Big fish reveal shelter secrets on reefcam

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When it comes to choosing a place to hang out, big reef fish like coral trout, snappers and sweetlips have strong architectural preferences.

The choices big fish make on where to shelter could have a major influence on their ability to cope with climate change, say scientists from the ARC Centre of Excellence for Coral Reef Studies at James Cook University.

In research aimed at understanding the process of fish population decline when coral reefs sustain major damage, PhD student James Kerry and Professor David Bellwood have found that big fish show a marked preference for sheltering under large, flat table corals, as opposed to branching corals or massive corals (known as bommies).

In a study that covered 17 separate locations round Lizard Island in far North Queensland, the researchers videoed the behaviour of large reef fish, allowing them to identify the kind of habitat they most preferred and depended on.

"Like human beings, fish have strong preferences on where they like to hang out – and it appears that they much prefer to shelter under overhanging tablecorals. This tells us quite a bit about how important these corals are to the overall structure of the reef and the large reef fish that live there," says James. "The reason for the fishes' preference is not yet clear – but possibilities include hiding from predators such as sharks, shading themselves from ultraviolet sunlight, or lying in ambush for prey.

"The importance of this finding is that table corals are among the types most vulnerable to climate change," Prof. Bellwood explains. "In shallow waters and on the tops of reefs, they are often the main source of cover for these big fish.

"If they die back as a result of bleaching or disease, or are destroyed by storm surges, this would strip the reef of one of its main attractions, from a coral trout's viewpoint."

The researchers also proved that it isn't the coral, so much as the shelter that is important to big fish, by deploying artificial shelters made from plastic in the lagoon.

"We made one sort with no roof, one with a translucent roof and one with a roof painted black. Far and away the fish preferred to shelter under the black roof, which suggests they either want to hide or else to avoid direct sunlight," James says.

While the team is planning further experiments to clarify the reasons for the fishes' shelter preferences, their early findings may provide a useful insight to reef managers, about the importance of trying to maintain a range of structures and shelters as climate change bears down on the Great Barrier Reef, including the highly susceptible tabular corals.

More information: Their paper "The effect of coral morphology on shelter selection by coral reef fishes", by J. T. Kerry and D. R. Bellwood appears in the journal *Coral Reefs*.

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