

Better synchronization helps fish deal with predator threat

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Fish alter their movements when under threat from predators to keep closer together and to help them to blend into the crowd, according to new research headed by scientists at the University of York.

Researchers in the York Centre for Complex Systems Analysis (YCCSA), based in the University's Department of Biology, used a combined computer simulation and experimental study of group behaviour to discover that shoaling [fish](#) co-ordinate their movements more frequently when under threat.

They 'update' their behaviour more often because by moving in a more coherent fashion with shoal members, individual fish are able to reduce the risk of being targeted by predators as the 'odd one out'.

The model predicts that higher updating frequency, caused by threat, leads to more synchronized group movement with both speed and nearest neighbour distributions becoming more uniform.

The research is published today in the latest issue of [Proceedings of the Royal Society B](#). The study is supported by the Natural Environment Research Council.

The scientists suggest that the so-called 'oddity effect' could be the driving force for the behavioural changes. The [computer model](#) measures speed and distance distributions and provides a method of assessing stress levels of collectively grouping animals in a remotely

collectable and non-obtrusive way.

Dr Jamie Wood, of YCCSA, said: "We find that as grouping animals feel more threatened, they monitor their fellows more frequently which results in better synchronization.

"Closely coordinated movement has the advantage that predators find it more difficult to single out a single target for their prey. Our work may help to explain how tightly bound fish shoals emerge and determine how agitated animals moving in groups are at any given moment."

Provided by University of York

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