

***E. coli* in Duluth-Superior Harbor Fish**

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INTRO: This is Superior Science News. Today's program explores research on *E. coli* in wild fish.

E. coli bacteria contamination in the Duluth/Superior harbor has been an issue for many years. University of Minnesota Duluth biology professor Randall Hicks is working with researchers to narrow the field for possible causes and pathways of contamination.

“For a number of years, we’ve been looking at identifying the source of *E. coli* that are found at beaches. Some of our beaches are occasionally closed because of high levels of either fecal coliforms or *E. coli* in the water. And through our research, we’ve been able to identify the sources of many of these *E. coli*, but not all of them. There is some *E. coli* in the water that we just don’t know where they’re coming from.”

Hicks and fellow researchers are trying to identify whether wild fish harbor *E. coli*.

“And, if they do, where these *E. coli* might be coming from that we find in the intestines of fish. We found that both pelagic and benthic species of fish—the fish that live up in the water as well as the fish that live on the bottom of the harbor — contain fecal coliform bacteria. But, a much smaller percentage of those fish contain *E. coli*. Mainly, the benthic fish — the bottom-living fish — contained *E. coli* inside their intestines.”

E. coli is just one type of fecal coliform bacteria. Hicks says *E. coli* found in some of the fish tested—such as white perch, rock bass, or brown bullheads — were not unique to the fish, but to their environment.

“It appears that most of the species the *E. coli* that we were able to identify are coming from other sources. Those sources were primarily *E. coli* that are found in sediments or *E. coli* that have been found in fecal material from Canadian geese or gulls, and, in a few cases, human wastewater.”

Other scientists have found that *E. coli* can be carried in fish. Hicks and his team are the first to discover the sources of that *E. coli*. Hicks says the majority, forty percent, of the small amount of *E. coli* isolated from the fish came from sediments, while the remaining 60 percent originated from various animals. Their research determined fish probably acquire *E. coli* when they eat food contaminated with feces. But, Hicks says anglers don't need to worry.

“There are certainly a few *E. coli* that can cause disease, but people shouldn't be overly concerned about eating fish, especially if they don't cut

the intestines open and smear the contents all over the fish that they're going to eat, which most people don't."

Heidi Bauman is the manager of the Lake Superior Beach Monitoring Program for the Minnesota Pollution Control Agency in Duluth. She agrees that wild fish shouldn't be considered a new source of *E. coli* contamination.

"Fish are cold-blooded and so they aren't reproducing and multiplying bacteria. They're just kind of a temporary host. It's going through their system as they are feeding in the harbor and the lake, whereas warm-blooded animals are contributing and increasing the amount."

Hicks says now they're turning their research toward identifying how often the known sources of *E. coli* change.

"So, we'd like to know when we see these high levels of *E. coli* at beaches is it because of a particular source, and does that correlate with other things we know had occurred in the previous few days like a lot of nesting birds at the beach or maybe a wastewater overflow event that happened in the recent past."

Bauman says the research just helps give people a better idea of what contributes to contamination. She adds that people can do their part to keep Lake Superior and neighboring beaches clean.

"There's a number of things we can do as individuals. Clean up after our pets. Don't rake your yard waste to the street. Bag it up. Compost it. Sweep up your streets in the spring so all the salt and dirt isn't washed into the lake with our spring run-off. Clean up your trash at the beach. If you leave a lot of trash, it brings in the gulls, and they leave a lot of droppings on the beach. Do these kind of things."

For Superior Science News, I'm Marie Zhuikov.

OUTRO: This has been a production of Minnesota Sea Grant and KUWS Radio.