

Fishes' innate food choice could change with the environment

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

The fact that fish choose their food based on what colours they can see, as opposed to how it tastes, is an inherited trait that could have implications for the evolution in the animal kingdom, new Deakin University research has found.

Researchers from Deakin's Centre for Integrative Ecology within the School of Life and Environmental Sciences have discovered fishes' ability to find [food](#) depends on what colours they see, which can be affected by [environmental changes](#) such as colour variations due to pollution.

Lead researcher Dr Gemma Cole said the team discovered that while [fish](#) can adapt their [visual system](#) to suit environmental colour changes, the fact this was an inherited ability could mean it took at least a generation for them to be able to catch up to the changes.

Researchers previously understood fish chose food based on colour, but until now did not know that this was an inherited trait.

The new findings are detailed in 'Artificial selection for food colour preferences', published today in online journal *Proceedings of the Royal Society B*.

"How well fish can detect food seems to drive the evolution of the visual system," Dr Cole said.

"If the environment changes, due to things such as water colour changes because of pollution, changes to lighting conditions caused by deforestation or changes in the relative abundance of certain coloured foods, then the associated changes in colour may make it difficult to detect.

"Animals with visual systems that have already adapted to finding these foods would then need to evolve a new visual system to adjust to the change so they can forage efficiently."

Co-researcher Alfred Deakin Professor John Endler said many fish species which relied on the visual system for food choice also used

colour to choose a mate.

"If the visual system evolves with food detection then this can have affects for other visually based behaviours, such as mate selection," Professor Endler said.

"Under environmental change, species relying on vision could become endangered not only through changed abilities to find food, but also through changed perception of potential mates.

The team's research centred on the monitoring of guppies, which Professor Endler said was an ideal model species because scientists already knew much about their ecology, behaviour and genetics. The findings can translate across to not only other [fish species](#), but to other animals which also use vision for both food and [mate selection](#).

More information: Artificial selection for food colour preferences, *Proceedings of the Royal Society B*, [rspb.royalsocietypublishing.or1098/rspb.2014.3108](https://rspb.royalsocietypublishing.org/doi/10.1098/rspb.2014.3108)

Provided by Deakin University

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