

When it comes to selecting a mate, the eyes have it: study

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For the first time ever, scientists have found a difference in the way males and females of the same species of vertebrate see things – and that sexes likely use that difference to select their mates.

Queen's PhD candidate Shai Sabbah, a Vanier Scholar, led a team of researchers who found that male and female cichlid fishes not only see things differently, but detect light in different ways as well.

"It is difficult to say what colour attracts the female the most, but we know that if we manipulate the colour of the fish by changing the light in the environment, the female fish will fail to choose a male of her own species," says Mr. Sabbah.

In nature, increased water turbidity due to deforestation and human development alters the visual environment of fish and consequently, impairs visually-mediated tasks such as mate choice. That can endanger the survival of the species and eventually lead to a reduction in diversity.

"These fish depend on colour vision for their own survival, so discovering differences in the highly dimensional visual systems of males and [females](#) is a significant finding," says Mr. Sabbah.

The research team also discovered that the fish have five different photoreceptor cones in their eyes, the most ever found in a vertebrate. Cones are what enable the eye to detect colours. Humans, by comparison, have just three photoreceptor cones. This gives cichlids the

potential for very good discrimination between colours, which they need in order to choose a correct mate.

Cichlids are small, colourful [fish](#) found in many lakes around the world and in aquariums in North America. Female cichlids are dull in colour, while [males](#) are vibrant and often show colourful body markings.

Colour vision plays a key role in visual behavior. Mr. Sabbah and other members in Craig Hawryshyn's laboratory are currently looking at how differences in visual abilities affect the behavior of male and female cichlids.

The findings were recently published in *BMC Biology*, an online open access scientific journal that publishes original, peer-reviewed research in all fields of biology.

Provided by Queen's University

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