

Parasitised fish pick sides

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A parasite attached to a bream. Credit: Dominique Roche

(Phys.org) —Fish with parasites attached to their heads have a stronger preference for left or right when facing a T-intersection, giving them an edge when it comes to escaping predators, research from The Australian National University (ANU) has revealed.

A preference for one side is called lateralisation. Many human behaviours, such as being left- or right-handed when writing, are lateralised due to the body's [asymmetries](#) and different wiring in the brain's hemispheres.

"In addition to humans, many animals show lateralisation, including the bridled monocle bream we used in this study," said lead author of the paper, Mr Dominique [Roche](#), a PhD candidate in the ANU Research School of Biology.

"There has been some evidence that lateralisation is plastic, meaning it can change depending on the circumstances. For example, history has shown that some people born left-handed can become very adept at writing with their right hand if forced to do so in school. In fact, they often become more comfortable using their right hand in the long run."

The bridled monocle bream is often parasitised by a large [crustacean](#) which attaches itself to one side of the fish's head, just above the eye.

"We were interested in testing whether the [ecological interaction](#) of having this parasite attached to the fish's head had any influence on lateralisation and whether it was changeable," said Ms Sandra Binning, who collaborated with Mr Roche on the study.

The team caught bream with and without [parasites](#) from Lizard Island on the [Great Barrier Reef](#) and swam the fish in a [maze](#) that resembles a T-[intersection](#), which forced the fish to choose to turn left or right.

"The population as a whole didn't show a preference to turn one way or the other," said Mr Roche. "However, at an individual level, some fish showed a turning preference, with parasitised fish showing a much stronger preference than their unparasitised counterparts. If they have a parasite, they definitely choose a side."

When the parasite was removed, turning preference became much less pronounced, returning to the level of the unparasitised population.

"This is one of the first instances where lateralisation has been shown to

be plastic and change so rapidly," said Mr Roche.

"Having a preferred side gives the fish an advantage. Lateralised fish are quicker at responding to threats. We've shown previously that parasitised fish swim slower than unparasitised fish. Given that our parasitised fish don't swim very fast, it makes sense that they need to react faster to [predators](#) to give themselves a head start and have a better chance of escaping."

Interestingly, not all fish react the same to their parasite – some showed a preference to turn towards and some preferred to turn away.

"This is a good thing – the parasites are quite big and a predator could spot them easily," said Ms Binning. "If all parasitised fish always turned towards their parasite, eventually predators would be able to anticipate their reaction, and parasitised fish would lose the advantage of reacting quickly."

"This is a really exciting and interesting result," said Mr Roche. "Fish are vertebrates like us, and determining whether important behaviours like turning can change ultimately helps us better understand humans and whether our own preference for using the right or left side of our body is plastic depending on circumstances and the environment around us."

The research is published in the journal *Behavioural Ecology and Sociobiology*.

Provided by Australian National University

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