

# Paternity of subordinates raises cooperative effort in cichlids

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Cichlid male nannies help out, especially if they've been sneaking.

The highly social [cichlid fish](#) *Neolamprologus pulcher* displays cooperative breeding behavior, where non-parents contribute to rearing the offspring of the dominant breeding pair. Until now, it was assumed that male subordinates never gained paternity in the field. A new study published Oct. 12, in the online journal [PLoS ONE](#), reveals that some offspring from this domestic arrangement are actually fathered by subordinate members of the group, and when this happens these fish increase investment.

The study demonstrates that the level of cooperative behavior is affected by direct fitness benefit - producing their own offspring - on top of indirect benefits such as safety, or raising related offspring.

The researchers, led by Rick Brintjes at the University of Bristol, found that while [dominant females](#) sired 99.7% of all offspring, the [dominant males](#) only sired 88.8%. Subordinate females did not participate in reproduction, but male subordinates successfully gained paternity in 28% of all clutches.

Subordinate males that sired offspring defended more rigorously against predators compared to similar males that did not sire offspring. Neither parentage nor other helping behaviors were affected by relatedness between subordinates and dominants. According to Dr Brintjes, "this is the first evidence in a cooperatively breeding fish species that the

helping effort of male subordinates may depend on obtained paternity, which stresses the need to consider direct fitness benefits in [evolutionary studies](#) of helping behaviour."

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