

Coral Aquaculture and Deployment

This intervention aims to seed large numbers of aquaculture-grown, heat tolerant corals onto the Great Barrier Reef using human assisted delivery methods.

We are developing the aquaculture facilities and products that can improve end-to-end production of millions of coral larvae, young corals and fragments each year, incorporating automation to reduce cost and increase scale. We are also developing tools for the detection of pests in aquaculture and the assessment of genetic diversity of corals produced in aquaculture.

We are further investigating factors influencing propagated coral survival in the wild, to guide decisions about where and when to seed cultivated corals and achieve the best survival and growth outcomes.

Outcomes to Date

- Development of semi-automated, operator-free gamete harvesting, high density fertilisation and larval culturing
- Development of AI camera systems to count and monitor both coral larvae and settlement in aquaculture
- Microherbivores successfully applied to control algae growth in tanks, promote coral production, whilst minimising cost to producers
- Microbial biofilms and crustose coralline algae have been characterised that can induce settlement for several non-acroporid coral species
- Field program developed, to trial the performance of innovative coral deployment device designs, materials and surface textures, antifoulant coatings and biomimetic glues with results indicating improved retention and survival

Next Steps:

- Refinement of prototype automated systems and trials with more species
- Mass manufacture and semi-automation of device and settlement tab assembly
- Pilot field trials at large scale (50-100 thousand corals) to test and refine the mechanisms and logistics required to assemble devices and deliver in large numbers onto the Reef, and subsequent monitoring requirements

