

NASKW 2018 Secretary of Defense Environmental Award Nomination

2. Narrative

INTRODUCTION

Naval Air Station Key West (NASKW) is the southernmost military installation in the continental United States. The total population of NASKW is 2,541 personnel, with 1,434 military and 1,107 civilians. NASKW's national security mission supports operational and readiness requirements for the Department of Defense (DOD), Department of Homeland Security, National Guard units, federal agencies and Allied forces. The installation is the Navy's premier East Coast pilot training facility for tactical aviation squadrons; as such, NASKW's Boca Chica Field hosts aviation squadrons from around the country on a regular basis. Customers include active and reserve fighter/strike fighter communities, Chief of Naval Air Training, fleet replacement squadrons, and other military service customers. Fighter Squadron Composite (VFC) 111, "Sun Downers," is a homeported squadron that uses real world intelligence to provide adversary tactics in order to expertly train military pilots in air to air combat. NASKW also hosts more than 30 tenant commands with diverse missions, including unique naval research, development testing, counter-drug operations, and special warfare training. Major tenants or detachments operating out of NASKW include the U.S. Army Special Forces Underwater Operations School; Strike Fighter Squadron (VFA) 106 Detachment; Atlantic Targets & Marine Operations Detachment; Naval Special Warfare Group Two Training Detachment; Naval Research Laboratory; U.S. Coast Guard Sector Key West; and Joint Interagency Task Force South.

NASKW is enclaved within the Florida Keys National Marine Sanctuary (FKNMS) and is located within two of only five regions of the state designated as an "Area of Critical State Concern." The designation is issued by the state to protect natural resources of statewide significance and oversee local government land use management to promote orderly and balanced growth. The Navy owns more than 12 distinct properties in the Lower Florida Keys, occupying 6,400 acres, with over 20 miles of shoreline. The largest property, Boca Chica Field, is located on Boca Chica Key, four miles east of the City of Key West in Monroe County, Florida. Boca Chica Field occupies 4,700 acres which is nearly the entire land area of the key. More than 60 percent of Boca Chica Field is undeveloped wetlands, supporting a wide variety of native flora and fauna. Many of these species are federally listed as either threatened or endangered. The Integrated Natural Resources Management Plan (INRMP) identifies 23 federally listed species on NASKW property including 21 animals and two plants. The endangered Lower Keys marsh rabbit (LKMR) is endemic to the Lower Florida Keys. The U.S. Fish & Wildlife Service (USFWS) estimates there are only 2,116 acres of suitable habitat to support Lower Keys marsh rabbit in the Florida Keys. NASKW supports an estimated 60% of the total Lower Keys marsh rabbit population in only 15% of the total habitat area.



Lower Keys marsh rabbit
(*Sylvilagus palustris hefneri*)

BACKGROUND

In June 2015, the INRMP was documented as DoD compliant with the 5-year review for operation and effect. The INRMP was last reviewed by our resource partners, USFWS and Florida Fish and Wildlife Conservation Commission (FWC) in September 2016 and INRMP implementation was deemed satisfactory by all partners. The last External EMS Audit of NASKW was in June 2017; the audit found the natural resources program to be in full compliance.

INRMP implementation is supported by two Caribbean Cooperative Ecosystem Studies Unit (CESU) cooperative agreements, one with the University of Florida (2010-2017) and the other with Texas A&M University (2011-2018); these universities conduct species surveys and population studies for NASKW. The installation has two support agreements with USFWS (2015-2016) and the U.S. Department of Agriculture (USDA) Wildlife Services (WS) (2013-2017) for endangered species surveys and nuisance wildlife control.

NASKW 2018 Secretary of Defense Environmental Award Nomination

The Natural Resources (NR) program is implemented by a NR Manager who has a bachelor's degree in conservation biology and the Installation Environmental Program Director (IEPD) who has a graduate degree in marine biology. The NR program is in full compliance with all environmental regulations and permits.

The Environmental Division sits on two significant committees that have major impacts on the NR program. The NR Manager is a long-standing member of the Florida Keys Invasive Exotics Task Force. The State of Florida provides financial support for the removal of invasive, exotic vegetation on public lands through this task force. Local funding restraints have historically limited the station's ability to control invasive, exotic vegetation that impacted operations in key areas of the installation. NASKW was able to leverage its task force membership in order to have state contractors remove exotic vegetation from those areas, greatly improving natural habitats and safety of flight for aircraft operations. NASKW received contractor support for the control of exotic vegetation valued at \$45K in 2015, \$18K in 2016 and \$57K in 2017.

The Florida Keys National Marine Sanctuary Advisory Council (SAC) was established to advise the Sanctuary Superintendent on issues regarding management of the sanctuary. The Navy has critical operational interests within the existing sanctuary boundaries that cannot be accomplished elsewhere without significant mission degradation. The Naval Air Station Key West Commanding Officer was invited to be a member of the SAC to ensure national security interests were adequately addressed in Sanctuary management actions. The SAC provides an exceptional forum for NASKW NR program outreach, showcasing the critical role it plays in endangered species management and habitat preservation.

SUMMARY OF ACCOMPLISHMENTS

NASKW has exceeded the goals of the INRMP through projects and programs, highlighted below, that implement the Commanding Officer's environmental policy to protect, preserve and conserve our natural environment through proper stewardship of natural resources.

Airfield Restoration Project

In 2002 Naval Air Systems Command found the NASKW airfield to be out of compliance with airfield safety criteria due to the growth of state-protected mangrove trees up to 35 feet tall within the runway clear zones, and drainage conveyances choked with vegetation. In 2004, NASKW initiated an Environmental Impact Statement (EIS) to develop a project to restore the airfield clear zones and drainage system.

During the EIS process, NASKW created a working group, the NASKW Natural Resources and Environmental Compliance Partnering Team, to facilitate development of projects that would comply with the complex environmental regulatory requirements. The team included representatives from U. S. Environmental Protection Agency, USFWS, FKNMS, NOAA Fisheries Service, Florida Department of Environmental Protection, FWC, Monroe County and the City of Key West.

The EIS was completed with the Record of Decision signed in September 2007. The preferred alternative was a project that would reestablish safety of flight by removing airfield clear zone obstructions, result in no loss of wetlands, and enhance the habitat of the critically endangered Lower Keys marsh rabbit.

The largest permitted wetland project in the Florida Keys was completed in phases using an adaptive management approach consistent with the natural resources management goals and objectives identified in the INRMP. Phase I was initiated in 2009 and completed in 2010. Phase II was initiated in 2012 and completed in 2015.

NASKW 2018 Secretary of Defense Environmental Award Nomination



Adjacent to the main runway on Boca Chica Field, mangrove wetlands were converted to saltmarsh wetlands, preserving Lower Keys marsh rabbit habitat, as evidenced by increased pellet counts. The saltmarsh wetlands provide for clear line of sight on the runways, ensuring airfield safety.

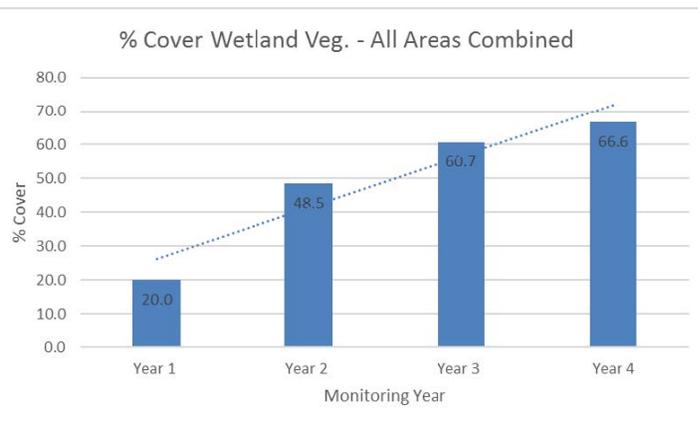
The overall project consisted of converting 137 acres of mangrove wetlands to saltmarsh wetlands consisting of native grasses and shrubs. Of the 137 acres, 38 acres were Lower Keys marsh rabbit habitat.

Advanced Offsite Wetland Mitigation Success

Environmental permits from the State of Florida and U.S. Army Corps of Engineers required mitigation to offset unavoidable impacts to wetlands during project construction. These impacts were largely temporal in nature, due to loss of wetland functions while the conversion areas mature to highly functional wetlands.

Mitigation efforts included wetland and endangered species habitat creation, enhancement and restoration at several locations on and adjacent to the airfield. Mitigation sites were selected outside anticipated Navy operations areas to avoid future conflicts between restoration objectives and ongoing military operations. Any area potentially in conflict with long-term military objectives was dropped from consideration.

Seventy-five acres of land at seven locations on NASKW were restored to wetlands. Over 174,000 individual wetland plants native to the Lower Florida Keys were planted in the restoration areas. Success of the wetland mitigation areas was prescribed by environmental permits to achieve 80% vegetative cover by desirable wetland plants and less than 3% cover of invasive, exotic vegetation by 2018 as determined through annual monitoring.



Quantitative monitoring of the mitigation sites is conducted annually with the last two conducted in January 2016 and January 2017. The average wetland vegetative cover across all mitigation areas increased from 61% and 67% respectively with some restoration areas as high as 89%. Exotic vegetation was effectively zero in all mitigation locations. The data indicates the mitigation areas are trending toward success and full regulatory compliance well within environmental permit timeframes. Wildlife observations indicate the mitigation sites are productive wetland systems and Lower Keys marsh rabbits

NASKW 2018 Secretary of Defense Environmental Award Nomination

have been observed using the mitigation areas.

Airfield Wetland Conversion Success

A major component of the airfield restoration was the conversion of existing mangrove wetlands to saltmarsh wetlands on the airfield. The intent of this conversion was to raise elevations in mangrove areas to prevent the re-growth of mangroves, to provide for safety of flight and to facilitate long-term maintenance. Two types of saltmarsh wetlands were created, low saltmarsh created to be mowed regularly to maintain airfield safety and high saltmarsh created to serve as habitat for the Lower Keys marsh rabbit. Success of the airfield saltmarsh conversion was prescribed by state and federal environmental permits to achieve 80% vegetative cover by desirable wetland plants and less than 3% cover of invasive, exotic vegetation by 2019.

Airfield work was completed in two stages, Stage 1, completed in 2014, and Stage 2 completed in 2015. A total of 1.2 million wetland plants were planted on the airfield, replacing mangroves and other woody vegetation that caused clear zone safety violations.

Quantitative monitoring of Stage 1 was initiated in June 2015 with the last two monitoring events conducted in September 2016 and June 2017. The average vegetative cover with desirable wetland plants increased from 58% to 61% and exotic plant cover was near zero. The saltmarsh conversion areas of Stage 1 are clearly on track to meet the compliance deadline of 2019. Quantitative monitoring of Stage 2 was conducted in June 2016 and June 2017. The average vegetative cover with desirable wetland plants increased from 78% to 81%. Observations indicated appropriate site hydrology and a clear positive trend toward the establishment and growth of desirable wetland vegetation throughout the area, with exotic plant species largely absent.

During the wetland conversion, contractors and NASKW realized plant survival was higher in Phase I areas in soils with a higher organic content. Contract specifications required the soil to have an organic content of 5 to 10%. A no-cost modification to the contract was negotiated, the modification increased the organic content of the soil to 50% resulting in greater plant survival. Monitoring results in 2016 and 2017 revealed higher percentages of plant coverage observed in Stage 1 compared to Stage 2. This revision showcased the use of adaptive management to achieve project goals.

Lower Keys Marsh Rabbit Habitat Conversion Success

USFWS estimates that 15% of the total habitat area and 60% of the total rabbit population is located on NASKW. As such, NASKW plays a significant role in the management of this critically endangered species. Specifically, NASKW has ongoing management actions that include: population and habitat monitoring, habitat enhancements, predator control and public education.

The airfield project was originally designed to maintain the total amount of habitat on the airfield. Thirty-eight acres of marsh rabbit habitat were to be replaced at a 1:1 ratio through conversion to high quality saltmarsh wetlands within the airfield. NASKW met with USFWS in February 2014 to discuss the benefits of reconfiguration and consolidation of LKMR habitat as part of the airfield project. NASKW presented a proposal to relocate LKMR habitat areas away from runways and outside airfield clear zones. USFWS concluded that the final LKMR habitat reconfiguration and consolidation was allowed within the parameters of NASKW's existing Biological Opinion and resulted in larger, more viable patches deemed optimal and appropriate by USFWS for long-term management of the habitat and LKMR success. As a result, six acres of LKMR habitat were created in the mitigation areas, 18 acres of habitat were relocated to areas off the airfield, and 14 acres within airfield clear zones near the runways were relocated to less critical areas resulting in now-mowable wetlands within the runway primary surface.

LKMR population monitoring was conducted in October 2015 and December 2016. The monitoring reports documented habitat management associated with the Airfield Restoration Project shows successful LKMR habitat restoration, with numerous patches on the airfield providing high-quality

NASKW 2018 Secretary of Defense Environmental Award Nomination

LKMR habitat.

In 2016 the NASKW LKMR Management Plan was updated to include new habitat maps using improved mapping technology and high-resolution aerial photography. The plan's primary management objective is to maintain viable LKMR populations consistent with historical population trends while supporting the military mission. The plan was approved by the USFWS in February 2017.



Pictured left, Public Broadcasting Service selected the LKMR as one of nine endangered species in the world to be highlighted in a documentary, "RARE: Creatures of the Photo Ark." USFWS selected NASKW to be the location to film the LKMR and showcase the restoration and conservation efforts NASKW provides to the LKMR. Filming was completed in early 2016 and in July 2017 the premiere episode aired on PBS, in the episode, National Geographic photographer Joel Sartore states, "The LKMR had already been wiped out in most of the Keys, the largest remaining population is making its last stand on a key

called Boca Chica and the reason is kind of a surprise; there's 3,000 acres that hasn't been wiped out yet because they are on the Key West Naval Air Station."

Threatened and Endangered Species Management

Roseate Tern Rooftop Nesting – Adaptive Management

A federally threatened species, roseate terns (*Sterna dougallii dougallii*) were first documented nesting on NASKW rooftops in 1996. From 1999-2009 no roseate tern nests were observed on NASKW rooftops, but by 2011 nearly 100 nests were documented. The roofs used by roseate terns, flat with gravel coatings, were constructed decades ago. Florida building codes no longer allow placement of gravel on rooftops due to safety concerns when hurricanes strike. The existing NASKW roofs have reached their maximum lifespan and need to be replaced. The last remaining rooftop used by roseate terns at NASKW was replaced in 2016.

In March 2014, NASKW constructed and placed eight improvised nesting boxes made from wooden pallets, plywood and gravel, *left*, on a non-gravel rooftop adjacent to the one needing replacement. An FWC biologist who surveyed the rooftop confirmed that roseate terns used these nesting boxes during the 2015 nesting season, observing four to five nests per box. NASKW proved the boxes can replace the nesting habitat provided by gravel roofs, although NASKW does not consider the perpetual use of nesting boxes on Navy rooftops as an acceptable long-term solution for providing tern nesting habitat.



In April 2015 NASKW initiated an endangered species consultation with USFWS for the roof replacement. In June 2016, based on the success of the nesting boxes, USFWS issued a concurrence letter that the proposed action may affect but is not likely to adversely affect threatened or endangered species or their habitat. Surveys conducted in 2016 documented the successful nesting of roseate terns in the boxes.

NASKW 2018 Secretary of Defense Environmental Award Nomination

Least Tern Airfield Nesting – Innovative Management

State-protected least terns have historically nested along the gravel shoulders and overruns of NASKW's airfield runways and taxiways. Once they have established their nests, nothing, including pyrotechnics, will move them. In 2015, due to large groups of least terns nesting along the main runway, the installation's USDA Wildlife Biologist recommended an innovative pilot project to installation's Bird Hazard Working Group to paint a section of the gravel next to the main runway green to determine whether or not it would deter terns from nesting. The project showed that the colored gravel deterred birds from nesting. Prior to the 2016 and 2017 nesting season, NASKW painted all light-colored gravel along runways and taxiways on the airfield green. Terns did not nest on the painted gravel and moved to other locations off the airfield to nest, minimizing this aviation hazard.



Sawfish

The smalltooth sawfish is the first totally marine fish to be federally listed as endangered from United States marine waters. An INRMP project funded in FY15 was awarded to conduct an assessment of NASKW nearshore waters for quality of habitat for the smalltooth sawfish. Surveys conducted in 2016 and 2017 concluded NASKW's nearshore waters are high-quality sawfish habitat and with security restrictions implemented by the Navy, suggests that these waters may be an important area for the recovery of the smalltooth sawfish in U.S. waters.



Protected Species Habitat Restoration (Shorebird Nesting Platform)

NASKW's INRMP includes a goal to restore native habitats and improving habitat for plant and wildlife species. In our ongoing efforts to minimize potential aircraft collisions with birds, while also providing additional nesting habitat for endangered species, a project was initiated in FY16 to construct a bird nesting platform in a remote wetland area of NASKW on Big Coppitt Key. The goal was to attract shore birds, including the roseate tern, to nest. Construction of an elevated nesting platform was completed in March 2017 just prior to the start of nesting season. Ten least tern decoys were randomly placed around the nesting platform. Surveys revealed 13 least tern nests on the platform and at least 14 fledglings were observed. Wildlife cameras were positioned near the nesting platform to document nesting and potential threats, such as predation.

Community Outreach

The Environmental Division works diligently to educate the public and base personnel on NASKW's environmental mission to protect, preserve and conserve our natural resources through proper stewardship by participating and organizing community outreach events.

Sea Turtle Volunteer Program

Annually, between April and October, the Environmental Division works extensively with the community to maintain an effective turtle nesting volunteer program. NASKW worked with 18 volunteers in 2016 and 25 volunteers in 2017, surveying the beaches on Truman Annex for sea turtle

NASKW 2018 Secretary of Defense Environmental Award Nomination

nests and hatchlings. NASKW participates in the statewide Beach Survey, which documents the distribution, seasonality and abundance of sea turtle nesting in Florida. The installation reported two nests and one false crawl in 2016 and two nests and 11 false crawls in 2017.



In November 2015, September 2016 and April and September 2017, NASKW's Environmental Division organized shoreline cleanups in support of the Ocean Conservancy's International Coastal Cleanup and Earth Day. Volunteers from the community participated in both events. Hundreds of pounds of trash were removed from the shoreline during each event.

Speaking Events

In May 2016 and 2017 NASKW's Natural Resources Manager was invited to speak to the Sigsbee Charter School and the Key West Tropical Forest & Botanical Garden about protecting plants and wildlife on a military installation.

CONCLUSION

NASKW exceeded the goals of the INRMP to protect, enhance and maintain natural resources and provided public outreach highlighting the unique ecological value and diversity of the Lower Florida Keys. The installation's environmental staff has developed exceptionally close relationships with resource and regulatory agencies, local governments and universities.

NASKW demonstrates a successful balance between sustaining its multifaceted mission and effectively managing natural resources and critically endangered species. NASKW is an award-winning leader in natural resources conservation in the U.S. Navy and continues to set the standard for others to follow on how to successfully sustain its missions in an extremely critical and sensitive environment.

Earth Day

NASKW participated in Earth Day in 2016 and 2017 by having an informational/educational booth at the Bahia Honda State Park Earth Day Celebration. The Environmental Division provides information on the Installation's Environmental Management System (EMS), Natural Resources Conservation Programs and Energy Management Program.

Shoreline Cleanup

