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Study: Asian carp DNA may not signal live fish

Associated Press

TRAVERSE CITY, Mich. — Live Asian carp don't necessarily have to be present for their DNA to turn up in the environment, according to a government study released Wednesday that could intensify the debate over how to prevent the aggressive, hungry invaders from reaching the Great Lakes and other vulnerable waters.

DNA is found in excrement, slime and scales from live fish. But the report by three federal agencies identifies six other possible means through which genetic fingerprints from bighead and silver carp could find their way into locations such as the Chicago waterway system and western Lake Erie, where it has been detected in dozens of samples taken in recent years.

Those potential pathways include storm sewers, fisheries sampling gear, fish-eating birds, dead fish carcasses, barges and sediments, the report said. It said carp DNA attached to any of those sources could remain for days before disintegrating.

Scientists with the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service and the U.S. Geological Survey are conducting a three-year study designed to answer questions raised by the repeated discovery of Asian carp DNA in rivers and canals in the Chicago area — including locations beyond an electric barrier intended to block the carp's northward march toward Lake Michigan. Their DNA also has been found in the Mississippi River beyond Minneapolis.

"The purpose ... is to improve the understanding and interpretation of Asian carp environmental DNA results, so we can refine and make this relatively young monitoring tool the most effective to detect live Asian carp presence," said Kelly Baerwaldt, an Army Corps fisheries biologist and Asian carp program manager. Additional reports are planned as the study continues.

Bighead and silver carp escaped into the Mississippi River from sewage treatment ponds and fish farms in the Deep South decades ago and have migrated northward, invading numerous tributary rivers. The filter feeders gobble massive volumes of plankton — microscopic plants and animals crucial to aquatic food webs.

Scientists say if allowed to infest the Great Lakes, the carp eventually could crowd out native species, endangering the region's \$7 billion fishing industry. Silver carp, which spring from the water when startled and have collided jarringly with boaters, pose a threat to tourism.

Some state and local officials in the Great Lakes region want structures placed in the Chicago waterways to seal off Lake Michigan from the Mississippi watershed. Business and government leaders in Chicago say that would devastate shipping in the area, and some question whether the DNA findings are sufficient evidence that the carp have evaded the electric barrier.

Just one live carp has been found beyond the barrier, which is in a canal 37 miles southwest of the city, despite intensive netting operations after repeated positive DNA findings.

Asian carp DNA discoveries also have ignited a debate over whether to close a Mississippi River shipping lock in Minnesota's Twin Cities area.

In their report, the federal scientists said they have conducted experiments to determine the feasibility of alternative explanations for the sampling results. Skeptics have suggested the previously detected DNA could have come from excrement of birds that feed on dead carp, or perhaps from ice and wastewater flushed into Chicago sewers from markets that sell the carp, or from boats that touched the fish.

Without taking sides in the debate, the scientists found that fish-eating birds "have the capacity" to transmit carp DNA in their droppings, which could contaminate barges and other vessels. They found the telltale DNA in feces of birds that were fed Asian carp.

The study also found "considerable amounts" of DNA stuck to boat hulls, which can remain for days "and does not appear to be completely or quickly washed off of boats moving through the water."

Team members reported finding Asian carp DNA in Chicago's storm sewers. They said boats, nets and other gear used by commercial fishermen and natural resource agencies could spread the genetic markers.

Chris Jerde of the University of Notre Dame, who's among the scientists who have detected Asian carp DNA in recent years, said they never claimed that all the positive hits came from live fish. But alternatives suggested in the report don't explain the persistent DNA findings in the same general locations, he said.

Jerde said he and colleagues have tested more than 1,700 water samples from the Chicago waterways, Lakes Michigan and Erie, and many rivers in the region. The positive results have been concentrated in areas relatively close to where a live carp was landed in Chicago in 2010 and where a bighead was caught in Lake Erie around 2000, he said.

"These patterns ... would seem to indicate that there's at least some live carp present in the system, although we don't know how many," Jerde said.

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