



Legacy Program Update

FY 2011 Full Proposals: The Legacy staff met with the Environmental Director in December to review full proposals recommended by the Military Components. Final project approvals will be announced at www.dodlegacy.org in early 2011.

Legacy Project Highlight of the Month

Legacy Project 08-401: Establishing American chestnut test orchards on two TNARNG installations: contributing to the efforts to restore an ecological and cultural giant to the forest ecosystems of the eastern United States

American chestnut (*Castanea dentata*) was once one of the dominant trees in the eastern forests of the United States. In addition to providing an unparalleled food source for wildlife and holding an irreplaceable position in forest ecosystems, American chestnut seeds and lumber played a significant role in many rural Appalachian economies. Its fast growing and rot resistant wood made it the primary hardwood timber species in the 19th and early 20th centuries.

The first occurrence of the Asian chestnut blight (*Cryphonectria parasitica*) in the United States was documented in 1904 in New York City. By 1950, an estimated 9 million acres of the American chestnut in the eastern forest had all but vanished as a result of blight infection.

Since 1983, the American Chestnut Foundation (TACF) has led and managed an intensive



Male American chestnut flowers. Photo by TACF.

[See American Chestnut, page 3](#)



In The News

Restoration of the Longleaf Pine – Conservation, Working Lands, and National Defense

By Roel Lopez¹, John Dondero², and Aaron Valenta³
¹ Texas A&M University
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Longleaf pine forests once ranged from the Atlantic Coastal Plain of southeastern Virginia to the West Gulf Coastal Plain of Texas, comprising more than 90 million acres of the North American landscape. These forests represent an extraordinary diversity of cultural, ecological, and social-economic values, making them one of the great coniferous forests of the world. Often referred to as the tree that built America, today longleaf pine forests occupy a small portion of their former range – approximately 3.4 million acres. Remaining forests provide a suite of values including support for many threatened and endangered species.

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Managing Our Forests for Mission and Sustainability

DoD manages and protects its biological resources foremost to accomplish its defense mission. Without protecting the lands, waters, and airspace needed to test equipment and train personnel, DoD would not be able to properly prepare our troops to respond to environmental situations around the world. To adequately train our soldiers, sailors, marines, and airmen, DoD needs a range of realistic habitats including forest ecosystems.

The majority of DoD's forested lands are in the southeast, including 730,000 acres of longleaf pine. These lands are integral components of DoD's testing and training landscape.

This issue describes some of the ways in which DoD is using partnerships, research, and ecosystem restoration to increase mission flexibility and maintain these lands for long-term use. Yet, although we continue to achieve significant successes, pressures on our lands will continue.

- Climate change may alter the composition and distribution of our forested lands. New pests and diseases also are likely to emerge.
- Additional species will have an increased likelihood of being listed or candidates for listing under the Endangered Species Act. The spread of diseases such as white-nose syndrome will exacerbate this situation.
- Prescribed burns may become more difficult to schedule and manage; wildland fires may become more frequent and intense.
- Renewable energy and carbon sequestration proposals may impact our operations.

These and other potential impacts emphasize the need for continued flexibility by both resource and mission managers. We must:

- Develop and implement enhanced techniques to manipulate forest plants for mission use. These should embrace the latest ecological forestry practices.
- Sustain existing partnerships and promote new ones, emphasizing efforts with cost-saving synergies or other mutual benefits.
- Identify and assess the most likely and most significant impacts of climate change.
- Refocus existing resources, as appropriate, to the most pressing priorities.

One small way in which OSD can help is to refocus some of the annual DoD Forestry Reserve Account proceeds to address broad-scale forest management issues. I ask you to consider how we can address some of these larger regional and DoD-wide forestry-related challenges. We'll issue a formal call for proposals in January.

All the very best to our readers for a relaxing holiday season and a joyous new year.



American Chestnut, continued from page 1

breeding program aimed at instilling blight resistance into American chestnut trees. One of the most essential resources needed for this breeding program is land for the seed orchards where the hybrid chestnuts can be grown. The Tennessee Army National Guard (TNARNG) has small areas on its training sites that are not actively used for military training, and so a cooperative agreement was developed with the TACF to establish seed orchards at two of its facilities: Volunteer Training Sites (VTS) Milan and Catoosa. The overall objective of this project is to contribute to the efforts to develop a blight-resistant American chestnut that may be reintroduced into its former habitat across the eastern United States.



Volunteers planting American chestnuts at VTS-Milan, April 18, 2009

Several different approaches are undertaken in the effort to restore American chestnut. One of these methods is known as the backcross method, which seeks to instill blight resistance into American chestnuts by hybridizing 100% American chestnuts with blight resistant Chinese chestnut and then conducting a series of backcrosses with 100% American chestnut trees. Within each generation, only trees exhibiting both blight resistance and phenotypically American chestnut traits are used to produce seed for the following generation.

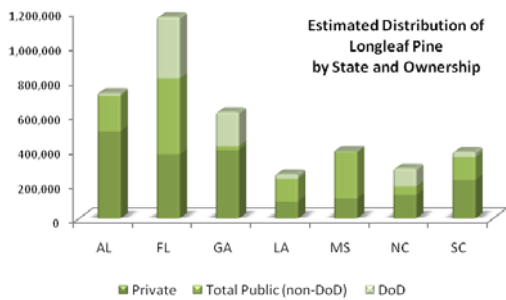
Seeds produced from the TNARNG orchards will be used for some of the first large-scale reforestation trials and will be, on average, 93.75% to 96.875% genetically American chestnut.

The orchards on the VTS-Catoosa and VTS-Milan are a small part of a large project whose long-term goal is to reintroduce to its native range an American chestnut with the ability to resist the blight and thrive again. Success in this project will enhance ecosystem quality and biodiversity on TNARNG lands and other forested properties throughout the range of this species and enrich the training environment for military generations to come.

Since being awarded funding from the [Department of Defense Legacy Program](#) in FY 2008, two backcross orchards have been prepared and planted on TNARNG properties. Preparation work included clearing trees, controlled burning of grasslands, and surrounding each orchard with an eight-foot tall, deer-resistant fence. In April 2009, 760 chestnut seeds and seedlings were planted at TNARNG facilities. These young trees are in their first season of growth and are currently being monitored for survival, vigor, and general health. Annual monitoring and routine maintenance will continue for the foreseeable future.



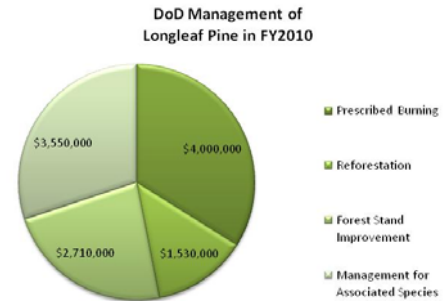
Longleaf, continued from page 1



Why Longleaf?

Military testing and training in the southeastern United States is critically linked to the longleaf pine ecosystem. Longleaf restoration enhances military readiness by sustaining off-base compatible land use, providing natural buffers to DoD facilities, increasing flexibility under the Endangered Species Act by protecting key habitats off-post, and expanding habitat for this forest’s 29 threatened and endangered species. Currently, more than 730,000 acres of longleaf habitat occurs on military installations and ranges in the Southeast, which is approximately 35% of the estimated publicly

owned longleaf pine habitat (figure above). In the last three years, military installations in the Southeast have spent an estimated \$11 million annually on management of longleaf pine forests and associated activities (e.g., red-cockaded woodpecker, prescribed fire; figure right). For all these reasons, the restoration of the longleaf pine ecosystem benefits the military and serves to promote conservation, working lands, and national defense.



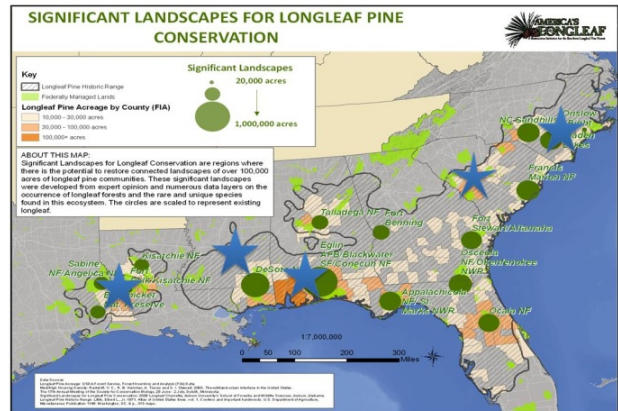
What’s Happening?

America’s Longleaf Restoration Initiative (ALRI). In 2005, a group of leaders convened by the Longleaf Alliance articulated the need for a focused, range-wide restoration approach. At the same time, a partnership of several states and federal agencies in the Southeast was formed to promote better collaboration in making resource-use decisions. Known as the Southeast Regional Partnership for Planning and Sustainability (SERPPAS), the group identified “Sustaining the Land of the Longleaf Pine” as one of its top conservation priorities. This convergence of interests generated tremendous enthusiasm and momentum. To harness this interest in longleaf restoration, under the leadership of the USDA Forest Service, Department of Defense, and U.S. Fish and Wildlife Service, a Regional Working Group of diverse organizations was formed in October 2007 to establish ALRI (<http://americaslongleaf.net>). The first charge of ALRI was to develop the first-ever Range-Wide Conservation Plan for Longleaf Pine (hereafter the Conservation Plan). The Conservation Plan has an ambitious goal to maintain, improve, or restore 8 million acres of longleaf pine forests across its historic range within 15 years. The plan calls for strategic coordination of science-based conservation at the regional and local levels, including 16 significant geographic areas (SGAs) have been identified to serve as “anchor points” for longleaf restoration. Twelve of these 16 SGAs (75%) have direct implications and benefits to military assets. Efforts to implement the Conservation Plan are occurring at the local level through implementation teams.

America’s Great Outdoors (AGO) Initiative. In April 2010, President Obama signed a Presidential Memorandum to launch the AGO Initiative. The purpose of AGO is to promote and support community-level efforts to conserve outdoor spaces. In identifying examples of landscape-scale efforts supporting the initiative, USDA Secretary Vilsack identified the longleaf pine ecosystem as a priority resource concern of national significance. He charged USDA to coordinate with DoD and DOI in designating longleaf as an AGO priority landscape. A Memorandum of Understanding (MOU) was signed by leadership within USDA, DOI, and DoD to further coordinate and collaborate. The MOU directs the development of a partnership agreement that encourages the full engagement of all federal, state, and other longleaf partners to work collaboratively and establish a process for cooperation to achieve the goals of the Conservation Plan. Currently, a Declaration of Partnership is being circulated among interested parties to “declare” their self-identified interests and contributions to the overall initiative.

How to Engage?

Benefits to engaging with ALRI include leveraging resources and partner interest, particularly in areas that have direct implications and benefits to military assets. Supporters of longleaf conservation can engage with ALRI through local implementation teams that are being established within the 16 SGAs. Some examples of local implementation teams (see figure right) include the North Carolina Longleaf Coalition (<http://nclongleaf.org/>), South Carolina Sand Hills, Gulf Coast Plains Ecosystem Partnership (<http://www.gcpepartners.com/>), and the Texas/Louisiana Longleaf Taskforce (<http://txlalongleaf.org/>). For the latest information on local implementation teams, contact Mr. Tom Darden (tdarden01@bellsouth.net).



Significant Landscapes for Longleaf Conservation regions with the potential to restore connected landscapes of more than 100,000 acres of longleaf pine communities.

Strategic Environmental Research and Development Program's Activities Related to Ecological Forestry

By John A. Hall¹, Joan Walker², and Norm Christensen³

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Given the priorities of DoD land use—sustainable mission support and stewardship—forest management is not primarily dictated by traditional commercial forestry practices that emphasize optimal yields of forest products. Instead, DoD strives for the ecologically sustainable management of its forests so as to maintain the continued supply of desired ecosystem services.

The above emphasis is embodied in the concept of ecological forestry, which is a silvicultural philosophy and approach that perpetuates ecosystem integrity at landscape spatial scales while continuing to provide wood products and other ecosystem services. Three guiding principles of ecological forestry are:

- ✚ incorporating legacies (structural retention) into silvicultural prescriptions
- ✚ understanding and incorporating intermediate stand development processes, such as fire
- ✚ incorporating appropriate recovery periods between silvicultural treatments into management systems.

DoD's approach to and requirements of its forest management activities make DoD lands an ideal test bed to develop and demonstrate the emerging practices of ecological forestry. As a result, the Strategic Environmental Research and Development Program (SERDP) and its sister demonstration program, the Environmental Security Technology Certification Program (ESTCP) intend to focus on the development of theory, tools, and practices for implementing the principles of ecological forestry on DoD forested lands. In particular, DoD is an important manager of southern pine forests in the Southeast, with a primary emphasis on restoring the longleaf pine (*Pinus palustris*) ecosystem, in part because of the need to recover the endangered red-cockaded woodpecker (*Picoides borealis*; RCW).

Longleaf pine forests once dominated most of the southeastern United States (estimates range from 60 to 90 million acres), especially on the well-drained soils of the coastal plain. Most of those forests were cut and, in many areas, converted to agriculture or plantations of faster growing loblolly (*P. taeda*) and slash (*P. elliotii*) pine. Only a small percentage of the original longleaf forest cover remains. Because of the high biodiversity and species endemism of longleaf pine ecosystems, there is considerable interest in the conservation of those stands that remain and in the restoration of longleaf forests on lands that are now dominated by other tree species. The

longleaf pine ecosystem is a fire-adapted ecosystem and hence its recovery and maintenance is dependent on the use of fire as a stand development process.

SERDP's initial forays into the science of ecological forestry have focused on the development of silvicultural practices that first enable restoration of the longleaf pine forest and subsequently the entire ecosystem. Three projects—one completed and two ongoing—are highlighted. In combination, they are investigating methods for accelerating stand development processes, including the use of fire, that will restore the longleaf pine ecosystem.

Arguably one of the most difficult challenges to longleaf pine ecosystem restoration has been how to restore longleaf pine on somewhat poorly drained sites where no remaining natural seed source is present. On such sites foresters typically rely on intensive management actions to prepare the sites for planting trees. Effective site preparation methods minimize pine seedling mortality and promote their early, rapid growth, but also may reduce the diversity of the ground layer plant community. In addition to direct effects of plantation establishment, longer term effects on habitat quality accrue through time as the new forest develops. These effects also are not well-documented for poorly drained sites, nor are the driving ecological processes known. As a result, project [RC-1303, Regenerating Longleaf Pine on Hydric Soils: Short- and Long-Term Effects on Native Ground-Layer Vegetation](#), posed two

primary research questions: *What are the effects of selected site preparation methods on ground layer vegetation and on longleaf pine establishment and early growth?* and *What are the persistent effects of past plantation establishment on the structure and composition of the ground layer vegetation of sites that historically supported longleaf pine?* Investigators used a field experiment to address the first question, and they collected plant community data to compare established plantations with mostly undisturbed reference conditions to address the second question. All investigations took place on Marine Corps Base Camp Lejeune (MCBCL) in North Carolina.



Established longleaf pines recently emerged from the grass stage (RC-1303).

Researchers worked with forest managers to design experimental treatments representing low to moderate intensity site preparation methods. Treatments included combinations of vegetation control treatments (mechanical chopping or chemical herbicide) with three planting conditions (flat, bedded, or mounded). In contrast to natural regeneration that relies on local seed sources, container grown seedlings were planted as required where local seed sources are gone. The minimal treatment plots, which included only prescribed fire prior to and three years after planting, most closely represented the presumed natural conditions for establishment and early growth of longleaf pine seedlings. Effects on seedlings, ground layer vegetation, and fire behavior were quantified. The establishment and early growth of pine seedlings clearly benefited from treatments that controlled competition from shrubs and that improved local drainage at planting sites. The most intensive management benefited pines, and it had remarkably few short-term effects on the diversity or composition of the ground layer vegetation after three growing seasons; however, the behavior of prescribed fires differed among treatments, such that through time the plant communities in the various treatments are likely to diverge. Disrupted burning, as recorded in bedded and mounded plots, will likely alter species patterns and diversity in the future. The comparison of plantations with reference forests showed that plantations do have lower species richness at small scales and a loss of some key characteristic species. Clearly there are ecological trade-offs and managers will be challenged to balance management choices based on desired outcomes in both the short- and long-terms. This project altered the initial conditions for forest development and documented early forest growth. Continued monitoring will increase understanding of the ecological processes shaping longleaf pine forest development on wetter sites, so that silviculture prescriptions for restoration will be improved. The Final Report for this project is available on the SERDP web site.

A second ongoing project, [RC-1474, Managing Declining Pine Stands for the Restoration of Red-Cockaded Woodpecker Habitat](#), addresses alternative methods for converting plantation loblolly pine to longleaf pine stands. Past land use and management have resulted in the replacement of longleaf pine with loblolly pine. Compared with the original longleaf pine forests, loblolly pine stands often include abundant hardwoods and have lost much of the characteristic ground layer that provide fuel needed for frequent, low-intensity surface fires. Although such altered conditions are considered inferior habitat for the RCW, the widespread loss of the preferred longleaf pine has resulted in RCWs using loblolly pine for nesting and foraging. The conventional silviculture approach to replacing loblolly pine with longleaf pine would involve clearcutting the existing forest, preparing the site, and planting container-grown seedlings; however, in many locations the existing loblolly pine forest is needed for RCW nesting or foraging and clearcutting is not an option. Alternative methods for gradual conversion are needed, and RC-1474 addresses that need. Because the longleaf pine ecosystem differs markedly across its range and silvicultural solutions are likely to differ with site conditions, it is essential to develop an understanding of the underlying ecological processes at different locations. As a result, this work is being conducted at Fort Benning, Georgia and MCBCL.



Canopy manipulation treatments to restore longleaf pine in loblolly pine stands (RC-1474).



Timber marking for establishment of canopy treatments (RC-1474).

A large field experiment was installed at both locations. Main plot treatments are canopy modifications of thinning or gap creation. Additional subplot manipulations feature actions that would alter resource availability to longleaf pine seedlings, including fertilization, herbicide application, and planting native grasses. Seedling growth and ground layer vegetation responses have been measured for three years after tree planting and one season after prescribed burning, with plans to continue periodic measurements through stand development. This project already has generated much detailed information about pine seedling and vegetation responses from each location. The site differences are surprising, and the comparison of site responses is most likely to increase understanding of the diverse longleaf pine ecosystem.

The third project, also ongoing, also takes place at MCBCL and is part of the broader [Defense Coastal/Estuarine Research Program](#) (DCERP; RC-1413) that occurs there. As mentioned previously, historically, attempts to restore longleaf pine forest often have involved removal of the existing forest canopy and subsequent planting of longleaf pine seedlings as well as seed of other species such as wiregrass. Restoration of conditions that can support a high frequency (1 to 4 years depending on location), low-intensity fire regime is critical. Restoration of a fully functioning forest (e.g., one that will support such species as the RCW) may require more than a century.

More recently, restoration has focused on thinning of existing forest canopy trees and removal of dense woody undergrowth to create a physical structure similar to the longleaf pine savanna. Here, the goal is to restore habitat conditions that will support the appropriate fire regime and encourage subsequent establishment of longleaf pine savanna species over time. Ecologists are optimistic that habitat conditions for many longleaf pine endemic species can be accelerated to a matter of years or, perhaps, a decade.

The DCERP research at MCBCL addresses two important questions related to this restoration approach. First, over what range of environmental conditions (e.g., soil moisture conditions) is this type of restoration likely to be successful? Second, in what ways do variations in the season (growing versus dormant), in which undergrowth thinning treatments are applied, influence restoration success? Thinning in these experiments involves mechanical treatment using a hydro-axe.

The experimental design involves locating eight experimental blocks in 40 to 60 year-old stands of loblolly pine (in locations thought to have been longleaf pine in pre-settlement times) along a gradient from sandy, well-drained to heavier, moister soils. Each block includes three treatments: dormant season restoration thinning, growing season restoration thinning, and no thinning (control). All stands will receive dormant season prescribed fire every three years, beginning the year following treatment. Small plots (10x10m) will receive soil tilling treatments and native species seeding treatments to determine the effects of soil disturbance and seed availability, respectively, on restoration.



Longleaf pine forests showing heavy brush cover pre-treatment conditions (RC-1413).



Hydro-axe understory thinning treatment of longleaf pine forest (RC-1413).

Each treatment plot is being monitored for changes in soil nutrients (organic matter, pH, N and P), understory vegetation (species composition and relative abundance), abundance and diversity of insects, and fuel conditions. Vegetation and insect surveys are coordinated with breeding bird surveys centered on treatment plots and carried out by Dr. Jeff Walters and his colleagues at Virginia Tech. In addition, vegetation and insect monitoring has been extended to additional plots on which the Walters team has gathered bird abundance and diversity data. Investigating the effects of the soil moisture gradient and restoration treatments across trophic levels is a high priority for this project. Data collection will continue through 2011.

In the years to come, SERDP and ESTCP will continue to evaluate the need for additional research and demonstration projects that will assist DoD foresters in implementing the practice of ecological forestry on their forests. For example, DoD also needs improved understanding of carbon cycle dynamics across the various landforms and vegetation types it manages to better determine appropriate objectives for carbon sequestration that ensure such sequestration is compatible with maintaining other desired ecosystem services and native biological diversity. For forested ecosystems in particular, the preceding knowledge needs to be integrated with the practices of ecological forestry to better understand how such practices affect carbon management and compare to other land-use and silvicultural practices. To address this particular need, SERDP will be starting four new projects in 2011 that will investigate carbon management in the context of ecological forestry on DoD lands.



Longleaf pine forest after understory thinning treatment (RC-1413).

Training, Announcements & Events of Interest

Workshops, Interagency Training Announcements, and Future Events of Interest to the Conservation Community



11th National Conference on Science, Policy and the Environment: Our Changing Oceans: January 19-21, 2011, at the Ronald Reagan Building and International Trade Center in Washington, DC. Our Changing Oceans will provide a forum to address the crisis facing our oceans, new knowledge and innovative tools to address the challenge, and the policy and governance needed to restore and protect the oceans. Expecting over 1,000 attendees, Our Changing Oceans will bring together scientists, professionals, policy makers, university faculty and students, and educated citizens from a wide range of disciplines and sectors to share their perspectives and work to address the topic at hand. The conference will feature renowned speakers, topical symposia to explore issues more in depth, and breakout sessions to develop a set of recommendations on how to advance science and connect it to policy and decision-making. Visit <http://communities.earthportal.org/ncseoceans2011/> for details.

2011 Green Infrastructure Conference: February 23-25, 2010, Shepherdstown, West Virginia. Join us to hear nationally recognized speakers from across the country discuss key elements for success and vital lessons-learned. Be part of developing the strategy for the future of green infrastructure! Featured topics include green infrastructure and public health, social equity, transportation, economic development, climate change and more! For more information go to <http://www.conservationfund.org/GIC2011>, or contact Kris Hoellen, at 304-876-7462 or khoellen@conservationfund.org.

2011 National Military Fish and Wildlife Association Meeting: March 14-19, 2011, at the Westin Crown Center Hotel in Kansas City, Missouri. This meeting provides an excellent opportunity for DoD personnel specializing in fish and wildlife management to meet and discuss challenges and solutions to managing these resources. It also affords an opportunity for DoD natural resources managers to meet with counterparts from the U.S. Fish and Wildlife Service and State fish and wildlife agencies who work on Sikes Act issues and many other areas of common concern. For the agenda and other details, visit http://www.nmfw.org/2011_Meeting/index.cfm. Note: If you are reserving a room at the conference hotel, please reference the *North American Wildlife and Resources Conference*.

Sustainable Military Lands Management Certificate: This three-course online certificate from Colorado State University trains you in the breadth and complexity of military land management and provides you with knowledge of the rapidly evolving practices, technologies, and analytical tools necessary to support this national defense mission. For more information, please visit www.learn.colostate.edu or contact Jenny Hannifin at 970-491-2665 or jhannifin@learn.colostate.edu

Funding Available for Environmental Research and Development: The Department of Defense's (DoD) Strategic Environmental Research and Development Program (SERDP) is seeking to fund environmental research and development in the Resource Conservation and Climate Change program area. SERDP invests across the broad spectrum of basic and applied research, as well as advanced development. The Resource Conservation and Climate Change program area supports the development of the science, technologies, and methods needed to manage DoD's installation infrastructure in a sustainable way. SERDP is requesting proposals that respond to the following two focused Statements of Need (SON) in Resource Conservation and Climate Change:

- ✚ Assessment and Monitoring of Biological Diversity: Method Development
- ✚ Climate Change Impacts to Department of Defense Installations

Proposals responding to the Fiscal Year (FY) 2012 SONs will be selected through a competitive process. Pre-proposals from the non-federal sector are due by **Thursday, January 6, 2011**. Proposals from the federal sector are due by **Thursday, March 10, 2011**. The SONs and detailed instructions for federal and private sector proposers are available on the SERDP web site at www.serdp-estcp.org/Funding-Opportunities/SERDP-Solicitations.



Recent Natural Resources Documents Online

Reports, Fact Sheets, Photos, Videos



This section highlights recently uploaded reports and fact sheets on the Legacy Tracker or on the DENIX web site. For Legacy-related products, please visit https://www.dodlegacy.org/Legacy/intro/ProductsList_NU.aspx. All Legacy products and many more are available at <http://www.denix.osd.mil/nr>. In addition, bird-related products are also posted on the DoD Partners in Flight web site at <http://www.DoDPIF.org>.

Grassland Birds Wintering at US Navy Facilities in Southern Texas- Final Report, July 2010: (Legacy 07-189): Grassland birds have undergone widespread decline throughout North America during the past several decades. A large number of exotic plant species, including grasses, have been introduced in North America, but most research on the effects of these invasions on birds has been limited to breeding birds, primarily those in northern latitudes. Research on the effects of exotic grasses on birds in winter has been extremely limited. This is the first study in southern Texas to examine and compare winter bird responses to native and exotic grasslands. This study was conducted during a period of six years (2003–2009) on U.S. Navy facilities in southern Texas including Naval Air Station–Corpus Christi, Naval Air Station–Kingsville, Naval Auxiliary Landing Field Waldron, Naval Auxiliary Landing Field Orange Grove, and Escondido Ranch, all of which contained examples of native grasslands, exotic grasslands, or both. For the report or the fact sheet for this project, please visit <http://www.denix.osd.mil/nr/FishandWildlife/Birds.cfm>.

Intensive Plant Conservation Workshop-Berkeley, CA - Final Report, April 2010: (Legacy 09-364): This document details the planning, hosting, and response by attendees to the 2009 offering of the Plant Conservation Workshop, funded by Legacy and developed by The Center For Plant Conservation. <http://www.denix.osd.mil/nr/OtherConservationTopicsIz/OutreachandEducation.cfm>

Avian Response to Grassland Management on Military Airfields in the Mid-Atlantic and Northeast - Interim Report, May 2010: (Legacy 08-381): This study explored the relationships among grassland habitat management methods, vegetation characteristics, and avian habitat use during spring migration, breeding, and fall migration periods on three military airfields: Lakehurst Naval Air Engineering Station (LNAES), Westover Air Reserve Base (WARB), and Patuxent River Naval Air Station (PRNAS). The interim report summarizes combined findings from Year 1 and Year 2 (fall 2008 - summer 2009) of the study. Data from the most recent year of the study was examined to see if patterns were similar to those observed in the first year. Data were then combined for subsequent analyses, summaries, and maps. For the report or the fact sheet for this project, please visit <http://www.denix.osd.mil/nr/FishandWildlife/Birds.cfm>.

Propagation of Species At Risk Atlantic Pigtoe on Military Installations - Final Report, April 2010: (Legacy 09-450): The Department of Army has identified the Atlantic Pigtoe Mussel as a Species at Risk (SAR) with potential for detrimental impact on the military mission if federally listed as either threatened or endangered. The Nottoway River on ARNG-MTC Fort Pickett, Virginia, is home to one of only two known stable populations of the Atlantic Pigtoe Mussel left in Virginia, and perhaps the world. Populations are in precipitous decline throughout the southeast, and expert consensus is that the species currently warrants federal listing. This report details the first year's efforts towards propagating the species and introducing new populations into its habitat. <http://www.denix.osd.mil/nr/FishandWildlife/FreshwaterandMarine.cfm>

Establishing American Chestnut Test Orchards on Two TN Army National Guard Installations – Final Report, October 2009: (Legacy 08-401): Since 1983, the American Chestnut Foundation has led and managed an intensive breeding program aimed at instilling blight resistance into American chestnut trees. One of the most essential resources needed for this program is land for the seed orchards where the hybrid chestnuts can be grown. Because the Tennessee Army National Guard has small areas on its training sites that are not actively used for military training, they agreed to establish seed orchards at two of its facilities: VTS-Milan and VTS-Catoosa. <http://www.denix.osd.mil/nr/OtherConservationTopicsAH/HabitatRestoration.cfm>

Proof of Concept of The Range Ignition Probability Tool: (Legacy 07-374): Wildfires resulting from military training pose a significant threat to training realism and land use capabilities, natural and cultural resources, infrastructure, and human/soldier safety. Assessing incendiary munitions wildfire risk and determining best management practices requires accurate information about where fires are likely to start as ignition location can make a dramatic difference in fire outcomes. The RIP Tool is designed to fill the information gap caused by the lack of actual ignition location data. <http://www.denix.osd.mil/nr/OtherConservationTopicsAH/Disturbance.cfm>

Wildlife of Iraq and Afghanistan: How to avoid losing your money, your freedom or your life over wildlife – Presentation: (Legacy 09-444): This presentation describes the wildlife in these two regions (including poisonous species one might encounter), the problem of illicit wildlife trade, important laws pertaining to wildlife trade that must be followed by military personnel, the trade in Afghanistan and Iraq, what military leadership may do, and valuable information sources. Available also as a .PDF file, please visit <http://www.denix.osd.mil/nr/OtherConservationTopicsIZ/OutreachandEducation.cfm>.

Developmental Counseling Form DA FORM 4856: Specific to Wildlife Trade: (Legacy 09-444): This is a customized DA 4856, pre-loaded with important information and advice regarding illicit wildlife trade, to aid command and troops to be deployed or currently deployed. <http://www.denix.osd.mil/nr/OtherConservationTopicsIZ/OutreachandEducation.cfm>

The Bat Grid Inventory and Monitoring Project: A Regional Approach to Inventorying and Monitoring Bat Populations - 2008 Monitoring Report: (Legacy 08-390): The monitoring portion of The Bat Grid project is designed to assess bat species detection and occupancy probabilities across the Pacific Northwest (PNW). Additionally, these probabilities are to be calculated across multiple years to form a baseline against which future changes in PNW bat distributions can be made. This report presents preliminary analyses of 2008 data for three species as a pilot effort to guide final analyses and subsequent field efforts and to provide feedback to the acoustic call identification team (Humboldt State University) currently engaged in processing Bat Grid acoustic data. For the report and fact sheet, visit <http://www.denix.osd.mil/nr/FishandWildlife/TerrestrialAnimals.cfm>.

Natural Resources Funding Manual: (Legacy 08-399): The Natural Resources Funding Manual identifies funding resources for which the Department of Defense (DoD) may apply, directly or through partnerships with local, state, or tribal governments; non-governmental organizations (NGOs); commercial organizations; or private landowners. It is intended to facilitate the search for funding sources, but is by no means a comprehensive list of all available resources. The funding sources presented here are associated with land use, endangered species, habitat conservation, environmental quality, and other forms of conservation. <http://www.denix.osd.mil/nr/ConservationProgramInformation/ReportsandPublications.cfm>



Photo of the Month

Capturing the beauty of our natural resources



November/December 2010 Photo of the Month Winner!

Owls at Twentynine Palms, CA

Submitted by *Natural Selections* reader: Major William M. Rowley, USMC

Did You Know?

Little Did You Know Conservation Could Be So Much Fun!



The Christmas Tree is Evergreen! The Christmas tree is a decorated evergreen coniferous tree and a tradition associated with the celebration of Christmas.

Douglas-fir, *Pseudotsuga menziesii*; Balsam Fir, *Abies balsamea*; Fraser Fir, *Abies fraseri*; and Grand Fir, *Abies grandis* are among the most common species used as Christmas trees because they have the benefit of not shedding their needles when they dry out, as well as retaining good foliage color and scent. Less-traditional conifers are sometimes used, such as Giant Sequoia, Leyland Cypress, Monterey Cypress, and Eastern Juniper. Various types of spruce tree are also used for Christmas trees (including the Blue Spruce and, less commonly, the White Spruce); but spruces (unlike firs) begin to lose their needles rapidly upon being cut, and spruce needles are often sharp. Virginia Pine is still available on some tree farms in the southeastern United States; however, its winter color is faded. The long-needled Eastern White Pine is also used there, though it is an unpopular Christmas tree in most parts of the country, owing also to its faded winter coloration and limp branches. Norfolk Island Pine is sometimes used, particularly in Oceania, and in Australia some species of the genera *Casuarina* and *Allocasuarina* are also occasionally used as Christmas trees, but by far the most common tree is the Monterey Pine. *Adenanthos sericeus* or Albany Woolly Bush is commonly sold in southern Australia as a potted living Christmas tree. Hemlock species are generally considered unsuitable as Christmas trees due to their poor needle retention.



Some trees, frequently referred to as Living Christmas trees, are sold live with roots and soil, often from a nursery. They can be planted later outdoors and enjoyed (and often decorated) for years or decades. Others are produced in a container and sometimes as topiary for a porch or patio. However, when done improperly, the combination of root loss caused by digging, and the indoor environment of high temperature and low humidity is very detrimental to the tree's health. Additionally, the warmth of an indoor climate will bring the tree out of its natural winter dormancy, leaving it little protection when put back outside into a cold outdoor climate. Replanting when done properly provides higher survival rates.

Excerpts of this month's Did You Know? are from http://en.wikipedia.org/wiki/Christmas_tree



Links of Interest on the Web

Useful URLs



DoD Natural Resources Conservation Program: <http://www.DoDNaturalResources.net> 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: <https://www.dodlegacy.org> 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.

DoD TER-S Document Repository: <http://dodtes.nbii.gov> A compilation of DoD Threatened and Endangered Species documents and data made available online through the National Biological Information Infrastructure. Information contained in these documents is considered "gray" literature (i.e., not peer reviewed).

Biodiversity Handbook: <http://www.dodbiodiversity.org> 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 Partners in Flight: <http://www.dodpif.org> The DoD PIF 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: <http://www.DoDpollinators.org> Provides an overview of pollinators and the reasons they are important to DoD. This web site highlights the 2009 NMFVA workshop on pollinators, and has many useful resources, including factsheets and technical reports, pocket guides to identifying pollinators, and links to other web sites on pollinators.

DoD Invasive Species Outreach Toolkit: <http://www.DoDinvasives.org> 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.

DENIX: <https://www.denix.osd.mil> DENIX is an electronic environmental bulletin board that provides access to environmental information, such as Executive Orders, policies, guidance, INRMPs, fact sheets, and reports. This web site is under reconstruction. We will advise you when it is fully operational.

DISDI Portal: <https://rsgis.crrel.usace.army.mil/disdicac> (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 (SERDP): <http://www.serdp-estcp.org> SERDP is DoD's environmental science and technology program, planned and executed in partnership with DOE and EPA, with participation by numerous other federal and non-federal organizations. SERDP invests across a broad spectrum of basic and applied research, as well as advanced development.

Environmental Security Technology Certification Program (ESTCP): <http://www.serdp-estcp.org> ESTCP is DoD's environmental technology demonstration and validation program. The Program promotes the transfer of innovative technologies that have successfully established proof of concept to field or production use. ESTCP demonstrations collect cost and performance data to overcome the barriers to employ an innovative technology because of concerns regarding technical or programmatic risk.

Cooperative Ecosystem Studies Unit Network (CESU): <http://www.cesu.psu.edu/> This network of 17 cooperative units provides research, technical assistance, and training to federal resource and environmental managers. DoD is a member of 12 units of the CESUs National Network.

Bat Conservation International (BCI): <http://www.batcon.org> BCI, based in Austin, Texas, is devoted to conservation, education, and research to protect bats and their ecosystems around the world.

PARC - Partners in Amphibian and Reptile Conservation: <http://www.parcplace.org> PARC is a partnership of individuals and entities dedicated to the conservation of amphibians and reptiles (i.e., herpetofauna) and their habitats as integral parts of our ecosystem and culture through proactive and coordinated public/private partnerships.

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Who we are and where to find us!



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