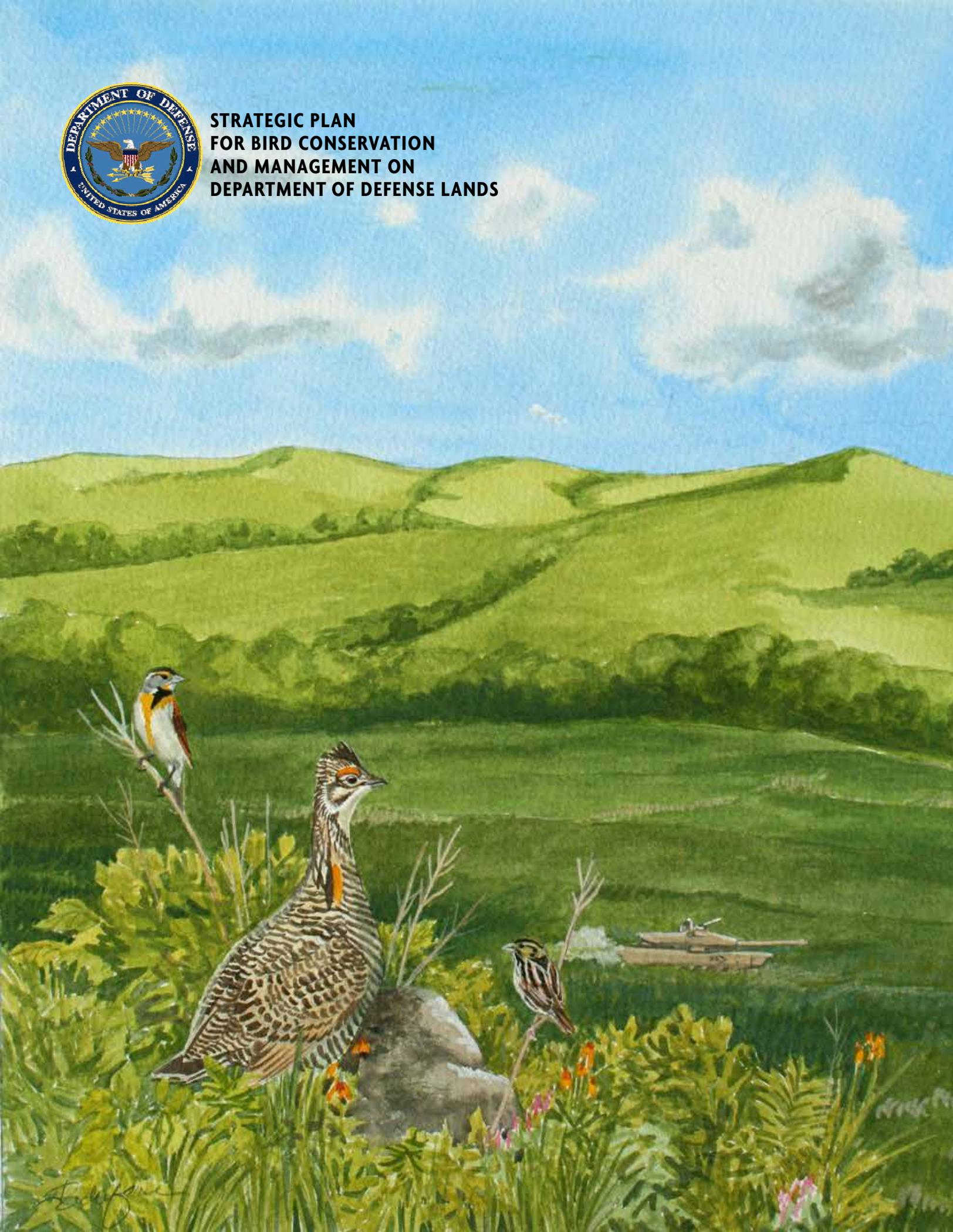




**STRATEGIC PLAN
FOR BIRD CONSERVATION
AND MANAGEMENT ON
DEPARTMENT OF DEFENSE LANDS**



Front cover:

Trainers and natural resources personnel collaborated on Fort Riley's 2010 INRMP to improve conditions for both training activities and grassland bird species. (from left: Dickcissel, Greater Prairie-Chicken, Henslow's Sparrow)

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“The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased, and not impaired, in value.”

- Theodore Roosevelt (1858-1919), U.S. President, hunter-naturalist

PURPOSE AND VISION

DoD's bird conservation activities sustain and enhance the military testing, training, and safety mission through proactive, habitat-based management strategies that maintain healthy landscapes and training lands. This document identifies actions that support and enhance the military mission 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. Participating in partnerships, such as Partners in Flight (PIF), helps DoD to more effectively meet its trust responsibility to conserve our nation's biodiversity while protecting the military mission.



Ruffed Grouse

ACKNOWLEDGMENTS

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We gratefully acknowledge the extensive support, cooperation, and dedication of natural resources managers on installations nationwide, together with the tireless efforts of DoD's bird conservation Regional and Working Group Representatives, and DoD biologists throughout the country – Our sincere thanks for your continuing efforts.

“A country worth defending is a country worth conserving.”

*- Major General Michael Lehnert, Commanding General,
Marine Corps Installations West 2005-2009*

EXECUTIVE SUMMARY

Biodiversity conservation is essential in sustaining the natural landscapes required for the training and testing necessary to maintain military readiness. Managing for biodiversity can help ensure that lands and waters are maintained in a “healthy condition” and thereby facilitate greater flexibility in land use for military operations. This document is a compilation of current best management practices and suggested focus areas to help Commanders comply with the Migratory Bird Treaty Act (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.

One of the best ways to comply with these legal requirements is to continue ongoing conservation efforts at the installation level. This helps protect and conserve birds and their habitats via implementation of our Integrated Natural Resources Management Plans (INRMPs), as well as to build and maintain partnerships with other agencies and conservation entities. The Department of Defense has blended conservation actions with military preparedness since the passage of the Sikes Act in 1960. By its partnering with the PIF initiative in 1991, DoD became a leader in the effort to keep common birds common.

The international PIF coalition is a partnership-based network that has expanded to include more than 300 federal and state agencies and nongovernmental organizations (NGOs) throughout the Western Hemisphere. PIF’s mission is expressed in three related concepts:

- **Helping Species at Risk** – protecting species before they become imperiled;
- **Keeping Common Birds Common** – ensuring that common native birds, both resident and migratory, remain common throughout their natural ranges; and
- **Voluntary Partnerships for Birds, Habitats and People** – collaborating with partners to conserve birds and their habitats.

It has long been apparent that DoD’s installations and ranges provide critical “steppingstones” of habitat for birds during their annual migrations to and from Central and South America, and valuable nesting habitat during the breeding season. DoD is thus a key partner in the PIF coalition, and the many bird conservation activities in which DoD engages are an integral part of the broader efforts in which we partner. Because of this, we call our collective bird conservation programs and activities DoD’s Partners in Flight, thus mirroring similar efforts being implemented through the National PIF network.

While our basic environmental responsibility is to wisely manage the land, water, and airspace entrusted to us, the imperative for DoD natural resource managers is to help Commanders implement their fundamental task of maintaining military readiness. While this document focuses on conserving migratory birds and their habitat via INRMPs, every goal and objective promoted here is consistent with and supportive of efforts to train military personnel by stewarding the Nation’s resources.

THE MISSION/MIGRATORY BIRD LINK

For many years, DoD has complied with the Migratory Bird Treaty Act (MBTA) and taken proactive measures regarding the conservation of migratory birds and their habitats through implementation of installation INRMPs. However, DoD historically operated under the premise that the “incidental take” of migratory birds, including those occurring during training and testing operations to maintain readiness, was not subject to the protections afforded to migratory birds via the MBTA.

In 2002, the U.S. District Court for the District of Columbia ruled in *Center for Biological Diversity v Pirie*, 191 F. Supp.2d 161, that military readiness exercises that incidentally take migratory birds without a permit are subject to the MBTA. Because authorized permits for take of migratory birds existed only for activities such as scientific research, education, and depredation control, there was no permit or incidental take authorization available for DoD for take of migratory birds.

The dilemma was remedied in part by Section 315 of the 2002 National Defense Authorization Act, which required the Secretary of the Interior to prescribe regulations to exempt the Armed Forces for the incidental taking of migratory birds during military readiness activities. The Secretary of the Interior, working closely with the Secretary of Defense, subsequently developed a “Rule” to accommodate the take of migratory birds by DoD.

The Final Rule, promulgated in the Federal Register (Vol. 72, No. 39, 28 February 2007), authorizes incidental take of migratory birds during military readiness activities provided that the Armed Services determine that their proposed readiness action will not have significant negative effects on a population of migratory birds. The Rule also requires the Armed Services to confer and cooperate with the U.S. Fish and Wildlife Service (USFWS) to develop and implement appropriate conservation measures and monitoring protocols to minimize or mitigate adverse impacts of military readiness activities on migratory birds if the DoD determines that



Red-headed Woodpecker

the readiness action will have significant negative effects on a population of migratory birds.

During this same time frame, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, was issued. Through this Executive Order, the President signaled that DoD should give appropriate consideration to the protection of migratory birds when planning and executing military activities, and that any diminishment in military effectiveness could impair DoD's ability to fulfill its national security mission. This Executive Order specifically requires federal agencies to enter into Memorandums of Understanding with the USFWS to promote the conservation of migratory bird populations. As a result, DoD now has a Memorandum of Understanding with the USFWS to “Promote the Conservation of Migratory Birds” (that focuses on non-readiness actions). Additionally, the USFWS issued a Final Rule on Take of Migratory Birds by the Armed Forces (50 CFR 21) that authorizes take, with limitations, that result from the military’s readiness activities.

DOD'S MIGRATORY BIRD REPRESENTATIVES

As part of DoD's Natural Resources Program, DoD has established an ad hoc network of subject matter experts who provide technical information in support of migratory bird management on DoD lands. The National Technical Representative, who is funded by DoD to provide technical support and expertise regarding migratory bird issues, coordinates inputs from this group, and is charged by the DoD Natural Resources Program to:

- collect/compile relevant technical information;
- monitor trends;
- distribute DoD approved information to all interested and appropriate stakeholders; and
- serve as a resource center for relevant technical information and materials.

The National Technical Representative carries out these duties by:

- coordinating with the appropriate Military Department Secretariat Staff to collect and distribute information in support of DoD-approved tasks;
- providing DoD approved presentations, when directed, on technical migratory bird information at regional conferences, workshops, and webinars; and
- providing technical assistance to DoD natural resources professionals, when directed by DoD and coordinated through the appropriate Military Department Secretariat Staff¹.

BIRD CONSERVATION GOALS AND OBJECTIVES

DoD has established goals and objectives to identify key bird conservation priorities and guide the actions of its natural resource management activities. These priorities will be implemented to the extent they are required by DoD's legal obligations and specifically provided for by congressional appropriations.

DoD's bird conservation goals, described on the following pages, include:

- Bird/Wildlife Aircraft Strike Hazard (BASH)
- Encroachment Minimization
- Stewardship
- Habitat and Species Management
- Monitoring
- Research
- Partnership/Cooperation
- Communication and Education
- Enhancing the Quality of Life

¹See Appendix 1 for specific functions that fall within the scope of these responsibilities.



DoD won the 2013 Presidential Migratory Bird Federal Stewardship Award for its 8-year, multi-partner study of Burrowing Owl population declines across the U.S. and Canada, which was particularly important to DoD because Western Burrowing Owls often select habitats adjacent to military airfield runways.



Burrowing Owls on Yakima Training Center sage brush flats

BIRD/WILDLIFE AIRCRAFT STRIKE HAZARD (BASH)

“The world is full of signals that we don't perceive.”

– Stephen Jay Gould (1941-2002), *The Panda's Thumb*, 1980

GOAL: Help Air Station Commanders manage birds and habitats in ways that reduce the incidence of bird-aircraft strikes.

ISSUES AND CHALLENGES

Ever since humans took to the air, we have shared the skies with birds. Yet, when planes and birds share the same airspace, the results can be deadly. It is therefore essential that conservation activities support and enable the military's flying mission. Supporting air safety remains a top DoD priority.

The primary role of every military aviation facility is to ensure mission readiness and capability by providing the safest flying environment possible. Military airfields are artificially maintained environments designed for the safe launch and recovery of all aircraft designs. Properly managing habitats to reduce risk and the probability of wildlife strikes on and surrounding military airfields is essential in providing a safety margin. While it is impossible to keep all wildlife away from the airfield environment, it is important to not provide, maintain, or enhance habitat that directly or indirectly attracts wildlife in harm's way. It is mutually detrimental to wildlife and mission capability when habitat that attracts wildlife is maintained or encouraged within or around an active airfield environment.²

Although much has been learned in recent years, more research is needed to better understand the dynamics and interactions of certain vegetation types and bird species on and near airfields. By working to ensure that management actions reduce the number of birds that pose a risk to aviation, air safety can be improved. By enhancing habitat away from the airfield for species known to be strike risks at specific installation, the threat to air safety can be reduced even further. To aid these efforts, airfield managers should collect the remains of

birds involved in aircraft strikes and send them to the Smithsonian Institution, which will identify remains, feathers, and even blood smears. By identifying problem species, military airfield managers can target resources to help decrease problem wildlife near active airfields. Improved coordination among safety, operations, and natural resources personnel in the management of airfield environments enhances safety for both aircraft and personnel while facilitating bird management.

OBJECTIVES:

1. Provide technical assistance to airfield managers and safety personnel, as requested, to minimize the attractiveness of airfield environments to birds.
2. Provide technical assistance to natural resource managers so INRMPs enhance off-airfield habitats in ways that increase mission safety by helping minimize bird strike risks.
3. Inform installation BASH plans to keep problem avian species away from areas in which they may pose an airspace hazard.
4. Investigate and encourage the use of technologies that reduce BASH risks (e.g., radar, acoustics, falconers and their birds).
5. Encourage reporting of BASH incidents (bird strikes) to Safety Centers and other appropriate entities.
6. Promote research to develop BASH guidelines for specific habitats and species.
7. Help ensure INRMPs are designed to support and enhance the installation's BASH Plan in decreasing risk of wildlife strikes.

²Direct actions include adding food, water, cover, or nesting features attractive to wildlife; indirect actions include activities that could potentially increase the presence of prey species, such as small mammals and insects.



Osprey

Preventing birds and aircraft from occupying the same airspace is a top priority for DoD.

ENCROACHMENT MINIMIZATION

"Examine each question in terms of what is ethically and aesthetically right, as well as what is economically expedient."

– Aldo Leopold, *A Sand County Almanac*, 1949

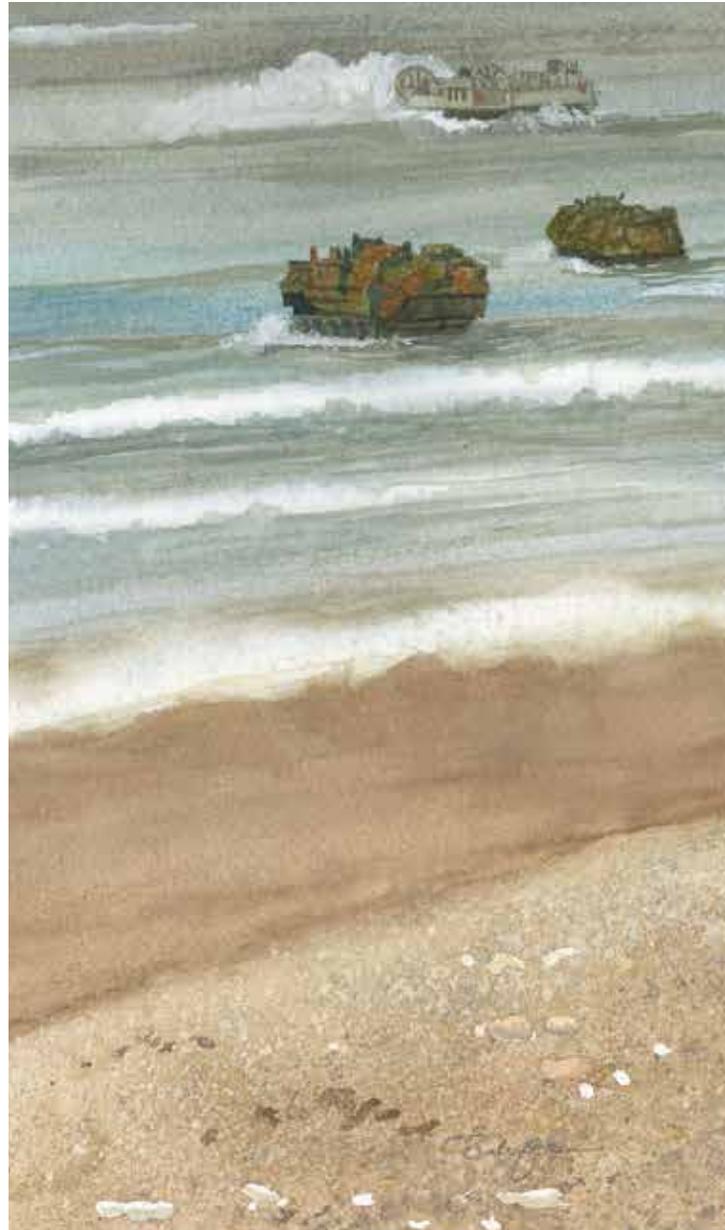
GOAL: Help preserve buffer areas around installations to maintain critical testing and training capabilities.

ISSUES AND CHALLENGES

Maintaining qualified staff and ensuring proper stewardship in a time of unprecedented population growth and urban development is challenging, but vital. Encroachment is the cumulative result of any and all outside influences that inhibit normal military training, testing, and operations. Encroachment can result from urban growth near installations, competition for radio frequencies and airspace, air and noise pollution, increased need for endangered species habitat, legislation protecting habitat, regional habitat fragmentation, airspace use, and stakeholder group issues.

Remoteness and isolation from population centers have historically been valued when choosing sites for military installations. However, once established, military posts often become surrounded by development. Wildlife habitat that was once expansive and whole then becomes fragmented and degraded. The result is that once-common species begin to become more rare, and available habitat in some cases occurs primarily on military lands. State- and federally-listed species create restrictions for training and testing, and force DoD to expend additional human and financial resources on compliance activities.

The U.S population is likely to continue to grow and require greater land area. Weapon systems will become more sophisticated and also require



From FY1991-FY2013, seven of DoD's top ten endangered species expenditures were for birds. Of the nearly \$1B invested in these 'top ten,' approximately \$435M was spent on birds, including over \$18.3M to protect the Western Snowy Plover.

larger training areas. Land use conflicts will inevitably become more common. Influencing land use decisions outside military property must consider what drives those decisions, identify who cares, and determine why. Conservation groups realized several decades ago that fences and hard boundaries do not work when



Western Snowy Plover and California Least Tern

protecting a resource. Buffers can provide a mechanism for ensuring compatibility of interests among all stakeholders. A buffer can't be viewed simply as a measure to force separation between communities and military installations. Buffers need to be created and managed as zones of transition and cooperation, and must take into account activities on both sides of the boundaries.

OBJECTIVES:

1. Help identify and prioritize habitats for potential buffers.
2. Collaborate with DoD programs, such as the Readiness and Environmental Protection Integration program (REPI), to identify the best military installations for buffer projectfunding.
3. Utilize the PIF partner network to identify potential partners for buffer planning and management actions.

STEWARDSHIP

“The whole (ecosystem) is greater than the sum of its parts.”

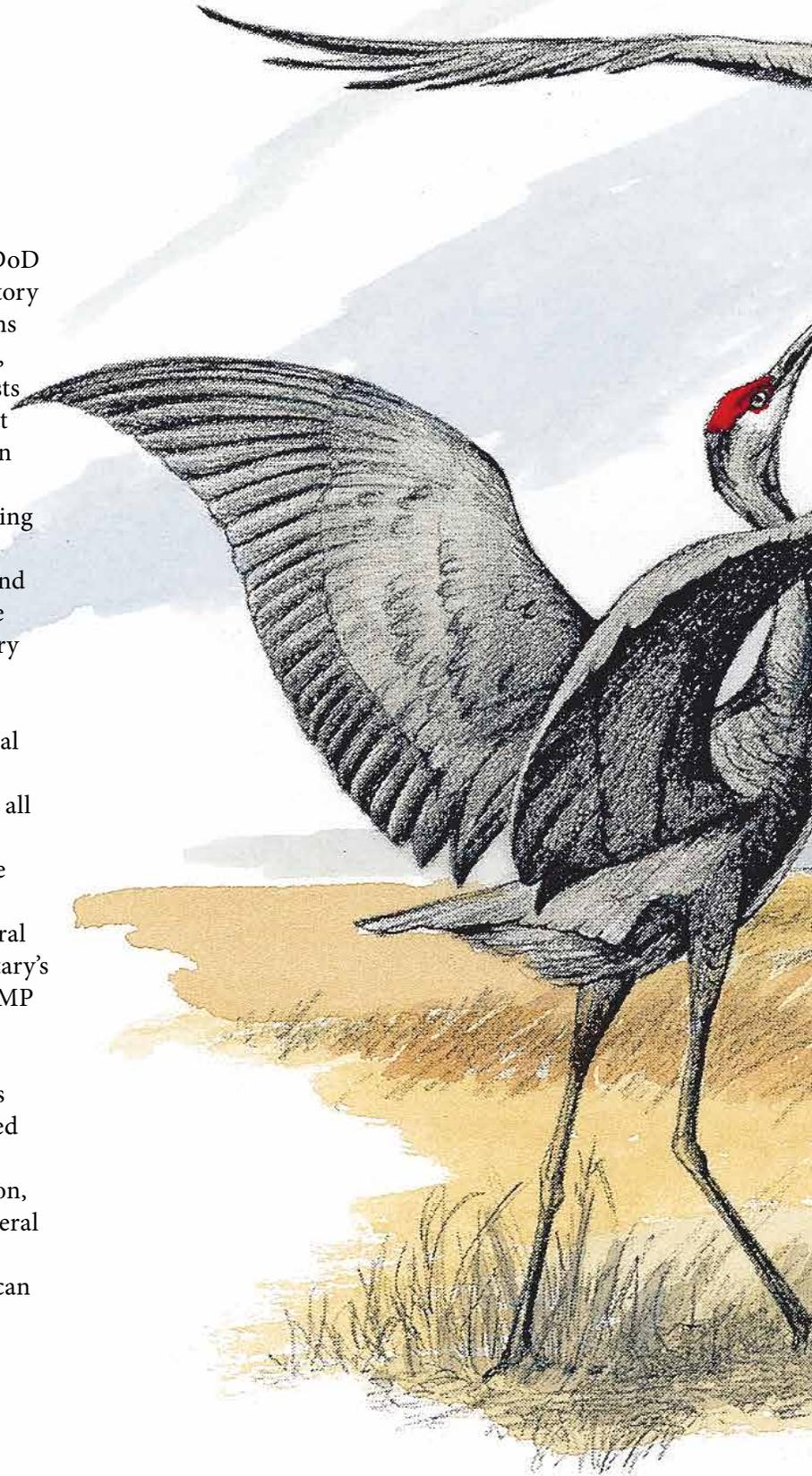
– Eugene Odum (1913-2002), *BioScience*, 1964

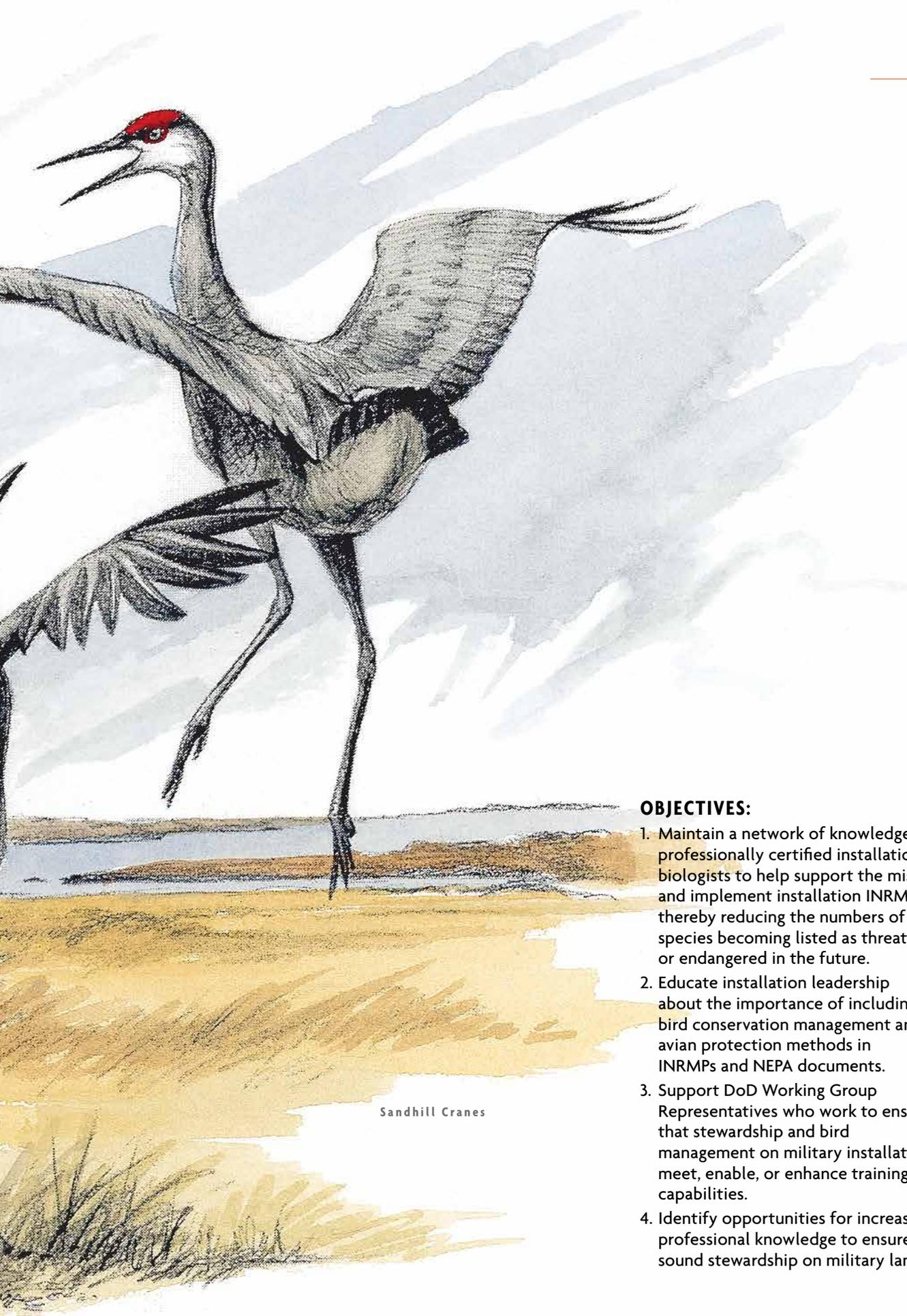
GOAL: Provide technical assistance to installation natural resource managers for adequately addressing migratory bird conservation in INRMPs.

ISSUES AND CHALLENGES

Legislation and common sense require DoD to be a good steward of its lands. Migratory birds use habitats on military installations for breeding, as migratory stopover sites, and as wintering grounds. DoD biologists manage habitats and the bird species that depend on them in ways that help sustain the military mission while supporting conservation goals and objectives. Meeting this requirement requires staff who are professionally trained in the biological and wildlife sciences, who are knowledgeable of what resources are available on military lands, and who understand how mission activities can impact the resources on which they depend. Protecting functional landscapes requires knowledge of what resources we have on our lands and how all the parts of the ecosystem fit together.

Land management and stewardship are planned for, and implemented through installation INRMPs, which ensure natural resource management supports the military’s primary national security mission. INRMP actions are driven by compliance with environmental laws and regulations. By ensuring that DoD stewardship activities comply with laws, such as the Endangered Species Act, DoD also ensures that its stewardship actions promote conservation, contribute to preventing or reducing federal listings, and complement larger regional efforts. Bird conservation partnerships can increase the effectiveness of stewardship actions on military installations.





Sandhill Cranes

OBJECTIVES:

1. Maintain a network of knowledgeable professionally certified installation biologists to help support the mission and implement installation INRMPs, thereby reducing the numbers of species becoming listed as threatened or endangered in the future.
2. Educate installation leadership about the importance of including bird conservation management and avian protection methods in INRMPs and NEPA documents.
3. Support DoD Working Group Representatives who work to ensure that stewardship and bird management on military installations meet, enable, or enhance training capabilities.
4. Identify opportunities for increasing professional knowledge to ensure sound stewardship on military lands.

HABITAT AND SPECIES MANAGEMENT

“The one process now going on that will take millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats. This is the folly our descendants are least likely to forgive us.”

– Edward O. Wilson, *Biophilia*, 1984

GOAL: Support and enhance coordinated planning efforts that implement habitat and species management.

ISSUES AND CHALLENGES

Migratory birds use habitats on military installations for breeding, as migratory stopover sites, and as wintering grounds. DoD biologists manage habitats and the bird species that depend on them in ways that help sustain the military mission while supporting conservation goals and objectives.

Every U.S. habitat harbors birds in need of conservation. Hawaiian birds and ocean birds appear most at risk, with populations in danger of collapse if immediate conservation measures are not implemented. Among mainland species, bird populations in grassland and xeric (dry and desert shrublands) habitats have shown the most rapid declines over the past 40 years. Birds that depend on intact forests also are declining, with the exception of wetland species and hunted waterfowl, whose populations have increased due largely to the strong focus on wetland conservation and implementation of conservation programs, such as the North American Waterfowl Management Plan.

CONSERVATION RELIANT SPECIES AND DOD

The Endangered Species Act of 1973 is built on the assumption that once recovery goals for a listed species are achieved, the species can be delisted and will thrive under existing regulatory mechanisms. This assumption has proven valid in cases where the threats were remediable, and species were adaptable enough to thrive in human-created habitats. The problem, however, is that most species do not survive well in human-dominated landscapes and, therefore, require continuing intervention to survive. With appropriate intervention, they can achieve biological recovery, but delisting is more problematic. A species is considered “conservation reliant” if it requires management and intervention for the foreseeable future.

A conservation-reliant species can be delisted only if the threats to the species are removed. If threats cannot be removed or ameliorated, a “recovery management agreement” can provide the ongoing conservation management assurances to allow delisting. DoD has invested more than \$250 million over the past 20 years on conservation-reliant bird species. Managing for these species will require a paradigm shift in DoD’s conservation planning, with partnerships becoming an increasingly essential tool. Thus, managing habitats and species is critical for current INRMP objectives as well as sustaining sufficient habitat to accommodate future requirements.



Kirtland's Warbler

OBJECTIVES:

1. Provide technical assistance to military installation personnel about migratory bird habitat and species management in INRMP project planning and implementation.
2. Help identify management actions to control invasive species (including feral animals) that negatively affect native habitats important to birds and other native wildlife.
3. Facilitate the identification, development, and dissemination of conservation measures, lessons learned, and best management practices.
4. Help installation resource managers find accurate and current information about habitat and species important for migratory bird management, as well as species of interest lists (threatened/endangered, species at risk, state listed, invasive, etc.).
5. Encourage proactive management to avoid and prevent bird species from becoming listed.
6. Utilize DoD and, when appropriate, other agency resources to help installation resource managers identify bird species and habitats on DoD lands that may need special attention or protection.
7. Help identify relevant conservation actions identified in regional bird conservation plans, including Landscape Conservation Cooperatives (LCCs), Joint Ventures, and Bird Conservation Regions.
8. Facilitate the identification, development, and dissemination of conservation measures, lessons learned, and best management practices.

MONITORING

“In utilizing and conserving the natural resources of the Nation, the one characteristic more essential than any other is foresight.”

– Theodore Roosevelt (1858-1919), U.S. President, hunter-naturalist

GOAL: Support bird monitoring efforts that meet regulatory requirements.

ISSUES AND CHALLENGES

Successful conservation of both listed and common species requires accurate and current information about the species, its population, habitat, and life-cycle. Understanding the status of bird populations on installations is important from both regulatory and ecological perspectives. Bird population data are of much greater value when analyzed at the appropriate temporal and spatial scales, and collected to assess the impacts of readiness and non-readiness activities. Appropriate monitoring helps managers gauge long-term responses to biological changes, such as vegetation succession or climate change. In most cases, learning about the overall status of bird populations, including sizes and trends, requires working at regional and national scales.

Monitoring is the glue that binds the adaptive management cycle. Coordinated Bird Monitoring: Technical Recommendations for Military Lands (CBM Technical Recommendations)³ provides a thorough set of guidelines for the design of bird monitoring surveys on DoD lands (when, where, and how to monitor), as well as sample monitoring programs designed for specific installations or purposes. Bird monitoring data



American Robin fledgling

collected from DoD and others is entered into a CBM database, which is linked to the Avian Knowledge Network⁴ to ensure inventory and monitoring datasets are preserved for future use. Guidance for monitoring threatened and endangered species can be found on the USFWS website (www.fws.gov/endangered).

³ Coordinated Bird Monitoring (CBM) recommendations: www.dodpif.org/downloads/DoDCBM_Plan.pdf.

⁴ The Avian Knowledge Network (www.avianknowledge.net) is an international partnership of government and non-government organizations focused on understanding the patterns and dynamics of bird populations across the Western Hemisphere. The goal is to educate the public on the dynamics of bird populations, provide interactive decision-making tools for land managers, make available a data resource for scientific research, and advance new exploratory analysis techniques to study bird populations.



Eastern Meadowlark



Brown Thrasher

OBJECTIVES:

1. Provide technical assistance to installation biologists so monitoring programs support both the mission and migratory bird management.
2. Promote use of the CBM Technical Recommendations, including standardized protocols and methodologies for bird monitoring, proper data entry, and archiving.
3. Provide technical assistance to installation biologists so DoD monitoring efforts provide pertinent data for INRMPS and NEPA documents.
4. Identify and resolve questions relevant to avian monitoring on military installations.
5. Participate in the CBM Program, and provide monitoring information to the CBM database and other regional and national databases.

RESEARCH

“Like the resource it seeks to protect, wildlife conservation must be dynamic, changing as conditions change, seeking always to become more effective.”

– Rachel Carson (1907-1964), *Guarding Our Wildlife Refuges, Conservation in Action #5*, 1948

GOAL: Conduct research that helps to assure current, scientifically-based knowledge informs management actions.

ISSUES AND CHALLENGES

There are significant gaps in our understanding of the key factors that affect population sizes of priority bird species. Bird population responses to environmental variables are often poorly understood; and the true effects of bird conservation activities on military training and testing, whether positive or negative, are sometimes unknown or misunderstood.

Limiting factors for many migratory birds occur across landscapes much larger than the DoD footprint, beyond installation and U.S. borders. Research into migratory connectivity can help identify limiting factors that occur off DoD lands. Similarly, understanding how to manage the species and habitats that are reliant on human management for their continued existence will become increasingly critical as climate change, encroachment, habitat fragmentation, and non-native species further constrain management options.

OBJECTIVES:

1. Help identify research-related bird conservation issues of highest relevance to mission requirements and installation needs.
2. Develop ideas and projects that help facilitate bird- and habitat-related research projects important to DoD.
3. Contribute DoD data to regional bird conservation projects.
4. Encourage appropriate collaboration with research efforts (e.g., Cooperative Ecosystem Studies Units, Joint Ventures).
5. Develop partnerships with leaders in emerging fields of research, such as the Strategic Environmental Research and Development Program/Environmental Security Technology Certification Program (SERDP/ESTCP), Engineer Research and Development Center (ERDC), U.S. Department of Agriculture, National Wildlife Research Center, National Science Foundation, and others.
6. Develop and promote partnership-based regional and national applied management proposals for funding consideration by the DoD Legacy Resource Management Program or other sources.
7. Target appropriate and available funding sources to support priority bird conservation research needs.



Wood Thrush

PARTNERSHIPS/COOPERATION

“Hemispheric solidarity is new among statesmen, but not among the feathered navies of the sky.”

– Aldo Leopold (1887-1948), *A Sand County Almanac*, 1949

GOAL: Promote conservation partnerships.

ISSUES AND CHALLENGES

DoD’s bird conservation efforts are founded on a base of cooperative relationships—formal and informal, local and regional, national and international. For example, DoD was instrumental in helping the Kirtland’s Warbler Recovery Team increase the warbler’s populations from a low of 167 singing males in 1987 to more than 2,000 in 2012, exceeding the recovery goal of 1,000 pairs. DoD’s contributions to surpassing this goal focused primarily on an agreement with USFWS to improve jack pine habitat—where the Kirtland’s Warbler primarily nests—without restricting the military training mission. Birds that nest in jack pine habitat on Camp Grayling are now considered “bonus birds” to the overall population, and training activities have had no negative impact on Kirtland’s Warbler. This example demonstrates how conservation and mission objectives can both be met through partnerships and good stewardship.

Migratory bird species face significant population declines due to habitat loss and alteration, impacts from climate change, and other causes. Without intervention and proper management, some of these species may become listed as threatened or endangered under the Endangered Species Act. No single agency or organization can reverse such declines—

this can be achieved only by working through partnerships across geopolitical boundaries, which is why DoD participates in the international PIF coalition and other bird conservation partnerships. For example, Joint Ventures (<http://www.fws.gov/birdhabitat/JointVentures/index.shtm>) are regionally-based partnerships of agencies, NGOs, tribes, and individuals, all working cooperatively to implement regional, national, and/or international bird conservation plans and projects within specific geographic areas. Joint Venture partnerships have invested \$5 billion to conserve 17.3 million acres of wetlands and other wildlife habitat since 1987.

OBJECTIVES:

1. Identify migratory bird conservation opportunities through INRMPs and partnerships that support the military mission.
2. Participate in bird conservation planning and implementation at local, state, regional, national, and international levels.
3. Develop, maintain, and strengthen regional, national, and international partnerships to facilitate migratory bird conservation on DoD lands.
4. Provide technical assistance to internal partners (e.g., range personnel, master planners) on appropriate conservation measures.
5. Identify where Joint Venture partnerships can improve mission support by collaborating on natural resource projects.
6. Engage in existing and new partnerships with state, regional, and national bird conservation groups and initiatives.

COMMUNICATION AND EDUCATION

“Incredible as it may seem, almost complete ignorance reigned as to the life history of this abundant, friendly, and well-nigh universally distributed bird [Song Sparrow]. I went to the books and read that this species has two notes beside the song, and that incubation lasted ten to fourteen days and was performed by both sexes - meager enough information and all of it wrong.”

– Margaret Morse Nice, *The Watcher at the Nest*, 1939

GOAL: Identify and disseminate educational and outreach materials that inform the local community about installation mission and conservation efforts, and inform DoD personnel about key bird conservation issues, priorities, policy, and guidance.

ISSUES AND CHALLENGES

Linking educators and communicators with ecologists and conservationists can increase and improve awareness, attitudes, skills, knowledge, and behaviors among the public, stakeholder groups, decision makers, and land managers. For DoD, the target audience also includes “inreach” to the training/testing communities, facilities/public works departments, environmental planners, and other intra-departmental environmental and operations programs. DoD’s network of installation biologists and resource managers must work with installation trainers and planners to stay current with ever-changing mission requirements, while ensuring that military personnel have the up-to-date information they need to avoid negative impacts to key or sensitive birds or habitats.

Communicating DoD policies, guidance, and priorities is key to addressing the needs of DoD’s various stakeholders. Internal installation-level partnerships, such as among the training/testing components, facilities/public works departments, environmental planners, and other intradepartmental environmental programs, are key to ensuring appropriate understanding and implementation of all relevant policies and programs. By helping facilitate this

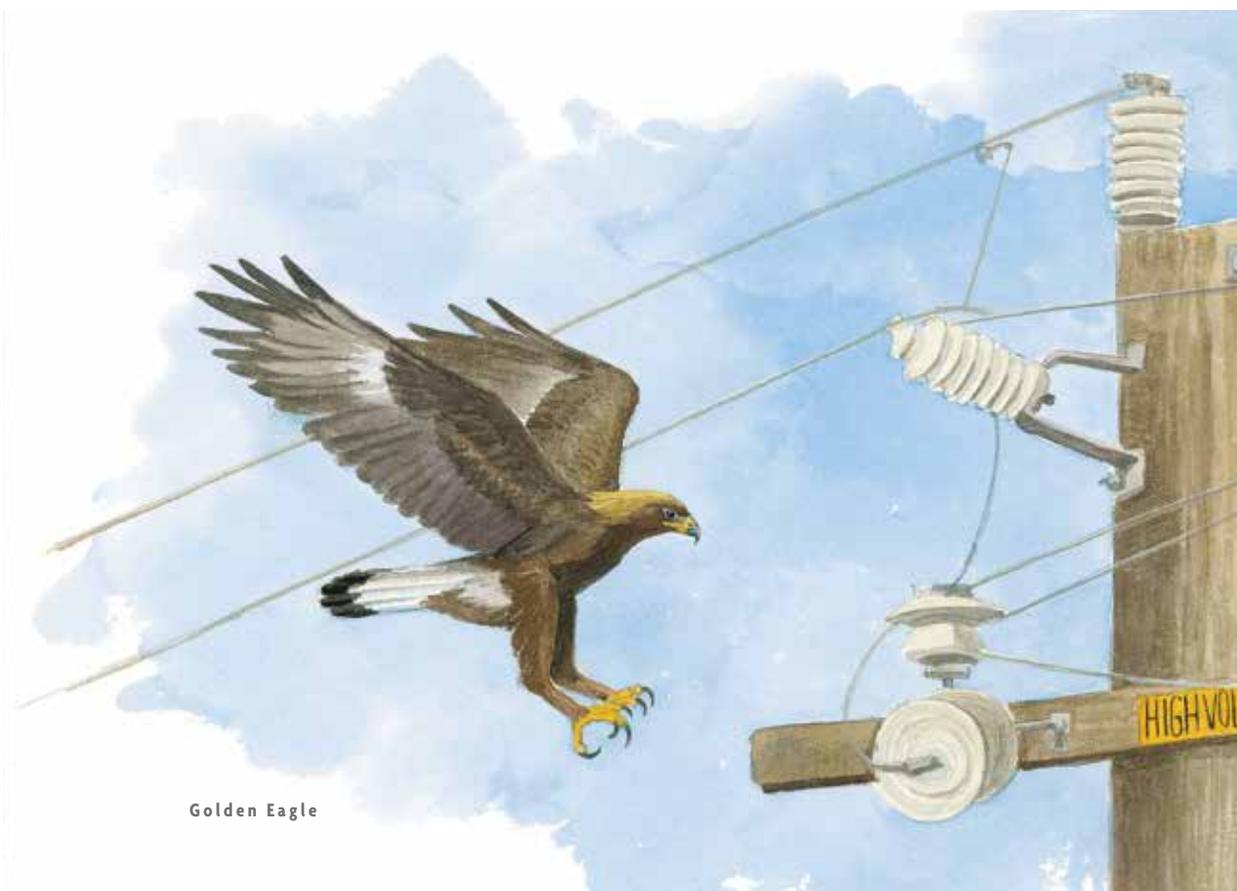


Western Meadowlark

communication, DoD can better ensure that bird-related conservation issues, priorities, policy, and guidance are understood by the appropriate personnel.

OBJECTIVES:

1. Encourage DoD senior leadership awareness of national and regional bird conservation organizations and initiatives, and how they support DoD goals.
2. Inform military and installation civilians about compliance with policy regarding migratory birds and bird conservation actions on DoD lands.
3. Stay informed about current mission requirements.
4. Promote and distribute existing outreach materials, such as the Don’t Let Your Cat Go AWOL brochure, Bird Conservation on DoD Lands map, and installation bird checklists.



DoD has joined other federal agencies to implement guidelines to reduce eagle electrocutions, including retrofitting power lines.

5. Discourage installation residents and employees from feeding feral animals.
6. Develop and/or distribute educational materials and facts on key issues, such as human structure impacts on birds (power lines, communication towers, wind turbines, building lights, windows) and other emerging conservation issues.
7. Develop, distribute, and post success stories about conservation and mission interactions.
8. Participate in educational outreach events to installation personnel, the public, and partners both nationally and internationally.
9. Develop and conduct webinars for DoD personnel on bird conservation topics of mission relevance.
10. Facilitate communication among air safety, operations, and natural resources managers to achieve common objectives.
11. Post and/or distribute approved migratory bird guidance documents to inform INRMPs, National Environmental Policy Act (NEPA), and other planning documents.
12. Provide a forum within DoD to discuss mission-conservation integration.
13. Provide technical guidance to DoD leadership and resource managers on the implementation of Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds; its associated DoD/USFWS MOU; and the Migratory Bird Rule.
14. Provide technical guidance to DoD leadership and resource managers on emerging issues and policy/guidance needs.

ENHANCING THE QUALITY OF LIFE

“The truth of the matter is, the birds could very well live without us, but many - perhaps all - of us would find life incomplete, indeed almost intolerable, without the birds.”

– Roger Tory Peterson (1908–1996), artist, author, photographer, educator

GOAL: Help improve recruitment and retention rates by enhancing soldier/sailor and family well-being and quality of life on the installation.

ISSUES AND CHALLENGES

Recruitment and retention of soldiers/sailors is one DoD’s most important priorities.

A viable military installation also requires a viable employment base, and many installation activities are now more closely integrated with the civilian community. The quality of life for Military Service members has always been inextricably linked to the quality of community life. Now the linkage is even stronger. Actions that improve the overall quality of life for Military Service members and their families also contribute to public support for DoD’s continuing presence in host communities.

The Conserving Biodiversity on Military Lands guide states: “We measure success not so much by numbers of species recovered or by numbers of environmental restrictions removed from military training operations, but by such criteria as number of successful collaborative management actions undertaken that result in a ‘win-win’ benefit to military training, endangered species recovery, and improved quality of life.” A healthy, functioning human community can help to promote and restore both people and nature, which improves our ecological and social lives.



Vermilion Flycatcher

OBJECTIVES:

1. Promote bird watching as a recreational opportunity to connect military families with nature and their community.
2. Provide assistance to installation Morale, Welfare, and Recreation (MWR) personnel in developing bird watching programs.
3. Connect with local bird clubs to engage military families in birdwatching, and with installation biologists to help monitor birds.

THE PLIGHT OF MIGRATORY BIRDS

“Today, the biggest threats to migratory birds do not come from the barrel of a gun, nor are they easily cured by passing laws. They arise from habitat loss and the wholesale environmental changes we have imposed on the natural world.”

– Scott Weidensaul, *Living on the Wind*, 1999

Maintaining biodiversity – the variety and variability of life on Earth, from genes to ecosystems, together with the ecological and evolutionary processes that sustain it – is crucial to the military mission. A diverse ecosystem, or landscape, provides realistic training conditions, protects installation resources, aids environmental compliance, maintains quality of life for installation personnel, and helps build and sustain good relations with adjacent land owners and managers. In sum, maintaining biodiversity on DoD lands helps sustain the military’s testing and training mission.

Over the last 200 years, the U.S. population has skyrocketed from about 8 million to more than 315 million. In that time, people have harvested resources for energy and food, built cities, and developed and grown industries, often failing to consider environmental consequences. As a result, we have lost a part of our natural heritage, degrading and depleting the resources upon which our quality of life depends. For example, we have lost more than half of our nation’s original wetlands, 98% of our tallgrass prairies, and virtually all virgin forests east of the Rocky Mountains. Without habitats to provide feeding, resting, and nesting opportunities, bird species across the country also are declining. For those species that nest only in arid lands, 75% are in decline, while in the Hawaiian Islands, as many as 71 bird species have gone extinct.

Birds are very visible in our world, by both sight and sound. As such, they are a sentinel of biodiversity and ecosystem health wherever they are found. Birds provide ecological and economic contributions to all of us; these contributions are called “ecosystem services.” For example, birds

disperse seeds and pollinate plants; insect-eating birds control insect pest outbreaks in forests, grasslands and croplands; raptors control rodent and other pest populations; and scavengers play a large role in nutrient recycling and preventing disease outbreaks. Birds also drive ecotourism, which can bring direct benefits to many communities. Conversely, declines in bird populations result in reduced seed dispersal and pollination, increased pest and disease outbreaks, loss of socioeconomic resources, and potential disruption of the food web.

Because many birds migrate, using different lands at different times of the year or different phases of their lives, a comprehensive approach to conservation is crucial. Understanding migratory connectivity (where and when birds go for the breeding and non-breeding seasons) is crucial to effective bird conservation. To benefit bird populations, installation resource managers should focus their efforts on improving and enhancing habitat conditions in ways that maximize breeding success and post-fledging survivorship. Attention to overwintering survivorship is also important, especially in southern states where many grassland and Boreal forest breeding species spend the winter.

Because many at-risk bird species depend on off-base conditions, it is crucial that military resource managers nurture cooperative partnerships at the state, regional, national, and even international levels. DoD, in coordination with state and federal partners, can play a positive role in enhancing collaborative conservation efforts in Latin America and the Caribbean. For

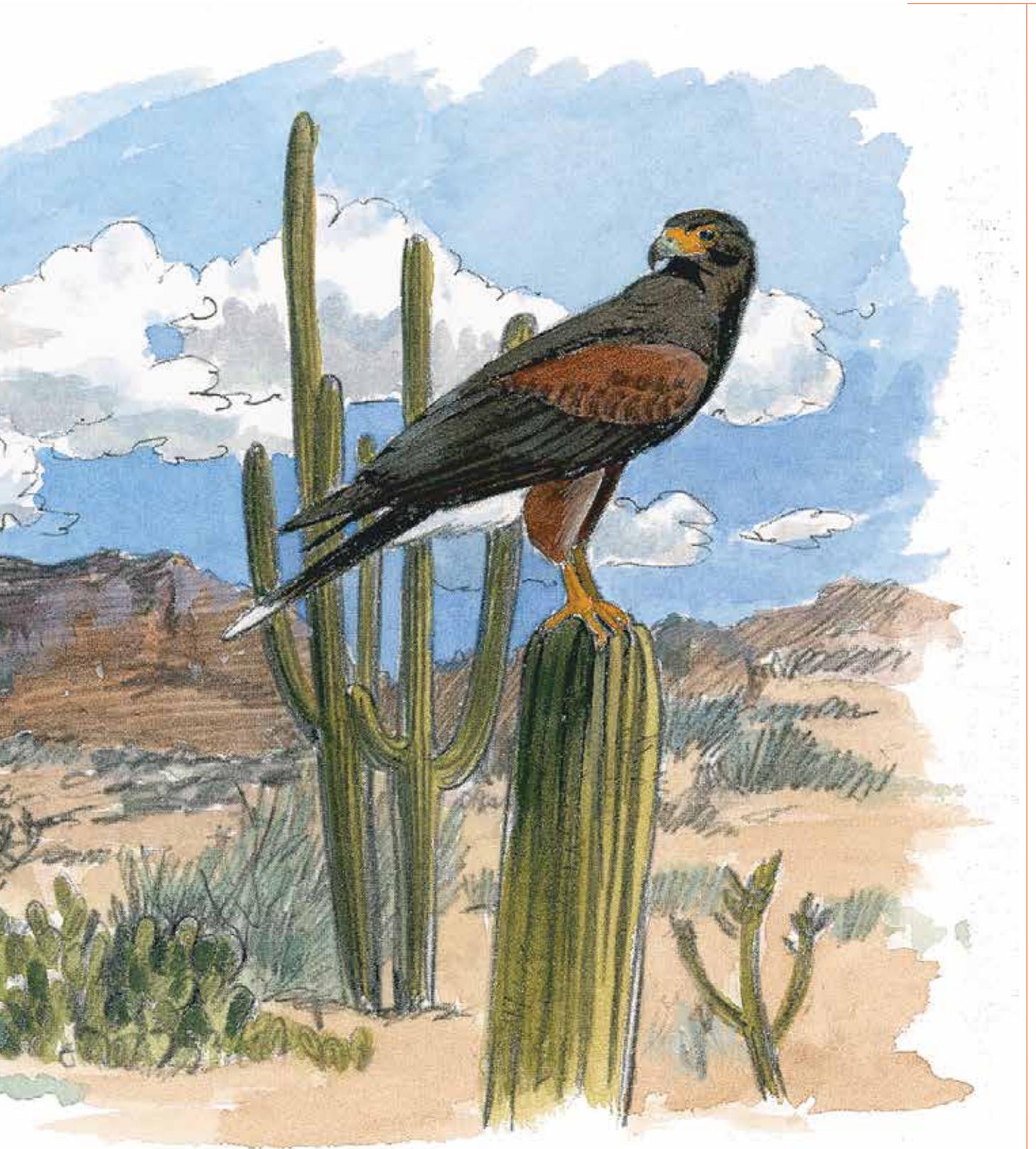
example, installations can maintain small habitat patches, including forest, scrub, or grassland, that can benefit migrating birds, or schedule activities in mudflats and coastal areas to avoid the brief times when shorebirds migrate through these areas, or manipulating water levels in ponds and reservoirs to benefit many water-dependent species during different seasons. Tools such as radar provide information to help identify the most important migration stopover sites, allowing DoD managers to better protect critical habitat patches that may otherwise appear to be unused.

Maximizing contiguous forest or grassland areas is important for successful breeding in many species, and research has shown that breeding success is dramatically reduced along habitat edges. This provides excellent opportunities for installations to build and maintain partnerships with on-site partners and adjacent landowners. In addition, large contiguous grasslands provide ideal training conditions at numerous military installations that are compatible with obligate grassland bird species. Active DoD airfields must not be categorized or managed as functional grasslands in terms of bird and wildlife conservation.

Like many plants and animals, birds' life cycles and behavior are closely linked with the changing seasons. Climate change has already influenced the abundance, distribution, and timing of migration and breeding for many bird species. Changes in temperature, daylight, and wind are all factors that trigger migration. These factors also affect the timing and availability of flowers, seeds, and other food sources when birds reach their stopover locations and destinations. As a result, songbirds that migrate earlier in the spring because of warmer temperatures may now arrive before food or shelter resources are available.

Changes in plant and prey distribution and abundance, reduced productivity, shrinking habitats, greater competition for limited resources, and collisions with man-made objects such as cell phone towers and buildings will present huge challenges for birds on land and at sea.





Harris's Hawk

MAJOR INITIATIVES

“The number and scope of severe threats to birds is daunting, but implementing solutions immediately and widely will pay off in benefits to society, the economy, and the health of our environment.”

– U.S. NABCI Committee, *The State of the Birds, USA, 2009*



Least Tern

DoD’s bird conservation efforts are spearheaded by a cooperative network of natural resources personnel and others from military installations across the United States. This network of biologists helps sustain and enhance the military mission through proactive, habitat-based conservation and management strategies that maintain healthy landscapes and training

lands. The participants work beyond installation boundaries to facilitate cooperative partnerships, determine the current status of birds, and prevent additional birds from becoming listed as threatened or endangered. Through their efforts, DoD utilizes a scientific basis for maximizing



Ruddy Duck

the effectiveness of resources management, enhancing the biological integrity of DoD lands, and ensuring continued use of these lands to fulfill military training requirements.

Participating in partnerships, such as the international PIF network, helps DoD to more effectively meet its trust responsibility to conserve our nation's biodiversity. Specifically, DoD's participation in the PIF network facilitates:

- the development of cooperative agreements for implementing bird conservation projects on military lands;
- communication and information sharing across geographic and political boundaries;

- DoD's participation in national and regional PIF committees and working groups;
- cooperative ecosystem-based bird conservation planning at local, state, regional, national, and international levels; and,
- military natural resources professionals' ability to obtain and utilize up-to-date information on bird conservation.

DoD's bird conservation website (www.dodpif.org) hosts information on the most current bird conservation resources for military leadership, and resource planners and managers. The site also has information to help educate the public about bird conservation on military lands, and DoD's stewardship role.

SUPPORTING THE MISSION INTO THE FUTURE

“One winter morning the President electrified his nervous Cabinet by bursting into a meeting with, ‘Gentlemen, do you know what has happened this morning?’ They waited with bated breath as he announced, ‘Just now I saw a Chestnut-sided Warbler and this is only February.’”

– Corine Roosevelt Robinson, on her brother, President Theodore Roosevelt (1861-1933)

Change is the one true constant in today’s world. Military training missions must continually adapt as threats, weapons, and tactics evolve; political priorities realign with every election, resulting in changes to laws, legislation and funding; and, in the world of conservation, ecosystems and landscapes are changing at an unprecedented rate due to climate change.

The environmental alterations caused by our changing climate are likely to result in increased species endangerment, the proliferation of harmful invasive species, and potentially irreversible landscape degradation. Moreover, continued urbanization and intensified land use threaten not only habitats, but the natural resources critical to DoD mission success.

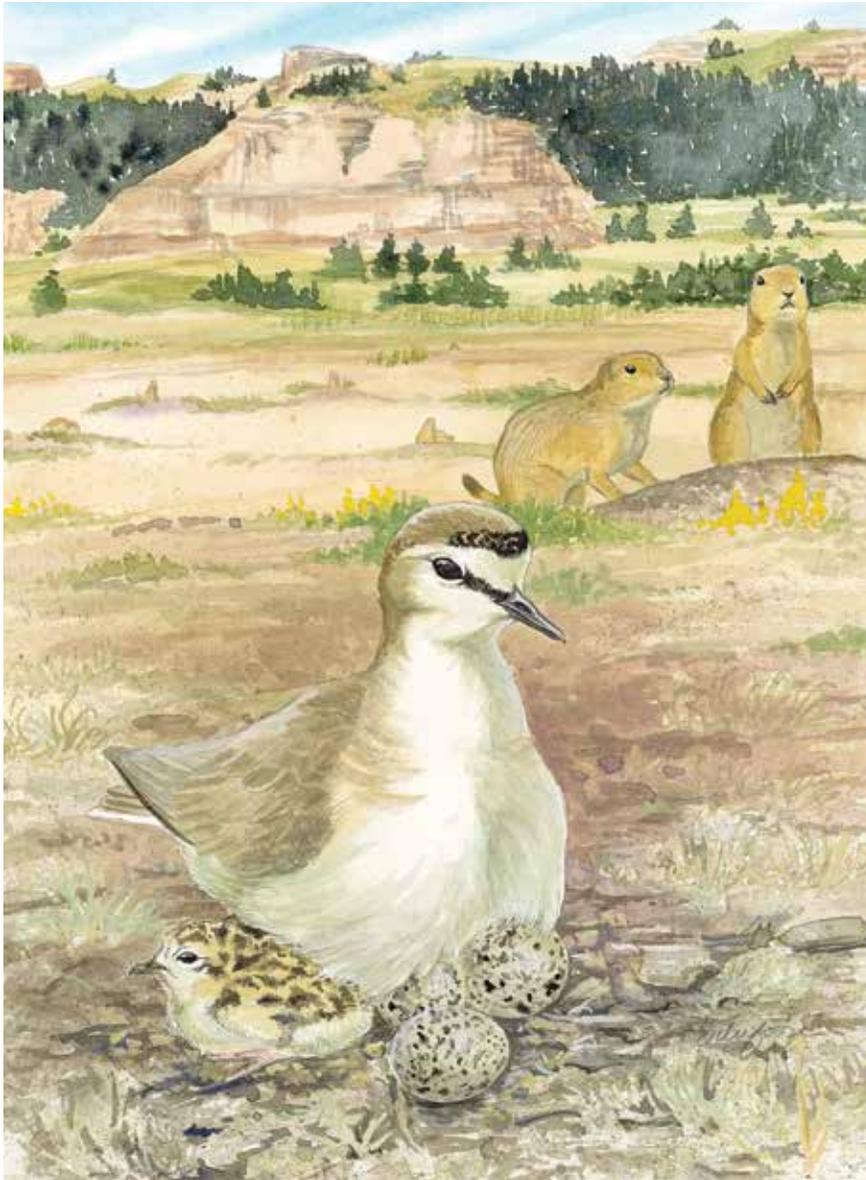
To achieve the parallel goals of conservation and mission success, DoD must remain focused on its objectives, while acknowledging and adapting to changing environmental, political, and mission conditions. Adapting management actions to changing conditions requires knowledge, planning, and flexibility. Within DoD, this adaptive management approach is implemented through the INRMP, which:

- Supports operational and training missions;
- Uses the best available scientific information;
- Fosters long-term sustainability of ecosystem services;
- Maintains or restores native ecosystem types;
- Supports ecological processes;
- Incorporates and implements an adaptive management approach; and
- Is regularly reviewed and updated or revised, as needed.

Adaptive management also requires monitoring the effectiveness of predictive tools, developing innovative management tools, and looking for non-traditional partnerships and creative methods of communicating information.

Even without the variable of climate change, bird conservation challenges are continually evolving, and success depends increasingly on cooperation and partnerships. Better conservation depends on better management, which requires better science. Cooperation helps all partners integrate individual organizational/agency missions with broader conservation priorities. For DoD, tools such as buffer programs that strive to stem mission encroachment and conserve species and habitats rely heavily on targeting lands with the highest mission and conservation values. Prioritizing those lands requires coordination and cooperation among a wide variety of partners, including state and federal agencies, NGOs, and even international organizations. It is through the DoD’s participation in PIF that this coordination and cooperation occur.

To facilitate this collaboration, DoD has a network of regional representatives and technical working groups that are structured similar to other national bird conservation partnerships⁵. These representatives have on-the-ground experience with the intricacies of managing natural resources, and supporting the military training and testing mission. They also have specialized knowledge of migratory bird requirements and, combined with their familiarity of developing and implementing INRMPs, are uniquely qualified to provide technical assistance to DoD installation personnel.



Mountain Plover with prairie dogs

In planning for the future, these representatives should look to existing partnerships and other collaborative efforts, leveraging resources and managing at a broad scale to share data, success stories, and information; and working to ensure that monitoring, research, and management remain relevant, informed, and accurate.

DoD works to fulfill all mission requirements while simultaneously striving to be a conservation leader and good steward of our nation's resources. To those ends, installation natural resources managers will continue to use informed, strategic

approaches to implement cooperative projects and programs that benefit birds and their habitats. Only by working together with a broad network of partners can DoD truly meet its long-term goal of maintaining the military's testing and training mission while keeping common birds common and avoiding species endangerment.

⁵Regional Representation: Northeast, Southeast, Midwest, West; and, Technical Working Groups: Bird/Wildlife Aircraft Strike Hazard (BASH), Communication/Education/Outreach, Research and Monitoring, International, Seabirds, and Species of Concern.

APPENDIX I

DOD NATIONAL TECHNICAL AND PARTNERS IN FLIGHT REPRESENTATIVE FUNCTIONS

- Provide Military Service natural resources managers (NRMs) with information and tools to address the conservation of migratory birds and their habitats in support of INRMP development and implementation both by responding to NRM queries and by providing relevant information (e.g., webinars, articles, reports, studies) via listserv.
- Provide proactive, science-based conservation and management strategies and subject matter expertise to appropriate stakeholders when called upon.
- Increase awareness, involvement, and communication among natural resources managers and others within DoD (e.g., via listserv, websites, training webinars).
- Present technical migratory bird information to national and regional conferences/workshops/webinars. Presentations may discuss DoD-wide migratory bird activities, but may not provide information or implementation details of specific policies and procedures. OSD's Natural Resources Program Office will review PowerPoint or other presentation format prior to delivery to any external audiences to ensure messaging is consistent with OSD guidance.

- Inform OSD and Military Service leadership about current migratory bird conservation issues, goals, and objectives (e.g., through presentations to the DoD Conservation Committee).
- Review, coordinate, and evaluate large scale priorities and project ideas, such as coordinated monitoring strategies, habitat and species management, and invasive species, in the context of providing continued mission support by maintaining healthy lands and populations to directly avoid endangered species listings and critical habitat designations (flora and fauna).
- Recommend DoD-wide technical guidelines or other field needs (e.g., training), and work with OSD to ensure they are appropriately implemented.
- Respond to emergent needs with respect to birds (e.g., population crashes, potential/proposed listings of species).

All activities and information will support the military's testing and training mission and natural resource stewardship responsibilities, and will be consistent with DoD Natural Resources Program and Secretary of Defense priorities and objectives.

Activities and information will not be of a policy-formation or directive nature (e.g., no data calls or tasking memos), and will be supervised by DoD's Natural Resources Program Office.



DoD's Natural Resources Program helps enable the military's testing and training mission while simultaneously working to maintain the long-term sustainability of the priceless natural heritage entrusted to DoD stewardship (www.dodnaturalresources.net; www.denix.osd/nr).

APPENDIX II

ACRONYMS AND ABBREVIATIONS

AWOL	Absent Without Leave
BASH	Bird/Animal Aircraft Strike Hazard
CBM	Coordinated Bird Monitoring
DoD	Department of Defense
EO	Executive Order
ERDC	Engineer Research and Development Center
ESTCP	Environmental Security Technology Certification Program
INRMP	Integrated Natural Resources Management Plan
LCC	Landscape Conservation Cooperative
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MWR	Morale, Welfare, and Recreation
NABCI	North American Bird Conservation Initiative
NEPA	National Environmental Policy Act
NGO	Nongovernmental organization
NRM	Natural Resource Managers
OSD	Office of Secretary of Defense
PIF	Partners in Flight
REPI	Readiness and Environmental Protection Integration
SERDP	Strategic Environmental Research and Development Program
USFWS	U.S. Fish and Wildlife Service

APPENDIX III

REFERENCES

- Carson, R. 1948. *Guarding Our Wildlife Resources*. Conservation in Action #5. U.S. Fish and Wildlife Service, Government Printing Office.
- Gould, S.J. 2008. *The Panda's Thumb: More Reflections in Natural History*. W.W. Norton & Company, New York.
- Leopold, A. 1949. *A Sand County Almanac And Sketches Here And There*. Oxford University Press, New York.
- Nice, M.M. 1939. *The Watcher at the Nest*. The Macmillan Company, New York.
- North American Bird Conservation Initiative, U.S. Committee, 2009. *The State of the Birds, United States of America, 2009*. U.S. Department of Interior: Washington, DC.
- Odum, E.P. 1964. The New Ecology. *BioScience* 14(7):14-16.
- Weidensaul, S. 1999. *Living on the Wind: Across the Hemisphere With Migratory Birds*. North Point Press, New York.
- Wilson, E.O. 1984. *Biophilia*. Harvard University Press, Cambridge, Massachusetts.



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