

Ensuring sustainable recreational fisheries in the face of social change

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A busy lake parking lot. Credit: Acorns Resort/Flicker

The observation that 'the fishing's not what it used to be' ranks up there with 'the one that got away' as a story that has crossed over from folk wisdom to folklore. But what if there is truth in it? New research

published in *Fish and Fisheries* suggests that slow but steady degradation of recreational fisheries may be common, and points to actions that anglers and fisheries managers can take to help stabilize and improve fisheries today and for future generations.

Fishery biologist Dr. Chelsey Nieman led the study when they were a postdoctoral researcher at Cary Institute of Ecosystem Studies. They explain, "For too long, recreational fisheries were seen as self-regulating. We now know that their sustainability depends on both natural and human features. When these conditions change, it can have big implications for [fish populations](#) and the quality of the fishing experience."

Nieman and co-author Dr. Chris Solomon, an ecologist at Cary Institute, focused on the human side of fisheries. Their study is one of the first to explore the role that slow social change plays in the resilience of recreational fisheries. "When change happens over many years or generations, it can be hard for people to perceive it or summon the will to act on it," Solomon notes. "Yet our work shows that slow social changes that can degrade fisheries may be quite common and widespread."

Using a mathematical model of open access recreational fisheries, and data from Wisconsin, the western Pacific, and British Columbia, they considered the impacts of three kinds of social change on fish abundance: the cost of going fishing, the effectiveness of fishing technology, and the importance of catch to [angler](#) satisfaction. "These are three key determinants of fish abundance," says Nieman, "and there is reason to believe that each of them might be changing in ways that gradually drive [fish abundance](#) lower."

Travel tends to be a major 'cost' of going fishing. Improvements in [road infrastructure](#) that accumulate over many years can reduce travel time

and encourage more fishing. The authors highlight evidence that fishing destinations are becoming easier to reach. An *Ecological Applications* study in a region of northern Wisconsin where lake access is one of the primary uses of roads found that road density more than doubled between 1937 and 1999.

Similarly, gradual advancements in fishing technology—from improved fishing gear to wider use of electronics and faster spread of fishing knowledge via apps and social media—mean that each hour spent fishing can yield more fish caught. "This 'technological creep' has been well documented in commercial fisheries," says Nieman, "and it's occurring in recreational fisheries as well."

The importance of catch to angler satisfaction may also change over time. Anglers value many aspects of the fishing experience beyond just catching fish, such as spending time in nature, socializing, and mastering angling-related challenges. "Because catching fish is only one of many reasons that people go fishing," Solomon says, "they may continue to enjoy going fishing even as catch rates decline."

For instance, a study looking at motivations for fishing in British Columbia found that from 1990-2005, catch-related motivations declined while non-catch motivations changed very little. "It's like the old story about boiling a frog," says Solomon. "If anglers gradually become accustomed to lower catch rates, they may not notice the signal that it's time to jump out of the water. Ultimately, that can be bad for the fishery, because fishing pressure continues even as fish populations drop to dangerously low levels."

Despite these concerns, the authors emphasize a positive message: "There are concrete actions that anglers and managers can take to help ensure sustainable fisheries, even in the face of slow social change," says Nieman. They and Solomon emphasize five actions—three for anglers,

and two for fisheries managers—as particularly important.

First, anglers can embrace the challenge of fishing, to fight technological creep. "Limitations on fishing methods are commonly accepted or even adopted by anglers out of a sense of fair play and a desire for challenge," says Solomon. "Extending these limitations—for instance, by voluntarily avoiding the use of technologies like fish finders—could go a long way." Voluntary behavior change may be essential for counteracting the negative effects that gradual technological improvement can have on fish populations.

Second, anglers can take steps to reduce fishing mortality by using [best practices](#) to release captured fish whenever possible. "Limiting fish mortality helps to sustain good fishing opportunities," says Nieman. Third, anglers can support and advocate for adequate funding for fisheries monitoring by state management agencies, who play an essential role in understanding and conserving fish populations in the face of social and environmental change. Improvements in monitoring lead to more effective responses by managers – and better outcomes for fish populations.

For managers, the authors recommend actions that are already in use in some places. First, some fishing opportunities should be managed for high catch rates. "Many waterbodies are managed to support high fishing effort," says Nieman. "This is important for making sure that people have opportunities to fish, but because it's hard to have lots of people fishing and high catch rates at the same time, it may contribute to decreases in the importance of catch to angler satisfaction. If some waterbodies are managed for high catch rates instead of high effort, it should help counteract slow but insidious changes in the importance of catch," Nieman advises.

Second, the authors urge careful consideration of the long-term impacts

of investments in infrastructure such as boat launches; once access improves, fishing pressure ramps up. "Everyone wants good and equitable access to fishing opportunities," says Solomon, "Providing that access while ensuring long-term fisheries sustainability will take careful thought."

"If anglers and managers can work together to confront the challenges posed by gradual social and environmental change," concludes Nieman, "we can hope to sustain good fishing opportunities and healthy [fish](#) populations for many generations to come."

More information: Chelsey L. Nieman et al, Slow social change: Implications for open access recreational fisheries, *Fish and Fisheries* (2021). [DOI: 10.1111/faf.12608](https://doi.org/10.1111/faf.12608)

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