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DFW team studies mercury contamination of Texas lakes

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FORT WORTH – Researchers from Texas Christian University and the University of North Texas have determined that fish from Caddo Lake show signs of liver damage that could have been caused by high levels of mercury.

Now, the team, which focused on the gar population, wants to study whether the liver damage is affecting its ability to reproduce in the East Texas lake and whether similar things are happening in lakes in Louisiana, Arkansas and Oklahoma.

"We see evidence of liver damage," said Matt Chumchal, a biology professor at TCU. "We don't know if that has a negative impact on the size of the population of fish there."

Chumchal and Ray Drenner, chairman of TCU's biology department, discovered a roughly 24,700-square-mile area in East Texas with high concentrations of mercury. They are working with Aaron Roberts, a toxicologist at UNT, to study the implications of contamination of fish and other organisms.

Researchers said they recently published some of their findings in a series of studies. The studies indicate that Southern states may have a mercury pollution problem that appears to be affecting organisms that consume fish.

Industrial sources

Researchers focused on Caddo Lake, considered an environmental gem in Texas. Chumchal said people have been aware of mercury contamination issues there for about 15 years.

"We've started to use it as a model system to help us understand what might be happening in other lakes in this region," Chumchal said, explaining that North Texas lakes have some mercury, but not at a level dangerous to humans. "In East Texas, that's where we find levels of mercury that are potentially a concern."

The mercury is coming from the atmosphere, and while it can be emitted by natural sources such as volcanoes, the mercury in the Caddo Lake area probably comes from industrial sources – the biggest being coal-burning power plants, Chumchal said.

"The mercury that is falling in Texas is a combination of mercury primarily from Asia and also from local sources," Chumchal said, adding that they don't know how much is coming from where.

In addition to the effects on animals, mercury is a concern to pregnant women and their unborn children because it affects developing nervous systems, Chumchal said.

Up the food chain

Researchers are also studying how mercury moves through the food chain in and around the lake. They determined that mercury levels are higher in animals farther up the food chain, such as gar, bass, bowfin, raccoons and cottonmouth snakes.

Roberts studied samples of gar and discovered the liver damage. The team hopes to publish its findings on liver damage in bowfin and bass soon.

He said the liver damage is consistent with previous findings in other parts of the country.

"We are seeing the same type of thing in Texas that we have seen in the Great Lakes," Roberts said.

Roberts' aquatics lab is trying to determine what this damage means for the animal. If it is affecting the fish's ability to survive and reproduce in Caddo Lake, it could affect the lake's fish stocks, he said.

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