



Parent of the year award goes to... the damselfish

PROJECT NAME: How do damselfish offspring learn from their parents to escape predators? Reef HQ Aquarium provides damselfish to researchers studying how offspring learn the survival behaviour of parents escaping predators.

PROJECT DATES: April 2011 – July 2015.

PROJECT LEADER: Jennifer Atherton. James Cook University, Townsville, Australia.

PROJECT FOCUS: A lot is known about predator-prey relationships on coral reefs, but very little about the learning mechanisms between generations in the face of predator presence. This project is looking at how the presence or absence of predators near damselfish parents and embryo affect the quality and survival of offspring.

Contrary to most fish species, *Acanthochromis polyacanthus* damselfish also called spiny chromis display a high level of parental care of juveniles. Instead of laying eggs and letting them hatch and fend for themselves alone, these damselfish parents guard the egg clutch and the juvenile school until they are adults. This project is investigating the following questions:

1. Can fish pass down information regarding response to predators to their offspring through non-genetic inheritance (parental effects)?
2. Can fish embryos recognise the odour of predators and could they use this to avoid predation?



Single *A. polyacanthus* embryo under a microscope.
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Clutch of eggs of *A. polyacanthus* laid on a plant pot.
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PROJECT OUTCOMES: Reef HQ Aquarium has provided spiny chromis (mainly juvenile) individuals, to use in behavioural experiments addressing these two questions. Fish are used to breed schools of fish in sufficient numbers to run the experiments and to make chemical alarm cues. These cues are odours that are released when the skin of the fish is damaged, as it would be when it is attacked by a predator – this warns other fish that there is danger in the area and is known to be detected by other fish. However, it is not yet known whether this 'knowledge' is learnt by the fish as early as the embryonic stage.

