IMPROVING FISHERIES HABITAT

BY SCOTT DECKER AND JOHN MAGEE

One of the best ways to make sure we have great fishing is to improve fisheries habitat. Inland Fisheries biologists completed a range of habitat projects during the biennium, from providing deep pools and structure that allow fish to thrive, to removing old dams that halt fish migration, to stabilizing streambank erosion.

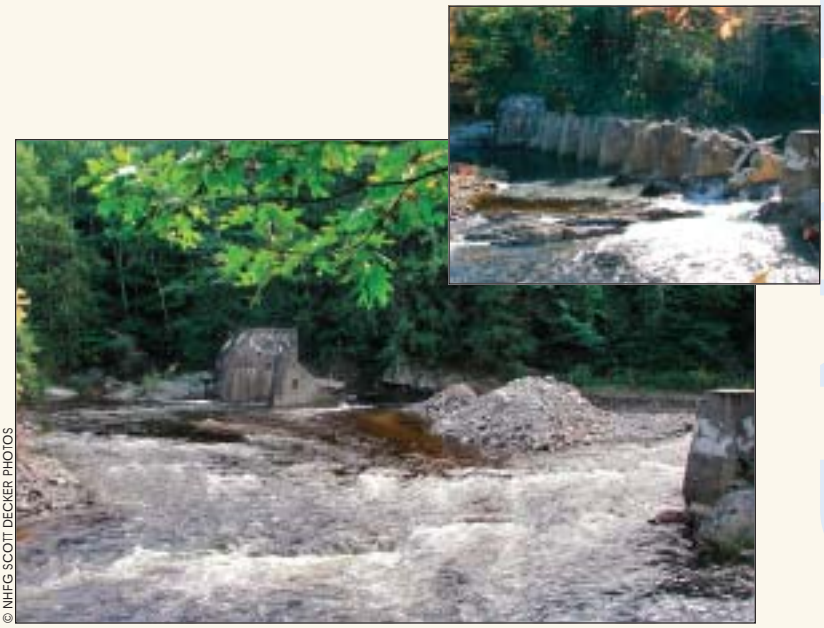
COLD RIVER HABITAT IMPROVEMENT

In September 2003, the Fish Habitat Program partnered with the N.H. Coldwater Fisheries Coalition and Trout Unlimited to conduct a fisheries habitat improvement project on a section of the Cold River in Walpole. The Cold River site was a good candidate for a habitat restoration and fisheries enhancement pilot project, with a secondary goal of improving recreational potential. The site did not have much water with the right conditions to hold adult fish, partly because of physical impacts to the riverbed and bank from the historic gravel operations of previous owners.

A metal gravel trolley over the river affected the aesthetics of the area. Further, a defined channel and deep-water pools were lacking. These features typically dictate whether or not a waterbody has healthy fish populations. Deep-water pools, for instance, maintain cooler temperatures and provide cover for fish during low-flow periods. A diversion dam at the site created an unnatural barrier to fish movement, further decreasing the quality of the fish habitat.

In carrying out the pilot project, we placed boulders in several areas to provide fish holding cover, excavated two pools in the riverbed to create a bar, deepened one existing pool, reconfigured the existing diversion dam into a U-shaped weir, and removed the obsolete and rusting metal trolley. Fish and Game will monitor the site over the next few years to document improvements to the fishery and aquatic community.

You might be surprised to learn how many organizations are involved in making a project like Cold River a reality. In addition to N.H. Fish and Game, project partners contributing funding and/or technical expertise to this project included FishAmerica Foundation and the National Oceanic and Atmospheric Administration (NOAA) Partnership Program, U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program, French Foundation, Trout Unlimited, Connecticut River Watershed Council, Connecticut River Joint Commissions, N.H. Department of Environmental Services, National Park Service, Red Hed Supply Company and Lane Construction.



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The Bearcamp River in South Tamworth, shortly after dam removal that opened up miles of free-flowing riverine habitat. The dam abutments were left for historical purposes. Inset: Bearcamp River Dam, prior to removal.

BEARCAMP RIVER DAM REMOVAL

During the biennium, dam removal projects were completed on two rivers, the Bearcamp and the Contoocook. Fish and Game's fish habitat program took part in these removal projects as a financial partner and by providing technical expertise.

In October 2003, the Bearcamp River Dam in South Tamworth was taken out. The dam was built in 1929 to power Tamworth Industries, which manufactured toys, furniture and pre-fabricated housing. It consisted of eight 20-foot high concrete piers resting on bedrock and spanned 230 feet across the Bearcamp River, a popular trout stream. The dam had served no useful purpose since the mill was destroyed by fire in 1945.

Over the years, the dam had changed owner-

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Inland Fisheries Division

The Inland Fisheries Division is responsible for all freshwater fish within state and interstate waters. Fisheries biologists and fish culturists work to provide New Hampshire anglers with a diversity of fishing opportunities and to protect and restore fish resources and aquatic habitat. This Division is responsible for operating the Department's six fish hatcheries, which during the biennium produced more than a million fish each year to meet a variety of management needs.

ship several times and deteriorated, accumulating a great deal of woody debris behind the structure. In 1997, the N.H. Department of Environmental Services Dam Bureau determined the structure to be unsafe and issued orders to the current owner to remove the woody debris regularly or remove the dam. In the interest of a long-term solution, the dam owner chose to remove the dam with the assistance of the New Hampshire River Restoration Task Force, an interdisciplinary team of state, federal and private conservation groups whose goal is restoring rivers through selective removal of obsolete dams.

The removal of the Bearcamp River Dam opened up approximately 28 miles of free-flowing riverine habitat, restored the natural movement of woody debris through the river and improved recreational opportunities for anglers and paddlers.

The project was made possible by financial and technical assistance by the N.H. Fish and Game Department, Public Service Company of New Hampshire, U.S. Fish & Wildlife Service Partners for Fish and Wildlife, FishAmerica Foundation, Norcross Wildlife Foundation, N.H. Department of Environmental Services, U.S. Environmental Protection Agency, Saunders Brothers Inc. and Trout Unlimited.

WEST HENNIKER DAM REMOVAL

The West Henniker Dam was removed between July and October 2004. On the Contoocook River in the town of Henniker, the 10-foot high, 130-foot long structure was built in 1936. The dam diverted water that once powered the Contoocook Valley Paper Company mill, located a short distance downstream. The mill was closed in 1987, and the dam had become obsolete.

Removing the dam had the potential to increase trout fishing opportunities by extending the length of riffle/run habitat in this reach of the Contoocook River. The river upstream of the former dam


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Fish and Game operates six fish hatcheries that annually produce nearly a million catchable-size fish for stocking.

Inland Fisheries Major Accomplishments

- Developed and implemented a **Fish Conservation Program** with the goal to protect, conserve, enhance or restore anadromous and freshwater fish species of greatest conservation need.
- The **Fish Habitat Program** evaluated habitat in approximately 40 miles of streams; evaluated and/or performed eight dam removal projects; assessed and/or performed four aquatic habitat restoration projects; and worked on the incorporation of stream habitat and stream fish survey data into a comprehensive GIS database.
- Evaluated **warmwater fish populations** in 24 waterbodies and sampled Lake Winnipesaukee each fall to assess abundance, growth and condition of black bass less than a year old.
- Conducted hydroacoustic and trawl-net **forage fish surveys** on landlocked salmon/lake trout managed lakes such as Lake Winnipesaukee; these efforts help determine appropriate landlocked salmon stocking rates, which in turn provide high-quality salmonid fisheries.
- Increased **fish passage** at the fishway in Lowell, Massachusetts, resulted in greater numbers of adult shad migrating into the New Hampshire portion of the Merrimack River; run of 5,000 river herring passed through the fishway at the Amoskeag dam in 2005. A new genetic marking program for juvenile Atlantic salmon will assist in identifying the origin of adult salmon returning to the Merrimack River.
- In addition to producing tons of trout and salmon for stocking into appropriate waters, the Department's **six fish hatcheries** have implemented measures needed to meet revised water quality discharge criteria associated with Environmental Protection Agency-issued permits.
- Performed **two-year population assessments** on thirteen ponds/lakes managed for coldwater fisheries to examine species composition, to identify whether natural reproduction was occurring and to evaluate growth of both stocked and wild trout species.

impoundment has been managed as a special regulation trout fishing area for a number of years. Downstream movement of Atlantic salmon smolts, as well as upstream movement of American eels, will be much easier with the dam gone.

Project partners in this effort included Fish and Game, N.H. Department of Environmental Services, American Rivers – NOAA Community-Based Restoration Program, U.S. Fish & Wildlife Service, U.S. Environmental Protection Agency, National Fish and Wildlife Foundation, American Whitewater, Town of Henniker and Trout Unlimited.

SHORING UP FISHERIES HABITAT

N.H. Fish and Game worked with the U.S. Army Corps of Engineers on a streambank stabilization project on the North Branch Piscataquog River in Weare in May 2005. The project was an excellent candidate for Fish Habitat Program efforts because of its low cost to Fish and Game. The land is wholly owned by the U.S. Army Corps of Engineers, which provided complete financial and technical support, and the river is designated under the Rivers Management and Protection Act. This project is expected to have significant positive impact on the fishery.

The project site is just upstream from the Everett Lake Reservoir. The river and reservoir provide self-sustaining warmwater fisheries, and the river is also stocked with trout. The stabilization project involved installing a well-marked fence along the streambank to halt illegal crossing by OHRVs, the primary cause of the bank erosion, and planting native trees and shrubs to reduce erosion into the river and reservoir.

Several large biologs (20-foot 'logs' of biodegradable coconut material) and coconut matting were placed along steep sections of the streambank to stabilize it and protect the plants.

Since the project was completed, monitoring has included photographic documentation of the stability of the bank. Illegal crossing activity has been completely curtailed, and approximately 80 percent of the plantings have grown well.

Throughout New Hampshire, Inland Fisheries habitat projects like these — based on scientific assessments, careful planning and cooperative work with many partner organizations — are restoring and improving habitat for the state's fish populations. This work helps to ensure that our fisheries will be healthy and abundant in years to come. WJ

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Volunteer Don McGinley of Merrimack Valley Chapter of Trout Unlimited (right) assists fisheries biologist Gabe Gries with measuring brook trout on a local trout stream. Volunteers like Don are an invaluable resource in helping Fish and Game achieve its goals.

NUMBER OF FISH STOCKED BY SPECIES - FY2004

	1+YR	2+YR	3+YR	Fingerling	Fry	Grand Total
Atlantic salmon					1,025,000	1,025,000
Brook trout	465,126	19,489	1,981	261,820		748,416
Brown trout	140,585	150		48,173		188,908
Landlocked salmon	47,617			29,649		77,266
Rainbow trout	337,602	740	215	95,371		433,928
Grand Total	990,930	20,379	2,196	435,013	1,025,000	2,473,518

NUMBER OF FISH STOCKED BY SPECIES - FY2005

	1+YR	2+YR	3+YR	Fingerling	Fry	Grand Total
Atlantic salmon					342,700	342,700
Brook trout	509,868	18,827	2,810	507,104		1,038,609
Brown trout	172,658		555	12,400		185,613
Landlocked salmon	42,259			49,597		91,856
Rainbow trout	278,136					278,136
Tiger trout	1,600					1,600
Grand Total	1,004,521	18,827	3,365	569,101	342,700	1,938,514