

Natural Selections

Department of Defense Natural Resources Program



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THE VALUE OF THE RECOVERY AND SUSTAINMENT PARTNERSHIP INITIATIVE TO CONSERVING SPECIES

By Gary Frazer, U.S. Fish and Wildlife Service

The Recovery and Sustainment Partnership Initiative (RASP) formalized a long-standing partnership between the Department of the Interior (DOI) and the Department of Defense (DoD) through a memorandum of understanding (MOU) established in June 2018. DoD manages nearly 27 million acres of land that are home to more than 500 species listed as threatened or endangered under the Endangered Species Act (ESA) and several hundred more at-risk species. As a major land management agency, DoD is an important partner for the U.S. Fish and Wildlife Service (USFWS) in species conservation work. ESA compliance is a significant responsibility of DoD in ensuring mission readiness for all Military Services. Partnerships are essential to successful species conservation efforts, and the RASP is a prime example of an exceptionally collaborative conservation partnership that has moved the needle on listed and at-risk species conservation while sustaining military readiness across the United States.

The RASP has been foundational in ensuring that USFWS and DoD align their goals and implement missions in tandem. Its purpose is to develop effective ecosystem and species conservation and recovery initiatives to (1) reduce or eliminate the need for federal protection and regulation under the ESA and (2) provide for increased flexibility for military mission activities. The partnership focuses on implementation of conservation approaches for species that impact the DoD mission or have the potential to impact the mission. The RASP's high level of coordination and collaboration between DoD and USFWS enables the achievement of multiple objectives that advance species conservation and recovery while also meeting DoD mission-related needs.

For example, one focal species of the partnership is the Mojave desert tortoise (*Gopherus agassizii*). With a range in Arizona, California, Nevada, and Utah that overlaps 15 installations across four different Military Services, this species is a clear priority. The partnership focused on developing an innovative framework for reducing mission restrictions and streamlining regulatory processes to manage the species and accelerate its recovery. USFWS, DoD, and the Bureau of Land Management (BLM) partnered with the National Fish and Wildlife Foundation (NFWF) to develop a recovery implementation strategy. The partnership with NFWF also led to the creation of the Desert Tortoise Recovery Partnership to implement recovery actions. NFWF recently solicited proposals from organizations to carry out these actions. In just under three years, the RASP's collaborative efforts for Mojave desert tortoise conservation resulted in a shared recovery strategy and expanded capacity to address its implementation.



Marine Corps service member releases desert tortoise at California base. Photo by Kelly O'Sullivan

Some listed species, such as the Okaloosa darter (*Etheostoma okaloosae*), are found almost exclusively on DoD lands. The darter currently occurs in just six tributaries to the Rocky and Boggy Bayous of Choctawhatchee Bay in Florida, and Eglin Air Force Base (AFB) has the management responsibility for 90 percent of the Bay's drainage area. Given that the Air Force manages the majority of the darter's habitat, it plays

MESSAGE FROM THE DOD NATURAL RESOURCES PROGRAM

By Ryan Orndorff, Director, DoD Natural Resources Program and DoD Legacy Program

Welcome to the Summer 2022 Edition of *Natural Selections*!

This issue of *Natural Selections* highlights the Recovery and Sustainment Partnership Initiative (RASP), an innovative collaboration between DoD and DOI that continues to strengthen both species conservation and mission readiness. Through the 2018 MOU that formalized the RASP, DOI and DoD built on all the positive efforts the two agencies had previously undertaken to conserve and protect species and habitats. The RASP expands the reach of that work, ensures the efficient accomplishment of DOI and DoD goals, and proactively addresses the balance between protected species and mission activities. The specific objectives of the RASP are to (1) achieve conservation goals and targets; (2) develop collaborative partnerships to recover additional listed species or prevent additional species from being listed; and (3) develop innovative regulatory approaches to the ESA to provide greater mission flexibility and capabilities. In this sense, the RASP is a three-legged stool, with each support working together to create more flexibility and certainty for DoD to execute its mission while improving conservation outcomes for species and habitats.

This issue begins with remarks from Gary Frazer, USFWS Assistant Director for Ecological Services. Gary's article spotlights the RASP and describes how DoD installations are often strategically positioned in areas that offer unique training and readiness capabilities while also providing habitat for at-risk and threatened and endangered (T&E) species. Today, DoD manages more than 500 ESA-listed species on its land as well as hundreds more at-risk species that may warrant federal protection in the future. Through the RASP, federal partnerships continue to enable new initiatives that protect at-risk and T&E species over time while avoiding impacts to military readiness.

As part of the effort to achieve conservation goals, DoD and USFWS have begun to create Species Action Plans (SAPs) for at-risk and T&E species. In 2021, these SAPs focused on improving the conservation status of 29 species. Of these 29 species, six species¹, all endemic to DoD lands, were proposed for delisting in 2021, along with the Hawaiian stilt, which was proposed for downlisting due to improvement in its status. Those species join the RCW and Stephens' kangaroo rat, whose downlisting is expected to be finalized in 2022.

Read about how San Clemente Island was able to create and implement a multi-species, multi-agency, and NGO conservation effort in "Species Recovery at San Clemente Island." In "When Tortoises Fly," we see how the Marine Corps Air Ground Combat Center (MCAGCC) was able to pull off a huge desert tortoise translocation effort that took nine years of planning, with multiple agencies, NGOs, and local ranchers all working together. "A Bird, a Conflict, and a Transformative Way of Working Together" highlights the RCW's journey toward recovery. You can also read about the success Eglin AFB had with recovery of the Okaloosa darter in "Partnered-up to Recover the First Endangered Fish East of the Rockies."

Supporting the health and stability of an ecosystem is a key component to removing species from ESA protection. Due to the RASP, DoD is continuously working to invest in these natural resources through management and conservation efforts while working toward mission readiness. At Fort Hood, natural resource managers figured out a way to increase the population

of the black-capped vireo that once numbered fewer than 200 individuals. Learn how Fort Hood increased the black-capped vireo's numbers in "Here Today, Here Tomorrow: Fort Hood Helps Recover Black-capped Vireo."

DoD has worked diligently with USFWS to increase the existing numbers of multiple at-risk species. In "The Marvelous Monarch," Rebecca Meyer discusses how incredible monarch butterflies (*Danaus plexippus*) are, their at-risk species status, and how DoD is working on a plan to conserve the butterflies while carrying out its military mission. A great way to directly support monarchs is described in the article "Free Pollinator Seeds to Help Monarch Butterflies," which details how to obtain and plant milkweed seeds to reduce monarch habitat loss and potentially increase their numbers. As referenced in "Mission Sensitive Amphibians and Reptiles: Proactive Solutions to Avoid Tomorrow's Challenges," DoD worked through its Partners in Amphibian and Reptile Conservation network (DoD PARC) to create a Mission Sensitive Species list of amphibians and reptiles. This list helps installations prioritize management efforts for at-risk amphibian and reptile species that were petitioned for ESA listing, in case any of those species would be impacted by mission-related activities.

The RASP is instrumental in supporting partnerships with other federal and state agencies, state and local governments, academia, and NGOs. While each installation has its own species conservation challenges, using partnerships to achieve shared goals is a win-win scenario. DoD staff at all levels play an important role in this by planning, executing, and documenting successes and lessons learned. We can see the benefits of partnerships in the "Natural Resource Manager Showcase," which highlights the critical work that Cindy Hopkins of Naval Air Weapons Station China Lake performs with the wild horse and burro population.

To further conservation efforts for T&E and at-risk species, DoD is developing policies and guidelines along with new and innovative regulatory approaches and resources. Read about how DoD and USFWS are working together to craft these new initiatives and capabilities with mission flexibility in mind in "Pilot Projects Getting Off the Ground in Washington and Georgia." As part of a new initiative, we often need new tools. In "Tools to Support Management of Imperiled Species on DoD Lands," NatureServe highlights the development of a new tool to help manage T&E and at-risk species on DoD lands. The NatureServe Explorer DoD TER-S tool contains details on each installation's climate, landscape, and needs.

I hope you enjoy reading this issue of *Natural Selections* and learning more about how, through the RASP, DoD and its installations across the United States are taking innovative, proactive approaches to species recovery and partnering with multiple federal agencies, state and local governments, and NGOs. I'm excited about these ongoing efforts to conserve and protect T&E and at-risk species while preserving DoD's mission capabilities across the nation. We will publish our next newsletter in Fall 2022.

Please contact NaturalSelections@bah.com if you have any good DoD stories to share or would like to contribute an article.

[1] These six species are the San Clemente Bell's sparrow; the San Clemente Island (SCI) paintbrush, lotus, larkspur, and bush mallow; and the Okaloosa darter.



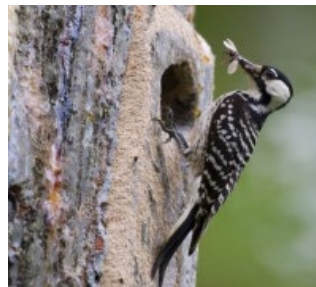
Assistant Secretary for Fish and Wildlife and Parks, Shannon Estenez, announcing the proposed delisting.

a critical role in recovering the species, making the darter an ideal priority species. DoD and USFWS work collaboratively on recovery efforts, including habitat and stream restoration. A U.S. Geological Survey project, funded by DoD, mapped groundwater

recharge areas, providing crucial information needed to maintain natural historical flow regimes in the watersheds. These collaborative efforts resulted in a proposed rule to delist the species, which was published in November 2021.

The Sentinel Landscapes Partnership has the potential to work synergistically with several RASP focal species. In 2022, DoD, USFWS, the U.S. Forest Service, and the Natural Resources Conservation Service renewed our commitment to the Sentinel Landscapes Partnership and signed an updated MOU. By collaborating with additional partners (e.g., states, non-governmental organizations [NGOs]), the Sentinel Landscapes Partnership brings alternative and innovative approaches to conservation. Two listed species, the red-cockaded woodpecker (RCW; *Picoides borealis*) and golden-cheeked warbler (*Setophaga chrysoparia*), demonstrate the benefits of both the RASP and Sentinel Landscapes Partnership.

The RCW is a wide-ranging species that spans 11 states in the southeast and 16 military installations across four Military Services. DoD has been a strong partner in the species' recovery since its listing in 1970. The establishment of the Georgia Sentinel Landscape in 2018 increased the efforts of DoD, USFWS, state and local governments, and NGOs to manage the RCW's longleaf pine habitat, further contributing to recovery. A recent status review of the RCW indicated to USFWS that reclassifying it to threatened may be warranted. USFWS and DoD worked collaboratively to establish current and projected population goals and training restrictions for incorporation into installation Integrated Natural Resources Management Plans (INRMPs). The agencies also documented future management requirements and commitments to support a status change. The RCW is currently proposed for down-listing from endangered to threatened.



Red-cockaded woodpecker

The RASP has similarly advanced the recovery of the golden-cheeked warbler by leveraging ongoing research and recovery work that are critical to informing a status assessment of the species, protecting and managing large blocks of high-quality habitat, and preserving multiple populations of the species across its range. The recovery effort was enhanced



Golden-cheeked warbler

by the establishment of the Camp Bullis Sentinel Landscape located in the Texas Hill Country in February 2022. Through this Sentinel Landscape, nearly 40 partner organizations have committed to protecting the natural resources in the landscape from rapid population growth, development, and climate change.

Since 2018, the RASP has played an important role in helping DoD and USFWS focus and expand their ongoing conservation efforts for listed species on military lands. RASP efforts have contributed to two species down-listings (the Hawaiian goose or nene [*Branta sandvicensis*] and Stephens' kangaroo rat [*Dipodomys stephensi*]) and two species delistings (the lesser long-nosed bat [*Leptonycteris curasoae yerbabuena*] and black-capped vireo [*Vireo atricapilla*]). In addition, USFWS has published proposals to down-list two additional listed species (the RCW and Hawaiian stilt [*Himantopus mexicanus knudseni*]) and delist six other species (the Okaloosa darter and San Clemente Island Bell's sparrow [*Artemisospiza belli clementeae*], paintbrush [*Castilleja grisea*], larkspur [*Delphinium variegatum ssp. kinkiense*], lotus [*Acmispon dendroideus var. traskiae*], and bush mallow [*Malacothamnus clementinus*]) in part due to the Military Services' conservation efforts. The partnership has additional species action plans in development and many ongoing collaborative conservation efforts. DoD support in coordinating, funding, and implementing conservation efforts through collaborative programs such as the RASP and the Sentinel Landscapes Partnership has been, and will continue to be, essential to the conservation success of numerous species. USFWS and DoD partnerships demonstrate how thoughtful, collaborative conservation partnerships can meet multiple, diverse organizational needs while achieving long-lasting conservation goals.

PARTNERED-UP TO RECOVER THE FIRST ENDANGERED FISH EAST OF THE ROCKIES

By Rodney Felix, Eglin Air Force Base, and Bill Tate, U.S. Fish and Wildlife Service

Of the six stream systems in Walton and Okaloosa counties that the Okaloosa darter inhabits in the Florida panhandle, over 90 percent of those stream miles are located entirely on land managed by the U.S. Air Force at Eglin AFB (Eglin). Primary threats to the Okaloosa darter are hydrologic alteration, erosion from unpaved roads or test ranges, impoundments by beaver dams or undersized culverts, and urbanization. To counteract these threats, the Eglin INRMP goals and objectives for the Okaloosa darter have focused on efforts that minimized erosion in darter watersheds and restored hydrology in altered stream reaches by replacing road crossings and removing fish passage barriers.



Okaloosa darter in situ

Eglin's commitment to partnership-driven recovery of T&E species has a long history. For the Okaloosa darter, that began in the 1990s when Eglin's erosion control program began by eliminating approximately 75,000 tons of sediment per year entering darter streams. Together, Eglin, USFWS, and several other federal, state, NGO, and private partners have completed more than 500 erosion control projects, more than

20 fish passage barrier removals, 17 stream restorations, and implementation of an intensive, long-term monitoring program in the years since.

In 1995, another step further strengthened the Okaloosa darter partnership when USFWS and the Air Force established a USFWS sub-office embedded with the Eglin Natural Resources Office. That sub-office established the Eglin Aquatic Monitoring Program, which focused on monitoring and recovery of the then-endangered Okaloosa darter, as well as establishing a baseline aquatic monitoring program for the installation. The successful elimination of threats to the Okaloosa darter and its habitat allowed USFWS to reclassify the species from endangered to threatened in 2011. Today the USFWS-Eglin sub-office extends its Eglin mission support beyond the darter by conducting strategic natural resource conservation programs, which are designed to collect informative data, test and evaluate methods, provide decision support, and enhance the conservation of the natural landscape.

Fast-forward to 2018, when DoD and USFWS initiated the RASP to promote the recovery of listed species on DoD lands and prevent future listings through collaborative conservation and management. The RASP selected two species from Eglin as part of the initial species focus, with the Okaloosa darter being one. In fiscal years (FYs) 2019 and 2020, the Natural Resources Office supported the RASP by initiating innovative projects, like groundwater mapping for Okaloosa darters, that achieve recovery goals. More importantly, with the support of Eglin and DoD, Species Status Assessments (SSAs) were completed for both species, and results point toward recovery for both. Long-term monitoring, targeted research, and continued stream and habitat restoration provided the basis for scenario modelling for the 2019 Okaloosa Darter Species Status Assessment, which suggested the species will maintain a stable conservation status even under the most pessimistic management scenarios. This finding, combined with Eglin’s continued natural resources efforts, largely contributed to USFWS’s formal announcement of its intent to delist the Okaloosa darter in November 2022. This darter is the fifth fish species ever to be delisted through recovery efforts and the only fish east of the Rocky Mountains to receive this distinction. In addition, the other Eglin RASP species, the RCW, is also now proposed for down-listing!



The process of restoring an Okaloosa darter stream on the Eglin Golf Course, clockwise from top left. A pond is drained and excavated so the floodplain can be rebuilt before the stream is created. Okaloosa darters colonized the new habitat within three months.

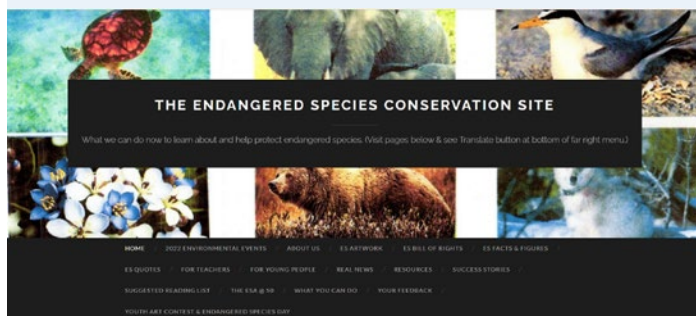
THE ENDANGERED SPECIES CONSERVATION SITE

In 2021, the [Endangered Species Conservation Site](https://www.esconservsite.org) launched to serve as an ESA resource. The goal of the website is to help inform people about the importance of protecting endangered plant and animal species, profile success stories of species recovery, emphasize the critical role of the ESA, and highlight the individual actions we can take collectively as a nation.

The website is full of information and resources that anyone can access. Notable sections include resources for teachers and young people, virtual tours, educational videos, podcasts, and information on what individuals can do to help. These sections include information on federal, state, and local level efforts and organizations, including the DoD Natural Resources Program and National Military Fish and Wildlife Association. Over two dozen tips on “what you can do” urge website visitors to learn more about and help protect endangered species and their habitats.

In addition, the site highlights recovered species success stories, artwork and images, news articles from a variety of media outlets and other organizations, and current facts and figures on endangered species describing the importance of saving species from extinction.

As you can see, the site includes information far beyond just an overview of what the ESA is and which animals are listed. If you want to receive email notifications on new posts, you can sign up for alerts at www.esconservsite.org.



Screenshot of www.esconservsite.org home page

PILOT PROJECTS GETTING OFF THE GROUND IN WASHINGTON AND GEORGIA

By Zachary Radmer, U.S. Fish and Wildlife Service, and Anthony Sowers, Bureau of Land Management (formerly U.S. Fish and Wildlife Service)

Lands managed by DoD contain the highest density of endangered species of any federal land management agency. Despite that, the requirements of the ESA still provide a practical disincentive for the proactive management of rare and listed species at many installations. The Conservation Policy Initiative, a product of the RASP, issued a challenge to natural resources managers at a workshop in early 2020: *How can new regulation approaches incentivize conservation, improve military readiness, and streamline interagency cooperation?*

Working together, USFWS and DoD developed various approaches to achieve these goals. One of the principal ideas of the Conservation Policy Initiative is a “defined conservation commitment” (DCC), which establishes conservation goals



Glacial outwash prairie on Joint Base Lewis-McChord marked with a Siebert Stake. Photo by Zachary Radmer, USFWS

that, when met, would unlock broad training and management flexibility for the participating installations. The other key concept is “strategic habitat conservation,” which uses the conservation commitment of an ecosystem or umbrella species to provide conservation benefits to multiple associated species of concern. DoD and USFWS volunteered Joint Base Lewis-McChord in the State of Washington and various installations statewide in Georgia as pilot projects to test these innovative approaches. In each pilot, the Military Services and USFWS consider the mission needs of the installation now and in the future, and balance those with the capacity and responsibility of the installation to conserve species that are or may be later protected by the ESA.

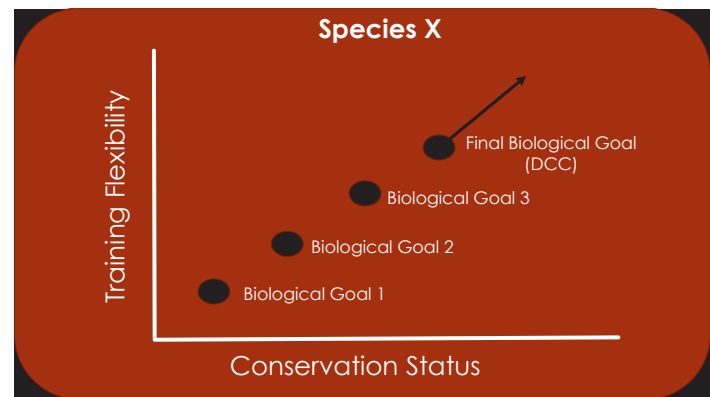
Multiple installations in Georgia have realized tremendous conservation successes for listed and imperiled species, particularly in the longleaf pine ecosystem. For example, Fort Benning and Fort Stewart support RCWs in exceedance of population goals, which factored significantly in the recent proposal to down-list the RCW from endangered to threatened. The gopher tortoise (*Gopherus polyphemus*), a candidate species for listing, is another prime example where success has been realized across multiple installations. Like the RCW, the gopher tortoise functions as an umbrella species whose conservation and management benefit countless co-occurring species in the longleaf pine ecosystem. Under the DCC concept, installations will continue to provide a mutually agreed-upon level of conservation for such species. However, under this new concept, species population growth above and beyond the DCC will not result in additional ESA regulatory burden on the installations in the future because the DCC considered and accounted for future conflicts in accordance with the ESA.



Longleaf pine restoration (left) and habitat on Fort Benning (right). Photo by Fort Benning Natural Resource Management Branch

Joint Base Lewis-McChord is the last stronghold for multiple species associated with post-glacial prairies in western Washington. Less than 10 percent of this imperiled ecosystem remains, and much of that persists on the installation, including a 7,000-acre prairie used for artillery training. Interagency cooperation has led to a set of conservation measures and workarounds that are effective in maintaining and improving that status of Taylor’s checkerspot butterfly (*Euphydryas*

editha taylori), the Mazama pocket gopher subspecies (*Thomomys mazama*), the streaked horned lark (*Eremophila alpestris strigata*), and the Oregon vesper sparrow (*Pooecetes gramineus affinis*), but at a cost to DoD mission flexibility and realistic training. Despite these challenges, the Army and Air Force are working together with USFWS to establish a “stage programmatic” agreement, which pairs interim and, eventually, complete training restriction relief with improvements in the conservation statuses of the covered species. DoD would then know in advance what mission flexibilities it earns in exchange for success in implementing voluntary species conservation on and off the installation. This approach aligns the interests of conservation and military readiness, removing conflict and extending benefits to all stakeholders across the landscape.



Joint Base Lewis-McChord and the U.S. Fish and Wildlife Service seek to explicitly describe the mission benefits that will result from species conservation now and in the future. Graphic by Zachary Radmer, USFWS

2022 NATIONAL PUBLIC LANDS DAY DOD AWARDS ANNOUNCEMENT AND PROCESS



In commemoration of this year’s National Environmental Education Foundation (NEEF) [National Public Lands Day \(NPLD\)](#), DoD, through the DoD Legacy Resource Management Program, will fund NPLD projects that support natural and cultural resources projects on military installations. The [2022 NPLD DoD Awards](#) will provide up to \$20,000 to select installations to implement pollinator protection projects; climate adaptation/resilience habitat restoration projects; or natural and cultural resources management, restoration, or enhancement projects on or around this year’s NPLD on September 24, 2022.

For 2022, DoD is asking applicants to think creatively and strategically about how they can positively impact the environment and help participants to learn about these lands and their natural and cultural resources. Applicants should think of ways that DoD natural and cultural resources managers can lead NPLD events that advance environmental stewardship. **Applications for the 2022 NPLD DoD Awards are due by 11:59 p.m. (EDT) on Monday, August 1, 2022.** Before you apply, please take a moment to review the criteria and application process below. Please note that lands managed by the U.S. Army Corps of Engineers are not eligible for NPLD DoD awards.

I. ELIGIBILITY AND CRITERIA FOR SELECTION

Applicants must be:

- A DoD installation that has some lands open to the public for recreation, including lands managed by the U.S. Army, Air Force, Marine Corps, National Guard, or Navy.
- Registered for National Public Lands Day.

Applicants must propose a project that:

- Demonstrates how it will:
 - Engage a variety of volunteers, either in person or virtually, and create a positive experience for them. (Please see the NEEF website [Resource Page](#) for ideas on how to lead projects that abide by social distancing guidelines.)
 - Improve or enhance broader strategic or programmatic objectives through pollinator protection; climate adaptation/resilience; habitat restoration; natural and cultural resources management, and restoration or enhancement on the DoD installation.
 - Engage installation scientists, and natural and/or cultural resources managers.
 - Involve or benefit the broader community.
 - Promote a stewardship ethic among participants via project-relevant environmental education and communication opportunities.
- Presents an appropriate and detailed budget.
 - For previous award winners, the recipient must have successfully completed past project(s) on time, achieved project goals, and demonstrated responsive and effective communications with NEEF, including submitting a satisfactory Final Report.

Please note that proposed projects can include but are not limited to:

- Pollinator protection and conservation, and/or pollinator garden development.
- Tree and native vegetation planting.
- Invasive plant removal.
- Trash and debris cleanup.
- Wildlife habitat improvement and restoration activities.
- Wetland, streamside, or shoreline restoration and erosion control.
- Trail building and maintenance.
- Restoration of culturally and historically significant areas, buildings, and structures.

II. FUNDING RESTRICTIONS

Award funds may NOT be used for:

- Lobbying, propaganda, or attempting to influence legislation.
- Influencing the outcome of any specific election by any means.
- Covering budget shortfalls, general support, or endowment funds.
- Land acquisition or real estate purchases.
- Giveaways or gift items, such as t-shirts.
- Purchasing of food.*
- Payments for labor or salary costs.
- Scholarships, fellowships, or grants to individuals.

- Any costs not directly related to the funds requested in the proposal.

Purchasing items required to complete work (e.g., small tools, garden gloves) is allowable.

*Federal funds cannot be used to pay for food and beverages unless doing so is reasonable and necessary (i.e., providing water at an outdoor event where there is no other source of water is allowable).

III. TIMELINE

NEEF prefers that projects take place on **NPLD, Saturday, September 24, 2022**. Alternate dates for NPLD events may be allowed for those regions where weather conditions during September are prohibitive, but projects cannot occur earlier than September 10, 2022. However, all projects must be completed by **March 31, 2023, with Final Reports due on or before April 28, 2023**.

Application Due: By 11:59 p.m. (EDT) on Monday, August 1, 2022

Awards Announced: Mid/Late August

NPLD Project: September 24, 2022 (or alternate date)

NPLD Project Completion Deadline: March 31, 2023

Final Reports Due: April 28, 2023

IV. SUBMISSION

NPLD DoD Award applications are accepted only through NEEF's online system. Follow these steps to register and begin your application:

1. [Click here](#) to apply.
2. You will be taken to a login page. If you have not created an account from a previous NEEF award, select "Create New Account." If you have created an account with NEEF, skip to step 4.
3. Follow the instructions to create your account. It will ask you for your contact information as the account holder and the contact information for your organization's representative. Contact information supplied in the "User Information" section should reflect the individual who will be directly handling the application process for your organization. In the "Organization Information" section, we recommend that you include the contact information of the person in charge of your installation site or office. This would be the person who is authorized to sign off on items such as award agreements.
4. Upon creating an account, it will take you to your home screen.
5. To start your application, click "Apply" in the menu on the left. You will be taken to a list of NEEF awards and funding opportunities. Select "2022 National Public Lands Day DoD Awards."
6. Complete the application.
7. You can save the application and return later to finish it.
8. Pay close attention to character limits listed on the NEEF website. These limits include spaces.
9. Once you have completed the application and uploaded all attachments, click "Submit Form" to complete your application. If you do not click "Submit Form," your application is not complete. You will be directed to a confirmation screen upon submitting.

If you have any questions or problems, please consult the [FAQ](#) or don't hesitate to contact the NEEF at grantsadmin@neefusa.org.

NATURAL RESOURCES MANAGER SHOWCASE: CINDY HOPKINS

By Lisa VanAmburg, Naval Facilities Engineering Command Southwest

You may know that Naval Air Weapons Station China Lake (NAWSCL) is the U.S. Navy's largest single landholding with more than 1.1 million acres (4,500 km²) of mostly undeveloped land. What you may not know is that NAWSCL is home to a growing wild horse and burro (WHB) population and that, under the California Desert Protection Act, the Secretary of the Navy is responsible for managing the WHB populations on NAWSCL.



Cindy Hopkins, NAWSCL biologist. Photo by Carrie Clancy

As part of the natural resources staff at NAWSCL, Cindy Hopkins is one of three installation biologists who work in the Environmental Management Division (EMD). Cindy is responsible for coordinating WHB management through a memorandum of agreement between the base commander, Navy Region Southwest, and BLM. Few people know firsthand the effort and dedication that planning and conducting a safe gather or census requires. Both are fantastically complex operations that require coordination with multiple agencies, local law enforcement, and several installation departments. Since 2018, Cindy has organized and successfully conducted a census on the WHB population, two burro gathers, and one emergency horse gather on NAWSCL Ranges—a monumental effort for one person. Cindy's ability to work with and achieve agreement between all partners is critical to the success of the NAWSCL mission.

WHBs in North America are introduced feral animals originating from domestic stock. Feral WHBs do not have natural predators and other population-stabilizing life history systems. As a result, they do not have natural population control mechanisms, and WHB populations experience overpopulation pressures if they are not actively managed. If the WHB populations are left unchecked, they can come into conflict with installation personnel and cause issues with range testing operations



Gathered burros loading onto a trailer. Looking down at trap, trailer, and personnel; located on G-2 Tower Road. Photo by Cindy Hopkins

including vehicular traffic incidents on NAWSCL. Over time, WHB numbers on the NAWSCL ranges exceeded the BLM-set appropriate management level of 168 animals to reach 763 animals. The herd's health deteriorated through overpopulation and a lack of forage, largely due to extreme drought. In October 2021, owing to prolonged drought and recent fires, the situation became dangerous for the herd. An emergency gather of 250 horses from the North Range would be necessary to reduce animal numbers immediately to a sustainable population size based on the available food resources.

Cindy acted quickly to organize the gather with BLM, with additional support and cooperation from Navy staff at every stage. She was able to achieve this due to her development of a strong and trusting relationship with the BLM Ridgecrest field office and with Alex Neiberg, BLM's WHB specialist. Cindy attributes much of the effort's success to Alex's outstanding mentorship and the phenomenal partnership he has with the Navy. Together, they have overcome multiple issues that initially stymied their efforts to reduce the WHB population to a healthy number. Challenges have included cancellation or delay of events after years of planning due to range closures, unexpected conflicts, inclement weather, or helicopter repairs.

Due to the coordination of Cindy and Alex, the gather was a phenomenal success that removed 251 animals from the North Range using helicopter-assisted drive trapping or roping via horseback. The size, scale, and amount of logistics to plan an event like this on NAWSCL cannot be overstated. From the time one enters the security gate at the entrance to NAWSCL, it takes travel for over an hour at highway speeds to reach the trapping location. The physical demands of humanely gathering and transporting 251 rescued animals off the Range are significant. The emergency gather lasted seven long days that required the leading of pre-dawn cowboy caravans across the Navy's largest base, early morning helicopter surveys, and navigation of extreme temperatures and elevations. Working in remote landscapes in close contact with wild horses makes this work hazardous. Despite the chaos, and a giant dust storm with wind gusts approaching 100 miles per hour that caused the flight crew to make an emergency landing, everything ended well, and the mission was a success due to Cindy's dedication and efforts during the gather.



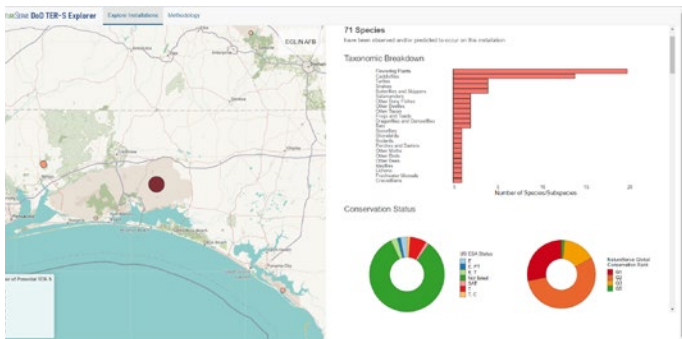
Gathered horses being loaded onto trailer. Looking down at trap, trailer, and personnel; located on road to Little Petroglyph Canyon. Photo by Ericka Buckreis

Cindy's success in managing the complexities involved with organizing multiple stakeholders, Navy Range training requirements, flight time, cowboys, and numerous other challenges highlights her dedication to her work, which substantially contributes to the overall success of the EMD mission at NAWSCL. Cindy is a pleasure to work with, and the Navy proudly recognizes her for her continued commitment to serve the NAWSCL's mission.

TOOLS TO SUPPORT MANAGEMENT OF IMPERILED SPECIES ON DOD LANDS

By Max Tarjan and Gio Rapacciuolo, NatureServe

DoD-managed lands provide critical habitats for hundreds of imperiled species. Of all federal land management agencies, DoD is responsible for managing lands with the highest density of species listed as T&E under the ESA. In addition to listed T&E species, DoD-managed lands support numerous at-risk species that may be under review for ESA listing in the future. If these at-risk species become listed under the ESA, it could impact DoD's ability to test, train, and operate, thus compromising the military mission. To support the conservation of at-risk species and protect the military mission, DoD requires accurate information on the identity, conservation status, and distribution of at-risk species that occur on its installations. With support from the DoD Legacy Resource Management Program, NatureServe is conducting the first standardized assessment of the identity, distribution, conservation status, and climate change vulnerability of the most at-risk species on DoD installations.



The Beta version of NatureServe's DoD TER-S Explorer. NatureServe created a DoD TER-S Explorer that enables DoD staff to interact with the results from the standardized identification of potential TER-S on DoD installations. Species experts at DoD were introduced to this tool at workshops in 2021 and 2022 and are providing feedback on the tool for refinement.

NatureServe used a repeatable assessment framework to identify 1,002 potential DoD mission priority Threatened, Endangered, and At-Risk Species (TER-S) and created the first version of an interactive web-based tool—NatureServe Explorer DoD TER-S—for DoD personnel to explore and visualize the results of this analysis. The tool enables users to zoom in on a DoD installation and get an overview of the identity, taxonomic breakdown, conservation status, and relative stewardship responsibility of all potential TER-S overlapping an installation's boundaries. To assess spatial overlap, the team is using NatureServe's Biodiversity Location Data, citizen science data, and NatureServe's Species Habitat Models, which estimate the likely distribution of habitat for the species based on known occurrences. As part of this effort, new high-resolution species habitat distribution models and associated summary information were developed for seven of these potential TER-S. High-resolution species habitat models of TER-S are likely to improve estimates of the distribution of these species on DoD lands, thus increasing mission flexibility by minimizing conflict with TER-S, improving mitigation outcomes both off site and on installations, and contributing to conservation actions that may preclude ESA listing.

For access to NatureServe Explorer DoD TER-S or questions about this project, please contact Gio Rapacciuolo: gio@natureserve.org.

A BIRD, A CONFLICT, AND A TRANSFORMATIVE WAY OF WORKING TOGETHER

By Catherine Phillips and Leopoldo Miranda-Castro, U.S. Fish and Wildlife Service

They may be small and unassuming, but one little endangered southeastern woodpecker was the impetus for much more than an incredible conservation story. Following a historical reduction in its range due to fire suppression, timber harvesting, and habitat conversion of longleaf pine ecosystems, remaining populations of the RCW largely resided in areas with intact, mature growth longleaf ecosystems—military installations being a major part of that.

In a historic moment in the early 1990s that tested agency relationships, USFWS issued a jeopardy opinion to Fort Bragg that halted its operations. However, with innovation and collaboration in mind, a local partnership was established, resulting in the application of conservation measures that could accommodate both the RCW and military training. The RCW rebounded on Fort Bragg due to these efforts, and the Military Services built on this model to lead the way in conserving the woodpecker and its habitat across its range. Throughout military installations in the RCW's range, DoD adopted the conservation practice of incorporating bird and habitat management into its existing INRMPs that outline how each military installation manages its significant natural resources. Examples of these practices include installing nesting cavities, managing habitat through prescribed fire, translocating birds to establish new locations, and incorporating endangered species education into base operations. Due in very large part to DoD's efforts, USFWS recently proposed to down-list the RCW from an endangered to threatened species. The change in status of a species is a huge accomplishment and wonderful recovery story.



U.S. Air Force personnel banding a red-cockaded woodpecker at Eglin AFB

The threat of a potential species extinction, accompanied by the critical need of the military's ability to operate and exhibit readiness, created an urgent need to align DoD and USFWS missions. Modeling off the RCW success, working relationships

between USFWS and DoD have since been transformed in the Southeast. On some installations, both civilian DoD and USFWS staff sit next to one another, and it's hard to distinguish the difference. Once viewed by some as adversarial, the agencies now stand shoulder to shoulder in efforts to achieve their collective missions of conservation and military readiness. Installation leadership tout their own "conservation legacies" with pride and ownership. USFWS teams hear that DoD has the conservation helm and know the work is in capable and determined hands.

USFWS celebrates the trajectory toward recovery for the RCW and looks forward to what DoD and USFWS can accomplish next. Our shared approach to sustainable land stewardship and continuing the conservation legacy is what mission compatibility really looks like.

HERE TODAY, HERE TOMORROW: FORT HOOD HELPS RECOVER THE BLACK-CAPPED VIREO

By David Cimprich, U.S. Army Garrison Fort Hood



Biologist Michelle Singh removes cowbirds with a hand-held net from a trap in a pasture. Above her head is a slot in the ceiling where birds enter. Photo by Scott Summers, Directorate of Public Works (DPW) Environmental

Gil Eckrich records a burst of photos of a black-capped vireo in the instant before it disappears. Now enjoying photography in retirement, Eckrich spent over 20 years as a biologist at Fort Hood. "Thirty-one years ago, black-capped vireos were scarce and difficult to find on the installation," he says. "These days, the species can be found in practically every training area."

In 1988, one year after USFWS listed the species as endangered, researchers scoured Fort Hood and found fewer than 200 of these migratory songbirds. In contrast, surveys in 2021 found over 8,500 birds. Partly due to the dramatic increase of this population, USFWS de-listed the species in 2018. To increase the vireo's numbers and achieve recovery, it was necessary to control the parasitic brown-headed cowbird (*molothrus ater*) and manage the birds' habitat.

Cowbirds lay their eggs in the nests of other species and rely on them to raise their young. However, when a cowbird chooses the black-capped vireo as a surrogate parent, the vireo nest usually fails. Either the vireo eggs never hatch or nestlings die after the larger cowbird hatches. It became clear in the late 1980s that cowbird removal was vital to boosting vireo nest success, since Fort Hood biologists found cowbird eggs in over 90 percent of vireo nests. Using traps baited with live cowbirds, biologists ultimately reduced vireo nest parasitism to less than 10 percent. Fort Hood shares its cowbird trapping expertise widely through the vireo's range and effectively extends its efforts beyond the installation boundaries by supplying more than 20 other programs with cowbirds to stock their traps.



Biologist David Sperry surveys birds in black-capped vireo habitat at Fort Hood. Photo by David Cimprich, DPW Environmental

As wildlife biologist Scott Rowin at Balcones Canyonlands National Wildlife Refuge (BCNWR) states, "Because of these initial bait-birds, we are able to trap approximately 1,000 cowbirds each year, many of which we later provide to dozens of central Texas landowners so they, too, can trap cowbirds. It all, however, starts with the initial birds we obtained from Fort Hood."

In addition to cowbird removal, habitat management further helped the black-capped vireo recover and succeed. Black-capped vireos nest in habitats with abundant shrubs interspersed with grassy areas. Vireos conceal their nests in the dense foliage at the edges of these shrub patches. In Central Texas, ideal vireo habitat often develops three to five years after a fire or mechanical brush thinning. So, when Fort Hood undergoes prescribed burns, this strategy not only reduces the chances that military training will spark unpredictable, damaging wildfires, but enhances vireo habitat, too. "The grasslands and shrublands that fire promotes provide open space for military maneuver training," says Virginia Sanders, Fort Hood Endangered Species Program Manager.



Male black-capped vireo marked with numbered leg band. Photo by Gil Eckrich, Fort Hood volunteer

Fort Hood biologists conduct prescribed burns in partnership with the BCNWR wildland fire crew. The combined team, which operates during the winter months, treated 18,783 acres over the past year. This cooperative effort benefits both partners. According to Carl Schwoppe, fire management officer at BCNWR, "[My] crew is able to increase their knowledge and experience base assisting Fort Hood with their management needs. This increases the crew's capacity to achieve management objectives at Balcones."

Habitat management and cowbird trapping gave the black-capped vireo a place to nest and the chance to successfully rear their young at Fort Hood. The efforts of Fort Hood and other federal and state partners were key in the vireo's recovery. Although individual vireos may disappear into the shrubs, the continuation of Fort Hood's management practices promises to prevent their permanent disappearance and sustain the population into the future.



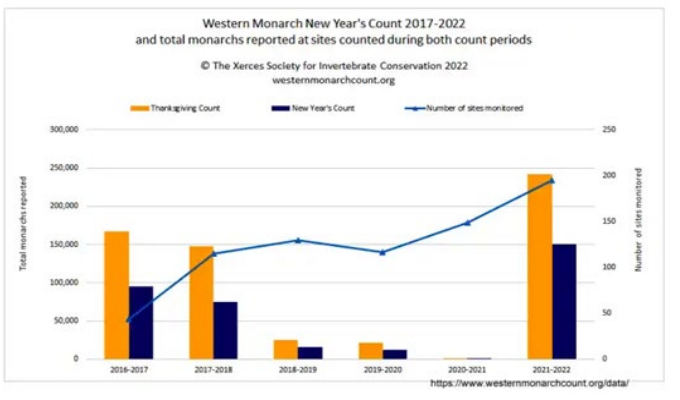
Nest holding three black-capped vireo eggs and a single brown-headed cowbird egg. Photo by Gil Eckrich, Fort Hood volunteer

THE MARVELOUS MONARCH

By Rebecca Meyer, Headquarters, Department of the Air Force

The marvelous monarch butterfly, easily recognized by its large and vibrant orange wings, represents a mystery of the animal kingdom. Monarchs carry out one of the most incredible cross-continental journeys in the animal kingdom, traveling upwards of 3,000 miles from Canada and the northern United States to overwintering sites in coastal California (Western monarchs) and Mexico (Eastern monarchs).

Western monarchs are found in the summer months primarily in Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington. When overwintering, they can be found in 200 to 300 small monarch colonies within five miles of the Pacific Coast, stretching from Ensenada, Baja California, in Mexico to Marin County, California. The 2020 western population count had the monarch on the verge of collapse with only 1,914 butterflies, a 99.9-percent decrease since the 1990s. The Xerces Society, which organizes the annual west coast counts, reported a surprising rebound to almost 250,000 butterflies in 2021. Emma Pelton of the Xerces Society states the butterfly's rebound represented a "rare ray of hope that the population is more resilient than we thought."

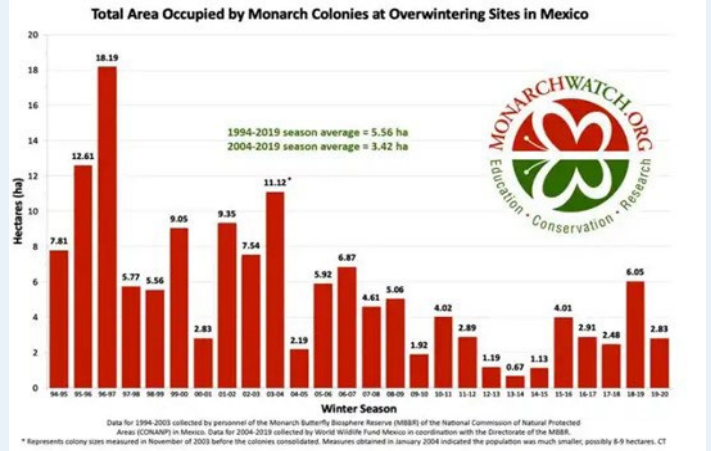


Western Monarch New Year's Count 2017-2022. Graphic by The Xerces Society

Eastern monarchs are the larger monarch population. During summer months, they are found east of the Rocky Mountains throughout much of the central and eastern United States and Canada. They overwinter on 12 mountaintops in Mexico according to census data published by Mexico's Comisión Nacional de Áreas Naturales Protegidas (CONANP). The 2019 eastern population count was approximately 27,000 butterflies, an 85-percent decrease since the 1990s. There is no population data from CONANP for the 2020 and 2021 counts at this time.

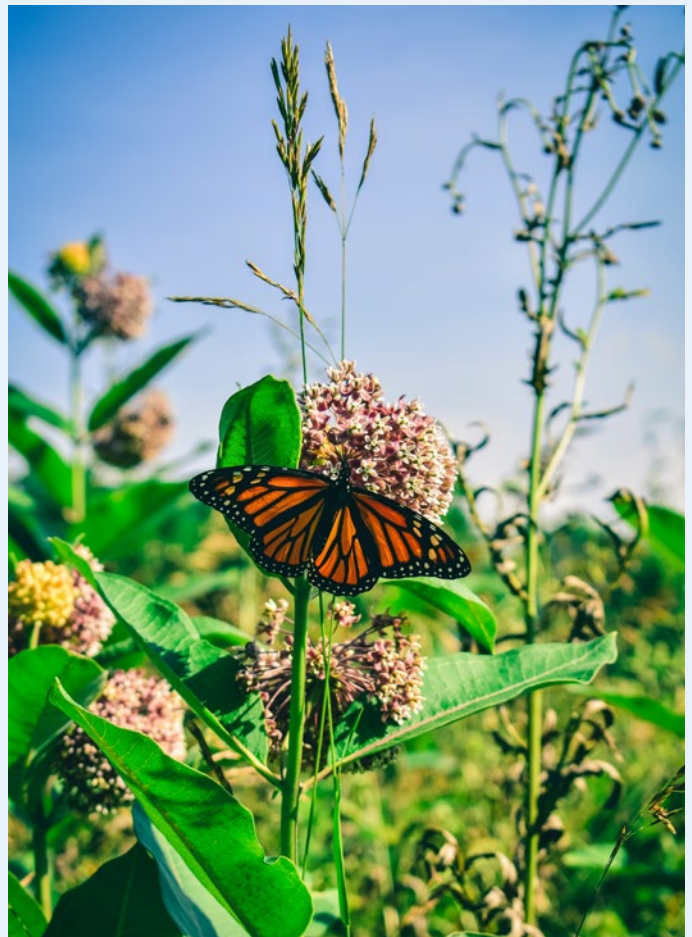
The top threats to this iconic species are loss of habitat, climate change, and pesticide use. A call to action is taking place to encourage individuals and communities to plant native milkweed, avoid using pesticides, become citizen scientists, or volunteer with nonprofits.

Unfortunately, these monarch populations currently lack federal legal protection, which would usher in resources to help recover their populations. USFWS acknowledges this conundrum and the monarch's decline and is exploring enactment of ESA protections for the monarch. If the monarch



Population data for eastern monarch butterflies 1994 to 2020. Graphic by MonarchWatch.org

is listed under the ESA, its wide-ranging presence has the potential to impact DoD's installations and mission. To address this risk, DoD is working with USFWS on developing a SAP to streamline monarch consultation, work to reduce DoD mission impacts, and conserve the monarch and its habitat.



Monarch on milk weed plant.

MISSION SENSITIVE AMPHIBIANS AND REPTILES: PROACTIVE SOLUTIONS TO AVOID TOMORROW'S CHALLENGES

By Robert E. Lovich and Chris Petersen, Department of Defense Partners in Amphibian and Reptile Conservation

We are all intimately aware of the potential challenges that regulatory protections present to the military mission. Federal and state endangered and threatened species are one of these challenges as they occur at most military installations. Compounding this challenge is trying to predict and avoid future species listings. However, with global biodiversity in a state of decline, state and federal agencies are faced with numerous petitions for listing, status reviews, and challenges to ensure that the nation's species receive the legal protections they deserve under respective laws and regulations. For example, in 2012, USFWS was petitioned by the Center for Biological Diversity to consider [53 herpetofauna species](#) for status review for listing under the ESA.



The spotted turtle is one of eleven herpetofaunal DoD Mission Sensitive Species. Photo by Chris Petersen

To assist military installation biologists with identifying which at-risk amphibian and reptile species were petitioned for ESA listing, or were already ESA-listed, DoD PARC developed a report titled [Department of Defense Herpetofauna Conservation Status Summary](#) in 2019. The report lists all the at-risk and ESA listed amphibian and reptile species (57 species) on military sites and specifically identifies the military installations where they are confirmed present or have the potential to be present. It also includes photos of each species.

In 2020, the Office of the Secretary of Defense tasked the DoD PARC network with refining the same *Department of Defense Herpetofauna Conservation Status Summary* to develop a list of priority at-risk species, or Mission Sensitive Species (MSS). MSS are species that have been petitioned for ESA listing or review, are confirmed present on military sites, and would greatly impact military readiness if they became listed as federally endangered or threatened. DoD PARC developed the list of MSS by reviewing the USFWS National Listing Workplan to determine the planned listing decision dates, consulting the DoD PARC Herpetofaunal Database to determine which installations had the petitioned species confirmed or potentially present, and considering the impact to mission-related actions if a species were to become ESA-listed. There are 11 species of amphibians and reptiles on the MSS list. DoD Partners in Flight (DoD PIF) also conducted a similar analysis and developed a list of 15 MSS bird species. Priority consideration for both species groups was given to those species that occur on the greatest number of installations.



Flat-tailed horned lizard found on the Barry M. Goldwater Range West. Photo by Richard Whittle

The 11 species of amphibians and reptiles on the MSS list include:

- Spotted turtle (*Clemmys guttata*)
- Gopher frog (*Lithobates capito*)
- Wood turtle (*Glyptemys insculpta*)
- Northern red-bellied cooter (*Pseudemys rubriventris*)
- Eastern diamond-backed rattlesnake (*Crotalus adamanteus*)
- Western pond turtle (*Actinemys marmorata*)
- Alligator snapping turtle (*Macrochelys temminckii*)
- Gopher tortoise (*Gopherus polyphemus*)
- Florida pinesnake (*Pituophis melanoleucus mugitus*)
- Blanding's turtle (*Emydoidea blandingii*)
- Western spadefoot (*Spea hammondi*)

DoD PARC has recently completed Best Management Practices (BMPs) documents for all 11 of the amphibian and reptile MSS. The BMPs can be downloaded from the [DoD PARC website](#). The documents were intended to serve as informational tools that DoD natural resource managers can use to help them prioritize relevant conservation and management actions on their respective installations. Hopefully, these proactive conservation practices, including those conducted by other partners and stakeholders, will preclude the ESA listing of these species.

Historically, ESA-listed species are prioritized for the planning, programming, and execution of projects and funding support. Funding for projects focused on proactive conservation for at-risk species that are not listed under the ESA is more difficult to secure. Unfortunately, such prioritizations often hamper the ability of the Military Services to focus funding on conservation and management actions for at-risk species to mitigate their decline.

To help alleviate this problem, the Military Services rely on partnerships to share the burden of cost and effort constraints. An excellent example of this is the flat-tailed horned lizard (*Phrynosoma mcallii*) that occurs on Navy and Marine Corps lands in the arid southwest of California and Arizona. Since the early 1990s, state and federal stakeholders in those states, along with those in neighboring Mexico, have pursued a path of proactive and voluntary protection of the species to avoid an ESA listing. Starting with a conservation agreement signed by all stakeholder agencies—and following with a Rangewide Management Strategy (RMS: 1997, updated 2003), which has been actively implemented since its creation—stakeholders have successfully navigated petitions to list the lizard at the



The Arroyo toad is federally listed as endangered and confirmed present on five military sites. Photo by Robert E. Lovich

California state and federal ESA levels multiple times with no listing decisions resulting. The existence of the RMS allowed participating agencies to conduct the proactive, beneficial conservation and management actions.

Unfortunately, many other species of amphibians and reptiles have been listed within the last several decades without partnership agreements, requiring DoD and the Military Services to respond in a reactive fashion. The desert tortoise, Arroyo toad (*Bufo californicus*), Louisiana pinesnake (*Pituophis ruthveni*), and others were listed under the ESA with less engagement to preclude their inevitable listing on a scale similar to the flat-tailed horned lizard. The island night lizard (*Xantusia riversiana*) can be included on that list, but fortunately it was delisted from the ESA in 2015 after many costly years of conservation and management to mitigate its decline. During a listing, effort and funding that could have been directed to on-the-ground projects were instead directed to compliance actions, or “paper chases” and permitting so that the training and testing mission could continue.

In summary, we have now identified species that need focused attention and actions to mitigate further declines to support the freedoms we currently have for the military’s training and testing mission. These tools will help the Military Services prioritize these species at a time of global biodiversity decline. It will take all of us, including our partners and stakeholders outside our installations, to preserve these species and avoid further mission restrictions. To aid natural resources personnel in addressing the threats that tomorrow’s listed species pose to DoD’s vital mission, DoD PARC has assembled a few questions to consider. We stand ready to help if you have more specific questions or concerns, or otherwise need the support of DoD PARC.

What questions should we be asking ourselves?

- Does your installation have MSS?
- Does your INRMP provide a conservation benefit to MSS confirmed present on your installation?
- Are you doing anything to mitigate potential declines in populations of those species?
- Does your leadership need to be informed as to why such steps are necessary?
- Have you spoken to your operators about the threat to ranges, training, and testing being limited in use because of future listings?
- Have you developed open and recurring conversations with other stakeholders for respective species with discrete actions identified or pursued jointly?

Have further questions? Feel free to reach out to either or both of us. We are happy to assist.

Robert E. Lovich: robert.e.lovich.civ@us.navy.mil

Chris Petersen: christopher.e.petersen4.civ@us.navy.mil

SPECIES RECOVERY AT SAN CLEMENTE ISLAND

Adapted from the Department of the Navy's *Conservation Without Conflict*

San Clemente Island (SCI) is the southernmost of the Channel Islands off the coast of California, entirely owned and managed by the U.S. Department of the Navy (Navy). On SCI alone there are 17 federally protected plant species found nowhere else in the world and 24 additional rare endemic plants found only on the Channel Islands. Species were listed due to habitat loss and unmanaged threats resulting from the impacts and downstream effects of ranching prior to Navy ownership in the mid-1930s. The Navy has since then successfully conducted many long-term monitoring and management projects in partnership with USFWS and NGOs. These collaborative efforts have resulted in the biological recovery of multiple species, reduction of threats to listed and endemic species, ecosystem recovery, and support for the Navy’s mission, obligation under the ESA, and commitment to stewardship. SCI is one of the few places where ecosystems are actively recovering and plants assumed to be extirpated are returning without re-introduction, all while Navy training is expanding.

As the only training venue within the continental United States (CONUS) where ship-to-shore, combined arms live-fire and maneuver training can occur, SCI is a vital DoD asset. SCI supports multiple training activities from every Navy Primary Mission Area and provides critical training resources for Naval Special Warfare (NSW) forces, Carrier Strike Group, Amphibious Ready Group, and Marine Expeditionary Unit certification exercises. To support this critical mission and to meet federal obligations for listed species recovery, the building blocks of the successful SCI Natural Resources Management Program have included:

- Collaborative ecosystem management including removal of residual ranching threats (feral herbivores including sheep, cattle, pigs, and, especially, goats)
- Habitat enhancement and restoration
- Management of non-native and invasive species
- Effective fire management and erosion control
- Species-specific monitoring and management

Decades of successful ecosystem management have resulted in habitat recovery across much of SCI with a commensurate population increase of listed and endemic species. Decades of non-native and invasive species eradication and control projects have reduced threats, allowing stable and resilient populations of listed species to thrive. Long-term adaptive monitoring projects have documented the significant increases in listed species populations, providing data for SSAs and informing future management.

Targeted Species for Recovery at SCI:

- San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*)
- San Clemente Bell’s sparrow (*Artemisiospiza belli clementeae*)
- San Clemente Island fox (*Urocyon littoralis clementae*)
- Scripps’s murrelet (*Synthliboramphus scrippsi*)
- Guadalupe murrelet (*Synthliboramphus hypoleucus*)
- Ashy storm-petrel (*Oceanodroma homochroa*)
- Leach’s storm-petrel (*Oceanodroma leucorhoa*)
- Island night lizard (*Xantusia riversiana*)

- SCI bush mallow (*Malacothamnus clementinus*)
- SCI paintbrush (*Castilleja grisea*)
- SCI larkspur (*Delphinium variegatum kinkiense*)
- SCI lotus (*Acmispon dentroideus var. traskiae*)
- SCI woodland star (*Lithophragma maximum*)
- Santa Cruz Island rock-cress (*Sibara filifolia*)
- Brown pelican (*Pelecanus occidentalis*)
- Western snowy plover (*Charadrius alexandrinus nivosus*)

Collaborative actions include long-term coordination between the Navy, regulatory partners and NGOs. These entities worked together to develop and execute monitoring and management strategies and complete research in support of ecosystem management and recovery. Each of the following actions were collaborative and many benefit multiple species and their habitats:

- Botanical research, monitoring, restoration, and enhancement
- San Clemente Bell's sparrow monitoring
- San Clemente loggerhead shrike captive breeding, release, monitoring and research
- Non-native predator research and control
- Invasive species (plant) control
- Argentine ant (*Linepithema humile*) eradication efforts
- Seabird monitoring, management and enhancement
- Pollinator research
- Endemic surveys and management
- Erosion control
- Fire monitoring, research and management
- Weather and climate data research

The program's success was framed by overcoming or managing the following challenges:

- Habitat loss from historic feral herbivores
- Habitat restoration
- Invasive species management
- Fire management
- Topography (steep terrain)
- Complex logistics

Habitat and species recovery was facilitated with:

- Removal of goats (1972-1992)
- Native species predator control programs (feral cats, rats, and Argentine ants)
- Species recovery supported by captive breeding and release programs (San Clemente loggerhead shrike).

These efforts resulted in the biological recovery of multiple species, reduction of threats to listed and endemic species, ecosystem recovery, and support for the Navy's mission at SCI. The loggerhead shrike breeding and release program prevented the species' extinction and endemic species.

Additional Species Recovery Successes at SCI

- Biological recovery of six species with a delisting and another five proposed species to be delisted.
- The persistence and increase in range and numbers of endemic faunal species, such as land snails.
- The return of avian nesting species formally extirpated, most notably the peregrine falcon (*Falco peregrinus*) and bald eagle (*Haliaeetus leucocephalus*), which rely on a balanced ecosystem to persist.

- Extensive use of SCI as an avian migratory and wintering ground even as other areas have documented decreased avian presence, particularly for the burrowing owl (*Athene cunicularia*), a DoD MSS.

These collaborative successes demonstrate the importance of long-term ecosystem management, adaptive monitoring, investment in best-available science, and the use of data to achieve success. In this win-win scenario, the island night lizard has been delisted, previously threatened birds are thriving, plant populations have biologically recovered, native diversity and abundance are on the rise, and the Navy can continue its military mission with reduced constraints.

Without these important partnerships, species recovery would take longer and the Navy's military readiness would be impacted. SCI is a model for installations looking for a way to increase biodiversity and reduce species listed under the ESA while increasing military testing and training activities.

FREE POLLINATOR SEEDS TO HELP MONARCH BUTTERFLIES

To help sustain monarch butterflies, the Live Monarch Educational Foundation is giving away free milkweed seeds to anyone who sends one self-addressed, stamped envelope to the organization. In return, each sender will receive 15 or more milkweed seeds that are native to the sender's region. If you would like more seeds, you can make a donation to the Live Monarch Educational Foundation, and they will send 40 or more seeds for every dollar you donate.

The monarch butterfly's favorite plant is the milkweed. Monarchs drink the nectar, lay their eggs on the leaves, and use the plant as a place to create their chrysalis. As a result, milkweed is an essential part of the monarch lifecycle. The monarch butterfly population has decreased significantly (over 85 percent) since the mid-1990s, from a population with millions of individuals to a population with only thousands of butterflies. In 2019 and 2020, the western monarch butterfly population numbered only 2,000 individuals. In 2021, the population jumped to 250,000 monarchs. Planting more milkweed can help the monarch recover across its range.

If you would like more information, please visit the [Live Monarch Educational Foundation website](#). If you would like to participate in the free seed program, please send a self-addressed, stamped envelope to the address below.

Live Monarch—2022 Seed Campaign
PO Box 1339
Blairsville, Georgia 30514



Fluffy ball of milkweed seeds

WHEN TORTOISES FLY

By Linda Mitrovich and Dan Mitrovich, Preservation Ranch²

In April 2017, MCAGCC planned to expand its training area and fulfill its military mission to provide high-quality, realistic, live-fire and maneuver training environments for its operating forces. To accomplish this mission, MCAGCC launched a massive translocation project for the desert tortoise. Our firm, Preservation Ranch, had the privilege of playing a critical role in this endeavor.



Preservation Ranch team at April 2017 translocation site tour. Pictured left to right: Katherine Francis, Priscilla Fuentes, Cecilia Milner, Heidi Brannon, and Linda Mitrovich. Photo by Dan Mitrovich, Preservation Ranch

The translocation effort for the desert tortoise was a monumental undertaking that took nine years to prepare prior to execution. Like many places, the Mojave Desert is not immune to land use disputes. MCAGCC's expansion and translocation project were no exception. One issue that stood in the way of the translocation effort was the fact that the federal lands found suitable for the tortoises would result in their eventual dispersal to a federal grazing allotment.

To safely and securely translocate the tortoises, BLM had to obtain approval from a rancher. Without this approval, MCAGCC could not enact its translocation plan. Fortunately, the parties came to a mutually beneficial agreement with Preservation Ranch, satisfying both parties' needs while also benefiting the tortoises. Translocation sites were carefully selected to be as similar as possible to each tortoise's original habitat. On the day of translocation, staff used a helicopter to fly the tortoises to their new homes to reduce their stress and translocated them in groups so they would have familiar neighbors in their new homes.



Translocated tortoises being flown to their new homes in April 2017. Photo by Dan Mitrovich, Preservation Ranch

"Five years later, the Combat Center's translocation of more than 1,000 adult desert tortoises has succeeded, with annual survival exceeding 94 percent, matching rates of healthy populations during years of high rainfall and food availability," says Brian T. Henen, PhD, Supervisory Environmental Protection Specialist, Marine Air Ground Task Force Training Command, Installation Support Directorate, Environmental Affairs.

The translocation effort didn't end with moving the tortoises; it also includes 30 years of monitoring and studies to determine how well they are faring in their new home range. The benefits to the species from this endeavor are wide-ranging and will extend beyond the actual translocation itself. Information gathered through long-term monitoring and studies will enhance future translocation projects and inform ways to augment populations in critical areas, both on MCAGCC and throughout the tortoise's range.

Today, the RASP initiative is shifting from on-base project mitigation to the implementation of off-base recovery actions to stabilize and recover species' populations. Preservation Ranch is working to complete a RASP demonstration project through the Readiness and Environmental Protection Integration (REPI) Program Challenge in partnership with MCAGCC, Fort Irwin National Training Center, and NFWF. Through this demonstration project, Preservation Ranch will work with MCAGCC to restore 1,816 acres located within a desert tortoise focal area. This project seeks to establish a fortified, continuous tortoise habitat unobstructed by restricted routes that can potentially degrade tortoise habitat and contribute to tortoise mortality.



Brian Henen examines a tortoise encountered in the translocation area on a March 24, 2022, site tour with USFWS and MCAGCC. Photo by Heidi Brannon, Preservation Ranch

Other key aspects of the RASP efforts are ensuring that project mitigation will occur where it provides the greatest benefit to the desert tortoise and that federal lands with endangered species are perpetually managed and monitored. We view the RASP as the future of conservation and tortoise recovery, and the MCAGCC role demonstrates its commitment to sustaining an endangered species population while fulfilling its military mission for its operating forces.



Biologist, Alice Karl with desert tortoise during health assessment. Photo by Dan Mitrovich, Preservation Ranch

[2] Preservation Ranch is a partnering company dedicated to creating conservation programs that are economically viable, maintain multiple uses and working lands, and support the local economy.



Screen shot of a map of the joint venture region from <https://www.c3jv.org/>.

snowy plover, California least tern (*Sterna antillarum browni*), and Least Bell's vireo (*Vireo bellii pusillus*). With six key DoD installations within the C3JV geography, including Fort Hunter Liggett and Vandenberg Space Force Base, strengthened coordination of conservation efforts will not only support increased operational flexibility of integral missions within installation boundaries, but extend these benefits beyond the installation boundaries and across the Central California coast communities.

6. Legacy Program #DoD PARC-22: Recommended Best Management Practices (BMPs) for the Blanding's Turtle (*Emydoidea blandingii*) on DoD Installations

POC: [Chris Petersen](#) and [Robert E. Lovich](#), DoD PARC

The Blanding's turtle is a species that USFWS petitioned to list under the ESA in 2012. In 2015, USFWS conducted a status review ([90-Day Substantial Petition Findings](#)), which found that the ESA listing may be warranted.

The Blanding's turtle is currently considered a species at risk under the ESA. Due to this and its occurrence on 10 DoD installations, the Blanding's turtle is one of DoD's MSS. As such, DoD PARC developed Blanding's turtle BMPs for DoD natural resource managers to aid in determining which planning, prioritizing, and implementing conservation and management actions provide conservation benefits. These BMPs also offer compliance approaches for regulatory processes, such as the Sikes Act and the National Environmental Policy Act (NEPA).

7. Legacy Program #DoD PARC-22: Recommended BMPs for the Gopher Tortoise (*Gopherus Polyphemus*) on DoD Installations

POC: [Chris Petersen](#) and [Robert E. Lovich](#), DoD PARC

Gopher tortoise populations west of the Mobile and Tombigbee rivers (Louisiana, Mississippi, west Alabama) are federally listed as Threatened under the ESA. Elsewhere—as of 2021—the tortoise is considered an at-risk species that is a candidate for listing by USFWS. The Gopher tortoise is another DoD MSS for which DoD PARC developed BMPs. Implementation of these BMPs for Gopher tortoises should support military readiness activities, be documented in installation INRMPs, and should align with existing efforts among DoD, federal/state agencies, and NGOs to prevent this species' decline and preclude further ESA listing.

8. Legacy Program #DoD PARC-22: Recommended BMPs for the Florida Pinesnake (*Pituophis melanoleucus mugitus*) on DoD Installations

POC: [Chris Petersen](#) and [Robert E. Lovich](#), DoD PARC

The Florida pinesnake, one of three subspecies of *P. melanoleucus*, is considered an at-risk species that has been petitioned for listing and is currently "Under Review" by USFWS. DoD, through its PARC network and USFWS, developed these BMPs for the Florida pinesnake, a DoD MSS. Implementation of these pinesnake BMPs should support military readiness activities, be documented in installation INRMPs, and should align with existing efforts among DoD, federal/state agencies, and NGOs to prevent this species' decline and preclude further ESA listing.

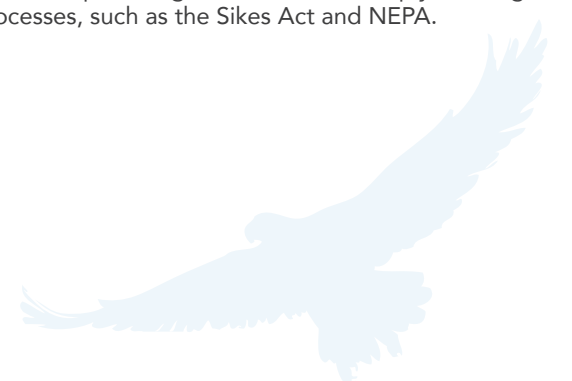


Florida pinesnake. NatureServe Global Status: Vulnerable Subspecies (T3). Photo by Kevin Engle

9. Legacy Program #DoD PARC-22: Recommended BMPs for the Western Spadefoot (*Spea hammondi*) on DoD Installations

POC: [Chris Petersen](#) and [Robert E. Lovich](#), DoD PARC

The western spadefoot, a DoD MSS, is considered an at-risk species that has been petitioned for listing under the ESA and is currently being evaluated for listing by USFWS. The BMPs are intended to serve as guidelines that DoD natural resource managers can use to help plan, prioritize, and implement conservation and management actions that provide a conservation benefit to the western spadefoot, while also providing information to comply with regulatory processes, such as the Sikes Act and NEPA.



UPCOMING EVENTS, CONFERENCES, WORKSHOPS, AND TRAININGS

Western Association of Fish & Wildlife Agencies Summer Meeting

July 10-15, 2022

Oklahoma City, Oklahoma

The Western Association represents 19 U.S. states, three Canadian provinces, and one Canadian Territory. Its summer meeting will feature speakers and workshops that promote sound natural resources management and partnerships at all levels to conserve wildlife for the use and benefit of all citizens.

Joint Meeting of Ichthyologists and Herpetologists

July 27-31, 2022

Spokane, Washington

The Joint Meeting of Ichthyologists and Herpetologists is an annual meeting of three scientific societies—the American Society of Ichthyologists and Herpetologists; the Herpetologists' League; and the Society for the Study of Amphibians and Reptiles—to share current research and network with professional peers.

First Global Amphibian & Reptile Disease (GARD) Conference

August 4-10, 2022

Knoxville, Tennessee

The goal of the GARD 2022 conference is to bring together scientists from across the globe to discuss various amphibian and reptile diseases, organize facilitated discussions on the similarities and differences among host-pathogen systems, and identify disease management strategies that can be used to ensure the conservation of herpetofauna species for future generations. In person and virtual attendance.

Land Trust Alliance Rally 2022

September 15-17, 2022

New Orleans, Louisiana

The Land Trust Alliance Rally gathers approximately 2,000 inspired and passionate land conservation practitioners dedicated to conserving cherished places in local communities from the United States, Canada, South America, and beyond. In 2022, the Land Trust Alliance is proud to host its 35th year of Rally: The National Land Conservation Conference. Serving as the premier training and networking conference, Rally offers educational sessions focused on land conservation topics, networking events, exhibits, plenary sessions, and an awards presentation celebrating conservation leadership. Register online through the Land Trust Alliance's website.

2022 Association of Fish & Wildlife Agencies (AFWA) Annual Meeting

September 18-21, 2022

Fort Worth, Texas

The 112th AFWA annual meeting will bring together more than 700 leaders from regional fish and wildlife agencies and conservation groups nationwide to discuss conservation policy, management issues, and accomplishments. Attendees include key decision makers in the field of fish and wildlife, including directors, assistant directors, program

managers, and others involved in fisheries, wildlife habitat, law enforcement, legal affairs, industry, and public affairs (information and education) from all 50 states, U.S territories, Canada, and Mexico.

National Public Lands Day

September 24, 2022

Nationwide

NPLD, hosted by the NEEF, is the nation's largest single-day volunteer effort for public lands. In 2019, volunteers celebrated at more than 2,500 public land sites, including parks, refuges, local waterways, recreation areas, trails, community gardens, historical sites, and DoD installations. DoD joined the NPLD partnership in 1999 and has awarded approximately \$3 million through the DoD Legacy Program to fund over 575 NPLD projects that have directly benefitted military lands across the United States. Check out these exciting opportunities, register an event, or volunteer at an existing event on the NPLD website. Volunteers' work will help ensure our public lands continue to be beautiful places for all to enjoy.

World Animal Day

October 4, 2022

Global

World Animal Day promotes the many ways we interact with animals to support wildlife conservation and animal welfare. Activities range from awareness events at zoos and aquariums to adoption and vaccination drives. Join one of the estimated 1,000 events in 100 countries that occur annually.

National Wildlife Refuge (NWR) Week

October 9-15, 2022

Nationwide

Wildlife refuges provide excellent opportunities to hunt, fish, and hike. These special places not only feature native plants and wildlife habitat, but also provide important ecosystem functions by filtering pollution from the air and water. Come out to visit one of the nation's 567 refuges to celebrate NWR Week.

14th Biennial Longleaf Conference – Longleaf: The Resilient Landscape

October 25-28, 2022

Wilmington, North Carolina

The Biennial Longleaf Conference is a regional event focused on the restoration and conservation of the longleaf ecosystem that once dominated the landscape in the southeastern United States. The conference provides the opportunity for people from all over the Southeast to share, learn about, and celebrate longleaf ecosystems. This conference is open to individuals, private landowners, land managers, wildlife biologists, conservation groups, consultants, university researchers, forestry professionals, and agency and outreach personnel who share an interest in restoring the longleaf ecosystem.

LINKS OF INTEREST

DoD Natural Resources Program

DoD's Natural Resources Program provides policy, guidance, and oversight to manage natural resources on approximately 25 million acres of military land, air, and water resources. Visit the Natural Resources Program website for more information on DoD's natural resources initiatives, policy updates, presentations, and links to other conservation and natural resources sites.

DoD Legacy Resource Management Program

Congress established the DoD Legacy Resource Management Program (Legacy Program) in 1990 and modified it under the FY 1997 National Defense Authorization Act. The Legacy Program funds natural and cultural resources projects that support military readiness and enhance conservation objectives. Projects eligible for Legacy Program funding must have regional or DoD-wide significance and involve more than one Military Service; be necessary to meet legal requirements or to support military operations; be more effectively managed at the DoD level; and not be an assigned responsibility of a Military Service.

DoD Environment, Safety and Occupational Health Network and Information Exchange (DENIX)

The DENIX Natural Resources website is another resource that provides access to natural resources information. Specifically, the website includes DoD Legacy Resource Management Program fact sheets and reports, as well as other natural resources materials.

Armed Forces Pest Management Board (AFPMB)

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

Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP)

SERDP and ESTCP are independent DoD research programs that use the latest science and technology to develop innovative solutions to DoD's environmental challenges. They promote partnerships and collaboration among academia, industry, the Military Services, and other federal agencies that support military readiness, compliance with legislation and policy, and natural and cultural resources management.

Readiness and Environmental Protection Integration (REPI)

Under REPI, DoD partners with conservation organizations and state and local governments to preserve land around military installations to combat encroachment. REPI promotes innovative land conservation, which preserves the military's ability to train and test on its lands now and into the future.

Cooperative Ecosystem Studies Units (CESU) Network

DoD participates in the CESU Network, which is a national consortium of federal agencies, tribes, academia, state and local governments, and non-governmental organizations working together to provide research, technical assistance, and training to federal agencies and their partners. The CESU Network also provides managers with the adaptive management approaches necessary to preserve installation natural and cultural resources.

DoD Partners in Flight (PIF)

DoD PIF consists of natural resources personnel from military installations across the United States and works collaboratively with partners throughout the Americas to conserve migratory and resident birds and their habitats. In addition, DoD PIF supports and enhances the military mission through proactive, habitat-based management strategies that help protect birds on DoD lands and maintain healthy landscapes and training lands. Visit the DoD PIF website for fact sheets, reports, and other materials with information about DoD's migratory bird conservation efforts.

DoD Partners in Amphibian and Reptile Conservation (PARC)

DoD PARC is a partnership dedicated to the conservation and management of herpetofauna (reptiles and amphibians) and their habitats on military lands. DoD PARC membership includes natural resource specialists and wildlife biologists from the Military Services, and individuals from state and federal agencies, museums, universities, and environmental consultants. Visit the DoD PARC website for information about herpetofauna management projects on DoD lands.

DoD Pollinator Initiatives

Visit this website for an overview of pollinators and why they are important to DoD. The website also contains information on how people can help protect pollinators and their habitat, including fact sheets, technical reports, and how-to guides.

DoD Invasive Species Outreach Toolkit

This toolkit has materials to help DoD natural resources managers communicate with agencies, organizations, and the public about invasive species issues on DoD lands. Specifically, the tool kit includes modifiable outreach materials, such as posters, brochures, reference cards, and a PowerPoint presentation.

Conserving Biodiversity on Military Lands: A Guide for Natural Resource Managers

The DoD Biodiversity Handbook contains a thorough introduction to biodiversity and how it is essential to support the military mission. It also details the scientific, legal, policy, and natural resources management contexts for biodiversity conservation on DoD lands, and includes 10 case studies with practical advice from DoD natural resources managers.

DoD PARC Photo Library, DoD PIF Photo Library, and DoD Natural Resources Photo Library

Visit these three websites to share pictures, news, information, and ideas with the DoD Natural Resources, DoD PARC, and DoD PIF communities. Please review the [photo policy](#) and [photo submission instructions](#) to contribute your images. In addition, account users can download photographs for reports, PowerPoint presentations, and educational materials.

DoD Chesapeake Bay Program (CBP)

DoD was one of the first federal departments to be formally involved in the Chesapeake Bay Watershed restoration effort. Military installations in Maryland, Pennsylvania, Virginia, New York, West Virginia, and the District of Columbia play an important role in defending and preserving the Bay. DoD-funded efforts advance the goals and outcomes of the Bay and further the ability for DoD to test, train, and operate in the watershed.



DOD NATURAL RESOURCES PROGRAM

Enabling the Mission, Defending the Resources

www.denix.osd.mil/nr

<https://twitter.com/DoDNatRes>

Program Director, DoD Natural Resources

Ryan Orndorff: ryan.b.orndorff.civ@mail.mil

Senior Natural Resources Program/DoD Legacy Program Manager

Liz Galli-Noble: elizabeth.j.galli-noble.civ@mail.mil

DoD Natural Resources Program Support

DoDNatRes@bah.com

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