Naval Magazine Indian Island Port Hadlock, Washington

Integrated Natural Resources Management Plan

2019 Final INRMP

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INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
NAVAL MAGAZINE INDIAN ISLAND

Prepared by

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This plan will be internally updated as necessary.

Date of Change	Name and Title of the Person Making the Change

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Signature Page

This Integrated Natural Resources Management Plan is a long term planning document to guide the Naval Magazine Indian Island management concerning natural resources, and to support its military mission while protecting and enhancing natural resources for multiple uses, sustainable yield, and biological integrity. The primary purpose of the plan is to ensure that natural resources conservation and military operations are integrated and consistent with legal and stewardship requirements. This Integrated Natural Resources Management Plan meets the requirements of the Sikes Act Improvement Act (SAIA), as amended, 16 United States Code §670(a) et seq.; Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*; and OPNAV M-5090.1D, *Environmental Readiness Program Manual*.

Reviewed and Approved by:

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U.S. Fish and Wildlife Service (USFWS)

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This Integrated Natural Resources Management Plan meets the requirements of the Sikes Act Improvement Act, as amended, 16 United States Code §670(a) et seq. and supports U.S. Fish and Wildlife Service policies, management goals, and objectives.

Approved by:

CURTIS TANNER

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for Brad Thompson
State Supervisor, Washington Fish and Wildlife Office
United States Fish and Wildlife Service

Date

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Washington Department of Fish and Wildlife (WDFW)

Signature Page

This Integrated Natural Resources Management Plan meets the requirements of the Sikes Act Improvement Act, as amended, 16 United States Code §670(a) et seq. and supports Washington Department of Fish and Wildlife policies, management goals, and objectives.

Approved by:

Kelly Susewind
Director
Washington State Department of Fish and Wildlife

2/19/20
Date

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National Oceanic and Atmospheric Association (NOAA) / National Marine Fisheries Service (NMFS)

Signature Page

This Integrated Natural Resources Management Plan meets the requirements of the Sikes Act Improvement Act, as amended, 16 United States Code §670(a) et seq. and supports NOAA/NMFS policies, management goals, and objectives.

Approved by:

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1.0 Overview of Integrated Natural Resources Management Plan

1.1 Purpose

This Integrated Natural Resources Management Plan is a long-term planning document designed to guide the Naval Magazine (NAVMAG) Indian Island management concerning natural resources in support of the Navy's military mission while protecting and enhancing natural resources for multiple uses, sustainable yield and biological integrity. The primary purpose of the plan is to ensure that natural resources conservation measures and military operations on the installation are integrated and compliant with stewardship guidelines and legal requirements.

This plan emphasizes ecosystem management, a process that considers the environment as a complex system functioning as a whole, not as a collection of parts. It recognizes the needs of people and the military mission as parts of that whole. Ecosystem management encourages partnerships among private, tribal, and local, state, and federal government entities.

1.2 Scope

This plan covers the Navy-owned lands, tidal lands and near shore waters of NAVMAG Indian Island, located in Jefferson County, Washington (see Figure 1-1). NAVMAG Indian Island is located at the northeast corner of the Olympic Peninsula in Jefferson County, Washington, southeast of the city of Port Townsend. NAVMAG Indian Island is bounded by Port Townsend Bay on the west and north, Oak Bay and Portage Canal to the west and south, and Kilisut Harbor to the east. It consists of 2,716 acres with approximately 2,100 of forested lands. Navy property extends to -4.0 Mean Low Low Water (MLLW) throughout the entire shoreline of the base.

1.3 Goals and Objectives

The installation's successfully implemented natural resources program will meet five basic goals, which are closely related and not mutually exclusive, and the associated objectives within each goal:

Table 1-1. Table of Goals and Objectives

Goal	Objective	Description
Goal 1: Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military mission requirements.		
	Objective 1.1	Ensure no net loss to the training and testing capability and capacity of the installation and range and enhance those capabilities to the maximum extent practicable.
	Objective 1.2	Sustain and enhance healthy wetland, riparian, and shoreline areas and buffers.
	Objective 1.3	Redesign existing landscaped areas so they are low-maintenance. Incorporate native trees, shrubs, and herbaceous plants where appropriate. Selection of plant species used in landscape design should be drought tolerant to limit need for irrigation after establishment.

Goal	Objective	Description
	Objective 1.4	Prioritize areas with invasive species for eradication and subsequent restoration with native plants.
	Objective 1.5	Protect soil resources from erosion through prevention and control practices.
	Objective 1.6	Minimize the amounts of fertilizers, nutrients, and pesticides applied on NAVMAG Indian Island.
	Objective 1.7	Assess and enhance the biological conditions of aquatic and terrestrial ecosystems.
	Objective 1.8	Promote and implement alternative storm water management approaches, including low impact development, to minimize adverse impacts of surface runoff from impervious areas. Maintain or mimic natural systems when possible.
	Objective 1.9	Promote management practices to control damage caused by feral animals and nuisance wildlife, both to NAVMAG Indian Island's facilities and to sensitive wildlife populations.
	Objective 1.10	Ensure compliance with Federal Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Magnuson-Stevens Fisheries Conservation Management Act (MSFCMA) and Marine Mammal Protection Act (MMPA) in all construction, maintenance, operations, and landscaping activities.
	Objective 1.11	Review all planned construction projects for natural resources impacts. The review will focus on meeting the goals and objective of this Integrated Natural Resource Management Plan (INRMP).
Goal 2: Increase awareness of natural resources issues and conditions, programs, and responsibilities for sustaining natural resources among the public, NAVMAG Indian Island employees, and tenants.		
	Objective 2.1	Solicit Tribal and public input on the INRMP.
	Objective 2.2	Conduct regular INRMP metric meetings with USFWS, WDFW, and NMFS.
	Objective 2.3	Provide information on base-wide natural resources initiatives to NAVMAG Indian Island employees and tenants (e.g. Earth Day activities, surveys, etc.).
Goal 3: Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.		
	Objective 3.1	Partner with local, city, county, and tribal governments and with non-governmental organizations for natural resource enhancement projects.
	Objective 3.2	Partner with state and federal agencies for natural resource projects.

Goal	Objective	Description
Goal 4: Provide sustainable natural resources related outdoor recreation opportunities.		
	Objective 4.1	Provide quality outdoor recreation experiences through picnic areas, and fishing areas for base employees while sustaining ecosystem integrity.
Goal 5: Improve natural resources management through enhanced management tools.		
	Objective 5.1	Manage, use and disseminate data collected from surveys, reports and projects to update various documents (including this IRNMP) and personnel. Additionally, this data can be used to inform visitors and contractors regarding natural resource concerns on the island.
	Objective 5.2	Maintain or acquire adequate funding and resources to ensure natural resources staff has access to Global Positioning System units, Geographical Information System (GIS) support, and training.
	Objective 5.3	Maintain existing data layers with the most up-to-date natural resources data and develop layers for natural resources data not currently in the GIS database.

1.4 Responsibilities

Successfully implementing an INRMP requires the support of natural resources personnel, other installation staff, command personnel, and installation tenants. The following section discusses the responsibilities for INRMP implementation within the United States Navy (USN). Responsibility for implementation of this program flows through the following chain of command:

1.4.1 Chief of Naval Operations (CNO), Environmental Readiness Division

CNO (OPNAV) shall serve as the principal leader and overall Navy program manager for the development, revision, and implementation of INRMPs and shall:

1) Provide policy, guidance, and resources for the development, revision, and implementation of INRMPs and associated NEPA documents.
2) Represent the Navy on issues regarding development and implementation of INRMPs and delegate responsibility in writing.
3) Resolve high-level conflicts associated with development and implementation of INRMPs.
4) Approve all INRMP projects before INRMPs are submitted to regulatory agencies for signature.

1.4.2 Commander, Navy Installations Command (CNIC)

CNIC shall:

1) Ensure the installations under its command develop, revise and implement INRMPs, if required, and:

    a) Reevaluate the need for an INRMP at all installations that currently do not have an INRMP.
    b) Following the initial evaluation, reevaluate all remaining installations that do not have an INRMP every five years.

2) Ensure that installations comply with DoD, DoN, and CNO (OPNAV) policy on INRMPs and associated NEPA document preparation, revision, and implementation.
3) Ensure the programming of resources necessary to maintain and implement INRMPs, which involves:

    a) The review and endorsement of projects recommended for INRMP implementation prior to submittal for signature. These projects are identified in Appendix A.
    b) The evaluation and validation of Environmental Program Requirements (EPR) web project proposals.

4) Participate in the development and revision of INRMPs, which involves the maintenance of a close liaison with N45, Naval Facilities Engineering Command (NAVFAC), and other budget submitting offices (BSO).
5) Provide overall program management oversight for all natural resources program elements.

1.4.3 Regional Commanders

The Regional Commanders shall:

1) Ensure that installations comply with DoD, DoN, and CNO (OPNAV) policy on INRMP and associated NEPA document preparation, revision, and implementation.
2) Ensure that installation INRMPs undergo annual informal reviews as well as formal five-year evaluations. Ensure installations complete the annual INRMP metrics review and endorse the results prior to submittal to CNIC via the chain of command.
3) Ensure the programming of resources necessary to maintain and implement INRMPs, which involves:
    a) The evaluation and validation of EPR-web project proposals.
    b) The funding of installation natural resources management staff.

4) Establish positive, productive relationships with local and regional authorities responsible for natural resource conservation for the benefit of subordinate command functions and INRMP development and implementation is accomplished.

1.4.4 Commanding Officer

The Installation Commanding Officer (CO) shall ensure the preparation, completion, and implementation of INRMPs and associated NEPA documentation for their installations and should systematically apply the conservation practices set forth in the Plans. Their role is to:

1) Act as stewards of natural resources under their jurisdiction and integrate natural resources requirements into the day-to-day decision-making process.
2) Ensure natural resources management and INRMPs comply with all natural resources-related legislation; EOs and Executive Memorandums; and DoD, SECNAV, DoN, and CNO (OPNAV) directives, instructions, and policies.
3) Involve appropriate tenant, operational, training, or research and development (R&D) commands in the INRMP review process to ensure no net loss of military mission.
4) Designate by letter, a Natural Resources Manager (NRM) responsible for the management efforts related to the preparation, revision, implementation, and funding for the INRMP. A copy of the designation letter is included in Appendix E.
5) Involve appropriate Navy Judge Advocate General or Office of the General Counsel to provide advice and counsel with respect to legal matters related to natural resources management and INRMPs.
6) Endorse the INRMP via Commanding Officer signature.

The Naval Magazine's Commanding Officer holds the highest-ranking position at the installation and ultimately is responsible for all aspects of the installation and its many functions. This includes ensuring that the INRMP is developed, implemented, and fully supported. The Commanding Officer can facilitate the implementation of the INRMP by encouraging support down the chain of command; ensuring that a process is established for early coordination between the NRM and key installation staff; and ensuring that natural resources management is integrated with other installation management functions, military operations, security and Research, Development, Testing & Evaluation (RDT&E) activities.

1.4.5 Natural Resources Manager

The NRMs are responsible for natural resources management at NAVMAG Indian Island. The NRM is designated in writing by the Commanding Officer (Appendix E). The NRM duties include ensuring that the CO is informed of natural resource conditions and issues; goals and objectives of the INRMP; and potential or actual conflicts between mission requirements and natural resource mandates. The NRM is a member of the NAVMAG Indian Island Environmental Department and is administratively a NAVFAC employee. They are primarily responsible for the preparation, revision and implementation of this INRMP and coordinating with other personnel on the installations as necessary to implement the INRMP to meet the goals and objectives. They are also responsible for ensuring this plan is reviewed, current, and compliant in coordination with the USFWS, NMFS, and the WDFW. The NRM is responsible for annually compiling, tracking, and maintaining the INRMP metrics on the Navy Conservation Website.

1.4.6 Region Program Director for Environmental (N45)

The Region Program Director for Environmental (N45) provides a Senior Regional Natural Resources Specialist to ensure execution of Natural Resources conservation responsibilities in support of the Regional Commander. The specialist reviews and signs INRMPs for technical sufficiency, consistency within the region, and compliance with Navy and DoD policy.

1.4.7 Public Affairs Office

The Public Affairs Office (PAO) provides a significant link between the INRMP and the on- and off-installation communities. The PAO can facilitate communication between offices across the installation and nearby communities regarding environmental management initiatives. Any proposed communications outside the installation should be discussed in advance with the PAO.

1.4.8 Naval Facilities Engineering Command

NAVFAC NW provides oversight and support for the development, maintenance and implementation of Navy Region Northwest's installation INRMPs and the natural resources program. NAVFAC NW's role in natural resources management is to:

a) Provide technical and contractual support to Regional and Installation Commanders for the preparation, development and implementation of INRMPs and associated NEPA documents.
b) Facilitate and coordinate the issuance of INRMP-related NEPA documentation.
c) Evaluate and disseminate information concerning new technology, methods, policies, and procedures for use in the development and implementation of INRMPs.
d) Assist with the development of the INRMP Project Implementation Table, EPR and Legacy project proposals.
e) Provide technical and administrative guidance for the development and execution of contracts and cooperative agreements to develop and implement INRMPs.

f) Facilitate the acquisition of INRMP mutual "agreements" between the Navy, USFWS, and state fish and wildlife agencies.
g) Facilitate conflict resolution between the Navy, USFWS, and state fish and wildlife agencies and other stakeholders if necessary.
h) Provide technical oversight and resources for forest management and assist in implementing forest habitat management actions.
i) Provide support and resources to installation fish and wildlife program and assist with hunting and fishing fee and permit collections and distributions if applicable.
j) Assist with compiling, tracking and maintaining INRMP metrics on the Natural Resources Data Call Station.

In addition to the installation NRM, NAVFAC NW has professionally qualified foresters, botanist, fisheries specialists, marine mammal experts, marine and terrestrial bird specialist, and knowledgeable biologists for invasive species management. These subject matter experts are all available to support and assist the installation's NRM natural resources program and associated consultations pertaining to ESA Section 7, Magnuson Stevens Act, MMPA, BASH and MBTA.

1.4.9 Other Federal Agencies

a) USFWS

The SAIA directs DoD to coordinate with the USFWS in the management of natural resources on DoD installations. This INRMP reflects a mutual agreement of the USFWS and State fish and wildlife agency representatives concerning the conservation of the natural resources under their respective legal authorities, consistent with the Department of the Interior's memorandum of understanding. USFWS biologists may be called upon to provide assistance and support to the Natural Resources Manager, if necessary.

b) NMFS

The SAIA does not require NMFS to participate in the development of INRMPs but coordination with this agency may be appropriate when listed species under NMFS jurisdiction would benefit from INRMP implementation. The NMFS is not required to review INRMPs for operation and effect but their participation is recommended when appropriate.

1.4.10 State Agencies

a) WDFW

The SAIA also directs DoD to prepare INRMPs in cooperation with the appropriate state fish and wildlife office; in this case the Washington Department of Fish and Wildlife. The goal is to gain mutual agreement with respect to the entire INRMP, but agreement is only required with respect to conservation, protection, and management of fish and wildlife resources. This INRMP reflects a mutual agreement of the USFWS and State fish and wildlife agency representatives concerning the conservation of the natural resources under their respective legal authorities, consistent with the Department of the Interior's memorandum of understanding. WDFW biologists may be called upon to provide assistance and support to the NRM, if necessary.

The WDFW manages wildlife and habitat under its SWAP; a comprehensive plan for conserving Washington's fish and wildlife and the natural habitats on which they depend. One guiding principle of the SWAP planning process is to identify actions needed to conserve wildlife and their habitats before species become too rare and restoration efforts too costly. The WDFW and the NRM will coordinate to ensure natural resource management at NAVMAG Indian Island meets the intent of the SWAP in conserving, protecting, and managing fish and wildlife resources.

1.4.11 Other Stakeholders

There is one tenant command located on Indian Island, which is the Navy Munitions Command (NMC) Continental United States (CONUS) West Division. The NMC performs the installation's primary mission of handling, storage and tracking of ordnance and weapons components. NMC consists of 63 full time employees who operate the weapons magazines, truck lots, ordnance production buildings, Ammunition Wharf, pier crane, mobile cranes, tractor-trailers, and forklifts. The NMC Executive Director and Ordnance Operations Manager work closely with the Environmental Manager and Natural Resources Manager to facilitate activities such as new construction, maintenance, training exercises, nuisance species eradication and hazard tree removal. As the Installation Commanding Officer is also the Officer In Charge of the NMC Detachment, the Environmental Manager and Natural Resources Manager are able to coordinate all environmental planning efforts and collaborations through a central office which has enabled the staff to develop a close working relationship. This has allowed the NMC and Environmental personnel to work as one team to collaborate and work collectively to resolve and overcome regulatory, tribal and Navy policy hurdles to facilitate the ordnance mission.

1.4.12 Tribal Coordination

Pursuant to SECNAVINST 11010.14A, COMNAVREGNWINST 11010.14, and OPNAV M-5090.1D, the Navy consults with federally recognized Native American Tribes if a Navy proposed action could potentially affect Tribal resources.

There are four federally recognized tribes with Usual & Accustomed treaty harvest rights on Indian Island (Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam, and Suquamish Tribes). These tribes exercise their treaty rights by harvesting shellfish (predominantly manila clams) on the six beaches designated for tribal use only in the Annual Shellfish Harvest Plan signed by the CO and tribal shellfish program managers. These beaches are #5.0, #6.0, #6.5, #7.0, #9.0, and #9.5 (Figure 1-2). Additionally, these tribes also conduct annual cedar bark harvest and medicinal plant (e.g. stinging nettle, soap berry, common horsetail) gathering events for tribal elders and youth on Indian Island. The tribal biologists have also conducted extensive forage fish spawning surveys and juvenile salmonid net seining surveys in partnership with the installation Natural Resources Program Manager for various beaches located in Kilisut Harbor and Port Townsend Bay.

The Navy is bound by the United States federal trust responsibility to protect Indian lands, protected tribal resources, and tribal rights as defined in DoDI 4710.02 (dated September 14, 2006). Additionally, the Department of Defense American Indian and Alaska Native Policy requires the Navy to undertake DoD actions and manage DoD lands consistent with the conservation of protected tribal resources and in recognition of Indian treaty rights to fish, hunt, and gather resources on-and off-reservation lands. Also, this policy requires the Navy to enhance tribal capabilities to the extent permitted by law to effectively protect and manage natural and tribal trust cultural resources whenever DoD acts to carry out a program that may have the potential to significantly affect those tribal resources at both on-and off-reservation lands.

These four tribes work closely with the NAVMAG Indian Island Environmental staff to review all proposed Navy actions that have the potential to affect or impact treaty resources. Over the years the tribal biologists and NAVMAG Indian Island Environmental staff have developed a very strong and long standing relationship to address issues of concern or mitigate impacts resulting from new construction, maintenance, repair, and/or training exercises.

Government to Government consultations between the four local tribes and the NAVMAG CO occur when there are projects/maintenance activities/or training exercises that have the potential to impact treaty resources which include, finfish, wildlife, shellfish, near shore habitat, eelgrass, traditional cultural properties and archaeological sites. When impacts to treaty resources are unavoidable, projects to mitigate these impacts are negotiated with tribal Chairman, council and staff to develop mutually agreeable outcomes which are

documented in a memorandum of agreement or memorandum of understanding. Pursuant to SECNAVINST 11010.14A, COMNAVREGNWINST 11010.14, and OPNAV M-5090.1. A copy of the draft INRMP will be sent to each tribe, whose input will be sought.

1.4.13 Mitigation Projects

Fort Road Wetland Restoration: The jurisdictional riparian wetland and stream channel was significantly impacted by unauthorized commercial logging activities in 2008. This wetland ecosystem sustained heavy compaction from equipment operation and near elimination of wetland conditions by blockages of hydrologic functions. Notices of Violation for this impact were issued in 2010 by the US Fish and Wildlife Service, U.S. Army Corps of Engineers, and Washington Department of Ecology (WDOE) and required a mandatory restoration of the site. Approximately $99K in funding was secured to implement a restoration project in 2011. This restoration project included wetland/stream channel re-establishment, relocation of logging debris, filling of drainage trenches, and replanting of native plant, shrub, and seedling trees to re-establish the impacted vegetation. Upon completion of the restoration project a final report was submitted to the three regulatory agencies and the NOV's were closed out in 2013. Annual monitoring of the restoration site continues and each year a report is submitted to the three agencies.

Tribal Shellfish Beach Enhancement: In September 2009 the U.S. Navy entered into a Memorandum of Agreement with the Suquamish Tribe to enable the Navy to install a Port Security Barrier (PSB) around the Ammunition Wharf within the restricted area. To mitigate the tribe for the loss of access to treaty resources and the ability to exercise treaty fishing rights (i.e. crab, shrimp, geoduck) within the PSB the Navy agreed to compensate the tribe for 20 years by conducting an annual shellfish enhancement project. Beginning in 2010 the NAVMAG Indian Island Environmental staff and Suquamish Tribe Fisheries staff have conducted annual manila clam seeding events on Beaches #6, #6.5, #7, and #9. Each year approximately 1.5 million manila clam seed have been spread over the intertidal shoreline areas of these beaches which are located on the east side of Indian Island within the waters of Kilisut Harbor. The Navy purchases the seed and equipment (i.e. predator netting and stakes) required to implement this seeding project.

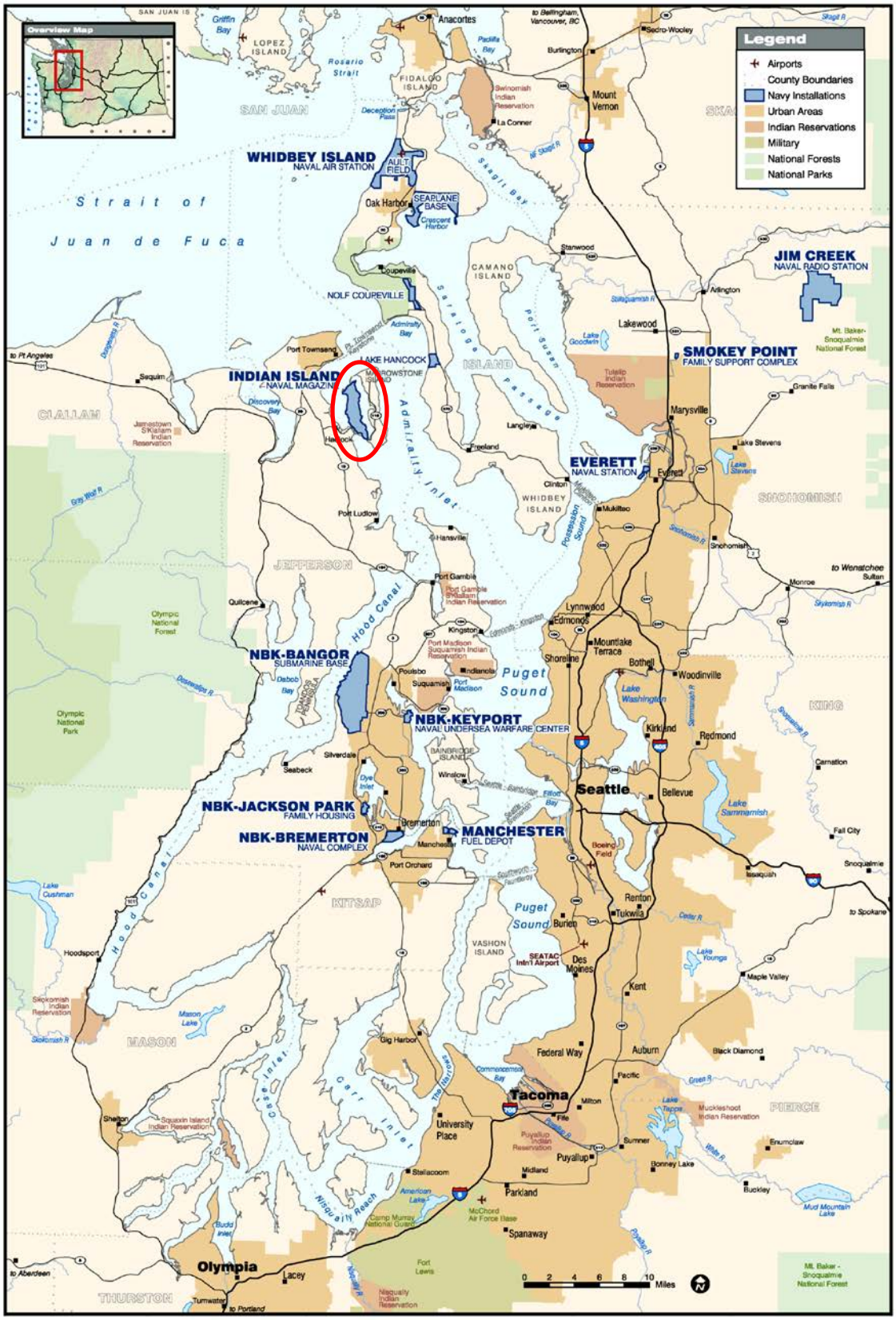


Figure 1-1. Location of Naval Magazine Indian Island

Figure 1-2. Tribal Shellfishing Beaches

1.5 Authority

This INRMP is authorized under the Conservation Programs on Military Installations (SAIA), as amended; 16 United States Code (USC) § 670(a) et seq., which requires military installations to prepare and implement INRMPs to provide for:

a) Fish and wildlife management, land management, forest management, and fish and wildlife-oriented recreation.
b) Fish and wildlife habitat enhancement or modifications.
c) Wetlands protection, enhancement, and restoration, where necessary for support of fish, wildlife, or plants.
d) Integration of and consistency among the various activities conducted under the plan.
e) Establishment of specific natural resources management goals and objectives and timeframes for proposed actions.
f) Sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of the fish and wildlife resources.
g) Public access to the military installation that is necessary and appropriate for use, subject to requirements necessary to ensure safety and military security.
h) Enforcement of applicable natural resources laws and regulations.
i) No net loss in the capability of military installation lands to support the military mission of the installation.
j) Such other activities as the Secretary of the Navy determines appropriate.

The SAIA also sets guidelines for the collection of fees for the use of natural resources such as hunting and fishing.

Over the last several years various guidance documents have been prepared on the interpretation of the SAIA and on INRMP preparation. Below are listed key DoD and Department of Navy (Navy) documents relevant to natural resource management.

1) *Memorandum on Implementation of Ecosystem Management in DoD.* This Memorandum issued by the Deputy Under Secretary of Defense on 8 August 1994, was the first formal statement of an ecosystem management approach to land management in the DoD. Ecosystem management is to be achieved through developing and implementing INRMPs. This Memorandum contains DoD's 10 principles of ecosystem management as an attachment, which were later included as an enclosure in DoDI 4715.3 (see below).
2) *DoDI 4715.03, Natural Resources Conservation Program (18 March 2011)* - This Department of Defense Instruction (DoDI) pertains to both natural and cultural resources management on DoD lands. It includes budgeting classifications for funding priorities and detailed information on the intent of INRMPs. Exhibit 1–1 lists the specific contents required in an INRMP document. This instruction also captures the requirements of the 2002 and 2005 memos listed below.
3) *DoDM 4715.03, Integrated Natural Resource Management Plan (INRMP) Implementation Manual (25 November 2013)* - In accordance with the authority in DoD Directive 5134.01 and pursuant to DoD Instruction 4715.03, this manual provides procedures to prepare, review, update, and implement INRMPs in compliance with sections 670-670o of Title 16, United States Code (U.S.C.) (also known and referred to in this manual as "the SAIA"). It incorporates and cancels Deputy Under Secretary of Defense for Installations and Environment memorandum and Assistant Deputy Under Secretary of Defense for Environment, Safety and Occupational Health memorandums.
4) *Memorandum on Implementation of Sikes Act Improvement Amendment: Updated Guidance*. This Memorandum of the Under Secretary of Defense, issued on 10 October

2002, provides guidance for implementing the requirements of the SAIA in a consistent manner throughout DoD and replaces the 21 September 1998 guidance Implementation of the Sikes Act Improvement Amendments. The October 2002 memorandum and its supplement issued in November 2004 emphasize implementing and improving the overall INRMP coordination process and focus on coordinating with stakeholders, reporting requirements and metrics, budgeting for INRMP projects, using the INRMP as a substitute for critical habitat designation, supporting military training and testing needs, and the INRMP review process.

5) *Memorandum on Implementation of Sikes Act Improvement Amendment: Supplemental Guidance concerning INRMP reviews.* This memo provides supplemental guidance for implementing SAIA requirements consistently throughout the Department of Defense. The guidance covers three elements of the INRMP review process – The scope of the review, public comments on INRMP reviews, and Endangered Species Act consultations on INRMPs.
6) *The Implementation of Sikes Act Improvement Amendment: Supplemental Guidance Concerning Leased Lands*, 17 May 2005. This document provides supplemental guidance for implementing SAIA requirements consistently throughout the Department of Defense. The guidance covers lands occupied by tenants or lessees or being used by others pursuant to a permit, license, right of way, or any other form of permission. INRMPs must address the resource management of all lands for which the subject installation has real property accountability, including leased lands. Installation Commanding Officers may require tenants to accept responsibility for performing appropriate natural resource management actions as a condition of their occupancy or use, but this does not preclude the requirement to address the natural resource management needs of these lands in the installation INRMP.
7) *OPNAVINST 5090.1D, Environmental Readiness Program.* Contains instructions on the implementation of the OPNAV M-5090.1D Environmental Readiness Program Manual.
8) *OPNAV M-5090.1D, Environmental Readiness Program Manual.* Establishes broad policy and assigns responsibilities for the Naval Natural Resources Program. Naval Facilities Engineering Command is assigned overall program management responsibility with authority to establish, coordinate, and promulgate the Natural Resources Program; to issue appropriate instructions to the Navy installations for implementation of the various natural resources programs; and to provide professional natural resources services and technical assistance, through Engineering Field Activities, to Navy and Marine Corps Installations. It also directs major claimants and intermediate commands to ensure that subordinate commands support natural resources programs on installations under their control. Installation Commanding Officers are tasked with:

    a) Requesting and using technical assistance from the appropriate NAVFAC office in developing and maintaining an effective natural resources program.
    b) Providing funding to ensure adequate support of the natural resources program.
    c) Applying practices set forth in approved natural resources management plans.
    d) Assigning specific responsibilities, centralized supervision, and qualified personnel to the natural resources program.

9) *NAVFAC Real Estate Operations and Natural Resources Management Procedure Manual, P-73, Volume II.* This document addresses CNO natural resources program requirements, guidelines and standards.

10) *Guidelines for Preparing Integrated Natural Resources Management Plans for Navy Installations,* April 2006. This guidance provides natural resources managers at Navy installations with an interpretation of what processes are needed to prepare INRMPs. This document is divided into three sections. The first section suggests a process to develop an INRMP. The second section addresses traditional technical areas to be included in the INRMP. The third section includes a discussion on implementing the INRMP.

1.6 Sustainability and Compliance

As a steward of military lands, the Navy recognizes that NAVMAG Indian Island's diverse and functioning ecosystems are critical not only to management of the species that might be harvested and all other fish and wildlife species which inhabit the island, in a manner which is consistent with the conservation of the species as well as the no net loss of military mission. The Natural Resources management program fully recognizes and embraces the many contributions that need to be made by non-biologists to the conservation of biodiversity. In many cases, social values, economics, and political factors have more of an impact on natural resources management than do biological sciences. The Commanding Officer, operations personnel, and other installation personnel have an influence on environmental conditions. At NAVMAG Indian Island, they become part of the solution by working with the Natural Resources Manager and integrating their perspectives within the management process of the installation and implementation of this INRMP.

As NAVMAG Indian Island faces pressures of increasing demands and fewer resources to meet them, stewardship of the environment becomes a very practical issue. Biodiversity, which refers to the variety of life and the ecological processes that sustain it, is critical to the integrity and sustainability of NAVMAG Indian Island ecosystems. This concept of biodiversity is central to ecosystem management, which is the basis for NAVMAG Indian Island's natural resources management. Sustainability is a systemic concept to preserve biodiversity and ensure the integrity of natural ecosystems over time while meeting the needs of the military mission. This concept of conservation, adaptive management and sustainability goes beyond the definition of compliance, which is simply meeting the minimum requirements of laws and regulations that pertain to the environment. NAVMAG personnel will take an active approach to managing the natural resources of the installation, and integrate all plans and operations into the concepts of conservation, biodiversity, no net loss of wetlands and sustainability of these resources. This INRMP, as a whole, outlines a strategy for sustaining biodiversity and the ecosystem as well as plans for complying with applicable regulations while meeting the needs of the military mission.

1.7 Review and Revision Process

An evaluation of natural resource management at NAVMAG Indian Island will be performed each year using this INRMP as the basis for the evaluation. This will include participation by representatives from USFWS, WDFW and NMFS, and will use the Navy's internet-based Conservation Metrics tool (see below) to evaluate the plan's relevance, operation, and effectiveness. These annual evaluations are the venue for assessing the effectiveness of the INRMP, and also serve to ensure regular interagency coordination. This also supports the review for operation and effect. The evaluation will utilize the seven areas in the Navy's Conservation Website. The evaluation will include the following seven areas:

1) Natural Resources Management (Ecosystem Integrity);
2) Listed Species and Critical Habitat;
3) Recreational Use and Access;
4) SAIA Cooperation (Partnership Effectiveness);
5) Team Adequacy;
6) INRMP Implementation;
7) INRMP (Natural Resource Program) Support of the Installation Mission.

Use of the web-based Conservation Metrics generates Navy conservation program metrics which annually provide information on the status of the installation's Natural Resource Program, and the status of the Navy's relationship with USFWS, NMFS and WDFW.

The annual evaluation must be completed in cooperation with the appropriate field offices of the USFWS, NMFS and WDFW and will measure successes and identify issues resulting from INRMP implementation. Minor updates will be compiled each year from this review and from the change page at the beginning of this INRMP and appended to the INRMP as Annexes 1-5. The NRM will maintain the controlled version of this INRMP and associated data within the installation's electronic and hardcopy file system. During these reviews, it may be determined that an installation's current INRMP is effective and is not in need of revision. Agreement from USFWS, NMFS and WDFW, through written documentation of the annual evaluation, can be used to substitute for the five-year review of operation and effect. Therefore, it is NAVMAG Indian Island's intent that it document annual reviews and work with USFWS, NMFS and WDFW to utilize the annual review process to meet the five-year review for operation and effect requirement whenever possible.

1.7.1 Annual INRMP Review and Conservation Metrics

Per DoD Instruction and Manual 4715.03 and OPNAV M-5090.1D, Natural Resources Conservation Metrics (Metrics) must be completed by each Navy installation with natural resources. The Metrics ensure that Navy installations are in compliance with the SAIA (16 USC 670(a)) and that each region or installation is preparing, maintaining, and implementing its INRMP. The metrics also support ESA expenditure reporting to Congress by the USFWS. Furthermore, the Metrics contribute to information collected for the Defense Environmental Program Annual Report to Congress and the Office of Secretary of Defense's (OSD) Environmental Management Review. Data collected during the Metrics exercise also informs briefings up the DoD and Navy chains of command regarding the status of the Navy's Natural Resources Programs. As required by DoD and Navy policy, the Metrics are to be completed with the US Fish and Wildlife Service, state fish and wildlife agencies, and, when appropriate, NOAA Fisheries and other stakeholders and partners.

The annual INRMP review utilizes seven focus areas documented within the U.S. Navy's Environmental Portal. Access requires a CAC and login.

1.7.2 Review for Operation and Effect

Consistent with guidance and references in DoD Instruction and Manual 4715.03 and the Natural Resources chapter of OPNAV M-5090.1D, the NRM will review this INRMP for operation and effect cooperatively with USFWS and WDFW at least once every 5 years. This review is the statutory responsibility of these agencies and Navy funds may not be used to pay for their participation in this requirement. The review for operation and effect is conducted during the annual INRMP metrics review. Mutual agreement on operation and effect will be documented in writing in the form of a new signature page for the INRMP. The new signature page will be appended to this INRMP and uploaded to the Navy's internal Conservation Web site: https://conservation.dandp.com/#/login. NAVMAG Indian Island will document annual reviews and work with USFWS, NMFS, and WDFW to use the annual review process to meet the 5-year formal review requirement whenever possible. The NAVMAG Indian Island NRM will coordinate with the partner agencies to coordinate the annual INRMP review at a time and location that is convenient for all.

1.8 Commitment of the USFWS, NMFS and WDFW

The Agencies agree to cooperate in the development of the INRMP and to review the INRMP as to operation and effect at least once every five years. In addition to the formal five-year review, DoD policy calls for annual INRMP reviews that are conducted in coordination with the SAIA partners.

No element of the SAIA is intended to either enlarge or diminish the existing responsibility and authority of the Agencies concerning fish and wildlife responsibilities on military lands. An INRMP reflects a mutual agreement of the parties concerning the conservation, protection, and management of fish and wildlife resources. Per the Memorandum of Understanding (MOU) between the U.S. Department of Defense, U.S. Fish and Wildlife Service and the Association of Fish and Wildlife Agencies. (July 29, 2013) a comprehensive, joint review by all parties as to operation and effect will be conducted no less often than every five years. Although not required by the Sikes Act, the Navy has invited NMFS to review this INRMP. Navy Region Northwest has also invited NMFS to collaborate with installations in the management of NMFS regulated fish and marine mammals located on or around NAVMAG Indian Island. While once every five years is required, an annual review is also expected.

An INRMP reflects mutual agreement of the parties concerning the conservation, protection, and management of fish and wildlife resources. All actions and projects in the INRMP are subject to the availability of funds appropriated by Congress, and none of the proposed projects shall be interpreted to require obligation or payment of funds in violation of any applicable federal law including the Federal Anti-Deficiency Act (31 USC § 1341). All actions contemplated in this INRMP are subject to the availability of funds properly authorized and appropriated under Federal law. Nothing in this INRMP is intended to be nor must be construed to be a violation of the Anti-Deficiency Act (31 USC § 1341 et seq.).

1.9 Management Strategy

Ecosystem management is a goal-driven approach to environmental management that is on a scale compatible with natural processes; is cognizant of nature's time frames; recognizes social and economic viability within functioning ecosystems; and is realized through effective partnerships among private, local, state, tribal and federal interests. Ecosystem management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. The ecosystem management approach has the overarching goal of protecting the properties and functions of natural ecosystems. Over the long term, this approach will maintain and improve the sustainability and biological diversity of terrestrial and aquatic ecosystems while supporting sustainable economies and communities. Maintenance of healthy ecosystems supports realistic military training and testing, which in turn promotes mission readiness.

The Commander, Navy Region Northwest, considers this approach to be responsible stewardship. The Natural Resources Management Program is based on the premise that responsible stewardship and ecosystem management are synonymous and are compatible with integrated natural resources management.

1.9.1 Natural Resources Management Strategy

The natural resources management strategy for NAVMAG Indian Island begins with three words: "What, Where, When":

1) **What:** what natural resources, habitats, vegetation, wildlife and water resources are on the installation?
2) **Where:** where are these resources located?
3) **When:** when are they present on the installation?

The NRM will use the best available data that helps answer the "What, Where, When" questions for management decisions for the installation. Early review by the NRM of planned actions and projects, identification of potential environmental impacts, and the development of alternatives or project design features to reduce, avoid and/or minimize impacts.

1.9.1.1 Early Review and Risk Assessment

Early review by the NRM of planned actions and projects, identification of potential environmental impacts, and the development of alternatives or project design features to reduce, avoid and/or minimize impacts. This requires that all new projects, programs, and operations, or changes to existing projects, programs, and operations, be reviewed by the Environmental Office staff for potential impacts to the environment, including potential impacts to natural resources. The Natural Resources Manager is a member of the Environmental Office, and is able to review planned actions, assess the risks to natural resources, and provide comments and/or alternatives to the action proponents that will minimize or eliminate the risks, if possible. The early review process also allows the NAVMAG Environmental office an opportunity to identify the appropriate NEPA documents that will be generated based on the proposed action and the alternatives.

The Natural Resources Manager is not exempt from the review process, nor from the requirements of NEPA. Agricultural or shellfish harvesting leases, research projects, and restoration projects, just to name a few possible natural resource actions, must all be reviewed for environmental risks and impacts, the same as if the proposed action is a building project or a new training operation. Effective communication between those proposing future actions at NAVMAG and the Natural Resource Manager to develop ways to minimize or eliminate potential environmental impacts is critical. Identification of restoration or enhancement opportunities, prioritization of the opportunities, and seeking the funding to carry them out within the constraints of the military mission at the installation is also of critical importance.

1.9.1.2 Restoration and Enhancement of Resources

The Natural Resources Manager will keep abreast of installation military requirements and identify areas heavily impacted by the operations and thus appropriate for restoration activities. A ranking system must be developed in order to make efficient use of diminishing budgets and to focus restoration and monitoring activities. Mission, biological, seasonal or budgetary constraints may dictate when restoration projects can be implemented. Restoration planning must be detailed enough to allow for successful completion of the project. Monitoring for success or failure should also be a key component of any restoration or enhancement planning.

1.9.2 Integration with other Plans

a) Integrated Cultural Resource Management Plan

NAVMAG Indian Island does not have a signed Integrated Cultural Resource Management Plan (ICRMP). However, a final draft of the ICRMP is in process and is referenced and considered for all projects and activities that take place on the island.

b) Integrated Pest Management Plan

NAVMAG Indian Island is included in the West Puget Sound Navy Installations, Washington Integrated Pest Management Plan October of 2011. The integrated approach to pest management is a planned program incorporating education, continuous surveillance, record keeping, and communication to prevent pests and disease vectors from causing unacceptable damage to operations, people, property, materiel, or the environment. This approach uses targeted, sustainable (effective, economical, environmentally sound) methods. Herbicides are not routinely used on Indian Island and use for a project or action must be approved by the Environmental office and no other effective options available.

c) Encroachment Action Plan

The installation has implemented the Naval Magazine Indian Island Encroachment Action Plan which was approved and signed by the installation Commanding Officer in September 2010. Encroachment includes both physical and political actions by non-military entities affecting the installation's ability to carry out its mission. These entities include Native American tribes, federal and state agencies, local community, private land owners, and citizen groups. One of the primary means of de-conflicting encroachment from tribal fisheries in the marine waters of Port Townsend Bay and Kilisut Harbor is to work closely with tribal managers and staff. Examples of tribal partnering include coordinating fishery openings with Navy waterborne security personnel, providing maps of vessel transit lanes in the vicinity of the Ammunition Wharf Port Security Barrier, and developing educational briefs on tribal fisheries (i.e. gear, seasons, fishing areas, etc.) for Navy vessel operators. As a result of these and other partnering efforts with tribes having Usual & Accustomed treaty harvest rights on Indian Island to conduct forage fish surveys, medicinal plant gathering, cedar bark harvests and shellfish beach enhancement, the installation Environmental staff have developed a close and long standing working relationship. This relationship fosters a more amicable environment in which to discuss and resolve potential issues and concerns with the tribes.

Additionally, the installation partners with other federal and state agencies to conduct fish and wildlife population surveys, wetland delineation, water quality sampling, and identification of environmentally sensitive areas. The results of these partnering efforts are used for a variety of purposes including presence/absence determination for ESA listed species, identifying forage fish habitat areas and eelgrass beds, juvenile salmonid seasonal outmigration periods, and developing baseline data for future reference and comparison studies. Public outreach and tours provided by installation environmental staff have gained the trust of the community and resulted in less hostility and increased understanding of the installation and its mission. These public tours have been given to students from local schools, citizen groups, community leaders, and land owner associations. In a smaller population area such as East Jefferson County the information provided during these tours goes back into the local community and serves to garner trust and maintain the credibility of the Navy's commitment to the environment and reputation as a "good neighbor".

d) Strategic Plan for Amphibian and Reptile Conservation and Management on Department of Defense Lands

This is a strategic plan that summarizes current reptile and amphibian-related challenges and concerns on DoD lands. This plan provides a framework for accomplishing DoD-wide conservation objectives related to the protection of amphibians, reptiles, and their habitats as part of a comprehensive effort to manage natural resources in ways that preclude mission conflicts and loss of training capabilities that can result from conservation based regulatory restrictions. To the extent applicable natural resources management at NAVMAG will be conducted consistent with this strategic plan. Presently there are no constraints on mission activities at NAVMAG related to amphibian or reptile regulatory restrictions.

e) Partners in Flight (PIF) Strategic Plan for Bird Conservation and Management on Department of Defense Lands

This plan identifies actions that support and enhance military missions while working to secure bird populations. It also provides a scientific basis for maximizing the effectiveness of resource management, enhancing the biological integrity of DoD lands, and ensuring continued use of these lands to fulfill military training requirements. Military commanders must comply with the MBTA, Bald and Golden Eagle Protection Act, Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) and its associated Memorandum of Understanding, and the Final Rule on Take of Migratory Birds by the Armed Forces. The PIF strategic plan presents a compilation of current Best Management Practices (BMP) and suggested focus areas to assist in compliance, and recognizes that one of the best ways to comply with the above legal requirements is to continue ongoing conservation efforts

at the installation level. This helps protect and conserve birds and their habitats via implementation of INRMPs, as well as to build and maintain partnerships with other agencies and conservation entities.

f) National Environmental Policy Act Compliance

An INRMP is considered a major Federal action and as such, is subject to NEPA. An Environmental Assessment (EA) was conducted to evaluate the potential environmental effects associated with adopting this INRMP (Appendix B). It is foreseeable that actions proposed by the Navy under an INRMP may be minor in nature and may have been adequately addressed under previous NEPA analyses. In such instances an updated INRMP may not necessarily require a new EA and may rely upon the determinations of previous EAs, if the updated INRMP is within the scope of that analysis. Individual projects that are proposed at NAVMAG, but that are not part of this INRMP will be assessed to determine the type of NEPA analysis needed. In most cases, projects are categorically excluded.

2.0 Physical Environment

2.1 Installation Information

2.1.1 General Description

NAVMAG Indian Island is located at the northeast corner of the Olympic Peninsula in Jefferson County, Washington, southeast of the city of Port Townsend. NAVMAG Indian Island is bounded by Port Townsend Bay on the west and north, Oak Bay and Portage Canal to the west and south, and Kilisut Harbor to the east (Figure 2-1). It consists of 2,716 acres with approximately 2,100 acres of forested lands. Navy property extends to -4.0 MLLW throughout the entire shoreline of the base.

2.1.2 Military Mission

NAVMAG Indian Island functions as the ordnance management center for fleet and shore stations in the Pacific Northwest Region. We provide quality and responsive logistics, technical and material support in the areas of retail ammunition management, and ordnance system components maintenance. We provide technical support of ordnance and ordnance-related equipment and processes, and logistics management as the only active breakbulk and containerized ordnance transshipment port in support of the joint services of the Pacific command.

2.1.3 Operations and Activities

The primary military mission is to load, offload and manage ordnance from ships and other vessels. All training events are coordinated with the NAVMAG Indian Island Environmental office to ensure that the training can be completed with minimal or no impact to the natural environment.

2.1.4 Installation History and Pre-Military Land Use

Indian Island was a seasonal clam and fish gathering area utilized by the Chemakum tribe on the Quimper Peninsula, from their villages located at Hadlock, Irondale, and Discovery Bay. In later years, the Klallam tribe used Kilisut Harbor and the Scow Bay inlet for travel to and from Puget Sound, staying overnight on Indian Island where food could be gathered in a protected inlet to support canoe travelers. Food gathering and use is evident today by the many shell middens found on Indian Island. Indian Island was occupied by descendants of the Klallam Chief Chetzemoka (a.k.a. Duke of York), and land ownership records show that several descendants were living on the island as recently as the 1930's (LAAS 1999).

The first Euro-American sighting of Indian Island was by the George Vancouver expedition in May 1792. Archibald Menzies, naturalist to the expedition, circumnavigated Indian Island and Marrowstone Island. He saw oak trees on the southwest side of Indian Island and named the waterbody Oak Cove, now called Oak Bay. In 1841, Charles Wilkes, an early explorer of the area, made a hydrographic map of "Harbors in Admiralty Inlet Oregon Territory". Euro-American settlement of the region in the 1860's led to the development of fishing, timber, shipping and mill industries at nearby Irondale and the town of Port Hadlock (EDAW 2002). The first Europeans began to settle on Indian Island in the late 1860's. Indian Island and Marrowstone Island were joined to the mainland and sometimes collectively called Craven's Peninsula. Despite the name, Indian Island was only separated from the mainland by a marshy area until the early 1900s. A canal linking Oak Bay with Port Townsend Bay, through the ancient canoe portage was dug in 1915 by the US Army Corps of Engineers. This canal was dug primarily for economic reasons, which then effectively created a true island out of what was once a peninsula. A bridge linking Indian Island with the mainland was built in 1953. When the Navy purchased the island in 1939, there were 94 residents on Indian Island, primarily of Scandinavian descent (LAAS 1999).

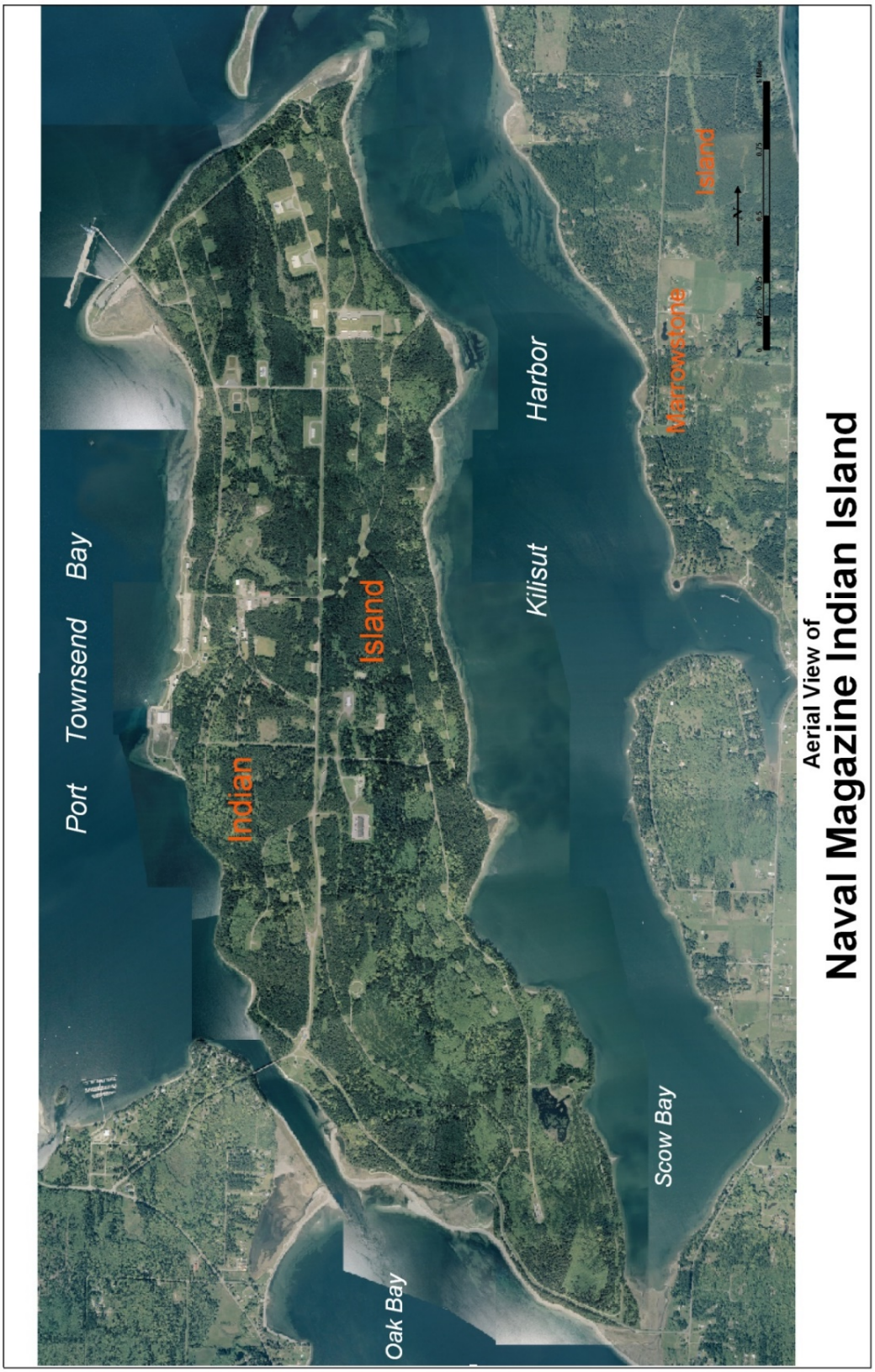


Figure 2-1. Naval Magazine Indian Island Aerial Map

In the early winter of 1936, the necessity for additional facilities for the stowage of ammunition, primarily aircraft bombs, and an arming area for aircraft based at the Naval Air Station, Seattle was brought to the attention of the Bureau of Ordnance. The Navy investigated possible sites and on August 1, 1939 recommended the acquisition of Indian Island. When the Navy acquired Indian Island in 1939, the few residents of the island were mostly fishermen and shellfish harvesters. Other land uses included small scale farming, logging, and raising of cattle.

Construction of the first Navy buildings began in early 1941, concentrated on the west side of the island. These included the original barracks (Building 69), the original administration building (Building 71, which no longer stands), the gymnasium (Building 151), and a separate barracks building (Building 68, which no longer stands) for African-American sailors. Additional buildings were constructed over the next few years (1942-1945), including the ammunition magazines, maintenance shop and storehouse. One of the major functions of Indian Island during World War II was loading and offloading ammunition onto ships berthed at the original timber planked Ammunition Wharf located at Crane Point. The first ammunition to arrive at the Naval Magazine was sent by truck from the Naval Ammunition Depot, Puget Sound, Washington on December 16, 1941. While other naval installations in the Puget Sound could perform this function, Indian Island was unique in that it could load large amounts of explosives and accommodate large munitions ships at its deep draft wharf. In addition to loading/offloading ammunition, WWII operations at Indian Island also included the production of anti-submarine and anti-torpedo nets and mine assembly.

In 1945, a general decline of work occurred, and the two activities were combined to form the U.S. Magazine and Net Depot under Captain J. W. Rankin, United States Navy (USN), Commanding Officer Naval Ammunition Depot, Puget Sound, Washington. In 1948, the Magazine and Net Depot was annexed to the Bangor Naval Ammunition Depot.

In the post war period, Indian Island changed commands and responsibilities numerous times, as shown in Table 2-1. Effective August 1, 1950, the station was disestablished and consolidated under the U.S. Naval Ammunition Depot, Bangor. The station was again renamed the Naval Ammunition Depot, Bangor, Indian Island Annex, Port Hadlock, Washington.

During the 1950s, work on net production and mine maintenance continued as in the 1940s. Near the end of the 1950s, the station work force was reduced gradually, along with the workload. On August 1, 1959, Indian Island (then called the Indian Island Annex) was placed in "Reduced Activity" status and used primarily as an ammunition storage facility.

Table 2-1. Timeline of Indian Island Name Changes

Time Span	Installation Name
1941-1948	U.S. Naval Magazine and Net Depot, Indian Island
1948-1950	Indian Island Annex, U.S. Naval Ammunition Depot, Bangor
1950-1970	Naval Ammunition Depot, Bangor, Indian Island Annex
1970-1979	Naval Undersea Warfare Establishment, Keyport, Indian Island Annex
1979-1992	Naval Undersea Warfare Center, Division Keyport, Indian Island Detachment
1992-2000	Naval Weapons Station Seal Beach, Detachment Port Hadlock
2000-present	Naval Magazine Indian Island

During its Reduced Activity status, the inert portion of the mine operations was moved to Bangor and the island was manned only by a very small security and fire protection force, along with a maintenance man who also carried the title of Station Keeper.

With the construction of the Trident Submarine Base at Bangor in the 1970s, it became necessary to reactivate Indian Island as a full Naval fleet support facility. As a result, the Naval Undersea Warfare Engineering Station Indian Island Detachment was officially established in June 1979. A multi-million dollar concrete pier was built on the northwest corner of the island at Walan Point to serve the U.S. Pacific fleet. The original wood piling supported Ammunition Wharf used during WWII, was demolished in 1996. The new concrete Ammunition Wharf was constructed approximately 2 miles to the north in 1978.

With the decision to base carrier battle groups at nearby Naval Station Everett in the early 1980s, the importance of the installation increased once again. Instead of the one-week round-trip necessary to reach ammunition-loading facilities in California, Everett-based ships are only two hours travel time from ammunition loading facilities at Indian Island.

2.1.5 Regional Land Uses

Jefferson County comprises 1,808 square miles, and is the eighteenth largest of Washington's thirty-nine counties. The Olympic National Park and Olympic National Forest, which bisect the County into western and eastern halves, comprise approximately 65 percent of the County's 1.16 million acres of land. Most of the county's non-federal land is forest and farmland.

2.2 General Physical Environment

NAVMAG Indian Island is located in the Puget Lowland Physiographic Province of western Puget Sound. This geographic region is bounded on the east by the Cascade Range, on the west by the Olympic Mountains, on the north by the U.S.-Canadian border (although the physiography continues into British Columbia), and on the south by the low hills of the Coast Range near Olympia (Kruckeberg 1991). Landforms in this province developed as a result of glaciation during the last ice age. Topography associated with this portion of the Puget Lowland is flat lying to moderately steep.

2.2.1 Climate

NAVMAG Indian Island is located in the rain shadow of the Olympic Mountains and is one of the driest regions of western Washington. Measurable precipitation is recorded on three to five days each month in summer and on 17 to 22 days per month in winter (National Climatic Data Center 2005). Snowfall is light adjacent to tidewater, increasing with distance from the water and rise in elevation.

The average monthly maximum summer temperatures are in August, ranging from 65° Fahrenheit (F) near the water to 75° F inland and seldom exceed 90° F. The average monthly minimum temperature is usually in January in the lower 30's. Minimum temperatures between -5° and –8° F have been recorded; however, the minimum temperature seldom drops below 15° to 20° F. The coldest weather is usually associated with cold air fronts from Alaska and Canada. The average date of the last freezing temperature in the spring ranges from the latter half of March near the water to the last of April in agricultural areas 100 to 300 feet above sea level and a few miles inland. The first freezing temperature in the fall is about the first of November.

2.2.2 Climate Change

Global climate change has continued to cause impacts on the environment. Temperatures rising have caused ice caps and glaciers to melt, resulting in increased precipitation, and storms causing a rise in sea levels. This can threaten our wetlands around the installation by flooding them out, and destroy habitats for salmon and other finfish. Air temperatures rising are another risk that has caused increased insect growth and respiratory irritants, which may affect personnel and the surrounding community. To implement its climate policy, the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science. A more regulatory approach to addressing this issue may evolve over time at the national level.

Climate change has not been properly assessed for the majority of DOD installations, including the installation specific to this INRMP. The United States Government Accountability Office (GAO) was asked to assess the DOD's actions to adapt to the challenges of climate change during a DOD and Installation audit, with a final report submitted in May 2014. During this audit, it was found that some of the installations were trying to incorporate the required information into their INRMPs with varied interpretations of instructions, while others were leaving it out until further guidance. The GAO report provided 3 recommendations that the DOD concurred with in the final report. These three recommendations were to complete a baseline climate change vulnerability assessment of all DOD sites; provide further direction and information to clarify instructions that were submitted to the installations; and, approval for projects may in future incorporate a climate change adaptation that should be listed in the approval process for funding.

2.2.2.1 Regulations Guidance

Climate change regulations are evolving. Currently, the following serve as guidance:

a) EO 13514**:** Oct 2009**.** Energy (GHG reduction), Water, Waste conservation and reduction goals Energy (GHG reduction), Water, Waste conservation and reduction goals

- Requires agency Strategic Sustainability Performance Plans

b) Whitehouse Council on Environmental Quality (CEQ): (Mar 2011). "Federal Agency Climate Change Adaptation Planning, Implementing Instructions" require federal agencies to:

- Assess likely effect of climate change on agency's ability to achieve its mission & strategic goals, Sept 30, 2011

c) QDR: (Feb 2010) "The Department must complete a comprehensive assessment of all installations to assess the potential impacts of climate change on its missions and adapt as required."

d) Department of Defense Strategic Sustainability Performance Plan: (August 2010). Planning actions in accordance with EO13514

e) DoDI 4715.03: (Feb 2011). Integrate climate change impact assessment and adaptation planning in INRMPs.

In Washington, physical and chemical effects of climate change, particularly sea level rise, are expected to manifest themselves in 5 primary ways (from Littell et al. 2009):

Inundations – regular flooding of the lowest lying areas by high tides.
Flooding – more extensive flooding due to the compounding of sea level rise on storm surges.
Erosion and Landslides – an acceleration of bluff and beach erosion caused when sea level rise exacerbates erosion that occurs naturally during storm events.
Saltwater Intrusion – an intrusion of salt water into coastal freshwater aquifers as sea level rises.
Increased Ocean Surface Temperature and Acidity – increase in ocean temperatures due to warmer air temperatures, and the absorption of carbon dioxide by ocean waters leading to increased acidity.

Indian Island is highly affected by these changes as the increase in storm frequency and intensity has caused us to consider erosion potential on our cliff sides. Along with these erosion factors comes changes in the water column, most specifically ocean acidification. Changes in sea level alone and in conjunction with changes in timing and severity of storm events and change in the timing and flow of water in the Puget

Sound, and the effects of these phenomena on sediment dynamics and wetland migration have the potential to impact the continued use and stability of the ammunition wharf, small craft pier and Crane Point quaywall to some degree. In the future it may be necessary to perform a vulnerability assessment to anticipate the different ways that NAVMAG may be affected by climate change.

More information on climate change in the Pacific Northwest can be found at the North Pacific Landscape Conservation Cooperative's website: http://www.northpacificlcc.org/

2.2.3 Geology

As part of the Puget Sound lowlands, Indian Island is mantled with glacial sediments deposited during several ice advances over the last 50,000 years. The glacial sequence varies in composition and thickness depending on location. Glacial activity left characteristic signatures on the region's landscape, including numerous lakes and streams, and broad, relatively flat islands, and deeply incised river valleys. The geology of NAVMAG is composed of reworked beach deposits and bedrock along the immediate shoreline to a thin sequence of glacial till and bedrock over the remainder of the island.

2.2.4 Seismology

The south end of NAVMAG Indian Island has four fault systems in the sandstone bedrock (LAAS 1999). The largest fault system is the Portage Canal Fault. The northeast side of the fault uplifts and the southwest side drops (LAAS 1999). Bedrock underlying the glacial sediments in the Puget Lowland consists of several large tectonically active blocks that are moving relative to one another. Due to earthquake activity in the area, NAVMAG Indian Island lies within a high-risk category Zone 3 on a scale of 0 to 4, as defined by the Uniform Building Code. Fault lines and soil types are shown in Figure 2-2.

2.2.5 Topography

Indian Island measures approximately 4.5 miles in length north to south, and approximately 1.25 miles wide at its widest point. The southern portion of the island has greater relief than the northern part. Jorgenson Hill, at 363 feet above mean sea level, is the highest point on the island. Much of the shoreline areas consist of near vertical bluffs that range in height between 40 and 100 feet in elevation. Like most of Puget Sound, the beaches and nearshore areas of NAVMAG Indian Island have a very high percentage of sediments supplied by erosion of coastal bluffs and not by rivers and streams.

Indian Island is separated from the mainland by the narrow Portage Canal and from neighboring Marrowstone Island by shallow tide flats and sand spit. The terrain is hilly, but much of the surface is only moderately sloped. Portions of the taller hills and sections of the shoreline are characterized by steeper slopes and bluffs. The shoreline character is varied, ranging from accretionary sand spits and tidal mud flats to steep, slowly eroding bluffs. The steep slopes north of Portage Canal are of exposed sandstone. Offshore gradients are slight in most nearshore tidal zones, with steeper offshore slopes dropping to 60-foot depths to the south and west and to a relatively shallow bottom in Kilisut Harbor. The NAVMAG Indian Island topography is shown in Figure 2-3.

2.2.6 Soils

Indian Island soils were mapped as part of the Jefferson County Soil Survey, published by the Soil Conservation Service in 1975. Refer to "Soil Survey of Jefferson County Area, Washington, United States Department of Agriculture (USDA) Soil Conservation Service, August 1975" for detailed descriptions of soil types and soil profiles. Figure 2-4 shows soil types on Indian Island.

A variety of soil classifications have been distinguished across Indian Island. In general, these soils occupy a range of texture classes from silty clay loam (*Wapato* and *Belfast* complexes) to fine sandy loam (*Townsend* and *Casollary* complexes) to gravelly loam (*Hoypus, Swantown* and *San Juan* complexes). Also

present are tidal marshes, small pockets of peat (*McMurray* and *Mukilteo* complexes) and gravelly coastal beaches.

The most common soils in the north half of Indian Island are: (1) the *Whidbey* complex (0 to 15 percent slopes), made up of well drained gravelly sandy loam that forms on terraces comprised of glacial till and overlays bedrock; (2) the *Dick* complex (0 to 15 percent slopes), made up of somewhat excessively drained loamy sand that has formed on terraces and plains of glacial outwash; and, (3) the Cassolary complex, made up of well-drained sandy loam that forms on terraces made of glacial drift and/or marine deposits, and found in an elevation range of 50 to 500 feet above sea level. All three complexes are important farmland soils (USDA 2013)

The most common soils in the south half of Indian Island are: (1) the *Whidbey* complex (0 to 30 percent slopes), present on higher and steeper terraces in the southern half, is comprised of glacial till; (2) the *Cathcart* complex (0 to 30 percent slopes), and upland matrix made up of well drained gravelly silt loam that has formed from colluvium and residuum of sandstone and shale, and is found in an elevation range of 100 to 1,600 feet above sea level; and, (3) the *Alderwood* complex, made up of moderately well-drained gravelly sandy loam that forms on terraces of glacial till with remnant volcanic ash, and is found in an elevation range of 50 to 800 feet above sea level. All three complexes are important farmland soils (USDA 2013).

2.2.7 Marine Waters

Indian Island is surrounded by the marine waters of Port Townsend Bay, Admiralty Inlet, Oak Bay, Kilisut Harbor and Scow Bay. Tidal activity consists of two unequal highs and lows each tidal day of 24.8 hours. The diurnal range of tides or the difference in height between Mean Higher High Water (MHHW) and MLLW is 8.52 feet for Port Townsend (NOAA 2005). NAVMAG Indian Island owns down to -4.0 MLLW with a designated naval restricted area in the waters adjacent to the ammunition wharf.

Near shore waters are defined by the OPNAV M-5090.1D as “Near shore areas are waters and submerged lands adjoining the installation from the mean high water mark (i.e., the line on the shore established by the average of all high tides) to the boundaries of installation waterfront activities where Navy controls access, and that are subject to the immediate authority of the installation CO or tenant command.”

2.2.8 Surface Waters

Surface water runoff on NAVMAG Indian Island follows gently sloped yet well-defined channels especially on the eastern bedrock slopes in the island's southern one-third, where a small intermittent stream is present. Elsewhere, the permeable glacial, outwash sands and gravels do not produce much runoff, while the lower permeability glacial till soils tend to produce perched water conditions and slow subsurface drainage. Historically the only large freshwater body on Indian Island was Anderson pond, which was constructed by a U.S. Navy Reserve unit that dredged Anderson marsh. In 2015 the standpipe that regulated water levels rusted through and the pond drained, returning it to wetland conditions. Since the pond was manmade there has been no effort to restore it.

NAVMAG Indian Island complies with the requirements of the Multi-Sector General Permit for stormwater discharges through implementation of control measures and BMPs; routine facility inspections and visual assessments of stormwater discharges; periodic monitoring; and reporting to the U.S. Environmental Protection Agency (EPA). In advance of major constructions projects that disturb one acre or greater and smaller projects that are part of larger projects that together exceed this threshold, the Navy and the project contractor must comply with construction stormwater management requirements; including the preparation of a construction stormwater pollution prevention plan and submittal of a Notice of Intent to the EPA.

2.2.9 Potable Water

From the Sparling Well near Port Hadlock, the City of Port Townsend provides potable water to NAVMAG Indian Island. The potable water is treated for iron and magnesium near the well location. Port Townsend allocates 100,000 gallons per day of potable water for use by NAVMAG Indian Island.

2.2.10 Ground Water

Ground water generally occurs at or near sea level in the northern two-thirds of the island, and largely occurs in limited perched water bodies in the topographically higher southern third of the island. The on-island groundwater is not presently used as a potable water source. Local precipitation is the primary source of water recharging the island's aquifers. The bulk of precipitation occurs during winter months.

2.2.11 Water Quality

The Washington State Department of Ecology (WDOE) has measured and classified some of the waters surrounding NAVMAG Indian Island (Figure 2-6) as Category 1 – "meets tested standards" - on the 2004 Clean Water Act (CWA) Section 303(d) list of impaired water bodies. WDOE has a long-term water quality monitoring station near Walan Point (Station PTH005). A review of the monitoring data shows that water quality is generally good at the station's location. Dissolved Oxygen (DO) levels lower than 5 mg/L (according to WDOE, the DO level that begins to have a negative effect to marine species) were recorded twice: once in February 1998, and once in October 2000, measured at depths between -12.5 meters (41 feet) to –21 meters (69 feet) below surface level (WDOE 2002).

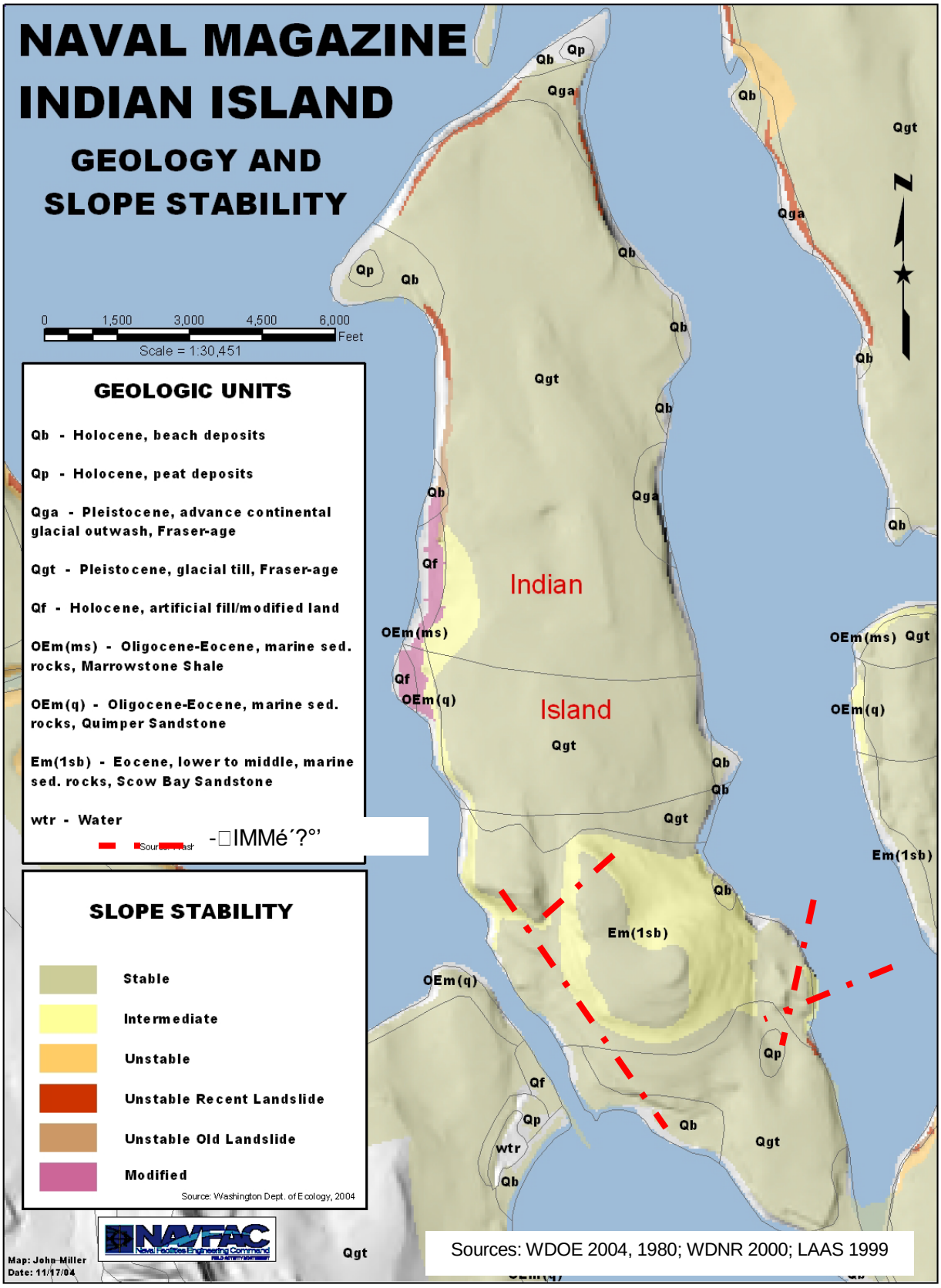


Figure 2-2. Geologic and Slope Stability Map of NAVMAG Indian Island

Figure 2-3. NAVMAG Indian Island Topography

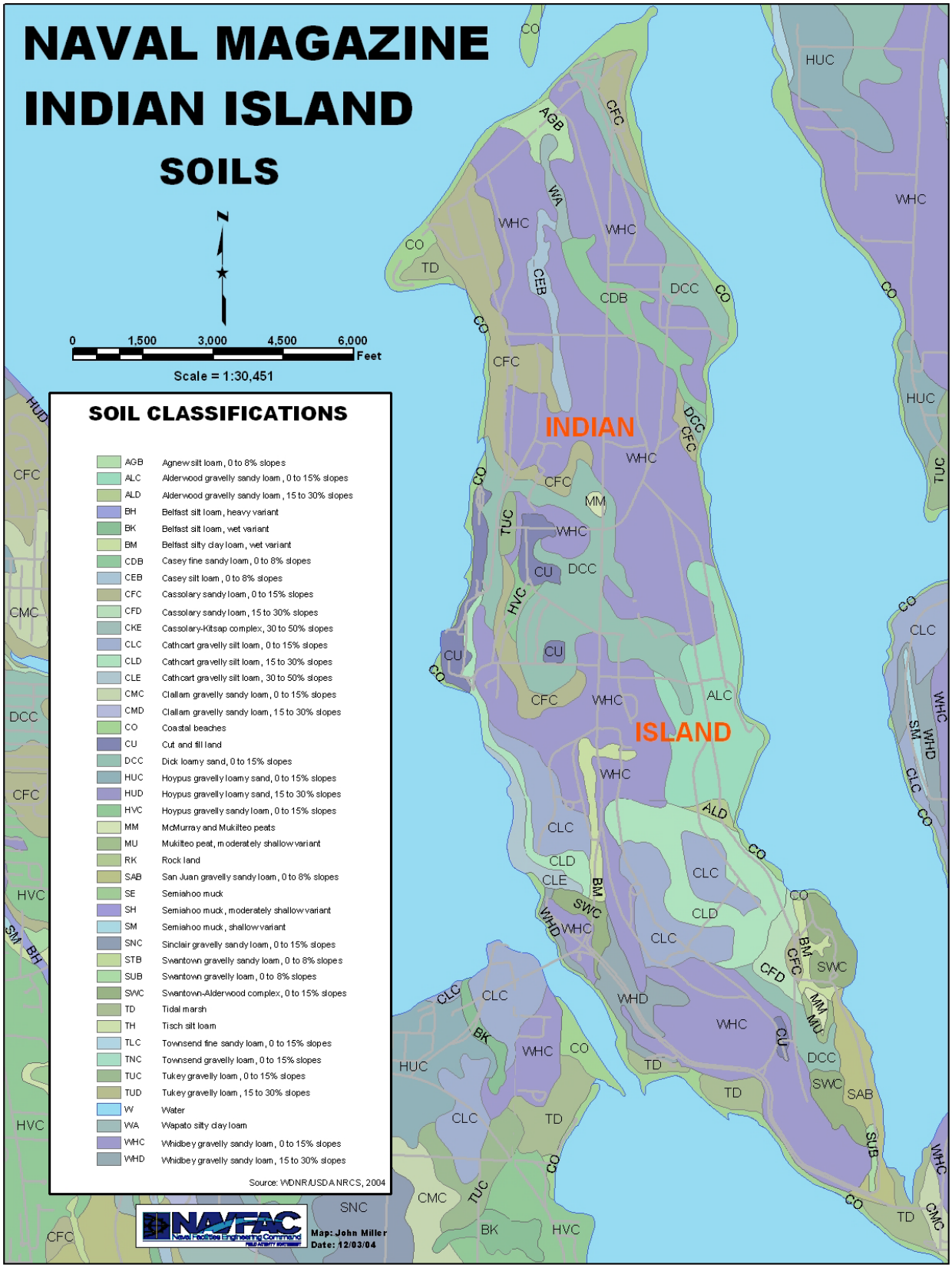


Figure 2-4. NAVMAG Indian Island Soils

2.3 General Biotic Environment

NAVMAG Indian Island is located in the Puget Trough Ecoregion. The Puget Trough Ecoregion is situated between the Cascade and Olympic Mountains and the Willapa Hills. It includes Puget Sound and the lowlands south to the Columbia River. The ecoregion extends north into the Georgia Basin in British Columbia and south into the Willamette Valley in Oregon. Roughly eight percent of Washington is within this ecoregion.

The Puget Trough Ecoregion includes the marine waters of Puget Sound and the lowlands generally up to about 1,000 feet above sea level (Figure 2-5). A few isolated highlands within the ecoregion extend up to 2,400 feet in elevation.

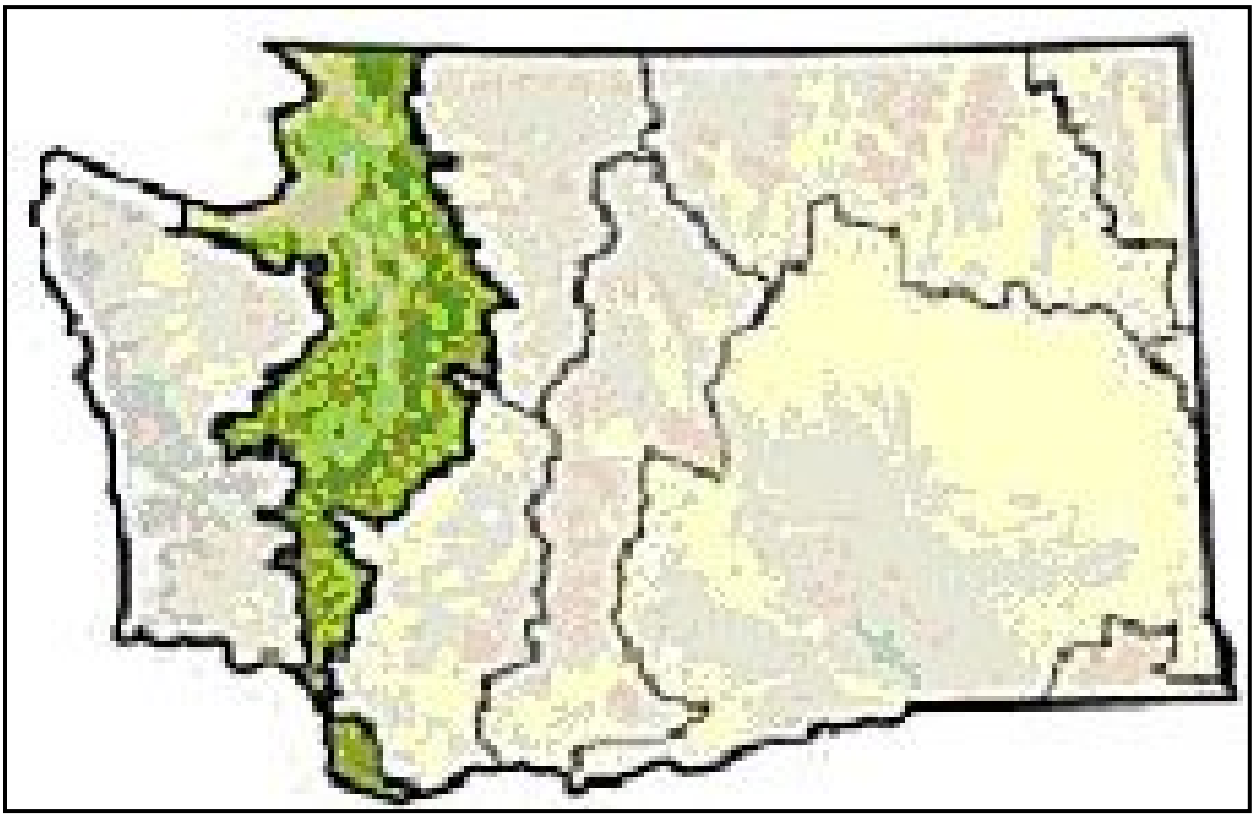


Figure 2-5. Map Showing the Puget Trough Ecoregion.

The Puget Trough Ecoregion is characterized by glacial landforms and cool, relatively mild climate dominated by Pacific maritime weather systems. Historically, the uplands were covered in extensive conifer forests, with prairies and other open areas found in the southern portion of the ecoregion. This region is now one of the most human-populated areas of the Northwest, and humans have altered the region by extensive logging, farming and by building cities and vast suburbs. Puget Sound dominates the ecoregion and provides a habitat for many species of marine animals and vegetation. Indian Island is comprised mainly of shoreline, nearshore, forest, wetland and riparian ecological systems as defined by the Conservation Website.

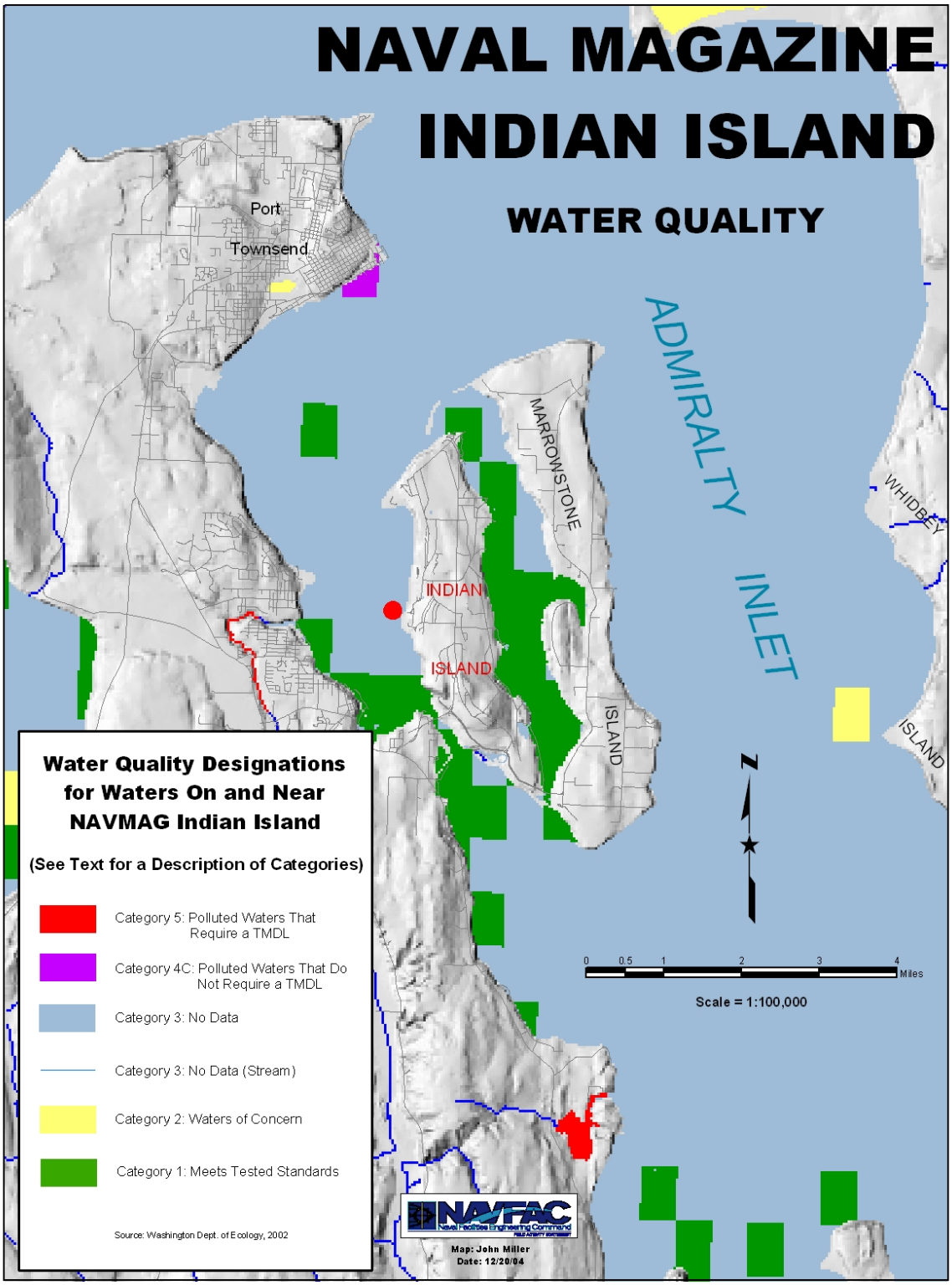


Figure 2-6. Impaired Water Bodies near NAVMAG Indian Island

2.3.1 Threatened and Endangered (T&E) Species and Species of Concern

Federally listed T&E species that occur or potentially occur on NAVMAG Indian Island property or in the adjacent waters include: the marbled murrelet (*Brachyramphus marmoratus*), bull trout (*Salvelinus confluentus*), Hood Canal summer-run chum salmon (*Oncorhynchus keta*), Chinook salmon (*O. tshawytscha*), steelhead (*O. mykiss*), bocaccio (*S. paucispinis*), yelloweye rockfish (*S. rubberimus*), green sturgeon (*Acipenser medirostris*), southern resident killer whale (*Orcinus orca)*, and humpback whale (*Megaptera novaeangliae*), No T&E plant species are known to exist on NAVMAG Indian Island. Information on each of these species is located in Section 4.

2.3.2 Wetlands

According to Executive Order (EO) 11990 (1977), the term "wetlands" includes areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds. EO 11990 requires Federal agencies to minimize the loss or degradation of wetlands and to enhance their natural values. Section 404 of the Clean Water Act prohibits discharges of dredged or fill material into waters of the U.S., including wetlands, without first obtaining a permit from the U.S. Army Corps of Engineers. OPNAV M-5090.1D refers to 33 Code of Federal Regulations (CFR) 320-330, CWA Section 404, and requires that the Navy comply with the national goal of no net loss of wetlands, and to avoid loss of size, function and value of wetlands.

In 1997, wetlands on Indian Island were mapped and characterized by the Navy (U.S. Navy. 2015. Fort Road Wetland Restoration Project). In 2015, the wetlands were revisited and new maps were produced using recent aerial photographs (see Figure 2-7). There are approximately 33 acres of salt marshes and 89 acres of freshwater wetlands within the Navy-owned property, and one additional wetland is located outside of the Navy fence line along Oak Bay. The salt marsh at Walan Point, at approximately eleven acres, is the largest wetland and has been protected by the installation's Command as a wildlife preserve area.

2.3.3 Fauna

A wide variety of fish and wildlife species inhabit or otherwise utilize Indian Island and its surrounding waters. Lists of species that may be present are found in Appendix C-1.

2.3.3.1 Marine Invertebrates

Benthic species within the marine waters surrounding Indian Island are typical of other areas around Puget Sound and are predominated by polychaetes, mollusks, and crustaceans. Invertebrate species include deposit-feeding polychaetes, ghost shrimp (*Callianassa* sp.), seastars (*Pycnopodia helianthoides*), and anemones (*Anthopleura* sp.) (SAIC 2001). Shellfish species in the area include Pacific oyster (*Crassostrea gigas*), blue mussel (*Mytilus edulis*), basket cockle (*Clinocardium nuttallii*), manila clam (*Tapes philippinarum*), native littleneck (*Protothaca staminea*), butter clam (*Saxidomus giganteus*), Pacific gaper clam (*Tresus capax*), horse clam (*Tresus nuttallii*), the eastern soft shell clam (*Mya arenaria*), geoduck (*Panopea generosa*), hood canal shrimp (*Panadulus danae*), dungeness crab (*Cancer magister*), and the red rock crab (*Cancer productus*)(SAIC 2001).

In past years, commercial shellfishing had been allowed on the tidelands of NAVMAG Indian Island. This generated lease money that was placed in the SAIA Fish and Wildlife account (to be used for natural resources restoration or management efforts on the installation), but commercial shellfishing was discontinued for security reasons after September 11, 2001. Currently, there are no plans to reestablish commercial shellfishing leases at Indian Island.

2.3.3.2 Pelagic, Demersal, and Anadromous Fish

Offshore waters around Indian Island are used by diverse and abundant fish fauna (SAIC 2001). Many of the species are commercially, recreationally, and/or ecologically important, and several are bottom-feeding species that are considered to be relatively resident to the area. The north end of Indian Island and Kilisut Harbor appear to be major spawning and/or nursery areas for herring (*Clupea harengus pallasi*), smelt (*Hypomesus pretiosus*), cod (*Gadus microcephalus*), tomcod (*Microgadus proximus*), pollock (*Theragra chalcogramma*), great sculpin (*Myoxocephalus polyacanthocephalus*), cabezon (*Scorpaenichthys marmoratus*), and rock sole (*Lepidopsetta bilineata*). Other species reported in this area and adjacent areas of Port Townsend Bay include: spiny dogfish (*Squalus acanthias*), lingcod (*Ophiodon elongates*), great skate (*Raja binoculata*), halibut (*hippoglossus stenolpis*), midshipman (*Porichthys notatus*), eelpouts (*Zoarcidae spp.*), tube-snouts (*Aulorhynchus flavidus*), surfperch (*Embiotocidae spp.*), shiner perch (*Cymatogaster aggregate*), pricklebacks (*Stichaeidae spp.*), gunnels (*Pholidae spp.*), rockfish (*Scorpaenidae spp.*), sablefish (*Anoplopomatidae spp.*), greenlings (*Hexagrammidae spp.*), poachers (*Agonidae spp.*), sanddab (*Bothidae spp.*), and flounder (*Pleuronectidae spp.*) (SAIC 2001).

Surveys performed by the Port Townsend Marine Science Center from 1991 to 1999 identified the presence of additional species reported in this area and adjacent areas of Port Townsend Bay. These include salmon, trout, spotted ratfish *(Hydrolagus colliei)*, Pacific sanddab *(Citharichthys sordidus)*, Dover sole *(Microstomus pacificus)*, spiny dogfish *(Squalus acanthias)*, flathead sole (*Hippoglossoides elassodon)*, English sole *(Parophrys vetulus)*, snake prickleback *(Lumpenus sagitta)*, and blackbelly eelpout (*Lycodes pacificus)* (SAIC 2001). Sand lance is present all along the beaches of Port Townsend Bay and along the majority of the Kilisut Harbor shoreline of Indian Island and Marrowstone Island (SAIC 2001, U.S. Navy 1997).

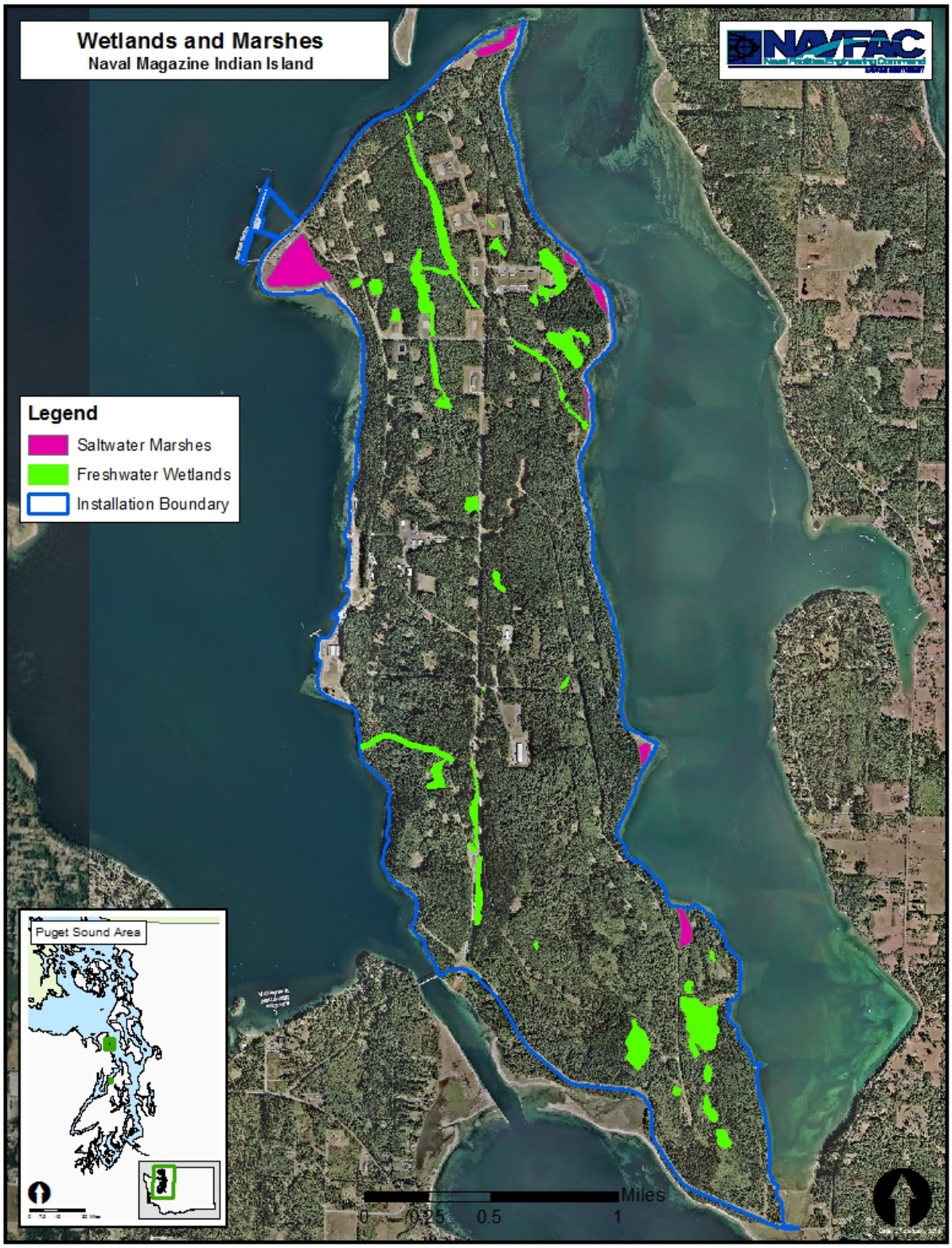


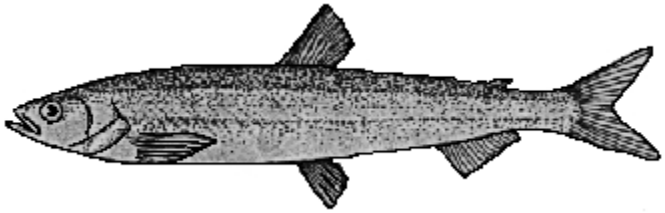
Figure 2-7. Wetlands on Indian Island.

2.3.3.3 Forage Fish

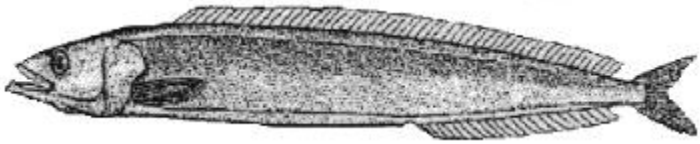
Forage fish are an important and abundant fish species in Washington. As the name implies, the significance of forage fish is related to the critical part they play as the prey base for a large variety of other marine organisms, their popularity as recreational fishing bait, and their significance to commercial and subsistence fisheries. Herring, sand lance, and surf smelt have documented spawning areas along the shores of Indian Island (Figure 2-8). Surf smelt and sand lance tend to spawn in sediment depositional beaches, and herring deposit eggs within eelgrass beds. A recent study by the WDFW conducted beach seining to assess fish numbers around the ammunition pier (WDFW 2016) and is located in Appendix C-5. Also provided in Appendix C are the "2016-2017 Surveys for Spawning Surf Smelt and Pacific Sand Lance at Naval Base Kitsap Bangor, Manchester Fuel Department and Naval Magazine Indian Island".

Figure 2-8. Species commonly called "forage fish".

Pacific herring (*Clupea harengus pallasi*)



Surf smelt (*Hypomesus pretiosus*)



Sand lance (*Ammodytes hexapterus*)

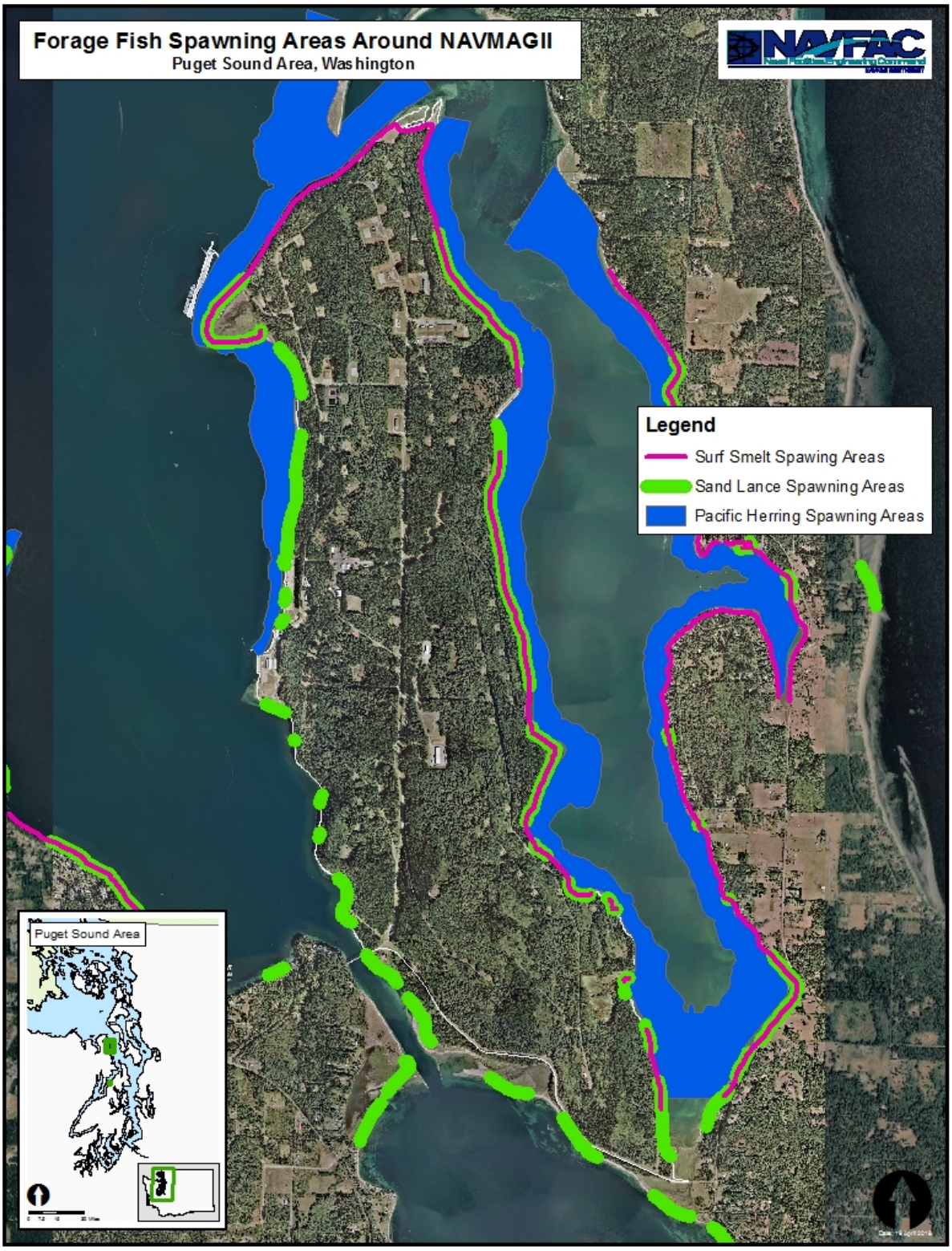


Figure 2-9. Forage Fish Spawning Areas at Indian Island (WDFW 2017).

Fresh Water Fish Species

The only freshwater lake located within the boundaries of the island was Anderson Pond. It is situated in the southeastern corner of the island in an undeveloped area. Anderson Pond has undergone some dramatic changes. In 1989 the pond and associated wetland, which is approximately 20 acres in size, had only two acres of open water. As a result of an extensive project that began in 1989, there were approximately 12 acres of open water. The water source for Anderson Pond was primarily rainfall and one or more small submerged springs that feed the pond. In 2015 the standpipe that regulated water levels rusted through and the pond drained, returning it to wetland conditions. Since the pond was manmade there has been no effort to restore it.

Anderson Pond was stocked with three species of fish for recreational fishing in the 1990s. The following stockings have taken place: December 1991, approximately 5,500 Kamloops trout (*Oncorhynchus mykiss kamloops*); May 1992, 8,000 rainbow trout (*Oncorhynchus mykiss*); and in May 1993, 4,500 largemouth bass (*Micropterus salmoides*) were planted at the pond in order to provide an ongoing fishing opportunity for recreation. No fish have been planted since 1993. Cutthroat trout (*Salmo clarki clarki*) were known to be in Anderson Pond in the early 1990s, but they are believed to have been extirpated by the largemouth bass (Figure 2-9). Since the pond has drained, no fish are currently able to live there.

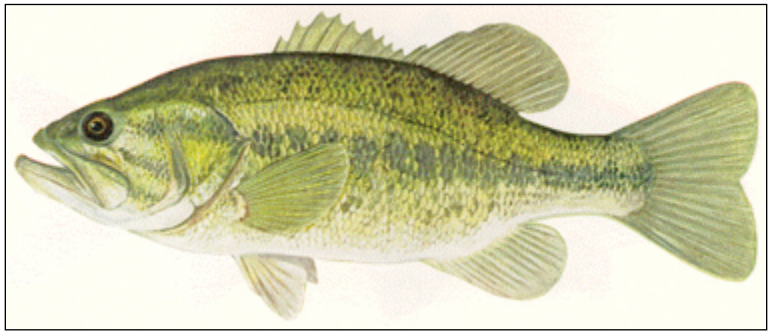


Figure 2-10. Largemouth Bass.

Terrestrial Invertebrates

NAVMAG Indian Island has invertebrate species similar to those typically observed in Kitsap and Jefferson counties. Species observed may include ants (family Formicidae), sweat bees (family Halictidae), jumping spiders (family Salticidae), and hobo spiders (Tegenaria agrestis). Other aquatic species that occur can include species of mosquitoes (family Culicidae), mayflies (family Baetidae), damselflies and dragonflies (order Ordonata), and water beetles (order Coleoptera) (USN 2001a, SAIC 2005a). For a complete listing of invertebrates potentially occurring on Naval Base Kitsap Bangor facilities, see Appendix C-9.

Reptiles and Amphibians

A baseline survey of reptiles or amphibians was conducted on NAVMAG Indian Island. The survey conducted in 2013 by Petersen, Block, and Klope (Appendix C-9) found the following species:

Ensatina (lungless salamanders) (*Ensatina eschscholtzii*);
Northern Pacific Chorus Frog (*Pseudacris regilla*)
Red-legged Frog (*Rana aurora*);
Rough-skinned Newt (*Taricha granulosa*);
Northwestern Salamander (*Ambystoma gracile*)
Long-toed Salamander (*Ambystoma macrodactylum*)
Northern Alligator Lizard (*Elgaria coerulea*);
Northwestern Garter Snake (*Thamnophis ordinades*);
Common Garter Snake (*Thamnophis sirtalis*).

Mammals

Due to the protected and largely undeveloped nature of Indian Island, it supports a number of mammals, including Columbian black-tailed deer (*Odocoileus hemionus columbianus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), mink (*Mustela vison*), short-tailed weasel or ermine (*Mustela erminea*), river otter (*Lutra canadensis*), and eleven bat species. A list of mammals, wildlife survey (Peterson 2014) along with the Bat Grid Inventory and Monitoring Bat Population report may be found in Appendix C-6. Black bears (*Ursus americanus*), and cougar (*Puma concolor*) have been sighted on Indian Island.

Columbian Black-Tailed Deer

Indian Island, by its very nature as an island, has a finite carrying capacity for deer. However, the Island is not completely sealed from deer moving between populations outside of the fenceline, as they are known to swim between Indian Island and Port Hadlock or Marrowstone Island. Hunting, in the past, was used as a way to manage the population on the Island. However, due to security reasons hunting has not been allowed since 2001. In 2005, the estimated population of Columbian black-tailed deer was 300 to 350 animals, based on NAVMAG's deer mortality log, mild winters, and observations from hair loss syndrome occurrence.

Bats

In 2008 and 2009 the Department of Defense Legacy Resource Management Program conducted bat grid inventories and monitoring surveys of NAVMAG Indian Island. A combination of mist nets and acoustic detection were used to identify eleven species of bat at nine locations on the island. These species were identified as Townsend's big-eared bat (*Corynorhinus townsendii*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), little brown bat (*Myotis lucifigus*), western long-legged myotis (*Motis evotis*), big brown bat (*Eptesicu fuscus*), Yuma myotis (*Myotis yumanensis*), California myotis (*Myotis californicusi*), silver-haired bat (*Lasionycterus noctivagans*), and the hoary bat (*lasiurus cinereus*). These surveys assisted in testing and implementing field and analyses methods to improve bat monitoring efficiency (DoD 2011).

Marine Mammals

California sea lions (*Zalophus californianus*) have hauled out occasionally on navigation aids around Indian Island and Pacific harbor seals (*Phoca vitulina*) haul out primarily on the sandy beaches north of Indian Island on Ratt Island. Less frequent visitors to the area are Steller sea lions (*Eumetopias jubatus*). With the exception of occasional use of navigation buoys, no sea lion haulout sites are known in Port Townsend Bay (SAIC 2001) or the surrounding waters. Cetaceans, including orcas (*Orcinus orca*), humpback whales (*Megatera novaengliae*), Dall's porpoise (*Phocoenoides dalli*), and harbor porpoise (*Phocena phocena*) are known to visit Port Townsend Bay (SAIC 2001).

Birds

A list of bird species that may be found on NAVMAG Indian Island is located (Cullinan, Tim. 2001. Important Bird Areas of Washington). The Audubon Society of Washington has identified the NAVMAG Indian Island area as an "important bird area of Washington" (Cullinan 2001). This designation includes the marine environments around Indian and Marrowstone Islands and selected terrestrial habitats on the two islands. An excerpt from the Audubon Washington document describing this designation may be found in (Cullinan, Tim. 2001. Important Bird Areas of Washington). Cullinan (2001) found this area to be important habitat for brant (*Branta bernicla*), harlequin ducks (*Histrionicus histrionicus*), other waterfowl, and bald eagles (*Haliaeetus leucocephalus*). Indian Island provides important nesting habitat for pigeon guillemots. Additional information on Laws and Regulations regarding avian species can be found in section 4.6.10.

Bald Eagles

Bald eagles are protected federally under the Bald and Golden Eagle Protection Act (16 USC 668) and the Migratory Bird Treaty Act (16 USC 703), and within Washington State by the Bald Eagle Protection

Rules (Washington Code (WAC) 232-12-292) and enabling legislation contained within the Revised Code of Washington (RCW 77.12.655). In 2007 bald eagles were removed from the List of Endangered and Threatened Wildlife after years of conservation efforts. Ten nests are currently being monitored for productivity with more specific information listed in Appendix B.

Great Blue Heron

Great blue herons (*Ardea herodias fannini*) are commonly observed in the Walan Point salt marsh, as well as other salt marshes around Indian Island. Herons nest in tall trees, frequently in large rookeries. There had been at least six heron rookeries in the past, but an increase in the numbers of bald eagle pairs nesting on Indian Island in recent years as well as the establishment of two bald eagle nests near historical rookeries, may have caused abandonment of the rookeries.

Pigeon Guillemot

The pigeon guillemot (*Cepphus columba*) lives year round in Puget Sound. Pigeon guillemots dive in shallow water for sculpin, sand lance and smelt. They feed in kelp beds and in waters near spits and jetties. Pigeon guillemots nest in rocky crevices on bluffs overlooking tidewater, or they dig holes in sandy bluffs, prying out stones and scraping with their sharp toe nails. There is a pigeon guillemot nesting area on the bluff along the east side of Indian Island just south of Bishop Spit, overlooking Kilisut Harbor.

Owls

In 1985, the Navy conducted a survey for owls on NAVMAG Indian Island (Lee 1985). Although the study is dated, it provides documentation of species presence for that time period, and it is likely that the same species are still present on the installation. The species found during that survey were saw-whet owl (*Aegolius acadicus*), pygmy owl (*Glaudicium gnoma*), screech owl (*Otus asio*), great horned owl (*Bubo virginianus*) and great gray owl (*Strix nebulosa*).

2.3.4 Flora

2.3.4.1 Terrestrial Vegetation

Naval Magazine Indian Island is within the *Tsuga heterophylla* Zone (Western Hemlock Zone), a vegetative zone that occupies extensive areas of western Washington (Franklin and Dyrness 1988). Plant communities which have not experienced alteration from logging or urbanization would typically consist of Western hemlock (*Tsuga heterophylla),* Douglas fir (*Psuedotsuga menziesii),* and Western red cedar (*Thuja plicata)* with an understory of sword fern (*Polystichum munitum),* vine maple *(Acer circinatum)* and salmonberry *(Rubus spectabilis*) (Franklin and Dyrness 1988). Within this vegetative zone, riparian and wetland plant communities tend to be dominated by red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), and salmonberry. Big-leaf maple (*Acer macrophyllum*) is often found scattered throughout the lower reaches of this zone, typically on the edges of open areas or in areas disturbed by fire, clearing, or logging. Two historically important, relict stands of Garry oaks (*Quercus garryana*) occur at Indian Island. One stand is at Walan Point and extends ¼ quarter mile along the southwest facing, sandy bluff. The second stand is located at the south end of Indian Island along Oak Bay.

In addition to the above named species, Pacific madrone (*Arbutus menziesii*) is found throughout Indian Island, indicating the drier climate found in the rain shadow of the Olympic Mountains. Understories within this drier zone are characterized by salal (*Gaultheria shallon*) and oceanspray (*Holodiscus discolor*).

In 1974, a terrestrial flora survey was conducted at several north Indian Island locations (U.S. Navy 1974). The plants found and identified typify the plants of the *Tsuga heterophylla* Zone described above, and also included such species as Oregon-grape (*Berberis nervosa*), Pacific rhododendron (*Rhododendron macrophyllum*) and Nootka rose (*Rosa nutkana*). The complete list of plants can be found in (Kalina, B.

1997 Nov. 3 "Routine Wetland Determination"), and this list is considered representative of the current natural (non-landscaped) terrestrial flora of Indian Island.

Landscaping

The vegetation around most of the buildings and bunkers consists of lawns and ornamental shrubs. A contractor performs normal maintenance practices, such as mowing, weeding, and fertilizer applications. Any landscaping additions or improvements follow the recommendations in the Installation Appearance Plan signed by Base CO and implemented in 2007. A copy of the list of recommended vegetation can be found in (Installation Appearance Plan, Recommended Planting List. Pages 50-54).

2.3.4.2 Marine Vegetation

Surveys near Walan Point (U.S. Navy 1974), found species that are typical of those occurring in the intertidal and subtidal areas of Indian Island, although all may not be present in all locations of the island.

Eelgrass beds are present at Indian Island along the Kilisut Harbor shoreline from the central to the north end of the island. Eelgrass is also present on the west side of the island from north of Crane Point to Walan Point (U.S. Navy 2003). Eelgrass is a common surface for deposit of herring spawn, and numerous other plants and animals thrive on or under the canopy of the blades (Harbo 1999).

There are approximately 225 acres of intertidal shoreline with 8 significant saltwater marshes covering approximately 32 of those acres (SAIC 2001). Vegetation in the largest salt marsh, at Walan Point, is dominated by pickleweed (*Salicornia virginica*), sandspurry (*Spergularia macrotheca*), and pigweed (*Atriplex patula*). Other vegetation found there includes salt grass (*Distichlis spicata*), jaumea (*Jaumea carnosa*), seaside plantain (*Plantago maritime*) and alkali grass (*Puccinellia maritime*) (U.S. Navy 1976). Surveys at the other salt marshes also found entire-leaved gumweed (*Grindelia integrifolia*) and dunegrass (*Elymus mollis*) (U.S. Navy 1997).

2.3.4.3 Invasive Vegetation

Spartina

Spartina grass is an aggressive noxious weed that displaces native vegetation, destroys shorebird and wildlife habitats, and severely threatens the state's shellfish industry (Figure 2-11). The noxious weed was introduced into Washington waters in the late 19th century in the form of packing material for East Coast oysters being brought to Willapa Bay. The weed gradually spread throughout the bay and eventually into Puget Sound and the Olympic Peninsula.

Figure 2-11. *Spartina anglica* at Boggy Spit .

Spartina, commonly known as cordgrass, is a noxious weed that severely disrupts native saltwater ecosystems, alters fish, shellfish and bird habitat and increases the threat of floods. Three species of *Spartina* have been introduced to western Washington:

1) *Spartina alterniflora* is a species native to the East Coast of North America. It was introduced to Willapa Bay in the early 1900's when it was used as packing material for the shipment of east coast oysters to the Bay. There were approximately 3,600 solid acres of *Spartina* spread over more than 15,000 total acres of mudflats in Willapa Bay at the beginning of the 1999 control season [Washington State Department of Agriculture (WSDA) 1999]. In Puget Sound, *Spartina alterniflora* is known to exist in Skagit County within Padilla Bay, Clallam County within Sequim Bay and Jefferson County within Bywater Bay. It was introduced by private landowners in Puget Sound sometime in the 1960's in an attempt to stabilize their shorelines. *Spartina alterniflora* has also been discovered at several locations within Grays Harbor and along the lower reaches of the Copalis River. Less than 20 solid acres of *Spartina alterniflora* are present in Skagit, Clallam, Jefferson and Grays Harbor counties combined.

2) *Spartina patens* is present at only one known location in Washington State, at Dosewalips State Park in Jefferson County. It was first discovered at this site in the early 1990's and its method of introduction is not known. At the beginning of the 1999 control season, WSDA staff found approximately 15 scattered clumps of *Spartina patens* within the park boundary (WSDA 1999).

3) *Spartina anglica* is present in Skagit, Snohomish and Island counties. It has also been found in San Juan, King, Kitsap and Jefferson counties. *Spartina anglica* originated in England from a cross of the American *Spartina alterniflora* and the European *Spartina maritima*. The result of this cross was a sterile hybrid named *Spartina X townsendii*. This sterile hybrid then underwent a genetic process termed "allopolyploidy" resulting in a fertile new species, *Spartina anglica*, with double the chromosome numbers of either of its parents. It was introduced into Puget Sound by a private landowner in an attempt to stabilize shorelines. At the beginning of the 1999 control season, there was approximately 900 solid acres spread over more than 8,000 acres throughout Puget Sound and Hood Canal (WSDA 1999).

Spartina spreads quickly and is extremely difficult to eradicate. Successful eradication involves essentially four steps. Those steps are:

1) preventing an existing infestation from producing seed;
2) containing an existing infestation to a site (particularly important given *Spartina's* high rate of vegetative spread);
3) treating for several consecutive years with a variety of treatment methods including mowing, applying herbicides, and hand pulling or a combination of these methods; and;
4) after successful eradication is achieved, monitoring the area and removing new seedlings to assure no re-establishment occurs.

In 1995 through 2004, *Spartina* was known to be present at the north and south ends of Indian Island, with the heaviest densities occurring at Boggy Spit and Walan Point. Both of these sites contained less than one acre of *Spartina* (WSDA 2013). WSDA worked cooperatively with the U.S. Navy on Indian Island to treat infestations on Navy property by hand digging and herbicide since 1995. As a result, a long-term partnership was solidified for the management of *Spartina* on this Navy property.

In 2005, WSDA returned to Indian Island and found approximately 30 square feet of *Spartina anglica* at Walan Point and Boggy Spit. Using shovels, WSDA personnel dug up the plants and disposed of them in upland areas away from the salt marsh. WSDA felt that the eradication efforts at Indian Island were working well, as indicated by the small amount of *Spartina* found in 2005.

In 2013 roughly $5ft^2$ of *Spartina anglica* was removed from Walan Point that was identified during an extensive ground survey. Approximately 11 solid acres were identified and treated in Washington state, which represents a 21% increase from 2012. The program has achieved a 99% reduction in *Spartina* from the peak infestation in 2003 (WSDA 2013).

In 2016, WSDA continues to coordinate eradication efforts at Indian Island to ensure that the *Spartina anglica* species is decreasing in number. Shovels were again used to remove growing plants (approximately 1-2 plants), and these plants were disposed of farther upland from the salt marsh.

Other Invasive Plants

Invasive plants present on Indian Island can be found in (NavFac NW Guide to Invasive Plants, With Photos.).

3.0 Environmental Management Strategy and Mission Sustainability

3.1 Supporting Sustainability of the Military Mission and the Natural Environment

The fundamental component of natural resources management is personnel and funding. OPNAV M-5090.1D requires each installation to have, in writing, a designated NRM. A copy of the designation letter can be found in Appendix E. This individual is to be professional, knowledgeable and trained in the particular resource issues for that installation. The NRM for NAVMAG Indian Island is a permanent, funded position, administratively under NAVFAC NW PWD. This position reports both to the Environmental Director of Naval Base Kitsap and NAVMAG, and to the Commanding Officer of NAVMAG Indian Island. The NRM can call upon other environmental professionals within the Navy Region Northwest, as well as the Naval Facilities Engineering Command Northwest, to assist in the management of natural resources on NAVMAG. The NRM will integrate environmental protection, conservation, enhancement/restoration, and outdoor recreation within the constraints of NAVMAG's military mission. At the same time, the NRM will identify risks to the environment that may result from military activities and report these potential risks to the Command so that alternatives may be developed that reduce or eliminate the potential impacts.

3.1.1 Achieving No Net Loss of Military Mission

Past efforts by the installation and Region have successfully achieved No Net Loss through effective coordination with the agencies in order to obtain National Defense Exemptions or SAIA exclusions for Critical Habitat under ESA. Implementation of this INRMP by NAVMAG Indian Island will ensure that the natural resources on NAVMAG will continue to support the installation's military mission. This INRMP strives to integrate natural resources management with other base plans and activities. It also establishes goals that represent a long-term vision for the health and quality of NAVMAG Indian Island's natural resources. The INRMP goals may be revised over time to reflect changing missions and environmental conditions. Any future changes in mission, training activity, or technology should be analyzed to assess its impact on natural resources. As new plans and DON guidance and regulations are developed, they will be integrated with the goals and management actions of this INRMP. The INRMP will be reviewed, assessed, and modified as needed on a regular basis to ensure continued integration with other management plans or changes in military mission.

3.1.2 Use of Cooperative Agreements

The current policy memo from DoD to the Assistant Secretary of the Navy (Energy, Installations and Environment) will be applied when entering Cooperative Agreements or contracts.

Under the SAIA, the Navy can enter into Cooperative Agreements to accomplish natural resource management projects. Further, per a 20 June 2014 memo from the Acting Deputy Under Secretary of Defense to the Assistant Secretary of the Navy (Energy, Installations and Environment), priority is to be given to federal and state agencies responsible for conservation or management of fish and wildlife when contracting for projects identified in INRMPs.

Cooperative agreements have been used successfully to conduct INRMP projects in other locations within NAVMAG Indian Island Area of Responsibility. Examples include conducting marbled murrelet and threatened and endangered fish surveys. (Washington Department of Fish and Wildlife. September 2015. Fall Through Spring 2014/2015 Marbled Murrelet At-Sea Densities in Five Strata Associated with U.S. Navy Facilities in Washington State: Annual Research Progress Report) Cooperative agreements will be considered a mechanism to conduct specific surveys or natural resource projects, should they be identified at NAVMAG in order to further implement this INRMP.

3.1.3 Other Agreements

Per the MOU between the U.S. Department of Defense, U.S. Fish and Wildlife Service and the Association of Fish and Wildlife Agencies (July 29, 2013) a comprehensive, joint review by all parties as to operation and effect will be conducted no less often than every five years. While once every five years is required, an annual review is also expected.

On a larger scale, the following list contains partnerships and collaborative agreements that DoD has entered to assist with natural resources management:

January 2006 MOU between DoD, USFWS and the International Association of Fish and Wildlife Agencies for a Cooperative Integrated Natural Resources Management Program on Military Installations.

July 2006 MOU between the USFWS and DoD to Promote the Conservation of Migratory Birds.

November 2006 MOU between DoD and USDA NRCS. Both agencies signed an MOU agreeing to coordinate activities to preserve land and improve water quality on lands surrounding government-owned military bases.

3.2 Natural Resources Consultation Requirements

3.2.1 Endangered Species Act (Threatened and Endangered Species) Consultation

Federal agencies are required by the ESA to manage federally listed T&E species and their habitat in a manner that promotes conservation of T&E species and is consistent with plans for recovery of such species. Section 7 of the ESA requires all federal agencies to enter into consultation with the USFWS and the National Marine Fisheries Service (NMFS) whenever proposed actions "may effect" listed T&E species of plants and animals. At NAVMAG Indian Island, projects, operations, or other actions, are scrutinized for potential impacts to T&E species through a formal review process. Section 7 consultations will be initiated if warranted. Otherwise, written documentation that there are no effects to T&E species will be generated by the NRM and kept with the project files.

Section 7(a) (1) of the ESA states that all federal agencies shall utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of the ESA. "Conservation" is defined in the ESA as "to use...all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regular taking."

Section 7(a)(2) Requires Federal agencies to consult with the USFWS and the NMFS [Services] to ensure actions are not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of Critical Habitat. Requires specific actions to limit the amount or extent of incidental take that may result from an activity within the action area, and for which formal consultation was conducted.

The NRM will use this INRMP as a tool to identify at an early stage the potential impacts of planned and ongoing Navy actions on endangered or threatened species and to provide avoidance and minimization measures. USFWS or NMFS (or both) may require changes or mitigation that could result in delays and additional costs. Because of this, it is imperative that the Command initiate early environmental/natural

resources review of proposed actions, in order to assess risks, develop alternatives, and correctly identify mitigation costs both in terms of time and dollars.

3.2.2 Marine Mammal Protection Act Consultation

The Marine Mammal Protection Act (MMPA), subject to limited exceptions, prohibits any person, (including federal agencies) or vessels subject to the jurisdiction of the United States from "taking" marine mammals on the high seas, in U.S. waters, or on land under U.S. jurisdiction. "Taking" includes the "harassment" of a marine mammal. Section 101(a)(5) of the MMPA directs the Secretaries of Commerce and Interior to allow upon request, the incidental (but not intentional) taking of marine mammals by U.S. citizens who engage in a specified activity (exclusive of commercial fishing) within a specified geographical region if certain findings are made and regulations are issued. Permission may be granted to "take" marine mammal(s) incident to Navy activities if the regulatory agencies Secretary determine that the Navy action:

a) Will have a negligible impact on the species or stock(s); and

b) Will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses.

Marine mammals may also be subject to the ESA requirements discussed in Section 3.2.1. The installation NRMs will review planned construction projects or operations that have an in-water component to them such as pile driving, removal, demolition, or dredging, and the potential for marine mammals to be present in the vicinity of the action area. If projects are identified and marine mammals are present, the NRMs will determine if an Incidental Harassment Authorization (IHA) or Letter of Authorization (LOA) is required for the action. LOAs are issued for up to 5 years and IHAs for 1 year or less; however, NMFS needs more time to issue LOAs than IHAs. If an IHA or LOA is required.

The MMPA requires a consultation and application to obtain an IHA or LOA through the NMFS headquarters in Washington D.C. The MMPA website notes that it takes 6-9 months for NMFS to issue an IHA and 12-18 months to issue an LOA.

The NRM will use this INRMP as a tool to identify at an early stage the potential impacts of planned and ongoing Navy actions on MMPA species and to provide a basis for altering the action to prevent or minimize those impacts. NMFS may require changes or mitigation that could result in delays and additional costs. Because of this, it is imperative that the Command initiate early environmental/natural resources review of proposed actions, in order to assess risks, develop alternatives, and correctly identify mitigation costs both in terms of time and dollars.

3.2.3 Essential Fish Habitat Consultation

The Magnuson-Stevens Fishery Conservation and Management Act requires that federal agencies consult with the U.S. Secretary of Commerce (which has been delegated to NMFS) on any action proposed to be undertaken that may adversely affect essential fish habitat (EFH). The objective of this EFH assessment is to determine whether or not the proposed project may adversely affect designated EFH for relevant commercial, federally managed fish species within the proposed action area. It also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the proposed project. Subsection 50 CFR 600.920(f) specifies that EFH consultation should be consolidated with existing environmental review procedures required by other statutes, such as ESA, when appropriate.

At each installation, proposed projects, operations, or other actions, are scrutinized for potential impacts to T&E species and EFH through a formal review process. Section 7 consultations will be initiated if

warranted, otherwise, written documentation that there are no effects to T&E species will be generated by the NRM and kept with the project files. EFH impact review will be consolidated with the ESA review and combined with ESA consultation documents sent to NMFS when possible. For projects that may adversely affect EFH habitat and not T&E listed species, the EFH consultation will be sent with a determination of no effect for ESA listed species. The timeframe for completion of an ESA/EFH consultation can range from 30 days for an informal consult to over 6 months for a formal consult.

NMFS may require changes or mitigation that could result in delays and additional costs. Because of this, it is imperative that the Command initiate early environmental/natural resources review of proposed actions, in order to assess risks, develop alternatives, and correctly identify mitigation costs both in terms of time and dollars.

3.3 Planning for National Environmental Policy Act Compliance

The NEPA of 1969 (42 USC § 4321 et seq.) requires federal agencies to evaluate the impacts of their proposed actions on the quality of the human environment. The Navy's policies regarding NEPA, OPNAV M-5090.1D, Chapter 2, dated 30 October 2007, Procedures for Implementing the NEPA, SECNAVINST 5090.6A (SECNAVINST 5090.6A, Environmental Planning for Department of the Navy Actions, dated April 26, 2004), and the Navy's Supplemental Environmental Planning Policy, dated 23 September 2004, emphasizes environmental planning at the earliest stages of projects. The Navy recognizes that the NEPA process includes the systematic examination of the likely environmental consequences of implementing a proposed action. To be an effective decision-making tool, the Navy integrates the process with other project planning at the earliest possible time. This ensures that planning and decision-making reflect environmental values, avoid delays, and avoid potential conflicts. The Navy is able to achieve its mission at home, at sea, and abroad more efficiently when environmental planning is properly integrated into Navy decision-making for those Navy actions that have the potential for adverse environmental consequences.

NEPA and Navy policy require early review and coordination for environmental considerations. This is achieved at NAVMAG Indian Island by its environmental review process, which requires all new projects, programs, and operations, or changes to existing projects, programs, and operations, be reviewed by the NRM for potential impacts to the environment, including potential impacts to natural resources. The NRM review planned actions, identifies the risks to natural resources, and provides comments and/or alternatives to the action proponents that will minimize or eliminate the risks, if possible. The early review process also allows the NRM an opportunity to identify the appropriate NEPA documents that will be generated based on the proposed action and the alternatives. Due to the fact that much time is needed to conduct consultations with regulatory agencies and stakeholders it is imperative to initiate early environmental/natural resources review of proposed actions in order to assess risks, develop alternatives, and correctly identify mitigation costs in terms of both time and dollars. Regulatory agencies and/or affected parties may request changes or mitigation that could result in delays and additional costs. NRMs shall participate in early review of proposed actions in order to assess risks, develop alternatives, and correctly identify mitigation costs in terms of both time and dollars.

Future updates of this INRMP may not necessarily require a new EA and may instead rely on the analysis and findings of the earlier EA, if the updated INRMP is within the scope of that analysis.

3.4 Public Access and Outreach

Persons authorized to use recreation areas on NAVMAG Indian Island are all military and civilian employees of the DoD and their dependents, relatives and guests, and retired military and their dependents, relatives, and guests. Sponsors must accompany dependents, relatives, and guests. General civilian use of the installation is not permitted.

Public outreach regarding natural resources is typically through efforts of the NAVMAG Indian Island Public Affairs Office. Outreach activities include participation with Earth Day events and invitations to local officials, newspapers, and community groups for tours of the installation.

3.5 Inreach

Permanent employees on the island are given natural resources awareness training on an annual basis at the base wide safety stand down meetings. The training includes general awareness topics as well as upcoming or continuing projects or actions that they may see or be involved with.

3.6 Encroachment Partnering

NAVMAG Indian Island is located on an island that is attached to the mainland by a bridge to the west and is attached to Marrowstone Island by a narrow strip of land supporting a road to the east. Encroachment is not an issue at NAVMAG Indian Island due to its relative isolation from surrounding communities.

3.7 State Wildlife Action Plans

Washington Department of Fish and Wildlife published a Comprehensive Wildlife Conservation Strategy (CWCS) in 2005. An update of this plan is nearly complete; now called a SWAP. Projects and actions at NAVMAG Indian Island will, where possible, use the plan as guidance to support the conservation and management goals and strategies documented in the SWAP and its coordinated, subordinate plans.

The Washington SWAP can be found at: http://wdfw.wa.gov/conservation/cwcs/. In developing this INRMP in coordination with WDFW, no specific projects or actions were identified for implementation at NAVMAG Indian Island to support the SWAP. The NRM will continue to coordinate with WDFW on potential wildlife management that could be conducted at NAVMAG Indian Island in support of the SWAP.

Washington's SWAP is a comprehensive plan for conserving the state's fish and wildlife and the natural habitats on which they depend. It assesses the status of the state's wildlife and habitats, identifies key problems they face, and outlines the actions needed to conserve them over the long term. The SWAP serves to inform conservation priorities and actions statewide, and provide tools and informational resources to support collaborative conservation initiatives across a range of organizations and entities (WDFW 2015).

As a resource management partner in the stewardship of natural resources on the installation; WDFW works closely with NAVMAG Indian Island on various fish and wildlife conservation issues, ranging from on-site habitat protection to invasive species control, and also cooperates with the installation on developing and conducting wildlife and habitat research and surveys.

3.8 Training of Natural Resource Personnel

OPNAV M-5090.1D, Chapter 12, section 12-3 states, "Professionally trained natural resources managers shall be assigned the responsibility of implementing these requirements", meaning Natural Resources Conservation (NRC).

OPNAV M-5090.1D, Chapter 12, section 12-3.15 states:

> *Personnel with NRC responsibilities shall receive the appropriate job-specific education and training to perform their assigned tasks.*
>
> *a. Natural resources managers shall receive, at a minimum, the following education and training:*
>
> > *(1) Basic environmental law (completion of Naval Civil Engineer Corps Officers School (CECOS) Basic Environmental Law (A-4A-0058) will satisfy this requirement);*

(2) Natural resources compliance (completion of CECOS Natural Resources Compliance (A-4A-0087) will satisfy this requirement);

(3) Environmental protection (completion of CECOS Environmental Protection (A-4A-0036) will satisfy this requirement);

(4) Introduction to NEPA (completion of CECOS National Environmental Protection Act (NEPA) Application (A-4A-0077) will satisfy this requirement);

(5) Environmental negotiation (completion of CECOS Environmental Negotiation Workshop (A-4A-0067) will satisfy this requirement); and

(6) Program funding (EPRWeb online training will satisfy this requirement).
In coordination with the Installation Environmental Program Director, assigned personnel submit and obtain training through their approved Individual Development Plan (IDP). Staff attends training sponsored by CECOS and other internal Navy sources.

Additionally, numerous training opportunities exist at a local level.

4.0 Management of Natural Resources Program Elements

4.1 Threatened and Endangered Species Management

Federal agencies are required by the ESA to manage federally listed T&E species and their habitat in a manner that promotes conservation of T&E species and is consistent with plans for recovery of such species. Section 7 of the ESA requires all federal agencies to enter into consultation with the USFWS and NMFS whenever actions are proposed that may affect listed and proposed T&E species of fish, wildlife and plants.

This INRMP is meant to be used as a tool to identify at an early stage the potential impacts of planned and ongoing Navy actions on endangered or threatened species and to provide avoidance and minimization measures.

4.1.1 Federal Candidate Species

Candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities (USFWS 2011). The NMFS also maintains a list of species of concern for which more information is needed before they can be proposed for listing (USFWS 2011). Candidate species receive no statutory protection under the ESA (USFWS 2011). USFWS encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the ESA (USFWS 2011). The NRM at NAVMAG is aware of candidate species potentially present, and works with the agencies on alleviating potential threats to the species. Those candidate species potentially present at NAVMAG are listed in Table 4-1.

4.1.2 Species of Concern

NAVMAG manage for bats of the genus *Myotis*. The preservation of aquatic habitat promotes the conservation of bats. Maintaining standing dead trees, and increasing tree species diversity contributes to the development of roosting and habitat for bat species in the area. In March 2016, white-nose syndrome was confirmed in a Little Brown Bat (*Myotis lucifugus*) near Seattle, WA. The fungal disease is primarily spread from bat-to-bat, and is unknown how it will affect bats in the state. Regional studies will be conducted (Appendix C) on Naval Installations to obtain more data on species, numbers, and locations of colonies.

The Western Pond Turtle (*Acinemys marmorata*) is listed as a candidate species. It can be found in small isolated populations within slow streams, wetlands, ponds and lakes within the lowlands of Puget Sound. In Washington State the western pond turtle has been affected by shell disease. This disease is associated with a fungal or bacterial infection due to other environmental factors, and is more common in captive turtles than in naturally occurring populations. A reptile and amphibian survey conducted by the Navy in 2013 (Appendix C-9) did not identify any pond turtles on the property.

4.2 Special Management and Protection of Threatened and Endangered Species

Special management or protection is a term that originates in the definition of Occupied Critical Habitat (OCH) in Section 3 of the Endangered Species Act. For OCH, one first determines whether the area contains the physical and biological features essential to the conservation of the species and their area has or needs additional special management or protection. Additional special management is not required if adequate management or protection is already in place. If *unoccupied* areas were determined to be essential to the conservation of the species, the Navy would include such unoccupied areas only where special management or protection is required.

Adequate special management or protection is provided by a compliant or legally operative plan (the Navy uses the term "Integrated Natural Resources Management Plan", or INRMP; the INRMP is required by the SAIA) that addresses the maintenance and improvement of the primary constituent elements important to the species and manages for the long-term conservation of the species. Navy management & protection plans for T&S species must demonstrate compliance with strict criteria, intended to ensure the adequacy of management for the benefit the species. The original criteria language was written within USFWS Guidelines for Coordination on INRMPs (June 2015). The Navy has adopted the criteria to benefit the document development between the Sikes Act partners.

Criteria 1. Conservation Benefit

The plan provides a conservation benefit to the species. The cumulative benefits of the management activities identified in a management plan, for the length of the plan, must maintain or provide for an increase in a species' population, or the enhancement or restoration of its habitat within the area covered by the plan [i.e., those areas deemed essential to the conservation of the species]. A conservation benefit may result from reducing fragmentation of habitat, maintaining or increasing populations, insuring against catastrophic events, enhancing and restoring habitats, buffering protected areas, or testing and implementing new conservation strategies.

Criteria 2. Implementation of the Plan

The plan provides assurances that the management plan will be implemented. Persons charged with plan implementation are capable of accomplishing the objectives of the management plan and have adequate funding for the management plan. They have the authority to implement the plan and have obtained all the necessary authorizations or approvals. The plan provides a conservation effort implementation schedule, including completion dates.

Criteria 3. Management Effectiveness

The plan provides assurances that the conservation effort will be effective. The following criteria will be considered when determining the effectiveness of the conservation effort. The plan includes (1) biological goals (broad guiding principles for the program) and objectives (measurable targets for achieving the goals); (2) quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, and standards for these parameters by which progress will be measured, are identified; (3) provisions for monitoring and, where appropriate, adaptive management; (4) provisions for reporting progress on implementation based on compliance with the implementation schedule, and effectiveness based on evaluation of quantifiable parameters of the conservation effort. This goal will be accomplished at the annual INRMP review and update in coordination with the appropriate federal and state agencies; and (5) a duration sufficient to implement the plan and achieve the benefits of its goals and objectives. The INRMP for Naval Magazine Indian Island is a five-year plan, beginning with FY 2015, but may be extended further than five years if installation mission or natural resources do not change, or changes are minimal. This is a time period long enough to seek funding for projects, implement those projects, and monitor and report progress. At the end of the five-year period the INRMP will be reviewed and updated or rewritten, as necessary, to continue protection and enhancement for T&E species and habitats.

4.3 Navy GeoReadiness Program

NAVFAC Northwest manages the local GeoReadiness Center (GRC), which is responsible to CNIC for managing all GIS data for installations within the Navy Region Northwest (NRNW) area of responsibility. In addition to the NAVFAC Environmental group, user groups include public works, public safety, and others.

The NRNW GRC supports the development of natural resources data reflecting the land and sea habitats of rare and endangered species, migratory birds and marine mammals. These data are critical for the maintenance and management of the environmental business line infrastructure and helps with the

installations' efforts to comply with environmental laws and ensures the protection of sensitive resources while supporting military operations. GIS provides the framework for the acquisition, analysis, synthesis, and application of inventory and monitoring data for the Environmental Business Line. The NAVFAC NW Natural Resources Branch is responsible for preserving biodiversity and ensuring the integrity of natural ecosystems over time while meeting the needs of the military mission and complying with applicable regulations. This requires identifying, analyzing and mapping existing and historic conditions, as well as species presence and distribution. The information generated is vital in establishing a foundation for the preparation of INRMPs.

Data coverage of Natural Resource media in general is limited, and it is necessary to gather datasets and coverage from public sources in order to improve the utility of GIS as a natural resource management tool for informed decision making. Data development, gathering and integration are on-going efforts. However, the NAVFAC NW Natural Resources Branch has developed a Scope of Work to obtain GIS data development services from the NRNW GRC. The intent is to develop NAVFAC-approved ESRI features, geodatabases and maps that support NAVFAC NW Natural Resource Business Line. This geospatial information will conform to Spatial Data Standards for Facilities, Infrastructure and Environment version 3.x and final deliverables are to be stored and accessible in the GeoReadiness Explorer (GRX), which is the primary web-based viewing tool that provides views of geospatial map data at Navy Installations. Data collected to meet this intent can include field surveys, extraction from reports/imagery, or extraction from existing geospatial data.

As this INRMP is reviewed and improved to accommodate new information and objectives, data requirements and surveys will be identified. Planning level surveys proposed under this INRMP will be scoped to require the submittal of data in an appropriate format and sufficient standard to enable spatial inquiries and use of the data within a greater GIS suite as developed by the GRC. The GRC will be consulted when developing survey scopes to ensure sufficient data fidelity for integration into GRX. Updates to this INRMP will include data and visual representations of data that have been compiled and stored by the GRC. Survey results, reports, and other non-GIS documents and products originating within NAVMAG that support this INRMP are maintained at NAVMAG Indian Island, within the Environmental Management Division office. Where such items are part of a larger, Regional effort, documents are maintained by the NAVFAC Northwest Senior Natural Resource Specialist at Bangor.

4.4 T&E Species at Naval Magazine Indian Island

Table 4-1: Threatened and Endangered Species (Federal & State)

Common Name (Scientific Name)	***Status/Federal Status/State***	***Critical Habitat Designated***	***Habitat***
FISH			
Puget Sound Chinook salmon ESU (*Oncorhynchus tshawytscha*)	FT/NMFS *70 FR 37160* *June 28, 2005* C/WA	**Exempt** *70 FR 52630* *August 29, 2005*	Marine waters, estuaries, freshwater rivers, salt marshes
Puget Sound Steelhead DPS (*Oncorhynchus mykiss*)	FT/NMFS *72 FR 26722* *MAY 11, 2007*	**Not Proposed in Marine Waters** *81 FR 9251* *February 24, 2016*	Marine waters, estuaries, freshwater rivers, salt marshes
Coastal Puget Sound bull trout DPS (*Salvlinus confluentus*)	FT/USFWS *64 FR 58909 Nov. 1, 2007* C/WA	**Exempt** *75 FR 63898*	Marine waters, estuaries, freshwater rivers, salt marshes

Bocaccio rockfish (*Sebastes paucispinis*)	FE/NMFS *75 FR 22276* *April 28, 2010* C/WA	**Exempt** *79 FR 68042* *November 13, 2014*	Marine waters
Yelloweye rockfish (*Sebastes ruberrimus*)	FT/NMFS *75 FR 22276* *April 28, 2010* C/WA	**Exempt** *79 FR 68042* *November 13, 2014*	Marine waters
North America Green Sturgeon (*Acipenser medirostris*)	FT/NMFS *71 FR 17757* *April 2006*	**Puget Sound Excluded** *74 FR 52300* *October 9, 2009*	Marine waters
Hood Canal Summer-run chum (*Oncorhynchus keta*)	FT/NMFS *70 FR 37160* *June 28, 2005*	**Exempt** *70 FR 52630* *September 2, 2005*	Marine waters, estuaries, freshwater rivers, salt marshes
BIRDS			
Marbled murrelet (*Brachyramphus marmoratus*)	FT/USFWS *57 FR 45328* T/WA	***Not Designated on NAVMAG*** *76 FR 61599*	Marine waters, mature forest near coastal areas
Yellow-billed Cuckoo (*Coccyzus americanu*)	Does not occur		
Northern Spotted Owl (*Strix occidentalis caurina*)	Does not occur		
MARINE MAMMALS			
Southern Resident killer whale DPS (*Orcinus orca*)	FE/NMFS *70 FR 69903* *November 18, 2005* E/WA	**National Defense Exclusion** *71 FR 69054* *December 29, 2006*	Marine waters
Humpback whale (Megaptera novaengliae)	FE/NMFS *35 FR 8491* E/WA	*None Designated*	Marine waters
FEDERAL CANDIDATE SPECIES			
Yellow Cedar (Calliptropsis nootkatensis)	FC/USFWS Potential to occur	*None*	Coastal forests
Cascades Frog (Rana Cascadae)	FC/USFWS Potential to occur	*None*	Freshwater in coniferous forests
Evening Field Slug (Deroceras hesperium)	FC/USFWS Potential to occur	*None*	Moist terrestrial habitat
Burrington Jumping Slug (Hemphillia burringtoni)	FC/USFWS Potential to occur	*None*	Moist terrestrial habitat
***FE** – Federal Endangered, **FT** – Federally Threatened, **FC** – Federal Candidate, **E/WA** – Endangered Washington, **T/WA**– Threatened Washington, **C/WA** – Candidate Washington, **WS** – Sensitive Washington, **Exempt** – Exempt due to INRMP.*			

October 3, 2014 the final ruling on the listing of the western yellow-billed cuckoo (*Coccyzus americanus)* as threatened under ESA. They require large blocks of riparian habitat for breeding (particularly woodlands with cottonwoods and willows) and dense understory foliage appears to be an important factor in nest site selection (USFWS 2011a). Surveys have not been conducted for the species, but current vegetation surveys will note any habitat on the installation. Additionally, the northern spotted

owl is listed as threatened, and the range is currently not within NAVMAG. However, both of these bird species may occur on NAVMAG properties but are typically secretive and hard to detect. Surveys have not been conducted, but consideration is taken during maintenance timing and activities.

4.4.1 Marbled Murrelet

The marbled murrelet populations occurring in California, Oregon, and Washington were listed as threatened under the ESA on October 1, 1992 (FR 57[19]: 45328-45337), effective September 28, 1992. Murrelets range from the Aleutian Archipelago in Alaska to central California. The majority of their lives are spent in the marine environment within 2 miles of shore, where they feed primarily on small fish such as sand lance and Pacific herring.

Marbled murrelets nest in inland forests, typically in old-growth, mature stands at lower elevations. Nesting occurs from late March to late September when both parents tend a single young. Marbled murrelets have been observed foraging in the waters adjacent to NAVMAG Indian Island. They have not been observed in terrestrial habitats on Indian Island. A ground survey is being conducted by the regional forester to identify potential platform trees (Goal 1.7, 1.10 and 5.2). Additional ground surveys for terrestrial habitat will be required over the next two to three years for upcoming construction projects (Goal 1.11). Surveys conducted by the WDFW in 2014 and 2015 in the waters surrounding NAVMAG are located in (Washington Department of Fish and Wildlife. September 2015. Fall Through Spring 2014/2015 Marbled Murrelet At-Sea Densities in Five Strata Associated with U.S. Navy Facilities in Washington State: Annual Research Progress Report).

4.4.1.1 Critical Habitat

The primary constituent elements (PCEs) of critical habitat identified by USFWS are: (1) individual trees with potential nesting platforms, and (2) forested areas within one-half mile of individual trees with potential nesting platforms, and with a canopy height of at least one-half the site-potential tree height. The site potential tree height is the average maximum height for trees given the local growing conditions, and is based on species-specific site index tables. This includes all such forest, regardless of contiguity. These primary constituent elements are essential to provide and support suitable nesting habitat for successful reproduction (61 FR 26256). Critical habitat has been designated for marbled murrelets but there is no designated Critical Habitat on or near NAVMAG Indian Island property.

Since there is no critical habitat designated near NAVMAG Indian Island the Primary Constituent Elements do not apply.

4.4.1.2 Marbled Murrelet Special Management and Protection Requirements

Criteria 1. Conservation Benefit

The NAVMAG Indian Island Command will ensure that all proposed actions at the installation that potentially affect (including beneficially affect) marbled murrelets comply with Section 7 of the Endangered Species Act. This Act requires, at a minimum, informal consultation with USFWS (Goals 1.10 and 1.11).

Murrelet surveys will assist USFWS in monitoring population trends. Although most murrelet nesting habitat has been eliminated by logging, by protecting potential habitat and foraging areas from development, these areas could provide for an increase in suitable nesting habitat in decades to come.

The installation command will ensure that all proposed actions at the installations that potentially affect (including beneficially affect) marbled murrelets comply with Section 7 of the ESA, which requires, at a minimum, informal consultation with USFWS. This management action will benefit marbled murrelets because any action potentially affecting marbled murrelets will be reported to and reviewed by USFWS,

possibly resulting in subsequent mitigation requirements. Navy personnel have worked in-depth with the USFWS over the past year to ensure planned actions do not significantly affect marbled murrelets.

The NRM or designated staff will do the following (as needed and as resources allow):

- Continue to survey forested areas to identify potential nest sites during vegetation surveys and as needed by project requirements;
- Monitor for marbled murrelet use and implement special protection measures, such as timing restrictions on human activities and protection of trees;
- Record areas used by marbled murrelets, such as foraging areas along the shore, that may overlap with human activities; and
- Use information gained to update the INRMP and provide management guidance to the installation's command and departments.
- Monitors are placed during pile driving projects to avoid take of marbled murrelets. All pile driving activities are to cease upon detection of the murrelets within the monitoring zone. The Navy has limited installation of piles within the survey area to:
    - Summer (April 1 through September 30) – 75 days of total driving up to 90 minutes per day, and;
    - Winter (October 1 through March 30) – 30 days of total pile driving up to 90 minutes per day.
    - The work also cannot begin until two hours after sunrise and must stop two hours before sunset to avoid peak feeding times and low visibility (Goal 1.10).

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider marbled murrelet protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: survey the forested areas to identify potential nest sites; monitor for marbled murrelet use and implement special protection measures, such as timing restrictions on human activities and protection of trees; record areas of use by marbled murrelets, such as foraging areas along the shore, that may overlap with human activities, and use the information to update the INRMP and also provide management guidance to NAVMAG Indian Island's command and departments (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.4.2 Hood Canal Summer-Run Chum Salmon

On March 25, 1999, NMFS listed all naturally spawned Hood Canal summer-run chum salmon as a threatened species (FR 64 [57]: 14508-14517). This listing was reaffirmed in 2005 (FR 70[123]: 37160-37204) and again in 2011 (FR 76[157]: 50448-50449.

The Hood Canal summer-run chum salmon ESU includes all naturally spawned populations of summer-run chum salmon in Hood Canal and its tributaries, as well as populations in Olympic Peninsula rivers between Hood Canal and Dungeness Bay, Washington, and four artificial propagation programs: Hamma Hamma Fish Hatchery, Lilliwaup Creek Fish Hatchery, Union River/Tahuya, and Jimmycomelately Creek Fish Hatchery.

Chum salmon usually spawn in coastal areas and juveniles out-migrate to marine waters almost immediately after emerging from the gravel in February. For this reason, the survival and growth in juvenile chum salmon depends less on freshwater conditions than on favorable estuarine and marine conditions (Foster Wheeler 2003). The smaller chum salmon juveniles tend to remain in nearshore, shallow areas, while larger juveniles move into deeper water, similar to the chinook salmon out-migrants (Roni and Weitkamp 1996).

Indian Island does not contain any streams with salmonids (SAIC 2001). Chimacum Creek is the nearest spawning stream and drains into Port Townsend Bay from the west, just south of Kala Point. Historically, the creek supported chum salmon spawning but recent spawning surveys do not mention chum in Chimacum Creek, suggesting that the run may be near extinction (SAIC 2001). Recent restoration and stocking efforts have resulted in low numbers (<55 individuals) of chum escapement in 1999 (SAIC 2001) to 558 individuals in 2003 (WDFW 2005). WDFW has rated the population of Chimacum Creek as extinct because there is no information that a natural-producing population is established in the creek (WDFW 2005).

4.4.2.1 Critical Habitat

In February 2000, NMFS had designated critical habitat as the species' current freshwater and estuarine range, certain marine areas, and all waterways, substrate, and adjacent riparian zones below longstanding, impassible, natural barriers. In April 2002, NMFS won approval to withdraw critical habitat designation for all Puget Sound stocks. After a lengthy review process, critical habitat for chum salmon was again designated, on September 2, 2005 (NOAA 2005b). Critical habitat for chum salmon was designated in Port Townsend Bay, with the exception of the waters within the boundaries of Department of Defense managed lands and waters (NOAA 2005b). Department of Defense managed lands and waters are exempt from having critical habitat designated within their boundaries provided they have a current signed INRMP. This exempts the habitat within NAVMAG Indian Island's boundary from designation status.

Primary constituent elements (PCEs) are the physical or biological features essential to the conservation of the species, as identified within the critical habitat designation for the species. Within the boundaries of designated critical habitat, the primary constituent elements essential for the conservation of the Hood Canal Summer Run ESU are those biological features essential to the conservation of the ESU. The specific PCEs include:

(1) Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.
(2) Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade submerged and overhanging large wood, log jams and beaver dams.

(3) Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhangin large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

(4) Estuarine areas free to obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh-and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.

(5) Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

(6) Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, support growth and maturation.

Of the six Primary Constituent Elements associated with Summer-Run Chum Salmon only two are relevant to NAVMAG Indian Island. There are no perennial streams on NAVMAG, therefore there is no spawning, rearing, or estuarine habitat. The offshore habitat (30 meters or greater) does not apply as the Navy does not have jurisdiction beyond the nearshore habitat zone. The western shoreline of NAVMAG is a known outmigration corridor for juvenile salmonids. Additionally, the near shore habitat along the island shoreline contains contiguous eelgrass beds and two large tidal salt marshes which serve as refugia and forage area for outmigrants.

4.4.2.2 Hood Canal Summer-Run Chum Salmon Special Management and Protection Requirements

Criteria 1. Conservation Benefit

NAVMAG Indian Island will ensure that all routine construction and repair activities that will take place below the MHHW line be restricted to the approved in-water work time for chum salmon (October 1st – January 15th) for Tidal Reference Area 10 (Goals 1.10 and 1.11).

NAVMAG Indian Island will ensure that all actions at NAVMAG Indian Island that potentially affect (including beneficially affect) chum salmon comply with Section 7 of the Endangered Species Act which requires, at a minimum, informal consultation with NOAA Fisheries; this includes emergency repairs to structures and other activities that are required by the installation's mission (Goals 1.10, 1.11, 3.1 and 3.2).

The NRM will identify operations and infrastructure that could affect water quality (example: storm drains that release directly to marine waters; pesticide applications near intermittent streams) and coordinate with the command and NAVMAG Indian Island departments to minimize or eliminate releases to marine waters. The NRM, under the direction of the Environmental Director, will provide assistance if required to the development of spill prevention, control, and countermeasures for the facility and for operations. The NRM or designated staff will regularly inspect any structures that extend below the MHHW line and keep the structures free of debris or other materials that could hinder juvenile salmon movement along the shoreline (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2, 5.3).

NAVMAG Indian Island, WDFW, and tribal biologists annually conduct forage fish spawning surveys along the shorelines of the installation. Identification of these important habitat areas allows for better management and protection, thus benefiting salmon that feed on these species (Goal 1.7, 5.1, 5.2 and 5.3).

NAVMAG Indian Island annually conducts beach cleanups that remove debris, contaminant sources, and predator hiding places from salmon habitat areas, benefiting migrating and foraging chum salmon (Goal 1.7).

NAVMAG Indian Island has identified eleven acres of a salt marsh at Walan Point as a Navy wildlife sanctuary. Hunting, fishing, and human activities are restricted in the marsh. The marsh is a valuable nursery for numerous marine species and provides foraging and refuge habitat for salmonids and other fish species, as well as for waterfowl. Man-made debris, including plastic trash, old boats, and an old buoy have been pulled out of the marsh during past clean-up activities. These clean-up projects utilize volunteer Navy personnel that have the added benefit of promoting pride and environmental stewardship amongst the sailors (Goal 1.7).

NAVMAG Indian Island, with Washington Department of Agriculture, annually conducts spartina grass (invasive non-native species) eradication in tidal areas; this benefits salmon by preventing habitat loss through eutrophication and preserving the natural vegetative conditions, which salmon use as foraging and refuge habitat (Goals 1.7, 3.1, 3.2).

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider Hood Canal Summer-Run Chum salmon protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: coordinate with the appropriate state and federal fish and wildlife agencies to conduct surveys along the installation's shorelines for chum presence; conduct a minimum of two surveys over five years to determine change over time, which will assist managers in assessing the effectiveness of the plan; consult with the regulatory partners during the annual INRMP review to identify necessary changes that would benefit Puget Sound summer-run chum (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.4.3 Chinook Salmon

On March 24, 1999, NMFS listed the Puget Sound chinook salmon as threatened, including native chinook populations as well as naturally spawned populations within the boundaries of Puget Sound that originated from hatchery stock. This status was reaffirmed on June 28, 2005 (FR 70 [123]: 37160-37204)(effective date August 29, 2005).

The Puget Sound chinook salmon includes stocks from all rivers within Hood Canal and Puget Sound. There are no known chinook salmon runs within any watershed of Port Townsend Bay. Chinook salmon caught by recreational anglers in Port Townsend Bay are likely on their way to a natal stream within Hood Canal and are traveling through Port Townsend as part of their migration path; or they may have possibly strayed from northern rivers within the Strait of Juan de Fuca (SAIC 2001; Foster Wheeler 2003). The nearest river containing historical runs of chinook salmon is the Salmon River within Discovery Bay (25 miles west of Port Townsend)(Foster Wheeler 2003).

4.4.3.1 Critical Habitat

In February 2000, NMFS had designated critical habitat as the species' current freshwater and estuarine range, certain marine areas, and all waterways, substrate, and adjacent riparian zones below longstanding, impassible, natural barriers. In April 2002, NMFS won approval to withdraw critical habitat designation for all Puget Sound stocks. After a lengthy review process, critical habitat for chinook salmon was again designated, on September 2, 2005 (NOAA 2005b). Critical habitat for chinook salmon was designated in Port Townsend Bay, with the exception of the waters within the boundaries of Department of Defense managed lands and waters (NOAA 2005b). Department of Defense managed lands and waters are exempt from having critical habitat designated within their boundaries provided they have a current signed INRMP.

Exclusion was based off the benefits provided within the INRMP, which include: erosion control, protect riparian zones, minimize stormwater and construction impacts, reduce contaminants, and monitor listed species and their habitats. In these areas, critical habitat consists of the water, substrate, and the adjacent riparian zone of accessible estuarine and riverine reaches and extends to a depth of 30 meters below the mean lower low water (MLLW) line.

Primary constituent elements (PCEs) are the physical or biological features essential to the conservation of the species, as identified within the critical habitat designation. Within the boundaries of designated critical habitat, the primary constituent elements essential for the conservation of the Puget Sound ESU of Chinook salmon are those sites and habitat components that support one or more life stages, including (FR 70: 52630):

(1) Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development;

(2) Freshwater rearing sites with:

(i) Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility;

(ii) Water quality and forage supporting juvenile development; and

(iii) Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

(3) Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival;

(4) Estuarine areas free of obstruction and excessive predation with:

(i) Water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater;

(ii) Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels; and

(iii) Juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.

(5) Nearshore marine areas free of obstruction and excessive predation with:

(i) Water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and

(ii) Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

(6) Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.

Of the six Primary Constituent Elements associated with Chinook Salmon only two are relevant to NAVMAG Indian Island. There are no perennial streams on NAVMAG, therefore there is no spawning,

rearing, or estuarine habitat. The offshore habitat (30 meters or greater) does not apply as the Navy does not have jurisdiction beyond the nearshore habitat zone. The western shoreline of NAVMAG is a known outmigration corridor for juvenile salmonids. Additionally, the near shore habitat along the island's shoreline contains contiguous eelgrass beds and two large tidal salt marshes which serve as refugia and forage areas for outmigrants.

4.4.3.2 Chinook Salmon Special Management and Protection Requirements

Criteria 1. Conservation Benefit

NAVMAG Indian Island will ensure that all routine construction and repair activities that will take place below the MHHW line be restricted to the approved in-water work time for Chinook salmon (October 1st – January 15th) for Tidal Reference Area 10 (Goals 1.10 and 1.11).

NAVMAG Indian Island will ensure that all actions at NAVMAG Indian Island that potentially affect (including beneficially affect) Chinook salmon comply with Section 7 of the Endangered Species Act which requires, at a minimum, informal consultation with NOAA Fisheries; this includes emergency repairs to structures and other activities that are required by the installation's mission (Goals 1.10, 1.11, 3.1 and 3.2).

The NRM will identify operations and infrastructure that could affect water quality (example: storm drains that release directly to marine waters; pesticide applications near intermittent streams) and coordinate with the command and NAVMAG Indian Island departments to minimize or eliminate releases to marine waters. The NRM, under the direction of the Environmental Director, will provide assistance if required to the development of spill prevention, control, and countermeasures for the facility and for operations. The NRM or designated staff will regularly inspect any structures that extend below the MHHW line and keep the structures free of debris or other materials that could hinder juvenile salmon movement along the shoreline (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2, 5.3).

NAVMAG Indian Island and tribal biologists annually conduct forage fish spawning surveys along the shorelines of the installation. Identification of these important habitat areas allows for better management and protection, thus benefiting salmon that feed on these species (Goal 1.7, 5.1, 5.2 and 5.3).

NAVMAG Indian Island annually conducts beach cleanups that remove debris, contaminant sources, and predator hiding places from salmon habitat areas, benefiting migrating and foraging Chinook salmon (Goal 1.7).

NAVMAG Indian Island has identified eleven acres of a salt marsh at Walan Point as a Navy wildlife sanctuary. Hunting, fishing, and human activities are restricted in the marsh. The marsh is a valuable nursery for numerous marine species and provides foraging and refuge habitat for salmonids and other fish species, as well as for waterfowl. Man-made debris, including plastic trash, old boats, and an old buoy have been pulled out of the marsh during past clean-up activities. These clean-up projects utilize volunteer Navy personnel that have the added benefit of promoting pride and environmental stewardship amongst the sailors (Goal 1.7).

NAVMAG Indian Island, with Washington Department of Agriculture, annually conducts spartina (invasive non-native species) eradication in tidal areas; this benefits salmon by preventing habitat loss through eutrophication and preserving the natural vegetative conditions, which salmon use as foraging and refuge habitat (Goals 1.7, 3.1, 3.2).

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within

NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that new or changed operations and missions consider Chinook salmon protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: coordinate with the appropriate state and federal fish and wildlife agencies to conduct surveys along the installation's shorelines for chum presence; conduct a minimum of two surveys over five years to determine change over time, which will assist managers in assessing the effectiveness of the plan; consult with the regulatory partners during the annual INRMP review to identify necessary changes that would benefit Chinook salmon (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.4.4 Bull Trout

On November 1, 1999, the USFWS designated bull trout in the Coastal-Puget Sound region as threatened under the ESA (FR 64[210]: 58910-58933) (effective date December 1, 1999).

As a species, bull trout exhibit primarily freshwater phases, including resident and migratory life cycles. A portion of coastal bull trout populations may use an anadromous life strategy that was not well documented in the past (Rieman and McIntyre 1993). Recent work by Goetz et al (2004/2005) has tracked bull trout from Puget Sound river systems into marine waters and back again, suggesting that some bull trout utilize both fresh and salt water habitats for foraging within the same year or even within the same season. They have also been tracked from one river system to another, which also suggests that they are not bound to natal or birth river systems but are able to explore and forage in different watersheds in Puget Sound.

The Strait of Juan de Fuca river basins are the closest and most likely sources of bull trout occurrence within Port Townsend Bay. There are four tentatively identified bull trout stocks within the Strait of Juan de Fuca: Upper Dungeness River, Dungeness/Gray Wolf, Lower Elwha, and Upper Elwha (WDFW 2004). Run timing and spawning timing are unknown for all of these stocks (WDFW 2004). The Skokomish River basin (located at the extreme south end of Hood Canal) is made up of three distinct bull trout stocks. Very little information exists regarding the life history of this stock, as well as no harvest, escapement, or run-size data (SAIC 2001).

Although bull trout could sporadically occur within the Port Townsend Bay Action Area, according to the 1998 Salmon and Steelhead Stock Inventory (WDFW 2004), there are no records of bull trout within Port Townsend Bay or its river systems. According to Goetz et al, (2004), bull trout/Dolly Varden historically were caught in the area of Port Townsend. Bull trout prey upon sand lance, surf smelt, and herring; these are baitfish species that utilize many areas of Indian Island for spawning. It is likely that bull trout may be present along the nearshore areas of Indian Island to take advantage of these food sources.

4.4.4.1 Critical Habitat

On September 26, 2005, USFWS designated Critical Habitat for bull trout in certain marine waters within Washington State, but *not* in Port Townsend Bay or in the waters surrounding Indian Island (USFWS 2005). On 30 September 2010, USFWS redesignated critical habitat for bull trout but final designation did not include areas on Navy installations. The exclusion was based on data that the military activities occurring at the sites are currently being conducted in a manner that minimizes impacts to bull trout habitat.

Additionally, nearshore areas adjacent to Navy installations and those areas designated as marine security areas or restricted zones provide some additional conservation benefits, as recreational and commercial vessels are prohibited from entering. INRMPs will continue to provide a benefit to the species, and we will continue to discuss with the agencies regarding future designations.

Primary constituent elements (PCEs) are the physical or biological features essential to the conservation of the species, as identified within the critical habitat designation for the species. Within the boundaries of designated critical habitat, the USFWS determined that the following PCEs are essential for the conservation of bull trout and may require special management considerations or protection (75FR 63931):

(1) Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.

(2) Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.

(3) An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

(4) Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.

(5) Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.

(6) In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.

(7) A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.

(8) Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.

(9) Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.

Since there is no critical habitat designated near NAVMAG Indian Island the Primary Constituent Elements do not apply.

4.4.4.2 Bull Trout Special Management and Protection Requirements

Criteria 1. Conservation Benefit

NAVMAG Indian Island will ensure that all routine construction and repair activities that will take place below the MHHW line be restricted to the approved in-water work time for bull trout (October 1st – January 15th) for Tidal Reference Area 10 (Goals 1.10 and 1.11).

NAVMAG Indian Island will ensure that all actions at NAVMAG Indian Island that potentially affect (including beneficially affect) Bull trout comply with Section 7 of the Endangered Species Act which requires, at a minimum, informal consultation with USFWS; this includes emergency repairs to structures and other activities that are required by the installation's mission (Goals 1.10, 1.11, 3.1 and 3.2).

The NRMs will work with stormwater managers in reviewing proposed projects and programs for stormwater or other discharges, and ensure that these discharges do not degrade the water or sediment quality of the waters surrounding an installation. The NRM will identify operations and infrastructure that could affect water quality (example: storm drains that release directly to marine waters; pesticide applications near intermittent streams) and coordinate with the command and NAVMAG Indian Island departments to minimize or eliminate releases to marine waters. The NRM, under the direction of the Environmental Director, will provide assistance if required to the development of spill prevention, control, and countermeasures for the facility and for operations. The NRM or designated staff will regularly inspect any structures that extend below the MHHW line and keep the structures free of debris or other materials that could hinder juvenile salmon movement along the shoreline (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2, 5.3).

NAVMAG Indian Island, WDFW, and tribal biologists annually conduct forage fish spawning surveys along the shorelines of the installation. Identification of these important habitat areas allows for better management and protection, thus benefiting salmon that feed on these species (Goal 1.7, 5.1, 5.2 and 5.3).

NAVMAG Indian Island annually conducts beach cleanups that remove debris, contaminant sources, and predator hiding places from salmon habitat areas, benefiting migrating and foraging chum salmon (Goal 1.7).

NAVMAG Indian Island has identified eleven acres of a salt marsh at Walan Point as a Navy wildlife sanctuary. Hunting, fishing, and human activities are restricted in the marsh. The marsh is a valuable nursery for numerous marine species and provides foraging and refuge habitat for salmonids and other fish species, as well as for waterfowl. Man-made debris, including plastic trash, old boats, and an old buoy have been pulled out of the marsh during past clean-up activities. These clean-up projects utilize volunteer Navy personnel that have the added benefit of promoting pride and environmental stewardship amongst the sailors (Goal 1.7).

NAVMAG Indian Island, with Washington Department of Agriculture, annually conducts spartina (invasive non-native species) eradication in tidal areas; this benefits salmon by preventing habitat loss through eutrophication and preserving the natural vegetative conditions, which salmon use as foraging and refuge habitat (Goals 1.7, 3.1, 3.2).

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider bull trout protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: coordinate with the appropriate state and federal fish and wildlife agencies to conduct surveys along the installation's shorelines for Bull trout presence; conduct a minimum of two surveys over five years to determine change over time, which will assist

managers in assessing the effectiveness of the plan; consult with the regulatory partners during the annual INRMP review to identify necessary changes that would benefit bull trout (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.4.5 Steelhead

On May 11, 2007, NMFS listed the Puget Sound Distinct Population Segment (DPS) of steelhead as a threatened species (FR 72[91]: 26722-26735). The Puget Sound steelhead DPS includes all naturally spawned winter-run and summer-run steelhead populations below natural and man-made impassable barriers, in streams in the river basins of the Strait of Juan de Fuca, Puget Sound, and Hood Canal, bounded to the west by the Elwha River and to the north by the Nooksack River and Dakota Creek, as well as the Green River natural and Hamma Hamma winter-run hatchery steelhead stocks.

Steelhead is the name commonly applied to the anadromous form of the biological species *Oncorhynchus mykiss*. Steelhead exhibit perhaps the most complex suite of life-history traits of any species of Pacific salmonid. Steelhead can be anadromous, or freshwater residents (‘‘rainbow or redband trout’’), and under some circumstances yield offspring of the opposite life-history form. Those that are anadromous can spend up to seven years in freshwater prior to smoltification and then spend up to 3 years in salt water prior to first spawning. Steelhead are also iteroparous (meaning individuals may spawn more than once), whereas the Pacific salmon species are principally semelparous (meaning individuals generally spawn once and die). Within the range of West Coast steelhead, spawning migrations occur throughout the year, with seasonal peaks of activity. In a given river basin there may be one or more peaks in migration activity; since these ‘‘runs’’ are usually named for the season in which the peak occurs. Some rivers may have runs known as winter, spring, summer or fall steelhead runs.

4.4.5.1 Critical Habitat

Critical habitat for the Puget Sound DPS of steelhead was proposed in January 2013 (78 FR 2725). The final ruling came on 24 February 2016 (81 FR 9251) for Puget Sound steelhead, and was effective on 25 March 2016. This includes approximately 2,031 miles of freshwater and estuarine habitat in Puget Sound, Washington. Primary constituent elements (PCEs) are the physical or biological features essential to the conservation of the species, as identified within the critical habitat designation for the species. Within the boundaries of designated critical habitat, the primary constituent elements essential for the conservation of the Puget Sound DPS of steelhead are those sites and habitat components that support one or more life stages, including (81 FR 9251):

(1) Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development;
(2) Freshwater rearing sites with:
(i) Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility;
(ii) Water quality and forage supporting juvenile development; and
(iii) Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.
(3) Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival;
(4) Estuarine areas free of obstruction and excessive predation with:
(i) Water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater;

(ii) Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels; and

(iii) Juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.

(5) Nearshore marine areas free of obstruction and excessive predation with:

(i) Water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and

(ii) Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

(6) Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.

Critical Habitat has only been designated in freshwater and estuarine areas. No such areas exist on NAVMAG Indian Island.

Since there is no critical habitat designated on or near NAVMAG Indian Island the Primary Constituent Elements do not apply.

4.4.5.2 Steelhead Special Management and Protection Requirements

Criteria 1. Conservation Benefit

NAVMAG Indian Island will ensure that all routine construction and repair activities that will take place below the MHHW line be restricted to the approved in-water work time for steelhead (October 1st – January 15th) for Tidal Reference Area 10 (Goals 1.10 and 1.11).

NAVMAG Indian Island will ensure that all actions at NAVMAG Indian Island that potentially affect (including beneficially affect) steelhead comply with Section 7 of the Endangered Species Act which requires, at a minimum, informal consultation with NOAA Fisheries; this includes emergency repairs to structures and other activities that are required by the installation's mission (Goals 1.10, 1.11, 3.1 and 3.2).

The NRM will identify operations and infrastructure that could affect water quality (example: storm drains that release directly to marine waters; pesticide applications near intermittent streams) and coordinate with the command and NAVMAG Indian Island departments to minimize or eliminate releases to marine waters. The NRM, under the direction of the Environmental Director, will provide assistance if required to the development of spill prevention, control, and countermeasures for the facility and for operations. The NRM or designated staff will regularly inspect any structures that extend below the MHHW line and keep the structures free of debris or other materials that could hinder juvenile Steelhead movement along the shoreline (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2, 5.3).

NAVMAG Indian Island, WDFW, and tribal biologists annually conduct forage fish spawning surveys along the shorelines of the installation. Identification of these important habitat areas allows for better management and protection, thus benefiting steelhead that feed on these species (Goal 1.7, 5.1, 5.2 and 5.3).

NAVMAG Indian Island annually conducts beach cleanups that remove debris, contaminant sources, and predator hiding places from salmon habitat areas, benefiting migrating and foraging steelhead (Goal 1.7).

NAVMAG Indian Island has identified eleven acres of a salt marsh at Walan Point as a Navy wildlife sanctuary. Hunting, fishing, and human activities are restricted in the marsh. The marsh is a valuable nursery for numerous marine species and provides foraging and refuge habitat for steelhead and other fish species, as well as for waterfowl. Man-made debris, including plastic trash, old boats, and an old buoy have been pulled out of the marsh during past clean-up activities. These clean-up projects utilize

volunteer Navy personnel that have the added benefit of promoting pride and environmental stewardship amongst the sailors (Goal 1.7).

NAVMAG Indian Island, with Washington Department of Agriculture, annually conducts spartina (invasive non-native species) eradication in tidal areas; this benefits fish species by preventing habitat loss through eutrophication and preserving the natural vegetative conditions, which steelhead use as foraging and refuge habitat (Goals 1.7, 3.1, 3.2).

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider steelhead protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: coordinate with the appropriate state and federal fish and wildlife agencies to conduct surveys along the installation's shorelines for steelhead; conduct a minimum of two surveys over five years to determine change over time, which will assist managers in assessing the effectiveness of the plan; consult with the regulatory partners during the annual INRMP review to identify necessary changes that would benefit steelhead (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.4.6 Rockfish

On April 28, 2010, the Puget Sound/Georgia Basin DPSs of yelloweye rockfish (*Sebastes ruberrimus*) and canary rockfish (*S. pinniger*) were listed as threatened, and bocaccio rockfish (*S. paucispinis*) as endangered under the ESA (75 FR 22276). However, on March 24, 2017 the canary rockfish was delisted after additional studies were conducted. The Critical Habitat for the canary rockfish was also removed (82 FR 7711). The designation area of Puget Sound/Georgia Basin encompasses yelloweye and boccaccio DPS throughout their range, from the inland marine waters east of the central Strait of Juan de Fuca and south of the northern Strait of Georgia. Past overfishing of rockfish for commercial and recreational purposes and incidental by-catch of the species during other recreational fisheries is cited as the leading cause of the species decline (75 FR 22276, Palsson et al. 2009). The life histories of these fish make them susceptible to overfishing. In general, rockfish have long life spans, often exceeding 50-100 years, are slow to mature and have a very low first year survival, all of which results in long generation times. Other factors that threaten rockfish include habitat degradation (degradation of rocky habitat, loss of kelp and eelgrass habitats, derelict fishing gear and nets) and water quality problems (low DO), elevated contaminant levels), and species interactions (predation and competition), among others.

Yelloweye and bocaccio have similar life histories and are part of the deepwater assemblage of rockfish which is composed of large bodied, deepwater fish (Palsson et al. 2009). In general, the deepwater assemblage of rockfish share similar life histories and are characterized by their viviparous reproduction strategy (live-bearing young), pelagic larval and juvenile stages, and eventual settlement to deepwater, rocky habitats greater than 40 meters. Although each species has been documented along areas of high relief and

non-rocky substrates such as sand, mud, and other unconsolidated sediments (Washington, 1977; Miller and Borton, 1980), yelloweye and bocaccio densities are highest near rocky habitats which are limited in the Puget Sound (Palsson et al., 2009). Deepwater rocky habitats are absent around NAVMAG Indian Island, but can be found in the vicinity of the northeastern side of Port Townsend and Marrowstone Island towards Admiralty Inlet (Palsson et al., 2009). While adult rockfish are associated with high-relief, rocky habitats, larval and juvenile stages of some rockfishes make use of open water and nearshore habitats near Indian Island. Juvenile bocaccio rockfish are most likely to utilize nearshore waters with substrates of rock or cobble compositions, and/or kelp species (Love et al. 1991, Love et al. 2002). In addition, nearshore vegetated habitats may serve as nursery areas for juveniles and later provide connecting pathways for movement to adult habitats.

A survey conducted by WDFW in the years 2014-2015 showed that no Threatened or Endangered species of rock fish were present in the areas around the ammunition pier, small craft pier and nearby shipwreck. An analysis of the substrate also showed that they habitat preferred by those species was very small and suboptimal (WDFW 2016). The full report is located in Appendix C.

4.4.6.1 Critical Habitat

On November 13th 2014 NMFS published the final rule for critical habitat for the yelloweye, canary and bocaccio rockfish (FR 79 [219]: 68042-68087).). However, effective March 24th, 2017 Critical Habitat for the canary rockfish was removed (82 FR 7711). Critical habitat was designated in Port Townsend Bay, with the exception of the waters within the boundaries of Department of Defense restricted areas. This exempts the habitat within NAVMAG Indian Island's waterfront restricted area from designation status.

This critical habitat excludes the waters within the boundaries of DOD managed waters in the nearshore zone due to Navy security zones. In these areas, critical habitat consists of the water and substrate from the extreme high tide datum down to the MLLW line. Benefits to the species that led to the exclusion are: actions that improve shoreline conditions, control erosion and water quality, prevention of and prompt response to chemical and oil spills, and monitoring of listed species and their habitats.

Physical or Biological Features Essential to the conservation of adult Bocaccio (78 FR 47638) are:

(1) Quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities

(2) Water quality and sufficient levels of dissolved oxygen to support growth, survival, and reproduction, and feeding opportunities, and

(3) The type and amount of structure and rugosity that supports feeding opportunities and predator avoidance.

Physical and Biological features essential to the conservation of juvenile Bocaccio (78 FR 47638) are:

(1) Quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities; and

(2) Water quality and sufficient levels of dissolved oxygen to support growth, survival, and reproduction, and feeding opportunities.

Physical or Biological Features Essential to the conservation of adult and juvenile Yelloweye Rockfish (78 FR 47638) are:

(1) Quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities

(2) Water quality and sufficient levels of dissolved oxygen to support growth, survival, and reproduction, and feeding opportunities, and

(3) The type and amount of structure and rugosity that supports feeding opportunities and predator avoidance.

At this time there are no Primary Constituent Elements for listed rockfish species.

4.4.6.2 Rockfish Special Management and Protection Requirements

Criteria 1. Conservation Benefit

NAVMAG Indian Island will ensure that all routine construction and repair activities that will take place below the MHHW line be restricted to the approved in-water work time for rockfish (October 1st – January 15th) for Tidal Reference Area 10 (Goals 1.10 and 1.11).

NAVMAG Indian Island will ensure that all actions at NAVMAG Indian Island that potentially affect (including beneficially affect) Rockfish comply with Section 7 of the Endangered Species Act which requires, at a minimum, informal consultation with NOAA Fisheries; this includes emergency repairs to structures and other activities that are required by the installation's mission (Goals 1.10, 1.11, 3.1 and 3.2).

The NRM will identify operations and infrastructure that could affect water quality (example: storm drains that release directly to marine waters; pesticide applications near intermittent streams) and coordinate with the command and NAVMAG Indian Island departments to minimize or eliminate releases to marine waters. The NRM, under the direction of the Environmental Director, will provide assistance if required to the development of spill prevention, control, and countermeasures for the facility and for operations (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2, 5.3).

NAVMAG Indian Island, WDFW, and tribal biologists annually conduct forage fish spawning surveys along the shorelines of the installation. Identification of these important habitat areas allows for better management and protection (Goal 1.7, 5.1, 5.2 and 5.3).

NAVMAG Indian Island has identified eleven acres of a salt marsh at Walan Point as a Navy wildlife sanctuary. Hunting, fishing, and human activities are restricted in the marsh. The marsh is a valuable nursery for numerous marine species and provides foraging and refuge habitat for fish, as well as for waterfowl. Man-made debris, including plastic trash, old boats, and an old buoy have been pulled out of the marsh during past clean-up activities. These clean-up projects utilize volunteer Navy personnel that have the added benefit of promoting pride and environmental stewardship amongst the sailors (Goal 1.7).

NAVMAG Indian Island, with Washington Department of Agriculture, annually conducts spartina grass (invasive non-native species) eradication in tidal areas; this benefits salmon by preventing habitat loss through eutrophication and preserving the natural vegetative conditions (Goals 1.7, 3.1, 3.2).

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider rockfish protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

NAVMAG staff is working with WDFW to conduct surveys within NAVMAG Indian Island waters for rockfish presence. Surveys were conducted using non-lethal survey techniques (such as quantitative video surveys, scuba transects, etc.) because of rockfishes susceptibility to barotrauma. The surveys conducted in 2013 and 2014 showed no presence of the ESA-listed rockfish species. NRM will continue to meet with WDFW staff during annual INRMP review meetings to discuss rockfish protection and identify necessary changes to the plan that would benefit yelloweye and bocaccio rockfish species (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.4.7 North American Green Sturgeon

NMFS published a final rule on April 7, 2006 listing the Southern DPS of the North American green sturgeon as threatened (71 FR 17757), which took effect June 6, 2006. The Southern DPS of green sturgeon consists of the coastal and central valley populations south of the Eel River, with the only known population in the Sacramento River ("Southern DPS"). The principal factor for decline of the green sturgeon has been the reduction of spawning area which is now limited to the Sacramento River. This is a threat due to increased risk of extirpation due to catastrophic events. Other threats that have been cited as potential threats to the species include insufficient freshwater flow rates in spawning areas, contaminants (e.g., pesticides), by-catch of green sturgeon in fisheries, potential poaching, entrainment by water projects, influence of exotic species, small population size, impassable barriers, and elevated temperature concerns.

The green sturgeon is the most broadly distributed, wide ranging, and most marine-oriented species of the sturgeon family. The green sturgeon is believed to spend the majority of its life in nearshore oceanic waters, bays and estuaries ranging from San Francisco Bay to British Columbia. Although use of habitat surrounding NAVMAG Indian Island is largely unknown, tagged Southern DPS subadults and adults have been detected in the coastal marine waters of the Strait of Juan de Fuca (Lindley et al. 2008).

4.4.7.1 Critical Habitat

Critical habitat was designated for green sturgeon on October 9, 2009 (74 FR 52300) but does not include the Puget Sound or waters surrounding NAVMAG Indian Island property.

Since there is no critical habitat designated near NAVMAG Indian Island the Primary Constituent Elements do not apply.

4.4.7.2 Green Sturgeon Special Management and Protection Requirements

Criteria 1. Conservation Benefit

NAVMAG Indian Island will ensure that all actions at NAVMAG Indian Island that potentially affect (including beneficially affect) Southern DPS of the green sturgeon will comply with Section 7 of the ESA, which requires at a minimum, informal consultation with NMFS; this includes emergency repairs to structures and other activities required by the mission (Goals 1.10, 1.11, 3.1 and 3.2).

The NRM will identify operations and infrastructure that could affect water quality (example: storm drains that release directly to marine waters; pesticide applications near intermittent streams) and coordinate with the command and NAVMAG Indian Island departments to minimize or eliminate releases to marine waters. The NRM, under the direction of the Environmental Director, will provide assistance if required to the development of spill prevention, control, and countermeasures for the facility and for operations (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2, 5.3).

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider green sturgeon protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

The NRM or designated staff will work with WDFW and NMFS to monitor for green sturgeon during salmonid and rockfish surveys. Surveys will give the NRM a better understanding of green sturgeon's potential use of NAVMAG Indian Island and/or surrounding waters and will assist managers in assessing the effectiveness of the plan on these species. The NRM will consult with regulatory partners during the annual INRMP review to discuss species protection and to identify necessary changes to the plan that would benefit the green sturgeon (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.4.8 Southern Resident Killer Whale

Southern Resident Killer Whales (SRKW), a subpopulation of *Orcinus orca*, was designated as Endangered by NMFS on November 18, 2005 (FR 70[222]: 69903-69912) (effective date February 16, 2006).

Orcas have been observed in Admiralty Inlet and the Straits of Juan de Fuca on numerous occasions, and they occasionally also visit Port Townsend Bay. The SRKW subpopulation are fish-eaters; other orca populations that visit the area are mammal-eaters (primarily seals in Puget Sound) and are known as the Transient population because they are not thought to be regular inhabitants of Puget Sound, as are the SRKW. Researchers have studied the SRKW and have documented the identification markings of each animal. To the casual observer, however, it is difficult to tell if a group of orcas are Transients or SRKW, unless feeding behavior is observed.

The SRKW typically hunt for fish in deeper waters, but females and sub-adults have been observed hunting for salmon in rock crevices in shallow water (NMFS 2005). SRKW seem to prefer salmon but will also eat lingcod, flat fish, rockfish, and herring (NMFS 2005). There is a very small run of chum salmon in Chimacum Creek, which is the only run of salmonids in Port Townsend Bay. This run is not natural; it has been established by local restoration efforts using hatchery-raised fish, and returns have been low (WDFW 2005). SRKW would not be expected to remain in the area for long periods due to a lack of food availability unless they begin to forage for baitfish species that are known to spawn along the shores of Indian Island. This has not been observed in the past.

4.4.8.1 Critical Habitat

On November 29, 2006, Critical Habitat for SRKW was designated, with the exclusion of the waters within the boundaries of Department of Defense managed lands and waters (FR 71[229]: 69054-69070) (effective date December 29, 2006)).

Joint NMFS-FWS regulations for listing threatened and endangered species and designating critical habitat shall consider those physical and biological features that are essential to the conservation of the species.

Pursuant to the regulations, such PCEs include, but are not limited to the following:

(1) Space for individual and population growth, and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter

(4) Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally,

(5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

The three Primary Constituent Elements for SRKWs includes water quality, which for NAVMAG has been closely monitored and BMPs are in place to ensure that all discharges are below EPA benchmarks for contaminants. For the prey species primary constituent elements, our nearshore and shoreline habitat provide suitable spawning and migration corridors for fin fish species that are consumed by SRKW. For passage condition there are no in water impediments or obstacle which would prevent them from transiting through the adjacent marine waterways.

4.4.8.2 Southern Resident Killer Whale Special Management and Protection Requirements

Criteria 1. Conservation Benefit

The NAVMAG Indian Island Command will ensure that all actions at the installation that potentially affect (including beneficially affect) Southern Resident Killer Whales comply with Section 7 of the Endangered Species Act which requires, at a minimum, informal consultation with NMFS. In addition, any future in water construction projects will be reviewed and to the maximum extent practicable will incorporate elements to ensure that passage conditions will not be adversely affected (Goals 1.10, 1.11, 3.1 and 3.2).

Current conservation efforts for fin fish will benefit the SRKWs by protecting prey species and spawning habitats.

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider Southern Resident Killer whale protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

The Natural Resources Manager or designated staff will do the following: record areas of use in the waters surrounding Indian Island by killer whales and use the information to update the INRMP and also provide management guidance to NAVMAG Indian Island's command and departments (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.4.9 Humpback Whale

The humpback whale has a worldwide distribution, with three major distinct populations: The North Atlantic, North Pacific, and southern oceans. This species inhabits waters over continental shelves, along edges, and around some oceanic islands. During winter individuals are usually found in tropical or temperate waters (10-23º latitude). During the summer, most migrate considerable distances to waters with higher biological productivity, typically at high latitudes (35 º - 65º).

Humpback whales have been protected since 1965, and are currently listed as Endangered under the ESA. NMFS has reclassified the humpback whale into 14 DPSs (81 FR 62260). Two of the ESA-listed DPSs have the potential to occur in the surrounding waters-the Mexico DPS, listed as threatened, and the Central America DPS, listed as endangered (81 FR 62260). Both DPSs are considered depleted under the MMPA (81 FR 62260). The California, Oregon, and Washington humpback whale stock occurs within Puget Sound and partially or fully coincides with the ESA-listed Mexico and Central America DPSs. The humpback whale DPSs were generally defined by NMFS based on breeding areas (81 FR 62260), while the stock structure was based on feeding areas because of the species' fidelity to feeding grounds (Carretta et al., 2014). NMFS proposed to conduct a review of humpback whale stock delineations to determine whether any stocks should be realigned with the recently established DPSs (81 FR 62260). In 2016, NMFS published a final decision changing the status of humpback whales under the ESA (effective October 11, 2016). Previously humpback whales were recognized as worldwide, but recent changes have recognized the existence of 14 distinct population segments (DPSs).

In the North Pacific, there are three distinct population groups: a western North Pacific population (endangered), a central population that migrates between Hawaii and Alaska (delisted), and a Mexico-California-Alaska population (threatened) that seasonally migrates past Washington State between breeding areas and feeding areas. During the summer, humpback whales in the North Pacific migrate and feed over the continental shelf and along the coasts of the Pacific Rim, from Point Conception, California, to the Gulf of Alaska, Prince William Sound, and Kodiak Island. Humpback whales spend the winter in three separate wintering grounds: the coastal waters along Baja California and the mainland of Mexico, the main islands of Hawaii, and the islands south of Japan (SAIC 2001).

In Washington inland waters, most humpback whale sightings occur in the Strait of Juan de Fuca and in the San Juan Island area. Sightings of humpback whales in Puget Sound vary by location, but historically were infrequent. A small number of humpback whales (based on concurrent sightings of one to four individuals, including a cow/calf pair) was present in Puget Sound from September 2015 to July 2016 (Orca Network, 2016). Most of the sightings reported to Orca Network since 2003 were in the main basin of Puget Sound with numerous sightings in the waters between Point No Point and Whidbey Island, Possession Sound, and southern Puget Sound in Colvos Passage. Prior to 2012 sightings, there were no confirmed reports of humpback whales entering Hood Canal (Calambokidis, 2012, pers. comm.). Published density estimates for humpback whales in Washington inland waters are not available.

4.4.9.1 Critical Habitat

Critical habitat has not been designated for the humpback whale.

4.4.9.2 Humpback Whale Special Management and Protection Requirements

Criteria 1. Conservation Benefit

The NAVMAG Indian Island Command will ensure that all actions at the installation that potentially affect (including beneficially affect) humpback whales comply with Section 7 of the Endangered Species Act which requires, at a minimum, informal consultation with NMFS (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 2. Implementation of the Plan

NAVMAG Indian Island annually funds and staffs the NRM position. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider humpback whale protection measures (Goals 1.10, 1.11, 3.1 and 3.2).

Criteria 3. Management Effectiveness

The Natural Resources Manager or designated staff will do the following: record areas of use in the waters surrounding Indian Island by humpback whales and use the information to update the INRMP and also provide management guidance to NAVMAG Indian Island's command and departments (Goals 1.7, 1.10, 1.11, 3.1, 3.2, 5.1, 5.2 and 5.3).

4.5 Wetlands Management

According to OPNAV M-5090.1D wetlands are those areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, such as swamps, marshes, and bogs. Jurisdictional wetlands are those that meet criteria established by the EPA, regulations and EPA and Department of the Army guidance. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds. EO 11990 requires Federal agencies to minimize the loss or degradation of wetlands and to enhance their natural values. Section 404 of the Clean Water Act prohibits discharges of dredged or filled material into waters of the U.S., including wetlands, without first obtaining a permit from the U.S. Army Corps of Engineers (USACE). According to OPNAV M-5090.1D, the Navy will comply with the national goal of no net loss of wetlands, and will avoid loss of size, function and value of wetlands.

The majority of wetlands in and around developed areas on NAVMAG have been previously delineated to varying degrees although changes to surface-water hydrology can alter the size of wetlands. In a 2015 survey NAVMAG was found to have approximately 33 acres of salt marshes and 89 acres of freshwater wetlands. The survey was not all encompassing and project areas will always be checked prior to the final planning phase (Goals 1.7, 1.10, 1.11, 5.1, 5.2, 5.3).

Changes in hydrology and the potential for finding additional, typically small wetlands is always present and must be verified on the ground prior to finalizing project design and pursuing implementation. Baseline climate change vulnerability assessment of all DOD sites would help in assessing wetlands and surface-water hydrology, and possible changes to this system. Further information to clarify instructions that were submitted to the installations; and, approval for projects may in future incorporate a climate change adaptation that should be listed in the approval process for funding.

To help categorize previously undelineated wetlands on Navy owned property, NAVMAG Indian Island has adopted the WDOE *Wetland Rating System for Western Washington* (WDOE 2014), which is consistent with the U.S. Corps Wetland Delineation Manual and its regional supplements. The purpose of the rating system is to distinguish differentiate between wetlands based on the functionality, sensitivity, significance, replacement capability, and rarity of the wetland. Use of this rating system will aid NAVMAG land managers and planners in protecting and managing wetlands. NAVMAG Environmental staff evaluating previously uncategorized wetlands will use the latest version of WDOE's Wetland Rating Form for Western

Washington. These staff will have experience and/or education in the identification of natural wetland features, indicators of wetland function, vegetation classes, and ability to distinguish between different plant species.

In addition, the Navy will preserve and enhance the natural and beneficial values of wetlands in carrying out its activities. In order to comply with the Navy's "No Net Loss of Wetlands Policy"; commands with land management responsibilities shall ensure the following:

A. That the Navy plans all construction and operational actions to avoid adverse impacts to wetlands. Any construction requirement that cannot be sited to avoid wetlands shall be designed to minimize wetlands degradation and shall include compensatory mitigation as required by wetlands regulatory agencies in all phases of the project's planning, programming, and budgeting process. Within this policy, use of Navy lands and lands of other entities are permissible for mitigation purposes for Navy projects when consistent with EPA and USACE guidelines or permit provisions. Requests by non-Navy entities to mitigate the effects of non-Navy projects on Navy property should be reviewed on a case-by-case basis for their effect on Navy mission, the environment, and appropriateness of economic compensation to the Navy for the long-term use of the site, all such projects need to be approved by the chain of command;
B. That any action significantly affecting wetlands is addressed by the environmental review and public notification process;
C. Boundaries of legally defined wetlands, on all Navy lands, are identified and mapped with sufficient accuracy to protect them from potential unplanned impacts, and that the maps are distributed to all potential users, including facilities planners, operational units, and tenant commands. Jurisdictional maps may be required prior to actual construction if there is any potential of wetlands present in the vicinity of the project. Field verification and jurisdictional determinations should be required for all projects;
D. That adequate expertise is available to installation COs for the protection, management, identification, and mapping of wetlands;
E. That implementation of wetlands creation or enhancement projects and wetlands mitigation banking, where compatible with the installation mission, is encouraged. Natural resources managers should identify potential wetland mitigation sites.

The wetland delineations depicted on Figure 2-7 in this document were not formally delineated by USACE and should be considered rough estimates. This information should be used in the planning phase of proposed projects or operations. If a project is planned in the proximity of a wetland system shown on Figure 2-7, the wetlands in the immediate area should be flagged and surveyed to adequately show the boundaries.

4.6 Fish and Wildlife Management

4.6.1 Habitat

Habitat loss has a direct correlation to a decline or loss of fish and wildlife populations. This INRMP is meant to be used as a tool in NAVMAG's operational, training, and construction planning endeavors to minimize or prevent loss of habitat, thus preserving species diversity and populations at the installation. The following management criteria will ensure that NAVMAG provides a wise stewardship ethic in managing the fish and wildlife resources found there:

Program and Project Review: The NAVMAG NRM is part of the planning team at NAVMAG and reviews all projects, operations, and training plans for possible impacts to habitat and fish and wildlife. If impacts to habitat or fish and wildlife are identified, the NRM provides recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process. The

recommendations may include, but are not limited to, construction BMPs for erosion control, changing the aspect or placement of a new building to protect trees, identifying wetlands and wetland buffers that must be protected, or other recommendations that will help NAVMAG preserve its fish and wildlife habitats. The NRM is also available to help decide on the best mitigation designs if habitat loss is unavoidable (Goals 1.1-1.11, 3.1, 3.2, 5.1-5.3).

Habitat Inspections: The NRM frequently drives and walks throughout the installation, inspecting various habitats for unauthorized encroachment or impacts, and closely monitors and observes fish and wildlife usage of these areas. The NRM has the ability to elevate concerns about habitat impacts to the installation Commanding Officer (Goals 1.2, 1.4, 1.7, 1.10).

Habitat Enhancement and Restoration: Hunting and fishing fees are not currently collected. Under the authority of the SAIA to recover expenses of implementing these programs and would be used only to defray costs of the fish and wildlife management program at the installation collecting the fees. Collected fees would be accounted for and reported under a special fund entitled "Wildlife Conservation". If hunting is reestablished, fees will be collected and deposited into the Wildlife Conservation account also. Funds in the account have been used in the past to enhance habitat, which has a direct benefit to fish and wildlife (Goal 4.1).

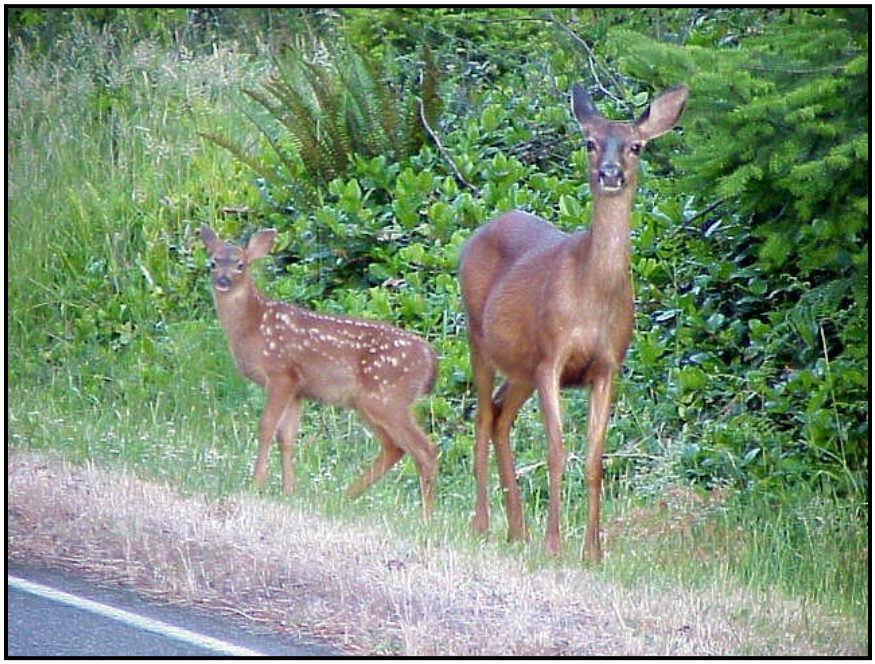


Figure 4-1. Columbian Black-Tailed Deer

Habitat Management:
Forests: A detailed forest management plan may be found in Section 4.6. This plan includes protection of habitats for wildlife.

Riparian/Wetlands: There is one perennial non-fishbearing stream on NAVMAG Indian Island and a number of wetlands. Wetland management strategies vary depending primarily on the wetland's classification, which is determined by the value of a particular wetland. A wetland's value is decided by the quality of the functions it provides, including its biomass production, habitat, erosion control, stormwater storage, water quality protection, aquifer recharge potential, and low flow augmentation. Some of the factors used to measure the quality of these functions are the wetland's size, its location in the watershed, the amount of development in the watershed, vegetative structure and composition, rate of water flow through the

wetland, the size of natural buffers, and surrounding land uses. Regardless of the habitat value, wetland areas are almost always poor choices for building sites or for most activities, other than providing non-consumptive (passive) enjoyment of the outdoors. The NRM, during the program/project review process, will be diligent about encroachment and impacts to the wetlands found on NAVMAG, and ensure that program/project managers are aware of the laws and regulations regarding the protection of wetlands.

1) **Maintain buffers in which no construction, logging, or other disturbance occurs.** Each requirement must be examined on a case-by-case basis. NAVMAG Indian Island is using a rating system that will aid land managers and planners in protecting and managing wetlands. NAVMAG Environmental staff evaluating previously uncategorized wetlands will use the information below. These staff will have experience in the identification of natural wetland features, indicators of wetland function, vegetation classes, and ability to identify aquatic plant species.

    a) Wetlands on NAVMAG property requiring delineation may fall into Categories I through IV based on the points from the Wetland Rating Form. Table 4-2 describes the categories and point system to be used on NAVMAG wetlands

Table 4-2: NAVMAG Wetland Categories based on *Wetland Rating System*

Wetland Category	Description	Scoring
Category I	Wetlands that 1) represent a unique or rare wetland type; or 2) are more sensitive to disturbance than most wetlands; or 3) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or 4) provide a high level of functions.	>70
Category II	Wetlands that are difficult, though not impossible, to replace, and provide high levels of some functions. Wetlands which are disturbed and may be Estuarine and greater than 1 acre.	51 – 69
Category III	Wetlands with a moderate level of functions and may be Estuarine between 0.1 and 1 acre in size.	30-50
Category IV	Wetland with the lowest levels of function and are often heavily disturbed.	<30

    b) Through NAVMAG's Environmental Review process, described in Section 4.1, Environmental staff will confirm whether a proposed project will impact wetlands. Proposed projects will maintain undisturbed buffers around wetlands according to Table 4-3.

    c) Buffer areas will be maintained but buffer distance may vary if the adjustment has either beneficial or neutral impact to the wetland as determined by wetland subject matter experts and supported by natural resource staff.

Table 4-3: Wetland Buffer Widths on NAVMAG Properties

Category of Wetland	Buffer Width
Category I	200 feet
Category II	100 feet
Category III	50 feet
Category IV	30 feet

d) Buffer widths will be measured horizontally from a perpendicular line established at the wetland edge (high water mark) to the buffer width specified in Table 4-3. The Navy's GRX GIS mapping tool can plot buffers around water features for planning purposes. Environmental staff performing this analysis should verify that the applicable GIS layers are based on an up to date survey of the water feature as changes in surface-water hydrology could alter wetland boundaries.

e) Decreases to the above buffer widths must have documented justification and be approved in writing by the NAVMAG Environmental Manager. Projects requesting a decrease in wetland buffer widths will be required to demonstrate that the decreased buffer will not adversely impact the wetland. Projects where direct impacts to wetlands are unavoidable will require a CWA Section 404 permit and Compensatory Mitigation, as regulated by the USACE.

f) NAVMAG staff will characterize baseline wetland conditions as needed and ensure GIS layers accurately reflect the proper size and conditions as consistent with resources allocated to the installation to implement. NAVMAG will enhance the functions and values of these systems as allowable and ensure no loss in size or function.

2) **Carefully plan for and control runoff in uplands.** If building is to occur near wetlands, water quality and quantity impact can be lessened by retention of natural swales, depressions, and areas with permeable soils.
3) **Retain adjacent areas of native vegetation, especially if they connect to other wetlands.** Also retain connections to other natural areas via native vegetation. This creates corridors that allow uninhibited movement of wildlife between wetlands and adjacent habitat areas.
4) **Exclude livestock, vehicles, and foot traffic from wetlands and buffers.** Plant native vegetation around wetlands; don't use fences that would restrict wildlife movement.

Shorelines: Shellfish, forage fish, and many other wildlife species use the beaches and shoreline areas of Indian Island. The NRM will conduct the following activities to protect shoreline habitats:

1) **Inspect the shorelines, especially the beach areas, for man-made debris.** Man-made trash often consists of plastic items, which wash up on many shorelines in the Puget Sound. This trash is not only unsightly, but some items may be perceived as a food source by wildlife and pose as an ingestion hazard. Accumulations of trash or man-made objects may remove areas of shore from forage fish spawning opportunities or from bird use.

NAVMAG has successfully performed volunteer beach cleanups in the past; and shall be continued in the future.

2) **Protect eelgrass areas.** Eelgrass is found along much of the sub and inter-tidal areas around Indian Island. This aquatic plant species is an important habitat for many marine invertebrate and vertebrate species. During the program/project review process, the NRM will look for potential impacts to eelgrass areas and offer alternatives to minimize or eliminate the impacts.
3) **Stormwater runoff.** The NRM will review projects and programs for stormwater or other discharges, and ensure that these discharges (point and non-point source) do not degrade the water or sediment quality of the waters surrounding Indian Island.
4) **Military training.** The Navy and other services conduct annual training operations at NAVMAG. These operations often require that equipment and personnel utilize beach areas for landings and encampments. The NRM will be familiar as to the seasonal use of beaches by waterfowl, sea birds, marine mammals and forage fish, and recommend alternate shoreline areas or seasonal timing restrictions that will avoid or minimize potential impacts to these species and their habitats (including eelgrass).

Habitat Management – Developed Areas: The following items will enhance the wildlife habitat on NAVMAG.

- **Where feasible, reduce the mowed areas**. Reducing areas that are mowed will allow native vegetation to grow, enhancing wildlife habitat, and may also result in a significant cost savings for the Navy.
- **Use native vegetation for landscaping around buildings**. Native vegetation is well-suited to the conditions of the Pacific Northwest and will require less maintenance to keep healthy. Native vegetation provides better wildlife habitat than exotic, non-native plants and trees. Also, native vegetation promotes the protection and habitat of pollinators in accordance with DoD Policy.

4.6.2 Hunting Program

Historically, archery hunting was allowed on base, but the program was shut down after September 11, 2001. If hunting or trapping is allowed in the future, laws and rules specified in the current WDFW Big Game Hunting Season and Regulations will be enforced by the NAVMAG NRM, assisted by the NAVMAG Police and WDFW Law Enforcement personnel.

4.6.3 Fishing Program

Recreational fishing on NAVMAG is for DoD or other authorized personnel only. Recreational fishing from shore is allowed at Crane Point, the beach northwest of Boggy Spit, Bishop Point, the beach east of Anderson Pond, and along Anderson Pond's shoreline. All authorized fishermen will obey all WDFW Freshwater and Saltwater fishing regulations, including obtaining the appropriate licenses.

4.6.4 Shellfish

Shellfish harvesting on NAVMAG is for DoD or other authorized personnel only and four federally recognized tribes, with Usual and Accustomed treaty harvest rights based on historical and archaeological harvest evidence for Indian Island. The Annual Shellfish Harvest Plan is included in Appendix C-3. The plan includes beach-specific harvest guidelines for hard shell clams on certain Indian Island beaches. Additionally, harvest quotas may be set based on shellfish population surveys conducted by tribal personnel in late spring or summer of each year. This benefits other naval facilities in the region by re-allocating treaty harvest quantities from those other Naval facilities where security requirements prohibit tribal harvests.

All authorized shellfish harvesters will obey State of Washington regulations, including purchase of a WDFW shellfish harvest license, and, for authorized tribal gathers, the tribal harvest management plan and appropriate tribal regulations.

NAVMAG actively participates with the Puget Sound Restoration Fund, a nonprofit organization that restores marine and watershed habitats throughout Puget Sound, to maintain a population of Olympia oysters (*Ostrea conchaphila*) on tidelands of Indian Island. The Olympia oyster is the only oyster native to the entire west coast of the United States, including Puget Sound. All other oysters that are grown and harvested are non-native, exotic species originating mostly from Asia. Olympia oysters were one of the most abundant bivalves in most of the larger estuaries on the west coast, including Puget Sound, until the late 1800's, when over-harvest, logging and pollution brought them to near extinction. Native oysters were also an important food source to Native American Tribes of Puget Sound prior to European settlement. Olympia oysters play an important role in the marine ecosystem. They are biological filters, purifying local marine waters. Olympia oysters provide structure, food and shelter for a wide variety of marine crustaceans and finfish, including salmonids.

4.6.5 Marine Fish

The Magnuson-Stevens Fishery Conservation and Management Act, as amended in October 1996, requires that federal agencies consult with the U.S. Secretary of Commerce (which has been delegated to NMFS) on any action proposed to be undertaken that may adversely affect EFH. The objective of this EFH assessment is to determine whether or not the project may adversely affect designated EFH for relevant commercial, federally managed fish species within the action area. It also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the project. Subsection 50 CFR 600.920(f) specifies that EFH consultation should be consolidated with existing environmental review procedures required by other statutes, such as ESA, when appropriate. The NAVMAG NRM will review all projects, operations, and training plans for possible impacts to EFH. If impacts to EFH are identified, the NRM provides recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process.

Federal agencies are required by the ESA to manage federally listed threatened and endangered (T&E) species and their habitat in a manner that promotes conservation of T&E species and is consistent with plans for recovery of such species. Section 7 of the ESA requires all federal agencies to enter into consultation with the USFWS and NMFS whenever actions are proposed that may affect listed and proposed T&E species of fish, wildlife and plants.

4.6.6 Freshwater Fish

Historically freshwater fishing was allowed on the installation for largemouth bass in Anderson Pond. The pond has since been drained because of the standpipe rusting through. Since the pond was manmade, no attempt has been made to restore it.

4.6.7 Reptiles and Amphibians

As mentioned above, managing habitat for diversity, protection, and enhancement will have the greatest benefit for wildlife, including reptiles and amphibians, on NAVMAG. Protection of wetlands and retention of some downed logs will have the greatest benefit to these species.

4.6.8 Marine Mammals

The MMPA of 1972 prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Congress passed the MMPA based on the following findings and policies:

1) Some marine mammal species or stocks may be in danger of extinction or depletion as a result of human activities;
2) These species or stocks must not be permitted to fall below their optimum sustainable population level (depleted);
3) Measures should be taken to replenish these species or stocks;
4) There is inadequate knowledge of the ecology and population dynamics; and
5) Marine mammals have proven to be resources of great international significance.

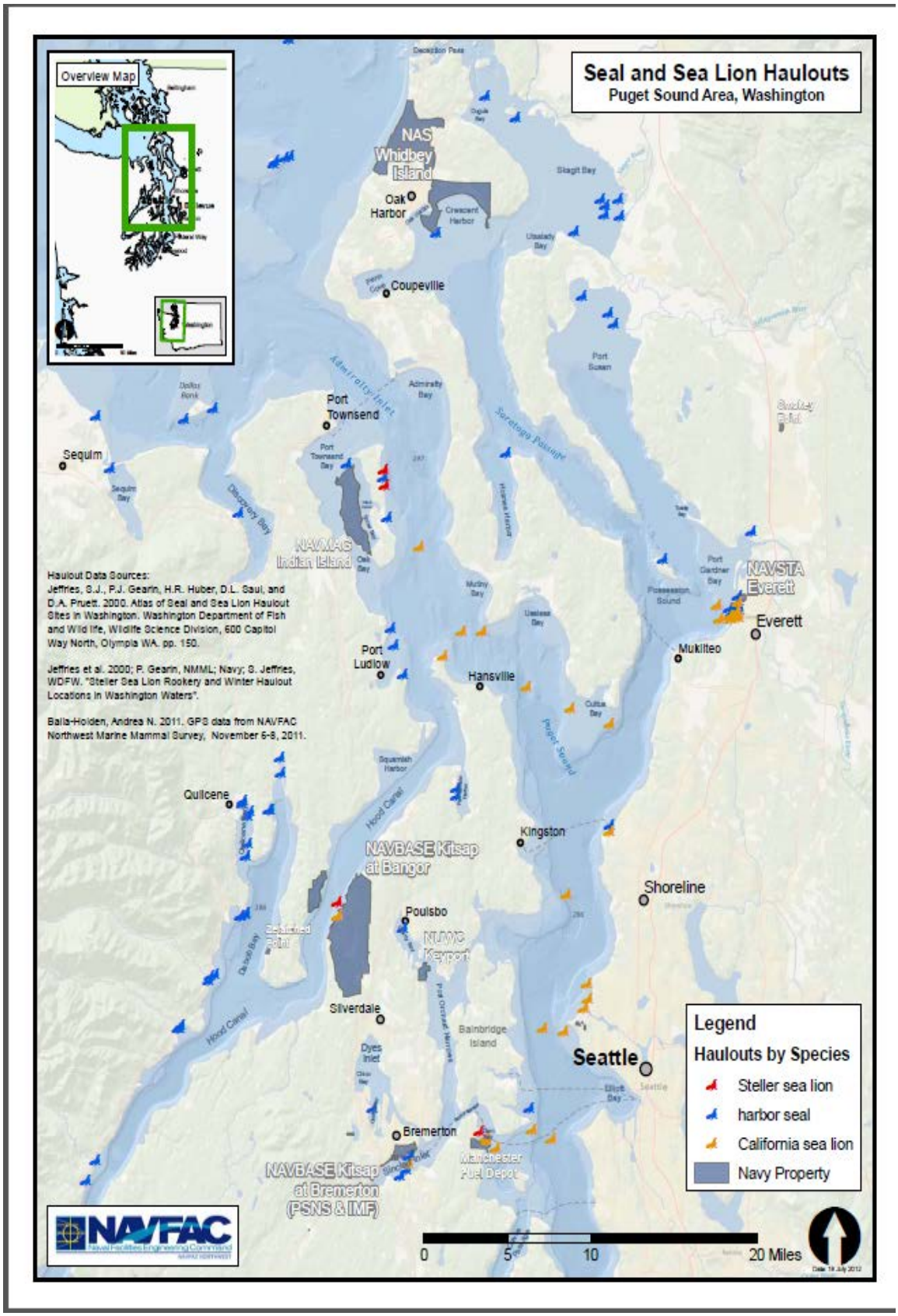


Figure 4-2. Seal and Sea Lion Haulouts

MMPA Definitions

Take

To harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal.

Harassment

The Administration transmitted its Marine Mammal Protection Act reauthorization bill to Congress on June 16, 2005. Among other proposals, the bill includes amendments to clarify the harassment definition:

Section 3 (16 U.S.C. § 1362) is amended in subsection (18) to read as follows:

"(18) The term "harassment" means any act which–

[Level A] injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild; or

[Level B] (i) disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering to a point where such behavioral patterns are abandoned or significantly altered; or
(ii) is directed toward a specific individual, group or stock of marine mammals in the wild that is likely to disturb the individual, group, or stock of marine mammals by disrupting behavior, including, but not limited to, migration, surfacing, nursing, breeding, feeding or sheltering."

The NRM will review all projects, operations and training plans for possible impacts to marine mammals. If impacts to marine mammals are identified, the NRM will provide recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process. The NRM will also inform personnel that operate watercraft about the MMPA regulations and restrictions regarding marine mammals.

If distressed or entangled whales are found at NAVMAG Indian Island, the Environmental Manager or NRM will be immediately contacted. After recording species and location information, the Environmental Manager or NRM should contact the State Patrol or the Whale Hotline (1-800-SOS-WHALE). If a marine species appears to have stranded itself on the beaches of NAVMAG Indian Island, the Environmental Manager or NRM will be immediately contacted. After recording species and location information, the Environmental Manager or NRM should alert the Northwest Marine Mammal Stranding Network (1-800-767-6114).

4.6.9 Terrestrial Mammals

Managing habitat for diversity, protection and enhancement will have the greatest benefit for wildlife on NAVMAG. The NAVMAG NRM will review all projects, operations, and training plans for possible impacts to terrestrial mammals, realizing, however, that many minor as well as major projects may impact small mammals such as mice and voles, without consequences to the health of the populations of these species. If serious impacts to terrestrial mammals on NAVMAG are identified, the NRM will provide recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process.

4.6.10 Birds

Migratory Bird Treaty Act

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing or possessing migratory birds is unlawful. Additionally, the Navy conforms to EO13186 Responsibilities of Federal Agencies to Protect Migratory Birds, the DoD/USFWS Migratory Bird MOU 2013 and Military Readiness Rule Part 21.15.

Prohibited Acts: Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or receive any migratory bird, part, nest, egg or product, manufactured or not.

50 CFR 21.15 - Authorization of take incidental to military readiness activities, defines those times when and if incidental take of birds due to military readiness activities applies.

On March 15, 2005, the U.S. Fish and Wildlife Service published in the Federal Register (FR 70(49):12710-12716) a final list of the bird species to which the MBTA does not apply because they are not native to the United States and have been introduced by humans everywhere they occur in the nation. The list is required by the Migratory Bird Treaty Reform Act of 2004. The actual list of migratory birds protected by the MBTA is published in the Code of Federal Regulations (Title 50, Part 10.13). When it became law in 2004, the Reform Act excluded any species from protection not specifically included on the Title 50, Part 10 list.

In addition, a MOU between USFWS and DoD (2014) identifies specific activities where cooperation between the two agencies will contribute to the conservation of migratory birds and their habitats. The MOU describes actions that should be taken by DoD to advance migratory bird conservation, avoid or minimize the take of migratory birds, and ensure DoD activities (other than military readiness activities) are consistent with the MBTA. The MOU describes how DoD and USFWS will work together cooperatively to achieve conservation of migratory birds. The 2008 Birds of Conservation Concern (BCC) list (USFWS 2008) identifies 32 species in the Northern Pacific Forest Region. Migratory birds and specifically those on the BCC list may fly over or be occasional visitors to the installation.

The NRM will ensure compliance with the MBTA and meet the intent of the 2014 MOU. Individual projects will be evaluated for potential effects to migratory birds and appropriate consultations conducted with USFWS. One mechanism to accomplish this will be to identify proposed projects that could potentially affect migratory birds and discuss them at the annual INRMP evaluation and conservation metrics meeting.

Nuisance birds inhabiting Navy installations in the northwest include the glaucous-winged gull, Canada goose, rock dove, Eurasian starling and house sparrow. Gulls and geese are a nuisance because of the large amount of feces they produce. Local Navy installations, including NAVMAG, have contracted with U.S. Department of Agriculture Wildlife Services (USDA WS) to control these problem birds on some installations. USDA WS has the expertise and required permits to deal with all nuisance wildlife species.

Partners in Flight

In 1990, the National Fish and Wildlife Foundation initiated the Neotropical Migratory Bird Conservation Program, known as "Partners in Flight - Aves de Las Americas." The purpose of the program is to bring together the diverse array of groups and individuals involved in the conservation and management of birds and their habitats. The initial focus was on neotropical migrants, but has now spread to include most birds requiring terrestrial habitats. The PIF strategy for effective conservation relies on setting realistic

biological priorities, using an appropriate geographic scale and applying an ecosystem management approach. The primary goals and objectives of the DoD Partners in Flight program are to:

1) Apply information collected from this partnership program to support DoD mission requirements;
2) Take proactive management actions to prevent bird species from reaching threatened or endangered status;
3) Facilitate cooperative partnership efforts consistent with the military mission;
4) Determine the status of migratory and resident bird populations on DoD lands and the causes of population fluctuations;
5) Reduce bird aircraft strike hazard risks through implementation of` mobile radar;
6) Maintain and restore priority habitats on DoD lands for migratory and resident bird populations;
7) Reduce or eliminate pesticide use in sensitive habitats, especially in and around wetlands and riparian areas;
8) Reduce the spread and impact to birds and their habitats of invasive and nuisance species on military lands, including feral cats.

For further information on the DoD Partners in Flight program go to http://www.DODpif.org (Department of Defense 2002).

Bird/Animal Aircraft Strike Hazard (BASH)

There is a helicopter pad located near Crane Point on the west side of Indian Island. Helicopter flights are very rare. The pad is maintained but there is no BASH plan required for the helicopter pad at this time.

Bald Eagles

Bald eagles are protected federally under the Bald and Golden Eagle Protection Act (16 USC 668) and the Migratory Bird Treaty Act (16 USC 703).

Ten bald eagle nests representing ten separate territories occur on Naval Magazine Indian Island. The bald eagle management plan is contained in Appendix B.

4.6.11 Noise in Water and Air

There is increasing concern regarding the effect of human-generated (anthropogenic) noise on marine organisms. While most concern is focused on marine mammals, many of the lower frequency (under 1,000 Hz) sounds are also likely to affect fish (Popper 2003).

At NAVMAG Indian Island, the NRM will review operations and projects for potential noise impacts to fish and wildlife. The NRM will recognize that some project actions (such as pile driving) may result in noise and may negatively affect nearby species. The NRM will work with project and program managers to reduce the effects of anthropogenic noise on fish and wildlife. The NRM will use his or her expertise to advise the command and program and project managers in the use of BMPs to reduce or eliminate the effects of noise on fish and wildlife.

4.7 Forest Management

4.7.1 Introduction

Naval Magazine Indian Island forest lands extend over approximately 2,100 acres. The recent history of forest management on the installation can be surmised from the existing timber stands. The majority of existing trees are 80 to 130 years old. This indicates that most of the acreage was harvested by homesteading pioneers prior to Navy acquisition of the property in the late 1930's. Over the last two decades, forest treatments have focused on thinning to enhance diversity, release cuts, pre-commercial thinning and reforestation to re-establish coniferous stands. Some lands have been cleared of all timber for military construction projects.

Reforestation of areas harvested in the 1870s and subsequent decades resulted from natural seeding coinciding with favorable environmental conditions for the establishment of seedlings. Since Douglas-fir dominated the acreage adjacent to harvested areas, it was the primary tree available to produce abundant seed. Naturally established stands of Douglas-fir therefore tend to be very dense, often containing more than 2,000 stems per acre at an early age. The existing stands have essentially developed naturally. While stands are dominated by Douglas-fir, shade tolerant species such as western red cedar, grand fir and western hemlock are also present in large numbers. Common broadleaved tree species are big leaf maple, red alder, willow, madrone, wild cherry, quaking aspen and cottonwood.

The most recent forest inventory and mapping were accomplished in fiscal year 2000 resulting in a map of forest stand type. The forest stands are the basis of the development of site specific stand treatment prescriptions used to produce this plan, see (U.S. Navy. Jones, Terri. Naval Magazine Indian Island. Forest Map Stand. North. & U.S. Navy. Jones, Terri. Naval Magazine Indian Island. Forest Map Stand. South.).

In accordance with Department of Defense and Department of Navy requirements, the Navy Forest Management Program is centrally funded and executed through the Naval Facilities Engineering Command. The Forester, NAVFAC NW, Silverdale WA, will provide professional forestry services to manage and develop the forest resources for the economical production of forest products and the conservation or enhancement of related resources.

The Forest Management Program and Forestry Funds are centrally-managed and centrally-funded by Commander, Naval Facilities Engineering Command (COMNAVFACENGCOM). Thus, all forestry services for the purpose of habitat enhancement are provided to the installation at no cost to the base command. This includes professional forest management services, forestry projects, consultations, natural resources education, and, when requested by the base command, representation with outside natural resource conservation groups and the media.

4.7.2 Purpose and Objectives

This section of the INRMP provides programmatic and silvicultural policy for management of forest resources at Naval Magazine Indian Island. It outlines procedures, projects and silvicultural prescriptions to restore, enhance, conserve and protect the productivity and resources of approximately 2,100 acres of forest on the installation.

The INRMP silvicultural prescriptions address second growth forest stands including those that contain relict old growth trees as well as restoration of the coniferous forest areas impacted by construction and military uses which are no longer needed. The prescriptions are consistent with DoD policy that forest lands suitable for timber production shall be intensively managed for restoration and improvement of forest resources. The prescriptions must support economical production of commercial forest products, based on

soil-site capabilities, integrated with the total natural resources program, and in consonance with military uses.

Installation forests will be managed on a multi-disciplinary, multi-use, watershed basis. This means that other natural resources programs and uses, such as, wildlife management, endangered species protection, wetlands protection, outdoor recreation, etc., will be addressed in association with forest projects to ensure that natural resources program objectives and the military mission are appropriately incorporated. Specific management strategies and prescriptions are presented later in the document.

The forest management objectives at the Installation are: (1) continue to maintain the timber stands in a healthy, productive condition through selective thinning that will increase tree and stand vigor and enhance structural diversity; (2) support the military mission by maintaining land availability and use options and providing a diverse training environment. Retain accessibility by enhancing slope stability along forest access roads and the portions of the Installation that are affiliated with direct mission operations and reduce wildfire hazards in critical areas; (3) preserve relict old growth trees; (4) protect water quality in drainage courses, wetlands, ponds and shorelines; (5) generate forest products and income through timber sales contracts; (6) integrate forest management with other natural resources disciplines and programs to protect natural resource attributes associated with the forested acreage on the installation; and (7) support natural resources aspects of outdoor recreation, education and public relations.

Navy forest management policies include mandates to conserve and enhance natural resources, maintain soil and water quality and provide financial returns to the Government, as well as contributing forest products to the local economy. Applying a conservation stewardship ethic on the land contributes to increasing confidence that the Navy is committed to quality natural resource management that complies with federal law, and enhances habitat conditions. The conservation ethic influences the preparation of annual increments and the selection of silvicultural techniques and projects used on Navy forests. Annual increments will be reviewed with installation natural resource personnel prior to implementation to assure compatibility with mission requirements. When implemented, the project and prescriptions of this plan will enhance the structural diversity of forest stands to improve biological diversity and to encourage development of late-successional forest conditions that are deficient on this landscape.

Schedule for Review:

The forestry aspects of this plan will be reviewed and updated yearly during the annual INRMP review period or as needed. For example, this plan will need revision when: (1) the prescriptions have been fully implemented; (2) when sufficient time has passed and, in the absence of plan implementation, natural processes have so changed the forest conditions that the plan no longer reflects existing conditions; or (3) when sufficient land use changes have occurred as a result of mission requirements that the plan needs adjustment. Given recent types and intensities of mission uses, it is anticipated that annual reviews and a 5-year update schedule are appropriate.

4.7.3 Policies

The Navy Forest Management Program will be administered in compliance with applicable laws and regulations. Planning, budgeting, fiscal management, reporting and implementation will be in accordance with DoD program requirements, including forest management initiatives, mission support, positive community relations and public affairs, ecosystem forest management, and environmental protection.

In order to achieve Navy policy, this forestry plan will: stay within sustainable yield production rates, provide for conservation and management of quality habitat consistent with proven scientific practices. This means that for stand prescriptions:

1) forest management will be holistic to include a wide array of natural resource uses, values and functions;

2) wildlife and fisheries issues are incorporated into forest management planning, project criteria and operations;
3) wildlife trees, snag retention and wetlands protection are integral parts of timber sales;
4) thinning prescriptions will improve vertical and horizontal structural diversity to foster greater opportunities for biological diversity;
5) stand prescriptions will contribute positively to enhancement of wildlife habitat and corridors, and endangered species protection, conservation and recovery if needed;
6) wetlands will be protected not only within jurisdictional boundaries, but including hyporrheic zones. Particular protective attention will be given to palustrine wetlands;
7) adjacent land conditions will be considered in prescriptions and implementation schedules.

4.7.4 Implementation

The Forester, NAVFAC NW will provide professional forestry services to manage and develop the forest resources for the economic production of forest products and the conservation of related resources. The Forester will prepare, and review with the installation NRM, the forestry Annual Work Increments. Annual Increments are INRMP addenda which describe planned forest management work to be completed during a fiscal year. Upon approval of the Annual Increment and receipt of funding, the year's forestry work may be implemented.

Reimbursement for the cost of managing forest resources for timber production associated with habitat enhancement is authorized by 10 USC 2665 from the sale of forest products. Forest product sales are accomplished in accordance with NAVFAC P-73, Volume II. Service contracts used to acquire forestry services are processed per the Federal Acquisition Regulations. The Forester will provide technical specifications, and contract administration in support of all forestry contracts.

4.7.5 Forest Description and Inventory:

An inventory of forestland areas was conducted in 2000. Forestland areas were grouped based on dominant tree species, stem density/acre, age, and diameter. The results of this inventory are summarized in (International Forestry Consultants, Inc. 2000. Timber Inventory – Naval Magazine Indian Island, Port Hadlock, WA). This data can be used to select forested areas for thinning, prioritization for treatment, and other appropriate management prescriptions. The forested area on NAVMAG Indian Island includes some unique habitats. A new survey is currently in progress and will be included in (International Forestry Consultants, Inc. 2000. Timber Inventory – Naval Magazine Indian Island, Port Hadlock, WA) when complete.

4.7.5.1 Vegetation Characteristics

The existing forest stands on NAVMAG Indian Island land components may be generally classed in four broad categories: second growth mixed conifer; second growth mixed conifer and broadleaved; ruderal or emergent (<30 years old) broadleaved or conifer and developed areas with individual or patches of trees. Large relict trees occasionally occur in each of the types.

Second growth mixed conifer forest dominates the installation. It is the result of logging that occurred between the 1880s and 1930s. The second growth stands are dominated by conifers such as Douglas-fir, grand fir, western hemlock and western red cedar. Pacific yew, shore pine, and western white pine, are present in lower numbers.

Second growth mixed conifer and broadleaved stands have the above conifers plus fractions of big leaf maple, black cottonwood, quaking aspen, wild cherry, willow, vine maple and red alder.

Ruderal or emergent, broadleaved or conifer generally occurs on disturbed sites. Some of these areas are naturally occurring as a result of past disturbance, cleared zones and areas impacted by historic construction or landfills.

Developed forest areas are very small stands, clumps of trees or individual specimens found in pre-existing housing and other industrial and support areas.

Overall, most second growth and mixed stands are very densely stocked above the desired 100 stems per acre level and are deficient in understory vegetation, reproduction and structural diversity resulting from high stem densities that preclude adequate light from reaching the forest floor. Understory characteristics (understory calls) are included in the forest inventory.

4.7.5.2 Forest Soils

Soil characteristics are used to predict the probable impact of various forest management practices on individual soil types. Probable impacts predicted include: timber productivity, soil compaction potential, slope stability, competing vegetation and susceptibility to wind throw. Refer to the USDA Soil Conservation Service (sic) "Soil Survey of Jefferson County Area, Washington (August 1975)" for specific soils mapping units, profile descriptions and pertinent land use information. A NAVMAG soils type map can be found on page 2-8.

4.7.6 Management System

A forest management system to retain tree viability and reduce mortality will be applied. Treatments such as selective thinning will be used to enhance growing space, retain vigorous trees, foster a mix of forest age classes, species composition and preserve large trees and T & E species habitats. It is not considered appropriate to fragment the forest into a number of stands equal to a rotation age. Rather, existing stand delineations will be the planning base for development of future age classes. This may be accomplished by the application of variable thinning spacing's strategically placed in the landscape in addition to changes caused by natural disturbances.

Selective thinning will dominate forest activity over the duration of this plan. Many of the forest stands are homogeneous, densely stocked second growth that would benefit from density management. Progress has already been made in thinning forest areas using horse logging. It is anticipated that in some years there will be additional selective thinning and/or tree planting. Planting will be focused on restoring areas currently dominated by invasive species to native species with the long-term intention of using conifer shade to control the spread of invasive species (i.e. scotch broom) while concurrently re-establishing habitat qualities to these areas. A typical harvest prescription will specify that at least 80 selected quality tree species, "Leave Trees", be left uncut and undamaged on each acre, variably spaced throughout the thinning area. In general, no cedar or Pacific yew trees will be cut. In addition to the specified Leave Trees and all cedars, small non-commercial sized trees will be left intact. This includes less prevalent species such as wild cherry, willow, cottonwood, yew, quaking aspen, etc. The purposes of this approach include:

1)sustainable forest management without diminution of future diversity and productivity;
2)minimizing stand disturbance while opening up the canopy sufficiently to allow more sunlight to reach the forest floor and foster development of a variety of understory species;
3)preserving and enhancing both horizontal and vertical structural diversity through retention of shade tolerant understory trees and development of grasses, forbs and woody brush species;
4)providing a population of understory and suppressed trees that are recruitment for snags in future decades;
5)providing species and structural diversity that will enhance forest stands for wildlife.

Snags, Hollow Logs and Wildlife Trees

Snags and hollow logs play an important role in forest ecology. Timber sale contracts will, to the degree feasible, protect snags and large down woody material. In addition, trees deemed unique or of special interest for wildlife, such as advanced second growth specimens, isolated relict old growth, trees with large limbs or cavities, or less prevalent species (yew, cottonwood, big leaf maple, wild cherry, willow, etc) will be protected in timber sales contracts and may be field marked with signs or paint prior to advertisement of a timber sale.

Snags and downed hollow logs, important to cavity-nesting birds and other animals, will be left uncut except when determined by the Forester, in consultation with the timber purchaser, to present a safety hazard and no alternatives are available for working around the snag. All naturally downed logs will be left on the forest floor, to provide habitat for wildlife including small mammals, salamanders, insects and other arthropods. Slash left from cutting the tops and branches off of harvested trees will be left on the forest floor to allow it to decompose naturally unless it is in an area where reduction of forest fuels is necessary to protect critical infrastructure from wildfire.

Species To Be Grown

Douglas-fir is the dominant species that is well adapted to most stands on Indian Island. Western red cedar is also a valuable tree for commercial and structural diversity functions. Cedar can be grown on a rotation probably equal to twice that of any other species. Because of shade tolerance and persistent foliage, it is critical for horizontal and vertical structural diversity in the forests. Garry oak trees will be protected and preserved. Other less frequent species will be also emphasized in selecting leave trees to foster short-term and long-term biodiversity.

In the last few years red alder has increased in value as a commercial species in addition to its known habitat values. As a result, silvicultural prescriptions will consider enhancing red alder growth to support its role in the ecosystem as well as its commercial value.

Natural regeneration of other native species such as alder, willow, wild cherry, hazel nut, big leaf maple and vine maple is expected to diversify the habitat qualities of stands thinned or replanted.

Reforestation

Reforestation will use a mixture of site-adapted native coniferous and deciduous species. Plantings will be conducted the first planting season after harvest to achieve full stocking, which is defined as at least 302 live stems of commercial seedlings per acre. This equals planting seedlings 12 foot on center. Hand planting conifer seedlings will be the method used to reforest openings or to fully stock deficient stands. Hand planting will be accomplished by service contract.

Some planting areas may be cleared and scarified mechanically prior to planting. This is most likely in severely compacted areas of heavy grass and/or brush competition. Spot application of herbicides may be used as part of the pre-planting site treatment as a last resort for control of competition to support establishment of native forest species.

Deer browsing pressure on forest seedlings is a problem on Indian Island. Repellants or physical seedling protection may be necessary at some sites.

Rotation and Cutting Cycle

It is not desirable to set a rotation and cutting cycle for the entire Indian Island forest at this time. Setting rigid rotation ages and cutting cycles reduces the options needed to respond to natural disturbances and to effectively achieve the objectives of maintaining vigor, health and structural and biological diversity for all forest resources. Instead, this plan will focus on intermediate silvicultural treatments and thinnings that

promote structural diversity, and protect or enhance wildlife habitats and water quality. However, it is anticipated that pre-commercial and intermediate commercial thinning will be followed at some point in the distant future by a final harvest at a rotation age well in excess of 100 years. It is possible that the final harvest rotation would more likely occur between stand ages of 150 and 300 years. Some species such as western red cedar may even require a longer rotation age, up to 400 years to achieve log form and grade that could produce high quality wood products. Using an extended rotation allows for development of high quality forest habitat and forest products, which will provide increased structural and biological diversity supporting a mixture of consumptive and non-consumptive products, values and functions.

Allowable Annual Harvest

The annual growth on Indian Island will improve as the stands are stocked and treated. The allowable annual cut will not be determined for this plan since the remedial and developmental treatments are considered intermediate. When the plan is revised subsequent to completion of all intermediate treatments the stands may be in a condition favorable to determination of a cutting cycle, rotation age and allowable annual cut. It is not anticipated that an allowable final cut would necessarily involve harvests every year.

Silvicultural Treatments

1) Methods of Cutting. Clearcut final harvest is the silvicultural system best suited to the regeneration of Douglas-fir. Young Douglas-fir trees are the least shade-tolerant of any of the other commonly associated conifers. Partial cutting would favor the establishment of more shade-tolerant species and a gradual shift in stand species composition away from Douglas-fir towards more shade-tolerant but less commercially valuable species such as grand fir and western hemlock. The increase in shade tolerant species will increase the value of species that favor vertical diversity and contiguous interior habitats. Except in cases of salvage of timber due to natural disturbance such as windthrow, deadfall, pest infestation/outbreak, landslide, fire or other disturbance clear cutting will not be used under this plan as a silvicultural treatment.

Variable density selective thinning will be the system used in both pre-commercial and commercial thinning's for the duration of this plan. Intermediate selective cutting will be used to thin stands for the concentration of growth, development of horizontal and vertical structural diversity, increase in value of the residual trees and to salvage mortality losses. Commercial timber sale thinning and pre-commercial service contract thinning are viable options. Thinning will improve stands by removing smaller, suppressed or diseased trees, inferior species and damaged trees.

In drainage corridors, special care and restrictions will be used, such as machinery exclusion, to assure development of a healthy and vigorous stand of trees that will provide ample opportunity for wildlife uses while shading watercourses to maintain preferred water temperature regimes. In the vicinity of raptor perch or nest trees, selective thinning will be used to assure development and perpetuation of vicinal large, open-grown trees similar to those already chosen as perches.

2) Insect and Disease Control. Insect and disease problems have not reached epidemic proportions on the installation in recent years. The following specific forest pests are the most frequently encountered and are listed along with the prescribed control method:

a) Tent caterpillars are present in broadleaved trees and do considerable defoliation. Whole trees may be defoliated. Alder is seldom killed by this, and investment in forest control measures (notably spraying) is not warranted.
b) Root rot is a persistent problem, especially on some of the heavier clay soils. Often, infected trees also fall prey to bark beetles, which speed loss of foliage and mortality and may offer the first outward sign of fungal infection. A great deal of control can be accomplished by clearcutting the patches where root rot is evident, perhaps to include tipping over the stumps, and planting back to a tolerant species.

c) Douglas-fir bark beetle is frequently seen as a secondary invader of trees weakened by old age or disease. This insect has the potential for epidemic attack, but proper forest sanitation including thinning and harvest of over mature or diseased trees should keep it under control if it becomes a problem. In such cases, patch cutting will be used to salvage infested areas.
d) Douglas-fir tussock moth has built into an epidemic in southwest Washington, but has not yet been identified on the installation lands. If this defoliating insect does become a problem, control will be difficult. "BT", a biologic control agent may be adapted to tussock moth control in the future. At present, aerial application of insecticides is the only known control method. Any pesticide application will have to be thoroughly reviewed and approved prior to use.
e) White pine blister rust, an introduced disease, has virtually eliminated white pine from serious management at this time. White pine is a minor species on the installation. Use of rust-resistant strains will support planting white pine in the future to contribute to species diversity.
f) White pocket rot is a fairly common pathogen in Douglas-fir and is occasionally seen in young second growth. Patch cutting harvest of identifiably infested trees plus a surrounding transition area is the best control.
g) White heart rot is a very destructive disease of alder. This fungus is responsible for the slow destruction of alder stands after the age of 40 or 50 years. The best control is the harvest of mature alder before the fungal losses take their toll. Particularly near fences, power lines, etc and in recreation areas where there is pedestrian use, hazardous alders should be removed.
h) Gypsy moth is a recently introduced forest pest that has shown great capacity for destruction and sudden epidemic growth in Washington. Both the European and Asian gypsy moths are of concern. They have not been detected on Indian Island. The Navy will continue to cooperate with state and federal agencies conducting surveys for the moths.

3) Wildlife Damage Control. Deer browsing the growing tips of young Douglasfir cause reduced height growth and in extreme cases may stop height growth completely until the size of the deer herd declines.

4) Fire Suppression. Past forest fires at Indian Island occurred prior to Navy ownership. Forest fire detection would be by observation from the installation or adjacent lands. Given the controls on recreation, the most common source of ignition, human activity, is limited to industrial areas and Moral, Welfare and Recreation (MWR) sites. A fire originating in an MWR site is unlikely due to the lack of fuel. Suppression of wildfire would be accomplished by a combination of installation assets and local fire departments. Timber sale contracts require spark arrestors, fire tools, fire watchman and suppression and reporting of any fire on the sale area. During periods of high fire danger, additional equipment such as a tank truck or trailer with pump and hose may be required or operations may be halted. Logging activity restrictions and shutdowns are at the discretion of the installation Commanding Officer, or follow Washington Department of Natural Resources Industrial Fire Precaution Levels, whichever is more restrictive. Service contracts for silvicultural treatments also contain fire prevention and suppression requirements, although this is not the same threat because of the lack of spark producing equipment in most cases.

5) Slash Treatment. Logging slash, the residual tops, limbs and non-merchantable logs, will be treated after harvest by lopping and scattering within the forest, chipping, or piling. Piling of slash and undesirable brush clears the soil for reforestation and breaks slash into manageable portions for fire safety. Slash piles will decay over a period of years while slowly releasing organic nutrients back to the new cycle of growing trees. Concentrations of slash will be removed to a minimum of 25 feet from roads and structures.

Personal Use Forest Products Program

A personal use forest products (e.g. firewood cutting) program is established for regional installations. This is an opportunistic program, with the suitable materials dependent upon availability in accessible areas. This is not necessarily a year-round program. In accordance with law and regulation, forest products are government property that may be disposed of through prescribed, legally sufficient and compliant methods. For the personal use forest products program, this means that a permit must be issued. Fees are collected for the sale of forest products and are evaluated and established annually in the Annual Increment for the installation. These fees are collected via a special permit provided by the NAVFAC NW Forest Management Program, serialized and tracked. The funds received for firewood are deposited to the Navy Timber Sales Receipts Account pursuant to "Department of Defense Instruction 7000.14-R: Accounting for production and sale of forest products".

The NAVFAC NW Forester will cooperate with the installation to identify suitable and available forest products.

4.7.7 Natural Resources Protection Considerations in Forest Management

In accordance with The SAIA requirements, this Plan will be implemented upon approval. The designated NRM at NAVMAG Indian Island and the Forester at NAVFAC NW will implement forestry plans and projects in a coordinated manner to achieve prescriptions and goals. While NAVMAG has overall responsibility for the Plan, NAVFAC NW administers the Navy's centrally-managed Forest Management Program. As such, NAVFAC NW is responsible for planning, budgeting and executing forest management activities in coordination with the installations approval.

4.7.8 Control of Non-Point Sources of Water Pollution

1) Pesticides. Currently, the only anticipated use of herbicides would be spot applications where heavy grass sod, brush or weed infestation will substantially compete with planted trees. If and when pesticides are used as a last resort, they will be applied by trained and certified personnel in accordance with DoD, DoN and EPA rules and regulations.

2) Erosion Control. Erosion in forest areas is not a problem because of gentle terrain, minimal exposure of bare mineral soils, typically dense understory; vegetative cover and infrequency of silvicultural treatments. Natural development of the forest, timing of silvicultural treatments, choices of low-impact technologies and improving understory vegetation will continue to protect the soils.

Skid trails on slopes steeper than 10% will be located or water-barred to prevent water quality impacts caused by channelization. The risk of erosion during logging and early regeneration is greatly reduced by tree retention as a result of selective harvest, planned location and method of harvest, the use of uncut buffer strips on some sites, and early planting to establish root strength and increase soil stability. Erosion from forest access roads will also be minimal since existing roads will be used to the degree feasible. New forest haul roads to be constructed for silvicultural practices will be aligned to take advantage of topography so as to reduce the potential for erosion. After logging operations, roads may be left open to address other access objectives or may be revegetated.

3) Logging Debris. Logging slash will be treated as previously described and in some cases will be distributed in a manner to reduce, or trap, erosion as needed

4) Riparian Zones. The restoration and enhancement of buffer strips along existing watercourses will be a direct benefit to riparian habitat quality. Equipment exclusion, directional falling and other techniques will be employed to protect riparian zones.

5) Wetlands Protection. Wetlands will be protected in accordance with applicable law and regulation. The erosion control and riparian protection requirements previously described and requirements in timber sale and forestry services contracts will protect wetlands from damage by forestry operations.

6) Endangered Species Protection. Forestry operations will comply with laws, regulations and management plans for the protection of T&E species. This will typically be accomplished by avoiding impact to T&E species through timing forestry work to be done outside the seasonally restricted time periods.

7) Cultural and Historic Site Protection. Known sites will be protected during silvicultural treatments by establishing them as exclusion zones. If additional sites or artifacts are discovered at any time, they will be protected from forestry operations through restriction of treatments and machinery use in areas of concern. Additionally, NAVMAG environmental personnel will be notified to determine the appropriate protection measures. Forestry activities will comply with pertinent laws and regulations.

8) Aesthetics. The question of forest aesthetics is viewed from several perspectives. The common public view of the Navy property is from the nearby mainland or the Puget Sound. For installation employees, the view is from the immediate foreground. From a distance, this affords a vista of evergreen and deciduous trees and open grassy areas. Overall it presents a semi-pastoral scene that is partially developed.

In thinned areas, it is not only what is done to encourage structural and biological diversity, it is also the rate at which it is done which can create a point of tension for some viewers. For instance, up close reforestation efforts appear somewhat harsher than from a distance. Trees cut or pushed over appear less attractive as they turn brown and lose their leaves as compared to when green and upright. Lopped or piled slash looks better from afar than up close. When combinations of treatments occur in areas of visual interest and close in timing, the likelihood of concern increases. As a result, aesthetic values and their potential impact will be considered when developing silvicultural treatment plans.

Aesthetic considerations in forest management are intended to reduce visual impacts of logging and site preparation and include slash disposal requirements, placement and layout of harvest areas, and buffer strips to create visual barriers, when practical, between work areas and main roads.

9) Wildlife Habitat. Reforestation, timber stand improvement and harvest support development of wildlife habitat. Existing dense timber stands shade out the understory plants that provide food and cover for wildlife. Planned thinning and reforestation enhance young forest stands to develop an increased diversity of species such as grass, forbs, woody shrubs and trees for food and cover. Specifically, treatments open up the forest canopy to allow sunlight to reach the forest floor so that the understory growth will be enhanced to improve foraging, nesting and thermal cover for wildlife. Consequently, predators will benefit. Some species preferring closed canopy habitat will be displaced until the young trees reestablish a closed canopy.

10) Multiple Use. Within the constraints of mission and safety requirements, the forests are managed for multiple use to produce sustainable wildlife, timber and other forest products; clean water, military training and recreational opportunity

11) Road Construction. The existing roads developed for logging, construction and operation of the installation are generally sufficient for forestry activities. To implement silvicultural treatments, it may be necessary to place crushed rock on existing roads, or to develop temporary haul spurs. Haul spurs will be minimized and developed using old grades where possible. Where these do not exist or present unacceptable risks, new spurs will be created by meandering between Leave Trees. Road construction will be minimized in order to retain as much land as possible in production and to minimize land disturbance and costs. Reforestation will be up to within 6 to 10 feet of road edges to eventually shade out occluding ruderal vegetation and to fully stock the site. Full stocking will eventually function as a means of maintaining the

road corridor. Within cutting areas, road construction will be limited to temporary spurs as narrow as possible. These temporary spurs will be waterbarred or otherwise treated (seeding, cross ditching, etc) to reduce erosion.

4.7.9 Work Objectives and Thinning Criteria

The long term forest management goal is to achieve fully stocked, healthy, productive, mixed conifer stands of timber for sustainable yield of quality forest products and other compatible forest uses and benefits; and to provide land use opportunities for military training, installation security and outdoor recreation and education. Over the span of this plan, this will involve thinning, plantings, and, in the case of natural disaster or pest infestation, small patch clearcuts if needed. Since the bulk of the prescriptions are remedial silvicultural treatments to improve the health, vigor and structural diversity of the stands and forest as a whole, it is desirable that some work be accomplished each year under this plan. Specific recommendations are given below.

Sales Procedures

The NAVFAC NW Forester provides professional forestry services to the installation to manage and develop the forest resources within the facility for the economical production of forest products and the conservation of all forest resources. In cooperation with the installation, the Forester recommends the areas to be treated based on overall goals, silvicultural needs, resource protection considerations and stand inventory data; analyzes the potential for environmental impacts of proposed silvicultural treatments; completes the field work, including volume and value estimates, project or sale boundary establishment, snag and wildlife tree marking, and access spur layout and design; prepares and administers the contract. All logging activities shall be carried out under contract issued by NAVFAC NW and will comply with all aspects of the current NAVMAG Indian Island INRMP. Sales of forest products are accomplished in accordance with NAVFAC P-73, Volume II. Service contracts used to acquire forestry services are processed in accordance with the Federal Acquisition Regulation. Sales of forest products and forestry services cannot be combined under one contract.

The Forester will prepare timber sale contracts and administer them from advertisement and award through operations and completion. The installation will be kept advised of the schedule and progress of all forestry operations and any environmental issues that arise. Following award, the Forester will inspect timber sales to assure contract compliance and protection of the forest environment. Forestry services contracts will follow similar procedures.

Forestry Consultations and Support

The Forester will mark project boundaries, wetlands and riparian buffers, prepare and administer contracts, and coordinate forestry projects for commercial and pre-commercial thinnings, plantings and other forestry work as needed. This includes forestry consultations in support of installation operations, maintenance, repair, and construction projects.

Public Relations

The Navy's natural resources management has generated significant interest over the years. If requested by the installation, the Forester can support tours, consultations and natural resources education events. All public events will be thoroughly coordinated with the installation public affairs officer.

Forest Practices

The following practices are anticipated to be used in managing forested lands and may be applied to varying extents to the forested lands of NAVMAG Indian Island land components.

Forest Thinning

Trees need sufficient growing space to maximize diameter growth rates and to maintain tree vigor and health. Dense stands require thinning to allow tree crowns to expand and provide the leaf area necessary for optimum photosynthesis. Thinning also allows sunlight to reach the forest floor and support the development of grasses, forbs, brush, and tree reproduction in a healthy, multi-layered understory. This understory is essential to horizontal and vertical structural diversity. Thinning provides the opportunity for inspection for and removal of diseased trees that threaten the health of the surrounding trees.

Young, dense stands may be pre-commercially thinned to promote optimum tree vigor and health. Since the trees are too small to generate income, these thinning's, are called pre-commercial. The optimum time to initiate pre-commercial thinning is when saplings are 15 - 30 feet tall, the crowns of adjacent trees have begun to interlock, and dominance has been established. It is recommended that no more than approximately 16 feet of growing space be established between high quality or dominant "leave trees." All other trees between the leave trees are cut down and typically left on the forest floor to decompose, enrich soils, and recycle nutrients. An average spacing of 16 feet between trees establishes an after-thinning density of about 170 trees per acre. No wheeled or tracked equipment will be used, therefore there is no potential for soil compaction, and work can be done at any time of year. About 20 years following pre-commercial thinning, the stand should be evaluated for a first commercial thinning.

Commercial thinning presumes that the income derived from the thinning will more than pay for the associated expenses. If properly conducted, a thinning should first remove the poor quality trees, leaving the best trees to grow. Considering the average tree diameter and age of the units needing commercial thinning on NAVMAG Indian Island land components, it is recommended that a spacing that provides for wind resistance and room to grow be determined based on stand history, location, height to diameter ratio, etc. Typically, commercial thinning has averaged approximately 20 feet between trees, establishing an after-thinning density of about 100 trees per acre. For those soils with a high soil compaction potential, skidding activities should be scheduled for the summer or fall months, or other periods of low soil moisture and limited in extent, capitalizing on previously existing skid trails. Scarring of the trunks of residual trees resulting from the falling or skidding of harvested trees should be kept to a minimum, since these scars serve as rot infection centers. Timber sale contracts and pre-commercial thinning contracts will contain definitions, terms, and conditions addressing excessive damage and penalties for exceeding allowable levels of damage. Felled trees are typically limbed, topped, and bucked into log lengths where they lay and their slash lopped and scattered evenly over the forest floor to decompose in depths averaging no greater than 24 inches above grade. This height limit may be exceeded in cases of desirable large organic debris. Any tree removal will be reviewed and approved by a NAVFAC Northwest Professional Forester and must have concurrence from the NAVMAG Indian Island Commanding Officer and Environmental Office.

The commercial products that would result from forest thinning include primarily Douglas-fir sawlogs, and some pole or piling grade material. Lesser quantities of sawlog red alder, western hemlock, western red cedar, western white pine, and grand fir may also be generated. Smaller-sized or poor quality material of these species could be utilized as chip and saw, pulpwood, or firewood.

Tree Planting

The habitat qualities of forested areas at NAVMAG Indian Island land components can be expanded and enhanced by planting trees in unforested areas, to the extent it is compatible with other land use requirements. Inter-planting to replace mortality and additional plantings may be conducted in both forest land and developed areas. Planting will often be associated with site preparation that involves management of invasive species and may include use of goats to reduce competition from invasive species.

Stand Prescriptions

The following silvicultural prescriptions are somewhat general and may be adjusted on a case-by-case basis to address specific site characteristics as determined by site visits near the time of treatment.

Second growth coniferous stands will be thinned to fewer trees per acre in accordance with the guidelines and policies set forth herein. The objectives are to improve the health and vigor of retained trees, encourage structural and species diversity, and develop understory vegetation. The first thinning in areas dominated by conifers areas will result in an average stocking of approximately 100 leave trees per acre. The second thinning will result in a more variably spaced stand having approximately 80 trees per acre.

Stands of red alder (*Alnus rubra*) that are of lower quality in terms of form, health, vigor, and merchantability and are not located in streams or wetlands may be converted to pre-disturbance coniferous forests; whereby, red alder stems are removed and native conifers are planted in the resulting open areas. Species such as bigleaf maple, wild cherry, willow, and other less prevalent hardwoods will be retained to the degree feasible to provide habitat diversity. Stands of broadleaved trees including red alder that are of higher quality in terms of form, health, vigor, and merchantability and providing they are not located in streams or wetlands may be thinned using a system of habitat (leave) tree release; whereby a habitat (leave) tree will be selected and all nearby trees whose crowns either touch or are directly above the crown of the leave tree will be subject to removal. Thinning prescriptions will be designed with BMP's to protect streams and wetlands.

Open or unstocked areas, to the extent allowable, will be planted with a mix of native species emphasizing those that reflect surrounding natural stands. Patches of disease or infestation may be clear-cut and replanted with the best possible mix of conifers depending on the pathogen present. The prescriptions may be adapted and adjusted as necessary to accommodate site-specific circumstances.

Stand Prescription Priorities

The following list outlines priorities intended to support decisions regarding which silvicultural prescriptions to execute and which prescriptions to wait for later implementation. All prescriptions or planned forestry actions that are a part of a mission critical or hazard reduction project shall have the highest priority over all other projects. However, when projects are not mission critical or for hazard reduction, selection for implementation shall consider the list of priorities below. Implementation of multiple project priorities may occur at one time particularly when there is adequate funding available (e.g., reforestation). The priorities are as follows for prescriptions that:

a) Convert sites with invasive species as a major component into stands with native, healthy, and vigorous vegetation.

b) Contribute to the existing qualities of special or unique habitats such as riparian areas, etc. Rely on pre-commercial thinning to stop density dependent mortality as a means of increasing stand health and vigor.

c) Open canopies to increase residual stand health, productivity, and form while increasing light for the development of a productive understory for vertical and horizontal structural diversity and wildlife habitat and reduce the incidence of competition caused mortality. Stands with the highest relative densities will be treated first.

d) Seek to attain high levels of horizontal and structural diversity through stratification of the stand whereby, large spaced selective thinning with inter-planting is utilized. This will occur primarily on second growth stands of larger DBH that have already been thinned

e) Involve management for interior species habitat; whereby, treatments are utilized to attain late successional characteristics as outline in the Forest Service document PNW-RN447.

f) Prior to project implementation ensure coordination with NAVMAG Environmental staff and field delineation of nearby eagle restricted zones on-the-ground. Incorporate seasonal restriction

requirements in the contract and reflect boundaries on the contract map to improve clarity and ensure compliance by contractor(s).

4.8 Outdoor Recreation

Naval Magazine Indian Island has recreational opportunities including camping, saltwater fishing, beachcombing, birdwatching, shellfishing, hiking, and biking for installation personnel. Because of security restrictions we are not currently able to offer recreational opportunities to non-installation personnel. The Navy's natural resources professionals will support and manage outdoor recreation by providing information, coordinating the timing and location of recreation activities to assure protection of natural resources, compliance with applicable laws and regulations, as well as safety in natural areas.

4.9 Resource Monitoring

At Indian Island the resources monitoring occurs via several different types of methods. The Natural Resources Manager conducts quarterly Environmental Quality Assurance Tier II inspections of natural resources throughout the island as part of the Environmental Management System Program. Additionally, field surveys are conducted at various frequencies (i.e. monthly, annually, one-time only) depending on the type of data being collected by United States Geological Survey, USFWS, NMFS, WDFW, WSDA, tribal biologists, NAVFAC Atlantic and NAVFAC NW. The agency and tribal biologists have surveyed the installation and developed reports for presence/absence, population density, and/or distribution of shellfish, juvenile salmonids, rockfish, forage fish, avian species (including specific surveys for marbled murrelets), bats, eagles, marine mammals, reptiles, amphibians, vegetation, forest stands, eelgrass, and spartina grass. The final reports containing the survey data is kept in hard copy format in the Environmental Office files and the electronic versions are stored on the Regional shared drive.

4.10 Environmental Protection Measures

4.10.1 Project Review Procedure

The installation Environmental Manager or NRM review all construction and maintenance projects performed on the installation. This ensures that the installation is in compliance with all environmental laws and regulations, provides feedback to the program managers regarding costs and length of time to receive permits, and provides an additional design review check to help catch conflicts or other issues that were overlooked by the program managers. The process consists of the following steps:

1) A program manager notifies the Environmental Manager and NRM that a project or maintenance activity will be performed.
2) The program manager provides initial project information, including maps, outlining the project and showing the location.
3) The Environmental Manager or NRM will receive the package and:
    a. log it into a database to track the review process and
    b. send it to the correct Environmental Division staff members for their review and comments.
4) The review coordinator (which may be the Environmental Manager or NRM) will coordinate the comments and return them to the program manager. The review comments will include:
    a. the identification of any environmental concerns,
    b. suggestions for BMPs to minimize or eliminate any potential environmental degradation;
    c. the identification of all environmental permits and other documents required to carry out the project,

d. the designation of the environmental staff person who will write and obtain the permits or carry out the environmental consultation process with outside regulatory agencies,
e. an estimation of any costs necessary to obtain environmental permits or other documents (example: an EIS may require a consultant to carry out the work and these costs would be estimated and provided to the program manager), and
f. provide a schedule for obtaining all permits and documentation.

The above process is a standard practice for the installation and provides for the protection of the environment, natural resources, and health and safety of personnel.

4.10.2 Hazardous Materials Management

The Environmental Division and the Safety Director review and approve all hazardous material usage on the installation. The installation has hazardous materials storage lockers where materials are stored, logged into a tracking system, and issued upon request.

4.10.3 Hazardous Waste Management

The installation has a single 90-Day hazardous waste storage facility on the installation. The installation is staffed with hazardous waste employees whose duties are to pick-up hazardous waste from visiting MSC ships and on-base shops, transport it to the storage facility, profile the waste, repackage it if necessary (prepare for shipment), and manage the proper shipping and disposal of the waste according to the EPA and appropriate state hazardous waste regulations. Hazardous waste sites within the shops are equipped with containment areas and other design facility features to prevent any spilled material from entering storm drains.

4.10.4 Spill Prevention, Control, and Countermeasures

An SPCC plan has been developed for the installation. A full description of the plan will not be provided in this INRMP, but can be found in (U.S. Navy. 2012. Oil Spill Prevention, Control, and Countermeasure Plan (SPCC). Naval Magazine Indian Island, Port Hadlock, Washington). The Environmental Division implements the plan; coordinates training and drills for installation staff; carries out inspections of storage tanks and equipment; reviews project descriptions where a potential release of oil to the environment may occur; and participates as spill response team members in the event of an actual release. The Operations Division is trained and has the necessary equipment to respond to a spill on the water and begin recovery procedures. The installation will call upon the Commander, Navy Region Northwest, for notification and assistance in the event of a spill.

4.10.5 Pest Management

The NRM and Pest Control Manager are responsible for the management of pest problems such as insects and rodents. The NRM will respond to calls for sick or injured wildlife and will either resolve the situation or notify the state for assistance. As mentioned in the Fish and Wildlife section, US Department of Agriculture Wildlife Services or other groups may be brought in to deal with chronic problems with birds or other nuisance wildlife (European brown rats and rock pigeons). Pest management will include feral dog and cat control per Department of Navy Feral Dog and Cat Policy (Figure 4.4).

The installation has an Integrated Pest Management Plan, which provides guidelines for the use and storage of pesticides and herbicides. The NRM reviews the plan and ensures that pesticides and herbicides are used sparingly.

Dept. of Navy Feral Cat Policy

Department of the Navy
Office of the Chief of Naval Operations
2000 Navy Pentagon
Washington, D.C. 20350-2000

In Reply Refer To: 5090, Ser N456M/1U595820, 10 Jan 2002

From: Chief of Naval Operations
Subj: **Policy letter preventing feral cat and dog populations on Navy property**
Ref: (a) SECNAVINST 6410-1A, of 16 Aug 1994, Veterinary Health Services
(b) AFPMB TIM #37, Guidelines for Reducing Feral/Stray Cat Populations on Military Installations in the U.S.
(c) OPNAVINST 6250.4B, of 27 Aug 1998, Pest Management Programs
(d) Executive Order 13112, of 3 Feb 1999, Invasive Species

1. This letter clarifies the application of reference (a) regarding the prevention of free roaming (also called wild, feral or stray) tat and dog populations on Navy installations. The objective is to prevent injury or disease to Navy personnel, and eliminate adverse impacts on native wildlife. It requires Navy commands to institute pro-active pet management procedures in order to prevent establishment of free roaming cat and dog populations. Free roaming cats and dogs pose a potential public health threat to personnel on Navy installations, and they pose a threat to wildlife including endangered species and migratory birds.

2. Existing policy at paragraph 4-2c(4) of reference (a) states Dogs, cats, and other privately-owned or stray animals will not be permitted to run at large on military reservations. Consistent with this policy, Navy commands must ensure the humane capture and removal of free roaming cats and dogs. Consistent with this requirement, Trap/Neuter/Release (TNR) programs will no longer be established on Navy land. All existing TNR programs on Navy land must be terminated no later than 1 January 2003.

3. Responsible pet ownership is a key factor in eliminating free roaming cat and dog populations. In consultation with supporting Army Veterinary Office, installations shall implement appropriate pet management measures to preclude establishment of feral cat/dog populations, including, but not limited to the following:

Require installation residents to keep and feed pet animals indoors or under close supervision when outdoors (such as on leash and collar or other physical control device - cage, fenced yard etc.).

Encourage neutering or spaying of cats and dogs before they reach reproductive age (exceptions to this policy can be made on a case by case basis as determined by the Installation Commander).

Require routine vaccinations of vats and dogs for rabies and other diseases as required by federal, state and local laws and ordnances. A current vaccination record is required at time of registration of pets.

Require microchipping registration (or other system of pet identification approved by supporting veterinary office) of all pet cats and dogs brought onto installations. Installation residents must register cats and dogs and have pets wear registration or identification tags at all times.

Prohibit the feeding of feral animals on the installation.

Provide educational materials to pet owners regarding installation regulations and general pet management.

Enforce prohibition of abandonment of animals on installations.

Comply with all humane and animal control regulations at the federal, state and local level (and their equivalents in host nation countries).

Navy installations in Europe that do not have a supporting veterinary office contact 100th Medical Detachment (VA HQ) (011) 49-622-177-2968; for all other locations that do not have a supporting veterinary office the POC is the VETCOM HQ, Commander (210) 221-6522.

4. Effective prevention, management and elimination of feral cat and dog populations requires close coordination and cooperation between natural resources, pest management, security, veterinary, and housing personnel to develop and implement an effective and humane program. Reference (b) provides information for preventing free roaming cat populations on military installations General pest management guidelines are detailed in reference (c). Every effort should be made to work with other federal, state and local agencies to support reference (a) and reference (d) by eliminating free roaming cat and dog populations on Navy land. Navy commands. should work with local animal control agencies to determine the best approach for the ultimate disposition of the captured animals. Every effort should be made, if practical, to find homes for adoptable feral cats and dogs.

5. My point of contact on this issue is Mr. Joe Cook, CNO N456M, at (703) 602-5335, or DSN 332-5335.

WILLIAM G. MATTHEIS
Deputy Director, Environmental
Protection, Safety and Occupational
Health Division

Don't Let Your Cat Go AWOL

https://www.denix.osd.mil/denix/Public/ES-Programs/Conservation/Legacy/SafeCats/safecats.html

Military bases often struggle with how to manage domestic cat populations. Frequent transfers of personnel often means cats are left behind, abandoned to fend for themselves. Lucky cats find a new human, but most are not so fortunate. Base commanders must deal with how to humanely and cost-effectively resolve the issue of too many free-roaming cats. ***As a cat owner, you are an important part of the solution.***

Figure 4-3. Navy Feral Dog and Cat Policy

5.0 Implementation

This chapter addresses how installation INRMPs will be carried out as a means of supporting the military mission through effective land stewardship. The INRMP reflects a strategy that addresses legal, regulatory, DoD, DoN, and CNO directive or policy requirements regarding funding and manpower. "Implementation" of the INRMP anticipates the execution of all Environmental Readiness Level (ERL) 4 projects and activities in accordance with specific timeframes identified in the INRMP. All actions contemplated in these plans are subject to the availability of funds properly authorized and appropriated under Federal law. Nothing in the INRMPs are intended to be nor construed to be a violation of the Anti-Deficiency Act (31 U.S.C. 1341 *et seq*.).

A list of NAVMAG Indian Island proposed projects may be found in Appendix A of this INRMP.

5.1 Project Drivers

5.1.1 INRMP Programming Hierarchy

Projects and actions to implement this INRMP are in Appendix A. Projects can be added, modified, or removed in coordination with the regulatory partners to maintain a viable, effective natural resources program.

This INRMP reflects a strategy that addresses legal, regulatory, DoD, DON, and CNO directives and policy requirements regarding funding and manpower. "Implementation" anticipates the execution of all Environmental Readiness Level (ERL) 4 projects and activities within the timeframes identified in the INRMP. However, all projects and actions contemplated in this INRMP are subject to the availability of funds properly authorized and appropriated under Federal law. Nothing in this INRMP is intended to be, nor must be, construed to be a violation of the Anti-Deficiency Act (31 U.S.C. § 1341 *et seq*.)

The Navy programming hierarchy is based on DoD funding level classifications; therefore, the DOD programming hierarchy is described first, followed by the Navy programming hierarchy. DoD Programming Hierarchy. Project priority within this INRMP is initially determined by funding classification as defined in DoDI 4715.03, *Natural Resources Conservation Program.* This instruction identifies recurring and non-recurring requirements.

5.1.1.1 Recurring and Non-Recurring Conservation Management Requirements

Recurring Requirements (DODI 4715.03, 2011):

a) Administrative, personnel, and other costs associated with managing the DOD Natural Resources Conservation Program that are necessary to meet applicable compliance requirements in Federal and state laws, regulations, Executive Orders (EO), and DOD policies, or in direct support of the military mission.

b) DoD components shall give priority to recurring natural resources conservation management requirements associated with the operation of facilities, installations, and deployed weapons systems. These activities include day-to-day costs of sustaining an effective natural resources management program, as well as annual requirements, including manpower, training, supplies, permits, fees, testing and monitoring, sampling and analysis, reporting and recordkeeping, maintenance of natural resources conservation equipment, and compliance self-assessments.

Non-Recurring Requirements:

Current Compliance - Includes installation projects and activities to support:

a) Installations currently out of compliance (e.g., received an enforcement action from an authorized Federal or state agency or local authority).
b) Signed compliance agreement or consent order.
c) Meeting requirements with applicable Federal or state laws, regulations, standards, EOs, or DoD policies.
d) Immediate and essential maintenance of operational integrity or military mission sustainment.
e) Projects or activities that will be out of compliance if not implemented in the current program year. Those activities include:
    i. Environmental analyses for natural resources conservation projects, and monitoring and studies required to assess and mitigate potential impacts of the military mission on conservation resources.
    ii. Planning documentation, master plans, compatible development planning, and INRMPs.
    iii. Natural resources planning-level surveys.
    iv. Reasonable and prudent measures included in incidental take statements of biological opinions, biological assessments, surveys, monitoring, reporting of assessment results, or habitat protection for listed, at-risk, and candidate species so that proposed or continuing actions can be modified in consultation with the USFWS or NMFS.
    v. Mitigation to meet existing regulatory permit conditions or written agreements.
    vi. Nonpoint source pollution or watershed management studies or actions needed to meet compliance dates cited in approved state coastal nonpoint source pollution control plans, as required to meet consistency determinations consistent with Coastal Zone Management.
    vii. Wetlands delineation critical for the prevention of adverse impacts to wetlands, so that continuing actions can be modified to ensure mission continuity.
    viii. Compliance with missed deadlines established in DoD-executed agreements.

Maintenance Requirements - Includes those projects and activities needed to meet an established deadline beyond the current program year and maintain compliance. Examples include:

a) Compliance with future deadlines.
b) Conservation, GIS mapping, and data management to comply with Federal, state, and local regulations, EOs, and DoD policy.
c) Efforts undertaken in accordance with non-deadline specific compliance requirements of leadership initiatives.
d) Wetlands enhancement to minimize wetlands loss and enhance existing degraded wetlands.
e) Conservation recommendations in biological opinions issued pursuant to the ESA.

Enhancement Actions Beyond Compliance - Includes those projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required by law, regulation, or EO, and are not of an immediate nature. Examples include:

a) Community outreach activities, such as International Migratory Bird Day, Earth Day, National Public Lands Day, Pollinator Week, and Arbor Day activities.
b) Educational and public awareness projects, such as interpretive displays, oral histories, Watchable Wildlife areas, nature trails, wildlife checklists, and conservation teaching materials.
c) Restoration or enhancement of natural resources when no specific compliance requirement dictates a course or timing of action.
d) Management and execution of volunteer and partnership programs.

5.1.1.2 Environmental Program Priorities

In accordance with the OPNAV M-5090.1D Ch 2, the Environmental Program Priorities are subdivided into four separate Environmental Readiness Levels (ERL):

a) ERL 4 - Legal requirements derived from existing laws and Executive Orders (E.O.) and Final Governing Standards or Overseas Environmental Baseline Guidance Document (OEBGD), as applicable, which apply to Navy activities, platforms and operations. These OMB/EPR Class 0, 1 and 2 EPRs/ongoing efforts include responding to applicable Federal, state and local requirements (e.g., ESA; MMPA; RCRA; CWE; CAA; SDWA; NEPA; TSCA; OPA, APS and Executive orders such as 12088 (Federal Agency Compliance), 12843 (ODS Conversion/replacement), and 13423 (PW, Recycling, ODS, Energy Conservation).

b) ERL 3 - Requirements derived from DoD policy, Navy Policy, or proactive initiatives that could result in obvious returns on investments and support critical readiness activities by decreasing encumbrances of statutory compliance (e.g. PCB elimination, regional environmental coordination, candidate conservation agreements, etc.). These project/proposed efforts are not mandated by law or other Federal, state, or local regulations/orders but would minimize current or future impacts (including costs) to the Navy mission.

c) ERL 2 - Requirements derived from DoD policy, Navy policy, or proactive initiatives that result in speculative returns on investments and uncertain benefits to the Navy mission. These projects/proposed efforts are not mandated by law or other Federal, state, or local regulations/orders and should be based on best available scientific or commercial data; or pending Federal, state, or local regulations under development (where publication is scheduled) using, if available, model state regulations or permit standards.

d) ERL 1 - Investments in environmental leadership and general proactive environmental stewardship, and provides manpower and recurring cost to support these functions.

5.1.1.3 Project Classification

"Must fund" conservation requirements are those projects and activities that are required to meet recurring natural and cultural resources conservation management requirements or current legal compliance needs, including EOs. These projects are designated ERL 4 or 3 in the Navy funding classification system, which is described in detail above. "Must fund" or ERL 4 or 3 projects could include:

- Developing, updating and revising INRMPs.
- Salaries and annual training of professional personnel, in accordance with Individual Development Plans (IDP), involved in the development and implementation of INRMPs.
- Terms and conditions of Biological Opinions (BOs) required by endangered species consultations.
- Baseline surveys to keep INRMPs current.
- Biological surveys to determine population status of endangered, threatened and sensitive species.
- Survey and monitoring programs to support the migratory bird rule.
- Wetland surveys for planning, monitoring and/or permit applications.
- Erosion control measures required in order to remain in compliance with natural resources protection regulations and to maintain land condition for realistic training operations.

- Memoranda of Agreement/Understanding (MOA/MOU) commitments.

This list is not meant to be all-inclusive, rather it is meant to give an indication of the types of projects that could be classified as compliance or must fund projects. INRMPs should also include valid projects and programs that enhance an installation's natural resources, promote proactive conservation measures, and support investments that demonstrate Navy environmental leadership and proactive environmental stewardship. These projects are considered "stewardship" projects and will fall under ERL 1 or 2 in the Navy classification system. Examples of these stewardship-type projects could include:

- Community outreach activities, such as Earth Day and Migratory Bird Day activities.
- Educational and public awareness projects, such as interpretive displays, oral histories, watchable wildlife areas, nature trails, wildlife checklists, and conservation teaching materials.
- Biological surveys or habitat protection for non-listed species.
- Management and execution of volunteer and partnership programs.
- Demonstration plantings of native plant materials.
- Experimental conservation techniques.
- Agriculture Outlease improvements.
- Forest stand improvements and other management efforts.
- Wildlife management efforts.

In addition, the natural resource manager should also utilize the Navy Environmental Requirements Guidebook, which assists project originators in preparing environmental program requirement submissions for consideration during the development of the Shore Environmental Quality Program Memorandum or Program Review.

All INRMP projects must be entered into the EPR web and receive approval up the chain of command prior to funding. Chief of Naval Operations, Code 45 is the final authority for designating the appropriate ERL.

5.2 Funding Process

The process to implement this INRMP consists of funding and executing specific projects and conducting work with in-house staff, which also requires specific funding. Implementation further includes NRM input to military and MWR activities and proposed projects in order to ensure they are consistent with natural resource requirements and with this INRMP. Because INRMPs must be implemented and the status of implementation reported to Congress, the INRMP must reflect an annual strategy that addresses legal, regulatory, and DoD, DoN, and CNO directive or policy requirements; funding; and manpower. "Implementation" anticipates the execution of all Environmental Readiness Level (ERL) 4 projects and activities in accordance with specific timeframes identified in the INRMP.

5.2.1 Per DoD Manual 4715.03 (*Integrated Natural Resources Management Plan (INRMP) Implementation Manual, Nov. 25, 2013*) INRMPs are implemented by:

- Actively requesting and using funds for natural resources management projects, activities and other requirements in support of goals, and objectives identified in the INRMP.

- Ensuring that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP.

- Inviting annual feedback from the appropriate USFWS and State fish and wildlife agency offices on the effectiveness of the INRMP.

- Documenting specific INRMP action accomplishments undertaken each year.

- Evaluating the effectiveness of past and current management activities and adapting those activities as needed to implement future actions.

Once validated, INRMP requirements are entered into EPR-web. Typically, funding for all ERL Level 3 and 4 projects will be programmed. Projects that are ERL 1 and 2 should seek alternate funding sources, which are listed below. Executed funding will be entered into EPR-web. There are restrictions on how different Navy funding sources for natural resources management can be used. It is important, therefore, that appropriate funding sources are used and that EPR entries clearly justify funding requests so that: (1) natural resource funds are distributed wisely and (2) funding levels are not threatened by the use of funds in ways that are inconsistent with funding program rules. The following are the primary funding sources for Navy natural resources programs:

5.2.2 O&MN Environmental Funds. The majority of natural resource projects are funded with Operations and Maintenance, Navy (O&MN) environmental funds. These appropriated funds are the primary source of resources to support must-fund, just-in- time environmental compliance (i.e., Navy ERL 4 projects). O&MN funds are generally not available for Navy Environmental Readiness Level 3 - 1 projects. In addition to the restriction to Environmental Readiness Level 4 requirements, there are other limitations placed on the use of O&MN funds:

Only the initial procurement, construction, and modification of a facility or project are considered valid environmental funding requirements. The subsequent operation, modification due to mission requirements, maintenance, repair, and eventual replacement is considered a Real Property Maintenance (RPM) funding requirement. For example, the cost of initially installing a best management practice (BMP) can be funded through O&MN, but future maintenance or repair of that.

5.2.3 Legacy Funds. The Legacy Resource Management Program (Legacy Program) is a special congressionally mandated initiative to fund military conservation projects. Although the Legacy Program was originally funded from 1991 to 1996 only, funds for new projects have continued to be available through this program. The Legacy Program can provide funding for a variety of conservation projects, such as regional ecosystem management initiatives, habitat preservation efforts, archaeological investigations, invasive species control, monitoring and predicting migratory patterns of birds and animals, and National partnerships and initiatives, such as National Public Lands Day. If the installation plans to request Legacy Program funds, it should be aware of the following:

- The availability of Legacy funds is generally uncertain early in the year.
- Pre-proposals for Legacy projects are due in March and submitted using the Legacy Tracker Website: http://www.DODlegacy.org/.
- Project proposals are reviewed by the Navy chain of command before being submitted to the DoD Legacy Resources Management Office for final project selection.
- The Legacy Website provides further guidance on the proposal process and types of projects requested.

5.2.4 Forestry Revenues. Revenues from the sale of forest products on Navy lands are a source of funding for forestry and potentially other natural resources management programs. Forestry revenues provide funds for two different funding programs:

a) Annual Navy Forestry Funds. These funds support commercial forestry operations at installations. Borrowed from COMNAVFACENGCOM Headquarters (NAVFAC HQ) O&MN funds at the beginning of each fiscal year, the funds are reimbursed when the forestry revenues are received. The NAVFAC field offices solicit funding needs each year from installations with commercial forestry programs in place. Forestry operations must be commercially viable to be eligible for these funds. The NAVFAC field offices can work with installations to make a work plan, known as an annual increment, for the commercial forestry program and ensure that all funding needs are included. Funding recommendations are forwarded from the field offices to NAVFAC HQ for final approval and disbursement of funds, based on revenue from timber sales.
b) DoD Forestry Reserve Account. Forestry revenues are first used to reimburse commercial forestry expenses. Then, as directed by DoD Financial Management Regulation 7000.14-R Volume 11A, 40 percent of installation net proceeds for the fiscal year are distributed to the state that contains the installation. The funding is used to support road systems and schools. Once the commercial forestry expenses are reimbursed and a portion of the proceeds are distributed among the state counties, any remaining amount is transferred to a holding account known as the DoD Forestry Reserve Account. Reserve account funds can be used for the following:

- Improvement of forest lands;
- Unanticipated contingencies in the administration of forest lands and the production of forest products for which other funding sources are not available within an acceptable timeframe (e.g., actions necessary as a result of a storm or wildfire); and
- Natural resources management that implements approved plans and agreements. To be eligible for funding, these project must:
  1) Be specifically included in an approved management plan, such as an INRMP, and
  2) Provide for at least one of the following purposes: fish and wildlife habitat improvements or modifications; range rehabilitation where necessary for support of wildlife; control of off-road vehicle traffic; specific habitat improvement projects and related activities; and adequate protection for species of fish, wildlife, and plants considered threatened or endangered.
- Projects included in a) and b) are generally given preference in the allocation of these funds. The amount available through this account varies from year to year, but the amount remaining for natural resources management as described in c) is relatively small. The NAVFAC field offices usually solicit project proposals for the Forestry Reserve Account once there is an indication of the level of funding available (usually January or February). Installations need not harvest timber to be eligible for Reserve Account funds. Proposals are submitted to NAVFACHQ via the field office where they are reviewed and forwarded to the Deputy Under Secretary of Defense I&E for final selection. The installation should contact a NAVFAC field office or consult reference (f) for more information on funding availability and timelines. It is important to note that these funds may not be used for "must fund" projects.

5.2.5 Agricultural Outleasing. Money collected through the leasing of Navy-owned property for agricultural use is directed back into the natural resources program and reallocated throughout the Navy by NAVFAC HQ. These funds are available to natural resource managers primarily for agricultural outlease improvements, and potentially for natural resources management and stewardship projects once the primary objective is met. Agricultural and grazing leases revenues from agricultural outleasing are available for the following:

a. Administrative expenses of agricultural lease (salaries of professional and technical support of the grazing and cropland programs in direct support of agricultural outlease which meet INRMP goals and objectives, training, scientific meetings, parts and supplies);

b. Initiation, improvement, and perpetuation of agricultural outleases (increased productivity, reduced soil erosion, and fencing);
c. Implementation of INRMP Stewardship Projects (compliance measures should be budgeted from O&MN Conservation POM process).

The NAVFAC field office sends a request for project proposals for agricultural outleasing funds to the regions and installations in November of each year. Proposals are submitted to the field office and reviewed. Recommended projects are forwarded to NAVFAC HQ for final review and project selection. While the available funding varies from year to year, this is one of the more consistent funding sources for implementing INRMP projects that are not Level 1 requirements. The installation should contact the field office for additional information on funding availability and timeline.

5.2.6 Fish and Wildlife Fees. User fees collected for the privilege of hunting or fishing are collected, deposited and used in accordance with the Sikes Act and the DoD financial management regulations. The SAIA specifies that user fees collected for hunting and fishing shall be used only on the installation where collected. Further, collections will be used exclusively for fish and wildlife conservation and management on the installation where collected.

The same fee schedule will be used for all participants with the exception of senior citizens, children and the handicapped. Membership in an installation conservation organization will not give members priority in participating in hunting, fishing and trapping programs. Efforts should be made to utilize the services of the installations MWR function to collect and administer these funds locally in accordance with SAIA authorization.

5.2.7 Recycling Funds. An installation with a qualified recycling program may use proceeds for some types of natural resource projects. Proceeds must first be used to cover qualified recycling program costs. Up to 50 percent of net proceeds may then be used for pollution abatement, pollution prevention, composting, alternative fueled vehicle infrastructure support, vehicle conversion, energy conversion, or occupational safety and health projects, with first consideration given to projects included in the installation's pollution-prevention plans. Remaining funds may be transferred to the non-appropriated MWR account for approved programs, or retained to cover anticipated future program costs. Natural resource projects can be funded as pollution prevention/abatement (e.g., wetlands or riparian forest restoration) or MWR projects (e.g., trail construction and maintenance).

5.2.8 Strategic Environmental Research and Development Program (SERDP) Funds: SERDP is DoD"s corporate environmental research and development program, planned and executing in full partnership with the Department of Energy (DOE) and EPA, with participation by numerous other Federal and non-Federal organizations. SERDP funds for environmental and conservation are allocated through a competitive process. The SERDP focuses on Cleanup, Compliance, Conservation, and Pollution Preventions technologies. The purpose of the conservation technology program is to use research and development to provide improved inventory and monitoring capabilities; develop more effective impact and risk assessment techniques; and provide improved mitigation and rehabilitation capabilities. Recently, the program solicited Statements of Need for conservation technology proposals to research indicators of stress on threatened and endangered species and to develop techniques to inventory and monitor threatened and endangered species in accessible areas.

5.2.9 Non-DoD Funds. Many grant programs are available for natural resources management projects, such as watershed management and restoration, habitat restoration, and wetland and riparian area restoration. When Federally funded, these programs typically require non-Federal matching funds. However, installations may partner with other groups to propose eligible projects. Below is one example of a grant program:

The Five-Star Restoration Challenge Grants Program is sponsored by the National Association of Counties, National Association of Service and Conservation Corps, National Fish and Wildlife Foundation, and Wildlife Habitat Council in cooperation with EPA, NMFS, and other sponsors. This program provides modest financial assistance ($5,000-$20,000) on a competitive basis to support community-based wetland and riparian restoration projects that build diverse partnerships and foster local natural resource stewardship. Installations would need to partner with other groups to be eligible for this type of program. Applications are due in March. Information is available on the Web at http://www.epa.gov/owow/wetlands/restore/5star/.

INRMPs should include valid ERL 1 and 2 projects and actions that would enhance an installation's natural resources. Nontraditional sources of funding for natural resources programs include non-appropriated reimbursable funds (i.e., agricultural outleasing, forestry, hunting and fishing fees), and appropriated reimbursable funds (e.g., DoD Legacy Program, USDA Pest Management Program). These accounts are sources of funds for ERL 3 projects. Installations, however, should not depend on reimbursable programs to fund their natural resources management programs.

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Appendix A. Natural Resources Action and Project Implementation Table

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Appendix A

The following is a list of recommended projects developed in collaboration with other federal agencies at annual NR metrics meetings and the Navy Region Northwest forester and biologists:

NOTE: All projects and actions contemplated in this INRMP are subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. 1341

Table A-1. INRMP Projects and Actions Implementation Table

EPR Number	INRMP Section	Funding Source	ERL	Legal Drivers	Implementation Frequency	Goals Supported	Natural Resources Focus Area	Project Goals
SIKES NW NAVMAG INDIAN ISLAND Surveys for Mammals, Reptiles, Amphibians - Survey for mammals, reptiles and amphibians. Survey for mammals, amphibians and reptile use of NAVMAG to gauge the success of the Navy's protection and management of habitat. Results will help determine the success of managing for biological diversity.								
6101612006	4.6	O&MN	3	Sikes Act DoD INST 4715 OPNAVINST 5090.1D	Annual	1.2 1.7 1.10 1.11 5.1	Sikes Act Cooperation Listed Species & Critical Habitat	Support Mission by Providing Data for Planning and NEPA Documentation
CHE NW NAVMAG INDIAN ISLAND INRMP - Provide the foundation for the Natural Resources program and contribute to the NEPA planning process dealing with project site approvals, military training evaluations, and endangered species / wildlife management.								
61016NR013	All	O&MN	4	Sikes Act ESA MBTA	Annual	1.1, 1.2, 1.7, 1.10 1.11, 2.1, 2.2, 2.3 3.1, 3.2 5.1, 5.2 5.3	Ecosystem Integrity Listed Species & Critical Habitat Sikes Act Cooperation	Support Mission through Management and Compliance
CWA NW NAVMAG INDIAN ISLAND Port Security Barrier Mitigation - Tribal Mitigation Clam Seeding Projects. The Navy installed a Port Security Barrier under an individual permit issued by the US Army Corps of Engineers, which stated that the Navy will comply with the Cooperative Agreement for tribal clam seeding over a period of 20 years. A Memorandum of Agreement (MOA) was signed between the Suquamish Tribe at the Navy to enhance six beach areas.								
61016NR009	1.4.13	CN	4	CWA MOA ESA	Annual	3.1	Mitigation for PSB	Annual Clam Seeding According to MOA for Port Security Barrier Installation
SIKES NW Forest Damage Assessment & Prescription - Assessment of forest habitats throughout Navy Region NW (by installation) to identify areas at risk for insect and disease outbreaks, existing outbreaks, storm damage, wildfire hazards, other damage agents and subsequent prescription for appropriate treatment(s).								
68742FOR17	4.7	O&MN	4	Sikes Act DODI 4715.03 OPNAVINST 5090.1D	Periodic	1.2, 1.4, 1.6, 1.7	Sikes Act Cooperation Ecosystem integrity Listed Species & Critical Habitat	Rehabilitate Forests after Disturbance

MMPA NRNW Marine Mammal Monitoring and Orca Network* - Region Marine Mammal Density Surveys for Inland Waters of Puget Sound. Surveys for seals, sea lions, whales, dolphins, and porpoises are conducted by the National Marine Fisheries Service (NMFS) and Washington Department of Fish and Wildlife (WDFW) approved protocol. Surveys are conducted either by air or vessel and account for the haul-outs and movements of the species.

68742MMS01	4.6.8	O&MN	4	MMPA ESA Sikes Act	Annual	1.7 1.10 1.11 5.1 5.2	Listed Species & Critical Habitat Sikes Act Cooperation	Support Mission by Providing Data for IHAs and other NEPA Documentation

CHE NRNW Threatened and Endangered Fish and Forage Fish Surveys - Region Survey for Threatened and Endangered fish and forage fish species along the shores of Indian Island. This will provide a means to gauge the success of the Navy's protection and management of these species.

68742CN002	2.3.3	O&MN	4	ESA MSFCMA Sikes Act	Annual	1.2, 1.7, 5.1 5.2 5.3	2. Listed Species & Critical Habitat	Meet commitment critical habitat exemption; Maintain information on nearshore use by ESA listed fishes and

1 CR NRNW Marbled Murrelet Density Surveys - Survey for threatened marbled murrelets along the shores of Indian Island. These surveys will be conducted during the winter months, and is needed for local population estimates to meet ESA consultation needs. Washington State Fish and Wildlife (WDFW) survey protocols are required and will be used.

68742CN001	4.4.1	O&MN	4	ESA MBTA Sikes Act	Periodic	1.2, 1.7 1.10, 1.11 5.1 5.2 5.3	Listed Species & Critical Habitat Sikes Act Cooperation	Gather winter density data useful to ESA consultations and filling data gaps

EO 13751 NW NBK Invasive Species Treatment - Monitor and control invasive, non-native upland plants at NAVMAG Indian Island. If significant populations of non-native plant species are found, these undesirable species should be removed and controlled. Work will focus on disturbed sites that have the potential to be replanted if funding is established in future years.

6874212345	2.3.4	O&MN	4	EO13751 EO13112 Sikes Act DODI 4715.03	Every Other Year starting in 2018	1.2, 1.3 1.4 1.6 1.7	Ecosystem integrity Listed Species & Critical Habitat	Control invasive, non-native plants and animals

3 SAR NW Bat Surveys and Monitoring - Conduct bat surveys at NRNW installations, to identify species and monitor bat presence at the installations where bats may occur. These proposed surveys will be conducted in order to establish baseline data for CNRNW Integrated Natural Resources Management Plans. The surveys will also include the presence/absence of white-nose syndrome.

68742BAT01	4.6	O&MN	4	Sikes Act ESA FWCA	Annual	1.10 1.11 5.1 5.3	Listed Species & Critical Habitat	Support Mission by Providing Data for Planning and NEPA Documentation

SIKES NW Puget Sound & Alaska INRMP Conservation Mapping - Provide data collection (including analysis and reporting), GIS data and GRX mapping support for the Puget Sound installations natural resources programs. The mapping data is used for periodic updates of natural resources information that supports INRMPs, with information such as vegetation descriptions unique habitat types/locations, coastal modifications, recreational bald eagle nest sites, conservation project locations, restoration program sites, and for tracking natural resource treatments.

68742NRMAP	4.3	O&MN	4	Sikes Act BGEPA OPNAVINST 5090.1D	Annual	1.4, 1.7 1.10 1.11 2.3	Listed Species & Critical Habitat Ecosystem integrity ESA	Support Mission by Providing Data for Planning and NEPA Documentation

						5.1, 5.3		
SIKES NW Outdoor Recreation Electronic Permit System - The system offers a web based content management system configurable for installation/base natural resource managers to schedule activities, accessible areas and access requirements. The general public interacts with the secure online system to register, purchase permits or use other available options. The system can support any military hunting/fishing/trapping or outdoor recreation programs as well as firewood sales.								
68742RECNW	4.8	O&MN	4	Sikes Act OPNAVINST 5090.1D	Annual	4.1	Sikes Act Recreation Environmental Awareness	Provide quality outdoor recreation experiences for base employees while sustaining ecosystem integrity.
EO13112 NW NAVMAG INDIAN ISLAND Spartina Eradication Partnership - Continue the annual cooperation with Washington Department of Agriculture (WSDA) to eradicate Spartina. Per mission and security requirements, allow WSDA personnel on base to survey and remove infestations.								
None	2.3.4	O&MN	4	Plant Protection Act Sikes Act EO13112 EO13751	Annual	1.2 1.4 1.7	Sikes Act Cooperation Ecosystem integrity Listed Species & Critical Habitat	Control invasive, non-native plants.
Partnering with USGS and Local Middle Schools - Partner with USGS lab on Marristone Island and local middle schools to seine beaches on the east side of the island. Data recorded includes, weather data, species identification, catch measurement and counts. The event promotes education, outreach and collects baseline data for the Kilisut Harbor Restoration Project.								
None		None	None	ESA	Annual	1.7 3.1 5.1	Ecosystem integrity Sikes Act Cooperation	Foster education, outreach and collect data for the Kilisut Harbor Restoration Project
Vegetation Survey - In house vegetation survey to gather data and update the forest stand inventory. This information will be used for forest stand perscriptions, project review.								
None		None	None	ESA MBTA EO13112 EO13751	Periodic	1.2 1.4 1.5 1.7 1.11	Sikes Act Cooperation Listed Species & Critical Habitat	Gather and maintain up to date data on natural resources.
Cooperate with state and local biologists - Cooperate with local biologists to gather information and conduct surveys.								
None		None	None	Sikes Act ESA MBTA MMPA MOA	periodic	3.1	Ecosystem integrity Sikes Act Cooperation	Partner with non-governmental organizations for natural resource enhancement projects.

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Appendix B. Bald Eagle Management Plan

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2016 BALD EAGLE MANAGEMENT PLAN

Ten bald eagle nests representing ten separate territories occur on NAVMAG. An identification number was developed and assigned to each nest territory by WDFW, but recent finds were numbered by NAVMAG Indian Island's NRM. This system should be maintained for reference and management purposes.

The nests are as follows (and see Figure B-1):

Number 118 (Bishop Point) - located in T30N, R01E, Sec. 31, on the east central side of the installation. The nest tree is about 15 meters from the Kilisut Harbor shoreline and is located east of Robinson Road and north of a concrete magazine (No. 48). The surrounding area is vegetated with primarily second growth coniferous species while the nest is in a fairly small Douglas fir. Three alternate nests are known to exist within this territory.

Number 532 (Boggy Spit) - located in T30N, R01E, Sec. 19, in the northeast portion of the installation. The nest is located on the edge of an approximately 20 year-old clearcut within 100 meters of the shoreline. It is bounded on the west by Fenner Road and on the south by Puyallup Road. There are two alternate nest sites located north of the existing nest.

Number 531 (Crane Point) - located in T30N., R01W., Sec. 36, on the west central side of the installation. The nest tree (Douglas Fir) is located about 125 meters from Port Townsend Bay. The surrounding area is vegetated with primarily second growth coniferous and deciduous trees. There are three alternate nest sites located in this territory.

Number 657 (Scow Bay) - located in T29N., R01E., Section 5, in the southeast portion of the installation. The nest tree, a grand fir tree, is located approximately 100 meters west of the Kilisut Harbor shoreline and directly east of East Road. One alternate nest site is located in this territory.

Number 708 (Administration Building) - located in T29N., R01E., Section 8, on the southeast end of the installation. The nest tree is approximately 250 meters west of the Kilisut Harbor shoreline and 125 meters east of Building 849. The nest is in a grand fir tree within a stand of primarily second growth coniferous trees with some old growth trees mixed in. There are no known alternate nest sites located within this territory.

Number 1003 (Walan Point) - located in T30N., R01W., Sec. 24, on the northwest end of the installation. The nest is located on the edge of a sandstone bluff overlooking Port Townsend Bay. It is located within a stand of second growth coniferous trees, due north of North Road. There is one alternate nest site within this territory.

Number 1259 (Fire Station) - located in T30N., R01W., Sec. 36, on the west side of the installation. The nest is located in a Douglas fir tree close to the east side of Building 301, the installation's fire station. It is located within a stand of second growth coniferous trees, due north of North Road. There are no known alternate nest sites located within this territory.

Number 1176 (Kilisut Harbor) - located in T30N., R01W., Sec. 30, on the northeast side of the installation. The nest is located about 80 meters west of the shoreline of Kilisut Harbor, due north of Dynamite Trail. There are no known alternate nest sites located within this territory.

Number 1300 (Mag 59) – located in T29N, R01E, Sec. 06 on the east central side of the installation. This nest may be an alternate nest site to two others found in the same vicinity. However, NAVMAG will be watching this nest for productivity to determine the status.

Number 1301 (East Road) - located in T29N, R01E, Sec. 06, on the east central side of the installation. This may be an alternative site to the Scow Bay nest site. However, eagles have been spotted in and around the located nest, and NAVMAG will be observing for productivity to determine the status.

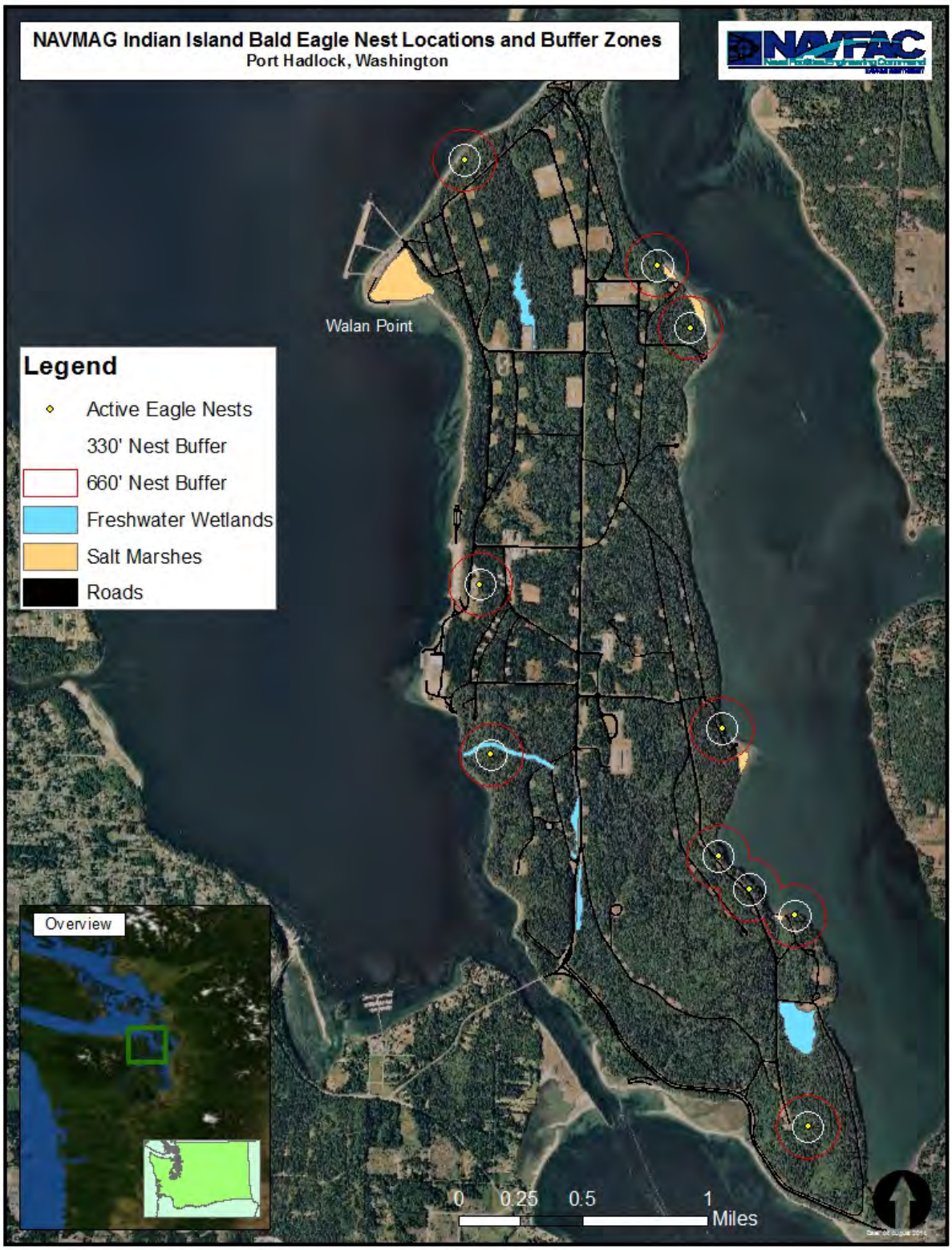

Figure B-1. Map of Bald Eagle Nest Sites

General Management Guidelines

The following recommendations for management of nesting bald eagles were derived from the "Bald Eagle Protection in Washington State" guidelines (WDFW 2002), "Washington Department of Fish & Wildlife's Priority Habitat and Species Management Recommendations, Volume IV: Birds, Bald Eagle" (WDFW 2001) and was checked for consistency with the "Naval Air Station Whidbey Island Bald Eagle Management Plan" (EDAW 1996).

Concerted efforts must be made to assure that human disturbances are eliminated or greatly minimized around each nest site during the nesting season, and that the natural characteristics of the site are maintained. Human disturbance includes but is not limited to: entering the nesting area on foot or in vehicles, logging and wood-cutting activities, discharge of firearms or explosives, low flying aircraft, construction activities, bright lights at night, power lines, and construction of buildings and other structures. In addition, broad application of certain herbicides and pesticides can have long lasting adverse impacts on the eagles, their habitat, and species which they prey upon.

Human disturbance within nesting territories may result in cessation of nesting attempts, abandonment of nests, and damage or death of eggs or eaglets through egg cooling, breakage, and injury to nestlings and premature fledging. Individual eagles have various tolerance limits to disturbance factors. Unless these tolerance limits are known, the following general management criteria should be applied to each nest:

1. Establishment of a primary buffer zone around each nest. The general dimensions of each zone are outlined in the section on specific nest site management, but they are at a minimum 330 foot radius around the nest tree.

    a. All human activity in the primary buffer zone should be avoided during the nesting season except as described in the following section on specific guidelines. The nesting season is considered to be from the time that adult eagles are first observed near the nest tree (usually during winter) until after fledging of young is apparent (usually late summer). If the exact dates when nesting activities are initiated and/or when fledging occurs are unknown for a particular nesting pair no human activity should occur in the primary buffer zone from January 1 through July 31.

    b. Human activity can commence within a primary buffer zone after August 1 - if it is obvious that no nesting is taking place within an individual territory. Productivity surveys of each known eagle nest in Washington were once conducted each spring and early summer by WDFW.

    c. Timber harvesting should not occur within the primary buffer zone. Woodcutting of downed trees in the primary buffer zone should occur prior to or after the nesting season. Standing dead trees and snags should remain.

    d. Broadcast application of chemicals should not occur within the primary buffer zone except for emergency situations such as severe insect infestation and only during non-nesting periods. Only those chemicals approved for use by the Environmental Protection Agency should be used with strict adherence to application procedures. However, approved chemical compounds that are known to be toxic to fish and/or wildlife should also be avoided in the primary buffer zone.

e. Vehicular traffic use on existing roads need not be altered.

f. Power line and pole construction should not occur in the primary buffer zone.

2. Establishment of a secondary buffer zone beyond the primary buffer zone. This zone serves as a buffer between the primary buffer zone and the areas of normal human activity. It should be developed and maintained in such a manner that the visual line of sight between all human activities and the nest are obscured. All secondary buffers are now 660 foot radius around the nest (see Figure 1): this is a change from the 1996 BEMP and is a more conservative buffer that should further benefit bald eagles at NAVMAG.

   a. Human activities within this zone should be avoided or at best minimized during the nesting period. The guidance presented in l.b. above for suspected non-active nests should prevail.

   b. Timber harvesting and woodcutting can occur prior to and after the nesting period provided that:

      1) total removal of all standing timber does not occur;
      2) at least 50 trees greater than 11 inches d.b.h. be retained per acre. The density can be altered if the forest manager deems it necessary to reduce windthrow;
      3) standing snags and dead trees be retained except where an obvious safety hazard is evident.

   c. The use of chemical compounds, especially herbicides and pesticides, be restricted as in 1.d above.

   d. The construction of permanent buildings or other structures be avoided at all times in the secondary buffer zone.

   e. Vehicular traffic use of existing roads need not be altered.

   f. Construction of new roads should be avoided. Any necessary road construction within the secondary buffer zone should not occur during the nesting season.

3. During nesting season, helicopters should not operate within 1000 feet of a nest and fixed-winged aircraft within 500 feet of a nest.

4. Should a nest appear to be abandoned or the nest and/or nest tree destroyed, the primary buffer zone, and if feasible, the secondary buffer zone should be maintained and managed according to the above guidelines. Eagles often reoccupy an abandoned nest or another tree within a territory even after several years of non-use of a site.

5. Guidelines and restrictions for new nests within an existing territory or for newly established territories are the same as those listed above.

6. Power lines should not be constructed in the secondary buffer zone. If it is deemed absolutely necessary to construct power lines (either above ground or below ground) construction should not occur during the nesting season. Above ground power lines should be constructed according to the publication entitled "Suggested Practices for Raptor Protection on Power lines." Another useful document for power line and pole construction is "Suggested Practices for Raptor Protection on Power lines: The State of the Art in 1981." This publication is available from the Raptor Research foundation, c/o Department of Veterinary biology, University of Minnesota, St. Paul, Minnesota 55101.

Specific Nest Site Management

In addition to the above guidelines, the following recommendations for each of the eight nest sites should be implemented. For the update to this plan, all secondary buffers have been expanded to 660 foot radius, which is a more conservative buffer than the original 1996 plan.

Nest Number 118 - the primary buffer zone for this nest should include the area from the nest in a westerly direction to East Road and Hoogewerff Street and from the nest south and north for approximately 100 meters (330 feet). From the farthest north and south points, the zone should extend at a 45-degree line in an easterly direction to the shoreline. These boundaries place the nest tree approximately in the center of the zone with the widest reach along the shoreline. This assures not only nest tree isolation but an uninterrupted flight path to and from the water as well as perching sites.

It is understood that military activity may occur around the magazines within both zones during the nesting season. Military personnel and employees should be advised to apply utmost caution to assure that noise and activity are held to an absolute minimum.

Nest Number 531 - with the nest at the center, the primary buffer zone should extend 330 feet to the east, north and south. From the north and south edge of this line it should be extended west at a 45-degree angle to the water.

Nest Site Number 532 - The primary buffer zone should extend to the west side of Fenner Road with the existing buffer of early second-growth fir maintained. The secondary buffer zone should extend at least 660 feet from the north, south, and west (but not west of Anderson Road) of the nest and then east to the shoreline.

Nest Site Number 657 - The primary buffer zone for this nest should extend south to the intersection of Ozette Road and Sunny Cove Road, east and north to the shoreline of Kilisut Harbor, and west to East Road.

Nest Site Number 708 - this nests primary buffer zone extends 330 feet to the south, east, and north. The buffer zone should also extend due west to East Road.

Nest Site Number 1003 - This nest is located in a fairly inaccessible area atop a large sandstone bluff, but does have a direct line of sight to the Ammunition Pier and all of its associated activities. The primary buffer zone at this nest site should extend from the nest in a southerly direction to North Road, and for approximately 330 feet from the nest to the east, north, and west.

Nest SiteNumber 1300 (Mag 59) – This nest location was built directly over an existing road. The primary buffer zone should extend east, north and south 330 feet to the bluff. With the location, the extension of the buffer west should be to East Road due to ammunition restrictions on building any additional facilities.

Nest SiteNumber 1301 (East Road) - This nest location was built directly over an existing road. The primary buffer zone should extend east, north and south 330 feet to the bluff. With the location, the extension of the buffer west should be to East Road due to ammunition restrictions on building any additional facilities.

Potential Nest Sites

Suitable habitat exists on Indian Island to support one or more nesting territories than the ten existing territories. Prey items, primarily fish and marine invertebrates, waterfowl, shorebirds, marine birds, small mammals and carrion are abundant. The many miles of wooded shoreline could supply suitable nesting habitat. The western shoreline appears to have the most suitable vacant habitat. The recommendations for potential nest sites discussed in the "National Bald Eagle Management Guidelines" should be applied. In summary, this includes retaining 30-acre tracts of timber for every 1,280 acres (two sections) of timbered habitat adjacent to the shoreline. These tracts should be spaced at least one-half mile apart. The 30-acre tract should have a clear flight path and view to the water. Timber harvest can occur but at least 50 to 60 trees greater than 11 inches d.b.h. should be left per acre. Of these 50 to 60 trees, 8 to 21 should be 75 to 125 feet high and the remainder more than 125 feet high assuming trees of this size are present.

Wintering and Feeding Habitat

Suitable undisturbed perching and roosting habitat should be maintained around the shoreline to support both resident and migrant bald eagles over-wintering on the installation. Present management strategies appear to be supplying this basic requirement. Nonetheless, specific recommendations for future actions should include:

1. Maintain the existing timber within 200 feet of the shoreline. This should include the retention of standing dead trees and snags.

    a. Selective harvesting of timber can occur providing that a density of trees is maintained similar to the density recommended in the Potential Nest Sites section of this plan. This density recommendation is flexible to the extent that it should not preclude wise forest management practices necessary to reduce wind throw.

    b. Commercial timber harvesting should not occur during the eagle peak use periods on the installation - normally late winter through early spring.

2. Present human access and use areas be maintained. Opening of new areas to human activities should be discouraged.

3. The construction of new permanent structures should be avoided near and within known feeding and perching areas.

4. Known night roosts (any stand of trees in which eagles regularly roost together) should be protected from all human activity. Buffer zones extending at least one-quarter mile beyond the edge of the roost should be established. A specific plan can be developed if a communal night roost is discovered on the installation.

5. Power line construction should conform to the guidance presented in Recommendation Number 6 under General Management Guidelines.

Identification of Sites

Marking or placing signs around eagle nests can draw undue attention to the presence of nests with subsequent harassment that would not normally occur. Therefore, the placement of signs around the primary and secondary buffer zones should be implemented only if it would be necessary to control recreational use of the area. The zone boundaries and guidelines should, however, be included in any long-range forest management plans as well as facilities use regulations.

Signing of shoreline perching and feeding areas is recommended. Signs can be placed at the various recreation access points around the island. Signing should be installed in conjunction with an explanation to recreational users of the installation regarding the sensitivity of shoreline areas frequented by bald eagles. This can be accomplished through post regulations as well as thorough briefing of security personnel.

Appendix C. Fish and Wildlife Species Information

C-1: Species Lists

C-2 : Port Townsend Audubon Christmas Bird Count, 2009

C-3 : Clam Harvest Plan

C-4 : Fed. Reg. - Final List of Bird Species to Which the MBTA Does Not Apply

C-5 : Final Assessment of Threatened and Endangered Marine and Anadromous Fish Presence and their Critical Habitat Occurrence Adjacent to Naval Magazine – Indian Island: 2014-15 Survey Results

C-6 : Summary Report 2013-2014 Wildlife Surveys at Naval Magazine Indian Island, Jefferson County, Washington

C-7 : Indian Island Vicinity Bald Eagle Data

C-8 : Summary of Avian Survey at Naval Magazine Indian Island, Jefferson County, Washington, September 2015

C-9 : Final Baseline Survey for Amphibians and Reptiles at Naval Magazine Indian Island

C-10: 2016-2017 Surveys for Spawning Surf Smelt and Pacific Sand Lance at Naval Base Kitsap Bangor, Manchester Fuel Department and Naval Magazine Indian Island

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Appendix C-1

Reptiles and Amphibians					
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**	**Common Name**	**Scientific Name**
Ensatina	*Ensatina eschscholtzii*	Rough-skinned Newt	*Taricha granulosa*	Northern Alligator Lizard	*Elgaria coerulea*
Long-toed Salamander	*Ambystoma macrodactylum*	Northern Pacific Chorus Frog	*Pseudacris regilla*	Common Garter Snake	*Thamnophis sirtalis*
Northwestern Salamander	*Ambystoma gracile*	Red-legged Frog	*Rana aurora*	Northwestern Garter Snake	*Thamnophis ordinoides*
Mammals					
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**	**Common Name**	**Scientific Name**
Creeping Vole	*Microtus oregoni*	American Beaver	*Castor canadensis*	California Myotis	*Myotis californicus*
Long-Tailed Vole	*Microtus longicaudus*	Long-tailed Weasel	*Mustela frenata*	Fringed Myotis	*Myotis thysanodes*
Redback Vole	*Clethrionomys gapperi*	Short-tailed Weasel	*Mustela erminea*	Hoary Bat	*Lasiurus cinereus*
Vagrant Shrew	*Sorex vagrans*	Mink	*Mustela vison*	Long-legged Myotis	*Myotis volans*
Coast Mole	*Scapanus orarius*	River Otter	*Lontra canadensis*	Silver-haired Bat	*Lasionycterus noctivagans*
Townsend's Mole	*Scapanus townsendii*	Raccoon	*Procyon lotor*	Townsend's Big-eared Bat	*Corynorhinus townsendii*
Deer Mouse	*Peromyscus maniculatus*	Black-Tailed Deer	*Odocoileus hemionus columbianus*	Western Long-legged Myotis	*Motis evotis*
Norway Rat	*Rattus norvegicus*	Red Fox	*Vulpes vulpes*	Yuma Myotis	*Myotis yumanensis*
Bushytail Woodrat	*Neotoma cinerea*	Coyote	*Canis latrans*	Harbor Seal	*Phoca vitulina*
Douglas Squirrel	*Tamiasciurus douglasi*	Bobcat	*Lynx rufus*	California Sea Lion	*Zalophus californianus*
Northerm Flying Squirrel	*Glaucomys sabrinus*	Cougar	*Puma concolor*	Harbor Porpoise	*Phocoena phocoena*
Townsend's Chipmunk	*Eutamias townsendi*	Black Bear	*Ursus americanus*	Gray Whale	*Eschrichtius robustus*
Brush Rabbit	*Sylvilagus bachmani*	Big Brown Bat	*Eptesicus fuscus*		
Muskrat	*Ondatra zibethicus*	Little Brown Bat	*Myotis lucifigus*		
Birds					
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**	**Common Name**	**Scientific Name**
Bewick's Wren	*Thryomanes bewickii*	Varied Thrush	*Ixoreus naevius*	Harlequin Duck	*Histrionicus histrionicus*
Marsh Wren	*Cistothorus palustris*	Northern Flicker	*Colaptes auratus*	Long-tailed Duck	*Clangula hyemalis*
Pacific Wren	*Troglodytes pacificus*	Downy Woodpecker	*Picoides pubescens*	Northern Pintail	*Anas acuta*
Winter Wren	*Troglodytes hiemalis*	Hairy Woodpecker	*Picoides villosus*	Wood Duck	*Aix sponsa*
American Goldfinch	*Spinus tristis*	Pileated Woodpecker	*Dryocopus pileatus*	Sora	*Porzana carolina*
House Finch	*Haemorhous mexicanus*	Steller's Jay	*Cyanocitta stelleri*	Ring-necked Duck	*Aythya collaris*
Purple Finch	*Haemorhous purpureus*	California Quail	*Callipepla californica*	Mallard	*Anas platyrhynchos*
Black-throated Gray Warbler	*Setophaga nigrescens*	Anna's Hummingbird	*Calypte anna*	Brant	*Branta bernicla nigricans*
Orange-crowned Warbler	*Oreothlypis celata*	Rufous Hummingbird	*Selasphorus rufus*	Ruddy Duck	*Oxyura jamaicensis*
MacGillivray's Warbler	*Geothlypis tolmiei*	Red Crossbill	*Loxia curvirostra*	Pigeon Guillemot	*Cepphus columba*
Townsend's Warbler	*Dendroica townsendii*	Mourning Dove	*Zenaida macroura*	Common Loon	*Gavia immer*
Wilson's Warbler	*Cardellina pusilla*	Rock Pigeon	*Columba livia*	Red-throated Loon	*Gavia stellata*
Yellow Warbler	*Setophaga petechia*	European Starling	*Sturnus vulgaris*	Pacific Loon	*Gavia pacifica*
Yellow-rumped Warbler	*Dendroica coronata*	American Crow	*Corvus brachyrhynchos*	Ancient Murrelet	*Synthliboramphus antiquus*
Common Yellowthroat	*Geothlypis trichas*	Northwestern Crow	*Corvus caurinus*	Marbled Murrelet	*Brachyramphus marmoratus*
Bushtit	*Psaltriparus minimus*	Common Raven	*Corvus corax*	Rhinoceros Auklet	*Cerorhinca monocerata*
Red-breasted Sapsucker	*Sphyrapicus ruber*	Belted Kingfisher	*Megaceryle alcyon*	Barrow's Goldeneye	*Bucephala islandica*
Spotted Towhee	*Pipilo maculatus*	Black Turnstone	*Arenaria melanocephala*	Common Goldeneye	*Bucephala clangula*
Olive-sided Flycatcher	*Contopus cooperi*	Sanderling	*Calidris alba*	Eared Grebe	*Podiceps nigricollis*
Pacific-slope Flycatcher	*Empidonax difficilis*	Rock Sandpiper	*Calidris or Erolia ptilocnemis*	Horned Grebe	*Podiceps auritus*
Willow Flycatcher	*Empidonax traillii*	Least Sandpiper	*Calidris minutilla*	Pied-billed Grebe	*Podilymbus podiceps*
Barn Swallow	*Hirundo rustica*	Spotted Sandpiper	*Actitis macularius*	Red-necked Grebe	*Podiceps grisegena*
Cliff Swallow	*Petrochelidon pyrrhonota*	Lesser Scaup	*Aythya affinis*	Western grebe	*Aechmophorus occidentalis*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Greater Scaup	*Aythya marila*	Great blue heron	*Ardea herdias*
Violet-green Swallow	*Tachycineta thalassina*	Green-winged Teal	*Anas crecca*	Brandt's Cormorant	*Phalacrocorax penicillatus*
American Tree Sparrow	*Spizelloides arborea*	Black-bellied Plover	*Pluvialis squatarola*	Double-crested Cormorant	*Phalacrocorax auritus*
Chipping Sparrow	*Spizella passerina*	Killdeer	*Charadrius vociferus*	Pelagic Cormorant	*Phalacrocorax pelagicus*
Fox Sparrow	*Passerella iliaca*	Black Oystercatcher	*Haematopus bachmani*	Common Merganser	*Mergus merganser*
Golden-crowned Sparrow	*Zonotrichia atricapilla*	Wilson's Snipe	*Gallinago delicata*	Hooded Merganser	*Lophodytes cucullatus*
House Sparrow	*Passer domesticus*	Common Murre	*Uria aalge*	Red-breasted Merganser	*Mergus serrator*
Lincoln's Sparrow	*Melospiza lincolnii*	Northern Shoveler	*Anas clypeata*	American Kestrel	*Falco sparverius*
Savannah Sparrow	*Passerculus sandwichensis*	Greater Yellowlegs	*Tringa melanoleuca*	Merlin (Pigeon Hawk)	*Falco columbarius*
Song Sparrow	*Melospiza melodia*	Marbled Godwit	*Limosa fedoa*	Peregrine Falcon	*Falco peregrinus*
White-crowned Sparrow	*Zonotrichia leucophrys*	Caspian Tern	*Hydroprogne caspia*	Cooper's Hawk	*Accipiter cooperii*
Dark-eyed Junco (Slate-colored)	*Junco hyemalis*	Bonaparte's Gull	*Chroicocephalus philadelphia*	Red-tailed Hawk	*Buteo jamaicensis*
Pine Siskin	*Spinus pinus*	Glaucous-winged Gull	*Larus glaucescens*	Sharp-shinned Hawk	*Accipiter striatus*
Red-winged Blackbird	*Agelaius phoeniceus*	Herring Gull	*Larus smithsonianus*	Northern Harrier	*Circus cyaneus*
Western Tanager	*Piranga ludoviciana*	Mew Gull	*Larus canus*	Osprey	*Pandion haliaetus*
Cedar Waxwing	*Bombycilla cedrorum*	Ring-billed Gull	*Larus delawarensis*	Bald Eagle	*Haliaeetus leucocephalus*
Brown Creeper	*Certhia americana*	Western Gull	*Larus occidentalis*	Barn Owl	*Tyto alba*
Red-breasted Nuthatch	*Sitta canadensis*	Canada Goose	*Branta canadensis*	Barred Owl	*Strix varia*
Black-capped Chickadee	*Poecile atricapillus*	Trumpeter Swan	*Cygnus buccinator*	Flammulated Owl	*Psiloscops flammeolus*

Appendix C-1

Chestnut-backed Chickadee	*Poecile rufescens*	American Widgeon	*Anas americana*	Great Gray Owl	*Strix nebulosa*
Golden-crowned Kinglet	*Regulus satrapa*	Eurasian Wigeon	*Anas penelope*	Great Horned Owl	*Bubo virginianus*
Ruby-crowned Kinglet	*Regulus calendula*	Gadwall	*Anas strepera*	Northern Pygmy Owl	*Glaucidium gnoma*
Black-headed Grosbeak	*Pheucticus melanocephalus*	Dunlin	*Calidris alpina*	Saw-whet Owl	*Aegolius acadicus*
Brown-headed Cowbird	*Molothrus ater*	Surf Scoter	*Melanitta perspicillata*	Screech Owl	*Megascops kennicottii*
Hutton's Vireo	*Vireo huttoni*	White-winged Scoter	*Melanitta deglandi*	Snowy Owl	*Bubo scandiacus*
American Robin	*Turdus migratorius*	American Coot	*Fulica americana*	Turkey Vulture	*Cathartes aura*
Hermit Thrush	*Catharus guttatus*	Surfbird	*Aphriza virgata*		
Swainson's Thrush	*Catharus ustulatus*	Bufflehead	*Bucephala albeola*		
Fish					
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**	**Common Name**	**Scientific Name**
Pacific Sand Lance	*Ammodytes personatus*	Pipefish	*Syngnathinae ssp.*	Starry Flounder	*Platichthys stellatus*
Longfin Smelt	*Spirinchus thaleichthys*	Snake Prickleback	*Lumpenus sagitta*	Spearnose Poacher	*Agonopsis vulsa*
Surf Smelt	*Hypomesus pretiosus*	Bay Goby	*Lepidogobius lepidus*	Sturgeon Poacher	*Podothecus accipenserinus*
Pacific Sanddab	*Citharichthys sordidus*	Blackbelly Eelpout	*Lycodes pacificus*	Pacific Tomcod	*Microgadus proximus*
Buffalo Sculpin	*Enophrys bison*	Shortfin Eelpout	*Lycodes brevipes*	Lingcod	*Ophiodon elongatus*
Great Sculpin	*Myoxocephalus polyacanthocephalus*	Spiney Dogfish	*Squalus suckleyi*	Pacific Halibut	*Hippoglossus stenolepis*
Longfin Sculpin	*Jordania zonope*	Big Skate	*Raja binoculata*	Shiner Perch	*Cymatogaster aggregata*
Padded Sculpin	*Artedius fenestralis*	Butter Sole	*Isopsetta isolepis*	Black Rockfish	*Sebastes melanops*
Ribbed Sculpin	*Triglops pingelii*	Dover Sole	*Microstomus pacificus*	Blue Rockfish	*Sebastes mystinus*
Slim Sculpin	*Radulinus asprellus*	English Sole	*Parophrys vetulus*	China Rockfish	*Sebastes nebulosus*
Spineyhead Sculpin	*Dasycottus setiger*	Flathead Sole	*Hippoglossoides elassodon*	Copper Rockfish	*Sebastes caurinus*
Plainfin Midshipman	*Porichthys notatus*	Rex Sole	*Glyptocephalus zachirus*	Quillback Rockfish	*Sebastes maliger*
Whitespotted greenling	*Hexagrammos stelleri*	Rock Sole	*Lepidopsetta bilineata*	Tiger Rockfish	*Sebastes nigrocinctus*
Saddleback Gunnel	*Pholis ornata*	Sand Sole	*Psettichthys melanostictus*		
Pacific Herring	*Clupea pallasii*	Walleye Pollock	*Theragra chalcogramma*		
Benthic & Shellfish Species					
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**	**Common Name**	**Scientific Name**
Blue Mussel	*Mytilus edulis*	Eastern Soft Shell Clam	*Mya arenaria*	Pacific Gaper Clam	*Tresus nuttalli*
Olympia Oyster	*Ostrea lurida*	Geoduck	*Panopea generosa*	Hood Canal Shrimp	*Panadulus danae*
Pacific Oyster	*Crassostrea gigas*	Horse Clam	*Tresus capax*	Dungeness Crab	*Cancer magister*
Basket Cockle	*Clinocardium nuttallii*	Manila Clam	*Venerupis philippinarum*	Red Rock Crab	*Cancer pruductus*
Butter Clam	*Saxidomus gigantea*	Native Littleneck Clam	*Prototthaca staminea*		

Threatened and Endangered Species

Species		**Status**	
Common Name	**Scientific Name**	**Federal**	**State**
Marbled murrelet	*Brachyramphus marmoratus*	Threatened	Threatened
Bald eagle	*Haliaeetus leucocephalus*	Species of Concern	Sensitive
Puget Sound Chinook salmon	*Oncorhynchus tshawytscha*	Threatened	Candidate
Hood Canal summer run chum salmon	*Oncorhynchus keta*	Threatened	Candidate
Puget Sound steelhead	*Oncorhynchus mykiss*	Threatened	-
Bull trout	*Salvelinus confluentus*	Threatened	Candidate
Bocaccio rockfish	*Sebastes paucispinis*	Endangered	Candidate
Yelloweye rockfish	*Sebastes ruberrimus*	Threatened	Candidate
Humpback whale	*Megaptera novaeangliae*	Endangered	Endangered
Southern Resident killer whale	*Orcinus orca*	Endangered	Endangered

species.ID	species.commonName	year	number	numberPerHour	hours	flags
brant	Brant	109	401	6.546938776	61.25	
cangoo	Canada Goose	109	275	4.489795918	61.25	HC
truswa	Trumpeter Swan	109	36	0.587755102	61.25	
gadwal	Gadwall	109	30	0.489795918	61.25	
eurwig	Eurasian Wigeon	109	2	0.032653061	61.25	
amewig	American Wigeon	109	2353	38.41632653	61.25	HC
mallar	Mallard	109	499	8.146938776	61.25	
norsho	Northern Shoveler	109	100	1.632653061	61.25	HC
norpin	Northern Pintail	109	1708	27.88571429	61.25	HC
gnwtea	Green-winged Teal	109	344	5.616326531	61.25	HC
duck	duck sp.	109	267	4.359183673	61.25	HC
rinduc	Ring-necked Duck	109	48	0.783673469	61.25	
gresca	Greater Scaup	109	16	0.26122449	61.25	
lessca	Lesser Scaup	109	15	0.244897959	61.25	
scaup	scaup sp.	109	2	0.032653061	61.25	
harduc	Harlequin Duck	109	34	0.555102041	61.25	
sursco	Surf Scoter	109	301	4.914285714	61.25	
whwsco	White-winged Scoter	109	97	1.583673469	61.25	
scoter	scoter sp.	109	3	0.048979592	61.25	
lotduc	Long-tailed Duck	109	31	0.506122449	61.25	
buffle	Bufflehead	109	273	4.457142857	61.25	
comgol	Common Goldeneye	109	126	2.057142857	61.25	
bargol	Barrow's Goldeneye	109	6	0.097959184	61.25	
golden	goldeneye sp.	109	7	0.114285714	61.25	
hoomer	Hooded Merganser	109	30	0.489795918	61.25	
commer	Common Merganser	109	3	0.048979592	61.25	
rebmer	Red-breasted Merganser	109	82	1.33877551	61.25	
rudduc	Ruddy Duck	109	8	0.130612245	61.25	
x00095	duck sp. X Mallard (hybrid)	109	3	0.048979592	61.25	
calqua	California Quail	109	22	0.359183673	61.25	
retloo	Red-throated Loon	109	5	0.081632653	61.25	
pacloo	Pacific Loon	109	137	2.236734694	61.25	
comloo	Common Loon	109	30	0.489795918	61.25	
loon	loon sp.	109	7	0.114285714	61.25	
pibgre	Pied-billed Grebe	109	8	0.130612245	61.25	
horgre	Horned Grebe	109	133	2.171428571	61.25	

rengre	Red-necked Grebe	109	43	0.702040816	61.25	
eargre	Eared Grebe	109	2	0.032653061	61.25	
wesgre	Western Grebe	109	197	3.216326531	61.25	
bracor	Brandt's Cormorant	109	26	0.424489796	61.25	
doccor	Double-crested Cormorant	109	186	3.036734694	61.25	
pelcor	Pelagic Cormorant	109	93	1.518367347	61.25	
cormor	cormorant sp.	109	43	0.702040816	61.25	
grbher	Great Blue Heron (Blue forn	109	46	0.751020408	61.25	
baleag	Bald Eagle	109	35	0.571428571	61.25	
norhar	Northern Harrier	109	2	0.032653061	61.25	
shshaw	Sharp-shinned Hawk	109	1	0.016326531	61.25	
coohaw	Cooper's Hawk	109	0	0	61.25	CW
rethaw	Red-tailed Hawk	109	6	0.097959184	61.25	
hawk	hawk sp.	109	1	0.016326531	61.25	
amekes	American Kestrel	109	1	0.016326531	61.25	
merlin	Merlin	109	1	0.016326531	61.25	
perfal	Peregrine Falcon	109	1	0.016326531	61.25	
amecoo	American Coot	109	78	1.273469388	61.25	
bkbplo	Black-bellied Plover	109	28	0.457142857	61.25	
killde	Killdeer	109	47	0.767346939	61.25	
blkoys	Black Oystercatcher	109	1	0.016326531	61.25	
sptsan	Spotted Sandpiper	109	2	0.032653061	61.25	
greyel	Greater Yellowlegs	109	2	0.032653061	61.25	
margod	Marbled Godwit	109	0	0	61.25	US CW
blktur	Black Turnstone	109	109	1.779591837	61.25	
surfbi	Surfbird	109	1	0.016326531	61.25	
sander	Sanderling	109	54	0.881632653	61.25	
rocsan	Rock Sandpiper	109	1	0.016326531	61.25	US
dunlin	Dunlin	109	188	3.069387755	61.25	
peep	peep sp.	109	37	0.604081633	61.25	
wilsni1	Wilson's Snipe	109	13	0.212244898	61.25	
bongul	Bonaparte's Gull	109	3	0.048979592	61.25	
mewgul	Mew Gull	109	455	7.428571429	61.25	
hergul	Herring Gull	109	1	0.016326531	61.25	
glwgul	Glaucous-winged Gull	109	142	2.318367347	61.25	
x00051	Glaucous-winged Gull X We	109	254	4.146938776	61.25	
gull	gull sp.	109	277	4.52244898	61.25	

commur	Common Murre	109	177	2.889795918	61.25	
piggui	Pigeon Guillemot	109	135	2.204081633	61.25	
marmur	Marbled Murrelet	109	39	0.636734694	61.25	
ancmur	Ancient Murrelet	109	47	0.767346939	61.25	HC
rhiauk	Rhinoceros Auklet	109	21	0.342857143	61.25	
alcid	alcid sp.	109	2	0.032653061	61.25	
rocpig	Rock Pigeon	109	264	4.310204082	61.25	
moudov	Mourning Dove	109	37	0.604081633	61.25	HC
brdowl	Barred Owl	109	2	0.032653061	61.25	
owl	owl sp.	109	1	0.016326531	61.25	
annhum	Anna's Hummingbird	109	13	0.212244898	61.25	HC
belkin	Belted Kingfisher	109	12	0.195918367	61.25	
rebsap	Red-breasted Sapsucker	109	48	0.783673469	61.25	HC
dowwoo	Downy Woodpecker	109	5	0.081632653	61.25	
haiwoo	Hairy Woodpecker	109	5	0.081632653	61.25	
norfli	Northern Flicker	109	49	0.8	61.25	
resfli	Northern (Red-shafted) Flick	109	48	0.783673469	61.25	
yesfli	Northern (Yellow-shafted) Fl	109	1	0.016326531	61.25	
pilwoo	Pileated Woodpecker	109	1	0.016326531	61.25	
hutvir	Hutton's Vireo	109	5	0.081632653	61.25	
stejay	Steller's Jay	109	49	0.8	61.25	
crow	crow sp.	109	560	9.142857143	61.25	
comrav	Common Raven	109	16	0.26122449	61.25	
bkcchi	Black-capped Chickadee	109	28	0.457142857	61.25	
chbchi	Chestnut-backed Chickadee	109	137	2.236734694	61.25	
bushti	Bushtit	109	60	0.979591837	61.25	
rebnut	Red-breasted Nuthatch	109	18	0.293877551	61.25	
brncre	Brown Creeper	109	6	0.097959184	61.25	
bewwre	Bewick's Wren	109	9	0.146938776	61.25	
winwre	Winter Wren	109	33	0.53877551	61.25	
marwre	Marsh Wren	109	7	0.114285714	61.25	
gockin	Golden-crowned Kinglet	109	146	2.383673469	61.25	
ruckin	Ruby-crowned Kinglet	109	30	0.489795918	61.25	
kingle	kinglet sp.	109	37	0.604081633	61.25	
herthr	Hermit Thrush	109	8	0.130612245	61.25	
amerob	American Robin	109	1735	28.32653061	61.25	HC
varthr	Varied Thrush	109	85	1.387755102	61.25	

eursta	European Starling	109	295	4.816326531	61.25	LC
cedwax	Cedar Waxwing	109	48	0.783673469	61.25	
audwar	Yellow-rumped (Audubon's)	109	0	0	61.25	CW
towwar	Townsend's Warbler	109	2	0.032653061	61.25	
spotow	Spotted Towhee	109	142	2.318367347	61.25	
savspa	Savannah Sparrow	109	1	0.016326531	61.25	
foxspa	Fox Sparrow	109	82	1.33877551	61.25	
sonspa	Song Sparrow	109	242	3.951020408	61.25	
linspa	Lincoln's Sparrow	109	6	0.097959184	61.25	HC
whcspa	White-crowned Sparrow	109	31	0.506122449	61.25	
gocspa	Golden-crowned Sparrow	109	58	0.946938776	61.25	
sparro	sparrow sp.	109	4	0.065306122	61.25	
orejun	Dark-eyed (Oregon) Junco	109	496	8.097959184	61.25	
slcjun	Dark-eyed (Slate-colored) Ju	109	0	0	61.25	CW
rewbla	Red-winged Blackbird	109	25	0.408163265	61.25	

2015-2016 BIVALVE SHELLFISH HARVEST PLAN FOR NAVAL MAGAZINE INDIAN ISLAND

INTRODUCTION

This Naval Magazine Indian Island (NAVMAG) Bivalve Harvest Plan provides a beach-specific harvest plan for clams and for subsistence oysters on NAVMAG beaches for the 2015-2016 management period. The parties to this plan include the United States Navy, the Lower Elwha Klallam Tribe, the Jamestown S'Klallam Tribe, the Port Gamble S'Klallam Tribe and the Suquamish Tribe. This plan presents the harvestable quantities for native littleneck and Manila clams for each beach and gives harvest allowances for tribal and non-tribal harvest from October 1, 2015 through September 30, 2016. In addition, this plan provides for a tribal subsistence opportunity on non-commercial clams and Pacific oysters. Finally, this plan establishes conditions and procedures for the tribal harvest at NAVMAG.

CLAM POPULATION ESTIMATES AND ALLOWABLE HARVEST

The native littleneck and Manila clam population size for each harvest area (Figure 1) was estimated using survey techniques developed by the Point No Point Treaty Council. Table 1 shows the estimated population biomass for harvestable size (≥ 38 mm) clams for each harvest area, and includes both wild and enhanced clam stocks. Some harvest areas were not surveyed for the 2015-16 season due to a lack of available personnel during low tide events. In these cases the estimated clam population was set at a level equal to 75% of the previous population estimate derived from quantitative surveys, less any harvest recorded since the last survey. In addition, some beaches were not surveyed because of pollution problems, security restrictions, or poor clam habitat.

On those beaches reserved for Tribal harvest, a harvest rate of 20% was applied to the total wild population biomass of harvestable size native littleneck clams and Manila clams combined to calculate the allowable harvest quantity. On those Tribal beaches subject to annual enhancement activity, a total harvest rate of 50% was applied to the total population biomass of harvestable size clams to calculate the allowable harvest. For those beaches reserved for non-tribal harvest, a harvest rate of 25% was applied to the total wild population biomass of harvestable size native littleneck clams, and a rate of 33% was applied to the total wild population biomass of harvestable Manila clams to calculate the

allowed harvest quantity. Each beach was treated as a separate harvest area and the clam biomass and allowable harvest was calculated accordingly[1].

SUBSISTENCE HARVEST

Additional quantities of clams other than native littleneck and Manila clams (butter clams, cockles, horse clams) may be harvested for subsistence purposes during scheduled commercial harvests, upon agreement amongst Naval Magazine Indian Island, Point No Point Treaty Tribes, and the Suquamish Tribe. Likewise, oysters may be harvested for subsistence purposes by any Tribe during a normally scheduled commercial clam harvest. The individual subsistence limits for clams and oysters during any scheduled commercial harvest are as follows:

Butter Clams:	10 pounds/harvester
Cockles:	5 pounds/harvester
Horse Clams:	5 clams/harvester
Oysters:	5 dozen oysters/harvester

Subsistence harvest limits other than those prescribed above may be implemented for a particular harvest if agreed to by all parties prior to the scheduled opening.

HARVEST CONDITIONS

The following conditions will be met for all tribal harvest:

1. Harvest shall occur only on beaches along the east shore of the Island from beach 5.0 at the north to Beach 9.5 at the south (Figure 1). Harvest quantities for each harvest group are listed for each beach in Table 2.

2. The NAVMAG staff and tribal biologists will coordinate tribal harvest schedules. Due to force protection security measures, harvest days will be limited to four per month. This number (i.e. 4 days per month) does not include ceremonial harvest days. Any Tribe wishing to conduct a ceremonial harvest will obtain agreement with the other Tribal parties as well as NAVMAG staff at least 48 hours prior to the proposed fishery.

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[1] During the 2009-10 clam harvest season, it was discovered that the ownership of some of the beaches on the eastern side of Indian Island were in question. The State claimed that several intertidal areas were never transferred to the Navy when the Navy took possession of the Island during the 1930's. However, the State of Washington, through the Washington Departments of Fisheries and Wildlife, and the Navy entered into a cooperative management agreement for these and other Indian Island beaches in 1989. Part of that agreement provided sole access to these beaches to Tribes and Navy personnel for the harvest of bivalve resources. This agreement is still in effect, and until such time as this agreement is modified or cancelled, the clam management plan between the Navy and the Treaty Tribes will continue in its' current form.

3. The number of tribal clam harvesters shall not exceed 25 individuals during any tide or time and will be limited to digging only in designated areas.

4. Access shall be given only to harvesters age 12 years or older who are included on a list of eligible harvesters provided by tribal management staff to the NAVMAG Indian Island Natural Resources Manager at least 48 hours prior to the planned opening. Access shall not be granted to convicted felons, registered sex offenders or individuals with a warrant out for their arrest. All monitors, tribal members, their spouses, and all tribal harvesters planning to be alternates must be included on the list. The list shall specify the specific date, time, and beach number for the scheduled harvest. The list may be updated as necessary, provided that no changes to the list will be allowed 48 hours in advance of the scheduled harvest. Access to NAVMAG will require an official picture identification card that will be matched against the list. In addition to the photograph, the card must contain the full legal name, date of birth, gender, height, weight, eye color and current address. Those not on the list and those without proper identification will be denied access. All tribal harvesters, monitors and enforcement officers are subject to random background checks while being processed through the main gate during entry onto the installation. Refusal to provide consent for the background check will result in denial of access for that individual. Non-US citizens will not be allowed access unless escorted by NAVMAG staff.

5. Harvesters will be escorted to and from the beach area by NAVMAG Indian Island staff as guests of the Commanding Officer. Harvesters will be permitted on open beaches for the period not to exceed four hours before and after the low tide during an opening. Harvesters must enter and leave NAVMAG, as well as travel to and from the beach, as a group under escort by NAVMAG Indian Island staff.

6. No cameras, weapons, matches, lighters, alcohol or drugs are allowed. Smoking and open fires are prohibited at all times. Phones may be used to make calls, but may not be used to take photographs.

7. Harvesters will provide transportation, lights, and other equipment necessary to accomplish their harvest. There are no toilet facilities available on NAVMAG beaches. Tribal guidelines must address this issue.

8. All vehicles entering the Naval Magazine facility must meet minimum NAVMAG requirements (i.e. current registration, proof of insurance and valid driver's license).

9. Harvest methods will be limited to hand-digging or handheld prying tools only. Holes caused by digging must be refilled.

10. Minimum harvest size for all clam species is 1.5 inches (38 mm) in length. Minimum harvest size for oysters is 2.5 inches in length.

11. Harvesters must exercise care not to damage any oysters on beaches where they are harvesting clams.

12. Beach boundaries shall be maintained by the NAVMAG staff.

13. Beaches, which the Department of Health (hereafter DOH) has designated as not certified or prohibited to commercial harvest, will not be open to any shellfish harvest.

14. NAVMAG security requirements will be strictly enforced. By agreement, tribal fishery enforcement officers may work with NAVMAG security personnel in maintaining orderly clam fisheries consistent with applicable laws, regulations and administrative instructions.

15. During all tribal harvest, there will be at least one tribal harvest supervisor or one tribal enforcement officer on the beach at all times. The tribal harvest supervisor will not harvest shellfish except as may be required for sampling for paralytic shellfish poisoning, population information, or other necessary information. This person is responsible for assuring that diggers comply with all regulations, especially no smoking, backfilling holes, minimum size limits, harvesting within boundaries, completing harvest cards, and recording bag weights.

16. Access to the harvest area(s) will be by land vehicle only. Vehicles will not be allowed on the beaches. All vehicles and harvesters will be escorted to and from the beach area by NAVMAG Indian Island staff.

17. Existing NAVMAG roads, bridges, piers, utilities, buildings, or other facilities damaged by operations of the harvester shall be repaired or replaced by the harvester as directed without cost to Naval Magazine Indian Island or, at the option of NAVMAG, may be repaired by NAVMAG personnel and the cost reimbursed by the harvester. Damaged items shall be restored to their "before-damage" condition. Beaches and harvesting areas will be cleaned of all debris brought in by the harvesters before leaving the area.

PSP MONITORING

Paralytic Shellfish Poisoning (PSP) monitoring for NAVMAG and tribal shellfish harvest will be conducted as follows:

1. Approval to harvest certified NAVMAG beaches will be conditional upon PSP test results from the beach scheduled for opening. In addition, PSP results that equal or exceed 80 micrograms from other non-tribal sample sites in Kilisut

Harbor, including early warning mussel samples from Fort Flagler, may result in a closure of all shellfish harvesting for Naval Magazine Indian Island.

2. PSP samples will be collected according to the requirements of the Department of Health (DOH). When required, one sample of littleneck clams will be collected from NAVMAG beaches within seven (7) days prior to the planned opening from the beach intended for harvest. For any harvest on beach 6.0, two samples will be taken: one from the north end and one from the south.

3. If PSP toxin levels equal or exceed 80 micrograms at any of the sampling sites on NAVMAG beaches, these beaches will be closed to all shellfish harvesting.

> **Note:** Species-specific closures may be applied, i.e., toxicity in butter clams and mussels would not preclude harvest of littlenecks or Manila's if test results for either of these species were consistently less than 80 micrograms over a period of time.

4. All samples will be collected by representatives of the Point No Point Treaty Council, the individual Tribes, or NAVMAG personnel.

5. Two successive sample sets less than 80 micrograms will be required to reopen a beach closed due to elevated levels of PSP. Sample sets will be collected five (5) to fourteen (14) days apart.

6. A separate sample of butter clams will be collected during the first PSP sampling for littlenecks on NAVMAG beaches. If PSP toxin levels in the butter clams are greater than 80 micrograms, NAVMAG beaches will be closed to butter clam harvest. To reopen for butter clam harvest, toxin levels must be below 80 micrograms in two successive sample sets of butter clams, collected at least fourteen (14) days apart.

If the first butter clam sample taken in the year for PSP monitoring is less than 80 micrograms, harvest for butter clams on NAVMAG beaches will be open. Sampling of butter clams for PSP toxin will occur when toxicity is detected in test results from PSP samples of littlenecks.

7. DOH shellfish programs will coordinate with laboratory staff and distribute test results. The contact person will be Jerry Borchert at 360-236-3328. Laboratory staff shall not be contacted.

8. DOH will contact the following persons by phone regarding test results and closures:

Suquamish Tribal Fisheries:
Viviane Barry – 360-394-8448; Cell phone – 360-434-8788, or

Luke Kelly – 360-394-8514; Cell phone – 360-271-1177

Point No Point Tribal Fisheries:
Austin Paul – 360-297-6505, or
Tamara Gage – 360-297-6290, or
Kelly Toy – 360-681-4641

Lower Elwha Klallam Tribal Fisheries:
Doug Morrill – 360-457-4012, ext. 7485

Naval Magazine Indian Island:
Environmental Manager
Bill Kalina – 360-396-5353; Cell phone – 360-981-8391; e-mail: William.kalina@navy.mil

Biologist
Sara Street – 360-396-5394; e-mail: Sara.c.street@navy.mil

HARVEST SCHEDULING AND MONITORING

1. Harvest schedules shall be prepared by the tribes and NAVMAG staff so that harvest does not exceed quantities specified in this plan. Monitoring will be performed to identify tribal, and non-Indian recreational and commercial harvest quantities. The tribal harvest schedule will include beach number, tribal affiliation, and date and time of harvest. A preliminary seasonal harvest schedule for all Tribal beaches is listed in Table 3. When tribal harvest of clams for a particular beach nears the allowable harvest, the following plan will be implemented by the Point No Point Treaty Council, the Lower Elwha Klallam Tribal staff, and the Suquamish Tribal staff:

   a. As the harvestable quantity remaining on any beach nears 500 pounds, tribal staff will relay this information to the designated NAVMAG personnel.
   b. Tribal staff will limit the final opening of a beach nearing its allowed harvest quantity to the number of hours, total bags, or total diggers estimated to reach, but not exceed, the allowable harvest.

2. The Security Officer and NAVMAG Natural Resources Manager must receive a minimum 48 hours notice for a scheduled opening. Openings to occur on Monday must be received by noon Friday prior to the planned first day's opening unless otherwise arranged. The NAVMAG Security Officer may cancel scheduled harvests during periods of heightened security threat condition.

3. The tribal monitor will complete two Daily Harvest Logs. One log will be sent by Security to the NAVMAG Natural Resources Manager. Information

provided on these logs will be used to maintain a record of the quantity of clams and oysters harvested by tribal and NAVMAG representatives.

4. The tribal harvest supervisor shall weigh a minimum of 50 percent of the number of full bags and of each group of partial bags containing harvested clams to determine average bag weight. All harvested clams will be weighed using a calibrated scale starting in 2013.

5. NAVMAG Security or the NAVMAG Natural Resources Manager may randomly check vehicles to verify the number of bags of harvested clams and oysters, and sub-sample harvested bivalves to obtain other biological information.

SECURITY REQUIREMENTS

1. Tribal harvesters shall stop at the Naval Magazine's Pass and ID Office prior to being allowed on NAVMAG. Harvesters shall provide security personnel the following:

a. Current Car Registration
b. Current Proof of Insurance
c. Current Driver's License for Vehicle Operator
d. Tribal ID Card

2. Harvesters shall be compared to the access list to gain access. Security will perform patrols of the area to ensure that NAVMAG Security Regulations are being followed. All Washington State traffic laws will be strictly enforced.

3. NAVMAG beaches and harvesting areas are made available on an "as is where is" basis. Neither the U.S. Navy nor any officer or employee thereof makes any representation or warranty of the condition or safety of any beach or clamming area involved in this agreement. The Tribal Management Authority, spouses, and other family members of the harvest agree to hold the U.S. Navy and its officers and employees harmless from any liability to the tribes or to their members that may arise from their use under this agreement of the beaches and clamming areas. Individual harvesters shall also sign agreements, and parents or guardians shall sign for individual harvesters under eighteen years of age to hold the U.S. Navy and its officers and employees harmless for any liability that may arise from their involvement in the use under this agreement of the beaches and harvesting areas.

4. In order to ensure the safety and security of harvesters, and protect all natural resources entrusted to NAVMAG's care, harvesters will be required to comply with the visitation conditions set forth above for harvesting and will cooperate fully with established harvest scheduling, monitoring and security requirements. Non-compliance as demonstrated through violation of conditions

and restrictions stated above are grounds for revocation of NAVMAG access privilege.

5. All harvesters, tribal enforcement officers and monitors shall be escorted as a group from the main gate to the designated beach area by NAVMAG Indian Island staff as guests of the Commanding Officer. Once the harvest is over the tribal enforcement officer or monitor will contact the staff member for escort of the group back to the main gate.

TRIBAL BEACH ENHANCEMENT

The Point No Point Treaty Council Tribes, along with the Lower Elwha Klallam Tribe and the Suquamish Tribe, have recently begun efforts to enhance Manila clam populations on beaches 5.0, 6.0, 7.0 and 9.0. Subsequent clam seeding activities will be dependent upon the availability of clam seed and prevailing security requirements at NAVMAG. The use of active predator control measures, such as the placement of nets over the seed after planting, will not be employed for this project, unless specifically approved in advance by the NAVMAG Environmental Manager or NAVMAG Natural Resources Manager. Seed survival and growth will be monitored through normal clam population surveys conducted by the Tribes. Any adult Manila clams resulting from this enhancement activity will become available for harvest within approximately 3 years. The harvest schedule for enhanced beaches will be incorporated into the monthly harvest schedule depicted in Table 3.

Plans to enhance other tribal beaches, other than beaches 5.0, 6.0, 7.0 and 9.0, will be discussed and agreed to by the parties to this Plan prior to implementation. The following table summarizes tribal enhancement activities to date.

Beach	Year Seeded	Survey Year	First Harvest	# of Clams Seeded	Biomass
6.0	2010	2013	2013-14	3.5M	
7.0	2011	2014	2014-15	1M	
9.0	2011	2014	2014-15	2M	
5.0	2013	2016	2016-17	2M	
6.0	2014	2017	2017-18	2.8M	
9.0	2015	2018	2018-19	0.75M	

Signature Page

2015-2016 Clam Harvest Plan for Naval Magazine Indian Island

Commanding Officer, Naval Magazine Indian Island — Date: 10/21/15

Fisheries Manager,
Lower Elwha Klallam Tribe — Date

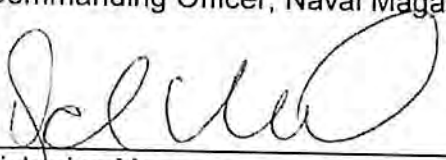
Shellfish Manager,
Jamestown S'Klallam Tribe — Date

Shellfish Manager,
Port Gamble S'Klallam Tribe — Date

Fisheries Director, Suquamish Tribe — Date

Signature Page

2015-2016 Clam Harvest Plan for Naval Magazine Indian Island

Commanding Officer, Naval Magazine Indian Island	Date
 Fisheries Manager, Lower Elwha Klallam Tribe	10-23-15 Date
Shellfish Manager, Jamestown S'Klallam Tribe	Date
Shellfish Manager, Port Gamble S'Klallam Tribe	Date
Fisheries Director, Suquamish Tribe	Date

Signature Page

2015-2016 Clam Harvest Plan for Naval Magazine Indian Island

Commanding Officer, Naval Magazine Indian Island — Date

Fisheries Manager,
Lower Elwha Klallam Tribe — Date

Shellfish Manager,
Jamestown S'Klallam Tribe — Date 10/19/15

Shellfish Manager,
Port Gamble S'Klallam Tribe — Date

Fisheries Director, Suquamish Tribe — Date

Signature Page

2015-2016 Clam Harvest Plan for Naval Magazine Indian Island

Commanding Officer, Naval Magazine Indian Island	Date
Fisheries Manager, Lower Elwha Klallam Tribe	Date
Shellfish Manager, Jamestown S'Klallam Tribe	Date
Shellfish Manager, Port Gamble S'Klallam Tribe	10-19-15 Date
Fisheries Director, Suquamish Tribe	Date

Signature Page

2015-2016 Clam Harvest Plan for Naval Magazine Indian Island

Commanding Officer, Naval Magazine Indian Island	Date
Fisheries Manager, Lower Elwha Klallam Tribe	Date
Shellfish Manager, Jamestown S'Klallam Tribe	Date
Shellfish Manager, Port Gamble S'Klallam Tribe	Date
Fisheries Director, Suquamish Tribe	10/9/15 Date

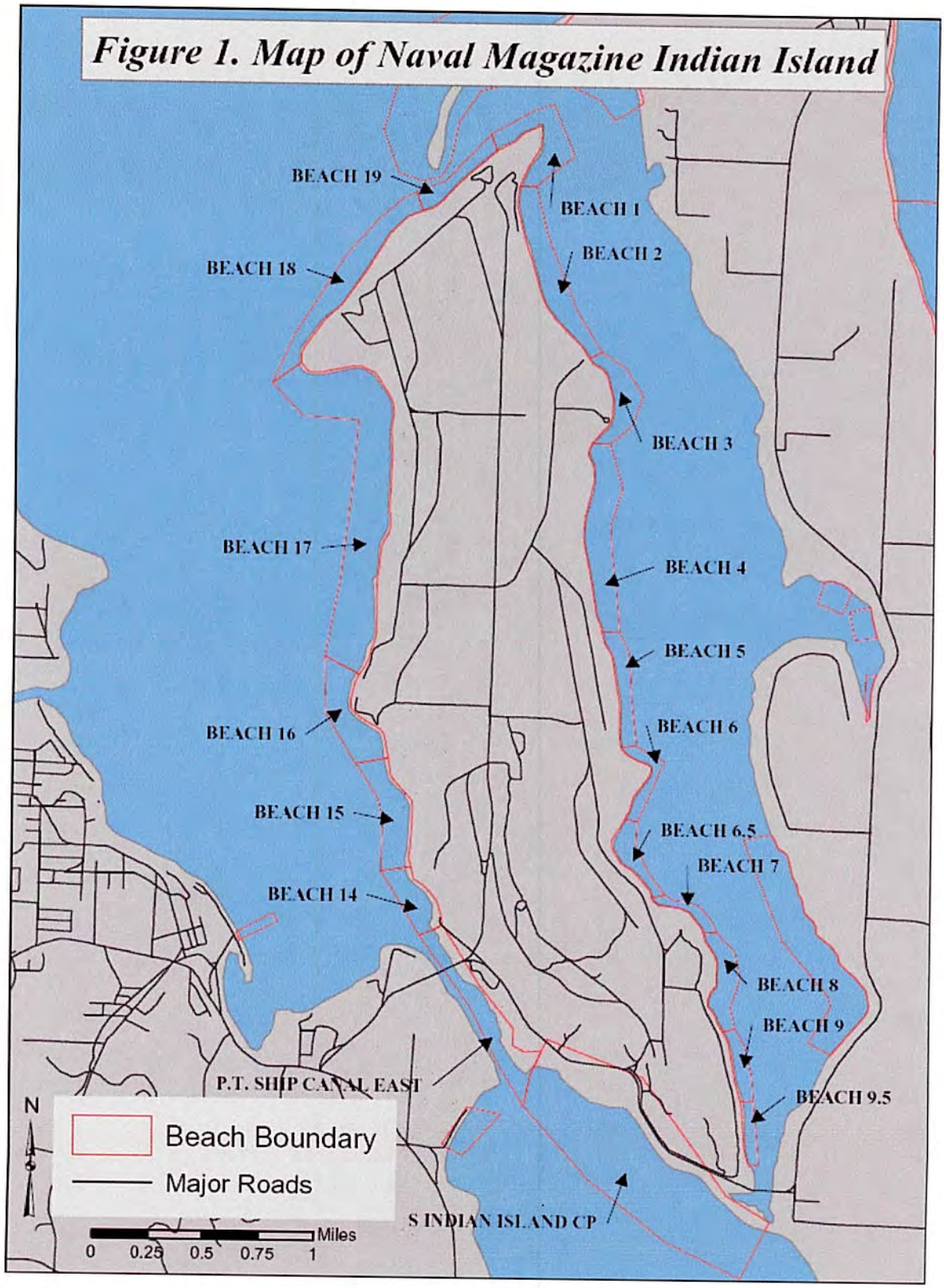


Figure 1. Map of Naval Magazine Indian Island
BEACH 19
BEACH 1
BEACH 2
BEACH 18
BEACH 3
BEACH 17
BEACH 4
BEACH 5
BEACH 16
BEACH 6
BEACH 15
BEACH 6.5
BEACH 7
BEACH 14
BEACH 8
BEACH 9
P.T. SHIP CANAL EAST
BEACH 9.5
N
Beach Boundary
Major Roads
S INDIAN ISLAND CP
Miles
0 0.25 0.5 0.75 1

Table 1. **2015 POPULATION ESTIMATES FOR NATIVE LITTLENECK AND MANILLA CLAMS ON INDIAN ISLAND BEACHES. QUANTITIES REPORTED IN POUNDS.**

Beach Name[1]	BIDN	Survey Date	Littleneck Clams ≥ 38mm[2]	Manila Clams ≥ 38 mm	Littleneck & Manila Clams ≥ 38 mm Combined	Total Allowable Harvest[3]
Indian Is. #1	250370					
Indian Is. #2	250360					
Indian Is. #3	250290	May-02	5,318	10,512	15,830	3,599
Indian Is. #4	250350	May-02	19,992	33,308	53,300	11,992
Indian Is. #5	250280	Jun-15	21,285	10,251	31,536	6,307
Indian Is. #6	250310	Apr-13	19,027	39,332	58,359	5,129
Indian Is. #6.5	250315	Jul-15	13,696	0	13,696	2,739
Indian Is. #7	250340	May-14	8,161	0	8,161	1,632
Indian Is. #8	250330	May-02	23,197	316	23,513	4,428
Indian Is. #9	250320	May-14	8,488	842	9,330	1,866
Indian Is. #9.5	250325	Aug-14	9,702	166	9,868	1,974
Indian Is. #15	250220					
Indian Is. #16	250230					
Indian Is. #17	250240					
Indian Is. #18	250250					
Indian Is. #19	250270					
TOTAL			**128,865**	**94,727**	**223,592**	**39,666**

1. Beaches 1, 2, 15, 16, 17, 18, and 19 were not surveyed because of security restrictions, pollution or poor clam habitat
2. Beaches #3, #4, and #8 were last surveyed in 2002. The abundance quantities for 2015 were estimated at 75% of the 2002 abundance estimates for Manila clams and 50% of the 2002 abundance estimates for littleneck clams.
3 The estimated Manila clam population on Beach #6.0 was the result of enhancement, and the harvestable amount was therefore calculated at 50% of the estimated biomass, less the harvest recorded during the summers of 2013-2015.
4. Manila clam abundance on Beaches #7.0, 9.0 and 9.5 were adjusted by subtracting total harvest from the last survey and reducing the result by 25% to establish a conservative harvestable amount.
5. The 2015 total allowable harvest for beaches #3, #4, and #8 is equal to 25% of littleneck clam population ≥ 38 mm plus 33% of Manila clam population ≥ 38 mm. The total allowable harvest for beaches #5, #6.5, #7, #9, and #9.5 is equal to 20% of the combined littleneck clam and Manila clam population ≥ 38 mm..

Table 2. **2015 HARVEST QUANTITY FOR TRIBAL AND NON-TRIBAL SHARES OF LITTLENECK AND MANILLA CLAMS FROM INDIAN ISLAND BEACHES**

Beach Name	BIDN	Total Allowable Littleneck and Manila Clam Harvest	Allowable Non-Tribal Recreational And Commercial Littleneck And Manila Clam Harvest	Allowable Tribal Littleneck And Manila Clam Harvest
Indian Is. #1	250370			
Indian Is. #2	250360			
Indian Is. #3	250290	3,599	3,599	
Indian Is. #4	250350	11,992	11,992	
Indian Is. #5	250280	6,307		6,307
Indian Is. #6	250310	5,129		5,129
Indian Is. #6.5	250315	2,739		2,739
Indian Is. #7	250340	1,632		1,632
Indian Is. #8	250330	4,428	4,428	
Indian Is. #9	250320	1,866		1,866
Indian Is. #9.5	250325	1,974		1,974
Indian Is. #15	250220			
Indian Is. #16	250230			
Indian Is. #17	250240			
Indian Is. #18	250250			
Indian Is. #19	250270			
TOTAL		**39,666**	**20,019**	**19,647**

Table 3. **2015-2016 Indian Island Tribal Clam Fishery Preliminary Harvest Plan**

Rotation Number-Day	Day/Date	Tide Height	Time[1]	Beach
1 - 1	Tue/Oct 27	-1.3	11:25 pm	9.5
1 - 2	Thu/Oct 29	-1.8	12:08 am	9.5
1 - 3	Fri/Oct 30	-1.9	12:54 am	9.5
1 - 4	Sat/Oct 31	-1.6	1:41 am	9.5
2 - 1	Wed/Nov 25	-2.2	10:07 pm	9.5
2 - 2	Thu/Nov 26	-2.4	10:49 pm	9.5
2 - 3	Fri/Nov 27	-2.2	11:32 pm	9.5
2 - 4	Sun/Nov 29	-1.7	12:16 am	9.5
3 - 1	Fri/Dec 11	-1.5	10:39 pm	9.5
3 - 2	Sat/Dec 12	-1.7	11:16 pm	9.5
3 - 3	Sun/Dec 13	-1.6	11:56 pm	9.5
3 - 4	Tue/Dec 15	-1.3	12:38 am	9.5
4 - 1	Fri/Jan 8	-1.3	9:43 pm	9.5
4 - 2	Sat/Jan 9	-1.7	10:20 pm	9.5
4 - 3	Sun/Jan 10	-1.9	10:59 pm	9.5
4 - 4	Mon/Jan 11	-1.7	11:40 pm	9.5
5 - 1	Sat/Feb 6	-1.1	9:18 pm	6.5
5 - 2	Sun/Feb 7	-1.3	9:59 pm	6.5
5 - 3	Mon/Feb 8	-1.3	10:40 pm	6.5
5 - 4	Tue/Feb 9	-1.0	11:22 pm	6.5

Table 3. Continued

Rotation Number-Day	Day/Date	Tide Height	Time[1]	Beach
6 - 1	Sat/Mar 5	-0.1	8:04 pm	6.5
6 - 2	Sun/Mar 6	-0.3	8:50 pm	6.5
6 - 3	Mon/Mar 7	-0.4	9:34 pm	6.5
6 - 4	Tue/Mar 8	-0.1	10:18 pm	6.5
7 - 1	Sat/Apr 9	-0.9	12:57 pm	6.5
7 - 2	Sun/Apr 10	-1.2	1:45 pm	6.5
7 - 3	Mon/Apr 11	-1.1	2:37 pm	6.5
7 - 4	Tue/Apr 12	-0.7	3:32 pm	6.5
8 - 1	Sat/May 7	-2.0	11:48 am	6.5
8 - 2	Sun/May 8	-2.3	12:33 pm	6.5
8 - 3	Mon/May 9	-2.2	1:20 pm	6.5
8 - 4	Tue/May 10	-1.8	2:10 pm	6.5
9 - 1	Sat/Jun 4	-2.4	10:45 am	7.0
9 - 2	Sun/Jun 5	-2.8	11:29 am	7.0
9 - 3	Mon/Jun 6	-2.9	12:13 pm	7.0
9 - 4	Tue/Jun 7	-2.5	12:59 pm	7.0
10 - 1	Sat/Jul 2	-2.1	9:44 am	7.0
10 - 2	Sun/Jul 3	-2.5	10:29 am	7.0
10 - 3	Mon/Jul 4	-2.7	11:13 am	7.0
10 - 4	Tue/Jul 5	-2.5	11:56 am	7.0

Table 3. Continued

Rotation Number-Day	Day/Date	Tide Height	Time[1]	Beach
11 - 1	Mon/Aug 1	-1.8	10:15 am	7.0
11 - 2	Tue/Aug 2	-1.7	10:58 am	7.0
11 - 3	Wed/Aug 3	-1.4	11:40 am	7.0
11 - 4	Thu/Aug 4	-0.9	12:20 pm	7.0
12 - 1	Tue/Sep 20	-0.1	1:41 am	7.0
12 - 2	Wed/Sep 21	-0.4	2:34 am	7.0
12 - 3	Thu/Sep 22	-0.4	3:30 am	7.0
12 - 4	Fri/Sep 23	-0.3	4:32 am	7.0

1. "Time" denotes the time of the maximum tidal deviation. Tribal fisheries will typically be scheduled to begin two hours in advance of this time, and continue for two hours after this time.

Note: This preliminary harvest schedule may require modification if paralytic shellfish poisoning (PSP) levels at the target beach are outside the acceptable range, as outlined under PSP Monitoring. Adverse weather conditions or other unforeseen circumstances may also require a modification to this schedule. Additionally, the actual harvest rate on each beach will dictate the actual number of harvest days reserved for each beach. Notification of modifications to this schedule will follow provisions under Harvest Scheduling and Monitoring.

Designated Parking Areas – Indian Island Shellfish Beaches 3 – 9.5

Beach 3 North: Puyallup Road turnaround within the graveled area.

Beach 3 South/Beach 4 North: Dynamite Trail turnaround.

Beach 4 South: Griffin Street turnaround on the graveled area.

Beach 5 & 6: Bishop Spit Road turnaround.

Beach 6.5 & 7: Shoulder on East Road across from Magazine 60 (east side).

Beach 8 & 9: Shoulder on Halligan Road adjacent to the orchard (east side).

Beach 9.5: Shoulder of South Boundary Road at Gate 3.

Note: Vehicles parked at each designated parking area must be clear of the access roads to allow passage of thru traffic at all times.

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

Final List of Bird Species to Which the Migratory Bird Treaty Act Does Not Apply

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of availability.

SUMMARY: We are publishing a final list of the nonnative bird species that have been introduced by humans into the United States or its territories and to which the Migratory Bird Treaty Act (MBTA) does not apply. This action is required by the Migratory Bird Treaty Reform Act (MBTRA) of 2004. The MBTRA amends the MBTA by stating that it applies only to migratory bird species that are native to the United States or its territories, and that a native migratory bird is one that is present as a result of natural biological or ecological processes. This notice identifies those species that are not protected by the MBTA, even though they belong to biological families referred to in treaties that the MBTA implements, as their presence in the United States and its territories is solely the result of intentional or unintentional human-assisted introductions.

ADDRESSES: The complete file for this notice is available for inspection, by appointment (contact John L. Trapp, (703) 358–1714), during normal business hours at U.S. Fish and Wildlife Service, 4501 North Fairfax Drive, Room 4107, Arlington, Virginia.

SUPPLEMENTARY INFORMATION:

What Is the Authority for This Notice?

Migratory Bird Treaty Reform Act of 2004 (Division E, Title I, Sec. 143 of the Consolidated Appropriations Act, 2005, Pub. L. 108–447).

What Is the Purpose of This Notice?

The purpose of this notice is to make the public aware of the final list of "all nonnative, human-introduced bird species to which the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*) does not apply," as required by the MBTRA of 2004.

This notice is strictly informational. It merely lists some of the bird species to which the MBTA does not apply. The presence or absence of a species on this list has no legal effect. This list does not change the protections that any of these species might receive under such agreements as CITES—the Convention on International Trade in Endangered Species of Wild Fauna and Flora (T.I.A.S. 8249), the Endangered Species Act of 1973 (16 U.S.C. 1531–1544, 87 Stat. 275), or the Wild Bird Conservation Act of 1992 (16 U.S.C. 4901–4916, 106 Stat. 2224). Regulations implementing the MBTA are found in parts 10, 20, and 21 of 50 CFR. The list of migratory birds covered by the MBTA is located at 50 CFR 10.13.

What Was the Response of the Public to the Draft List?

A notice announcing a draft list of the nonnative human-introduced bird species to which the MBTA does not apply was published on January 4, 2005 (70 FR 372), with a request for public comments. The notice generated approximately 826 nonduplicated comments from the public. The draft list was supported by 21 State wildlife agencies (Arizona Game and Fish Department; Connecticut Bureau of Natural Resources; Delaware Division of Fish and Wildlife; Florida Fish and Wildlife Conservation Commission; Maryland Department of Natural Resources; Massachusetts Division of Fisheries and Wildlife; Michigan Department of Natural Resources; Montana Fish, Wildlife, and Parks; New Hampshire Fish and Game Department; New Jersey Division of Fish and Wildlife; New York State Division of Fish, Wildlife, and Marine Resources; North Carolina Wildlife Resources Commission; North Dakota Game and Fish Department; Oklahoma Department of Wildlife Conservation; Pennsylvania Game Commission; Rhode Island Division of Fish and Wildlife; South Dakota Department of Game, Fish, and Parks; Vermont Department of Fish and Wildlife; Virginia Department of Game and Inland Fisheries; Wisconsin Department of Natural Resources; and Wyoming Game and Fish Department), 11 nonprofit organizations representing bird conservation and science interests (American Bird Conservancy—submitted on behalf of 10 constituent organizations; Atlantic Flyway Council—representing 17 States, 7 Provinces, Puerto Rico, and the U.S. Virgin Islands; California Partners in Flight; Environmental Studies at Airlie–Swan Research Program; Friends of Iroquois National Wildlife Refuge; National Audubon Society; National Wildlife Federation; Ornithological Council—representing 11 scientific societies of ornithology; Point Reyes Bird Observatory; Tennessee Ornithological Society; and The Nature Conservancy), 1 organization representing an extractive industry (National Mining Association), and 18 private citizens.

Opposition to the draft list came from 4 animal-rights organizations (Ecology Center of Southern California, Friends of Animals, Friends of Montgomery Village Wildlife, and Humane Society of the United States), 2 law firms (representing the Humane Society of the United States and MBTA Advocates—the litigant in an outstanding lawsuit involving the mute swan), and some 770 private citizens. The vast majority of the latter comments are directly traceable to a posting made on January 13 to a free, weekly e-mail subscription service maintained jointly by the Fund for Animals and the Humane Society of the United States to notify their members of "hot issues in animal protection" and encourage them to write to public officials. Nearly all of these comments repeat the four "talking points" included in the alert and exhibit other similarities indicative of a common origin. The "talking points" are addressed in the Service's responses to Issues 1, 2, 3, and 10.

Issue 1: One reviewer argued at length (and numerous others suggested) that the Service must prepare an Environmental Impact Statement (EIS) before publishing the final list of bird species to which the Migratory Bird Treaty Act does not apply.

Service Response: In requiring (a) that the Secretary "provide adequate time for public comment" on a draft list and (b) that a final list be published "not later

than 90 days after the date of enactment" of the MBTRA (December 8, 2004), Congress did not allow sufficient time for the Service to prepare an EIS. The preparation of an EIS would have been inconsistent with the Service's duty to comply with the statutory time period. Furthermore, NEPA does not apply, as this list, which has no legal effect, is not the result of agency decisionmaking; also, publication of the list is a ministerial duty based on factual determinations. To the extent that any change in the scope of the MBTA has occurred, that change occurred upon Public Law 108–447 going into effect.

Issue 2: One reviewer argued at length (and many others agreed) that the draft list was inconsistent with the conventions with Canada, Mexico, Japan, and Russia because it excluded nonnative species from the protection of the MBTA. In particular, the reviewer asserted that Article I of the treaty with Mexico, which states that "it is right and proper to protect birds denominated as migratory, whatever may be their origin," demonstrates that the treaty parties intended to protect nonnative species.

Service Response: Congress explicitly stated its sense that the language of the MBTRA was "consistent with the intent and language of the four bilateral treaties implemented by" the MBTA.

The list is clearly not inconsistent with the conventions with Japan or Russia, as (a) those conventions list in an Annex (Japan) or Appendix (Russia) the individual species that are covered, (b) all of the species listed in the Annex or Appendix are native to both signatory countries, and (c) none of the species on this list appears in the Annex or Appendix.

In the case of the convention with Mexico, the language referred to by the reviewer must be read in the context of the entire sentence. The words "whatever may be their origin" are followed immediately by the words "which in their movements live temporarily" in the United States and Mexico. Therefore, the "whatever may be their origin" language is not inconsistent with the treaty applying only to species that are native to one or both countries. Although the treaty is admittedly silent on the issue, the families of migratory birds that the parties chose to protect strongly suggests that the intention was to protect only native migratory birds, as only families with species native to the United States and Mexico are included. None of the listed families are strictly nonnative to the United States or Mexico.

While the convention with Canada does not specifically make a distinction between native and nonnative or exotic species, the Service has traditionally and consistently interpreted and enforced the convention and the MBTA as applying only to native species. This approach is consistent with the historical fact that all of the contemporaneous concerns leading to enactment of the Canadian convention in 1916 and the MBTA in 1918 focused exclusively on imminent threats to native species, including (a) devastation of native waterfowl, dove and pigeon, and shorebird populations by market hunters; (b) the slaughter of native herons and egrets to supply the millinery trade with their plumes or aigrettes, and (c) the adornment of women's hats with the feathers of native songbirds (Dorsey 1998: 165–246). Moreover, like the treaty with Mexico, the list of bird groups covered by the treaty with Canada strongly suggests that the intent of the parties was to cover native species. Neither the families nor any of the other groupings or individual species mentioned are purely nonnative.

In any case, Congress has acted, and the Service now has no authority to enforce the prohibition of section 703 of the MBTA with respect to nonnative species.

Issue 3: One reviewer argued at length (and many others agreed) that, to avoid unintended consequences, the Service must go through the entire list and provide scientific justification for the inclusion of each individual species, conducting an exhaustive search of existing literature and consulting with ornithologists to ensure that no naturally occurring species have been included.

Service Response: Congress required only that the Service publish a list of species that we deemed to be not protected by the MBTA by virtue of their nonnative human-introduced status. Congress did not require that we publish the actual data on which the list was based. Nevertheless, we did conduct a comprehensive internal review of the relevant ornithological literature in making our determinations. That data was available for inspection during the public comment period as part of the administrative record. In making our determinations, we relied most prominently on the American Ornithologists' Union's (AOU 1998) *Check-list of North American birds.* The *Check-list* was supplemented, where necessary, by Phillips's (1928) *Wild birds introduced or transplanted in North America,* Long's (1981) *Introduced birds of the world,* Berger's (1981) *Hawaiian birdlife,* Stevenson and Anderson's (1994) *The birdlife of Florida,* and more than 200 other sources. The Ornithological Council concluded in their comments that "the list appears to be entirely consistent with the best available ornithological science." The National Audubon Society and the National Wildlife Federation offered their joint opinion that the list is "scientifically defensible," "thoroughly researched," and "in conformance with the decisions of the American Ornithologists' Union and other proper scientific authorities." The Tennessee Ornithological Society volunteered that, "To the best of our knowledge, no species occur on the list that do not meet the criteria [and] * * * no species have been omitted." In the interest of full public disclosure, the Service has posted—at *http://www.migratorybirds.fws.gov*—a summary of the evidence that it evaluated in reaching its conclusion that all of the species included in the final list are nonnative to the United States and its territories and occur therein solely as a result of human-assisted introductions.

Issue 4: Citing (a) fossil records, (b) historical illustrations, and (c) claims of natural occurrence in western North America, one reviewer claimed that "Under the definitions contained within the MBTRA, the mute swan is indeed a native species and hence entitled to continuing coverage under the Migratory Bird Treaty Act."

Service Response: We disagree for the reasons set forth in the draft list (70 FR 372). To more specifically address this comment, we provide additional information and analysis below.

(a) *Fossil Records.* The relevant scientific literature (A[llen] 1893; Brodkorb 1958 1964; Howard 1936, 1964; Miller 1948; Parmalee 1961; Shufeldt 1892, 1913a, 1913b; Wetmore 1933, 1935, 1943, 1956, 1957, 1959) reveals that four species of swans are recognized in the prehistoric faunal record of the United States: *Cygnus paloregonus* (extinct), *C. hibbardi* (extinct), *C. columbianus* (tundra swan), and *C. buccinator* (trumpeter swan). Avian paleontologists who examined the remains of *paloregonus* recognized that its skeletal structure was more similar to that of a group of swans formerly lumped together in the subgenus *Sthenelides,* a group that includes *C. olor* (the mute swan), than it was to either the tundra or trumpeter swan. Although sometimes referring to it as "mute-like" in structure, authorities have always recognized *paloregonus* as totally distinct from the mute swan (Brodkorb 1964; Howard

1964; Wetmore 1959), with no evidence of any evolutionary lineage from *paloregonus* to *olor*. Fossil remains of mute swans are known only from present-day Azerbaijan, England, Germany, Ireland, Italy, and Portugal (Howard 1964). In light of the above evidence, Wilmore's (1974:32) unsupported statements regarding the supposed presence of mute swans in North America prior to human settlement (*i.e.*, "From the discovery of swan fossils of the Pleistocene period it is believed the mute swan was indigenous to North America," and "Further proof of the mute being a native of North America has been found") are not scientifically credible.

(b) *Historical Illustrations.* We continue to conclude that none of the birds depicted in Harriot (1590) can be confidently identified to a particular species of swan, and the illustrations certainly do not provide evidence of the presence of mute swans in Pamlico Sound, North Carolina, in the late 16th century. John White (1537–1593), the Governor of the Roanoke colony and the artist whose illustrations grace Harriot (1590), produced a set of 27 portraits of North American birds that now resides in the British Museum; while the trumpeter swan is one of the 25 species illustrated by John White, the mute swan is not (White 2002).

A variety of paper products (such as blotters, calendars, calling cards, postcards, and trade cards) manufactured and sold in the United States in the late 19th and early 20th century often were adorned with fanciful illustrations of birds, and not infrequently the birds depicted were of European origin, including such species as mute swan, European robin, and European goldfinch. For this reason, commercial illustrations such as the Currier & Ives print purportedly depicting mute swans in the Chesapeake Bay in 1872 do not provide reliable evidence of the native occurrence of this species.

It is unreasonable to suggest that a species as large and distinctive as the mute swan—if it was truly a part of the native North American avifauna—would not have been encountered by reputable wildlife artists such as Alexander Wilson or John James Audubon and depicted in their artwork, or collected by any of the early naturalists such as Spencer Fullerton Baird, Charles Lucien Bonaparte, William Brewster, Elliott Coues, Thomas Nuttall, and Robert Ridgway during expeditions of exploration across the length and breadth of the American frontier. The absence of mute swans in the works of Wilson and Audubon, together with the absence of verifiable 18th or 19th century specimen records, is sufficient evidence for us to conclude that the mute swan is not native to the United States or its territories.

(c) *Claims of natural occurrence in the western United States.* Contrary to the reviewer's claim, the range map in Dement'ev and Gladkov (1952:303) does not depict a mute swan breeding population in extreme northwestern Alaska. In fact, there are no known natural occurrences of mute swans in Alaska (Ciaranca *et al.* 1992; Gabrielson and Lincoln 1959; Gibson 1997). Similarly, the suggestion of "migration" between northeast Siberia and northwest Alaska, "with [mute] swans coming down from Alaska and taking up residence in Washington, Oregon, and parts of Canada in between" is speculation, unsupported by evidence (Ciaranca *et al.* 1992).

All occurrences of the mute swan in British Columbia, Washington, Oregon, and California—including all known instances of breeding—can be confidently attributed to birds originating from human-assisted introductions or escapes (Campbell *et al.* 1990; Washington Ornithological Society 2004; Gilligan *et al.* 1994; Small 1994). The mute swans photographed on a lake in Del Monte, California, and published in the August 1904 issue of Country Life in America magazine undoubtedly represent an early introduction of domesticated or semidomesticated birds to the grounds of the luxurious Hotel Del Monte (opened in 1880) or the Old Del Monte golf course (opened in 1897), both located on the Monterey Peninsula. In short, there are no known natural occurrences of mute swans in any of these jurisdictions.

Issue 5: Several reviewers complained that we had not ruled out the possibility of natural occurrence in the United States or its territories for one or more of the species included on the draft list, with the following 19 being specifically mentioned by one or more respondents: bar-headed goose, red-breasted goose, mute swan, white-faced whistling duck, ruddy shelduck, common shelduck, white stork, king vulture, red-backed hawk, great black-hawk, southern lapwing, blue-headed quail-dove, black-throated mango, San Blas jay, great tit, greater Antillean bullfinch, Cuban bullfinch, Cuban grassquit, and European greenfinch.

Service Response: We again reviewed the scientific sources that were used to make a determination that these species are not native to the United States or its territories. We conclude that there is insufficient evidence to show that any of these species have occurred anywhere in the United States or its territories unaided by human assistance. In particular, the absence of any substantiated record of natural occurrence in the United States or its territories in the AOU Check-list (1998, as amended) or other competent authorities constitutes substantial evidence that none of these species is native to the United States or its territories. This decision does not preclude the addition of any of these species to the list of migratory birds protected by the MBTA (50 CFR 10.13) at some future date should substantive evidence (such as a specimen, identifiable photograph, or sound recording) become available confirming its natural occurrence in the United States or its territories.

Issue 6: Two reviewers questioned the omission of the muscovy duck and requested a clarification as to why this species is not on the list.

Service Response: The muscovy duck (*Cairina moschata*) has been domesticated for hundreds of years, with feral birds now being broadly distributed across the globe. In the United States, domesticated and semidomesticated birds are found in farms, parks, private collections, and zoos, and feral populations have been established in south Texas, Florida, and possibly elsewhere. It is native to the neotropics, where it is "*Resident* in the lowlands from Sinaloa and Tamaulipas [Mexico], south through most of Middle America (including Cozumel Island) and South America south, west of the Andes to western Ecuador and east of the Andes to northern Argentina and Uruguay" (AOU 1998:64). Through natural expansion, it is now a "Rare visitor on the Rio Grande in Texas (Hildalgo, Starr, and Zapata counties), where breeding was reported in 1994" (*ibid.* 64–65). On that basis, we believe that it now qualifies for protection under the MBTA, and will be making a formal proposal to that effect in a forthcoming revision to the list of migratory birds (50 CFR 10.13) to be published in the **Federal Register**.

Issue 7: The Service must continue to protect all migratory birds until it promulgates the final list of nonnative species.

Service Response: The Service can only enforce the prohibitions of the MBTA as they exist. To the extent that those prohibitions ever applied to nonnative species, they no longer applied as of December 8, 2004. As discussed above, the publication of this final list does not have any legal effect. Even if it did, this issue is now moot with publication of the final list.

Issue 8: One reviewer noted that the MBTRA does little to resolve the problems caused by nonnative birds in the Hawaiian Islands, where at least seven species native to the continental United States have been intentionally introduced and established, with some of them now being detrimental to native wildlife.

Service Response: The MBTA and the international migratory bird conventions do not allow the exemption of species on a geographic basis. If a species is native anywhere in the United States or its territories and belongs to a family covered by one or more of the four conventions, it is protected anywhere and everywhere that the MBTA applies. Federal regulations implementing the MBTA authorize mechanisms such as depredation permits or depredation orders that may be used to grant local authorities greater leeway in dealing with situations in which protected migratory birds are causing damage to agricultural crops, livestock, or wildlife, or when causing a health hazard or other nuisance.

Issue 9: One reviewer argued that nothing in the MBTA or the MBTRA prevents the Service from affording the protection of the MBTA to species that belong to families not covered by any of the underlying migratory bird treaties, and suggested biologically-based criteria that would consider the population status of a species and its need for conservation action rather than the inclusion or exclusion of a family in one or more of the treaties.

Service Response: We disagree. Neither the MBTA nor the MBTRA provide us the authority to grant MBTA protection to species that (a) don't belong to any of the 69 families covered by the Canadian, Mexican, or Russian conventions; or (b) aren't specifically listed in the Japanese or Russian conventions. The inclusion of species that belong to families not currently covered by any of the conventions (such as Psittacidae or Timaliidae, for example) would require an amendment to one of the conventions to expand the families to which it applies (this was done with respect to the treaty with Mexico in 1972), or an amendment to the MBTA applying its prohibitions to species not covered by any of the treaties.

Issue 10: Many of the 770 private citizens opposed to the Service's determination that these species are not subject to the protection of the MBTA expressed the view that publication of the list "will declare an open season on the killing of over a hundred species of birds, and mark the beginning of a mass slaughter campaign against mute swans."

Service Response: Of the 124 species included on the final list, only one, the mute swan, has ever been treated as Federally protected under the MBTA. *See Hill* v. *Norton*, 275 F. 3d 98 (D.C. Cir. 2001). By declaring that the MBTA does not apply to nonnative human-introduced species, the MBTRA merely restores the status quo that prevailed during the first 83 years of the MBTA. More than 100 species of nonnative migratory birds have been introduced into the United States or its territories since enactment of the MBTA in 1918. In the absence of Federal protection, 18 of those species successfully established self-sustaining breeding populations. Today, 16 of these 18 species continue to maintain thriving breeding populations and several have expanded their ranges dramatically, all in the continued absence of Federal protection. In publishing this list, we do not "declare on open season" or promote the killing of any species; we merely list the species that are not Federally protected under the MBTA because they are nonnative and human-introduced.

What Determination Did the Service Make Regarding the Mute Swan?

Because of the previous litigation regarding the mute swan, and because of the comments we received asserting that the mute swan is a native species, we have decided to treat the comments received from MBTA Advocates on the proposed list as a petition for rulemaking pursuant to the Administrative Procedure Act, 5 U.S.C. 553(e), to add the mute swan to the list of birds covered by the MBTA found at 50 CFR 10.13. As noted above, the list of nonnative species in this notice is published for information purposes, and does not constitute a binding factual determination by the agency with respect to any of the species listed. In contrast, we have made, in response to the mute swan petition, a factual determination that the mute swan is not native to the United States or its territories. In a separate letter, we have informed MBTA Advocates that we have denied their petition. Members of the public may at any time provide the Service with information concerning whether (a) birds currently listed in 50 CFR 10.13 are not covered by the MBTA, or (b) birds not listed in 50 CFR 10.13 are covered by the MBTA, for any reason, including their status as native or nonnative species. The public may also petition for specific rulemaking changes. In any case, 50 CFR 10.13, subject to any amendments, constitutes the Service's binding interpretation of the species covered by the MBTA.

How Does the Final List Differ From the Draft List?

Criteria. We revised the first sentence of criteria 3 by replacing "confidently attributed solely to" with "best (or most reasonably) explained by." As revised, this sentence now reads as follows: "All of its [each species] known occurrences in the United States can be best (or most reasonably) explained by intentional or unintentional human-assisted introductions to the wild." This change reflects the reality that there is sometimes a certain amount of uncertainty about the origin or provenance of individuals of some species that appear in the United States. For example, while it may be possible that an individual of a species with no known history of natural occurrence in the United States represents a natural vagrant, the most plausible or reasonable explanation is often that the individual involved represents an intentional introduction or escape from captivity. This criteria is thus consistent with the requirement for substantial evidence of natural occurrence before adding a species to the list of species protected by the MBTA at 50 CFR 10.13.

The List. After further review of the literature and the draft list, we removed 3 species and added 15.

Lanner falcon (*Falco biarmicus*), saker falcon (*F. cherrug*), and barbary falcon (*F. pelegrinoides*) are removed because of a lack of substantial evidence that they meet the criteria for inclusion.

Lanner and saker falcons are regularly imported into this country for use in recreational falconry or bird control at airports, and are believed to sometimes escape from their handlers, but we have found no literature documenting the presence of escapes in the United States.

The barbary falcon is currently protected under the MBTA as a subspecies of the peregrine falcon (*F. peregrinus*), in accordance with the taxonomic treatment of the AOU (1998) Check-list. Like the lanner and saker, barbary falcons are regularly imported into this country for use in recreational falconry or bird control at airports, and are believed to sometimes escape from their handlers, but we have found no literature documenting the presence of escapes in the United States.

The removal of these three species or subspecies from this list does not determine their qualification for protection under the MBTA.

The following 14 species were overlooked in the notice of January 4 but there is substantial evidence of nonnative human-introduced

occurrence in the United States or its territories, so we add them to the final list (the authorities upon which these determinations are based are noted parenthetically):

Nettapus coromandelianus, Cotton Pygmy-goose (Pranty 2004).

Pelecanus rufescens, Pink-backed Pelican (McKee and Erickson 2002; Pranty 2004).

Anhinga melanogaster, Oriental Darter (McKee and Erickson 2002).

Platalea leucorodia, Eurasian Spoonbill (Pranty 2004).

Threskiornis aethiopicus, Sacred Ibis (Pranty 2004).

Terathopius ecuadatus, Bateleur (Small 1994).

Grus virgo, Demoiselle Crane (Bull 1974; Cole and McCaskie 2004).

Vanellus spinosus, Spur-winged Lapwing (Bull 1974).

Corvus albicollis, White-necked Raven (Pranty 2004).

Corvus nasicus, Cuban Crow (Zeranski and Baptist 1990).

Pyrrhocorax pyrrhocorax, Red-billed Chough (Zeranski and Baptist 1990).

Dendrocitta vagabunda, Rufous Treepie (Bull 1974).

Saxicoloides fulicata, Indian Robin (Bull 1974).

Turdus ruficollis, Dark-throated Thrush (Bull 1974).

Cyanerpes cyaneus, Red-legged Honeycreeper (Pranty 2004).

What Criteria Did We Use To Identify Bird Species Not Protected by the MBTA?

In accordance with the language of the MBTRA, the Service relied on substantial evidence in the scientific record in making a determination as to which species qualified as nonnative and human-introduced. Thus, each species in the final list meets the following four criteria:

(1) It belongs to a family of birds covered by the MBTA by virtue of that family's inclusion in any of the migratory bird conventions with Canada, Mexico, Russia, or Japan. The Canadian and Mexican treaties list the families of birds that are protected. In the Russian treaty, the specific species covered are listed in an Appendix in which the species are arranged by family. Article VIII of the Russian treaty allows the parties to protect additional species that belong to the same family as a species listed in the Appendix. The treaty with Japan lists covered species in an Annex without reference to families, and contains no provision that would allow treaty parties to unilaterally add additional species.

(2) There is credible documented evidence that it has occurred at least once in an unconfined state in the United States or its territories.

(3) All of its known occurrences in the United States can be best (or most reasonably) explained by intentional or unintentional human-assisted introductions to the wild. An intentional introduction is one that was purposeful—for example, the person(s) or institution(s) involved intended for it to happen. An unintentional introduction is one that was unforeseen or unintended—for example, the establishment of self-sustaining populations following repeated escapes from captive facilities. Self-sustaining populations are able to maintain their viability from one generation to the next through natural reproduction without the introduction of additional individuals.

(4) There is no credible evidence of its natural occurrence in the United States unaided by direct or indirect human assistance. The native range and known migratory movements (if any) of the species combine to make such occurrence in the United States extremely unlikely, both historically and in the future. Migratory bird species with credible evidence of natural occurrence anywhere in the United States or its territories, even if introduced elsewhere within these jurisdictions, are listed in 50 CFR 10.13.

The Final List: What Are the Bird Species Not Protected by the MBTA?

We made this list as comprehensive as possible by including all nonnative, human-assisted species that belong to any of the families referred to in the treaties and whose occurrence(s) in the United States and its territories have been documented in the scientific literature. It is not, however, an exhaustive list of all the nonnative species that could potentially appear in the United States or its territories as a result of human assistance. New species of nonnative birds are being reported annually in the United States, and it is impossible to predict which species might appear in the near future.

The appearance of a species on this list does not preclude its addition to the list of migratory birds protected by the MBTA (50 CFR 10.13) at some later date should substantial evidence come to light confirming natural occurrence in the United States or its territories.

The 125 species on this list are arranged by family according to the American Ornithologists' Union (1998, as amended by Banks *et al.* 2003). Within families, species are arranged alphabetically by scientific name. Common and scientific names follow Monroe and Sibley (1993). Where the names adopted by the American Ornithologists' Union differ from those of Monroe and Sibley, they are given in parentheses. Species with established, self-sustaining populations are denoted with an asterisk (*).

Family Anatidae

Aix galericulata, Mandarin Duck
Alopochen aegyptiacus, Egyptian Goose
Anas hottentota, Hottentot Teal
Anas luzonica, Philippine Duck
Anser anser, Graylag Goose
Anser anser 'domesticus', Domestic Goose
Anser cygnoides, Swan Goose
Anser indicus, Bar-headed Goose
Branta ruficollis, Red-breasted Goose
Callonetta leucophrys, Ringed Teal
Chenonetta jubata, Maned Duck
Coscoroba coscoroba, Coscoroba Swan
Cygnus atratus, Black Swan
Cygnus melanocoryphus, Black-necked Swan
Cygnus olor, Mute Swan*
Dendrocygna viduata, White-faced Whistling-Duck
Neochen jubata, Orinoco Goose
Netta peposaca, Rosy-billed Pochard
Netta rufina, Red-crested Pochard
Nettapus coromandelianus, Cotton Pygmy-goose
Tadorna ferruginea, Ruddy Shelduck
Tadorna tadorna, Common Shelduck

Family Pelecanidae

Pelecanus onocroatalis, Great White Pelican
Pelecanus rufescens, Pink-backed Pelican

Family Phalacrocoracidae

Phalacrocorax gaimardi, Red-legged Cormorant

Family Anhingidae

Anhinga melanogaster, Oriental Darter

Family Threskiornithidae

Platalea leucorodia, Eurasian Spoonbill
Threskiornis aethiopicus, Sacred Ibis

Family Ciconiidae

Ciconia abdimii, Abdim's Stork
Ciconia ciconia, White Stork
Ciconia episcopus, Woolly-necked Stork
Ephippiorhynchus asiaticus, Black-necked Stork

Family Cathartidae

Sarcoramphus papa, King Vulture

Family Phoenicopteridae

Phoenicopterus chilensis, Chilean Flamingo
Phoenicopterus minor, Lesser Flamingo

Family Accipitridae

Buteo polyosoma, Red-backed Hawk
Buteogallus urubitinga, Great Black-Hawk
Gyps sp., Griffon-type Old World vulture
Terathopius ecuadatus, Bateleur

Family Rallidae

Aramides cajanea, Gray-necked Wood-Rail

Family Gruiidae

Balearica pavonina, Black Crowned-Crane
Balearica regulorum, Gray Crowned-Crane

Grus antigone, Sarus Crane
Grus virgo, Demoiselle Crane

Family Charadriidae

Vanellus chilensis, Southern Lapwing
Vanellus spinosus, Spur-winged Lapwing

Family Laridae

Larus novaehollandiae, Silver Gull

Family Columbidae

Caloenas nicobarica, Nicobar Pigeon
Chalcophaps indica, Emerald Dove
Columba livia, Rock Pigeon*
Columba palumbus, Common Wood-Pigeon
Gallicolumba luzonica, Luzon Bleeding-heart
Geopelia cuneata, Diamond Dove
Geopelia humeralis, Bar-shouldered Dove
Geopelia striata, Zebra Dove*
Geophaps lophotes, Crested Pigeon
Geophaps plumifera, Spinifex Pigeon
Geophaps smithii, Partridge Pigeon
Leucosarcia melanoleuca, Wonga Pigeon
Phaps chalcoptera, Common Bronzewing
Starnoenas cyanocephala, Blue-headed Quail-Dove
Streptopelia bitorquata, Island Collared-Dove*
Streptopelia chinensis, Spotted Dove*
Streptopelia decaocto, Eurasian Collared-Dove*
Streptopelia risoria, Ringed Turtle-Dove*

Family Strigidae

Pulsatrix perspicillata, Spectacled Owl

Family Trochilidae

Anthracothorax nigricollis, Black-throated Mango

Family Corvidae

Callocitta colliei, Black-throated Magpie-Jay
Corvus albicollis, White-necked Raven
Corvus corone, Carrion Crow
Corvus nasicus, Cuban Crow
Corvus splendens, House Crow
Cyanocorax caeruleus, Azure Jay
Cyanocorax sanblasianus, San Blas Jay
Dendrocitta vagabunda, Rufous Treepie
Garrulus glandarius, Eurasian Jay
Pyrrhocorax pyrrhocorax, Red-billed Chough
Urocissa erythrorhyncha, Blue Magpie (=Red-billed Blue-Magpie)

Family Alaudidae

Alauda japonica, Japanese Skylark
Lullula arborea, Wood Lark
Melanocorypha calandra, Calandra Lark
Melanocorypha mongolica, Mongolian Lark

Family Paridae

Parus caeruleus, Blue Tit
Parus major, Great Tit
Parus varius, Varied Tit

Family Cinclidae

Cinclus cinclus, White-throated (=Eurasian) Dipper

Family Sylviidae

Cettia diphone, Japanese Bush-Warbler*
Sylvia atricapilla, Blackcap

Family Turdidae

Copsychus malbaricus, White-rumped Shama*
Copsychus saularis, Oriental Magpie-Robin
Erithacus rubecula, European Robin
Luscinia akahige, Japanese Robin
Luscinia komadori, Ryukyu Robin
Luscinia megarhynchos, Common (=European) Nightingale
Saxicoloides fulicata, Indian Robin
Turdus philomelos, Song Thrush
Turdus ruficollis, Dark-throated Thrush

Family Prunellidae

Prunella modularis, Hedge Accentor (=Dunnock)

Family Thraupidae

Piranga rubriceps, Red-hooded Tanager
Thraupis episcopus, Blue-gray Tanager
Cyanerpes cyaneus, Red-legged Honeycreeper

Family Emberizidae

Emberiza citrinella, Yellowhammer
Gubernatrix cristata, Yellow Cardinal
Loxigilla violacea, Greater Antillean Bullfinch
Melopyrrha nigra, Cuban Bullfinch
Paroaria capitata, Yellow-billed Cardinal*
Paroaria coronata, Red-crested Cardinal*
Paroaria dominicana, Red-cowled Cardinal
Paroaria gularis, Red-capped Cardinal
Sicalis flaveola, Saffron Finch*
Tiaris canora, Cuban Grassquit

Family Cardinalidae

Passerina leclacherii, Orange-breasted Bunting

Family Icteridae

Gymnostinops montezuma, Montezuma Oropendola
Icterus icterus, Troupial*
Icterus pectoralis, Spot-breasted Oriole*
Leistes (=Sturnella) militaris, Red-breasted Blackbird (=Greater Red-breasted Meadowlark)

Family Fringillidae

Carduelis cannabina, Eurasian Linnet
Carduelis carduelis, European Goldfinch
Carduelis chloris, European Greenfinch
Carduelis cucullata, Red Siskin*
Carduelis magellanica, Hooded Siskin
Loxia pysopsittacus, Parrot Crossbill
Serinus canaria, Island (=Common) Canary*
Serinus leucopygius, White-rumped Seedeater
Serinus mozambicus, Yellow-fronted Canary*

The MBTA also does not apply to many other bird species, including (1) nonnative species that have not been introduced into the U.S. or its territories, and (2) species (native or nonnative) that belong to the families not referred to in any of the four treaties underlying the MBTA. The second category includes the Tinamidae (tinamous), Cracidae (chachalacas), Phasianidae (grouse, ptarmigan, and turkeys), Odontophoridae (New World quail), Burhinidae (thick-knees), Glareolidae (pratincoles), Pteroclididae (sandgrouse), Psittacidae (parrots), Todidae (todies), Dicruridae (drongos), Meliphagidae (honeyeaters), Monarchidae (monarchs), Pycnonotidae (bulbuls), Sylviinae (Old World warblers, except as listed in Russian treaty), Muscicapidae (Old World flycatchers, except as listed in Russian treaty), Timaliidae (wrentits), Zosteropidae (white-eyes), Sturnidae (starlings, except as listed in Japanese treaty), Coerebidae (bananaquits), Drepanidinae (Hawaiian honeycreepers), Passeridae (Old World sparrows, including house or English sparrow), Ploceidae (weavers), and Estrildidae (estrildid finches), as well as numerous other families not represented in the United States or its territories. A partial list of the nonnative human-introduced species included in category 2 is available at *http://migratorybirds.fws.gov*.

Author

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Other Sources

A list of other sources used to compile this list is available upon request from any of the **ADDRESSES** listed above. It has also been posted online at *http://migratorybirds.fws.gov.*

Dated: March 3, 2005.

Steve Williams,

Director, U.S. Fish and Wildlife Service.

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Final Assessment of Threatened and Endangered Marine and Anadromous Fish Presence and Their Critical Habitat Occurrence Adjacent to Naval Magazine - Indian Island: 2014-15 Survey Results

Prepared for:

Naval Facilities Engineering Command Northwest (NAVFAC NW)

Submitted by:

The WDFW Marine Fish Science Unit

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FINAL REPORT

For Cooperative Agreements N44255-13-2-0006 & N44255-14-2-0006

February 2016

Washington Department of FISH and WILDLIFE

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Executive Summary

Puget Sound is home to a variety of marine and anadromous fish species that are afforded legal protection under the Endangered Species Act (ESA). The ESA-listed fish species within the Puget Sound/Georgia Basin Distinct Population Segments (DPS) most relevant to this study include three species of rockfish (Yelloweye, Canary, Bocaccio), four species of salmonids (Chinook, Hood Canal summer-run Chum, steelhead, Bull Trout), and one forage fish species (Eulachon). In an effort to determine whether these ESA-listings have the potential to affect operations in the waters adjacent to the Naval Magazine (NAVMAG) Indian Island, the Naval Facilities Engineering Command Northwest (NAVFAC NW) and the Washington Department of Fish and Wildlife (WDFW) entered into a cooperative agreement whereby the WDFW agreed to survey these waters to evaluate both the seasonal and resident presence of ESA-listed fish and their habitats.

The NAVMAG-Indian Island, specifically the areas adjacent to the Walan Point Naval Restricted Area (WPNRA), was surveyed by the WDFW in 2014 and 2015. After reviewing the geographic scope, depth profile, water quality, and security restrictions associated with the survey area, it was determined that a combination of sampling methods including a remotely operated vehicle (ROV), split-beam echosounder (hydroacoustics), scuba diving, lighted fish traps, and beach seining would be used to survey the WPNRA and immediate adjacent areas. Beach seine surveys targeted forage fish and juvenile salmonids in the nearshore, while all other sampling techniques were appropriate to surveying rockfish and critical habitat for all species. Surveys for rockfish were conducted at six month intervals in 2014 and 2015, while surveys for forage fish and juvenile salmonids occurred monthly from May to September 2015 in order to detect temporal changes in fish abundance or distribution. See Appendix A for a comprehensive list of fish species recorded for each survey method type.

Overall, very few rockfish were observed within the WPNRA, however many rockfish and other groundfish were recorded at a large shipwreck site nearby. None of the rockfish species recorded at the NAVMAG-Indian Island in 2014 or 2015 were protected under the ESA, and neither the habitat nor depths recorded were consistent with known associations of ESA-listed rockfish species elsewhere in Puget Sound. All areas within the WPNRA were accessible to these survey tools, allowing for a thorough assessment. Based on the results from 2014 and 2015 surveys, we conclude that the WPNRA is unlikely to support adult ESA-listed rockfish species or their preferred deep-water habitats. However, there were areas recorded within the shallow water (i.e. nearshore) zones of the WPNRA where patchy eelgrass beds and mixed algal growth on harder substrates could provide productive rearing habitat for juvenile rockfish. These nearshore habitat characteristics overlap with essential features for juvenile Bocaccio and Canary Rockfish as described by NOAA under 50 CFR Part 226. Ongoing sampling is recommended specifically for detecting juvenile rockfish settlement and recruitment within these essential features.

The only confirmed ESA-listed species captured with the beach seine at the NAVMAG-Indian Island was Chinook Salmon at the site north of the ammunition pier, where peak catches of juveniles occurred in July. Ongoing sampling will assess the interannual variation of Chinook Salmon presence and abundance. However, based on the results from 2015, we preliminarily conclude that in order to reduce impact on juvenile salmon, the work window (July 15 to February 15) for any of the NAVMAG-Indian Island facilities' in-water maintenance, military construction (MILCON), mitigation projects, future Fleet training, and testing should not include June or July, as is consistent with measures outlined in WAC 220-660-330.

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Background

The inland marine waters of Washington State, which include all waters east of Cape Flattery and south of the Canadian border (i.e., Puget Sound), are inhabited by a variety of species that have been afforded legal protection under the Endangered Species Act (ESA) due to a reduction in their range, average biomass, a combination of these population-level parameters, and/or their inherent "value" to humankind. This value may stem from fisheries or other exploitative uses, ecotourism, other non-exploitative uses, or recognition of the integral ecological role a species plays in the local or regional food web (NMFS online). Several fishes protected under the Endangered Species Act (ESA) within the Puget Sound/Georgia Basin Distinct Population Segments (DPS) include Eulachon (*Thaleichthys pacificus*) (NMFS 2010a), Chinook Salmon (*Oncorhynchus tshawytscha*) and Hood Canal summer-run Chum (*O. keta*) (NMFS 1999), steelhead (*O. mykiss*) (NMFS 2007), and Bull Trout (*Salvelinus confluentus*) (USFWS 1999). In 2010, ESA protection was extended to three species of rockfish within a geographic area that includes the vast majority of Puget Sound (NMFS 2010b). Yelloweye Rockfish (*Sebastes ruberrimus*) and Canary Rockfish (*S. pinniger*) were afforded Threatened status, while Bocaccio (*S. paucispinis*) received an Endangered designation.

The United States Department of the Navy (DoN) desired to understand the species composition, timing, and migration of Threatened and Endangered (T&E) fish listed under the ESA, and additionally ensure compliance with the Fish and Wildlife Conservation Act, Magnuson-Stevens Fishery Conservation and Management Act, and the Sikes Act Improvement Act at the following eight Naval installations: Naval Air Station Whidbey Island at Crescent Harbor (NASWI-Crescent Harbor) and at Lake Hancock (NASWI-Lake Hancock), Naval Magazine Indian Island (NAVMAG-Indian Island), Naval Undersea Warfare Center at Keyport (NUWC-Keyport), Naval Base Kitsap at Bremerton (NBK-Bremerton), Naval Base Kitsap at Bangor (NBK-Bangor), Naval Station Everett (NAVSTA-Everett), and Manchester Fuel Department (MFD). A Cooperative Agreement (CA) was established between the DoN and the Washington Department of Fish and Wildlife (WDFW) to design and implement studies to assess shoreline and adjacent marine water use by ESA-listed fish species. It was further agreed that the WDFW, based on known ESA-listed fish habitat preferences and trophic relationships, would also assess the suitability of the habitat and prey for supporting ESA-listed fish at each of the eight installations.

The four primary project tasks identified in the CA are: 1) a kick-off meeting to formalize the monitoring project planning and management; 2) develop survey protocols and a study plan; 3) conduct fish surveys and evaluate potential habitat at Naval Facilities Engineering Command (NAVFAC) NW installations; and 4) provide a study report documenting preliminary results and recommendations for routine fish surveys and monitoring at Navy operational areas. In accordance with Tasks 1 and 3, a kick-off meeting between principle participants from the WDFW and NAVFAC NW personnel was held in November 2014. The meeting included discussions on security, access, survey methods, scheduling, logistics, and installation-specific survey priorities. Monthly progress reports were prepared by the WDFW, and meetings were held periodically to discuss headway and to identify and resolve any impediments to the project. The WDFW coordinated and communicated extensively with installation security and other personnel to arrange for access at prescribed times and locations. Task 2 is detailed under headings below, and this report meets the deliverables requirement for the final task by detailing all research conducted as part of this cooperative agreement at the NAVMAG-Indian Island installation.

Methods

Study Area

The NAVMAG-Indian Island is located along the eastern shore of Port Townsend Bay extending from the Walan Point Naval Restricted Area (WPNRA) to Port Townsend Canal, and encompasses an area of approximately 1.0km^2 around the ammunition pier. The study area was not restricted by security measures and included all areas within and adjacent to the WPNRA (Figure 1). The majority of bottom habitat within the study area is considered featureless mud and sand (NOAA nautical chart 18464), which is generally not favored by ESA-listed, or other rockfish species in Puget Sound. However, some habitats known to support rockfish and other groundfish species elsewhere in Puget Sound may occur. These habitat features include nearshore eelgrass (*Zostera spp.*), macroalgal beds (e.g., *Ulva lactuca*, Laminariales), and pebble and cobble substrates (WA DOE Coastal Atlas Map). The primary focus of rockfish surveys within the study area were significant structures that included the ammunition pier, floating security barrier (FSB), shipwreck, and anchored barges (Figure 2). The shipwreck has been identified as the 50.3m long *F/V Alaskan Reefer* which caught fire near Port Townsend in 1961 and was towed to Indian Island where it finally sank near shore.

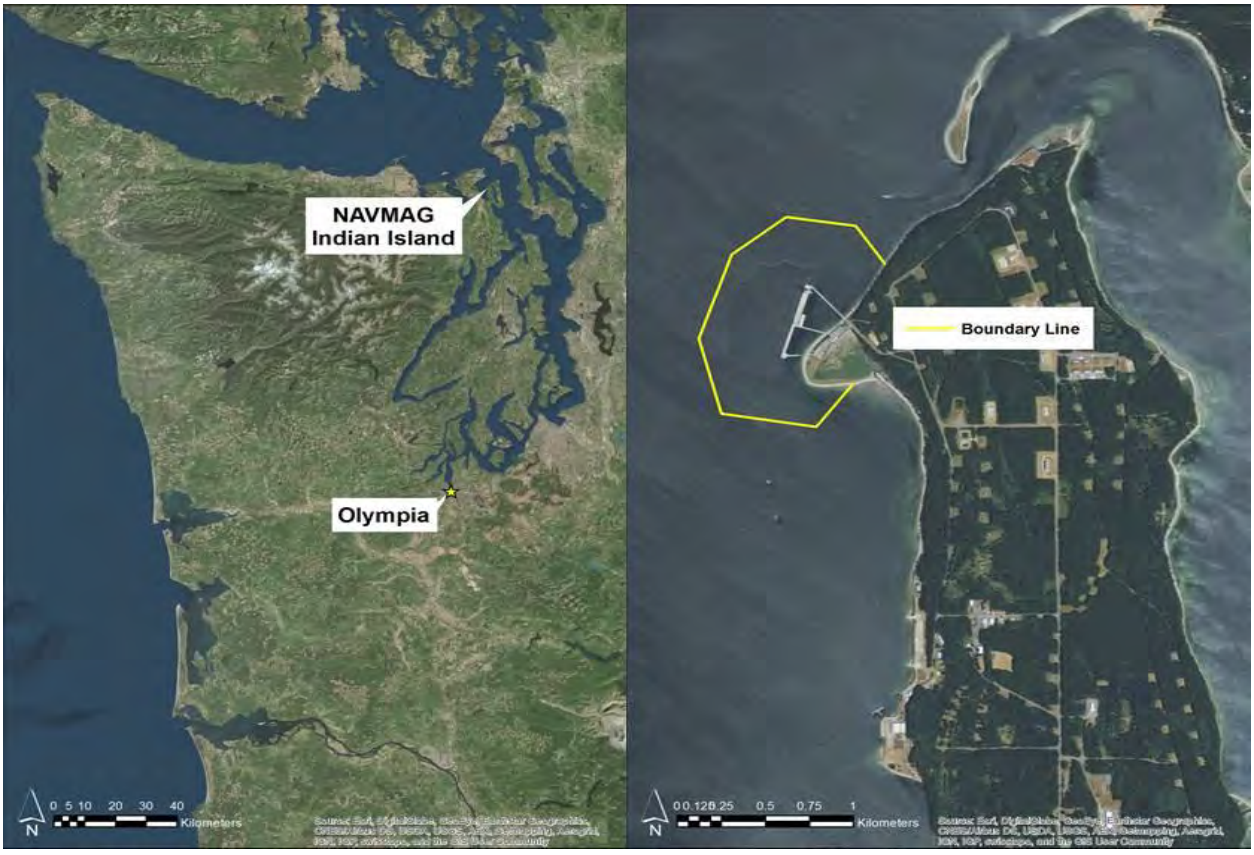

Figure 1. Orthophoto of the NAVMAG-Indian Island, showing the Walan Point Naval Restricted Area (WPNRA) boundary line in yellow. Image from Esri DigitalGlobe.

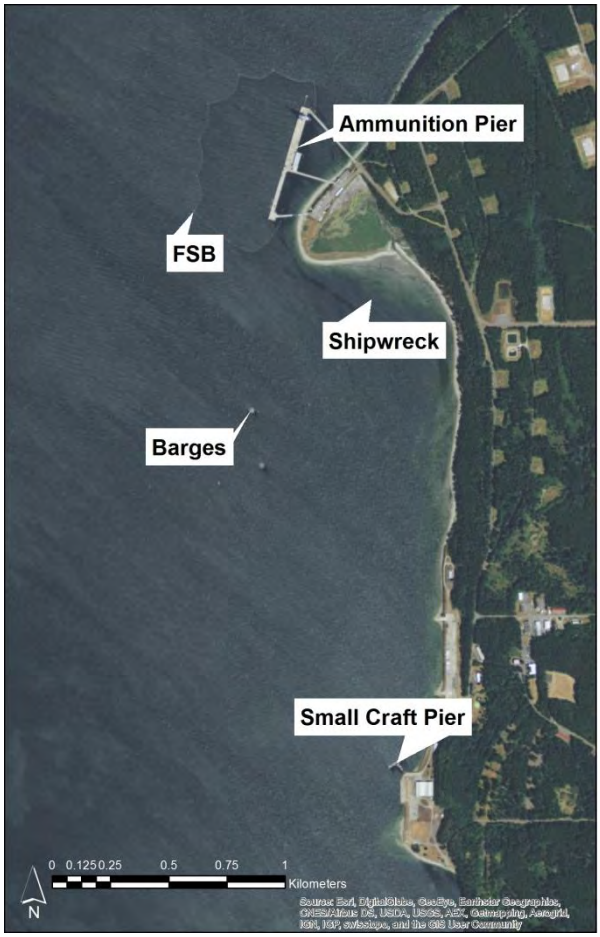

Figure 2. Orthophoto of the NAVMAG-Indian Island identifying the survey sites: ammunition pier, floating security barrier (FSB), shipwreck, barges, and small craft pier. Image from Esri DigitalGlobe.

Beach seine sites included beach areas adjacent to the north and south sides of the ammunition pier within the WPNRA. Both the north and south sites are historically documented Pacific Sand Lance (*Ammodytes personatus*) and Surf Smelt (*Hypomesus pretiosus*) spawning beaches, and adjacent to Pacific Herring (*Clupea pallasii*) spawning beds located offshore (WDFW online). The north site lies within a transport zone north of the pier which is exposed to northerly wind-waves with increased wave action from ferry and shipping traffic in transit along Admiralty Inlet. Beach seining at the south site occurred on an accretion beach south of the pier, separated from a tidal marsh immediately to the east by a sandy low-bank berm in the backshore.

Survey Design

A combination of survey techniques were employed to effectively assess the presence or absence of ESA-listed fish and suitable habitats within the study area. These surveys were conducted with a remotely operated vehicle (ROV), split-beam echosounder (hydroacoustics), scuba, lighted fish traps, and beach seine. While each sampling technique has inherent advantages and disadvantages, when properly combined, data acquired from different techniques can effectively offset method-specific deficiencies and form a more comprehensive and accurate reflection of the current biotic and habitat conditions.

For rockfish surveys, ROV and hydroacoustic surveys were typically paired to efficiently cover expansive areas of variable and unknown habitat in depths >10m for adult fish, while scuba and fish traps may be used in combination to survey complex and shallow water (<30m) habitat for juvenile fish. The ROV was primarily used to record benthic fish species and habitat types along the seafloor, but was occasionally used to record fish and the associated biota on pier pilings and buoy chains from the surface water to the seafloor. .

Beach seining allows fish to be collected in the intertidal and shallow subtidal zone (<5m deep) where few other techniques are capable of sampling. This is critically important for assessing forage fish and juvenile salmonids because they rely heavily on this nearshore zone for spawning, feeding, refuge, and/or migration.

ROV and hydroacoustic survey plans based on available bathymetry maps and priority survey areas were developed as GIS layers in ArcMAP to aid in identifying final survey coverage areas, and facilitated selection of appropriate survey techniques. The layers were then submitted to Navy security personnel for evaluation and approval. These layers were essential to field operations, particularly when the ROV and hydroacoustic methods were used in tandem, enabling transect lines to be closely followed from start to finish with live-tracking software aboard the research vessel. They were also used to identify sites within the study area that could be safely accessed and surveyed with scuba. ROV transects targeted the FSB chains and anchor blocks, and other adjacent areas within the study area. For scuba survey planning, the primary areas of interest where survey approval was granted were the ammunition pier, small craft pier, shipwreck, and eelgrass/macroalgal habitats in the nearshore environment. Rockfish surveys were conducted in August 2014, February 2015, and August 2015 with a similar design and repeated at a six month offset in order to observe any temporal changes in fish abundance or distribution.

Beach seine sampling sites were selected based on the priorities of Navy personnel to determine fish presence and occupancy timing adjacent to the ammunition pier. These sites were sampled monthly from May to September 2015 at high-slack tides, which are known to be preferred by beach-spawning forage fish and migrating juvenile salmonids.

Remotely Operated Vehicle (ROV) Survey Protocols

We employed a Seaeye Falcon ROV (Figure 3) owned by the State of Washington to survey deep (>10m) sites within the survey area. The ROV was equipped with a high-resolution digital color camera and two 180-lumen LED lights. The lights were placed forward of the camera and projected downward at approximately a 30° angle to minimize backscatter from suspended particulates. Additional lighting was supplied by three forward-facing, variable-intensity incandescent lamps, when necessary. The camera angle was maintained at a downward angle of approximately 35° to maximize illumination of the visual field. A pair of lasers mounted in parallel 10 cm apart were affixed to the top of the camera and projected into the center of view to provide a scaler reference for determining transect width and approximate fish size. All ROV survey operations were conducted from a 12-m vessel (*R/V Molluscan*) (Figure 4). During

deployment, the ROV was georeferenced by combining the GPS-based positioning for the research vessel with data from an ultrashort baseline (USBL) acoustic tracking system (LinkQuest) that determined ROV position relative to the vessel. Tracking data were collected at 1- to 2-second intervals and used to geographically reference the ROV position. Raw tracking data were clipped to match the video transect start and end times and post-processed to remove errant position fixes based on the distance traveled between consecutive fixes within a 10-second period around an individual fix. Further technical descriptions of the ROV, including deployment/retrieval procedures can be found in Pacunski et al. (2008) and Pacunski et al. (2013). A complete list of equipment utilized during the course of ROV surveys is included in Appendix B.

Figure 3. The Seaeye Falcon remotely operated vehicle (ROV) employed during this study to survey groundfish and their habitat.

Figure 4. The WDFW research vessel *R/V Molluscan* from which the Seaeye Falcon ROV was deployed.

All survey video was streamed from the ROV to the support vessel and recorded digitally. The date, time, depth, and calculated position of the ROV were imprinted on the video imagery for later analysis in ArcGIS 10.2. An audio track was recorded in real-time to the video and captured discussion between the ROV pilot, vessel captain, and other members of the crew. This audio track was used to assist species and habitat identification during video review.

We assumed that all organisms within the surveyed area were observed with equal probability (Barry and Baxter 1993), and all transects were conducted during daylight hours to minimize the effects of diurnal fish behavior (Benoit-Bird et al. 2009; Kaartvedt et al. 2009). The fixed lasers mounted on top of the camera housing were not used to estimate ROV transect mean width during video post-processing because the soft mud substrate and variety of submerged structures throughout the NAVMAG-Indian Island survey area limited the ability to accurately measure laser width on the bottom. As a result, no area swept or fish density calculations are included in this report. All linear distance measurements assumed a flat substrate with the ROV flying a consistent height off bottom, which was generally true given the lack of rugosity at the NAVMAG-Indian Island sites. Error in these estimates was minimized by operating the ROV under low-current, light-wind conditions and making every effort to maintain a fixed distance from the bottom during surveys.

Following field surveys, the resulting audiovisual recordings were reviewed and pertinent data was entered into a relational database based on the methods outlined in Pacunski et al. (2008). Habitat data were recorded at approximately 30-second intervals; each interval is hereafter referred to as a "habitat segment." Dominant substrate type and biological cover were delineated for each habitat segment using the two most abundant substrate types visually apparent for five seconds prior to and after the habitat segment start. Substrate categories consisted of bedrock, boulder, cobble, pebble, sand, mud, and shell hash. Biological cover was characterized using a list of common invertebrate and algal species, or species complexes documented in Puget Sound. In addition, the presence and type of any anthropogenic material encountered was recorded (e.g., shipwrecks, anchor blocks, pier and dock structures, tires, anchors and chains). When anthropogenic material composed more than 90% of the field of view, substrate and categorical biocover were not recorded, though biocover presence on anthropogenic material was noted in a comments field.

All fish and select invertebrates within the field of view were identified to the lowest possible taxonomic level and enumerated, and fish were additionally georeferenced by location and depth using the video overlay. For all fish species observed, dominant substrate, biological cover, habitat complexity, and presence of anthropogenic material were recorded for future spatial habitat analysis. When visually possible, their life history stage, sex, and total length (using the paired lasers) were also determined.

Hydroacoustic Survey Protocols

The Biosonics DT-X split-beam sonar system collects data from a number of components that are visualized and recorded on a laptop computer. Hydroacoustic information is collected by the echosounder's transducer while spatial information is collected via a GPS antenna, and the resulting spatially and temporally correlated echogram is displayed by the program Visual Acquisition (Figure 5). A 120khz transducer was attached to a customized pole mounted to the *R/V Molluscan's* starboard gunwale, and submerged in the water at a depth even to the boat's hull when operated (~2m). The primary use for hydroacoustic surveys was sonar reconaissance to locate areas of potential rockfish habitat (e.g., rocks, structures) and aggregations of fish. Hydroacoustic survey tracks were also paired with ROV survey tracks to broaden the habitat assessment and to confirm conclusions based on ROV surveys, which provide direct quantification of habitat and species composition rather than the unverified information provided by hydroacoustics.

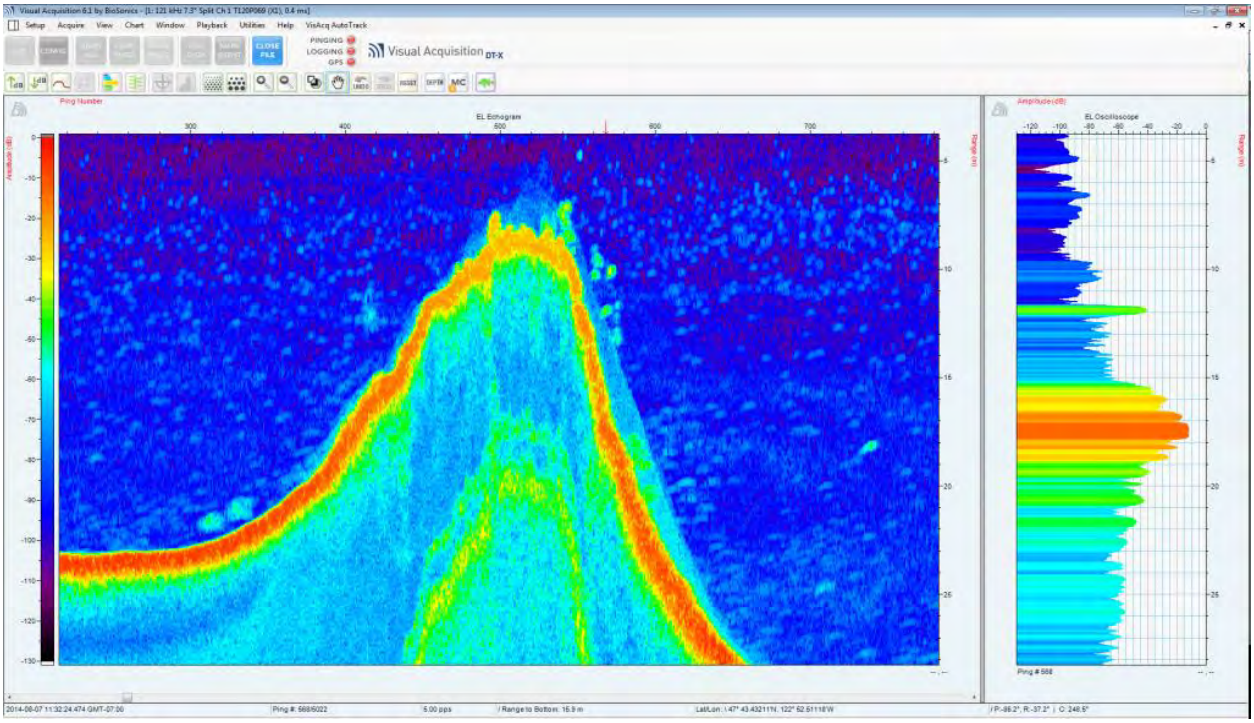

Figure 5. Screen shot of a live-feed BioSonics echogram recording a rocky pinnacle.

Scuba Survey Protocols

Scuba surveys were conducted with a team of two divers and one topside dive tender at structures and habitats (within safe operating depths and locations) that appeared suitable for rockfish utilization at any life stage. In areas with complex habitat or structure, a pair of divers carefully examined the structure and habitat in search of rockfish while maintaining dive buddy contact. One diver carried a slate to record a species list and relative abundance, while the other diver carried a camera equipped with lights to record video of fish species and structure/habitat present. When a rockfish was observed by a diver, they would alert the other diver to either record the observation by slate or video camera. Peak counts of each rockfish species were noted, and the video recordings confirmed the species identification and the habitat on which they were observed. Scuba survey sites with recorded rockfish observations were resampled at six-month intervals to provide consistent results and to examine all complex structures. In areas too shallow for ROV survey techniques and lacking complex habitat, two divers filmed video along a predetermined transect using a GoPro camera while piloting dive scooters (DiveXtras, Inc.) at low speed and being tracked with a LinkQuest transponder, allowing dive videos to be reviewed similar to ROV video review methods.

Lighted Fish Trap Survey Protocols

Light traps were used to capture small benthic fish species, including juvenile rockfish, which can be difficult to identify and count with other sampling methods (Figure 6)**.** The design for trap lines consisted of 12 plastic minnow traps (Aquatic Ecosystems, Inc.) each internally illuminated with a single LED fishing light (KryptoLume LED Deep Drop Light), attached by troll clips spaced 5m apart on a 70m lead line, anchored at each end with a single marker buoy attachment. Blue, green, and red colored LED fishing lights were used to attract diverse marine biota by alternating each color along the trap line or designating a single color for each trap line. Trap lines were deployed from a 5.8m aluminum vessel by

dropping the first anchor and extending the line with moderate tension along a selected isobath until the second anchor was dropped with the marker buoy attachment, from which a GPS coordinate and compass heading of the trap line were recorded. Trap lines were typically deployed for 24 to 96 hours. Sample data collected during trapping events included counts of fish and invertebrate species, total length measured to the nearest millimeter, and trap LED color. Sampling sites were generally pre-selected for proximity to Navy base facilities and eelgrass/macroalgae habitat provided they would not interfere with port operations. Trap lines deployed near base facilities were oriented parallel to the structure, while trap lines deployed at eelgrass/macroalgae habitat were deployed along a selected isobath.

Figure 6. Lighted fish trap example showing single trap illuminated with blue LED (left). WDFW staff aboard a research vessel processing marine organisms captured in light traps (right).

Beach Seining Survey Protocols

Beach seine surveys were conducted during daylight hours, within two hours of high-slack tide using a 5.5m WDFW research vessel (aluminum hull, 115hp outboard motor) equipped with a bow picker. The beach seine was 36.6m long x 3.7m deep with 3.2mm knotless nylon mesh (Cristensen Net Works - Everson, WA). The net was cut to taper from 1.8m to 3.7m deep in the leading 18.3m of net, followed by 18.3m of netting 3.7m deep (Figure 7). This "Skagit" net design is widely used by the WDFW, Wild Fish Conservancy (WFC), Skagit River System Cooperative (SRSC), and many other organizations to assess nearshore fish assemblages throughout the Puget Sound region.

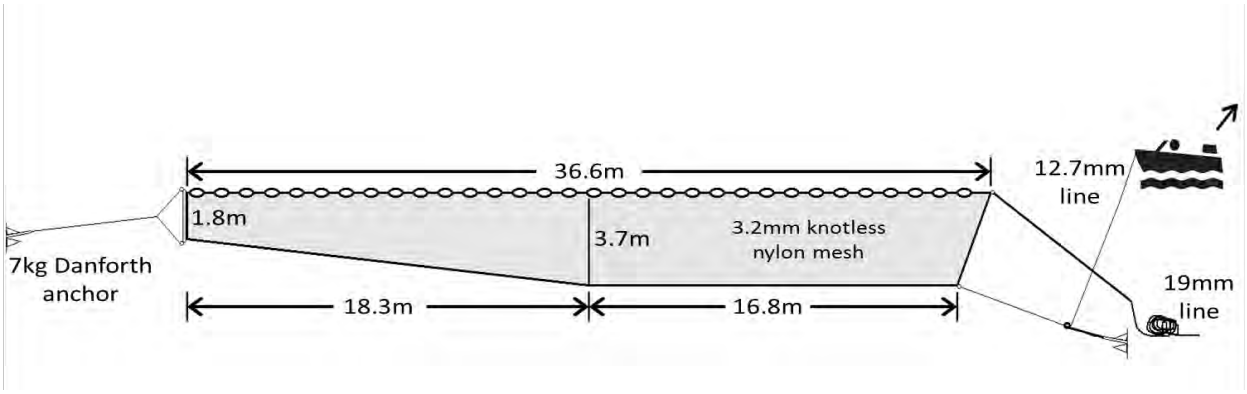

Figure 7. Diagram of the beach seine with dimensions used for sampling.

During sampling the shallow end of the net was anchored to the beach with a 7kg Danforth anchor and deployed perpendicular to the beach. A haul line of 19mm braided nylon attached to the net was secured to the bow with approximately 10m of line between the boat and end of the net. The net was towed in reverse against the current in a "round haul" fashion and returned towards shore at a point approximately 75% of the net's length (Figure 3). As the boat approached shore, a second line of 12.7mm, three-strand nylon attached at the net's lead line was tossed to a crew member on shore, passed through a stainless steel snatch block attached to a second anchor, and returned to the boat where it was secured to a post on the bow. The boat then carefully reversed away from shore pulling the line through the anchored snatch block, and landing the net on the beach (Figure 4). Set durations ranged from three to five minutes from net deployment to landing on the beach, and each sampling trip typically included six to eight total sets on a given date.

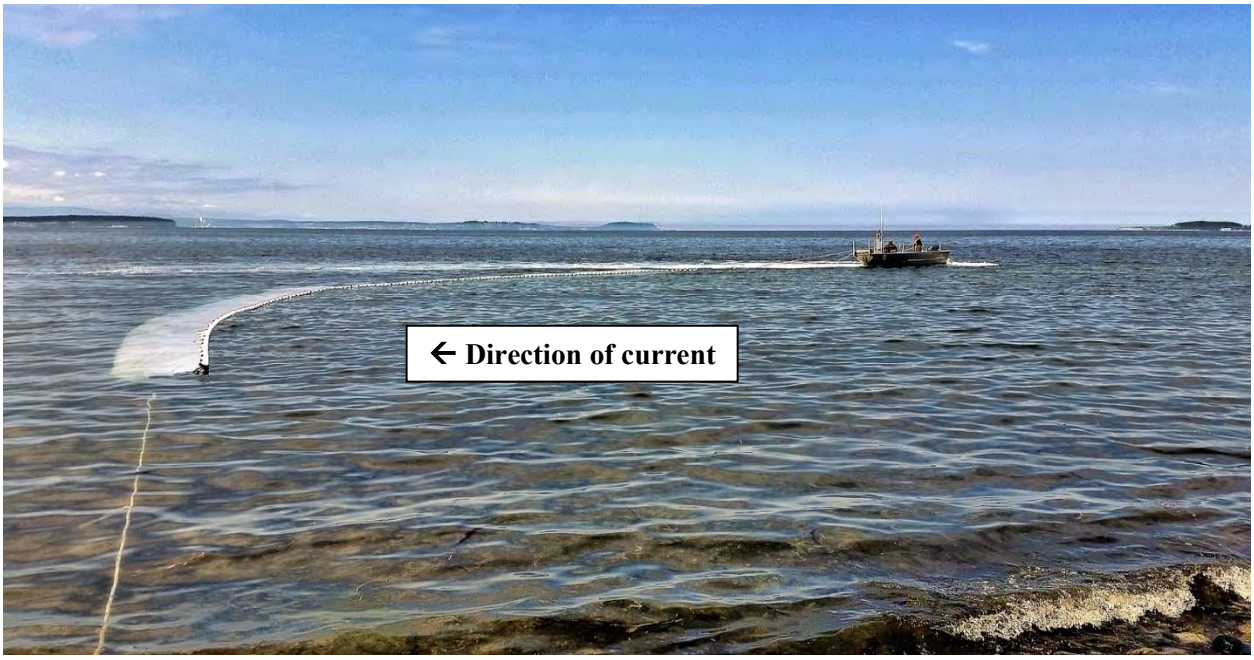

Figure 8. Photo taken while beach seining showing the "round haul" net deployment method into the current.

Figure 9. Photo taken during a beach seine set showing the use of a snatch block anchored to shore and research vessel to land the net (left). The WDFW beach seine staff sorting fish species in the landed net enclosure (right).

Upon landing the net, smaller catches were transferred to 113L containers that were aerated by bubblers and regularly irrigated with fresh seawater. Larger catches were retained in the net enclosure to minimize heat and oxygen stress during handling. Each set's catch was identified to the lowest possible taxonomic level and enumerated before release. Holding time was often less than 5 minutes and not longer than 15 minutes. A subsample (n=20) of each species of forage fish and juvenile salmonid were measured (fork length) to the nearest millimeter for each sampling trip. Salmonids were checked for adipose fin presence/absence to determine hatchery or natural-origin, if applicable. In addition to collecting biological data specific to catch, information describing weather, water surface conditions, depth, tide stage and elevation, primary and secondary substrate characteristics, and amount of algae in each set were recorded.

Results

ROV Surveys

Total linear distances of 3.3km on July 16th and September 10th, 2014; and 3.4km on March 4th, 2015 were surveyed for all transects using the ROV. Combined transect depths ranged from the water's surface to 36m ($\bar{x}$=23.9±8.4m). The primary substrate type recorded was a mud-sand complex with occasional shell hash and various anthropogenic debris throughout. Transects included the areas inside and outside the FSB, adjacent to the ammunition pier, and around the moored barges (Figure 10); however, the ammunition pier and barges were not repeated in 2015 due to the lack of suitable habitat found in 2014. Most fish recorded on video were too small or cryptic to identify to the species level, which is common for this survey method. This suite of organisms included unidentified fish <5cm, pricklebacks (Family: Stichaeidae), flatfishes (Order: Pleuronectiformes), sculpins (Family: Cottidae), rockfishes (*Sebastes* spp.), eelpouts (Family: Zoarcidae), and codfishes (Family: Gadidae) (Table 1). Fish that were identified to the species level included Pacific Herring, Copper Rockfish (*S. caurinus*), Vermilion Rockfish (*S. miniatus*), Brown Rockfish (*S. auriculatus*), Great Sculpin (*Myoxocephalus polyacanthocephalus*), Rock Sole (*Lepidopsetta* spp.), English Sole (*Parophrys vetulus*), and Pacific Spiny Dogfish (*Squalus suckleyi*). Invertebrate marine organisms recorded were primarily unidentified shrimp (*Pandalus* spp.), Dungeness crab (*Metacarcinus magister*), red rock crab (*Cancer productus*), and sea stars (Class: Asteroidea). No species of ESA-listed fish were noted during any of the ROV surveys, and the complex habitat typically occupied by the three ESA-listed rockfish species was not identified in any appreciable amount.

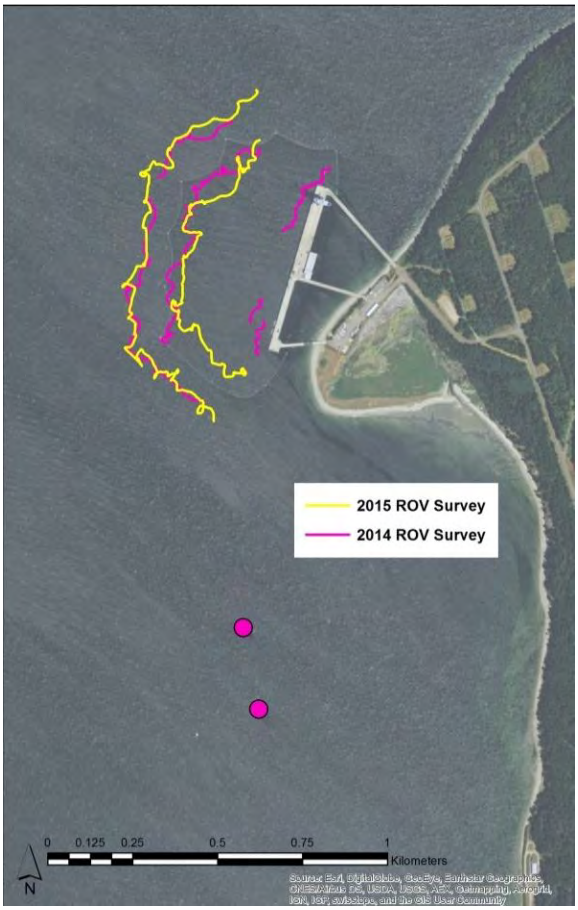

Figure 10. Orthophoto showing survey tracks for ROV transects in 2014 (pink) and 2015 (yellow). Image from Esri DigitalGlobe.

Table 1. Total counts of all marine organisms recorded on all ROV transects for 2014 and 2015.

Fish Species	# Recorded
Unidentified fish (<5cm)	>1000
Pacific Herring	>1000
Prickleback unidentified	93
Sculpin unidentified	17
Great Sculpin	11
Flatfish unidentified	9
Rockfish unidentified	9
Eelpout unidentified	7
Copper Rockfish	6
English Sole	2
Rock Sole	2
Vermilion Rockfish	2
Pacific Spiny Dogfish	2
Brown Rockfish	1
Gadidae unidentified	1

Invertebrate Species	# Recorded
Shrimp unidentified	>1000
Cancer crab unidentified	54
Dungeness crab	47
Sea star unidentified	13
Red rock crab	7

ROV transects along the FSB were conducted into the tidal current, therefore survey directionality varied throughout each day. The FSB is maintained in place by a series of concrete anchors and chains placed at regular intervals along its length (Figure 11). A radial sonar unit (Imagenex, Inc) aboard the ROV was used to locate 10 anchors and chains. When an anchor chain was encountered during a transect segment, the ROV was piloted along the chain to the attached anchor block to collect video of the associated biota. A total of 18 rockfish were recorded directly on the anchor blocks, of which nine were unidentifiable but were likely Copper, Brown, or juvenile Black Rockfish as noted by video reviewers. None of the unidentified rockfish matched the characteristics of any of the three ESA-listed species. Confirmed rockfish species recorded directly on the anchor blocks included Copper, Brown, and Vermilion Rockfish (Figure 12). Great Sculpins were also commonly recorded on most anchor chains and blocks. Transect depths for the FSB ranged from 22m to 36m ($\bar{x}$=28.6 ±4.8m), and the total linear distance covered was 2.5km (2014) and 3.4km (2015).

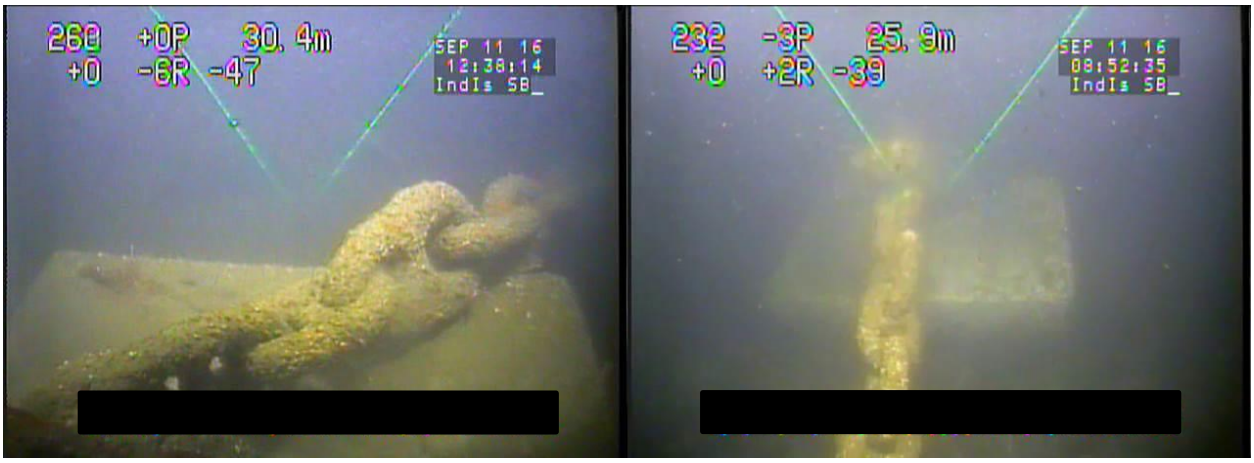

Figure 11. Still images taken from ROV survey video showing the FSB anchor blocks and chains.

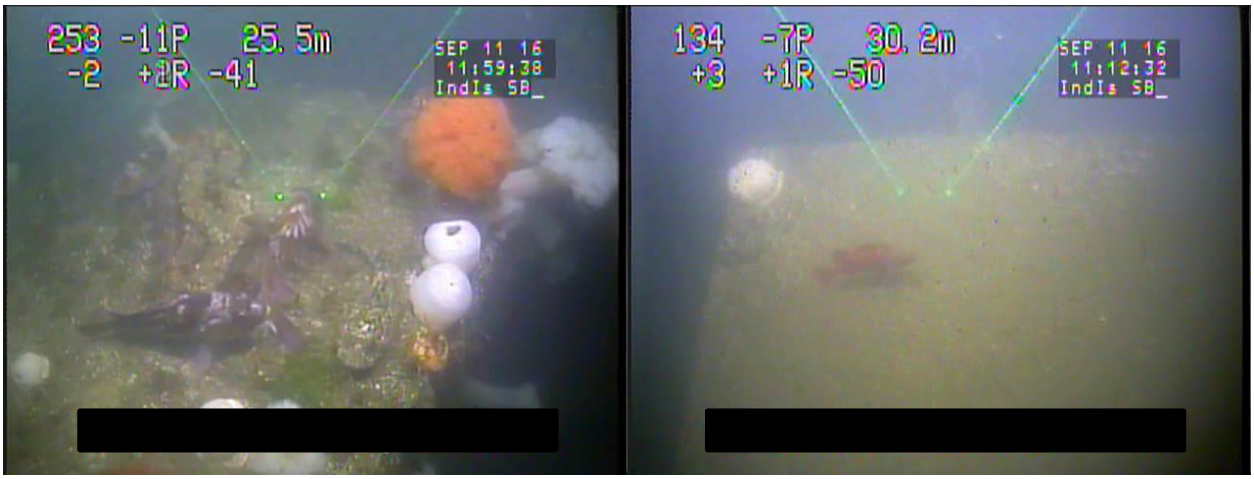

Figure 12. Still images taken from ROV survey video showing three Copper Rockfish (left) and a Vermilion Rockfish (right) directly on the FSB anchor blocks.

ROV transects along the ammunition pier were conducted from north to south, starting near the pier pilings at the surface and moving west parallel to the pier to deeper water. Video was recorded to collect data of the associated biota occurring on the dominant mud-sand substrate, punctuated with shell hash and various anthropogenic debris. There were many small (<5cm) fish recorded and most were unidentifiable to the species level. Notable recordings included two Pacific Spiny Dogfish and one large derelict ship anchor in the northern portion of these transects. Transect depths ranged from the water's surface to 25m ($\bar{x}$=17.6 ±6.9m), and the total distance covered was 0.56km.

ROV transects along two moored barges were conducted from the water's surface and down the anchor chains to the seafloor. Video was recorded to collect data of the associated biota occurring on the chains and dominant mud-sand substrate at the bottom. There were many Pacific Herring recorded but other fish were unidentifiable to the species level. No anchor blocks were found attached to the chains and were assumed to be sunken into the soft substrate. Transect depth ranged from water's surface to 29m ($\bar{x}$=17.3 ±10.4m), and the total distance covered was 0.20km.

Hydroacoustic Surveys

A total linear distance of 18.5km on July 16th, 2014 and 20.6km on March 5th, 2015 was surveyed using hydroacoustics (Figure 13). The primary bottom type was confirmed to be soft substrates including mud and sand, which aligns with the ROV habitat recordings taken near the hydroacoustic tracks. Hard bottom substrates such as gravel, pebble, and cobble were recorded near the entrance to Kilisut Harbor and south of Walan Point. The hydroacoustic survey results did not indicate any significant fish aggregations above the bottom or rocky habitat that could have been missed by the ROV camera, which samples approximately 1.5m above the bottom. Anchor blocks near the FSB were recorded as small protrusions from the seafloor in echograms (Figure 14).

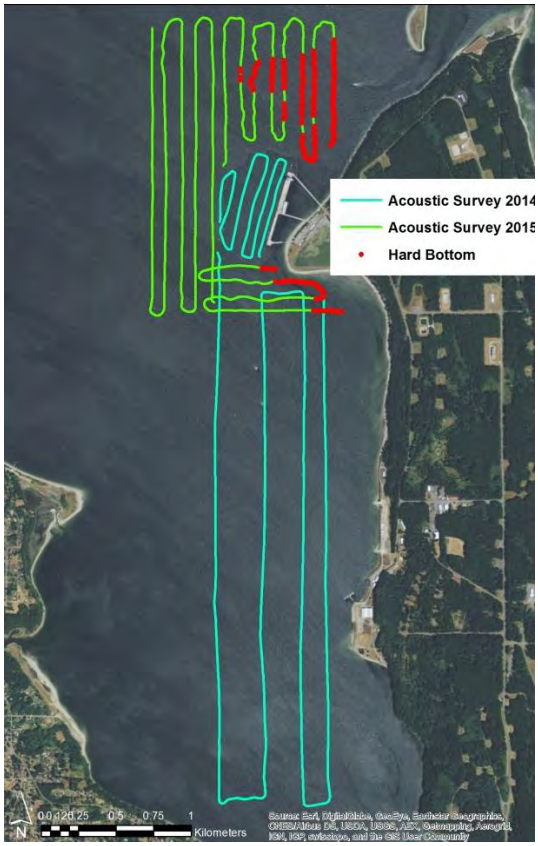

Figure 13. Orthophoto showing survey tracks for hydroacoustic transects in 2014 (blue) and 2015 (green), with hard bottom indicated in red. Image from Esri DigitalGlobe.

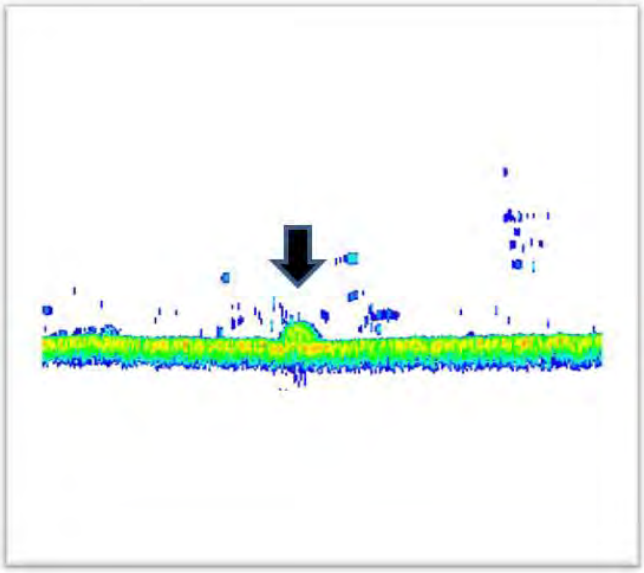

Figure 14. Echogram image during hydroacoustic survey showing an FSB anchor block structure.

Scuba Surveys

A total of seven scuba dive surveys were conducted throughout the NAVMAG-Indian Island facilities, including the ammunition pier, small craft pier, shipwreck, and areas north/south of Walan Point (Figure 15). No ESA-listed fish of any type were observed on any of the dive surveys in 2014 or 2015. A single dive survey was completed on the 0.5km ammunition pier in April 2014, confirming a flat and featureless bottom consisting of mud-sand substrates with occasional shell hash at an average depth of 18m. Fish recorded were many Snake Pricklebacks (*Lumpenus sagitta*) and two juvenile Puget Sound Rockfish (*S. emphaeus*). A single dive survey underneath the 0.07km small craft pier in April 2014 recorded zero fish along the structure or the mud-sand bottom at an average depth of 8m. In March 2015, two dive surveys to the north and south of Walan Point using actively tracked dive scooters while recording video did not observe any fish but classified the nearshore habitat features by substrate and vegetation cover. The survey north of Walan Point was conducted from south to north and covered 0.64km at an average depth of 6m. Along this transect, extensive *Ulva* cover was recorded adjacent to the ammunition pier, and increasing substrate size from pebble to cobble to boulders was noted when approaching the entrance to Kilisut Harbor. The survey south of Walan Point was conducted from south to north and covered 1.0km at an average depth of 6m. Patchy eelgrass cover and mud-sand complex in the southern half, and extensive *Ulva* cover in the northern half were noted.

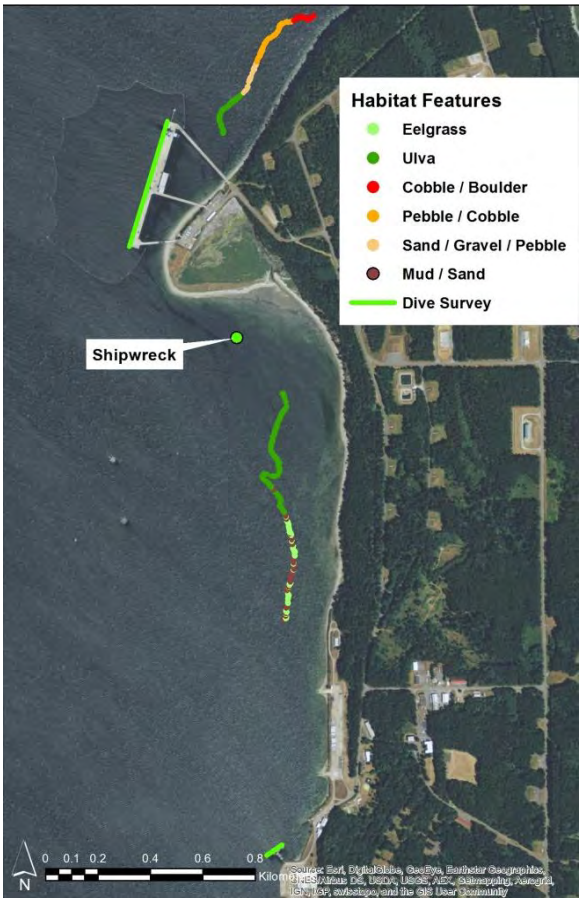

Figure 15. Orthophoto showing survey tracks for scuba surveys in 2014 and 2015, with habitat features labeled. Image from Esri DigitalGlobe.

The shipwreck required three dives to thoroughly survey the complex structure where many rockfish and other marine fish species occurred (Figure 16). The wreckage forms an expansive and complex habitat composed of metal, wood, concrete, cable, and pilings. Cracks and crevices, overhead features, and semi-enclosed compartments were plentiful. Two dives were completed in April 2014 and the third dive in March 2015 with incomplete video recorded. Video from the third dive survey was thoroughly reviewed despite the challenges of complex structure, poor visibility, and high densities of fish that likely create error in total fish counts. The percentage of marine fish species recorded on video were primarily adult Black Rockfish (*S. melanops*) at 76.5% and Striped Seaperch (*Embiotoca lateralis*) at 14.8%, but a moderate diversity of groundfish was also recorded (Table 2). Other fish species noted in the previous two shipwreck dives, but not recorded on the video, included Puget Sound Rockfish, Yellowtail Rockfish (*S. flavidus*), and Red Irish Lord (*Hemilepidotus hemilepidotus*). Gravid Copper and Brown Rockfish were commonly observed, as well as juvenile rockfish on all three shipwreck dives.

Figure 16. Photos of a gravid Copper Rockfish (left) and schooling Black Rockfish (right) taken on the shipwreck site during scuba surveys.

Table 2. Total counts and percentages of all marine fish recorded by divers on video at the shipwreck.

Fish Species	# Recorded	% Recorded
Black Rockfish	371	76.5%
Striped Seaperch	72	14.8%
Copper Rockfish	9	1.9%
Unidentified fish (<5 cm)	8	1.6%
Brown Rockfish	7	1.4%
Kelp Greenling	6	1.2%
Quillback Rockfish	5	1.0%
Lingcod	3	0.6%
Rockfish unidentified	2	0.4%
Great Sculpin	1	0.2%
Sculpin unidentified	1	0.2%

Lighted Fish Trap Surveys

Lighted fish traps were deployed in March 2015 at three sites adjacent to the NAVMAG-Indian Island and left to soak for 48 hours (Figure 17). Very few fish were captured, but those sampled included sculpins and Shiner Perch (*Cymatogaster aggregata*) (Table 3). Many invertebrate marine organisms were captured including dock shrimp (*Pandalus danae*), crangon shrimp (*Crangon crangon*), stout shrimp (*Heptacarpus brevirostris*), spot prawn (*Pandalus platyceros*), black-eyed hermit crab (*Pagurus armatus*), and sunflower star (*Pycnopodia helianthoides*). No ESA-listed species were captured during any lighted fish trap deployments.

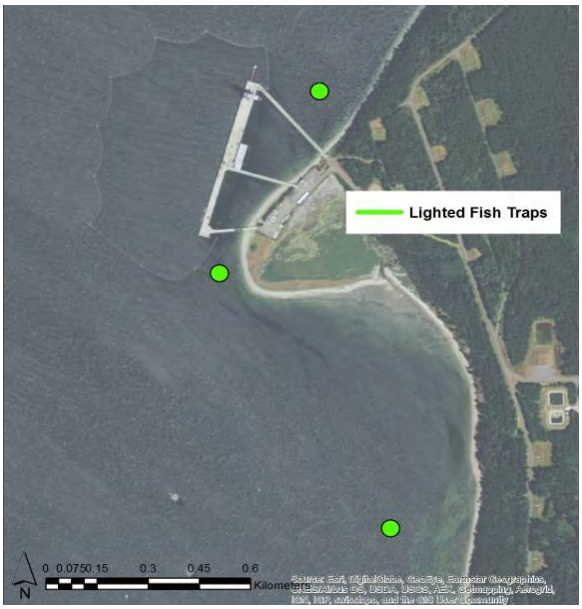

Figure 17. Orthophoto showing locations for lighted fish traps adjacent to the NAVMAG-Indian Island facilities. Image from Esri DigitalGlobe.

Table 3. Total counts of all marine organisms captured in lighted fish traps.

Fish Species	# Recorded
Sculpin unidentified	2
Great Sculpin	1
Shiner Perch	1

Invertebrate Species	# Recorded
Dock shrimp	79
Crangon shrimp	38
Stout shrimp	32
Spot prawn	3
Black-eyed hermit crab	2
Sunflower star	1

Beach Seine Surveys

Beach seine sampling occurred at the north and south boundaries of the ammunition pier adjacent to the NAVMAG-Indian Island once a month from May to September 2015 (Figure 18). A total of 21 sets were completed in 2015, with two to three sets occurring at each site on each date. Sampling always began at the south boundary on the beach closest to the pier structure, and subsequent sets were deployed along the beach towards Walan Point. Sets at the northern boundary always began closest to the pier structure and subsequent sets were deployed north along the beach. Substrate composition at the north site was a coarse cobble-pebble mix, with boulders visible on the beach just north of the sampling location. Nearshore habitat within the south site sampling zone includes substrate composition of fine to medium gravel with a sand base. Dense *Ulva* beds and drift vegetation extended from the pier to the north and south through both sampling zones. Maximum nearshore water depths recorded while sampling both sites averaged 2.4m.

Figure 18. Orthophoto of the NAVMAG-Indian Island pier identifying the beach seining survey sites: north and south of the ammunition pier. Image from Esri DigitalGlobe.

A total of 39 fish species and species-groups were captured over the five months of sampling at both sites. Overall catch composition consisted primarily of Shiner Perch 21.7%, Pacific Sand Lance 18%, Surf Smelt 16.9%, and gunnels (Family: Pholidae) 11.5% (Table 4). Species richness varied monthly from 15 to 27 total species captured during each sampling trip, with peak species richness observed in June (Figure 19). Fork lengths were recorded for a total of 272 forage fish and 93 salmonids during the five months of sampling at both sites (Table 5).

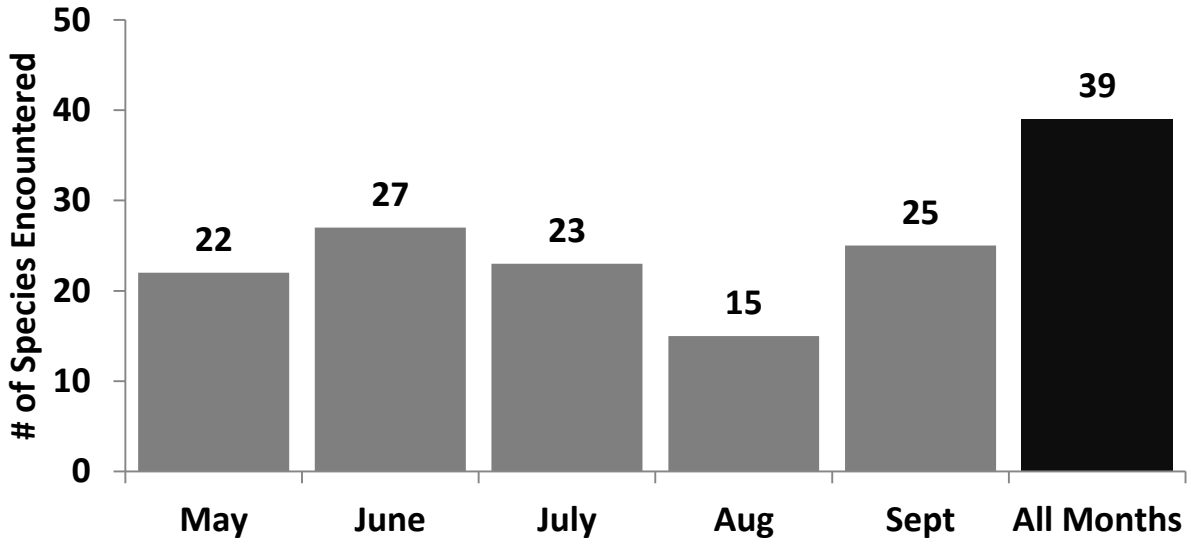

Figure 19. Species richness, including unidentified taxa, of all captured fish during beach seining, by month and all months combined.

Table 4. Total number of sets completed and counts of all marine fish captured in the beach seine for each month of sampling.

Species	13-May	10-Jun	8-Jul	24-Aug	9-Sep	Total	% of Total
# of Sets Completed	**3**	**4**	**6**	**2**	**6**	**21**	**-**
American Shad		2				2	0.02 %
Bay Pipefish	40	42	68	18	74	242	2.24 %
Buffalo Sculpin		6	6	1	6	19	0.18 %
Cabezon					1	1	0.01 %
Chinook Salmon	1	1	28			30	0.28 %
Chum Salmon	238	6				244	2.26 %
Coho Salmon	39	2	12			53	0.49 %
Crescent Gunnel	27		1	5		33	0.31 %
Cutthroat Trout	2				1	3	0.03 %
English Sole	18	15	218	38	62	351	3.25 %
Flatfish (unidentified)	31	60	6		1	98	0.91 %
Greenling (unidentified)		2				2	0.02 %
Gunnel (unidentified)	74	523	638	7	664	1906	17.64 %
Kelp Perch		1			6	7	0.06 %
Lingcod	3					3	0.03 %
Pacific Herring		264	28			292	2.70 %
Pacific Sand Lance	571	1000	265	98	15	1949	18.03 %
Pacific Staghorn Sculpin	32	145	244	14	57	492	4.55 %
Padded Sculpin			12	3	26	41	0.38 %
Penpoint Gunnel	3		3	28	78	112	1.04 %
Surfperch (unidentified)		2				2	0.02 %
Pile Perch		3	6	2	1	12	0.11 %
Plainfin Midshipman	1	17				18	0.17 %
Rockweed Gunnel		1	12	1	1	15	0.14 %
Saddleback Gunnel			19	151		170	1.57 %
Sculpin (unidentified)	15	34		1	3	53	0.49 %
Shiner Perch	120	405	1003	268	548	2344	21.69 %
Silverspot Sculpin					1	1	0.01 %
Snake Prickleback	101	45	59		10	215	1.99 %
Starry Flounder	1	1	2		1	5	0.05 %
Striped Seaperch					2	2	0.02 %
Sturgeon Poacher	1					1	0.01 %
Surf Smelt	29	1311	467		23	1830	16.93 %
Tadpole Sculpin		29			4	33	0.31 %
Three-Spine Stickleback	1	10	14		108	133	1.23 %
Tidepool Sculpin		3	2	1	2	8	0.07 %
Tubesnout		6	61		15	82	0.76 %
Whitespotted Greenling	4					4	0.04 %

Table 5. Fork length (mm) data summaries for juvenile salmonid and forage fish species.

Species	Mean ±SD	CV	n
Chinook hatchery	122.27 ±11.91	0.10	18
Chinook natural	125.42 ±11.84	0.09	12
Coho hatchery	121.50 ±13.44	0.11	2
Coho natural	120.5 ±15.55	0.13	32
Chum Salmon	94.45 ±11.84	0.13	29

Species	Mean ±SD	CV	n
Pacific Sand Lance	87.31 ±15.80	0.18	133
Surf Smelt	118.29 ±39.83	0.34	92
Pacific Herring	60.21 ±12.94	0.21	47

Forage fish species catch rates were generally higher for the south sampling site, while salmonid species catch rates were higher for the north sampling site (Figure 20). Forage fish species captured in 2015 included Pacific Sand Lance, Surf Smelt, Pacific Herring, and American Shad (*Alosa sapidissima*), with peak catch rates occurring in June (Figure 21). The most commonly captured forage fish species over all five months was Pacific Sand Lance, with the highest catch rates encountered at the south site in May (190 fish/set) and June (250 fish/set). Pacific Sand Lance fork lengths likely indicate mixed broods up to age-2 present during surveys (Emmett et al. 1991, Greene at al. 2011) (Figure 22). While Surf Smelt were captured at both sites, greater densities were recorded from the south site with a peak catch rate in June (328 fish/set), and declining in July (93 fish/set). Surf Smelt mean fork length data for all months combined resulted in high variation (CV=0.34) indicating a bimodal distribution of of age-1 and age-2+ fish (Penttila 1978) as well as variation in size between sexes of the same age class (Figure 23). Pacific Herring were encountered at both sites but more dominant at the south site with a peak catch rate in June (66 fish/set), and declining by July (6 fish/set). Pacific Herring captured in June and July fit age-length estimates for age-0 and age-1 fish (Buchanan 1985) (Figure 24). No ESA-listed Eulachon were captured during any beach seine sampling.

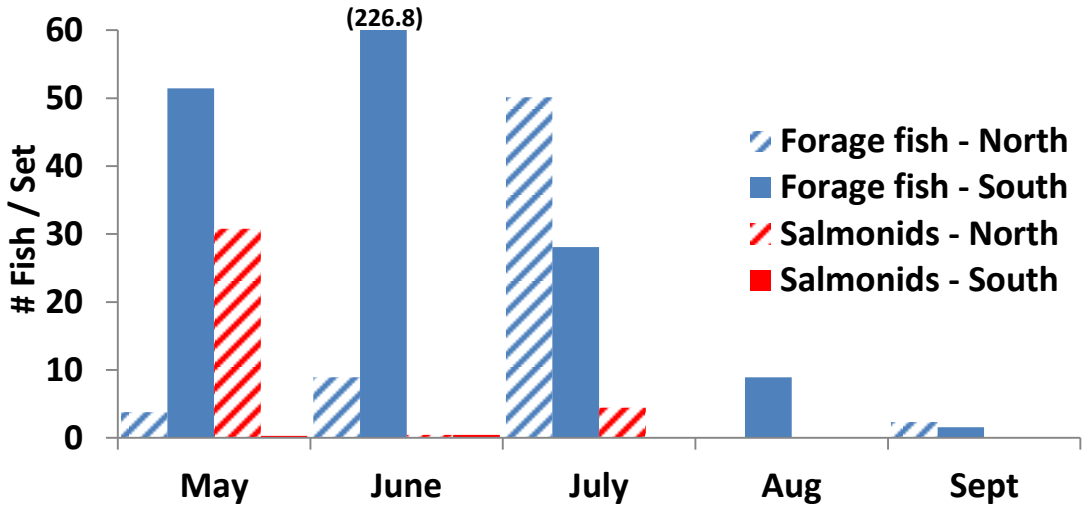

Figure 20. Catch rates for forage fish and salmonid species groups captured during beach seining, by month for north and south sampling sites.

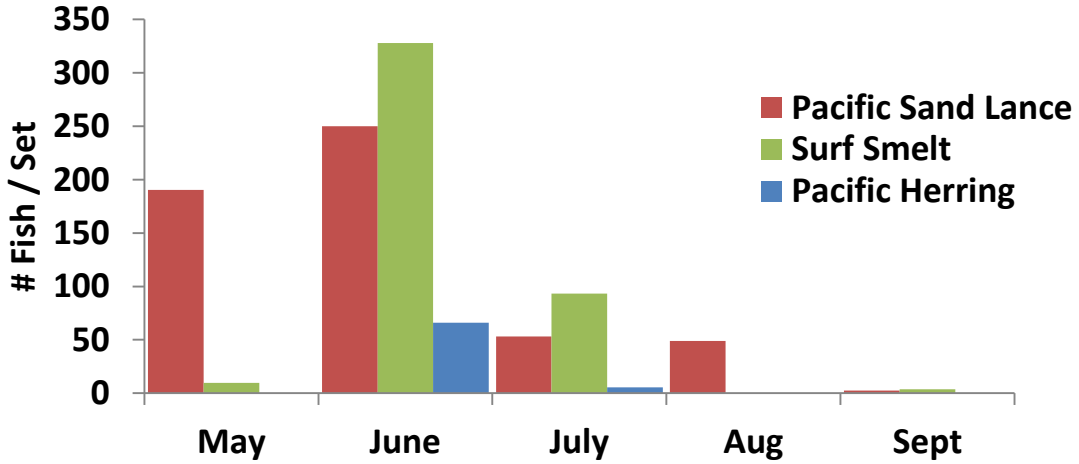

Figure 21. Catch rates for forage fish species captured during beach seining for all sites combined.

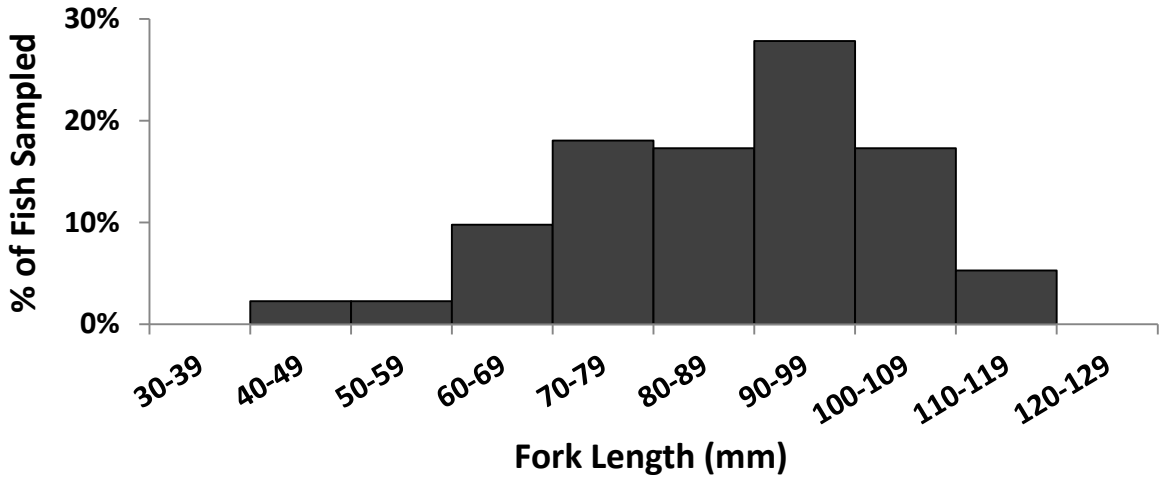

Figure 22. Pacific Sand Lance fork length histogram for all months and sites combined in 2015.

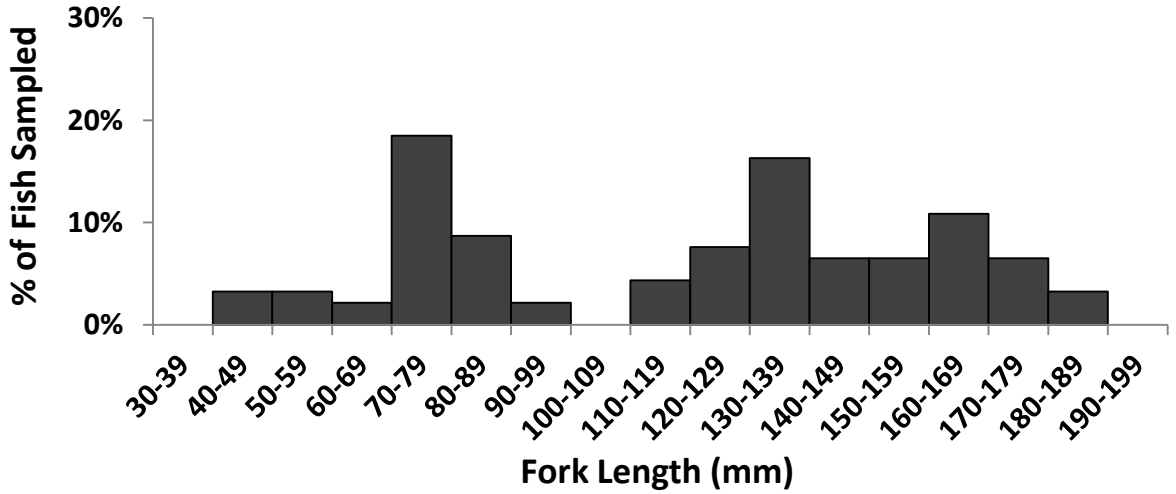

Figure 23. Surf Smelt fork length histogram for all months and sites combined in 2015.

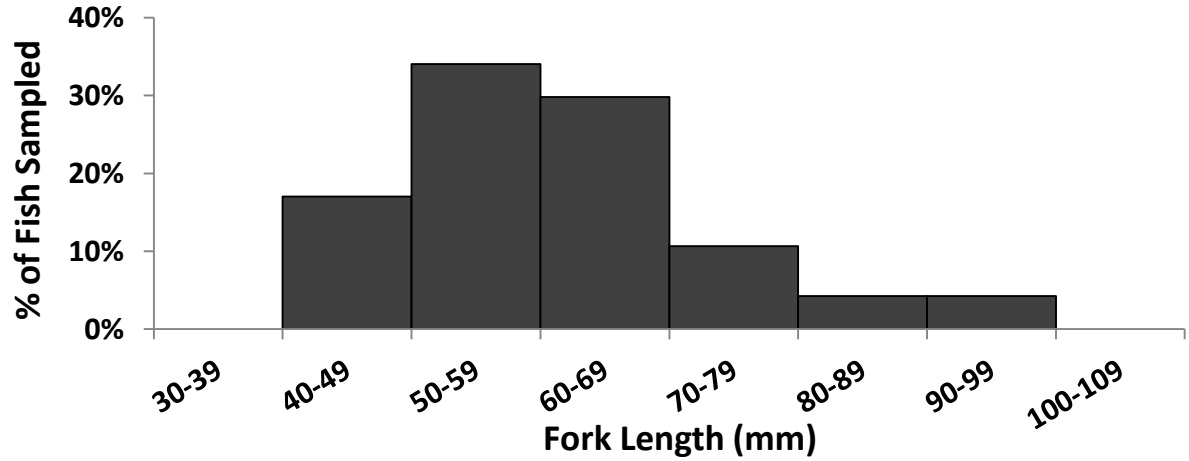

Figure 24. Pacific Herring fork length histogram for all months and sites combined in 2015.

Salmonid species captured in 2015 included Chinook Salmon, Chum Salmon, Coho Salmon (*O. kisutch*), and Cutthroat Trout (*O. clarkii*) with variable catch rates occurring in May, June, and July (Figure 25). Salmonid fork lengths generally increased for each species, as expected, from May through July (Figure 26). Juvenile Chinook Salmon was the only confirmed ESA-listed species captured at the NAVMAG-Indian Island, and was recorded only from the north site. Chinook Salmon catches were low in May (n=1) and June (n=1) with a peak catch rate in July (9.3 fish/set), which consisted of 17 hatchery and 11 natural-origin fish. Chinook Salmon mean fork lengths for hatchery and natural-origin fish were 122.27 ±11.91mm and 125.42 ±11.84mm respectively. Chum Salmon were mostly captured at the north site, with a peak catch rate in May (79.3 fish/set) that greatly declined in June (1.5 fish/set). Natural-origin Coho Salmon were only captured from the north site with variable monthly catch rates observed: the peak occurred in May (13 fish/set), declined in June (<1 fish/set), and increased in July (2.4 fish/set). Hatchery-origin Coho Salmon were only captured in July, totaling two fish. Cutthroat Trout were only encountered at the north site in May (n=2) and September (n=1).

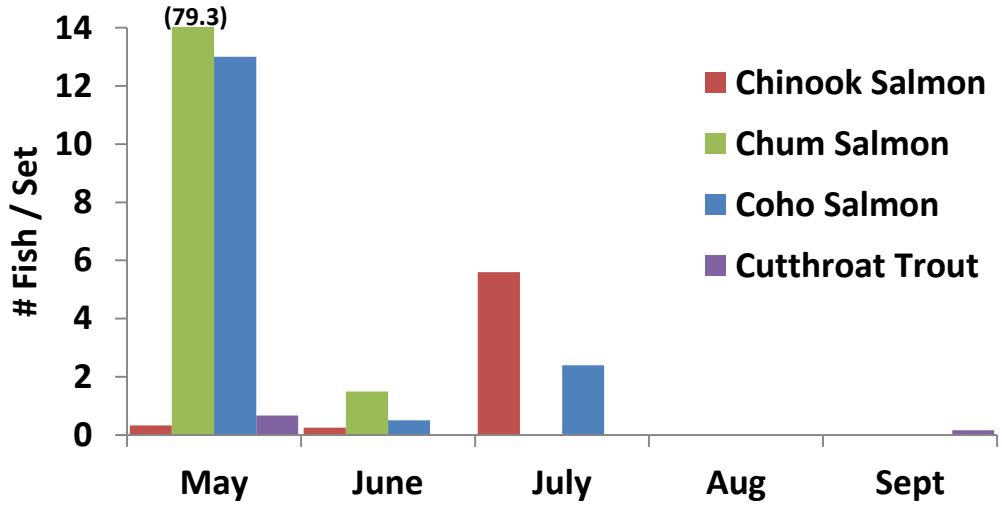

Figure 25. Catch rates for salmonid species captured during beach seining for all sites combined.

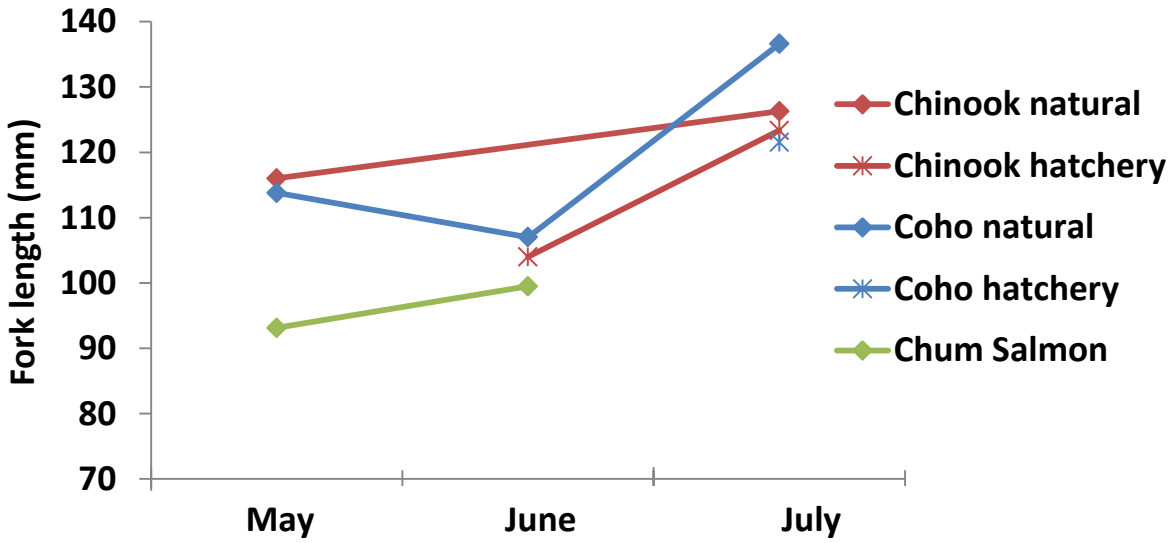

Figure 26. Mean fork length for juvenile salmonid species by month for all sites.

Several age-0 Lingcod (*Ophiodon elongatus*) (n=3) were captured in the beach seine from the south site during May sampling (Figure 27). All three of these Lingcod were considered to be age-0 due to their small lengths (47 to 65mm), and were likely rearing in the nearshore vegetation.

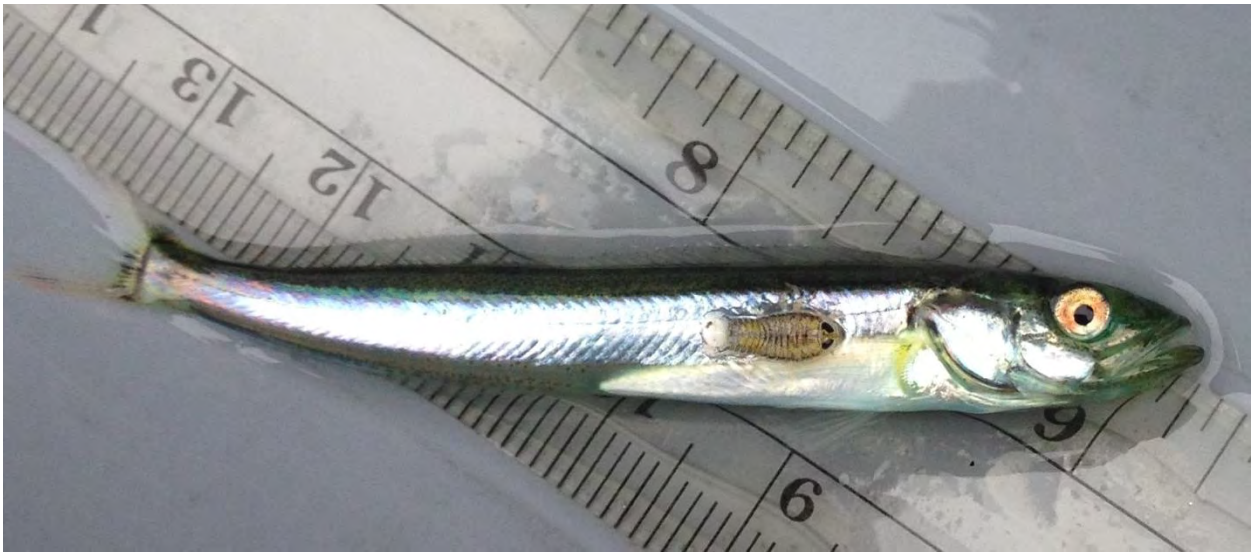

Figure 27. Photo of an age-0 Lingcod (with parasitic isopod) captured with the beach seine.

During August sampling, high densities of drift algae were captured in three attempted sets, prohibiting effective processing of the net's contents, and were omitted from the data set. The beach seine crew attempted to remove large quantities of the drift algae before releasing the net's contents to facilitate fish enumeration, but observable stress to the captive fish necessitated immediate release. There did not appear to be any salmonids or significant densities of forage fish in the omitted sets.

Discussion

Rockfish

The composition of benthic marine fish communities in the Pacific Northwest, including those in Puget Sound, can readily be described as complexes associated with specific habitat attributes, including depth, substrate type, and various physiochemical variables (Anderson and Yoklavich 2007; Love et al. 2009; Pacunski et al. 2013; Yoklavich et al. 2000; Yoklavich and O'Connell 2008). One suite of benthic species, including rockfish, Lingcod, and many sculpin, tends to associate strongly with complex benthic habitats that attract prey and mates, and serves as a refuge against predators (Du Preez and Tunnicliffe 2011; Love et al. 2000; Love et al. 2002; Palsson et al. 2009; Reynolds et al. 2010). The three ESA-listed species of rockfish (Canary, Yelloweye, and Bocaccio) are well-documented to occupy such habitats, especially deeper than 40m. A second species complex, including many flatfish, pricklebacks, and eelpouts, tends to associate with soft bottoms that generally lack complex habitat (Becker 1988; Moser et al. 2005; Palsson et al. 2002). On these flat, often muddy substrates, most species rely more on cryptic morphology or burrowing/burying behavior to camouflage their appearance, rather than seeking refuge in complex habitat (WDFW observation).

Based on direct observations of habitat immediately adjacent to the NAVMAG-Indian Island facility and within the WPNRA, very little hard or complex substrate typically preferred by rockfish was present. Some solid substrate was observed as cobble and small boulders in the nearshore habitat north of the ammunition pier, but this is outside the WPNRA. While anthropogenic debris is known to attract and

harbor rockfish, it is considered sub-optimal habitat for these, and most other, bottom-dwelling fish species (Davis et al. 1982; Fowler and Booth 2012; Matthews 1990; Reynolds et al. 2010). Although most of the fish observed by the ROV remained unidentified to species level, nearly all definitively identified fish are known to associate with soft-bottom, low-relief habitat (Adams et al. 1995; Bradburn et al. 2011; Palsson et al. 1998). Hard substrate or structure is not generally regarded as an essential habitat requirement for these groundfish species (Jagielo et al. 2003; Palsson et al. 2002; Tissot et al. 2007). The species composition of fish observed with the ROV, scuba surveys, and captured in light traps suggests that the benthic marine fish community is typical of soft-bottomed, low-complexity habitats. The observed species abundance and assemblages observed at the NAVMAG-Indian Island are comparable to expectations based on prior sampling results from surveys using an ROV and bottom trawl in Puget Sound (Pacunski et al. 2013; Palsson et al. 2002; Palsson et al. 1997; Palsson et al. 1998; Palsson et al. 2003; Palsson et al. 2009; WDFW unpublished data). Though high-relief rocky habitat can be patchy on a scale that often eludes detection by a single survey method, the suite of tools employed here provide a nearly comprehensive assessment of available habitat and we conclude that very little adult rockfish critical habitat exists in the vicinity of the NAVMAG-Indian Island.

The 2014 and 2015 ROV surveys did not detect any temporal changes in fish abundance or distribution, and the overall species assemblages identified within the two years were nearly identical. The only rockfish recorded with the ROV inside the WPNRA were directly associated with the FSB anchor blocks and observed in the same locations during both sampling periods. All of these observed rockfish were considered sub-adults within the length range of 15cm to 30cm as estimated with the ROV paired lasers. There were no ESA-listed rockfish species recorded during any ROV surveys conducted at the NAVMAG-Indian Island.

The scuba surveys on the shipwreck recorded the highest diversity of rockfish and groundfish across all the survey sites; however, the wreck is located just outside the WPNRA boundary. The complex structure of this shipwreck appears favored over the adjacent Navy structures by rockfish of many life history stages, including large, breeding, female Copper and Brown Rockfish. These breeding populations of rockfish will produce many larvae that could drift through the WPNRA structures and adjacent nearshore habitat, which includes eelgrass and *Ulva* beds as potential rearing habitat. This shipwreck structure may serve as a suitable baseline or index site, presenting an opportunity to further assess rockfish recovery throughout Puget Sound.

A rule recently finalized by NOAA Fisheries (50 CFR 226) designated nearly all of the shallow water habitat and adjacent waters of Indian and Marrowstone Islands as critical habitat (CH) for juvenile Bocaccio and Canary Rockfish (NMFS 2014). Several small areas of deep-water habitat near the Admiralty Inlet also received a CH designation for adult Bocaccio, Canary Rockfish, and Yelloweye Rockfish. Property owned by the Department of Defense is precluded from CH designation where that land is covered by an Integrated Natural Resource Management Plan, but immediately adjacent areas are still eligible. We did not observe appreciable quantities of the physical or biological features (e.g., rock substrate) considered essential by NOAA to support delineation of deep-water CH for adult ESA-listed rockfish in any of the areas surveyed by ROV, scuba, or hydroacoustics. However, there were areas recorded within the shallow water (i.e. nearshore) zones of the WPNRA where patchy eelgrass beds and mixed algal growth on harder substrates could provide productive rearing habitat for juvenile ESA-listed rockfish. The several age-0 Lingcod captured in the beach seine also indicate the nearshore zone to be a 'saltwater habitat of special concern' as a settlement and nursery area described in WAC 220-660-320.

Forage Fish and Salmonids

Beach seine surveys were completed to assess ESA-listed forage fish and salmonid species' use of marine nearshore habitats, specifically with regard to their timing, distribution, and relative abundance adjacent to the NAVMAG-Indian Island facilities and the WPNRA. Forage fish were captured during all five months of sampling, with the peak catch rate occurring in June. Fork length data taken for all species of forage fish indicate presence of both age-0 juveniles and sexually mature adults simultaneously utilizing nearshore habitat within sampling areas. This is consistent with documented Surf Smelt spawning events known to occur nearly year-round throughout different regions of the Puget Sound (Penttila 1978; WDFW unpublished data). Pacific Herring of age-0 and age-1, and Pacific Sand Lance of age-0 and age-1, and age-2+ were also recorded in catch data throughout the sampling period. No ESA-listed species of forage fish (i.e., Eulachon) were captured during 2015 sampling.

Chinook Salmon was the only confirmed ESA-listed species captured at the NAVMAG-Indian Island, and was recorded only at the north site. Catch rates were low in May and June, and the peak catch rate occurred in July. Timing of juvenile Chinook Salmon at Indian Island coincides with results from other beach seining studies conducted along the western Whidbey Island shoreline (Wait et al. 2007). Coho and Chum Salmon juveniles both had peak catch rates during the first sampling event in May, and would likely have been captured in April if sampling began earlier. Hood Canal summer-run Chum Salmon are an ESA-listed species stock; however, they are indistinguishable from fall Chum Salmon stocks by visual methods, and no genetic analysis was conducted to differentiate the two stocks in this study. Hood Canal summer-run Chum Salmon are typically expected to emerge into the marine environment earlier (January to March) than fall Chum Salmon stocks (March to June), which are hugely supplemented with hatchery fall Chum Salmon releases in April (Ames et al. 2000,Cook-Tabor 1995, Fletcher et al. 2013). Although the presence of Hood Canal summer-run Chum Salmon stocks cannot be confirmed with this study, the temporal sampling frame occurred after the expected peak nearshore habitat utilization by summer-run Chum Salmon, which suggests that fall Chum Salmon stocks were primarily, or exclusively, captured in 2015.

It is unclear why salmonids dominated the catch on the north site and forage fish dominated the catch on the south site. While the sampled depths and proximity to Navy pier structures are similar, the substrate compositions are different; the north site is coarse pebble-cobble and the south site is fine gravel with sand. The north site lies much closer to the entrance of Kilisut Harbor, which exposes the site to stronger tidal currents and may increase prey availability during ebb tides. Ongoing sampling will assess this north/south site species differential, as well as the interannual variation.

Conclusions

Overall, very few rockfish directly associated with the NAVMAG-Indian Island facilities were observed. Nearly all of the benthic terrain surveyed as a part of this study consisted of mud or mud-sand mosaic, unconducive to the settlement and long-term residency of fishes that prefer high-relief, complex habitats. The one exception is the shipwreck that has attracted many rockfish and other groundfish. Even though this location is outside of the WPNRA, it may serve as a suitable baseline or index site, presenting an opportunity to further assess rockfish recovery throughout Puget Sound. This wreck is within the depth range occupied by juvenile Bocaccio and Canary Rockfish but is too shallow for use by Yelloweye Rockfish of any age to be expected.

None of the rockfish species recorded at the NAVMAG-Indian Island in 2014 or 2015 were ESA-listed, and neither the habitats nor depths recorded were consistent with associations of ESA-listed rockfish species, with the exception of the shipwreck noted above. Based on the results from these surveys, we conclude that the WPNRA is unlikely to support adult ESA-listed rockfish species or their preferred deep-water habitats. However, there were areas recorded within the shallow water (i.e. nearshore) zones of the WPNRA where patchy eelgrass beds and mixed algal growth on harder substrates could provide productive rearing habitat for juvenile rockfish. These nearshore habitat characteristics overlap with essential features for juvenile Bocaccio and Canary Rockfish as described by NOAA under 50 CFR Part 226. Ongoing sampling is recommended specifically for detecting juvenile rockfish settlement and recruitment within these essential features. These habitat data are considered to be static over time, meaning that no significant changes are expected to occur with the habitat substrates or features without severe environmental or anthropogenic influences (e.g., dredging).

The only confirmed ESA-listed species captured with the beach seine at the NAVMAG-Indian Island was juvenile Chinook Salmon in May and June, with peak catches occurring in July, and only from the site north of the ammunition pier. Ongoing sampling will assess the interannual variation for Chinook Salmon. Based on results from 2015, we preliminarily conclude that in order to reduce impact on juvenile salmon, the work window (July 15 to February 15) for any NAVMAG-Indian Island facilities' in-water maintenance, military construction (MILCON), mitigation projects, future Fleet training and testing should not include June or July, as is consistent with the measures outlined in WAC 220-660-330.

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Appendices

Appendix A: Comprehensive list of all fish species recorded at the NAVMAG-Indian Island in 2014 and 2015 by survey method type. BS=Beach Seine, ROV=Remotely Operated Vehicle, LFT=Lighted Fish Traps, SCU=Scuba. Taxanomic nomenclature and phylogenetic organization follows arrangement from Pietsch and Orr (2015).

TAXON	Common Name	Survey Method			
		BS	ROV	LFT	SCU
SQUALIFORMES	**DOGFISH SHARKS**				
Squalidae	**Dogfish Sharks**				
Squalus suckleyi	Pacific Spiny Dogfish		**X**		
CLUPEIFORMES	**HERRINGS**				
Clupeidae	**Herrings and Sardines**				
Alosa sapidissima	American Shad	**X**			
Clupea pallasii	Pacific Herring	**X**	**X**		
OSMERIFORMES	**FRESHWATER SMELTS**				
Osmeridae	**Smelts**				
Hypomesus pretiosus	Surf Smelt	**X**			
SALMONIFORMES	**TROUTS**				
Salmonidae	**Trouts and Salmon**				
Oncorhynchus clarkii clarkii	Cutthroat Trout (coastal)	**X**			
Oncorhynchus keta	Chum Salmon	**X**			
Oncorhynchus kisutch	Coho Salmon	**X**			
Oncorhynchus tshawytscha	Chinook Salmon	**X**			
GADIFORMES	**CODS**				
Gadidae	Gadidae unidentified		**X**		
BATRACHOIDIFORMES	**TOADFISHES**				
Batrachoididae	**Toadfishes**				
Porichthys notatus	Plainfin Midshipman	**X**			
GASTEROSTEIFORMES	**STICKLEBACKS**				
Aulorhynchidae	**Tubesnouts**				
Aulorhynchus flavidus	Tubesnout	**X**			
Gasterosteidae	**Sticklebacks**				
Gasterosteus aculeatus	Three-Spine Stickleback	**X**			
Syngnathidae	**Pipefishes**				
Syngnathus leptorynchus	Bay Pipefish	**X**			
SCORPAENIFORMES	**MAIL-CHEEKED FISHES**				
Scorpaenidae	**Scorpionfishes**				
Sebastes auriculatus	Brown Rockfish		**X**		**X**
Sebastes caurinus	Copper Rockfish		**X**		**X**
Sebastes maliger	Quillback Rockfish				**X**
Sebastes melanops	Black Rockfish				**X**
Sebastes miniatus	Vermilion Rockfish		**X**		
Sebastes spp.	Rockfish unidentified		**X**		**X**
Hexagrammidae	**Greenlings**				
Hexagrammos decagrammus	Kelp Greenling				**X**
Hexagrammos stelleri	Whitespotted Greenling	**X**			
Ophiodon elongatus	Lingcod	**X**			**X**
	Greenling unidentified	**X**			

Cottidae	**Sculpins**				
Artedius fenestralis	Padded Sculpin	**X**			
Enophrys bison	Buffalo Sculpin	**X**			
Leptocottus armatus	Pacific staghorn Sculpin	**X**			
Myoxocephalus polyacanthocephalus	Great Sculpin		**X**	**X**	**X**
Oligocottus maculosus	Tidepool Sculpin	**X**			
Scorpaenichthys marmoratus	Cabezon	**X**			
Hemitripteridae	**Spiny Sculpins**				
Blepsias cirrhosus	Silverspot Sculpin	**X**			
Agonidae	**Poachers**				
Podothecus accipenserinus	Sturgeon Poacher	**X**			
Psychrolutidae	**Flathead sculpins**				
Psychrolutes paradoxus	Tadpole Sculpin	**X**			
	Sculpin unidentified	**X**	**X**	**X**	**X**
PERCIFORMES	**PERCHES**				
Embiotocidae	**Surfperches**				
Brachyistius frenatus	Kelp Perch	**X**			
Cymatogaster aggregata	Shiner Perch	**X**		**X**	
Embiotoca lateralis	Striped Seaperch	**X**			**X**
Rhacochilus vacca	Pile Perch	**X**			
	Surfperch unidentified	**X**			
Zoarcidae	**Eelpouts**				
	Eelpout unidentified		**X**		
Stichaeidae	**Pricklebacks**				
Lumpenus sagitta	Snake Prickleback	**X**			
	Prickleback unidentified		**X**		
Pholidae	**Gunnels**				
Apodichthys flavidus	Penpoint Gunnel	**X**			
Apodichthys fucorum	Rockweed Gunnel	**X**			
Pholis laeta	Crescent Gunnel	**X**			
Pholis ornata	Saddleback Gunnel	**X**			
	Gunnels unidentified	**X**			
Ammodytidae	**Sand Lances**				
Ammodytes personatus	Pacific Sand Lance	**X**			
PLEURONECTIFORMES	**FLATFISHES**				
Pleuronectidae	**Righteye Flounders**				
Lepidopsetta spp.	Rock Sole		**X**		
Parophrys vetulus	English Sole	**X**	**X**		
Platichthys stellatus	Starry Flounder	**X**			
	Flatfish unidentified	**X**	**X**		

Appendix B: Detailed list of electronic equipment associated with remotely operated vehicle (ROV) surveys conducted by WDFW. This list includes equipment aboard the support vessel and carried as payload by the Seaeye Falcon ROV.

Item	Make	Model	Serial Number	Other Features
R/V Molluscan -- fixed gear	Roberts	1976, 36'	561140	Converted fishing vessel
Global Positioning System	Northstar	952XDW	AT20040DW	
Global Positioning System	Garmin	GPSMAP 4210	19R006587	
Automatic Identification System	Garmin	GPS 17x NMEA	1BP079445	
Compass	KVH	Azimuth 1000	061201589	
Radar	Furuno			
Fathometer	Furuno			
VHF Radio (2)				
CB radio unit				No Antenna - Deck only
Remotely Operated Vehicle (ROV)	Saab Seaeye	Falcon 12105		
Camera	Saab Seaeye	Seaeye CAM04P Colour Camera		50 hz, 0.35 Lux, 24 VDC
Control Unit	Saab Seaeye	Surface Control Unit SI-SCU07		
Umbilical	Saab Seaeye			330 m range
Acoustic Tracking System	Linkquest	Transponder		25 watt, 1000 m range
Radial Sonar Unit	Imagenex	881L-GS		Gyro stabilized
Tracklink 1500 LC System		TN 1505 BR Transponder		uses Ship GPS and Compass
Tracklink 1500 LC System		TN 1505 BR Transponder		uses Ship GPS and Compass
Tracklink 1500 LC System		TC 1505 LC Transceiver		uses Ship GPS and Compass
Other gear				
4TB external HDD	Fantom	MDE4000		
2TB external HDD	Iomega	31853000	NVA03837BC	
Laptop - NO CAMERA	Dell	Latitude C810	TW04K420129611C91252	Win XP
Laptop - NO CAMERA	Dell	Latitude C810	TWD4K420129611C91411	Win XP
Laptop - NO CAMERA	Dell	Latitude E6410	240B1M1	Win Vista
Laptop - NO CAMERA	Dell	Latitude E6410		Win 7
13" TV Monitor	Sony	Color monitor for video review		

Summary Report
2013-2014 Wildlife Surveys
At Naval Magazine Indian Island, Jefferson County, Washington

Short-tailed Weasel

Photo by Jaime Wasielewski

December 2014

Prepared by:
Paul Block, Chris Petersen, and Matt Klope
Naval Facilities Engineering Command, Atlantic

Table of Contents

Introduction

This report summarizes the results of six field surveys for wildlife at Naval Magazine Indian Island (NAVMAG Indian Island) located in Jefferson County, Washington. The surveys were conducted by natural resource specialist Chris Petersen, Matt Klope, and Paul Block of Naval Facilities Engineering Command, Atlantic (NAVFAC LANT) with the assistance of Student Conservation Association students (Christina Hersum, Jaime Wasielewski, Erik Kunz, Kim Ramos, Navit Reid, Alexander Peterson, and Jackson Letchworth) and NAVFAC Northwest staff (Julia Stockton, Cindi Kunz, Mike Schwinn, Terri Jones, and Sara Street). The surveys occurred during the following dates: 22-26 April 2013, 15-19 July 2013, 16-20 September 2013, 23-27 June 2014, and 21-25 July 2014. All photos were taken by Paul Block unless otherwise labeled in the photo.

The objective of the survey was to document natural resource data at NAVMAG Indian Island. Surveys focused on mammals, reptiles and amphibians, and nesting bald eagles with other species observations noted during the field surveys. Data collected from the surveys will provide additional data for the Integrated Natural Resource Management Plan (INRMP) and be used for environmental planning, natural resource management, and conservation in support of the military missions of the installation. This report focuses on mammals and other anecdotal wildlife observations while additional reports are available for reptiles and amphibians (Baseline Survey for Amphibians and Reptiles at Naval Magazine Indian Island, September 2013) and bald eagle observation data.

Project Location and Habitats

NAVMAG Indian Island is located at the northeast corner of the Olympic Peninsula in Jefferson County, Washington, southeast of the city of Port Townsend. The Navy installation is bounded by Port Townsend Bay on the west and north, Oak Bay and Portage Canal to the west and south, and Kilisut Harbor to the east. Tidal flats and a manmade bridge are the only land links to surrounding habitats for the island. The primary military mission is to load, offload, and manage ordnance from U.S. Navy vessels.

The dominant habitat of NAVMAG Indian Island is forest lands (approximately 2,100 acres). The majority of trees are 70 to 120 years old. Evergreen tree species include the Douglas-fir

(*Psuedotsuga menziesii*), western red cedar (*Thuja plicata*), grand fir (*Abies grandis*), and western hemlock (*Tsuga heterophylla*). Common broadleaved tree species are bigleaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), madrona *(Arbutus menziesii)*, quaking aspen (*Populus tremuloides*), and black cottonwood (*Populus balsamifera*).

Understory plant vegetation of the evergreen forest stands include sword fern (*Polystichum munitum*), salal (*Gaultheria shallon*), wild rose, and oceanspray (*Holodiscus discolor*). Understory plant vegetation of the broadleaved stands includes stinging nettle (*Urtica dioica*), oceanspray (*Holodiscus discolor*), and horse tail (*Equisetum*). Wetland plant communities tend to be dominated by red alder, black cottonwood (*Populus balsamifera*), and salmonberry (*Rubus spectabilis*). Abundant fallen logs are scattered throughout the forested habitats.

Non-forested habitats of the installation include clear-cuts, emergent shoreline fields, and cut grass along roadways and covering the top of magazine storage sites. Scotch broom (*Cytisus scoparius*) commonly grows in the clear-cuts and upland fields, in addition to stinging nettle (*Urtica dioica*) and Himalayan blackberry (*Rubus armeniacus*).

Wildlife Surveys

The objective of the surveys was to collect natural resource data for NAVMAG Indian Island. This report will focus on the mammal surveys. During the five weeks of surveys many anecdotal observations were also made and these will also be included in this report.

Mammal Surveys

The objective of the mammal surveys was to document which mammal species have the potential or are confirmed for the base. Prior to this effort, no formal survey had been conducted with only anecdotal field observations and desk top analysis used to document the mammal species on the base. The survey did not include bat species since the researchers did not have specific bat monitoring equipment such as mist nets or an acoustic monitoring system.

Field Methodology for Mammal Species


Havahart Trap Set and Baited

Live Trapping

Live trapping was one of the primary survey techniques used at NAVMAG Indian Island. Up to fifty six Sherman live-capture traps (size 3”x3”x10") and fifteen Havahart single door traps (sizes 42”x15”x15", 24”x7”x7", 32”x12”x10") were used to document the presence of small and medium mammal species throughout the installation. Traps were baited with a variety of baits that included a mixture of peanut

butter and oats, canned tuna, canned cat food, canned sardines, raw chicken, marshmallows sprinkled with vanilla extract, and scent lures (Mark June's Lures: Predator Frenzy and Windwalker Predator). Live trapping occurred nightly between the dates of September 16-19, 2013; June 23-27, 2014, and July 21-25, 2014. All traps were checked in the morning every day. A mammal trapping datasheet was filled out at each trap location as the traps were checked to record captured individuals.

Live traps were baited and deployed for a total of twelve trap nights using all available traps during each trapping event. Trap locations and number of trap nights varied per location and are summarized in Appendix A. An installation map with trapping locations is included in Appendix B. Trapped animals were identified and many were photographed. All were released except for two trap mortalities (both vagrant shrews).

Wildlife Cameras

Five Cuddeback Cameras (Attack IR-Model 1156) each equipped with a two gigabyte SD card were deployed at different locations throughout NAVMAG Indian Island. These cameras have been constantly deployed in a variety of locations since initial setup. Bait (canned tuna, cat food, sardines, and scent lures) was sometimes placed within the field of view of the cameras as an attractant. The cameras are downloaded and relocated periodically.

Spotlight Survey

Spotlight surveys were conducted on June 25, 2014, and July 23, 2014. The surveys were conducted by driving at a low speed (10-15 mph) on roads of the installation during nighttime hours and shinning a high-powered beam spotlight into fields, down trails and within wooded areas along the roadway. Appendix C is the route used for the June and July 2014 surveys.

Visual Encounter Surveys

Visual encounter surveys were one technique used by biologists to conduct the field work. This survey method involves visually searching habitats for mammals while in the field. This technique was conducted during daylight hours by walking and driving throughout the base.


Columbian Black-tailed Deer

Desk-top Analysis

A desk-top analysis using a variety of resources but primarily the *Washington Department of Fish and Wildlife GAP Analysis Program's Vertebrate Distribution Models for Mammals* (WDFW 2014) was conducted for NAVMAG Indian Island considering range maps and habitat requirements to determine the likelihood of a species using the site.

Results

Based on desk-top analysis, anecdotal observations and survey results, fifty-one (51) species of mammals may be year-round, seasonal, or transient mammals of NAVMAG Indian Island (Appendix D). The field study confirmed the presence of twelve (12) species, anecdotal observations confirmed an additional three (3) species and desk-top analysis determined that an additional twelve (12) species are likely and twenty-four (24) are potential at NAVMAG Indian Island. Photos of several species are located in Appendix I.

Medium and Small Mammal Surveys

Four species of mammals were captured during surveys at NAVMAG Indian Island including deer mouse, long-tailed vole, short-tailed weasel, and vagrant shrew. Of the species observed, the deer mouse was the most frequently captured and was found in most habitats in which trapping occurred except interior forest. The deer mouse was captured frequently while the vagrant shrew was captured twice and the long-tailed vole and short-tailed weasel only once each.

The stormwater basin next to Magazine 1018 had the most diverse capture with several deer mice, a long-tailed vole, and both vagrant shrews all captured at this location. The

short-tailed weasel was captured in the wetlands near Sunny Cove. Peanut butter was the most effective bait during the survey. Future surveys strategies may include setting traps in the late fall, winter and very early spring when less natural food is available to increase trap capture success.

Wildlife cameras have observed primarily deer but have also recorded mountain lion, coyote and a hummingbird. A list of mammal species that could be present at NAVMAG Indian Island was created by survey results, desk-top analysis, and reports of mammal siting from base personnel (Appendix D).

Deer Spotlight Surveys

Two spotlight surveys were conducted during field visits in 2014. One survey's results (July 24, 2014) was not used for the following black-tailed deer population estimation. The July survey was conducted in poor weather conditions with impaired visibility due to fog formation during the survey period. The following population estimation is based on the June 25, 2014 survey results.

The only species observed during spotlight surveys was the Columbian black-tailed deer. During the June survey 20 black-tailed deer were recorded consisting of six bucks and 14 does. No button bucks, spikes or fawns were observed during the spotlight survey. Fawns but no spikes or button bucks were observed anecdotally during other daytime field work. This may indicate a low survivorship of the previous year's fawns. If true, causes for this low survivorship are highly speculative but could include high predation rate from an increase in the coyote population along with a least one mountain lion (see photo on page 5) located on site. Further study and management may be warranted if this low survivorship is confirmed and observed to be a chronic issue.

The population estimate was based on the following calculations:

Equation 1: Estimated acres of observable area ÷ Number of observed deer = Number of acres per deer

Equation 2: Total acres of study area ÷ Number of acres per deer = Estimated population of deer

Estimated acres of observable area is the area that is observable with the spotlight from the vehicle. This was estimated using area calculations on web-based aerial imagery of the survey route. The observable area includes the road, road shoulders, and any open areas adjacent to the route such as bunkers and work areas but stopped at the edge of any visual barriers such as forests or buildings. The total area on the survey route was estimated to be 6,273,940 square feet or 144.03 acres. Indian Island has a total acreage of 2,716 acres. This population estimate assumes that deer density is equal throughout all habitats on base.

Therefore, the calculations for the estimated deer population for NAVMAG Indian Island are:

Equation 1: 144.03 ÷ 20 = 7.2 acres per deer

Equation 2: 2,716 ÷ 7.2 = 377.2 estimated deer on NAVMAG Indian Island

The current black-tailed deer population estimate for NAVMAG Indian Island is 377.2 deer. The doe to buck ratio during the survey was 14 to 6 so the estimated total doe to buck ratio is 264 does to 113.1 bucks or 2.33 does to every buck at NAVMAG Indian Island. The population estimate is based on one survey's data and should be repeated to increase the accuracy of the population estimate and to follow population changes over time.

Based on this one survey, there is a potential overabundance of deer at NAVMAG Indian Island. As a general rule, a deer density goal for managers is around 20 deer for every square mile or one deer for every 32 acres. NAVMAG Indian Island has 440 % higher deer per acre (4.4 deer for every 32 acres) rate than what is considered optimal. NAVMAG Indian Island may support a greater density due to the availability and distribution of manmade habitats (lawn areas and open fields) throughout the base. In essence, these artificial areas may act as food plots for the population thus supporting the greater densities and not submitting the native vegetation to over browsing by the deer. This population rate should be verified through repeated surveys prior to making any management plans and decisions.

Other Wildlife Observations

Pigeon Guillemot Nesting Areas

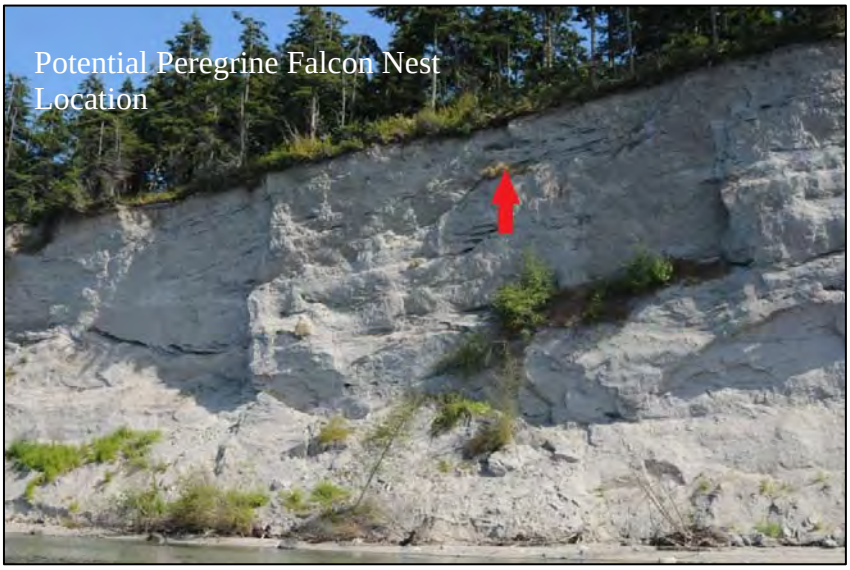
Two active nesting areas with multiple nesting burrows were observed on the eastside of NAVMAG Indian Island. Both nesting areas were located in the soil bluff facing Kilisut Harbor (Appendix E). The more southern nesting group consisted of fourteen (14) nest holes and the northern nesting group contained twelve (12) nest holes. Both nest locations were active with adult birds loafing and making alarm whistles off shore with individual adults periodically flying into and out of the nest holes. Additional surveys may be warranted to document the number of nesting pairs.

Pigeon Guillemot Nesting Sites


Pigeon Guillemot Nesting Hole

Peregrine Falcon Nest Site

A possible peregrine falcon nest is located at the north end of the property on a ledge on the high bluff facing Rat Island (Appendix E). Two peregrine falcons were observed on June 24, 2014 in two trees on the edge of the bluff. These appeared to be an adult and a first year bird. One of many of the small ledges on the bluff appeared to have significant amount of avian fecal droppings (white wash) on and below the ledge. This area may be the location of a peregrine nest or a roost location and should be surveyed in the late spring to document nesting activity and location.



Close-up of Potential Peregrine Falcon Nest Location (notice white wash)

Great Blue Heron Loafing and Roosting Location

Blue herons congregate in large numbers at the tidal spit at the end of Boggy Spit road and in the trees along the shoreline just south of this location (see Appendix F). The number of herons loafing on the spit varies but at times exceeds fifty (50) birds. The roost area does not appear to support nesting but has signs of frequent usage by the amount of avian fecal droppings (white wash) below the trees. The wooded roost area should be observed in the spring and summer to inspect the area for potential nesting.

Great Blue Heron's Loafing on Boggy Spit

Great Blue Heron's Roosting near Boggy Spit

Rat Island: Harbor Seal Haul-Out Location

Rat Island is located in Port Townsend Bay approximately 600 feet north of NAVMAG Indian Island but may be accessible by foot at extreme low tide. Rat Island is owned by the Washington State Department of Natural Resources. The island has a sandy shoreline on the eastern side with some vegetated sand dunes in the middle of the island. The western side appears to have less of a sandy shoreline containing more pebbles and stones. Appendix G shows the location of a frequent harbor seal haul-out area on the western side of the island. This is currently the only known area on NAVMAG Indian Island that supports terrestrial marine mammal usage.

Harbor Seals on Rat Island

Rat Island: Glaucous-winged Gull and Caspian Tern Nesting Colonies

Rat Island is a breeding location for large numbers of Glaucous-winged gulls and Caspian terns. These two species nest on the ground in the vegetated areas and barren ground toward the higher elevated center of the island. The gulls seem to use the more northern half while the terns seem to nest in the more southern half of the island. These nesting birds attract opportunistic bald eagles that were observed hunting the nesting colonies. The eagles were often perched in the shoreline trees at NAVMAG Indian Island before approaching the nesting area. Appendix H is a list of all species of birds observed at NAVMAG Indian Island and Rat Island during the surveys. This list includes 23 species not currently listed in the INRMP.

Caspian Tern Nesting Colony on Rat Island

Immature Bald Eagle Hunting Glaucous-winged Gull Nesting Colony

Appendix A: Trap Locations, Numbers, and Deployment Period

Trap Location	Dates Deployed	Number of Sherman Traps	Number of Havahart Traps	Length of Trap Deployment (nights)	Number of Trap Nights
Field next to Anderson Pond	9/16/2013, 9/17/2013	30	4	2	68
Marsh Habitat Near the Pier	9/16/2013, 9/17/2013	26	8	2	68
EOD Range	9/16/2013, 9/17/2013,	0	3	2	6
Forest North of Boneyard	9/18/2013, 9/19/2013	30	3	2	66
Beach at Northern Spit	9/18/2013, 9/19/2013	26	1	2	54
End of Fort Road	9/18/2013, 9/19/2013	0	7	2	14
Shoreline North of Concrete Pad on West Side	9/18/2013, 9/19/2013	0	4	2	8
Field next to Anderson Pond	6/24/2014, 6/25/2014	6	5	2	22
Bishop Spit	6/24/2014, 6/25/2014	10	4	2	28
Ferry Street	6/24/2014, 6/25/2014	14	3	2	34
Magazine 1018	6/24/2014, 6/25/2014, 6/26/2014, 6/27/2014	9	1	4	40
Boggy Spit	6/24/2014, 6/25/2014	10	2	2	24
Water Line Trail	6/24/2014, 6/25/2014	0	9	2	18
End of	6/26/2014,	6	5	2	22

Campbell Road	6/27/2014				
Boneyard	6/26/2014, 6/27/2014	25	4	2	58
Burma Hut	6/26/2014, 6/27/2014	0	9	2	18
Griffin	6/26/2014, 6/27/2014	20	3	2	46
Landfill	6/26/2014, 6/27/2014	17	2	2	38
Sunny Cove Wetlands	7/22/2014, 7/23/2014, 7/24/2014, 7/25/2014	10	0	4	40
Magazine 1018	7/22/2014, 7/23/2014, 7/24/2014, 7/25/2014	10	0	4	40
Griffin	7/22/2014, 7/23/2014, 7/24/2014, 7/25/2014	10	0	4	40
Burn Pit	7/22/2014, 7/23/2014, 7/24/2014, 7/25/2014	0	6	4	24
Lower Bob	7/22/2014, 7/23/2014, 7/24/2014, 7/25/2014	0	2	4	8
Upper Bob	7/22/2014, 7/23/2014, 7/24/2014, 7/25/2014	0	1	4	4
Anderson and Taffinder	7/22/2014, 7/23/2014, 7/24/2014, 7/25/2014	0	6	4	24

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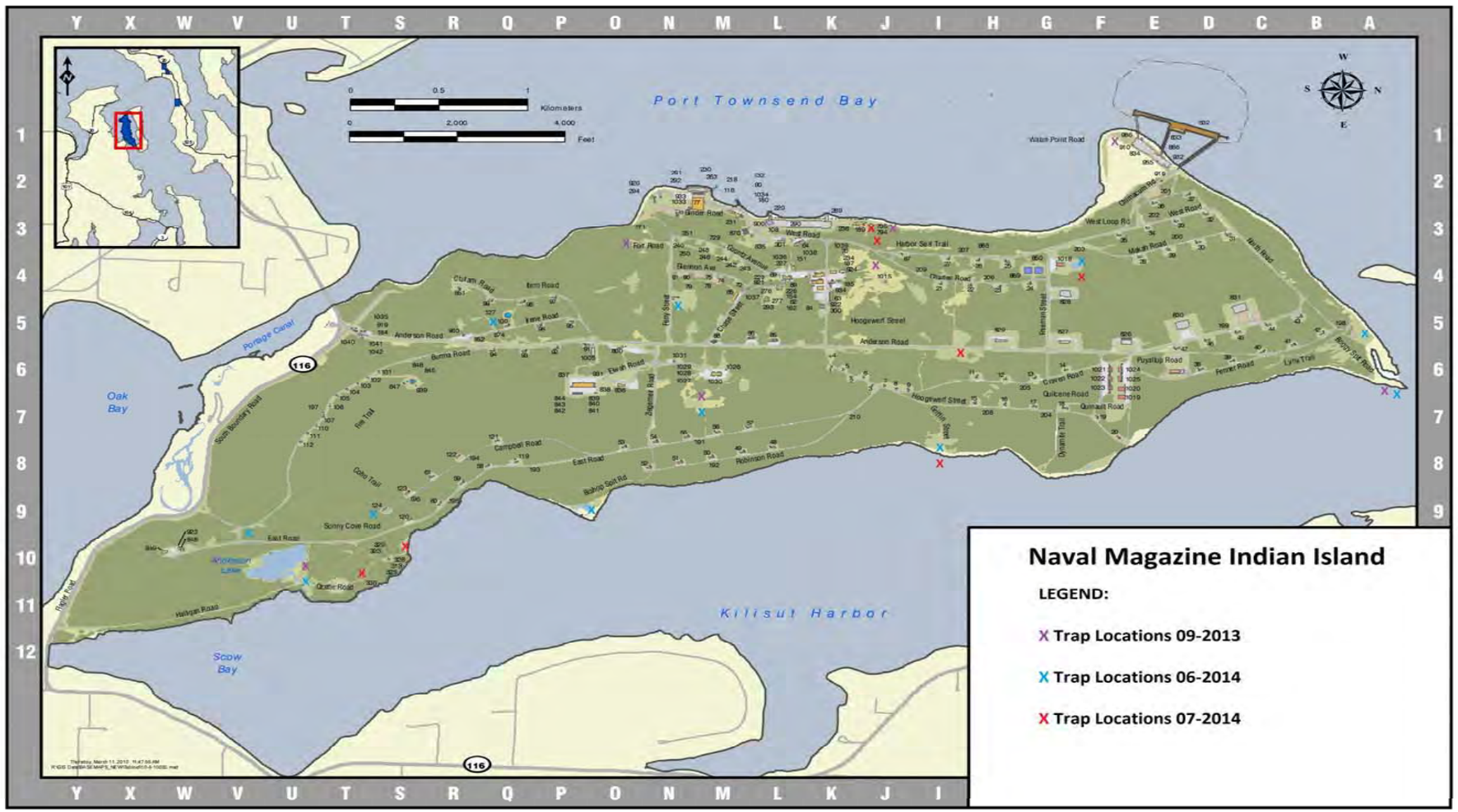
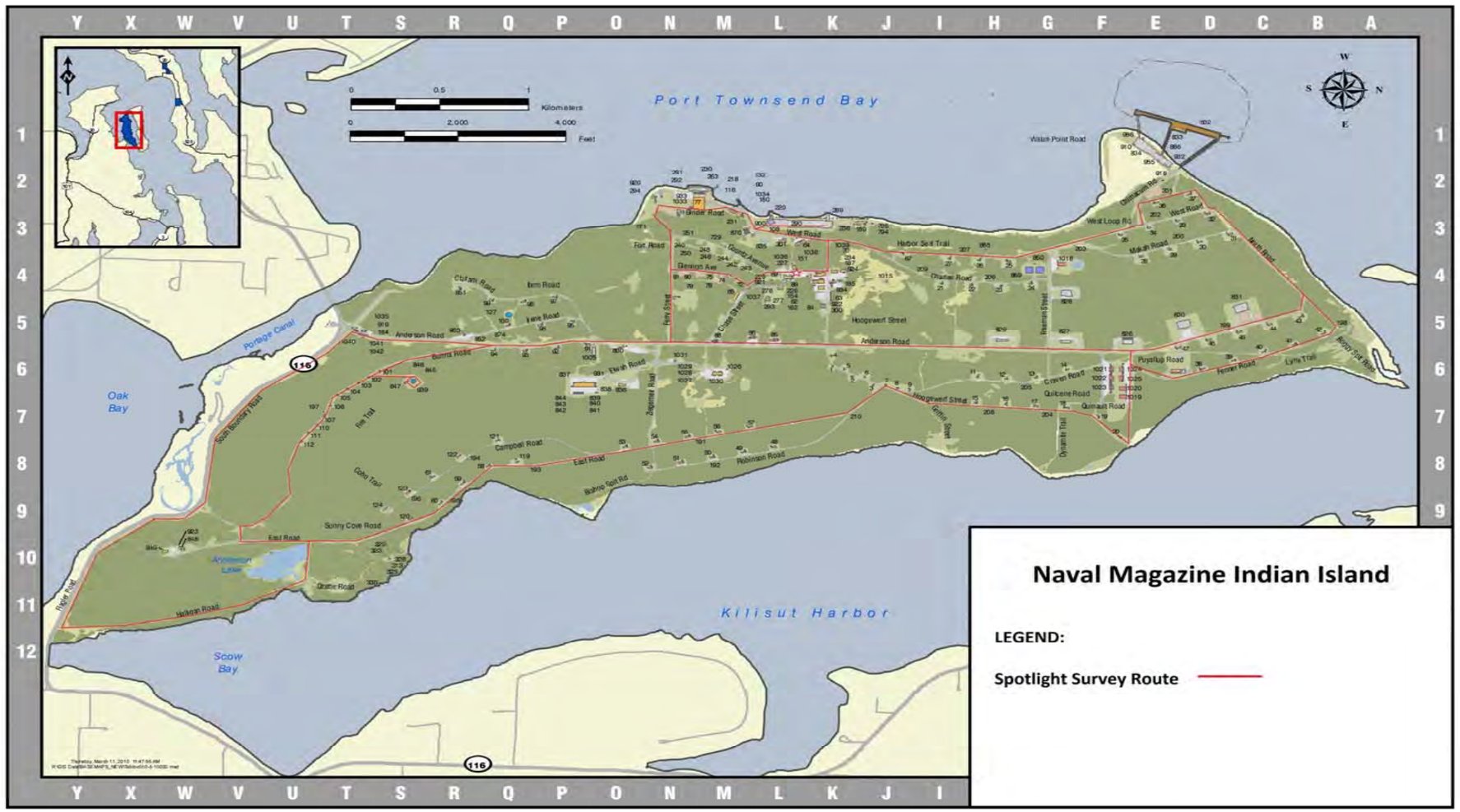
Appendix B: Trap Locations



Appendix C: Spotlight Survey Route



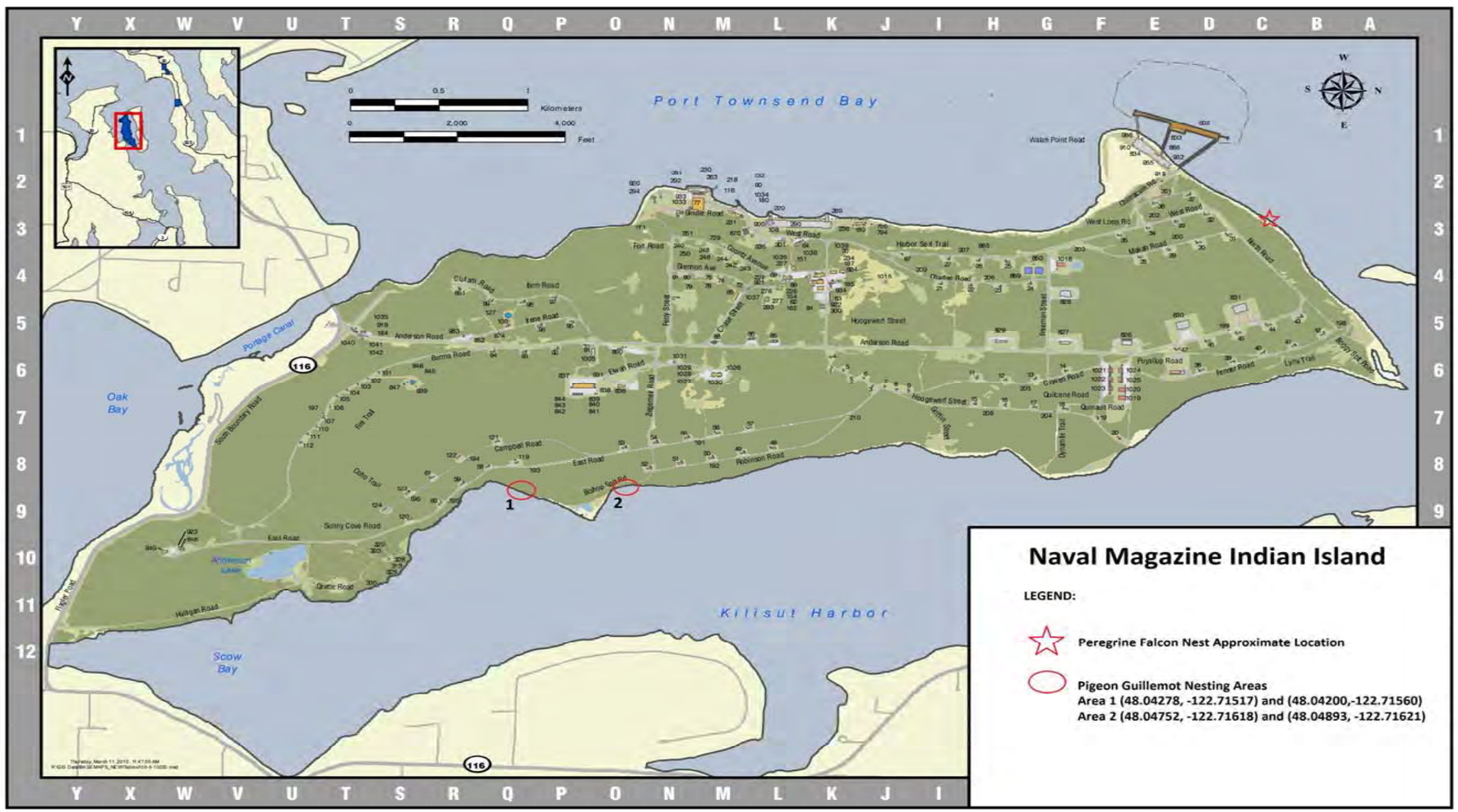
Appendix D: Mammals of NAVMAG Indian Island

Scientific Name	Common Name	Confirmed (C) or Likely (L) or Potential (P)	Federal or State Status
Castor canadensis	American Beaver	C	
Eptesicus fuscus	Big Brown Bat	L	
Ursus americanus	Black Bear	C (Transient)	
Lynx rufus	Bobcat	P	
Neotoma cinerea	Bushy-tailed Woodrat	P	
Myotis californicus	California Myotis	L	
Zalophus californianus	California Sea Lion	P	
Scapanus orarius	Coast Mole	L	
Canis latrans	Coyote	C*	
Microtus oregoni	Creeping Vole	L	
Phocoenoides dalli	Dall's Porpoise	P	State Monitored
Peromyscus maniculatus	Deer Mouse	C*	
Tamiasciurus douglasi	Douglas Squirrel or Chickaree	C*	
Cervus canadensis	Elk	C (Transient)	
Phoca vitulina	Harbor Seal	C*	State Monitored
Peromyscus keeni	Forest Deer Mouse	P	
Clethrionomys gapperi	Gapper`s Red-backed Vole	L	
Eschrichtius robustus	Gray Whale	P	State Sensitive
Myotis keenii	Keen`s Myotis	P	State Candidate
Orcinus orca	Killer Whale or Orca	P	State Endangered Federal Endangered
Myotis lucifugus	Little Brown Myotis	L	
Myotis evotis	Long-eared Myotis	L	
Myotis volans	Long-legged Myotis	L	State Monitored
Microtus longicaudus	Long-tailed Vole	C*	
Mustela frenata	Long-tailed Weasel	P	
Mustela vison	Mink	P	
Sorex monticolus	Montane Shrew	P	

Felis concolor	Mountain Lion	C* (Transient)	
Odocoileus hemionus columbianus	Mule Deer (Columbian Black-tailed Deer)	C*	
Ondatra zibethicus	Muskrat	L	
Glaucomys sabrinus	Northern Flying Squirrel	P	
Rattus norvegicus	Norway Rat	P	
Phocoena phocoena	Pacific Harbor Porpoise	P	State Candidate
Zapus trinotatus	Pacific Jumping Mouse	P	
Erethizon dorsatum	Porcupine	P	
Procyon lotor	Raccoon	C*	
Vulpes vulpes	Red Fox	P	
Lutra canadensis	River Otter	C*	
Mustela erminea	Short-tailed Weasel or Ermine	C*	
Neurotrichus gibbsii	Shrew-mole	P	
Lasionycteris noctivagans	Silver-haired Bat	L	
Lepus americanus	Snowshoe Hare	P	
Spilogale gracilis	Spotted Skunk	P	
Eumetopias jubatus	Steller Sea Lion	P	State Threatened Federal Species of Concern
Mephitis mephitis	Striped Skunk	P	
Plecotus townsendii	Townsend`s Big-eared Bat	L	State Candidate
Eutamias townsendi	Townsend Chipmunk	C*	
Microtus townsendii	Townsend`s Vole	P	
Sorex vagrans	Vagrant Shrew	C*	
Didelphis virginiana	Virginia Opossum	P	
Myotis yumanensis	Yuma Myotis	L	

** Observed during study*

Appendix E: Peregrine Falcon Nest Location and Pigeon Guillemot Nesting Areas



Appendix F: Great Blue Heron Loafing and Roosting Locations

Appendix G: Harbor Seal Haul-Out Site

Appendix H: Bird Observations

Listed below are bird species that were anecdotal observations made during our field surveys.

Common Name	Scientific Name	New to INRMP or Base List	*Status/Notes*
Birds			
Bald Eagle	*Haliaeetus leucocephalus*		*State Sensitive, Federal Species of Concern, active nests on base*
Red-winged Blackbird	*Agelaius phoeniceus*		
Canada Goose	*Branta canadensis*		
Mallard	*Anas platyrhynchos*		
Wood Duck	*Aix sponsa*	X	
Green-winged Teal	*Anas crecca*		
Gadwall	*Anas strepera*		
Harlequin Duck	*Histrionicus histrionicus*		
Bufflehead	*Bucephala albeola*		
Hooded Merganser	*Lophodytes cucullatus*		
Horned Grebe	*Podiceps auritus*		*State Monitored*
Rufus Hummingbird	*Selasphorus rufus*	X	
Townsend Warbler	*Dendroica townsendi*		
Song Sparrow	*Melospiza melodia*		
Dark-eyed Junco	*Junco hyemalis*		
Glaucous-winged Gull	*Larus glaucescens*		*Nesting on Rat Island*
Western Gull	*Larus occidentalis*	X	
Herring Gull	*Larus argentatus*		
Caspian Tern	*Sterna caspia*	X	*State Monitored, Nesting on Rat Island*
Marsh Wren	*Cistothorus palustris*		
MacGillivray's Warbler	*Oporornis tolmiei*	X	
Greater Yellowlegs	*Tringa*		

	melanoleuca		
Northern Shoveler	*Anas clypeata*		
American Robin	*Turdus migratorius*		
American Wigeon	*Anas americana*		
House Sparrow	*Passer domesticus*	X	
Great-blue Heron	*Ardea herodias*		*State Monitored, loafing and roost area at north end near Boggy Spit*
American Crow	*Corvus brachyrhynchos*		
Red-tailed Hawk	*Buteo jamaicensis*		
Peregrine Falcon	*Falco peregrinus*		*State Sensitive, Federal Species of Concern, Possible nest located on north end bluff*
Cooper's Hawk	*Accipiter cooperii*		
Great-horned Owl	*Bubo virginianus*	X	*Observed just off site*
California Quail	*Callipepla californica*		
Black-bellied Plover	*Pluvialis squatarola*		
Black Oystercatcher	*Haematopus bachmani*		*State Monitored*
Rhinoceros Auklet	*Cerorhinca monocerata*		
Pigeon Guillemot	*Cepphus columba*		*Two nesting areas on base*
White-winged Scoter	*Melanitta fusca*		
Belted Kingfisher	*Ceryle alcyon*		
Pileated Woodpecker	*Dryocopus pileatus*		*State Candidate*
Common Raven	*Corvus corax*		
Brown-headed Cowbird	*Molthrus ater*	X	
Chestnut-backed Chickadee	*Poecile rufescens*		
Spotted Towhee	*Pipilo maculatus*		
Fox Sparrow	*Passerella iliaca*		
Lincoln's Sparrow	*Melospiza lincolnii*		
Black-headed Grosbeak	*Pheucticus melanocepalus*	X	
Bewick's Wren	*Thryomanes bewickii*		
Willow Flycatcher	*Empidonax traillii*	X	

Pacific-slope Flycatcher	*Empidonax difficilis*	X	
Olive-sided Flycatcher	*Contopus borealis*		
American Goldfinch	*Carduelis tristis*	X	
Barn Swallow	*Hirundo rustica*	X	
Hermit Thrush	*Catharus guttatus*		
Red Crossbill	*Loxia curvirostra*	X	
Western Tanager	*Piranga ludoviciana*	X	
Yellow-rumped Warbler	*Dendroica coronata*		
Wilson's Warbler	*Wilsonia pusilla*	X	
Pine Siskin	*Carduelis pinus*	X	
Bushtit	*Psaltriparus minimus*		
Swainson's Thrush	*Catharus ustulatus*	X	
Cedar Waxwing	*Bombycilla cedrorum*		
Sora	*Porzana carolina*	X	
Northern Flicker	*Colaptes auratus*		
Rock Pigeon	*Columba livia*		
Mourning Dove	*Zenaida macroura*		
Red-breasted Nuthatch	*Sitta canadensis*		
White-crowned Sparrow	*Zonotrichia leucophrys*		
Violet-green Swallow	*Tachycineta thalassina*	X	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	X	
Turkey Vulture	*Cathartes aura*	X	*State Monitored*
Cliff Swallow	*Petrochelidon pyrrhonota*	X	

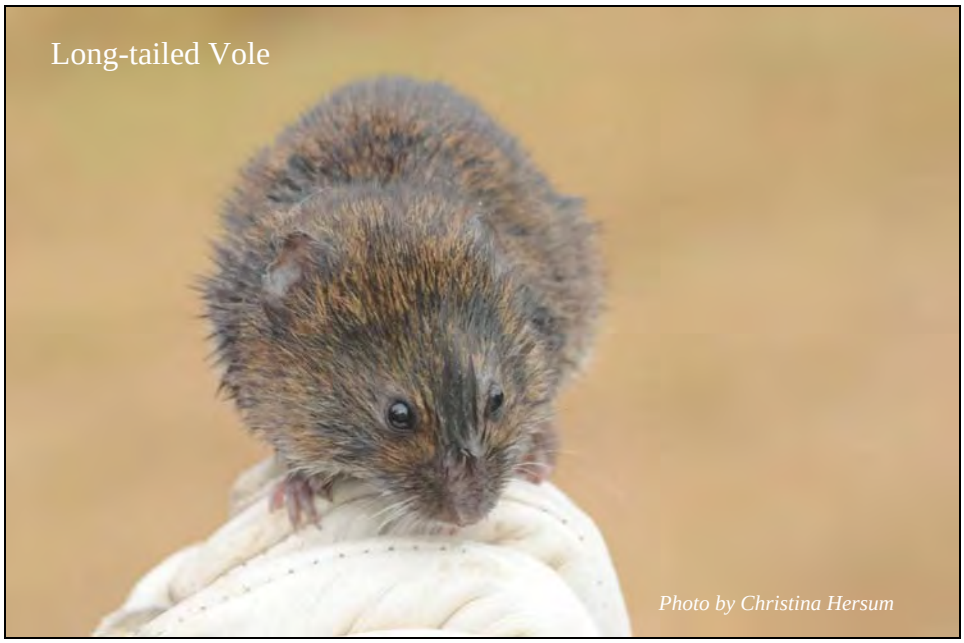
Appendix I: NAVMAG Indian Island Wildlife Photos

Douglas Squirrel

Coyote

Coyote with Black-tailed Deer Fawn Legs *Photo by Remote Wildlife Camera*

Deer Mouse


Long-tailed Vole
Photo by Christina Hersum


Beaver

Vagrant Shrew

Raccoon

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REGION 6 JEFFERSON COUNTY AMENT
DELORME PG 94 D3
USGS QUAD 4812216 NORDLAND

KILISUT HARBOR BALD EAGLE TERRITORY (OCCURRENCE 1176)

SEE REVERSE FOR MAP

YEAR	NEST	EARLY SEASON OBSERVATION	LATE SEASON OBSERVATION	SEASON SUMMARY	OBSERVER	PAGE
2002	1	1 Adult, Incubating, Nest Repaired	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	6241
2001	1	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	AMENT/BRENNAN	6217
2000	1	1 Adult, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	AMENT, S. WDFW	6139
1999	1	2 Adults, Incubating, Nest Repaired	2 Feathered Young	2 Young	AMENT, S.WDFW	126
1998	1	2 Adults, Incubating, Nest Repaired	1 Adult, 2 Downy Young	2 Young	AMENT, S. WDFW	255
1997	1	2 Adults, Incubating, New Nest	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	.

2005 OCCUPANCY / PRODUCTIVITY SURVEY

Recommended Dates: April 7 - April 25
Early Season Survey Done by: S. Ament + J. Moore
Reported by: S. Ament

Recommended Dates: June 10 - June 25
Late Season Survey Done by: _____
Reported by: _____

PLEASE USE CODES SHOWN AT BOTTOM OF PAGE TO REPORT DATA IN THE FORM BELOW.
TWO EXTRA LINES ARE PROVIDED IN THE DATA FORM TO ACCOMODATE NEW NESTS THAT MAY BE FOUND THIS YEAR.
IF A NEW NEST IS FOUND, MARK ITS LOCATION ON THE MAP ON THE REVERSE OF THIS SHEET.
DESCRIBE THE NEST IN THE SPACE BELOW, OR ATTACH A SEPARATE SHEET IF THERE IS NO SPACE.

NEST	MONTH	DAY	# ADULTS	BEHAVIOR			REPAIR	OCCOBS	MONTH	DAY	# ADULTS	PRODOBS	DEVELOPMENT					
1176-1	4	8	2	I	P		R	6								+		

USE THE SPACE BELOW TO:

(1) Describe new nests
(2) Update and expand on descriptions of previously reported nests
(3) Note other conditions, such as occupancy by another species or young present during early season survey, that don't fit into the form.

If describing a nest, include a detailed description of the nest tree (species, nest ht, etc.) as well as the tree's location.

* Special Note – This territory was in Plot 8W of the USFWS Area Frame survey conducted in a helicopter on 4/25/05. This nest was not seen during this survey. Nest is inland and difficult to see.

Behavior: I = Incubating D = Defensive P = Perched F = Flying E = Egg(s) In Nest
Repair: N = New R = Repaired U = Unrepaired D = Destroyed

Development: D = Downy F = Feathered E = Egg S = Shell/Addled Egg

OCCOBS Codes:

X = Not Checked
6 = Occupied, Active (breeding attempt confirmed by incubation or eggs)
7 = Occupied but Inactive (adults present but NOT incubating/no eggs)
5 = Occupied, Activity Unknown (adults present, breeding attempt suspected but not confirmed)
8 = Unoccupied
3 = Occupancy unknown (No birds present, but nest is new or newly repaired)
2 = Adult/Subadult Pair
4 = Occupancy unkown (Single adult, or pr flying/not attending nest
1 = Occupancy unknown (Visit during non-breeding season)
9 = Not Located or Destroyed

PRODOBS Codes:

X = Not Checked
0 = Unsuccessful/Nest Empty
1-6 = Number of Young Observed in Nest
7 = Nest Successful, but # Young Unknown
8 = Adults Obstructing View of Nest
9 = Not Located or Destroyed

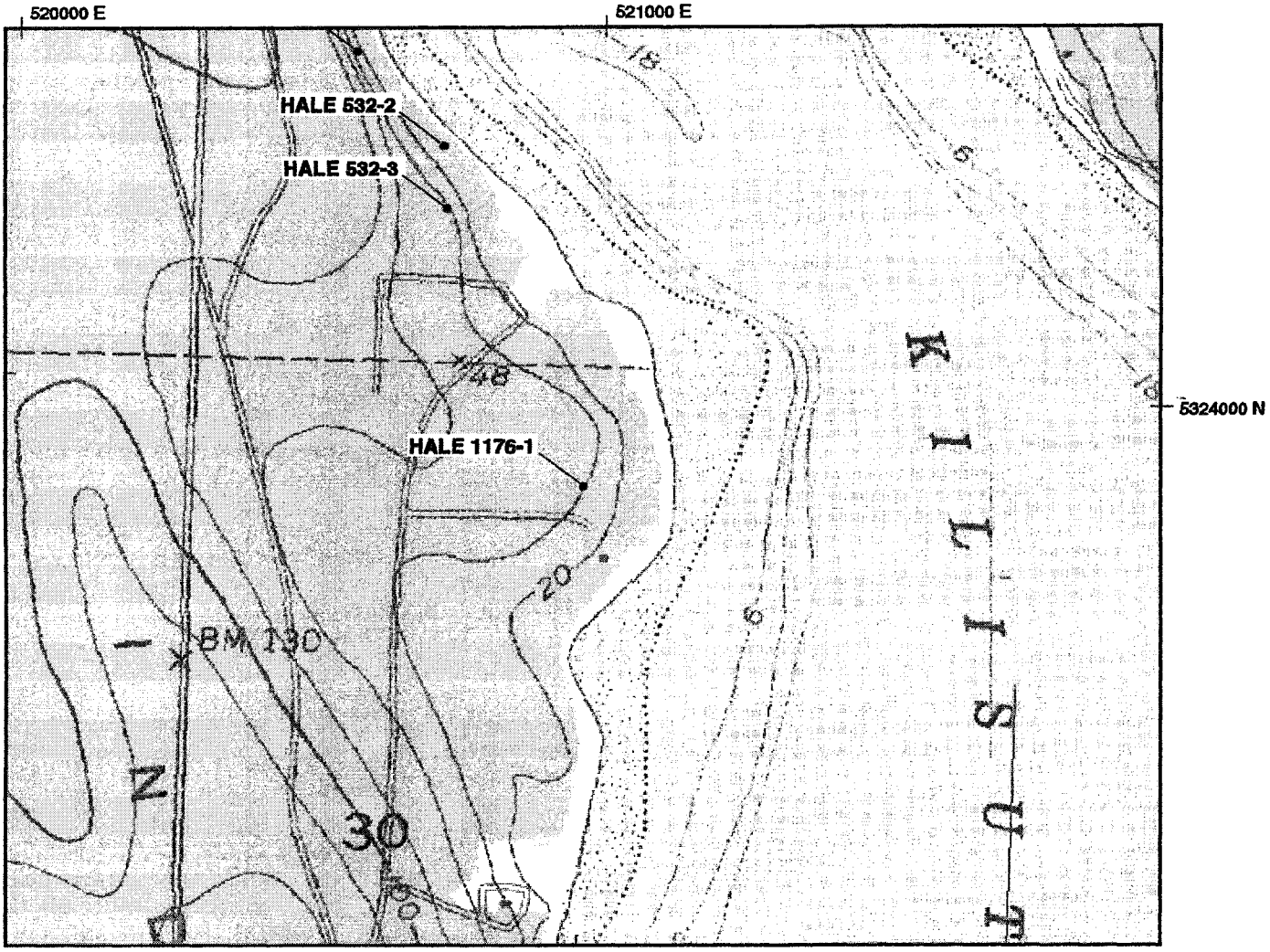
SENT TO: S. Ament WDFW Region 6 Wildlife Biologist PO Box 1933 Sequim, WA 98382
DATE: January 28, 2005

DELORME ATLAS PG 94 D3
USGS QUAD 4812216 NORDLAND

KILISUT HARBOR BALD EAGLE TERRITORY (OCCURRENCE 1176)

OTHER SITES (IF PRESENT) SHOWN FOR REFERENCE. SEE REVERSE FOR AVAILABLE HISTORY.

COMPARE THIS MAP TO YOUR PERSONAL/REGIONAL FIELD MAP AND REPORT INCONSISTENCIES



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FEET

MAP SCALE 1:12,000 MAP PROJECTION: STATE PLANE SOUTH DATUM: NAD27 CONUS TICS: UTM ZONE 10T
WHEN ADDING NEW LOCATIONS OR CORRECTING OLD LOCATIONS, PLEASE MARK TO SCALE!

IF YOU ARE USING A GPS UNIT WITH THIS MAP, SET THE DATUM TO NAD27 CONUS

1176-1 KILISUT HARBOR
LAST OCCUPIED: 20020418
48 04' 10" 122 43' 06"

T30N R01E S30
AMENT, SHELLY OCCPRO
UTM 520986 E 5323832 N

BALD EAGLE NEST. NEST TREE LOCATED APPROX. 400 FT SW OF SMALL POND NEXT TO SHORELINE. NEST IN LIVE, FULL, WHORL-TOPPED. NEST ON BOLE 15 FT DOWN FROM TOP, LOTS OF BRANCHES ABOVE THE NEST.

Other sites ...

HALE 532 BUGGY SPIT BALD EAGLE TERRITORY

REPORT ERRORS AND RETURN COMPLETED FORM TO: Gretchen Blatz, WDFW, 600 Capitol Way North, Olympia, WA 98501-1091

DELORME PG 94 D3

USGS QUAD 4812216 NORDLAND

FIRE STATION INDIAN ISLAND BALD EAGLE TERRITORY (OCCURRENCE 1259)

SEE REVERSE FOR MAP

YEAR	NEST	EARLY SEASON OBSERVATION	LATE SEASON OBSERVATION	SEASON SUMMARY	OBSERVER	PAGE
2002	1	2 Adults, Incubating, Nest Repaired	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	6238
2001	1	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	AMENT/BRENNAN	6214
2000	1	2 Adults, Incubating, Nest Repaired	1 Adult, No Young	Failure	AMENT, S. WDFW	6136
1999	1	2 Adults, Incubating, New Nest	1 Adult, 1 Feathered Young	1 Young	AMENT, S. WDFW	92

2005 OCCUPANCY / PRODUCTIVITY SURVEY

Recommended Dates: April 7 - April 25
Early Season Survey Done by: S. Ament & J. Moore
Reported by: S. Ament

Recommended Dates: June 10 - June 25
Late Season Survey Done by: _____
Reported by: _____

PLEASE USE CODES SHOWN AT BOTTOM OF PAGE TO REPORT DATA IN THE FORM BELOW.
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IF A NEW NEST IS FOUND, MARK ITS LOCATION ON THE MAP ON THE REVERSE OF THIS SHEET.
DESCRIBE THE NEST IN THE SPACE BELOW, OR ATTACH A SEPARATE SHEET IF THERE IS NO SPACE.

NEST	MONTH	DAY	# ADULTS	BEHAVIOR			REPAIR	OCCOBS	MONTH	DAY	# ADULTS	PRODOBS	DEVELOPMENT					
1259-1	4	8	1	I			R	6										
																–		

USE THE SPACE BELOW TO:

(1) Describe new nests
(2) Update and expand on descriptions of previously reported nests
(3) Note other conditions, such as occupancy by another species or young present during early season survey, that don't fit into the form.

If describing a nest, include a detailed description of the nest tree (species, nest ht, etc.) as well as the tree's location.

* Special note – This territory was in Plot 8W of the USFWS Area Frame survey. The nest was observed again on 4/25/05. One adult eagle was (again) observed in incubation posture on the nest.

Behavior: I = Incubating D = Defensive P = Perched F = Flying E = Egg(s) In Nest
Repair: N = New R = Repaired U = Unrepaired D = Destroyed

OCCOBS Codes:

X = Not Checked
6 = Occupied, Active (breeding attempt confirmed by incubation or eggs)
7 = Occupied but Inactive (adults present but NOT incubating/no eggs)
5 = Occupied, Activity Unknown (adults present, breeding attempt suspected but not confirmed)
8 = Unoccupied
3 = Occupancy unknown (No birds present, but nest is new or newly repaired)
2 = Adult/Subadult Pair
4 = Occupancy unkown (Single adult, or pr flying/not attending nest
1 = Occupancy unknown (Visit during non-breeding season)
9 = Not Located or Destroyed

Development: D = Downy F = Feathered
E = Egg S = Shell/Addled Egg

PRODOBS Codes:

X = Not Checked
0 = Unsuccessful/Nest Empty
1-6 = Number of Young Observed in Nest
7 = Nest Successful, but # Young Unknown
8 = Adults Obstructing View of Nest
9 = Not Located or Destroyed

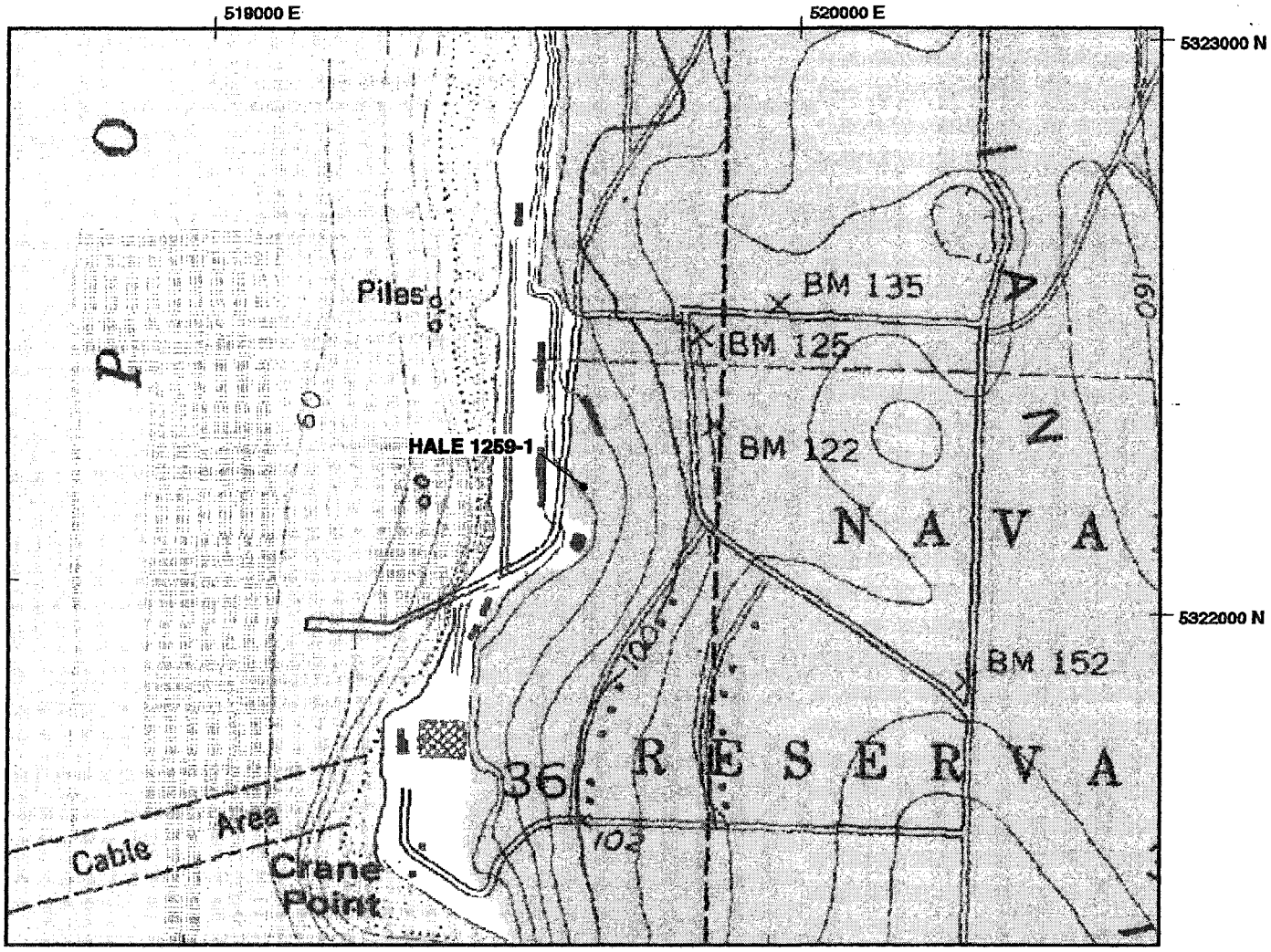
SENT TO: S. Ament WDFW Region 6 Wildlife Biologist PO Box 1933 Sequim, WA 98382
DATE: January 28, 2005

DELORME ATLAS PG 94 D3
USGS QUAD 4812216 NORDLAND

FIRE STATION INDIAN ISLAND BALD EAGLE TERRITORY (OCCURRENCE 1259)

OTHER SITES (IF PRESENT) SHOWN FOR REFERENCE. SEE REVERSE FOR AVAILABLE HISTORY.

COMPARE THIS MAP TO YOUR PERSONAL/REGIONAL FIELD MAP AND REPORT INCONSISTENCIES



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FEET

MAP SCALE 1:12,000 MAP PROJECTION: STATE PLANE SOUTH DATUM: NAD27 CONUS TICS: UTM ZONE 10T
WHEN ADDING NEW LOCATIONS OR CORRECTING OLD LOCATIONS, PLEASE MARK TO SCALE!

IF YOU ARE USING A GPS UNIT WITH THIS MAP, SET THE DATUM TO NAD27 CONUS

1259-1	FIRE STATION INDIAN LAST OCCUPIED: 20020418 48 03' 17" 122 44' 10"	T30N R01W S36 AMENT, SHELLY OCCPRO UTM 519655 E 5322191 N	BALD EAGLE NEST IN BROKEN-TOPPED DOUG-FIR NEAR INDIAN ISLAND FIRE STATION. NEST IS 10 FT DOWN FROM TOP OF TALL DOMINANT TREE. TREE IS NEAR LAWN AREAS AND BLDGS WITH TURQUOISE EAVES. 2000: EAGLET FELL OUT OF NEST W/2 BRKEN WINGS. PG 2006136.

REPORT ERRORS AND RETURN COMPLETED FORM TO: Gretchen Blatz, WDFW, 600 Capitol Way North, Olympia, WA 98501-1091

REGION 6 JEFFERSON COUNTY AMENT
DELORME PG 94 D3
USGS QUAD 4812216 NORDLAND

WALAN POINT BALD EAGLE TERRITORY (OCCURRENCE 1003)

SEE REVERSE FOR MAP

YEAR	NEST	EARLY SEASON OBSERVATION	LATE SEASON OBSERVATION	SEASON SUMMARY	OBSERVER	PAGE
2002	1	2 Adults, Incubating, Nest Repaired	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	6239
2001	1	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	AMENT/BRENNAN	6215
2000	1	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	AMENT, S. WDFW	6137
1999	1	2 Adults, Incubating, Nest Repaired	1 Adult, 2 Feathered Young	2 Young	AMENT, S.WDFW	124
1998	1	2 Adults, Incubating, Nest Repaired	2 Adults, 2 Feathered Young	2 Young	AMENT, S. WDFW	253
1997	1	1 Adult, Incubating	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	.
1996	1	1 Adult, Incubating, Nest Repaired	3 Adults, 1 Feathered Young	1 Young	AMENT/MCMILLA	319
1995	1	2 Adults, Incubating	1 Adult, No Young	Failure	AMENT/LIVESEY	907
1994	1	Occupied, Inactive	2 Adults, No Young	Occupied, Inactive	AMENT, MCMILL	517

2005 OCCUPANCY / PRODUCTIVITY SURVEY

Recommended Dates: April 7 - April 25
Early Season Survey Done by: S. Ament & J. Moore
Reported by: S. Ament

Recommended Dates: June 10 - June 25
Late Season Survey Done by: _____
Reported by: _____

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DESCRIBE THE NEST IN THE SPACE BELOW, OR ATTACH A SEPARATE SHEET IF THERE IS NO SPACE.

NEST	MONTH	DAY	# ADULTS	BEHAVIOR	REPAIR	OCCOBS	MONTH	DAY	# ADULTS	PRODOBS	DEVELOPMENT
1003-1	4	8	0	-	-	9					
1003-2 (New)	4	8	2	I P	N	6					

USE THE SPACE BELOW TO:

(1) Describe new nests
(2) Update and expand on descriptions of previously reported nests
(3) Note other conditions, such as occupancy by another species or young present during early season survey, that don't fit into the form.

If describing a nest, include a detailed description of the nest tree (species, nest ht, etc.) as well as the tree's location.

* New Nest #2: T30N, R1W, Section 24, SE of NE → see reverse side map.

Description - Short splayed top conifer tree located on the edge of a bluff. Nest on the fairly open limbed top of the tree.
Adult on nest, other adult eagle perched along shoreline.

Lat 48° 04.884' N
Lon 122° 44.105' W
(NAD 27)

* Unable to locate Nest #1. Not sure if exact tree tree was located. Nest obvious in past (likely gone)

Behavior: I = Incubating D = Defensive P = Perched F = Flying E = Egg(s) In Nest
Repair: N = New R = Repaired U = Unrepaired D = Destroyed

Development: D = Downy F = Feathered E = Egg S = Shell/Addled Egg

OCCOBS Codes:

X = Not Checked
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X = Not Checked
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1-6 = Number of Young Observed in Nest
7 = Nest Successful, but # Young Unknown
8 = Adults Obstructing View of Nest
9 = Not Located or Destroyed

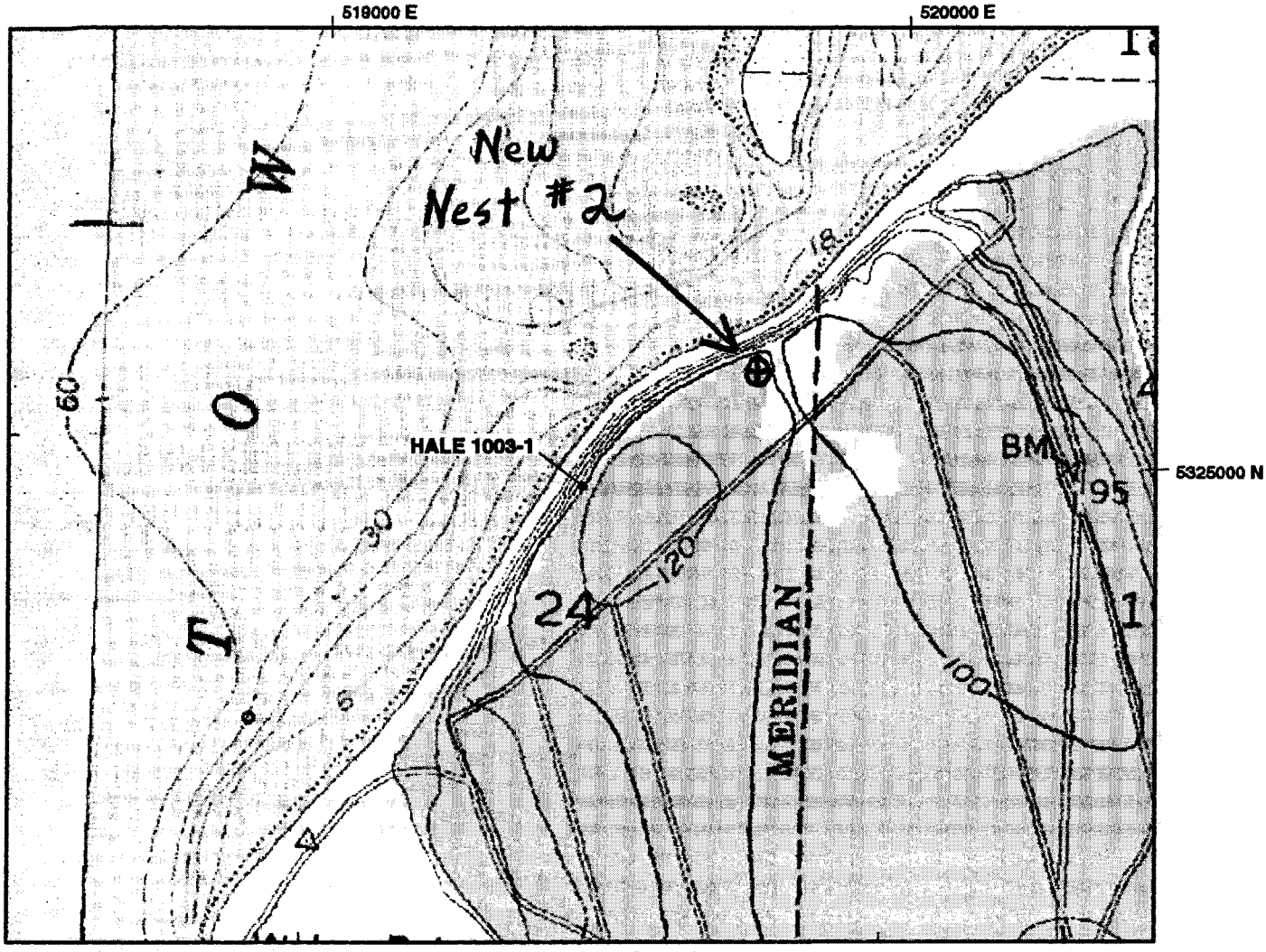
SENT TO: S. Ament WDFW Region 6 Wildlife Biologist PO Box 1933 Sequim, WA 98382
DATE: January 28, 2005

DELORME ATLAS PG 94 D3
USGS QUAD 4812216 NORDLAND

WALAN POINT BALD EAGLE TERRITORY (OCCURRENCE 1003)

OTHER SITES (IF PRESENT) SHOWN FOR REFERENCE. SEE REVERSE FOR AVAILABLE HISTORY.

COMPARE THIS MAP TO YOUR PERSONAL/REGIONAL FIELD MAP AND REPORT INCONSISTENCIES



0 500 1000
FEET

MAP SCALE 1:12,000 MAP PROJECTION: STATE PLANE SOUTH DATUM: NAD27 CONUS TICS: UTM ZONE 10T
WHEN ADDING NEW LOCATIONS OR CORRECTING OLD LOCATIONS, PLEASE MARK TO SCALE!

IF YOU ARE USING A GPS UNIT WITH THIS MAP, SET THE DATUM TO NAD27 CONUS

1003-1	WALAN POINT LAST OCCUPIED: 20020418 48 04' 44" 122 44' 20"	T30N R01W S24 AMENT, SHELLY OCCPRO UTM 519461 E 5324941 N	BALD EAGLE NEST ON FULL TOPPED TREE. NEST DOWN 5 FT FROM TOP.

REPORT ERRORS AND RETURN COMPLETED FORM TO: Gretchen Blatz, WDFW, 600 Capitol Way North, Olympia, WA 98501-1091

DELORME PG 94 D3
USGS QUAD 4812216 NORDLAND

ADMINISTRATION BLDG BALD EAGLE TERRITORY (OCCURRENCE 708)

SEE REVERSE FOR MAP

YEAR	NEST	EARLY SEASON OBSERVATION	LATE SEASON OBSERVATION	SEASON SUMMARY	OBSERVER	PAGE
2002	2	1 Adult, Incubating, Nest Repaired	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	6244
2001	2	1 Adult, Incubating, Nest Repaired	1 Feathered Young	1 Young	AMENT/BRENNAN	6220
2000	2	1 Adult, Incubating, Nest Repaired	1 Adult, 2 Feathered Young	2 Young	AMENT, S. WDFW	6142
1999	2	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	AMENT, S. WDFW	129
1998	2	1 Adult, Incubating, Nest Repaired	2 Adults, 1 Feathered Young	1 Young	AMENT, S. WDFW	258
1997	2	1 Adult, Incubating	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	.
1996	2	2 Adults, Incubating	2 Adults, 1 Feathered Young	1 Young	AMENT/MCMILLA	323
1995	2	1 Adult, Incubating	2 Adults, 1 Feathered Young	1 Young	AMENT/JORDAN	898
1994	2	1 Adult, Incubating, New Nest	2 Adults, 2 Feathered Young	2 Young	AMENT/MCMILL	374
1993	1	2 Adults, Incubating, Nest Repaired	1 Feathered Young	1 Young	SLOAN/HOFFMAN	159
1992	1	2 Adults, Incubating, Nest Repaired	1 Adult, 2 Feathered Young	2 Young	HOFMANN, L	555
1991	1	1 Adult, Incubating	2 Adults, 2 Feathered Young	2 Young	MCMILLAN, A	442
1990	1	2 Adults, Incubating	2 Feathered Young	2 Young	MCMILLAN, A	156
1989	1	2 Adults, Incubating	1 Adult, 2 Feathered Young	2 Young	MCMILLAN, A	432
1988	1	1 Adult, Incubating, Nest Repaired	1 Feathered Young	1 Young	MCMILLAN, A	253
1987	1	1 Adult, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	MCMILLAN, ANI	156
1986	1	2 Adults, Incubating, Nest Repaired	1 Adult, 2 Feathered Young	2 Young	CUMMINS, ERIC	133
1985	1	1 Adult, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	CUMMINS, E WD	427

2005 OCCUPANCY / PRODUCTIVITY SURVEY

Recommended Dates: April 7 - April 25
Early Season Survey Done by: S. Ament + J. Moore
Reported by: S. Ament

Recommended Dates: June 10 - June 25
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Reported by: _____

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DESCRIBE THE NEST IN THE SPACE BELOW, OR ATTACH A SEPARATE SHEET IF THERE IS NO SPACE.

NEST	MONTH	DAY	# ADULTS	BEHAVIOR			REPAIR	OCCOBS	MONTH	DAY	# ADULTS	PRODOBS	DEVELOPMENT					
708-2	4	8	1	I			R	6										

USE THE SPACE BELOW TO: * More description - Double topped grand fir tree.

(1) Describe new nests
(2) Update and expand on descriptions of previously reported nests
(3) Note other conditions, such as occupancy by another species or young present during early season survey, that don't fit into the form.

If describing a nest, include a detailed description of the nest tree (species, nest ht, etc.) as well as the tree's location.

* Special note - This territory was within Plot 8W of the USFWS Area Frame survey on 4/25/05. During this survey - one adult eagle flying near the nest, One egg seen in the nest.

Behavior: I = Incubating D = Defensive P = Perched F = Flying E = Egg(s) In Nest
Repair: N = New R = Repaired U = Unrepaired D = Destroyed

Development: D = Downy F = Feathered E = Egg S = Shell/Addled Egg

OCCOBS Codes:

X = Not Checked
6 = Occupied, Active (breeding attempt confirmed by incubation or eggs)
7 = Occupied but Inactive (adults present but NOT incubating/no eggs)
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1 = Occupancy unknown (Visit during non-breeding season)
9 = Not Located or Destroyed

PRODOBS Codes:

X = Not Checked
0 = Unsuccessful/Nest Empty
1-6 = Number of Young Observed in Nest
7 = Nest Successful, but # Young Unknown
8 = Adults Obstructing View of Nest
9 = Not Located or Destroyed

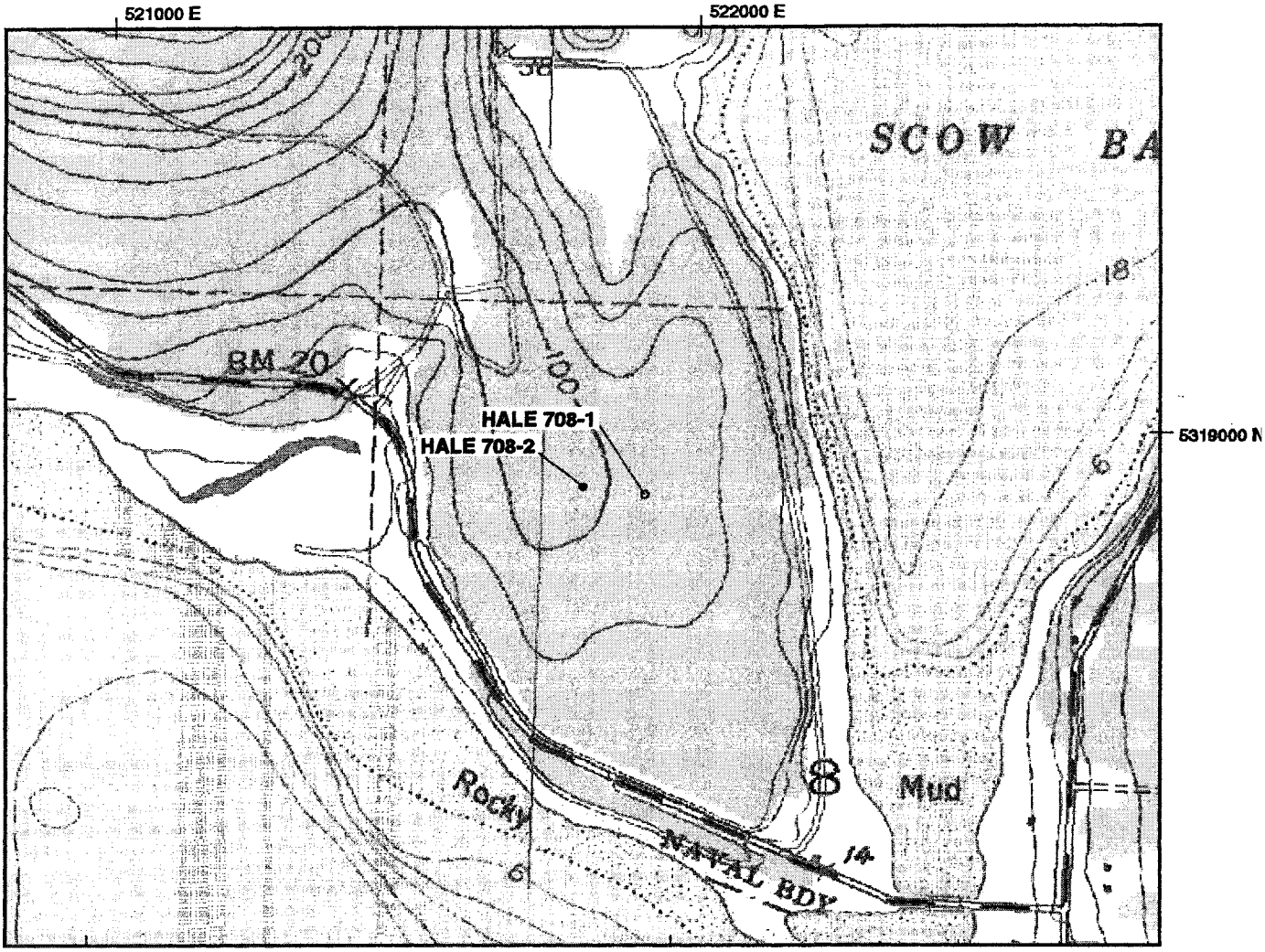
SENT TO: S. Ament WDFW Region 6 Wildlife Biologist PO Box 1933 Sequim, WA 98382
DATE: January 28, 2005

DELORME ATLAS PG 94 D3
USGS QUAD 4812216 NORDLAND

ADMINISTRATION BLDG BALD EAGLE TERRITORY (OCCURRENCE 708)

OTHER SITES (IF PRESENT) SHOWN FOR REFERENCE. SEE REVERSE FOR AVAILABLE HISTORY.

COMPARE THIS MAP TO YOUR PERSONAL/REGIONAL FIELD MAP AND REPORT INCONSISTENCIES



0 500 1000
FEET

MAP SCALE 1:12,000 MAP PROJECTION: STATE PLANE SOUTH DATUM: NAD27 CONUS TICS: UTM ZONE 10T
WHEN ADDING NEW LOCATIONS OR CORRECTING OLD LOCATIONS, PLEASE MARK TO SCALE!

IF YOU ARE USING A GPS UNIT WITH THIS MAP, SET THE DATUM TO NAD27 CONUS

708-2 ADMINISTRATION BLDG
LAST OCCUPIED: 20020418
48 01' 30" 122 42' 25"

T29N R01E S08
AMENT, SHELLY OCCPRO
UTM 521824 E 5318878 N

BALD EAGLE NEST DOWN 25-30 FT. LIVE TOP BUT TREE DYING, SE OF BOLE.

REPORT ERRORS AND RETURN COMPLETED FORM TO: Gretchen Blatz, WDFW, 600 Capitol Way North, Olympia, WA 98501-1091

REGION 6 JEFFERSON COUNTY AMENT
DELORME PG 94 D3
USGS QUAD 4812216 NORDLAND

SCOW BAY BALD EAGLE TERRITORY (OCCURRENCE 657)

SEE REVERSE FOR MAP

YEAR	NEST	EARLY SEASON OBSERVATION	LATE SEASON OBSERVATION	SEASON SUMMARY	OBSERVER	PAGE
2001	1	2 Adults, Incubating, Nest Repaired	No Young	Failure	AMENT/BRENNAN	6219
2000	1	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	AMENT, S. WDFW	6141
1999	1	1 Adult, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	AMENT, S.WDFW	128
1998	1	1 Adult, Incubating, Nest Repaired	1 Adult, No Young	Failure	AMENT, S. WDFW	257
1997	1	1 Adult, Incubating	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	.
1996	1	No Adults	No Young	Unoccupied	AMENT/MCMILLA	322
1995	1	1 Adult, Incubating	1 Adult, 1 Feathered Young	1 Young	AMENT/JORDAN	906
1994	1	1 Adult, Incubating	1 Adult, 2 Feathered Young	2 Young	AMENT, MCMILL	494

2005 OCCUPANCY / PRODUCTIVITY SURVEY

Recommended Dates: April 7 - April 25
Early Season Survey Done by: S. Ament & J. Moore
Reported by: S. Ament

Recommended Dates: June 10 - June 25
Late Season Survey Done by: _____
Reported by: _____

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DESCRIBE THE NEST IN THE SPACE BELOW, OR ATTACH A SEPARATE SHEET IF THERE IS NO SPACE.

NEST	MONTH	DAY	# ADULTS	BEHAVIOR	REPAIR	OCCOBS	MONTH	DAY	# ADULTS	PRODOBS	DEVELOPMENT
657-1	4	8	0	-	D	8					
(New) 657-2	4	8	1	I	N	6					

USE THE SPACE BELOW TO:

(1) Describe new nests
(2) Update and expand on descriptions of previously reported nests
(3) Note other conditions, such as occupancy by another species or young present during early season survey, that don't fit into the form.

If describing a nest, include a detailed description of the nest tree (species, nest ht, etc.) as well as the tree's location.

New Nest # 2: T29N, R1E, Section 5, SW of NW → see reverse side map,

Description - Multi-topped grand fir tree directly east of a paved road. Nest in a crotch 15' below the top of the tree.

Lat 48° 02.147' N
Lon 122° 42.648' W
(NAD 27)

* Nest # 1 no longer present. Tree still present.

Behavior: I = Incubating D = Defensive P = Perched F = Flying E = Egg(s) In Nest
Repair: N = New R = Repaired U = Unrepaired D = Destroyed

Development: D = Downy F = Feathered E = Egg S = Shell/Addled Egg

OCCOBS Codes:

X = Not Checked
8 = Occupied, Active (breeding attempt confirmed by incubation or eggs)
7 = Occupied but Inactive (adults present but NOT incubating/no eggs)
5 = Occupied, Activity Unknown (adults present, breeding attempt suspected but not confirmed)
8 = Unoccupied
3 = Occupancy unknown (No birds present, but nest is new or newly repaired)
2 = Adult/Subadult Pair
4 = Occupancy unkown (Single adult, or pr flying/not attending nest
1 = Occupancy unknown (Visit during non-breeding season)
9 = Not Located or Destroyed

PRODOBS Codes:

X = Not Checked
0 = Unsuccessful/Nest Empty
1-6 = Number of Young Observed in Nest
7 = Nest Successful, but # Young Unknown
8 = Adults Obstructing View of Nest
9 = Not Located or Destroyed

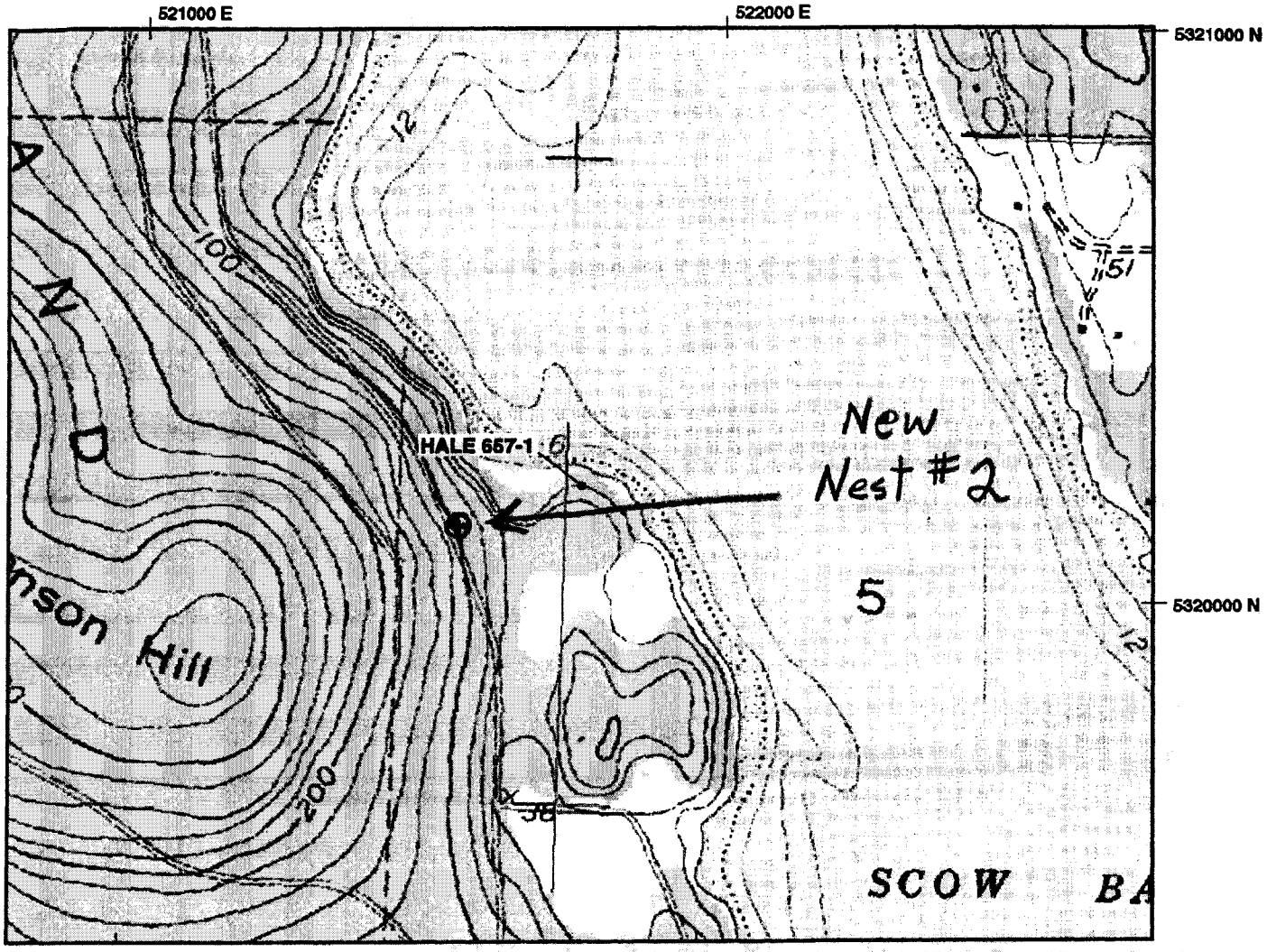
SENT TO: S. Ament WDFW Region 6 Wildlife Biologist PO Box 1933 Sequim, WA 98382
DATE: January 28, 2005

REGION 6 JEFFERSON COUNTY AMENT
DELORME ATLAS PG 94 D3
USGS QUAD 4812216 NORDLAND

SCOW BAY BALD EAGLE TERRITORY (OCCURRENCE 657)

OTHER SITES (IF PRESENT) SHOWN FOR REFERENCE. SEE REVERSE FOR AVAILABLE HISTORY.

COMPARE THIS MAP TO YOUR PERSONAL/REGIONAL FIELD MAP AND REPORT INCONSISTENCIES



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FEET

MAP SCALE 1:12,000 MAP PROJECTION: STATE PLANE SOUTH DATUM: NAD27 CONUS TICS: UTM ZONE 10T
WHEN ADDING NEW LOCATIONS OR CORRECTING OLD LOCATIONS, PLEASE MARK TO SCALE!

IF YOU ARE USING A GPS UNIT WITH THIS MAP, SET THE DATUM TO NAD27 CONUS

657-1 SCOW BAY
LAST OCCUPIED: 20010619
48 02' 10" 122 42' 29"

T29N R01E S05
AMENT/BRENNAN OCCP
UTM 521774 E 5320178 N

BALD EAGLE NEST. TREE ALONG SHORELINE NE OF SMALL CLEARING. NEST ON TOP OF BOLE BUT BRANCHES PROTRUDE 15' ABOVE NEST.

REPORT ERRORS AND RETURN COMPLETED FORM TO: Gretchen Blatz, WDFW, 600 Capitol Way North, Olympia, WA 98501-1091

REGION 6 JEFFERSON COUNTY AMENT
DELORME PG 94 D3
USGS QUAD 4812216 NORDLAND

CRANE POINT BALD EAGLE TERRITORY (OCCURRENCE 531)

SEE REVERSE FOR MAP

YEAR	NEST	EARLY SEASON OBSERVATION	LATE SEASON OBSERVATION	SEASON SUMMARY	OBSERVER	PAGE
2002	4	2 Adults, Incubating, Nest Repaired	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	6237
2001	4	1 Adult, Incubating, Nest Repaired	2 Adults, 2 Downy Young	2 Young	AMENT/BRENNAN	6213
2000	4	1 Adult, Incubating, Nest Repaired	1 Adult, 2 Feathered Young	2 Young	AMENT, S. WDFW	6135
1999	4	2 Adults, Incubating, New Nest	1 Feathered Young	1 Young	AMENT, S. WDFW	123
1998	3	1 Adult, Incubating, Nest Repaired	2 Adults, Nest Not Located	Active, Prod Unk.	AMENT, S. WDFW	252
1997	3	1 Adult, Incubating, New Nest	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	.
1996	1	No Adults , Nest Destroyed	No Young	Unoccupied	AMENT/MCMILLA	318
1995	2	Not Checked/Not Rep.	1 Adult, 1 Feathered Young	1 Young	AMENT/LIVESEY	901
1994	1	1 Adult, Incubating	2 Adults, 1 Feathered Young	1 Young	AMENT/MCMILL	379
1993	1	1 Adult, Incubating, Nest Repaired	1 Feathered Young	1 Young	SLOAN/HOFFMAN	162
1992	1	1 Adult, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	HOFMANN, L	558
1991	1	1 Adult, Incubating	No Young	Failure	MCMILLAN, A	445
1990	1	No Adults	1 Adult, 1 Feathered Young	1 Young	MCMILLAN, A	153
1989	1	2 Adults, Incubating	2 Feathered Young	2 Young	MCMILLAN, A	430
1988	1	1 Adult, Incubating, Nest Repaired	1 Adult, 1 Downy Young	1 Young	MCMILLAN, A	252
1987	1	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	MCMILLAN, ANI	155
1986	1	No Adults	No Young	Unoccupied	CUMMINS, ERIC	132
1985	1	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	CUMMINS, E WD	427
1984	1	1 Adult, Incubating, Nest Repaired	1 Adult, 2 Feathered Young	2 Young	CUMMINS	93
1983	1	Occupied, Active	1 Young	1 Young		.
1982	1	Unoccupied	Not Checked/Not Rep.	Unoccupied		.

2005 OCCUPANCY / PRODUCTIVITY SURVEY

Recommended Dates: April 7 - April 25
Early Season Survey Done by: S. Ament & J. Moore
Reported by: S. Ament

Recommended Dates: June 10 - June 25
Late Season Survey Done by: _____
Reported by: _____

PLEASE USE CODES SHOWN AT BOTTOM OF PAGE TO REPORT DATA IN THE FORM BELOW.
TWO EXTRA LINES ARE PROVIDED IN THE DATA FORM TO ACCOMODATE NEW NESTS THAT MAY BE FOUND THIS YEAR.
IF A NEW NEST IS FOUND, MARK ITS LOCATION ON THE MAP ON THE REVERSE OF THIS SHEET.
DESCRIBE THE NEST IN THE SPACE BELOW, OR ATTACH A SEPARATE SHEET IF THERE IS NO SPACE.

NEST	MONTH	DAY	# ADULTS	BEHAVIOR	REPAIR	OCCOBS	MONTH	DAY	# ADULTS	PRODOBS	DEVELOPMENT
531-1	4	8	0	-	-	9					
531-2	4	8	0	-	D	8					
531-3	4	8	0	-	D	8					
531-4	4	8	0	-	U	8					

Behavior: I = Incubating D = Defensive P = Perched F = Flying E = Egg(s) In Nest
Repair: N = New R = Repaired U = Unrepaired D = Destroyed

Development: D = Downy F = Feathered E = Egg S = Shell/Addled Egg

OCCOBS Codes:

X = Not Checked
6 = Occupied, Active (breeding attempt confirmed by incubation or eggs)
7 = Occupied but Inactive (adults present but NOT incubating/no eggs)
5 = Occupied, Activity Unknown (adults present, breeding attempt suspected but not confirmed)
8 = Unoccupied
3 = Occupancy unknown (No birds present, but nest is new or newly repaired)
2 = Adult/Subadult Pair
4 = Occupancy unkown (Single adult, or pr flying/not attending nest
1 = Occupancy unknown (Visit during non-breeding season)
9 = Not Located or Destroyed

PRODOBS Codes:

X = Not Checked
0 = Unsuccessful/Nest Empty
1-6 = Number of Young Observed in Nest
7 = Nest Successful, but # Young Unknown
8 = Adults Obstructing View of Nest
9 = Not Located or Destroyed

*More accurate location for Nest #4 provided on the attached map → Lat 48°02.747'N Lon 122°44.047' (NAD 27)

*Special note - This territory is within Plot 8W of the USFWS Area Frame survey. Nest #4 was the.

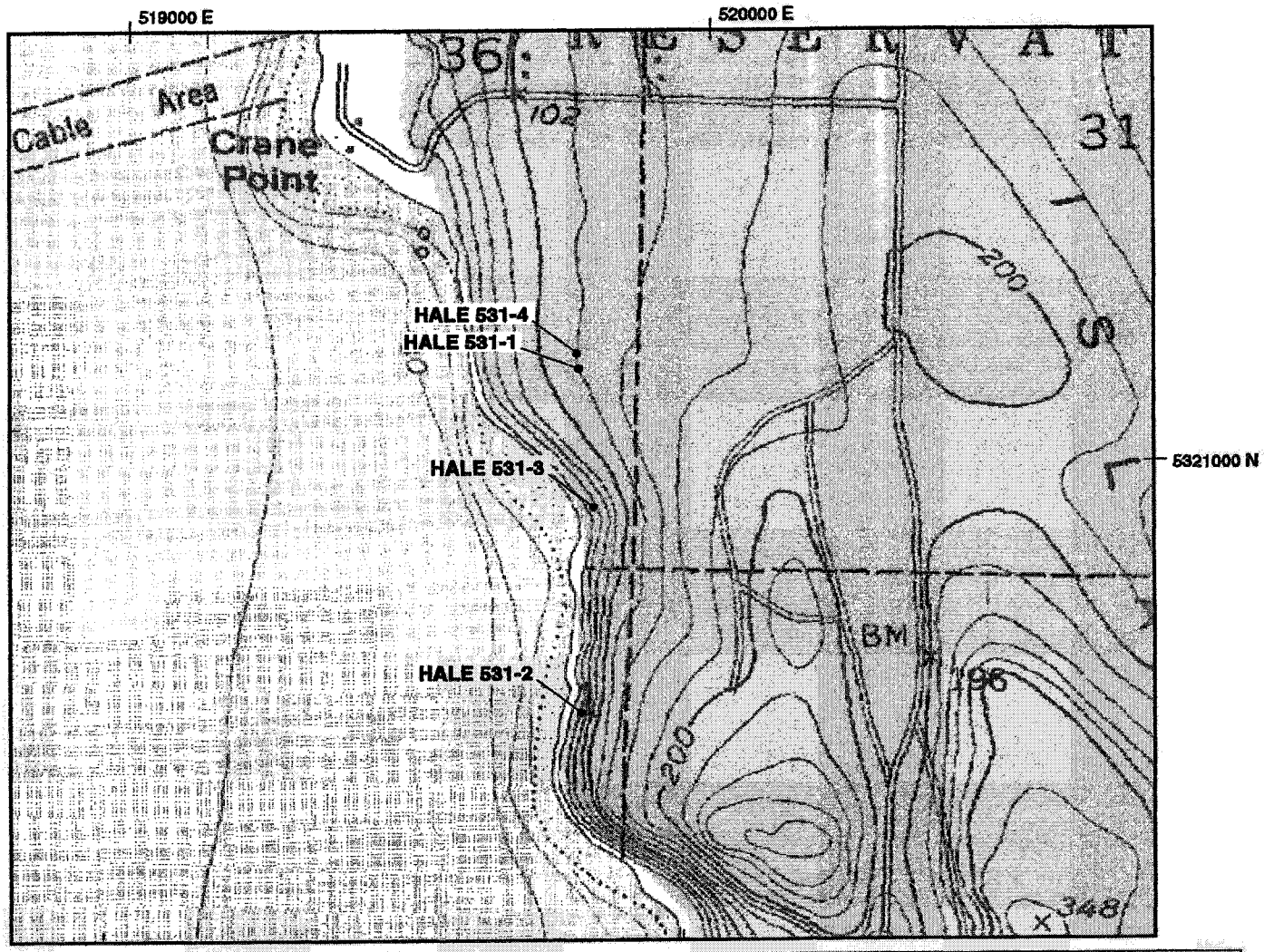
SENT TO: S. Ament WDFW Region 6 Wildlife Biologist PO Box 1933 Sequim, WA 98382
DATE: January 28, 2005

REGION 6 JEFFERSON COUNTY AMENT
DELORME ATLAS PG 94 D3
USGS QUAD 4812216 NORDLAND

CRANE POINT BALD EAGLE TERRITORY (OCCURRENCE 531)

OTHER SITES (IF PRESENT) SHOWN FOR REFERENCE. SEE REVERSE FOR AVAILABLE HISTORY.

COMPARE THIS MAP TO YOUR PERSONAL/REGIONAL FIELD MAP AND REPORT INCONSISTENCIES



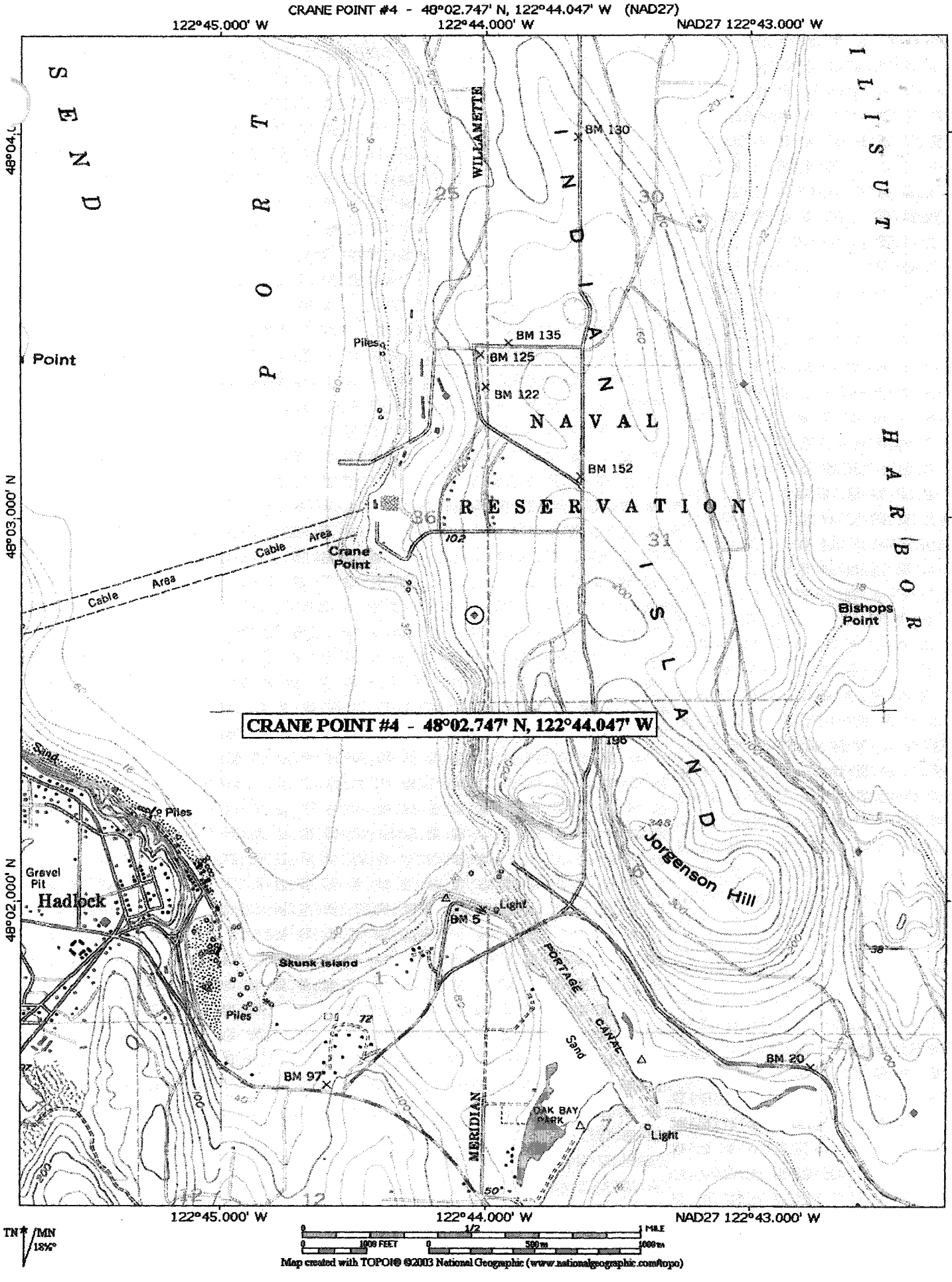
0 500 1000
FEET

MAP SCALE 1:12,000 MAP PROJECTION: STATE PLANE SOUTH DATUM: NAD27 CONUS TICS: UTM ZONE 10T
WHEN ADDING NEW LOCATIONS OR CORRECTING OLD LOCATIONS, PLEASE MARK TO SCALE!

IF YOU ARE USING A GPS UNIT WITH THIS MAP, SET THE DATUM TO NAD27 CONUS

531-1	CRANE POINT LAST OCCUPIED: 19940616 48 02' 42" 122 44' 06"	T30N R01W S36 AMENT/MCMILL OCCPROD UTM 519790 E 5321134 N	BALD EAGLE NEST DOWN 15 FT. FROM TOP ON NE SIDE OF TREE, JUST W SM SPIKE TOP TREE ON EAST SIDE OF ALDER PATCH. NEST IS VERY DIFFICULT TO SEE.
531-2	CRANE POINT LAST OCCUPIED: 19950531 48 01' 48" 122 44' 03"	T29N R01W S01 AMENT/LIVESEY OCCPRO UTM 519811 E 5320532 N	BALD EAGLE NEST. TREE IS APPROX. 1/2 MILE N OF BRIDGE, LEANER TREE NEAR THE SHORELINE
531-3	CRANE POINT LAST OCCUPIED: 19980603 48 02' 24" 122 44' 03"	T30N R01W S36 AMENT, S. WDFW OCC UTM 519822 E 5320892 N	BALD EAGLE NEST ON BROKEN BOLE OF LIVE DOUG-FIR, 5 FT DOWN FROM WHORL OF LIVE BR BRANCHES. NEST IN ONE OF TWO TALL DOM. DOUG-FIRS LOCATED CLOSE TOGETHER. NEST IS APPROX 30 FT DOWN IN THE MORE SOUTHERN TREE.
531-4	CRANE POINT LAST OCCUPIED: 20020418 48 02' 43" 122 44' 04"	T30N R01W S36 AMENT, SHELLY OCCPRO UTM 519786 E 5321161 N	BALD EAGLE NEST IN MULTI-TOPPED DF APPROX 60 FT NORTH OF NEST TREE #1. LIVE TREE IN CLUMP OF TALL TREES. NEST DOWN 15 FT FROM TOP.

REPORT ERRORS AND RETURN COMPLETED FORM TO: Gretchen Blatz, WDFW, 600 Capitol Way North, Olympia, WA 98501-1091


CRANE POINT #4 - 48°02.747' N, 122°44.047' W (NAD27)
122°45.000' W
122°44.000' W
NAD27 122°43.000' W
48°04.000' N
48°03.000' N
48°02.000' N
PORT SEND
WILLAMETTE
INDIAN
ILLISUT
HARBOR
BM 130
BM 135
BM 125
BM 122
BM 152
NAVAL
RESERVATION
ISLAND
Piles
Point
Cable Area
Cable Area
Crane Point
Bishops Point
CRANE POINT #4 - 48°02.747' N, 122°44.047' W
Sand
Piles
Gravel Pit
Hadlock
Jorgenson Hill
Light
BM 5
Skunk Island
Piles
PORTAGE CANAL
Sand
BM 97
BM 20
OAK BAY PARK
Light
MERIDIAN
TN
MN
18½°
1/2
MILE
1000 FEET
500 m
1000 m
Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

REGION 6 JEFFERSON COUNTY AMENT
DELORME PG 94 D3
USGS QUAD 4812216 NORDLAND

BUGGY SPIT BALD EAGLE TERRITORY (OCCURRENCE 532)

SEE REVERSE FOR MAP

YEAR	NEST	EARLY SEASON OBSERVATION	LATE SEASON OBSERVATION	SEASON SUMMARY	OBSERVER	PAGE
2002	3	No Adults , Nest Unrepaired	Not Checked/Not Rep.	Unoccupied	AMENT, SHELLY	6240
2001	3	2 Adults, Perched, Nest Unrepaired	No Young	Occupied, Inactive	AMENT/BRENNAN	8216
2000	3	1 Adult, Incubating, Nest Destroyed	2 Adults, 2 Feathered Young	2 Young	AMENT, S. WDFW	6138
1999	3	2 Adults, Incubating, Nest Repaired	1 Adult, 2 Feathered Young	2 Young	AMENT, S.WDFW	125
1998	3	2 Adults, Perched, Nest Unrepaired	2 Adults, No Young	Occupied, Inactive	AMENT, S. WDFW	254
1997	2	2 Adults, Perched, Nest Destroyed	Not Checked/Not Rep.	Occupied, Inactive	AMENT, SHELLY	.
1996	1	2 Adults, Perched, Nest Unrepaired	No Young	Occupied, No Yng.	AMENT/MCMILLA	320
1995	2	1 Adult, Incubating	No Young	Failure	AMENT/JORDAN	900
1994	2	No Adults	2 Adults, 1 Downy Young	1 Young	AMENT/MCMILL	377
1993	2	No Adults	1 Adult, 2 Feathered Young	2 Young	SLOAN/HOFFMAN	161
1992	1	1 Adult, Incubating, Nest Repaired	No Young	Failure	HOFMANN, L	557
1991	1	1 Adult, Incubating	2 Adults, 2 Feathered Young	2 Young	MCMILLAN, A	444
1990	1	1 Adult, Incubating	1 Adult, 1 Downy Young	1 Young	MCMILLAN, A	154
1989	1	1 Adult, Incubating	2 Adults, 1 Feathered Young	1 Young	MCMILLAN, A	435
1988	1	2 Adults, Incubating, Nest Repaired	1 Adult, 1 Feathered Young	1 Young	MCMILLAN, A	250
1987	1	1 Adult, Incubating, Nest Repaired	No Young	Failure	MCMILLAN, ANI	152
1986	1	1 Adult, Incubating, Nest Repaired	1 Feathered Young	1 Young	CUMMINS, ERIC	132
1985	1	No Adults , Nest Unrepaired	No Young	Unoccupied	CUMMINS, E WD	427
1984	1	1 Adult, Incubating, Nest Repaired	1 Feathered Young	1 Young	CUMMINS	93
1983	1	Occupied, Active	2 Young	2 Young		.
1982	1	Occupied, Active	2 Young	2 Young		.

2005 OCCUPANCY / PRODUCTIVITY SURVEY

Recommended Dates: April 7 - April 25
Early Season Survey Done by: S. Ament + J. Moore
Reported by: S. Ament

Recommended Dates: June 10 - June 25
Late Season Survey Done by: S. Ament + J. Moore
Reported by: S. Ament

PLEASE USE CODES SHOWN AT BOTTOM OF PAGE TO REPORT DATA IN THE FORM BELOW.
TWO EXTRA LINES ARE PROVIDED IN THE DATA FORM TO ACCOMODATE NEW NESTS THAT MAY BE FOUND THIS YEAR.
IF A NEW NEST IS FOUND, MARK ITS LOCATION ON THE MAP ON THE REVERSE OF THIS SHEET.
DESCRIBE THE NEST IN THE SPACE BELOW, OR ATTACH A SEPARATE SHEET IF THERE IS NO SPACE.

NEST	MONTH	DAY	# ADULTS	BEHAVIOR	REPAIR	OCCOBS	MONTH	DAY	# ADULTS	PRODOBS	DEVELOPMENT
532-1	4	8	0	-	D	8					
532-2	4	8	0	-	D	8					
532-3	4	8	2	I P	R	6	* 4	25	1	1	D

Nest gone, tree present For Nest #1 and Nest #2.

Behavior: I = Incubating D = Defensive P = Perched F = Flying E = Egg(s) In Nest
Repair: N = New R = Repaired U = Unrepaired D = Destroyed

Development: D = Downy F = Feathered E = Egg S = Shell/Addled Egg

OCCOBS Codes:

X = Not Checked
6 = Occupied, Active (breeding attempt confirmed by incubation or eggs)
7 = Occupied but Inactive (adults present but NOT incubating/no eggs)
5 = Occupied, Activity Unknown (adults present, breeding attempt suspected but not confirmed)
8 = Unoccupied
3 = Occupancy unknown (No birds present, but nest is new or newly repaired)
2 = Adult/Subadult Pair
4 = Occupancy unkown (Single adult, or pr flying/not attending nest
1 = Occupancy unknown (Visit during non-breeding season)
9 = Not Located or Destroyed

PRODOBS Codes:

X = Not Checked
0 = Unsuccessful/Nest Empty
1-6 = Number of Young Observed in Nest
7 = Nest Successful, but # Young Unknown
8 = Adults Obstructing View of Nest
9 = Not Located or Destroyed

* More accurate location for Nest #3 provided on the attached map. → Lat 48°04.439'N Lon 122°43.255W (NAD27)

* Special Note: This territory was in Plot 8W of the USFWS Area Frame survey. During this survey on 4/25/05 at least one downy young was seen in the nest. Adult eagle was present at the nest. Possible >1 young in the nest → view obstructed by the adult

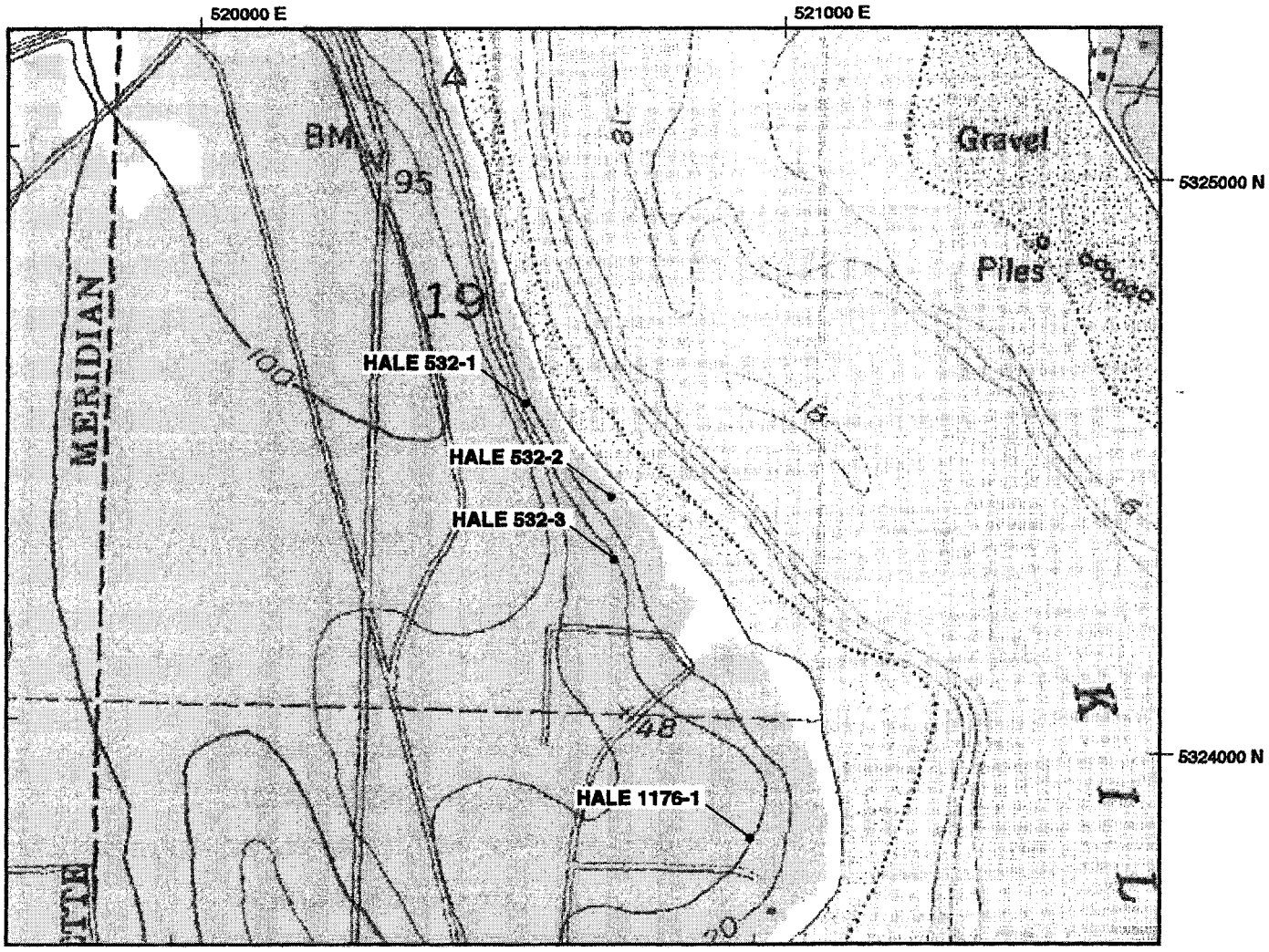
SENT TO: S. Ament WDFW Region 6 Wildlife Biologist PO Box 1933 Sequim, WA 98382
DATE: January 28, 2005

REGION 6 JEFFERSON COUNTY AMENT
DELORME ATLAS PG 94 D3
USGS QUAD 4812216 NORDLAND

BUGGY SPIT BALD EAGLE TERRITORY (OCCURRENCE 532)

OTHER SITES (IF PRESENT) SHOWN FOR REFERENCE. SEE REVERSE FOR AVAILABLE HISTORY.

COMPARE THIS MAP TO YOUR PERSONAL/REGIONAL FIELD MAP AND REPORT INCONSISTENCIES



0 500 1000
FEET

MAP SCALE 1:12,000 MAP PROJECTION: STATE PLANE SOUTH DATUM: NAD27 CONUS TICS: UTM ZONE 10T
WHEN ADDING NEW LOCATIONS OR CORRECTING OLD LOCATIONS, PLEASE MARK TO SCALE!

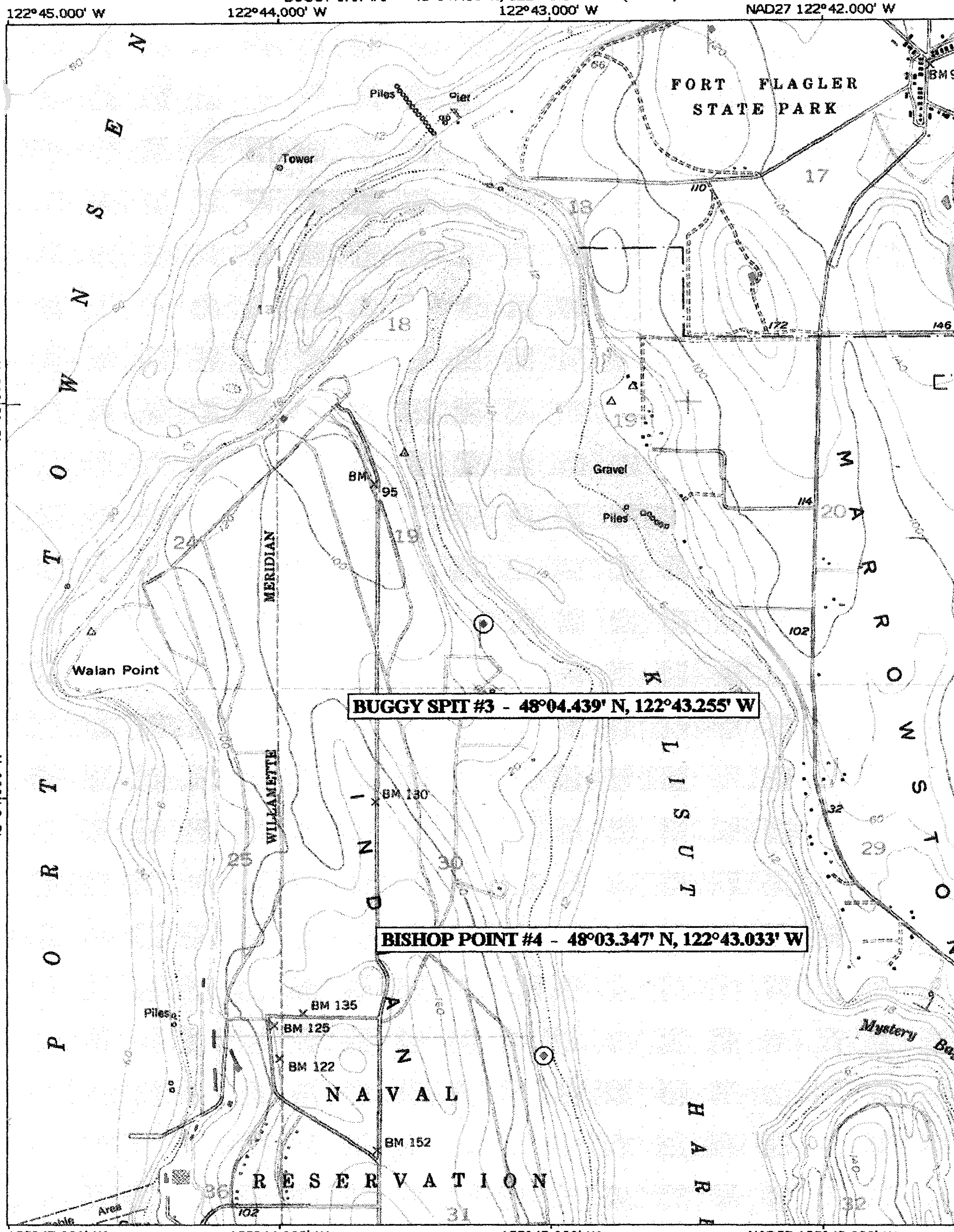
IF YOU ARE USING A GPS UNIT WITH THIS MAP, SET THE DATUM TO NAD27 CONUS

532-1	BUGGY SPIT LAST OCCUPIED: 19960610 48 04' 34" 122 43' 26"	T30N R01E S19 AMENT/MCMILLA OCCPRO UTM 520575 E 5324577 N	BALD EAGLE NEST, NEST DOWN FROM TOP IN BROKEN TOP TREE THAT LEANS EAST, 3800FT S OF SPIT,100M FROM BEACH. BEST SEEN FLYING WEST TO EAST.
532-2	BUGGY SPIT LAST OCCUPIED: 19970409 48 04' 30" 122 43' 19"	T30N R01E S19 AMENT, SHELLY OCCPRO UTM 520728 E 5324419 N	BALD EAGLE NEST, LOCATED IN SUBDOMINANT TREE. NEST IS DOWN IN TREE.
532-3	BUGGY SPIT LAST OCCUPIED: 20010619 48 04' 26" 122 43' 19"	T30N R01E S19 AMENT/BRENNAN OCCP UTM 520736 E 5324310 N	BALD EAGLE NEST ON TOP OF DOMINANT TREE.

HALE 1176 KILISUT HARBOR BALD EAGLE TERRITORY

REPORT ERRORS AND RETURN COMPLETED FORM TO: Gretchen Blatz WDFW, 600 Capitol Way North, Olympia, WA 98501-1091

BUGGY SPIT #3 - 48°04.439' N, 122°43.255' W (NAD27)



122°45.000' W 122°44.000' W 122°43.000' W NAD27 122°42.000' W

TN MN 18½°

0 1/2 1 MILE
0 1000 FEET 0 500 m 1000 m

Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

REGION 6 JEFFERSON COUNTY AMENT
DELORME PG 94 D3
USGS QUAD 4812216 NORDLAND

BISHOP POINT BALD EAGLE TERRITORY (OCCURRENCE 118)

SEE REVERSE FOR MAP

YEAR	NEST	EARLY SEASON OBSERVATION	LATE SEASON OBSERVATION	SEASON SUMMARY	OBSERVER	PAGE
2002	3	1 Adult, Incubating, Nest Repaired	Not Checked/Not Rep.	Active, Prod Unk.	AMENT, SHELLY	6242
2001	1	No Adults , Nest Unrepaired	No Young	Unoccupied	AMENT/BRENNAN	6218
2000	1	2 Adults, Perched, Nest Unrepaired	2 Adults, No Young	Occupied, Inactive	AMENT, S. WDFW	6140
1999	1	2 Adults, Incubating, Nest Repaired	1 Feathered Young	1 Young	AMENT, S.WDFW	127
1998	1	1 Adult, Incubating, Nest Repaired	1 Adult, 1 Downy Young	1 Young	AMENT, S. WDFW	256
1997	1	No Adults , Nest Unrepaired	Not Checked/Not Rep.	Unoccupied	AMENT, SHELLY	.
1996	1	2 Adults, Incubating	1 Adult, 1 Feathered Young	1 Young	AMENT/MCMILLA	321
1995	1	3Adults, Flying, Nest Unrepai	No Young	Occupied, Inactive	AMENT/LIVESEY	899
1994	1	1 Adult, Perched	2 Downy Young	2 Young	AMENT/MCMILL	376
1993	1	2 Adults, Perched, Nest Unrepaired	No Young	Occupied, Inactive	SLOAN/HOFFMAN	160
1992	2	2 Adults, Perched, Nest Repaired	1 Adult, Adult Obstr. View	Active, Prod Unk.	HOFMANN, L	556
1991	1	1 Adult, Incubating	1 Adult, 2 Downy Young	2 Young	MCMILLAN, A	443
1990	1	1 Adult, Perched	1 Adult, 1 Downy Young	1 Young	MCMILLAN, A	155
1989	2	Not Checked/Not Rep.	1 Adult, 1 Feathered Young	1 Young	MCMILLAN, A	431
1988	1	1 Adult, Incubating, Nest Repaired	No Young	Failure	MCMILLAN, A	251
1987	1	No Adults , Nest Unrepaired	No Young	Unoccupied	MCMILLAN, ANI	153
1986	1	2 Adults, Perched, Nest Unrepaired	Nest Not Located	Occupied, Inactive	CUMMINS, ERIC	133
1985	1	No Adults , Nest Unrepaired	Nest Not Located	Unoccupied	CUMMINS, E WD	427
1984	1	2 Adults, Perched, Nest Unrepaired	No Young	Occupied, Inactive	CUMMINS	93
1983	1	Unoccupied	Not Checked/Not Rep.	Unoccupied		.
1982	1	Occupied, Inactive	Nest Not Located	Occupied, Inactive		.
1981	1	Occupied, Active	1 Young	1 Young		.
1980	1	Occupied, Active	1 Young	1 Young		.
1975	1	Occupied, Active	2 Young	2 Young		.

2005 OCCUPANCY / PRODUCTIVITY SURVEY

Recommended Dates: April 7 - April 25
Early Season Survey Done by: S. Ament + J. Moore
Reported by: S. Ament

Recommended Dates: June 10 - June 25
Late Season Survey Done by: _____
Reported by: _____

PLEASE USE CODES SHOWN AT BOTTOM OF PAGE TO REPORT DATA IN THE FORM BELOW.
TWO EXTRA LINES ARE PROVIDED IN THE DATA FORM TO ACCOMODATE NEW NESTS THAT MAY BE FOUND THIS YEAR.
IF A NEW NEST IS FOUND, MARK ITS LOCATION ON THE MAP ON THE REVERSE OF THIS SHEET.
DESCRIBE THE NEST IN THE SPACE BELOW, OR ATTACH A SEPARATE SHEET IF THERE IS NO SPACE.

NEST	MONTH	DAY	# ADULTS	BEHAVIOR	REPAIR	OCCOBS	MONTH	DAY	# ADULTS	PRODOBS	DEVELOPMENT
118-1	4	8	0		D	9					
118-2	4	8	-	-	-	9					
118-3	4	8	0	-	U	8					
(New) 118-4	4	25	1	I	N	6					

Behavior: I = Incubating D = Defensive P = Perched F = Flying E = Egg(s) In Nest
Repair: N = New R = Repaired U = Unrepaired D = Destroyed
Development: D = Downy F = Feathered E = Egg S = Shell/Addled Egg

OCCOBS Codes:

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1-6 = Number of Young Observed in Nest
7 = Nest Successful, but # Young Unknown
8 = Adults Obstructing View of Nest
9 = Not Located or Destroyed

* New Nest #4:
(see details on reverse side)

SENT TO: S. Ament WDFW Region 6 Wildlife Biologist PO Box 1933 Sequim, WA 98382
DATE: January 28, 2005

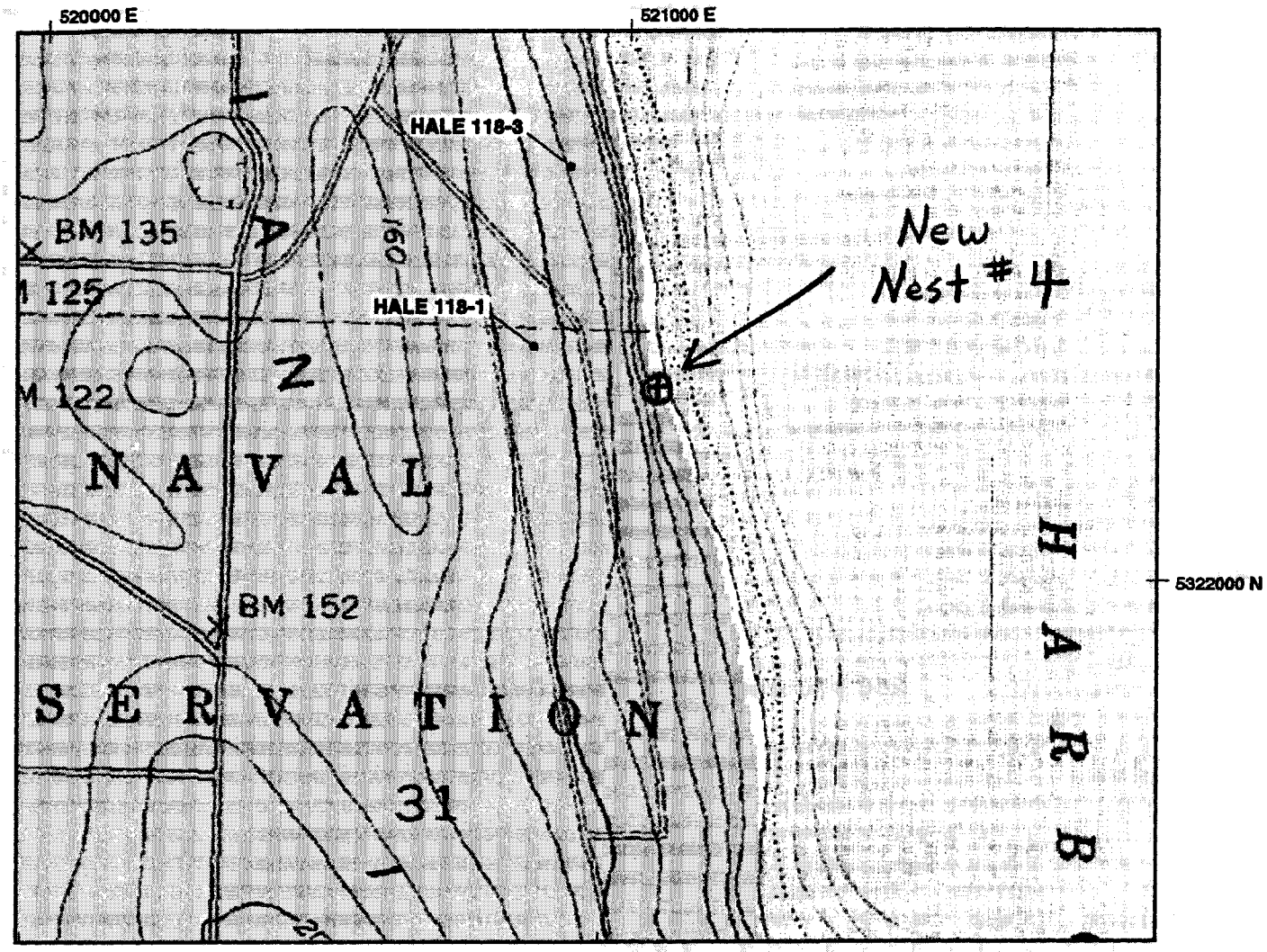
DELORME ATLAS PG 94 D3

USGS QUAD 4812216 NORDLAND

BISHOP POINT BALD EAGLE TERRITORY (OCCURRENCE 118)

OTHER SITES (IF PRESENT) SHOWN FOR REFERENCE. SEE REVERSE FOR AVAILABLE HISTORY.

COMPARE THIS MAP TO YOUR PERSONAL/REGIONAL FIELD MAP AND REPORT INCONSISTENCIES



0 500 1000 FEET

MAP SCALE 1:12,000 MAP PROJECTION: STATE PLANE SOUTH DATUM: NAD27 CONUS TICS: UTM ZONE 10T

WHEN ADDING NEW LOCATIONS OR CORRECTING OLD LOCATIONS, PLEASE MARK TO SCALE!

IF YOU ARE USING A GPS UNIT WITH THIS MAP, SET THE DATUM TO NAD27 CONUS

118-1	BISHOP POINT LAST OCCUPIED: 20000615 48 03' 22" 122 43' 12"	T30N R01E S31 AMENT, S. WDFW OCC UTM 520852 E 5322379 N	BALD EAGLE NEST, IN TREE WITH LARGE, DEFORMED, BROKEN TOP 8 FT.DOWN VEGETATION LIES FLAT.BEST VIEW FROM NW. NW OF BISHOP POINT IN KILISUT HARBOR.
118-2	BISHOP POINT LAST OCCUPIED: 19920611 48 02' 49" 122 43' 01"	T30N R01E S31 HOFMANN, L OCCPROD S UTM 521111 E 5321329 N	BALD EAGLE NEST, JUST WEST OF ALDERS, FACING SHORELINE 5-10' FROM TOP OF SQUASHED TOP TREE JUST W OF POINT, S. OF BLOWDOWN.
118-3	BISHOP POINT LAST OCCUPIED: 20020418 48 03' 33" 122 43' 10"	T30N R01E S30 AMENT, SHELLY OCCPRO UTM 520905 E 5322697 N	BALD EAGLE NEST IN TALL, DOMINANT DOUGLAS FIR WITH TOP 10 FT OF TREE DEAD. NEST LOCATED 25 FT DOWN FROM TOP, ON SE SIDE OF BOLE. OLDER NEST WITH NO NEW NEST MATERIAL OR REPAIRS.

Nest # 4 : T30N, R1E, Section 31, NW of NE → see attached map.

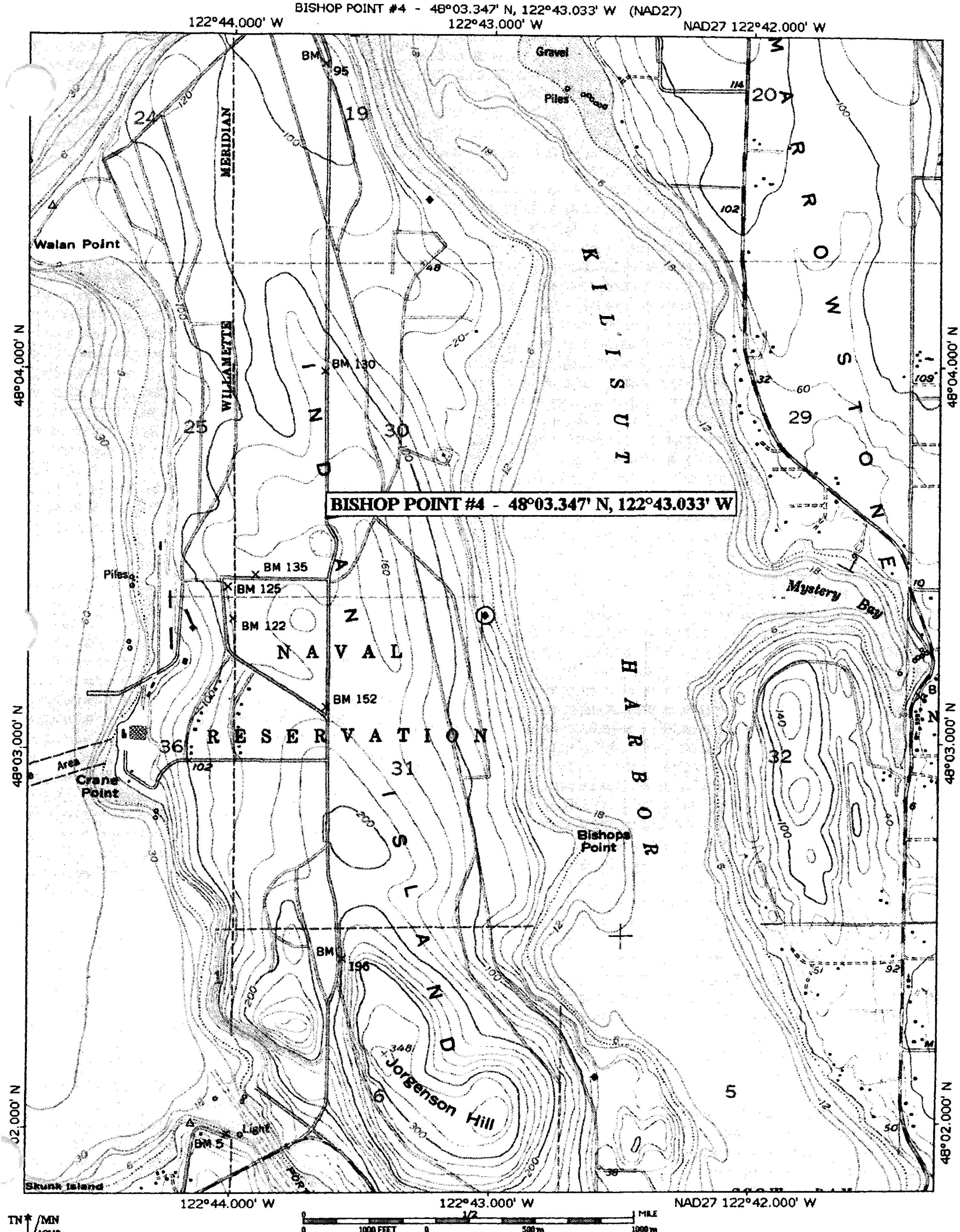
Description - Fairly small, live, splayed topped Douglas fir tree. Nest 10 feet down from the top on the e. side of bole.

Lat 48° 03.347' N
Lon 122° 43.033' W
(NAD 27)

* This Nest # 4 was located during the USFWS Area Frame survey on 4/25, It was not seen during the 4/8 List Frame survey.

REPORT ERRORS AND RETURN COMPLETED FORM TO: Gretchen Blatz, WDFW, 600 Capitol Way North, Olympia, WA 98501-1091

BISHOP POINT #4 - 48°03.347' N, 122°43.033' W (NAD27)



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

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Summary of Avian Survey At Naval Magazine Indian Island, Jefferson County, Washington

September 2015

Prepared by:

Arlene Arnold, NAVFAC Southwest

Jennifer Wright, NAVFAC Atlantic

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INTRODUCTION

NAVMAG Indian Island serves as the west coast ammunition ordnance storage center for the Pacific Fleet. The primary mission is to load, offload, and manage ordnance from ships and boats (USN 2009).

Naval Magazine (NAVMAG) Indian Island is located in the northeast corner of the Olympic Peninsula in Jefferson County, Washington, southeast of the city of Port Townsend (Figure 1). It is bounded by Port Townsend Bay to the west and north, by the Oak Bay and Portage Canal to the west and south, by Scow Bay to the south and east, and by Kilisut Harbor to the east (Figure 2). Indian Island measures approximately 4.5 mile in length and 1.25 miles at its widest point. It is separated from the mainland by the Portage Canal and from neighboring Marrowstone Island by shallow tide flats and sand spit. The highest point is 363 feet above mean sea level (USN 2009).

NAVMAG Indian Island is located in the rain shadow of the Olympic Mountains and is one of the driest regions of western Washington. Average maximum temperatures occur in August and range from 65° F near the water to 75° F inland, and seldom exceed 90° F. Average minimum temperatures occur in January and are generally in the 30's. Minimum temperatures seldom drop below 15° F.

NAVMAG Indian Island is approximately 2,100 acres of forest lands within the Western Hemlock Zone. Common plant communities consist of Douglas Fir (*Psuedotsuga menziesii*), western red cedar (*Thuja plicata*), grand fir (*Abies grandis*), and western hemlock (*Tsuga heterophylla*) with an understory of sword fern (*Polystichum munitum*), vine maple (*Acer circinatum*), and salmonberry (*Rubus spectabilis*) (USN 2009, USN 2014). Other common species are bigleaf maple (*Acer macrophyllum*) red alder (*Alnus rubra*), madrona (*Arbutus menziesii*), quaking aspen (*Populus tremuloides*), and black cottonwood (*Populus balsamifera*). Two historic, relic stands of Garry Oak (*Quercus garryana*) occur on Indian Island (USN 2009).

Avian surveys were conducted to support the Integrated Natural Resources Management Plan (INRMP), future planning, compliance with the Migratory Bird Treaty Act (MBTA), and support the Department of Defense Partners in Flight (DoD PIF) initiative. NAVMAG Indian Island has been designated an Important Bird Area of Washington State by the Audubon Society of Washington. Heron rookeries, Pigeon Guilletmot (*Cepphus columba*) and Bald Eagle (*Haliaeetus leucocephalus*) nesting occur on Indian Island. Potential threatened or endangered bird species that may occur on NAVMAG Indian Island include the Marbled Murrelet (*Brachyramphus marmoratus*) which have been observed in offshore waters, but not documented on land at Indian Island (USN 2009). No Critical Habitat for the Marbled Murrelet has been designated on Indian Island.

Figure 1. Location of Naval Magazine Indian Island (USN 2009).

Figure 2. Aerial view of Naval Magazine Indian Island (USN 2009).

METHODS

Presence/absence avian surveys were conducted from 14-17 September 2015 to capture potential resident species as well as fall migrants. Surveys were conducted by two personnel via visual encounter surveys through different areas of the Island, including known nesting and loafing areas. Wandering, spending as much time as necessary, as opposed to point counts or transects, enabled personnel to fully cover an area and maximize detection of species present. Surveys were conducted from approximately 07:30 until 17:00 daily.

Areas surveyed included but not limited to: security office area, environmental office area, Anderson Road, Anderson Pond, orchard and nature trail at Anderson Pond, access points for Scow Bay, campgrounds, trails off Ferry Street, road along Bishop Spit, Lynx Trail, Dynamite Trail, Anderson Road Spit, Boggy Spit, north beach, Harbor Seal Trail, bay access off Halligan Road, radio tower area/Fire Trail, ball field/picnic area, and sewage treatment ponds.

RESULTS

At least 64 species were identified during this avian survey over the various habitats at Indian Island. There were some sparrow and marine species that could not be positively identified and were not included in the species list. Table 1 lists the observed and identified species, along with location spotted, as well as if the species is new to INRMP list. All marine species, including the Marbled Murrelet, *Brachyramphus marmoratus*, were identified while in the water offshore.

DISCUSSION

Certain areas of the island were more active than others during this fall survey, such as Boggy Spit and Access areas 2 and 3 off Puyallup Road due to the blend of diverse habitats and geographic setting, or ecotone. These areas frequently contained a mixture of passerines, raptors and coastal/aquatic species. The forested areas near the coastline had a variety of fall migratory passerines foraging, such as vireos, warblers and one species of hummingbird. Throughout the wooded interior of the island, feeding flocks of chickadees, brown creepers, red-breasted nuthatchs and kinglets were often encountered together. An evening owl survey was attempted but was cut short due to poor weather conditions (wind and heavy rain). Future avian surveys, including owl surveys, are recommended to augment the INRMP and comply with the Migratory Bird Treaty Act (MBTA).

Table 1. Indian Island Bird List – Sep 2015

Note: Highlighted species indicate new to INRMP listed species

Species Common Name	Scientific Name	Location
Pacific Loon	*Gavia pacifica*	Skow Bay
Common Loon	*Gavia immer*	Boggy Spit, Access 9.5 (Off Halligan Rd. & Flagler Road), Dynamite Trail, Access 2 & 3 (off Puyallup Road)
Horned Grebe	*Podiceps auritus*	Bishop Spit, Access 2 & 3 (off Puyallup Road)
Eared Grebe	*Podiceps nigricollis*	Skow Bay, Dynamite Trail, Bishop Spit, Access 2 & 3 (off Puyallup Road), Access 9.5 (Off Halligan Rd. & Flagler Road)
Double-crested Cormorant	*Phalacrocorax auritus*	Boggy Spit, Dynamite Trail
Great-blue Heron	*Ardea herodias*	Skow Bay, Bishop's Spit, Boggy Spit, Access 9.5 (Off Halligan Road & Flagler Road), Access 2 & 3 (off Puyallup Road)
Mallard	*Anas platyrhynchos*	Bishop Spit, shoreline near Walan Point
Harlequin Duck	*Histrionicus histrionicus*	Boggy Spit
Surf Scooter	*Melanitta perspicillata*	Dynamite Trail, Access 2 & 3 (off Puyallup Road)
Common Goldeneye	*Bucephala clangula*	Bishop Spit
Cooper's Hawk	*Accipiter cooperii*	Boggy Spit
Bald Eagle	*Haliaeetus leucocephalus*	Boggy Spit, Dynamite Trail
Osprey	*Pandion haliaetus*	Access 9.5 (Off Halligan Road & Flagler Road)
Peregrine Falcon	*Falco peregrinus*	Boggy Spit
Killdeer	*Charadrius vociferus*	Campground
Least Sandpiper	*Calidris minutilla*	Sewage Treatment Pond
Mew Gull	*Larus canus*	Campground, Skow Bay, Bishop Spit
Ring-billed Gull	*Larus delawarensis*	Access 9.5 (Off Halligan Rd. & Flagler Road)
Glaucous-winged Gull	*Larus glaucescens*	Skow Bay, Access 9.5 (Off Halligan Rd. & Flagler Road), Boggy Spit, Campground, Dynamite Trail

Species Common Name	Scientific Name	Location
Caspian Tern	*Sterna caspia*	Skow Bay, Campground, Boggy Spit, (Off Halligan Road & Flagler Road), Bishop Spit, Dynamite Trail, Access 2 & 3 (off Puyallup Road)
Pigeon Guillemot	*Cepphus columba*	Campground area (offshore in Port Townsend Bay), Bishop Spit, Dynamite Trail
Marbled Murrelet	*Brachyramphus marmoratus*	Campground (offshore in Port Townsend Bay)
Anna's Hummingbird	*Calypte anna*	Boggy Spit
Belted Kingfisher	*Ceryle alcyon*	Anderson Pond, Skow Bay, Campground, Bishop Spit
Red-breasted Sapsucker	*Sphyrapicus ruber*	Boggy Spit, Harbor Seal Trail, Bishop Spit, Access 2 & 3 (off Puyallup Road)
Downy Woodpecker	*Picoides pubescens*	Anderson Pond Nature Trail
Hairy Woodpecker	*Picoides villosus*	Bishop Spit Road
Northern Flicker	*Colaptes auratus*	Security building, Bishop Spit Road, Anderson Road split (near Walan Point), Access 9.5 (Off Halligan Road & Flagler Road), Radio Tower
Pileated Woodpecker	*Dryocopus pileatus*	Bishop Spit Road
Hutton's Vireo	*Vireo huttoni*	Bishop Spit Road, Boggy Spit
Cassin's Vireo	*Vireo cassinii*	Bishop Spit Road, Dynamite Trail
Stellar's Jay	*Cyanocitta stelleri*	Security building, Skow Bay, Harbor Seal Trail, Radio Tower, Sewage Treatment Plant, Bishops Spit Road, Access 2 & 3 (off Puyallup Road)
Common Raven	*Corvus corax*	Security building, Skow Bay, Bishop Spit Road, Ball Field/Picnic area, Sewage Treatment Pond
Violet-green Swallow	*Tachycineta thalassina*	Anderson Pond
Tree Swallow	*Tachycineta bicolor*	Anderson Pond
Barn Swallow	*Hirundo rustica*	Anderson Pond
Black-capped Chickadee	*Poecile atricapilla*	Security building, Anderson Pond, Boggy Spit, Anderson Pond Nature Trail, Dynamite Trail

Species Common Name	Scientific Name	Location
Chestnut-backed Chickadee	*Poecile rufescens*	Lynx Trail, Harbor Seal Trail, Anderson Pond Nature Trail, Ball Field/Picnic Area, Bishop Spit, Access 2 & 3 (off Puyallup Road)
Bushtit	*Psaltriparus minimus*	Radio Tower
Red-breasted Nuthatch	*Sitta canadensis*	Security building, Lynx Trail, Anderson Road split (near Walan Point), Harbor Seal Trail, Ball field/picnic area, Bishop Spit Road, Dynamite Trail, Access 2 & 3 (off Puyallup Road), Radio Tower
Brown Creeper	*Certhia americana*	Anderson Road split (near Walan Point), Harbor Seal Trail, Bishop Spit Road, Dynamite Trail, Access 2 & 3 (off Puyallup Road), Radio Tower, Access 9.5 (Off Halligan Rd. & Flagler Road)
Bewick's Wren	*Thryomanes bewickii*	Harbor Seal Trail, Sewage Treatment Plant, Dynamite Trail, Access 2 & 3
Pacific Wren	*Troglodytes pacificus*	Bishop Spit Road, Harbor Seal Trail, Access 2 & 3 (off Puyallup Road)
Golden-crowned Kinglet	*Regulus satrapa*	Bishop Spit Road, Lynx Trail, Harbor Seal Trail, Anderson Road split (near Walan Point), Anderson Pond Nature Trail, Ball Field/Picnic Area, Sewage Treatment Pond, Bishop Spit, Radio Tower, Dynamite Trail
Ruby-crowned Kinglet	*Regulus calendula*	Anderson Pond, Lynx Trail, Harbor Seal Trail, Anderson Pond Nature Trail, Bishop Spit, Radio Tower
American Robin	*Turdus migratorius*	Security Building, Anderson Road split (near Walan Point), Anderson Pond Nature Trail, Bishop Spit Road, Dynamite Trail
Hermit Thrush	*Catharus guttatus*	Dynamite Trail, Radio Tower
European Starling	*Sturnus vulgaris*	Security building
Orange-crowned Warbler	*Vermivora celata*	Access 2 & 3 (off Puyallup Road)
Yellow Warbler	*Dendroica petechia*	Boggy Spit, Bishop Spit, Access 2 & 3 (off Puyallup Road)
Yellow-rumped Warbler	*Dendroica coronata*	Boggy Spit, Access 2 & 3 (off Puyallup Road)

Species Common Name	Scientific Name	Location
Black-throated Gray Warbler	*Dendroica nigrescens*	Bishop Spit Road, Access 2 & 3 (off Puyallup Road)
Townsend's Warbler	*Dendroica townsendii*	Bishop Spit Road
Common Yellowthroat	*Geothlypis trichas*	Anderson Pond
Spotted Towhee	*Pipilo maculatus*	Security building, Anderson Pond, Lynx Trail, Ball field/picnic area, Sewage treatment ponds, Dynamite Trail, Radio Tower, Access 2 & 3 (off Puyallup Road)
American Tree Sparrow	*Spizella arborea*	Anderson Road split
Chipping Sparrow	*Spizella passerina*	Dynamite Trail
White-crowned Sparrow	*Zonotrichia leucophrys*	Security building, Anderson Pond
Fox Sparrow	*Passerella iliaca*	Skow Bay, Boggy Spit, Anderson Pond Nature Trail, (near Walan Point), Radio Tower, Bishop Spit Rd, Access 2 & 3 (off Puyallup Road), Dynamite Trail
Song Sparrow	*Melospiza melodia*	Security building, Anderson Pond, Anderson Road split (near Waylen Point), Harbor Seal Trail, Dynamite Trail
Dark-eyed Junco (Oregon)	*Junco hyemalis*	Security building, Boggy Spit, Ball field/picnic area, Sewage treatment ponds, Anderson Pond Nature Trail, Harbor Seal Trail, Bishop Spit Road, Access 2 & 3 (off Puyallup Road)
Purple Finch	*Carpodacus purpureus*	Anderson Pond, Campground
House Finch	*Carpodacus mexicanus*	Bishop Spit Road
Pine Siskin	*Carduelis pinus*	Campground area
American Goldfinch	*Carduelis tristis*	Bishop's Spit Road, Ball Field/Picnic area

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Final

Baseline Survey for Amphibians and Reptiles At Naval Magazine Indian Island

Rough-skinned Newt on Naval Magazine Indian Island

September 2013

Prepared by:
Chris Petersen, Paul Block, Matt Klope
Naval Facilities Engineering Command, Atlantic

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Introduction

This report summarizes the results of three field surveys for reptiles and amphibians (herpetofauna) at Naval Magazine Indian Island (NAVMAG Indian Island) located in Jefferson County, Washington. The surveys were conducted by natural resource specialists Chris Petersen, Paul Block, and Matt Klope of Naval Facilities Engineering Command Atlantic (NAVFAC LANT) with the assistance of Student Conservation Association (SCA) students (Erik Kunz, Kim Ramos, Navit Reid, Jackson Letchworth, Alexander Peterson, and Christina Hersum) and NAVFAC Northwest staff (Julia Stockton, Cindi Kunz, Mike Schwinn, Terri Jones, and Sara Street). The surveys occurred on April 22–26, 2013; July 15–19, 2013; and September 16–20, 2013. During the three survey periods, approximately 240 hours were spent collecting the field data.

The overall objective of the surveys was to confirm the presence of reptiles and amphibians species with the potential to be present on the Navy facility. Observations from the surveys will provide baseline data for the Integrated Natural Resource Management Plan (INRMP) and be used for environmental planning, natural resource management, and conservation in support of the military missions of the installation. Prior to this effort, no formal survey had been conducted with only anecdotal field observations and desktop analysis used to document the herpetofauna of these sites.

Prior to the field work, natural resource specialists compiled a list of potential species to establish field methodologies and field survey strategies based on species-specific habitat preferences. This list was created by gathering data from field guides, the National Amphibian Atlas http://armi.usgs.gov/national_amphibian_atlas.php, and museum records http://herpnet.org/portal.html. Based on this literature search, it was determined that 15 species of herpetofauna could be present at the site (appendix A).

Project Location and Habitats for Amphibians and Reptiles

NAVMAG Indian Island is located at the northeast comer of the Olympic Peninsula in Jefferson County, Washington, southeast of the town of Port Townsend. The Navy installation is bounded by Port Townsend Bay on the west and north, Oak Bay and Portage Canal to the west and south, and Kilisut Harbor to the east. The primary military mission is to load, offload, and manage ordnance from ships and boats.

The dominant habitat of NAVMAG Indian Island is forest lands (approximately 2,100 acres). The majority of trees are 70 to 120 years old. Evergreen tree species include the Douglas-fir (*Psuedotsuga menziesii*), western red cedar (*Thuja plicata*), grand fir (*Abies grandis*), and western hemlock (*Tsuga heterophylla*). Common broadleaved tree species are bigleaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), willow, madrona *(Arbutus menziesii)*, wild cherry, quaking aspen, and cottonwood.

Upland Forested Habitat at NAVMAG Indian Island

Wetland Habitat at NAVMAG Indian Island

Understory plant vegetation of the evergreen forest stands include sword fern (*Polystichum munitum*), salal (*Gaultheria shallon*), wild rose, and oceanspray (*Holodiscus discolor*). Understory plant vegetation of the broadleaved stands includes stinging nettle (*Urtica dioica*), oceanspray, and horse tail (*Equisetum*). Wetland plant communities tend to be dominated by red alder, black cottonwood (*Populus balsamifera*), and salmonberry. Abundant fallen logs are scattered throughout the forested habitats.

Non-forested habitats of the installation include clear-cuts, emergent shoreline fields, and cut grass along roadways and covering the top of magazine storage sites. Scotch broom commonly grows in the clear-cuts and upland fields, in addition to stinging nettle and blackberry.

Field Methodology

Visual encounter surveys were the primary technique used by biologists to conduct the field work. This survey method involves searching selected wetland and upland habitats for amphibians and reptiles when the probability of encounter is high (appropriate microhabitat, weather, and time of year, and time day for target species). This technique was conducted during daylight hours by walking in selected habitats searching for animals within their microhabitats. Particular attention was taken to search under fallen logs and patches of moss, plywood boards, and other natural and manmade materials since these items are known to provide cover habitat for herpetofauna.

A second technique used during this survey included driving roads looking for roadkill and individuals crossing or resting on the roadway. This technique involved driving slowly on paved and dirt roads carefully looking for active herpetofauna.

A third technique used during the survey was listening for the breeding calls of frogs. This technique was used to identify species and was helpful for locating wetland habitats where these species were breeding.

Lastly, dip nets were used to sample for amphibians within wetland habitats. This method was particularly useful at locations like the stormwater pond and the bioswale.

Amphibians and reptiles encountered were captured by hand or net and identified to species. A digital photograph was recorded of each captured species and a Global Positioning System (GPS) was used to record the location of the observed animals. Unless otherwise specified, all pictures in this report were taken by Paul Block or Chris Petersen.

Results

Nine herpetofauna species (six amphibians and three reptiles) were confirmed on NAVMAG Indian Island during the survey. During the first survey period (April 22–26, 2013) a total of eight herpetofauna species (five amphibians and three reptiles) were observed. During the second field survey period (July 15–19, 2013) a total of seven herpetofauna species (five amphibians and two reptiles) were observed and eight species (six amphibians and two reptiles) were observed during the last survey period (September 16–20, 2013 (table 1).

Scientific Name	Common Name	Field Survey 1	Field Survey 2	Field Survey 3
Pseudacris regilla	Northern Pacific Chorus Frog	X	X	X
Rana aurora	Northern Red-legged Frog	X	X	X
Taricha granulosa	Rough-skinned Newt	X	X	X
Ambystoma gracile	Northwestern Salamander		X	X
Ambystoma macrodactylum	Long-toed Salamander	X	X	X
Ensatina eschscholtzii	Ensatina	X		X
Elgaria coerulea	Northern Alligator Lizard	X	X	X
Thamnophis ordinoides	Northwestern Gartersnake	X		
Thamnophis sirtalis	Common Gartersnake	X	X	X

Table 1. Species confirmed on Naval Magazine Indian Island.

Amphibians

In total, from all survey periods, six species of amphibians (two frog and four salamander species) were observed at NAVMAG Indian Island (table 1 and figure 1). Of the species observed, the northern pacific chorus frog (*Pseudacris regilla*) and the northern red-legged frog (R*ana aurora*) were most frequently encountered in and around emergent and forested wetland sites of the installation. In particular, many individuals of both species were observed around Anderson Pond, the stormwater pond behind magazine 1018, and the bioswale. Pacific chorus frog egg masses were observed in nearly every site that contained standing freshwater.


Pacific Chorus Frog


Northern Red-legged Frog


Rough-skinned Newt

Rough-skinned newts (*Taricha granulosa*) were observed at the manmade pond near the truck inspection site, in the emergent wetland habitat along Anderson Road, and in the forested wetland north of the burn pit clearing. Over a dozen newts were observed on East Road near Anderson Pond during the September field period. A "Newt Crossing" sign on East Road warns drivers of their presence.


Juvenile Northwestern Salamander

Two individuals of the northwestern salamander (*Ambystoma gracile*) were observed on the installation. The first individual was captured using a dip net in the stormwater pond located behind Magazine 1018. The second individual was captured in the manmade pond near the truck inspection site. Both salamanders were juveniles and still had external gills.

Long-toed salamanders (*Ambystoma macrodactylum*) were the most common salamander observed on the installation. Several were found under logs and moss ground cover along the perimeter of Anderson Pond. They were also observed in and around the drainage ditch south of North Road.


Long-toed Salamander

Ensatina (*Ensatina eschscholtzii*) were observed in similar habitats as the long-toed salamander. These individuals were observed during the first and third survey periods by rolling logs and looking under patches of moss. Four nests of Ensatina were encountered during the September survey period. Nest sites included an adult female with six to eight newborns. All of the nest sites were encountered under moss growing on fallen logs or covering the ground.


Ensatina

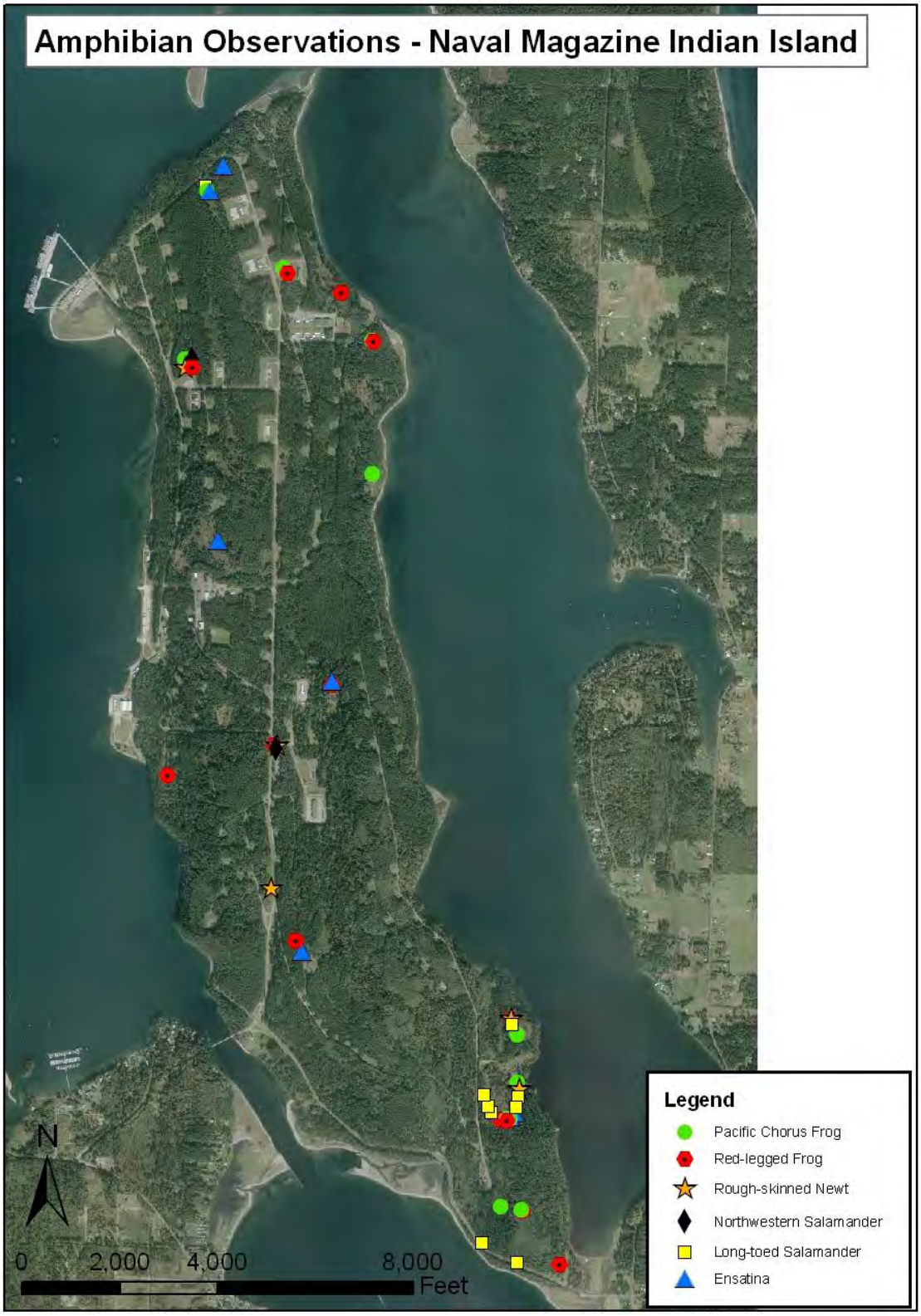

Figure 1. Location of amphibian species observed during the three field survey periods.

Reptiles

Three species of reptiles (one lizard and two snake species) were observed at NAVMAG Indian Island during the survey (table 1 and figure 2). Reptile species observed on the installation included the northern alligator lizard (*Elgaria coerulea*) and two species of snakes (northwestern garter snake [*Thamnophis ordinoides*] and common garter snake [*Thamnophis sirtalis*]). The two species of garter snakes can only be differentiated by counting the upper jaw and dorsal scales.

Northern Alligator Lizard

Northern alligator lizards were observed under rocks, logs, and plywood in areas of the installation with limited tree canopy cover (forest clearings, grass fields, and forest edges). The two species of garter snakes were observed in similar habitats and also in emergent wetlands adjacent to the shoreline. Several garter snakes were observed hit on the roads or killed by grass cutting on the edge of the roadways.

Common Garter Snake

None of the reptile species were observed within the interior sections of forested habitat. This observation stresses the importance of non-forested habitat (clear-cuts, open fields, and emergent wetlands) to the populations of reptile species on NAVMAG Indian Island. The location of their habitats is likely due to these reptiles selecting microhabitats that receive more sun and are typically warmer than would be found in shaded forested habitats.

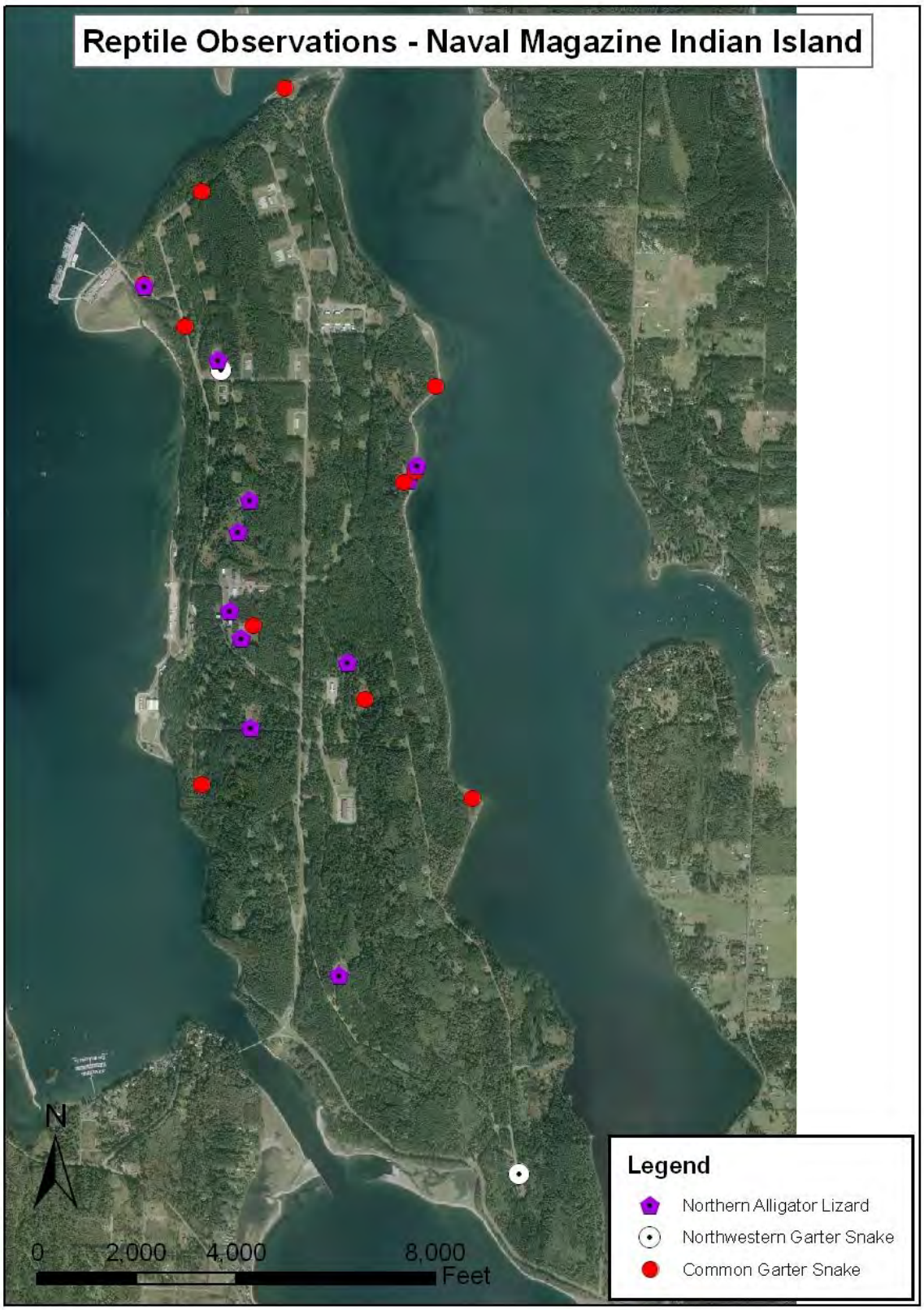

Figure 2. Location of reptile species observed during the three field survey periods.

Discussion

This baseline field survey documents the herpetofauna species present on Naval Magazine Indian Island and provides some insight as to what species could likely be confirmed in future survey efforts based on available habitat. Appendix A lists the species and their presence (not found, confirmed, potential) for the Navy installation to date.

Amphibian species that were not encountered on NAVMAG Indian Island, but have been documented in Jefferson County include the western toad (*Anaxyrus boreas*), the American bullfrog (*Lithobates catesbeiana*), and the western red-backed salamander (*Plethodon vehiculum*).


Western Toad


American Bullfrog

The western toad, when present in an area, is typically abundant and frequently encountered. As the result of not encountering this species during this survey and the lack of any anecdotal observations from installation personnel, surveyors conclude that this species likely does not occur on the installation. Additionally, surveyors feel that the American bullfrog likely does not occur on the installation. This species, when present, is easily documented by both visual observations or by its distinctive call. American bullfrogs were not observed during the survey and no anecdotal observations were reported. The American bullfrog is considered invasive in Washington and its absence is beneficial to the ecosystem. Lastly, despite being one of the most abundant salamander species in Washington, the western red-backed salamander was not encountered during the survey. These results are surprising. However, since this species is secretive and the survey did not include every forest stand of the installation, surveyors believe that the presence of the salamander is still possible.


Western Red-backed

Reptile species thought to be potential, but not encountered during this investigation included the western terrestrial gatersnake (*Thamnophis elegans*), the western fence lizard (*Sceloporus occidentalis*), and the northern rubber boa (*Charina bottae*).

Contrary to their name, western terrestrial gartersnakes are almost always found near water in Washington. These snakes have been observed along ponds, wetlands, lakes, stream edges, irrigation canals, and rivers. Even though there is only one documented observation of this species in southern Jefferson County, surveyors conclude that this species is still potential for NAVMAG Indian Island since habitat for this species is present.

In the Puget Trough, the western fence lizard occurs along shorelines with accumulations of driftwood, dry, and in non-forested habitats such as bitterbrush-grassland and grasslands. In treeless habitats, they tend to be associated with rocks, rock outcrops, or other features that allow them to climb above the vegetation to bask and watch for prey. Surveyors believe that the western fence lizard is not present on NAVMAG Indian Island. The western fence lizard, when present, is usually common and easily observed. Since this species was not encountered during the survey and has never been observed by installation staff, surveyors conclude that this species is likely not present on the installation.

Rubber boas are found in a variety of habitats in Washington including prairies, shrub-steppe, grasslands, and forests of various types but their distribution is patchy in the state. They are common in some areas and apparently absent from others. Rubber Boas are active at night and spend much of their time below ground. They are usually found by turning woody debris and rocks or by searching roads at night. Since this species was not encountered during this investigation, has not been observed by installation staff, and has not been documented in Jefferson County, surveyors conclude that this species is likely not present on NAVMAG Indian Island.

Appendix A

Herpetofauna Species List for NAVMAG Indian Island

Location	Type	*Scientific Name*	Common Name	Status	Confirmed By
NAVMAG Indian Island	Frog or Toad	*Anaxyrus boreas*	Western Toad	Not Found –Presence Unlikely	
NAVMAG Indian Island	Frog or Toad	*Lithobates catesbeianus*	American Bullfrog	Not Found –Presence Unlikely	
NAVMAG Indian Island	Frog or Toad	*Pseudacris regilla*	Northern Pacific Chorus Frog	Confirmed	Block and Petersen 2013
NAVMAG Indian Island	Frog or Toad	*Rana aurora*	Northern Red-legged Frog	Confirmed	Block and Petersen 2013
NAVMAG Indian Island	Lizard	*Elgaria coerulea*	Northern Alligator Lizard	Confirmed	Erik Kunz 2012, Block
NAVMAG Indian Island	Lizard	*Sceloporus occidentalis*	Western Fence Lizard	Not Found –Presence Unlikely	
NAVMAG Indian Island	Newt	*Taricha granulosa*	Rough-skinned Newt	Confirmed	Block and Petersen 2013
NAVMAG Indian Island	Salamander	*Ambystoma gracile*	Northwestern Salamander	Confirmed	Block and Petersen 2013
NAVMAG Indian Island	Salamander	*Ambystoma macrodactylum*	Long-toed Salamander	Confirmed	Block and Petersen 2013
NAVMAG Indian Island	Salamander	*Ensatina eschscholtzii*	Ensatina	Confirmed	Block and Petersen 2013
NAVMAG Indian Island	Salamander	*Plethodon vehiculum*	Western Redback Salamander	Potential	

NAVMAG Indian Island	Snake	*Thamnophis elegans*	Terrestrial Gartersnake	Potential	
NAVMAG Indian Island	Snake	*Thamnophis ordinoides*	Northwestern Gartersnake	Confirmed	Block and Petersen 2013
NAVMAG Indian Island	Snake	*Thamnophis sirtalis*	Common Gartersnake	Confirmed	Block and Petersen 2013
NAVMAG Indian Island	Snake	*Charina bottae*	Northern Rubber Boa	Not Found –Presence Unlikely	

2016-2017 Surveys for Spawning Surf Smelt and Pacific Sand Lance at Naval Base Kitsap Bangor, Manchester Fuel Department and Naval Magazine Indian Island

May 2017

NAVFAC Northwest
1101 Tautog Circle Suite 203
Silverdale, Washington 98315-1101

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List of Acronyms

BA……..…….*Biological Assessment*
Corps…….....…..*U.S. Army Corps of Engineers*
EHW…….……...*extreme high water*
ESA…….…….…*Endangered Species Act*
GPS…….……..……*Global Positioning System*
IBSBSP…….....*Intertidal Baitfish Spawning Beach Survey Project*
INRMP……...……*Integrated Natural Resource Management Plan*
MFD…….*Manchester Fuel Department*
MHHW……..……...*mean higher high water*
MLLW…….……*mean lower low water*
NAVFAC NW……..……..…*Naval Facilities Engineering Command Northwest*
NAVMAG…….…….…..…*Naval Magazine*
Navy……..……*U.S. Department of the Navy*
NAVBASE.……...*Naval Base*
NEPA……...…….……...*National Environmental Policy Act*
NOSC……..……...….*North Olympic Salmon Coalition*
PNPTC…….……...*Point No Point Treat Council*
SCA……..…….……*Student Conservation Association*
USFWS.……....……*U.S. Fish and Wildlife Service*
WAC……...……..…..……...*Washington Administrative Code*
WDFW……..……..…*Washington Department of Fish and Wildlife*

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Executive Summary

This report summarizes the results of surveys for spawning surf smelt and Pacific sand lance at Naval Base Kitsap Bangor, Manchester Fuel Department, and Naval Magazine Indian Island. The surveys were conducted from May 1, 2016 to April 30, 2017. The objective of the surveys was to document the presence of spawning surf smelt (*Hypomesus pretiosis*) and Pacific sand lance (*Ammodytes hexapterus*).

Natural resources staff from Naval Facilities Engineering Command Northwest (NAVFAC NW) collected 457 samples over a period of twelve months. Sand lance spawning was detected at Manchester Fuel Department and Naval Magazine Indian Island. Surf smelt spawning was not detected at any of the installations surveyed.

Continued monitoring would allow potential comparison of spawning locations and timing over time. Comparing spawning data from with additional information about the shorelines of Navy installations, such as areas of accretion and erosion, can provide greater insight into the distribution of potential forage fish spawning habitat.

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1 Introduction

1.1 General Information

Forage fish are small schooling fishes that form critical links between the marine zooplankton community and larger predatory fish, seabirds, and marine mammals in the marine food web (Penttila 2007). The intertidal and shallow subtidal areas within the Puget Sound Basin provide spawning habitat for two common forage fish species; surf smelt (*Hypomesus pretiosis*), and Pacific sand lance (*Ammodytes hexapterus*).These species are an essential prey source for species protected under the federal Endangered Species Act (ESA), including four species of listed salmonids and the marbled murrelet (*Brachyramphus marmoratus*). Sand lance are an important prey species providing 35% of the diet of all young salmonids and 60% of the juvenile Chinook salmon diet (WDOE 2014). In addition to being critical prey for larger predatory fish, surf smelt also support significant human-consumption fisheries in many areas of Washington State. Surf smelt are fished commercially with beach seines with average annual landings of 95,000 pounds since 2000 in Puget Sound, most of which are harvested in central Puget Sound. Similar annual poundage is currently assumed to be taken by sportsmen (WDFW 2015a).

Nearshore ecosystems provide valuable nursery and feeding grounds during the first year of life for these species (Pentilla 2007). Both surf smelt and sand lance spawn at high tide in beach sediment and have wide-ranging spawning grounds throughout the Puget Sound. Spawning in nearshore habitats make them susceptible to the cumulative negative impacts of an assortment of shoreline development activities. Many spawning beaches are at risk due to a wide variety of human impacts including elimination of riparian vegetation and processes such as dredging and beach armoring that alter sediment quantity and quality in the intertidal zone (Penttila 2007).

1.2 Project Scope and Location

The objective of this project was to determine the presence of surf smelt and sand lance spawning on three Navy properties located in Puget Sound. Sampling occurred at Naval Base (NAVBASE) Kitsap Bangor, Manchester Fuel Department (MFD), and Naval Magazine (NAVMAG) Indian Island (Figure 1-1). Specific areas of shoreline were selected for sampling based on previous studies and potential suitable spawning habitat. Site selection is further discussed is Section 3.2, which also contains detailed maps of sampled beaches.

1.3 State and Federal Protections and Regulations

Forage fish species and their spawning habitat are protected by the state of Washington and are included in the Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species Program. Once confirmed and designated, forage fish spawning beaches are protected by the Washington Administrative Code (WAC) “Hydraulic Rules” (WAC 220-110) through WDFW’s hydraulic permit application process. After forage fish spawning is verified, the WDFW classifies a 1,000 foot stretch of beach as a forage fish spawning habitat, 500 feet on either side of the detection.

In addition, the U.S. Army Corps of Engineers (Corps) has established approved work windows for all marine/estuarine areas in Puget Sound. In-water work windows regulate work performed below mean higher high water (MHHW) and are dependent upon sensitive fish species, including forage fish. The recommended work window for sand lance is from March 2nd to October 14th for all installations inventoried. For MFD, the surf smelt work window is from

April 1st to August 31st. For NAVBASE Kitsap Bangor, the surf smelt work window is from February 1st to October 14th. For NAVMAG Indian Island, the surf smelt work window is from November 1st to September 14th (U.S. Army Corps of Engineers 2012).

1.4 Navy Requirements

Knowledge of the presence, location, and timing of surf smelt and sand lance spawning on Naval installations in Puget Sound is necessary for the management of Navy natural resources and the preparation of Biological Assessments, Essential Fish Habitat Assessments and National Environmental Policy Act documents. Data from Navy forage fish spawning surveys will be used during consultations with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) in compliance the Navy's responsibilities under Section 7 of the Endangered Species Act (ESA) and the Magnusson-Stevens Fishery Conservation and Management Act.

On-going monitoring of forage fish spawning on Navy shorelines will provide information to update installation Integrated Natural Resource Management Plans (INRMPs) and help guide future mission critical in-water construction projects. Making this data available to the installation natural resources managers, USFWS, NMFS and WDFW contributes to the overall knowledge and management of installation natural resources in accordance with Navy policy and federal laws.

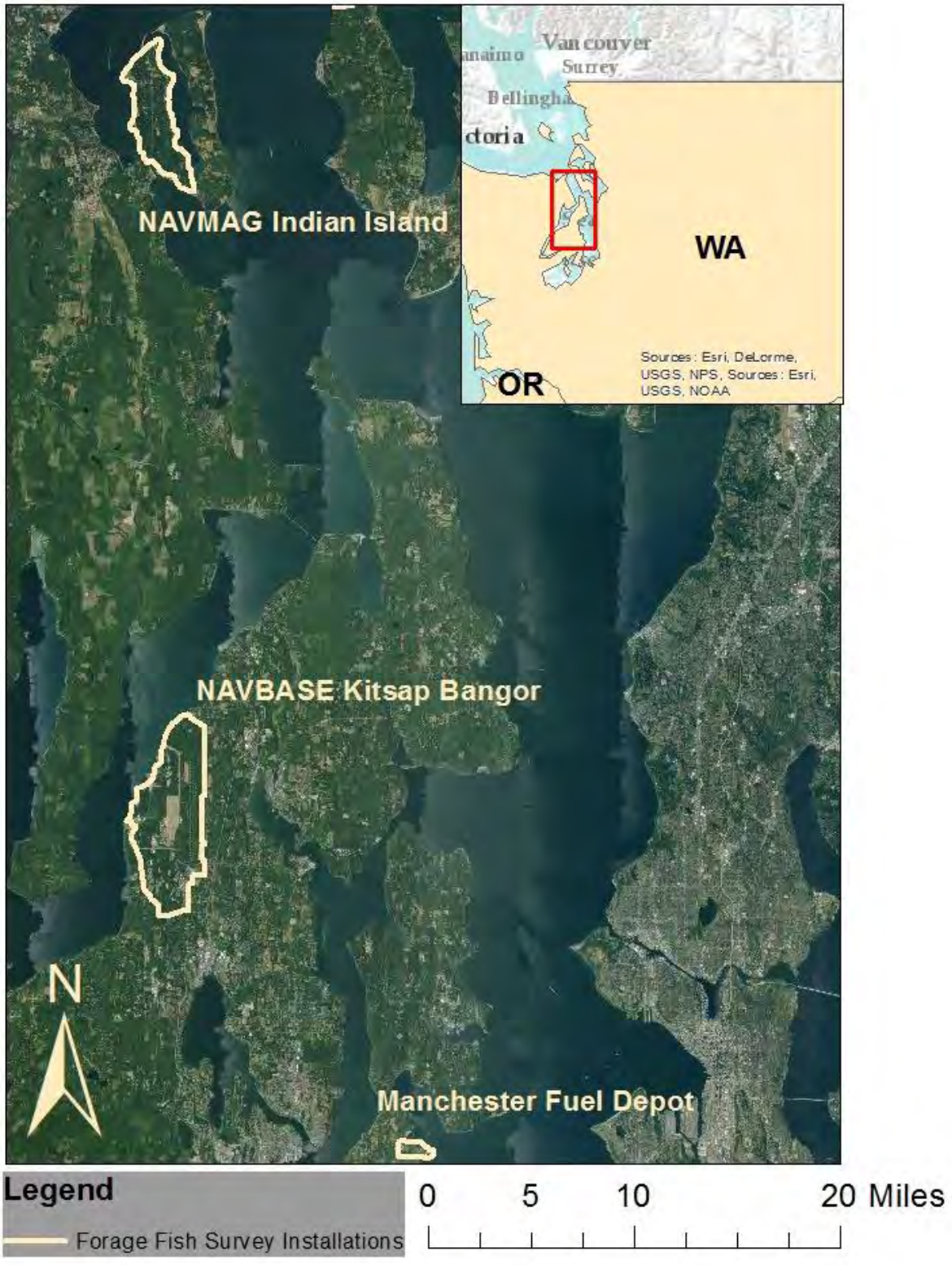


Figure 1-1 Spawning Forage Fish Survey Locations 2016-2017

1.5 Species Accounts

1.5.1 Surf Smelt

Surf smelt may grow up to 9-inches long, and common colorations include an olive green back with bands of silver or yellow on the sides (Puget Sound Water Quality Action Team 2001). Approximately 259 miles of Puget Sound shoreline is documented surf smelt spawning habitat (WDFW 2015a), with wide variations in spawning times. Some spawning regions are occupied year-round with a possible seasonal peak, some occupied during the summer (May-August), and others during the fall-winter (September-March) (Penttila 2007).

Surf smelt potential spawning habitat encompasses the uppermost one-third of the tidal range, approximately from +7 feet mean lower low water (MLLW) up to extreme high water (EHW). The commonly preferred substrate grain size is a sand-gravel mix with the majority of material in the diameter range of 1-7 mm. Preferred substrate layer thickness varies with local sediment-supply regimes and wave action and ranges from 1-10 cm. Within a typical sediment drift cell, surf smelt spawning habitat is limited at the erosional and depositional ends where beaches tend to be overly coarse or overly sandy respectively (Penttila 2007). Surf smelt eggs have a single pedicle, or attachment stalk, which adheres to the sediment grains. Incubation times vary from two weeks during summer months to four to eight weeks during the winter months. Surf smelt spawning beaches are often located at the heads of bays or inlets shaded by trees and bluffs (WDOE 2014). Shade moderates beach surface temperatures and helps summer-spawned eggs, which are easily killed by sun or wind exposure, survive to hatching.

1.5.2 Pacific Sand Lance

Pacific sand lance may grow up to 8-inches long, and common colorations include a gray to green back with silver sides and a long dorsal fin covering most of the length of an elongated body (Puget Sound Water Quality Action Team 2001). Since 1989, approximately 140 miles of Puget Sound shoreline has been documented as sand lance spawning habitat, although many potential areas have yet to be surveyed (WDOE 2014).

In Puget Sound, spawning occurs between November and February and egg deposition takes place during high tide, when the upper portion of the beach is covered in shallow water. Spawning typically occurs in the upper beach zone, from +5 feet MLLW to the mean higher high water (MHHW). Typical sand lance spawning substrate is characterized as sand with a majority of the mixture ranging from 0.2-0.4mm in diameter. Beaches at the distal ends of drift-cells, where sand spits, cuspate forelands and other accretionary shoreforms tend to occur, commonly support sand lance spawning (Penttila 2007). Sand lance eggs are usually deposited slightly lower in the intertidal zone than those of surf smelt. Each egg has multiple pedicles, giving the egg appearance of being surrounding by sand grains when viewed under a microscope. Their incubation time is approximately one month and repeated episodes of spawning activity may occur during the spawning season on any particular beach (Penttila 2007).

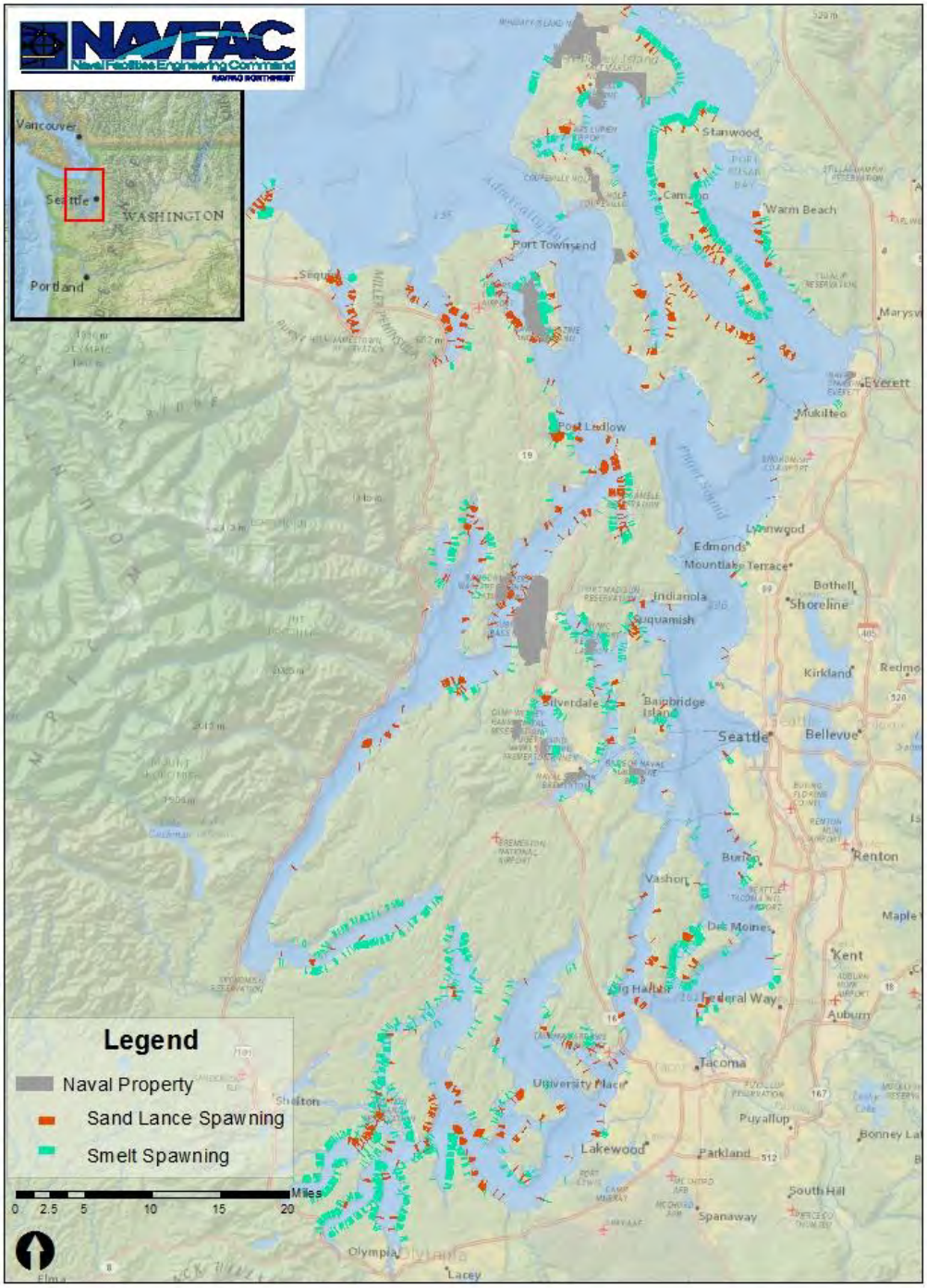
2 Previous Studies

Surf smelt spawning has been documented at a number of areas throughout Puget Sound since 1936 (Penttila 1995a). Non-systematic surf smelt spawning habitat surveys undertaken by WDFW between 1972 and 1990 revealed a greater geographical distribution of surf smelt

spawning within Puget Sound, but knowledge of these habitats remained difficult to catalog completely (Penttila 1995a). Sand lance spawning habitat in the Puget Sound Basin has only been documented since 1989, when a protocol for detecting eggs in suitable substrate was developed (Penttila 1995a, b). Beginning in 1991, the locations and temporal usage patterns of spawning habitat by both surf smelt and Pacific sand lance along Puget Sound shorelines have been systematically documented by the WDFW through their Intertidal Baitfish Spawning Beach Survey Project (IBSBSP) (Penttila 1995a, b). In the Puget Sound Basin, over 200 miles of surf smelt spawning habitat and approximately 140 miles of sand lance spawning habitat have been documented (WDOE 2014). Figure 2-1 shows an overview of forage fish spawning grounds throughout Puget Sound. Specific findings near and on Naval installations are discussed below. Surf smelt spawning may occur at irregular, short intervals at any particular site and the timing of spawning events varies by specific location (Figure 2-2). Sand lance spawning in Puget Sound occurs in fall-winter, between November and February, mostly during the first half of that period (Penttila 1995b).

The widespread surveying efforts described by Penttila (1995a) were drastically reduced in 1997 due to budget constraints (Bargmann 1998). However, WDFW announced in October of 2015 that it would be expanding its search for forage fish spawning areas in Puget Sound through more widespread survey efforts (WDFW 2015b).

NAVFAC biologists began surveying in 2013, sampling at multiple beaches at several Navy installations in the Puget Sound area. The 2013-2014 NAVFAC study documented surf smelt spawning at NAVMAG Indian Island Ammo Pier and sand lance spawning at Manchester Fuel Department Fuel Pier, and between Marginal Wharf and Explosives Handling Wharf at NAVBASE Kitsap Bangor. The 2013-2014 NAVFAC surveys documented forage fish spawning locations consistent with previous WDFW findings. The 2014-2015 and 2015-2016 NAVFAC studies resulted in no surf smelt or sand lance spawning detections at any installation. NAVFAC intends to continue surveying in future years pending funding availability.



Data Source: WDFW 2014

Figure 2-1 Surf Smelt and Sand Lance Spawning Grounds in Puget Sound

2.1 Manchester Fuel Department

MFD is located in eastern Kitsap County, Washington, approximately 11 miles east of Bremerton, and contains roughly 2 miles of shoreline along Orchard Point bordered by Clam Bay and Rich Passage (Figure 2-2).

No surf smelt spawning sites have been documented at MFD. The nearest documented surf smelt spawning site is a half-mile stretch of beach approximately 0.3 miles south of the Naval property line (WDFW 2014). A WDFW survey in November 1996 documented sand lance spawning at MFD on an approximately 1000-foot stretch of beach located south of Orchard Point (WDFW 2014). The Olympic Drive fuel pier bisects this stretch of beach. NAVFAC surveys also documented sand lance spawning along this stretch of beach in March 2014. WDFW and NAVFAC documented spawning on and near the Manchester Fuel Department shoreline is displayed in Figure 2-2.

2.2 Naval Base Kitsap Bangor

NAVBASE Kitsap Bangor is located within Kitsap County, Washington, approximately 20 miles west of Seattle. The base property includes 4.5 miles of waterfront along the eastern shoreline of Hood Canal.

Surveys conducted in December 1995, November 1996, and January 1997 (WDFW 2014) documented sand lance spawning at multiple locations along the NAVBASE Bangor shoreline including beaches adjacent to Carderock Pier, Service Pier, K/B Pier, Delta Pier, Marginal Wharf, Explosive Handling Wharf, and the Magnetic Silencing Facility. NAVFAC surveys documented sand lance spawning between Marginal Wharf and Explosive Handling Wharf in May 2013. WDFW and NAVFAC documented spawning on and near the NAVBASE Kitsap Bangor shoreline is displayed in Figure 2-3.

No surf smelt eggs have been detected at NAVBASE Kitsap Bangor (Navy 2014). The nearest documented surf smelt spawning beach is located across Hood Canal approximately 1.5 miles west of Floral Point, 1000 feet north of the northern boundary of the Toandos Peninsula Naval Reservation (WDFW 2015a). In addition, there is a documented surf smelt spawning beach approximately 2.5 miles south of the southern property line.

2.3 Naval Magazine Indian Island

NAVMAG Indian Island is located at the northeast corner of the Olympia Peninsula in Jefferson County, Washington, southeast of the town of Port Townsend. The base is bounded by Port Townsend Bay on the west and north, Oak Bay and Portage Canal to the west and south, and Kilisut Harbor to the east.

Surf smelt and sand lance spawning were documented at NAVMAG Indian Island during WDFW surveys conducted in December 1993, December 1994, January 1995, and December 2003. Surf smelt spawning has been documented on the north and in several areas along the entire eastern length of the island, while sand lance spawning has been documented on the west, east, and south shorelines (Figure 2-4). Surveys conducted by the North Olympic Salmon Coalition (NOSC) from 2001-2004 confirmed WDFW's results in these respective locations verifying 22 new and 23 redocumented spawning sites along 12 miles of shoreline. Extremely dense sand lance spawn deposits mixed with surf smelt eggs were detected along Indian Island near the head of Scow Bay in early December 2003 (Long et al. 2005).

A study conducted by the Point No Point Treaty Council (PNPTC) from October 2011-August 2012 sampled locations in Kilisut Harbor on the east side of Indian Island and found that highest density of surf smelt eggs occurred in October and the highest density of sand lance occurred in December with spawning of both species diminishing in March (Hatch and Shannon 2012). Greater densities of both species were observed at sites on the southeastern end of the island and tidal elevation of highest densities overlapped between the two species with the greatest surf smelt densities at +7.5 foot tidal elevation and two linear feet below the +7.5 foot mark and the greatest sand lance densities at the +7.5 foot tidal elevation and one linear foot below the +7.5 foot mark (Hatch and Shannon 2012). NAVFAC surveys documented sand lance spawning near the Ammunition Pier at Whalen Point in September and October 2013, and January 2014. WDFW and NAVFAC documented spawning on and near the Indian Island shoreline is displayed in Figure 2-4.

Figure 2-2 Forage Fish Spawning in the Vicinity of Manchester Fuel Department

Figure 2-3 Forage Fish Spawning in the Vicinity of NAVBASE Kitsap Bangor

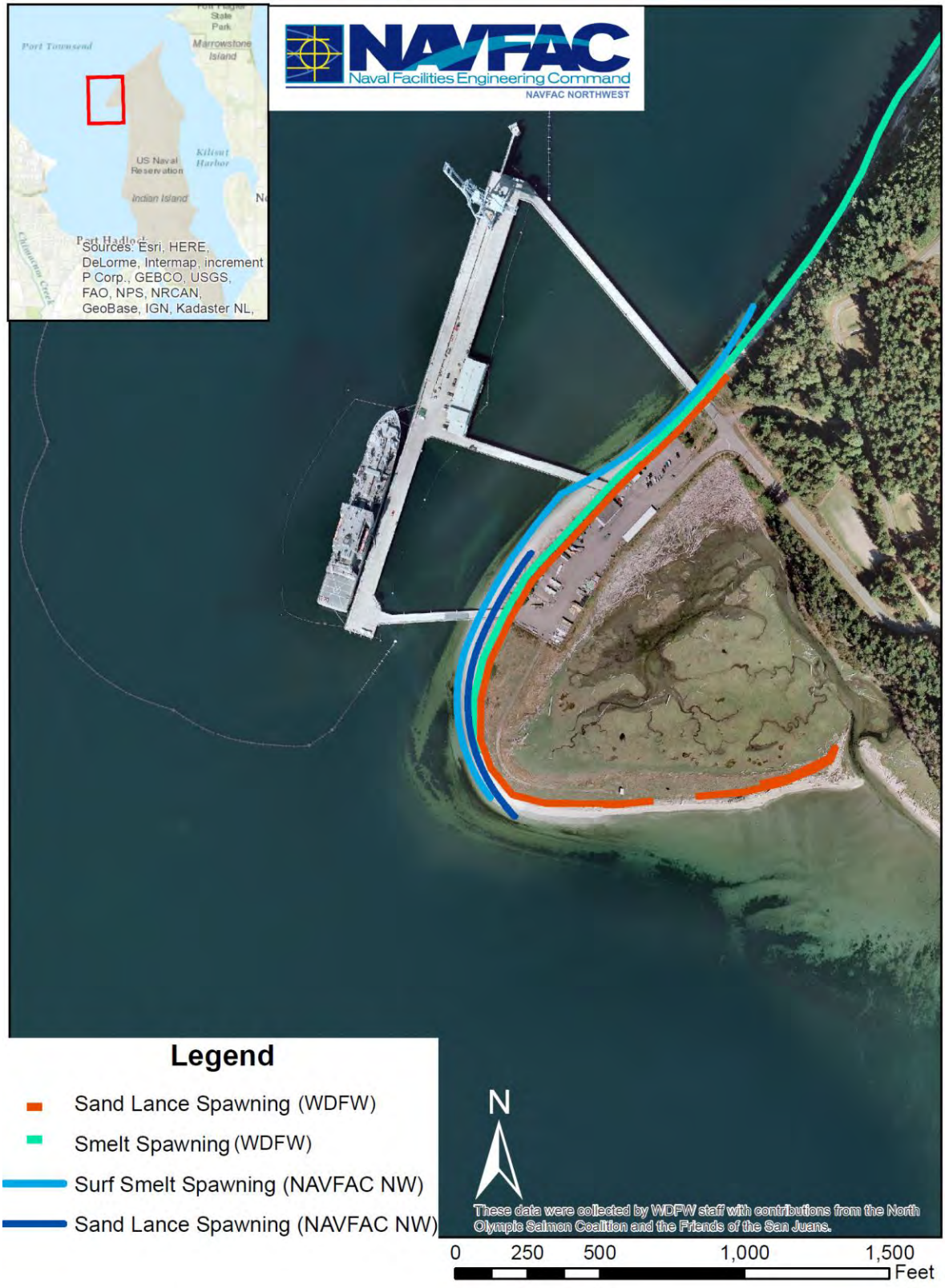


Figure 2-4 Forage Fish Spawning in the Vicinity of NAVMAG Indian Island

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3 Methodology

Sampling of Naval installation shorelines was conducted on a monthly basis from May 1, 2016 to April 30, 2017 at, NAVBASE Kitsap Bangor, MFD, and NAVMAG Indian Island. Surveys were conducted by a NAVFAC NW biologist and Student Conservation Association (SCA) interns. Shorelines were sampled at lowest tide possible to ensure access to the lowest typical spawning tidal elevations. Sampling followed the protocols detailed in Moulton and Penttila's *Field manual for sampling forage fish spawn in intertidal shore regions* (2001) and *Vortex method for separation of forage fish eggs from beach sediment: Addendum to the 2006 revision of Field manual for sampling forage fish spawn in intertidal shore regions* (Dionne 2015). The specifics of the NAVFAC NW survey design are described in detail below.

3.1 Sampling Protocol

Sampling techniques followed the methods developed by the WDFW for sample collection, processing and laboratory analysis (Moulton and Penttila 2001). The methods in brief are described as follows: A bulk sample of surface substrate was collected from sediment in the +5-9 tidal height by scraping the top 0.5-2 inches of sand from a 3-4 foot swath of beach parallel to the water line. This was repeated approximately every 25 feet to gather sediment from four locations along a 100-foot transect. The beach and transect location were recorded at the midpoint with a GPS unit. GPS data was collected with a Garmin GPSMAP 78SC and is horizontally accurate within 30 feet. Samples were collected at up to three tidal elevations at each transect, depending on beach substrate conditions. WDFW data sheets were used which noted substrate type, character of the uplands (development), location of sample zone, width of visible spawning band, and shading of the beach. A blank sample data sheet and field observation codes are shown in Appendix A. A numbered waterproof tag was included in the sample bag. If multiple tidal elevations were sampled, the relative height (high, middle, low) were noted on the tag. Bulk samples were rinsed through a set of 4-mm, 2-mm, and 0.5mm sieves to capture the 0.5-2 mm size fraction that would contain any egg deposits. This size fraction was then run through a vortex to separate the light (potentially egg) material from the heavier material. The light material overflowed from the vortex into a 0.5 mm sieve and was then washed into a plastic 1-pint sample jar. The sample jar was preserved with ethanol until lab analysis. Ethanol both preserved the sample and bleached any potential eggs to make them easier to detect during microscope analysis. The waterproof tag was transferred from the sample bag to the sample jar to track samples throughout the process.

SCA interns were given samples to analyze by the project manager or lead SCA intern. During analysis, the winnowed, preserved fraction was again agitated within the jar to bring the lighter, less dense material to the surface and middle of the jar. Approximately 200 grams of this material at a time was scooped into a microscope dish and scanned under 10X magnification to detect and identify forage fish eggs. The entire sample was analyzed unless two or more eggs were found early in the analysis. Any suspected eggs were placed into a small glass vial with ethanol to preserve the eggs for further examination by the project manager and sent to WDFW for confirmation of positive detection. At least two eggs needed to be found in a sample for it to be counted as a positive sample. Sites where only one egg was detected in the condensed fraction were marked as priority areas for resampling at similar tidal elevations. Lab results were recorded on data sheets tracking the beach and sample number, date of sample collection, date of sample analysis, number and species of eggs detected, and analysis time. A sample lab data sheet

is included in Appendix A. All data collected during sampling and analysis was transcribed into a sortable Microsoft Excel database organized by individual naval installation. Original data sheets and lab sheets were filed as well as scanned and stored electronically as PDFs.

3.2 NAVFAC NW Study Design

The Naval installations included in this 2016-2017 survey efforts occupy a total of approximately 17 miles of shoreline. The substantial lengths of shoreline in the survey area precluded the ability of NAVFAC NW to sample the entire shoreline. Therefore, sections of beach were selected for the survey based on the presence of potential forage fish spawning habitat and in consideration of previous and potential future in-water construction projects. Surveys were conducted on a monthly basis at each installation. With the exception of sampling at NAVBASE Kitsap Bangor, all collection of bulk beach substrate samples occurred during a single day. At NAVBASE Kitsap Bangor, bulk beach substrate samples were usually collected over two to three days. All samples were sieved on the day of collection or were stored under refrigeration until sieving could be completed. The vortexed fractions were stored in sample jars for laboratory analysis.

3.2.1 Manchester Fuel Department

Sampling at MFD was conducted along the shorelines near the fuel pier (3A) and small boat pier (3B) (Figure 3-2). Due to the relatively small amount of shoreline within Navy property providing suitable spawning substrate, three 100 foot transects spaced 100 feet apart were sampled within the vicinity of the fuel pier. At the small boat pier, one transect was sampled.

3.2.2 Naval Base Kitsap Bangor

Sampling at NAVEBASE Kitsap Bangor occurred at six distinct beaches with transects covering approximately 1.25 miles of shoreline (Figure 3-3). Locations were chosen based on presence of potential spawning habitat and proximity to existing and potential future in-water construction projects. Beach 4A, from the Carderock Pier to Service Pier, consisted of three transects with 200 feet spacing in between each transect. Beach 4B, located just south of the outfall from Devil's Hole, consisted of one transect. Beach 4C, from Delta South to Marginal Wharf, and Beach 4D, from Marginal Wharf to Explosive Handling Wharf #1, were sampled with four transects with approximately 500 foot spacing. Spacing was adjusted to avoid riprap and depended on visual observance of suitable spawning habitat. Beach 4E, from Explosive Handling Wharf # 1 to Magnetic Silencing Facility, was sampled with four to five transects with approximately 500 foot spacing in between, with adjustments made to sample best potential spawning substrate. Beach 4F, north of the Magnetic Silencing Facility to the northern property line, was sampled with one transect just south of Cattail Creek outlet.

3.2.3 Naval Magazine Indian Island

Since much of the eastern shoreline of Indian Island continues to be sampled by the PNPTC Fisheries, NAVFAC NW sampling focuses on the north end of the island near the Ammunition Pier at Whalen Point (6A) (Figure 3-4). Four transects with 100 feet spacing in between were sampled beginning just west of the Ammunition Pier, continuing eastward along the shoreline.

Figure 3-1 NAVFAC NW Sampling Transects at MFD

Figure 3-1 NAVFAC NW Sampling Transects at Manchester Fuel Department

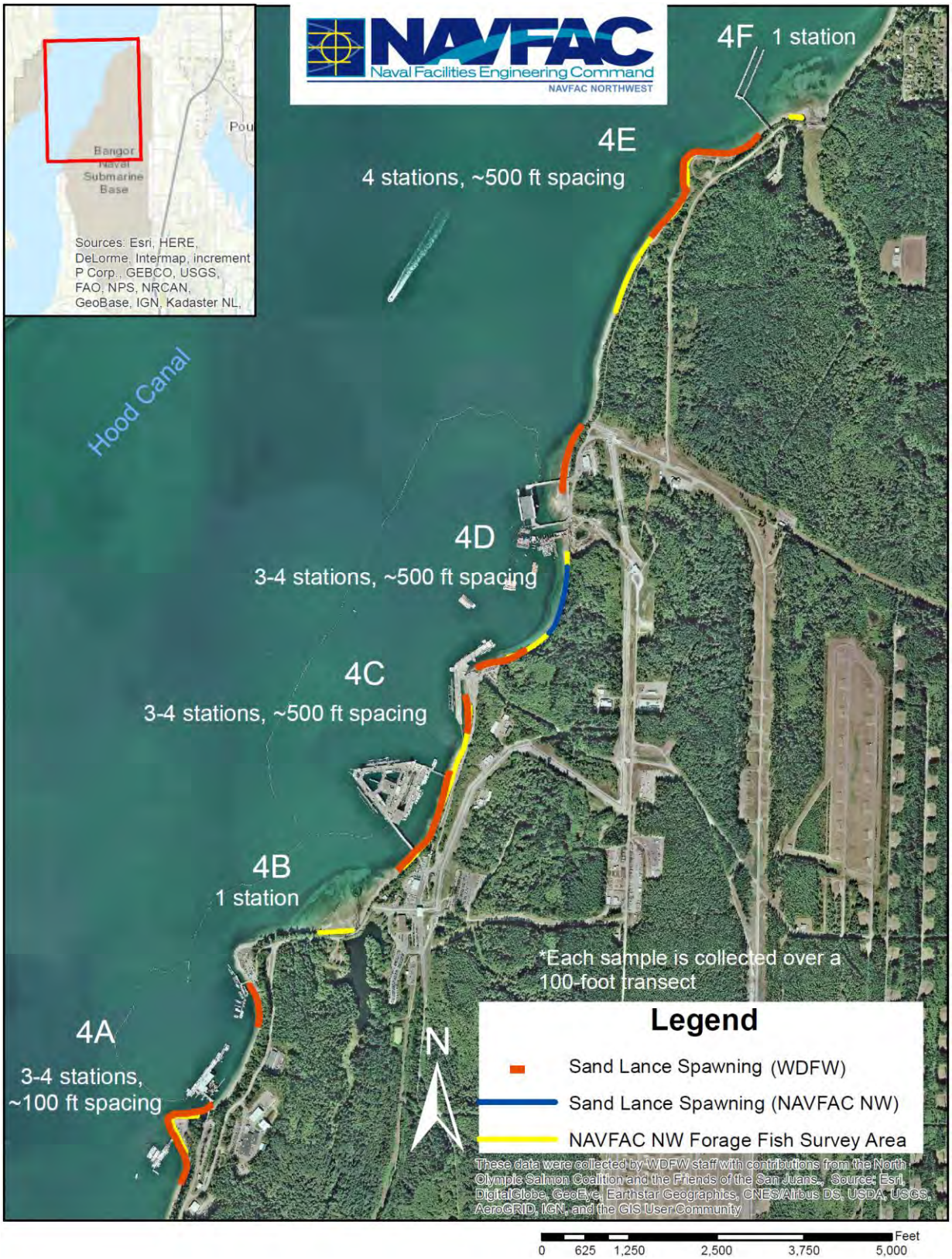

Figure 3-2 NAVFAC NW Sampling Transects at NAVBASE Kitsap Bangor

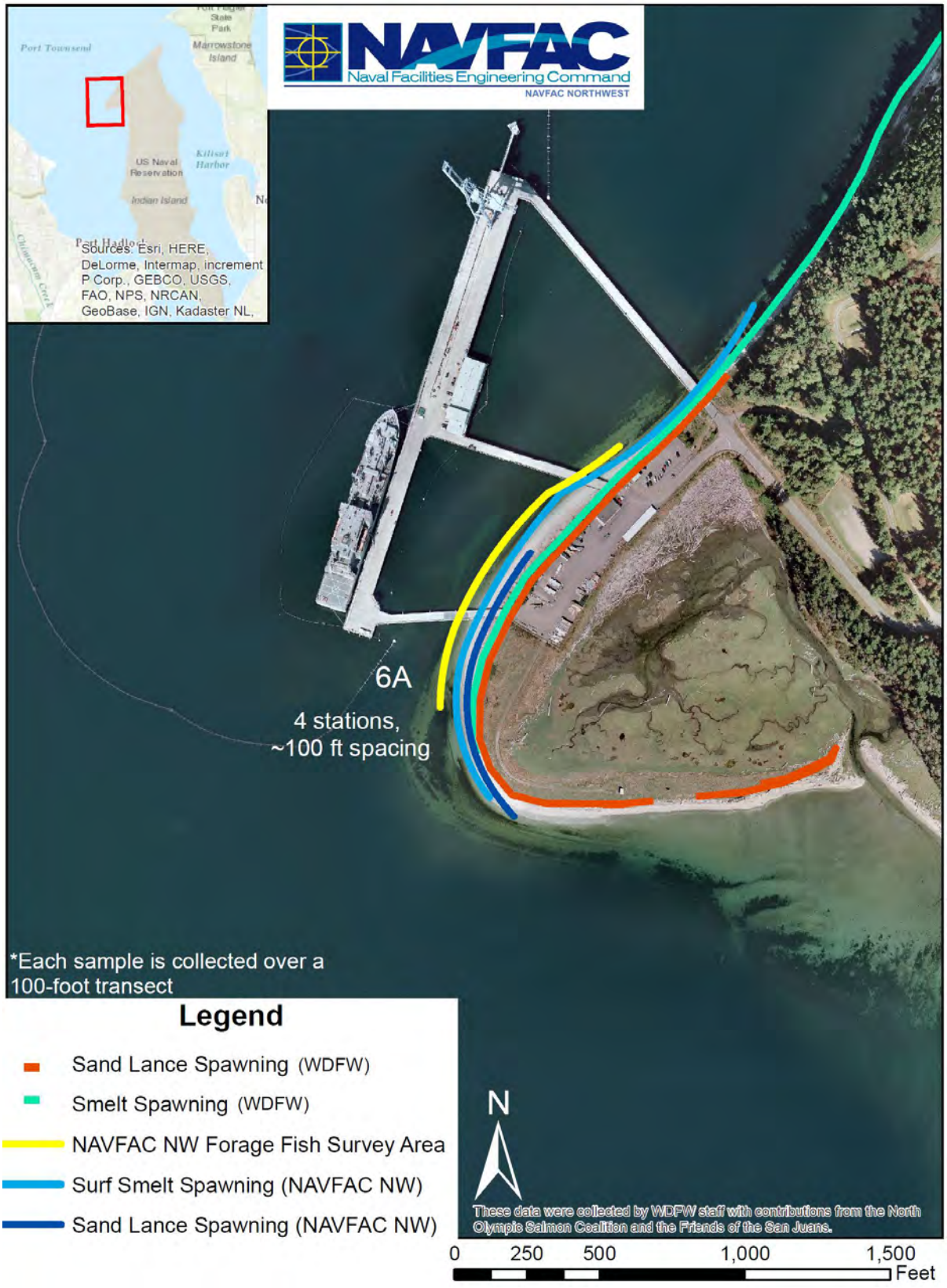

Figure 3-3 NAVFAC NW Sampling Transects at NAVMAG Indian Island

4 Results

4.1 Manchester Fuel Department

4.1.1 Surf Smelt

Surf smelt spawning was not detected at either beach sampled at MFD during the 2016-2017 surveys.

4.1.2 Sand Lance

Sand lance spawning was detected at beach 3A in December of 2016.

4.2 Naval Base Kitsap Bangor

4.2.1 Surf Smelt

Surf smelt presence was not detected at any of the six beaches sampled at NAVBASE Kitsap Bangor during the 2016-2017 surveys.

4.2.2 Sand Lance

Sand lance presence was not detected at any of the six beaches sampled at NAVBASE Kitsap Bangor during the 2016-2017 surveys.

4.3 Naval Magazine Indian Island

4.3.1 Surf Smelt

Surf smelt presence was not detected at NAVMAG Indian Island during the 2016-2017 surveys.

4.3.2 Sand Lance

Sand lance spawning was detected at beach 3A in November of 2016 and January of 2017.

5 Discussion

5.1 Comparison with Previous Findings

NAVFAC NW 2016-2017 spawning surveys detected sand lance spawning on the beaches of NAVMAG Indian Island and Manchester Fuel Department. No surf smelt spawning was detected at any installation during the 2016-2017 NAVFAC NW surveys.

NAVFAC NW forage fish spawning surveys in 2013-2014 documented forage fish spawning at all three installations surveyed. Sand lance eggs were found on Beach 4D (Marginal Wharf to Explosives Handling Wharf) in May 2013 and on Beach 3A (Manchester Fuel Department Fuel Pier) in March 2014. Surf smelt eggs were found on Beach 6A (NAVMAG Indian Island Ammo Pier) in October 2013, November 2013, and January 2014. NAVFAC forage fish spawning surveys in 2014-2015 and 2015-2016 did not document any spawning at any beach at the installations surveyed.

Table 5-1 Sand Lance Spawning Presence at Navy Region NW Installations

Sand Lance Spawning Presence									
Beach	**4A Carlson Spit**	**4B Devil's Hole**	**4C Delta Pier →Marginal Wharf**	**4D Marginal Wharf →EHW**	**4E Floral Point**	**4F Cattail**	**6A NAVMAG Ammo Pier**	**3A MFD Fuel Pier**	**3B MFD Small Boat Pier**
WDFW surveys	Dec-95		Dec-95	Dec-95	Dec-95		Dec-94	Nov-96	
NAVFAC 2013-14				May-13				Mar-14	
NAVFAC 2014-15									
NAVFAC 2015-16									
NAVFAC 2016-17							Nov-16, Jan-17	Dec-16	

Table 5-2 Surf Smelt Spawning Presence at Navy Region NW Installations

Surf Smelt Spawning Presence									
Beach	**4A Carlson Spit**	**4B Devil's Hole**	**4C Delta Pier →Marginal Wharf**	**4D Marginal Wharf →EHW**	**4E Floral Point**	**4F Cattail**	**6A NAVMAG Ammo Pier**	**3A MFD Fuel Pier**	**3B MFD Small Boat Pier**
WDFW surveys							Dec-94		
NAVFAC 2013-14							Oct-13, Nov-13, Jan-14		
NAVFAC 2014-15									
NAVFAC 2015-16									
NAVFAC 2016-17									

It is important to note that all WDFW documented spawning on Navy Region NW installations occurred during surveys in November, December, and January. Navy surveys during these months in 2013-2014 were limited. In the 2014-2015 and 2015-2016 survey years, NAVFAC NW biologists and SCA interns were able to survey all study beaches during the winter months. However, these winter surveys did not detect any sand lance eggs, even on previously known sand lance spawning beaches. Due to the highly dynamic geophysical processing along

shorelines, it is possible that areas with documented forage fish habitat may have become less suitable or more suitable over time as substrate grain size and beach elevations and slopes change. Even small changes in beach dynamics can be observed over the course of the sampling year, resulting in changes in substrate composition.

Due to sources of human error (discussed in detail in section 5.4), it is possible that spawning events for both species were missed by sampling outside appropriate beach elevations, sampling in less suitable substrate, or through errors in processing or analysis. However, it is also possible that sand lance simply do not or no longer spawn along the shorelines sampled. Currently, only about 10% of Puget Sound is documented as surf smelt spawning habitat and only 140 miles are documented as sand lance spawning (Pentilla 2007, WDOE 2014). Most of the beaches on the Puget Sound shoreline that appear outwardly suitable for surf smelt spawning habitat are apparently not used by fish (Penttila 1995a, Moulton and Penttila 2001). Aside from tidal elevation and substrate size, there is limited knowledge as to why some suitable habitat repeatedly results in positive spawning occurrences, while other suitable habitat does not.

5.2 Spawning Habitat and Drift Cells

The availability of a suitable amount of appropriately textured spawning substrate at specific tidal elevations along the shoreline is the most critical element of surf smelt and sand lance spawning habitat. Sediment composition of intertidal beaches is closely linked to nearshore geophysical processes including available wave energy, tidal range and current velocity, coastal bluff landsliding, fluvial delivery of sediment from rivers, and reworking of existing beach sediments by waves and tides (Johannessen and MacLennan, 2007). Surf smelt spawning may be limited at the erosional beginning of a drift cell, where beaches tend to be overly course in sediment texture, as well as at the depositional end of a drift cell, where the beach may be overly sandy (Pentilla 2007). Beaches at the distal ends of drift cells, where accretionary shoreforms tend to occur including sandy spits and cuspate forelands, commonly support sand lance spawning (Pentilla 2007).

Forage fish spawning habitat is also especially vulnerable to the impacts of shoreline armoring because of their dependence on the upper intertidal area with fine grained sand and gravel substrates (Krueger et al. 2010). Shoreline armoring can directly bury spawning habitat and also affects beach conditions for spawning forage fish waterward of the modification (Penttila 2007, Rice 2006). Hardened shorelines can increase wave energy at both the toe and the ends of armoring structures, resulting in a lowering of the beach profile and loss of finer grained sediments required for spawning (Johannessen and MacLennan 2007, Penttila 2007). Armoring is often associated with the removal of shoreline vegetation, reducing a source of large woody debris and organic material to the beach, altering microclimate and increasing egg mortality (Penttila 2007 and Rice 2006).

Analysis of the nearshore topography of Navy Region NW installations is beyond the scope of this project, but combining future drift cell and shoreline modification research with documentation of surf smelt and sand lance spawning could provide greater insight into the location of forage fish spawning habitat and changes in the location of suitable substrate over time.

5.3 Sources of Error

Although the NAVFAC NW study followed the best available sampling techniques as developed by WDFW (Moulton and Penttila 2001), there is still potential for human error throughout the process. At the bulk sample collection stage, samples could be taken at a tidal elevation where spawning has not occurred which would lead to missed eggs. It is also possible that sampling occurred between spawning events and any eggs laid had already hatched at the time of sampling. During the analysis stage, sources of error include overlooking eggs in the sample and misidentifying species.

To minimize potential error, SCA interns were trained by an experienced NAVFAC biologist in both field and lab protocols. Only the project lead staff member or project intern may lead survey efforts. Monthly sampling events are timed, to the extent possible, to be within spawning and hatching cycle timeframes to avoid missing eggs before they hatch. However, survey efforts are subject to tidal conditions and security restrictions so precise sampling timing is not always possible. Security restrictions resulted in only two beaches surveyed at Naval Base Kitsap Bangor in August 2016. Similarly, security restrictions, tidal conditions, and personnel scheduling conflicts led to no surveys conducted at Naval Base Kitsap Bangor in December 2016.

Interns are shown samples with preserved eggs to learn what eggs look like within samples. During laboratory analysis, frequent breaks are taken to minimize fatigue. Tired eyes are more likely to miss eggs within a sample. Any suspected eggs are put in small glass vials with ethanol to be further inspected by the project manager and are then sent to WDFW for confirmation. While error is possible throughout the survey and analysis process, levels of error are believed to be low given the efforts to reduce it with QA/QC protocols.

5.4 Recommendations for Continued Monitoring

NAVFAC NW is continuing to survey for spawning surf smelt and sand lance at MFD, NAVBASE Kitsap Bangor, and NAVMAG Indian Island in 2017-2018 with the continued goal of detecting forage fish spawning. In addition to new sample processing methods, WDFW finalized new survey methods. Bulk samples will be collected at up to three tidal elevations at each survey transect. Sampling at multiple tidal elevations increases the likelihood of detecting forage fish spawning. Surveys beyond 2018 would occur if funding is available.

Data from continued monitoring could provide a data set that could be compared with other shoreline information if it is available. For example, sediment deposition/accretion rates, ground water availability, shoreline modification/armoring, shoreline vegetation, and invasive species presence could all influence forage fish spawning (Penttila 2007). Finally, the NAVFAC NW Forage Fish Spawning surveys will provide information for annual updates to installation INRMPs, help guide future mission critical in-water construction projects, and contribute to the overall knowledge and management of installation natural resources.

6 Acknowledgements

The following individuals contributed to the Navy Region Northwest 2016-2017 Surf Smelt and Pacific Sand Lance Spawning Inventory: Study design and selection of sampling sites by NAVFAC NW Biologist Tiffany Nabors and SCA interns Jackson Letchworth and Kimberley Ramos. Data collection, sample processing, and microscope analysis by Tiffany Nabors and

SCA interns Amy Fowler, Brendan Himelright, Sarah Maher, Alex Russell, Alex Kunz, and Jennifer Stottlemeyer. Data analysis and written report by Amy Fowler and Tiffany Nabors. Unless otherwise noted, all maps created by Jamie Wasielewski, Alexander Smith, and Sarah Maher in ESRI ArcGIS Desktop10. Datum: NAD 83 Washington State Plan North. Maps were created with data from the WDFW and NAVFAC NW and imagery from ESRI ArcGIS Online base maps.

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APPENDIX A: EXAMPLE DATA SHEETS AND FIELD OBSERVATION SAMPLING CODES

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Sarah Sept. 2016 **Forage Fish Lab Datasheet**

Entered	Initial/Last Name	Date of Survey	Date Processed	Location	Beach Number	Sample Number	Surf Smelt	Sand Lance	Other	Process Time	Comments
	Maher	9.1.16	9.12.16	NAVMAG	6A	3L	—	—	—	16 min	
	Maher	9.2.16	9.12.16	MFD	3A	1H	—	—	—	9 min	
	Maher	9.1.16	9.12.16	NAVMAG	6A	2L	—	—	—	8 min	
	Maher	9.1.16	9.12.16	NAVMAG	6A	1M	—	—	—	17 min	Shrimps!
	Maher	9.2.16	9.12.16	MFD	3A	2L	—	—	—	23 min	
	Maher	9.2.16	9.12.16	MFD	3B	1L	—	—	—	27 min	
	Maher	9.14.16	9.15.16	Bangor	4F	1	—	—	—	7 min	
	Maher	9.14.16	9.15.16	Bangor	4A	3L	—	—	—	16 min	
	Maher	9.15.16	9.15.16	Bangor	4D	1H	—	—	—	18 min	
	Maher	9.14.16	9.15.16	Bangor	4A	1M	—	—	—	10 m	

Forage Fish Spawning Beach Survey (see back for codes)

Month	Day	Year

Camera ID:

Last High Tide
Time (24-hr):
Elevation:

2nd Effective High Tide
Time (24-hr):
Elevation:

Location:

County:

Page ___ of ___

	Beach Station #	Time (24-hr)	Latitude (decimal degrees)	Longitude (decimal degrees)	Beach	Uplands	Width	Length	Sample #	Landmark	Sample Zone	Tical Elevation	Shading	Sample Type	Smelt	Sand lance	Rock sole	Photo #	Comments
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			

Samplers:

(*print names here, sign back*)_____

Organization:_____

Reviewer:_____

Field Observation Sampling Code

Beach: Sediment character of the upper beach (particle size range in inches)
0 = mud (<0.0025)
1 = pure sand (0.0025-0.079)
2 = pea gravel (0.079-0.31, "fine gravel") with sand base
3 = medium gravel (0.31-0.63) with sand base
4 = coarse gravel (0.63-2.5) with sand base
5 = cobble (2.5-10.1) with sand base
7 = boulder (>10.1) with sand base
8 = gravel to boulders without sand base
9 = rock, no habitat

Uplands: Character of the uplands (up to 100 ft. from high water mark)
1 = natural, 0% impacted (no bulkhead, rip-rap, housing, etc.)
2 = 25% impacted
3 = 50% impacted
4 = 75% impacted
5 = 100% impacted

Width: Width of the potential spawning substrate band to the nearest foot. Judged by character of sediment and presence of spawn, when possible.

Length: Length of the beach up to 1,000 feet (500 feet on either side of the station).

Landmark: landmark for determining sample zone where collection occurs
1 = down beach from last high tide mark
2 = up beach from last high tide mark
3 = down beach from second to last high tide mark
4 = down beach from upland toe
5 = up beach from waterline at the time noted

Sample Zone: Distance of sample zone transect parallel to the landmark, in feet to the nearest ½ foot. Used to determine the tidal elevation of the spawn deposit.

Tidal Elevation: Determined in the office using location and time data provided.

Shading: Shading of spawning substrate zone, averaged over the 1,000 foot station and best interpretation for the entire day and season
1 = fully exposed
2 = 25% shaded
3 = 50% shaded
4 = 75% shaded
5 = 100% shaded

Sample Type: S=Scoop; V=Visual; B=Bulk; E=Elevation; P=Permit

Smelt, Sand Lance, Rock Sole: subjective field assessment of spawn intensity apparent to the naked eye:
0 = no eggs visible
L = light, but apparent
M= medium, readily visible
H = heavy, broadly abundant
W = eggs observed in winnow

Photos: Take 6 site photos standing near the center of the site, and record the file number of the 1st photo in the 6 photo series.
***Photo 1:** Completed sample tag
***Photo 2:** Sediment w/ scale at transect
Photo 3: Beach backshore
Photo 4: Beach right
Photo 5: Beach foreshore (towards water)
Photo 6: Beach left
**If multiple samples are collected at a single station, then only photos 1 and 2 need be repeated for each sample.*

****I certify that to the best of my abilities, the surveys recorded on this data sheet and the associated samples were collected and documented in accordance with WDFW approved protocols, and the information I am providing are the true and accurate results of the these surveys.**

Lead Signature: _____

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Appendix D. Agency Correspondence and Annual Matrix Meeting Notes

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DEPARTMENT OF THE NAVY
NAVAL MAGAZINE INDIAN ISLAND
100 INDIAN ISLAND ROAD
PORT HADLOCK, WA 98339-9723

IN REPLY REFER TO:
5090
Ser N39/010
January 31, 2017

Washington Department of Fish and Wildlife
450 Port Orchard Blvd, Suite 290
Port Orchard, WA 98366

Attention: Mr. Jim Unsworth

Ladies and Gentlemen:

SUBJECT: FISCAL YEAR (FY) 2016 INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP) METRICS SUMMARY REPORT

Per the Office of the Chief of Naval Operations Instruction 5090.1D: Environmental Readiness Manual, Navy installations are required to submit an annual report summarizing our recent INRMP Metrics meeting, updates to the INRMP, and the status of our INRMP.

The Naval Magazine (NAVMAG) Indian Island INRMP Metrics meeting was held on October 18, 2016 at Naval Base Kitsap Manchester in Manchester, WA. A list of those who participated in the meeting can be found in Enclosure (1) page 1, and a summary of our annual INRMP Metrics results for the past year can be found in Enclosure (1) page 2 through 61.

A summary and description of the NAVMAG Indian Island INRMP actions and projects implemented in FY 2016 are provided in Enclosure (1) page 62 through 71. Additionally, for federally listed species and candidate species inhabiting the installation a description of benefits resulting from INRMP implementation is outlined in Enclosure (1) pages 72 through 78.

Thank you for your participation in our INRMP Metrics meeting and for your support of the NAVMAG Indian Island Natural Resources Program. Should you have any questions concerning the report, my point of contact is Ms. Sara Street, who can be reached at (360) 396-5394 or e-mail: sara.c.street@navy.mil.

Sincerely,

N. A. VANDE GRIEND
Commanding Officer
Naval Magazine Indian Island

Enclosure: 1. FY 2016 INRMP Metrics

DEPARTMENT OF THE NAVY
NAVAL MAGAZINE INDIAN ISLAND
100 INDIAN ISLAND ROAD
PORT HADLOCK, WA 98339-9723

IN REPLY REFER TO:
5090
Ser N39/009
January 31, 2017

United States Department of the Interior
Fish and Wildlife Service
Western Washington Fish and Wildlife Office
510 Desmond Dr. SE, Suite 102
Lacey, Washington 98503

Attention: Mr. Eric Rickerson

Ladies and Gentlemen:

SUBJECT: FISCAL YEAR (FY) 2016 INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP) METRICS SUMMARY REPORT

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Sincerely,

N. A. VANDE GRIEND
Commanding Officer
Naval Magazine Indian Island

Enclosure: 1. FY 2016 INRMP Metrics

DEPARTMENT OF THE NAVY
NAVAL MAGAZINE INDIAN ISLAND
100 INDIAN ISLAND ROAD
PORT HADLOCK, WA 98339-9723

IN REPLY REFER TO:
5090
Ser N39/008
January 31, 2017

National Marine Fisheries Service
Washington Habitat Conservation Branch
510 Desmond Drive SE, Suite 103
Lacey, WA 98503

Attention: Mr. Steve Landino

Ladies and Gentlemen:

SUBJECT: FISCAL YEAR (FY) 2016 INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP) METRICS SUMMARY REPORT

Per the Office of the Chief of Naval Operations Instruction 5090.1D: Environmental Readiness Manual, Navy installations are required to submit an annual report summarizing our recent INRMP Metrics meeting, updates to the INRMP, and the status of our INRMP.

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Sincerely,

N. A. VANDE GRIEND
Commanding Officer
Naval Magazine Indian Island

Enclosure: 1. FY 2016 INRMP Metrics

Introduction

Welcome to the Annual Navy Natural Resources Conservation Metrics!

This site has been designed to help guide you step-by step through a series of questions that will inform decision- makers on the status of your Natural Resources program. Data is being collected for fiscal year 2016. Questions followed by an asterisk * are mandatory and must be completed before the data call can be approved and forwarded to DoD. The User Guide and Training Brief can be found here. The FY16 DoD Environmental Data call memorandum can be found here.

Note:

Please click "Save" located at the bottom of each page to add your draft answers to the database. After you save if you leave or are logged out of the system, your answers will be retained the next time you log in. Click on the buttons at the top to jump to a different section.

Getting Started...

Please add all participants and attendees that were involved in the Annual Navy Natural Resources Conservation Metrics. The drop down list includes all people currently using the CN Web system and those entered using the blue 'Add Personnel to List' button. If the person you need to add is not in the pull down list, click the blue 'Add Personnel to List' button and fill out the required fields, indicated by an asterisk.

Note: The Navy Lead is the Navy POC responsible for the completion of the Metrics for this installation/site.

1. Gordon, Brittany
WA Dept Fish and Wildlife
(360) 895-4756
Brittany.gordon@dfw.wa.gov

Is this person the Navy Lead?

_____ Yes
_____ No

2. Kunz, Cindi
NAVFACNW
360-396-1860
cindi.kunz@navy.mil

Is this person the Navy Lead?

_____ Yes
_____ No

3. McFeron, Curtis
NMFS
360-534-9309
curtis.mcferon@noaa.gov

Is this person the Navy Lead?

_____ Yes
_____ No

4. Muck, Jim
USFWS
360-753-9586
jim_muck@fws.gov

Is this person the Navy Lead?

_____ Yes
_____ No

5. Sleeman, Stephanie
NAVFACNW
360-396-0023
stephanie.sleeman@navy.mil

Is this person the Navy Lead?

_____ Yes
_____ No

6. Stockton, Julia
NAVFACNW
360-476-6067
julia.stockton@navy.mil

Is this person the Navy Lead?

_____ Yes
_____ No

7. Street, Sara
NAVFACNW
3603965394
sara.c.street@navy.mil

Is this person the Navy Lead?

_____ Yes
_____ No

8. Tailleur, Douglas
123-456-7890
douglas.tailleur@navy.mil

INRMP Status

Navy INRMP Status Check

Objective: This purpose of this section of the Natural Resources Conservation Metrics data call is to gather required information associated with the Natural Resources program, specifically the status of Integrated Natural Resources Management Plans (INRMP). These questions have been added here to collect information that will support the Defense Environmental Program Annual Report to Congress (DEPARC) and Office of the Secretary of Defense Environmental Management Review (EMR). By combining these questions with responses to the Metric's seven (7) focus areas, Natural Resources Managers are faced with fewer annual data calls. Questions followed by an asterisk * are mandatory and must be completed before the data call can be approved and forwarded to DoD.

1. Is an INRMP necessary for this installation/site(s)? *

X Yes
_____ No

2. Is there currently a compliant INRMP that covers this/these installation/site(s)? *

_____ Yes
_____ No
X INRMP - Under Revision
_____ INRMP Under Development (First Version)

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

2.a. Enter the name of First Compliant INRMP

NAVMAG Indian Island INRMP

2.b. Date of First Compliant INRMP (Usually Dated 2001/2002) Format: MM/DD/YYYY

8/20/2009

2.c. What type of NEPA Documentation was done for the first compliant INRMP?

_____ EA / FONSI
_____ EIS / ROD
__X__ NEPA document is currently under development

2.d. When was the NEPA completed for the first compliant INRMP? Format: MM/DD/YYYY

2.e Name of the most current INRMP that covers this/these installation/site(s) *

NAVMAG Indian Island INRMP

2.e.1 Date of the most current INRMP that covers this/these installation/site(s). Format: MM/DD/YYYY

This date records when the Regional Commander/Commanding Officer endorsed (signed) the most recent INRMP (with valid NEPA coverage) and/or completed a review for operation and effect.
*

7/31/2009

2.f. Select the species where the INRMP was used to exempt critical habitat designation under ESA Section 4(a)(3)(B)(i) on this/these site(s). Select all that apply. Leave blank if not applicable. See i-note for bug work

Bull Trout : Salvelinus confluentus

3. Has a 5-year INRMP review for operation and effect been completed for the most recent INRMP?

_____ Yes
__X__ No
_____ N/A
_____ In Progress

Enter the date that the 5-year INRMP review was completed. Format: MM/DD/YYYY

3.a. If a 5-year INRMP review for operation and effect been completed, did the review result in an addendum/appendix, update or revision of the INRMP?

_____ Addendum / Amendment
_____ Update
_____ Revision

3.b. What is the expected completion date of the Addendum/Amendment, Update, Revision? Format: MM/DD/YYYY

3.c. If a 5-year INRMP review for operation and effect has not been completed; please explain why a review for operation and effect has not been completed?

Currently In Progress

3.d. Was the Mutual DoD & USFWS Guidelines for Streamlined Review of INRMP Updates to secure FWS approval and state approval for updated INRMPs used?

_____ Yes
__X__ No

3.d.1 Did using the guidelines expedite the process?

_____ Yes

_____ No

3.d.2. Why not?

IF IT HAS BEEN MORE THAN 3 YEARS SINCE A REVIEW FOR OPERATION AND EFFECT, ADMINISTRATIVE PROCESS SHOULD BE UNDERWAY IN CASE THE INRMP NEEDS TO BE

4. Has USFWS concurrence been received on the most recent INRMP or review for operation and effect?

_____ Yes
_____ No
__X__ In Progress

4.a. If question 4. is "Yes" or "In Progress", which USFWS Region(s) are applicable? (Choose all that apply)

__X__ Pacific

4.b List the Field Office, if applicable, that did or will sign concurrence documentation

__X__ Washington Fish and Wildlife Office - Lacey, WA

4.c.If question 4. is "Yes", what is the date of concurrence? Format: MM/DD/YYYY

4.d. If question 4. is "No", what is the reason for the delay?

4.e Was an ESA Section 7 Consultation completed with USFWS for the INRMP?

_____ Yes
__X__ No
_____ N/A
_____ In Progress

4.f. Which USFWS field office do you regularly conduct ESA Section 7 consultations with typically?

4.g. Did the Threatened and Endangered Species Listing and Recovery personnel participate in the INRMP

_____ Yes
_____ No
_____ N/A

5. Has NOAA Fisheries (NMFS) concurrence been received on the most recent INRMP or review for operation

_____ Yes
_____ No
__X__ N/A

5.a. If question 5. is "Yes", which NOAA Fisheries (NMFS) Region(s) are involved? (Choose all that apply)

5.b Select the Local Office, if applicable, that did or will sign concurrence documentation.

5.c. If question 5. is "Yes", what is the date of concurrence? Format: MM/DD/YYYY

5.d. If question 5. is "No", what is the reason for the delay?

5.e Was an ESA Section 7 Consultation completed with NOAA Fisheries (NMFS) for the INRMP?

_____ Yes
_____ No
_____ N/A

5.f. Did the Threatened and Endangered Species Listing and Recovery personnel participate in the INRMP

__X__ Yes
_____ No
_____ N/A

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

_____ Yes
_____ No
__X__ In Progress
_____ N/A

6.a. If question 6. is "Yes", which State fish and wildlife agency(ies)? (Choose all that apply)

6.a. If question 6. is "In Process", which State fish and wildlife agency(ies)? (Choose all that apply)

__X__ Washington Department of Fish and Wildlife - Olympia, WA

6.b. If question 6. is "Yes", what is the date of concurrence? Format: MM/DD/YYYY

6.c. If question 6. is "No", what is the reason for the delay?

7. If this/these site(s) is/are located on lands affected by tribal treaty rights or other known rights; were Federally-recognized Tribe(s) consulted with to develop or revise the Integrated Natural Resource

__X__ Yes
_____ No
_____ N/A

8. Are migratory birds, specifically birds of conservation concern, adequately addressed in the INRMP for this installation to support the mission and needed NEPA analyses?

__X__ Yes
_____ No

9. If the INRMP was updated/revised did the INRMP require new or supplementation NEPA?

__X__ Yes
_____ No

9.a. If so, what was the type of NEPA?

_____ CATEX
__X__ EA / FONSI
_____ EIS / ROD

9.b. When was the NEPA completed? Format: MM/DD/YYYY

10. Has the Regional Commander / Installation Commanding Officer concurrence been received on the most recent INRMP or review for operation and effect?

__X__ Yes
_____ No
_____ In Progress

10.a. If question 10. is "Yes", what is the date of concurrence? Format: MM/DD/YYYY

8/20/2009

10.b. If question 10. is "No", what is the reason for the delay?

11. If the Regional Commander has final authority over whether this/these site(s)' INRMP is compliant has the Regional Commander concurred with/signed the most recent INRMP or review for operation and effect?

__X__ Yes
_____ No
_____ N/A

11.a. If question 11. is "Yes", what is the date of concurrence? Format: MM/DD/YYYY

8/20/2009

11.b. If question 11. is "No", what is the reason for the delay?

12. Please select (all that apply) and upload these documents. *

_____ New or Current INRMP
_____ INRMP NEPA documentation
_____ 5-year operation & effect review letter(s)
_____ Signed Correspondence with Regulatory Partners
_____ Annual review briefs to Commanding Officer or Regional Commander
_____ INRMP Waiver Letter
__X__ Final INRMP not available

12.1 Please upload the following documents where applicable: INRMP *

12.2 Please upload the following documents where applicable: INRMP NEPA documentation *

12.3 Please upload the following documents where applicable: 5-year operation & effect review letter(s) *

12.4 Please upload the following documents where applicable: Other Signed Correspondence with Regulatory

12.5 Please upload the following documents where applicable: Annual review briefs to Commanding Officer

12.6 Please upload the following documents where applicable: INRMP Waiver Letter *

13. Please confirm if you uploaded or sent any INRMP Related document(s). *

_____ Uploaded to Conservation Website Document Library
_____ Uploaded through Army Safe Website
_____ Sending / Sent by US Mail
__X__ Not Uploaded / Sent

Army SAFE – Safe Access File Exchange

https://safe.amrdec.army.mil/SAFE/

US Mail

Naval Facilities Engineering Command Headquarters

Attn: Tom Mayes – EV2

1322 Patterson Ave. SE, Suite 1000

Washington Navy Yard, DC

20374-5065

Goals and Objectives

Please enter all Goals and Objectives as listed in the INRMP for this/these site(s). Enter Goals in the Goals Tab and the Objectives in the Objective tab. Enter Goals first so they can be linked to recommendations.

Please enter a short or abbreviated Goal and Objective name when creating them. To create a new Goal or Objective, click on the appropriate tab button and then click the blue 'Manage Goals' and 'Manage Objectives' buttons. You will be able to add the full text of the Goal or Objective later by clicking on the row with the shore name.

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

Goals

Enter or review, as appropriate, the Reporting Unit's Goals as documented in the current INRMP.

1. Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs.

Please enter the full description of the Goal:

Please describe any Key Considerations or Issues associated with this Goal.

2. Increase awareness of natural resources issues, programs, and responsibilities for sustaining natural resources among the public, NAVMAG Indian Island employees, and tenants

Please enter the full description of the Goal:

Please describe any Key Considerations or Issues associated with this Goal.

3. Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.

Please enter the full description of the Goal:

Please describe any Key Considerations or Issues associated with this Goal.

4. Provide sustainable natural resources related outdoor recreation opportunities.

Please enter the full description of the Goal:

Please describe any Key Considerations or Issues associated with this Goal.

5. Improve natural resources management through enhanced management tools.

Please enter the full description of the Goal:

Please describe any Key Considerations or Issues associated with this Goal.

Objectives

Enter or review, as appropriate, the Installation/site(s) Objectives as documented in the current INRMP. Associate Objectives with goals as appropriate.

1. Manage for no net loss in NAVMAG Indian Island's capability to support the military mission.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

2. Sustain and enhance healthy wetland, riparian, and shoreline areas and buffers.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

3. Redesign existing landscaped areas so they are low-maintenance. Incorporate native trees, shrubs, and herbaceous plants where appropriate. Selection of plant species used in landscape design should be drought tolerant to limit need for irrigation after establishment.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

4. Prioritize areas with invasive species for eradication and subsequent restoration with native plants.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

5. Protect soil resources from erosion through prevention and control practices.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

6. Minimize the amounts of fertilizers, nutrients, and pesticides applied on NAVMAG Indian Island.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

7. Assess and enhance the biological conditions of aquatic and terrestrial ecosystems.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

8. Promote and implement alternative storm water management approaches, including low impact development, to minimize adverse impacts of surface runoff from impervious areas. Maintain or mimic

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

9. Promote management practices to control the damage caused by feral animals and nuisance wildlife, both to NAVMAG Indian Island's facilities and to sensitive wildlife populations.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

10. Ensure compliance with Federal ESA, MBTA, MSA, and MMPA in all construction, maintenance, operations, and landscaping activities.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

11. Review all planned construction projects for natural resources impacts. The review will focus on meeting the goals and objective of this INRMP.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

12. Solicit Tribal input on the INRMP.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

13. Conduct annual INRMP metric meetings with USFWS, WDFW, and NMFS.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

14. Provide information on base wide natural resources initiatives to NAVMAG Indian Island employees and tenants (e.g. Earth Day activities, surveys, etc.).

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

15. Partner with local, city, county, and tribal governments and with non-governmental organizations for natural resource enhancement projects.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

16. Partner with state and federal agencies for natural resource projects.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

17. Provide quality outdoor recreation experiences through picnic areas, and fishing areas while

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

18. Maintain or acquire adequate funding and resources to ensure natural resources staff has access to Global Positioning System (GPS) units, Geographical Information System (GIS) support, and

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

19. Maintain existing data layers with the most up-to-date natural resources data and develop layers for natural resources data not currently in the GIS database.

Select the INRMP Goal that this Objective applies to.

Enter full description of Objective.

Enter Key Considerations if applicable.

1 - Ecosystem Integrity

Focus Area Score **0.94**

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Per DoD Instruction 4715 and OPNAV Manual 5090 the goal of ecosystem management is to ensure that military lands support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. Ecosystems are functioning units of nature consisting of complex networks of relationships between land, water, and living resources and are subjected to various stressors ranging from human impacts to climate change, and as such, need to be managed in a way that allows for mitigation, adaptation, and long-term sustainability on a regional basis. The intent of this module is to define the ecosystems that occur on the installation/sites. The information will assess the integrity of these ecosystems and inform the annual Navy Natural Resource Conservation Metrics and reporting requirements.

Ecosystem classifications have been preloaded under the Ecosystem Integrity button. The list of ecosystems is comprised of (1) terrestrial ecosystems identified in Nature Serve's, "Ecological Systems of the United States: A Working Classification of US Terrestrial Systems" and (2) marine ecosystems identified in NOAA's Coastal and Marine Ecological Classification Standard. For additional information on these classification schemes, go directly to the Nature Serve's ecosystem online reference or view a list of terrestrial ecosystems by Land Cover Classes, Biogeographic Divisions, and Ecological Systems. Additionally, go directly to the CMECS Catalogue of Units, view their Standard or view a list of marine ecosystems, which only includes the Benthic Biotic, Surface Geology, and Water Column components of the classification scheme. Locally-defined ecosystems may be added to capture specific INRMP details and program management.

All questions followed by an asterisk * are mandatory and must be completed before the datacall can be approved and forwarded to DoD.

To start populating ecosystem information, click the gray 'Ecosystem' button on the upper right side of the screen.

Ecosystems

Focus Area Score 0.89

Please validate (add/delete) the list of ecosystems below, add as necessary if none are listed, and ensure that they are correct. To **ADD** an ecosystem to the site/installation click the blue 'Select EcoSystems' button in the upper left. If you need an ecosystem that is not listed contact Tom Mayes (tom.mayes@navy.mil) or Tammy Conkle

1. Forest

1.1. Has the ecosystem been identified in the INRMP? *

- [X] Yes
- [ ] No

1.2. If the ecosystem has been identified in the INRMP, to what degree are the INRMP goals and objectives

- [X] Fully Achieved
- [ ] Somewhat Achieved
- [ ] Not Achieved

1.3. What is the level of effect Natural Resources management actions have had on desired outcomes within

- [ ] Actions have had a positive effect on conditions
- [X] Actions have had a limited effect on conditions
- [ ] Actions have not been effective

1.4. To what extent is the ecological system on the site(s) fragmented due to land or water conversion during

- [ ] Ecosystem fragmentation is the result of five (5) of the phenomena

_____ Ecosystem fragmentation is the result of four (4) of the phenomena
_____ Ecosystem fragmentation is the result of three (3) of the phenomena
_____ Ecosystem fragmentation is the result of two (2) of the phenomena
_____ Ecosystem fragmentation is the result of one (1) of the phenomena
X No fragmentation

1.5. To what degree is the ecological system vulnerable to stressors? *

_____ Completely Vulnerable
_____ Severely Vulnerable to Stress
_____ Highly Vulnerable to Stress
_____ Moderately Vulnerable to Stress
X Slightly Vulnerable to Stress
_____ Not Vulnerable to Stress

1.6. Is the ecosystem effectively managed to sustain viable populations of species? *

_____ Not effectively managed
_____ Minimally effective management
_____ Moderately effective management
X Effectively managed

1.7. How does the ecosystem's condition within the site(s) compare to the condition outside the site(s)? *

_____ Condition is worse on the site(s)
_____ Condition is similar both on and off the site(s)
X Condition is better on the site(s)

1.8. How many acres of this ecosystem have been identified on the installation?

2100

1.9. How many acres of this ecosystem were conserved, enhanced or restored this past fiscal year?

0

2. Intertidal

1.1. Has the ecosystem been identified in the INRMP? *

X Yes
_____ No

1.2. If the ecosystem has been identified in the INRMP, to what degree are the INRMP goals and objectives

X Fully Achieved
_____ Somewhat Achieved
_____ Not Achieved

1.3. What is the level of effect Natural Resources management actions have had on desired outcomes within

_____ Actions have had a positive effect on conditions
X Actions have had a limited effect on conditions
_____ Actions have not been effective

1.4. To what extent is the ecological system on the site(s) fragmented due to land or water conversion during

_____ Ecosystem fragmentation is the result of five (5) of the phenomena
_____ Ecosystem fragmentation is the result of four (4) of the phenomena
_____ Ecosystem fragmentation is the result of three (3) of the phenomena
_____ Ecosystem fragmentation is the result of two (2) of the phenomena
_____ Ecosystem fragmentation is the result of one (1) of the phenomena
X No fragmentation

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

1.5. To what degree is the ecological system vulnerable to stressors? *

- ____ Completely Vulnerable
- ____ Severely Vulnerable to Stress
- ____ Highly Vulnerable to Stress
- X Moderately Vulnerable to Stress
- ____ Slightly Vulnerable to Stress
- ____ Not Vulnerable to Stress

1.6. Is the ecosystem effectively managed to sustain viable populations of species? *

- ____ Not effectively managed
- ____ Minimally effective management
- ____ Moderately effective management
- X Effectively managed

1.7. How does the ecosystem's condition within the site(s) compare to the condition outside the site(s)? *

- ____ Condition is worse on the site(s)
- ____ Condition is similar both on and off the site(s)
- X Condition is better on the site(s)

1.8. How many acres of this ecosystem have been identified on the installation?

1.9. How many acres of this ecosystem were conserved, enhanced or restored this past fiscal year?

3. Marine Nearshore

1.1. Has the ecosystem been identified in the INRMP? *

- X Yes
- ____ No

1.2. If the ecosystem has been identified in the INRMP, to what degree are the INRMP goals and objectives

- X Fully Achieved
- ____ Somewhat Achieved
- ____ Not Achieved

1.3. What is the level of effect Natural Resources management actions have had on desired outcomes within

- ____ Actions have had a positive effect on conditions
- X Actions have had a limited effect on conditions
- ____ Actions have not been effective

1.4. To what extent is the ecological system on the site(s) fragmented due to land or water conversion during

- ____ Ecosystem fragmentation is the result of five (5) of the phenomena
- ____ Ecosystem fragmentation is the result of four (4) of the phenomena
- ____ Ecosystem fragmentation is the result of three (3) of the phenomena
- ____ Ecosystem fragmentation is the result of two (2) of the phenomena
- ____ Ecosystem fragmentation is the result of one (1) of the phenomena
- X No fragmentation

1.5. To what degree is the ecological system vulnerable to stressors? *

- ____ Completely Vulnerable
- ____ Severely Vulnerable to Stress
- ____ Highly Vulnerable to Stress
- X Moderately Vulnerable to Stress
- ____ Slightly Vulnerable to Stress

_____ Not Vulnerable to Stress

1.6. Is the ecosystem effectively managed to sustain viable populations of species? *

_____ Not effectively managed
_____ Minimally effective management
_____ Moderately effective management
__X__ Effectively managed

1.7. How does the ecosystem's condition within the site(s) compare to the condition outside the site(s)? *

_____ Condition is worse on the site(s)
__X__ Condition is similar both on and off the site(s)
_____ Condition is better on the site(s)

1.8. How many acres of this ecosystem have been identified on the installation?

1.9. How many acres of this ecosystem were conserved, enhanced or restored this past fiscal year?

4. Riparian Wetland

1.1. Has the ecosystem been identified in the INRMP? *

__X__ Yes
_____ No

1.2. If the ecosystem has been identified in the INRMP, to what degree are the INRMP goals and objectives

__X__ Fully Achieved
_____ Somewhat Achieved
_____ Not Achieved

1.3. What is the level of effect Natural Resources management actions have had on desired outcomes within

_____ Actions have had a positive effect on conditions
__X__ Actions have had a limited effect on conditions
_____ Actions have not been effective

1.4. To what extent is the ecological system on the site(s) fragmented due to land or water conversion during

_____ Ecosystem fragmentation is the result of five (5) of the phenomena
_____ Ecosystem fragmentation is the result of four (4) of the phenomena
_____ Ecosystem fragmentation is the result of three (3) of the phenomena
_____ Ecosystem fragmentation is the result of two (2) of the phenomena
_____ Ecosystem fragmentation is the result of one (1) of the phenomena
__X__ No fragmentation

1.5. To what degree is the ecological system vulnerable to stressors? *

_____ Completely Vulnerable
_____ Severely Vulnerable to Stress
_____ Highly Vulnerable to Stress
_____ Moderately Vulnerable to Stress
__X__ Slightly Vulnerable to Stress
_____ Not Vulnerable to Stress

1.6. Is the ecosystem effectively managed to sustain viable populations of species? *

_____ Not effectively managed
_____ Minimally effective management
_____ Moderately effective management
__X__ Effectively managed

1.7. How does the ecosystem's condition within the site(s) compare to the condition outside the site(s)? *

_____ Condition is worse on the site(s)
_____ Condition is similar both on and off the site(s)
__X__ Condition is better on the site(s)

1.8. How many acres of this ecosystem have been identified on the installation?

1.9. How many acres of this ecosystem were conserved, enhanced or restored this past fiscal year?

5. Wetlands

1.1. Has the ecosystem been identified in the INRMP? *

__X__ Yes
_____ No

1.2. If the ecosystem has been identified in the INRMP, to what degree are the INRMP goals and objectives

__X__ Fully Achieved
_____ Somewhat Achieved
_____ Not Achieved

1.3. What is the level of effect Natural Resources management actions have had on desired outcomes within

_____ Actions have had a positive effect on conditions
__X__ Actions have had a limited effect on conditions
_____ Actions have not been effective

1.4. To what extent is the ecological system on the site(s) fragmented due to land or water conversion during

_____ Ecosystem fragmentation is the result of five (5) of the phenomena
_____ Ecosystem fragmentation is the result of four (4) of the phenomena
_____ Ecosystem fragmentation is the result of three (3) of the phenomena
_____ Ecosystem fragmentation is the result of two (2) of the phenomena
_____ Ecosystem fragmentation is the result of one (1) of the phenomena
__X__ No fragmentation

1.5. To what degree is the ecological system vulnerable to stressors? *

_____ Completely Vulnerable
_____ Severely Vulnerable to Stress
_____ Highly Vulnerable to Stress
_____ Moderately Vulnerable to Stress
__X__ Slightly Vulnerable to Stress
_____ Not Vulnerable to Stress

1.6. Is the ecosystem effectively managed to sustain viable populations of species? *

_____ Not effectively managed
_____ Minimally effective management
_____ Moderately effective management
__X__ Effectively managed

1.7. How does the ecosystem's condition within the site(s) compare to the condition outside the site(s)? *

_____ Condition is worse on the site(s)
_____ Condition is similar both on and off the site(s)
__X__ Condition is better on the site(s)

1.8. How many acres of this ecosystem have been identified on the installation?

1.9. How many acres of this ecosystem were conserved, enhanced or restored this past fiscal year?

Encroachment

Focus Area Score **1.00**

An Encroachment Action Plan (EAP) is the primary tool and process which results in the identification, quantification, mitigation, and prevention of the potential encroachment challenges to an installation or a range. NAVFAC provides planning, environmental, legal, real estate support, and program management oversight for the Commander, Navy Installations Command (CNIC) Encroachment Management program. Per OPNAVINST 11010.40, Navy natural resources managers shall coordinate with mission component commands, COs of Navy installations, range COs, range complex coordinators, enhanced readiness teams, community plans and liaison officers and others with roles and responsibilities for encroachment identification, quantification, mitigation, and prevention.

1.10. Are conservation easements, or buffers, in place to provide an ecosystem integrity benefit on the site(s)?

_____ No = opportunity exists, but easements/buffers have not been pursued

X Yes

_____ N/A = no opportunity, development is immediately adjacent to installation

1.11. How many miles of shoreline habitat are conserved, enhanced or restored this fiscal year? (miles)

0

1.12. How many acres of aquatic habitat are conserved, enhanced or restored this fiscal year? (acres)

0

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing

1. Findings

1. Recommendations

2 - Listed Species Critical Habitat

Focus Area Score **0.96**

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

Listed Species & Critical Habitat

Focus Area Purpose: Evaluates the extent to which federally listed species have been identified and the INRMP provides conservation benefits to these species and their habitats.

Supplemental Information: The intent of this Focus Area is to identify the federally listed species that occur on a Navy installation, as well as assess if an INRMP provides the conservation benefits necessary to preclude designation of critical habitat for a particular species. In addition, information is collected about Proposed and Candidate Species and also about State, Local and other Species of interest. The USFWS has defined criteria to determine if an INRMP provides adequate special management or protection. These criteria must be detailed in the INRMP to demonstrate that designation of critical habitat is not necessary and that the installation is implementing the necessary measures to protect and conserve the habitat. The list of available species is derived from USFWS and NMFS data sources tracking the status of species worldwide plus those entered by navy users. Species are automatically placed into the correct table based upon species population code and its status. If a species status changes over the year users will not need to manually move the species from one type of table to the other, i.e. Threatened and Endangered, Proposed and Candidate, and State, Local, and other.

Instructions: Please create and or review the site(s) list of species for each of the three groups of species statuses and ensure that they are correct. To **ADD** a species to the site select a species status tab button, click the blue 'Select Species button', type the filters you wish to filter on and click the blue 'Filter Results' button for the filtered species list. Clicking the blue Common Name of a species will take you to ECOS's web site for the selected species. Clicking the row of the species population applicable to the site(s) and pressing the blue 'Save Selected Species' button will add the species to the site(s) list of species. Note you do not need to be in any specific species status tab, the system will automatically place the species correctly. Also from the blue 'Select Species' button on each of the three specific species status tabs you can view more about the species, delete it from the site(s) and also manage which sites the species resides using the blue 'Manage' button.

Select the name of the preloaded species to answer the questions for the current reporting period. To propose adding a species that is not in the database list or to propose a change or delete a species from the list click the main menu 'Species' then the submenu 'Search / Update'; from there you can propose all the above.

Please answer the questions for each of the species selected from the preloaded list for each of the three species status tab buttons. Questions are tailored to the species status. Last, please answer the questions in the 'Unoccupied Critical Habitat' tab button.

Questions followed by an asterisk * are mandatory and must be completed before the datacall can be approved and forwarded to DoD.

Federal Status Codes

(E) Endangered. A species in danger of extinction throughout all or a significant portion of its range.

(T) Threatened. A species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

(C) Candidate. A species under consideration for official listing for which there is sufficient information to support listing.

SAE, E(S/A) Endangered due to similarity of appearance. A species that is endangered due to similarity of appearance with another listed species and is listed for its protection. Species listed as E(S/A) are not biologically endangered or threatened and are not subject to Section 7 consultation.

SAT, T(S/A) = threatened due to similarity of appearance. A species that is threatened due to similarity of appearance with another listed species and is listed for its protection. Species listed as T(S/A) are not biologically endangered or threatened and are not subject to Section 7 consultation.

(EXPE, XE) Experimental essential population. A species listed as experimental and essential.

(EXPN, XN) Experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species (e.g., red wolf) are treated as threatened species on public land, for consultation purposes, and as species proposed for listing on

private land.

(PE) Proposed endangered. Species proposed for official listing as endangered.

(PT) Proposed threatened. Species proposed for official listing as threatened.

(PEXPE, PXE) Proposed experimental population, essential. Species proposed for official listing as experimental and essential.

(PEXPN, PXN) Proposed experimental population, non-essential. Species proposed for official listing as experimental and non-essential.

PSAE, PE (S/A) Proposed endangered, due to similarity of appearance. Species proposed for official listing as endangered due to similarity of appearance with another listed species.

PSAT, PT (S/A) Proposed threatened, due to similarity of appearance. Species proposed for official listing as threatened due to similarity of appearance with another listed species.

(EE) Emergency Endangered - A temporary (240) day listing for emergency purposes when species is at significant, immediate risk.

(SC) Species of Concern - Species that have not been petitioned or been given E, T, or C status but have been identified as important to monitor.

(RT) Resolved Taxon - Species that have been petitioned for listing and for which a Not Warranted 12 month finding or Not Substantial 90-day finding has been published in the Federal Register. Also includes species that have been removed from the candidate list.

(UR) Under Review - Species that have been petitioned for listing and for which a 90 day finding has not been published or for which a 90 day substantial has been published but a 12 Month finding have not yet been published in the Federal Register. Also includes species that are being reviewed through the candidate process, but the CNOR has not yet been signed.
(NL) Not Listed.

State Codes

(SE) State listed as Endangered – Species is in imminent danger of extinction within the state.

(ST) State listed as Threatened - State population listed as Threatened

(StC) State Candidate – Candidate species for listing at the state level

(SCD) State Candidate (Delisting) - Candidate species for de-listing at the state level

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

(SSC) State Species of Special Concern - Species identified by any state that have not been petitioned or been given E, T, or C status but have been identified as important to monitor.

Other Codes

(TER-E) Territory listed as Endangered – Species is in imminent danger of extinction within the territory.

(TER-T) Territory listed as Threatened – Species population is listed as threatened within the territory.

(TER-C) Territory Candidate – Species population is listed as a Candidate species for listing within the territory.

(TER-D) Territory Candidate (Delisting) – Species population is listed as a candidate species for De-listing within the territory.

(TER-SC) Territory Species of Special Concern – Species identified by any territory that have not been petitioned or been given E, T, or C status but have been identified as important to monitor.

(BCC) Birds of Conservation Concern

IUCN Red List

Threatened and Endangered Species

Focus Area Score 0.93

Please validate (add/delete) the list of species below, add as necessary if none are listed, and ensure that they are correct. To **ADD** a species to the site/installation, select a species tab button, then click the blue 'Select Species' button in the upper left. Click on a species row to view or update answers about each species.

1. Bocaccio :: Sebastes paucispinis

2.1. Have surveys been completed for this species on the site(s)? *

- X Yes
- ____ No
- ____ Extirpated
- ____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2/15/2016

2.1.b. Why are surveys not required for this species?

- ____ Only transits nearshore waters
- ____ Only transits migratory flyway
- ____ Occasional sighting during migration
- ____ Occasional sighting based on seasonal conditions
- ____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

- X Yes
- ____ No
- ____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

- X Yes

_____ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal
_____ Moderate
__X__ Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
__X__ No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
__X__ No
_____ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
__X__ INRMP (Exemption)
_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

__X__ Yes
_____ No
_____ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

__X__ Yes
_____ No

_____ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

_____ Yes
__X__ No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

_____ Confirmed
_____ Potentially
_____ Offsite within 5 mi of installation
_____ Offsite not within 5 mi of installation
_____ Confirmed in nearshore waters
__X__ Within 5 miles nearshore waters

2. Bull Trout :: Salvelinus confluentus

2.1. Have surveys been completed for this species on the site(s)? *

__X__ Yes
_____ No
_____ Extirpated
_____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2.1.b. Why are surveys not required for this species?

_____ Only transits nearshore waters
_____ Only transits migratory flyway
_____ Occasional sighting during migration
_____ Occasional sighting based on seasonal conditions
_____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal
_____ Moderate
__X__ Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

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2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
_____ No
__X__ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
_____ No
__X__ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
_____ INRMP (Exemption)
_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

__X__ Yes
_____ No
_____ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

__X__ Yes
_____ No
_____ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

_____ Yes
__X__ No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

_____ Confirmed
_____ Potentially
_____ Offsite within 5 mi of installation
_____ Offsite not within 5 mi of installation

X Confirmed in nearshore waters
_____ Within 5 miles nearshore waters

3. canary rockfish :: Sebastes pinniger

2.1. Have surveys been completed for this species on the site(s)? *

X Yes
_____ No
_____ Extirpated
_____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2/15/2016

2.1.b. Why are surveys not required for this species?

_____ Only transits nearshore waters
_____ Only transits migratory flyway
_____ Occasional sighting during migration
_____ Occasional sighting based on seasonal conditions
_____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

X Yes
_____ No
_____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

X Yes
_____ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal
_____ Moderate
X Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
X No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes

X No
N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

National Security (Exclusion) (4(b)(2))
INRMP (Exemption) (4(a)(3)(B))
N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

National Security (Exclusion)
X INRMP (Exemption)
N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

Yes
No
X N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

X Yes
No
N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

Yes
X No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

Confirmed
Potentially
X Offsite within 5 mi of installation
Offsite not within 5 mi of installation
Confirmed in nearshore waters
Within 5 miles nearshore waters

4. Chinook salmon :: Oncorhynchus (=Salmo) tshawytscha

2.1. Have surveys been completed for this species on the site(s)? *

X Yes
No
Extirpated
Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

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2.1.b. Why are surveys not required for this species?

_____ Only transits nearshore waters
_____ Only transits migratory flyway
_____ Occasional sighting during migration
_____ Occasional sighting based on seasonal conditions
_____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal
_____ Moderate
__X__ Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
__X__ No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
_____ No
__X__ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
_____ INRMP (Exemption)

_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

X Yes
_____ No
_____ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

X Yes
_____ No
_____ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

_____ Yes
X No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

_____ Confirmed
_____ Potentially
_____ Offsite within 5 mi of installation
_____ Offsite not within 5 mi of installation
X Confirmed in nearshore waters
_____ Within 5 miles nearshore waters

5. Chum salmon :: Oncorhynchus keta

2.1. Have surveys been completed for this species on the site(s)? *

X Yes
_____ No
_____ Extirpated
_____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2.1.b. Why are surveys not required for this species?

_____ Only transits nearshore waters
_____ Only transits migratory flyway
_____ Occasional sighting during migration
_____ Occasional sighting based on seasonal conditions
_____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

_____ Yes
X No
_____ Not Warranted

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2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

_____ Yes
__X__ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal
_____ Moderate
__X__ Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
__X__ No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
_____ No
__X__ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
_____ INRMP (Exemption)
_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

__X__ Yes
_____ No
_____ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

- X Yes
- ____ No
- ____ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

- ____ Yes
- X No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

- ____ Confirmed
- ____ Potentially
- ____ Offsite within 5 mi of installation
- ____ Offsite not within 5 mi of installation
- X Confirmed in nearshore waters
- ____ Within 5 miles nearshore waters

6. Humpback whale :: Megaptera novaeangliae

2.1. Have surveys been completed for this species on the site(s)? *

- X Yes
- ____ No
- ____ Extirpated
- ____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2.1.b. Why are surveys not required for this species?

- ____ Only transits nearshore waters
- ____ Only transits migratory flyway
- ____ Occasional sighting during migration
- ____ Occasional sighting based on seasonal conditions
- ____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

- X Yes
- ____ No
- ____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

- X Yes
- ____ No
- ____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

- ____ None
- ____ Minimal
- ____ Moderate
- X Good
- ____ Excellent
- ____ N/A

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PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
__X__ No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
_____ No
__X__ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
_____ INRMP (Exemption)
_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

_____ Yes
_____ No
__X__ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

_____ Yes
_____ No
__X__ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

_____ Yes
__X__ No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

_____ Confirmed

_____ Potentially
_____ Offsite within 5 mi of installation
_____ Offsite not within 5 mi of installation
__X__ Confirmed in nearshore waters
_____ Within 5 miles nearshore waters

7. Killer whale :: Orcinus orca

2.1. Have surveys been completed for this species on the site(s)? *

__X__ Yes
_____ No
_____ Extirpated
_____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2.1.b. Why are surveys not required for this species?

_____ Only transits nearshore waters
_____ Only transits migratory flyway
_____ Occasional sighting during migration
_____ Occasional sighting based on seasonal conditions
_____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal
_____ Moderate
__X__ Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
__X__ No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

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2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
_____ No
__X__ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
_____ INRMP (Exemption)
_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

_____ Yes
_____ No
__X__ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

_____ Yes
_____ No
__X__ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

_____ Yes
__X__ No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

_____ Confirmed
_____ Potentially
_____ Offsite within 5 mi of installation
_____ Offsite not within 5 mi of installation
__X__ Confirmed in nearshore waters
_____ Within 5 miles nearshore waters

8. Marbled murrelet :: Brachyramphus marmoratus

2.1. Have surveys been completed for this species on the site(s)? *

__X__ Yes
_____ No
_____ Extirpated

_____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2.1.b. Why are surveys not required for this species?

_____ Only transits nearshore waters
_____ Only transits migratory flyway
_____ Occasional sighting during migration
_____ Occasional sighting based on seasonal conditions
_____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal
_____ Moderate
__X__ Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
__X__ No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
_____ No
__X__ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
_____ INRMP (Exemption)
_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

_____ Yes
_____ No
__X__ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

_____ Yes
_____ No
__X__ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

_____ Yes
__X__ No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

_____ Confirmed
_____ Potentially
_____ Offsite within 5 mi of installation
_____ Offsite not within 5 mi of installation
__X__ Confirmed in nearshore waters
_____ Within 5 miles nearshore waters

9. Steelhead :: Oncorhynchus (=Salmo) mykiss

2.1. Have surveys been completed for this species on the site(s)? *

__X__ Yes
_____ No
_____ Extirpated
_____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2.1.b. Why are surveys not required for this species?

_____ Only transits nearshore waters
_____ Only transits migratory flyway
_____ Occasional sighting during migration
_____ Occasional sighting based on seasonal conditions
_____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

__X__ Yes

_____ No
_____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

__X__ Yes
_____ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal
_____ Moderate
__X__ Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal

_____ Yes
__X__ No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
_____ No
__X__ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
_____ INRMP (Exemption)
_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

__X__ Yes

_____ No
_____ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

X Yes
_____ No
_____ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

_____ Yes
X No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

_____ Confirmed
_____ Potentially
_____ Offsite within 5 mi of installation
_____ Offsite not within 5 mi of installation
X Confirmed in nearshore waters
_____ Within 5 miles nearshore waters

10. yelloweye rockfish :: Sebastes ruberrimus

2.1. Have surveys been completed for this species on the site(s)? *

X Yes
_____ No
_____ Extirpated
_____ Not Warranted

2.1.a. What is date when surveys were completed? Format: (MM/DD/YYYY)

2/15/2016

2.1.b. Why are surveys not required for this species?

_____ Only transits nearshore waters
_____ Only transits migratory flyway
_____ Occasional sighting during migration
_____ Occasional sighting based on seasonal conditions
_____ Other

2.2. Do existing surveys provide adequate data on habitat conditions on the site(s)? *

X Yes
_____ No
_____ Not Warranted

2.3. Do existing surveys provide adequate data on population presence and numbers on the site(s)? *

X Yes
_____ No
_____ Not Warranted

2.4. To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the

_____ None
_____ Minimal

_____ Moderate
__X__ Good
_____ Excellent
_____ N/A

PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.

2.5. Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal Register [FR] Final Rule)?

_____ Yes
__X__ No
_____ N/A (Critical habitat designation was not proposed)
_____ CH determination currently under review

2.5.a. Did the Navy respond?

_____ Yes
_____ No

2.5.b. Please upload response to document library.

2.6. Has the critical habitat been designated for this species during the reporting period on the site(s)? *

_____ Yes
__X__ No
_____ N/A (Critical habitat has not been designated)

2.6.a. If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec. 4) was exemption/exclusion granted? *

_____ National Security (Exclusion) (4(b)(2))
_____ INRMP (Exemption) (4(a)(3)(B))
_____ N/A (Critical habitat designation was not proposed)

2.6.b. Why not? *

_____ National Security (Exclusion)
__X__ INRMP (Exemption)
_____ N/A (Critical habitat designation was not proposed)

2.6.c. Date critical habitat was designated? Format: (MM/DD/YYYY)

2.6.d. Effective date of critical habitat? Format: (MM/DD/YYYY)

2.6.e. Acreage of critical habitat designated?

2.7. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the INRMP? *

__X__ Yes
_____ No
_____ N/A

2.8. If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management projects clearly identified in the EPRWeb? *

__X__ Yes
_____ No
_____ N/A

2.9. Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?

_____ Yes

X No

2.10. Provide a location status for this species from the choices provided below. See i-Note if your selection

- Confirmed
- Potentially
- Offsite within 5 mi of installation
- Offsite not within 5 mi of installation
- Confirmed in nearshore waters
- X Within 5 miles nearshore waters

Proposed and Candidate Species

Please validate (add/delete) the list of species below, add as necessary if none are listed, and ensure that they are correct. To **ADD** a species to the site/installation, select a species tab button, then click the blue 'Select Species' button in the upper left. Click on a species row to view or update answers about each species.

State, Local, and other Species

Please validate (add/delete) the list of species below, add as necessary if none are listed, and ensure that they are correct. To **ADD** a species to the site/installation, select a species tab button, then click the blue 'Select Species' button in the upper left. Click on a species row to view or update answers about each species.

Unoccupied Critical Habitat

Focus Area Score 1.00

2.28. Has unoccupied critical habitat for any federally listed species been designated on the site(s)? *

- Yes
- X No
- N/A (Critical habitat designation was not proposed)

2.28.a. For which species?

2.29. Have management projects/actions addressing unoccupied critical habitat been clearly identified in the

- Yes
- No
- X N/A

2.30. Have management projects/actions addressing unoccupied critical habitat been clearly identified in the

- Yes
- No
- X N/A

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing

2. Findings

None

2. Recommendations

None

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

3 - Recreation Use and Access

Focus Area Score **0.60**

Focus Area Purpose: Evaluate the availability and adequacy of public recreational use opportunities, such as fishing and hunting, and access for handicapped and disabled persons, given security and safety requirements for the installation.

Comment on this Focus Area and associated Questions: Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

3. Are there Natural Resources related recreational opportunities on the reporting unit?

- [X] Yes
- [ ] No: Landscape doesn't support recreational opportunities
- [ ] N/A: Not available due to mission, security, safety, or environmental constraints

3.1. Does the INRMP adequately identify outdoor recreational activities? *

- [ ] Not Adequately Addressed
- [ ] Minimally Addressed
- [X] Moderately Addressed
- [ ] Completely Addressed

3.1.a. Please indicate the type(s) of outdoor recreation activities addressed in the INRMP and offered on the

- [ ] Hunting
- [ ] Fishing
- [ ] Trapping
- [X] Hiking
- [ ] Archery
- [X] Wildlife watching
- [ ] Fresh watersports
- [ ] Marine watersports
- [X] Day use-picnic
- [X] Camping

3.1.b. Where mission, security, safety, and environmental constraints allow, the INRMP indicates use and

- [X] Yes
- [ ] No
- [ ] N/A

3.2. If recreational opportunities are available, are they offered to the public? *

- [ ] Yes
- [X] No
- [ ] N/A (recreational opportunities are not available due to landscape or security constraints)

3.3. If recreational opportunities are available, are they offered to military or DoD civilian personnel? *

- [X] Yes
- [ ] No
- [ ] N/A (recreational opportunities are not available due to landscape or security constraints)

3.4. If recreational opportunities are available, are they accessible by disabled veterans/Americans? *

- [ ] Yes
- [X] No
- [ ] N/A (recreational opportunities are not available due to landscape or security constraints)

3.5. Are fees collected for outdoor recreational opportunities? *

- [ ] Yes

_____ No
__X__ N/A (recreational opportunities do not include hunting and fishing, and/or the collection of fees)

3.5.a. How much was collected during the reporting period?

3.6. Are recreational facilities in good condition? *

__X__ Yes
_____ No
_____ N/A (recreational opportunities are not available due to landscape or security constraints)

3.7. Are sustainable harvest goals in the INRMP effective for the management of the species' population? *

_____ Not Effective
_____ Minimal Effectiveness
_____ Moderate Effectiveness
_____ Effective
_____ Highly Effective
__X__ N/A = (recreational opportunities do not include hunting and fishing)

3.8. To what extent did the installation develop and provide public outreach/educational awareness, e.g. environmental educational opportunities, natural resource field trips/tours, pamphlets? *

_____ No Public Outreach Provided
_____ Low Outreach
_____ Moderate Outreach
_____ Good Outreach
__X__ Excellent Outreach
_____ N/A

3.9. Is there an active conservation law enforcement program (CLEP) on the installation? *

_____ Yes
_____ No
__X__ N/A (INRMP or Natural Resources Program does NOT identify Conservation Law Enforcement as part of the program. Recreational opportunities do not include hunting and fishing)

3.10. How many total work-hours per year are dedicated to law enforcement? (Includes full-time and part-time

3.11. Does the law enforcement program include federal (Non-Navy Civilian), state, or local or contractor

_____ Federal (Non-Navy Civilian)
_____ State
_____ Local
_____ Contractor
_____ Military

3.12. Please describe the funding sources used by the Law Enforcement Program.

_____ O&MN
_____ O&MNR
_____ MIS
_____ GWOT
_____ OPN
_____ ER,N
_____ RDT&EN
_____ Other

3.13. Are Law Enforcement personnel routinely supporting other programs? (Ex. Cultural Resources)

_____ Yes

_____ No

3.14. Do you have any inter-jurisdictional agreements for conservation law enforcement with other military departments, Federal, tribal, state or local law enforcement, or land management agencies?

_____ Yes
_____ No

3.15 Have conservation law enforcement officers completed the FLETC Land Management Police Training

_____ Yes
_____ No
_____ N/A

3.16. Is a Conservation Law Enforcement Plan included in your INRMP and/or ICRMP?

_____ Yes
_____ No

3.17. Please provide a brief description of the installation's Conservation Law Enforcement Program.

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing

3. Findings

Recreational activities are not available to the public due to security/mission reasons.

3. Recommendations

On base employees are allowed certain recreational activities, usually with restricted times and locations due to mission/security restrictions.

4 - Sikes Act Cooperation

Focus Area Score 0.79

Focus Area Purpose: Determine to what degree USFWS, State Fish and Wildlife Agency and, when appropriate, NOAA Fisheries Service (NMFS), partnerships are cooperative and result in effective INRMP development, review for operation and effect, and mutual agreement.

Comment on this Focus Area and associated Questions Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

4. Select which Sikes Act parterns work with this installation/site(s)? *

X USFWS
X State
X NOAA Fisheries Service

4.1. Was USFWS invited to participate in the annual INRMP/Natural Resources Program review? *

X Yes
_____ No

4.1.a. By what method was the agency invited to participate in the annual INRMP/Natural Resources Program

_____ Telephone call
X Electronic mail
_____ Official letter
_____ Other

4.1.b. Did the agency respond to the invitation to participate in the annual INRMP/Natural Resources Program

X Yes

_____ No

4.1.c. How many attempts were made to invite the agency to participate in the annual INRMP/Natural

__X__ 0-3
_____ 4-6
_____ 7-10
_____ >10

4.1.d. Did the agency participate in the annual INRMP/Natural Resources Program review? *

__X__ Yes
_____ No

4.1.e. If the agency participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect? *

_____ Yes
__X__ No

4.1.f. If the agency did not participate in the annual review, what type of correspondence was received from the agency to inform the site(s) that they were not able to participate?

_____ Telephone call
_____ Electronic mail
_____ Official letter
_____ Other

4.1.g. If the agency did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect?

_____ Yes
_____ No

4.1.g.a. What date? Format: MM/DD/YYYY

4.1.h. Was a report of the previous year's annual INRMP/Natural Resources Program review submitted to the agency during this reporting period? *

__X__ Yes
_____ No

4.2. Was the state invited to participate in the annual INRMP/Natural Resources Program review? *

__X__ Yes
_____ No

4.2.a. By what method was the agency invited to participate in the annual INRMP/Natural Resources Program

_____ Telephone call
__X__ Electronic mail
_____ Official letter
_____ Other

4.2.b. Did the agency respond to the invitation to participate in the annual INRMP/Natural Resources Program

__X__ Yes
_____ No

4.2.c. How many attempts were made to invite the agency to participate in the annual INRMP/Natural

__X__ 0-3
_____ 4-6
_____ 7-10

_____ >10

4.2.d. Did the agency participate in the annual INRMP/Natural Resources Program review? *

__X__ Yes

_____ No

4.2.e. If the agency participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect? *

_____ Yes

__X__ No

4.2.f. If the agency did not participate in the annual review, what type of correspondence was received from the agency to inform the site(s) that they were not able to participate?

_____ Telephone call

_____ Electronic mail

_____ Official letter

_____ Other

4.2.g. If the agency did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect?

_____ Yes

_____ No

4.2.g.1. What date? Format: MM/DD/YYYY

4.2.h. Was a report of the previous year's annual INRMP/Natural Resources Program review submitted to the agency during this reporting period? *

__X__ Yes

_____ No

4.3. Was the NOAA Fisheries Service invited to participate in the annual INRMP/Natural Resources Program

__X__ Yes

_____ No

4.3.a. By what method was the agency invited to participate in the annual INRMP/Natural Resources Program

_____ Telephone call

__X__ Electronic mail

_____ Official letter

_____ Other

4.3.b. Did the agency respond to the invitation to participate in the annual INRMP/Natural Resources Program

__X__ Yes

_____ No

4.3.c. How many attempts were made to invite the agency to participate in the annual INRMP/Natural

__X__ 0-3

_____ 4-6

_____ 7-10

_____ >10

4.3.d. Did the agency participate in the annual INRMP/Natural Resources Program review? *

__X__ Yes

_____ No

4.3.e. If the agency participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect? *

_____ Yes

X No

4.3.f. If the agency did not participate in the annual review, what type of correspondence was received from the agency to inform the site(s) that they were not able to participate?

_____ Telephone call
_____ Electronic mail
_____ Official letter
_____ Other

4.3.g. If the agency did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect?

_____ Yes
_____ No

4.3.g.1. What date? Format: MM/DD/YYYY

4.3.h. Was a report of the previous year's annual INRMP/Natural Resources Program review submitted to the agency during this reporting period? *

X Yes
_____ No

4.4. The USFWS, state fish and wildlife agency, and when appropriate NOAA Fisheries Service, are familiar with and have reviewed the INRMP. *

X Yes (All that apply) - These partners are familiar with and have reviewed the site(s)' INRMP.
_____ Two or more partners are familiar with and have reviewed the site(s)' INRMP.
_____ One or more partners are familiar with and have reviewed the site(s)' INRMP.
_____ No - Partners did not review the site(s)' INRMPs or INRMP updates, nor did they participate in other

4.5. The USFWS, state fish and wildlife agency and, when appropriate, NOAA Fisheries Service are engaged in the INRMP development and implementation. *

X The sites(s) engaged the USFWS, state fish and wildlife agency and, when appropriate, NOAA Fisheries Service and these efforts are well documented.
_____ The site(s) engaged the USFWS, state fish and wildlife agency and, when appropriate, NOAA Fisheries Service and these efforts are not documented.
_____ Partners were non-responsive to site(s) communications and/or are not familiar with the INRMP.
_____ The site(s) did not engage the USFWS, state fish and wildlife agency or NOAA Fisheries Service; therefore these partners did not review INRMPs or INRMP updates, nor did they participate in other

4.6. What is the level of collaboration/cooperation between Sikes Act partners? *

_____ None
_____ Minimal collaboration/cooperation
_____ Satisfactory collaboration/cooperation
X Effective collaboration/cooperation
_____ Highly effective collaboration/cooperation

4.7. How well are site(s) natural resource management goals and objectives aligned with conservation goals of Sikes Act partners, e.g. USFWS/NOAA Fisheries Service regional goals and State Fish and Wildlife Agency reginal goals (e.g. State Wildlife Action Plans (SWAPs)? *

_____ Not aligned
X Somewhat aligned
_____ Completely aligned

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

4. Findings

No findings were provided.

4. Recommendations

Bat surveys were recommended; Navy uses WDFW forage fish sampling protocol.

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

5 - Team Adequacy

Focus Area Score 0.76

Focus Area Purpose: Assess the adequacy of the natural resources team (professionally trained natural resources management and/or installation support personnel) in accomplishing INRMP/Natural Resources Program goals and objectives at each installation.

Comment on this Focus Area and associated Questions Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

5.1. Is there a Navy professional Natural Resources Manager designated by the Regional

- X Yes
- ___ No

5.2. Is there an on-site Navy professional Natural Resources Manager? *

- X Yes
- ___ No

5.3. Is there adequate installation staff assigned or available to properly implement the INRMP/Natural Resources Program goals and objectives? *

- ___ Sufficient
- X Insufficient
- ___ None

5.3.a. How many staff members are available?

2

5.3.b. How many staff members are required?

4

5.4. How well do higher echelon offices support the installation natural resources program? (e.g. reach back support for execution, policy support, etc.) *

- ___ No Support
- X Minimal Support
- ___ Satisfactory Support
- ___ Well Supported
- ___ Very Well Supported

5.5. The team is enhanced by the use of contractors. *

- ___ Disagree
- ___ Somewhat Agree
- ___ Neutral
- X Agree
- ___ Strongly Agree
- ___ N/A (no contractor support)

5.6. The team is enhanced by the use of volunteers. *

- ___ Disagree
- ___ Somewhat Agree
- ___ Neutral
- ___ Agree
- ___ Strongly Agree
- X N/A (No volunteer support)

5.7. The Natural Resources team is adequately trained to implement the goals and objectives of the INRMP.

X Professionals received adequate supplemental training

_____ Professionals have not received adequate training

_____ Professionals have not received any training

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

5. Findings

Insufficient staff

5. Recommendations

Additional staff needed

6 - INRMP Implementation

Focus Area Score 0.80

Focus Area Purpose: Evaluates the execution of actions, to include projects, taken to meet goals/objectives outlined in the INRMP.

Supplemental Information: The intent of this Focus Area is to assess how well actions are being implemented to execute the goals and objectives of the INRMP. Actions can include projects submitted via EPRWeb, as well as activities executed with alternative funds, not programmed through EPRWeb, or carried out by the use of volunteers or cooperative partnerships with other entities.

For each project or action executed, or partnership forged, or initiative engaged with, during the reporting period for the installation, the following questions are asked to evaluate INRMP action implementation. Note: For EPRWeb projects, the data such as project number, project title, funding source, and total obligated are pre-populated with data from EPRWeb. The user has the ability to edit the percentage applicable to this Reporting Unit (RU) if less than 100%.

Questions followed by an asterisk * are mandatory and must be completed before the datacall can be approved and forwarded to DoD.

FY16 Projects

Focus Area Score 0.80

Instructions: This section is for projects planned in the installations/site(s) INRMP for award or emergent in **FY16 only**. Select a project from the list below (created in the Action Builder) to begin answering questions. To Add new projects, delete existing projects or modify the percentage allocated (share of the project) to this Reporting Unit (RU), click the Blue 'Add/Manage Projects' button. Select the red '**X**' to delete a project, if a project doesn't apply to the Reporting Unit or is not a project that occurred during the current reporting period. If this is an incomplete list, use the filters to find any missing projects, check the appropriate check boxes, and click the Blue 'Add Projects' to add additional INRMP actions (projects), e.g. emergent projects, unfunded efforts, or actions that do not require funding, and begin answering questions. Users can also create non-EPRWeb projects by clicking the Green 'Create Project' button.

1. 6101612002 : CHE NW Indian Island - INRMP Conservation Mapping

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

FY16 EPRWeb Total Spent

$84,073.00

FY16 RU Share of Total Spent

$84,073.00

(FY16) 6.0 Does the action have an alternative name?

_____ Yes
__X__ No

(FY16) 6.0.a. Please enter the name(s)

(FY16) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
__X__ Action Underway
_____ Action Completed
_____ Prior Year Emergent/Executed
_____ Emergent/Accelerated and Executed this FY
_____ Action Considered Accepted Risk/Funding Not Available
_____ Funding Requested but not received
_____ Funding Received but not executable
_____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

_____ 2013
_____ 2014
_____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

_____ 2017
_____ 2018
_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
__X__ 26-50%
_____ 51-75%
_____ 76-99%
_____ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

__X__ Yes
_____ No

(FY16) 6.3.a. Is this action an emergent action?

__X__ Yes
_____ No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

__X__ Yes
_____ No

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

- [X] Yes
- [ ] No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

- [X] Yes
- [ ] Partially
- [ ] No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

Sustain and enhance healthy wetland, riparian, and shoreline areas and buffers.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

- [ ] None
- [X] Flora
- [ ] Fauna
- [ ] Habitat
- [ ] At Sea
- [ ] INRMP-Planned Developments, Updates, & Revisions
- [ ] Listed Species
- [ ] Wetlands
- [ ] Invasives
- [ ] Soil
- [ ] Forestry
- [ ] Outdoor Recreation
- [ ] Training
- [ ] Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Wetlands

2. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP

FY16 EPRWeb Total Spent

$10,189.00

FY16 RU Share of Total Spent

$10,189.00

(FY16) 6.0 Does the action have an alternative name?

- [ ] Yes
- [X] No

(FY16) 6.0.a. Please enter the name(s)

(FY16) 6.1. What is the current status of the INRMP action? *

- [ ] Action Awarded but not started

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

_____ Action Underway
__X__ Action Completed
_____ Prior Year Emergent/Executed
_____ Emergent/Accelerated and Executed this FY
_____ Action Considered Accepted Risk/Funding Not Available
_____ Funding Requested but not received
_____ Funding Received but not executable
_____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

_____ 2013
_____ 2014
_____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

_____ 2017
_____ 2018
_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
_____ 26-50%
_____ 51-75%
_____ 76-99%
__X__ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

__X__ Yes
_____ No

(FY16) 6.3.a. Is this action an emergent action?

_____ Yes
__X__ No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

__X__ Yes
_____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

__X__ Yes
_____ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

__X__ Yes
_____ Partially
_____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

Improve natural resources management through enhanced management tools.

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

(FY16) 6.5.o. Please select the objective(s) that this action supports.

Manage for no net loss in NAVMAG Indian Island's capability to support the military mission.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

- ____ None
- ____ Flora
- ____ Fauna
- ____ Habitat
- ____ At Sea
- X INRMP-Planned Developments, Updates, & Revisions
- ____ Listed Species
- ____ Wetlands
- ____ Invasives
- ____ Soil
- ____ Forestry
- ____ Outdoor Recreation
- ____ Training
- ____ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Wetlands

3. 61016NR009 : CWA NW NAVMAG INDIAN ISLAND Port Security Barrier Mitigation

FY16 EPRWeb Total Spent

$0.00

FY16 RU Share of Total Spent

$0.00

(FY16) 6.0 Does the action have an alternative name?

- X Yes
- ____ No

(FY16) 6.0.a. Please enter the name(s)

Clam Seeding

(FY16) 6.1. What is the current status of the INRMP action? *

- ____ Action Awarded but not started
- ____ Action Underway
- ____ Action Completed
- ____ Prior Year Emergent/Executed
- ____ Emergent/Accelerated and Executed this FY
- ____ Action Considered Accepted Risk/Funding Not Available
- ____ Funding Requested but not received
- ____ Funding Received but not executable
- X On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

- ____ 2013
- ____ 2014
- ____ 2015

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

- ____ 2017
- ____ 2018
- ____ 2019
- ____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

- X 0-25%
- ____ 26-50%
- ____ 51-75%
- ____ 76-99%
- ____ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

- X Yes
- ____ No

(FY16) 6.3.a. Is this action an emergent action?

- ____ Yes
- X No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

- X Yes
- ____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

- X Yes
- ____ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

- X Yes
- ____ Partially
- ____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

Assess and enhance the biological conditions of aquatic and terrestrial ecosystems.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

- ____ None
- ____ Flora
- ____ Fauna
- ____ Habitat
- ____ At Sea
- ____ INRMP-Planned Developments, Updates, & Revisions
- ____ Listed Species
- ____ Wetlands

_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training
__X__ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Intertidal

4. 61016NR010 : EO 13112 NW NAVMAG Invasive Species/Noxious Weed Management

FY16 EPRWeb Total Spent

$0.00

FY16 RU Share of Total Spent

$0.00

(FY16) 6.0 Does the action have an alternative name?

_____ Yes
__X__ No

(FY16) 6.0.a. Please enter the name(s)

(FY16) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
__X__ Action Underway
_____ Action Completed
_____ Prior Year Emergent/Executed
_____ Emergent/Accelerated and Executed this FY
_____ Action Considered Accepted Risk/Funding Not Available
_____ Funding Requested but not received
_____ Funding Received but not executable
_____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

_____ 2013
_____ 2014
_____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

_____ 2017
_____ 2018
_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
_____ 26-50%
__X__ 51-75%
_____ 76-99%
_____ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

__X__ Yes

_____ No

(FY16) 6.3.a. Is this action an emergent action?

_____ Yes
__X__ No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

__X__ Yes
_____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

__X__ Yes
_____ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

__X__ Yes
_____ Partially
_____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

Prioritize areas with invasive species for eradication and subsequent restoration with native plants.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
__X__ Flora
_____ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
_____ Listed Species
_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training
_____ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Forest

5. 6101612005 : MBTA NW NAVMAG Indian Island Non T&E Bird Habitat Surveys and Mapping

FY16 EPRWeb Total Spent

$0.00

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FY16 RU Share of Total Spent

$0.00

(FY16) 6.0 Does the action have an alternative name?

_____ Yes
__X__ No

(FY16) 6.0.a. Please enter the name(s)

(FY16) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
_____ Action Underway
_____ Action Completed
_____ Prior Year Emergent/Executed
_____ Emergent/Accelerated and Executed this FY
_____ Action Considered Accepted Risk/Funding Not Available
__X__ Funding Requested but not received
_____ Funding Received but not executable
_____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

_____ 2013
_____ 2014
_____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

_____ 2017
_____ 2018
_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

__X__ 0-25%
_____ 26-50%
_____ 51-75%
_____ 76-99%
_____ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

__X__ Yes
_____ No

(FY16) 6.3.a. Is this action an emergent action?

_____ Yes
__X__ No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

__X__ Yes
_____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

(FY16) 6.4. Is the INRMP action on schedule? *

_____ Yes
__X__ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

__X__ Yes
_____ Partially
_____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

Sustain and enhance healthy wetland, riparian, and shoreline areas and buffers.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
_____ Flora
__X__ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
_____ Listed Species
_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training
_____ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Wetlands

6. 6101612006 : MMPA NW NAVMAG INDIAN ISLAND Surveys for Mammals, Reptiles, Amphibians

FY16 EPRWeb Total Spent

$0.00

FY16 RU Share of Total Spent

$0.00

(FY16) 6.0 Does the action have an alternative name?

__X__ Yes
_____ No

(FY16) 6.0.a. Please enter the name(s)

Wildlife Surveys

(FY16) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
__X__ Action Underway
_____ Action Completed
_____ Prior Year Emergent/Executed

_____ Emergent/Accelerated and Executed this FY
_____ Action Considered Accepted Risk/Funding Not Available
_____ Funding Requested but not received
_____ Funding Received but not executable
_____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

_____ 2013
_____ 2014
_____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

_____ 2017
_____ 2018
_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
_____ 26-50%
__X__ 51-75%
_____ 76-99%
_____ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

__X__ Yes
_____ No

(FY16) 6.3.a. Is this action an emergent action?

_____ Yes
__X__ No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

__X__ Yes
_____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

__X__ Yes
_____ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

__X__ Yes
_____ Partially
_____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

Improve natural resources management through enhanced management tools.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

Manage for no net loss in NAVMAG Indian Island’s capability to support the military mission.

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(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

- ____ None
- ____ Flora
- X Fauna
- ____ Habitat
- ____ At Sea
- ____ INRMP-Planned Developments, Updates, & Revisions
- ____ Listed Species
- ____ Wetlands
- ____ Invasives
- ____ Soil
- ____ Forestry
- ____ Outdoor Recreation
- ____ Training
- ____ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Wetlands

7. 61016NR011 : SIKES NW NAVMAG Indian Island - Forest Management/Stand Improvement

FY16 EPRWeb Total Spent

$0.00

FY16 RU Share of Total Spent

$0.00

(FY16) 6.0 Does the action have an alternative name?

- ____ Yes
- X No

(FY16) 6.0.a. Please enter the name(s)

(FY16) 6.1. What is the current status of the INRMP action? *

- ____ Action Awarded but not started
- X Action Underway
- ____ Action Completed
- ____ Prior Year Emergent/Executed
- ____ Emergent/Accelerated and Executed this FY
- ____ Action Considered Accepted Risk/Funding Not Available
- ____ Funding Requested but not received
- ____ Funding Received but not executable
- ____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

- ____ 2013
- ____ 2014
- ____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

- ____ 2017
- ____ 2018

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_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
__X__ 26-50%
_____ 51-75%
_____ 76-99%
_____ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

__X__ Yes
_____ No

(FY16) 6.3.a. Is this action an emergent action?

_____ Yes
__X__ No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

__X__ Yes
_____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

__X__ Yes
_____ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

__X__ Yes
_____ Partially
_____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

Prioritize areas with invasive species for eradication and subsequent restoration with native plants.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
__X__ Flora
_____ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
_____ Listed Species
_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry

_____ Outdoor Recreation
_____ Training
_____ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Wetlands

8. 61016NR012 : SIKES NW NAVMAG Indian Island - Tribal Cedar Bark Collection Plan

FY16 EPRWeb Total Spent

$0.00

FY16 RU Share of Total Spent

$0.00

(FY16) 6.0 Does the action have an alternative name?

_____ Yes
__X__ No

(FY16) 6.0.a. Please enter the name(s)

(FY16) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
_____ Action Underway
__X__ Action Completed
_____ Prior Year Emergent/Executed
_____ Emergent/Accelerated and Executed this FY
_____ Action Considered Accepted Risk/Funding Not Available
_____ Funding Requested but not received
_____ Funding Received but not executable
_____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

_____ 2013
_____ 2014
_____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

_____ 2017
_____ 2018
_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
_____ 26-50%
_____ 51-75%
_____ 76-99%
__X__ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

__X__ Yes
_____ No

(FY16) 6.3.a. Is this action an emergent action?

_____ Yes
__X__ No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

__X__ Yes
_____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

__X__ Yes
_____ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

__X__ Yes
_____ Partially
_____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

Provide sustainable natural resources related outdoor recreation opportunities.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

Solicit Tribal input on the INRMP.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
_____ Flora
_____ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
_____ Listed Species
_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training
__X__ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Forest

9. 68742CN001 : 1 CR NRNW Marbled Murrelet Density Surveys

FY16 EPRWeb Total Spent

$200,323.00

FY16 RU Share of Total Spent

$24,038.76

(FY16) 6.0 Does the action have an alternative name?

_____ Yes

X No

(FY16) 6.0.a. Please enter the name(s)

(FY16) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
X Action Underway
_____ Action Completed
_____ Prior Year Emergent/Executed
_____ Emergent/Accelerated and Executed this FY
_____ Action Considered Accepted Risk/Funding Not Available
_____ Funding Requested but not received
_____ Funding Received but not executable
_____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

_____ 2013
_____ 2014
_____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

_____ 2017
_____ 2018
_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

X 0-25%
_____ 26-50%
_____ 51-75%
_____ 76-99%
_____ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

X Yes
_____ No

(FY16) 6.3.a. Is this action an emergent action?

_____ Yes
X No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

X Yes
_____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

X Yes
_____ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

X Yes
_____ Partially
_____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
_____ Flora
_____ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
X Listed Species
_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training
_____ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Marine Nearshore

10. 68742CN002 : 1 S NRNW Threatened and Endangered Fish and Forage Fish Surveys

FY16 EPRWeb Total Spent

$149,068.00

FY16 RU Share of Total Spent

$20,869.52

(FY16) 6.0 Does the action have an alternative name?

_____ Yes
X No

(FY16) 6.0.a. Please enter the name(s)

(FY16) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
X Action Underway
_____ Action Completed
_____ Prior Year Emergent/Executed
_____ Emergent/Accelerated and Executed this FY
_____ Action Considered Accepted Risk/Funding Not Available
_____ Funding Requested but not received
_____ Funding Received but not executable
_____ On-Hold

(FY16) 6.1.a. If awarded in a prior year, select the year in which the action was awarded.

_____ 2013

_____ 2014
_____ 2015

(FY16) 6.1.b. Select the year that this action was originally planned for in your INRMP.

_____ 2017
_____ 2018
_____ 2019
_____ 2020

(FY16) 6.2. How much progress has been made in implementing the action?

__X__ 0-25%
_____ 26-50%
_____ 51-75%
_____ 76-99%
_____ Complete

(FY16) 6.3. Was the Action Programmed in EPRWeb?

__X__ Yes
_____ No

(FY16) 6.3.a. Is this action an emergent action?

_____ Yes
__X__ No

(FY16) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If no, explain why you believe EPRWeb's amount shown is incorrect in the comments box. If EPRWeb shows zero and funding was spent, select No.

__X__ Yes
_____ No

(FY16) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY16) 6.3.b.2. Enter the correct Expended (invoiced) year to date here:

(FY16) 6.4. Is the INRMP action on schedule? *

__X__ Yes
_____ No

(FY16) 6.5. Does this action meet the goals and objectives of the INRMP? *

__X__ Yes
_____ Partially
_____ No

(FY16) 6.5.g. Please select the goal(s) that this action supports.

(FY16) 6.5.o. Please select the objective(s) that this action supports.

(FY16) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
_____ Flora
_____ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
__X__ Listed Species

_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training
_____ Other NR Requirements (Misc)

(FY16) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

Marine Nearshore

FY15 Projects

Instructions: This section is for projects planned in the installations/site(s) INRMP for award or emergent in **FY15 only**. Projects completed in FY15 and reported as complete in FY15 do not need to be entered. Select a project from the list below (created in the Action Builder) to begin answering questions. To Add new projects, delete existing projects or modify the percentage allocated (share of the project) to this Reporting Unit (RU), click the Blue 'Add/Manage Projects' button. Select the red '**X**' to delete a project, if a project doesn't apply to the Reporting Unit or is not a project that occurred during the current reporting period. If this is an incomplete list, change the 'Action Plan Year' to "2015", use the filters to find any missing projects, check the appropriate check boxes, and click the Blue 'Add Projects' to add additional INRMP actions (projects), e.g. emergent projects, unfunded efforts, or actions that do not require funding, and begin answering questions. Users can also create non-EPRWeb projects by clicking the Green 'Create Project' button.

1. 6101612002 : CHE NW Indian Island - INRMP Conservation Mapping

FY15 EPRWeb Total Spent

$68,997.00

FY15 RU Share of Total Spent

$68,997.00

(FY15) 6.0 Does the action have an alternative name?

_____ Yes
__X__ No

(FY15) 6.0.a. Please enter the name(s)

(FY15) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
_____ Action Underway
__X__ Action Completed
_____ On-Hold

(FY15) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
_____ 26-50%
_____ 51-75%
_____ 76-99%
__X__ Complete

(FY15) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If EPRWeb shows zero and funding was

__X__ Yes
_____ No

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(FY15) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY15) 6.3.b.2. Enter the correct Expended (invoiced) here:

(FY15) 6.5. Does this action meet the goals and objectives of the INRMP?

- [X] Yes
- [ ] Partially
- [ ] No

(FY15) 6.5.g. Please select the goal(s) that this action supports.

(FY15) 6.5.o. Please select the objective(s) that this action supports.

(FY15) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

- [ ] None
- [ ] Flora
- [ ] Fauna
- [X] Habitat
- [ ] At Sea
- [ ] INRMP-Planned Developments, Updates, & Revisions
- [ ] Listed Species
- [ ] Wetlands
- [ ] Invasives
- [ ] Soil
- [ ] Forestry
- [ ] Outdoor Recreation
- [ ] Training
- [ ] Other NR Requirements (Misc)

(FY15) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

2. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP

FY15 EPRWeb Total Spent

$7,861.00

FY15 RU Share of Total Spent

$7,861.00

(FY15) 6.0 Does the action have an alternative name?

- [ ] Yes
- [X] No

(FY15) 6.0.a. Please enter the name(s)

(FY15) 6.1. What is the current status of the INRMP action? *

- [ ] Action Awarded but not started
- [ ] Action Underway
- [X] Action Completed
- [ ] On-Hold

(FY15) 6.2. How much progress has been made in implementing the action?

- [ ] 0-25%
- [ ] 26-50%
- [ ] 51-75%
- [ ] 76-99%

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

X Complete

(FY15) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If EPRWeb shows zero and funding was

X Yes

No

(FY15) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY15) 6.3.b.2. Enter the correct Expended (invoiced) here:

(FY15) 6.5. Does this action meet the goals and objectives of the INRMP?

X Yes

Partially

No

(FY15) 6.5.g. Please select the goal(s) that this action supports.

(FY15) 6.5.o. Please select the objective(s) that this action supports.

(FY15) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

None

Flora

Fauna

Habitat

At Sea

X INRMP-Planned Developments, Updates, & Revisions

Listed Species

Wetlands

Invasives

Soil

Forestry

Outdoor Recreation

Training

Other NR Requirements (Misc)

(FY15) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

3. 6101612001 : 1 S NW Indian Island-Survey for Threatened and Endangered and Forage Fish Species

FY15 EPRWeb Total Spent

$5,489.00

FY15 RU Share of Total Spent

$5,489.00

(FY15) 6.0 Does the action have an alternative name?

Yes

X No

(FY15) 6.0.a. Please enter the name(s)

(FY15) 6.1. What is the current status of the INRMP action? *

Action Awarded but not started

X Action Underway

Action Completed

_____ On-Hold

(FY15) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
_____ 26-50%
_____ 51-75%
__X__ 76-99%
_____ Complete

(FY15) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If EPRWeb shows zero and funding was

__X__ Yes
_____ No

(FY15) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY15) 6.3.b.2. Enter the correct Expended (invoiced) here:

(FY15) 6.5. Does this action meet the goals and objectives of the INRMP?

__X__ Yes
_____ Partially
_____ No

(FY15) 6.5.g. Please select the goal(s) that this action supports.

(FY15) 6.5.o. Please select the objective(s) that this action supports.

(FY15) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
_____ Flora
__X__ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
_____ Listed Species
_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training
_____ Other NR Requirements (Misc)

(FY15) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

4. 61016NR009 : CWA NW NAVMAG INDIAN ISLAND Port Security Barrier Mitigation

FY15 EPRWeb Total Spent

$19,950.00

FY15 RU Share of Total Spent

$19,950.00

(FY15) 6.0 Does the action have an alternative name?

__X__ Yes
_____ No

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

(FY15) 6.0.a. Please enter the name(s)

Clam seeding

(FY15) 6.1. What is the current status of the INRMP action? *

- ____ Action Awarded but not started
- ____ Action Underway
- X Action Completed
- ____ On-Hold

(FY15) 6.2. How much progress has been made in implementing the action?

- ____ 0-25%
- ____ 26-50%
- ____ 51-75%
- ____ 76-99%
- X Complete

(FY15) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If EPRWeb shows zero and funding was

- X Yes
- ____ No

(FY15) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY15) 6.3.b.2. Enter the correct Expended (invoiced) here:

(FY15) 6.5. Does this action meet the goals and objectives of the INRMP?

- X Yes
- ____ Partially
- ____ No

(FY15) 6.5.g. Please select the goal(s) that this action supports.

(FY15) 6.5.o. Please select the objective(s) that this action supports.

(FY15) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

- ____ None
- ____ Flora
- X Fauna
- ____ Habitat
- ____ At Sea
- ____ INRMP-Planned Developments, Updates, & Revisions
- ____ Listed Species
- ____ Wetlands
- ____ Invasives
- ____ Soil
- ____ Forestry
- ____ Outdoor Recreation
- ____ Training
- ____ Other NR Requirements (Misc)

(FY15) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

5. 61016NR015 : CHS and MMPA NW - NAVMAG Indian Island Marine Mammal Density Surveys for

FY15 EPRWeb Total Spent

$0.00

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

FY15 RU Share of Total Spent

$0.00

(FY15) 6.0 Does the action have an alternative name?

_____ Yes
__X__ No

(FY15) 6.0.a. Please enter the name(s)

(FY15) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
_____ Action Underway
_____ Action Completed
__X__ On-Hold

(FY15) 6.2. How much progress has been made in implementing the action?

__X__ 0-25%
_____ 26-50%
_____ 51-75%
_____ 76-99%
_____ Complete

(FY15) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If EPRWeb shows zero and funding was

__X__ Yes
_____ No

(FY15) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY15) 6.3.b.2. Enter the correct Expended (invoiced) here:

(FY15) 6.5. Does this action meet the goals and objectives of the INRMP?

_____ Yes
_____ Partially
_____ No

(FY15) 6.5.g. Please select the goal(s) that this action supports.

(FY15) 6.5.o. Please select the objective(s) that this action supports.

(FY15) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
_____ Flora
__X__ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
_____ Listed Species
_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training

_____ Other NR Requirements (Misc)

(FY15) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

6. 61016NR010 : EO 13112 NW NAVMAG Invasive Species/Noxious Weed Management

FY15 EPRWeb Total Spent

$41,024.18

FY15 RU Share of Total Spent

$41,024.18

(FY15) 6.0 Does the action have an alternative name?

_____ Yes
__X__ No

(FY15) 6.0.a. Please enter the name(s)

(FY15) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
__X__ Action Underway
_____ Action Completed
_____ On-Hold

(FY15) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
_____ 26-50%
__X__ 51-75%
_____ 76-99%
_____ Complete

(FY15) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If EPRWeb shows zero and funding was

__X__ Yes
_____ No

(FY15) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY15) 6.3.b.2. Enter the correct Expended (invoiced) here:

(FY15) 6.5. Does this action meet the goals and objectives of the INRMP?

__X__ Yes
_____ Partially
_____ No

(FY15) 6.5.g. Please select the goal(s) that this action supports.

(FY15) 6.5.o. Please select the objective(s) that this action supports.

(FY15) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None
__X__ Flora
_____ Fauna
_____ Habitat
_____ At Sea
_____ INRMP-Planned Developments, Updates, & Revisions
_____ Listed Species

_____ Wetlands
_____ Invasives
_____ Soil
_____ Forestry
_____ Outdoor Recreation
_____ Training
_____ Other NR Requirements (Misc)

(FY15) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

7. 61016NR011 : SIKES NW NAVMAG Indian Island - Forest Management/Stand Improvement

FY15 EPRWeb Total Spent

$14,721.72

FY15 RU Share of Total Spent

$14,721.72

(FY15) 6.0 Does the action have an alternative name?

_____ Yes
__X__ No

(FY15) 6.0.a. Please enter the name(s)

(FY15) 6.1. What is the current status of the INRMP action? *

_____ Action Awarded but not started
__X__ Action Underway
_____ Action Completed
_____ On-Hold

(FY15) 6.2. How much progress has been made in implementing the action?

_____ 0-25%
__X__ 26-50%
_____ 51-75%
_____ 76-99%
_____ Complete

(FY15) 6.3.b. Is the EPRWeb Total Spent amount shown correct? If EPRWeb shows zero and funding was

__X__ Yes
_____ No

(FY15) 6.3.b.1. Enter the correct Total Spent Amount here:

(FY15) 6.3.b.2. Enter the correct Expended (invoiced) here:

(FY15) 6.5. Does this action meet the goals and objectives of the INRMP?

__X__ Yes
_____ Partially
_____ No

(FY15) 6.5.g. Please select the goal(s) that this action supports.

(FY15) 6.5.o. Please select the objective(s) that this action supports.

(FY15) 6.6. Which Natural Resources Program Area most benefitted from the INRMP action? (If other, please

_____ None

- [X] Flora
- [ ] Fauna
- [ ] Habitat
- [ ] At Sea
- [ ] INRMP-Planned Developments, Updates, & Revisions
- [ ] Listed Species
- [ ] Wetlands
- [ ] Invasives
- [ ] Soil
- [ ] Forestry
- [ ] Outdoor Recreation
- [ ] Training
- [ ] Other NR Requirements (Misc)

(FY15) 6.7. If the INRMP action provided an ecosystem integrity benefit, select the ecosystem benefitted.

FY14 Projects

Instructions: This section is for projects planned in the installations/site(s) INRMP for award or emergent in **FY14 only**. Projects completed in FY14 and reported as complete in FY14 do not need to be entered. Select a project from the list below (created in the Action Builder) to begin answering questions. To Add new projects, delete existing projects or modify the percentage allocated (share of the project) to this Reporting Unit (RU), click the Blue 'Add/Manage Projects' button. Select the red '**X**' to delete a project, if a project doesn't apply to the Reporting Unit or is not a project that occurred during the current reporting period. If this is an incomplete list, change the 'Action Plan Year' to "2014", use the filters to find any missing projects, check the appropriate check boxes, and click the Blue 'Add Projects' to add additional INRMP actions (projects), e.g. emergent projects, unfunded efforts, or actions that do not require funding, and begin answering questions. Users can also create non-EPRWeb projects by clicking the Green 'Create Project' button.

FY13 Projects

Instructions: This section is for projects planned in the installations/site(s) INRMP for award or emergent in **FY13 only**. Projects completed in FY13 and reported as complete in FY13 do not need to be entered. Select a project from the list below (created in the Action Builder) to begin answering questions. To Add new projects, delete existing projects or modify the percentage allocated (share of the project) to this Reporting Unit (RU), click the Blue 'Add/Manage Projects' button. Select the red '**X**' to delete a project, if a project doesn't apply to the Reporting Unit or is not a project that occurred during the current reporting period. If this is an incomplete list, change the 'Action Plan Year' to "2013", use the filters to find any missing projects, check the appropriate check boxes, and click the Blue 'Add Projects' to add additional INRMP actions (projects), e.g. emergent projects, unfunded efforts, or actions that do not require funding, and begin answering questions. Users can also create non-EPRWeb projects by clicking the Green 'Create Project' button.

Satisfaction Index

Focus Area Score **0.80**

Please answer the following general questions associated with INRMP Actions. Questions followed by an asterisk * are mandatory and must be completed before the datacall can be approved and

6.8. Do the goals and objectives of the INRMP/Natural Resources Program support other conservation

- [X] Yes

_____ No

6.9. Which conservation partnerships/initiatives are supported?

_____ American Land Trust
_____ Chesapeake Bay Initiative
_____ Coastal America
_____ Environmental Security Technology Certification Program (ESTCP)
_____ Flat-tailed Horned Lizard Rangewide (sic) Management Strategy
_____ Gulf of Coastal Plain Ecosystem Partnership
_____ Gulf of Mexico Initiative
_____ Joint Ventures
_____ Land Conservation Cooperatives (LCCs)
_____ Longleaf Pine Initiative
_____ Longleaf Alliance
_____ Mojave Desert Initiative
X National Military Fish and Wildlife Association (NMFWA)
_____ National Ocean Council (NOC) Regional Planning Bodies
_____ Oahu Conservation Partnership
X Partners in Amphibian and Reptile Conservation (PARC)
X Partners in Flight
_____ Other, please list

6.10. To what level does the Natural Resources Program/INRMP meet or exceed USFWS expectations? *

_____ Dissatisfied
_____ Minimally satisfied
_____ Somewhat satisfied
X Completely satisfied
_____ More than satisfied

6.11. To what level are Natural Resources Program executions meeting State Fish and Wildlife Agency conservation management expectations? *

_____ Dissatisfied
_____ Minimally satisfied
_____ Somewhat satisfied
X Completely satisfied
_____ More than satisfied

6.12. To what level are Natural Resource program executions meeting NOAA/NMFS conservation

_____ N/A Does not apply
_____ Dissatisfied
_____ Minimally satisfied
_____ Somewhat satisfied
X Completely satisfied
_____ More than satisfied

6.13. To what extent has the INRMP/Natural Resources program successfully supported other mission areas?

_____ Not supported
_____ Minimally supported
_____ Satisfactorily supported
X Well supported
_____ Very well supported

6.14. Are Cooperative Agreements used to execute natural resources program requirements?

X Yes
_____ No

6.15. Describe any obstacles to INRMP implementation.

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

6. Findings

No Findings

6. Recommendations

No Recommendations

7 - Support of Installation Mission

Focus Area Score 0.84

Focus Area Purpose: Evaluate the level to which existing natural resources requirements support the installation's ability to sustain the current operational mission, ensuring no net loss of mission capability.

NOTE: As always, this focus area is to be completed by the Regional Commander/Commanding Officer (CO) or his/her designee with the responsibility for Title 10 installation assets and resources. Natural Resource Manager(s) are available to facilitate and support this process.

Comment on this Focus Area and associated Questions Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

7.1. To what level do natural resources program support the installation's operational mission? *

X The installation is fully mission-capable because the NR Program fully supports current and future
_____ Partially mission-capable
_____ Not mission-capable

7.2. The Natural Resource program effectively considers current and potential future mission sustainment. *

_____ Strongly disagree
_____ Disagree
_____ Neutral
X Agree
_____ Strongly Agree

7.3. What is the level of coordination between natural resources staff and other site(s) departments and

_____ No coordination
_____ Minimal coordination
_____ Satisfactory coordination
_____ Effective coordination
X Highly effective and successful coordination

7.4. To what extent has the INRMP successfully supported other mission areas? *

_____ Mission not supported
_____ Mission minimally supported
_____ Mission satisfactorily supported
X Mission well supported and fully capable
_____ Mission enhanced, well supported and fully capable

7.5. To what extent does the NR Program and INRMP minimize possible contraints imposed by natural

- X Effectly minimizes mission constraints
- _____ Partially minimizes
- _____ Has not minimized constraints
- _____ Does not address constraints

7.6. To what extent has there been a net loss of training lands or mission-related operational/training

- _____ Mission is fully impeded; training activities cannot be conducted due to regulatory requirements
- _____ Mission/Training activities are somewhat impeded with workarounds due to regulatory requirements
- _____ Neutral
- X No loss occurred
- _____ Mission has seen benefits

7.7. Please provide examples of how the INRMP or Natural Resources program has resulted in any mission

7.8. Please provide examples of how the INRMP or Natural Resources program actions have resulted in

Regional Commander / Commanding Officer Signature

In the Regional Commander / Commanding Officer Section, this is a simple form to track who your Regional Commander / Commanding Officer is and that they have seen your results. It is not required that they physically type in their name and rank below.

Enter then name of your Regional Commander / Commanding Officer.

N. A. Vande Griend

Enter then rank of your Regional Commander / Commanding Officer.

Commander

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing

7. Findings

7. Recommendations

Success Stories

Enter the title of the story in the box to the right, then:

1. Click on the blue "Add Story" button to create a record.
2. Click on the record/row of the story and completely fill-out the success story form.
3. Add any supporting document or image files.
4. Click the green "Save" button in the form.

1. Gray Whale's Body to Live on as Educational Tool

Source

http://www.ptleader.com/news/gray-whale-s-body-to-live-on-as-educational-tool/article_0778ac30-2203-11e6-9e9b-e39e9da8f547.html

Date

5/25/2016

Select the appropriate topic(s)

- _____ Awards
- _____ BASH

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

	Coral Reefs
	Cultural
	Erosion Control
X	Fauna
	Flora
	Forestry
	GIS
	Invasive Species
	NR Management
	Policy
X	Public Outreach
	Recreation
	Restoration
	T&E Species
	Wetlands
	Other - Please Specify

Background discussion.

The body of a gray whale found dead in the Puget Sound earlier this month is now destined for a new life in education thanks to the Port Townsend Marine Science Center (PTMSC).

“The educational opportunities this presents for our students and volunteers are powerful and unique,” Janine Boire, PTMSC executive director, said in a press release.

In cooperation with students and community volunteers, the science center on the waterfront at Fort Worden plans to eventually articulate, or reconstruct, the whale's skeleton for educational use in classes and exhibits.

The whale, a female likely between ages 2 and 4, was first sighted alive in late April in central Puget Sound near Kingston struggling to swim and dive as a result of an injury or illness that trapped gases in the upper part of its body.

On May 8, the whale, identified as CRC-1524, was found dead in Elliott Bay near downtown Seattle. Cascadia Research Collective and the Washington Department of Natural Resources towed the whale’s carcass May 11 to a Port Townsend Bay beach at Naval Magazine Indian Island made available by the U.S. Navy for necropsy.

PTMSC staff and AmeriCorps members assisted in the necropsy May 12, the results of which help NOAA Fisheries understand the whale’s injuries and the cause of death, which could provide insight into health risks affecting gray whales. Biologists and veterinarians suspect the whale may have been suffering from an infection that produced gas inside its body or a pneumothorax – a collapsed lung – that had filled its chest cavity with air. Either condition could have made the animal too buoyant to dive. Gray whales feed by diving to the sea floor and sifting sediment for small marine organisms, such as tiny crustaceans.

A team of 20 volunteers and PTMSC staff, with oversight from veterinarian Dr. Pete Schroeder of the National Marine Mammal Foundation, collected the carcass May 18 from the Crane Point beach across the bay from Port Hadlock.

After removing its entrails, pectoral fins and baleen, the team wrapped the 30-foot, 30,000-pound whale in Spectra netting provided by fisherman Kwin Bailey and sunk it offshore, allowing it to decompose naturally for one-to-two years. Once decomposed, its skeletal remains are to be retrieved, cleaned and prepped for reconstruction, also known as articulation.

Boire said the whale's body, even while decomposing, offers many educational opportunities, “from using submersible ROV technology for monitoring the whale's decomposition, to working with community volunteers in articulating the skeleton, all the way through to providing the legacy of the whale's bones on permanent exhibit.”

Enter summary of the success.

When no one else would let them tow a dead whale onto their beach, the Commanding Officer generously consented to let them use the beach for necropsy, flensing, decomposition and recovery. The environmental staff worked to coordinate access, support and escort to all the volunteers and personnel needing access to the whale. By letting the whale decompose just off shore from the island it ensured the safety of the whale body from curious civilians and boat traffic.

Select story POC.

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

Date that the story was submitted.

10/14/2016

Upload any images that depict the story.

252||Whale Photos

Summary

List the top three accomplishments for the Natural Resources Program during this reporting period. Please include a statement regarding how these accomplishments support the mission of the installation or other activities. This information may be used to brief program successes up to leadership. See detailed examples provided, here.

1. As a result of this year's annual review, have any additional actions, such as management recommendations related to regulatory drivers (ACOE permits, EFH Issues, etc.), been identified that should

_____ Yes

_X_ No

1.a. Please explain in detail.

2. In addition to any findings submitted in the previous 7 Focus Areas, please provide any additional or general

3. In addition to any recommendations submitted in the previous 7 Focus Areas, please provide any additional

4. List the top accomplishment for the Natural Resources Program during this reporting period. *

Assisted Cascadia Research and the Port Townsend Marine Science Center preform a gray whale necropsy and flensing by providing a location and support during the project. The Port Townsend Marine Science Center will display the skeleton if possible or donate it to a facility that can display it and use it for education purposes. The results of the pathology from the necropsy have not yet

5. List the second accomplishment for the Natural Resources Program during this reporting period. *

Utilized goats as a natural, more effective way to remove invasive plant species and reduce the

6. List the third accomplishment for the Natural Resources Program during this reporting period. *

Reduced competition for resources by selective removal of other tree species, for native garry oak trees, which are becoming increasingly rare.

Agriculture

Agriculture Program Status

Objective: This purpose of this section of the Natural Resources Conservation Metrics data call is to gather required information associated with the status of the Agriculture Program. Responses to the questions in this section are not scored as a part of the Natural Resources Conservation Metrics data call. These questions have been added here to collect information that will support the Defense Environmental Program Annual Report to Congress (DEPARC) and Office of the Secretary of Defense Environmental Management Review (EMR). By combining these questions with responses to the Metric's seven (7) focus areas, Natural Resources Managers are faced with fewer annual data calls.

Is there an active agriculture out-lease program on this site? *

_____ Yes

_X_ No

What are the driving factors for having an Ag Lease on this site?

1. How many active leases are currently associated with this site?

2. What is the total number # of leased acres?

3. What is the Annual lease income?

4. What are the Annual expenses?

5. Do any leases involve in-kind payments?

_____ Yes
_____ No

5.a What are the number of in-kind leases?

6. What are the leases for?

_____ Crop Production
_____ Hay
_____ Grazing
_____ Other
_____ Honey Production
_____ Honey Bee Rearing

7. What is the primary land use where agriculture out-leasing occurs? Select all that apply.

_____ Airfield clear/buffer zone
_____ Antenna area
_____ ESQD Arc
_____ Outlying landing field
_____ Weapons storage
_____ Other, please list

8. Are additional lands available for AG out-leasing?

_____ Yes
_____ No

8.a What is the number of additional acres available?

9. Is there an apiary program?

_____ Yes
_____ No

9.a Is the apiary activity part of the AG out-lease program?

_____ Yes
_____ No

10. How many personnel are funded through agriculture out-lease funds?

11. Primary installation agriculture program POC.

Forestry

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

Forestry Program Status

Objective: This purpose of this section of the Natural Resources Conservation Metrics data call is to gather required information associated with the status of the Forestry Program. Responses to the questions in this section are not scored as a part of the Natural Resources Conservation Metrics data call. These questions have been added here to collect information that will support the Defense Environmental Program Annual Report to Congress (DEPARC) and Office of the Secretary of Defense Environmental Management Review (EMR). By combining these questions with responses to the Metric's seven (7) focus areas, Natural Resources Managers are faced with fewer annual data calls.

1. Does the site have forest cover? *

X Yes
_____ No

1.a What is the total number of forested acres on this site?

2. Is there an active forestry program on this site?

X Yes
_____ No

3. What is the total number of acres currently under active forest management?

4. Is there a commercial forest program?

_____ Yes
X No

5. What was the annual program revenue over the past fiscal year?

6. Where any trees harvested during the past fiscal year?

X Yes
_____ No

6.a How many acres of forest were harvested during the past fiscal year?

6.b What was the method of harvest?

_____ Clearcut
_____ Seed Tree Cut
_____ Shelterwood Cut
X Select Cutting
_____ Group Selection
_____ Single Tree Selection
_____ Commercial Thinning

7. What were the annual program expenses during the past fiscal year?

8. Was there a planting during the past fiscal year?

_____ Yes
X No

8.a What were the number of acres regenerated through planting over the past fiscal year?

8.b What species were planted?

9. Did natural regeneration occur last fiscal year?

X Yes
_____ No

Reporting Unit Metrics Q&A Report: NAVMAG INDIAN ISLAND

9.a How many acres are naturally regenerated?

10. Does the site have longleaf pine (Pinus palustris)?

_____ Yes
__X__ No

10.a What is the number of acres of longleaf pine (Pinus palustris)?

11. What are the primary commercial species managed?

12. Is prescribed burning used?

_____ Yes
__X__ No

12.a What is the number of acres burned in the past year?

13. How many personnel are funded through forestry funds?

14. Primary site forestry program POC.

Summary Score

1 - Ecosystem Integrity	**0.94**
Ecosystems	**0.89**
Encroachment	**1.00**
2 - Listed Species Critical Habitat	**0.96**
Threatened and Endangered Species	**0.93**
Unoccupied Critical Habitat	**1.00**
3 - Recreation Use and Access	**0.60**
4 - Sikes Act Cooperation	**0.79**
5 - Team Adequacy	**0.76**
6 - INRMP Implementation	**0.80**
FY16 Projects	**0.80**
Satisfaction Index	**0.80**
7 - Support of Installation Mission	**0.84**

DEPARTMENT OF THE NAVY
NAVAL MAGAZINE INDIAN ISLAND
100 INDIAN ISLAND ROAD
PORT HADLOCK, WA 98339-9723

:

IN REPLY
5090
Ser N45/013
January 23, 2019

National Marine Fisheries Service
Washington Habitat Conservation Branch
Attn: Mr. Steve Landino
510 Desmond Drive SE, Suite 103
Lacey, WA 98503

Dear Mr. Landino:

SUBJECT: FISCAL YEAR 2018 INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN METRICS SUMMARY REPORT

Per the Office of the Chief of Naval Operations Instruction 5090.1D: Environmental Readiness Manual, Navy installations are required to submit an annual report summarizing our recent Integrated Natural Resources Management Plan (INRMP) Metrics meeting, updates to the INRMP, and the status of our INRMP.

Naval Magazine Indian Island (NAVMAGII) INRMP Metrics meeting was held on October 3rd, 2018 at NAVMAGII in Port Hadlock, Washington. Enclosure (1) includes a list of those who participated in the meeting, a summary of our annual INRMP Metrics results for the past year, a summary and description of the NAVMAGII INRMP actions and projects implemented in Fiscal Year 2018, and the federally listed species and candidate species inhabiting the installation a description of benefits resulting from INRMP implementation.

Thank you for your participation in our INRMP Metrics meeting and for your support of the NAVMAGII Natural Resources Program. Should you have any questions concerning the report, my point of contact is Ms. Sara Street, who can be reached at (360) 396-5394 or e-mail: sara.c.street@navy.mil.

Sincerely,

ROCKY B. PULLEY
Commanding Officer
Naval Magazine Indian Island

Enclosure: 1. 2018 Partner Report: NAVMAG INDIAN ISLAND

DEPARTMENT OF THE NAVY
NAVAL MAGAZINE INDIAN ISLAND
100 INDIAN ISLAND ROAD
PORT HADLOCK, WA 98339-9723

IN REPLY
5090
Ser N45/014
January 23, 2019

United States Department of the Interior Fish and Wildlife Service
Western Washington Fish and Wildlife Office
Attn: Mr. Eric Rickerson
510 Desmond Dr. SE, Suite 102
Lacey, Washington 98503

Dear Mr. Rickerson:

SUBJECT: FISCAL YEAR 2018 INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN METRICS SUMMARY REPORT

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Sincerely,

ROCKY B. PULLEY
Commanding Officer
Naval Magazine Indian Island

Enclosure: 1. 2018 Partner Report: NAVMAG INDIAN ISLAND

DEPARTMENT OF THE NAVY
NAVAL MAGAZINE INDIAN ISLAND
100 INDIAN ISLAND ROAD
PORT HADLOCK, WA 98339-9723

IN REPLY
5090
Ser N45/015
January 23, 2019

Washington Department of Fish and Wildlife
Attn: Mr. Jim Unsworth
450 Port Orchard Blvd, Suite 290
Port Orchard, WA 98366

Dear Mr. Unsworth:

SUBJECT: FISCAL YEAR 2018 INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN METRICS SUMMARY REPORT

Per the Office of the Chief of Naval Operations Instruction 5090.1D: Environmental Readiness Manual, Navy installations are required to submit an annual report summarizing our recent Integrated Natural Resources Management Plan (INRMP) Metrics meeting, updates to the INRMP, and the status of our INRMP.

Naval Magazine Indian Island (NAVMAGII) INRMP Metrics meeting was held on October 3rd, 2018 at NAVMAGII in Port Hadlock, Washington. Enclosure (1) includes a list of those who participated in the meeting, a summary of our annual INRMP Metrics results for the past year, a summary and description of the NAVMAGII INRMP actions and projects implemented in Fiscal Year 2018, and the federally listed species and candidate species inhabiting the installation a description of benefits resulting from INRMP implementation.

Thank you for your participation in our INRMP Metrics meeting and for your support of the NAVMAGII Natural Resources Program. Should you have any questions concerning the report, my point of contact is Ms. Sara Street, who can be reached at (360) 396-5394 or e-mail: sara.c.street@navy.mil.

Sincerely,

ROCKY B. PULLEY
Commanding Officer
Naval Magazine Indian Island

Enclosure: 1. 2018 Partner Report: NAVMAG INDIAN ISLAND

Annual Meeting Participants and Attendees

Navy Lead	Last Name	First Name	Organization	Telephone	Email
	Gordon	Brittany	WA Dept Fish and Wildlife	(360) 895-4756	Brittany.gordon@dfw.wa.gov
	Jabloner	Matt		360-396-0050	matt.jabloner@navy.mil
	Kunz	Cindi	NAVFACNW	360-396-1860	cindi.kunz@navy.mil
	Muck	Jim	USFWS	360-753-9586	jim_muck@fws.gov
	Stockton	Julia	NAVFACNW	360-476-6067	julia.stockton@navy.mil
	Street	Sara	NAVFACNW	3603965394	sara.c.street@navy.mil
	Tailleur	Douglas		360-476-2664	douglas.tailleur@navy.mil
	Waldbillig	Chris	WA Dept Fish and Wildlife	360-874-7258	chris.waldbillig@dfw.wa.gov
	Yasenak	Tyler	NAVFACNW	360-315-2452	Tyler.yasenak@navy.mil

INRMP Status

Navy INRMP Status Check

Objective: This purpose of this section of the Natural Resources Conservation Metrics data call is to gather required information associated with the Natural Resources program, specifically compliance with the Sikes Act (16 U.S.C. 670 et seq.) and the status of Integrated Natural Resources Management Plans (INRMP). These questions have been added here to collect information that will support the Defense Environmental Program Annual Report to Congress (DEPARC) and Office of the Secretary of Defense Environmental Management Review (EMR). By combining these questions with responses to the Metric's seven (7) focus areas, Natural Resources Managers are faced with fewer annual data calls. Questions followed by an asterisk * are mandatory and must be completed before the data call can be approved and forwarded to DoD.

Is an INRMP necessary for this installation/site(s)? * **Yes**

Is there currently a compliant INRMP that covers this/these installation/site(s)? * **INRMP - Under Revision**

Name of the most current INRMP that covers this/these installation/site(s) *

Date of the most current INRMP that covers this/these installation/site(s). Format: MM/DD/YYYY

This date records when the Regional Commander/Commanding Officer endorsed (signed) the most recent INRMP (with valid NEPA coverage). *

Does this INRMP qualify as an Operational INRMP? See i for definition. *

Verify the species where the INRMP was used to exempt critical habitat designation under ESA Section 4(a)(3)(B)(i) on this/these site(s). Select all that apply. Leave blank if not applicable. See i-note for bug work around. Please gauge your responses for this reporting period only.

Has USFWS concurrence been received on the most recent INRMP? *

Which USFWS Region(s) are applicable? (Choose all that apply) * **Pacific**

If applicable, list the Field Office that did or will sign concurrence documentation **Washington Fish and Wildlife Office - Lacey, WA**

What is the date of concurrence? Format: MM/DD/YYYY *

You responded No to receiving USFWS concurrence, what is the reason for the delay? *

Was an ESA Section 7 Consultation completed with USFWS for the INRMP? *

Which USFWS field office do you regularly conduct ESA Section 7 consultations with typically? *

Did the Threatened and Endangered Species Listing and Recovery personnel participate in the INRMP review, update or revisions? *

Has NOAA Fisheries (NMFS) concurrence been received on the most recent INRMP? *

Which NOAA Fisheries (NMFS) Region(s) are involved? (Choose all that apply) *

Select the Local Office, if applicable, that did or will sign concurrence documentation.

What is the date of concurrence? Format: MM/DD/YYYY *

What is the reason for the delay? *

Was an ESA Section 7 Consultation completed with NOAA Fisheries (NMFS) for the INRMP? *

Did the Threatened and Endangered Species Listing and Recovery personnel participate in the INRMP review, update or revisions? *

Has State fish and wildlife agency(ies) concurrence been received on the most recent INRMP? *

Which State fish and wildlife agency(ies)? (Choose all that apply) *

What is the date of concurrence? Format: MM/DD/YYYY *

Which State fish and wildlife agency(ies)? (Choose all that apply) * **Washington Department of Fish and Wildlife - Olympia, WA**

What is the reason for the delay? *

If this/these site(s) is/are located on lands affected by tribal treaty rights or other known rights; were Federally-recognized Tribe(s) consulted with to develop or revise the Integrated Natural Resource Management Plan? *

Are migratory birds, specifically birds of conservation concern, adequately addressed in the INRMP for this installation to support the mission and needed NEPA analyses? If you select No, you will be required to enter the reason in the comment box below. *

If the INRMP was updated/revised did the INRMP require new or supplementation NEPA? *

What type of NEPA? * **EA / FONSI**

When was the NEPA completed? Format: MM/DD/YYYY *

Has the Regional Commander / Installation Commanding Officer concurrence been received on the most recent INRMP? *

What is the date of concurrence? Format: MM/DD/YYYY * **8/20/2009**

What is the reason for the delay? *

If the Regional Commander has final authority over whether this/these site(s)' INRMP is compliant has the Regional Commander concurred with/signed the most recent INRMP? *

What is the date of concurrence? Format: MM/DD/YYYY * **8/20/2009**

What is the reason for the delay? *

INRMP - Prior INRMP

Prior INRMPs - To collect overall data on your INRMP program the following questions are related to your first compliant INRMP only if it is different than your currently compliant INRMP.

In addition to your currently compliant INRMP, do you have a previously compliant INRMP? * **No**

Enter the name of First Compliant INRMP

Date of First Compliant INRMP (Usually Dated 2001/2002) Format: MM/DD/YYYY

What type of NEPA Documentation was done for the first compliant INRMP?

When was the NEPA completed for the first compliant INRMP? Format: MM/DD/YYYY

INRMP - Review for Operation and Effect

Review for operation and effect - The following questions are on the 5-year review for operation and effect.

Review for Operation and Effect: A comprehensive joint review by parties to the INRMP, conducted no less often than every 5 years, to determine whether the plan needs an update or revision to continue to adequately address Sikes Act purposes and requirements.

If it has been more than 3 years since a Review for operation and effect, administrative process should be underway in case the INRMP needs to be updated or revised

Remember to upload all related documents on the INRMP Documents tab.

Has a 5-year INRMP review for operation and effect been completed for the most recent INRMP? * **N/A**

Enter the date that the 5-year INRMP review was completed. Format: MM/DD/YYYY *

Has USFWS concurrence been received on the review for operation and effect? *

What is the date of concurrence? Format: MM/DD/YYYY *

Did USFWS or NOAA Threatened and Endangered Species Listing and Recovery personnel participate in the review for operation and effect review, update or revisions? *

Was the Mutual DoD & USFWS Guidelines for Streamlined Review of INRMP Updates to secure FWS approval and state approval for updated INRMPs used? *

Has State fish and wildlife agency(ies) concurrence been received on the most recent INRMP or review for operation and effect? *

What is the date of concurrence? Format: MM/DD/YYYY *

Has NOAA Fisheries (NMFS) concurrence been received on the most recent review for operation and effect? *

What is the date of concurrence? Format: MM/DD/YYYY *

Has the Regional Commander / Installation Commanding Officer concurrence been received on the most recent review for operation and effect? *

What is the date of concurrence? Format: MM/DD/YYYY *

Did the review result in an addendum/appendix, update or revision of the INRMP? *

Was an ESA Section 7 Consultation completed with USFWS review for operation and effect? *

Are migratory birds, specifically birds of conservation concern, adequately addressed in the review for operation and effect for this installation to support the mission and needed NEPA analyses? *

Did the review for operation and effect require new or supplementation NEPA? *

If this/these site(s) is/are located on lands affected by tribal treaty rights or other known rights; were Federally-recognized Tribe(s) consulted with to develop or revise the review for operation and effect? *

INRMP Documents

Uploading Relevant Documents

Please select (all that apply) and upload these documents. * **Final INRMP not available**

Please upload the following documents where applicable: INRMP *

Please upload the following documents where applicable: INRMP NEPA documentation *

Please upload the following documents where applicable: 5-year operation & effect review letter(s) *

Please upload the following documents where applicable: Other Signed Correspondence with Regulatory Partners *

Please upload the following documents where applicable: Annual review briefs to Commanding Officer and/or Regional Commander *

Please upload the following documents where applicable: INRMP Waiver Letter *

Please confirm if you uploaded or sent any INRMP Related document(s).

Army SAFE –Safe Access File Exchangehttps://safe.amrdec.army.mil/SAFE/

US Mail - NavalFacilities Engineering Command Headquarters
Attn: TomMayes – EV2
1322Patterson Ave. SE, Suite 1000
Washington Navy Yard, DC 20374-5065
* **Not Uploaded / Sent**

Goals and Objectives

Please enter all Goals and Objectives as listed in the INRMP for this/these site(s). Enter Goals in the Goals Tab and the Objectives in the Objective tab. Enter Goals first so they can be linked to recommendations.
Please enter a short or abbreviated Goal and Objective name when creating them. To create a new Goal or Objective, click on the appropriate tab button and then click the blue 'Manage Goals' and 'Manage Objectives' buttons. You will be able to add the full text of the Goal or Objective later by clicking on the row with the shore name.

Goals

1. Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs.

2. Increase awareness of natural resources issues and conditions, programs, and responsibilities for sustaining natural resources among the public, NAVMAG Indian Island employees, and tenants

3. Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.

4. Provide sustainable natural resources related outdoor recreation opportunities.

5. Improve natural resources management through enhanced management tools.

Objectives

1. Ensure no net loss in NAVMAG Indian Island's capability to support the military mission.

2. Sustain and enhance healthy wetland, riparian, and shoreline areas and buffers.

3. Redesign existing landscaped areas so they are low-maintenance. Incorporate native trees, shrubs, and herbaceous plants where appropriate. Selection of plant species used in landscape design should be drought tolerant to limit need for irrigation after establishment.

4. Prioritize areas with invasive species for eradication and subsequent restoration with native plants.

5. Protect soil resources from erosion through prevention and control practices.

6. Minimize the amounts of fertilizers, nutrients, and pesticides applied on NAVMAG Indian Island.

7. Assess and enhance the biological conditions of aquatic and terrestrial ecosystems.

8. Promote and implement alternative storm water management approaches, including low impact development, to minimize adverse impacts of surface runoff from impervious areas. Maintain or mimic natural systems when possible.

9. Promote management practices to control the damage caused by feral animals and nuisance wildlife, both to NAVMAG Indian Island's facilities and to sensitive wildlife populations.

10. Ensure compliance with Federal ESA, MBTA, MSA, and MMPA in all construction, maintenance, operations, and landscaping activities.

11. Review all planned construction projects for natural resources impacts. The review will focus on meeting the goals and objective of this INRMP.

12. Solicit Tribal and public input on the INRMP.

13. Conduct annual INRMP metric meetings with USFWS, WDFW, and NMFS.

14. Provide information on base wide natural resources initiatives to NAVMAG Indian Island employees and tenants (e.g. Earth Day activities, surveys, etc.).

15. Partner with local, city, county, and tribal governments and with non-governmental organizations for natural resource enhancement projects.

16. Partner with state and federal agencies for natural resource projects.

17. Provide quality outdoor recreation experiences through picnic areas, and fishing areas while sustaining ecosystem integrity.

18. Maintain or acquire adequate funding and resources to ensure natural resources staff has access to Global Positioning System (GPS) units, Geographical Information System (GIS) support, and training.

19. Maintain existing data layers with the most up-to-date natural resources data and develop layers for natural resources data not currently in the GIS database.

20. Manage, use and disseminate data collected from surveys, reports and projects to update various documents (including this INRMP) and personnel. Additionally, this data can be used to inform visitors and contractors regarding natural resource concerns on the island.

1 - Ecosystems

Terrestrial Ecosystems

(1 - Ecosystems) 1 - 3 of 3

	1. Forest	2. Riparian Wetland	3. Wetlands
Has the ecosystem been identified in the INRMP? *	Yes	Yes	Yes
To what degree are the INRMP goals and objectives being achieved? *	Fully Achieved	Fully Achieved	Fully Achieved
How many acres of this ecosystem have been identified on the installation?	2100	68	89
What is the level of effect Natural Resources management actions have had on desired outcomes to meet the goals and objectives as identified in the INRMP? *	Actions have had the desired effect on desired conditions to meet the goals and objectives as identified in the INRMP	Actions have had the desired effect on desired conditions to meet the goals and objectives as identified in the INRMP	Actions have had the desired effect on desired conditions to meet the goals and objectives as identified in the INRMP
To what extent is the ecological system on the site(s) fragmented	No fragmentation	No fragmentation	No fragmentation

	1. Forest	2. Riparian Wetland	3. Wetlands
due to land or water conversion during the reporting period? *			
To what degree is the ecological system vulnerable to stressors? *	Slightly Vulnerable to Stress	Moderately Vulnerable to Stress	Moderately Vulnerable to Stress
How does the ecosystem's condition within the site(s) compare to the condition outside the site(s)? *	Condition is better on the site(s)	Condition is better on the site(s)	Condition is better on the site(s)
How many acres of this ecosystem were conserved, enhanced or restored this past fiscal year?	2100	68	89
How many miles of shoreline habitat are conserved, enhanced or restored this fiscal year? (miles)	12	12	12
How many acres of aquatic habitat are conserved, enhanced or restored this fiscal year? (acres)	550	550	550

Marine Ecosystems

(1 - Ecosystems) 1 - 2 of 2

	1. Intertidal	2. Marine Nearshore
Has the ecosystem been identified in the INRMP? *	Yes	Yes
To what degree are the INRMP goals and objectives being achieved? *	Somewhat Achieved	Somewhat Achieved
How many acres of this ecosystem have been identified on the installation?	137	550
What is the level of effect Natural Resources management actions have had on desired outcomes to meet the goals and objectives as identified in the INRMP? *	Actions have had a limited effect on desired conditions to meet the goals and objectives as identified in the INRMP	Actions have had the desired effect on desired conditions to meet the goals and objectives as identified in the INRMP
To what extent is the ecological system on the site(s) fragmented due to land or water conversion during the reporting period? *	No fragmentation	No fragmentation
To what degree is the ecological system vulnerable to stressors? *	Highly Vulnerable to Stress	Highly Vulnerable to Stress
How does the ecosystem's condition within the site(s) compare to the condition outside the site(s)? *	Condition is better on the site(s)	Condition is similar both on and off the site(s)
How many acres of this ecosystem were conserved, enhanced or restored this past fiscal year?	137	550
How many miles of shoreline habitat are conserved, enhanced or restored this fiscal year? (miles)	12	12
How many acres of aquatic habitat are conserved, enhanced or restored this fiscal year? (acres)	550	550

1 - Encroachment

An Encroachment Action Plan (EAP) is the primary tool and process which results in the identification, quantification, mitigation, and prevention of the potential encroachment

challenges to an installation or a range. NAVFAC provides planning, environmental, legal, real estate support, and program management oversight for the Commander, Navy Installations Command (CNIC) Encroachment Management program. Per OPNAVINST 11010.40, Navy natural resources managers shall coordinate with mission component commands, COs of Navy installations, range COs, range complex coordinators, enhanced readiness teams, community plans and liaison officers and others with roles and responsibilities for encroachment identification, quantification, mitigation, and prevention.

Are NRMs actively participating (e.g. as a member of the installation's/Region's Encroachment working group) in Encroachment Management Program planning with Community Plans and Liaison Officers (CPLOs) and Asset Management at the installation to understand natural resource related encroachment challenges? * **Yes**

Are conservation easements or buffers in place to provide an ecosystem integrity benefit on the site(s)? * **No**

Are off-base conservation management actions integrated with continued management on-base through the INRMP? * **No**

Do opportunities exist, either through obtaining buffers/easements under 10 USC 2684a (REPI authority) or by entering into agreements for the maintenance and improvement of natural resources off-installation under 16 USC 670c-1 (Sikes Act Authority), for encroachment partnering to relieve or eliminate current or anticipated future natural resources related challenges that could restrict or impede military mission activities? * **No – development is adjacent to the installation or there are no willing partners.**

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.
Findings **We are an Island that is owned entirely by the Navy.**

Recommendations **None at this time.**

2 - Threatened and Endangered Species

(2 - Threatened and Endangered Species) 1 - 4 of 10

	1. (V01) Bocaccio : Sebastes paucispinis	2. (V06) Bull Trout : Salvelinus confluentus	3. (V04) Chinook salmon : Oncorhynchus (=Salmo) tshawytscha	4. (V02) Chum salmon : Oncorhynchus keta
Provide a location status for this species from the choices provided below. See i-Note if your selection window clips the choices. *	Within 5 miles nearshore waters	Confirmed in nearshore waters	Confirmed in nearshore waters	Confirmed in nearshore waters
Have inventories and/or surveys for this species ever been completed on the site(s)? *	Yes	Yes	Yes	Yes
Please provide dates (MM/YYYY) for all inventories/surveys for this species, separate each date with a ';'. Do not include surveys that were completed during this	2014 surveys with WDFW; regular surveys are conducted by the Tribes.	2014 surveys with WDFW; regular surveys are conducted by the Tribes.	2014 surveys with WDFW; regular surveys are conducted by the Tribes.	2014 surveys with WDFW; regular surveys are conducted by the Tribes.

	1. (V01) Bocaccio : Sebastes paucispinis	2. (V06) Bull Trout : Salvelinus confluentus	3. (V04) Chinook salmon : Oncorhynchus (=Salmo) tshawytscha	4. (V02) Chum salmon : Oncorhynchus keta
reporting period, you will provide that information in a separate question. (Example response for this question 01/1998; 02/2003; 02/2008; 03/2013 *				
Why are surveys not required for this species?				
Does existing survey data provide adequate information on the population presence and numbers on the site(s)? *	Yes	No	No	No
Do existing surveys provide adequate data on habitat conditions on the site(s)? *	Yes	Yes	Yes	Yes
Are protocol surveys required for this species? *	No	No	No	No
What is the established protocol or frequency of inventories/surveys for this species? *				
Are surveys being done within those timelines? *				
To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the conservation needs of the species and/or the species' habitat? *	Good	Good	Good	Good
Does the Navy have 95% or more of the total management burden for this species? *	No	No	No	No
PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.				
Have inventories/surveys for this species been completed on the site(s) during this reporting period? *	Yes	Yes	No	No
Has critical habitat been proposed for the species during the reporting period on the site(s)	No	No	No	No

	1. (V01) Bocaccio : Sebastes paucispinis	2. (V06) Bull Trout : Salvelinus confluentus	3. (V04) Chinook salmon : Oncorhynchus (=Salmo) tshawytscha	4. (V02) Chum salmon : Oncorhynchus keta
(per Federal Register [FR] Final Rule)? *				
Has the Navy been contacted or responded to any requests regarding proposed critical habitat been proposed for the species during the reporting period?				
Has USFWS and/or NMFS proposed critical habitat for the species during the reporting period on the site(s)?				
Did the Navy respond?				
Please upload response to document library and then select it here. *				
If critical habitat was designated during the reporting period, please explain why USFWS and/or NMFS did not provide the Navy with an ESA (Sec. 4) exemption/exclusion vice designating critical habitat?				
if critical habitat was designated during the reporting period, provide acreage of critical habitat designated?				
If critical habitat was designated during the reporting period, please provide the total acreage of critical habitat designated in all years.				
If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec.4) was exemption/exclusion granted?				
If known, please provide the number of acres excluded or exempted from critical habitat.				
If a previously designated critical habitat exemption/exclusion exists for this species on the	Yes	Yes	Yes	Yes

	1. (V01) Bocaccio : Sebastes paucispinis	2. (V06) Bull Trout : Salvelinus confluentus	3. (V04) Chinook salmon : Oncorhynchus (=Salmo) tshawytscha	4. (V02) Chum salmon : Oncorhynchus keta
site(s), are critical habitat management actions/projects clearly identified in the INRMP? *				
If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management actions/projects clearly identified in the EPRWeb? *	Yes	Yes	Yes	Yes
Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?	No	No	No	No
Please identify mission types that are or could be impacted by this species. Select all that apply. If you choose N/A, please explain in the comment field. *	Ordnance Ops	Ordnance Ops	Ordnance Ops	Ordnance Ops
What is the level of concern with regard to impacts to military readiness/mission capabilities with the management of the species? *	White - No known impact on military readiness.	White - No known impact on military readiness.	White - No known impact on military readiness.	White - No known impact on military readiness.
Please select an ecosystem(s)/habitat(s) that is/are associated with this species. *	Marine Nearshore	Marine Nearshore	Marine Nearshore	Marine Nearshore
Is the ecosystem effectively managed to sustain viable populations of species?	Minimally effective management	Minimally effective management	Minimally effective management	Minimally effective management
	E	T	T	T

(2 - Threatened and Endangered Species) 5 - 8 of 10

	5. (V06) Humpback whale : Megaptera novaeangliae	6. (V07) Humpback whale : Megaptera novaeangliae	7. (V01) Killer whale : Orcinus orca	8. (V01) Marbled murrelet : Brachyramphus marmoratus
Provide a location status for this species from the choices provided below. See i-Note if your selection window clips the choices. *	Offsite within 5 mi of installation	Confirmed	Confirmed in nearshore waters	Confirmed in nearshore waters
Have inventories and/or surveys for this species ever been completed on the site(s)? *	Yes	Yes	Yes	Yes
Please provide dates (MM/YYYY) for all inventories/surveys for this species, separate each date with a ';'. Do not include surveys that were completed during this reporting period, you will provide that information in a separate question. (Example response for this question 01/1998; 02/2003; 02/2008; 03/2013 *	3/2007 - 09/2007; 07/2008 - 09/2008; 10/2009 - 05/2010; 08/2013 - 09/2014; 07/2014 - 09/2014; 01/2015; 04/2015; 01/2016	3/2007 - 09/2007; 07/2008 - 09/2008; 10/2009 - 05/2010; 08/2013 - 09/2014; 07/2014 - 09/2014; 01/2015; 04/2015; 01/2016	3/2007 - 09/2007; 07/2008 - 09/2008; 10/2009 - 05/2010; 08/2013 - 09/2014; 07/2014 - 09/2014; 01/2015; 04/2015; 01/2016	3/2007 - 09/2007; 07/2008 - 09/2008; 10/2009 - 05/2010; 08/2013 - 09/2014; 07/2014 - 09/2014; 01/2015; 04/2015; 01/2016
Why are surveys not required for this species?				
Does existing survey data provide adequate information on the population presence and numbers on the site(s)? *	Yes	Yes	Yes	Yes
Do existing surveys provide adequate data on habitat conditions on the site(s)? *	No	No	No	Yes
Are protocol surveys required for this species? *	No	No	No	Yes
What is the established protocol or frequency of inventories/surveys for this species? *				Other
Are surveys being done within those timelines? *				Not Warranted
To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the conservation needs of the species and/or the species' habitat? *	Minimal	Minimal	Minimal	Good

	5. (V06) Humpback whale : Megaptera novaeangliae	6. (V07) Humpback whale : Megaptera novaeangliae	7. (V01) Killer whale : Orcinus orca	8. (V01) Marbled murrelet : Brachyramphus marmoratus
Does the Navy have 95% or more of the total management burden for this species? *	No	No	No	No
PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.				
Have inventories/surveys for this species been completed on the site(s) during this reporting period? *	No	Yes	Yes	Yes
Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal Register [FR] Final Rule)? *	No	No	No	No
Has the Navy been contacted or responded to any requests regarding proposed critical habitat been proposed for the species during the reporting period?				
Has USFWS and/or NMFS proposed critical habitat for the species during the reporting period on the site(s)?				
Did the Navy respond?				
Please upload response to document library and then select it here. *				
If critical habitat was designated during the reporting period, please explain why USFWS and/or NMFS did not provide the Navy with an ESA (Sec. 4) exemption/exclusion vice designating critical habitat?				
if critical habitat was designated during the reporting period, provide acreage of critical habitat designated?				
If critical habitat was designated during the reporting period, please provide the total acreage				

	5. (V06) Humpback whale : Megaptera novaeangliae	6. (V07) Humpback whale : Megaptera novaeangliae	7. (V01) Killer whale : Orcinus orca	8. (V01) Marbled murrelet : Brachyramphus marmoratus
of critical habitat designated in all years.				
If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec.4) was exemption/exclusion granted?				
If known, please provide the number of acres excluded or exempted from critical habitat.				
If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management actions/projects clearly identified in the INRMP? *	N/A	Yes	Yes	Yes
If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management actions/projects clearly identified in the EPRWeb? *	N/A	Yes	Yes	Yes
Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?	No	No	No	No
Please identify mission types that are or could be impacted by this species. Select all that apply. If you choose N/A, please explain in the comment field. *	Ordnance Ops	Ordnance Ops	Ordnance Ops	Ordnance Ops
What is the level of concern with regard to impacts to military readiness/mission capabilities with the management of the species? *	Yellow - Minimal potential to impact military readiness.	White - No known impact on military readiness.	White - No known impact on military readiness.	White - No known impact on military readiness.
Please select an ecosystem(s)/habitat(s) that	Marine Nearshore	Marine Nearshore	Marine Nearshore	Marine Nearshore

	5. (V06) Humpback whale : Megaptera novaeangliae	6. (V07) Humpback whale : Megaptera novaeangliae	7. (V01) Killer whale : Orcinus orca	8. (V01) Marbled murrelet : Brachyramphus marmoratus
is/are associated with this species. *				
Is the ecosystem effectively managed to sustain viable populations of species?	Effectively managed	Minimally effective management	Minimally effective management	Minimally effective management
	T	E	E	T

(2 - Threatened and Endangered Species) 9 - 10 of 10

	9. (V13) Steelhead : Oncorhynchus (=Salmo) mykiss	10. (V01) yelloweye rockfish : Sebastes ruberrimus
Provide a location status for this species from the choices provided below. See i-Note if your selection window clips the choices. *	Confirmed in nearshore waters	Within 5 miles nearshore waters
Have inventories and/or surveys for this species ever been completed on the site(s)? *	Yes	Yes
Please provide dates (MM/YYYY) for all inventories/surveys for this species, separate each date with a ';'. Do not include surveys that were completed during this reporting period, you will provide that information in a separate question. (Example response for this question 01/1998; 02/2003; 02/2008; 03/2013 *	2014 surveys with WDFW; regular surveys are conducted by the Tribes.	2014 surveys with WDFW; regular surveys are conducted by the Tribes.
Why are surveys not required for this species?		
Does existing survey data provide adequate information on the population presence and numbers on the site(s)? *	No	Yes
Do existing surveys provide adequate data on habitat conditions on the site(s)? *	Yes	Yes
Are protocol surveys required for this species? *	No	No
What is the established protocol or frequency of inventories/surveys for this species? *		
Are surveys being done within those timelines? *		
To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the conservation needs of the species and/or the species' habitat? *	Good	Good

	9. (V13) Steelhead : Oncorhynchus (=Salmo) mykiss	10. (V01) yelloweye rockfish : Sebastes ruberrimus
Does the Navy have 95% or more of the total management burden for this species? *	No	No
PLEASE GAUGE YOUR RESPONSES FOR THIS REPORTING PERIOD ONLY.		
Have inventories/surveys for this species been completed on the site(s) during this reporting period? *	Yes	Yes
Has critical habitat been proposed for the species during the reporting period on the site(s) (per Federal Register [FR] Final Rule)? *	No	No
Has the Navy been contacted or responded to any requests regarding proposed critical habitat been proposed for the species during the reporting period?		
Has USFWS and/or NMFS proposed critical habitat for the species during the reporting period on the site(s)?		
Did the Navy respond?		
Please upload response to document library and then select it here. *		
If critical habitat was designated during the reporting period, please explain why USFWS and/or NMFS did not provide the Navy with an ESA (Sec. 4) exemption/exclusion vice designating critical habitat?		
if critical habitat was designated during the reporting period, provide acreage of critical habitat designated?		
If critical habitat was designated during the reporting period, please provide the total acreage		

	9. (V13) Steelhead : Oncorhynchus (=Salmo) mykiss	10. (V01) yelloweye rockfish : Sebastes ruberrimus
of critical habitat designated in all years.		
If critical habitat was proposed for this species but has not been designated during the reporting period on the site(s), under which provision of the ESA (Sec.4) was exemption/exclusion granted?		
If known, please provide the number of acres excluded or exempted from critical habitat.		
If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management actions/projects clearly identified in the INRMP? *	Yes	Yes
If a previously designated critical habitat exemption/exclusion exists for this species on the site(s), are critical habitat management actions/projects clearly identified in the EPRWeb? *	Yes	Yes
Have any conservation recommendations pertaining to this species been identified during the reporting period that should be considered for incorporation in the INRMP?	No	No
Please identify mission types that are or could be impacted by this species. Select all that apply. If you choose N/A, please explain in the comment field. *	Ordnance Ops	Ordnance Ops
What is the level of concern with regard to impacts to military readiness/mission capabilities with the management of the species? *	White - No known impact on military readiness.	White - No known impact on military readiness.
Please select an ecosystem(s)/habitat(s) that is/are associated with this species. *	Marine Nearshore	Marine Nearshore

	9. (V13) Steelhead : Oncorhynchus (=Salmo) mykiss	10. (V01) yelloweye rockfish : Sebastes ruberrimus
Is the ecosystem effectively managed to sustain viable populations of species?	Minimally effective management	Minimally effective management
	T	T

2 - Proposed and Candidate Species

No items in this module.

2 - State, Local, and other Species

	1. western pond turtle : Actinemys marmorata
What is the current status of the species?	(SE) State listed as Endangered
Does the Navy manage 95% or more of this species population?	No
Have surveys been completed for this species on the site(s)?	No
What is date when surveys were completed? Format: (MM/DD/YYYY)	
Do existing surveys provide adequate data on habitat conditions on the site(s)?	No
Does existing survey data provide adequate information on the population presence and numbers on the site(s)?	No
To what extent are quantifiable goals, objectives, and monitoring requirements in place to address the conservation needs of the species and/or the species' habitat?	Minimal
Provide a location status for this species from the choices provided below. See i-Note if your selection window clips the choices.	Potentially

	1. western pond turtle : Actinemys marmorata
Provide any other comments below:	
Please identify the mission types impacted by this species. Select all that apply. If you choose N/A, please explain in the comment field.	Ordnance Ops
	SC

2 - Unoccupied Critical Habitat

Has unoccupied critical habitat for any federally listed species been designated on the site(s)? * **No**

For which species? *

Have management projects/actions addressing unoccupied critical habitat been clearly identified in the INRMP? * **N/A**

Have management projects/actions addressing unoccupied critical habitat been clearly identified in the EPRWeb? * **N/A**

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.
Findings **None**

Recommendations **None**

3 - Recreation Use and Access and Conservation Law Enforcement

Focus Area Purpose: Evaluate the availability and adequacy of public recreational use opportunities, such as fishing and hunting, and access for handicapped and disabled persons, given security and safety requirements for the installation.

Comment on this Focus Area and associated Questions: Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.
Are there Natural Resources related recreational opportunities on the site(s)? (i.e. Hunting, Fishing, Trapping, Hiking, Archery, Wildlife watching, Fresh Watersports, Marine watersports or Day use-picnic) * **Yes**

Does the INRMP adequately identify outdoor recreational activities? * **Moderately Addressed**

Please indicate the type(s) of outdoor recreation activities addressed in the INRMP and offered on the site(s). * **Day use-picnic, Camping, Hiking, Wildlife watching**

What is the total number of acres where outdoor recreation is allowed? (acres)

Are there recreational fishing opportunities at the installation/site(s)? **No**

Are state licenses for recreational fishing required?

Are local (installation/region) licenses or permits for recreational fishing required?

Are annual local fishing licenses or permits issued?

Number issued to DoD personnel:

Number issued to public:

Are daily local fishing licenses or permits issued?

Number of DoD user days:

Number of public user days:

Are records kept for recreational fishing "user days"?

Number of DoD user days:

Number of public user days:

How many acres of Lakes are available for recreational fishing at the installation/site(s)? (acres)

How many miles of streams are available for recreational fishing at the installation/site(s)?

Provide brief description of recreational fish opportunities sponsored by the site(s).

Where mission, security, safety, and environmental constraints allow, the INRMP indicates use and access areas on the installation. * **Yes**

Are recreational opportunities offered to the public? * **No**

How many acres are accessible to the public? **0**

Are recreational opportunities offered to military or DoD civilian personnel? * **Yes**

How many acres are provided for DoD personnel only?

Are recreational opportunities accessible by disabled veterans/Americans? * **No**

Are fees collected for outdoor recreational opportunities? * **N/A (recreational opportunities do not include hunting and fishing, and/or the collection of fees)**

How much was collected during the reporting period? *

Amount of Sikes Act fees collected in the current FY? (Hunting and Fishing)

Amount of Sikes Act fees spent on wildlife programs in current FY?

Are recreational facilities in good condition? * **Yes**

Are sustainable harvest goals in the INRMP effective for the management of the species' population? * **N/A = (recreational opportunities do not include hunting and fishing)**

To what extent did the installation develop and provide public outreach/educational awareness, e.g. environmental educational opportunities, natural resource field trips/tours, pamphlets? * **Excellent Outreach**

Please select all the outreach programs or opportunities on your site(s). **Earth Day Activities, Other**

Does the installation/site(s) voluntarily participate in public education & outreach programs that promote aquatic resources conservation, fishing ethics, recreational angling, and water safety? **No**

Does the installation/Site(s) sponsor recreational boating safety courses? **No**

Number of people who participated in DoD recreational boating safety courses:

Please describe your collaborative projects:

The following questions are related to your Natural Resources Law Enforcement Program

Is there an active conservation law enforcement program (CLEP) on the installation? * **N/A (INRMP or Natural Resources Program does NOT identify Conservation Law Enforcement as part of the program. Recreational opportunities do not include hunting and fishing)**

How many total work-hours per year are dedicated to law enforcement? (Includes full-time and part-time personnel) *

Does the law enforcement program include federal (Non-Navy Civilian), state, or local or contractor personnel? (Select all that apply)

Please select the funding sources used by the Law Enforcement Program. (Select all that apply.) *

Are Law Enforcement personnel routinely supporting other programs? (Ex. Cultural Resources) *

Do you have any inter-jurisdictional agreements for conservation law enforcement with other military departments, Federal, tribal, state or local law enforcement, or land management agencies? *

Have conservation law enforcement officers completed the FLETC Land Management Police Training Program or equivalent? *

Is a Conservation Law Enforcement Plan included in your INRMP and/or ICRMP? *

Please provide a brief description of the installation's Conservation Law Enforcement Program. *

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.
Findings **Recreational activities are not available to the public due to security mission reasons.**

Recommendations **On base employees are allowed certain recreational activity privileges, usually with restricted times and locations due to mission/security restrictions.**

4 - Sikes Act Cooperation

(4 - Sikes Act Cooperation) USFWS Questions

Question	USFWS
Was the agency invited to participate in the annual INRMP/Natural Resources Program review? *	Yes
The agency is familiar with and has reviewed the INRMP. *	Yes - This partner is familiar with and has reviewed the site(s)' INRMP.
The agency is engaged in the INRMP development and implementation. *	The sites(s) engaged the USFWS and these efforts are well documented.
By what method was the agency invited to participate in the annual INRMP/Natural Resources Program review?	Electronic mail
Did the agency respond to the invitation to participate in the annual INRMP/Natural Resources Program review? *	Yes
How many attempts were made to invite the agency to participate in the annual INRMP/Natural Resources Program review? *	0-3
Did the agency participate in the annual INRMP/Natural Resources Program review? *	Yes
If the agency did not participate in the annual review, what type of correspondence was received from the agency to inform the site(s) that they were not able to participate?	
If the agency did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect?	
What date? Format: MM/DD/YYYY	
How well are site(s) natural resource management goals and objectives aligned with conservation goals of the agency? e.g. USFWS/NOAA Fisheries Service regional goals? *	Somewhat aligned
Was a report of the previous year's annual INRMP/Natural Resources Program review submitted to the agency during this reporting period? *	Yes

(4 - Sikes Act Cooperation) State Questions

Question	State
Was the agency invited to participate in the annual INRMP/Natural Resources Program review? *	Yes
The state fish and wildlife agency is familiar with and has reviewed the INRMP. *	Yes - The partners is familiar with and has reviewed the site(s)' INRMP.

Question	State
The agency is engaged in the INRMP development and implementation. *	The sites(s) engaged the state fish and wildlife agency and these efforts are well documented.
By what method was the agency invited to participate in the annual INRMP/Natural Resources Program review?	Electronic mail
Did the agency respond to the invitation to participate in the annual INRMP/Natural Resources Program review? *	Yes
How many attempts were made to invite the agency to participate in the annual INRMP/Natural Resources Program review? *	0-3
Did the agency participate in the annual INRMP/Natural Resources Program review? *	Yes
If the agency did not participate in the annual review, what type of correspondence was received from the agency to inform the site(s) that they were not able to participate?	
If the agency did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect?	
What date? Format: MM/DD/YYYY	
How well are site(s) natural resource management goals and objectives aligned with conservation goals of the agency? e.g. State Wildlife Action Plans (SWAPs)? *	Somewhat aligned
Was a report of the previous year's annual INRMP/Natural Resources Program review submitted to the agency during this reporting period? *	Yes

(4 - Sikes Act Cooperation) NOAA Fisheries Service (NMFS) Questions

Question	NOAA Fisheries Service (NMFS)
Was the agency invited to participate in the annual INRMP/Natural Resources Program review? *	Yes
The agency is familiar with and has reviewed the INRMP. *	Yes - This partner is familiar with and have reviewed the site(s)' INRMP.
The agency is engaged in the INRMP development and implementation. *	The sites(s) engaged the NOAA Fisheries Service and these efforts are well documented.
By what method was the agency invited to participate in the annual INRMP/Natural Resources Program review?	Electronic mail

Question	NOAA Fisheries Service (NMFS)
Did the agency respond to the invitation to participate in the annual INRMP/Natural Resources Program review? *	Yes
How many attempts were made to invite the agency to participate in the annual INRMP/Natural Resources Program review? *	0-3
Did the agency participate in the annual INRMP/Natural Resources Program review? *	Yes
If the agency did not participate in the annual review, what type of correspondence was received from the agency to inform the site(s) that they were not able to participate?	
If the agency did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect?	
What date? Format: MM/DD/YYYY	
How well are site(s) natural resource management goals and objectives aligned with conservation goals of the agency e.g. USFWS/NOAA Fisheries Service regional goals *	Somewhat aligned
Was a report of the previous year's annual INRMP/Natural Resources Program review submitted to the agency during this reporting period? *	Yes

5 - Team Adequacy

Focus Area Purpose: Assess the adequacy of the natural resources team (professionally trained natural resources management and/or installation support personnel) in accomplishing INRMP/Natural Resources Program goals and objectives at each installation.

Comment on this Focus Area and associated Questions Select this link below each question if you would like to elaborate on the answer provided. This is also a good way to document the assumptions made by all partners that contributed to the answer.

Is there a Navy professional Natural Resources Manager designated by the Regional Commander/Installation Commanding Officer? * **Yes**

Is there an on-site Navy professional Natural Resources Manager? * **Yes**

Is there adequate installation staff assigned or available to properly implement the INRMP/Natural Resources Program goals and objectives? * **Insufficient**

How many staff members are available? * **2**

How many staff members are required? (based on the most recent POM Labor assessment) * **4**

How well do higher echelon offices support the installation natural resources program? (e.g. reach back support for execution, policy support, etc.) * **Satisfactory Support**

The team is enhanced by the use of contractors. * **Neutral**

The team is enhanced by the use of volunteers. * **Somewhat Agree**

The Natural Resources team is adequately trained to implement the goals and objectives of the INRMP. **Professionals received adequate supplemental training**

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.
Findings **Insufficient staff to support multiple programs within the environmental division.**

Recommendations **Additional staff are needed.**

6 - INRMP Implementation

Focus Area Purpose: Evaluates the execution of actions, to include projects, taken to meet goals/objectives outlined in the INRMP.
Supplemental Information: The intent of this Focus Area is to assess how well actions are being implemented to execute the goals and objectives of the INRMP. Actions can include projects submitted via EPRWeb, as well as activities executed with alternative funds, not programmed through EPRWeb, or carried out by the use of volunteers or cooperative partnerships with other entities.
For each project or action executed, or partnership forged, or initiative engaged with, during the reporting period for the installation, the following questions are asked to evaluate INRMP action implementation. Note: For EPRWeb projects, the data such as project number, project title, funding source, and total obligated are pre-populated with data from EPRWeb. The user has the ability to edit the percentage applicable to this Reporting Unit (RU) if less than 100%.
Questions followed by an asterisk * are mandatory and must be completed before the datacall can be approved and forwarded to DoD.

Note: Total Spent in EPRWeb is a total of the following fields in SABRS or STARS (Committed + Obligated + Expended + Prepayment + Accounts Payable + Travel Advance.)

FY18 Projects

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP	3. 61016NR009 : CWA NW NAVMAG INDIAN ISLAND Port Security Barrier Mitigation	4. UC-61016 : Spartina Eradication
Does the action have an alternative name? *	No	No	No	No
Please enter the name(s) *				
Was this action programmed in EPR Web? *	Yes	Yes	Yes	Yes
What is the current status of the INRMP action? *	Action Underway	Action Completed	Funding Received but not executable	Action Completed
If awarded in a prior year, select the year in which the action was awarded. *				
Select the year that this action was originally planned for in your INRMP. *				
If project was accepted risk or not executed please summarize the risk to the mission. *				
How much progress has been made in implementing the action? *	51-75%	Complete	0-25%	Complete
Is the INRMP action on schedule? *	Yes	Yes	No	Yes
Enter the correct Total Spent amount if the EPR $ is invalid - otherwise, leave blank. Note: This includes NAVFAC Budget Based Transfer (BBT) and acquisition support funds. User Created projects enter amounts here.	159966.75	25030	0	
Enter the correct Expended (invoiced) amount if the EPR $ is invalid - otherwise, leave blank. Note: This includes NAVFAC Budget Based Transfer (BBT) and acquisition support funds. User Created projects enter amounts here.	159966.75	25030	0	
Does this action meet the goals and objectives of the INRMP? *	Yes - meet or exceed overall INRMP goals and objectives.	Partially accomplish overall INRMP goals and objectives.	No - cannot accomplish overall INRMP goals and objectives.	Yes - meet or exceed overall INRMP goals and objectives.

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP	3. 61016NR009 : CWA NW NAVMAG INDIAN ISLAND Port Security Barrier Mitigation	4. UC-61016 : Spartina Eradication
Please select the goal(s) that this action supports.	Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs., Improve natural resources management through enhanced management tools., Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.			Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs.
Please select the objective(s) that this action supports.	Ensure compliance with Federal ESA, MBTA, MSA, and MMPA in all construction, maintenance, operations, and landscaping activities.			Assess and enhance the biological conditions of aquatic and terrestrial ecosystems.
Which Natural Resources Program Area most benefitted from the INRMP action? (Select all the apply) (If other, please describe in the comments) *	Fauna, At Sea, Listed Species	INRMP-Planned Developments, Updates, & Revisions	None	At Sea
If the INRMP action provided an ecosystem integrity benefit, select the ecosystem(s) benefitted and provide additional details in the comment field. If no specific "ecosystem" benefit, then leave blank.	Marine Nearshore			Intertidal
Does this project support mitigation for a project/action? *	No	No	Yes	No
Please include the name of the project or action it supports. *			Port Security Barrier - tribal mitigation	

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP	3. 61016NR009 : CWA NW NAVMAG INDIAN ISLAND Port Security Barrier Mitigation	4. UC-61016 : Spartina Eradication
Where have the mitigation requirements been documented? *			NEPA	

FY17 Projects

(FY17 Projects) 1 - 4 of 6

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 68742CN002 : 1 S NW Threatened and Endangered Fish and Forage Fish Habitat Quality Assessments/Improvements and Forage Fish Surveys	3. 6101612002 : CHE NW Indian Island - INRMP Conservation Mapping	4. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP
Does the action have an alternative name? *	No	No	No	No
Please enter the name(s) *				
Was this action programmed in EPR Web? *	Yes	Yes	Yes	Yes
What is the current status of the INRMP action? *	Action Underway	Funding Received but not executable	Action Completed	Action Completed
If awarded in a prior year, select the year in which the action was awarded. *				
Select the year that this action was originally planned for in your INRMP. *				
If project was accepted risk or not executed please summarize the risk to the mission. *				
How much progress has been made in implementing the action? *	0-25%	0-25%	Complete	Complete
Is the INRMP action on schedule? *	Yes	No	Yes	Yes
Enter the correct Total Spent amount if the EPR $ is invalid - otherwise, leave blank.		40000		

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 68742CN002 : 1 S NW Threatened and Endangered Fish and Forage Fish Habitat Quality Assessments/Improvements and Forage Fish Surveys	3. 6101612002 : CHE NW Indian Island - INRMP Conservation Mapping	4. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP
Enter the correct Expended (invoiced) amount if the EPR $ is invalid - otherwise, leave blank.	4286			
Does this action meet the goals and objectives of the INRMP? *	Yes - meet or exceed overall INRMP goals and objectives.	Partially accomplish overall INRMP goals and objectives.	Yes - meet or exceed overall INRMP goals and objectives.	Yes - meet or exceed overall INRMP goals and objectives.
Please select the goal(s) that this action supports. *	Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs., Increase awareness of natural resources issues and conditions, programs, and responsibilities for sustaining natural resources among the public, NAVMAG Indian Island employees, and tenants, Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable., Improve natural resources management through enhanced management tools.	Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs., Improve natural resources management through enhanced management tools., Increase awareness of natural resources issues and conditions, programs, and responsibilities for sustaining natural resources among the public, NAVMAG Indian Island employees, and tenants, Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.	Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs., Improve natural resources management through enhanced management tools., Increase awareness of natural resources issues and conditions, programs, and responsibilities for sustaining natural resources among the public, NAVMAG Indian Island employees, and tenants, Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.	Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs., Improve natural resources management through enhanced management tools., Increase awareness of natural resources issues and conditions, programs, and responsibilities for sustaining natural resources among the public, NAVMAG Indian Island employees, and tenants, Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable., Provide sustainable natural resources related outdoor recreation opportunities.
Please select the objective(s) that this action supports. *	Assess and enhance the biological conditions of	Assess and enhance the biological conditions of	Assess and enhance the biological conditions of	Assess and enhance the biological conditions of

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 68742CN002 : 1 S NW Threatened and Endangered Fish and Forage Fish Habitat Quality Assessments/Improvements and Forage Fish Surveys	3. 6101612002 : CHE NW Indian Island - INRMP Conservation Mapping	4. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP
	aquatic and terrestrial ecosystems., Ensure compliance with Federal ESA, MBTA, MSA, and MMPA in all construction, maintenance, operations, and landscaping activities., Maintain existing data layers with the most up-to-date natural resources data and develop layers for natural resources data not currently in the GIS database., Manage, use and disseminate data collected from surveys, reports and projects to update various documents (including this INRMP) and personnel. Additionally, this data can be used to inform visitors and contractors regarding natural resource concerns on the island., Partner with state and federal agencies for natural resource projects., Review all planned construction projects for natural resources impacts. The review will focus on meeting the goals and objective of this INRMP.	aquatic and terrestrial ecosystems., Ensure compliance with Federal ESA, MBTA, MSA, and MMPA in all construction, maintenance, operations, and landscaping activities., Maintain existing data layers with the most up-to-date natural resources data and develop layers for natural resources data not currently in the GIS database., Manage, use and disseminate data collected from surveys, reports and projects to update various documents (including this INRMP) and personnel. Additionally, this data can be used to inform visitors and contractors regarding natural resource concerns on the island., Partner with state and federal agencies for natural resource projects., Review all planned construction projects for natural resources impacts. The review will focus on meeting the goals and objective of this INRMP.	aquatic and terrestrial ecosystems., Ensure compliance with Federal ESA, MBTA, MSA, and MMPA in all construction, maintenance, operations, and landscaping activities., Maintain existing data layers with the most up-to-date natural resources data and develop layers for natural resources data not currently in the GIS database., Maintain or acquire adequate funding and resources to ensure natural resources staff has access to Global Positioning System (GPS) units, Geographical Information System (GIS) support, and training., Manage, use and disseminate data collected from surveys, reports and projects to update various documents (including this INRMP) and personnel. Additionally, this data can be used to inform visitors and contractors regarding natural resource concerns on the island.	aquatic and terrestrial ecosystems., Conduct annual INRMP metric meetings with USFWS, WDFW, and NMFS., Ensure compliance with Federal ESA, MBTA, MSA, and MMPA in all construction, maintenance, operations, and landscaping activities., Ensure no net loss in NAVMAG Indian Island's capability to support the military mission., Maintain existing data layers with the most up-to-date natural resources data and develop layers for natural resources data not currently in the GIS database., Maintain or acquire adequate funding and resources to ensure natural resources staff has access to Global Positioning System (GPS) units, Geographical Information System (GIS) support, and training., Manage, use and disseminate data collected from surveys, reports and projects to update various documents (including this INRMP) and personnel. Additionally, this data can be used to inform visitors and contractors regarding

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 68742CN002 : 1 S NW Threatened and Endangered Fish and Forage Fish Habitat Quality Assessments/Improvements and Forage Fish Surveys	3. 6101612002 : CHE NW Indian Island - INRMP Conservation Mapping	4. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP
				natural resource concerns on the island., Minimize the amounts of fertilizers, nutrients, and pesticides applied on NAVMAG Indian Island., Partner with local, city, county, and tribal governments and with non-governmental organizations for natural resource enhancement projects., Partner with state and federal agencies for natural resource projects., Prioritize areas with invasive species for eradication and subsequent restoration with native plants., Promote and implement alternative storm water management approaches, including low impact development, to minimize adverse impacts of surface runoff from impervious areas. Maintain or mimic natural systems when possible., Promote management practices to control the damage caused by feral animals and nuisance wildlife, both to NAVMAG Indian Island's facilities and to sensitive wildlife populations., Protect soil resources from erosion through

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 68742CN002 : 1 S NW Threatened and Endangered Fish and Forage Fish Habitat Quality Assessments/Improvements and Forage Fish Surveys	3. 6101612002 : CHE NW Indian Island - INRMP Conservation Mapping	4. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP
				prevention and control practices., Provide information on base wide natural resources initiatives to NAVMAG Indian Island employees and tenants (e.g. Earth Day activities, surveys, etc.)., Provide quality outdoor recreation experiences through picnic areas, and fishing areas while sustaining ecosystem integrity., Redesign existing landscaped areas so they are low-maintenance. Incorporate native trees, shrubs, and herbaceous plants where appropriate. Selection of plant species used in landscape design should be drought tolerant to limit need for irrigation after establishment., Review all planned construction projects for natural resources impacts. The review will focus on meeting the goals and objective of this INRMP., Solicit Tribal and public input on the INRMP., Sustain and enhance healthy wetland, riparian, and shoreline areas and buffers.
Which Natural Resources Program Area most benefitted from the	Fauna	At Sea	INRMP-Planned Developments,	INRMP-Planned Developments,

	1. 68742CN001 : 1 CR NW Marbled Murrelet Density and Occupancy Surveys	2. 68742CN002 : 1 S NW Threatened and Endangered Fish and Forage Fish Habitat Quality Assessments/Improvements and Forage Fish Surveys	3. 6101612002 : CHE NW Indian Island - INRMP Conservation Mapping	4. 61016NR013 : CHE NW NAVMAG INDIAN ISLAND INRMP
INRMP action? (Select all the apply) (If other, please describe in the comments) *			Updates, & Revisions	Updates, & Revisions
If the INRMP action provided an ecosystem integrity benefit, select the ecosystem(s) benefitted and provide additional details in the comment field. IF no specific "ecosystem" benefit, then leave blank.	Marine Nearshore	Marine Nearshore	Forest, Intertidal, Marine Nearshore, Riparian Wetland, Wetlands	Forest, Intertidal, Marine Nearshore, Riparian Wetland, Wetlands
Does this project support mitigation for a project/action? *	No	No	No	No
Please include the name of the project or action it supports. *				
Where have the mitigation requirements been documented? *				

(FY17 Projects) 5 - 6 of 6

	5. 61016NR009 : CWA NW NAVMAG INDIAN ISLAND Port Security Barrier Mitigation	6. UC-61016 : Spartina Eradication
Does the action have an alternative name? *	No	No
Please enter the name(s) *		
Was this action programmed in EPR Web? *	Yes	No, locally funded
What is the current status of the INRMP action? *	Action Underway	Action Completed
If awarded in a prior year, select the year in which the action was awarded. *		
Select the year that this action was originally planned for in your INRMP. *		
If project was accepted risk or not executed please summarize the risk to the mission. *		
How much progress has been made in implementing the action? *	26-50%	Complete
Is the INRMP action on schedule? *	Yes	Yes
Enter the correct Total Spent amount if the EPR $ is invalid - otherwise, leave blank.		
Enter the correct Expended (invoiced) amount if the EPR $ is invalid - otherwise, leave blank.		
Does this action meet the goals and objectives of the INRMP? *	Yes - meet or exceed overall INRMP goals and objectives.	Yes - meet or exceed overall INRMP goals and objectives.
Please select the goal(s) that this action supports. *	Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs.	Assess, sustain, and enhance the natural resources at NAVMAG Indian Island to ensure that resources are maintained in a healthy condition, while supporting existing and future military needs., Improve natural resources management through enhanced management tools., Integrate the NAVMAG Indian Island natural resources program with local, state, and regional environmental programs and initiative to the maximum extent practicable.

	5. 61016NR009 : CWA NW NAVMAG INDIAN ISLAND Port Security Barrier Mitigation	6. UC-61016 : Spartina Eradication
Please select the objective(s) that this action supports. *	Partner with local, city, county, and tribal governments and with non-governmental organizations for natural resource enhancement projects.	Assess and enhance the biological conditions of aquatic and terrestrial ecosystems., Manage, use and disseminate data collected from surveys, reports and projects to update various documents (including this INRMP) and personnel. Additionally, this data can be used to inform visitors and contractors regarding natural resource concerns on the island., Partner with local, city, county, and tribal governments and with non-governmental organizations for natural resource enhancement projects., Prioritize areas with invasive species for eradication and subsequent restoration with native plants.
Which Natural Resources Program Area most benefitted from the INRMP action? (Select all the apply) (If other, please describe in the comments) *	Fauna	Wetlands
If the INRMP action provided an ecosystem integrity benefit, select the ecosystem(s) benefitted and provide additional details in the comment field. IF no specific "ecosystem" benefit, then leave blank.	Marine Nearshore	Marine Nearshore, Wetlands
Does this project support mitigation for a project/action? *	Yes	No
Please include the name of the project or action it supports. *	NAVMAG Indian Island Port Security Barrier	
Where have the mitigation requirements been documented? *	NEPA	

7 - Support of Installation Mission

Focus Area Purpose: Evaluate the level to which existing natural resources requirements support the installation's ability to sustain the current operational mission, ensuring no net loss of mission capability. **NOTE**: As always, this focus area is to be completed by the Regional Commander/Commanding Officer (CO) or his/her designee with the responsibility for Title 10 installation assets and resources. Natural Resource Manager(s) are available to facilitate and support this process. Select the comment link below each question if you would like to elaborate on the answer

provided. This is a good way to document the assumptions made by all partners that contributed to the answer.

Please identify the mission types related to your reporting unit/site. Select all that apply. * **Ordnance Ops**

To what extent has the Natural Resource program/INRMP supported the current PRIMARY MISSION and potential future mission(s)? * **Mission well supported and fully capable**

To what extent has the Natural Resource program/INRMP supported other mission areas (secondary missions)? * **Mission well supported and fully capable**

To what extent does the Natural Resources program affect mission-related operational/training activities? * **No loss occurred**

To what extent does the Natural Resources Program/INRMP minimize possible constraints imposed by natural resources regulatory requirements? **Effectively minimizes mission constraints**

If applicable, please provide examples of how unresolved Natural Resources issues are resulting in mission impacts or work arounds. **None**

If applicable, please provide examples of how the INRMP or Natural Resources program actions have resulted in mission benefits. **Trail camera photos have enhanced relationships with personnel on the Island.**

What is the level of coordination between natural resources staff and other installation/site(s) departments and military staff? * **Highly effective and successful coordination**

Have stakeholders from every major tenant command participated in the INRMP preparation and review process? * **Both Updates and Revisions and the Annual Review Process**

Regional Commander / Commanding Officer Signature

In the Regional Commander / Commanding Officer Section, this is a simple form to track who your Regional Commander / Commanding Officer is and that they have seen your results. It is not required that they physically type in their name and rank below.

Enter the name of your Regional Commander / Commanding Officer. **Rocky B. Pulley**

Enter the rank of your Regional Commander / Commanding Officer. **Commander**

Please enter Findings and Recommendations. Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

Findings **No Response**

Recommendations **No Response**

Success Stories

Accomplishments

List the top three accomplishments for the Natural Resources Program during this reporting period. Please include a statement regarding how these accomplishments

support the mission of the installation or other activities. This information may be used to brief program successes up to leadership. See detailed examples provided, here.

As a result of this year's annual review, have any additional actions, such as management recommendations related to regulatory drivers (ACOE permits, EFH Issues, etc.), been identified that should be considered for incorporation into the INRMP? * **No**

Please explain in detail. *

In addition to any findings submitted in the previous 7 Focus Areas, please provide any additional or general findings.

In addition to any recommendations submitted in the previous 7 Focus Areas, please provide any additional or general recommendations.

List the top accomplishment for the Natural Resources Program during this reporting period. * **Maintained trail cameras in several places on the island and used the images as a large fauna survey and to monitor the health of the deer population as well as raise the moral of base employees and increase goodwill with other departments.**

List the second accomplishment for the Natural Resources Program during this reporting period. * **Completed Resource Surveys.**

List the third accomplishment for the Natural Resources Program during this reporting period. * **Worked with USGS wet lab for data collection in Kilisut Harbor with middle school kids.**

Site Profile

Instructions: Please select the program areas (gray buttons) in the top right corner that pertain to this installation. You should complete all questions for each program area. You may skip a section if it does not apply.

All sites with Agricultural Leases should complete the section on AG Leases.

All sites that harvest timber and wish to enter a project for the forestry reserve account should complete the FOR Projects section.

All sites with Outdoor Recreation opportunities should complete the Outdoor Recreation section.

All sites with a flying mission should complete the BASH section.

AG Leases

Forestry Projects

1. NAVMAG Indian Island 1

Enter Project Name **Administration of Forest Lands**

Site Name/Forest Stand (specific area where project is being done) **NAVMAG Indian Island**

Forest Compartment Name **N/A**

Enter Project Description **Request funds to provide a minimum of SCA intern support for the administration of forest lands and production of forest products**

Enter the fiscal year of the proposed project. **2018**

Amount Requested **2500**

Project rank. **1**

2. NAVMAG Indian Island 2

Enter Project Name **Forest Vegetation Inventory Analysis**

Site Name/Forest Stand (specific area where project is being done) **NAVMAG Indian Island**

Forest Compartment Name **N/A**

Enter Project Description **Using field data previously collected over 2200 acres, perform data analysis (GIS) and prepare report for NAVMAG Indian Island. Work is justified as the previous inventory is over 15 years old and is not reasonably feasible to use for planning/implementing some types of forestry related projects. Additionally, more recent data has become available.**

Enter the fiscal year of the proposed project. **2018**

Amount Requested **7500**

Project rank. **2**

3. NAVMAG Indian Island 3

Enter Project Name **Site Preparation and Planting**

Site Name/Forest Stand (specific area where project is being done) **NAVMAG Indian Island**

Forest Compartment Name **N/A**

Enter Project Description **Perform site preparation and increase stocking of native tree species on approximately 4 acres at NAVMAG Indian Island. The project will provide support for a forestry comparison study between the effectiveness of site preparation as it pertains to tree growth and survival using goats vs. mechanical means. This work can be implemented via a CATEX.**

Enter the fiscal year of the proposed project. **2018**

Amount Requested **10000**

Project rank. **3**

BASH

BASH/Wildlife Hazard Management Program Status

Objective: This purpose of this section of the Natural Resources Conservation Metrics data call is to gather required information associated with the status of the BASH/Wildlife Hazard Management Program. Responses

to the questions in this section are not scored as a part of the Natural Resources Conservation Metrics data call. These questions have been added here to collect information that will support the Defense Environmental Program Annual Report to Congress (DEPARC) and Office of the Secretary of Defense Environmental Management Review (EMR). By combining these questions with responses to the Metric's seven (7) focus areas, Natural Resources Managers are faced with fewer annual data calls.

Does the site(s) have a flying mission/activity? * **No**

List all sites with a flying mission associated with your facility (primary air fields, OLF's, ALF's, Ranges, etc.)

Does the site(s) have a BASH Plan? *

When was the Plan completed? Format: (MM/DD/YYYY) *

If the BASH Plan is currently being developed, what is the estimated completion date? *

Has the BASH Plan been incorporated into the site(s) Integrated Natural Resources Management Plan? *

Does or will the BASH Plan cover more than this/these sites(s)? *

List name(s) and UIC(s). *

Has a Bird Hazard Working Group (BHWG) been established? *

Is the Natural Resources Manager actively involved in the BHWG? *

Has a Bird Deterrent Unit been established on the facility? *

Who makes up the Unit? *

Briefly describe the Unit's duties. *

Does the Bird Deterrent Unit Depredate wildlife as a part of the program?

Does your facility have a USFWS or equivalent Depredation Permit? *

List the permit number. *

Has a Wildlife Hazard Assessment been performed for the facility? *

Who prepared the assessment? *

When was the assessment prepared? Format (MM/DD/YYYY) *

Did the Natural Resources Office participate in the development of the Wildlife Hazard Assessment? *

Is the USDA Wildlife Services involved with the program? *

Briefly describe their involvement. *

Are copies of birdstrike records sent to the Navy Safety Center being retained at this/these site(s)? *

Are birdstrike remains collected and identified? *

Does your facility have a USFWS Salvage Permit or equivalent for the collection of migratory birds and strike remains? *

List the permit number.

Additional BASH/Wildlife Hazard Program Comments.

Select the BASH/Wildlife Hazard POC for this/these site(s). *

Agriculture

Agriculture Program Status

Objective: This purpose of this section of the Natural Resources Conservation Metrics data call is to gather required information associated with the status of the Agriculture Program. Responses to the questions in this section are not scored as a part of the Natural Resources Conservation Metrics data call. These questions have been added here to collect information that will support the Defense Environmental Program Annual Report to Congress (DEPARC) and Office of the Secretary of Defense Environmental Management Review (EMR). By combining these questions with responses to the Metric's seven (7) focus areas, Natural Resources Managers are faced with fewer annual data calls.

Is there an active agriculture out-lease program on this site? * **No**

What are the driving factors for having an Ag Lease on this site? *

How many active leases are currently associated with this site? *

What is the total number # of leased acres? *

What is the Annual lease income? *

What are the Annual expenses? *

Do any leases involve in-kind payments? *

What are the number of in-kind leases? *

What are the leases for? *

What is the primary land use where agriculture out-leasing occurs? Select all that apply. *

Are additional lands available for AG out-leasing? *

What is the number of additional acres available? *

Is there an apiary program? *

Is the apiary activity part of the AG out-lease program? *

How many personnel are funded through agriculture out-lease funds? *

Primary installation agriculture program POC. *

Forestry

Forestry Program Status

Objective: This purpose of this section of the Natural Resources Conservation Metrics data call is to gather required information associated with the status of the Forestry Program. Responses to the questions in this

section are not scored as a part of the Natural Resources Conservation Metrics data call. These questions have been added here to collect information that will support the Defense Environmental Program Annual Report to Congress (DEPARC) and Office of the Secretary of Defense Environmental Management Review (EMR). By combining these questions with responses to the Metric's seven (7) focus areas, Natural Resources Managers are faced with fewer annual data calls.

Does the site have forest cover? * **Yes**

What is the total number of forested acres on this site? * **2100**

Is there an active forestry program on this site? * **Yes**

What is the total number of acres currently under active forest management? * **2100**

Is there a commercial forest program? * **Yes**

What was the annual program revenue over the past fiscal year? * **500**

Were any trees harvested during the past fiscal year? * **Yes**

How many acres of forest were harvested during the past fiscal year? * **1**

What was the method of harvest? * **Single Tree Selection**

What were the annual program expenses during the past fiscal year? * **350**

Was there a planting during the past fiscal year? * **No**

What were the number of acres regenerated through planting over the past fiscal year?

What species were planted?

Did natural regeneration occur last fiscal year? * **Yes**

How many acres are naturally regenerated? * **0**

Does the site have longleaf pine (Pinus palustris)? * **No**

What is the number of acres of longleaf pine (Pinus palustris)? *

What are the primary commercial species managed? * **Douglas fir (Pseudotsuga menziesii)**

Is prescribed burning used? * **No**

What is the number of acres burned in the past year? *

How many personnel are funded through forestry funds? * **1**

Primary site forestry program POC. * **Jones, Terri - terri.jones@navy.mil**

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Appendix E. Natural Resource Manager Designation Letter

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DEPARTMENT OF THE NAVY
NAVAL MAGAZINE INDIAN ISLAND
100 INDIAN ISLAND ROAD
PORT HADLOCK, WA 98339-9723

IN REPLY REFER TO
5500
Ser N39/021
2 Feb 15

From: Commanding Officer, Naval Magazine Indian Island
To: Ms. Sara C. Street

Subj: APPOINTMENT AS INSTALLATION NATURAL RESOURCES MANAGER

Ref: (a) OPNAVINST M-5090.1

1. Per reference (a), you are hereby appointed as the Installation Natural Resources Manager. In the performance of your duties you are responsible for preparation and implementation of the Integrated Natural Resources Management Plan (INRMP), keeping the command informed of any natural resources issues, resolving conflicts between mission requirements and natural resources mandates, and oversight of all conservation efforts for fish and wildlife habitat areas.

2. This designation remains in effect until rescinded in writing or upon your transfer from this command, whichever occurs first.

M. B. YESUNAS

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Appendix F. DoD Crosswalk Table

Table F-1: DoD Crosswalk Table

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DoD Template	**NBK INRMP**
Cover Page	Cover Page
Signature Page	Signature Pages
Executive Summary	1.0 Overview
Table of Contents	Table of Contents
Chapter 1 – Overview	1.0 Overview
1.a. Purpose	1.1 Purpose
1.b – Scope	1.2 Scope
1.c. – Goals and Objectives Summary	1.3 Goals and Objectives
1.d – Responsibilities of Stakeholders	1.4 Responsibilities
1.e – Commitment of Regulatory Agencies	1.8 Commitment of USFWS, NMFS, and WDFW
1.f – Authority	1.5 Authority
1.g – Stewardship of Compliance Statement	1.6 Sustainability and Compliance
1.h – Review and Revision Process	1.7 Review and Revision Process
1.i – Management Strategies	1.9 Management Strategy
1.j – Integration with other Plans	1.2 Scope
Chapter 2 – Current Conditions and Use	2.0 Physical Environment
2.0 – Installation Information	2.1 Installation Information
2.a.1 – Location Statement (concise)	2.1.1 General Description
2.a.2 – Regional Land Use	2.1.5 Regional Land Uses
2.a.3 – History and Pre-Military Land Use (abbreviated)	2.1.4 Installation History and Pre-Military Land Use
2.a.4 – Military Mission	2.1.2 Military Mission
2.a.5 – Operations and Activities	2.1.3 Operations and Activities
2.a.6 – Constraints Map	N/A
2.a.7 – Opportunities Map	N/A
2.b – General Physical Environment and Ecosystems	2.2 General Physical Environment
2.c – General Biotic Environment	2.3 General Biotic Environment
2.c.1 – Threatened and Endangered Species and Species of Concern	2.3.1 Threatened and Endangered Species and Species of Concern

2.c.2 – Wetlands and Deep Water Habitats	2.3.2 Wetlands
2.c.3 – Fauna	2.3.3 Fauna
2.c.4 – Flora	2.3.4 Flora
Chapter 3 – Environmental Management Strategy and Mission Sustainability	3.0 Environmental Management Strategy and Mission Sustainability
3.a – Supporting Sustainability of the Military Mission and the Natural Environment	3.1 Supporting Sustainability of the Military Mission and the Natural Environment
3.a.1 – Integrate Military Mission and Sustainability Land Use	3.1 Supporting Sustainability of the Military Mission and the Natural Environment
3.a.2 – Define Impact to the Military Mission	3.1 Supporting Sustainability of the Military Mission and the Natural Environment
3.a.3 – Describe Relationship to Range Complex Management Plan or other Operational Area Plans	N/A
3.b – Natural Resources Consultation Requirements (Section 7, EFH)	3.2 Natural Resources Consultation Requirements
3.c. – NEPA Compliance	3.3 Planning for NEPA Compliance
3.d – Opportunities for Beneficial Partnerships and Collaborative Resource Planning	3.4 Public Access and Outreach
3.e – Public Access and Outreach	3.4 Public Access and Outreach
3.e.1 – Public Access and Outdoor Recreation	4.8 Outdoor Recreation
3.e.2 – Public Outreach	3.4 Public Access and Outreach
3.e.3 – Encroachment Partnering	3.6 Encroachment Partnering
3.e.4 – State Comprehensive Wildlife Plans Integration	3.7 State Wildlife Action Plans (SWAP)
Chapter 4 – Program Elements	4.0 Management of Natural Resources Program Elements
4.a. – Threatened and Endangered Species and Species Benefit, Critical Habitat, Species of Concern Management	4.1 Threatened and Endangered Species Management 4.2 Special Management and Protection of Threatened and Endangered Species
4.b – Wetlands and Deep Water Habitats	4.5 Wetlands Management
4.c – Law Enforcement	N/A
4.d – Fish and Wildlife	4.6 Fish and Wildlife Management
4.e – Forestry	4.7 Forest Management
4.f. – Vegetation	2.3.4 Flora
4.g – Migratory Birds	4.6.10 Birds
4.h – Invasive Species	2.3.4 Flora
4.i – Pest Management	4.10.5 Pest Management
4.j – Land Management	2.1.5 Regional Land Uses, 4.7 Forest Management
4.k – Agricultural Outleasing	5.2 Funding

4.l – GIS Management, Data Integration, Access, and Reporting	4.3 Navy GeoReadiness Program
4.m – Outdoor Recreation	4.8 Outdoor Recreation
4.n – Bird/Animal Aircraft Strike Hazard	4.6.10 Birds
4.o – Wildland Fire	4.7.6 (Forestry) Management System
4.p – Training of Natural Resources Personnel	3.8 Training of Natural Resources Personnel
4.q – Coastal/Marine	4.6 Fish and Wildlife Management
4.r – Floodplains	N/A
4.s – Other Leases	N/A
Chapter 5 – Implementation	5.0 Implementation
5.a – Summary of Project Prescription Development Process	5.1 Project Drivers
5.b – Achieving No Net Loss	3.1 Supporting Sustainability of the Military Mission and the Natural Environment
5.c - Use of Cooperative Agreements	3.1 Supporting Sustainability of the Military Mission and the Natural Environment
5.d – Funding Process	5.2 Funding
Appendix 1. Acronyms	Appendix J List of Acronyms and Abbreviations
Appendix 2. Detailed Natural Resource Prescriptions	Appendix A Natural Resources Projects Implementation Table
Appendix 3. List of Projects	Appendix A Natural Resources Projects Implementation Table
Appendix 4. Surveys; Results of Planning Level Surveys	Appendix C
Appendix 5. Research Requirements	N/A
Appendix 6. Migratory Bird Management	Appendix B Bald Eagle Management Plan
Appendix 7. Benefits for Endangered Species	4.4 T&E Species at Naval Magazine Indian Island
Appendix 8. Critical Habitat	4.4 T&E Species at Naval Magazine Indian Island

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Appendix G. List of Acronyms and Abbreviations

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List of Acronyms and Abbreviations

BASH	Bird Aircraft Strike Hazard
BCC	Birds of Conservation Concern
BMP	Best Management Practice
CECOS	Civil Engineer Corps Officers School
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH	Critical Habitat
CNIC	Commander, Naval Installation Command
CNO	Chief of Naval Operations
CNRNW	Commander, Navy Region Northwest
CO	Commanding Officer
CONUS	Continental United Status
COMNAVREGNWISNT	Commander Naval Region Northwest Instruction
CPLO	Community Planning Liaison Officer
CWA	Clean Water Act
CWCS	Comprehensive Wildlife Conservation Strategy
CZMA	Coastal Zone Management Act
DBH	Diameter Breast Height
DEPARC	Defense Environmental Program Annual Report to Congress
DNR	Department of Natural Resources
DO	Dissolved Oxygen
DOD	Department of Defense
DODINST	Department of Defense Instructions
DODM	Department of Defense Manual
DOE	Department of Energy
DON	Department of Navy
DPS	Distinct Population Segment
DUSD (I&E)	Deputy Under Secretary of Defense (Installations and Environment)
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EMR	Emergency Management Review
EMS	Environmental Management System
EO	Executive Order
EPA	Environmental Protection Agency
EPR-web	Navy Environmental Program Requirements Web Database
EQ	Environmental Quality
EQA	Environmental Quality Assurance

ERL	Environmental Readiness Level
ESA	Endangered Species Act
ESU	Evolutionarily Significant Units
EU	Ecological Unit
FAR	Federal Acquisition Regulation
FGS	Final Governing Standards
FR	Federal Register
ft	Feet
FY	Fiscal Year
GIS	Geographic Information System
GPS	Global Positioning System
GRX	Geographic Readiness Exchange
HQ	Headquarters
ICO	Installation Commanding Officer
IDP	Individual Development Plan
IHA	Incidental Harassment Authorization
INRMP	Integration Natural Resources Management Plan
IPM	Integrated Pest Management
JAG	Judge Advocate General
LANT	Atlantic
LID	low impact development
m	meter
MBTA	Migratory Bird Treaty Act
mg/L	milligrams per liter
MHHW	Mean higher high water
mi	mile
MILCON	Military construction
MLLW	mean lower low water
MMP	Marine Mammal Program
MMPA	Marine Mammal Protection Act
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSC	Military Sealift Command
MWR	Morale, Welfare, and Recreation
NAD	Naval Ammunition Depot
NAVFAC	Naval Facilities Engineering Command
NAVFAC HQ	Naval Facilities Engineering Command Headquarters
NAVMAG	Naval Magazine
NEPA	National Environmental Policy Act

NMC	Navy Munitions Command
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOV	Notice of Violations
NRCS	Natural Resources Conservation Service
NRM	Natural Resources Manager
NRNW	Navy Region Northwest
NUWES	Naval Undersea Warfare Engineering Station
O&MN	Operations and Maintenance, Navy
OCH	Occupied Critical Habitat
OEBGD	Overseas Environmental Baseline Guidance Document
OGC	Office of the General Counsel
OPNAV	Chief of Naval Operations
OPNAVINST	Chief of Naval Operational Instructions
OSD	Office of the Secretary of Defense
PAO	Public Affairs Office
PCE	Primary Constituent Elements
PIF	Partners in Flight
PL	Public Law
PMP	Pest Management Plan
PNW	Pacific Northwest
PR	Program Review
PSB	Port Security Barrier
PWD	Public Works Department
QRP	Qualified Recycling Program
R&D	Research and Development
RCW	Revised Code of Washington
RPM	Real Property Maintenance
RSIMS	Regional Shore Installation Management System
SAIA	Sikes Act Improvement Act
SASSI	Salmon and Steelhead Stock Inventory
SCA	Sanitary Control Area
SDSFIE	Spatial Data Standards for Facilities, Infrastructure and Environment
SEAL	Sea, Air and Land
SECNAV	Secretary of the Navy
SECNAVINST	Secretary of the Navy Instruction
SERDP	Strategic Environmental Research and Development Program
SPCC	Spill Prevention, Control, and Countermeasures
SRKW	Southern Resident Killer Whales
SWAP	State Wildlife Action Plan

T&E	Threatened and Endangered
U&A	Usual & Accustomed
U.S.	United States
USC	United States Code
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDA-NRCS	U.S. Department of Agriculture – Natural Resources Conservation Service
USDA-SCS	U.S. Department of Agriculture – Soil Conservation Service
USDA APHIS-WS	U.S. Department of Agriculture – Animal and Plant Health Inspection Service - Wildlife Services
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USN	U.S. Navy
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WDOE	Washington Department of Ecology
WS	Wildlife Services
WSDA	Washington State Department of Agriculture
WSDOE	Washington State Department of Ecology
WWII	World War 2
XO	Executive Officer

Appendix H. INRMP EA

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Appendix I. Act Comparison Table

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Act Comparison Table

	ESA	BGEPA	MBTA
Enacted	**1973**	**1940**	**1918**
Purpose	Implemented the Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora	Declining Bald Eagle populations (shooting/habitat encroachment)	Implement Treaty with Great Brittan (on behalf of Canada) signed in 1916
Take Definition	"harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" or any attempt thereof	"pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb"	"pursue, hunt, shoot, wound, kill, trap, capture, or collect" [regulatory definition; no statutory definition]
Notable Differences	Harass = intentional or negligent act significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering Harm = act which actually kills or injures wildlife ... may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.	Disturb = agitate or bother ... to a degree that causes, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.	No Harass, Harm, or Disturb. Operates at a much different scale. Where ESA and BGEPA are focused on conserving at-risk species, MBTA protects all birds.
Behavior Disruption	If constitutes harassment, behavior disruption prohibited under ESA	If constitutes disturb, behavior disruption prohibited under BGEPA	No provision; however, unintentional killing of a nestling or abandoned egg constitutes take
Habitat Alteration	If constitutes harassment or harm, ESA can regulate habitat alteration	If constitutes disturbance, BGEPA can regulate habitat alteration	No provision to regulate habitat alteration, only direct take of birds [inactive nests are *not* protected]
Mitigation	Provisions for habitat conservation measures and compensatory mitigation	Provisions for compensatory mitigation as well as other forms of mitigation	Mitigation has not been required through MBTA permits to-date
Incidental Take	Permits: Incidental Take - if action is not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitats	Permits: Non-purposeful take (disturbance) - for individual instances that cannot practicably be avoided or programmatic take that is unavoidable even after implementation of advanced conservation practices	No expressed authorization for take that occurs as a result of an otherwise legal-action; however, no expressed prohibition either. Incidental take constitutes take and is illegal under MBTA without a permit.
Other Irregularities	No prohibition against possession of specimens/parts, provided demonstration of legal acquisition	Prohibits Import/Export (can only international transport)	- No permit required to haze/harass - Often more enforceable than ESA, used to add protection for ESA-listed birds
Noteworthy History	- CITES was signed in March 1973 - Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere is also implemented (signed 1940)	- Golden Eagle protected in 1962	- Becomes cornerstone for protection of birds and habitat - Additional treaties with Japan, Mexico, and Russia

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