Alabama Natural Heritage Program[SM]

2009 Annual Report

Staff Directory & Resources

2009 Staff Directory

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The mission of the Alabama Natural Heritage Program[SM] (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

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 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 fauana. 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 2009. A large proportion of time was devoted to preparing status surveys and natural community assessments on behalf of the U.S. Fish and Wildlife Service (USFWS), in addition to conducting field assessments and preparing the final report on the ecological assessment of Black Belt prairies funded through the State Wildlife Grant program. ALNHP is also currently working in conjunction with NatureServe on behalf of the National Park Service to gather vegetation data in Little River Canyon National Preserve and along the Natchez Trace Parkway in preparation of a comprehensive vegetation mapping project for both parks. 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 July 2008 the ALNHP entered into agreement with the Georgia Department of Natural Resources to conduct inventories for rare plants and ecological communities within the 29,000-acre Paulding Forest/Sheffield Wildlife Management complex west of Atlanta, from which a final report was submitted in December 2009.

Alabama red-bellied turtle (*Pseudemys alabamensis*)

Project Summaries

Alabama Red-bellied Turtle

Surveys of the Alabama red-bellied turtle (*Pseudemys alabamensis*) continued during 2009, completing the second 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). Preliminary analysis reveals age class and sex ratio shifts in the population suggesting reduced recruitment with either an increase in the male demographic or a decrease in the female demographic. Funding for this project has 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 third year.

Black Pine Snake Survey

The black pine snake (*Pituophis melanoleucus lodingi* Blanchard) is a candidate for listing under the Endangered Species Act. Declines in the distribution of the black pine snake throughout its range have raised considerable concern for this species. Surveys for the snake were conducted from fall 2008 to summer 2009 in Clarke, Mobile, and Washington counties. Black pine snakes were observed and captured on Mobile Water and Sewer Board property in Mobile County. Although no snakes were


black pine snake (*Pituophis melanoleucus lodingi*)

observed in other areas, several areas of apparently suitable habitat were identified that warrant additional intensive surveys.

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, has been underway for approximately one year. To date the species list includes 10 frogs and toads, 10 salamanders, 7 turtles, 6 lizards, and 14 snakes. This amphibian and reptile locality data is being integrated with natural community maps that were produced for a prior study


Cahaba River

(*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 rangewide status survey on the Carpenter's groundcherry (*Physalis carpenteri*) is in progress, resulting in three new occurrences of this globally imperiled plant. Surveys will be conducted in Florida, Georgia, and Louisiana during the spring and summer of 2010, with a final report due to the U.S. Fish and Wildlife Service in early 2011.

Ecological Assessment of Alabama's Black Belt Prairies

The Black Belt prairies are a unique habitat complex in the state. However, the majority of Black Belt prairies have been severely degraded by land use alterations. By the end of the twentieth century, only remnants of the original prairie remained, for these native grasslands were converted to cropland or pasture to serve the interests of agriculture. The remaining prairies tend to be small and highly fragmented, and prairie habitat continues to be lost through human activities and the encroachment of woody vegetation, especially eastern red cedar (*Juniperus virginiana*). Despite the high degree of imperilment for prairie habitats, the Black Belt prairies have received little conservation attention until recently.

ALNHP began an ecological assessment of Alabama's Black Belt prairies in 2007 to determine the quality and extent of natural grasslands throughout the Black Belt physiographic region. With nearly 14,600 individual prairies identified totaling 15,500 acres, the final report was completed and

Black Belt prairie in Perry County, Alabama.

submitted to the Alabama Department of Conservation and Natural Resources in December 2009. Significant prairies (relatively large area covered or relatively high quality) identified on public property included Jones Bluff (Autauga County), Old Cahawba Prairie Tract (Dallas County), Cochrane Recreation Area (Pickens County), and the University of West Alabama prairie restoration site (Sumter County). Significant prairies identified on private property include tracts in Autauga, Dallas, Greene, Lowndes, Sumter, and Wilcox counties. It is anticipated the report will assist in the guidance of conservation efforts in the Black Belt.

The report is available online from:

http://www.outdooralabama.com/research-mgmt/State Wildlife Grants/Prairies Ecological Assessment Final Report.pdf or

http://www.alnhp.org/reports/Prairie_SWG_Final_Report.PDF

Lyrate Bladderpod/Fleshy-fruit Glade Cress Status Survey

A status survey on the lyrate bladderpod (*Lesquerella lyrata*) and fleshy-fruit glade cress (*Leavenworthia crassa*) was conducted on behalf of the U.S. Fish and Wildlife Service, and completed in May 2009. The purpose of the report was to furnish an updated, rangewide assessment of each species to analyze population dynamics and determine disturbances and potential threats. Both taxa occur only in Alabama, represented by less than ten populations across a five-county area in the northwestern portion of the state. These species inhabit limestone glades, which have now become globally imperiled due to a combination of residential development, quarrying, trash disposal, and other modifications of its habitat.

National Parks Natural Community

lyrate bladderpod (*Lesquerella lyrata*)

fleshy-fruit glade cress (*Leavenworthia crassa*)

Assessments

ALNHP has partnered with NatureServe on behalf of the National Park Service to implement natural community assessments at Little River Canyon National Preserve and along the Natchez Trace Parkway in Alabama and Mississippi. Both projects were devoted to acquiring vegetation plot data that will be employed to produce an assessment and management protocol of all vegetation types within each park, a resource that will aid on-site management decisions, provide natural resource inventory data, and to contribute to appropriate integrated resource management.

Paulding State Forest Rare Plant and Natural Community Survey, Georgia

In 2008, ALNHP entered into agreement with the Georgia Department of Natural Resources to conduct an inventory of rare plants and ecological communities within the 29,000-acre Paulding Forest/Sheffield WMA complex near Atlanta. The one-year project was completed and a final report submitted in December 2009, resulting in 22 occurrences of 14 taxa of conservation concern as recognized by the state of Georgia.

Red Hills Salamander Activity Monitoring

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, and a significant number of Red Hills salamanders were 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

Red Hills salamander (*Phaeognathus hubrichti*)

on activity and movements of Red Hills salamanders. This project is in collaboration with Dr. Kristin Bakkegard of Samford 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 goal, in 2008 and 2009, 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, were incubated in the lab to obtain the indigo snakes needed

eastern indigo snake (*Drymarchon couperi*)

for the reintroduction project. To understand the activities of newly released snakes a radio-telemetry study will be 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, at this time two cohorts, are being held in the lab for at least a year to gain size and mass. The first release onto Conecuh National Forest is planned for late-spring 2010 and will be with the snakes born in 2008. Tracking the snakes with radio-telemetry will allow us to assess survivability and test the release techniques.

Collaboration is a key to this endeavor involving Auburn University, the Alabama Department of Conservation and Natural Resources (ADCNR), Project Orianne (The Indigo Snake Conservation Initiative), U.S. Forest Service, U.S. Fish and Wildlife Service, Georgia Department of Natural Resources, and Zoo Atlanta. Funding for the project is through a State Wildlife Grant administered by ADCNR with Project Orianne providing matching funds. Zoo Atlanta's contribution is presently housing and rearing the 2009 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 four natural communities identified. The anticipated completion date of the project is December 2010. To be 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

- Abscised spleenwort (*Asplenium abscissum*) was newly discovered for the state by Wayne Barger of the Alabama Department of Conservation and Natural Resources while exploring the cave systems with a cadre of scientists in Jackson County in the summer of 2009. Previously known in North America from only Florida, the discovery marks a northward range extension of several hundred miles.
- Ashe's hawthorn (*Crataegus ashei*) was observed along a margin of a Black Belt prairie while conducting inventories in Lowndes County during August 2009. This critically imperiled plant was considered globally extinct until being rediscovered in Autauga County in 1996. Since then the species has been documented from

abscised spleenwort (Asplenium abscissum)

a small number of sites in Alabama and Mississippi, all from within the Black Belt.

- Mississippi witch hazel (*Hamamelis ovalis*), a recently described species from Mississippi, was newly discovered in Alabama by Wayne Webb of Camden, Alabama, in Clarke, Covington, and Monroe counties during the summer and fall of 2009. Similar to the more common yellow-flowered witch hazel, this species produces red flowers from December to early February.

- Prairie scorpion-weed (*Phacelia strictiflora* var. *robbinsii*) was documented as a new occurrence from a sandy woodland in Dallas County in April 2009. This discovery serves as the third record reported from Alabama, and the highest quality occurrence known from the state. Phacelia strictiflora var. robbinsii is a mid-western species reaching its easternmost limits in Dallas County, Alabama.

- A yellow-eyed grass (*Xyris spathifolia*) was recently described from Bibb County, Alabama, by Robert Kral and Mincy Moffett, and has been henceforth published in the botanical journal Sida. Considered to one of the rarest plants in the Southeast, some speculate the plant is now extirpated in the wild, surviving only in botanical gardens.

Applied Conservation

Red-cockaded Woodpecker Safe Harbor Agreement

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

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

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 2008-09 for a total of seven. One other property should be enrolled by the end of 2009, and several other landowners have expressed interest in the program. In addition, existing populations at Enon-Sehoy Plantations were enhanced in November 2007, September, 2008, and September, 2009, by the installation of numerous artificial cavity inserts and translocation of juvenile birds from Fort Benning in Georgia (project led by Mark Spadgenske and Mark Bailey).

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 1,451 rare plants and animals (Fig. 1). There are 7,565 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 EO Rank completeness, with priority given to records for species that were federally listed or had a G1 or G2 Global Rank, and redigitizing data imported from our old Biological and Conservation Database to improve the spatial representation of the records. We reduced the total number of occurrences having a null EO Rank from 39% to 30%, with 90% of G1, G2, or federally listed species EOs with a null EO Rank populated. We redigitized approximately 6% of the records in the database, and populated the Representational Accuracy field for 7% of the records in the database. We will continue working to improve the database with the goal of meeting all BDCS goals. The focus in the coming year will be improving the Representational Accuracy (RA) field for G1, G2, and listed species, redigitizing data 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 2010, 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 15 paid data requests; 32 requests from academia, conservation non-profits, government agencies, NatureServe, other Heritage Network members, or cooperating partners; and 17 requests for an environmental review. The number of requests was similar to past years.

Geographic Information Systems

ALNHP has continued working to build the program's GIS capacity by acquiring software and data layers. The largest proportion of GIS work conducted was map production to support work conducted for our partners and clients. Almost all inventory work included the production of maps depicting survey results to be included in the final report, and several of the data requests we received included map production. GIS analysis also was used on several projects to prioritize areas prior to field surveys.

Publications

Peer-Reviewed and Published Articles:

Godwin, Jim and Chris Jenkins. 2009. Eastern indigo snake: past, present, and future. Alabama Wildlife 73(2):18-20 (Spring 2009).

Schotz, Alfred. 2009. Small white lady's-slipper. Alabama's Treasured Forests 18(1): 22. (Spring 2009)

Unpublished Project Reports:

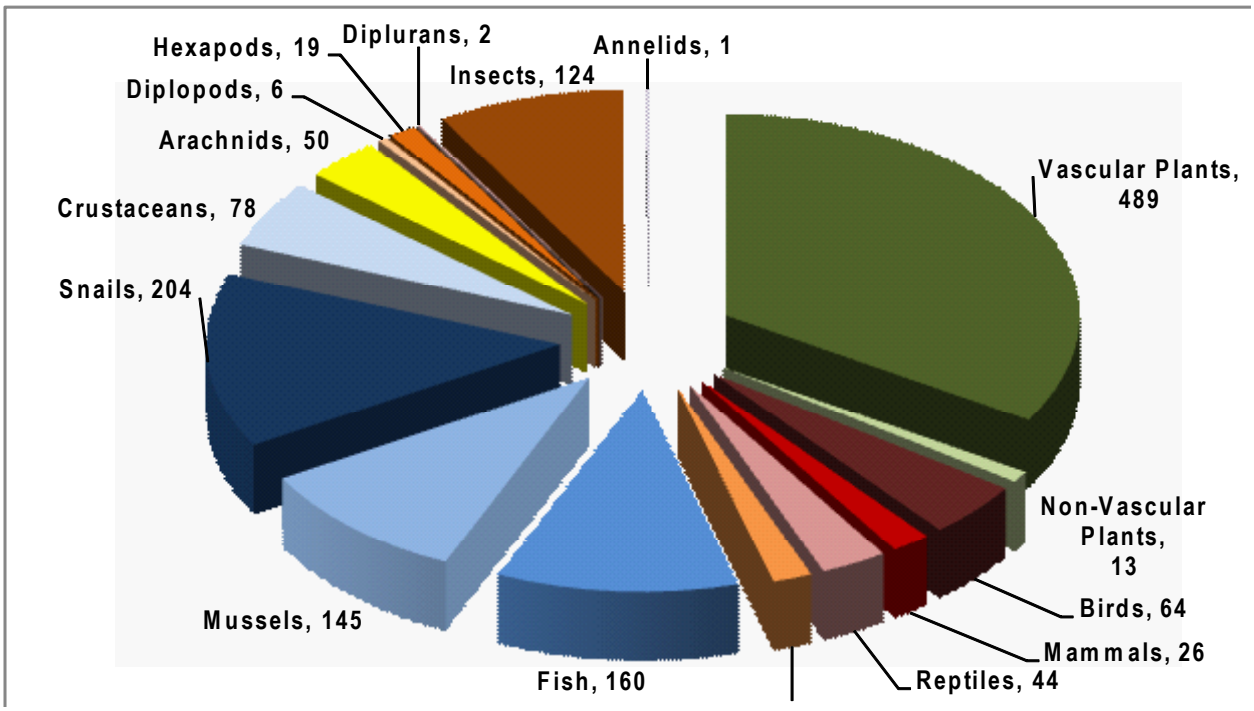

Figure 1. Number of rare plant and animal species track by ALNHP (total 1,451).

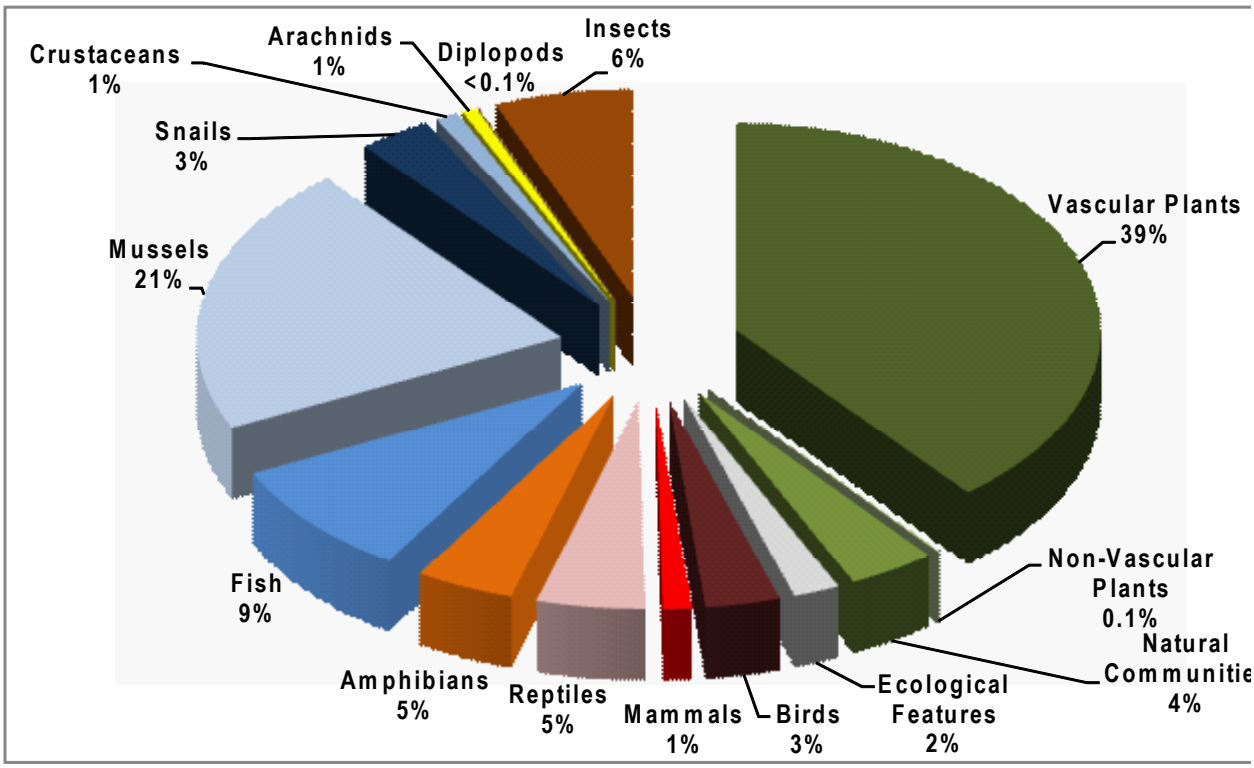

Figure 2. Percentage of 7,565 Element Occurrences in Biotics by major taxonomic group.

Barbour, Michael S. 2009. Survey for the black pine snake (*Pituophis melanoleucus lodingi* Blanchard) in Alabama. Unpublished final report submitted to the U.S. Fish and Wildlife Service, Daphne, Alabama. Alabama Natural Heritage Program, Auburn, Alabama. 36 pages.

Hastings, Robert W. 2009. 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. 12 pages.

Schotz, Alfred R. 2009. Rangewide status assessment of *Leavenowrthia crassa* (fleshy-fruit glade cress) and *Lesquerella lyrata* (lyrate bladderpod). Unpublished report submitted to the U.S. Fish and Wildlife Service, Jackson, Mississippi. Alabama Natural Heritage Program, Auburn, Alabama. 28 pages.

Schotz, Alfred R. 2009. Rare plant and natural community survey of Paulding Forest and Sheffield Wildlife Management Areas, Polk and Paulding Counties, Georgia. Unpublished report submitted to Georgia Department of Natural Resources, Social Circle, Georgia. Alabama Natural Heritage Program, Auburn, Alabama. 23 pages.

Schotz, Alfred R. and Michael S. Barbour. 2009. Ecological assessment and terrestrial vertebrate surveys for Black Belt Prairies in Alabama. Unpublished report submitted to the Alabama Department of Conservation and Natural Resources, Division of Wildlife & Freshwater Fisheries, Montgomery, Alabama. Alabama Natural Heritage Program, Auburn, Alabama. 139 pages.