



Natural Selections

Legacy Program Update

Now Accepting National Public Lands Day (NPLD)

Applications!: Applications for NPLD Legacy funds are available for base-level projects on any Department of Defense site that supports the goals of National Public Lands Day (NPLD) and emphasizes natural and cultural resource management. The deadline for submitting applications is June 15, 2008. For more information visit NPLD website at <http://www.publiclandsday.org> or contact Claudia Kessel, at claudia@neetf.org or Jane Mallory, with the Legacy Program at Jane.Mallory.ctr@osd.mil

Legacy Project Highlight of the Month

Legacy Project 06-297 Conserve Gray Bat to Achieve Recovery

Gray bats concentrate in caves called hibernacula to hibernate for the winter. They disperse in the spring and spend the summer foraging and reproducing. During the summer gray bats use caves called maternity caves (which are different from the hibernacula).



Gray bat (*Myotis grisescens*)

Although gray bat numbers are still relatively high, Bat Conservation International petitioned the US Fish and Wildlife Service to list the gray bat under the Endangered Species Act because the total bat population has decreased significantly during recent years. The gray bat is believed to have declined mainly due to destruction of habitat by vandals and disturbance by spelunkers and tourists. The reliance of the species on relatively few hibernacula is also a major reason for its endangered status.

The listing has triggered significant accomplishments in habitat protection, reduction of threats, and monitoring of

[See Legacy, page 4](#)



In The News

DoD Strategy to Support a Multi-Agency Bat Conservation Initiative within the State of Utah

By Robbie Knight, U.S. Army Dugway Proving Ground;
April 25, 2008

In recognition of the importance of Department of Defense (DoD) lands to the conservation of bats throughout the nation, a Memorandum of Understanding (MOU) was signed in October of 2006 to “develop a policy of cooperation and coordination between the DoD and Bat Conservation International (BCI)”. This comes at a particularly appropriate time in the state of Utah. Of the 18 bat species currently known to inhabit Utah, six or 33% are listed on the state’s sensitive species list and are identified as Tier II focus species within Utah’s Comprehensive Wildlife Conservation Strategy. Currently little information is available regarding the basic ecology of Utah’s bat species, including data on population dynamics and trends, roost site selection, foraging behavior, reproduction, and migration. Due to the deficiencies in

[Bat Conservation Strategy, 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 [Did You Know?](#)
- 8 [Contact Us](#)

Training

NEW! Natural Resource Compliance: June 17-20, 2008 in Crane, IN. 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.npdc.navy.mil/csfe/cecos/index.cfm?fa=courses.coursedetail>.

NEW! Coastal Ecology: June 9-13, 2008 in Monterey, CA This course provides Corps of Engineer personnel with state-of-the-art knowledge and technology in marine and coastal ecology. Students are given an overview of the latest scientific and analytical techniques in the field of coast ecology and related sciences. Through a series of lectures, practical exercises, and field trips, students are introduced to the basic concepts of marine/estuarine ecology (including benthic ecosystems, fisheries, coastal marsh and seagrass ecology), sensitive resources, experimental design, and current marine ecological techniques such as the Benthic Resources Assessment Techniques (BRAT) and the Sediment Profiling (SP) camera. The role and importance of coastal ecosystems will be discussed. Temperate, subtropical, and tropical ecosystems will be covered for the Gulf, Atlantic, and Pacific coasts. Cost \$3,350. Limited seats available, visit <http://pdsc.usace.army.mil/CourseListDetail.aspx?CtrlNbr=263>.

Bat Conservation and Management Workshops – 2008: Several dates and states. Bat Conservation International (BCI) offers a series of comprehensive, introductory field workshops to train serious students of bat conservation in current research and management techniques for the study of bats. Following an intensive 6-day, 5-night agenda, BCI biologists and professional colleagues will present a combination of lectures and discussions, field trips to view bat habitat resources and hands-on training to catch and identify bats. Learn species identification, netting, radio-tracking, night-vision observation and habitat assessment while working in extraordinary settings. Two Arizona Workshop sessions: May 20-25 and May 25-30, 2008. Each session limited to 16 people. Departure city: Tucson, Arizona. Cost: \$1,395 One California Workshop session: July 19-24, 2008. Limited to 20 people. Departure city: Medford, Oregon. Cost: \$1,395. For additional information, registration forms and scholarship applications, visit <http://www.batcon.org>.

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, and potential impacts resulting from various land use practices, restoration and management techniques that can be applied to maintain or improve riparian systems. For more details please visit <http://pdsc.usace.army.mil/CourseListDetail.aspx?CtrlNbr=281>.



Announcements and Events of Interest

REQUESTS FOR PROPOSALS! 2009 Multistate Conservation Grant Program: Due by midnight EDT Friday, May 2, 2008. The Multistate Conservation Grant Program (MSCGP) is soliciting Letters of Intent (Due by midnight EDT Friday, May 2, 2008) for the 2009 cycle of this competitive grant program. For more application information and materials please visit the MSCGP website. The MSCGP is intended to address regional or national level priorities of state fish and wildlife agencies. It was established in 2000 by the Wildlife and Sport Fish Restoration Programs Improvement Act, which amended the Pittman-Robertson Wildlife Restoration Act and the Dingell-Johnson Sport Fish Restoration Act. Up to \$6,000,000 is available each calendar year for one to three year projects (CFDA Number 15-628). Organizations eligible to apply include: a state or group of states, a non-governmental organization, or the U.S. Fish and Wildlife Service (USFWS) for the purpose of conducting the National Survey of Fishing, Hunting and Wildlife-Associated Recreation. Projects must benefit at least 26 states, or the majority of states in a USFWS region or a regional association of state fish and wildlife agencies. Projects must also benefit sport fish, wild birds and/or wild mammals. For more details visit their website at http://www.fishwildlife.org/multistate_grants.html.

NEW! Embry-Riddle's Wildlife Hazard Management workshop: July 8-10, 2008, at the Denver International Airport in Denver, Colorado. This workshop is being offered as part of Embry-Riddle Aeronautical University - Worldwide's Professional Education programs. The workshop is acceptable to the FAA Administrator for complying with part of the wildlife hazard management requirements of Title 14, Code of Federal Regulations, Part 139. The workshop is a good fit for those who train airport personnel involved in implementing FAA approved wildlife hazard management plans, as well as anyone directly involved in controlling wildlife hazards on airports. Highlights include discussions on wildlife population management and dispersal techniques, endangered species act compliance, strike reporting, wetlands mitigation, pesticides usage, drafting and implementation of integrated wildlife hazard management programs, and an overview of applicable local, state, and federal laws, regulations, and ordinances. For more information and registration form, please link to: <http://www.erau.edu/ec/soctapd/wildlife-management.html>

CALL FOR PAPERS! 35th Natural Areas Conference: October 14-17, 2008 at the Doubletree Hotel in Nashville, Tennessee. The 2008 Natural Areas Conference will be a joint conference of the Natural Areas Association (NAA) and the National Association of Exotic Pest Plant Councils (NAEPPC). The conference will kick-off the 30th anniversary celebration of the NAA, and will be an inaugural national conference for NAEPPC. The conference will focus on ecological management themes with an emphasis on invasive exotic species and the effects of climate change. The NAEPPC will bring its invasive species expertise to the conference and the two organizations will provide synergy in organizing an outstanding event. The plenary and concurrent sessions will address the conference theme "Tuning into a Changing Climate and Biological Invasion." Field trips and workshops will provide training opportunities for participants. Join us for an informative and rewarding experience. Call for papers deadline April 22, 2008. For details visit <http://www.naturalarea.org/08Conference>.

3rd Annual National Environmental Studies and Sciences Summit: May 22-24, 2008 Jonesboro, Arkansas. The National Council for Science and the Environment invites you to attend the 3rd Annual National Environmental Studies and Sciences Summit in Jonesboro, Arkansas at Arkansas State University from 22-24 May 2008. <http://evs.astate.edu/summit2008.htm> The Summit is an opportunity for exchange of interdisciplinary scholarship, teaching methods, and general networking. It is also an opportunity to learn how you can participate in the newly forming Association for Environmental Studies and Sciences (AESS) and a new interdisciplinary environmental studies and sciences journal.

National Mitigation & Ecosystem Banking Conference: May 6-9, 2008, at the Hyatt Regency Hotel in Jacksonville, Florida. Learn from & network with the nearly 400 attendees the conference draws, offering perspectives from bankers, regulators, and users. Participate in several workshops covering: Stream Banking, a Primer on Banking issues, as well as Field trips, Regulator, Banker & User Forums and Interactive sessions on banker, regulator and user perspectives. For details visit <http://www.mitigationbankingconference.com/>



Legacy, continued from page 1

the species. It was the general consensus of gray bat experts that gathered in August 2005 that the population of gray bat is approaching recovered status across the range. However, bat experts believe that the two main obstacles preventing full consensus that the species is recovered are the lack of a recent, range wide survey of bats and lack of an accepted inventory and monitoring protocol (the ESA requires a species to be monitored for 5 years following de-listing). In addition, the assembled experts felt that certain other conservation actions are necessary to fully meet recovery plan goals.

This Legacy funded project engages several partners and their assets to complete the final conservation efforts to recover the endangered gray bat. Considerable conservation efforts have been accomplished and the habitat and species population has improved considerably over the years. This project engages the organizations in a partnership to accomplish remaining protection requirements, and validate through population surveys summer maternity and hibernacula sites in the state of Tennessee.

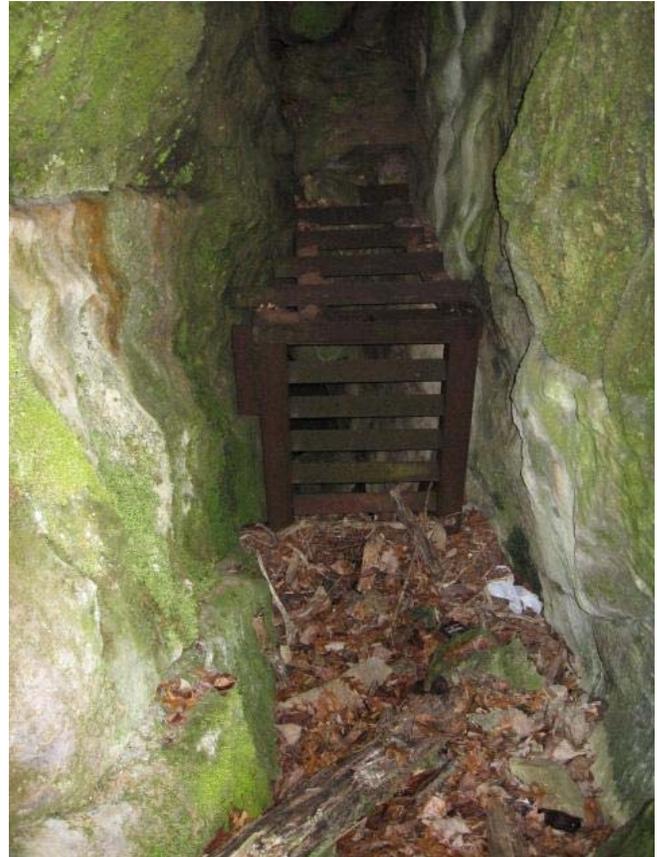
Two of the maternity caves involved in this project are, Bellamy Cave and Pearsons Cave in Tennessee. Pearson Cave was purchased in January 2007, by a conservation buyer who will hold the property until TNC or the State raises the funds needed to buy the property from him. Therefore, the immediate threat to the cave has been addressed but funds are still needed to provide for long-term TNC or State protection and management. At Bellamy Cave (Montgomery County), which is owned by The Nature Conservancy, a protection barrier was installed in 2007 to limit access to the cave. A barrier gate at Pearsons Cave was also installed the same year.

Hibernacula site population surveys were updated as part of the recovery efforts. During the project's bat population surveys in summer caves in Tennessee, a total of 201,563 bats were counted exiting 21 caves. Four caves could not be surveyed due to lack of permission or access.

Hibernacula surveys of nine caves in MO, TN, and AR showed an estimated total of just over 1,800,000 bats for the eight caves surveyed (Bellamy and Hubbards Caves, TN; Blanchard Springs, Bonanza, and Cave Mountain Caves, AR; and Coffin, Mose Prater, and Bat Caves, MO). An additional 260,000 bats were recorded during 2005 surveys in Coach Cave, KY. Three caves in Kentucky and Alabama could not be surveyed due to hazards.

The landowners denied access to Pearson (Hawkins County) and Cripps Mill (DeKalb County) Caves, both in Tennessee. The new landowners of Bat Cave in Lincoln County could not be contacted on 3 separate site visit attempts. Finally, permission could not be obtained in time for a trip into Hound Dog Drop Cave in Wayne County.

Improvements to Jesse James Cave, KY included rebuilding of the access stairs took place in 2006. The participation of members of the Coach and James Caves Mapping Group; who worked officially as USFWS volunteers made this improvement possible.



An effective tool for bat conservation is the installation of a barrier, or gate at the cave's entrance. Gates such as this one installed at Pearson's Cave, TN (Hawkins Co), help keep intruders from accessing the hibernacula or maternity caves. Similar conservation efforts have taken place at nearby Bellamy Cave (Montgomery Co).



Bat Conservation Strategy, continued from page 1

and unconsolidated nature of bat research in Utah, it has been very difficult for land managers to identify, much less address, management and conservation issues related to bats. Within the spirit and intent of the BCI MOU and the status of bat populations in Utah, Dugway Proving Ground (DPG) has brought together five DoD Command Groups: DPG, Hill Air Force Base (HAFB), Utah National Guard (UNG) - Camp Williams and Washington County, Deseret Chemical Depot (DCD), and Tooele Army Depot (TEAD). This group of DoD land managers has coordinated with the UT Division of Wildlife Resources (UDWR), U.S. Bureau of Land Management (BLM), U.S. Forest Service (USFS), U.S. Fish and Wildlife Service, National Park Service (NPS), U.S.D.A. Natural Resources Conservation Service, UT Division of Oil, Gas, and Mining (UDOGM), UT Division of Parks and Recreation, Utah State University, The Nature Conservancy (TNC), Southern Utah State University, Rocky Mountain Power, and Kennecott Utah Copper through the Utah Bat Conservation Cooperative (UBCC).



This State Sensitive Fringed Myotis (*Myotis thysanodes*) was caught 12 miles from Dugway Proving Ground during the Legacy Program sponsored project. Photo by Kimberly Asmus, State Biologist.

Resulting from this initiative we have collected and compiled a large amount of data on Utah bats, which is recognized as a critical step towards a state-wide bat conservation strategy. Specifically we have - 1) identified distribution, quantity, and quality of data on bats in Utah, 2) created a model that will track suitability of landscape characteristics that promote or limit potential use by bats, 3) created a geodatabase to house historic, current, and future bat data in the state for use by land managers for bat management, and 3) established a baseline for future cooperative bat research and management efforts in the state. This project's geodatabase and data are expected to provide a foundation upon which conservation partners can set priorities, collaborate on objectives, and emphasize system health for the entire state of Utah with specific benefit to the DoD.

The DoD Legacy Program award (Legacy project 07-346) - in addition to providing direct support for the development of a rigorous data acquisition, storage, and analysis framework - through the close involvement of a diversity of partners, has insured that the geodatabase supports priority research actions identified in the North American Bat Conservation Partnership (NABCP) Strategic Plan, as well as contributes significantly to Utah's Bat Conservation Plan (currently being written by UDWR). Such partnerships between the DoD, UDWR, and its UBCC collaborators sets a good precedent with respect to landscape scale management, recognition of the interconnectedness of animal communities, and importance of interagency collaboration.

The Utah Natural Heritage Program (UNHP) has gathered the majority of all known historical and contemporary biological bat data in Utah. Data were gathered from state and federal agencies, universities, and private environmental consulting firms. Currently, the UNHP has received cooperation or data from: DPG, HAFB, UDWR, BLM, NPS, UDOGM, Utah State University, Chicago Field Museum, AGEISS Environmental, Inc., Royal Ontario Museum, Southern Nevada Water Authority, and the USFS.

To date, the UNHP has compiled over 21,500 data records as part of this Legacy project. Nearly all of these records include georeferenced data (UTMs) for individual bat occurrences statewide. Such data were not previously available collectively for analysis and will provide the records necessary to address data gaps in the natural history of the bats of Utah.

The geodatabase is completed and is implementing an Enterprise GIS database based on ESRI ArcSDE. Data will be integrated in phases beginning with the infrastructure and facility information and continuing with Natural resource data. Data will comply with Spatial Data Standards for Infrastructure and Environment (SDSFIE). The database will support stock and customizable queries; a quality assessment and quality control (QAQC) module where data will be approved or rejected by UNHP staff members; and a web interface for data entry and public outreach. Once this geodatabase is populated with the help of UDWR data entry staff, DoD land managers will assist with the generation of conservation and management objectives covering much of the State, but specifically emphasizing DPG, HAFB, TEAD, DCD, and UNG testing and training ranges. This effort is part of Phase II of this project and has been funded by the Legacy Resources Management Program. In addition to the creation of

management objectives, Phase II will: 1) develop a state-wide statistics based protocol, 2) complete a data gap analysis on the 21,500+ records leading to a State of Bats Report which will be incorporated into the State Bat Conservation Plan (currently being drafted), and 3) integrate real data into the bat habitat suitability model.

This state-wide effort to cooperatively manage bats is a forward-looking approach that will enhance DoD's ability to access, evaluate, and utilize existing inventory data to manage bat species on military land – efforts that are extremely important because of the sensitive status of bat populations in Utah. Legacy Program project deliverables support military test and training ranges and sound stewardship initiatives throughout Utah. This Legacy project will specifically identify regional trends and patterns on DoD lands that support objectives and goals fundamental to sound land management policies within the DoD. This project will benefit the military through the identification and description of state-wide data currently existing within dozens of separate locations. This data, collectively, within a state-wide database, will yield invaluable trends and patterns throughout DoD training ranges and state and private recreational lands. Funding this project has led to this organization of data thereby saving DoD personnel thousands of dollars in time and contracts to collect data that may already exist elsewhere. This geodatabase will allow DoD land managers to efficiently, effectively and cheaply manage their own assets without having to replicate efforts. It will also allow regional trends in species abundance, diversity and richness to assist species management on DoD lands, almost certainly reducing the pressure and need for tight restrictions on testing and training lands. A regional approach to management benefits all land managers and enhances the war fighters ability to use the land in a way that support the motto “train as we fight, fight as we train.”



Did You Know?

A small bat you may say! – The Eastern Pipistrelle, *Pipistrellus subflavus*, found on several DoD installations throughout the Eastern United States, measures an average 8 cm in length and is one of the smallest and one of the most common species of bats found throughout the eastern forests of America – from Nova Scotia and Quebec, and extends south throughout eastern Mexico to Guatemala and Belize. Adults are light reddish-brown above and slightly paler below. The dorsal hairs are tricolored, being darkest at their base, yellowish-brown in the middle, and dark at the tip. Long guard hairs are completely reddish-brown. The skin covering the forearms is reddish and serves as a distinctive identification characteristic. The ears are longer than broad and taper to a narrowly rounded tip. When laid forward, the ear reaches slightly beyond the tip of the nostrils. The dorsal third of the interfemoral membrane (uropatagium) is lightly furred.

They are not often found in buildings or in deep woods, seeming to prefer edge habitats near areas of mixed agricultural use. These bats have been found to feed on large hatches of grain moths emerging from corn cribs, indicating that they may be of important agricultural benefit.

AMONG THE WORLD'S SMALLEST BATS!

Thailand's Kitti's hog-nosed bat (*Craseonycteris thonglongyai*), also known as the bumblebee bat, is an endangered species of bat and the only member of the family Craseonycteridae. With a full length of about 3 cm and mass of approximately 2 grams, it is the smallest bat and possibly the world's smallest mammal. First described in 1974, it was thought to be endemic to western Thailand until the recent discovery of additional populations in Myanmar.



Kitti's hog-nosed Bat (left), The American Silver Eagle & the Philippine Bamboo Bat (right). (all shown in "almost" actual size)



The Eastern Pipistrelle emerges early from its daytime hiding place in a building or hollow tree, to feed on tiny insects, especially leafhoppers, plant hoppers, beetles, and flies.

Another very small bat known today is the Philippine Bamboo Bat, *Tylonycteris pachypus*, (right hand side image). This bat belongs to the Vespertilionid family. This tiny little bat is only about 4 centimeters long and has a wingspan of 15 centimeters. It weighs right around 1.5 grams or 1/20 of an ounce. For comparison, this bat is so tiny it is as big (in length, not weight) as The American Silver Eagle, the official silver bullion coin of the United States which has a 40.6mm diameter and weights ~31.10 grams.

Want more Bat Facts? Although various bat species eat different kinds of food, the vast majority consume a variety of insects such as moths, beetles, gnats, and crickets. In this respect, the bat's nocturnal behavior provides certain advantages. Enormous numbers of insects fly at night, and with the exception of spiders, there are few competitors for such food. Other than the occasional owl or snake, there are also few predators that can capture or pursue a bat in the dark. Night brings cool temperatures which help dissipate the heat generated by the muscular activity of flight. Because the bat has a thin wing membrane, flying during the heat of the day could be hazardous causing excessive absorption of heat and resulting in dehydration and possible heat prostration. Still need more? Visit http://www.si.edu/Encyclopedia_SI/nmnh/batfacts.htm for more amazing fun facts about bats!

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