

Fish with attitude: Some like it hot

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Coral reef fish can undergo a personality change in warmer water, according to an intriguing new study suggesting that climate change may make some species more aggressive.

Experiments with two species of young damselfish on Australia's [Great Barrier Reef](#) have shown for the first time that some reef [fish](#) are either consistently timid, or consistently bold, and that these individual differences are even more marked as [water](#) temperatures rise.

A slight lift of just one or two degrees may have only a small effect on some fish but the behaviour of others can be transformed - leading them to become up to 30 times more active and aggressive.

"The idea that fish have personalities may seem surprising at first, but we now know that personality is common in animal populations, and that this phenomenon may have far-reaching implications for understanding how animals respond to ecological and environmental challenges," says Dr Peter Biro, of the UNSW School of Biological, Earth and Environmental Sciences, who led the study with colleagues Christa Beckmann and Judy A. Stamps. It is published in the journal *Proceedings of the Royal Society B*.

"Our results also suggest that temperature variations are much more significant than we thought in the way they affect the behaviours of individual animals. This needs to be taken into account for scientific studies of other cold-blooded animals, or ectotherms, such as reptiles and amphibians.

"For instance, individual variations in activity and boldness can affect food acquisition, encounter rates with predators and even the likelihood of an individual being captured by sampling or harvesting gear.

"We observed that most of the individuals in our experiments were very responsive to changes in temperature, dramatically increasing their levels of activity, boldness and [aggressiveness](#) as a function of increases of only a few degrees of temperature. Fish would experience such temperature fluctuations during the course of a normal day."

The scientists used fish that were captured just as they were ending their larval stage in open water and had not yet settled onto the reef, and so were naive to social hustle and bustle of reef fish life. They then directly manipulated water temperatures in laboratory tanks at Lizard Island Research station.

Placed by themselves in tanks, the fish were free to explore or to take refuge in a short piece of plastic pipe. The scientists observed how far and how often the fish ventured from the pipe. In cooler water, individual fish differed greatly in their activity levels. They all became more active to varying degrees when the water was warmed, with some becoming up to 30 times more active, bold and aggressive.

Source: University of New South Wales ([news](#) : [web](#))

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