

Atlantic Salmon

Salmo salar

While at one time hundreds of thousands of Atlantic salmon made their epic migration from the oceans of Greenland to their natal rivers in Maine, now it would be a privilege to see even a few of these powerful creatures. Depleted by a combination of overfishing, pollution and dams, this once-prominent salmon species is severely reduced. Now we must rely on fish hatcheries to provide enough young for the species to survive.

Historically in North America, Atlantic salmon once stretched from Ungava Bay, Canada, to the rivers of Long Island Sound, but now the only remaining wild U.S. populations swim in Maine rivers.

Early life

Atlantic salmon spawn in freshwater rivers and streams during autumn. Eggs remain in gravel substrates and hatch during winter. Tiny young salmon, called fry, emerge from the gravel in spring.



Atlantic salmon fry with sac

Until now, the salmon have looked like any other minnow, but soon dark bands and red spots can be seen on their sides. The colorful juvenile salmon, called parr, remain in freshwater one to three years before undergoing “smoltification” to prepare for migrating to the ocean.

Atlantic salmon are anadromous, meaning they travel from the sea to spawn in fresh water. These fish are

highly migratory, undertaking long marine migrations between U.S. rivers and a wide expanse of the northwest Atlantic Ocean.

The journey

Most Atlantic salmon of U.S. origin spend two winters in the ocean before returning to freshwater to spawn. These adult Atlantic salmon average from 28 to 30 inches long and weigh from 8 to 12 pounds. Although uncommon, adults can grow as large as 30 pounds. In the United States, most adult Atlantic salmon ascend Maine rivers beginning in spring and continuing through the autumn, with migration peaking in June.

Going home

So how do these fish find their way from the oceans of Greenland all the way back to their natal rivers? Well, it isn't GPS or a map. Atlantic salmon actually imprint upon their home river by olfactory sense during smoltification.

Imprinting allows Atlantic salmon to recognize the chemical fingerprint of their home river. Using this olfactory ability, the salmon can find their way home from the middle of the ocean to the stream where they were born.

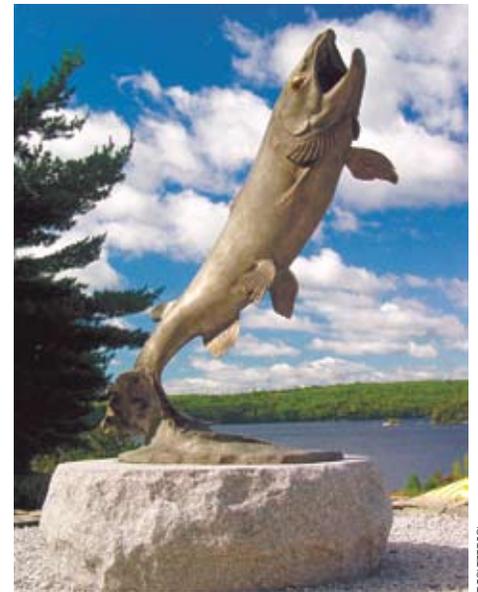
The recovery story

Atlantic salmon populations have been declining since the Industrial Revolution because of dam construction with no or inadequate fish passage, pollution, overfishing, illegal fishing, habitat loss and other factors. The most significant threats now are poor marine survival and dams obstructing fish passage.

In December 2000, wild Atlantic salmon populations in small coastal rivers in Maine – the Dennys, East Machias, Machias, Pleasant, Narraguagus,

Ducktrap, Sheepscot rivers and Cove Brook – were protected as endangered under the Endangered Species Act.

Together, the U.S. Fish and Wildlife Service and the State of Maine have a river-specific stocking program working toward the restoration and stability of the Atlantic salmon populations in Maine rivers.



Craig Brook National Fish hatchery

Craig Book National Fish Hatchery is the oldest public salmon hatchery in the nation and the last refuge in the United States for federally endangered Atlantic salmon. Craig Brook raises and releases up to 1.5 million juvenile salmon – 1-inch fry and 6-inch smolts – to recover populations.

As part of a river-specific stocking program begun in 1994, young Atlantic salmon are captured each year from the Dennys, Machias, East Machias, Pleasant, Narraguagus and Sheepscot rivers and brought to the hatchery to be raised as broodstock. The Atlantic salmon recovery program at Craig



Atlantic salmon female

Brook mimics the species' river-specific life cycle. Offspring are raised separately by river population and released as fry or smolts into their parents' home river, thereby protecting the genetic integrity of the salmon in each of these watersheds.

Biologists also release 2 million juvenile fish each year to restore the Atlantic salmon population in Maine's largest river, the Penobscot. The Penobscot lost all its native salmon north of Bangor by the mid-20th century, but has become America's greatest salmon restoration success story.

The Penobscot River has the only salmon population with sufficient numbers of returning adults to support an adult capture program. About 400 returning adult females and 200 males are temporarily captured for use as broodstock. They are released after artificial spawning. Most of the returning Penobscot adults are allowed to pass unobstructed at Veazie Dam to continue their upstream migration to spawn naturally in the river's headwaters.

More salmon rivers have protection

Based on a review of the status of Atlantic salmon in Maine, in June 2009 NOAA's Fisheries Service and the U.S. Fish and Wildlife Service redefined the population of Gulf of Maine Atlantic salmon and extended Endangered Species Act protection to salmon in large Maine rivers to help prevent extinction and to recover the imperiled population.

In addition to salmon originally protected in 2000, Atlantic salmon from the Penobscot, Kennebec and Androscoggin rivers now have Endangered Species Act protection. Salmon in these larger rivers were added because they are genetically similar or reside in watersheds with similar conditions to those found in the coastal rivers of Maine.

The restoration story

The Nashua, North Attleboro, Pittsford, Richard Cronin and White River national fish hatcheries produce salmon fry to restore lost populations in the Connecticut, Merrimack and Pawcatuck rivers. Salmon in these rivers are not protected by the Endangered Species Act. Hundreds of people, from schoolchildren to adults, assist each spring in stocking fry into these rivers and their tributaries as an investment in the future of Atlantic salmon.

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