MARRS Monitoring Programme

Our restoration teams have established effective global partnerships with Local Communities, NGOs, and Government Organisations to enhance global scalability. We have developed and implemented standardised monitoring procedures that can accurately assess the performance of these restoration efforts.

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 finalising our recommended approaches to assessing the performance of restoration at ecologically relevant scales. We monitor benthic composition, live coral cover, coral mortality and recruitment, and numerous fish community metrics such as biomass, size frequency distribution and species assemblages, to provide a detailed account of changes in the reef community in response to restoration as benchmarked against both positive and negative controls. As outlined in the MARRS Standard Operating Procedures (SOPS), a range of standardised and well-accepted monitoring techniques are used. These techniques, based on standard reef monitoring methods utilised by the global scientific community, also take advantage of modern advancements such as AI, and have been refined over a number of years. Their ease of repeatability enables all data to be used in longer term assessment of restoration success.

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. Before new approaches are subjected to detailed scientific scrutiny they pass through our innovation pipeline. The aim of this pipeline is to identify new solutions, undertake feasibility assessments, and to test the proposed solutions under field conditions whilst our team considers their applicability across the regions where we work and any potential barriers to adoption by partners who we work with. Such innovations include the use of AI in the assessment of reef soundscapes or image characterisation, and the use of eDNA within a restoration setting. We constantly strive to drive innovation and welcome scientific collaboration in this area (see Innovation).

Another exciting aspect of Mars' long-term monitoring program involves continuously assessing the progress and scaling of MARRS-focused restoration efforts among our trained partners. We categorize restoration projects into five tiers (outlined in Table 1 below) to monitor partners' on-ground restoration impact and identify enablers and barriers. This data helps optimize our targeted approach for greater restoration impact.

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