



Natural Selections

Legacy Program Update

FY 2008 Pre-Proposals due to the Legacy Program

September 4, 2007: The Legacy Program is accepting pre-proposals submitted for FY 2008 funding for the management, stewardship, and preservation of DoD's natural and cultural resources. The deadline for pre-proposals is 4 September 2007. All pre-proposals submissions will be accepted online through the Legacy Tracker at www.DoDLegacy.org.

National Public Lands Day: The National Environment Education Foundation (NEEF) is abuzz with organizing the 14th annual National Public Land's Day (NPLD). Last year, over 1,100 sites participated in celebrating NPLD. This year, NEEF predicts 1,300! This national partnership enlists volunteers to work with land managers to restore and enhance public lands and learn about resource conservation issues. They build trails, bridges and docks and remove invasive plants to make room for fragile native species. Volunteers also restore habitat for wildlife, install signage, and make facilities universally accessible.

The Legacy program is responsible for funding a total of 36 NPLD events, 29 of the sites involved natural resources, and 7 involve cultural resources. Be sure to reserve 29 September to volunteer. For details visit <http://www.publiclandsday.org/>

Legacy Project Highlight of the Month

Legacy Project 05-48 Forage Production on Reefs Constructed from Military Armored Vehicles.

For many years, obsolete military materials have been used for building constructed reefs to enhance recreational fishing and diving opportunities. These materials have included ships, aircraft, and other obsolete items and construction debris. Beginning in

See Legacy, page 4



In The News

Transportation Soldiers Dismantle World's Largest Man-made Reef

By Lindy Dinklage
Fort Eustis Public Affairs Office

Soldiers from the 97th Transportation Company recently returned from a more unconventional mission - recovering thousands of tires from off the Florida coast in an effort to dismantle the world's largest man-made reef.

The 15 Soldiers spent two and a half months off the Florida coast, conducting training operations for dive teams. They then traveled down coast to Fort Lauderdale, where they began a historic effort in environmental preservation.

"In 1972 a number of organizations with good intentions dropped about two million tires in the Atlantic Ocean in an effort to build the world's largest man-made reef," said Chief Warrant Officer Shane Sherrad, vessel master for the LCU-2017, El Caney. "In reality, nothing grew, and the tires began to drift, damaging the existing reefs on either side of the man

Man-made Reef, page 5

INSIDE THIS ISSUE

- 1 [Legacy Program Update](#)
- 1 [Legacy Project Highlight of the Month](#)
- 1 [In The News](#)
- 2 [Training](#)
- 3 [Announcements and Events of Interest](#)
- 6 [Recent Natural Resources Documents On DENIX](#)
- 7 [Did You Know?](#)
- 7 [Contact Us](#)

Training

NEW! Riparian Zone Ecology Restoration/Management: June 23-27, 2008, in Phoenix, AZ. This course addresses planning and management issues that pertain to riparian (streamside) ecosystems in a variety of ecological and geographical settings. Emphasis is placed on the ecology, restoration and stewardship of riparian habitats associated with Civil Works projects and activities. Students will receive instruction on the functions and ecological importance of riparian zones, conservation needs, potential impacts resulting from various land use practices, and restoration and management techniques that can be applied to maintain or improve riparian systems. For more details visit <http://pdsc.usace.army.mil/CourseListDetail.aspx?CtrlNbr=281>.

Health & Environmental Risk Communication Workshop: January 22-24, 2008 in Barstow, CA & April 1-3 in MCB Quantico, VA. This 3-day ISEERB approved course provides attendees with basic knowledge and tools to effectively communicate risk and risk management issues to stakeholders of diverse interests. This includes developing a proactive program to establish and maintain a sound relationship through dialogue with stakeholders based on mutual trust and credibility. Instruction focuses on how to have open discussions on environmental restoration issues, establish confidence in communicating key messages, develop effective media and public meeting techniques, improve verbal and non-verbal communication skills, and revitalize stakeholder dialogue. Although the course was originally designed to meet the needs of restoration personnel, other environmental personnel can benefit from this training. Eligible personnel include Military and civilian personnel responsible for communicating environmental risk management issues to the public, regulators and/or media stakeholders including remedial project managers, BRAC Environmental Coordinators, Base Closure Team members, installation environmental program managers, experts, engineers, scientists, health and safety personnel, natural resource personnel, and others. For more information visit <https://www.cecos.navy.mil/coursedetail.cfm?courseid=67>.

Natural Resource Compliance: January 15-18, 2008 in Corpus Christi, TX. This course offers instruction in specific natural resource laws, regulations, policies, Executive Orders, DoD Instructions, and other guidance, noting Service-specific requirements. Course addresses stewardship, preservation, and process; fish, game, and wildlife management laws; protection of wetlands, waterways, and other protected ecological areas; forest and land use management laws; and interservice cooperation. Practical exercises and guest speakers are included. This course is approved by the Interservice Environmental Education Review Board (ISEERB). For details visit <https://www.cecos.navy.mil/coursedetail.cfm?courseid=42>.



Announcements and Events of Interest

2007 National Gap Analysis Conference Featuring the Southeast Regional Gap Analysis Project September 11-13, 2007, at the Renaissance Asheville Hotel, Asheville, North Carolina. The meeting will include presentations and discussions about recent developments and applications from GAP projects across the country. Attendees will learn about the most important environmental issues in the country, particularly in the Southeast, and to discuss how GAP data sets can be used for resource management and decision-making. A special symposium will focus on conservation issues in the Southeastern U.S. and on the use of the Southeast Regional Gap Analysis Project (SEGAP) data for addressing these issues. This symposium is intended to bring together all interested individuals and agencies to explore the highest priority management needs in this region and to discuss how data resources can be used to assist managers. For more details visit <http://gapanalysis.nbii.gov>

Partners in Environmental Technology Technical Symposium & Workshop; December 4-6, 2007 at the Marriott Wardman Park Hotel in Washington, D.C. This conference assembles environmental researchers and technology developers with the defense user and regulatory communities to showcase cutting edge environmental technologies and ideas, as well as communicate the most difficult challenges of our defense establishment. The conference has a comprehensive technical program consisting of concurrent sessions highlighting proven environmental technologies, as well as technologies needed to address emerging DoD environmental challenges. Full registration in advance is \$415. For online registration and details visit <http://www.serdp-estcp.org/symposium/>.

NatureServe Conservation Conference October 1 - 3, 2007 at the Denver Marriott West, in Golden, Colorado. The NatureServe Conservation Conference 2007 is an international training, education, and networking event for the environmental conservation community. Conservation leaders, thinkers, and doers come together for three days of education, discussion, idea exchange, and professional networking. This conference joins natural resource management professionals from the non-profit, government, and corporate sectors to learn from each other, share innovations, and discover useful opportunities for collaboration. For more details visit the conference website at http://www.natureserve.org/visitLocal/cons_conference2007.jsp

Annual Conference on Ecosystem Restoration and Creation; The 34th anniversary of The Annual Conference on Ecosystems Restoration and Creation will be held November 1 - 2, 2007 at the Trinkle Building located on the Plant City campus of Hillsborough Community College (Plant City, Florida). The Annual Conference provides a forum for the nationwide exchange of results of the latest scientific research on restoration, creation, and management of not only freshwater and coastal systems but total ecosystems including upland and transitional areas. For more details visit their website at <http://www.hccfl.edu/depts/detp/ecoconf.html>



Legacy, continued from page 1

1994, the REEF-EX project sponsored by the Defense Logistics Agency provided obsolete military armored vehicles (MAVs) for use by state and county agencies in constructing fishing reefs. Since then, over 1500 armored vehicles were placed at over 60 sites off the coasts of 11 states along the Atlantic and Gulf of Mexico in water depths ranging from 8 to 42 meters. However, only limited data on their performance as reefs was available to help assess the merits of the program.

The overall objective of this series of projects was to assess the performance these constructed reefs, capture lessons learned to improve future construction, and assess the potential for future applications. Evaluating performance included examining the ecological functions provided by the reef habitat, gauging end-user satisfaction with these reefs, assessing where and how such reef materials should be placed, and estimating how long they will function.

The approach used to evaluate the reefs involved direct observations, surveys of end-users (fishers and divers), and interviews with state and county reef program managers. Initial studies focused on assessing MAV reef habitat value for target species, siting flexibility, durability, and the potential for collateral adverse impacts. Based on initial observations, a second phase effort assessed the potential benefits of enhancing the profile of these reefs to improve the abundance and diversity of mid-water fish. The third phase concentrated on assessing the fish forage based provided by the reefs. This effort examined the community developing on the reef substrate and compared this with the stomach contents of reef fish species to outline trophic linkages

This project demonstrated the habitat enhancement benefits associated with MAV reefs. The reefs created stable and durable reef habitat, enhanced the abundance and diversity of fish and invertebrates, provided forage for supporting target fish species, and had no observable adverse environmental impacts.



Diver counting fish inside turret of M-60 Tank. MAVs have proven effective in increasing abundance and diversity of fish and invertebrates.

Study results indicated that fish abundance and diversity on MAV reefs were generally equal to or greater than that on other local constructed reefs and comparable to many designed and prefabricated reef modules. Encrusting or fouling community percent cover and diversity was greater on MAV reefs than on collocated hard bottom or many other typical lower profile reefs. Armored vehicles are especially suited for a wide range of shallow to mid-depth sites typically used for reef construction along the Atlantic and Gulf coasts. As a result of their density, structural integrity, form and profile, MAVs were especially suited for shallow or high-energy sites inappropriate for many other types of materials.

The primary 'lesson learned' about the performance of MAV reefs was that deployment method and location had a greater impact on performance than the vehicles inherent properties on their success as reefs. "Best practices" for enhancing their reef performance included: 1) improve inter-unit spacing and reef configuration, 2) ensure upright orientation on the bottom, and 3) accurately record and report the location of each vehicle. More recent placements have incorporated these recommendations.

An additional "lesson learned" was that poor site selection resulted in subsidence and premature loss of habitat. In this case, best practices included better pre-placement surveys to screen sites. Work to date has clearly demonstrated the performance of the MAV reefs, captured lessons learned, made recommendations for improving future use of obsolete military materials, and suggested the potential for future use of constructed reefs for mitigation, restoration, and conservation applications. The use of such constructed reefs in conjunction with marine protected areas or restricted zones may provide new opportunities for developing sustainable fisheries. For more information on this project visit <https://www.denix.osd.mil/denix/Public/Library/NCR/reefs.html>.

Man-made Reefs, continued from page 1

made reef. Our job was to figure out how to recover the tires in order to protect the other reefs." The hundreds of thousands of tires lining the ocean bottom have begun to wash up on local shores and into existing marine life, making them a hazardous presence on the ocean floor. The mission is an unconventional one, and the LCU-crew faced the task with no existing template of how to complete the project.

Upon arriving in Florida, the Soldiers were given several plans for completing the mission. "We reviewed those plans, told them what would work and what wouldn't work. In the end, we tried three different plans and chose the best from there," Chief Sherrad said.

The crew settled on a plan that had them take position between the two live reefs running parallel with the coast, where divers would bundle approximately 50 to 60 tires together with a steel cable. The tires were then brought to the surface with lift bags and towed into the LCU, lifted with a crane and dropped into the containers.

The operation was an exercise in environmental responsibility. After the tires were collected, they were transported to a Georgia facility where they will be burned to create energy to power a recycling plant.

"The whole mission was about recycle, recycle, recycle," Chief Sherrad said.

The Eustis LCU crew manned the boat for the entire mission, with Army, Navy and Coast Guard divers participating together to recover the tires.

"It was a great experience, being with the three branches and working there together," said Staff Sgt. Don Morales, who worked on the deck, brining on containers and tires and doing other maintenance to ensure the boat was in peak performance.

The crew got no small share of media attention, with individuals from CNN, Discovery and a number of area newspapers and television stations reporting the mission.

"It's such a significant environmental issue," Chief Sherrad said. "There were individuals from Germany and England there. There was a big interest in how we were doing it, because others would like to be able to take on projects like this themselves. We're taking down the world's largest artificial reef. It had never been done before, and we had to find a way to do it."



Transportation Soldiers Dismantle World's Largest Man-made Reef. (Photo by Courtesy)

The mission was an opportunity for the Army to showcase its skills in environmental protection.

"The Army goes well above and beyond the civilian environmental laws," Chief Sherrod said. "There isn't a civilian company out there who sticks to the same environmental standards the Army does." Sgt. 1st Class Jose Lopez acted as the second in command. "On a daily basis, everything we do is about environmental protection," he said.

In addition to helping the environment, the mission also helped save the state of Florida millions of dollars. The project would have taken \$20 million to complete using civilian funds, but will cost just \$2 million with the military taking the helms.

The Soldiers moved thousands of tires during the mission, and it is slated to continue into 2010. Summer crews of Army vessels and divers will continue to visit the coasts of Florida each summer and remove the tires.



Recent Natural Resources Documents On [DENIX](#) and Web

NEW! Fact sheet: DoD Southeast Region Threatened, Endangered and At Risk Species (TER-S) Workshop

(Legacy 03-310): This fact sheet highlights a partnership-based workshop that developed a targeted and prioritized research and management action plan on issues related to threatened, endangered, and at-risk species (TER-S) of interest to the military throughout the Southeast Region. The fact sheet can be found at https://www.denix.osd.mil/denix/Public/Library/NCR/endangered_sp.html?fm-natres.

NEW! Fact Sheet: The North Carolina Sandhills Weed Management Area: Facilitating Regional, Invasive Species Management Partnerships Among DoD and Neighboring Land Stewards

(Legacy 6-334): This 3 page fact sheet details a project that formed the Weed Management Area (WMA) partnership of Federal, State and local government agencies, as well as, individuals, and various interested groups that cooperatively manage non-native invasive plant species (NIS) in the NC Sandhills. The fact sheet summarizes the project objectives and accomplishments to date. Visit <https://www.denix.osd.mil/denix/Public/Library/NCR/invasivespecies.html?fm-natres>

Migratory Bird Monitoring Using Automated Acoustic and Internet Technologies

(Legacy 5-245): This report details a project by Cornell Laboratory of Ornithology to develop digital autonomous recording units (ARU) that record mp3 and binary (BIN) sound files for periods of up to 6 weeks in duration. Also examined are ARU reliability, applicability to tasks, and recording quality. This report includes results of testing over 27,000 hours of data in fall 2005 and spring 2006. The document also outlines problems and constraints encountered in developing and applying hardware and software technologies.

Pamphlet: Conservation Resources for Prairie and Oak Woodland Landowners

(Legacy 6-213): this pamphlet briefly describes the threats and need for conservation for oak woodlands and prairie lands in the Pacific Northwest, the assurances and funding opportunities open to landowners and the benefits of conservation to landowners. Also includes a useful contact list and beautiful images.

Fact sheet: Species at Risk (SAR) Assessment and Recommendations: Part II Planning & Management

(Legacy 3-154): This fact sheet summarizes a project that identified targeted SAR, determined the steps necessary to prevent any further declines in the population of the species of concern on or near the targeted military installation, expanded SAR identification to all military installations, including National Guard, targeted one of the original four target species for follow-up work, and promoted the coordination of a Grassland partnership.



Did You Know?

Corals are not just rocks! - Corals are anthozoans, the largest class of organisms within the phylum Cnidaria. Comprising over 6,000 known species, anthozoans also include sea fans, sea pansies and anemones. Stony corals (scleractinians) make up the largest order of anthozoans, and are the group primarily responsible for laying the foundations of, and building up, reef structures. For the most part, scleractinians are colonial organisms composed of hundreds to hundreds of thousands of individuals, called polyps.

As members of the phylum Cnidaria, corals have only a limited degree of organ development. Each polyp consists of three basic tissue layers: an outer epidermis, an inner layer of cells lining the gastrovascular cavity which acts as an internal space for digestion, and a layer called the mesoglea in between.

The skeletons of stony corals are secreted by the lower portion of the polyp. This process produces a cup, called the calyx, in which the polyp sits. The walls surrounding the cup are called the theca, and the floor is called the basal plate. Thin, calcareous septa (sclerosepta), which provide structural integrity, protection, and an increased surface area for the polyp's soft tissues, extend upward from the basal plate and radiate outward from its center. Periodically, a polyp will lift off its base and secrete a new floor to its cup, forming a new basal plate above the old one. This creates a minute chamber in the skeleton. While the colony is alive, CaCO₃ is deposited, adding partitions and elevating the coral. When polyps are physically stressed, they contract into the calyx so that virtually no part is exposed above the skeletal platform. This protects the organism from predators and the elements. For more details on coral reefs visit http://www.coris.noaa.gov/about/what_are/ and <https://www.denix.osd.mil/denix/Public/ES-Programs/Conservation/Legacy/Coral-Reef/Plan/implementation.html#sec1>.



Soft corals on a Palau Reef.

Contact Us

For further information about the Legacy Resource Management Program please contact:

[L. Peter Boice](#)
Conservation Team Leader

[Jane Mallory](#)
Natural Resource Management Specialist
703-604-1774

[Pedro Morales](#)
Natural Resource Management Specialist
703-604-1933

[Hillori Schenker](#)
Cultural Resource Management Specialist
703-604-1724

Disclaimer

Every effort is made to provide accurate and complete information. However, with the hundreds of documents available online, often uploaded within short deadlines, we cannot guarantee that there will be no errors. With respect to documents and information referenced by means of hyperlinks on this publication, neither the U.S. Government, the U.S. Department of Defense (DoD), Plexus Scientific (website contractor) nor their employees and contractors make any warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose with respect to documents available from Department of Defense websites, or from independent parties outside of DoD. Additionally, the U.S. Government, DoD, nor Plexus Scientific assume no legal liability for the accuracy, completeness, or usefulness of any information, product, or process disclosed herein and do not represent that use of such information, product, or process would not infringe on privately owned rights.

Requests to be added or removed to the [Natural Selections](#) distribution list may be sent to Pedro.Morales.ctr@osd.mil.