

# Reef Islands Initiative

*Five-year snapshot  
2018 to 2023*

*Lady Elliot Island*



Fitzgerald Family  
Foundation





*More than 70 Traditional Owner groups have rich, ongoing connections, rights, interests and aspirations in the land and sea Country of the Great Barrier Reef.*

*The Great Barrier Reef Foundation extends its deepest respect and recognition to all Traditional Owners of the Great Barrier Reef as First Nations Peoples holding the hopes, dreams, traditions and cultures of the Reef.*

# Executive Summary

The Reef Islands Initiative (RII or the Initiative) is delivering a collaborative program of on-ground and in-water actions to protect and restore critical high-value island habitats. By combining science and Indigenous knowledge with on-ground and in-water actions, the \$AUD14m, 10-year program is building resilience in reef island habitats to create a network of climate arks across the Great Barrier Reef. Pioneered by the Great Barrier Reef Foundation and supported by funding from Lendlease, the Australian Government's Reef Trust, the Queensland Government and the Fitzgerald Family Foundation, the Initiative is the largest reef island habitat rehabilitation project of its kind in the Southern Hemisphere.

The Initiative is currently at the half-way mark of a 10-year program. In these foundational years, the Initiative has established four island sites: Lady Elliot Island, the Whitsundays, Avoid Island and Munamudanamy (Hinchinbrook Island). While the programs at each of these sites are at different levels of maturity, each have made strides towards protecting island habitats and building long-term resilience in partnership with local stakeholders and Traditional Owners.

Each site has been developed with a bespoke, place-based approach in response to local needs. Some sites are focused on in-ground works targeting terrestrial ecosystems with strong Reef links, while others are piloting novel marine-based restoration technologies or supporting businesses to reduce carbon emissions. A golden thread across all sites is the investment in local knowledge-building and empowerment of



*Manta ray being cleaned. Image credit: Asia Haines*

local stakeholders and Traditional Owners to lead long-term island stewardship.

Lady Elliot Island (LEI) is a critical seabird nesting site, with a history of mining that has dramatically altered the island's landscape. The RII is working to restore native vegetation across the island to rehabilitate seabird nesting habitat. To date, the program has revegetated more than 60% of the total target area, increasing native biodiversity and improving bio-condition across multiple regional ecosystems.

Through this effort, the island has increased available turtle nesting habitat by 125% and seen an increase in nesting seabird populations. The success of the revegetation program has attracted additional government investment of \$1.9m to sustain revegetation outcomes. The novel **Leaf2Reef** research program has been established and is delivering new knowledge on the island's marine and terrestrial ecosystems and their connection to revegetation. The research findings will be used to develop



Larvae release at Maureen’s Cove. Image Credit: James Unsworth, Ocean Rafting



Queensland Trust for Nature Team on Avoid Island  
Image credit: Jasmine Louise



Avoid Island Traditional Owner Co-Management.  
Image credit: Jasmine Louise

the first monitoring framework to assess the impacts of revegetation on island and reef ecosystems.

In the Whitsundays, the program is trialling multiple in-water restoration techniques to build the resilience of local reefs and seagrass meadows, following the impacts of Category 4 tropical cyclone Debbie in 2017. The Initiative is working with nearly 50 tourism businesses to cultivate regional stewardship through direct interventions and by reducing carbon emissions. So far, the program has helped build ecosystem resilience by deploying over 300 million coral larvae and planting 4,525 coral fragments to boost the recovery of local reefs. Locals have also collected over 65,000 seagrass seeds to enhance the resilience of local turtle and dugong feeding habitat.

Activities on Avoid Island are grounded in supporting the Traditional Owners to access and care for Country and develop an island management plan that will guide actions to protect vulnerable species for the next decade. The project has enabled seven Traditional Owners to access Country, share cultural knowledge and upskill in on-ground management techniques through field work and project governance. Importantly, this has seen the re-establishment of cultural fire practices to manage several ecosystems of conservation concern.

At Munamudanamy (Hinchinbrook Island) the Initiative is developing partnerships with Bandjin and Girramay peoples to elevate the voices of Traditional Owners to

improve local capacity to restore and protect critical island values. Two foundational scoping projects have been delivered identifying priorities and opportunities in line with this vision, such as cultural tourism projects. The next step is the design and implementation of projects in partnership with Bandjin and Girramay.

This report provides a high-level snapshot of key activities and achievements from 2018-2023 and next steps for each site. In addition to these works, the Initiative is in the process of developing an island prioritisation framework to inform future investments in island conservation across the Great Barrier Reef.

# Reef Islands Initiative

The Reef Islands Initiative is built on the vision to:

*‘deliver a collaborative program of on-ground and in-water actions to protect and restore critical high-value island habitats that support wildlife and communities in the face of a changing climate’.*

From this vision, the four themes or pillars of the program have been defined.



**Integrating knowledge to support resilience-based management.**



**Implementing adaptation and restoration action on-land and in-water.**



**Building engagement, education and stewardship.**



**Taking actions to reduce carbon emissions.**

# Our Partnership

The Reef Islands Initiative was announced in April 2018, tasked with establishing a network of climate change refuges to protect critical habitats and species across Great Barrier Reef islands. The Initiative’s partners — Great Barrier Reef Foundation, the Australian Government’s Reef Trust, Queensland Government, Lendlease and the Fitzgerald Family Foundation — have all contributed to the establishment of the Reef Islands Initiative. All partners share the vision and commitment to protecting the Great Barrier Reef.

Each partner is committed to the 10-year program duration, with all of the funders, including the Australian Government and Queensland Government, represented on the Steering Committee to provide overarching strategic direction and oversight.

The initiative includes on-land and in-water restoration efforts to enhance the resilience of ecosystems, guided by the best available scientific advice and stakeholder needs. The work will boost the resilience for islands to serve as arks to protect and preserve the Reef, and its inhabitants, while longer-term climate change mitigation and adaptation strategies are delivered.

The Foundation recognises Aboriginal and Torres Strait Islander Peoples are the Traditional Owners of the Great Barrier Reef. We are committed to meaningful collaboration and engagement with Reef Traditional Owners throughout the development and implementation of the Initiative.



# Lady Elliot Island

**Lady Elliot Island (LEI) is part of the Capricorn-Bunker group of islands and is the southern-most coral cay in the Great Barrier Reef.**

It's an island ark for over 1,200 species of marine life, including whales, manta rays, turtles, dolphins and coral reef. The island also has the second highest diversity of breeding seabirds of any island on the Great Barrier Reef and is an important stop for migrating seabirds.

To conserve the rich natural values of the island, this project aims to:

1. Promote engagement, education and stewardship through on-island education and participation opportunities, plus knowledge sharing with the scientific and Reef community.
2. Implement on-ground restoration activities to revegetate the island with native cay species.
3. Develop knowledge to support resilience-based management by researching and monitoring the impacts of the revegetation work on island ecosystems (through the Leaf2Reef project)
4. Reduce carbon emissions and improve sustainability practices.

The program is delivered in partnership with Lady Elliot Eco-Resort, Queensland Parks and Wildlife, Great Barrier Reef Marine Park Authority, University of the Sunshine Coast, and tireless contributions from volunteers. The achievements delivered to date would not be possible without a thriving volunteer revegetation program.

*Below: Aerial views of Lady Elliot Island showing the progress of revegetation work.*

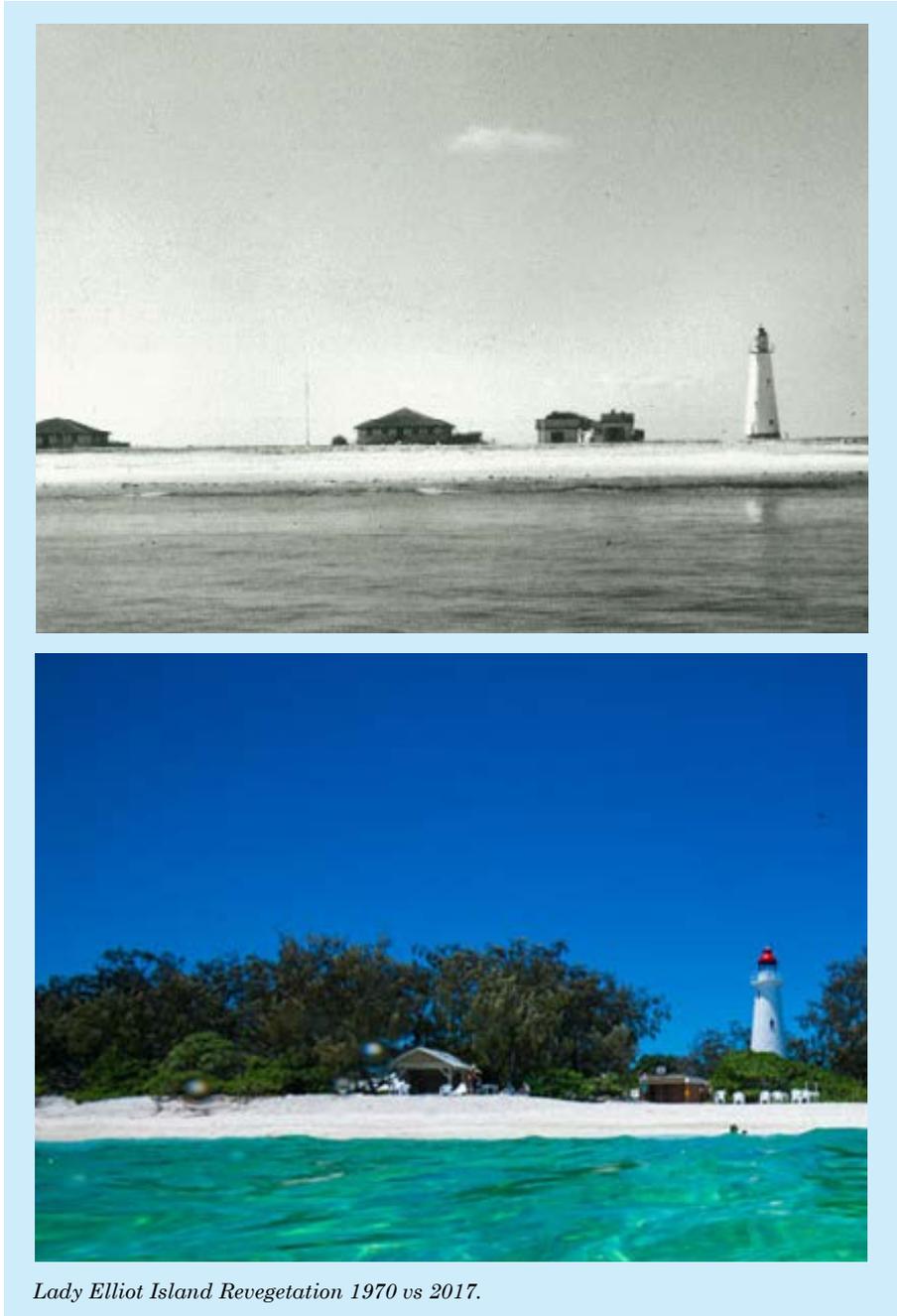


*Since 2018 the number of red-tailed tropicbird breeding pairs have increased from 2 to 9.*

## Highlights:

- Since 2018, the program has been a valuable proving ground for innovating and refining revegetation methods to restore native coral cay terrestrial ecosystems and critical seabird nesting habitat.
- 17.2 hectares of 'first pass' revegetation has been completed, equating to over 60% the area planned for revegetation (28.5 ha). These efforts have increased the extent and condition of revegetated areas, which have seen an increase in seabird nesting populations and removal of invasive plant species.
- Revegetation activities have increased turtle nesting habitat by 125%, enabling turtles to nest further inland, which is advantageous for nest survivorship.
- To support on-ground works, an on-island volunteer and research hub has been established. The hub has accommodated over 500 revegetation volunteers and 18 researchers and research students. The hub is a key element of the program's success and will support long-term fieldwork beyond RII.
- Over 800 visitors to the Island have learned of the program and the importance of LEI as an island ark (an ecosystem expected to persist in the face of a changing climate) through strategic signage, the education centre, nursery and behind-the-scenes tours.

- Established the only coral cay species nursery on a Great Barrier Reef island. The nursery acts as a critical ark for the island, with the capacity to propagate and stock 6,000 coral cay plants across 31 species to support the revegetation program. The nursery could potentially support the revegetation needs of other cays following disruption events.
- Established the novel Leaf2Reef research program to improve our understanding of the island’s biodiversity, connectivity of LEI species to the rest of the Great Barrier Reef and understand the impact of revegetation on island ecosystems. So far, the research program has delivered new knowledge on the island’s groundwater table and nutrient flows to the Reef, discovered new fish taxonomies, and collected critical baseline datasets to model the connection between terrestrial and marine habitats. This project is critical in providing supporting evidence of the link between on-island revegetation with native species habitats and flow-on benefits to the Reef.
- As a proving ground for novel research and revegetation methods, this program will provide managers with a toolkit of methods and best practices for coral cay revegetation, which can be scaled to other locations. A key tool is the development of the first modelling and monitoring framework to assess the effects of the revegetation on the island’s terrestrial and marine ecosystems, by the Leaf2Reef program.
- The revegetation and research programs have demonstrated the importance of large-scale ecosystem restoration for the Reef, with government investing \$1.9m in the revegetation project to sustain outcomes. Private donors have also contributed to the continuation of the Leaf2Reef program, facilitated by the Great Barrier Reef Foundation.
- The lessons learned and outcomes of the revegetation program are informing long-term planning and management of the island by contributing to the review of the Lady Elliot Island Ecosystem Resilience Plan, managed by the Great Barrier Reef Marine Park Authority (GBRMPA). These lessons can be adopted to contribute to the management of national parks and sites under their remit.



*Lady Elliot Island Revegetation 1970 vs 2017.*



*Lady Elliot Island Revegetation Volunteers. Image credit: Lizzy Rouse.*

**Next Steps:**

- Continue revegetation and weed management according to annual work plans. With the South West Pisonia Forest areas complete, the program will focus on revegetating the North West zone with coastal and shrubland revegetation and testing grassland revegetation methods in the North East zone. In 2024, the program will revegetate an additional 2.24 hectares and transition the nursery stock to grassland and shrubland species.
- Forward planning for the program to ensure there is a meaningful legacy beyond current RII funding, including opportunities to maintain the volunteer program at greater capacity, potentially through a user-pays corporate partnerships model. In 2024, the program will host volunteer groups to manage previously weeded areas.
- 2024 will be the first year Glyphosate will be used for broadscale weed management. This is a milestone moment for the program, which has been enabled through knowledge of island



*Jim and Annie Buck in Lady Elliot Island's Nursery.*

- ecosystems delivered by the Leaf2Reef team. Use of Glyphosate offers significant efficiency gains to ensure revegetation outcomes can be maintained.
- The resort currently operates on 100% renewable energy on good weather days. Next, potential carbon sequestration opportunities through the revegetation work, and pathways for the resort to operate as carbon neutral, will be explored.
- In 2024 the Leaf2Reef model will be available for managers to assess the effects of the revegetation program. This will be a milestone moment for the project and a first in island management across the Great Barrier Reef Marine Park. Other critical deliverables include research publications on biodiversity and species connectivity, and the relationship between the groundwater nutrient flows and coral health.

Case Study

## Leaf2Reef early research highlights

### Nutrient flows

Seabirds play an important role in Lady Elliot Island’s ecosystem by bringing in nutrients to fertilize plants on the island, while other nutrients are deposited into the island’s groundwater system and distributed to the surrounding reef. The positive relationship between seabird nutrient provision for coral reef health has been researched and confirmed domestically and internationally. However, the link between altering island vegetation, seabird behaviour and coral reef health is unknown. At Lady Elliot Island (LEI) this is a key research question the Leaf2Reef program has been established to answer and to develop the first monitoring system to assess the impacts of the revegetation program on the island’s marine and terrestrial ecosystems. This is a Great Barrier Reef first.

Since 2020, Leaf2Reef has been collecting critical baseline information on the island’s reef and terrestrial habitats, groundwater system and nutrient flows across the food web. This involves sampling groundwater, guano, coral tissues, microalgae, surveying benthic communities and bird abundance estimates.

So far two preliminary achievements have been made which act as foundational milestones for the research program.

1. High-resolution mapping of the island’s vegetation, surrounding reef and aquifer. This is an important baseline to track changes in terrestrial and marine ecosystems as the revegetation program matures and in the event of climate events, such as cyclones or coral bleaching. Mapping will be conducted again in October 2024 to assess habitat changes over three-years.
2. New knowledge on groundwater system and nutrient levels. Previously, little was known about these aspects. The program has published a study identifying high concentrations of groundwater nutrients, which are atypical of a thriving coral reef with rich biodiversity – such as Lady Elliot Island. One hypothesis is LEI’s high abundance of herbivorous marine species, such as turtles and parrot fish, help maintain the reef by controlling algae levels. The project will continue to collect data to track how nutrients flow through LEI’s ecosystems to model the effects of the revegetation program. This will be used to inform management of LEI and potentially similar islands.



Leaf2Reef team conducting fish surveys. Image credit: Asia Armstrong



Above left: Monitoring red-tailed tropicbird on Lady Elliot Island. Image credit: Asia Armstrong. Above right: Diver photographing manta ray for Leaf2Reef research project. Image credit: Asia Armstrong

*Case study continued*



*The Lady Elliot shrimp goby is the newest recorded species on the Great Barrier Reef.*



- Identified 14 new migrant species that can now be found on the island, demonstrating LEIs role as a refuge.
- Seabird abundance surveys have identified the black noddy as the primary nutrient depositor and therefore the species most impacted by revegetation works. Additional studies are underway to understand changes in nesting behaviour in response to changes in available nesting habitat from the revegetation program.
- Increase in red-tailed tropicbird (RTTB) nesting pairs from two to nine. This includes whoopi old bird which is the world’s oldest tagged RTTB, and two chicks born on the island which have returned to nest as adults. This supports the theory of natal philopatry for the species and highlights the importance of LEI as a refuge.



*Above left: Black nody and chick on Lady Elliot Island. Image credit: Carolyn Trewin. Above right: Leaf2Reef lead researchers Kathy Townsend and Chris Dudgeon. Image Credit: Asia Armstrong*

**LEI as a climate ark**

The other focus of Leaf2Reef is to investigate the island’s role as a biodiversity ‘hotspot’ and potential climate refuge for tropical species. Climate modelling predicts that reefs in good condition located in the Southern Great Barrier Reef, such as Lady Elliot Island, may become a refuge for species moving southward in search for more favourable habitats.

To ground truth this prediction, the team has been busily documenting vertebrates on land and in water and, examining the connectivity of LEI biodiversity with the broader Reef. Below are a few highlights from three years of biodiversity and connectivity surveys:

- The team has recorded over 150 additional vertebrates, lifting the total recorded terrestrial and marine vertebrate biodiversity to 665 species. An updated LEI field guide documenting the outcomes of BioBlitz surveys is being developed for launch in mid-2024.
- Discovery of a new fish species called the Lady Elliot shrimp goby. This exciting discovery was made possible through the support from world-leading fish taxonomists Dr Gerald Allen of the Western Australian Museum and Mark Edrman Vice President of Conversation International’s Asia Pacific Marine Programs. Details are published in the Journal of the Ocean Science Foundation. Genetic analysis is away for several other potential new species.

Leaf2Reef is also acting as a springboard to support multiple PhD and Masters student research projects on LEI biodiversity and connectivity.

The information obtained through the Leaf2Reef program will continue to provide critical knowledge to support resilience-based management for the island and its surrounding reef to support biodiversity in the face of climate change.

# Whitsundays

The Whitsundays region is a marine paradise and global icon, attracting almost half of all visitors to the Great Barrier Reef. Home to the Ngaro and Gia people for millenia, the Whitsundays islands have deeply significant cultural value and meaning.

In March 2017, the region was hit by Category 4 Cyclone Debbie. As a result, the Whitsundays islands provide opportunities to apply the Initiative’s work streams to the enhancement of coral recovery from cyclone and bleaching impacts, and restored ecosystem structure and function.

In collaboration with tourism operators, local businesses, council, Traditional Owners, community groups, park rangers, reef managers and researchers, the RII Whitsundays project aims to position the Whitsundays as a recognised global hub for reef restoration stewardship and reef industry sustainability through four projects:

1. **Boats4Corals:** advancing coral larval re-seeding as a routine, safe and sustainable means of undertaking coral reef restoration, led by local tourism operators.
2. **Coral Nurture Program:** scaling this successful coral restoration stewardship approach to the Whitsundays, which works with tourism operators to grow and outplant corals.
3. **Seagrass Restoration Program:** piloting and scaling localised strategies and techniques for critical seagrass habitat restoration at Pioneer Bay.
4. **Healthy Heart Project:** facilitating a sustainable and low-carbon COVID business recovery, while enhancing the sustainable destination image of the Whitsundays and increasing awareness of the benefits of decarbonisation.

Site selection for the three on-ground restoration projects was guided by an early investment project through RII, which undertook to determine the most strategic sites for restoration. This mapping was then socialised with local tourism operators and other key partners to determine key restoration sites.

This program could not be delivered without the many dedicated local tour operators and Traditional Owners working across multiple RII Whitsundays projects, including coral restoration, seagrass restoration and decarbonisation, to provide multi-faceted benefits to their region. Organisations participating in the on-ground and in-water restoration work include:

- Ocean Rafting\*
- Red Cat Adventures\*
- Kiana Sail and Dive\*
- SV Whitehaven
- Southern Cross Sailing\*
- Daydream Island Resort\*
- Hayman Island Resort\*
- Reef Check Australia
- Coral Sea Marina Resort\*
- Whitsunday Seagrass Volunteers
- ZigZag Whitsundays\*
- Reef Catchments\*
- Whitsunday Regional Council
- Australian Institute of Marine Science
- University of Technology Sydney
- Southern Cross University

*\* also partners in the Whitsundays Healthy Heart program; see following.*



*Boats4Corals larval reseedling. Image credit: Johnny Gaskell.*

**Highlights:**

**Boats4Corals**

- Since 2020, the project has achieved one of its key objectives of successfully demonstrating that coral larval re-seeding (Coral IVF) can be carried-out by trained tourism operators. The program is now focusing on local knowledge and skill-building and process improvements, including trialling new larvae deployment techniques informed by the Reef Restoration and Adaptation Program. As such, Boats4Corals is acting as an important proving ground to test regulatory frameworks and develop social licence for tourism operators to undertake low-risk restoration in the marine park.
- Over three years of implementation, the project has nearly doubled its coral spawn collection capacity and has deployed millions of coral larvae to two sites of Black Island, and Maureen’s Cove of Hook Island, which the tourism operators identified as needing an extra boost to assist with coral recovery.
- Year-on-year the number of local stakeholders upskilled on the Coral IVF method is increasing, with 40 people including three local Ngaro Traditional Owners now trained on the methodology and decision making. The intention is to build the capacity for local tourism operators to lead planning, deployment and monitoring in the future.
- The Boats4Corals project has become a flagship project demonstrating that coral restoration through the Coral IVF method can be performed by non-researchers, and therefore proving the scaling



*Coral spawning in the Whitsunday's. Image credit: Johnny Gaskell*



*Above left: Coralpalooza boat as part of Coral Nurture Program. Image credit: GBRF.*



*Above right: Boats4Coral deployment. Image credit: Jodie Salmond, Reef Check Australia.*

potential of this method. This has enabled the Foundation to secure corporate investment to scale these activities across the Reef.

**Coral Nurture Program**

- Since commencement in 2021, the project has achieved its initial objective of building a network of tourism operators to pilot coral propagation and outplanting techniques in the Whitsundays. Three operators have partnered with the Coral Nurture Program to establish three coral nurseries and restoration sites.
- To date the program has planted an additional 4,525 coral fragments across several coral species. These outplants are contributing to local reef resilience by accelerating coral recovery while encouraging coral biodiversity.

- Good progress has been made on understanding the return on investment of project activities. A draft publication is underway comparing RII Whitsunday Coral Nurture Program activities with Cairns and Port Douglas (separately funded through the partnership between the Australian Government’s Reef Trust Partnership and the Great Barrier Reef Foundation). These outcomes will be critical in assessing scaling potential.
- In preparation for the predicted marine heatwave this summer, the program has received additional funding to inform adaptive management and nursery stock protection through shading. The shading infrastructure has been built and is ready for deployment following approval from GBRMPA. This a milestone moment for the program to identify effective mitigation tactics and build a social licence for the tourism industry to lead similar readiness responses in future.

### Seagrass Restoration Program

- Since 2021, the project has made excellent progress in increasing the resilience of the Whitsunday’s seagrass meadows. The project has established a pilot nursery at the Coral Sea Marina and tested a novel nursery design that has resulted in excellent seagrass growth. Following this success, the nursery is being upscaled to double its capacity. Learnings from the new design are being adopted by other seagrass nurseries across the Reef to enhance nursery stock growth.
- Over 100 local stakeholders have become seagrass stewards, collecting over 65,000 seeds for propagation and learning about seagrass mariculture. There are two Ngāro Traditional Owners participating in a targeted traineeship program around seagrass mariculture and restoration.
- The program has established trials to assess three different methods of seed-based restoration. Preliminary monitoring has found that all three techniques have been successful in increasing seagrass growth. The learnings from the trial will be used to restore several hectares of seagrass meadow at Pioneer Bay.

### Healthy Heart Project

The program is supporting 48 tourism businesses to reduce their carbon emissions through benchmarking and implementing emission reduction strategies. These businesses are already seeing benefits such as savings in power, water and waste management.

*Next steps:*

- Following successful coral and seagrass restoration pilots, the program will focus on developing Standard Operating Procedures (SOPs) and exploring sustainable delivery models. The aim is to have these techniques adopted by the Great Barrier Reef Marine Park Authority as ‘business as usual’ for multiple restoration practitioners across the Reef.
- Continue working with local stakeholders to understand and address the capacity and coordination needs in the region to sustain long-term stewardship in the Whitsundays.
- Completion of the upscaled seagrass nursery, which will nearly triple the Whitsunday’s capacity to restore local dugong and turtle habitat. The project will also measure carbon levels at restoration sites to understand how seed-based restoration sequesters carbon, with the aim of contributing to national blue carbon methods.

- Boats4Corals will focus on increasing the autonomy of the tourism industry to lead coral restoration activities with the intention of local handover. The next two years will also include monitoring of the settlement devices trialled in the 2023 deployment and refining workflow and equipment for the settlement devices to be adopted as routine deployment tools.
- The Healthy Heart project will continue to support businesses to reduce carbon emissions to maximise impact, conduct end-of-program evaluation and legacy planning. The program has gained good momentum with project partners expressing value in having a business carbon reduction program and interest in exploring local offsetting opportunities.
- Publishing several papers from the Coral Nurture Program on the ecological impact/coral outcomes of outplanting, assessing the ROI in the Whitsundays and changes in fish assemblages at coral nurseries.
- The focus of CNP field work will be guided by the outcomes of the 23/24 summer. In the event of bleaching, the focus will be on restocking the nurseries and evaluating the impacts on the restoration sites to inform adaptive management. Through RII summer readiness funding, the program is equipped to respond to a potential marine heat wave.



Seagrass restoration Pioneer Bay, Whitsundays. Image credit: Johnny Gaskell

Case Study

## Seagrass Nursery Success

Seagrass restoration projects across the Great Barrier Reef are working to improve ocean health across the wider ecosystem while also helping the meadows recover from recurring major events like cyclones. RII is working to build the resilience of seagrass meadows in the Whitsunday's following the impacts of category 4 ex-tropical cyclone Debbie in 2017.

In early 2022, a pilot seagrass nursery was established in partnership with Central University of Queensland and the Coral Sea Marina to test the collection, cultivation and storing of seagrass to build the resilience of Pioneer Bay. This site serves as a critical local dugong and turtle habitat.



Seagrass nursery project in the Whitsundays. Image credit: Fiona Ayers



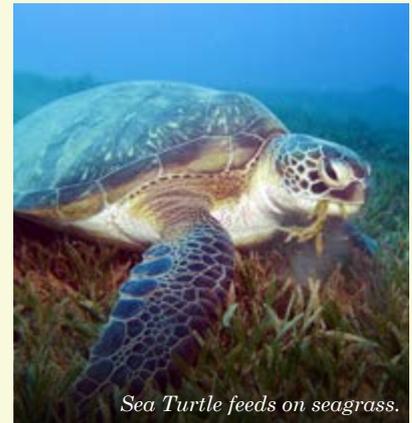
Above left: Seagrass nursery on the wharf in Airlie Beach. Image credit: Great Barrier Reef Foundation. Above right: Seagrass growth in nursery. Image credit: Great Barrier Reef Foundation

The nursery design piloted has been one of the most successful at growing seagrass across the Great Barrier Reef. This is because its filtration system pumps in sea water, introducing small marine animals to the tank, while also allowing the water to circulate. Both the animals, such as razor clams and blue-spotted sea hare (*Bursatella leachi*), and the flow within the tank is believed to limit algae build up and promote better seagrass growth.

Following this success, the nursery will be upscaled to nearly triple its capacity to include three seagrass tanks and two flower storage tanks. The aim is for the nursery to grow a healthy stock of seagrass to produce enough seeds for seed-based restoration and to develop a local seed bank as a security measure to rehabilitate degraded pockets of seagrass in the event of a cyclone.

To date, over 65,000 seeds have been collected by over 100 community members through community flower collection events. The seeds collected have been used to grow seagrass in the nursery and to test three different re-seeding methods which will be used to rehabilitate 4 hectares of seagrass meadow at Pioneer Bay.

The three methods are direct injection of the seed into the ground, hand dispersal which scatters seeds on the surface and seed 'balls'



Sea Turtle feeds on seagrass.

that group seeds in a pre-fertilised bundle. Preliminary monitoring has found that all three methods have resulted in increased growth in comparison to control sites. The outcomes of the re-seeding test will determine which methods/combination of methods will be used for local restoration. Community members will have the opportunity to contribute to the rehabilitation effort alongside Central Queensland University and Nagro Traditional Owner seagrass trainees.

The upscaled nursery will be ready by June 2024 in time for the next flowering season and has the potential to support seagrass works across the Whitsundays region. The seagrass nursery will act as a long-term research asset for ongoing seagrass research, public education and field work in partnership with Central Queensland University's Central Marien Ecosystem Research Centre. This will be the first seagrass research node in the Whitsundays region.

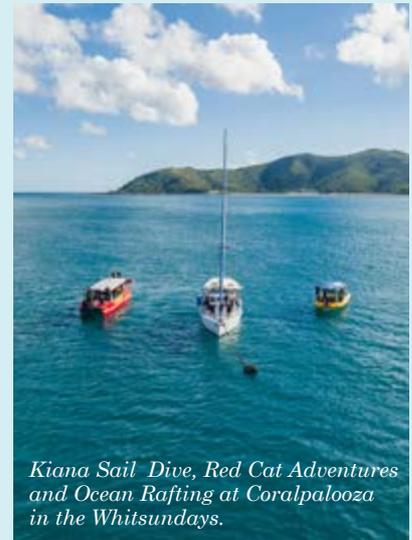
The success learnings from the Whitsunday's RII nursery are now being applied to other Central Queensland University nursery systems to enhance seagrass nursery outcomes across the Great Barrier Reef.

Case Study

## Science and Tourism Unite for Coralpalooza

Australia joins a global day of action to plant corals on our Reef.

Excitement filled the air at the Whitsundays, Cairns and Port Douglas marinas on June 10 as Coral Nurture Program researchers, local tourism operators and volunteers busily prepared for a day of intensive coral planting on the Reef. To the untrained eye, they could have been part of the throng of tourists heading out for a day of relaxation, if it wasn't for their distinctive shirts marked Coralpalooza 2023.



*Kiana Sail Dive, Red Cat Adventures and Ocean Rafting at Coralpalooza in the Whitsundays.*



*Top: The Coralpalooza team in action. Image credit: Great Barrier Reef Foundation. Above left: Researchers on Oceanfree planting coral fragments in Cairns. Image credit: Christine Roper. Above right: Researchers on Sailaway in Port Douglas using the coralclip®. Image credit: Pablo Cogollos.*

Coralpalooza™ is a global day of collaborative action to help restore key reef sites and build resilience to climate change. This year was the biggest event yet as Australia joined the global effort for the first time, alongside 11 other countries.

On the Great Barrier Reef, nine operator vessels took 56 divers to 13 different sites across the Whitsundays, Cairns and Port Douglas and collectively they achieved a phenomenal 6,726 coral fragments planted, smashing the initial goal of 4,000.

These amazing results could only be achieved because of the infectious passion shared above and below the surface. This was a team in its element, from different backgrounds, skillsets and organisations but with one collective intent – to make a positive impact on the Reef. Each coral fragment was planted using the innovative CoralClip® – a Queensland invention that allows corals to be planted quickly and with good survival rate.

There is an opportunity now for researchers to learn from this event – the first coordinated, intensive community effort to plant corals across multiple sites – to support ongoing capacity-building activities and research. Coral Nurture Program researchers from the University of Technology Sydney will continue to monitor these sites to better understand the impact coral planting has on reefs and their marine life. This will help determine where and how to target our efforts to assist recovery at high-value reef locations in the future.

Coralpalooza™ began in 2014 when the Coral Restoration Foundation™ first enlisted recreational divers for a day of large-scale coral restoration in honour of World Oceans Day in the Florida Keys National Marine Sanctuary.

Our participation in Coralpalooza™ 2023 is thanks to the dedicated support of thousands of school children around Australia who have participated in colour runs to raise money for our Reef through Australian School and Club Fundraising (ASCF).

# Avoid Island

Located 102km southeast of Mackay on Koinmerburra Country, Avoid Island is a truly remarkable mosaic of habitats including mangroves and samphire swamps, beach scrubs, Melaleuca forests, grasslands and dry sclerophyll forests.

The island is also one of the three largest flatback turtle rookeries on the southern Great Barrier Reef, and will likely be an important refuge for flatback turtles and other marine species in the face of climate change.

With our partners Queensland Trust for Nature, Koinmerburra Aboriginal Corporation (KAC) and Wonder of Science, we are building capacity for co-management and developing opportunities that celebrate the island’s values.

RII’s Avoid Island project aims to:

- Connect citizen scientists, Traditional Owners, volunteers and non-profit organisations to protect threatened species including flatback turtles, migratory shorebirds and coastal vine thicket;
- Develop and pilot education activities that showcase the unique natural assets of Avoid Island; and
- Work towards developing a sustainable business model hinged on education and ecotourism on Avoid Island.

The project is being built in collaboration with Traditional Owners from inception and will grow Avoid Island as a place of knowledge holding, sharing and demonstration of the power of co-management. It also serves to build a legacy of enduring impacts beyond this project by exploring sustainable education and ecotourism business options grounded in the island’s unique natural and cultural assets.

*Below left: Birds of Avoid Island. Image credit: Jasmine Louise*

*Below right: Fire burning on Avoid Island with Koinmerburra Aboriginal Corporation. Image credit: Jasmine Louise.*



*Aerial photo of Avoid Island. Image credit: Queensland Trust for Nature*

## Highlights:

- The project has enabled seven Traditional Owners to access Country, share cultural knowledge and upskill in on-ground management techniques through field work and project governance. Project governance has helped strengthen relationships between project partners and share power around prioritisation of project activities. To date, three Traditional Owners have been upskilled in fire management planning and implementation and another three have contributed to cultural values mapping, including two Elders.
- Fieldwork has successfully delivered new information on the ecological values of the island, including the presence of ecosystems of conservation concern and recording 326 additional species. A management plan is being developed to protect key values of flatback turtle nesting habitat, migratory shorebird habitat and threatened ecological communities such as the Critically Endangered EPBC-listed Coastal Vine Thicket (16 ha).
- Fieldwork data-outputs are being used to develop Year 9 curriculum resources to raise awareness on Avoid Island’s key values and encourage youth stewardship. These resources are developed in line with Australian Curriculum requirements. The aim is to teach students ecological and conservation principles and how to access databases to compare data from Avoid Island to their local environment, to draw conclusions about its ecological health and sustainable management practices. Resources will be piloted in April 2024.

## Next Steps

- Develop and implement the Island Management Plan, which will guide actions to protect vulnerable species and priority actions for the island for the next decade and beyond, such as fire management and establishing KAC-led turtle and vegetation monitoring projects.
- Pilot the school resources in April 2024 via STEM education expert Wonder of Science (WOS). After the pilot, the resources will be available for any WOS-partnered schools to teach and for KAC to adapt and use beyond RII funding as a legacy piece.
- Explore sustainable operational models for KAC-led island management and continue to build KAC's capacity towards realising their vision for the island.



Re-establishing fire management. Image credit: Jasmine Louise



Above left: Koinmerburra Aboriginal Corporation Ranger. Image credit: Jasmine Louise. Above right: Elders Aunty Pan and Aunty Jenawurrie with Queensland. Image credit: Jasmine Louise



Avoid Island Traditional Owner Co-Management. Image credit: Jasmine Louise

*Case Study*

## Avoid Island BioBlitz

After months of logistical planning and waiting for the optimal weather conditions, a team of experts touched down on Avoid Island to conduct a five-day BioBlitz.

A BioBlitz involves surveying vegetation, ecology, geology and fauna to understand the ecological values of a place. The team was on a mission to collect as much data as possible to understand the ecological state and processes.

This data will be used to identify what management actions are required to maintain and improve the island’s natural values and provide essential baseline data to track changes in response to actions or severe disturbance events, such as wildfire or cyclone.

The event was an overwhelming success, yielding significant insights into the island’s environmental values. Results indicate the island is more diverse than previously understood, including two endangered ecosystems.



*Avoid Island BioBlitz team. Image credit: Queensland Trust for Nature.*

**Key findings:**

- Recorded over 326 species of flora and fauna
- Remapped regional ecosystems, including the presence of two endangered ecosystems of littoral rainforest and coast vine thicket, and coastal tussock grasslands
- Avoid Island has a complex geological history
- Recorded 12 species of reptiles
- Recorded 64 species of bird, with seven species recorded for the first time on the island.
- The island is devoid of mammals except for bats, including a large colony of black flying foxes (*Pteropus alecto*).
- The island appears to be devoid of feral animals, with no records or signs of cats, rats, cane toads, etc. Weeds and the asian house gecko were the only non-native species present.



*Nesting flatback turtle returning to the sea at daybreak on Avoid Island. Image credit: Georgie Braun*



*Avoid Island fire training. Image credit: Queensland Trust for Nature*

These findings have far-reaching implications for the project. They will be used to develop a geological field guide of the island and will directly contribute to the island’s management plan, inform the creation of educational resources and guide conservation efforts.

The geological field guide will unravel the island’s complex geology, while the identification of regional ecosystems enhances our understanding of its biodiversity and ecosystem management.

The data has been recorded in the iNaturalist online platform and has engaged 149 citizen scientists to help identify and confirm species.

Now that the biodiversity of the island is better understood, the next steps are to commence fire management and record the cultural values of the island in partnership with Koinjmal Peoples.

Overall, the BioBlitz has generated valuable knowledge that will shape the future conservation and sustainable development of Avoid Island.

# Munamudanamy (Hinchinbrook) Island

Located between Townsville and Cairns, Hinchinbrook Island is the second largest island national park in Australia.

Bandjin and Girramay people lived on and around Hinchinbrook Island long before the arrival of Europeans and there are a number of rock shelters, paintings, shell middens, shell scatters, fish traps and tool or weapon artefacts on the island. There are also spiritual and sacred places, most of which are known only to Traditional Owners.

Hinchinbrook Island was identified as a priority site for the Reef Islands Initiative due to both its biodiversity and conservation value, as well as the pressure it is under from global and local stressors.

Recognising the significance of Traditional Owners’ inherent rights, interests and capacity, the Great Barrier Reef Foundation is partnering with the Traditional Owners to care for Hinchinbrook Island Country. The overarching objective of the project, developed with the Munamudanamy Working Group, is to elevate the profile of local Traditional Owners while restoring and protecting critical island habitats.

Key project partners include the local Traditional Owner groups – Bandjin and Girramay – along with the Giringun Aboriginal Corporation and Queensland Government (DESI, QPWS).

## Highlights:

- Since 2022, on-ground activities have focused on building a partnership with Girramay and Bandjin Traditional Owners to identify their vision for the island, develop a project plan and commence implementation. The first stage of the project plan has been implemented, which saw the completion of two scoping studies on the island’s cultural and ecological values and options for cultural-tourism experiences.
- A clear priority is transforming Cape Richards into a cultural asset for Traditional Owners to connect to Country and facilitate intergenerational knowledge-sharing and stewardship. The first step will be conducting an ecological and cultural assessment to identify existing resources to support cultural objectives, site stewardship/management needs and gaps and opportunities to progress.

- An on-country culture camp for Munamudanamy Traditional Owners was organised in partnership with QPWS, Traditional Owners (TO) and the Foundation. The camp brought TO families together to connect with Country and culture, and discuss Munamudanamy Working Group business. From an RII perspective, the camp was an invaluable touch point to strengthen relationships with project partners, gain a common understanding of QPWS and RII activities and explore

## Next Steps

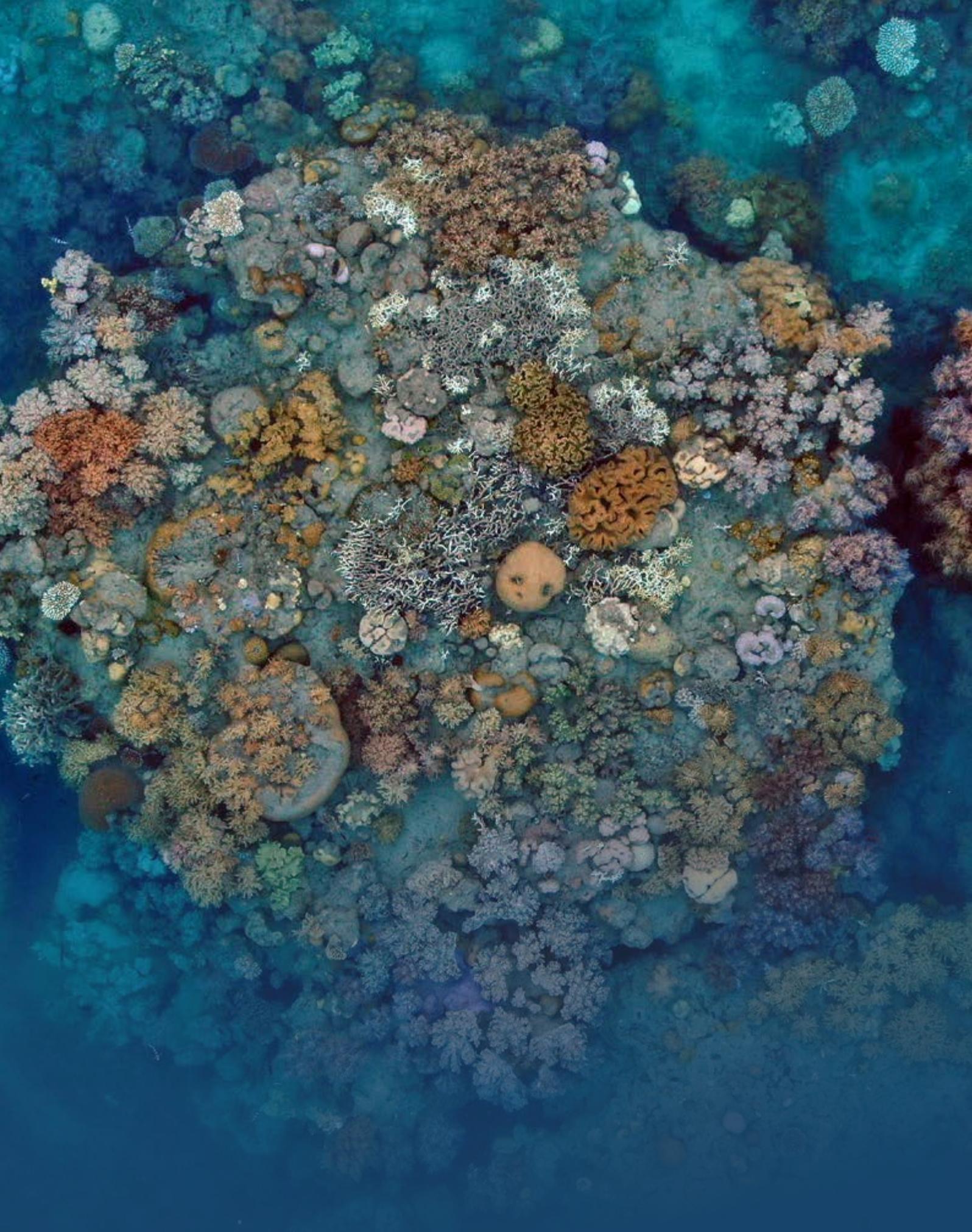
- Continue to strengthen the partnership with Girramay and Bandjin Traditional Owners through project governance and implementation.
- Establish the RII project delivery model with the appointment of a coordinator and procurement of a project lead for the Cape Richards ecological and cultural assessment.



Hinchinbrook Island visit, June 2022. Image credit: Jo Petersen, DES



Island Visit with Munamudanamy Working Group. Image Credit: Laura Smith, GBRF



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