



## International Coral Reef Initiative (ICRI)

Member's Report | 38<sup>th</sup> General Meeting

9<sup>th</sup> – 13<sup>th</sup> September 2024 Jeddah, – Kingdom of Saudi Arabia

**Reporting Period: 2023 & 2024**

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### A. Member Information:

- Name of ICRI member: [Mars, Incorporated](#)
- Name of person(s) completing member's report: [Alicia McArdle / Emma Longden](#)
- Position/Title: [Marine Program Manager / Marine Program Officer](#)
- Email: [alicia.mcardle@effem.com](mailto:alicia.mcardle@effem.com) / [emma.longden@effem.com](mailto:emma.longden@effem.com)
- Are you a designated ICRI Focal Point:  Yes  No
  - If no, please indicate who you are completing the form on behalf of:
- Which was the last General Meeting you attended: [2022 \(virtual event\)](#)
- Will you be attending the 38<sup>th</sup> ICRI General Meeting in Jeddah, Kingdom of Saudi Arabia:  Yes  No
- Member social media:
  - LinkedIn: [@mars](#)
  - Instagram: [@shebahopegrows](#)

**B. Reporting on the implementation of the ICRI Plan of Action 2021-2024: turning the tide for coral reefs.** *Your responses will help inform the Secretariat about members' contributions toward the current Plan of Action. You can download the ICRI Plan of Action here: <https://icriforum.org/documents/plan-of-action-2021-2024/>*

What are the main contributions you, as an ICRI member, have made to the ICRI Plan of Action?

*Theme 1 - Preparing for the Future: Promoting Resilient Coral Reefs*

*Theme 2 - Coral Reef Science and Oceanography: Advancing and Utilizing the Latest Science and Technology*

*Theme 3 - Local Threat Reduction: Integrating Response Planning Frameworks*

*Theme 4 - Diversity and Inclusion: Expanding the Coral Reef Community*

*Answer:*

Mars and our partners have made several contributions to the ICRI plan of action, and our work continues to prepare for the future via promoting resilient reefs. In addition to ongoing research exploring priority areas for conservation and opportunities to enhance climate resilient restoration, the work across our global sites supports the recovery of degraded reefs through a resilience-based approach. Via out-planting of climate resilient coral of opportunity and the establishment of a global network of scientists, Mars have been successful in demonstrating how coral restoration can be achieved at ecologically relevant scales which is paramount to preventing the loss of these ecosystems in a changing world.

Mars monitoring methods have been tried and tested at our largest restoration site within the Spermonde Archipelago, Indonesia, and learnings from these long-term efforts have been pivotal in finalizing our recommended approaches to assessing the performance of restoration at scale. In addition to the standard monitoring program, techniques to assess restoration performance are informed by our global research program, involving over 40 scientists from 28 different research institutes. Being research-focused and driven by innovation, this program includes the evaluation of new monitoring techniques that will provide greater accuracy, precision, and representation of ecological restoration that are cost-effective in their implementation.

Overall, what makes the Mars approach unique and successful in achieving global restoration at scale is the invaluable partnerships between our program and NGO's, governments, individuals and local and indigenous communities. Through funding, but more importantly, opportunities for local restoration training across global sites, Mars ensures that voices of local people are heard within decision making at all levels, whilst fully engaging communities in the restoration efforts, providing site-specific management frameworks to reduce local threats and ensures sensitivity to honour social and cultural ties of natives to the reef systems.

- (ICRI) What are your upcoming priorities for coral reefs?

*Answer:*

Our vision at Mars is to, by 2030, establish a global network of hubs professionalizing coral restoration training, pushing the boundaries of restoration science, and amplifying global capacity to secure a resilient future for our precious coral reefs. We aim to continue expanding global effort of restoration using the MARRS approach through the work of our partners, achieving a 1:5 Mars led to Partner led restoration ratio by 2027 with 6 ha.y-1 of reef restored, and 250 new people trained.y-1. Our 2027 goals also include establishing 5 global coral reef restoration hubs representing 50% of global coral reef regions, expanding our restoration footprint and global reach to operate in 20 different countries, to double the current restoration footprint of Mars (0.5 ha.y-1) and our partners (0.25 ha.y-1) and to continue to drive world leading science that underpins and informs global restoration efforts via annual participation in international committees, societies, conferences and publication of scientific studies. Through research and innovation, we also aim to develop our restoration technique to improve resilient restoration whilst identifying priority areas for restoration in a changing world.

**C. Reporting on the Restoration of Coral Reefs** (*Target 2 GBF/Action Point 3 Coral Reef Breakthrough*)

- (ICRI) Are you able to estimate the total area (km<sup>2</sup>) of coral reef under active restoration and the total area you consider to be 'restored', as a result of your organisation/country's in 2023?
  - Total area under active restoration in 2023: 0.016837 km<sup>2</sup>
  - Total area considered to be restored in 2023: 0.077769 km<sup>2</sup>
- (ICRI) If available, please provide further information on the total area considered to be restored, and under active restoration for the total period of the restoration programme, including the timeframe:

*Answer:*

Across all sites and in collaboration with partners, in 2023, 0.0168 km<sup>2</sup> (or 1.68 ha) of reef was under active restoration, with a further 0.0777km<sup>2</sup> (or 7.77ha) considered to be fully restored as both reef star installation and/or maintenance had been completed.

In the previous year of 2022, 0.04257 km<sup>2</sup> (or 4.25 ha) of reef was under active restoration, with a further 0.03519 km<sup>2</sup> (or 3.51ha) of reef area was considered to be fully restored.

So far in 2024, 0.0062km<sup>2</sup> (or 0.62 ha) of coral reef is under active restoration using the MARRS approach. None of this is yet to be classified as fully restored as active installation of reef stars and/or maintenance is still taking place.

Both restored sites and sites still under active restoration of Mars and our partners are documented, allowing us to calculate the overall footprint of coral restoration using the MARRS approach over time across global reef systems. We categorize restoration projects into five tiers (see table) to monitor partners' on-ground restoration impact and identify enablers and barriers. This data helps optimize our targeted approach for greater restoration impact.

<b>Tier</b>	<b>Definition</b>
<b>1</b>	Mars Core Program (Delivered directly through MSS build teams, Mars-funded)
<b>2</b>	Partners in direct collaboration [including funded] (MARRS-trained)
<b>3</b>	Partners directly trained through Mars and under Mars direct guidance
<b>4</b>	Organisations trained by partners who received MARRS training
<b>5</b>	Organisations using Reef Stars but with no previous contact with the Mars team

Since its implementation in the Spermonde Archipelago in 2016, we estimate that 9.46 ha of the global reef sites (Tier 1-4) undergoing restoration using the MARRS approach reefs have been restored, while a further 0.62 ha are considered to be under active restoration.

- (ICRI) For the purpose of the above, please provide definitions for how your programme/organisation/country considers coral reefs to be:
  - A) Under active restoration
  - B) Restored

*Answer:*

*Under active Restoration:*

The total reef area considered to be under active restoration, in our opinion, are any restoration sites which are undergoing reef star installation or active maintenance/ monitoring. In addition to this, any sites which have planned builds in that year are classed as still being under active restoration.

*Restored:*

We measure the total area restored as the area of restoration projects which have, both completed the installation of reef stars, and completed maintenance

of the finished reef star site (usually occurring within 3-4 months post installation).

Using the Mars technique we consider an area under restoration or as being restored as having 15 coral fragments attached per meter squared. We do not calculate restoration as corals per expanded unit area as seen and used by other organizations (e.g. 1 coral per 10m<sup>2</sup> equalling 10m<sup>2</sup> of reef restored). Please contact us if any further information is needed but to the best of our knowledge there is no consensus yet on how much reef are is restored by planting individual coral fragments.

Does your country have any restoration policies or regulations?

Many locations have outdated and insufficient regulations for coral reef restoration, resulting in inadequate oversight of restoration efforts. In addition, the absence, limitations, or differences among regulations between countries prevents the development and implementation of effective regional coral reef conservation strategies.

- (ICRI) Please describe the restoration policies or regulations (if any) that are in place in your country.

*Answer:*

N/A

#### **D. The Global Coral Reef Monitoring Network (GCRMN)**

The production of future GCRMN reports, both at the regional and global level, relies on the ongoing support of data contributors who are willing to share their coral reef monitoring data for this purpose. As such, from 2024 to 2026, the GCRMN will undertake the rigorous process of developing the **Status of Coral Reefs of the World: 2025** global report, including an extensive data collation process.

Do you have data to contribute to the upcoming GCRMN global report?

- Please provide the contact information for the data providers to allow for the GCRMN data collation team to request data and discuss the process of data contribution.

*Please add further contacts as needed.*

*Answer:*

*Contact Name: Prof David Smith*



Organisation: Mars Inc  
Email Address: david.smith@effem.com

Contact Name:  
Organisation:  
Email Address:

Contact Name:  
Organisation:  
Email Address:

## E. Capacity Building & Communications

### Have you found the ICRI #ForCoral Webinar Series useful?

Through 2024, ICRI has hosted multiple webinars that aim to share knowledge and foster collaboration across critical topics concerning the conservation, protection, and restoration of coral reefs. These webinars form the #ForCoral webinar series, and topics include the 4th Global Bleaching Event, impacts of land-based sources of pollution and National Biodiversity Strategies and Action Plans.

The full list of webinars and recordings can be found here: <https://icriforum.org/forcoral-webinar-series/>

- (ICRI) Did you attend any of the series' webinars, and if so which topics have you found the most useful and engaging? If you did not attend the webinars, please explain why, and how what we could have done better.

Answer:

No - the scheduled days and times didn't work with our schedules. It's great that they have been recorded and our team can go back and watch previous sessions when we get a chance.

- (ICRI) Do you have any suggestions or request for topics that you wish for ICRI to host as part of this series? If you have a specific topic in mind, and would like to host a webinar, please indicate below.

Answer:

### Have you found the ICRI communications useful?

- (ICRI) Do you find the ICRI Monthly Round of News Useful? If yes, what do you like about it and how would you suggest improving ICRI's communications?

Answer:

Yes – it's a great round-up of recent coral-related events and news. I like the regularity of the newsletters and the layout

## F. Kunming-Montreal Global Biodiversity Framework

ICRI has continually supported the Convention on Biological Diversity and the Post-2020 process, developing a recommendation for coral reef indicators to be included in the Global Biodiversity Framework and supporting Parties during the negotiation process. Following the Framework's adoption in 2022, ICRI's support now aims to support parties in implementing the framework, especially through National Biodiversity Strategies and Action Plans (NBSAPS) and the Marine and Coastal Work Programme.

In 2024, ICRI released [A Guide for Integrating Coral Reefs and Associated Ecosystems into National Biodiversity Strategies and Action Plans](#) to support coral reef countries to integrate coral reefs and associated ecosystems into their NBSAPs.

- (ICRI) Did you use read, use, and/or apply the Guide on integrating coral reefs and associated ecosystems into National Biodiversity Strategies and Action Plans (NBSAPs) useful? *Where possible, indicate specific elements that were useful or alternatively provide information if you did not find the guide useful.*

Answer:

N/A

- (ICRI) Did you revise your current National Biodiversity Strategies and Action Plans (NBSAP) to include coral reefs? **N.B.** *if you are not a country representative, are you working with national focal points to help update their NBSAPs? Please provide further details.*

Answer:

N/A

- (ICRI) How are you planning to implement the Kunming-Montreal Global Biodiversity Framework? Please list the target(s) and decisions that your work attributes to.

Answer:

N/A

**G. Upcoming events**

*Please tick the most any events that you will be, or are planning to attend:*

- September 10<sup>th</sup> – 24<sup>th</sup>: 79th Session of the UN General Assembly (UNGA 79)
- September 23<sup>rd</sup> – 26<sup>th</sup>: GEF International Waters Conference
- October 13<sup>th</sup> – 18<sup>th</sup>: 7<sup>th</sup> International Marine Conservation Congress (IMCC7)
- October 21<sup>st</sup> – November 1<sup>st</sup>: CBD COP16
- November 4<sup>th</sup> – 8<sup>th</sup>: 77<sup>th</sup> Annual meeting of the Gulf and Caribbean Fisheries Institute (GCFI77)
- December 10<sup>th</sup> – 12<sup>th</sup>: The International Mangrove Conservation and Restoration Conference
- December 9<sup>th</sup> – 13<sup>th</sup>: Reef Futures
- June 9<sup>th</sup> – 13<sup>th</sup> 2025: United Nations Ocean Conference
- October 9<sup>th</sup> – 15<sup>th</sup> 2025: IUCN World Conservation Congress
- Other

Please list any upcoming regional / international events relevant to ICRI that your organisation plans to attend:

*Answer:*

**H. Publications.** Please list relevant publications / reports you have released recently (+ add a link if possible)

Publication	Author	Year	Link
Restoration as a meaningful aid to ecological recovery of	Suggett et al (2024)	2024	<a href="https://buildingcoral.com">Restoration as a meaningful aid to ecological recovery of coral reefs (buildingcoral.com)</a>



coral reefs			
Coral restoration can drive rapid reef carbonate budget recovery	Lange et al (2024)	2024	<a href="#">Coral restoration can drive rapid reef carbonate budget recovery (buildingcoral.com)</a>
Assessing how metal reef restoration structures shape the functional and taxonomic profile of coral-associated bacterial communities	Strudwick et al (2024)	2024	<a href="#">fmars-11-1366971.pdf (buildingcoral.com)</a>
Impacts of plastic-free materials on coral-associated bacterial communities during reef restoration	Strudwick et al (2024)	2024	<a href="#">Impacts of plastic-free materials on coral-associated bacterial communities during reef restoration (wiley.com)</a>
Coral reef restoration in Indonesia: lessons learnt from the world's largest coral restoration nation	Watt-Pringle et al (2024)	2024	<a href="#">e8cb398f-77f2-40a7-afec-5c5048ba9eda_240705_150357.pdf (buildingcoral.com)</a>
Carbonate budgets induced by coral restoration of a Great Barrier Reef site following cyclone damage	Lendo et al (2024)	2024	<a href="#">Lendo-et-al-2024-Carbonate-budgets-induced-by-coral-restoration-of-a-Great-Barrier-Reef-site-following-cyclone-damage_fmars-10-1298411.pdf (buildingcoral.com)</a>
A review of the legal framework for coral reef restoration in Indonesia	Razak et al (2024)	2024	<a href="#">A review of the legal framework for coral reef restoration in Indonesia - ScienceDirect</a>
Experimental Observations And Prediction Of Wave Attenuation Using A Coral Reef Restoration Approach	Geldard et al (2024)	2024	<a href="#">View of Experimental Observations And Prediction Of Wave Attenuation Using A Coral Reef Restoration Approach (tudelft.nl)</a>
Variation in farming damselfish behaviour creates a competitive landscape of risk on coral reefs	Sheppard et al (2024)	2024	<a href="#">Variation in farming damselfish behaviour creates a competitive landscape of risk on coral reefs (royalsocietypublishing.org)</a>
Database for marine and coastal restoration projects in Australia and New Zealand	Purandare et al (2024)	2024	<a href="#">Database for marine and coastal restoration projects in Australia and New Zealand - Purandare - 2024 - Ecological Management &amp; Restoration - Wiley Online Library</a>

Mars Impact Report	MSS	2023	<a href="#">IMPACT REPORT 23 (canva.com)</a>
Impacts of plastic-free materials on coral-associated bacterial communities during reef restoration	Strudwick et al (2023)	2023	<a href="#">Impacts of plastic-free materials on coral-associated bacterial communities during reef restoration (buildingcoral.com)</a>
Effectiveness of coral reef restoration in wave attenuation applications	Lowe et al (2023)	2023	<a href="#">EFFECTIVENESS OF CORAL REEF RESTORATION IN WAVE ATTENUATION APPLICATIONS — the UWA Profiles and Research Repository</a>
Hold big business to task on ecosystem restoration Corporate reporting must embrace holistic, scientific principles	Lamont et al (2023)	2023	<a href="#">CombinedPDF Lamont_adh2610_accepted.pdf (bham.ac.uk)</a>
Rapid resource depletion on coral reefs disrupts competitor recognition processes among butterflyfish species	Keith et al (2023)	2023	<a href="#">Rapid resource depletion on coral reefs disrupts competitor recognition processes among butterflyfish species (royalsocietypublishing.org)</a>
Suppressed recovery of functionally important branching Acropora drives coral community composition changes following mass bleaching in Indonesia	Watt-Pringle et al (2022)	2022	<a href="#">Suppressed recovery of functionally important branching Acropora drives coral community composition changes following mass bleaching in Indonesia (buildingcoral.com)</a>
A roadmap to integrating resilience into the practice of coral reef restoration	Shaver et al (2022)	2022	<a href="#">A roadmap to integrating resilience into the practice of coral reef restoration (buildingcoral.com)</a>
HydroMoth: Testing a prototype low-cost acoustic recorder for aquatic environments	Lamont et al (2022)	2022	<a href="#">HydroMoth: Testing a prototype low-cost acoustic recorder for aquatic environments (buildingcoral.com)</a>
Enhancing automated analysis of marine soundscapes using ecoacoustic indices and machine learning	Williams et al (2022)	2022	<a href="#">Enhancing automated analysis of marine soundscapes using ecoacoustic indices and machine learning (buildingcoral.com)</a>
Mars and Coral Reef	McArdle et al	2022	<a href="#">MARS-AND-CORAL-REEF-RESTORATION-</a>

Restoration: Learnings From 15+ Years of Trial and Error	(2022)		<a href="#">LEARNINGS-FROM-15-YEARS-OF-TRIAL-AND-ERROR.pdf (buildingcoral.com)</a>
Multi-dimensional approaches to scaling up coral reef restoration	Lamont et al (2022)	2022	<a href="#">Multi-dimensional approaches to scaling up coral reef restoration (buildingcoral.com)</a>
The sound of recovery: Coral reef restoration success is detectable in the soundscape	Lamont et al (2022)	2022	<a href="#">The sound of recovery: Coral reef restoration success is detectable in the soundscape - Lamont - 2022 - Journal of Applied Ecology - Wiley Online Library</a>
Coral reef restoration in Indonesia: A review of policies and projects	Razak et al (2022)	2022	<a href="#">Coral reef restoration in Indonesia: A review of policies and projects - ScienceDirect</a>
Limiting motorboat noise on coral reefs boosts fish reproductive success	Nedelec et al (2022)	2022	<a href="#">Limiting motorboat noise on coral reefs boosts fish reproductive success (nature.com)</a>
Coral restoration and adaptation in Australia: The first five years	McLeod et al (2022)	2022	<a href="#">Coral restoration and adaptation in Australia: The first five years   PLOS ONE</a>
Removal of macroalgae from degraded reefs enhances coral recruitment	Smith et al (2022)	2022	<a href="#">Removal of macroalgae from degraded reefs enhances coral recruitment - Smith - 2022 - Restoration Ecology - Wiley Online Library</a>
A stratified transect approach captures reef complexity with canopy-forming organisms	Smith et al (2022)	2022	<a href="#">A stratified transect approach captures reef complexity with canopy-forming organisms   Coral Reefs (springer.com)</a>

**Papers which are in the works but not yet published:**

Publication	Author	Status
Survival rates of branching Acropora morphologies on coral rubble stabilization structures Restoration Ecology	Watt-Pringle et al	In Press
Impacts of 'Reef Star' coral restoration on habitat complexity at multiple scales. Restoration Ecology	Vida et al	In Press
Benthic communities on restored coral reefs confer equivalent aesthetic value to healthy reefs. Scientific Reports	Alisa et al	In Review
Reefs in Peril: Why critics miss the mark on global restoration efforts	Peixoto et al	Submitted



**I. ICRI Member Feedback.** What do you find most valuable about being a member of ICRI as well as completing the ICRI member reports? If you have any ideas to improve the Member Reports, please list below:

Answer:

Having access to the latest information and emergent issues in the world of coral reefs. Also as a platform to inform others of the efforts our company are making and the desire to actively collaborate across organisations.

**J. Contact information & member information.** (Note that this information will be posted on the ICRI website on your member page: <https://icriforum.org/members/>).

*Please use the table below to provide us updates to your member’s focal points as well as the blank cells to indicate changes to information (please add more rows, as needed):*

<b>Focal Point 1:</b>	
Name:	<b>Alicia McArdle</b>
Title/Organisation:	<b>Marine Program Manager, Mars Incorporated</b>
Email:	<b>alicia.mcardle@effem.com</b>
<b>Focal Point 2:</b>	
Name:	<b>Professor David Smith</b>
Title/Organisation:	<b>Senior Director Mars Sustainable Solutions and Chief Marine Scientist, Mars Incorporated</b>
Email:	<b>david.smith@effem.com</b>
<b>Focal Point 3:</b>	
Name:	
Title/Organisation:	
Email:	
<b>Member page updates:</b>	
Section	Update

Thank you very much for sharing your valuable experiences and information with ICRI. Members reports, meeting outputs and resources will be uploaded to: <https://icriforum.org/events/icrigm38/>