This gruesome discovery of nearly 150 dead turtles is a warning for the future

By Laura Paddison, CNN
Photographs by Michael C. Snyder and Justin Dastas
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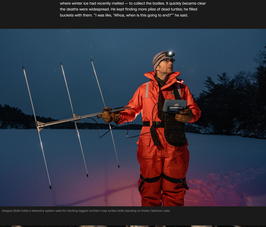
Northern map turtles hibernate under thick ice in the Sandusky River in Ohio's Lake Erie.

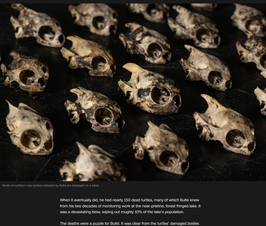
It started with the mysterious discovery of more than a hundred turtles, some with their shells smashed, others dismembered, all of them dead. It ended with a potential warning for the future.

It was Gregory Bulik who found the turtles. The biologist from Carleton University was out on the water of eastern Ontario's Opinicon Lake in April 2022 when he saw a dead turtle floating in the water. He thought it was unusual, but didn't realize the scale of the array. He came back to pick it up from the shallows the next day.

Bulik laced none, fetched his wetsuit and snorkel and got into the frigid water — where winter ice had recently melted — to collect the bodies. It quickly became clear the deaths were widespread. He kept finding more piles of dead turtles: he filled buckets with them. "I was like, 'Whoa, what is this going to do?'" he said.



Gregory Bulik holds a telemetry system used for tracking tagged northern map turtles while depositing at Opinicon Lake.

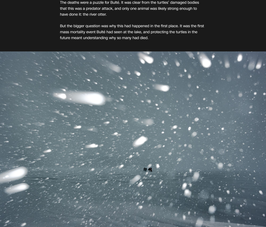


Bulik of northern map turtles collected by Bulik the day before in a lake.

When it eventually did, he had nearly 150 dead turtles, many of which Bulik knew had been in the lake the previous fall. Some had been tagged and gone. It was a breathing bind, wiping out roughly 10% of the lake's population.

The deaths were a puzzle for Bulik. It was unlike the former turtle damaged bodies that this was a predator attack, and only one animal was likely strong enough to have done it the river otter.

But the bigger question was why this had happened in the first place. It was the first mass mortality event Bulik had seen at the lake, and protecting the turtles in the future meant understanding why so many had died.



A team from Parks Canada crosses Opinicon Lake during a snow storm in search of the turtles' overwintering sites.

Northern map turtles are fascinating, Bulik said. They have adapted to survive the harsh Canadian winter by spending it clustered together, submerged underwater beneath a thick layer of ice. They stay there for months, moving only slightly, keeping their body temperatures near freezing and their metabolism slow.

The turtles have other interesting quirks, too. Females are much bigger than males and about 10 times heavier, with stronger jaws that allow them to eat mollusks, while males tend to stick to insects and snails. Their size advantage doesn't always protect them, however. Bulik has documented females moving in deeper water and burying their bodies in the sediment to escape unwanted, relentless attention from lower-ancestral males during mating season.

Northern map turtles are fairly abundant in parts of the United States, but in Canada, home to an estimated 10,000, they are designated a species of "special concern" because of the threats they face.

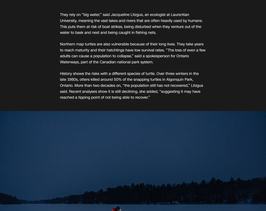
Bulik (left) and Carleton University biology student Ryan Ng (right) collect the bodies of northern turtles.

Bulik holds a 30-centimeter northern map turtle that he located in the shallows.

They rely on "big waters," said Jacqueline Litzgus, an ecologist at Laurentian University, measuring the vast lakes and rivers that are often heavily used by humans. This puts them at risk of boat strikes, being disturbed when they venture out of the water to bask and nest and being caught in fishing nets.

Northern map turtles are also vulnerable because of their long lives. They take years to reach maturity and their hatchlings have low survival rates. "The loss of even a few adults can cause a population to collapse," said a spokesperson for Ontario Waterways, part of the Canadian national park system.

History shows the risks with a different species of turtle. Over three winters in the 1990s, a mass mortality event killed off 80% of eastern Spiny Softshell turtles in Canada. More than two decades on, "the population still has not recovered," Litzgus said. Recent analyses show it is still declining, she added, "suggesting it may have reached a tipping point of not being able to recover."



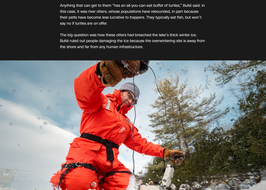
Bulik crosses Opinicon Lake.

To solve the mystery of what happened to the turtles of Opinicon Lake back in 2022, Bulik went through a process of elimination.

He started with what he knew. The turtles are vulnerable in the winter because they need to be "kept cold and oxygenated in the sediment. They don't hibernate into the mud and sink down."

Anything that can get in them "has an all-you-can-eat buffet of turtles," Bulik said. In this case, it was river otters, whose populations have rebounded, in part because their pelts have become less lucrative to trappers. They typically eat fish, but aren't say no if turtles are on offer.

The big question was how these otters had breached the lake's thick winter ice. Bulik ruled out people damaging the ice because the overwintering site is away from the shore and far from any human infrastructure.



Bulik deploys an underwater camera to look for turtles under the ice on Opinicon Lake.

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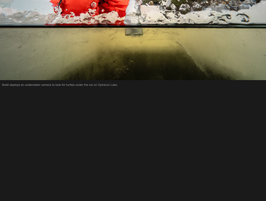
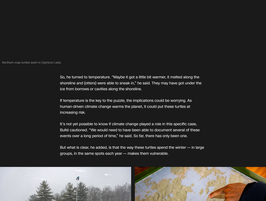


Bulik deploys an underwater camera to look for turtles under the ice on Opinicon Lake.



Northern map turtles swim in Opinicon Lake.

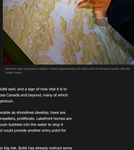
So, he turned to temperature. "Maybe it got a little bit warmer, it melted along the shoreline and [otters] were able to sneak in," he said. They may have got under the ice from burrows or cavities along the shoreline.

If temperature is the key to the puzzle, the implications could be worrying. As climate change and climate change warms the planet, it could put these turtles at increasing risk.

It's not yet possible to know if climate change played a role in this specific case, Bulik cautioned. "We would need to have been able to document several of these events over a long period of time," he said. So far, there has only been one.

But what is clear, he added, is that the way these turtles spend the winter — in large groups, in the same spots each year — makes them vulnerable.

Bulik, right, and Ryan Ostelas, center, use equipment to take samples near one of their overwintering sites.



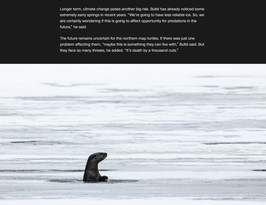
Opinicon Lake is located in eastern Ontario approximately 30 miles north of Canada's border with the United States.

The other otters are a "cautionary tale," Bulik said, and a sign of how vital it is to protect the turtles' overwintering sites across Canada and beyond, many of which are in busier and less pristine lakes than Opinicon.

Northern map turtles are increasingly vulnerable as shorelines develop, trees are felled, and motorboats, with their deadly propellers, proliferate. Lakefront homes are also increasingly using "bubblers," which push bubbles into the water to stop it freezing around docks and boathouses and could provide another entry point for predators.

Longer term, climate change poses another big risk. Bulik has already noticed some extremely early springs in recent years. "We're going to have less reliable ice. So, we are certainly worrisome if this is going to affect opportunity for prostatova in the future," he said.

The future remains uncertain for the northern map turtles. If there was just one problem affecting them, "maybe this is something they can live with," Bulik said. But they face too many threats, he added. "It's death by a thousand cuts."



A male otter emerges through a hole in the ice at Opinicon Lake.

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Credits

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