

## Zebra Mussel's Impact Anything but Clear

July 21-07  
Globe and Mail  
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After becoming so badly polluted it was labelled a 'dead lake' in the 1960s, few would have imagined the waters of Lake Erie would one day be compared to the vibrant hues of the Caribbean.

But in an ironic twist of fate, a destructive invasive species that entered the Great Lakes about 20 years ago has created increasingly clear waters, leaving many to reasonably assume the lakes keep getting cleaner and healthier.

But it's just an illusion created by the zebra mussel < a tiny interloper that's killing off life under the surface even as it continues to make all the Great Lakes look more and more picturesque.

"People will say, 'Well, zebra mussels are good because they clean the water, but people are getting the wrong perception < zebra mussels cause huge changes in the Great Lakes,'" said Francine MacDonald of the Ontario Federation of Anglers and Hunters.

"The impact that the public is seeing is with that increased water clarity, but they're not equating that with the impact zebra mussels have had on the lakes' ecosystems." Zebra mussels are filter feeders and each one can process about one litre of water each day, sucking out plankton and other organic matter.

It leaves the water cleaner but it also robs other aquatic life of a food source, which has a trickle-down effect on the food chain.

Less organic matter in the water also allows the sun to penetrate deeper, which results in increased water clarity.

"The waters have become much clearer; it's very, very clear, whereas before it might have been more turbid or dark," Ms. MacDonald said. The southwestern Ontario community of Port Dover, perhaps most famous for attracting bikers on Friday the 13th, is also known for a beautiful sandy beach along the calm waters of Lake Erie. It's hard to describe what shade of blue the lake resembles, said Milly Coulphart, general manager of the Port Dover Board of Trade, although the colour is always impressive.

"There are times that the colour looks like the Caribbean and there's other times it looks like all kinds of different shades of blue," Ms. Coulphart said.

"Sometimes it gets that grey-green, sometimes it's blue-blue, sometimes it's grey-blue. It depends on the day."

Visitors love the gorgeous clear water, making it difficult for tourism operators to curse the zebra mussels.

"The one thing the zebra mussels have done is they've certainly cleaned up the lakes, there's no doubt about that," Ms. Coulphart said.

But the zebra mussels have also pushed fish from their natural homes in the lake, forcing them to seek out darker areas, which again can have an effect on the food chain and the ecosystem of the waters.

"When zebra mussels and their large colonies that you get on the bottom cover a lot of the rocks, they also cover all the crevices," Ms. Macdonald said.

The creatures that used to live in those rocks were food for fish, but they're getting harder and harder to find. "Whitefish, for example, have missed out on this important food source and their growth rate is much lower, they're not as big as they were before because they lost that really high nutrient-rich source that is now not available," she said.

And while they may be making the lakes easier on the eyes, zebra mussels can make a lake's floor completely unwalkable without water shoes.

"They're razor sharp and I've had a lot of calls from people about getting hurt, and their dogs are getting their pads shredded up," said Beth Brownson, a biologist with Ontario's Ministry of Natural Resources.

She said those problems are being reported in all the Great Lakes and in streams, rivers and inland lakes across the province, because zebra mussels have the ability to covertly spread from one body of water to another, often without notice.

In their larvae form, they are invisible to the naked eye and can drift through the water for several kilometres. They can also sneak into a fisherman's buckets or boats and unknowingly be transported to another water source.

And they also attach themselves to the hulls of boats and other watercraft, which allowed them to spread through the Great Lakes after first setting in Lake St. Clair, which is situated between Lakes Huron and Erie, in the mid to late 1980s.

Given that each female zebra mussel can lay as many as one million eggs each season, it doesn't take long before a small colony of zebra mussels can build an uncontrollable empire.

Trying to contain the zebra mussel - as well as its cousin, the quagga mussel - costs governments in Canada and the United States hundreds of millions of dollars a year.

"With zebra mussels there is no control, so prevention is the key way to stop them or prevent their spread to new water bodies," Ms. Macdonald said. In the most extreme reported cases, as many as one million zebra mussels have been spotted in one square metre of water.

"There's just so many, the density in some areas of Lake Erie could be over 100,000 a square metre," Ms. Macdonald said. "There's huge, huge densities so when you get those kinds of numbers they just have this huge enormous impact on the entire lake."

Despite the nearly unanimous stand scientists take on zebra mussels and their destructive impacts, there are skeptics.

Larry Fletcher, who works in the tourism industry in Ottawa County, which is on the U.S. side of Lake Erie between Cleveland and Toledo, Ohio, thinks the creature's impact has been overblown.

"I don't see any difference in the colour of the lake now compared to when I was swimming in it in 1965 when I was growing up," Mr. Fletcher said.

"I think what often happens is with stories that people read or reports that people hear, it's not uncommon that things tend to get amplified from the reality."

Ms. Coulphart doesn't doubt that Lake Erie has undergone major changes over the last few decades but hopes the change in colour might be cyclical, and more pronounced just because there's now more attention being paid to the lakes.

"There's a part of me that believes we've never been at a time in history where there's been more people that have had the leisure time to sit around and look at the Great Lakes, to figure out what colour they are," she said. "It could very well be just a matter of all of us baby boomers are now looking for things to enjoy and places to go and maybe people are just now noticing it."