

Is eye size related to genetics or environment?

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(Phys.org) —Researchers at The University of Western Australia in collaboration with the University of Queensland and the Australian Museum are trying to understand how fish see at depths.

In the deep sea, and particularly between 200m and 1km, eyes need to adapt to see in dark conditions and to see bioluminescence, a type of light emitted by the creatures themselves. One of the most common [adaptations](#) to increase sight at those depths is enlarged eyes.

According to a study published in the journal *PLoS ONE*, the relative size of the eye within the same family of deep-sea fishes, the lanternfishes, does not seem to be directly linked to the amount of light

present in their environment but to "genealogy".

Lead author neuroecology PhD student Fanny de Busserolles of UWA's Oceans Institute and the School of Animal Biology, said that the results were quite surprising because they were expecting to find a relationship between eye size and either depth and/or the amount of light emitted by each species.

"These results show that there is a lot more to learn and exciting results to discover from this extreme and mysterious environment that is the deep-sea.

"This study represents an important contribution to our understanding of how both the [environmental conditions](#) and the [evolutionary history](#) of a species can influence the visual system of deep-sea fish," Ms de Busserolles said.

However, more work is needed to fully understand the evolutionary drivers that shape the visual system of the large biodiversity of organisms in the deep-sea.

The research was funded by the Australian Research Council and the Western Australian State Government.

This is the first study to examine variability in eye-size within the same family of [vertebrates](#) using representatives of more than 50% of the recognised members of the same [genus](#).

More information: www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0058519

Provided by University of Western Australia

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