



## Legacy Program Update

**Time to register for the DoD Sustaining Military Readiness 2007 Conference:** Don't delay! The 2007 Sustaining Military Readiness Conference, also known as the Conservation Plus Conference, will be held at Disney's Coronado Springs Resort in Orlando, Florida from July 30 to August 3, 2007. Calls for posters, registration, agenda, and field trip details are available online at [www.sustainingmilitaryreadiness2007.com](http://www.sustainingmilitaryreadiness2007.com).

**Legacy Program Announces FY 2008 RFP:** The Legacy Resource Management Program announces a call for pre-proposals focusing on the management, stewardship, and preservation of DoD's natural and cultural resources. The deadline for pre-proposals is 4 September 2007. Visit [www.DoDLegacy.org](http://www.DoDLegacy.org) for details.

## Legacy Project Highlight of the Month

### **Legacy Project 05-245 Migratory Bird Monitoring Using Automated Acoustic and Internet Technologies**

Acoustical methods play a prominent role in avian monitoring efforts because many birds can be heard more reliably and at much greater ranges than they can be seen (for example, all bird detections at 37% of study sites in Hawaiian study were aural; Scott et al. 1981). However, three factors constrain the robust translation of bird sound detections into reliable estimates of density: 1) human listeners differ significantly in hearing thresholds and psychoacoustic acuity (Cyr 1981, Ramsey and Scott 1981); 2) human observers vary in their ability to identify sounds, cope with dense choruses and judge distances to bird sounds (Faanes and Bystrak 1981, Emlen and DeJong 1981); and 3) the patterns of bird sound production (rates) are inadequately quantified (Diehl 1981, Ekman 1981, Best 1981). These limitations apply to ground-based monitoring of diurnal, terrestrial birds and to monitoring

[See Legacy, page 4](#)



## In The News

### Delisting of the Bald Eagle is Official

By Pedro Morales, Legacy Staff  
Chris Isleib, DoD Public Relations Staff contributed to this article

Assistant Deputy Under Secretary of Defense for Environmental Safety and Occupational Health Alex Beehler represented the Defense Department at the Bald Eagle delisting ceremony, celebrated June 28 at the Jefferson Memorial in Washington, DC. The ceremony marked the delisting of the Bald Eagle from the Department of the Interior's Endangered Species List. Secretary of the Interior Dirk Kempthorne hosted the signing ceremony. The Department of the Interior invited many to speak at the ceremony including Scott Aiken, from the Bureau of Indian Affairs who performed a blessing of the ceremony, Secretary of Treasury Henry Paulson Jr, and representatives of Non Governmental Organizations such as Jim Lyon, National Wildlife Federation, Michael Bean from Environmental Defense, and Ron Reagan from the Association of Fish and Wildlife Agencies.

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## Training

**NEW! Wetland of Stream Ecology Fundamentals** August 20, 2007 to August 23, 2007 in Kalispell, MT. Topics include: (1) A holistic and landscape driven approach to wetland stream ecology, (2) Introduction to the identification of flora and fauna of wetland stream systems with a strong focus on western regional stream systems, (3) Introduction to the processes and effects of geofluvial morphology on stream systems, (4) Focus on stream water quality factors including nutrients, sediments and catchment areas, (5) Application of the new stream ecology knowledge to understanding and developing ESA (Endangered Species Act) mitigation alternatives ie Bull Trout, etc. For more details visit <http://pdsc.usace.army.mil/CourseListDetail.aspx?CtrlNbr=192>

**Multi - Party Negotiation and Conflict Management: Sustainable Ranges Require Sustainable Relationships:**

July 31, 2007, Coronado Springs Resort, Orlando, FL. Sharpen your skills in multi-party negotiation and conflict management to strengthen local range sustainment efforts. This workshop offers a framework for negotiating productively with multiple interests, agencies, and agendas and preventing, managing and resolving conflicts that may arise. Multi-party negotiation is not the same as two-party negotiation with more people. Learn about the difference and how to improve your own communication and deliberation skills with other federal, state, and local agencies, diverse interest groups, and the community at large. A multi-party scenario based on a noise encroachment case provides the context for this skill-building workshop. NOTE: Materials are required for this workshop. Admittance will be limited to only those who have registered. For more details visit <http://www.sustainingmilitaryreadiness2007.com>

**Ecological Risk Assessment:** August 14-16, 2007, San Diego, CA. This Civil Engineer Corps Officers School course provides attendees with information on Ecological Risk Assessment (ERA) and its use in the IR program. Instruction includes discussion on ERA components, how the risk manager and risk assessor decide what is needed for a site-specific ERA, technical oversight that should be included in the ERA how the tasks of the ERA should be performed, how to estimate risk based on the results of the ERA, and how the ERA fits within required regulatory processes such as RI/FS (CERCLA) and RFI/CMS (RCRA). This course was developed in coordination with the Tri-Service ERA Group and is approved by the Interservice Environmental Education Review Board (ISEERB). For more details visit <https://www.cecos.navy.mil/coursedetail.cfm?CourseID=14>



## Announcements and Events of Interest

**FEATURED! DoD's "Conservation Plus" Conference:** The 2007 Sustaining Military Readiness Conference will be held July 30 to August 3, 2007, at the Coronado Springs Resort in Orlando, FL. The 2007 Sustaining Military Readiness Conference will bring together DoD professionals from the operational, environmental conservation, and planning communities along with partners from other government and non-governmental agencies and organizations to participate in training opportunities, discuss projects and programs, share lessons learned, and exchange information for the purpose of sustaining military readiness through conservation, compatible land use planning, and encroachment mitigation. Requests to submit posters are due by June 15. The hotel reservation deadline is July 4. Hotel per diem room rate is not guaranteed after July 4<sup>th</sup>. For more details and registration information visit the conference website at: <http://www.sustainingmilitaryreadiness2007.com/>

**NEW! 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](http://www.natureserve.org/visitLocal/cons_conference2007.jsp)

**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.nbj.gov>

**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>

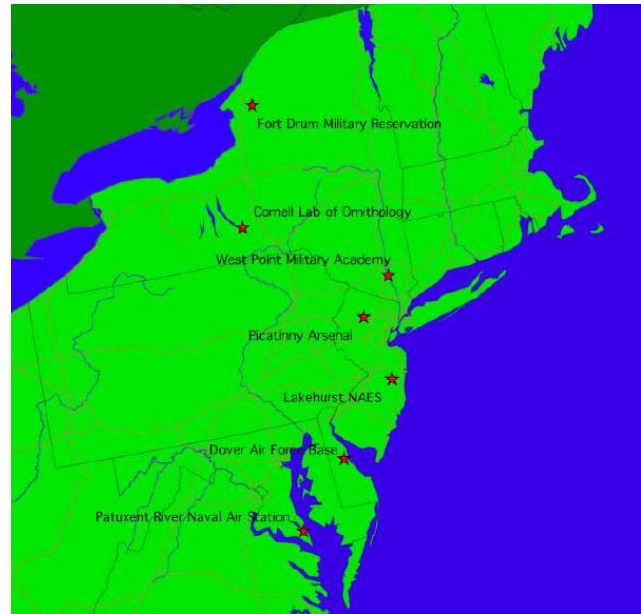


**Legacy, continued from page 1**

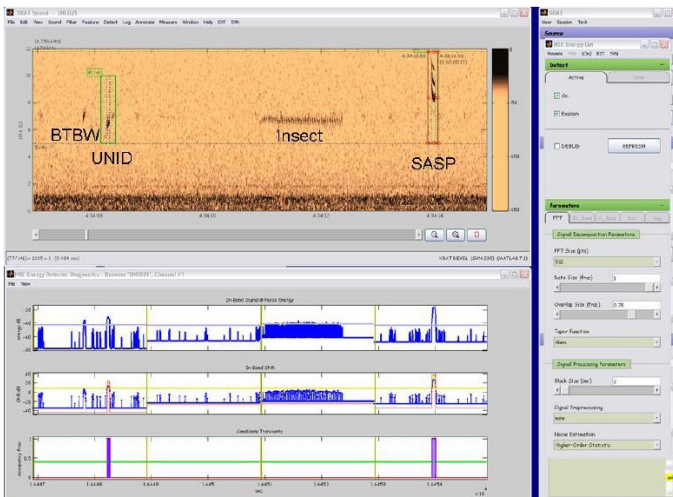
of the vast numbers of aerial, nocturnal migrants that vocalize in flight. Cornell Laboratory of Ornithology (CLO) developed digital autonomous recording units (ARUs) that record mp3 and binary (BIN) sound files for periods of up to 6 weeks in duration. This study addressed the limiting factors of observers monitoring birds acoustically and of protocols monitoring birds that may be missed by traditional observation methods and provide solutions and sample data that enhance DoD's capacity to monitor avian resources on and around DoD lands and analysis and summary of these data. ARU reliability was examined, applicability to tasks, and recording quality. All devices were tested with the planned application of this technology: to monitor acoustically species that vocalize infrequently, to improving accuracy of existing census methods, to produce acoustic datasets for training purposes, and to monitor flight-calls of migrant birds for predicting migration and stopover use on DoD installations.

During this project over 27,000 hours of data was collected in fall 2005 and spring 2006, and the Cornell Laboratory of Ornithology have successfully stored, processed, and initiated analysis of this information. The report outlines problems and constraints encountered in developing and applying hardware and software technologies.

CLO developed digital autonomous recording units (ARUs) that record acoustic data for periods of up to several months in duration. These units can provide a valuable extension to traditional point counts because they can detect species that are not censused efficiently by point count methods because they vocalize infrequently, and be deployed in advance at many sites and programmed to record simultaneously to produce true matched samples enabling ground personnel to cover more sites. These devices are also useful for monitoring audible bird migration.



Locations of Autonomous Recording Unit (ARU) arrays for monitoring nocturnal flight-calls and documenting use of airspace above DoD installations by migrating songbirds.



Energy detection algorithm used on flight-calls and insect stridulating as seen on screen in XBAT version 0.7. Upper left, mp3 sound file spectrogram with Black-throated Blue Warbler (BTBW), unidentified flight-calls (UNID), and Savannah Sparrow (SASP) flight-calls highlighted as green selections.

Data analysis involved the use of automatic detection algorithms to facilitate faster analysis of sound files containing flight-calls. Often these files are large, containing tens of hours of data. Automatic detection using algorithms designed to detect specific signal energy parameters is a useful way to begin to speed this process. However, choosing the parameters is a challenging process, requiring some trial and error. Such a detector was tested extensively, and efforts are underway to develop the parameters that detect 10-20 times faster than real time with a success of 40-50%. This success varies extensively from 0-10% to 90-100%. All detectors were compared against an expert classification by visual inspection, detecting all of the flight-calls present in a sound file. This process of development and troubleshooting has been extensive with the objective of finding a stable range of detection success.

There was extensive contamination in the sound files from non-avian noises such as insects and non-biological sources such as aircraft, gunfire, and automobiles. Placement of recording units in quiet areas is certainly critical for recording bird vocalizations. However, non-biological noise is relatively easy to filter; it sounds and looks distinct from bird vocalizations, and it is possible to create some algorithms to remove the effects of this noise. Insect noise is a greater problem, particularly in that many species of grasshoppers and crickets produce sounds in the range of many flight-calls. As such, positioning microphones away from trees will minimize the effects of katydids and some other insects. Positioning the microphones away from grassy areas, if possible in paved locations or on top of buildings, will greatly minimize the effects of insect noise.

The innovative monitoring network proposed and the data being collected provide the tools and the information to monitor migratory activity by species, contribute towards more accurate population estimates for these species, and provide information for more accurate environmental risk assessments (Migratory Bird Treaty Act and Endangered Species Act) and Integrated Natural Resource Management Plans. The proposed migratory bird network documents migratory phenomena that are unobservable by other means, and enable studies that extend beyond the boundaries of DoD installations, addressing three challenges confronting DoD: acquiring more detailed information to reduce bird strike hazards, meeting environmental stewardship obligations while managing the ongoing financial and operational costs, and engaging broader societal support and solutions for environmental problems.



## Bald Eagle, continued from page 1

Even after the delisting, the Bald Eagle remains protected by two federal laws, the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

The Bald Eagle has made a remarkable comeback from the brink of extinction. According to the U.S. Fish and Wildlife Service, there were only about 400 nesting pairs of Bald Eagles in the United States in 1963, but today there are over 10,000 nesting pairs in the continental US. This successful resurgence has been largely due to the cooperative efforts between federal, state, tribal, local, and private partners. The Defense Department played a significant role in that success.

The Department of Defense manages lands that host more than 440 active Bald Eagle nests on Army, Navy, Air Force, and Marine Corps facilities. Further, since the bald eagle is migratory, many other Bald Eagles use DoD-managed lands as part of their stopover locations on their migratory routes.

Department of Defense environmental scientists, policy officials, and service members worked together to plan and implement Bald Eagle Management Plans for each of these sites, in order to control human behavior and protect the natural habitat for the birds.

The Bald Eagle is one of the hundreds of species that the Defense Department works to preserve. DoD lands are home to more threatened and endangered species per acre than any other federal agency, with approximately 320 threatened and endangered species and nearly 550 species at risk.

## New York State Threatened Snake is Guest at CECOS NRC Course

By David-Bryden Pease, CECOS Course Director  
June 26, 2007

The CECOS Natural Resource Compliance (NRC) course held at USMA West Point, NY this June was given a unique encounter that will not be soon forgotten.

Mr. James (Jim) Beemer, the Natural Resource Manager for West Point, brought over a live Timber Rattlesnake (*Crotalus horridus*) for the class to see. He had just caught the Timber Rattler about 100 feet from his office that morning after receiving calls from maintenance workers about what they believed to be a copperhead snake in the area.

Jim thought that the class (comprised of students from all over DoD and installations as far as Japan) might enjoy a first hand view of a snake listed by the New York State Department of Environmental Conservation as Threatened. He called me to see if it would be OK to bring it over to the class. I said yes, it would be great for the class to see a Timber Rattler.

The snake was two feet long and Jim concluded that it was about two years old due to the number of rattles on its tail.

The snake had a color pattern (which is called the yellow phase) and had black or dark brown cross bands on a lighter background color of yellow and brown.



Bald Eagle Foundation non-releasable trained Bald Eagle, Challenger, and his keeper, join Jennifer Suh, DoD Conservation intern, and the Legacy Program Staff during the Bald Eagle delisting ceremony.



Timber Rattlesnake

The scales were ridged, giving this rattlesnake, a rough-skinned appearance. It had a broadly triangular head with many small scales on the crown of the head bordered by a few large scales.

In addition to the students, on hand to see the snake was Mr. Peter Boice (OSD Conservation Office), Dr. J. Douglas Ripley (LTC USAF Ret), and Mr. Todd Wills (Army Environmental Command) instructors in the NRC class. They were all a little nervous approaching the garbage can holding the Timber rattler.

There was no danger to the class as the snake was held in a garbage can where it could not strike anyone. It was held by snake tongs when it was taken out of the can. In addition, everyone was kept at least 3 feet back, well out of reach of the snake.



DoD Conservation Team Leader Peter Boice, who is one of the instructors of the Natural Resource Compliance course, examines from up close the Timber Rattlesnake. Behind him are two fellow instructors (quite the safe distance from the bin) Doug Ripley and Todd Wills.



Timber Rattlesnake safely handled by Jim Beemer

When Jim took the snake out of the can to give the class a closer look, only a few brave souls dared to get close, mainly to take some pictures. The class enjoyed the event and talked about it for some time.

The snake was released into the wild later that afternoon. Our hats off to Jim Beemer for giving the NRC class this unexpected treat.



Jim Beemer



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

**NEW! [Assessing BASH Risk Potential of Migrating and Breeding Osprey in the Mid Atlantic Chesapeake Bay Region](#)** (Legacy # 07-292): this PowerPoint presentation gives the project background, banding of the osprey on Langley AFB and preliminary data analysis. Contains great images.

**NEW! [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.

**NEW! [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.

**NEW! [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.

**[State-wide Conservation Forum to Facilitate Cooperative Conservation](#)** (Legacy 06-331): this report details the conservation forum held on December 14, 2006 at the Pocahontas State Park in Chester, Virginia. The purpose was to launch regional conservation partnerships in support of the Governor's land conservation initiative and military compatible land use and conservation buffers addressing both land protection and restoration. At the forum's conclusion, commitments were made by the forum attendees for three follow-on regional forums to explore specific conservation partnerships in the Northern Virginia area that includes Fort A.P. Hill, Naval Surface Warfare Center Dahlgren, and Marine Corps Base Quantico; the south-central region that includes Fort Pickett; and the Tidewater region that includes Fort Eustis, Fort Story, Langley Air Force Base, and the Oceana Naval Air Station.

**[Prescribed burns and their effects on threatened and endangered species with emphasis on the Eastern Box Turtle \(\*Terrapene c. carolina\*\)](#)** (Legacy # 05-271) This report summarizes preliminary findings from year one of field studies on the ecology of the Eastern Box Turtle (*Terrapene c. carolina*) on the Fort Custer Training Center (FCTC) in south central Michigan. This study was initiated to investigate the impacts of prescribed burning on resident herpetofaunal populations by examining patterns of movement and habitat use of the Eastern Box Turtle using radiotelemetry. This report provides a discussion of data collected to date, as well as management recommendations intended to promote the conservation of the Eastern Box Turtle, as well as other herpetofaunal species found on the FCTC, including those that are listed as threatened and endangered such as the Eastern Massasauga Rattlesnake (*Sistrurus c. catenatus*), Spotted Turtle (*Clemmys guttata*), and Blanding's Turtle (*Emydoidea blandingii*).

**[Grand Bay-Banks Lake \(GBBL\) Stewardship Partnership - Phase II:](#)** (Legacy 05-158) The Grand Bay-Banks Lake ecosystem is a major part of an expansive palustrine wetland complex (over 18,000 acres) in south-central Georgia in Lanier and Lowndes Counties near Valdosta. The wetland is co-owned by Moody Air Force Base (AFB); Georgia Department of Natural Resources (DNR), Grand Bay Wildlife Management. This project involved the development of preliminary hydrological and fire management plans for the area as well as a monitoring plan to track the impacts of management action or inaction on the rare species and natural communities found at GBBL. Other components of this project include mapping of current and historic vegetation at the site, and a description of the pre-settlement fire regime and vegetation of the GBBL area. See also project [Fact Sheet](#).



**SERDP Ecosystem Management Project (SEMP): 2005 Annual Report** The SERDP Ecosystem Management Project (SEMP) was initiated in 1998 by the Strategic Environmental Research and Development Program (SERDP), after a 1997 workshop on Department of Defense ecosystem management challenges. This report records the many changes that occurred in the SEMP Project in the year 2005. All the original SEMP research projects have completed their funded work and final reports were received during this year. As reported in the 2004 SEMP annual Report, significant change took place in almost every aspect of SEMP program management and execution during 2005. The response to the comprehensive external review of SEMP is reported as these changes have been implemented. New SEMP research projects are no longer being funded within the SEMP budget, but will be separate Statements of Need through the normal SERDP process. Two workshops were held at Fort Benning in January and February 2005 to identify more critical installation needs; Fort Benning staff, SEMP researchers, Technical Advisory Committee members, and several outside experts reviewed these results, which resulted in a redefined research plan for 2006 and beyond.

**Habitat Fragmentation Handbook for Installation Planners: Status and Options** The primary objective of this work is to provide military installation planners with a sourcebook on the state of the art in how to analyze the probability and risks of habitat fragmentation for animal Threatened and Endangered Species (TES). The document provides a review of habitat fragmentation issues, focusing on those of highest concern to Army Military Installation Land Managers. It has been designed to capture information developed during the 4-year Engineering Research and Development Center research project called: Quantify Effects of Fragmentation and Approaches to Mitigate.

**Habitat Selection by the Gopher Tortoise (*Gopherus polyphemus*)** The gopher tortoise (*Gopherus polyphemus*) occurs in the southeastern Coastal Plain and has experienced widespread decline due to habitat loss and other human impacts. The largest remaining populations occur on private lands and military installations. Proper management at these sites will be critical to the success of the species. The goal of this study was to determine the response of gopher tortoises to forestry management practices commonly implemented in the management of the Red-cockaded Woodpecker. Habitat use of individual tortoises was monitored at four study sites with different ownership and management scenarios: Fort Gordon (military installation, winter burning), Savannah River Site (federal defense facility, winter burning, translocated population), Tillman Sand Ridge (state wildlife preserve, summer burning), and a private hunting preserve (no management). Habitat data were collected to characterize typical canopy and herbaceous vegetation of each site. Data were collected at active burrows; the anecdotal belief that tortoises select the most open habitat available was confirmed. The preferred habitat density appears to be in the range of 40 percent canopy cover, a value compatible with current woodpecker management guidelines. Results will be used to develop recommendations for the concurrent management of gopher tortoises and Red-cockaded Woodpeckers.



## Did You Know?

**Eastern Indigo Snake** - The Eastern Indigo Snake (*Drymarchon corais couper*) is a large, docile, non-poisonous snake growing to a maximum length of about 8 feet. The color in both young and adults is shiny bluish-black, including the belly, with some red or cream coloring about the chin and sides of the head.

The Indigo subdues prey with powerful jaws and swallows it alive; eating other types of snakes (including venomous snakes), frogs, salamanders, toads, small mammals, birds, fish, and young turtles.

Indigo snakes probably reach sexual maturity at 3 to 4 years of age. Based on observations of captive Indigos at Auburn University, mating begins in November, peaks in December, and continues into March.

Clutches averaging eight to nine eggs laid in late spring hatch approximately 3 months later. The snakes remain active to some degree throughout the winter, often emerging from their dens whenever air temperatures exceed 50 degrees Fahrenheit.

This species is currently known to occur only throughout Florida and in the coastal plain of Georgia. Historically, the range also included southern Alabama, southern Mississippi, and the extreme southeastern portion of South Carolina.

The Indigo Snake seems to be strongly associated with high, dry, well-drained sandy soils, closely paralleling the sandhill habitat preferred by the Gopher Tortoise. During warmer months, indigos also frequent streams and swamps, and individuals are occasionally found in flat woods. Gopher Tortoise burrows and other subterranean cavities are commonly used as dens and for egg laying by the Indigo Snake.



The Eastern Indigo Snake is protected at 12 installations including Camp Blanding in Florida and Fort Stewart, Georgia.

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## Contact Us

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