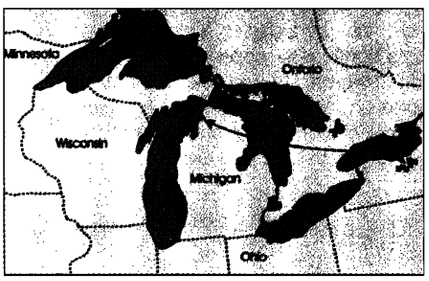
New Flea Imperils Fish, Fouls Gear

The Great Lakes have some new inhabitants. Nestling side by side, 50 to 80 of them could fit within 1 square inch of space. But their small size belies the potential that these fishhook water fleas hold for causing big damage.

Anglers are already complaining that gelatinous blobs comprising hundreds of these little animals are fouling their fishing lines. Sport fish may soon begin suffering from these zooplankton, as well. The voracious fleas devour the same small plankton that larval fish need to survive.

Indeed, "small fish could end up being big losers here," observes Hugh J. MacIsaac, an aquatic ecologist at the University of Windsor in Ontario. He described the flea's explosive North American invasion at an international conference Monday sponsored by the Smithsonian Environmental Research Center in Edgewater, Md.

At a meeting MacIsaac attended in Dublin 15 months ago, Russian scientists described the impact of the flea, *Cercopagis pengoi,* on fishing fleets in the Baltic Sea. As the fleas' numbers peak in summer, they clog nets with their bodies, which hook together into masses that look like frost, says MacIsaac. The Russians warned that freighter traffic from the Northern European home of this flea could soon transport the nuisance to America.



The spread of fishhook water fleas from Lake Ontario to Lake Michigan and six of New York's Finger Lakes—probably by unintentionally transferred water.

"Literally, within one day of coming home," MacIsaac notes, "I received the first notification that this flea was in our lakes." In August 1998, Canadian anglers began reporting knots on fishing lines that jammed their gear. Those knots turned out to be clumps of *Cercopagis.*

Within a month, the flea was sighted widely over Lake Ontario. Despite hopes that the pest would die out over winter, August 1999 counts in Lake Ontario exceeded 600 fleas per cubic meter of surface water. And not just in hot spots. "This was an average for sampling over the entire lake," notes Joseph Makarewicz of the State University of New York at Brockport.

Three months ago, *Cercopagis* also turned up in northern Lake Michigan. A week ago, researchers with the Illinois Natural History Survey in Zion reported finding 50 of the fleas per cubic meter in water from southern Lake Michigan. It's only a matter of time, MacIsaac says, before the flea enters the Illinois River on its way to the Mississippi and connected waters. The aggressive invader has already infested six of New York's Finger Lakes.

With no way to eradicate the flea, MacIsaac says, one can only hope to slow its spread—such as by bleaching fishing gear after its use in infected waters.

At stake is the Great Lakes' multibillion-dollar fishing industry, says Paul D.N. Hebert of the University of Guelph in Ontario. Even if the flea only starves out the larvae of noncommercial fish low in the food chain, it could indirectly trigger the collapse of top predators, such as salmon and trout, he notes. In the worst case, he says, "we could wake up one morning with no fish in the Great Lakes, except perhaps carp."

Right now, *Cercopagis* has few known North American predators. Its spiked tail spine, which can be nearly a half-inch long, makes the flea too big for most North American plankton feeders to swallow.

Aiding the flea's invasions is its asexual reproduction. During most of the summer, *Cercopagis* females reproduce almost exclusively by cloning. "A single female can seed a lake," Hebert notes. As the water cools or food becomes limited, the females begin developing into a sexual form, MacIsaac notes. If unmated, sexual females bear only males. Heterosexual unions then produce "resting eggs," which are able to survive harsh conditions, including cold winters, he says.

Like the zebra mussel, round goby (SN: 7/31/99, p. 68), and most other recent aquatic immigrants to the Great Lakes, the fleas have come from northern Europe, probably traveling in ballast water. "If these ships were discharging chemical pollutants, there would be a public uproar," Hebert argues. Instead, they release a more persistent, biological pollutant, he says—and yet garner almost no public notice.

He and MacIsaac are currently looking to use genetic analyses to locate the invading fleas' home port in Europe. Makarewicz is working with Edward Mills of Cornell University to identify U.S. predators and better predict how the flea will alter local food webs.

Since 1993, U.S. and Canadian laws have prohibited the discharge of ballast waters into the Great Lakes. Yet introductions of invasive species continue unabated. At the Smithsonian meeting this week, scientists began looking for patterns in these invasions.


Igor A. Grigorovich/Univ. of Windsor

Sexual female water flea carrying a single resting egg in her brood pouch (arrow). Her nearly half-inch-long, kinked tail spine deters predation.

Explains Greg Ruiz of the Smithsonian's Edgewater lab, "We hope to begin investigating whether [control programs] are targeting the right things"—and if not, to recommend improvements. —*J. Raloff*

Here come the Leonids

Attention, skywatchers.

That annual fall light show, the Leonid meteor shower, returns the night of Nov. 17, and some astronomers have suggested that this year's event could be quite a spectacle. The shower takes place every November, when Earth passes through a stream of debris shed by Comet 55P/Tempel-Tuttle (SN: 10/31/98, p. 280).

Every 33 years or so, when the comet passes close by, Earth encounters an especially dense part of the debris stream. Observers then see a heavy shower or even a storm, when more than 1,000 meteors streak across the sky in less than an hour.

Earth last witnessed a Leonid storm in 1966. A team of British and Australian astronomers has predicted a moderately good show for this year and next—stronger than in 1998—but they say the real McCoy won't occur until 2001 and 2002. Other astronomers doubt such forecasts.

Although Europe and Africa may have ringside seats this year, North America, especially the East Coast, could also witness some fireworks. Start gazing eastward around midnight, when the constellation Leo rises. Viewing might improve after the moon sets, but activity may have dwindled by then. —*R. Cowen*