



## Member's report on activities related to ICRI

Great Barrier Reef Foundation

Reporting period November 2016 – November 2017

1. **Contribution to the ICRI Plan of Action 2016-2018.** *Your responses to the following questions will assist the Secretariat in assessing contributions towards the major themes of the current ICRI Plan of Action (<http://www.icriforum.org/icri-secretariat/current>)*

### Theme 1 – “Help raise awareness of how coral reefs and related ecosystems help to fight climate change”

- *Goal 1-1: highlight the contribution of coral reefs, mangroves and seagrasses to mitigate and adapt to climate change and its impacts*

The Great Barrier Reef Foundation has not directly funded work in the current reporting period addressing this goal however we are involved in the International Blue Carbon Partnership (via CSIRO and DFAT) and are exploring work to cost the value of the Great Barrier Reef from a coastal protection perspective.

**Question:** Do you have examples of solutions provided by coral reefs and coastal systems to mitigate and adapt to climate change?

We are exploring opportunities, in conjunction with TNC and the Rockefeller Foundation, for valuing the coastal protection role of the GBR with the view to potentially piloting innovative financing options such as insurance products like the one launched in Mexico earlier this year.

**Question:** Are you planning to add in your NDC the importance of coral reefs / mangroves?

N/A

### Theme 3: “Help to reduce human threats to coral reefs and associated mangroves and seagrasses, by making greater use of regulatory tools”

- *Goal 3-1: promote legal frameworks for the protection of coral reefs and associated mangroves and seagrasses, with quantified targets and effective enforcement to protect these ecosystems*

**Question:** What are the legal frameworks for the protection of coral reefs and associated mangroves and seagrasses in place in your countries? If you already replied to the previous request, you don't need reply

The Great Barrier Reef Foundation has strong partnerships with the Australian Government, particularly the Department of Foreign Affairs & Trade, the Department of Environment & Energy and the Queensland Government Department of the Environment. We have a formal partnership with GBRMPA, via an MOU, and all of our activities from communication through science and on-ground conservation are undertaken together with GBRMPA. We are also members of the

Reef2050 Advisory Committee. GBRF will be commencing work in Ningaloo in 2018 in partnership with the Western Australian Government.

While GBRF does not itself play a role in the policy and legal framework setting for coral reef protection in Australia, in the last 12 months reporting period we have funded \$5m worth of reef projects, the outcomes of which are available to Government to inform coral reef policy and broader decision-making.

**Question:** Did you set quantified targets to protect their coral reefs, mangroves and seagrasses? And are you able to provide a % of what is currently protected in your country? Please define what you mean by protection?

The Great Barrier Reef Foundation has supported work in the last 12 months using the eReefs modelling tool to revise the Great Barrier Reef's regional water quality targets. We have also funded a resilience mapping project which is identifying priority reefs (based on their relative importance in driving recovery of the broader reef system) for coral reef protection in the Cairns and Townsville management areas.

- *Goal 3-2: encourage a ban on plastic microbeads in cosmetic products*

**Question:** How did you implement the recommendation to reduce plastic microbeads pollution in marine environment?

GBRF is currently not operating in the marine debris space but is planning to commence work in this area in 2018.

- *Goal 3-3: improve regulation and enforcement to reduce direct anthropogenic damage due to dredging and physical alteration of reef structures*

**Question:** are you working on this topic? If yes, could you please share with us your work. Please note that the information provided will help us to develop a recommendation for the next ICRI General Meeting. Please send us information as soon as possible,

N/A

- *Goal 3-4: promote the deployment of mooring devices limiting the mechanical destruction of coral reefs and seagrasses*

**Question:** are you working on this topic? If yes, could you please share with us your work. Please note that the information provided will help us to develop a recommendation for the next ICRI General Meeting. Please send us information as soon as possible,

GBRF will be commencing some reef protection work around critical islands of the GBR in 2018 and this is likely to include the deployment of mooring devices.

- *Goal 3-5: review issues related to the impact of sunscreens and other endocrine disruptors on coral reefs, and encourage the production of sunscreens that are proven not to damage coral reefs*

**Question:** are you working on this topic? If yes, could you please share with us your work. Please note that the information provided will help us to develop a recommendation for the next ICRI General Meeting. Please send us information as soon as possible.

N/A

#### Theme 4: “Monitor the state of reefs in order to better manage them”

- *Goal 4-2: better monitor the phenomena of coral bleaching*

**Question:** How did you implement the recommendation on addressing the decline in coral reef health due to global bleaching events?

The Great Barrier Reef Foundation is funding an initiative aimed directly at reducing the impact of coral bleaching through local scale environmental adjustments. We have piloted a surface film technology and shown it can reduce light entering the water by 30%. The film has just undergone environmental impact assessments and mechanical testing at the Australian Institute of Marine Science and has been demonstrated to be safe and effective. This could be a potential tool in the bleaching toolkit for application at highly valuable reef sites such as those that are vital for reseeded other reef areas.

We are also funding many initiatives aimed at boosting the resilience of the Great Barrier Reef. This includes a resilience mapping tool which uses a combination of monitoring and modelling to identify the reefs most important for resilience of the system. We have also funded, in partnership with CSIRO, AIMS, the Queensland Government and Australian Government, the development of the eReefs modelling tools which are critical diagnostic tools for predicting coral bleaching in the short term (ReefTemp tool) and long term (eReefs scenario modelling suite). The model outputs were recently assessed against the in-water bleaching survey data from the 2016 bleaching event on the GBR and the model outputs performed with a high degree of accuracy against the monitoring data. The three-dimensional nature of the model allows it to also model the likely impacts of coral bleaching at a range of depths, making it a powerful tool to complement in-water surveys. We have also funded work testing the feasibility of using remote sensing satellite technology to monitor the impacts of coral bleaching.

GBRF has also ramped up its focus on reef restoration science and practice in light of the last two years of catastrophic bleaching and extreme weather on the GBR. We have just completed the first successful trial of larval reseeded on the Great Barrier Reef, and I October 2017 released the first coral genome library to the world enabling researchers from around the globe to better understand the adaptability of corals and their symbionts. We are also working closely with DFAT to explore innovative new solutions (via DFAT’s recently announced \$5m Reef Innovation Fund) for building the health and resilience of coral reefs in the face of ever increasing climate impacts.

#### Theme 5: “Progress via education”

- *Goal 5-1: prepare for the 2018 International Year of the Reef (IYOR)*

**Question:** How did you implement the Recommendation designating 2018 as the third International Year of the Reef? Please let us also know what are you planning to celebrate IYOR2018.

The Great Barrier Reef Foundation is a member of the GBR2050 Communication working group developing an integrated plan of IYOR2018 activities. GBRF is intending on running the following IYOR2018 events:

##### Reef Hero Awards - September

- An Awards program to recognise inspirational and passionate Reef Heroes.
- Opportunity to profile those doing great things for our Reef & celebrate the good stories about our Reef
- Recognised with an event, badging & profile.
- Categories to include: Community; Tourism; Science; Farming; Boating / Fishing / Shipping; Business / Corporate; Indigenous; Leadership; Young Leader; Collaboration; Innovation and International.

**Year of the Reef stamp**

- An application has been made for a series of stamps issues by Australia Post to recognise the international Year of the Reef and our unique position as custodians to the Great Barrier Reef.
- The stamps would profile the unique creatures on our Reef OR Well known Australian artists could be commissioned to create a series of stamps.

**TEDxGreatBarrierReef –October**

- TEDx has never been held on the Great Barrier Reef.
- TEDxGreatBarrierReef would be the curation of suite of short, carefully prepared talks that are Reef idea-focused to provoke conversations that matter.
- It would be – multidisciplinary, one day only and an invitation only event.

**MyReef App - June**

- A digital game based application developed for primary school aged children that inspires a love and respect for the Great Barrier Reef, empower them to make positive change.
- The app will integrate across the Australian curriculum (primarily in the areas of science, maths, geography, technology and art) allowing it to be used in conjunction with in-classroom learning and activities.
- There is a great need in developing an educated and engaged Queensland community that understands and supports the protection and preservation of the Great Barrier Reef. No more is that seen than in our children who already have a natural wonder and curiosity for what is essentially in their backyard. Through children, there is a flow on effect to parents, teachers and the wider community which can create further understanding and awareness.

**Google Expedition on the Great Barrier Reef – June**

- With Google Expeditions, students can take field trips right from their classroom.
- In development are a series of additional expeditions on the Great Barrier Reef – to places students could normally never go to like Raine Island, the largest green sea turtle rookery in the southern hemisphere.

**Community Education & Engagement events**

- Three key events will be included with an installation and engagement activities.
  - › World Science Festival – March
  - › Commonwealth Games – April
  - › Royal National Show (Ekka) - August
- Visitors to these events will have the opportunity to have a ‘reef experience’ while at the event to gain an understanding of how amazing our Great Barrier Reef is.
- The events can also play a significant role in raising the awareness of the threats to Reef such as of single use plastics and what we can all do to help.

**Please also list the educational material that you’ve developed in the past, so we can share it on the IYOR website.**

**Educational material that you’ve developed**

- Videos - [https://www.youtube.com/channel/UCqbejMIJDgoq\\_UQ4BewPe5w](https://www.youtube.com/channel/UCqbejMIJDgoq_UQ4BewPe5w)

- Reef Pocket Guide - <https://www.barrierreef.org/uploads/Reef%20Pocket%20Guide%20A4.pdf>
- Chatterbox - <https://www.barrierreef.org/uploads/Chatterbox%20w%20instructions.pdf>
- Colour in posters - <https://www.barrierreef.org/uploads/Colouring%20Posters%20x%204.pdf>
- Website - <https://www.barrierreef.org/the-reef>

In 2018 we will also release:

- MyReef App; and
- Google Expeditions on the Great Barrier Reef

**Question:** Would you like to report on one of your activities during the ICRI GM meeting?

It is a little early for us to present on our events as they are in preliminary planning phase only.

2. **Publications.** Please list relevant publications/reports (related to the ICRI plan of action) you have released during this reporting period.

**GBRF commissioned reports:**

- At what price? The economic, social and icon value of the Great Barrier Reef, Deloitte Access Economics, 2017

**2017 Publications from GBRF funded science projects**

1. Brodie J, Chan CX, De Clerck O, Cock JM, Coelho SM, Gachon C, Grossman AR, Mock T, Raven J, Smith AG, Yoon HS, Bhattacharya D (2017) The algal revolution. *Trends in Plant Science*, accepted for publication 18 May 2017.
2. Lin M-F, Moya A, Ying H, Chen CA, Cooke K, Ball EE, Forêt S, Miller DJ (2017) Analyses of corallimorpharian transcriptomes provide new perspectives on the evolution of calcification in the Scleractinia (corals). *Genome Biology and Evolution* 9:150-160.
3. Katharina E Fabricius, Sam HC Noonan, David Abrego, Lindsay Harrington, Glenn De'ath (2017). Low recruitment due to altered settlement substrata as primary constraint for coral communities under ocean acidification. *Proc. R. Soc. B*, 284 (1862): 20171536
4. Smith, J., Richter, C., Fabricius, K., and Cornils, A. (2017). "Pontellid copepods, Labidocera spp., affected by ocean acidification – a field study at natural CO2 seeps." *PlosONE*.12(5): e0175663
5. Bryson M, Ferrari R, Figueira W, Pizarro O, Madin J, William S and Byrne M. (2017) Characterisation of measurement errors using structure-from-motion and photogrammetry to measure marine habitat structural complexity. *Ecology and Evolution*. In press.
6. Kennedy, EV., Lewis, BE., Ordoñez-Alvarez, A. & Diaz-Pulido, G. 2017. Comparison of recruitment tile materials for monitoring coralline algae responses to a changing climate. *Marine Ecology Progress Series*, vol. 569, p 129-144.
7. Kennedy, EV., Ordoñez-Alvarez, A. & Diaz-Pulido, G. 2017. Coral bleaching in the southern inshore Great Barrier Reef: a case study from the Keppel Islands. *Journal of Marine and Freshwater Research*, <https://doi.org/10.1071/MF16317>.
8. Karlo Hock, Nicholas H. Wolff, Juan C. Ortiz, Scott A. Condie, Kenneth R.N. Anthony, Paul G. Blackwell, Peter J. Mumby (2017) Connectivity and systemic resilience of the Great Barrier Reef. *PLoS Biology*

3. **General Information.** (Note that this information will be posted on the ICRI website on your member page: <http://www.icriforum.org/about-icri/members-networks>.)

Member type (Country / Organization):	Organisation
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*Thank you very much for sharing your valuable experiences and information with ICRI.*