

Coral Recruitment Study Snapshot

The Why

- In late 2023, the Cairns-Port Douglas Reef Hub led the first year of a collaborative study with five local organisations to explore coral recruitment rates following coral spawning over the early summer months.
- The study is aimed to help tourism operators, non-profits and the broader scientific community better understand and make decisions about local reefs.
- Stress in adult colonies can reduce egg and sperm production, negatively affecting recruitment and potential coral recovery from disturbances (e.g cyclones or bleaching related losses) [1-3].
- The study was repeated and expanded in 2024 to assess how extreme conditions may have impacted coral recruitment
- This is the first step in a planned long-term study of coral recruitment among and within reefs in the region delivered by a diverse community of partners.

What is coral recruitment?

Coral recruitment is the process by which coral larvae settle onto reef surfaces, attach, and grow into juvenile corals—a critical life cycle stage that underpins reef recovery, biodiversity, and overall ecosystem function.



The Who

Field work was completed with the support of four tourism operators, one First Nations Land & Sea Ranger Group, and one reef conservation group, lead by the Cairns Port-Douglas Reef Hub.



Jabalbina



1. Hughes, T.P., et al., Nature, 2019. 568(7752): p. 387-390.
 2. Edmunds, P.J., Limnology and Oceanography, 2021. 66(4): p. 1394-1408.
 3. Morais, J., et al., Ecology Letters, 2024. 27(1): p. e14332.

The How



- Each organisation deployed 15 limestone recruitment tiles (9 x 9 x 1.5 cm) at 2-3 sites per reef.
- Recruitment tiles, temporarily placed on reefs, help estimate coral recruitment, as new coral offspring are not visible to the naked eye until nearly 12 months old.
- Temperature loggers were also deployed at each site to track local temperature trends over time (see page 4).

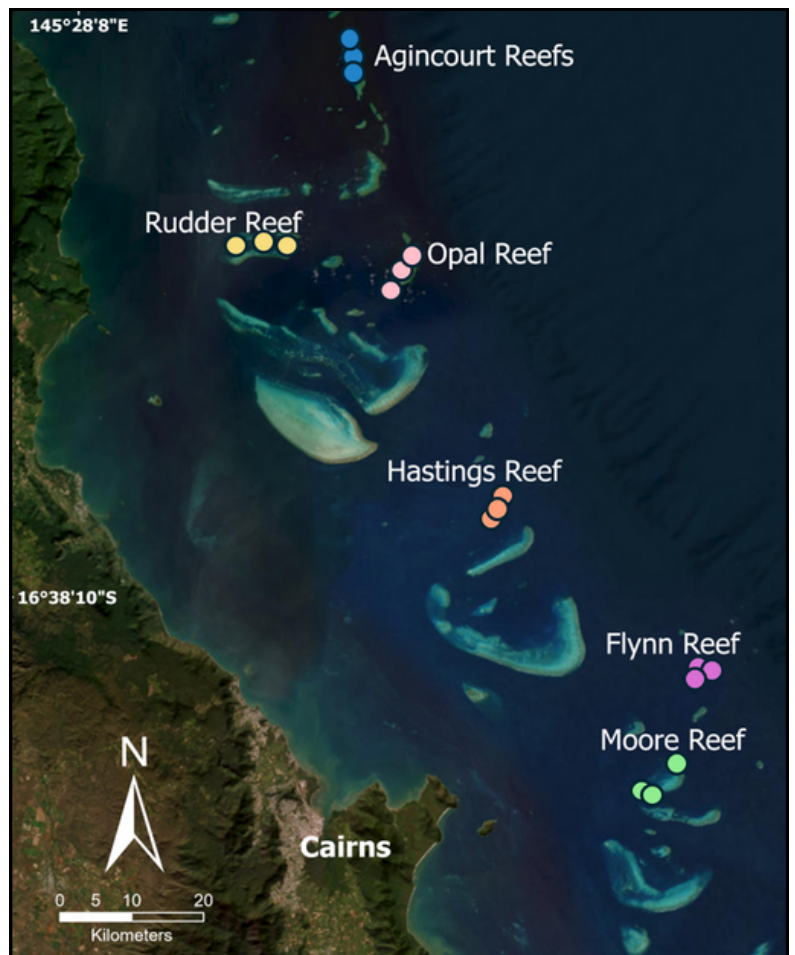
- Tiles were fixed at reef sites in early October and left for 10-12 weeks post-spawning.
- After retrieval, tiles were treated with a mild bleach solution to reveal the coral recruit skeletons on top, side and bottom surfaces.
- The tiles were analysed at James Cook University, where Reef Hub participants learned how to identify coral recruits and record data from the 180 deployed tiles. This included members of local First Nations ranger groups, school groups, staff members of the organisations involved, and the broader Reef Hub community.



The Where

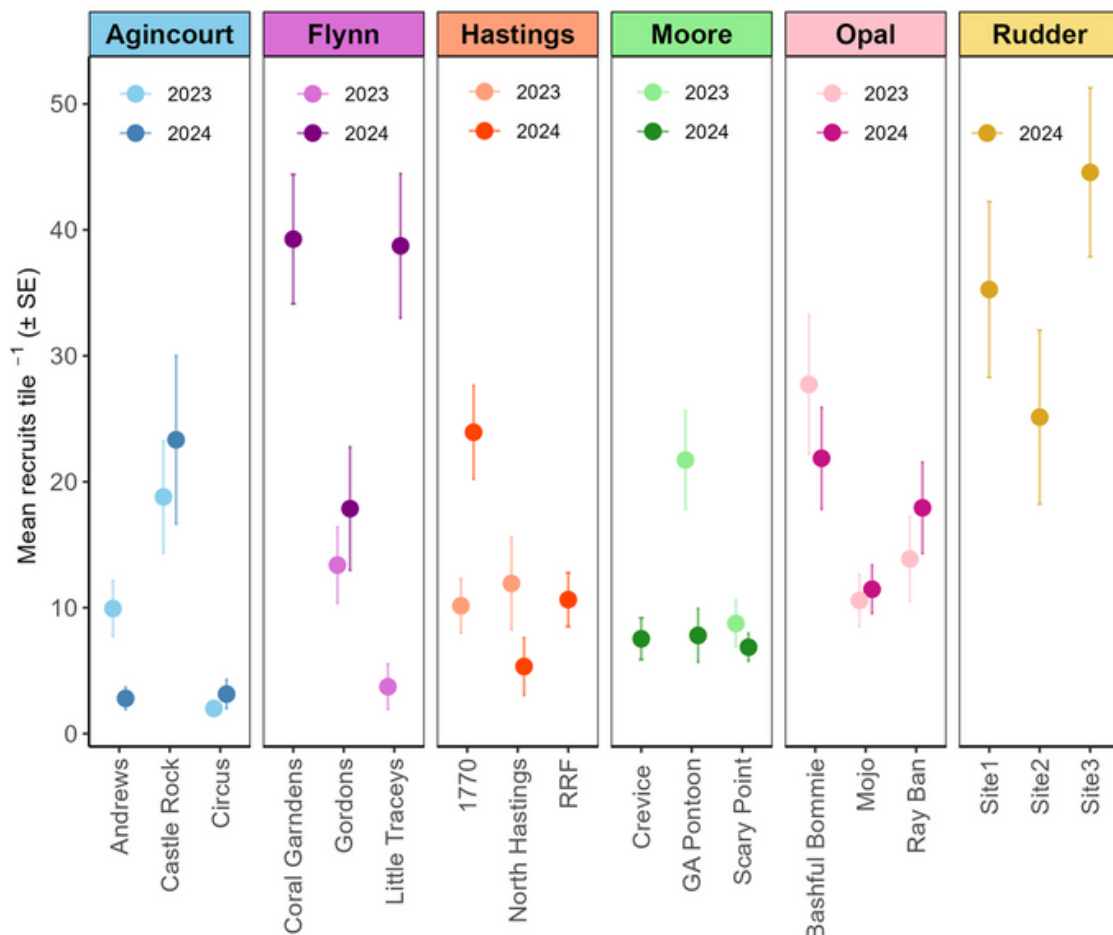
270 tiles deployed at 18 sites
across 6 reefs in the
Cairns-Port Douglas Region

- Rudder
 - Site 1
 - Site 2
 - Site 3
- Agincourt
 - Andrews
 - Castle Rock
 - Circus
- Opal
 - Bashful Bommie
 - Mojo
 - Ray Ban
- Hastings
 - 1770
 - North Hastings
 - RRF
- Flynn
 - Coral Gardens
 - Gordons
 - Little Traceys
- Moore
 - Crevice
 - GA Pontoon
 - Scary Point



The Results

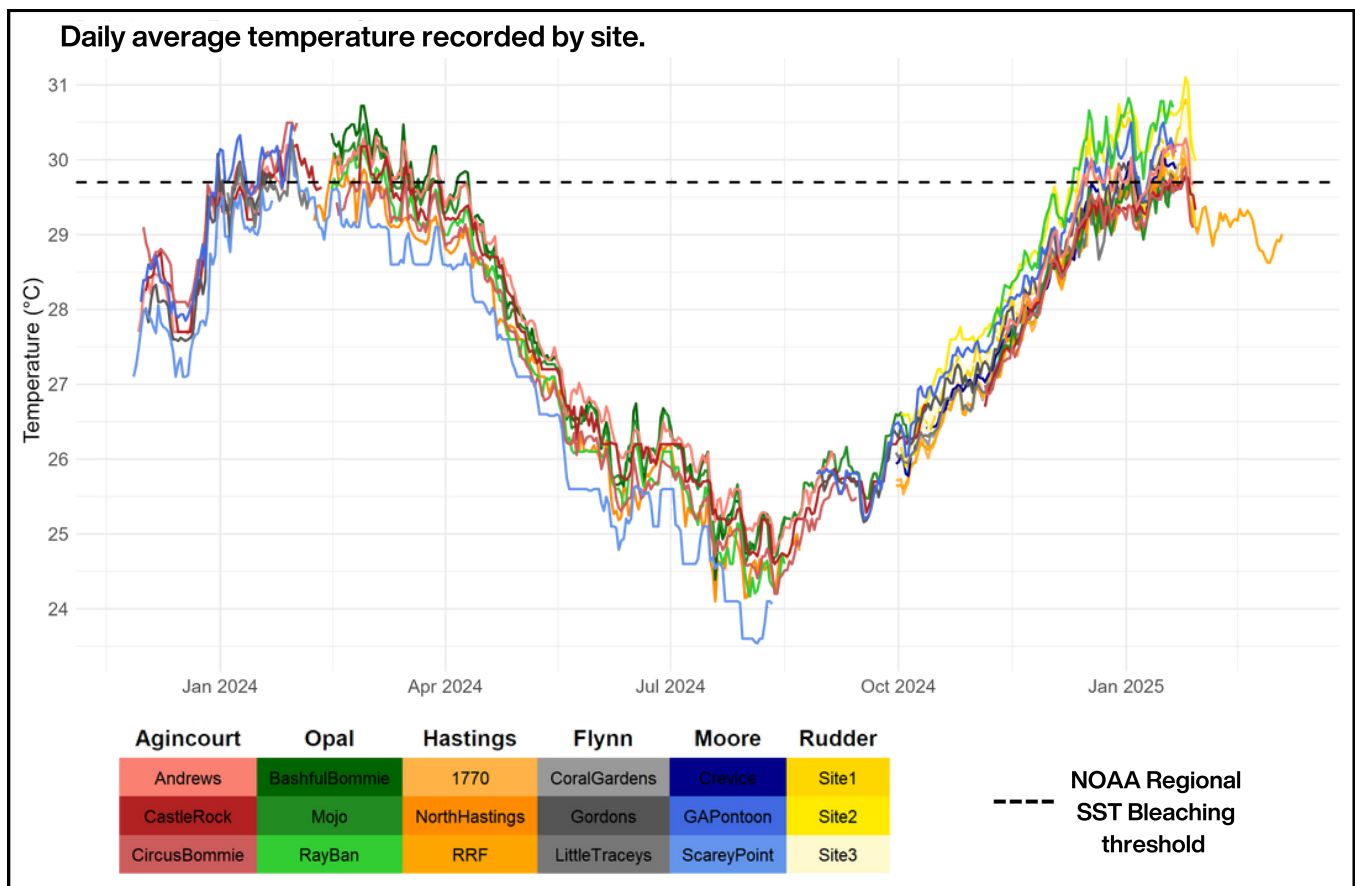
Coral recruitment patterns varied within and among reefs, and from year to year. Ongoing monitoring is essential to identify long-term trends and understand how recruitment responds to environmental changes and disturbance events.



Each point shows the mean number of recruits per site (based on 15 tiles), with vertical lines indicating standard error (SE).

The Results (cont.)

- While it is too early to establish clear correlations, continued temperature monitoring will support efforts to link recruitment patterns with thermal conditions, providing insight into how ocean warming and marine heatwaves may be impacting coral reproduction in the region.
- At most sites, operators also conducted benthic surveys. Over time, this data will help explore potential relationships between benthic community composition and coral recruitment patterns.



This study represents the initial phase of what is intended to become a long-term investigation of coral recruitment in the region—critical for understanding reef health and for providing essential baseline and ongoing monitoring data that can guide site-scale stewardship while also feeding into larger-scale reef management models and decisions.

Data is available at eAtlas.org.au or contact Katie.Chartrand@jcu.edu.au or Abbi.Scott1@jcu.edu.au for more information on this study.