

Higher temperatures could help protect coral reefs

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A new study in the journal *Behavioral Ecology*, published by Oxford University Press, suggests that higher water temperature, which increases the aggressiveness of some fish, could lead to better protection of some

coral.

In the face of global warming, recent years have seen an increasing number of studies predicting the future of corals. It is well established that higher water temperatures lead many corals to die. Over the past century, global temperature has increased by 1°F. Meanwhile, research has shown that [coral recovery](#) can be significantly influenced by the behavior of species living around [coral reefs](#).

Researchers here evaluated the relationship between fish behavior and coral performance using a farmerfish-coral system. Farmerfish (*stegastes nigricans*) are aggressive damselfish found around coral reefs in tropical climates that defend gardens of algae from intrusion by other fish. This study tested the relationship between coral recovery rates and the level of aggression exhibited by farmerfish groups when defending their gardens. The researchers did so by planting small coral fragments into farmerfish territories with different levels of [aggressiveness](#).

The researchers collected data from 29 farmerfish colonies in French Polynesia from 2016 and 2017. They evaluated the average aggressiveness of each farmerfish group as well as the group's reaction when intruders entered the farmerfish group's territory.

Researchers found that more branching corals resided in the territories of aggressive farmerfish groups. In addition, corals experimentally planted into the territories of non-aggressive farmerfish suffered 80 percent more damage than the corals planted into the territories of aggressive groups.

Researchers also found that farmerfish groups composed of larger animals were more aggressive. However, follow-up analyses showed that group aggressiveness mattered more than [group](#) member size in determining coral success. Fish aggressiveness is therefore likely to be

an important part of how [coral](#) reefs will grow and survive in future environments.

While warming oceans negatively impacts a variety of biological processes, this study hints that warmer temperatures, which often increase fish aggressiveness, could enhance the protective function of farmerfish for nearby corals.

"Predicting the future of corals will require a systems approach. Failing to account for broader ecological processes, such as species interactions, could lead us to issue the wrong predictions about how some corals will fare in future environments," said the paper's author, Jonathan Pruitt.

"Heating up many corals even mildly can negatively impact a variety of physiological processes. However, this study shows that small increases could provide greater protection by resident fishes. Obviously this can't go on for forever, though. At some point, all the protection in the world won't matter anything if the corals can't feed themselves."

More information: Jonathan N Pruitt et al, Collective aggressiveness of an ecosystem engineer is associated with coral recovery, *Behavioral Ecology* (2018). [DOI: 10.1093/beheco/ary092](https://doi.org/10.1093/beheco/ary092)

Provided by Oxford University Press

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