

# Natural Selections



Department of Defense Natural Resources Program



## IN THE NEWS



### DoD Signs the Sikes Tripartite Memorandum of Understanding

In July 2013, DoD signed a [Memorandum of Understanding \(MOU\)](#) between the U.S. Fish and Wildlife Service (USFWS) and the Association of Fish and Wildlife Agencies (AFWA) for a Cooperative Integrated Natural Resources Management Program on Military Installations. The purpose of this MOU is to further a cooperative relationship between DoD, USFWS, and state fish and wildlife agencies (acting through AFWA) in preparing, reviewing, revising, updating, and implementing Integrated Natural Resources Management Plans (INRMPs) for military installations. The parties agreed to enter this cooperative program with mutually agreed-upon fish and wildlife conservation objectives to satisfy Sikes Act goals.

[Download](#) a copy of this MOU.

## SPOTLIGHT

### Joint-Basing Brings Continuous Adaptation

By Brent Koenen, 673 Civil Engineering Squadron, Joint Base Elmendorf-Richardson  
[About JBER](#)

Joint Base Elmendorf-Richardson (JBER), Alaska, is highly unique, with elevations ranging from sea level to more than 5,000 feet. At nearly 40 feet, the tidal flux in the adjacent Knik Arm of Cook Inlet is the highest in the United States. In addition, JBER has ten major watersheds, including a glacially-fed river and four active salmon spawning streams. Abundant salmon runs sustain healthy populations of brown and black bears, and more than 15 active bald eagle nests on base. Undisturbed low- and mid-elevation forest stands are some of the best preserved and last remaining in Anchorage, and a wide range of distinctive wildlife is present on base, including a moose herd, wolves, wolverines, otter, lynx, beluga whale and harbor seals.

Change has come in rapid succession over the past few years at JBER. On October 1, 2010, Congress directed Fort Richardson and Elmendorf Air Force Base to combine with the Air Force as the supporting agency. The Air Force civil engineering reorganization and transformation began shortly after JBER was established.



Source: Brent Koenen

*JBER is home to the state-of-art Air Force fighter jet, the F-22. The natural resources conservation office secured endangered species consultation concurrence from the National Marine Fisheries Service to bed down 6 plus 1 additional F-22s in 2011. Conservation remains a vigilant supporter of the BASH program by monitoring and managing habitat associated with the 2,400 acre bird exclusion zone.*

These monumental changes have presented continual challenges. Throughout this managerial conversion, the JBER conservation section has not lost sight of its principal objectives: ensuring no net loss of military training by identifying risk, and coordinating and cooperating with internal and external agencies and the public, as necessary.

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# NATURALLY SPEAKING

From the Desk of L. Peter Boice, DoD Deputy Director,  
Natural Resources and Director, Legacy Program

## A Wild and Crazy Year



We're back! After sequestration-induced funding cuts and delays, furloughs, and contract gaps, indications are there's a glimmer of short-term sanity on the Congressional horizon. As I write this on Friday the 13th, both a two-year budget deal and passage of the National Defense Authorization Act for FY 2014 appear imminent.

But before we look forward to the New Year, I'd like to recap what's been a busy and productive summer and fall. With a lot of assistance from our friends and colleagues in the Military Services and elsewhere, we've made significant strides towards finalizing a number of important policy and program documents that should help you with your day-to-day management actions.

First and foremost, we finalized and posted the [INRMP Implementation Manual, DoDM 4715.03](#). This new Manual:

- Clarifies and provides detailed guidance for how to implement DoDI 4715.03 Natural Resources Conservation Program.
- Creates streamlined procedures for required annual and five-year INRMP reviews with federal and state regulators, reducing the approval time for proposed actions by allowing regulators to review only those portions of an INRMP that have been modified, provided those modifications are considered minor and do not trigger additional NEPA analysis.
- Establishes new performance metrics to better evaluate how natural resources management actions enable the military mission and support the long-term and sustainable use of habitats at a landscape level.

The new streamlined INRMP review procedures are reinforced in the revised and updated [Sikes Tripartite Memorandum of Understanding](#) with the U.S. Fish and Wildlife Service (USFWS) and the Association of Fish and Wildlife Agencies, finalized on July 29, and in the soon-to-be-issued new USFWS Sikes Guidelines.

We have completed formal coordination on an updated Bird Conservation and Management on DoD Lands document that will provide a compilation of current best management practices and suggested focus areas to help Commanders and others better address the conservation and protection of migratory birds while maintaining military readiness. I expect final approval within the next few weeks.

A second action in support of migratory bird conservation is the updated MOU between DoD and the USFWS to Promote the Conservation of Migratory Birds. This MOU, required by Executive Order 13186 and currently in formal coordination, will add language for new and emerging threats to birds and otherwise update the 2006 document.

For the FY 2013 Environmental Management Review data call, we completed final standardization of the green-yellow-red definitions for our seven natural resources focus areas – INRMP implementation; listed species and critical habitat; Sikes Act cooperation; recreational use and access; team adequacy; natural resources management; and natural resources program support of the installation mission. We also continue to track our progress in planning and managing for candidate species. Finally, we added questions to identify the number of INRMP-listed projects that specifically address listed species and critical habitat avoidance, and the number and total cost of such projects that were not implemented.

A related effort to increase visibility and oversight of DoD's environmental dollars involves changing and expanding DoD's inputs to the President's budget request. Expanding the environmental budget categories – that include the Compliance, Pollution Prevention, and Conservation programs – will give our leadership a better idea of how these funds are spent. The new natural resources categories, which have been Beta-tested, include manpower, listed and at-risk species (by ESA and MMPA expenditures), wetlands, integrated natural resource planning, conservation crosscutting, and a catch-all "other."

Looking forward to 2014, we already have several additional actions lined up, including a new Reptile and Amphibian Conservation and Management on DoD Lands document; policy memos to clarify the use of USFWS and state personnel in implementing INRMPS, and to enhance the use of cooperative agreements; and, a web-based version of our DoD-specific Endangered Species Act Implementation course. If you have other needs we should be aware of, send them up your chain and we'll add them to our list!

Best wishes to all of you during this holiday season, and for the New Year.

## SPOTLIGHT (CONTINUED)

### The Importance of JBER's INRMP

Throughout this change, the Integrated Natural Resource Management Plan (INRMP) provided the guiding script, outlining adaptive observation, communication, and protocols associated with conservation activities and management. The importance of the INRMP cannot be understated. The National Marine Fisheries Service (NMFS) recognized the INRMP's benefits to the endangered Cook Inlet beluga whale (CIBW), an isolated species of less than 350 animals. As a result, JBER ensures continued critical habitat exclusion through a process of merging the Army and Air Force INRMPs into a joint INRMP.

JBER personnel also use the INRMP as an adaptive management decision-making record. The INRMP describes our understanding of the ecological setting, flora and fauna landscape utilization, objectives necessary to support readiness training, minimizing conflicts, and sustaining the ecological integrity and mechanisms to monitor change. Maintaining an INRMP and communicating the ecological condition and managerial actions to both internal and external stakeholders remains a vital and continued practice.

### JBER's Importance to the Military Mission

How important is Alaska? U.S. Army General Billy Mitchell, regarded by some as the father of the United States Air Force, pleaded with the Military Affairs House Committee in 1935 to recognize Alaska's strategic importance by stating, "I believe that, in the future, whoever holds Alaska will hold the world ... I think it is the most important strategic place in the world."

JBER is a vital military asset, and its proximity to Asia, Europe, and North America makes it strategically important to global operations. Ideally situated for aircraft, troops, and equipment deployment, it provides front-line air defense and is the gateway to Alaska's 1.6 million acres of training land, including supersonic air space.

JBER land uses include bivouac sites, base camps, drop zones, artillery and mortar firing points, explosive ordnance disposal training, and salt water estuary impact areas. Unique high-elevation areas include a glacier training



Source: Brent Koenen

*Brown and black bears are difficult and expensive to monitor but are an important management species in terms of ecosystem and human interaction. Partnership with AK Department of Fish and Game allows JBER to study the populations and identify bear travel corridors on the cantonment, thus aiding mission planning and safety by adjusting conservation patrols and managing attractants.*



Source: Brent Koenen

*Encroachment from local and regional development places additional operational pressures on JBER. Conservation works closely with military operators and agency officials to help minimize conflict and controversy. Wildlife conflicts are primarily caused by human negligence; resident and contractor education is a continuous objective for conservation.*

site that provides training distinctly applicable to current global military operations. The land also provides a multitude of recreational opportunities such as camping, fishing, moose hunting, Class III whitewater rafting and kayaking, dog mushing, and alpine mountaineering.

Key objectives necessary to support readiness training, minimize conflicts, sustain ecological integrity, and monitor change include:

- satisfying Endangered Species Act (ESA) requirements to carry out programs for threatened and endangered species conservation;
- consulting with NMFS on activities that may affect a listed species;
- minimizing wildlife conflict;
- providing long-term ecological monitoring;
- identifying sloped wetlands prior to development;
- providing public recreational access;
- seeking and establishing functional partnerships; and
- providing meaningful education and outreach.

### Cook Inlet Beluga Whale Management

ESA compliance focuses on activity consultation that may affect a listed species. For example, JBER endeavors to carry out CIBW conservation programs. The CIBW critical habitat designation identified salmon as a primary constituent element essential for CIBW recovery. As a result, JBER annually constructs and operates a weir to monitor sockeye and coho salmon abundance and smolt and adult salmon run timing in the Six Mile Creek. JBER also uses sonar and fish wheels to monitor salmon abundance and run time for five salmon species in Eagle River, a waterway bisecting an active indirect fire impact range. In addition, JBER has identified and improved spawning habitat and completed an environmental assessment to restore salmon passage to Otter Lake. These fisheries efforts demonstrate how JBER aids CIBW recovery. Another objective includes recording CIBW presence at the mouth of Eagle River in relationship to salmon runs. Understanding and demonstrating this seasonal link will increase training capabilities by reducing the risk of CIBW take.

### Wildlife Management

Abundant wildlife presents both training limitations and wildlife conflict risks. Large avian species intensify Bird Airstrike Hazard (BASH) risk and

## SPOTLIGHT (CONTINUED)

bald eagles complicate risk management since they are afforded additional protection under the Bald and Golden Eagle Act (BGEA). JBER has 35 bald eagle nests, 17 of which were active in 2013 and fledged 12 to 20 eaglets per year. Annual aerial nesting and fledgling surveys help ensure JBER adherence to BGEA guidelines (e.g., distance separation from firing points, ranges, and proposed development). Demonstrating compliance with BGEA principles is critical and has precluded any U.S. Fish and Wildlife Service issuances of notice of violation.

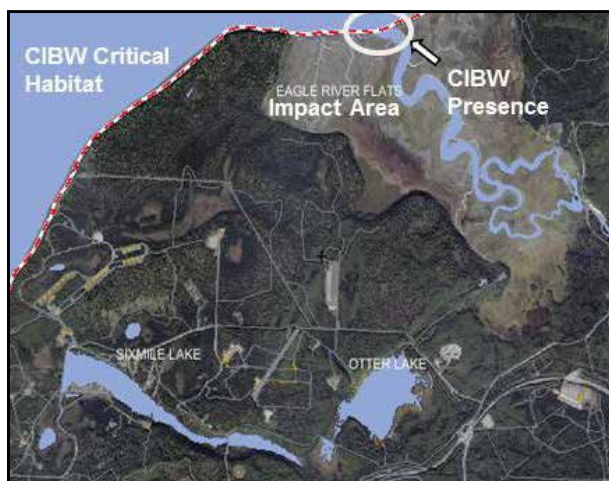
Bears, moose, and wolves all present substantial conflict risks on the installation. Like many other installations, wildlife impingement also occurs on JBER; however, these animals are common, large, and dangerous. To combat these risks, the installation hosts annual meetings and produces geo-reference maps to identify and reduce wildlife conflict, particularly in family housing. The principal focus is solid waste management, such as educating the public and adapting to bear activities by installing or relocating bear-proof dumpsters. In 2013, JBER digitally recorded all dumpsters (bear-proof or not) and all conservation law enforcement officer (CLEO) conflict responses. This graphic depiction acts as a play book that family housing, CLEOs, and service contract agents can use to identify high risk areas, respond with focused education, relocate bear-proof dumpsters, and increase area patrols.

### Embracing Change for the Future

Managerial changes from reduced deployment and austerity are likely to continue, forcing installations to continually adapt. Embracing change is hard for a “creature of habit,” as humans are sometimes called but, as biologists,

understanding and documenting change is the nature of our business.

Adaption is a constant, whether it is species- or managerial-related. By using your INRMP as a management tool, you will ensure the protection of both mission activities and species.



Source: Chris Eberly

This map shows CIBW presence in relation to the JBER impact area.

## STEPPINGSTONES CORNER



### View From the Eyrie The Power of Partnerships

By Chris Eberly, DoD Migratory Bird National  
Technical Representative

Conservation can be challenging even in the best times. When sequestration, furloughs, budget cuts, and economic uncertainty are also pressing issues around us, the challenges can appear nearly insurmountable. Partnerships are a powerful tool to help us achieve our goals through cooperative conservation actions and shared resources. One such success story received very high recognition. The Department of Defense, represented by Carol Finley of Kirtland Air Force Base, received the Presidential Migratory Bird Federal Stewardship Award in recognition of the Legacy-funded multi-year project, Migratory Linkages of Burrowing Owls on Department of Defense Installations and Adjacent Lands. The Council for the Conservation of Migratory Birds, composed of 22 federal agencies, chose the Presidential Award winner. The Award was presented to the Department of Defense at the Environment for the America's International Migratory Bird Day recognition event, held this past May at the Embassy of Canada in Washington, D.C.

Initiated in 2005, the project studied declines in western burrowing owl (*Athene cunicularia hypugaea*) populations across their range in the U.S. and Canada. The information gathered allowed partners to develop species-specific management plans. This is particularly important because western burrowing owls often select habitats adjacent to runways on military

airfields. In addition to western burrowing owls, other grassland bird species benefited from this work. Legacy funding was matched by an additional \$3 million from 49 partner agencies and organizations from the U.S., Canada, and Mexico.

Leadership notices and recognizes success. Solid partnerships and a science-based approach to conservation increase our likelihood of success. It can be difficult to think “outside the fence” in times of severe resource limitations (both financial and personnel). The natural tendency in belt-tightening can

**“DoD is proud to have sponsored this multi-year, multi-partner effort for the last eight years. It truly represents what can be achieved when partners come together to work towards common goals. With 28 million acres of often high-quality lands, DoD has a vested interest in managing its resources both for the military mission and to conserve our nation’s natural and cultural heritage.”**

**– John Conger, Acting Deputy Under Secretary of Defense (Installations and Environment)**

be an inward focus, but the power of partnerships actually increases during such times. In addition to federal agencies, non-governmental groups are also feeling the squeeze of budget reductions and limited funds. Working collaboratively may mean less funding per project for these groups, but it also means more projects may be possible. For DoD, more partners means



Source: Chris Eberly

Ambassador Gary Doer, Embassy of Canada; Carol Finley, Kirtland AFB; Peter Boice, OSD; Jerome Ford, USFWS; and Chris Eberly, honor Kirtland Air Force Base with the Presidential Migratory Bird Federal Stewardship Award.

Our primary focus is to sustain and enhance the military mission. We all know that conservation and the training mission depend on a healthy landscape. Partnerships can help us achieve our goals with limited resources. Working with different groups provides an opportunity for us to educate others about what it is we do and why we do it. And in the end, we are all striving for the same result – a sustainable future.

## Call for Nominations for the 2014 Presidential Migratory Bird Federal Stewardship Award

The application process is open for the 2014 Presidential Migratory Bird Federal Stewardship Award. Please review the [Information and Instructions Guide](#) carefully before developing qualifying applications or submitting final nominations, as failure to follow the instructions could result in disqualification of an entry.

Only one nomination may be submitted per agency. Qualifying applications should be submitted to [Chris Eberly](#) by January 28, 2014. All applications will go through an internal DoD review and the best application will be submitted on behalf of DoD by February 3, 2014.

Applicants must use the Application Form when submitting qualifying applications. Please adhere to format and other requirements from the Information and Instructions Guide when submitting nominations. Agencies should verify that their final nominations comply with all the guidelines specified in the Information and Instructions Guide before submitting them.

Download a copy of the [Information and Instructions Guide](#) and the [Application Form](#).

Please direct questions regarding the award nomination process to [Meghan Sadlowski](#) or call 703-358-2218.

less time and money spent and a higher return on our investment. We can achieve conservation success while embodying the reality of cooperative conservation. Partnership-oriented initiatives (e.g., DoD Partners in Amphibian and Reptile Conservation) recognize the value and power that collaboration brings to bear on conservation success.

***“I congratulate the Department of Defense for its leadership and work investigating possible causes of population declines of the western burrowing owls. This project was truly a tri-national collaboration of diverse partners, and illustrates how birds and other species can benefit from great research and partnerships.”***

***– Sally Jewell, Secretary of the Interior***

## WHAT’S HOPPIN’ IN DOD PARC?

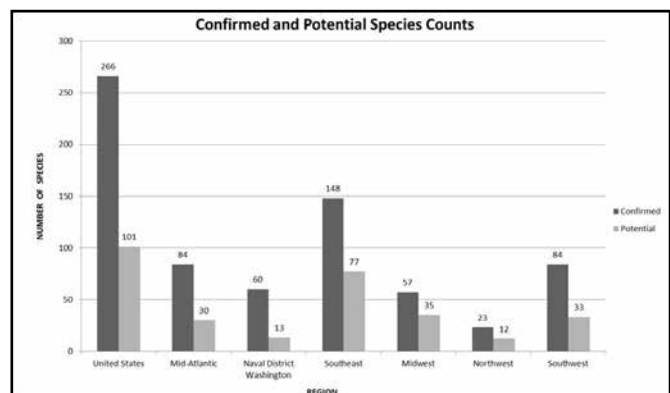


By Robert E. Lovich, PhD, DoD PARC Director and Chris E. Petersen, DoD PARC Manager

### Herpetofauna Species Inventories

DoD’s amphibian and reptile conservation and management initiative, collectively known as DoD Partners in Amphibian and Reptile Conservation (PARC) continues to grow and develop some exciting new features. Its members have recently completed and updated a peer-reviewed amphibian and reptile species database containing species-specific occurrence data (both confirmed and potential) for 57 Navy installations (130 distinct parcels). Each of the 57 installations represents those that are managed using an Integrated Natural Resource Management Plan (INRMP). This work represents a two-year effort that involved data collection and analysis and provides the most comprehensive list of herpetofauna ever to be compiled on over 1 million acres of Navy lands in the United States. Commander Navy Region (Mid-Atlantic, Washington, Southeast, Midwest, Northwest and Southwest) summarized the data, which revealed that

there are 266 confirmed and 101 potential species on Navy lands within the continental U.S. A written report will be available in January 2014. With the support of Marine Corps HQ, DoD PARC members have begun to similarly update the herpetofauna species lists for Marine Corps installations with INRMPS. This data will be available in April 2014.



Source: Chris Petersen

## WHAT'S HOPPIN' IN DOD PARC? (CONTINUED)

### Web-based Lecture Series

In January 2013, DoD PARC began a monthly web-based lecture series that members can join by using Defense Connect Online. DoD biologists and professional herpetologists conduct these lectures. To date, DoD PARC hosted seven lectures about various topics, including large scale industrial energy project effects on wildlife, the impacts of feral cats on wildlife, and the invasive Burmese python issue in Florida. You can download copies of the presentations from the [DoD PARC website](#). The goal of the lecture series is to help members stay connected and keep up with the most recent scientific studies and news. DoD PARC will continue to host more lectures in 2014.

### Amphibian Disease Surveys

With funding from the DoD Legacy Resource Management Program (Legacy), DoD PARC has nearly completed their amphibian disease surveys on military installations for 2013. DoD PARC used a 'citizen science' approach to survey for chytrid fungus (*Batrachochytrium dendrobatidis* [Bd]) occurrence on resident amphibians across the DoD landscape. This study is one of the largest sampling events for amphibian disease (Bd) in a single season; nearly 1,000 samples from 51 military installations have been analyzed. DoD PARC is currently evaluating the data and will issue a report in April 2014.



Source: Chris Petersen.

Home page of DoD PARC's group and photo website.

In addition, Navy now uses pictures from the website in its environmental magazine, *Currents*. If you would like to join the website or have pictures of herpetofauna to share with the group, please contact [Paul Block](#).

### Balloons, Bombs, and Birds.....

By Richard Fischer, Research Wildlife Biologist, U.S. Army Engineer R&D Center, Environmental Lab

In 2002, Dr. Kirt Frstrup and his research team from the Cornell Laboratory of Ornithology conducted some pioneering work with acoustics at Fort Hood, Texas. This group successfully affixed recording devices as a payload to helium-filled weather balloons and flew them in impact areas over Fort Hood where human access is very limited. The goal was to collect data on vocalizing endangered golden-cheeked warblers and black-capped vireos. The research team developed the balloon system, which included lightweight microphones highly sensitive to birdsongs, digital audio recorders, and an onboard global positioning system (GPS), along with on-the-ground GPS track logging, altitude control, and bidirectional wireless communications, with the goal of automating the collection and analyses of bird song data from remote or inaccessible sites.

Fast-forward nine years to Fort Riley, Kansas, and Big Oaks National Wildlife Refuge, Indiana (the former Jefferson Proving Ground). Dr. David Buehler and his team (the Team) from the University of Tennessee, with help from the U.S. Army Engineer Research and Development Center Environmental Laboratory (ERDC EL), are expanding this effort. With funding from the DoD Environmental Security Technology Certification Program (ESTCP), the Team is working to validate the flight performance of the balloon platform system (termed the Autonomous Aerial Acoustic Recording System [AAARS]), and assess detection and correct classification rates of target avian vocalizations across the range of environmental and operational conditions present on three eastern U.S. military installations.

The Team is addressing the following objectives:

- demonstrating the ability of the AAARS to collect data on avian vocalizations for threatened, endangered, and at-risk species (TER-S) over accessible training areas (as a proxy for performance over non-accessible impact areas) on military installations;



Source: Chris Petersen.

Swabbing a pine woods treefrog to detect chytrid fungus *Batrachochytrium dendrobatidis* (Bd) on resident amphibians across the DoD.

### Legacy Program Proposal Ranking Criteria

DoD PARC worked to develop a standardized criteria for evaluating Legacy pre-proposals and proposals related to herpetofauna and bird conservation and management. Both programs used these new criteria for the first time this year to evaluate and rank FY2014 proposals. We are pleased to assist the Legacy program in this important task and look forward to similar support in future years.

### DoD PARC Photo Library

DoD PARC continues to update their [photo website](#) on a weekly basis; currently there are approximately 850 pictures. The purpose of the site is to share amphibian and reptile photographs, literature, reports, and publications among DoD biologists and environmental planners. The Navy recently used the photo website to create a poster of the amphibians and reptiles located at a recreational site - Great Pond Outdoor Adventure Center - in Maine.

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- demonstrating the value of the data collected for supplementing and enhancing avian monitoring data already collected on military installations that supports regulatory and legislative compliance (e.g., National Environmental Policy Act, Executive Order 13186, Migratory Bird Treaty Act [MBTA]), and the conservation and stewardship of TER-S birds;
- training DoD natural resources staff on military installations on the use of this technology;
- evaluating the ability of trained DoD staff to deploy the technology and analyze and use the data collected; and
- comparing the accuracy, precision, and cost of monitoring data collected by AAARS to data collected by conventional means across a range of DoD installations.

The Team has worked diligently to improve the technology of the AAARS by implementing significant technological upgrades to nearly all of its components, including onboard GPS and altitude control. During the summers of 2011-2013, the Team redeployed the upgraded systems at two mid-western installations with great success. The system recorded target bird



Source: Chris Petersen

Team members holding an AAARS in Fort Riley, KS.

vocalizations and provided tracking telemetry to spatially correlate the audio data and track the system flight path. The Team also gained exceptional control of the flight system and safely and reliably recovered the system during more than 300 test flights, which covered nearly 33 times the amount of habitat that an equal effort by a ground-based field crew could cover.

Additional technologies used in the study include MP3 audio devices containing amplifiers and speakers, which are deployed in the field to simulate a breeding avian community by playing recorded vocalizations on demand. Bird song simulators have proven to be very useful in evaluating the performance of AAARS and human observers because it provides exact control over which species recording is playing, where it is located, and when it is playing. The Team is conducting additional field research to gather information on song frequencies and territory sizes of target bird species, which include Bachman's sparrow, Henslow's sparrow, greater prairie-chicken, and northern bobwhite.

The actual flight trials occur in training areas with varying terrain and vegetation communities. Dr. Buehler, the technical lead on the project, stated:

"This is part of the demonstration and validation component of the project. We want to show that the system is able to detect a variety of different vocalizing birds across a range of habitats and terrain. We also need to show that the system is both deployable and recoverable in these different landscape settings. Ultimately, the AAARS will prove useful in detecting presence as well as density

of vocalizing birds in inaccessible areas where it is very difficult or unsafe for humans to conduct ground-based surveys."

The DoD has an excellent track record of integrating natural resources management with the military mission. Up to this point, however, DoD natural resources staff have been unable to fully assess the significance of inaccessible areas to TER-S bird populations. This project provides critical information that will significantly improve DoD's ability to comply with a variety of legislative mandates, including the MBTA and the Endangered Species Act. Furthermore, monitoring TER-S in previously inaccessible areas will directly support the objectives of the DoD Coordinated Bird Monitoring Plan that recommends focused monitoring on species that have the potential for future impacts to the military mission.

Implementing the AAARS enables natural resources staff for the first time to inventory which species are present in inaccessible areas, estimate relative abundance and density of these species, and track the status of the populations over time. Documenting TER-S bird distribution, relative abundance, and density in inaccessible areas, in conjunction with existing data from outside these areas, will improve our understanding of the role DoD lands play in providing important habitat for a variety of at-risk species. Recently, some pilot studies were conducted to deploy bat ultrasound detectors on the AAARS, which provided promising results for detecting foraging airborne bats.

These systems, which are inexpensive (approximately \$1,000 each) and relatively easy to deploy with modest training, soon will be ready and available for any installation to use as a monitoring tool. Ultimately, it is hoped that AAARS systems will provide an additional tool for DoD as part of the overall monitoring strategy (for birds, and possibly bat and reptile/amphibian communities) among all DoD installations.

## Kentucky Army National Guard's Road to Natural Resources Conservation

By Ricky French, Environmental Manager, Kentucky Army National Guard

The Kentucky Army National Guard's (KYARNG) Wendell H. Ford Regional Training Center (WHFRTC) is truly a place out of the John Prine song, "Paradise." From the turn of the century until 1997, the Peabody Coal Company for coal mining operations managed the majority of the acres on base. Now managed by the Kentucky Department of Military Affairs, WHFRTC poses significant natural resource conservation challenges due to former strip mine terrain, hydrology, and vegetation types introduced during the reclamation of the area. Under the management of KYARNG staff, the installation has worked diligently over the past several years to support a comprehensive Natural Resources Program, which also supports KYARNG's training mission needs. The installation is a critical resource for the region; it provides maneuver, weapons, convoy, urban assault, Medevac, and virtual simulation training. Long-term sustainability of these training capabilities is dependent on the sustainability of the training site's land. To that end, the KYARNG Natural Resource Program works cooperatively with environmental agencies to improve habitat, restore mining-damaged areas, and reestablish native species in the most cost effective manner possible.

The KYARNG Natural Resources Program has achieved several milestones over the past two years, particularly in the expansion of the installation's prescribed fire program. In partnership with McGuire Farms and the Kentucky Department of Fish and Wildlife Resources, the installation now conducts all prescribed fire in-house with KYARNG certified wildfire trained personnel, an achievement that

*continued on page 8*



Source: Ricky French

*Wild quail are just one species now increasing in numbers on the installation. Fire and vegetation management has had tremendous benefits to wildlife populations, diversity, and habitat quality. The training area has self-sustaining populations of whitetail deer, eastern wild turkey, gray and fox squirrel, swamp and eastern cottontail rabbit, bobwhite quail, woodcock, raccoon, bobcat, coyote, red and gray fox, muskrat, beaver, and wood duck.*

saves the installation tens of thousands of dollars in contracting costs each year. The burn program directly supports both training needs and the Natural Resources Program's goal to address the non-native and invasive species that the coal company introduced when they previously owned the land; the use of prescribed fire allows the installation to avoid the use of herbicides. Pest species control also coincides with the installation's growing native grass restoration program, which has had positive impacts on wildlife populations—the installation recently documented the first recorded instance of natural pheasant reproduction in the state.

The Natural Resources Program blends the needs of military training with land stewardship. Because the site is a blank slate for natural resources, training priorities can be planned to simultaneously benefit the environment. For example, the reestablishment of native grasses and maintenance through prescribed fire compliment KYARNG training by creating healthy forests and fields of six-foot tall prairie grasses, which provide realistic training environments for our troops. In addition, the Natural Resources Program recently conducted an aerial forward-looking infrared sensor (FLIR) survey to develop a population census of



Source: Ricky French

*Fire management also supports native grasses, as well as military impacts. These prairie species thrive with these kinds of disturbances; without fire and trampling, the grasses are unable to establish strong root systems. Re-establishing native grasses is also essential to soil stabilization, a critical issue for formerly mined lands.*

white-tailed deer on post. This effort integrated the use of KYARNG helicopters for mission training with survey needs; the aviation groups logged the hours they needed in tracking exercises by tracking the deer for the Natural Resources Program. Had the Program contracted an independent flight crew to conduct this survey, the cost would have exceeded \$150,000.

The installation's Natural Resources Program has incorporated measures to ensure continuity and consistency. Personnel entered all wildlife and land management data into an online database that all installation users can access. This database is also linked into the installation GIS program. For long-term program support, the installation recognizes the importance of organizational buy-in and accountability by emphasizing training and awareness activities. The KYARNG engineering components are trained to protect water quality during construction activities, and all soldiers and engineering staff are trained and certified to comply with state laws and permitting requirements while conducting M-Day training projects at WHFRTC. The installation also partners with the Technology Transfer Program - KY Transportation Center at the University of Kentucky - to conduct two-day training courses on Erosion Prevention and Sediment Control. Through this workshop and fire training events, the installation also contributes to the expansion of these best practices and techniques to other military units and environmental agencies.



Source: Ricky French

*Prescribed fire is the preferred management technique because it is ideal for maintaining training areas while minimizing herbicide use. Working with the state Nature Preserves and KYDFWR, the installation has established a native grass seed mix that is representative of past vegetation communities. Native plants are seeded immediately after prescribed fires are completed.*

Sustainability is a key element to KYARNG's success. Each environmental project affects the force in a positive manner and serves as force multipliers as WHFRTC continues to grow, instead of being a hindrance. Informed and cooperative stakeholders are the key to the success of most all WHFRTC environmental initiatives, and that means maintaining the relationships that have been forged through time and awareness. The Wendell H. Ford Regional Training Center's environmental accomplishments are remarkable; this success would not be realized without KYARNG stakeholder support, including Soldiers and civilian team partners.



## Recovery Tool for Enhanced Black Abalone Recruitment on the California Channel Islands and Coastal Habitat

Dr. David Lapota, SSC Pacific Code 71760

Ms. Melissa N. Blando, MS.c, Biology Department, San Diego State University

The nearly extinct black abalone inhabit the rocky, intertidal areas of Department of Defense (DoD) land on the Channel Islands in Southern California, including San Clemente Island and San Nicolas Island, both of which are important Navy training and operating grounds. To avoid potential negative impacts to the environment and increase the number of disease-resistant black abalone within impacted areas, Space and Naval Warfare Systems Center Pacific (SSC Pacific) established a restoration program for this species. The DoD Legacy Resource Management Program sponsored this important effort.

### Background

DoD is responsible for managing federal lands that are home to a wide array of flora and fauna. Some of these species are listed as endangered or threatened under the Endangered Species Act (ESA), including the black abalone, which was listed as endangered in January 2009 (74 FR 1937). Black abalone inhabit San Nicolas Island and San Clemente Island, which are important Navy training and operating ranges. Without proper management of this species, these ranges could be at-risk of becoming restricted training activities or recommended for closure. As a result, Navy initiated a proactive program in abalone restoration efforts to increase the number of disease-resistant black abalone within impacted areas, and to avoid potential negative impacts on training and operations.

### Objective

This project's objective is to determine which culture regimes will condition black abalone for spawning. The main goal is to develop competent larvae, settle the larvae for metamorphosis into juvenile abalone, and culture the juvenile abalone for eventual outplanting into designated habitat to increase recruitment of this species. To accomplish this, scientists are working to develop a more proactive approach to refine protocols to increase the number of black abalone through laboratory studies. This will ultimately result in the outgrowing of black abalone larvae to a suitable size for eventual outplanting in habitats which previously exhibited healthy populations.

**Species of Interest: *Haliotis cracherodii***

- Most intertidal species in CA to 6m depth
- Primarily eats drift kelp, but also feeds on various macroalgae
- Seasonal broadcast spawners from late spring to early fall



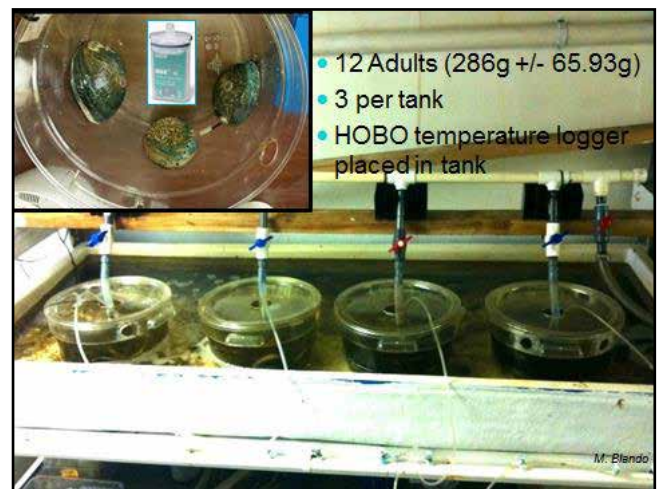
Black abalone found in its natural habitat prior to becoming endangered.

Source: Dave Lapota

### Summary of Approach

SSC Pacific personnel are working to identify ways to increase black abalone reproduction and survival with the goal to preserve this almost extinct species. SSC Pacific is also working with the National Oceanic and Atmosphere Administration (NOAA)/National Marine Fisheries Service (NMFS), the California Department of Fish and Game, the Orange County Coastkeeper, and the Orange County Restoration Project to increase the black abalone population in Southern California.

This project is in the second of a three-year duration. SSC Pacific is currently growing black abalone under various controlled environmental conditions to determine (1) the optimal seawater temperature for sustained growth (body mass, gonad index), and (2) the optimal algal diet required to attain an appropriate gonad index for spawning in the laboratory. Once scientists learn the appropriate gonad index, they will conduct induced spawning. Project results and outcomes will provide a resource tool that environmental range managers can use to mitigate further losses of this endangered species, thus providing the U.S. Navy and forces with the land and water access they are required to use for training areas and for amphibious training activities.



Source: Dave Lapota

Experimental setup for conditioning Black abalone at SSC.

### Benefit

The Channel Islands and surrounding environments host the most important training range in the eastern Pacific Ocean for the Navy. The U.S. Pacific Fleet conducts live ship to shore training and engages in near shore operational exercises. Under the ESA, all of these activities require annual concurrence from NMFS, as these types of training and operations may affect endangered species, including black abalone, and their habitat. By developing outplanting and culturing methods for this endangered species, range management personnel will be better able to mitigate range activities. This project also supports the Navy's stewardship efforts by supporting the growth and survival of the endangered black abalone.

### Accomplishments

- Secured an ESA permit from NMFS to culture black abalone and to conduct research on conditioning the black abalone.
- Transferred black abalone to SSC Pacific farm and established a culturing system.
- Collected data on growth requirements for 10 months.
- Induced spawning is planned for December 2013.

## Upcoming Events

### Conferences, Workshops, and Training

#### 14th National Conference and Global Forum on Science, Policy and the Environment

#### Invasive Plants—Issues, Challenges and Discoveries *January 23, Webinar Series*

The USDA Forest Service Rocky Mountain Research Station is pleased to announce a new webinar series. This free interactive series includes seven webinars and provides attendees with cutting-edge information about invasive plants and their management. The first webinar is scheduled on January 23 from 12:00pm-1:00pm MT.

#### Building Climate Solutions *January 28-30, Washington, DC*

The National Council for Science and the Environment's (NCSE) annual conference will focus on building climate solutions. Join over 1,200 key individuals from many fields of sciences and engineering, government and policy, business and civil society to advance solutions to climate change. The conference will be organized around two areas: The Built Environment, and Agriculture and Natural Resources. Visit the [Building Climate Solutions](#) website for more information.

#### National Invasive Species Awareness Week *TBD, Washington, DC*

Each year during National Invasive Species Awareness Week state, federal, local, and tribal officials meet with NGOs, industry, and stakeholder groups to address invasive species to examine laws, policies, and creative

approaches to prevent and reduce invasive species threats to our health, economy, environment and natural resources including special places. Attend events in the U.S. Capitol and in Washington, DC, or host your own event that explores local problems and solutions to invasive species. Visit the [National Invasive Species Week](#) website for more information.

#### 79th North American Wildlife and Natural Resources Conference *March 10-14, Denver, Colorado*

Join industry leaders dedicated to the conservation, enhancement, and management of North America's wildlife and other natural resources. Conference highlights include: plenary session with featured speakers; concurrent special sessions on key topics to natural resources management; agency, organization, committee and working group meetings, workshops; and special events and receptions. For more information, visit [Wildlife Management Institute](#) website.

#### Biodiversity Without Boundaries 2014: The NatureServe Conservation & Natural Heritage Conference *April 6-10, New Orleans, Louisiana*

Biodiversity Without Boundaries is where the NatureServe network, their partners, and their friends gather to celebrate successes, collaborate on new initiatives, share innovations, and design the future. The 2014 conference will emphasize education, working sessions, and networking. Join industry leaders in discussing how to provide, and how to continue to provide, the scientific basis for effective conservation. For more information visit the [Nature Serve](#) website.

## The 20th Anniversary of National Public Lands Day

By Tracey Adams, Public Lands Program Coordinator, National Environmental Education Foundation

September 28, 2013, marked the 20th Anniversary of National Public Lands Day (NPLD). More than 175,000 volunteers and park visitors celebrated public lands at 2,237 sites in all 50 states, the District of Columbia, Guam, and Puerto Rico. NPLD volunteers contributed an estimated \$18 million in public land improvements by removing 500 tons of trash; collecting 23,000 pounds of invasive vegetation; building and maintaining 1,500 miles of trails; and planting 100,000 trees, shrubs, and other native plants. Many NPLD events also included an environmental education component to teach volunteers about land stewardship.

### DoD's 15-Year Partnership with National Public Lands Day

The DoD Legacy Resource Management Program (Legacy) began its partnership with NPLD in 1999. Since then, NPLD has distributed over \$2.2 million to military lands for various natural and cultural resource restoration projects.

In 2013, 30 military installations received Legacy funds to support NPLD projects. Awardees represented the U.S. Army, Navy, Air Force, Marine Corps, and Air/National Guard. Over 1,600 volunteers engaged in these projects, which were located in 16 states and Guam. Many Legacy sites organized stewardship projects to improve habitat for pollinator species including bees, birds, bats, and insects. Additional types of projects included restoring dunes at Bellows Air Force Base in Hawai'i; installing a rain garden at Naval Air Station Fallon in Nevada; and adding native plants to enhance the grounds around memorials at Fort Indiantown Gap in Pennsylvania.

### Benefits to the Military

Participating in NPLD provides natural and cultural resources managers the means and labor to complete small installation-specific projects that may not otherwise get done due to budget or staffing limitations. It's estimated that NPLD provides a 5:1 cost benefit to the installation, where an installation receives about five hours of volunteer work for each hour a manager spends organizing.



Source: Rick Chaney

*Volunteers gather together on the Camp Dawson Training Center during a National Public Lands Day event.*

These projects also improve habitat and biodiversity for common and rare species alike, often reducing the need for more intense management actions.  
*continued on page 11*

For example, at Joint Base San Antonio-Randolph, project volunteers removed an invasive bamboo patch. Cut bamboo was then used to help prevent erosion and remove silt and pollution from surface runoff water. The clean water will irrigate and benefit the surrounding native vegetation.

Additionally, NPLD provides an opportunity for the military to invite the community to learn about these lands and understand the unique challenges surrounding natural resources management on DoD installations. In 2013, an array of groups participated, including Boy Scouts working towards the Eagle Scout rank, school groups, local outdoor recreation clubs, and more.

For more information on National Public Lands Day and the DoD Legacy partnership, visit: [www.publiclandsday.org](http://www.publiclandsday.org).

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## NEW! NATURAL RESOURCES DOCUMENTS

[Reports, Fact Sheets, Spreadsheets, Presentations](#)

Highlighted here are documents on that will soon be uploaded to the Legacy Tracker or on the DENIX site. For Legacy-related products, visit the [DoD Legacy Resource Management Program website](#). All Legacy products and many more are available on the [DENIX website](#).

### Wildfire Management

#### [Improved Wildfire Prediction Using Remote Sensing Technology on Military Grasslands in Hawaii \(Legacy 11-112\)](#)

Wildfires in non-native, invasive grasslands on Hawaiian DoD installations impede military training activities and preparedness, and threaten endangered species and adjacent lands. Wildfire prevention and management is typically accomplished with fire behavior models. However, current models (from the mainland U.S.) do not accurately predict fire ignition or behavior in Hawaii. Specifically, current models do not accurately predict fuel moisture, which is a key driver of wildfires. As a result, the project team developed a simple method to predict real-time, site- and time-specific fuel moisture from freely available Terra-MODIS Enhanced Vegetation Index data. More accurate fuel moisture prediction will greatly improve wildfire management on DoD installations in Hawaii, as well as other tropical installations dominated by non-native grasses.

For more information, please contact:

Natural Resources Specialist, DoD Legacy Program  
Yasmin Shafiq: [yasmin.shafiq.ctr@mail.mil](mailto:yasmin.shafiq.ctr@mail.mil)

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## LINKS OF INTEREST

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### [DoD Natural Resources Conservation Program](#)

DoD's NR Program provides policy, guidance, and oversight for management of natural resources on all land, air, and water resources owned or operated by DoD.

### [DoD Legacy Resource Management Program](#)

This DoD program provides funding to natural and cultural resources projects that have regional, national, and/or multi-Service benefits. The Legacy Tracker lets you download fact sheets and reports for completed Legacy-funded projects.

### [Biodiversity Handbook](#)

On this web site you will find a thorough introduction to biodiversity and how it applies to the military mission; the scientific, legal, policy, and natural resources management contexts for biodiversity conservation on DoD lands; and practical advice from DoD natural resources managers through 17 case studies. A Commander's Guide to conserving biodiversity on military lands is also available.

### [DoD Invasive Species Outreach Toolkit](#)

The Toolkit is an education and outreach tool to help DoD land managers communicate about invasive species. It contains modifiable outreach materials such as posters, brochures, reference cards, and a PowerPoint presentation. A list of resources to help identify information and funding sources is also included.

### [DoD Pollinator Workshop](#)

This web site provides an overview of pollinators and the reasons they are important to DoD. It highlights the 2009 NMFWA workshop on pollinators and has many useful resources, including fact sheets and technical reports, pocket guides to identifying pollinators, and links to other web sites on pollinators.

### [DENIX](#)

DENIX is an electronic environmental bulletin board that provides access to environmental information, such as Executive Orders, policies, guidance, INRMPS, fact sheets, and reports.

### [DISDI Portal](#) (DoD only, CAC required).

The DISDI Portal offers high-level geospatial data on DoD's installations, providing strategic maps of installations and information on how to access more detailed data. IVT data forms the foundation for the DISDI Portal, which is accessible to DoD staff with a common access card.

### [Strategic Environmental Research and Development Program and Environmental Security Technology Certification Program](#)

SERDP and ESTCP are DoD's environmental research programs, harnessing the latest science and technology to improve environmental performance, reduce costs, and enhance and sustain mission capabilities. They are independent programs managed from a joint office to coordinate the full spectrum of efforts, from basic and applied research to field demonstration and validation.

### [Readiness and Environmental Protection Initiative](#)

Under this initiative, DoD partners with conservation organizations and state and local governments to preserve buffer land and habitat around military installations and ranges as a key tool for combating encroachment. By promoting innovative land conservation solutions, REPI supports effective and realistic military training and testing now and into the future.

### [Cooperative Ecosystem Studies Unit Network](#)

This network of 17 cooperative units provides research, technical assistance, and training to federal resource and environmental managers. DoD is a member of 14 units of the CESUs National Network.

### [Bat Conservation International](#)

BCI is devoted to conservation, education, and research to protect bats and their ecosystems around the world.

### [Partners in Amphibian and Reptile Conservation](#)

PARC is a partnership of individuals and entities dedicated to the conservation of amphibians and reptiles and their habitats as integral parts of our ecosystem and culture through proactive and coordinated public/private partnerships.

### [Armed Forces Pest Management Board](#)

The AFPMB recommends policy, provides guidance, and coordinates the exchange of information on pest management throughout DoD. The AFPMB's mission is to ensure that environmentally sound and effective programs are present to prevent pests and disease vectors from adversely affecting DoD operations.



# DOD NATURAL RESOURCES PROGRAM

Enabling the Mission, Defending the Resources

[www.dodnaturalresources.net](http://www.dodnaturalresources.net)

Deputy Director, DoD Natural Resources  
Director, Legacy Resource Management Program  
Peter Boice: [l.p.boice.civ@mail.mil](mailto:l.p.boice.civ@mail.mil)

Senior Research Associate, DoD Natural  
Resources Program  
Alison Dalsimer: [allyn.a.dalsimer.ctr@mail.mil](mailto:allyn.a.dalsimer.ctr@mail.mil)

DoD Conservation Program Support  
[DoDNRProgram@hgl.com](mailto:DoDNRProgram@hgl.com)

## Natural Selections

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