

Title of Project: The biology, monitoring and conservation of the endangered Giant Triton Snail, *Charonia tritonis*, a potential Crown-of-Thorns Starfish biocontrol agent

Names of supervisors:

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Brief description of the project

Crown-of-Thorns starfish (CoTS) outbreaks represent a threat to corals. The Giant triton, as a primary predator, potentially plays a role in regulating CoTS populations. The concomitant increase in outbreaks over several decades and the decline of Giant triton populations, possibly due to over-exploitation, may have inadvertently played a critical role in coral cover loss. This project will:

- 1) Investigate Giant triton biology and ecology, where knowledge gaps exist, towards understanding their life history. Specifically, feeding preferences and aspects of tissue/shell development will be explored.
- 2) Establish their population distribution. Given their cryptic and nocturnal nature, conventional surveys are economically impractical, making the Giant triton an ideal candidate to study using environmental DNA (eDNA). Analysis of eDNA from seawater samples will determine presence/absence and establish their current spatial distribution.
- 3) Determine population connectivity and structure using population genetics. Sampling when possible from live animals will allow genome sequencing and investigation of patterns of connectivity amongst populations.
- 4) Assess the feasibility of the Giant triton as a CoTS biocontrol agent. Information regarding their distribution and abundance will be used to model impacts on CoTS populations on the GBR.

Discovering life history traits and distribution will guide management, conservation and re-stocking efforts.