



**NORTH CAROLINA
NATURAL HERITAGE PROGRAM**

2009 BIENNIAL REPORT



**Natural Resource Planning and Conservation
Department of Environment and Natural Resources
Raleigh, North Carolina
www.ncnhp.org**

REPORT ON ACTIVITIES OF 2007-2008

As directed by the North Carolina Nature Preserves Act (GS 113A-164.1-.11), the North Carolina Natural Heritage Program (NCNHP), part of Natural Resource Planning and Conservation in the Department of Environment and Natural Resources, has prepared this report to summarize program activities occurring during calendar years 2007 and 2008.

NCNHP is the North Carolina component of a national network of natural heritage programs which reaches from Canada through the United States and into much of Latin America. Members of this network share a common methodology and a commitment to support rare species and natural area conservation. The 80 member programs of the network are affiliated through NatureServe, a private, non-profit organization based in Arlington, Virginia.

When established in 1976, NCNHP was placed in the Division of Parks and Recreation. Enabling legislation was enacted in 1985 as part of the Nature Preserves Act (113A-164.1-.11). In March of 2007, Secretary Bill Ross moved NCNHP from the Division of Parks and Recreation to the Office of Conservation and Community Affairs to become part of that office's One North Carolina Naturally effort. A restructuring at the end of 2008 placed NCNHP in the newly created division of Natural Resource Planning and Conservation.

NCNHP continues working in partnership with a variety of state and federal agencies, private organizations, individuals, and corporations to: 1) identify the most significant natural areas and rare species habitats of North Carolina, and 2) support the protection of these significant natural areas so that future generations will be able to enjoy the full diversity of North Carolina's natural legacy.

Program activities of 2007 and 2008 are summarized in this report under the three major program areas of NC NHP: Inventory, Information Services, and Conservation Planning and Protection.

INVENTORY

NCNHP inventory efforts are conducted for one of three primary purposes: as part of a comprehensive natural area inventory to identify the highest quality sites for conservation action; as part of a protection-focused inventory done on behalf of a partner such as N.C. Division of Parks and Recreation, The Nature Conservancy or any of several local land trusts; or as an inventory for a particular rare species or specific natural community.

2007-2008 Natural Area Inventories

A Natural Area Inventory is a systematic search for the best examples of natural communities throughout a pre-defined location, typically a county. The identification of these "Significant Natural Heritage Areas" is a fundamental step in the effort to conserve our state's biodiversity

because these areas often support rare and endangered species. The conservation of these natural areas can greatly enhance the quality of life for the citizens of North Carolina.

Inventory reports map and describe the most important natural areas and their ecological significance. This information benefits a wide range of users, from individual landowners to various government agencies. County governments and municipalities use these inventories to help plan for growth and development in balance with the natural environment. State agencies and local land trusts rely on Natural Heritage data to make informed decisions about land and water use and site conservation. For example, the Nationally Significant Roan Mountain Massif SNHA was highlighted in the 2006 Avery County inventory and in 2007 the Southern Appalachian Highlands Conservancy was able to secure protection of the 435-acre Powdermill Creek tract within this site (http://www.onencnaturally.org/pages/FN_Success_Stories.html). In 2008, the Sandhills Area Land Trust was awarded a Clean Water Management Trust Fund grant to buy a conservation easement on 209 acres along Drowning Creek south of Pinebluff. (<http://www.sandhillslandtrust.org>). Drowning Creek and its floodplain are comprised of many SNHAs including local, regional and state significant sites identified in natural area inventories, including the 2004 Hoke County inventory and 2005 Scotland County inventory.

Powdermill Creek



Drowning Creek



Funding for natural area inventories is provided in large part by the Natural Heritage Trust Fund (NHTF). Whenever possible, matching funds are secured from local governments or raised by a partner, such as a land trust. The commitment of the NHTF Board and the partner agencies to natural area inventories and to local conservation actions is greatly appreciated.

2007-2008 Rare Species and Natural Community Inventories

In addition to county focused inventories, NCNHP inventories the distribution and habitats of rare species of our state and the remaining high quality or rare examples of natural communities. Many of these inventories are conducted in cooperation with the Wildlife Diversity Program of the North Carolina Wildlife Resources Commission, the Plant Conservation Program of the Department of Agriculture and Consumer Services, and the U.S. Fish and Wildlife Service.

Other partners include the N.C. Museum of Natural Sciences, the N.C. Wildflower Society and the N.C. Herpetological Association. Table I shows inventories conducted during 2007-2008.

Table I. Rare Species and Significant Natural Community Inventories

Target Element	Partner Agency	Principal Scientists
Edmond's Snaketail Dragonfly and Mountain River Cruiser		Steve Hall and Kristen Sinclair
Venus Flytrap Cutworm Moth		Steve Hall and Jeff Slotten
Midland Clubtail and Setima's Clubtail		Steve Hall, Kristen Sinclair and Sarah McRae
Grisatra Underwing Moth		Steve Hall and Jamie Cromartie
Fish surveys along the New and Little rivers -- Alleghany Co.	N.C. Wildlife Resources Commission	James Padgett and Sarah McRae
Hellbender and Common Mudpuppy -- New River, Alleghany Co.	NC WRC and N.C. Div. of Parks and Rec.	James Padgett
Wehrle's Salamander -- Bullhead Mountain	NC WRC and N.C. Div. of Parks and Rec.	James Padgett
Bog Turtle -- Alleghany Co.	NC WRC	James Padgett
Green Salamander and Crevice Salamander - - Chimney Rock	N.C. Division of Parks and Recreation	James Padgett
Tar Spiny mussel	NC WRC	Sarah McRae
Sensitive Jointvetch	USFWS and NCPCP	Misty Buchanan, Dale Suiter, and Laura Gadd

INFORMATION SERVICES

Compiling biological information from a wide variety of sources is a complex process. That process is crucial to developing the information needed for wise conservation and development planning, and to the environmental review function required by the national and the state environmental policy acts. Equally important is sharing that information with a wide variety of agencies, corporations and individuals.

North Carolina is fortunate to have a variety of outstanding naturalists working independently or as part of state and federal conservation agencies, in academia, as independent consultants or in private conservation organizations. Working as part of this informal network of outstanding naturalists, NCNHP consolidates the information collected about rare species, high quality natural communities, and significant natural areas and makes it available for use in statewide and regional conservation initiatives. The information is also used to weigh the ecological significance of various sites, and to evaluate the likelihood and nature of ecological impacts. This information supports informed evaluations of the trade-offs associated with biological diversity and development projects before plans have been finalized. Finally, this information facilitates the establishment of priorities for the protection of North Carolina's most significant natural areas.

Table II provides an overview of the BIOTICS Database which contains the core of NCNHP information. This database summarizes information about the occurrences of rare species, significant natural communities, and significant natural heritage areas in North Carolina.

Table II. Summary of BIOTICS Database

Database Components	Calendar Year	
	2007	2008
Number of Elements Tracked by NCNHP	1,653	1,687
Number of Records of Element Occurrences (EOs)	22,697	23,132
Vertebrate animals	4,790	4,832
Invertebrate animals	2,099	1,982
Vascular plants	9,629	9,868
Non-vascular plants	1,049	1,047
Natural communities	2,433	4,998
Special animal habitats/features	397	405
Number of Significant Natural Heritage Areas Identified	2,466	2,522
Number of Managed Natural Areas Mapped	1,068	1,091

Information Requests

During 2007 and 2008, NCNHP responded to an uncounted number of telephone inquiries and provided more than 800 written responses to federal and state agencies, consulting firms, academic institutions, conservation organizations, and city and county governments. In addition, approximately 735 visitors came to the NCNHP offices to use information from the databases and files over the two year period. During 2007 and 2008, our online information database (accessible to the general public) provided more than 17,000 reports for rare species information summarized by county or by USGS quadrangle.

The web-based information system, the Virtual Workroom, which was implemented in 2007 has been well received, by both partner agencies and the public. This service is updated daily and allows users to get information directly from the BIOTICS database with minimal training. This has reduced the workload for staff while allowing easier access to data for consultants doing field studies. In 2008 more than 800 unique visitors used the virtual work room to generate 1,673 reports.

Environmental Review

Another important and frequent use of NCNHP data is the review of the potential environmental impacts of major state or federal actions. NCNHP continues to assist with NCDENR environmental reviews, although this is not officially part of the clearinghouse process. Our database provides state and federal agencies with the most reliable source of information about potential impacts to rare species.

Publications

NCNHP produces three reference publications (listed below). These publications are used by staff of numerous federal and state agencies, including Fort Bragg, Camp Lejeune, N.C. Department of Transportation, N.C. Wildlife Resources Commission, N.C. Plant Conservation Program, as well as by environmental consultants, academicians and amateur naturalists. The publications are provided at cost upon request. In addition, NCNHP provides copies of these publications as digital files on the Web site (<http://www.ncnhp.org/>). Lists of 2007 and 2008 reports are included as Appendix A.

Natural Heritage Program reference publications:

- Natural Heritage Program List of the Rare Animal Species of North Carolina;
- Natural Heritage Program List of the Rare Plant Species of North Carolina; and
- Classification of the Natural Communities of North Carolina, Third Approximation.

Copies of county natural area inventory reports or rare species accounts are also available upon request or online (<http://www.ncnhp.org/Pages/publications.html>).

CONSERVATION PLANNING AND NATURAL AREA PROTECTION

Strategic Conservation Plan

The Strategic Conservation Plan, first initiated in 2006, is now referred to simply as the One NC Naturally Conservation Planning Tool (CPT). The CPT identifies and prioritizes both the essential high quality natural resources and the crucial land gaps between ecosystems across the state. The methods used are both strategic and scientifically-based and provide a vision for a green infrastructure network of supporting ecosystems.

The CPT is now in its fourth edition. Every six months the maps are updated with the most recent statewide data available. To date the following assessments have been completed: Biodiversity/Wildlife Habitat, Farmland, Water Services, Open Space and Conservation Lands and Forestry Lands. The Marine/Estuarine Assessment is underway and awaits the completion of the identification of Significant Habitat Areas as part of the Coastal Habitat Protection Plan.

The Conservation Planning Tool has been presented to more than 4,000 people across the state, to a range of audiences that include partners from federal, state, and local agencies, as well as non-profit conservation organizations. The accuracy and usefulness of the information provided in the Tool has been widely accepted and in many cases incorporated into local and regional planning efforts. This Tool has proven to be very helpful in building collaborative partnerships and supporting proactive planning for compatible land uses.

Statewide Assessment of Conservation Priorities at the Landscape Level

In 2008, NHP completed its contract with the N.C. Ecosystem Enhancement Program (EEP) to identify and evaluate large blocks of habitat still serving ecological functions at the landscape level (i.e., that have high landscape integrity). That project concentrated on mapping core areas for indicator guilds inhabiting coastal marsh and interior riparian habitats. We are currently implementing a grant from the Federal Highways Administration (FHWA) that concentrates on the upland and inter-basin habitats that were not included in the EEP project. Data resulting from both these projects have been incorporated into the Conservation Planning Tool. New data will be added as developed during the course of the FHWA project.

2007-2008 Dedications and Registries

The NC Natural Heritage Program encourages conservation and stewardship of Significant Natural Heritage Areas through two programs that create Dedicated Nature Preserves and Registered Natural Heritage Areas. Dedicated Nature Preserves, owned by state agencies, local governments, or nonprofit conservation groups, are permanently protected through a legally binding agreement with DENR to manage the land for conservation of its natural heritage values. State-owned land can only be removed from dedication upon approval of the Governor and Council of State. Owners of Registered Natural Heritage Areas have also signed a voluntary, though non-binding, agreement with DENR demonstrating their commitment to protecting the natural heritage values of their property. These landowners may also receive management recommendations to help ensure survival of the rare species or natural communities on their property.

Numerous natural areas have gained protection as Dedicated Nature Preserves or Registered Natural Heritage Areas during the 2007 and 2008 calendar years. In all, 63,516 acres were newly dedicated and 250 acres were registered. To date, 278,938 acres in 126 areas are dedicated and over 572,000 acres in 339 areas have been registered throughout the state.

Fifteen new nature preserves, totaling 50,290 acres, were dedicated during this period. These include Significant Natural Heritage Areas within the following forests, parks, preserves, and game lands: Carl Sandburg Home National Historic Site, Pettiford Creek State Forest, Beech Creek Bog State Natural Area, Bullhead Mountain State Natural Area, Mount Jefferson State Natural Area, Pettigrew State Park, Harvest Field Plant Conservation Preserve, Long Mountain/Poison Fork Plant Conservation Preserve, Angola Bay Game Land, Buffalo Cove

Game Land, Chowan Swamp Game Land, Holly Shelter Game Land, Nicholson Creek Game Land, Pisgah Game Land and Toxaway Game Land.

Eight existing nature preserve dedications were amended to include an additional 13,226 acres of protected land. These include: Rendezvous Mountain Educational State Forest, Bushy Lake State Natural Area, Eno River State Park, Lumber River State Park, Cape Fear River Wetlands Game Land, Sandhills Game Land, Roanoke Island Marshes Game Land and South Mountains Game Land.

In 2008 portions of three natural areas, totaling 250 acres, were added to the registry. These sites in Bladen, Pender, and Sampson counties are owned by TC & I Timber Co. and managed by Campbell Timberland Management LLC. Although several areas were removed from the Registry recently, most of these represent a transfer from another conservation partner to a state ownership. In each case, we are either in the process of establishing the registry agreement with the new owner, or the properties will be designated as Dedicated State Nature Preserves, a stronger form of protection.

Aquatic Ecosystem Protection

Threats to aquatic species, such as freshwater mussels, fish, crayfish, amphibians, snails and macroinvertebrates, continue to be of concern to the conservation community. During 2006-2007, NHP's Freshwater Program staff was increased to two full-time freshwater ecologists (one serving river basins west of, and including, the Yadkin-Pee Dee River basin, and one serving river basins east of the Yadkin-Pee Dee River basin); a part-time freshwater data technician position was also added. These positions are funded through Aquatic Inventory grants from the NHTF, with matching funds provided by the N.C. Wildlife Resources Commission.

NHP continues to collaborate with partner agencies (N.C. Wildlife Resources Commission, N.C. Department of Transportation, N.C. Division of Water Quality and N.C. Museum of Natural Sciences) to survey for rare aquatic species across North Carolina. At the end of 2008, NHP hosted its 6th annual meeting to coordinate inventory efforts and share information about freshwater surveys and conservation efforts across the state.

Through the county inventory process, aquatic site descriptions are being updated and included in county inventory reports. In conjunction with the county inventory process, and as part of DENR's Aquatic Education Program and WRC's Green Growth initiative, NHP staff is working with local governments to incorporate Natural Heritage Data into their planning efforts, including use in the design of ordinances and zoning plans. Freshwater program staff members have given presentations on planning for growth to local governments, elected officials, and developers throughout the state. NHP staff have also contributed to the DENR's "Guidance for Preparing SEPA Documents and Addressing Secondary and Cumulative Impacts," a document used by local governments throughout the state.

Information from NHP's Freshwater Program has been essential in building conservation partnerships throughout the state, including the Chatham Conservation Partnership, Partners for the Little Tennessee, the Cape Fear Arch Conservation Partnership and the Dan River Coalition.

NATURAL HERITAGE PROGRAM STAFF

NCNHP is only able to accomplish the work described above because of its knowledgeable staff and the assistance of its cooperators and supporters. The staff of the Program are listed below; those marked with * are supported through grants or contracts.

Raleigh Staff (Permanent)

- Katie Armstrong, Natural Area Specialist (starting 4/08)
- Misty Franklin Buchanan, Botanist
- Kim Douglass, Conservation Planner*
- John T. Finnegan, Information Systems Manager*
- Stephen P. Hall, Invertebrate Zoologist*
- Harry E. LeGrand, Jr., Zoologist*
- Suzanne Mason, Environmental Biologist*
- Sarah McRae, Aquatic Ecologist *
- Scott M. Pohlman, Natural Area Specialist (through 11/07)
- Ann M. Prince, Protection Specialist (½ time)*
- Judith Ratcliffe, Inventory Manager (starting 11/08)*
- Michael P. Schafale, Community Ecologist
- Kristen Sinclair, Inventory Manager (through 10/08)*

Raleigh Staff (Temporary)

- Jame L. Amoroso, Inventory Data Assistant*
- Caroline Bernard, Botanical Data Assistant
- Judith Ratcliffe, Aquatic Data Assistant*
- Reed Rossel, Zoology Inventory Assistant*

Field Staff (Permanent)

- Shawn C. Oakley, Inventory Specialist*
- James Padgett, Inventory Specialist*
- Edward Schwartzman, Inventory Specialist*
- Bruce Sorrie, Inventory Specialist*
- Angie Rodgers, Aquatic Ecologist*

Major Activities Planned for 2009 and 2010

- I. Complete County Natural Area Inventories in Caldwell, Robeson, Transylvania and Yancey counties; continue inventories in Anson and Stanly counties; begin four new county inventories.
- II. Continue to develop and refine North Carolina's Conservation Planning Tool, including development of the wildlife habitat maps.
- III. Continue the statewide assessment of conservation priorities at the landscape level.
- IV. Develop expertise in climate change adaptation within the program.
- V. Monitor the use of on-line information services and implement improvements as needed.
- VI. Contact owners of Registered Natural Heritage Areas to determine current status of the property.
- VII. Initiate development of a Natural Resource Damage Assessment program.

APPENDIX A

**North Carolina Natural Heritage Program
Publications and Reports
2007 & 2008**

**NC NATURAL HERITAGE PROGRAM
PUBLICATIONS and CONTRACT REPORTS
2007 & 2008**

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**Supported by a grant from the Natural Heritage Trust Fund.*