

by Mike Wicker

A Military Solution to an Environmental Problem



On December 1, 1999, combat engineers from the Marine Corps Air Station at Cherry Point, North Carolina, used C-4 plastic explosive to blast a very large hole in the 250 feet (76 meter) long, 12 feet (3.7 m) high Rains Dam on the Little River. Three more days of blasting reduced the 71-year-old dam to rubble.

A contractor working under the direction of the North Carolina Division of Water Resources cleared the site of broken concrete and other debris. The exposed mud flats were then planted with bald cypress (*Taxodium distichum*) and Atlantic white cedar (*Chamaecyparis thyoides*), with help from the North Carolina State University Department of Horticulture. The dam's owner was a partner in the removal project.

Before its demolition, Rains Dam blocked access to 49 miles (79 kilometers) of spawning habitat for six species

of anadromous fish. The removal of the dam restored this area as important spawning and rearing habitat. Anadromous fish that are benefitting as a result are alewife (*Alosa pseudoharengus*), American shad (*Alosa sapidissima*), hickory shad (*Alosa mediocris*), Atlantic sturgeon (*Acipenser oxyrinchus*), striped bass (*Morone saxatilis*), and an endangered species, the shortnose sturgeon (*Acipenser brevirostrum*). This project complemented two other dam removal projects (Quaker Neck Dam Removal and Cherry Hospital Dam Removal), which restored access to

The impoundment caused by Rains Dam inhibited feeding, migration, and breeding of several aquatic species by reducing downstream flows.

Photo by Tom MacKenzie/USFWS

1,000 miles (1,610 km) and 54 miles (87 km) of anadromous fish spawning habitat, respectively.

Removal of the Rains Dam may benefit other species as well. Populations of two endangered freshwater mollusks, the dwarf wedgemussel (*Alasmidonta heterodon*) and the Tar spiny mussel (*Elliptio steinstansana*), have been found in the Little River approximately eight miles (13 km) upstream of the project area. Additionally, populations of the dwarf wedge mussel have been found downstream of the Rains Dam in the Little River and its tributaries. These species require flowing water and had been extirpated from the 28-acre (11-hectare) lake impounded by the Rains Dam. Removal of the dam will allow these species to reoccupy 11 miles (18 km) of the Little River and restore genetic exchange between upstream and downstream populations that had become isolated from each other.

Other rare animals that benefit from the project are listed below.

Fish: The Carolina madtom (*Noturus furiosus*) appears to be a declining species throughout its range. This species requires flowing water, and removal of the dam increased the available habitat.

Amphibian: A good population of the Neuse River waterdog (*Necturus lewisi*), a large salamander, still remains in the Little River, and dam removal increased its habitat.

Mussels: The Atlantic pigtoe (*Fusconaia masoni*), yellow lance (*Elliptio lanceolata*), yellow lampmussel (*Lampsilis cariosa*), green floater (*Lasmigona subviridis*), triangle floater (*Alasmidonta undulata*), notched rainbow (*Villosa constricta*), and squawfoot (*Strophitus undulatus*). The removal of the dam increased and improved their habitat, and allowed the opportunity for genetic exchange among populations. Most of these species are only found above the previous reservoir for this dam. The North Carolina Wildlife Resources Commission's Non-Game Program considered dam removal essential for the long-term survival and health of these rare mussel species.

Prior to the dam's removal, this project had been proposed as a high priority environmental restoration project by the U.S. Fish and Wildlife Service's Coastal Program. To achieve this important goal, Coastal America, a multi-agency private/public partnership, stepped in to help. Coastal America provided a framework for the military to work with state and federal agencies, non-governmental organizations, and the public. Such dam removal projects are typically multi-disciplinary efforts that must address engineering, biological, legal, and social issues beyond the capabilities of any single agency, or public group. Partners in this project included the Service, U.S. Marine Corps, U.S. Army Corps of Engineers, National



Mike Wicker, left, speaks to a public gathering on hand to witness the demolition of Rains Dam.

Photo by Tom MacKenzie/USFWS

Fish and Wildlife Foundation, and the owners of the dam and adjacent lands. The North Carolina Department of Environment and Natural Resources led the team effort. Using the Coastal America framework allowed individual partners to contribute in their areas of strength, thus creating a very effective synergy for river restoration.

Mike Wicker is the Service's Albemarle/Pamlico Coastal Program Coordinator in Raleigh, North Carolina.

Post-event note: In October 2000, the Rains Dam project team received the Coastal America Partnership Award for 2000 and the U.S. Marine Corps Demolition Team received a Special Recognition Award. These awards recognize the participants' contributions for improving our coastal environment.



The three photos above show, from top to bottom, the Rains Dam site before, during, and after removal. The dam was a barrier to fish attempting to migrate upstream to breed.

Photos by Hugh Heine/US Army Corps of Engineers



The endangered Tar spinymussel, left, is one of the species that may benefit from the removal of Rains Dam.

Photo by Richard Biggins/USFWS