DEPARTMENT of the INTERIOR

news release

FISH AND WILDLIFE SERVICE

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TOXIC CHEMICALS MAY PROVIDE CLUE TO MYSTERIOUS DISAPPEARANCE OF STRIPED BASS

Traces of arsenic, PCB's, and other chemicals are the latest clues in a biological detective story--the mysterious decline of Atlantic Coast striped bass.

U.S. Fish and Wildlife Service biologists found the chemical residues in striped bass fry and fingerlings collected last summer from three East Coast rivers. Tests showed that the fish had weakened backbones, a condition the scientists believe is caused by toxic chemicals.

"A weakened backbone would certainly reduce the ability of striped bass to compete for food, avoid predators, or endure the stresses of migration and reproduction," according to Dr. Paul Mehrle, a biochemist at the Service's Columbia National Fisheries Research Laboratory in Missouri. "But we have a lot more work to do before we can say to what extent contaminants may be contributing to the decrease in the striped bass population."

The number of striped bass, a valuable sport and commercial fish, began dropping in the early 1970's and by 1978 had reached a 21-year low. Two Federal fishery agencies--the Interior Department's U.S. Fish and Wildlife Service and the Commerce Department's National Marine Fisheries Service--are conducting an emergency 3-year program to determine the size and distribution of striped bass populations and to find out whether the decline is natural or due to some man-made phenomenon, such as pollution or over-fishing.

Contaminants are a prime suspect in the mystery because striped bass spawn in heavily polluted rivers where the delicate young fish stay for up to 3 or 4 months after hatching. Then the young must survive for 2 years or more in estuaries where they are often exposed to more pollution. Later, some stocks of striped bass migrate out to sea where they spend most of their adult lives in coastal waters.

To find out what role pollution may be playing, extensive tests are now underway on striped bass at the Columbia laboratory, a facility that specializes in studying the effects of pesticides and other chemicals on fish. The Columbia research team, led by Dr. Mehrle and Dr. Terry Haines, is being assisted by State fishery agencies and private industry in collecting striped bass from the wild for the study and in assembling needed information.

In their initial tests, the Columbia scientists found that young striped bass from the Hudson River contained relatively high levels of PCB's (polychlorinated biphenyls, an industrial chemical), lead, and cadmium. Fish from the Potomac River contained lead, zinc, arsenic, and selenium, and fish from the Nanticoke River (Maryland) contained significant levels of arsenic and selenium. In contrast, striped bass raised at the Edenton National Fish Hatchery in North Carolina contained no significant chemical residues.

Tests also revealed that the backbones of Hudson River fish were 42 percent weaker than the uncontaminated hatchery fish, while backbones of fish from the Potomac and Nanticoke showed about a 20 percent reduction in strength.

Mehrle says the studies show that contaminants begin affecting striped bass during very early life stages--within the first 3 months. "What's interesting is not only that we're finding contaminants, but that we're seeing alterations in bone development even in these very young fish," he explains.

The researchers have already begun additional studies to learn more about the effects of contaminants on striped bass. Adult female bass have been collected from the Hudson River, the Elk and Choptank Rivers in Maryland, and the Cooper River in South Carolina, and their fertilized eggs sent to a National Marine Fisheries Service laboratory in Rhode Island. There, studies will be made of hatching success, and of survival, growth and development of the young for 90 days after hatch. Chemical residues in eggs and young will also be measured throughout the study period. Fish and Wildlife Service scientists will then see if the presence of chemical residues can be correlated with reproductive success or survival and growth of young.

The team is also beginning intensive monitoring of striped bass, eggs, and sediments from the Hudson, the Cooper, and a half dozen rivers in the Chesapeake Bay area to find out what chemicals are present. The studies will include use of sophisticated analytical techniques to discover contaminants that do not show up during routine laboratory procedures.

When the chemicals contaminating the fish are known, the next step will be to conduct toxicity tests on hatchery-reared striped bass under controlled conditions at the Columbia laboratory. From these tests the scientists will learn how different chemicals affect striped bass and what levels of exposure will kill the fish or cause tumors, reproductive failure, abnormal growth or bone development, or other problems. One possibility is that contaminants may interfere with the osmoregulatory process in young fish--their ability to adjust from freshwater to saltwater when they migrate to the ocean.

At this time there is no consensus as to what is causing the drop in the number of striped bass. Some scientists think a combination of factors is responsible, while others believe the decrease is part of a natural cycle that will eventually reverse itself without human help. The tests being conducted by the Columbia laboratory should help provide the evidence needed to determine whether pollution is contributing to the decline of the popular fish. In the meantime, the jury is still out on the case of the declining striped bass.

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