

# Natural Selections



Department of Defense Natural Resources Program



## IN THE NEWS

### Minnow is First Fish Taken off Endangered Species List

A tiny minnow that lives only in Oregon backwaters will become the first fish ever taken off the Endangered Species Act's (ESA's) federal list of Endangered and Threatened Wildlife because it is no longer threatened with extinction. The U.S. Fish and Wildlife Service (USFWS) announced February 4, 2014 that the Oregon chub (*Oregonichthys crameri*) was recovered, 21 years after it began receiving protection under ESA. The proposal will go through a 60-day public comment period before becoming final. The



Source: Oregon State University

Oregon chub minnow

USFWS will monitor the fish for nine years to make sure populations continue to grow.

The Oregon chub is a small minnow, three inches long, with an olive-green back, silvery sides and large scales. The fish had almost disappeared from Oregon's Willamette Valley as the swampy backwaters and beaver ponds on which it depends were drained to control flooding and create farms and cities over the past 150 years. Those that survived the habitat loss became easy prey for introduced bass species.

The recovery plan focused on partnerships with landowners to restore key habitats, breeding and transplanting fish to those places, and the U.S. Army Corps of Engineers to alter dam releases to more closely resemble natural river flows. Department of the Interior Secretary Sally Jewell and Oregon Gov. John Kitzhaber credit partnerships between agencies and private landowners for the chub's recovery.

## SPOTLIGHT

### Natural and Cultural Resources Professionals are the Keys to Success

By Gerald F. (Fred) Pease Jr, SES, Deputy Assistant Secretary of the Air Force for Environment, Safety and Occupational Health

Natural and cultural resource managers within the Department of Defense (DoD) manage 28 million acres of military land, air, and water resources and are faced with challenging budget cuts. This article seeks to place the upcoming changes into context and provide recommendations for success. Although DoD administers more than 1% of all land within the United States, natural and cultural resource programs are not typically viewed as a core military mission. As a result, many senior military officers and civilian leaders lack experience and expertise with natural and cultural resources management and the direction and leadership of these programs falls upon a dedicated cadre of natural and cultural resource professionals. Their success is readily apparent by examples such as the President Clinton's 2001 proclamation of the Sonoran Desert National Monument which states "the rich diversity,

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# NATURALLY SPEAKING

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



Each of us who works Natural Resources issues for the Department of Defense (DoD) provides support for the military's combat readiness mission. We do this by helping provide continued access to realistic habitat conditions, while simultaneously working to ensure the long-term sustainability of our nation's priceless natural heritage. To all of

us, this duality should be second nature. Yet, I expect I'm far from alone in having met dozens of people who didn't know DoD had natural resources (let alone a program to manage them!) – or weren't aware of the strong connections between sound natural resources management and long-term mission sustainment. This current issue focuses on and expands upon these ties in ways that I hope you will find informative and thought provoking.

Our Spotlight article by Fred Pease, Deputy Assistant Secretary of the Air Force of Environment, Safety and Occupational Health, speaks for itself – *Natural and Cultural Resources Professionals are the Keys to Success*. Fred states that new ideas to address changing paradigms must come from those most qualified to understand DoD's challenges, needs, and opportunities – our resource managers. He then provides four examples of how we might do our jobs better and more efficiently. Each example describes ways in which DoD could improve collaboration with different governmental agencies and other partners.

Martin Piorkowski and Daniel Sturla of the Arizona Game and Fish Department summarize progress to-date on a Legacy Program-funded project on *Golden Eagles on Southwestern Military Installations*. The study's key objective is to help us better understand the status and distribution of golden eagles throughout this vast region. This will lead to focused management recommendations that will allow our southwestern installations to maintain their training flexibility.

Joan VanDervort, OSD Deputy Director, Training Ranges, Sea and Airspace describes the role of the Sustainable Ranges Initiative (SRI) in identifying, assessing, and developing mitigation strategies to avoid incompatible development adjacent to installations. She describes how her office uses the SRI to collaborate with other offices, agencies and organizations to protect mission readiness to the mutual benefit of all partners. Joan also summarizes

key SRI challenges, including increased home station training, renewable energy siting, and offshore renewable energy development.

Dawn Lawson, et. al. summarize results of a case study conducted at Naval Weapons Station Seal Beach Detachment Fallbrook to assess the feasibility of *Incorporating Climate Change Adaptation into INRMPS*. They stress the importance of "agile" management to climate change adaptation, and to effectively tailoring conservation objectives to better support mission sustainment under changing global conditions.

Peter Egan of the Armed Forces Pest Management Board advocates for a DoD-wide assessment of the extent of DoD's invasive species problem and an analysis of how it impacts the military mission and key species, and habitats. He notes that once we better understand invasives on military lands, we will be better able to direct our resources to key challenges in a coordinated manner. Pete has announced his retirement in April. I've known him as a knowledgeable, passionate advocate for many invasives-related issues; he will be missed.

Chris Eberly's *View from the Eyrie* looks at the power of partnerships in supporting the "Military-Conservation Complex." He notes the importance of improved coordination between military testers and trainers, and natural and cultural resources managers through Legacy-funded projects. But Chris also looks beyond traditional partners to other potential opportunities to support mission needs, including those focused on buffer management, controlled burning, and off-site mitigation.

There's a lot *Hoppin' in DoD PARC*, as Rob Lovich and Chris Petersen describe. Of special note is their ongoing work to update herpetofauna species lists for installations across all four Military Services. These new lists will help ensure enhanced management of listed and at-risk herpetofauna on several hundred military installations, and will help identify how to lessen or avoid potential mission restrictions.

Doug Bruggerman and Mikes Jones have applied new techniques that guide the construction of population projection models for at-risk species. They have used Pattern Oriented Modeling (POM) to model behavior of breeding red-cockaded woodpeckers and dispersal of juvenile gopher tortoises. The researchers have found that POM reduces key components of model uncertainty, which will allow decision-makers to identify cost-effective investments in future field data collection.

The U.S. Fish and Wildlife Service has just honored Orchard Combat Training Center (OCTC) with its annual Military Conservation Partners Award. Much of the success of OCTC's natural resources program hinges on its extensive partnerships – both internally with their Integrated Training Area Management and Wildland Fire programs and Range staff, and externally with multiple federal and state agencies, local and regional universities, and other cooperators.

Finally, Susannah Woodruff and her colleagues at the University of Idaho's Department of Fish and Wildlife might seem to have the most challenging task in linking their research to military readiness, if only because of the nature of their noninvasive genetic sampling. However, their cost-effective monitoring work on the at-risk kit fox and endangered Sonoran pronghorn can be used to identify potential declines in these populations and hence avoid potential future restrictions.

I hope you take the time to read all of these highly interesting articles – and that you then take the time to consider how you can apply the ideas and methods in at least one of them to one of your current management challenges, keeping in mind the quote from Machiavelli's *The Prince* that Fred Pease uses to close his Spotlight article.

## SPOTLIGHT (CONTINUED)



Source: Courtesy of Luke AFB RMO

*Saguaro cactus*

density, and distribution of plants...is especially striking and can be attributed to the management regime in place since the area was withdrawn for military purposes in 1941.”

Natural and cultural resource programs will not be immune to budget cuts because of their basis in law and regulation. Environmental laws often direct “what” must be done and likely when it needs to be done, however, in most cases, the laws do not dictate “how.” Reinventing the “how” is where our future successes will be.

The current cadre of natural and cultural resource professionals

must realize that the new ideas will come from them. They are the brain trust in these arenas since most senior leaders are focused on other aspects of the mission. I don’t believe that anyone can or should be expected to do more with less, however, I do think that if we put our minds together, we will be able to do things better and more efficiently. There will be few, if any, “silver bullets” but I would like to share some examples of how we can operate more efficiently.

### Programmatic Integrated Natural Resource Management Plans (INRMPs):

There are more than 400 DoD facilities and most have their own INRMPs. That’s a lot of paperwork for us to generate and for the U.S. Fish and Wildlife Service (USFWS) and the State Game and Fish Agencies to review. What if we instead focused on regional INRMPs, or perhaps on a single nationwide INRMP? The INRMPs could be based on the USFWS Landscape Conservation Cooperative (LCC) boundaries or another regional schematic that would give us flexibility by allowing us to select mission locations with the least possible impact on the habitat, sensitive and protected species, and our cultural resource treasures. It could also serve as the basis to address



*DoD Installations and Landscape Conservation Cooperatives*

other Sikes Act requirements such as increased compatible hunting, fishing, and recreation at the most appropriate locations.

### Align DoD INRMPs/Integrated Cultural Resource Management Plans (ICRMPs) with Bureau of Land Management (BLM) Resource Management Plans (RMPs):

Approximately 60% of DoD lands are actually public lands that were withdrawn for military use during, or shortly after, World War II. A few innovators are working with the BLM (and the Forest Service [FS]) to ensure compatibility between our INRMPs/ICRMPs and their RMPs. Great idea! Although these documents are mandated by different laws and are by no means identical, each agency has flexibility to support each other’s missions.

NM-	3,354,582
-KS	24,308
-OK	50,840
NV -	3,279,744
CA -	2,792,095
AZ -	2,613,616
UT -	1,718,749
AK -	1,675,888
ID -	121,096
ES -	71,661
WA/OR	68,518
WY -	19,333
CO -	15,627
MT/SD -	1856



*Public Lands by State Withdrawn for DoD use in the U.S.*

BLM RMPs often include an evaluation of wind turbines, mining, and oil and gas exploration, whereas our INRMPs/ICRMPs are more focused on natural and cultural resources management while accomplishing the military mission. We can do things to help BLM/FS on DoD-withdrawn lands in our INRMPs/ICRMPs (e.g., compatible conservation) and they can help us by limiting non-mission compatible activities on adjacent public lands. Innovators in some places are creating those synergies, which are beneficial for both agencies.

### Optimize Endangered Species Act (ESA) mitigations:

We are spending way too much money on ESA mitigations, often with little benefits to show for our efforts. We all have stories. We need to work with the USFWS to initiate review processes at appropriate levels to evaluate proposed mitigations, their costs, and the intended measurable benefit. You are key in this process (i.e., when you believe the cost outweighs the benefits, there should be an expedient process to address the issue, in some cases at the USFWS Director/ DUSD level). We can do our job in the Pentagon to get buy-in at the senior level at USFWS, but your input is vital to success. A goal would be a legally sufficient, proportional level of effort for all federal agencies based on agency activity rather than on agency budget authority.

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## SPOTLIGHT (CONTINUED)

### Increase partnerships with other governmental agencies and non-governmental organizations (NGOs) for land conservation:

Military lands, ranges in particular, provide excellent habitat for many species. There are several NGOs, as well as county, state, and federal agencies that have realized that open land use designation equally supports conservation and the viability of military installations. We should work with governments and NGOs that are committed to expanding conservation designations compatible with military missions to ensure the viability of nearby military facilities. Some DoD installations do that already. We need to reach out to find even more partners, especially those who are willing to explore no-cost options for the military.

One of the most rewarding aspects of my past 20 years in the Pentagon has been my interaction with natural and cultural resource professionals. Those of you who know me are aware that I'm particularly invested in improving tribal relationship programs. I admire your knowledge and expertise and I'm amazed by your accomplishments every time I go out into the field. I count many of you as personal friends, and I'm convinced that you can successfully adapt to the upcoming changes driven by budget cuts.

I've seen many of your innovations which gives me confidence that we will find new ways of doing business. You can probably think of a lot of things that need to be changed and we in the Pentagon need to hear that from you. But please keep in mind that change has always been difficult. It's risky and unsettling, and I know that. One of my favorite quotes about change was written nearly 500 years ago and it is still as true today as it was then.

*"...there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions and lukewarm defenders in those who may do well under the new." Niccolò Machiavelli, The Prince, 1532.*



Source: Luke AFB RMO

Bighorn sheep

## STEPPINGSTONES CORNER



### View From the Eyrie Readiness and the Military-Conservation Complex

By Chris Eberly, DoD Bird Conservation and Partners in Flight Technical Representative

We are all tasked with supporting the military mission; that's why we have our jobs. Readiness and range sustainment take on many forms. Those of us dealing with natural resources on military lands understand the inextricable link between a healthy landscape and ranges able to support training activities. Our challenge is to get leadership support to sustain this military-conservation complex.

Sustaining readiness involves more than just maintaining healthy training lands. The ability for our troops to train also depends on factors outside the fence line. Threatened, endangered, and at-risk species (TERS), encroachment, climate change, and resource constraints (both fiscal and human) are just a few of the external factors we must consider in our daily actions. Especially in times of resource limitations, it is an easy, and perhaps natural, response to focus inward in the interest of not wasting what limited funds and personnel we have. However, it is times like these where we actually should be more outwardly focused. Partnerships exist for many reasons, but they all share the commonality of achieving a mutual goal more efficiently (i.e., fewer financial and human resources expended).

One of the Legacy Resource Management Program's (Legacy) Integrated Resources Areas of Emphasis is Readiness and Range Sustainment, which is described below (underline added for emphasis).

***The military's ability to fight and win our nation's wars is tied directly to readiness resulting from realistic test and training exercises. Encroachment from a variety of sources hampers this ability.***

***We especially seek efforts that promote improved coordination between military testers and trainers and natural and cultural resources managers on new and emerging threats.***

Improved coordination is just one benefit of a partnership. In addition to the potential of Legacy-funded projects, there are other ways to expand on this integrated approach by seeking appropriate partnerships with non-DoD entities. There may be opportunities with buffer management, controlled burning, off-site mitigation, and more. In many parts of the country, private landowners control the majority of lands surrounding military installations. Partnerships can and should involve public and private landowners, as appropriate to the area and the situation.

If you are unfamiliar with partnerships or have questions about forming one, there are many great resources available to help you. The National Military Fish and Wildlife Association (NMFWA) has a diverse and knowledgeable membership. If anyone understands the military-conservation complex, NMFWA members wrote the book! National partnerships such as Partners in Flight (PIF) and

Partners for Amphibian and Reptile Conservation (PARC) are especially adept at taxonomic and habitat partnerships. DoD has active involvement in both of these partnerships. Most of our sister federal agencies have partnership programs, and State Wildlife Action Plans also recognize the value of partnering to more effectively achieve conservation objectives.

While it may seem that compliance is getting all the attention lately, long-term stewardship remains one of the most effective tools for readiness and range sustainment. We must focus on the here and now in our day-to-day operations, while keeping an eye on the future to protect our heritage. We can't do it alone. The answer may be waiting somewhere over the fence.

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## Getting the Scoop from Poop

By Susannah Woodruff, Robert Lonsinger, Lisette Waits, Department of Fish and Wildlife Sciences, University of Idaho



Source: Lisette Waits

Susannah Woodruff collecting Sonoran pronghorn fecal pellets in Arizona.

Noninvasive genetic sampling (NGS) is a new approach for monitoring wildlife populations without ever handling or even seeing the focal species. Researchers use Deoxyribonucleic acid (DNA) left behind by an animal in the form of fecal samples, hair, saliva, or feathers to obtain valuable information such as the number of individuals, genetic health, survival rates, movement patterns, and mating system.

With support from the Department of Defense (DoD) Environmental Security Technology Certification Program (ESTCP) and the DoD Legacy Resource Management Program (Legacy), scientists are using NGS to simultaneously monitor kit fox and coyotes at Dugway Proving Ground (DPG), Utah and surrounding federal land. They are also monitoring Sonoran pronghorn and coyotes at the Barry M. Goldwater Range (BMGR), Arizona and adjoining Cabeza Prieta National Wildlife Refuge (CPNWR). Kit foxes are nocturnal and listed as a species of concern in Utah. Federally listed as endangered, and easily spooked, Sonoran pronghorn avoid people, cars, and aircraft. There are an estimated 160 free ranging Sonoran pronghorn found within the Sonoran desert in Arizona and California. Coyotes were selected for the study because they are known predators for both species.

All surveys are conducted by collecting fecal samples deposited along roads or at watering holes. DNA is extracted from these samples in a special genetics facility dedicated to the analysis of noninvasive genetic samples in the [Laboratory for Ecological, Evolutionary, and Conservation Genetics](#) at the University of Idaho. In the study's first year, scientists collected 326 kit fox and 1005 coyote samples on DPG and 723 pronghorn and 270 coyote samples at BMGR and CPNWR. Using NGS, scientists successfully obtained DNA fingerprints for individual identification on 75%-85% of samples and identified 41 individual kit fox and 132 coyotes on DPG, and 95 Sonoran pronghorn and 74 coyotes on the BMGR and CPNWR.

Overall project goals include developing efficient long-term monitoring protocols for kit fox, Sonoran pronghorn, and coyote, and facilitating the use of NGS for other species of concern on DoD installations. NGS is an attractive alternative because collection of hair, feces, or feathers provides DNA material of free-ranging species within a population without having to catch, handle, or even observe them (which reduces stress) and can be more cost-effective than traditional methods that require trapping animals or direct observation.

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## WHAT'S HOPPIN' IN DOD PARC?



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

During the last four years, the Department of Defense (DoD) has enhanced its focus on amphibians and reptiles through DoD Partnership for Amphibian and Reptile Conservation (PARC). As a result, DoD has made significant advances in herpetofaunal management on military lands. These advances include tangible products that would not have been possible without the hard work of our installation biologists, trainers, and other partners. We are thankful to all of you who have contributed to the success of DoD PARC, and look forward to working with you into the future. Below is a list of our recent accomplishments and future goals.

### Web-based Lecture Series

In 2014, DoD PARC will continue the monthly web-based lecture series that members can join through Defense Connect Online. The goal of the lecture series is to help members stay connected and keep up with the most recent scientific studies and news. Copies of past presentations can be downloaded from the DoD PARC website (<https://dodparcphotolibrary.shutterfly.com/lectureseries>). Lectures are advertised to DoD PARC members one week in

advance. If you would like to receive lecture announcements, please email Chris Petersen ([chris.petersen@navy.mil](mailto:chris.petersen@navy.mil)).



Source: Chris Petersen

Navy volunteer helps capture a Timber Rattlesnake at Naval Support Activity Hampton Roads-Northwest Annex, Virginia.

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

## Herpetofauna on Military Lands – Publications

- The spring issue of *Currents* will feature an article on a Timber Rattlesnake radiotelemetry project at a Navy installation in Virginia.
- The 2013 Amphibian Disease Survey will be available in April 2014. As highlighted in the *Natural Selections* Winter 2013-2014 issue, the Legacy-funded study evaluated nearly 1,000 samples from 50 military installations around the country.

## DoD PARC Photo Library

Nearly 200 pictures were added to DoD PARC's photo website (<http://dodparcphotolibrary.shutterfly.com>) in 2013, bringing the total to 850 amphibian and reptile photographs. We hope to reach 1000 pictures by the end of 2014. The site is a resource for DoD biologists and environmental planners to use for INRMPS, reports, and publications. Recently, the Navy used the photo website to create a poster of the amphibians and reptiles of Great Pond Outdoor Adventure Center, a Navy recreational facility in Maine. Pictures from the website are regularly featured in the Navy's environmental magazine, *Currents* in a series called "My Best Shot."



Amphibians and reptiles found at the Great Pond Outdoor Adventure Center

## Legacy Program Proposal Ranking Criteria

In 2013, DoD PARC and DoD Partners in Flight worked together to develop a standardized criteria for evaluating Legacy pre-proposals and full proposals related to herpetofauna and bird conservation and management. Both programs will use the new criteria to evaluate and rank taxa-specific proposals this fiscal year.

## Looking Ahead

DoD PARC hopes to complete the following in 2014:

- Finalize the DoD PARC Strategic Plan
- Collect, organize, and digitize herpetofauna surveys and reports conducted on military lands so they can be accessed online
- Continue to update herpetofauna species lists, including those of Army and Air Force sites
- Link the pictures on the photo website to military installation species lists

- Develop a DoD *Frog Watch* subgroup to continue citizen science outreach on military lands ([www.aza.org/frogwatch/](http://www.aza.org/frogwatch/))
- Continue to grow and mature our efforts, including identifying regional representatives and officers, who can help coordinate on-the-ground activities



Eastern Spadefoot

Source: Justin Sweitzer

DoD PARC is always seeking assistance. If you would like to join, please contact Rob Lovich ([robert.lovich@navy.mil](mailto:robert.lovich@navy.mil)) or Chris Petersen ([chris.petersen@navy.mil](mailto:chris.petersen@navy.mil)).

## Update and Analysis of Navy Herpetofauna Species Lists

Over the last year, DoD PARC members have been working on updating and analyzing amphibian and reptile (herpetofauna) species lists for 50 Navy installations within six Commander Navy Regions (Mid-Atlantic, Washington, Southeast, Midwest, Northwest, and Southwest) of the continental United States. Each of the installations selected have significant natural resources and are managed using an Integrated Natural Resource Management Plan (INRMP). The analysis of these updated species lists has revealed some very interesting discoveries into the patterns of herpetofauna biodiversity on Navy lands, and is the first comprehensive study of amphibian and reptile inventories on Navy lands.

The first milestone of the project was to review and update the existing herpetofauna species lists of the Navy installations using multiple online data sources (National Amphibian Atlas ([http://armi.usgs.gov/national\\_amphibian\\_atlas.php](http://armi.usgs.gov/national_amphibian_atlas.php)), Herpnet2 (<http://herpnet.org>) and existing herpetofauna surveys and inventories conducted at the Navy sites). The species lists were also updated to reflect the most current federal, state, and NatureServe status for each confirmed or potential species. The peer-reviewed species lists for each installation were combined into a single Excel spreadsheet for analysis.

Data were analyzed based on species occurrence (number of confirmed or potential [unconfirmed] species); federal, state, and NatureServe status; and occurrence of non-native species by Commander Navy Region. The presence or absence of venomous reptiles on each installation and Navy region was also investigated. The herpetofauna biodiversity of each Commander Navy Region were compared to each other and merged together for an overall summary across all Navy lands in the continental U.S.

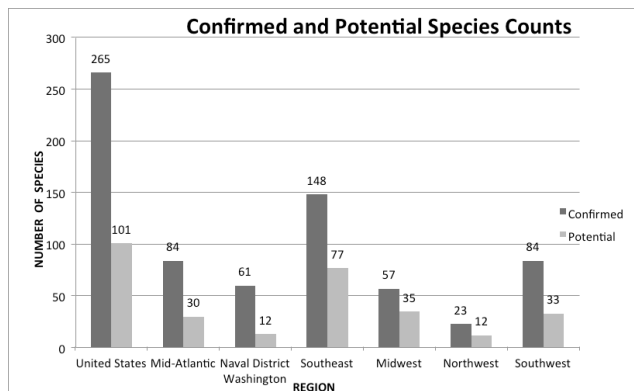
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Source: Chris Petersen

Seventeen species of venomous snakes have been confirmed on Navy installations within the U.S. (two species in the genus *Agkistrodon* (Copperhead and Cottonmouth), two species in the genus *Micrurus* (Coral Snake), and thirteen species in the genus *Crotalus* (rattlesnakes).

Preliminary results of the analysis have revealed interesting information regarding the biodiversity of herpetofauna on Navy lands. For example, Commander Navy Region Southeast had the greatest number of confirmed and potential herpetofauna species (148 and 77 species respectively) whereas Commander Navy Region Northwest had the least number of confirmed and potential species (23 species and 12 species respectively; as shown in the chart below). Considering all six Navy regions combined, the Navy installations evaluated in this project supported a total of 366 species (265 confirmed species and 101 potential species). In comparison to the total number of native herpetofauna species within the U.S. (approximately 460 species), Navy lands support 57% of the confirmed species, and 78% if potential species are included, on Navy lands. Snakes were the dominant herpetofauna species type on Navy installations in the U.S., with 76 confirmed species. A total of 29 NatureServe species at risk, 22 state-listed species and 14 federally-listed herpetofauna species were confirmed on Navy lands. Only five confirmed non-native species have been documented on Navy installations within the U.S., with Commander Navy Region Southeast having the most confirmed non-native species.



Source: Chris Petersen

This graph illustrates the number of confirmed and potential herpetofauna species by Commander Navy Region.

The spreadsheet containing the updated species lists and results of this analysis can be used by installation natural resource managers to identify survey or research gaps and also by senior Navy leadership for an overall view of herpetofauna diversity on Navy lands. In addition, this database will facilitate data sharing between Navy installations, and state and federal agencies that may help foster effective cooperative conservation initiatives and partnerships. DoD PARC will produce a written report in spring 2014 detailing herpetofauna species on Navy lands. Please contact [chris.petersen@navy.mil](mailto:chris.petersen@navy.mil) for a copy of the final report.

With the support of the Marine Corps, DoD PARC members have begun to update the herpetofauna species lists on eighteen Marine Corps installations with INRMPS. Next, with support from the DoD Legacy program, we will update the lists for Air Force and Army installations.

## If you Build It, They Will Come..., Or Will They? Development of Novel Approaches to Identify the Most Cost-Effective Allocations of Habitat for At-Risk Species

By Doug Bruggeman, Ecological Services and Markets, Inc., and Mike Jones, Michigan State University

The ambiguous “they” are not the ghosts of Hall of Fame baseball players, as in the iconic movie *Field of Dreams*, but the somewhat equally mysterious threatened, endangered, and at-risk species. With support from the Strategic Environmental Research and Development Program’s (SERDP’s) Resource Conservation and Climate Change Program (project RC-1656), researchers have been applying new techniques that guide the construction of population projection models for at-risk species, called Pattern Oriented Modeling (POM). POM applies statistical methods to model species’ behaviors that are difficult (and expensive) to observe directly, such as how land use (e.g., forested vs. non-forested areas) affects competition for breeding vacancies in the red-cockaded woodpecker (RCW) or whether juvenile gopher tortoises (GT) disperse across the landscape.

POM uses models that simulate the fate and behavior of each individual (or agent) in a population. The agent-based model represents a hypothesis regarding how environmental variation (e.g., climate change, land use patterns, vegetation type) affect the behavior of the species (e.g., reproduction, dispersal, survival, competition for food and/or mates). A large number of different models, each representing a different set of parameters that describe these behaviors is then compiled and tested. This allows the researchers to test an equally large number of different hypotheses regarding how the species survive in complex environmental conditions. Then, POM compares predictions from the population model and each parameter set (data generated) to monitoring data collected in the field (e.g., number of breeding pairs, genetic diversity, or burrow surveys). Researchers can statistically analyze the difference between the values. By verifying the prediction model against field observations, researchers can learn about behaviors and find flaws in their assumptions about species behavior.

The POM technique is also useful for identifying the type of field data required for estimating species behaviors. For example, the POM technique indicated that the long-term RCW bird banding program on Marine Corps Base Camp Lejeune (MCBCL) provided the best data for estimating behaviors, but also that even a single year of field data from a conservation

*continued on page 8*

partner, when added to data from MCBCL, helped to reduce uncertainty regarding dispersal. For GT, studied at Fort Benning, GA, data from different conservation partners were not available, but researchers found that radio telemetry data were more powerful descriptors of behavior than burrow surveys. The analysis indicated that accurate description of the GT mating system was critical for approximating field data. Population genetic data suggested that female tortoises stay close to areas where they were born but that males disperse longer distances. Adding population genetic data into the prediction model and comparing predicted with observed levels of genetic diversity suggested that dispersal of juvenile tortoises may help retain genetic diversity.

Researchers applied the prediction model, estimating population growth, and retention of genetic diversity 100 years into the future to estimate what would be the best arrangement of protected habitat at the lowest cost, using the sets of dispersal parameters best able to approximate field data. This approach recognizes that DoD will often wish to change habitat allocations prior to reaching scientific consensus regarding the species' behaviors and their implications for population viability. POM reduces key components of model uncertainty, which will allow decision-makers to identify cost-effective investments in future field data collection.

## Golden Eagles on Southwestern Military Installations

By Martin D. Piorkowski and Daniel P. Sturla, Arizona Game and Fish Department, Wildlife Contracts Branch, Project Biologists

The golden eagle, with its impressive seven-foot wingspan, may be declining across the western United States. In Southwest deserts, conditions are harsh with limited food and water across the landscape. With support from the DoD Legacy Program (Legacy) and eight military installations (Luke Air Force Base [AFB], Davis-Monthan AFB, Marine Corps Air Station Yuma, Arizona Army National Guard, Creech AFB, Nellis AFB, Fort Huachuca, and El Centro Naval Station), the Arizona Game and Fish Department's Wildlife Contracts Branch (AGFDWCB) set forth on an ambitious effort to quantify the distribution and status of golden eagles utilizing vast landscapes shared with military activities. The results of this effort will help conserve and better manage the species while maintaining compliance with environmental requirements such as the Bald and Golden Eagle Protection Act (BGEPA).

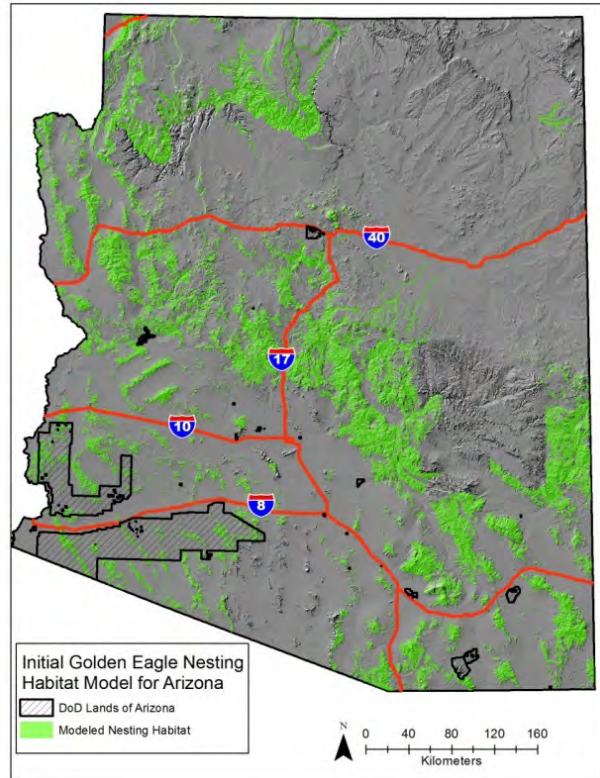


Juvenile (top) and adult (bottom) golden eagles on a cliff nest in Arizona.

Source: K. Licence

Study objectives include:

- Identify and survey potential nesting habitat;
- Develop a landscape-level geospatial model to identify high quality nesting habitat for golden eagles and survey these lands associated with military training, (as shown in the figure) and;
- Provide management recommendations that will allow southwestern military installations to avoid restrictions and maintain their training flexibility.



Source: M.D. Piorkowski and D.P. Sturla

This map is an example of the landscape-level geospatial model developed to identify nesting golden eagles in Arizona

Due to varying terrain in this rugged landscape, the AGFDWCB is using multiple survey strategies to collect data across Arizona, California, and Nevada. These strategies include helicopter, fixed-wing, and ground surveys to identify and monitor golden eagle nests focusing on areas within military training routes during their breeding season. With a collaboration of military, federal, state, and local agencies, AGFDWCB is leveraging resources, knowledge, and expertise to understand and inform natural resource managers of the distribution and status of golden eagles. This information can then be applied to Integrated Natural Resource Management Plans (INRMPs) to help make informed management decisions.

After the first year, researchers have developed a modeling application to identify potential nesting habitat in the study area. They have also identified approximately 1,200 potential golden eagle nests (558 confirmed to have been active within the past 10 years). Interestingly, golden eagles build multiple nests over the course of their lifetime so it is important to survey each one in an active area. In the upcoming year researchers will be investigating correlations between ecoregions and golden eagle distribution and demographics throughout the Southwestern region.

## Invasive Species and the Military Mission

By Pete Egan, Armed Forces Pest Management Board

The Armed Forces Pest Management Board (AFPMB), Natural Resources Committee is working with OSD and the Military Services through the DoD Conservation Committee to evaluate the efficacy of collecting data on the extent of the military's invasive species problem. An analysis of the data will quantify how invasive species impact the military mission and harm threatened and endangered species. The goal of this effort, if approved, is to provide good information for future management decisions. Detailed knowledge of the severity of invasive species presence and their impacts

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can help direct resources to develop best management practices (BMPs) by employing the principles of integrated pest management (IPM). Results of the survey could also determine training needs and assist in the development of Defense Connect Online (DCO) webinars.

Success stories about combating invasive species on Department of Defense (DoD) lands are an important message that we can share with each other. I urge Natural Selections readers to share your success stories and strategies employed by emailing Ms. Meegan Wallace ([mwallace@geo-marine.com](mailto:mwallace@geo-marine.com)), the co-chair of the National Military Fish and Wildlife Association (NMFWA) invasive species working group (ISWG). Often what strategy works in one area under local climate and vegetation conditions doesn't work on all sites and may require modification.

Visit the DENIX website to see projects on the formation of Cooperative Invasive Species Management Areas (CISMAs) ([www.denix.osd.mil/nr/OtherConservationTopicsIZ/InvasiveSpeciesManagement.cfm](http://www.denix.osd.mil/nr/OtherConservationTopicsIZ/InvasiveSpeciesManagement.cfm)). These CISMAs are great opportunities for partnerships for federal and state agencies, non-governmental organizations (NGOs) and private landowners. CISMAs develop a regional strategy to collaboratively manage their invasive species problems in a coordinated manner. Some Landscape Conservation Cooperatives (LCCs) sponsored by the U.S. Fish and Wildlife Service include invasive species management.

I will be retiring in a few months but there are excellent people who can assist you. Ms. Wallace can assist by putting your e-mail address on the NMFWA ISWG weekly digest. Mr. Mathew Kramm ([mathew.kramm@us.af.mil](mailto:mathew.kramm@us.af.mil)), chair of the AFPMB Natural Resources committee, and his vice chair Dr. William Miller ([william.b.miller54.civ@mail.mil](mailto:william.b.miller54.civ@mail.mil)), can also be excellent resources.

Best wishes for a successful career using BMPs and IPM measures against invasive plants and animals, Pete Egan.

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## Orchard Combat Training Center Wins Prestigious National Conservation Award

By Brian Bohnsack, U.S. Fish and Wildlife Service

The Idaho National Guard's Orchard Combat Training Center (OCTC) won the U.S. Fish and Wildlife Service (USFWS) 2014 Military Conservation Partners Award for its continued conservation efforts. The annual award recognizes one military base for their efforts of balancing the conservation of the facility's natural resources while providing soldiers with the training facilities needed to maintain operational readiness. USFWS announced the award during the North American Wildlife and Natural Resources Conference in Denver.



Source: Charles Baun

*Telemetry backpack on golden eagle as part of a monitoring program to study use of the OCTC and migration patterns. Partners: BLM and USFWS*



Source: Charles Baun

*Unmanned aerial vehicles help base researchers develop highly accurate vegetation maps using laser imaging detection and ranging (LIDAR) and hyper-spectral imaging. The same process was used to delineate slickspot peppergrass (*Lepidium papilliferum*) locations. Partners: BLM, USGS, Idaho National Laboratories/DoE.*

The OCTC is a truly unique training site. At 143,000 acres, it is the one of the largest National Guard training facilities in the United States and provides a variety of training opportunities for 10,000 to 14,000 soldiers each year from the Idaho Army National Guard (IDARNG), National Guard soldiers from other states, all other branches of the military, and local, state, and regional law enforcement agencies.

The OCTC falls within the Morley Nelson Snake River Birds of Prey National Conservation Area (NCA) and is adjacent to the Snake River Canyon. This NCA was established in 1993 by the Congress to protect one of the highest concentrations of raptor species in the United States while allowing for continued military use. The land supports a fragile, arid-land ecosystem that very closely resembles ecosystem conditions in Afghanistan. While this has a significant benefit for training operations, it also requires intense management of the area's natural resources, emphasizing raptors and their associated prey base and habitat, as well as multiple federally managed special-status plant and animal species.

The Idaho Guard's Conservation program manages their resources through long-term vegetation and habitat monitoring, comprehensive environmental awareness training, aggressive wildland fire program, environmental mapping and analysis with Geographic Information System (GIS) tools, and a proactive teaming approach to land management and research. The Conservation staff annually participate in environmental research and conservation projects with multiple partners, including the Bureau of Land Management, Natural Resources Conservation Service, U.S. Geological Survey, the Idaho Department of Fish and Game, local and regional universities, and other cooperators. However, it is the internal coordinated efforts with the Integrated Training Area Management (ITAM) and Wildland Fire programs, as well as Range staff at the OCTC that truly makes this program successful. "The successful collaboration we have with various internal and external environmental organizations makes our facility stronger," said OCTC director COL Michael Woods. "The guidelines we are given ensure we can carry out our critical training mission without degrading the land."

This is not the IDARNG's first award. In 1992, the organization became the first National Guard group to win the Secretary of the Army's Natural Resources Conservation Award. Recently, the OCTC installation won first place for the National Guard Bureau's Environmental Security Award for management of natural resources at large installations in 2012 and third place in 2013 for Natural Resource Conservation Team/Individual.

## DoD's Focus on Readiness—Sustainable Ranges Initiative

By Joan D. B. VanDervort, Deputy Director, Training Ranges, Sea, and Airspace

Since 2001, the Department of Defense's (DoD's) Sustainable Ranges Initiative (SRI) has been proactive in identifying, assessing, and developing mitigation strategies to avoid and mitigate encroachment challenges. Encroachment, or incompatible development adjacent to installations, hinders the military's ability to carry out testing and training missions. Loss of frequency spectrum from commercial sales, the continued expansion of renewable energy infrastructure, as well as the unintended consequences of environmental regulation, are ongoing challenges to DoD.

### What is ODASD (Readiness)'s Role in the SRI?

The Office of the Deputy Assistant Secretary of Defense (Readiness), or ODASD(R), oversees implementation of the SRI for DoD's training assets. To accomplish this, ODASD(R) works collaboratively with other OSD offices and the Military Services to develop policy and guidance, assess effectiveness of the SRI, and communicate issues and concerns to Congress. Additionally, ODASD(R) partners with other federal, state, tribal, and non-governmental organizations on collaborative efforts that protect mission readiness and are mutually beneficial to our partners. A snapshot of the SRI is available in the latest Sustainable Ranges Report to Congress at [www.denix.osd.mil/sri/Policy/Reports.cfm](http://www.denix.osd.mil/sri/Policy/Reports.cfm).



### Challenges to SRI and How We're Addressing Them

Our office is working collaboratively with its partners to develop innovative solutions to these challenges. Examples include:

#### *Increased Home Station Training -*

- As the competition for training land, ranges, and airspace at home station increases due to the draw down in Afghanistan, encroachment challenges will increase. DoD is actively engaging states and communities to address this challenge.

#### *Renewable Energy Siting -*

- ODASD(R) worked collaboratively with the Natural Resources Defense Council (NRDC) on a series of renewable energy siting principles and published in a primer in November 2013. The primer identifies key considerations for siting renewable energy projects that could impact the military mission, whether on or outside military-managed lands. These are intended to be information guidelines for developers and other participants in the renewable energy siting process. Additionally, our Deputy Assistant Secretary is a co-chair of the Board of Directors for the DoD's Siting Clearinghouse.

#### *Offshore Renewable Energy Development -*

- ODASD(R) has also been working closely with the Military Services, the Bureau of Ocean Energy Management, and the coastal states to mitigate incompatible development within DoD activities. To date, more than 6,000 lease blocks have been

assessed, with three quarters of the areas being identified as suitable for mission compatible development.

### For More Information

We are continuously looking for new ways to collaborate to protect both readiness and natural resources. Contact Joan VanDervort at [joan.d.vandervort.civ@mail.mil](mailto:joan.d.vandervort.civ@mail.mil) or 703.693.4377 for more information.

## Incorporating Climate Change Adaptation into Integrated Natural Resources Management Plans (INRMPs): Detachment Fallbrook Case Study

By Dawn M. Lawson<sup>1</sup>, Carolyn Enquist<sup>2</sup>, Robert Wolf<sup>3</sup>, Christy M. Wolf<sup>4</sup>, and Elizabeth Kellogg<sup>3</sup>

<sup>1</sup>SPAWARSYSCEN Pacific, Environmental Sciences, and Applied Systems Branch; <sup>2</sup>The National Phenology Network; <sup>3</sup>Tierra Data, Inc.; <sup>4</sup>Conservation Program Manager, Naval Weapons Station Seal Beach Detachment Fallbrook, Fallbrook, California

The goal of the Department of Defense's (DoD's) conservation program is to support the military's combat readiness mission while maintaining the long term sustainability of its natural resources. The new DoD INRMP Implementation Manual (DoDM 4715.03, November 25, 2013) specifically directs military installations to address climate change adaptation in their INRMPs. However, due to the complex and evolving nature of climate science, regulatory imperatives, budgets, and day-to-day demands, land managers are struggling with adaptation planning and implementation (Stein, et al. 2013). To overcome these barriers, the research team adapted and applied the Adaptation for Conservation Targets (ACT) framework (Cross, et al. 2012) in an initial effort to pilot and test methods for incorporating climate change adaptation planning into INRMPs. The team tested the ACT framework in a two-day workshop (Case Study).

### Case Study

Naval Weapons Station Seal Beach Detachment Fallbrook (Fallbrook) in San Diego County, California has an established natural resources management program in a biologically diverse ecoregion (USDON 2006). Fallbrook faces threats from global climate change, such as altered fire regimes and invasive non-native species (Underwood, et al. 2009). Fallbrook's managers must balance complex trade-offs between federally listed threatened and endangered species and employ aggressive strategies to mitigate fire risk in support of their mission.

### Methods

The workshop included a plenary session, development of conceptual model of ecosystem function, development of hypotheses of climate change effects, and identification of potential strategic actions. The team's adaptation of the ACT framework included adding a step to identify how a hypothesized climate change effect could be detected and by incorporating a session on the concept of "climate-informed" monitoring. Twenty-two people from military installations, state and federal regulatory agencies, academic institutions, non-governmental organizations, and private consulting firms participated in the workshop. A summary of the workshop will soon be available on the DENIX site.

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## Lessons Learned

- **Participant engagement** - The workshop format was effective in engaging the attendees and facilitated a transparent and collaborative process. The feedback was positive and both managers and regulators thought the approach was relevant and helpful.
- **Scope** - Only a few of the objectives of the INRMP could be addressed in the 2 days.
- **Regional context** - The development of hypotheses of global climate change and potential strategic management and monitoring actions at a regional level would provide both a sound scientific basis and an economy of scale for incorporating climate change adaptation into INRMPs.
- **Installation application** - Each installation could select the most relevant hypotheses of global climate change and strategic actions developed at the installation level to address in their INRMPs within the context of their mission and environmental settings.
- **Climate informed monitoring** - Participants agreed that a deliberate focus on monitoring approaches through the lens of climate change constituted a high priority adaptation action. A comprehensive regional review of existing monitoring efforts would facilitate identification of opportunities for installations to collaborate in data collection and analyses.
- **Prioritizing current management strategies** - The Case Study demonstrated that the potential strategic actions identified considered future climate change without losing sight of existing natural resources threats on the installation.

## Conclusion

The military faces unique challenges with respect to land management and conservation. Since threatened and endangered species are so dense and abundant on military lands, natural resources management becomes highly regulated, which poses barriers to “agile” management that is important in climate change adaptation (Stein, et al. 2013). Engaging the regulatory community in climate change adaptation planning is likely to decrease the management burden. Furthermore, each installation can tailor its conservation objectives to better support mission sustainment by accounting for various hypotheses of related to global climate change that are relevant to particular missions and environmental settings.

## Next Steps

The team is in the process of incorporating the Case Study’s information into an adaptation plan for Fallbrook’s INRMP. Next, they will develop a general method for incorporating climate change adaptation processes into INRMPs.

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## Upcoming Events

### Conferences, Workshops, and Training

#### ***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 providing, the scientific basis for effective conservation. For more information, visit the [NatureServe](#) website.

## Earth Day

***April 22, Global***

Earth Day, celebrated since 1970, promotes environmental conservation across our planet. Look for activities near you!

## 2014 Secretary of Defense Awards

***April 22***

Each year the Department honors individuals, teams, and installations for their outstanding achievements and innovative environmental practices and partnerships that promote quality of life and increase efficiencies without compromising mission success. Visit the [Secretary of Defense Environmental Awards](#) website for more information.

## **International Migratory Bird Day**

**May 10, Global**

Celebrate the many ways in which birds matter to the earth, to ecosystems, and to us. Some bird species provide practical solutions to problems, such as the need for insect and rodent control. Others disperse seeds, helping to re-vegetate disturbed areas. Others are pollinators, ensuring that we have flowering plants, trees, and shrubs. Look for a [National Wildlife Refuge International Migratory Bird Day](#) event near you.

## **Endangered Species Day**

**May 16, Nationwide**

Endangered Species Day recognizes national conservation efforts to protect endangered species and their habitat. For more information, visit the [U.S. Fish and Wildlife Service](#) website.

The U.S. Botanic Garden, with the Endangered Species Coalition and U.S. Fish and Wildlife Service, is hosting a free [Endangered Species Day Festival](#) from 10 a.m. to 2 p.m. Booths representing government agencies and conservation organizations, tours of the botanic garden's endangered and native plants, and children's activities focused on endangered species and pollinators are part of the festival.

## **National Fishing and Boating Week**

**June 1-8, Nationwide**

This week highlights the importance of recreational fishing and boating. To learn about free fishing days in your state and other events, visit the [Recreational Boating & Fishing Foundation](#) website.

## **Ecological Society of America (ESA) Course on Sustaining Biological Infrastructure: Strategies for Success**

**June 10-12, Washington, D.C.**

Successful biological research relies on access to a range of supporting infrastructure, including digital data resources, living stock collections, museum collections, and field stations. This training provides project directors with business planning, marketing, and communication skills to apply to biological infrastructure projects. Lectures, group work, and discussions prepare participants for addressing challenges and adapting to changing field conditions. For more information on the course, visit the [ESA Sustaining Biological Infrastructure](#) website.

## **Pollinator Week**

**June 16-24, Nationwide**

Pollinator Week promotes the importance of pollinators in our ecosystem. Events involve activities for bees, birds, butterflies, bats, beetles, and others. Visit the [Pollinator Partnership](#) website for more information.

## **Accessibility for Outdoor Recreation Programs & Facilities on Military Installations**

**July 22-24, Fort Drum, New York**

Ideal for staff responsible for outdoor recreation, this three-day training provides an overview on how to increase accessibility to all people visiting military installations. Contact Raymond Rainbolt ([Raymond.E.Rainbolt.civ@mail.mil](mailto:Raymond.E.Rainbolt.civ@mail.mil)) by June 15 to register. For more information, visit the [National Center on Accessibility](#) website.

## **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 [https://www.dodlegacy.org/Legacy/intro/ProductsList\\_NU.aspx](https://www.dodlegacy.org/Legacy/intro/ProductsList_NU.aspx). All Legacy products and many more are available at [www.denix.osd.mil/nr](http://www.denix.osd.mil/nr).

### **National Public Lands Day (Project 10-086) – Final Report**

National Public Lands Day (NPLD) is a public-private partnership that promotes community participation in shared stewardship of natural and cultural resources and lands. This national partnership enlists volunteers to work with land managers to restore and enhance public lands and learn about resource conservation. In support of NPLD, volunteers built trails and bridges, removed invasive plants, cleaned up trash, improved wildlife habitat, planted native vegetation, installed interpretive signage, and restored culturally historic sites.

### **Repellent Tools for Invasive Species Control in Military Cargo (Project 10-113) – Final Report**

Control of the invasive brown treesnake on Guam, and continued prevention of its spread to other islands and bases, is an integral part of DoD's ability to conduct military operations throughout the Pacific region. Implementation of chemical repellents to prevent snakes from entering outbound cargo on Navy Base Guam/Andersen will enhance the existing snake prohibition program. This project evaluated, in a simulated cargo staging area on Guam, three commercially-available chemical formulations ("Deterrent Granules," "Odorant Pads," "Paint") containing a snake repellent that is environmentally safe and non-aversive to people. This project evaluated the efficacy of 1) Deterrent Granules to prevent snakes from entering cargo staging areas, 2) Odorant Pads and Paint to prevent snakes from entering into palletized cargo and freight containers, respectively, and 3) Odorant Pads and Paint to cause the snakes to leave these same cargo types.

### **Status and distribution of Le Conte's Thrasher (*Toxostoma lecontei*): a species at-risk on three southwestern military installations (Project 10-343) – Final Report**

The current distribution and status of Le Conte's Thrashers were explored on three DoD installations in SW Arizona (Barry M. Goldwater Range (BMGR)-West managed by Marine Corps Air Station Yuma, BMGR-East managed by Luke Air Force Base, and U.S. Army Yuma Proving Ground) in an area that encompass more than 2.6 million acres of the Sonoran desert ecoregion. Project objectives were 1) survey and map occupied and potential habitat within the BMGR and the U. S. Army Yuma Proving Ground for the presence of Le Conte's Thrashers; 2) determine occupancy rates and detection probabilities in relation to habitat characteristics and military land use activities, and; 3) document habitat characteristics for all nest and vocal response (perch) sites

encountered. Le Conte's Thrashers distribution knowledge will assist in guiding future habitat management to fulfill mission critical activities while maintaining existing populations.

### **Assessing the presence and distribution of 20 Hawaiian yellow-faced bee species, currently under status review and/or designated as species of concern, on lands adjacent to military installations on Oahu and Hawaii Island (Project 11-104) – Final Report**

The project assessed the presence and distribution of 20 native Hawaiian yellow-faced bee species on lands adjacent to military installations on Oahu and Hawaii Island. At the time of the project, five of these species were undergoing a status review to determine whether a threatened or endangered listing is warranted; the remainder were species of concern or are otherwise rare, and may appear in future endangered species proposals. The discovery of populations on adjacent lands enables greater flexibility for the Army and Navy to conduct offsite mitigation if the species are listed. Such measures are necessary to continue the unrestricted use of military installations. Information obtained during the course of these biological surveys will enable continued use of Oahu and Hawaiian Island military lands for training and facilitate military preparedness in Hawaii and the greater Pacific region.

### **Experimental Restoration of Pine Flatwoods Wetlands (Project 11-109) – Final Report & Fact Sheet**

A suite of habitat restoration techniques was examined for this project with the goals of maintaining wetlands in fire-dependent ecosystems and determining the most appropriate method to improve breeding habitat for flatwoods salamanders and other amphibians on installations in the southeastern United States. This project served as a pilot demonstration of new restoration techniques that may benefit endangered flatwoods salamanders, other amphibians that are at risk, and at-risk plants. Although the restoration effort will occur on Eglin Air Force Base, the results will be applicable and informative to other military installations in the southeastern U.S. where flatwoods salamanders occur and where fire suppression has negatively impacted wetlands.

### **Design Guidelines for Implementing Energy Efficiency Strategies in Historic Properties (Project 11-382) – Final Report & Fact Sheet**

DoD is challenged to meet federally legislated energy efficiency standards, requiring the Department to renovate their immense inventory of historic buildings. These Guidelines for Implementing Energy Efficiency Strategies in Historic Properties provide renovation solutions to increase energy efficiency while also discussing the effects on the historic character of the building. The guidelines include a description of the approach, applicable Secretary of the Interior Standards, Historic Preservation Effects, Energy Savings Potential, and Cost Considerations in a comprehensive, easy-to-reference "How-To-Guide." Their goal is to help cultural resources managers and facility managers determine the best renovation approach to their project.

### **Coral Ecosystem and Marine Resource Initiative (T/E & Sensitive Species) (Project 12-306) – Fact Sheet**

This project has previously completed a draft web-based inventory of all DoD coastal marine facilities. Continuing tasks include 1) updating the database with new listings and changes in status of federally threatened and endangered species and 2) interpreting how new national policies such as the National Ocean Policy impact DoD coral reef management and training activities in coastal marine environments. The results of this project are provided in a database which includes all documentation (publications, copies of policy directives) for efficient access by DoD Natural Resource Managers.

### **Contextual Study of the Turpentine (Naval Stores) Industry in the Georgia, South Carolina, and Florida Coastal Plain (Project 12-506) – Final Report & Fact Sheet**

The goal of this study was to produce a historic context for the naval stores industry on the Coastal Plains of South Carolina, Georgia, and Florida. It provides cultural resource managers (CRMs) with a guideline for identifying the archaeological signatures of naval stores sites and providing a means of assessment that can be used in making recommendations under Section 106 and Section 110 of the National Historic Preservation Act of 1966 (as amended) for nomination to the National Register of Historic Places (NRHP).

### **Awareness of Classified Data Use in Historic Documents (Project 12-516) – Final Report & Fact Sheet**

This project helps CRMs meet Executive Order (EO) 13526 Classified National Security Information and DoD Directive 5200.1 requirements and avoid sanction by the Information Security Oversight Office. Army, Navy, Marine Corps and Air Force CRM programs have expressed concerns over the potential release of classified data through cultural resource reports. To aid the services in developing clean reports, the project team developed a tri-service guidebook about working with classified data and potential issues for DoD-produced historic preservation documents. The guidebook includes summaries of policies, best document development, and tri-service review practices. The guidebook also discusses general rules of thumb on typical classified data issues and data that should not be used in publically available reports and other non-classified CRM documents.

### **Two for the Price of One: Integration of NEPA and NHPA Procedures (Project 12-520) – Final Report & Fact Sheet**

This effort captures best practices and lessons learned from examining specific case studies that show how varying degrees of integrating Section 106 National Historic Preservation Act (NHPA) requirements with comparable National Environmental Policy Act (NEPA) processes has worked within DoD. The project team analyzed the service-specific procedures for NEPA preparation and processing and identified parallel processes between NEPA and NHPA (e.g. existing Standard Operating Procedures and Integrated Cultural Resources Management Plans), that are common within DoD. Better coordination and timing of certain steps of NHPA and NEPA offers opportunities to simultaneously engage similar stakeholders, streamline review processes, and share analysis information for determination of adverse effects.

## LINKS OF INTEREST

### [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 Partners in Flight](#)

The DoD Partners in Flight Program supports and enhances the military mission while it works to develop cooperative projects to ensure a focused and coordinated approach for the conservation of resident and migratory birds and their habitats.

### [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 Integration](#)

Under this program, 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)

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## Natural Selections

Natural Selections is written and published quarterly by Booz Allen Hamilton with funding awarded under Washington Headquarters Services contract number HQ0034-12-A-0032-0002

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