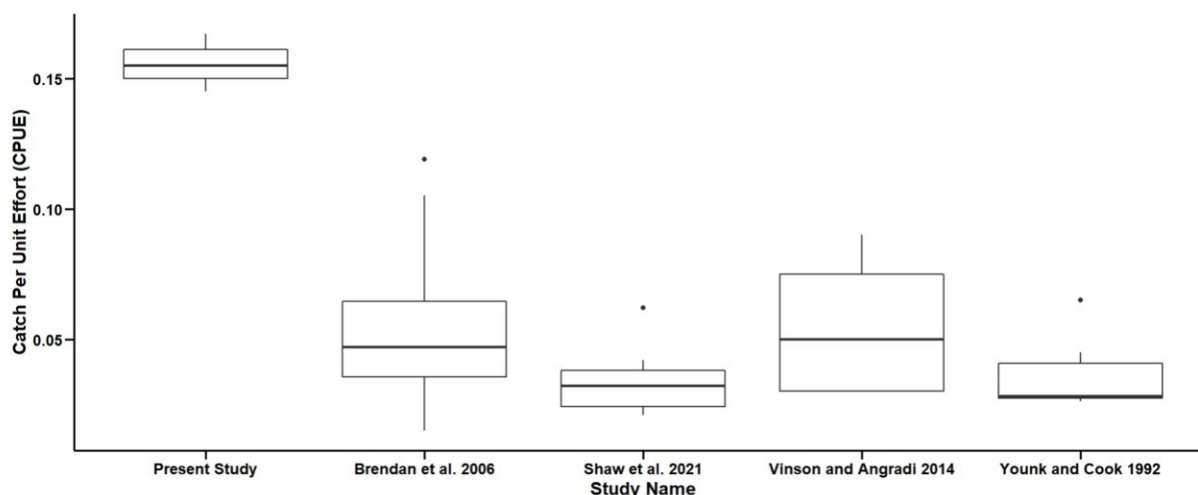


Why are muskies the 'fish of 10,000 casts'? A new study explains

January 30 2023



Catch Per Unit Effort (CPUE) of Muskellunge from in a range of natural systems. CPUE data were calculated as catch per hour of angler effort and reported in the citations shown along the x-axis of the figure. Credit: *North American Journal of Fisheries Management* (2023). DOI: 10.1002/nafm.10852

For anglers, landing a muskellunge, or muskie, is a big deal. The "fish of 10,000 casts" is notoriously elusive, making the massive fish an even bigger prize when one finally strikes a lure.

In a new study, University of Illinois researchers got into the minds of muskies to learn what [personality traits](#) make the [fish](#) more likely to strike. In the process, they learned valuable lessons that could help

conserve the important aquatic predators.

"Our results clearly show capturing muskies is not random. There are behavioral traits that predispose these fish to capture. We need to use [best practices](#) to try and protect those traits and keep those individuals around so we can keep fishing long term," says Cory Suski, professor in the Department of Natural Resources and Environmental Sciences at U of I and study co-author.

Suski and graduate student John Bieber evaluated [behavioral traits](#)—activity, aggression, boldness, and exploration—for 68 young muskies in laboratory tanks before transferring the fish to an outdoor pond. Then they fished the pond every day for more than a month.

"After 35 days throwing our whole arsenal at them, every combination of time of day, lure, and casting style, we can verify muskies are indeed the fish of 10,000 casts. We only caught seven fish. In addition, we saw that catch rates decline very, very rapidly after the first several days," Bieber says. "It was a long month."

It turns out those captured fish were larger, less exploratory, and less aggressive than their peers in the laboratory behavior tests. Bieber says that pattern lines up with muskies' overall feeding strategy.

"They're very tough sit-and-wait predators, which means they'll just camp out under a log or at the bottom of the river until something comes right by," he says. "Then they'll burst out to take the prey. More exploratory muskies won't strike because they are roaming around the lake trying to find shelter or get more comfortable.

"If you're an [angler](#) going around the lake, just casting randomly won't necessarily mean you'll catch a muskie. You have to get your lure perfectly in the face of a muskie of the appropriate behavior type, likely

that is sedentary and poised to attack, to be able to initiate a strike."

While anglers may be glad to learn it's not their fault muskies are so hard to catch, the research has deeper implications.

Since fish behavior can be passed from parent to offspring, anglers have a vested interest in keeping large, less exploratory, and less aggressive fish in the population. Those traits make muskies more likely to go after lures, after all. So, according to the researchers, anglers and resource managers should prioritize actions to avoid harming those fish or impacting their reproductive capacity.

"Catch and release is key," Suski says. "And then there are best practices like angling fish quickly and releasing it in a way that minimizes impact on the fish; keeping an eye on water temperature and those kinds of things."

The researchers note most anglers in the muskie community aren't harvesting fish these days, but angling can be inherently stressful for fish, leading to incidental mortality. If enough of that happens and individuals vulnerable to capture are removed from the population, other behaviors—ones not compatible with capture—may become dominant among muskies left behind.

According to the researchers, current behavior observations are just one component of muskie capture rates.

"Why are muskies the fish of 10,000 casts? They're sedentary and they hide, so you have to cast where they are. And we have anecdotal evidence that these fish seem to learn when anglers are around and actively avoid lures. And then there's the historical context. Years ago, people would harvest muskies. If they were taking vulnerable fish out of the population, then you just have hard-to-catch fish left today. So, there

are a bunch of things that potentially contribute," Suski says.

The findings are published in the *North American Journal of Fisheries Management*.

More information: John F. Bieber et al, Capture Is Predicted by Behavior and Size, Not Metabolism, in Muskellunge, *North American Journal of Fisheries Management* (2023). [DOI: 10.1002/nafm.10852](https://doi.org/10.1002/nafm.10852)

Provided by University of Illinois at Urbana-Champaign

Citation: Why are muskies the 'fish of 10,000 casts'? A new study explains (2023, January 30) retrieved 23 April 2024 from <https://phys.org/news/2023-01-muskies-fish.html>

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