

Choosy females make colourful males

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Female fish prefer brightly coloured males because they are easier to see and are in better shape concludes Dutch researcher Martine Maan following her study of fish speciation in the East African Lakes. Environmental variation subsequently leads to differences in preference and eventually to speciation.

Evolutionary theory predicts that species can diverge if different females choose different characteristics in males. Yet females often pay attention to traits that reveal something about the quality of a male. As a result, females are likely to share the same preferences. In Lake Victoria cichlid fish, Martine Maan found a solution for this paradox: in different species, different traits reveal male quality.

She examined two closely related species, one with blue males and the other with red males. Females prefer males of the right colour, blue or red, and within those categories they choose the most brightly coloured males. They do so for good reasons: brightly coloured males from both species carry fewer parasites and are thus in better condition. Moreover, both species are adapted to different infection risks, which are associated with a difference in water depth and food choice. It is therefore in the females' interest to mate with their own males.

Red and blue light

Yet how did these differences evolve? The red species occurs in deeper water than the blue species and therefore experiences different light conditions. Behavioural experiments showed that both species have adapted to this: the red species is more sensitive to red light and the blue species is more sensitive to blue light. For females of the red species, red males are therefore more conspicuous than blue ones, and vice versa. Males of other colours are inconspicuous and unattractive, and therefore produce few offspring. Eventually only the bright red and bright blue fish remain, and two separate species can arise.

Due to the introduction of the Nile perch, deforestation and population growth, water transparency in Lake Victoria is declining. In turbid water, cichlid females are less choosy and males are less brightly coloured. This research therefore underlines the importance of measures to counteract the ongoing eutrophication of the lake.

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Martine Maan investigated mechanisms of speciation in Lake Victoria cichlid fish (East Africa).

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