WILDLIFE BIOLOGY

Atlantic Salmon Spawn Fight Over Species Protection

CHERRYFIELD, MAINE—Fisheries biologist Greg Horton drags his canoe from ice-fringed Old Stream, one of Maine's legendary salmon runs. After a frigid day spent scrutinizing 20 kilometers of river bottom, Horton had spotted just a handful of redds, the bowl-shaped gravel nests in which Atlantic salmon lay eggs. "There have been years when this river was just dotted with redds," he says. But the sparse count this year is grave new evidence of what Horton and his colleagues at the Maine Salmon Authority have feared: It looks like another dismal breeding season here for wild salmon, which once thrived half a million strong in rivers north of the Hudson. But because Atlantic salmon remain abundant in Canada and Europe, the U.S. government won't be stepping in to save them.

The decision not to use the Endangered Species Act (ESA) to protect seven of the nation's last native Atlantic salmon runs (see map), which Interior Secretary Bruce Babbitt announced in late December, has rekindled a fierce debate over which animal populations are worth saving. While the ESA is generally used to shelter an entire species, a 1978 amendment allows federal officials to protect individual populations. But critics of the Maine decision charge that the criterion used to choose which populations to protect—their "evolutionary significance" to the species as a whole—overemphasizes genetics and ignores factors, such as an animal's cultural value to society, that might justify its protection. "The approach is too narrow and will prevent the recognition of important biodiversity," contends Walter Dimmick, an ichthyologist at the University of Kansas, Lawrence.

When Congress wrote the distinct population segment (DPS) provision, it ordered federal officials to use it sparingly—a message that has been taken to heart. Currently, fewer than 30 of the more than 300 ESA-protected vertebrates fall into the DPS category. But Congress "didn't tell us how to define distinctness," says Robin Waples, a geneticist at the National Marine Fisheries Service (NMFS) in Seattle.

To fill the gap, Waples and others developed a formal DPS definition adopted by the federal government in 1996. The policy is based largely on a test that Waples and his colleagues devised in the early 1990s, when NMFS had to decide which populations of Pacific salmon warranted ESA protection. To pass the DPS test, a population must be judged by federal scientists as "substantially reproductively isolated" from other populations and "an important component in the evolutionary legacy" of the species—an evolutionarily significant unit (ESU).

The Maine salmon provided an early test of the policy. In 1995, two agencies—NMFS and the U.S. Fish and Wildlife Service (FWS)—proposed designating Maine's last few hundred wild salmon as a threatened DPS. The proposal was a lightning rod for criticism from Maine politicians and industry groups, who feared the listing would crimp everything from salmon ranching to blueberry farming. The state and its scientists insisted that any remaining wild Atlantic salmon were hatchery-contaminated mongrels indistinguishable genetically from their Canadian cousins. Federal biologists, meanwhile, argued that wild fish with a distinct gene pool persisted in the seven rivers, and to prove it they commissioned a huge study on DNA from 1000 Atlantic salmon from Maine, Canada, and Europe. "Defining the DPS became *the* issue," says NMFS biologist Mary Colligan.

The study, by a team led by U.S. Geological Survey geneticist Tim King of the Leetown Science Center in West Virginia, found that Maine salmon could be distinguished from their Canadian and European brethren. Researchers, for instance, were able to pinpoint a Maine fish's country of origin 95% of the time, based on its genetic makeup. But the Maine salmon failed a key DPS test, King asserts: "The reproductive isolation just isn't there." And Maine salmon shared too many of the same alleles, or gene variants, with the Canadian fish to be considered a distinct population. "Nothing jumps out as an ESU," King says.

Faced with what Waples calls "a fairly murky issue," NMFS and FWS officials offered a compromise. In December, they designated Atlantic salmon in the seven rivers as part of a larger "Gulf of Maine DPS," making them eligible for ESA protection. But at the same time, the agencies announced that the imperative for the listing had subsided, citing, for instance, state efforts to reduce poaching. The improved outlook led them to accept a state-crafted $17 million conservation plan that relies mostly on voluntary actions by state agencies and industry groups.

Critics, however, say the decision shows how judging "evolutionary significance" opens listing decisions to political pressure. "Magically, the box we put a creature into tends to be very convenient for avoiding unpopular listing decisions," says law professor Daniel Rohlf of Lewis and Clark College in Portland, Oregon. "The [populations] often seem to fall just outside areas where listing would cause real economic pain."

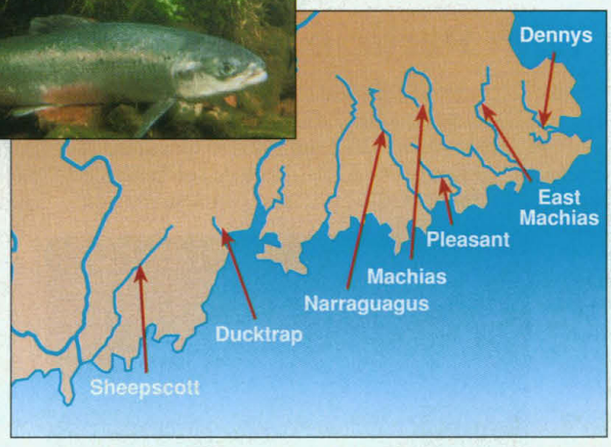
Waples concedes that defining a DPS involves making judgment calls but says he's puzzled by claims that genetics is the key factor behind decisions. "It is not clear what has spawned the misconception," he says, pointing to species that have attained DPS status without benefit of a genetic study, such as the Snake River sockeye.

The debate is unlikely to fade soon. Some of the same biologists involved in the salmon fracas are now examining whether the Atlantic sturgeon—which lives in rivers from the Gulf of Mexico to Maine—deserves DPS protection. And, in courtrooms across the country, environmentalists are challenging federal decisions to deny populations DPS status or to abdicate authority for protecting them to state governments. "There is no scientific justification for relying on a handshake from a governor as a substitute for listing," says Jasper Carlton of the Biodiversity Legal Foundation of Boulder, Colorado, which plans a court challenge to the Maine decision. Waples, for his part, hopes the critics will reexamine the record: "There is some paranoia that isn't justified when you look at how the concept is actually used."

–David Malakoff

W. W. HARTLEY

Insignificant? The feds have opted not to step in to protect wild salmon in these Maine rivers.



SOURCE: U.S. FISH AND WILDLIFE SERVICE

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