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Habitat Restoration, Appalachian Style



Fencing can prevent livestock damage to stream banks, reducing erosion and stream turbidity.

Photo by R.S. Butler/USFWS

A high level of biodiversity, particularly one encompassing the rarer components of riverine and mountain bog ecosystems, is the chief criterion in selecting areas for restoration efforts. The primary goals of Asheville's habitat restoration program are the reduction of non-point source pollution and the elimination of other threats to aquatic and bog communities. Habitat enhancement efforts will ultimately benefit nearly 50 federally-listed species (including 32 mussels, 10 fishes, and several plants) as well as dozens of other rare riverine and bog organisms.

A herd of Herefords mosey along after a lazy summer morning grazing the floodplain pasture. The cattle follow the familiar path leading to the thirst-quenching river they have relied on since birth. Suddenly, the lead animal gets a jolt, causing the rest of them to stop in their tracks. This herd has not yet adapted to the farmer's newly-installed electric fence that protects severely eroding stream banks from their hooves, nor to the alternate watering source, both provided through the Fish and Wildlife Service's (FWS) Partners for Fish and Wildlife program. But the cows will learn.

The Partners program was established to provide private landowners with funds to restore fish and wildlife habitats. At the same time, Partners projects such as stream bank restoration reduce significant non-point sources of water quality degradation. In fact, Partners funding has played an instrumental role in jump-starting the aquatic habitat restoration program of the FWS Asheville, North Carolina, Field Office. Working in an area that encompasses Kentucky, Tennessee, North Carolina, South Carolina, northern Alabama, and northern Georgia, the Asheville office currently coordinates 10 watershed-based riparian and 7 mountain bog habitat restoration projects. These restoration projects, now in various stages of implementation, are cooperative efforts among dozens of stakeholders, including several other FWS field offices and teams from three FWS ecosystems (Southern Appalachian, Lower Tennessee-Cumberland, and Ohio River Valley).

Asheville's habitat restoration initiatives have used Partners funds as

seed money to help conservation organizations initiate specific projects. At the top of our long list of partners is The Nature Conservancy (TNC). With similar biodiversity protection goals, Asheville and TNC have formed a long-standing partnership in riparian habitat and mountain bog restoration projects.

The Clinch River Community Project (CRCP), initiated in 1993, is a classic example of building upon the expertise of several agencies and organizations to bring a major habitat restoration project to fruition. According to TNC, the upper Clinch River, located in the species-rich Tennessee River system, has more at-risk mussel and fish species (48) than any other small watershed in the country. A section of the Clinch in Hancock County, northeastern Tennessee, was chosen for concerted restoration activities by the Tennessee Chapter of TNC and our Asheville office. This stretch harbors 14 endangered or threatened species, 12 mussels and 2 fishes. TNC has leveraged \$35,000 in FWS Partners funds in 1994 into over \$650,000 for restoration efforts in this area. With the assistance of the Clinch-Powell Resource Conservation and Development Council (RC&D), Tennessee Wildlife Resources Agency, Tennessee Department of Agriculture, Tennessee Department of Environment and Conservation, Environmental Protection Agency (EPA), U.S. Geological Survey, Tennessee Valley Authority, Natural Resources Conservation Service (NRCS), local governments and agencies, various local organizations and individuals, and private landowners, TNC has restored habitat at over 20 sites in the watershed.

Restoration activities on the Clinch project include fencing of riparian

zones, providing alternate livestock watering sources, stabilizing heavy livestock use areas and stream crossings, installing erosion control structures, revegetating critical areas, improving riparian buffers and pond habitats, and improving pasture management. Being a community-based conservation project, other activities have included cleaning up illegal dump sites, providing low-cost rental farm equipment to community farmers, and hosting informational meetings for local landowners. The various activities of CRCP prove that farming activities and natural resource conservation are mutually compatible and economically feasible.

Based on the success of the CRCP, the FWS and other partners have provided funds enabling TNC to begin a restoration project on the Conasauga River. Located on the Georgia-Tennessee border in the highly imperiled Mobile Basin, the Conasauga River is another stream with high biodiversity. There are records of 12 federally-listed mussels and fishes and other rare aquatic species from the Conasauga. Although several of the rare mussels have disappeared from the river (some are extinct throughout their range), at least four listed mussels and three listed fishes still call the Conasauga home (see "The Conasauga Saga" in *Bulletin*, Vol. XXI, No. 6).

Another major project, launched with \$49,000 in Partners funding, is located on the Little Tennessee River in western North Carolina. Administered by the Southwestern North Carolina RC&D through the grassroots Little Tennessee Watershed Association, this project has secured three separate \$100,000 EPA Clean Water Act (section 319) grants for restoration projects in the Little Tennessee and an adjacent watershed, the Hiwassee River. Recently, this project received a grant from the North Carolina Clean Water Management Trust Fund, which earmarked \$750,000 out of the \$3.9 million grant specifically for riparian habitat restoration work in the Little Tennessee watershed. To date,

about 20 landowners have participated in the project. Critical partners on this project include NRCS, EPA, Macon Soil and Water Conservation District, North Carolina Wildlife Resources Commission (NCWRC), U.S. Forest Service, Nantahala Power and Light, Nikwasi Land Trust, and private landowners.

To date, our Asheville office has leveraged \$160,000 of Partners and \$80,000 of endangered species recovery funding into over \$2.2 million for aquatic habitat restoration activities using other Federal funds, along with State and private funding matches secured by our partners. The most crucial component of our activities, however, is active participation by willing landowners and local volunteers. Without them, restoration efforts would have little chance of success. With their support, we are entering an exciting age of ecosystem-based management for the improvement of water and habitat quality that benefits all species, including ourselves.

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Photo by Nora Murdock/USFWS



Endangered pitcher plants depend on bog habitat.
USFWS photo

Our Asheville office also has initiated bog restoration projects in the Appalachian Mountains of western North Carolina and eastern Tennessee. One of the most endangered ecosystems in the southeast, mountain bogs harbor unique plant and animal communities, including five federally listed plants and animals, and one species currently proposed for listing. Stakeholders, which include TNC, Atlanta Botanical Garden, Zoo Atlanta, North Carolina Herpetological Society, North Carolina State Museum of Natural History, NCWRC, University of North Carolina at Asheville, University of North Carolina at Greensboro, NRCS, and bog owners, have banded together to protect and rehabilitate bog habitats. Specific restoration activities include restoring hydrology by plugging drain tiles once installed to convert bogs to agricultural lands, controlling nuisance invasive woody vegetation by practicing limited controlled burning (see photo at left) and other methods, and erecting riparian fencing. Rare plants and animals that had disappeared are being reintroduced into historically occupied bog sites where suitable habitat conditions have been restored.