

Alabama Natural Heritage ProgramSM

2010 Annual Report



Staff Directory & Resources

2010 Staff Directory

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Affiliated Websites

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The mission of the Alabama Natural Heritage ProgramSM (ALNHP) is to provide the best available scientific information on the biological diversity of Alabama to guide conservation action and promote sound stewardship practices. ALNHP is administered by the Environmental Institute at Auburn University. Established by The Nature Conservancy in 1989, it is one of a network of such programs across the United States, Canada, and Latin America, collectively known as the Natural Heritage Network (NHN). As a member of the NHN, ALNHP is represented by its membership organization NatureServe. NatureServe works to aggregate data from individual Network Programs and is dedicated to the furtherance of the Network and the application of Heritage data to biodiversity conservation.

Natural Heritage Programs have three broad functions:

- to collect information on the status and distribution of species and natural communities,
- to manage this information in a standardized way, and
- to disseminate this information to a wide array of users.

Natural Heritage Programs use a standardized information management system to track biodiversity data including taxonomy, distribution, population trends, habitat requirements, relative abundance, quality, condition, and viability. ALNHP provides the following services: biodiversity data management, inventory, biological monitoring, site prioritization, conservation planning, Geographic Information System services, and land management expertise.

Affiliations



AUBURN
UNIVERSITY
ENVIRONMENTAL
INSTITUTE

The mission of the Auburn University Environmental Institute is to serve the state, nation, and global community by providing leadership and coherence in all university areas of environmental instruction, research, and extension/outreach. The goal of the Environmental Institute is to promote, coordinate, and implement multi-disciplinary programs and activities to meet the environmental needs of the University, state, and nation. There are several ways in which the Institute works to meet these goals.

By supporting and coordinating interdisciplinary teams, programs, or specialized centers, the Institute creates a new forum for environmental research and education. The associated faculty program promotes the work and research across many disciplines which may not ordinarily coordinate investigative efforts. The Institute also serves the faculty by increasing information and access to extramural funding, and developing proposals and other means for improving the quality of environmental education and research at Auburn University. The Institute serves as a source of information concerning funding, through public and private monies, of new and innovative research opportunities. It is additionally important to increase the effectiveness of Auburn University educational programs, curriculum, and professional opportunities for all students in all academic fields related to the environment, such as through lecture series and sponsored annual conferences.



NatureServe

A Network Connecting Science With Conservation

NatureServe is a non-profit conservation organization that provides the scientific information and tools needed to help guide effective conservation action.

NatureServe represents an international network of biological inventories - known as natural heritage programs or conservation data centers - operating in all 50 U.S. states, Canada, Latin America and the Caribbean. NatureServe and its network of natural heritage programs are the leading source for information about rare and endangered species and threatened ecosystems. Together we not only collect and manage detailed local information on plants, animals, and ecosystems, but develop information products, data management tools, and conservation services to help meet local, national, and global conservation needs. The objective scientific information about species and ecosystems developed by NatureServe is used by all sectors of society - conservation groups, government agencies, corporations, academia, and the public - to make informed decisions about managing our natural resources.

Introduction

The program staff continue to conduct in-depth surveys for imperiled species in Alabama and to produce quality reports and publications on the state's diverse flora and fauna. The comprehensive database of Alabama's natural heritage continues to grow, and provides a sound foundation for conservation efforts in the state. This report includes summaries of our projects over the past year.

Inventory

Botany & Community Ecology

The botany/community ecology component has been actively involved presenting lectures, conducting field surveys, and preparing reports for several projects in 2010. A large proportion of time was devoted to preparing status surveys and conducting five-year reviews of federally-listed plants on behalf of the U.S. Fish and Wildlife Service (USFWS). ALNHP is also currently working in conjunction with Daphne Field Office of the USFWS on behalf of the U.S. Army Corps of Engineers (USACE) to conduct rare plant surveys of USACE landholdings along the Alabama River. The results will be employed in conservation planning efforts to safeguard critically imperiled species from the potential impacts of USACE projects. The National Park Service has also partnered with ALNHP to conduct an inventory of vascular plants on the Cane River Creole National Historical Park and prepare an account of historic vegetation within the Cane River National Heritage Area, Louisiana. In December 2010 the ALNHP entered into agreement with NatureServe to develop and institute a series of ecological metrics to assess the condition of longleaf pine forests in national forests across the Southeast. The final product will enable the Forest Service to better assess the long-term integrity and viability of these systems.



Alabama canebrake pitcher-plant (*Sarracenia rubra* ssp. *alabamensis*)

Project Summaries

Alabama Canebrake Pitcher-plant – five-year review

A five-year review of the Alabama canebrake pitcher-plant (*Sarracenia rubra* ssp. *alabamensis*) was prepared on behalf of the USFWS to update existing information on the viability and conservation efforts of known populations to determine the level of federal protection to conserve the species. Currently known from 11 sites, the species is an Alabama endemic, occurring in only three counties in the central part of the state.

Alabama Red-bellied Turtle

Surveys of the Alabama red-bellied turtle (*Pseudemys alabamensis*) continued during 2010, completing the third year of data collection. Information collected through this survey is being used to evaluate the status of this federally endangered species and for revision of the recovery plan (funded by the USFWS); recovery plan revision is nearing completion. Preliminary analysis reveals a gradual decline in turtle numbers since the first survey in 1979. No definitive underlying cause has been identified that can be attributed to a declining turtle population, instead a combination of factors are being considered. Funding for this project has



Alabama red-bellied turtle (*Pseudemys alabamensis*)

been through the Section 6 program administered by the Alabama Department of Conservation and Natural Resources. Funding has been secured to continue this project for a fourth year.

Botanical Inventories of U.S. Army Corps landholdings along the Alabama River

In June 2010, ALNHP entered into an agreement with the Alabama Ecological Services Field Office of the USFWS to conduct an inventory of rare plants on USACE landholdings along the Alabama River. The results of the report will be applied toward conservation planning efforts to safeguard critically imperiled species from the potential impacts of USACE projects. Survey efforts to date have resulted in 24 occurrences of 18 taxa of conservation concern as recognized by ALNHP. A final report will be submitted in June 2011.

Black Warrior Waterdog

Known from only about a dozen locations, the Black Warrior waterdog (*Necturus alabamensis*) is a species endemic to the Black Warrior river system of Alabama. Occurring only above the Fall Line, the range of the Black Warrior waterdog mimics that of another Black Warrior endemic, the flattened musk turtle. The USFWS is reviewing the status of the waterdog and the present study is to provide information



Black Warrior waterdog (*Necturus alabamensis*)

on the status of the salamander; the Black Warrior waterdog is a permanently aquatic salamander. This study is being funded by the Jackson, Mississippi Field Office of USFWS.

Cahaba River National Wildlife Refuge Inventory for Amphibians and Reptiles

Cahaba River National Wildlife Refuge is located in Bibb County, totals approximately 3,500 acres, straddles the Cahaba River, and encompasses a variety of habitats. Being a relatively new refuge baseline data is unavailable for most faunal groups. A baseline inventory, to produce a species list of amphibians and reptiles, was completed during 2010. The final species list included 11 frogs and toads, 10 salamanders, 7 turtles, 6 lizards, and 15 snakes; this total represents a 51% of the potential species for Bibb County. Voucher specimens were deposited in the Auburn University Museum of Herpetology.



Cahaba River

This amphibian and reptile locality data was integrated with natural community maps that were produced during a prior study (*Cahaba River National Wildlife Refuge Natural Community Assessment and Rare Plant Survey* by Al Schotz, 2007). Extensive ecological restoration, from longleaf pine establishment to coal mine reclamation, is planned for the refuge and this study is critical to providing the baseline information on the amphibians and reptiles so that faunal shifts may be documented as restoration activities move forward.

Carpenter's Groundcherry Status Survey

A range-wide status assessment of the Carpenter's ground-cherry (*Physalis carpenteri*) is in progress, resulting in three new occurrences of this globally imperiled plant. To date, surveys have been conducted in Florida and Alabama, with additional field work planned for Georgia, Mississippi, and Louisiana during the spring and summer of 2011. The project, funded through the U.S. Fish and Wildlife Service, will provide critical information pertaining to population dynamics, habitat characteristics, and disturbances and potential threats to determine viable conservation efforts for the species. A final report will be submitted to the USFWS in November 2011.



Carpenter's ground cherry (*Physalis carpenteri*)



Georgia rockcress (*Arabis georgiana*)

Georgia Rockcress Status Survey

A status survey on the Georgia rockcress (*Arabis georgiana*) in Alabama was conducted on behalf of the U.S. Fish and Wildlife Service and completed in November 2010. The purpose of the report was to furnish an updated, state-wide assessment of the species to systematically analyze population dynamics, to characterize general habitat requirements, and to ascertain apparent disturbances and potential threats. Known only from Alabama and Georgia, this relative of turnip and broccoli is currently represented by 15 widely distributed populations across the central and southern portions of Alabama. The species inhabits limestone glades, open woodlands, and sandy river bluffs which have now become globally imperiled due to a combination of residential development, incompatible timber harvesting, quarrying, trash disposal, and other modifications of its habitat.

Red Hills Salamander (*Phaeognathus hubrichti*) Studies

Haines Island Occupancy and Probability of Detection Studies

Haines Island Park, owned by the U.S. Army Corps of Engineers, supports the only Red Hills salamander population on federally owned property. This location has been a study site by Auburn University researchers on a number of occasions. The present study is planned to



Red Hills salamander (*Phaeognathus hubrichti*)

accomplish two objectives: 1) determine the occupancy rate of the burrows, i.e. the ratio of salamanders to burrows, and 2) conduct a probability detection study, i.e. what is the likelihood of sighting a salamander at a burrow entrance under given environmental conditions. These studies are being conducted in tandem within a section of slope habitat within the park, and the studies will be completed by early summer 2011. This project is being funded through the USFWS Daphne Field Office.

Falkenberry Hill Activity Study

In 2008 a study on a population of Red Hills salamanders (*Phaeognathus hubrichti*) in Monroe County was initiated in which all burrows were identified and mapped, with a significant number of Red Hills salamanders being captured, measured, weighed, sexed, implanted with a PIT tag, and returned to their respective burrows. With completion of this short-term study the essential elements of a long-term study were in place, thus beginning in January 2010 monthly trips have been made to the site to collect activity and movement data on the PIT tagged salamanders. Using a PIT tag reader and antenna capable of detecting a tag as deep as 30 cm underground an entire year of data, taken once a month, has been gathered on activity and movements of Red Hills salamanders. This Red Hills salamander activity study will continue for

a minimum of an additional year with funding from the USFWS. A second component of the study will be a fine-scale genetics assessment of the population with comparison to two other sites, one contiguous and one separated by an anthropogenic barrier. This project is in collaboration with Dr. Kristin Bakkegard of Samford University and Dr. Rulon Clark and Shannon Hoss of San Diego State University.

Population Genetics

The Alabama Department of Conservation and Natural Resources, through a Section 6 grant, is funding a population genetics study on the Red Hills salamander. For this project, which will be range-wide, the genetics and burrow density of 10 populations from undisturbed sites will be compared to genetics and burrow density from 10 disturbed sites. A main criterion in deciding the categorization of disturbance will be buffer width and intactness. This study is being conducted in collaboration with Dr. JJ Apodaca of Florida State University.

Reintroduction of the Eastern Indigo Snake onto Conecuh National Forest

This is an ambitious, long-term project with the goal of establishing a viable population of the eastern indigo snake (*Drymarchon couperi*), an apex predator long absent from Alabama, on Conecuh National Forest. To achieve this



eastern indigo snake (*Drymarchon couperi*)

goal, in 2008, 2009, and 2010 gravid female snakes were captured in Georgia, returned to Auburn and maintained in the lab until laying eggs. Once having laid eggs the female snakes were returned to their place of capture. The eggs, 3 clutches in 2008 and 7 clutches in 2009 and 2010, were incubated in the lab to obtain the indigo snakes needed for the reintroduction project. To understand the activities of newly released snakes a radio-telemetry study is being done, and while hatchling indigo snakes are quite large they are not large enough for the implantation of a radio transmitter of the needed size. Thus, the young snakes must be held in the lab for at least a year to gain size and mass. The first release onto Conecuh National Forest occurred in June 2010 with snakes born in 2008. A total of 17 snakes were released, all with an implanted radio transmitter. Tracking the snakes with radio-telemetry will allow us to assess survivability and test the release techniques. Initial survivability was high and no snakes were lost until a few weeks had passed. By December five snakes had succumbed to predation, five were out of transmitter range or transmitter batteries had died, but seven could be accounted for.

Collaboration is a key to this endeavor involving Auburn University (ALNHP/Environmental Institute & Department of Biology), Alabama Department of Conservation and Natural Resources (ADCNR), The Orianne Society (formerly Project Orianne), U.S. Forest Service, U.S. Fish and Wildlife Service, Georgia Department of Natural Resources, Zoo Atlanta, and Ft. Stewart (US Army). Funding for the project is through a State Wildlife Grant administered by ADCNR with The Orianne Society providing matching funds. Zoo Atlanta's contribution is presently housing and rearing the 2009 and 2010 snakes.

Vascular Plant Inventory and Ecological Community Assessment at Cane River Creole National Historical Park, Louisiana

A vascular plant inventory and ecological community assessment is currently in progress at Cane River Creole National Historic Park, Louisiana. The two-year project will entail surveying the properties of two historic plantation homes located in the Cane River region near Natchitoches. To date, nearly 250 species have been documented and five natural communities identified. The anticipated completion date of the project is August 2011. Conducted in conjunction with the foregoing project is an inventory of historic vegetation in the Cane River National Heritage Area. The final product of the project will contribute to the baseline knowledge of historically significant plant species by providing reliable information regarding the role of how each species has influenced the history and culture within the boundaries of the Heritage Area. It is anticipated that use of the final report will enable the National Heritage Area commission personnel to produce a user-friendly visitor guide to native and culturally significant plant species throughout the Heritage Area region.

Significant Botanical Discoveries

- Florida milkvetch (*Astragalus obcordatus*) was newly discovered for the state from Dallas County while exploring along the banks of the Alabama River in April 2010. Previously known from only Florida and Mississippi, the discovery bridges a distributional gap between the two states.
- Georgia rockcress (*Arabis georgiana*), a globally imperiled species was observed along the banks of the Alabama River in April 2010 while canoeing south of Selma in Dallas County, representing a new population. The population was discovered while conducting a status survey on the species for the USFWS.

- Mississippi Witch Hazel (*Hamamelis ovalis*), a recently described species from Mississippi, is now documented from a small number of sites in Clarke, Covington, and Monroe counties based on surveys conducted by staff of ALNHP and other agencies during the summer and fall of 2010. Similar to the more common yellow-flowered witch hazel, this species produces red flowers from December to early February.

Significant Zoological Discoveries

- The trispot darter (*Etheostoma trisella*) was considered to be extirpated from Alabama until the species was rediscovered in the Little Canoe Creek system (St. Clair County) in 2008. In February 2010, Geological Survey of Alabama biologists discovered a second population in Ballplay Creek (Cherokee County).



Trispot darter (*Etheostoma trisella*)

- Jennifer E. Buhay and Keith A. Crandall (2009) described two new crayfish species endemic to northern Alabama: sweet home Alabama cave crayfish (*Cambarus speleocoopi*) from Marshall County and Lacon exit cave crayfish (*Cambarus laconensis*) from Morgan County.

Applied Conservation

Red-cockaded Woodpecker Safe Harbor Agreement

In order to encourage landowners with existing or potential RCW habitat to manage their lands



red-cockaded woodpecker (*Picoides borealis*)
(Photo by Jim Hanula)

in order to conserve RCW populations, the U.S. Fish and Wildlife Service (USFWS) and the Alabama Department of Conservation and Natural Resources (ADCNR) has implemented a Red-cockaded Woodpecker Safe Agreement in Alabama. Under a Safe Harbor Agreement, the landowner agrees to carry out activities expected to benefit red-cockaded woodpeckers, but no added federal restrictions will be imposed should the numbers (or occurrences) of the species expand beyond a “baseline” level when the agreement is entered into.

ALNHP is working with ADCNR and USFWS to encourage forest landowners to enroll property in the Safe Harbor program. Copies of the brochure describing the Safe Harbor Agreement have continued to be distributed to interested individuals. Numerous property owners have been contacted and given information regarding the program (brochures, e-mail messages, and verbal communications). Two additional properties were enrolled during 2009-10 for a total of nine. One other property was surveyed during June 2010 and an agreement prepared for the landowner’s consideration.

Information Systems & Technology

Biodiversity Database

ALNHP maintains a comprehensive database on the location and conservation status of species and ecological communities in Alabama. The Biotics database is supported by funding through our inventory and conservation planning projects. Although building and improving the database has always been a primary goal of the program, securing funding to support this important program area remains a challenge. ALNHP is currently tracking 1,454 rare plants and animals (Fig. 1). There are 7,168 individual occurrences of these species and natural communities documented in Biotics, with the majority of the Element Occurrences (EO) being for vascular plants or mussels (Fig. 2).

Following the conversion of our database to Biotics in March 2008, we have been working on improving compliance with the Benchmark Data Content Standards (BDCS) for natural heritage data. This past year, we received funding from NatureServe to contribute to the BDCS goals identified as high priorities. The focus was on improving Representational Accuracy (RA) completeness, with priority given to records for species that were federally listed or had a G1 or G2 Global Rank. Secondary goals were improving EO Rank completeness and redigitizing data imported from our old Biological and Conservation Database to improve the spatial representation of the records. We achieved 100% completeness for RA, and redigitized ca. 7% of the records in the database for tracked species (mostly aquatic or cave records) to improve their spatial representation. We also reduced the total number of occurrences having a null EO Rank from 30% to 24%, and completed a quality control check of the State Protection Status field. We will continue working to improve the database with the goal of meeting all BDCS goals. The focus in the coming year will be redigitizing data imported from

BCD to improve the spatial representation and improving EO Rank completeness and quality.

One of the important tasks each heritage program performs is the regular compilation of a Rare Species Inventory List for the state that ranks each element tracked by the program based on the number and quality of occurrences. Updates to the Alabama Inventory List will be completed by March 2011, with the list published and distributed to cooperators and other interested parties and posted to the ALNHP website.

Data Requests

Over the past year, ALNHP has responded to 12 paid data requests; 32 requests from academia, conservation non-profits, government agencies, NatureServe, other Heritage Network members, or cooperating partners; and 13 requests for an environmental review. The number of requests was similar to past years.

Publications

Unpublished Project Reports:

Godwin, James C. 2010. Amphibian and Reptile Inventory of the Cahaba River National Wildlife Refuge. Alabama Natural Heritage Program, Auburn University, AL. Unpublished report for the U.S. Fish and Wildlife Service. 125 pp. + Appendix.

Godwin, James C. 2010. Reassessment of the Status of the Federally Endangered Alabama Red-bellied turtle (*Pseudemys alabamensis*). Unpublished report submitted to the Alabama Department of Conservation and Natural Resources, Montgomery, Alabama. 44 pp.

Godwin, James, Michael Wines, Jimmy Stiles, Sierra Stiles, Craig Guyer, and E. Marie Rush. 2010. Reintroduction of the Eastern Indigo Snake (*Drymarchon couperi*) into Conecuh National Forest. Progress Report submitted to The Orianne Society. 57 pp.

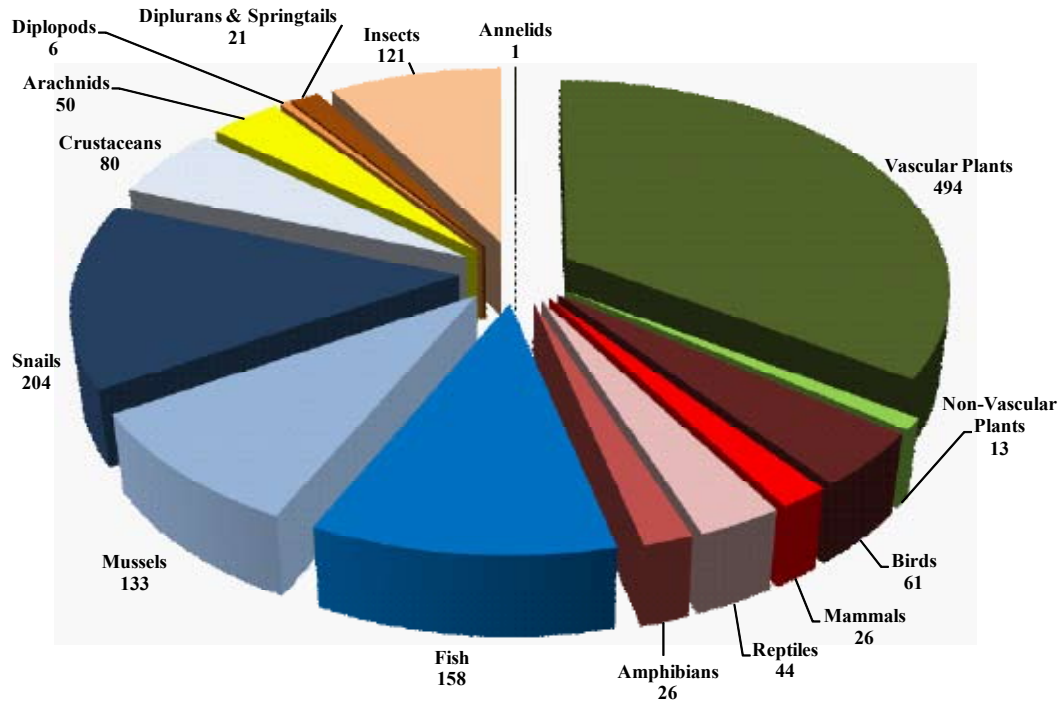


Figure 1. Number of rare plant and animal species track by ALNHP (total 1,454).

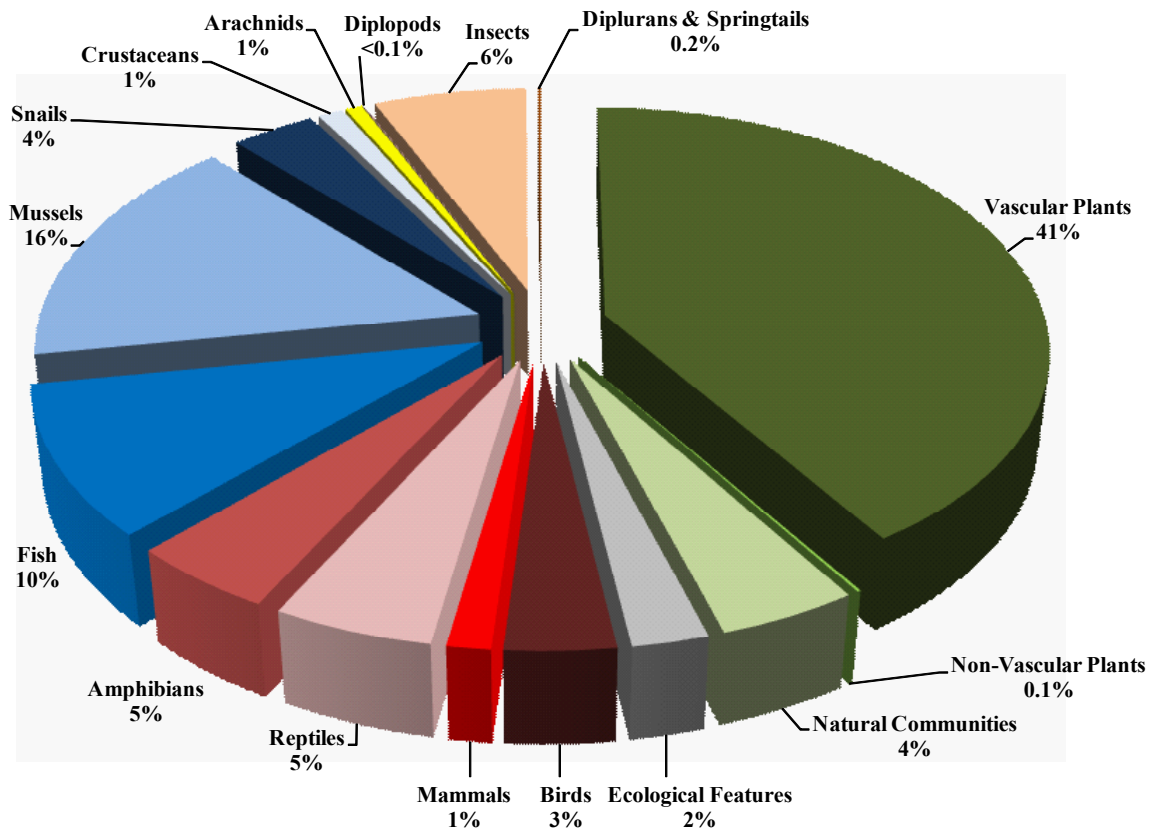


Figure 2. Percentage of 7,168 Element Occurrences in Biotics by major taxonomic group.

Hastings, Robert W. 2010. Final report for implementation of the safe harbor plan for the endangered Red-cockaded Woodpecker in Alabama. Unpublished report submitted to the Alabama Department of Conservation and Natural Resources, Division of Wildlife and Freshwater Fisheries, Montgomery, Alabama. 14 pages.

Schotz, A. 2010. Pitcher-plant bog survey in Washington county, Alabama. Alabama Natural Heritage Program, Auburn University, Alabama. Unpublished report for the United States Fish and Wildlife Service. 19 pp.

Schotz, A. 2010. Status assessment of *Arabis georgiana* Harper (Brassicaceae), the Georgia Rockcress, in Alabama. Alabama Natural Heritage Program, Auburn University, Alabama. Unpublished report for the United States Fish and Wildlife Service. 63 pp., including 5 Appendices.