

ID: W3003324864

TITLE: Coral restoration ? A systematic review of current methods, successes, failures and future directions

AUTHOR: ['Lisa Boström?Einarsson', 'Russell C. Babcock', 'Elisa Bayraktarov', 'Daniela Ceccarelli', 'Nathan Cook', 'Sebastian C. A. Ferse', 'Boze Hancock', 'Peter Harrison', 'Margaux Y. Hein', 'Elizabeth C. Shaver', 'Adam K. Smith', 'David J. Suggett', 'Phoebe J. Stewart?Sinclair', 'Tali Vardi', 'Ian Mcleod']

ABSTRACT:

Coral reef ecosystems have suffered an unprecedented loss of habitat-forming hard corals in recent decades. While marine conservation has historically focused on passive habitat protection, demand for and interest in active restoration has been growing in recent decades. However, a disconnect between coral restoration practitioners, coral reef managers and scientists has resulted in a disjointed field where it is difficult to gain an overview of existing knowledge. To address this, we aimed to synthesise the available knowledge in a comprehensive global review of coral restoration methods, incorporating data from the peer-reviewed scientific literature, complemented with grey literature and through a survey of coral restoration practitioners. We found that coral restoration case studies are dominated by short-term projects, with 60% of all projects reporting less than 18 months of monitoring of the restored sites. Similarly, most projects are relatively small in spatial scale, with a median size of restored area of 100 m<sup>2</sup>. A diverse range of species are represented in the dataset, with 229 different species from 72 coral genera. Overall, coral restoration projects focused primarily on fast-growing branching corals (59% of studies), and report survival between 60 and 70%. To date, the relatively young field of coral restoration has been plagued by similar 'growing pains' as ecological restoration in other ecosystems. These include 1) a lack of clear and achievable objectives, 2) a lack of appropriate and standardised monitoring and reporting and, 3) poorly designed projects in relation to stated objectives. Mitigating these will be crucial to successfully scale up projects, and to retain public trust in restoration as a tool for resilience based management. Finally, while it is clear that practitioners have developed effective methods to successfully grow corals at small scales, it is critical not to view restoration as a replacement for meaningful action on climate change.

SOURCE: PloS one

PDF URL:

[https://storage.googleapis.com/plos-corpus-prod/10.1371/journal.pone.0226631/1/pone.0226631.pdf?X-Goog-Algorithm=GOOG4-RSA-SHA256&X-Goog-Credential=wombat-sa%40plos-prod.iam.gserviceaccount.com%2F20210222%2Fauto%2Fstorage%2Fgoog4\\_request&X-Goog-Date=20210222T094418Z&X-Goog-Expires=3600&X-Goog-SignedHeaders=host&X-Goog-Signature=1f730a1f12475e7af29bab9c4f6f8dd85aecefaebc1fbb8b10fb4c0df4adcb04d2577398606c8767be6cd340bade266c80b24183bbcfef957578530f6c6c882381c0062cfd34bc737e2ceee18e503e599ba519b7f7e2a17538c3746a302224427458b73d06e4fd52682643a90fbcfc085dfcbe851ad34d38ef9a248392bea48a77d4bac16101ce27a9220ca1934e17cf3be9f7f4eea3c71066584f5273e1f6146c2711a1228e44971a422000cede095915e83985269424b0cabf444c5007d546057b17ec34cced89ba9b81a6928b7b87fb7dc33ccf7deaeb32cd6b7bc9d79c9d5f032b4a4b26e795646d241f8c6d03e4583c7056d9f7f1b35499f42f0478d174](https://storage.googleapis.com/plos-corpus-prod/10.1371/journal.pone.0226631/1/pone.0226631.pdf?X-Goog-Algorithm=GOOG4-RSA-SHA256&X-Goog-Credential=wombat-sa%40plos-prod.iam.gserviceaccount.com%2F20210222%2Fauto%2Fstorage%2Fgoog4_request&X-Goog-Date=20210222T094418Z&X-Goog-Expires=3600&X-Goog-SignedHeaders=host&X-Goog-Signature=1f730a1f12475e7af29bab9c4f6f8dd85aecefaebc1fbb8b10fb4c0df4adcb04d2577398606c8767be6cd340bade266c80b24183bbcfef957578530f6c6c882381c0062cfd34bc737e2ceee18e503e599ba519b7f7e2a17538c3746a302224427458b73d06e4fd52682643a90fbcfc085dfcbe851ad34d38ef9a248392bea48a77d4bac16101ce27a9220ca1934e17cf3be9f7f4eea3c71066584f5273e1f6146c2711a1228e44971a422000cede095915e83985269424b0cabf444c5007d546057b17ec34cced89ba9b81a6928b7b87fb7dc33ccf7deaeb32cd6b7bc9d79c9d5f032b4a4b26e795646d241f8c6d03e4583c7056d9f7f1b35499f42f0478d174)

CITED BY COUNT: 336

PUBLICATION YEAR: 2020

TYPE: article

CONCEPTS: ['Coral', 'Coral reef', 'Restoration ecology', 'Habitat', 'Environmental resource management', 'Reef', 'Ecosystem services', 'Ecology', 'Ecosystem', 'Geography', 'Biology', 'Environmental science']