

Open wide: Zebrafish fool fast food

November 14 2013



Danio rerio also known as the zebrafish. Credit: Bob Jenkins

Research published in the Royal Society Journal, *Interface*, has demonstrated that predatory fish sneak up on lightning-fast prey by disguising water disturbances as they approach.

Zebrafish [prey](#) on [tiny crustaceans](#) called copepods. These tiny creatures have evolved incredible senses to help them escape incoming [predators](#). Their sensitivity to changes in water help them to sense the approach of predators who cause disruptions in the surrounding water.

These disruptions trigger an escape response in copepods which can shoot off at speeds of over 500 body lengths per second. Though much smaller than their predators, a copepod's escape velocity of 256

millimetres per second means they can outpace their zebrafish predators who move slower when attempting to grab their prey.

Despite lightning-fast reactions, copepods have little success evading some [fish](#), who have a 90% success rate at catching their prey. The fish catch the tiny crustaceans by striking out with protrusive jaw movements and using suction at close range to cut off escape routes. However, to successfully capture copepods, fish must sneak up on them without triggering their impressive escape mechanisms.

A team from the University of Minnesota have used a series of high-speed cameras and software designed to track changes in water disturbance to reveal the stealth tactics that zebrafish use to stalk their copepod prey. The fish open their mouths slightly as they approach to create suction which counteracts the water disturbance they cause as they swim. This helps form what the scientists call a 'stealth zone' ahead of them where there is little water disturbance. In this zone the zebrafish's prey remains unaware of its increasing proximity until the fish is close enough to strike.

By disguising their presence as they approach the zebrafish ensure they get close enough to make a quick strike leaving their target [copepod](#) little time to make an escape. This clever tactic means zebrafish are able to grab their prey despite their rapid reactions.

The team also suggest that earlier studies investigating the head and jaw movement of turtles identify a similar type of 'compensatory suction'.

More information: "Volumetric quantification of fluid flow reveals fish's use of hydrodynamic stealth to capture evasive prey," Brad J. Gemmell, Deepak Adhikari and Ellen K. Longmire, *Journal of the Royal Society Interface* [dx.doi.org/10.1098/rsif.2013.0880](https://doi.org/10.1098/rsif.2013.0880)

Provided by The Royal Society

Citation: Open wide: Zebrafish fool fast food (2013, November 14) retrieved 27 April 2024 from <https://phys.org/news/2013-11-wide-zebrafish-fast-food.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.