

Herpetology Project

The Herpetology Project was created in the mid-1970s. The project began with studies that assessed the status and distribution of amphibians and reptiles in threatened Florida biotic communities. Since then, our research has expanded to focus on the life histories, diversity, and importance of amphibians and reptiles in a wide variety of Southeastern and Caribbean ecosystems.

USGS/FCSC scientists have pioneered the development of herpetofaunal community sampling techniques, now adopted throughout the world. Since the mid-1980s, research has centered on communities, guilds, and individual species. Research has focused on the status of Southeastern amphibians and the ecology of amphibians and reptiles inhabiting the endangered longleaf pine community of the Coastal Plain, as well as the management and restoration of island herpetofaunas. In addition, our research has included studies on the life histories of declining, endangered, and threatened species, such as the federally protected Red Hills salamander, flattened musk turtle, and loggerhead sea turtle.

Through in-house expertise or collaboration, we have employed the latest scientific techniques, including the implementation of biometrically-based community inventory and monitoring programs, population modeling, telemetry (radio and satellite), genetic analysis, and database management. We anticipate continued emphasis on a multi-disciplinary approach to

long-term studies on the biology of amphibians and reptiles inhabiting the imperiled ecosystems of the Southeastern United States and Caribbean.



Checking for salamander larvae in the Great Smoky Mountains

Program Goals

1. To conduct basic and applied research on the biology, and especially the life history and conservation, of amphibians and reptiles.
2. To focus on federal lands, primarily in the Southeastern United States and Caribbean.
3. To disseminate information on the biology and conservation of amphibians and reptiles, and on the ecosystems on which they depend.



Spring salamander in the Great Smoky Mountains

4. To provide professional and unbiased information based on sound scientific analysis.

Research Programs

Southeastern Amphibian Research & Monitoring Initiative

The objectives of this initiative are (1) to determine the status and trends of amphibian populations on Interior Department lands in the southeastern United States, Puerto Rico, and the U.S. Virgin Islands, and (2) to provide information useful in determining causes of declines should they be discovered. Larger tracts of DOI land, such as the Great Smoky Mountains



Searching for salamanders under cover objects, Great Smoky Mountains



Checking funnel traps in culvert under US Highway 441, Paynes Prairie, Florida

National Park, Okefenokee National Wildlife Refuge, and the large parks of south Florida, should be of sufficient size to allow the determination of species trends, particularly of localized endemic species.

Research Approach

1. Study sites will be established in a manner that allows for statistically valid estimates of the status of amphibians within the boundaries of individual DOI lands and changes in the abundance and distribution of selected amphibian species in larger landscapes centered on large DOI lands.
2. For species and habitats where existing methods are inadequate to collect data on trends, research will be conducted to develop sampling protocols and appropriate methods to analyze data, detect trends, and make predictions concerning status.
3. Ancillary biological and physical data will be collected so that causes of changes in abundance and distribution can be determined.
4. Should emergency situations be detected, such as the presence of disease or malformations, research will assist in the determination of cause as well as methods of containment.

5. Data collection will be coordinated within USGS, among DOI and other federal agencies. Efforts to recruit partners among State agencies, university researchers, and non-governmental organizations will seek to expand the scope, scale, and interpretive value of work conducted by USGS.
6. Information will be made available to cooperating agencies, the scientific community, and the public.

Long-Term Studies of Florida Box Turtles

Since 1991, USGS/FCSC researchers have marked more than 1600 Florida box turtles, with more than 4000 individual captures, on Egmont Key National Wildlife Refuge. The purpose of this long-term project is to gather information on the life history of this species and to determine the effects of habitat restoration on the large population of resident turtles. To date, substantial data have been collected on the demography, population structure, activity patterns, habitat use, and behavior of these turtles. These data have been used to make critical management recommendations regarding island restoration. In addition, the results have implications for determining the response of long-lived animals to take and other forms of perturbations in their environment.

Effectiveness of Highway Barriers to Prevent Vertebrate Mortality

USGS/FCSC scientists are conducting an extensive evaluation of the effectiveness of highway barriers to reduce wildlife mortality and under-road culverts to facilitate intra-population movement across Paynes Prairie State Preserve in Alachua County, Florida. The barriers and culverts were installed by the Florida Department of Transportation in 1999-2000. USGS/FCSC researchers are evaluating pre- and post-construction mortality and animal movement patterns. The results of this study may lead to the development of a model system to significantly reduce the effects of highway mortality on wildlife.

Herpetofauna of the Endangered Longleaf Pine Community

This research began by evaluating the importance of a small temporary pond to a herpeto-faunal community in upland sandhill habitats. More than 16,000 amphibians and reptiles were captured. Our research yielded valuable information on life histories, population structure, orientation, drought effects, buffer zones, landscape dynamics, and management. Other sandhill projects involved inventories of the species using upland habitats, radio-tracking snakes and turtles, and developing sampling techniques.



Measuring a box turtle on Egmont Key NWR