JUNE 2010

Steppingstones

NEWSLETTER OF THE DEPARTMENT OF DEFENSE
PARTNERS IN FLIGHT PROGRAM

Wetland Enhancement in the Chesapeake Bay Watershed

The Chesapeake Bay Watershed is a critical region for bird conservation. According to the U.S. Fish & Wildlife Service, approximately one million swans, ducks and geese – roughly one third of all waterfowl that winter on the Atlantic Coast – use the Bay as their winter habitat. Hundreds of other bird species depend on this area for migratory stopover sites, summer breeding grounds, or year-round habitat.

Suitable habitat is shrinking for the resident and migratory birds that depend on the Chesapeake Bay area. Data collected by the Chesapeake Bay Program, a watershed partnership, indicates that the human population of the Bay watershed is more than 16 million and growing, and that 100 acres of forest are lost to development each day. In the built-up areas around the watershed's largest cities, such as Washington, DC, lands managed by government agencies are some of the last remaining large open spaces. In this context, more than 420,000 Department of Defense (DoD)-managed acres across 68 installations in the watershed are critical for biodiversity conservation.

To preserve and improve the wildlife value of DoD lands in the watershed, the U.S. Navy and the Wildlife Habitat Council (WHC), a nonprofit organization, formed a partnership. This partnership, through a cooperative agreement with the U.S. Army Corps of Engineers and funding from the DoD Legacy Resource Management Program, was established to enhance wetland habitat at two Navy installations in Maryland. The cornerstones of these programs were consistent on-the-ground fieldwork, partnerships with neighboring landowners, community volunteer activities, and capacity-building events. Results of the work included increased native plant richness, more observed wildlife species using the habitats, expanded opportunities for positive community interaction, and new opportunities for installation personnel to learn about and connect with the ecosystems at their installations.

INSIDE:

Water lilies found at the NSF Carderock wetland
Photo: CDR Scott Merritt

The partners at Naval Support Facility (NSF) Carderock in Bethesda, Maryland, enhanced a wetland constructed by the Navy in 2005. The wetland supported a variety of native flora and fauna before the partnership habitat enhancement project began, but non-native invasive plant species began to degrade large portions of the habitat. Canada thistle (*Cirsium arvense*) and crown vetch (*Coronilla varia*) covered about 80% of the upland transition zone surrounding the deepwater area. Bush honeysuckle (*Lonicera* spp.), an inadequate food source for migrating birds due to low lipid content and late fruiting time, was spreading through an adjacent forest buffer. Invasive vines, particularly oriental bittersweet (*Celastrus orbiculatus*), were overtopping native trees.

As a result of the partnership, WHC's invasive species program manager conducted weekly fieldwork to remove invasive plants and monitor the regeneration of the native plant community. Meanwhile, the Navy and WHC organized a variety of community events to tackle large invasive monocultures and stabilize the management areas with native plants. WHC staff provided education about the wildlife values of native plants such as buttonbush (*Cephalanthus occidentalis*), which produces seeds that are eaten by waterfowl, and elderberry (*Sambucus nigra* ssp. *canadensis*), a source of berries for birds and a hardy competitor against invasive species.

Continued on next page

Partnership Wetland Enhancement in the Chesapeake Bay Watershed (cont.)

With the fieldwork underway and positive results evident after the first season of management, WHC staff and Navy natural resources personnel began working with the commanding officer of Naval Support Activity North Potomac. Together, they planned a community event to energize similar efforts across the Chesapeake Bay Watershed by building capacity and forming partnerships for watershed protection. The team engaged community partners, including the county government and the local chapter of The Nature Conservancy, to help coordinate the event. The free seminar, which took place in April 2009, attracted participants representing community groups, schools, corporations, federal and county agencies, and fourteen military installations. Attendees heard a panel of expert speakers and participated in workshop activities, including a member of a local watershed society teaching them how to identify invasive species. As a result of this seminar, attendees were able to develop new conservation partnerships and update land management plans. The seminar also led to a June 2009 fieldwork event that brought together Montgomery County and NSF Carderock to restore the wetland forest buffer that spans the border between NSF Carderock and county property.

MD Conservation Corps planting at NSF Indian Head
Photo: Susan Robinson

To further the uses of NSF Carderock's wetland as wildlife habitat and a community conservation education site, the Navy and WHC held an additional event in fall 2009 for National Public Lands Day, with funding from the DoD Legacy Resource Management Program. Fifth- and sixth-grade students participated in hands-on ecology lessons in the wetland and planted native species, such as crimson-eyed rosemallow (*Hibiscus moscheutos*), a nectar source for hummingbirds. In addition, The Nature Conservancy led a team of volunteers from the Maryland Conservation Corps in the removal of invasive Bradford pear (*Pyrus calleryana*) trees.

Another wetland enhancement partnership between the Navy and WHC took place at NSF Indian Head in Marbury, Maryland. The program used the same framework as the NSF Carderock program, involving partnerships with neighboring landowners (in this case, Smallwood State Park), regular invasive plant removal, and native plantings. The wetland at NSF Indian Head is a known nesting site for Bald Eagles (*Haliaeetus leucocephalus*) and is used by a diversity of other wildlife. WHC staff, Navy personnel, and volunteers from the Maryland Conservation Corps planted native seed-producing plants for waterfowl (which in turn serve as prey for Bald Eagles), berry-producing shrubs for songbirds, and nectar plants for hummingbirds.

While the wetland acreage enhanced through these two projects is small relative to the scope of the watershed, these areas can now serve as valuable stopover sites for migrating birds and provide small pockets of habitat for resident species. Additionally – and perhaps most importantly – the projects energized community members and neighboring landowners to work together to protect the critical resources of the Chesapeake Bay Watershed.

- Susan Robinson,
Education Specialist,
Wildlife Habitat Council

For more information one the Wildlife Habitat Council, visit www.wildlifehc.org

SERDP Activities Related to Migratory Bird Ecology and Management

A comprehensive and integrated avian monitoring program has eluded our nation's land managers for many years now, due in large part to a lack of standardization in data collection, difficulties in data sharing, and critical data gaps. Military lands provide some of the highest quality habitats available for a wide diversity of bird species, and the abundance of migratory bird species that use habitats on military lands creates an additional safety issue for DoD air operations. These are among the key factors that point to the need for more robust avian monitoring, and the military plays an important role in developing a comprehensive and integrated avian monitoring program.

A lack of information pertaining to migratory bird habitat, in particular the fine-scale structural characteristics and time/frequency of use, represents a critical knowledge gap that limits a more comprehensive avian monitoring program. The Strategic Environmental Research and Development Program (SERDP) is currently funding two efforts to help address this knowledge gap and the Environmental Security and Technology Certification Program (ESTCP) is currently funding an additional effort to address this gap.

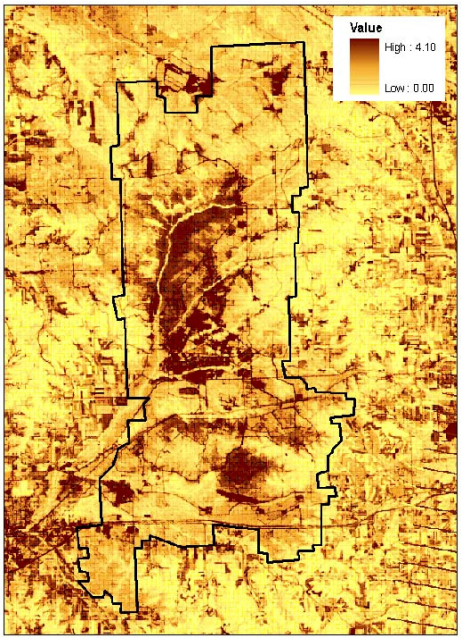
Project SI-1438: Advanced Monitoring of Migratory Birds on Military Lands
Dr. Anna Pidgeon, University of Wisconsin-Madison, is using aerial photography and high-resolution satellite imagery to create cost-effective tools for monitoring migratory birds.

Continued on next page

SERDP Activities Related to Migratory Bird Ecology and Management (cont.)

Specific project objectives include:

1. identifying the fundamental relationships of vegetation structure that define migratory bird habitat, and
2. developing texture-based image processing methods for high-resolution satellite data to forecast migratory bird distribution and abundance.



Patterns of Grasshopper Sparrow abundance at Fort McCoy, WI (perimeter shown in black). Grasshopper Sparrow abundance is higher in darker areas.

Research to date has found that specific structural aspects of habitat are good predictors of bird diversity and occupancy by certain species. Two structural aspects have been shown to have a significant influence on bird distribution, namely (a) foliage height diversity (a measure of the number of vertical layers), and (b) horizontal heterogeneity of plant species and other vegetation growth forms within habitat types. Dr. Pidgeon used this information to test the efficacy of using image texture, a measure of small-scale differences in tonal values of pixels generated from remotely sensed data, in identifying patterns of habitat structural features that migrating birds cue in on when selecting their breeding habitat. She subsequently used this information to quantify bird diversity and abundance in those habitats.

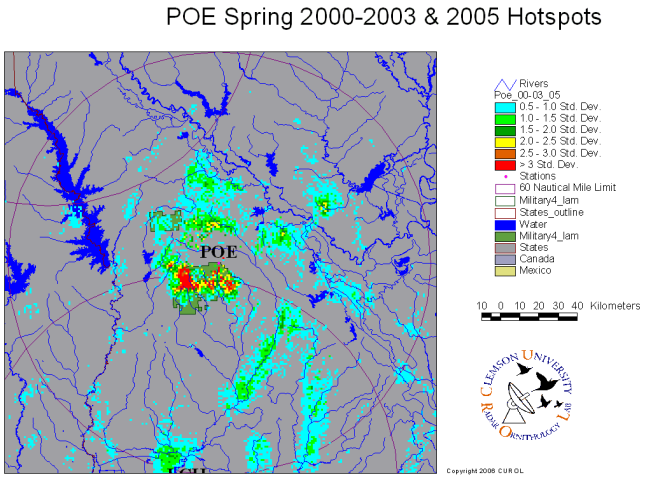
Dr. Pidgeon's approach was evaluated at Fort Bliss, NM, and Fort McCoy, WI. At both study sites, Dr. Pidgeon found that measures of image texture derived from aerial imagery corresponded to nearly 80% of the variation found in foliage height diversity. In other words, migratory birds prefer habitat with a varying range of vegetation height, and image texture can be used to identify these sites with 80% accuracy. At Fort Bliss, image textures calculated from satellite imagery were strongly associated with areas of high avian diversity, the occurrence of Loggerhead Shrikes (*Lanius ludovicianus*) and their nests, and the abundance of several other migratory bird species. At Fort McCoy, image texture measures showed strong associations with patterns of abundance of both Grasshopper Sparrow (*Ammodramus savannarum*, a grassland species) and Ovenbird (*Seiurus aurocapillus*, a woodland species).

Because of the fine resolution and broad scale possible with image texture, as well as its strong correlation with vertical vegetation structure, Dr. Pidgeon developed a useful tool for identifying potential habitat from remotely sensed data. This tool can be used to inform future bird survey efforts by focusing attention on specific habitat areas and, when combined with traditional vegetation cover class information, to improve the accuracy and precision of habitat models.

Project SI-1439: The Identification of Military Installations as Important Migratory Bird Stopover Sites and the Development of Bird Migration Forecast Models: A Radar Ornithology Approach

Dr. Richard Fischer, U.S. Army Engineer Research and Development Center, in collaboration with the Clemson University Radar Ornithology Laboratory and the University of Southern Mississippi, used a more ground-up approach to identify migratory bird stopover habitat. The objectives of his project included:

1. identifying military installations that have important migratory bird stopover sites;
2. documenting the pattern of bird migration at these installations;
3. verifying those sites identified using radar technology as migratory bird stopover hot spots; and
4. developing forecast models of bird migration for installations and surrounding areas.



Map of important migration stopover areas for Fort Polk, LA. The colors represent standard deviations of above the mean density of birds per cubic km. Note that many of the stopover areas are associated with riparian habitat.

Because migratory birds travel in groups, stopover sites along a migration route can encounter high volumes of migratory bird entries and exits, often occurring over short time frames. Those sites that have the highest use are referred to as "hotspots."

Continued on next page

SERDP Activities Related to Migratory Bird Ecology and Management (cont.)

It is critical to identify where, when, how long, and in what concentrations migratory birds inhabit these temporary stopover sites. Dr. Fischer and his research team performed a rigorous field campaign across three study sites that included more than 2,300 km of transect sampling and more than 149,000 bird detections, yet the results of this effort showed no significant relationships between ground-based avian transect data and two radar measures of bird density at any of the study sites. These results suggest that daily variation associated with migrant movements or detection probabilities may be too high to enable an accurate estimate of ingress or egress at stopover hotspots due to migration. However, Dr. Fischer's team did show that radar indicated stopover hotspots were typically riparian areas associated with streams and rivers. This was particularly true for the arid west (near Yuma Proving Ground, AZ) where riparian areas are the only suitable stopover habitats in the region.

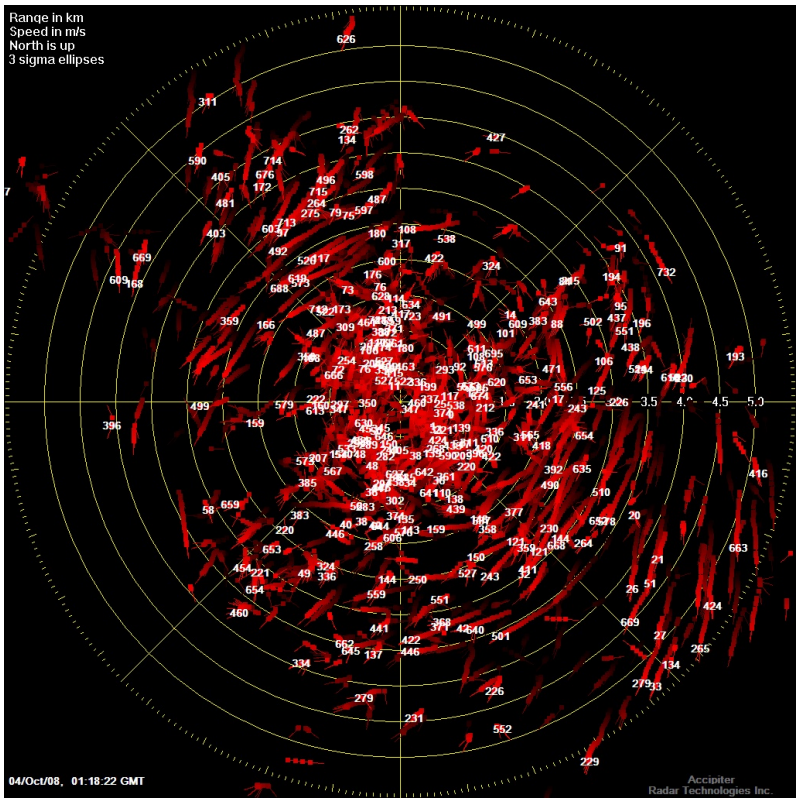
Despite these findings, Dr. Fischer and his team were able to develop site-specific migration models for Eglin Air Force Base, FL (fall only), and Fort Polk, LA (spring and fall), that can predict bird density with fairly high accuracy based on predictor variables primarily derived from readily available meteorological data. Moreover, this work further validated the power and accuracy of radar technology in tracking migratory birds aloft under the cover of darkness.

Project SI-0723: Validation and Integration of Networked Avian Radars

Ongoing experience with the ability of different types of radars to detect resident and migrating birds led to the obvious next step of demonstrating and validating a particular radar technology for bird detection and tracking through ESTCP to verify its cost and operational performance. Ms. Marissa Brand, U.S. Navy Space and Naval Warfare Systems Command (SPAWAR) Systems Center, and her multiple collaborators have demonstrated that avian radar systems can provide air safety and natural resources management personnel improved tools for automatically detecting and tracking resident and migratory birds in an effort to reduce the bird/animal aircraft strike hazard (BASH) potential around airfields and low-level military training routes.

An avian radar system can be created by coupling inexpensive marine radars with advanced digital signal processing and tracking algorithms that enable the suppression of ground clutter and its interference with detection capabilities. Ms. Brand and her team compared the detection data generated by the avian radar system with visual observations and thermal imagery. Results from this effort demonstrated that such systems can automatically detect and track birds ranging in size from small songbirds to large raptors, and can continuously track birds in real-time through 360° of azimuth at ranges up to 11 km and altitudes over 0.5 km.

Compared to traditional bird survey and detection methods, avian radar systems generate a much higher volume of detection data. The systems operate by updating the three-dimensional position and other parameters (i.e., time, speed, and heading) of each of hundreds of simultaneously-tracked targets every two to three seconds. To take full advantage of avian radar systems benefits, data collected from these systems must be effectively integrated across multiple avian radar systems and streamed across the Internet so that end users can effectively track these targets in real time. Ms. Brand and her team also demonstrated this functionality as part of this ESTCP project. DoD BASH managers now have a tool that will help reduce the number, cost, and risk of bird strikes. Natural resources managers can also benefit from this tool by applying it to their data collection and monitoring efforts.



Targets being tracked by an eBirdRad digital avian radar system at Edisto Island, SC, 4 October 2008 01:18:22 UTC (21:18:22 EDT). The length of the red "tails" represents the history of a target's positions in the scans prior to this image being taken. The white numeric labels (Track IDs) show the current position of the targets being tracked by the radar (total = 234); tails with no label are targets that are no longer being tracked by the radar.

Each of the projects discussed here has generated promising results for informing appropriate long-term management and stewardship of migratory bird species, and for advancing the development of a comprehensive and integrated avian monitoring program. SERDP and ESTCP will continue to invest in research and technology demonstrations, respectively, that advance bird monitoring and decision support tools for DoD end users.

- John Thigpen, HydroGeoLogic, Inc., and John A. Hall, OSD, SERDP/ESTCP

NPLD: Early-successional Habitat Restoration Project

In September 2005, a National Public Lands Day (NPLD) Project was conducted in the McCarty field/landfill area of Fort Belvoir, Virginia, to convert mid-successional habitat back to an early-successional habitat. The project goal was to increase the quality of wildlife habitat to sustain increased wildlife populations. The site was selected for habitat improvement due to the presence of two breeding Partners in Flight (PIF) Species of Concern: Prairie Warbler (*Dendroica discolor*) and Field Sparrow (*Spizella pusilla*). PIF identifies these two species as habitat indicators for early-successional habitats and as species in decline in this Bird Conservation Region (BCR #31, New England/Mid-Atlantic Coast).

During the 1999-2002 breeding seasons, these two PIF species were found in the McCarty field with higher than average occurrences: Prairie Warblers averaged six and Field Sparrows averaged four. The following three breeding seasons (2003-2005) saw a decline by over half of these target species, with Prairie Warblers having only two on average and Field Sparrows having none. This decrease in species was likely due to habitat change from early- to mid-successional habitat during this period.

Prairie Warbler on Ft. Belvoir, VA on the project site
Photo: Gregory Fleming

Tasks Completed

The project entailed the following tasks to restore the area to early-successional habitat:

- reduced average tree height by cutting and/or pruning selected trees over 20' tall;
- piled brush from the cut trees to create additional habitat;
- broadcast seeded a select mix of native warm-season grasses; and
- planted shrubs at the south end of the field outside the landfill boundaries.

This topped/pruned pine tree is an example of maintaining early-successional habitat on landfills where woody vegetation is no longer allowed to be planted. This tree was about 20 feet tall and very narrow before it was cut to five feet high. The braches below the cut bushed out and the tree is now about 14 feet high, five years after the project.

Results

Four years have passed since the project was completed and the habitat is now in an early-successional habitat stage. Many of the trees have re-sprouted, as expected, and are still below 20 feet tall. Small patches of the warm-season grasses have become established. The shrubs did not have a high success rate due to deer destruction; however, some have survived and will add to the quality of habitat at this site.

The 2006-2009 data indicate the target PIF species have increased in population in the study area since project completion. The number of species doubled compared to the 2003-2005 breeding season data, resulting in four Prairie Warblers and one Field Sparrow. In addition, the post-project data revealed a higher number of migratory birds utilizing this area during both non-breeding and breeding seasons, as well as an increased number of small to medium sized mammals. This project is a success because the target PIF Species of Concern and other wildlife responded positively, as hypothesized.

- Gregory W. Fleming,
United States Army,
Fort Belvoir

Site Profile: Moody Air Force Base

Moody Air Force Base, GA
*Recognized as a State Important Bird Area by National Audubon Society (part of the Grand Bay-Banks Lake Ecosystem IBA)

Location: Lowndes and Lanier Counties, Georgia
Land Size: 11,000 acres
Mission: The Moody Air Force Base (AFB) mission is to provide worldwide close air support, force protection, and rescue forces, including combat search and rescue and personnel recovery in support of humanitarian interests, U.S. national security, and worldwide contingency operations through the use of combat-ready A-10C, HC-130P, HH-60G, pararescuemen, force protection assets, and support personnel.
Bird Conservation Region: Southeastern Coastal Plain (BCR 27)

Wood Storks at Moody AFB
Photo: Gregory Lee

Grand Bay-Banks Lake Cooperative Partnership

Nestled in the heart of the southeastern coastal plain within the Suwannee River Basin, Moody AFB is the largest federally-owned property within a unique ecosystem, known as the Grand Bay-Banks Lake (GBBL) wetland complex. Other owners within this complex include the U.S. Fish and Wildlife Service (USFWS – Banks Lake National Wildlife Refuge), the Georgia Department of Natural Resources (GDNR – Grand Bay Wildlife Management Area), the Georgia Department of Transportation, The Nature Conservancy (TNC), and private landowners. Excluding the Okefenokee Swamp, the GBBL wetland complex of over 13,000 acres is the largest freshwater lake/swamp system in the coastal plain of Georgia. It is comprised of several broad Carolina bays and shallow lakes interconnected by cypress-black gum swamp. Moody AFB's Dudley's Hammock, the last extant example of the mesic hardwood hammock (e.g., "tree island") community once common through south Georgia and north Florida, is also located within this complex.

Because of agricultural conversion and increased urbanization, the GBBL wetland complex has become an island of biodiversity that provides critical wildlife and bird stopover habitat not found anywhere else within this part of the state. Recognizing the importance of this area and the need for scientific conservation, personnel from Moody AFB, USFWS, GDNR, and TNC joined together in the early 1990s to form the GBBL Council to provide for the coordinated management of the ecosystem. Group membership expanded in later years to include private landowners and other agencies and organizations with an interest in the GBBL ecosystem.

The first act of the GBBL Council was to prepare a cooperative stewardship plan for the continued management and conservation of the ecosystem. The Council then met with regional experts and scientists to determine the "Desired Future Ecological Condition" of the ecosystem, which would be used to guide conservation and management actions within the human context by establishing conservation targets to focus management. An integrated Site Conservation Plan was developed and DoD Legacy Resource Management Program funds were obtained to conduct ecological surveys within the ecosystem. To date, the GBBL Council has completed ichthyofaunal and herpetofaunal surveys, and three ecosystem-level studies to help future ecosystem management efforts. These studies are: 1) hydrological responses in the Grand Bay-Banks Lake ecosystem; 2) landscape-level changes in land cover and natural habitats from 1941 to present; and, 3) determination of historic fire periodicity and mapping of presettlement vegetation.

Carolina Bay
Photo: Gregory Lee

Management of Carolina Bay Habitats

Carolina bays are elliptical, shallow depressions found primarily on the coastal plain of the southeastern U.S. Characteristics include orientation on a northwest-southeast axis and, in many cases, a distinct sand rim on the southeast end. While the origin of these bays may be unknown, their ecological importance is unprecedented. Several different community types occur within the Carolina bay swamp complex, including open water, scrub-shrub, bay swamp, cypress domes, shallow ponds, and wetland depressions. Typically, these community types occur along a moisture gradient, with open water areas giving way to scrub-shrub habitat, which, in turn, is adjacent to bay swamps.

While home to a vast assemblage of fish and wildlife species, the most notable residents of these Carolina bay habitats are the rare Round-tailed Muskrat (*Neofiber alleni*), the endangered Wood Stork, plus

Continued on next page

Site Profile: Moody Air Force Base (cont.)

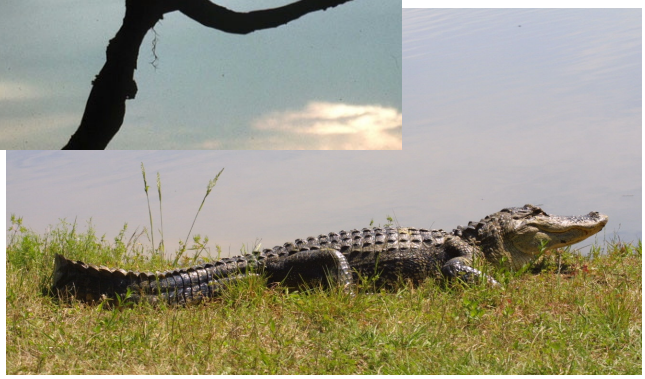
Sandhill Crane, American Alligator, and a plethora of neotropical migrants, including Prothonotary, Hooded, and Swainson's Warblers, Common Yellowthroat, White-eyed and Red-eyed Vireos, and Blue-gray Gnatcatcher. Round-tailed Muskrats, although similar in morphology and ecology to the common muskrat (*Ondatra zibethicus*), are smaller, more nocturnal, and inhabit areas with denser vegetation and less open water. They are colonial and live in dome-shaped houses made from grasses, sedges, or cattails. There are about 250 muskrats residing within the Carolina bay complex at Moody AFB. Approximately 2,000 Florida Sandhill Cranes are considered year-round residents in the Carolina bay habitats, while other migratory sandhills occur transiently during migration periods.

Fire and water dominate the ecological processes within these Carolina bays. Historically, these bays burned only during periods of extreme drought. Studies conducted on Moody AFB indicate a natural fire periodicity ranging from two to twenty years in these systems. These fires, followed by normal hydrological cycles, would have set back succession by removing the scrub-shrub habitat and burning the peat, allowing the creation of more open water and floating mat habitats required by the Sandhill Crane and Round-tailed Muskrat. Currently, Moody AFB and GBBL partners attempt to burn the Carolina bays on a ten-year cycle, and carefully control water in the system through a series of flash-board risers in order to replicate more natural ecological processes.

Management of Longleaf Pine Habitats

Supporting the Grand-Bay Banks Lake complex is a 40,000-acre watershed comprised of various upland habitats. Historically, these areas consisted primarily of longleaf pine-wiregrass habitats on the drier sites grading into slash pine and pond pine dominated ecosystems nearer the wetlands. Because longleaf pine habitats throughout the southeastern U.S. have declined by more than 90% over the last two centuries, the GBBL Council is working to promote longleaf pine restoration where possible.

Prescribed burning at Moody AFB
Photo: Gregory Lee



Left: Roosting Heron overlooking a sunset
Below: American Alligator
Photos: Gregory Lee

Longleaf pine forests are important areas of biodiversity, and serve as homes for rare species such as the threatened Eastern Indigo Snake, the endangered Red-cockaded Woodpecker, the state-listed Gopher Tortoise, Bachman's Sparrow, Northern Bobwhite (Quail), and many neotropical migrants, including gnatcatchers, White-eyed and Red-eyed Vireos, Northern Parula, Summer Tanager, White-throated Sparrow (winter), and numerous reptiles and amphibians.

For the past decade, Moody AFB managers have been actively restoring and enhancing longleaf pine habitat on the installation. In the 1970s, many areas on the base were planted with poor quality loblolly pines on a tight spacing, resulting in canopy closure and an overall reduction in plant and animal diversity. These areas are being converted back to native longleaf pine forests through direct planting of containerized longleaf seedlings and wiregrass plugs. Additionally, thinning of existing stands and the reintroduction of prescribed fire on a three-year rotation has promoted the return of native vegetation and wildlife, and increased populations of Northern Bobwhite, Eastern Wild Turkey, and associated neotropical migrants, based on annual point counts taken by Moody AFB staff.

The Future

Managers at Moody AFB have demonstrated that interagency partnerships at the federal, state, local, and private levels can result in greater gains for wildlife and natural resources than single agency efforts alone. An associated benefit of these partnerships has been the improved relationships that Moody AFB enjoys with federal and state regulatory agencies and with the general public in the region. By leading the effort to secure partnerships and share information and resources, Moody AFB has led the way in regional conservation in south Georgia while ensuring the military mission can still occur unabated.

- Gregory Lee,
Supervisory Biological Scientist

Partnership Focus: The Wildlife Society

Most of us understand the *Power of Partnerships* by now. Partners in Flight is celebrating this theme in honor of its 20th anniversary this year, so it seems appropriate to feature partner organizations from time to time in this newsletter. We welcome suggestions on organizations that have conservation partnerships with DoD that you would like to see highlighted.

The Wildlife Society (TWS; http://joomla.wildlife.org), founded in 1937, is a professional, international non-profit scientific and educational association dedicated to excellence in wildlife stewardship through science and education. Its mission is to enhance the ability of wildlife professionals to conserve diversity, sustain productivity, and ensure responsible use of wildlife resources for the benefit of society. TWS encourages professional growth through certification, peer-reviewed publications, conferences, and working groups. Although TWS does not actually "do" on-the-ground work, partnership opportunities with TWS and its state and local chapters can link DoD biologists with potential partners that can help with project planning and implementation of an installation's Integrated Natural Resource Management Plan (INRMP).

TWS holds an annual conference that attracts more than 1,000 of its members; DoD has hosted a symposium at each of the past two conferences. At the 2008 conference, Peter Boice chaired the symposium *Biodiversity Management in the Department of Defense*, providing an introduction to TWS members about the role military lands play in the conservation of biodiversity. I gave a presentation that detailed DoD's migratory bird conservation program. At the 2009 conference, Rich Fischer and Rhys Evans co-chaired *Department of Defense Lands – Islands of Biodiversity*, providing details about specific examples of biodiversity conservation on DoD lands. Half of the ten presentations focused on bird conservation. At both of these conferences, many TWS members commented that they had no idea DoD cared about conservation, let alone had such an active and successful natural resources program. By all accounts, these symposia were very successful in creating opportunities for new partnerships. As a result, TWS leadership has approached the National Military Fish & Wildlife Association about forming an official TWS Working Group focused on military lands. Look for a symposium on bats that largely features work on DoD lands at the conference this fall in Snowbird, UT. You may be able to attend the first meeting of a new working group!

This past February, I had the privilege to be the keynote speaker at the spring meeting of the Georgia Chapter of The Wildlife Society (GA TWS). What was especially exciting about this meeting was the theme: *Wildlife Management on Military Reservations and Corps of Engineers Lands*. The meeting featured natural resources professionals from Moody AFB, Warner Robins AFB, Fort Benning, Fort Stewart, the Army Corps, the bird/animal aircraft strike hazard (BASH) program at Moody AFB, and the U.S. Fish & Wildlife Service. Overhearing many discussions throughout the day, it was clear that the meeting was successful in achieving its goal to educate GA TWS members as to what goes on "inside the fence" at Georgia military bases and Corps reservoirs.

TWS has embraced DoD's leadership in natural resources management and is actively pursuing partnership opportunities at the national, state, and local levels. I encourage you to seek out and take advantage of any opportunity you have to meet, educate, and work with TWS chapters and members (student chapters can provide an excellent source for potential interns!). Hardly a day goes by that I don't hear that familiar statement, "I didn't know DoD did (bird) conservation!" and I'm guessing most of you hear the same. We must embrace the chances to educate the uninitiated. It is in those encounters that we can discover new partnerships we didn't know could exist.

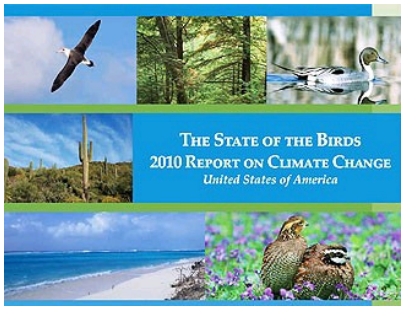
- Chris Eberly,
DoD PIF Program Coordinator

2010 State of the Birds Report

The 2010 State of the Birds Report focuses on climate change and how its impacts will influence our bird populations and their habitats. Accelerated by human activities, climate change is altering our natural world and diminishing the quality of our environment. As a result, habitat loss and degradation threatens birds and other wildlife as well as human and societal well-being. Birds in every terrestrial and aquatic habitat will be affected by climate change. For example:

- sea level rise and increased storm activity threaten coastal birds and their habitat;
- increased temperatures will drastically alter surface water and vegetation in the arctic, resulting in changes in bird abundance and distribution;
- grassland and aridland birds face warmer and drier habitats;
- changes in rainfall and temperature will negatively impact wetland birds;
- all 67 oceanic bird species are vulnerable due to their low reproductive potential, use of islands for nesting, and reliance on rapidly changing marine ecosystems; and
- forests will gradually change and alter bird communities.

To view the full report, and supplemental information such as species vulnerability scores by biome, visit www.stateofthebirds.org.



View From the Eyrie

In addition to celebrating its 20th anniversary, Partners in Flight just released *Saving Our Shared Birds: PIF Tri-National Vision for Land bird Conservation* (www.savingoursharedbirds.org). More than 200 species, comprising 83% of individual North American landbirds, rely on habitats in all three countries: Canada, the U.S. and Mexico. The document outlines six primary actions to protect, restore, and enhance populations and habitats of North America's birds:

1. protect and recover species at greatest risk;
2. conserve habitats and ecosystem functions;
3. reduce bird mortality;
4. expand our knowledge base for conservation;
5. engage people in conservation action; and
6. increase the power of international partnerships.

The clear linkages among birds and habitats compel us to work internationally, to reinforce partnerships, and to develop new mechanisms for conserving both migrants and residents.

The DoD PIF program has been focusing on these international linkages for a number of years. The most effective breeding habitat management on a military base can be rendered ineffective due to conditions encountered by migratory birds during migration and overwintering, which cover 8-9 months of their annual cycle. At our annual DoD PIF planning meeting, held in Puerto Rico in May, we met with the BirdLife International Caribbean Programme to learn about their conservation efforts and to discuss partnership ideas to protect "our" migratory birds and resident Caribbean species.

Several years ago, we held our planning meeting in Panama to follow up on the significant investment made by the Legacy Resource Management Program in assessing and protecting the biodiversity of DoD lands in the Panama Canal area. We met with officials from the office of the Mayor of Panama City, Panama's Protected Areas Program, the U.S. Embassy, and the Panama Audubon Society. The original assessment resulted in large portions of lowland rainforest being incorporated into Panama's national park system. It also led to the Upper Bay of Panama being designated as a Ramsar Site (wetland of international significance) and the first Central America site in the Western Hemisphere Shorebird Reserve Network. However, the Upper Bay still had no legal protected status. As a result of our discussions during the Panama meeting, a follow-up survey was funded to assess conditions ten years after the original survey. This survey helped the Panama Audubon Society successfully spearhead the effort that finally added the Upper Bay of Panama to Panama's network of protected areas. We are hoping our Puerto Rico meeting will pay similar dividends through our partnership with BirdLife International and other conservation groups for the protection of birds and their habitats in the Caribbean. DoD PIF is already working with BirdLife International to identify where our highest priority breeding species occur during the non-breeding months throughout the Caribbean.

Next year's annual planning meeting will be held at the headquarters of The Peregrine Fund in Boise, Idaho. The Peregrine Fund is a leader in raptor conservation and captive breeding programs for species such as the Aplomado Falcon, California Condor, and Harpy Eagle. DoD PIF is working to provide guidance on issues related to raptor conservation and reducing electrocutions and collisions. We look forward to building partnerships with The Peregrine Fund, the Avian Power Line Interaction Committee, and other raptor conservation groups. Our annual planning meetings have provided the launching pad for partnerships in the past and we will continue to meet where we can maximize future conservation partnership successes.

Other DoD PIF partnerships include funding partners. DoD is fortunate to have programs that fund research and development of new monitoring technologies, as well as a plan to better coordinate monitoring programs and ensure the availability and proper utilization of monitoring data. This issue of *Steppingstones* features an article on three innovative projects funded by the Strategic Environmental Research and Development Program. The next issue will feature the Legacy-funded efforts that have broken new ground for DoD avian monitoring programs.

Finally, I was very pleasantly surprised to recently get a call from Dr. Peter Stangel. Dr. Stangel is the creative genius behind the concepts of Partners in Flight and Partners in Amphibian and Reptile Conservation. He also writes the "Conservation Corner" in *WildBird* magazine. Dr. Stangel contacted me to review his upcoming column: *Department of Defense and Bird Conservation: Military Bases are Important for Security of our Nation's Birds*. This unsolicited article about DoD's bird conservation program casts a very favorable light not only on the DoD PIF program, but also on the overall success of natural resources management on military lands. Articles such as this could not be written without the examples created by the outstanding biologists and natural resource managers throughout DoD, to whom I offer a sincere and heartfelt "Thank you!"

- Chris Eberly,
DoD PIF Program Coordinator

Policy Perch: Plan and Policy Update

It's official! The gestation period for new Office of the Secretary of Defense Plans and Policies is longer than for an elephant or a sperm whale! Progress continues apace on our top priorities – but sometimes at a snail's pace.

It's been difficult to obtain formal coordination on the **DoD PIF Strategic Plan.** The Department of the Navy is now on board – a single paragraph that reasserts the Plan's focus on existing legal requirements and support for mission readiness was a simple and easily agreed to add. Air Force coordination has been more difficult – the challenge to describe how we effectively manage habitats around airfields to promote flight safety is seemingly almost as difficult as the actual implementation of such measures.

The new **Natural Resources Instruction,** DoDI 4715.03, is in formal coordination. After a two-year process with six separate opportunities to provide informal comments, we still managed to receive 241 coordination comments. I plan to review those comments by the end of June. My goal is to complete all actions – including responding to all formal comments, re-coordinating with the Office of General Counsel and the Directives Division, and obtaining Under Secretary of Defense Ashton Carter's approval by August 11.

The Army National Guard's **Sikes Act Amendment** is under formal consideration as H.R. 5284. The U.S. House of Representatives held a hearing on May 25 to consider this amendment, which would allow 45 state-owned Guard installations to develop official Integrated Natural Resource Management Plans (INRMPs). That provision appears noncontroversial. However, two changes to the original proposal have muddied its current status: the first would delete the "standard" critical habitat designation exclusion provision for these 45 installations; the second would extend Guam-specific invasive species provisions to all military installations with INRMPs.

The Council for the Conservation of Migratory Birds has begun staff level discussions concerning the development of **Conservation Measures** (best management practices). Paul Schmidt, Assistant Director for Migratory Birds, U.S. Fish and Wildlife Service, initially raised the idea of using ecoregionally-based conservation measures to establish incidental take permits for routine land management activities to an interagency group in December 2008. However, implementation of permits linked to conservation measures appears unlikely anytime soon.

These and other actions, such as Bald Eagle permitting, remain front-and-center for the **DoD Natural Resources Program**. I'm hoping that by the next *Steppingstones,* I'll be able to provide wrap-up summaries on some of these issues.

- Peter Boice,
Deputy Director,
Natural Resources

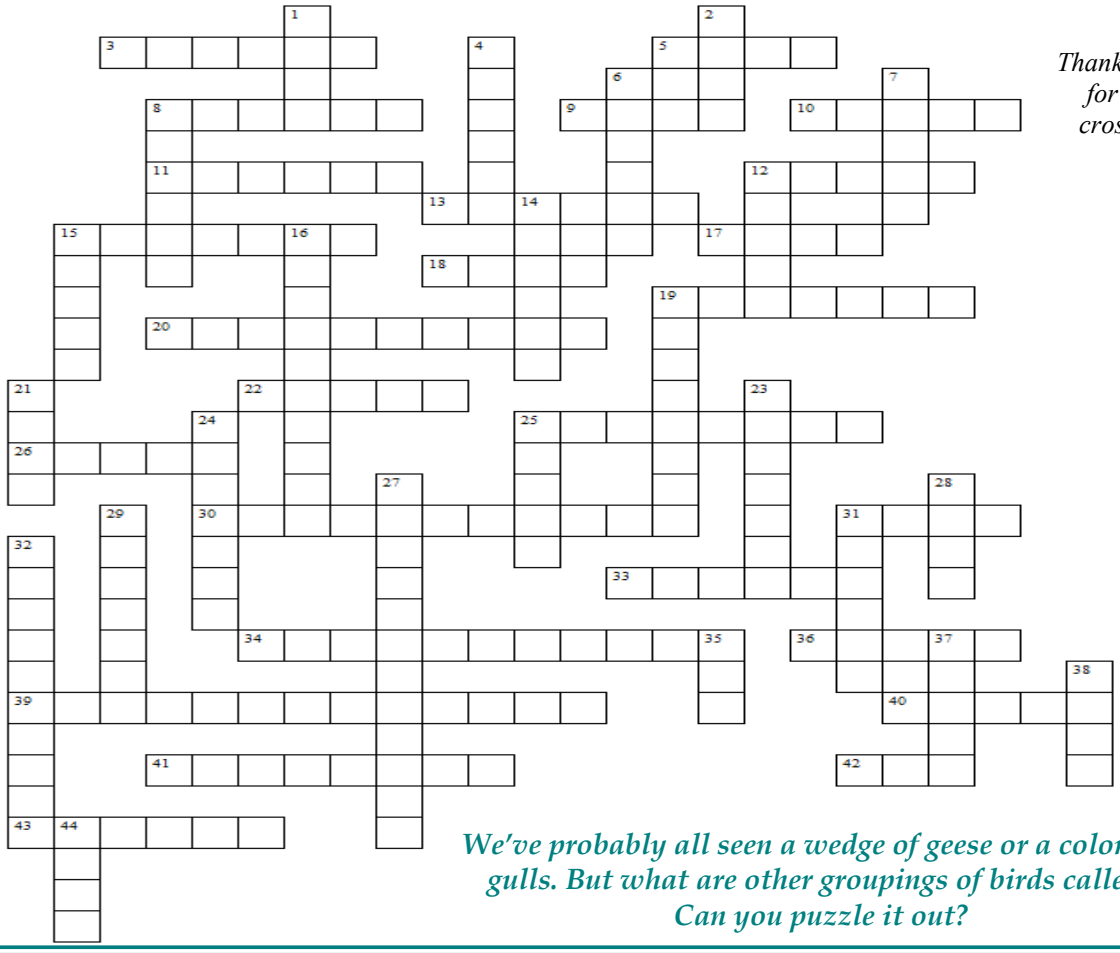
Call for Monitoring Data

Does your installation plan to monitor birds or have existing monitoring data? If you need assistance entering monitoring data into the Coordinated Bird Monitoring Database, or plan on initiating a monitoring project and need help with design and metadata setup, please contact Rich Fischer (Richard.A.Fischer@usace.army.mil).

Loggerhead Shrike
Photo: USFWS

Pearly-eyed Thrasher
Photo: Peter Boice

Cross-Bird Puzzle: Bird Groupings



Thanks to Peter Boice for this edition's cross-bird puzzle!

We've probably all seen a wedge of geese or a colony of gulls. But what are other groupings of birds called? Can you puzzle it out?

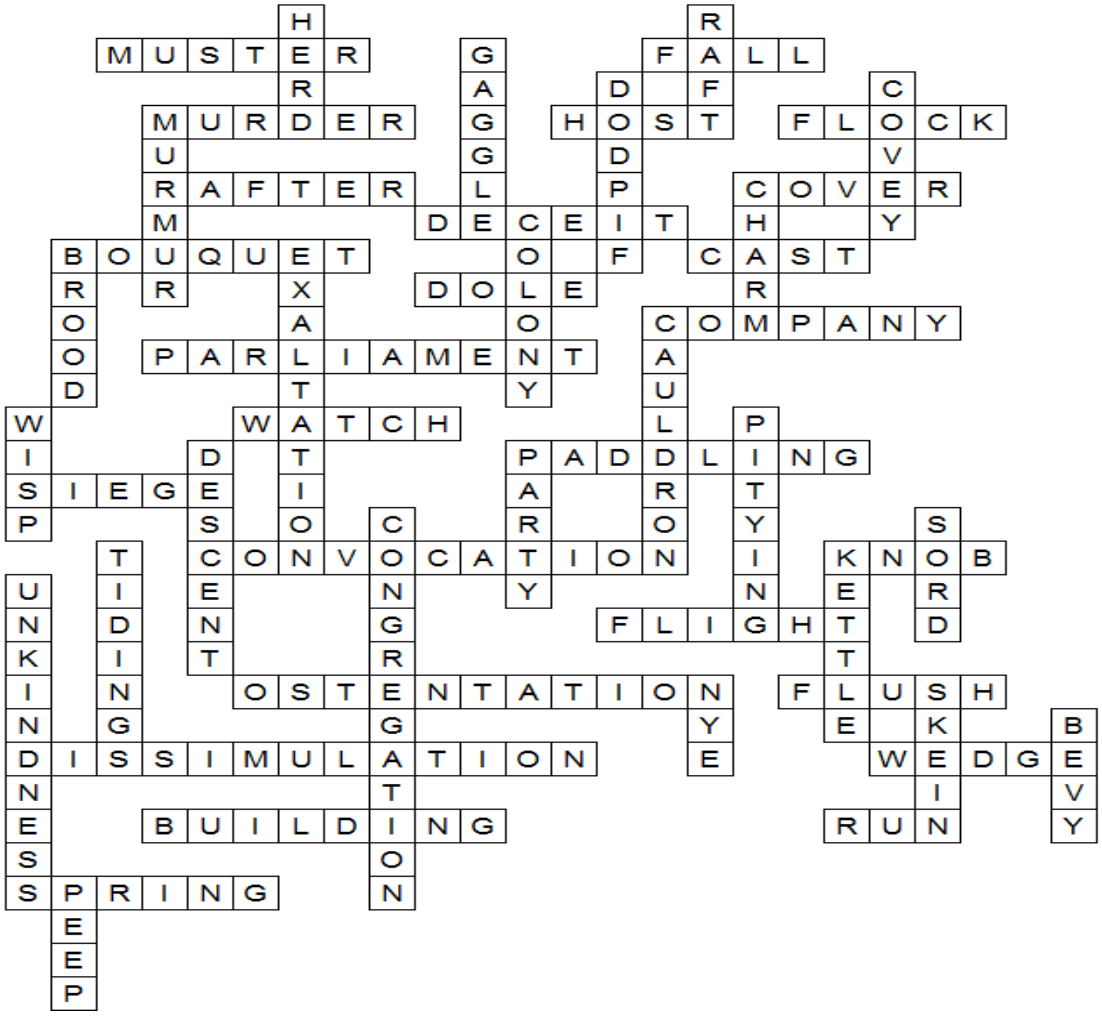
ACROSS

3 Storks or Peacocks
5 Woodcocks
8 Crows
9 Sparrows
10 Pigeons
11 Turkeys
12 Coots
13 Lapwings
15 Pheasants [when flushed]
17 Hawks [or Falcons]
18 Doves
19 Parrots
20 Owls
22 Nightingales
25 Ducks [on the water]
26 Herons or Bitterns
30 Eagles
31 Widgeons
33 Swallows [or Doves, Goshawks, or Cormorants]
34 Peacocks
36 Mallards
39 Birds
40 Swans [or geese, flying in a "V"]
41 Rooks
42 Poultry
43 Teal

DOWN

1 Wrens
2 Ducks
4 Geese [wild or domesticated]
6 Military birders
7 Partridges [or grouse or ptarmigans]
8 Starlings
12 Finches or Hummingbirds
14 Penguins or Gulls
15 Hens
16 Larks
19 Raptors
21 Snipe
23 Turtledoves
24 Woodpeckers
25 Lays
27 Plovers
28 Mallards
29 Magpies
31 Hawks [riding a thermal] or Nighthawks
32 Ravens
35 Pheasants [large groups, on the ground]
37 Geese [in flight]
38 Quail
44 Chickens

Cross-Bird Puzzle Answer Key



CONTRIBUTING TO THE DOD PIF NEWSLETTER IS EASY!

Want to highlight bird conservation efforts on your installation? Have a great bird image you just have to share? Send your ideas and images to Chris, Alison, or Erica.

POINT OF CONTACTS

DoD PIF Program Coordinator
Chris Eberly (ceberly@dodpif.org)

DoD PIF National Representative
Joe Hautzenroder (joseph.hautzenroder@navy.mil)

Deputy Director, Natural Resources
Peter Boice (peter.boice@osd.mil)

DoD PIF Website
www.dodpif.org

DoD PIF Regional and Working Group Representatives
www.dodpif.org/groups/about.php

Steppingstones Editor, Chris Eberly (ceberly@dodpif.org)
Steppingstones Production, Alison Dalsimer and Erica Evans, Booz Allen Hamilton (DoDNRConservation@bah.com)