

Distant fish relatives share looks

June 15 2017



A school of sardines in Italy. Credit: Wikimedia / Alessandro Duci

James Cook University scientists have found evidence that even distantly related Australian fish species have evolved to look and act like each other, which confirms a central tenet of evolutionary theory.

Dr Aaron Davis from the Centre for Tropical Water and Aquatic Ecosystem Research (TropWATER) at JCU said the phenomenon,

known as [convergent evolution](#), happens when different fish adopt similar lifestyles and evolve through time to look very similar.

Scientists used techniques such as scanning electron microscopy and x-ray imaging to investigate species' bodies and feeding mechanisms.

"The study highlighted some really striking similarities in characteristics like tooth and jaw structure and body shape between Australian freshwater grunters and several other marine fish families when they share feeding habits," said Dr Davis.

Convergent evolution is one of the fundamental predictions of [evolutionary theory](#). The JCU research was published in the prestigious *Proceedings of the Royal Society B* journal (and highlighted on the *Proceedings of the National Academy of Sciences* website).

It identified significant convergence in body form between Australian freshwater terapontid grunters and several distantly related marine fish families separated by 30-50 million years of evolution.

Dr Davis said Australia's freshwater fish are quite unique.

"We don't have lots of the freshwater fish families we see elsewhere because of our long geographic isolation from other continents. Most of our freshwater fish have actually evolved from marine fish groups that have invaded and adapted to Australian freshwaters over millions of years."

He said this meant Australian [freshwater fish](#) provided a rare testing ground for theories about evolution and the role of factors such as habitat, diet and competition in shaping evolutionary processes.

"It matches our expectations regarding [evolution](#), but we haven't seen this process documented at such broad habitat and time scales all that frequently, so it's quite exciting," he said.

More information: Aaron M. Davis et al, Widespread ecomorphological convergence in multiple fish families spanning the marine–freshwater interface, *Proceedings of the Royal Society B: Biological Sciences* (2017). [DOI: 10.1098/rspb.2017.0565](https://doi.org/10.1098/rspb.2017.0565)

Provided by James Cook University

Citation: Distant fish relatives share looks (2017, June 15) retrieved 11 May 2024 from <https://phys.org/news/2017-06-distant-fish-relatives.html>

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