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# Is Commercial Fishing Driving The Evolution Of Fish?

August 8, 2015 | by Josh L Davis



photo credit: Since cod have been intensively fished, has this selected for certain traits? Grigorev Mikhail/Shutterstock

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The intensive trawling of fish using massive nets might be influencing how fish evolve. In [lab-based experiments](#), researchers from the [University of Glasgow](#) have shown that the natural variability within a fish population might be sufficient to mean that some are more vulnerable to being caught, raising the interesting proposition that we might be driving fish to become "less catchable."

"It's been known for quite some time – people have been able to mount cameras on trawl nets, for example – and it's been observed that some of the fish do escape [from commercial trawl nets]," Shaun Killen, who co-authored the [paper](#) published in [Proceedings B](#), told IFLScience. "There is this perception that trawls suck up everything in their path. But some of the fish are actually able to escape."

Killen and his team wanted to find out whether those that managed to escape in consecutive experiments tended to be the same individuals, and if so, what might be driving this behavioral variability.

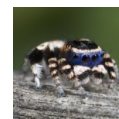
Rather than setting out to study fish in their natural environment, where controlling for variations would be near impossible, they decided to focus on the humble minnow fish in the lab. These, it turned out, were the perfect proxy for other species targeted by fisheries – such as cod and haddock – as they display similar behavior, like schooling, swimming close to the bottom, and when faced with a trawl net swim just in front of it until they get worn out and captured.

The researchers put them in what Killen describes as a "treadmill for fish" with a stationary net in the middle of the tank. They then observed which fish couldn't keep up and ended up getting caught. "What we found was that there was a lot of variability there, in the vulnerability to capture," explains Killen. "So some of the fish were very easily captured, and others were never captured."

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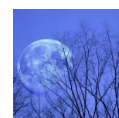
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They found that the fish that were the "best athletes" – those that displayed the highest anaerobic capacity and metabolic rate – were the ones that were able to stay out of the net the longest. These, it transpired, were the best at "burst-like behavior," effectively sprinting when faced with the trawl net.

The important factor to note here is that anaerobic capacity seems to be, at least partially, a heritable trait. This means that those fish with the highest capacity, those that are least likely to be caught, might be able to pass this advantage on to their offspring.

This is just one of [a few studies](#) that seem to point to the fact that commercial fisheries are driving the evolution of their quarry. Others have found that fish populations that are heavily targeted seem to show a trend whereby individuals mature at an earlier age and are smaller in size. In fact, the next step for Killen is to see if this vulnerability to capture that they observed is also a heritable trait.

"One of the things which is becoming more and more recognized is that we have to think about the ones that get away, the survivors," says Killen. "Why were they able to escape, and is the population of survivors any different than the population as a whole was before intensive fishing started?"

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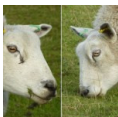
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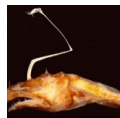
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