

# Chapter 9 Natural Resources

## 9.1 Ecological Significance of the Watauga River Basin

Unusual wetlands, topography, and the unique geology of the amphibolite bluffs on the eastern edge of the basin give the Watauga River basin a vital role in supporting the native biological diversity of the North Carolina mountains. Although small in area proportional to the total area of the state, the Watauga River basin contains a number of significant areas of natural heritage including portions of two of the most significant sites in the Southern Appalachian Mountain range – Grandfather Mountain and the Roan Mountain Massif. Both names are recognized well beyond the North Carolina State line, and both areas contain numerous rare plant and animals species, as well as outstanding natural communities.

## 9.2 Rare Aquatic and Wetland-Dwelling Animal Species

Table 13 lists the rare animal species associated with the aquatic and wetland habitats in the Watauga River basin. Three of these species – the hellbender, green floater and banded sculpin – are discussed in more detail in the following paragraphs. For information on any of the species listed in Table 13, visit the NC Natural Heritage Program (NHP) website [www.ncnhp.org](http://www.ncnhp.org).

Table 13 List of Rare Animals Associated with Aquatic and Wetland Habitats in the Watauga River Basin

Scientific Name	Common Name	Major Group	State Status	Federal Status
<i>Cottus carolinae</i>	Banded sculpin	Fish	T	
<i>Lasmigona subviridis</i>	Green Floater	Mollusk	E	FSC
<i>Drunella longicornis</i>	Mayfly	Insect	SR	
<i>Bolotoperla rossi</i>	Stonefly	Insect	SR	
<i>Palaeagapetus celsus</i>	Caddisfly	Insect	SR	
<i>Cryptobranchus alleganiensis</i>	Hellbender	Amphibian	SC	FSC
<i>Eurycea longicauda</i>	Longtail Salamander	Amphibian	SC	
<i>Glyptemys muhlenbergii</i>	Bog Turtle	Reptile	T	T(S/A)

### Rare Species Listing Criteria

- E = Endangered (those species in danger of becoming extinct)
- T = Threatened (considered likely to become endangered within the foreseeable future)
- SR = Significantly Rare (those whose numbers are small and whose populations need monitoring)
- SC = Species of Special Concern
- FSC = Federal Species of Concern (those under consideration for listing under the Federal Endangered Species Act)
- T(S/A) = Threatened due to similarity of appearance

The hellbender is a long-lived salamander that inhabits large streams with cool, clean and fast-moving water. Because they are sensitive to stream pollution, siltation and damming, hellbenders serve as good indicators of water quality. Urban development and associated habitat degradation have reduced hellbender populations in North Carolina. Forested riparian buffers can reduce pollution and siltation of streams and improve hellbender habitat.

The green floater is an endangered mussel that lives in smaller, slow-moving streams. Once common in the Neuse and Cape Fear River basins, populations have declined due to water quality degradation. Clean, high quality waters can help protect the green floater mussel populations in the Watauga River basin.

The entire range of the banded sculpin is limited to far western Virginia and North Carolina. These fish are typical of clean, clear streams with well-oxygenated, cool water. Sculpins prefer streams with rock or gravel bottoms, and an abundance of rocks where they can find aquatic insects, small fish and vegetation.

### **9.3 Significant Natural Heritage Areas and Aquatic Habitats in the Watauga River Basin**

The NC Natural Heritage Program (NHP) compiles a list of Significant Natural Heritage Areas as required by the Nature Preserves Act. The list is based on the program's inventory of natural diversity in the state. Natural areas are evaluated based on the number and quality occurrences of rare plant and animal species, rare or high-quality natural communities, and special animal habitats. The global and statewide rarity of these elements and their quality at a site is compared with other occurrences to determine a site's significance. Sites included on this list are the best representatives of the natural diversity of the state, and therefore, have priority for protection. Inclusion on the list does not imply that any protection or public access to the site exists.

The NHP has identified more than 20 individual natural heritage areas in the Watauga River basin. These are shown in Figure 11. A few are described briefly below and include significant aquatic habitats. In identifying the significant aquatic habitats in North Carolina, the NHP collaborates with other agencies and organizations. These habitat areas often include stream segments or other bodies of water that contain significant natural resources, such as a large diversity of rare aquatic animal species. The impact from lands adjacent to and upstream of these stream reaches determines their water quality and the viability of the aquatic species found there.

The Watauga River basin contains two significant aquatic habitat areas: Boone Fork and the Watauga River. Boone Fork Aquatic Habitat is considered regionally significant as habitat for rare aquatic species, including the caddisfly *Palaeagapetus celsus*, as well as an excellent community of native benthic species. The Watauga River Aquatic Habitat is also considered regionally significant, and provides habitat for hellbenders, green floaters, and the stonefly *Bolotoperla rossi*. The longtail salamander was historically known in this section of the Watauga River but has not been observed here in decades.

Outside of lotic, or flowing waters, the Watauga River basin also contains high-quality Southern Appalachian Mountain Bogs. Mountain bogs are saturated with water most of the year, and may

have thick layers of sphagnum moss underlain by peat. Most mountain bogs are acidic. These areas, in which water enters the system faster than it leaves, form on flat, stream-bordered glades. Although these bogs are often small and do not make up a significant portion of the landscape, they support many rare plants and animals, including bog turtles (*Glyptemis muhlenbergii*).

Beech Creek Bog is an outstanding example of a mountain bog. The Julian Price Park also contains three examples of Southern Appalachian Mountain Bogs along the Blue Ridge Parkway. Some mountain bogs likely date back to the last ice age – almost 11,000 years ago. Bogs provide food and shelter for wildlife, as well as aid in flood control and act as natural water purification systems. Even small bogs, most of which are located on the headwaters of trout streams, contribute to the productivity and high water quality needed by the fish downstream.

Significant upland sites and mountain ranges also contribute to the maintenance of water quality in the Watauga River basin. Hanging Rock Mountain is considered nationally significant and noted for the excellent examples of natural communities at its peak, including several rare plant species. Two other sites – Snake Mountain and Potato Hill Bog and Seeps/Rich Mountain Bald – are composed of amphibolite, a mineral-rich granite that neutralizes the natural soil acidity. It also contains higher levels of plant nutrients, affecting plant growth and community composition.

Even though only part of Grandfather Mountain lies within the Watauga basin, it warrants special mention. Grandfather Mountain contains one of the largest clusters of rare plants, animals, and natural communities in the Southern Appalachians, and is one of the most significant sites in Eastern North America. One of the highest mountains in the Blue Ridge escarpment at 5,964 feet, Grandfather Mountain drops to 3,200 feet in the Watauga River valley. Although, popular for its rugged bluffs and scenic vistas, biologists are especially enthusiastic about Grandfather Mountain because it contains extensive and well-developed natural communities, and numerous rare, threatened and endangered species.

The Roan Mountain Massif, like other upland sites, straddles the Watauga basin. Only a small portion of the Roan Mountain Massif lies in the watershed, but even this portion contains a number of rare species of plant, animal and natural communities, including a Southern Appalachian Mountain Bog.

There are a number of upland, riparian and wetland Significant Natural Heritage Areas not listed here that contribute to the water quality in the Watauga River basin. Contact the NHP to obtain more information about these natural areas, or visit the NHP website <http://www.ncnhp.org/>.

## **9.4 Conservation Lands – Public and Private**

Public conservation lands in the Watauga River basin are also shown in Figure 11. The basin contains significant public lands, both in terms of area and ecological value. Roan Mountain and wetlands in the Julian Price Park are managed by the National Park Service (Blue Ridge Parkway) and the U.S. Forest Service (USFS). The North Carolina Division of Parks and Recreation owns and manages a significant portion of the Beech Creek Bog, a significant aquatic habitat area (Section 9.3). Portions of Potato Hill Bog and Seeps/Rich Mountain Bald are also owned by the State of North Carolina under the Plant Conservation Program in the Department

of Agriculture. Appalachian State University (ASU) conducts research and assists with natural resources management in the Potato Hill Bog and Seeps/Rich Mountain Bald. Beech Creek Bog, Potato Hill Bog and Seeps/Rich Mountain Bald are all significant natural heritage areas and considered nationally significant.

Much of the basin is privately owned, and a number of significant natural heritage areas lie outside public ownership. While many landowners want to protect the natural character of the land, some of these ecosystems remain threatened. Grandfather Mountain is one of the earliest examples of how private land can be permanently protected through conservation easements. A conservation easement is a voluntary, binding agreement entered into by landowners wishing to protect natural features of their land while retaining ownership and use. A conservation easement can often provide estate tax or North Carolina income tax advantages to landowners, depending on the situation, along with the satisfaction of knowing that the land is being preserved for the future. In the case of Grandfather Mountain, The Nature Conservancy holds the conservation easement. The Nature Conservancy also holds a conservation easement on Hanging Rock Mountain. Land trusts, such as the High Country Conservancy and Blue Ridge Rural Land Trust (BRRLT) have also been active conserving natural areas, and consequently water quality, around Valle Mountain (Dutch Creek watershed) and the Watauga River. Funding has also been provided by the Clean Water Management Trust Fund (CWMTF). For more information on conservation easements, visit the land trust website <http://www.ctnc.org/lmap.htm>.

# Figure 11 Managed Lands and Significant Natural Heritage Area

