Results of the 2023 Survey of Coral Restoration Practitioners Needs

Authors: Nathan Cook[1], Kailash Cook[2], Tali Vardi[3], Anastazia T. Banaszak[4], David Suggett[1], Michelle Loewe[5]

Affiliations:

1. KAUST Coral Restoration Initiative
2. University of Queensland
3. Coral Restoration Consortium
4. Universidad Nacional Autónoma de México
5. National Oceanic and Atmospheric Administration

Suggested citation: *Cook N, Cook K, Vardi T, Banaszak A, Suggett D, Loewe M. 2024. Results of the 2023 Survey of Coral Restoration Practitioner Needs. Coral Restoration Consortium.* crc.world

Executive Summary

Globally, coral reef restoration activity continues to grow at an incredible rate in response to the fundamental need to preserve and recover reef ecosystem health. Thousands of dedicated practitioners, researchers, and resource managers continue to develop and adopt an ever-advancing toolbox of procedures and processes to increase reef restoration scale and effectiveness. In 2023, the CRC undertook a strategic review of its structure and operations, and as part of this process, conducted an October survey to better understand current needs of the restoration community. The results shown below are helping the CRC, and others, meet those needs.

A series of questions identified that ***storytelling and communications***, ***coordination with other regional groups***, **and** ***ensuring genetic diversity*** were top ranked general needs. Digging in further, the survey also sought to understand the highest priority learning needs in the reef restoration community. The top ranked learning needs were *learning the* ***latest techniques in coral interventions*** *and restoration* (54%), *learning* ***how to scale up to meet ecological restoration goals*** (49%)*, and learning how to* ***incorporate sexual reproduction*** *into projects* (32%). Regional responses (Figure 6) will help guide and focus CRC support within its Regional Groups.

Efforts for the next phase of the CRC (2024 and beyond) have already begun to align with these survey outcomes with the recent launch of the CRC's Storytelling Hub. The CRC will continue to focus on expanding and deepening its network of Regional Groups, which were identified by the survey responses as the most-desired type of engagement from the CRC followed by a desire to continue CRC webinars, and using social media to communicate the latest techniques in coral restoration. Finally, **77% of the Reef Futures Symposium attendees felt that attendance impacted their organization's coral reef restoration practice**.

The CRC is committed to actively supporting and serving the reef restoration community by listening to and responding to needs and ensuring that the field of coral reef restoration moves forward to shift coral reef ecosystems toward a positive trajectory.

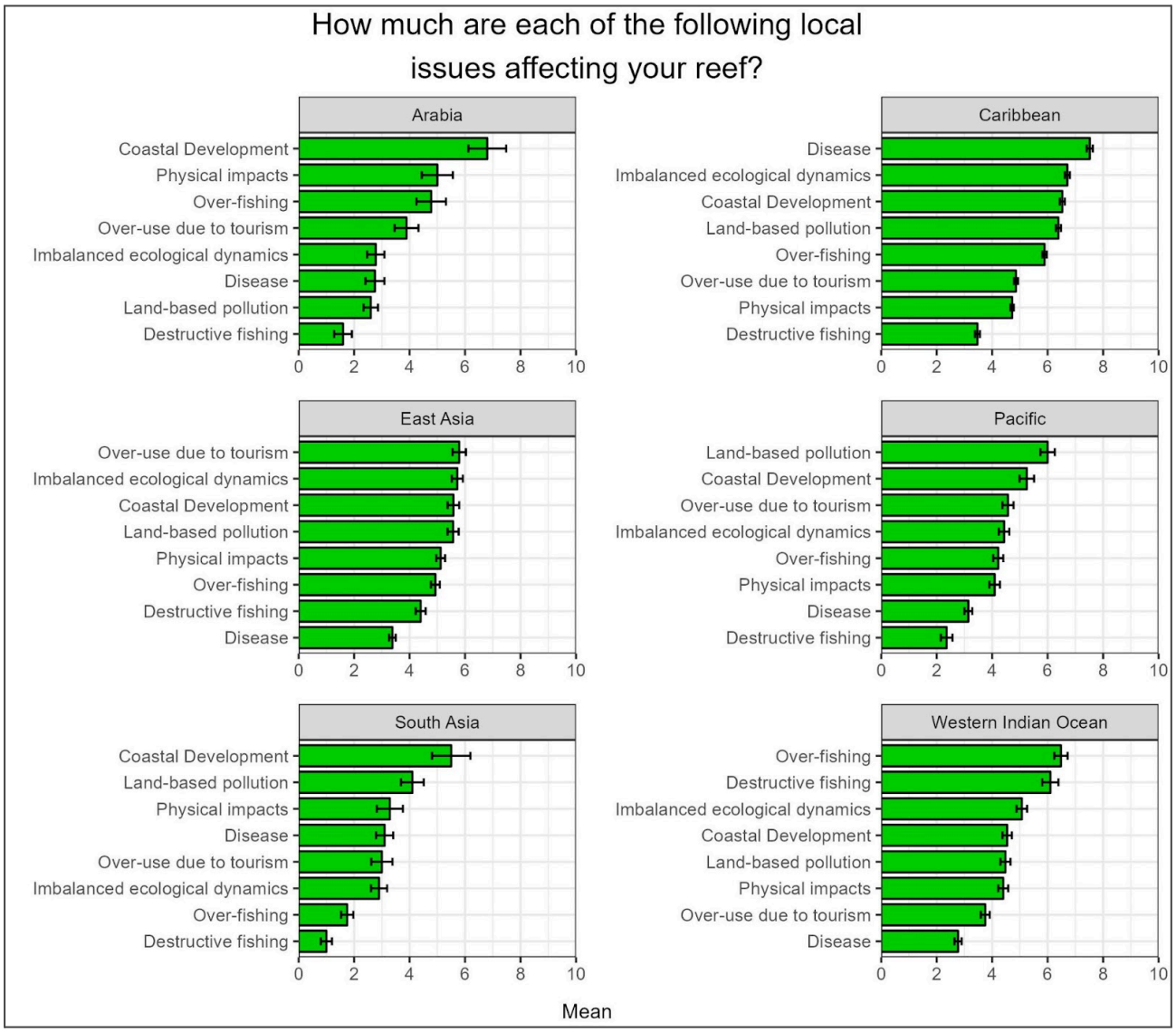
Key Results

The following three figures are key results of the survey including responses to questions about local issues affecting reefs, learning needs in the upcoming year, and usefulness of CRC Guides. The results of the full survey are discussed in the following report beginning on page 6.

While the prevailing threats to coral reefs globally include effects of climate change, it is important for the CRC to understand issues affecting reefs at the local level. While the CRC aims to create products that are widely applicable, understanding issues at the local reef level provides context for how restoration practitioners will utilize CRC products. As can be seen in Figure 2, top issues affecting local reefs vary significantly by region, providing further confirmation for the CRC to focus at the regional level.

Figure 2 shows the community's learning needs which helps the CRC decide what products to focus on. Finally, Figure 3, shows the relative utility of CRC Guides. These answers help us determine which format and topics have succeeded, so we can continue to improve our offerings. Thank you again to all those that completed our survey!

Figure 2 (as seen on pg.10): Responses to "how much are each of the following LOCAL issues affecting your reef(s)?". This graph illustrates the mean score of responses on a 10 point likert scale.



"Applaud you for creating an open and receptive, easy to enter CRC. It feels grounded, direct, and reduces jargon in its communications, products, and experiences which is important and awesome. Thank you!! " - Survey Respondent

Figure 5 (as seen on pg.15): “What are your organization's top three LEARNING NEEDS for 2024”. This graph illustrates the number of responses for each learning need. (For regional responses see Figure 6 in full report.)

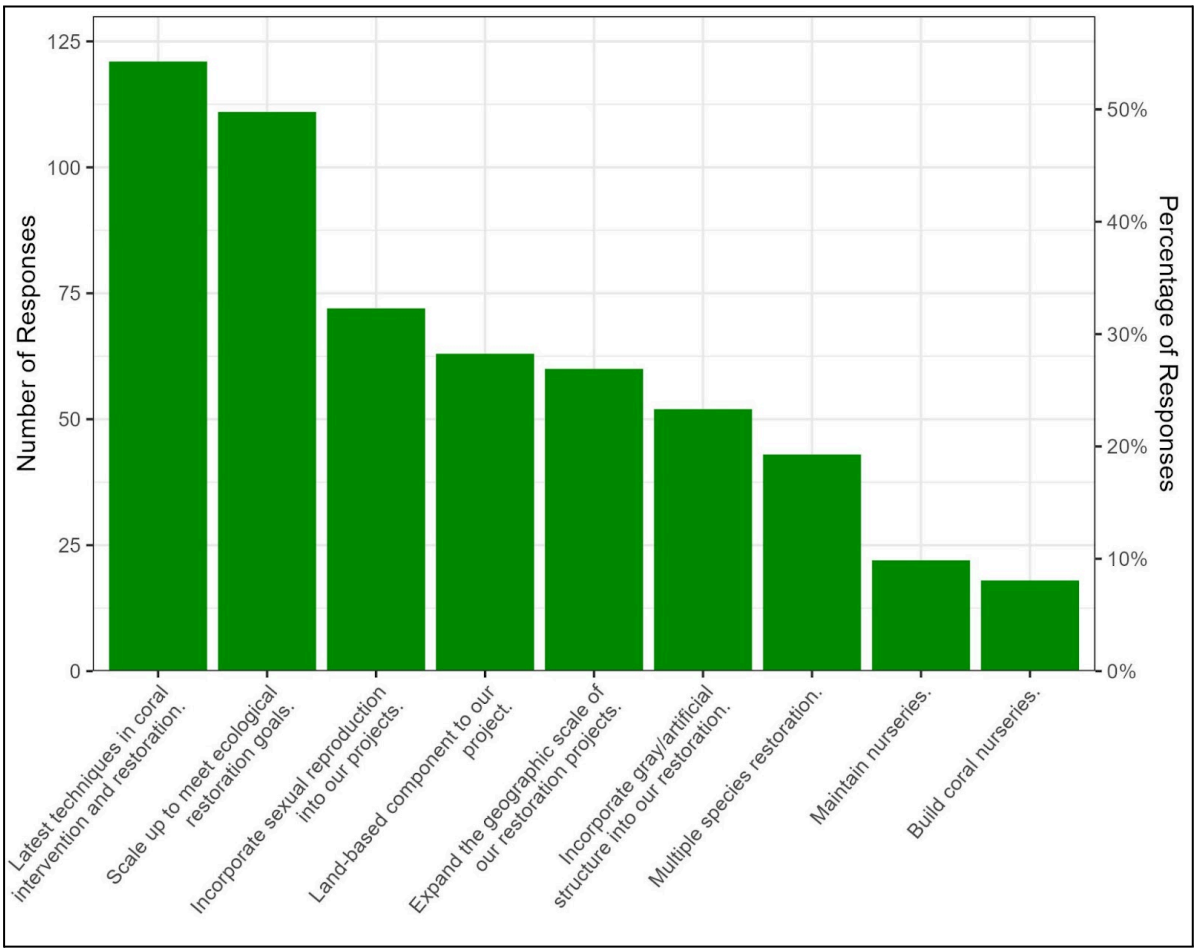
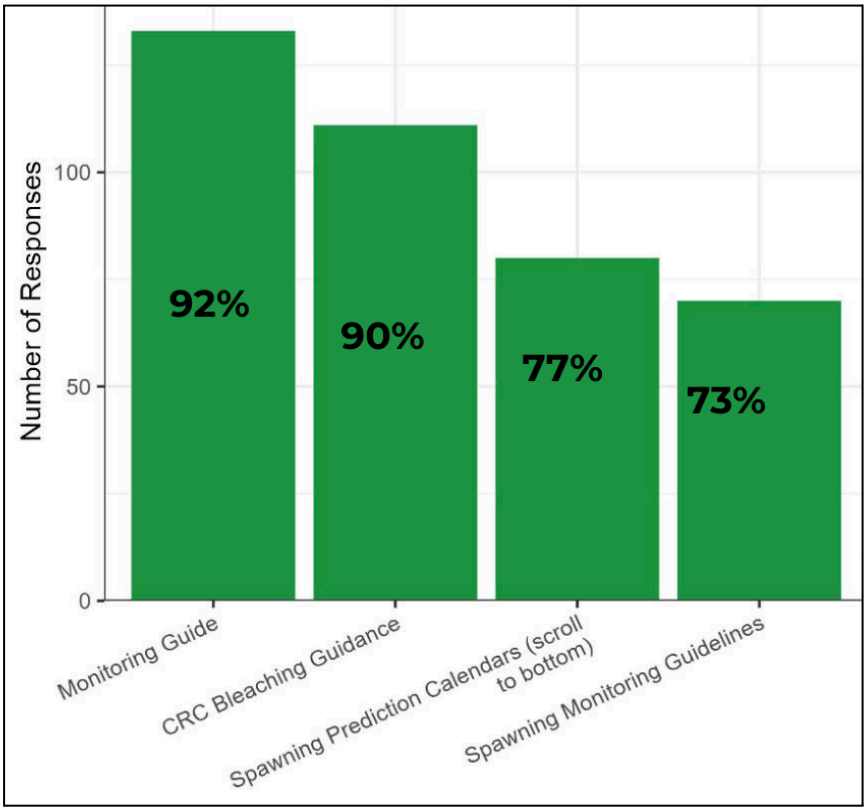


Figure 8 (as seen on pg.19): Results from respondents to the question “How useful have the following CRC guides been for your organization”. The Y-axis and the % represents the percentage of respondents who found the guide useful of those who had read the particular guide.



Coral Restoration Consortium

Full Report

Introduction

The Coral Restoration Consortium (CRC) is the global community of practice dedicated to restoring corals in the places where they are most needed. We do not advocate for a single method of restoration, but rather a better toolbox, shared resources, and a solid planning framework. The CRC, formed in 2017, has been managed and supported by in-kind donations from organizations and volunteers to operate. In 2023, after nearly six years of growth, the CRC undertook a strategic visioning process and decided to restructure to allow the Consortium to function with more efficiency and strategy in its approach, in order to best serve the coral restoration community.

For the CRC to best serve the restoration community, we needed to hear from the global restoration community to understand their needs. In October 2023, the CRC conducted an online global survey of reef restoration practitioners to better understand the primary issues they are facing and their most pressing learning needs in order to determine the best way for the CRC to support the global coral restoration community.

Who is the CRC?

Our global community is made of thousands of dedicated researchers, practitioners, resource managers, and members of reef-rich communities from all walks of life.

We use surveys, conversations, and social media to actively listen to what our community needs. We create and share products and resources needed such as standards, webinars, and training materials to help the restoration community work more strategically and rapidly.

Our primary audience are restoration practitioners in reef-rich, low-income nations. We also help scientists and funders reach the people and corals who need them the most.

Methods

Survey questions were developed by CRC in conjunction with the Oregon State University's Survey Research Center for and reviewed in Beta testing by multiple restoration practitioners. The survey was made available online using the Qualtrics Survey platform between October 25 and November 8, 2023.

Data Management

Overall, we received 224 complete or partially complete observations. The Survey Research Center includes partial observations in the analysis. Partial observations are those where 50% to 80% of applicable questions are answered by the respondent. They do not include so-called "break-off records". These are cases where the respondent did not answer a single question (but had entered the survey) or answered fewer than 50%. (There were 243 break-off responses.)

Data Processing

All data processing and calculations were performed using R version 4.2.2 (R Core Team, 2022). Data visualizations were produced using the 'ggplot2' package (Wickham, 2016).

Questions were arranged in a variety of formats:

- Open- ended questions (e.g. *What is the name of your organization?*)
- Check box. Selected response from a list of options (Select one only)
- Check box. Selected response from a list of options (Select top three)
- 10-Point Likert scale (e.g. *On a scale of 1 - 10, choose the rating that best fits*)

Check box answers were analyzed where the number of responses for each answer were represented as ordered column charts. 10 point likert scale responses required the calculations of mean and standard errors and represented these in the form of column charts with error bars. Many of the issues raised during the survey have greater consequence at local and regional levels rather than at a global scale. As such, a regional analysis was undertaken for a number of questions to tease out the nuances of responses and understand how issues were more relevant from a local perspective.

Regional Analyses

Regions were determined geographically and a regional breakdown was developed if >5 respondents originated from a particular region. Regions that are not included in any regional breakdown results include the Mediterranean, Australia, and Brazil as there were <5 complete respondents for each of these locations. Respondents that indicated they hailed from Eastern Asia were combined with East Asia. The Eastern

Tropical Pacific was combined with respondents from the Pacific. While respondents from the Persian Gulf & Oman and Red Sea & Gulf of Aden were combined into Arabia

Number of responses from each region:

- 75 Caribbean (*e.g. Jamaica, Mexico, Honduras, Bahamas, Dominican Republic, Puerto Rico*)
- 33 East Asia (e.g. Indonesia, Malaysia, Philippines, Cambodia)
- 28 Western Indian Ocean (e.g. Kenya, Mauritius, Seychelles, Tanzania)
- 23 Pacific (e.g. Guam, Fiji, Samoa, French Poylnesia)
- 10 Arabia (Universities, Large Projects)
- 10 South Asia (Indonesia, Maps)
- Not included <5 responses: 4 Australia 2 Mediterranean 1 Brazil

Results and Discussion

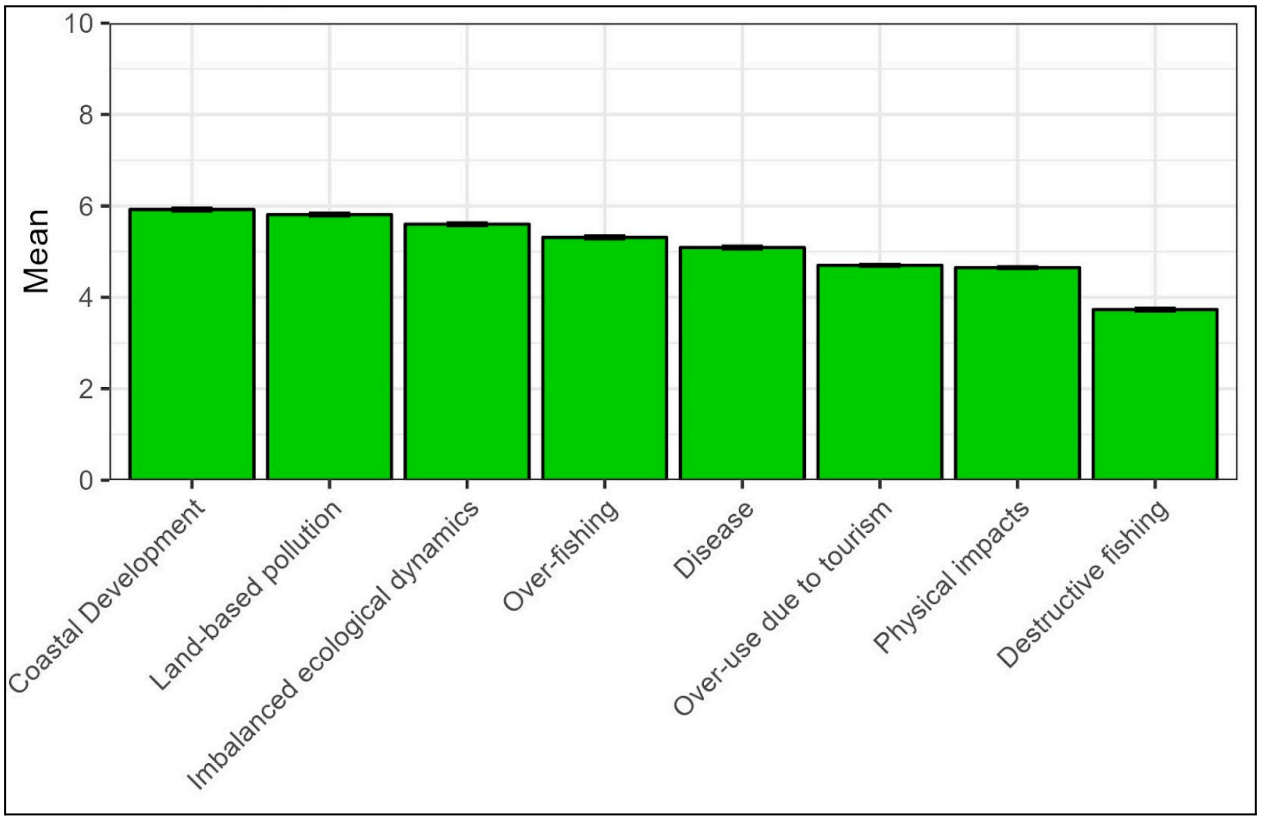
Overall, 224 complete responses were received from 70 countries and 206 unique organizations.

Local Issues

An initial line of inquiry was to determine what the primary issues were for people in the regions where they operate and implement coral restoration. Many practitioners would agree that coral restoration is a challenging discipline to implement, and site specificity is often crucial to understanding the complexities of responses required at particular locations. Therefore, understanding threats at the local level, is an important first step in providing support and guidance for coral restoration practitioners. Survey responses revealed that localized issues are relative, often linked, and likely compounding. For example, over 50% of respondents highly ranked both coastal development & land based pollution where the latter may be as a result of the former (Figure 1). Similarly, imbalanced ecological dynamics and overfishing potentially have linkages. However, destructive fishing practices rate as a low impact suggesting there are unlikely to be many survey responses from places like South East Asia where

destructive fishing practices like dynamite and poison fishing remain prevalent. Alternatively, this response may mean that coastal development and overuse due to tourism have overtaken the threat of destructive fishing practices in these locations.

Figure 1: Results from respondents to the question "On a scale of 1 - 10, how much are each of the following LOCAL issues affecting your reef(s)?". This graph illustrates the mean score of the total responses (n=224).



"CRC has been very helpful in producing products useful for active restoration."

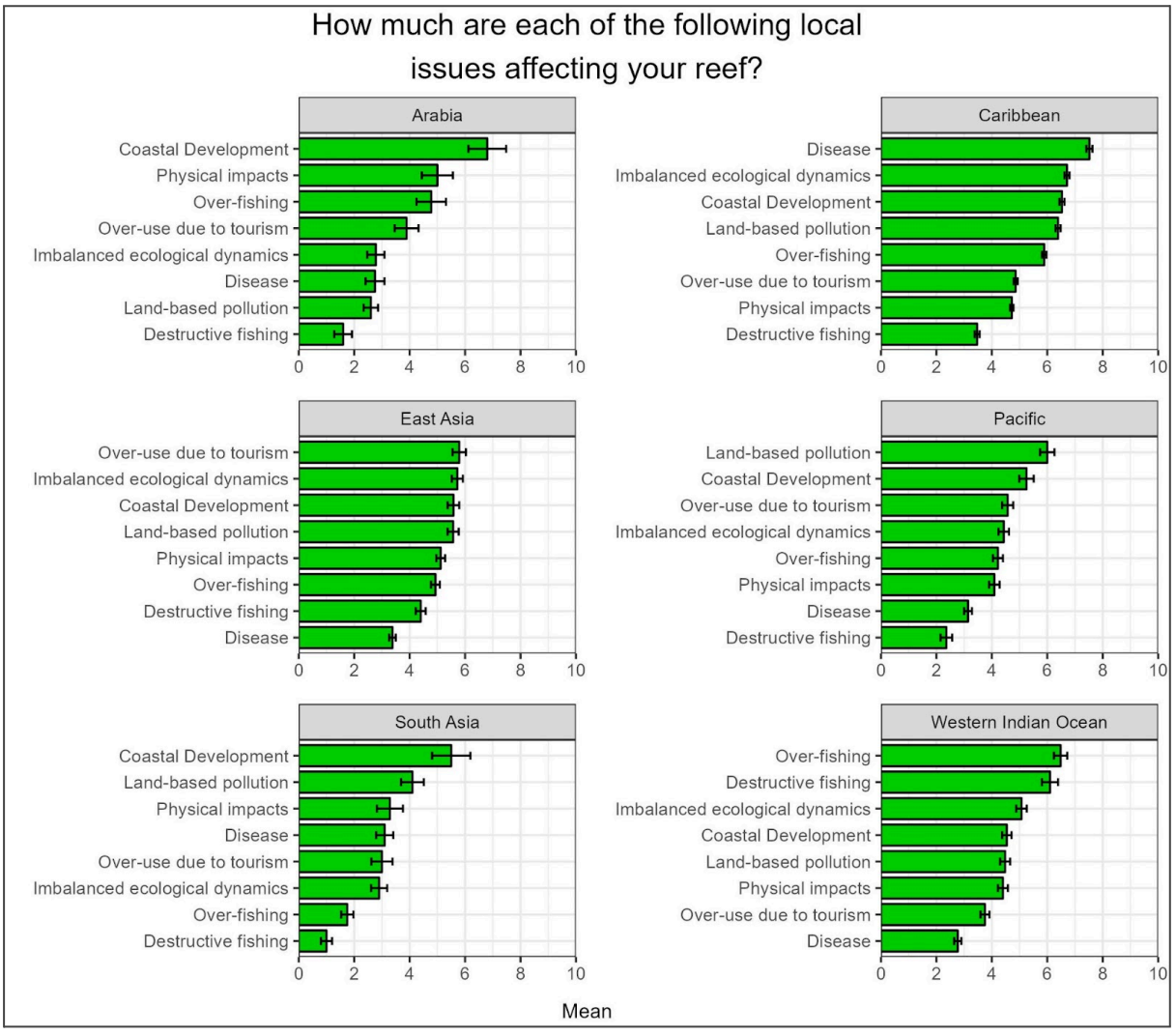
-Survey Respondent

Regional Breakdown

A regional breakdown of the survey responses showed that some areas highlighted single issues as a primary threat, while other areas viewed local issues as broadly equivalent in their impact. Coastal development was regarded as the substantial local

issue in Arabia, likely as a result of large scale investment in mega projects located along coastal areas. Coastal development was also ranked as a substantial issue in South Asia, potentially as a result of the expansion of tourism in coastal tropical regions in recent years (Figure 1).
Coastal development also ranked highly in the Pacific region, second behind land based pollution. Overfishing and destructive fishing practices dominated as a local threat in responses from the Western Indian Ocean, but were ranked low in South and East Asia. This may be indicative of an increase in education on the threats posed by destructive fishing in Asia or maybe be a result of more economic opportunities available in the tourism sector providing alternate income for fishermen. Disease ranked highest in the Caribbean, likely as a result of recent stony coral tissue loss disease (SCTLD).

Figure 2: Responses to "How much are each of the following LOCAL issues affecting your reef(s)?". This graph illustrates the mean score of responses on a 10 point likert scale from six different regions.

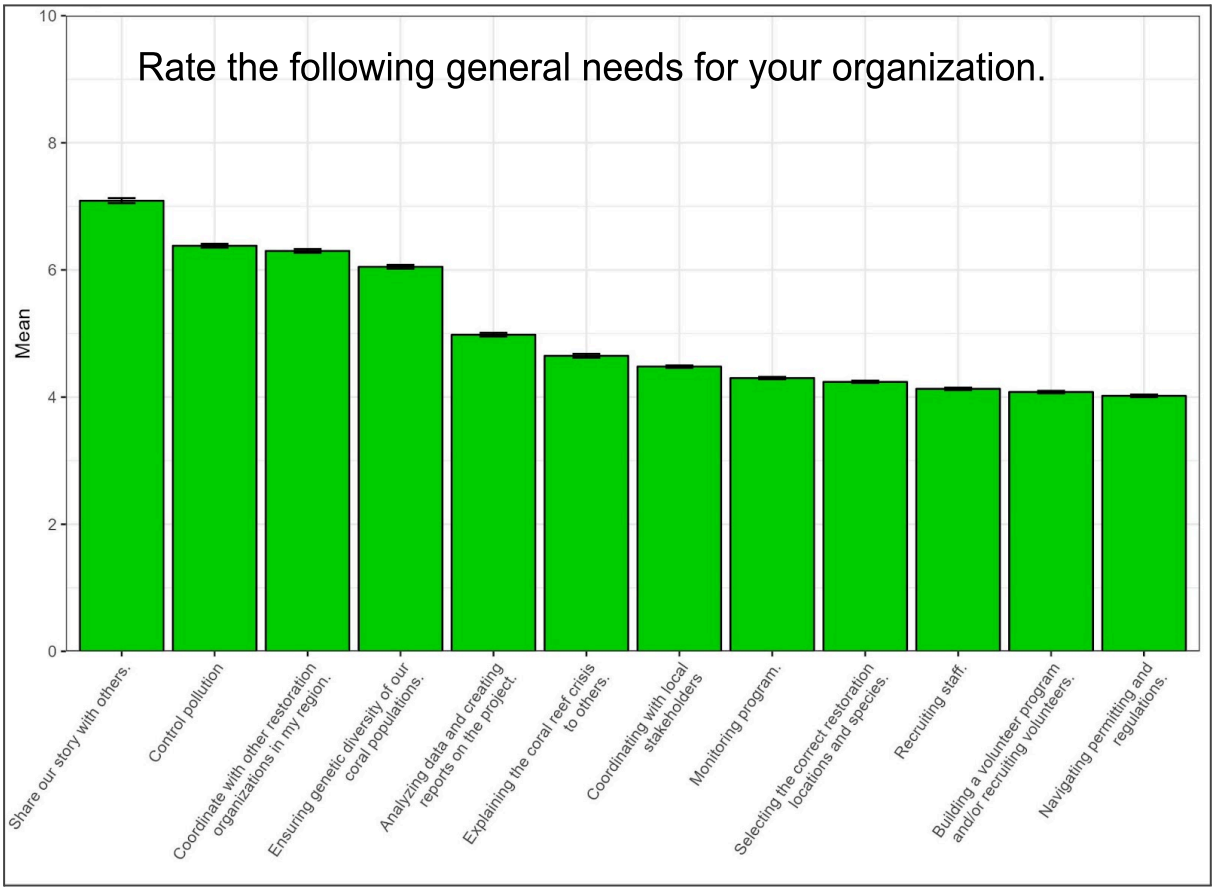


These responses help the CRC understand local threats and pressures on coral reefs and enable the Consortium to potentially better tailor support to address these issues. These could include educational materials and workshops for Western Indian Ocean constituents to address the issues of overfishing and destructive fishing practices, or greater support for Caribbean practitioners in addressing the issue of coral disease in their region.

General Needs

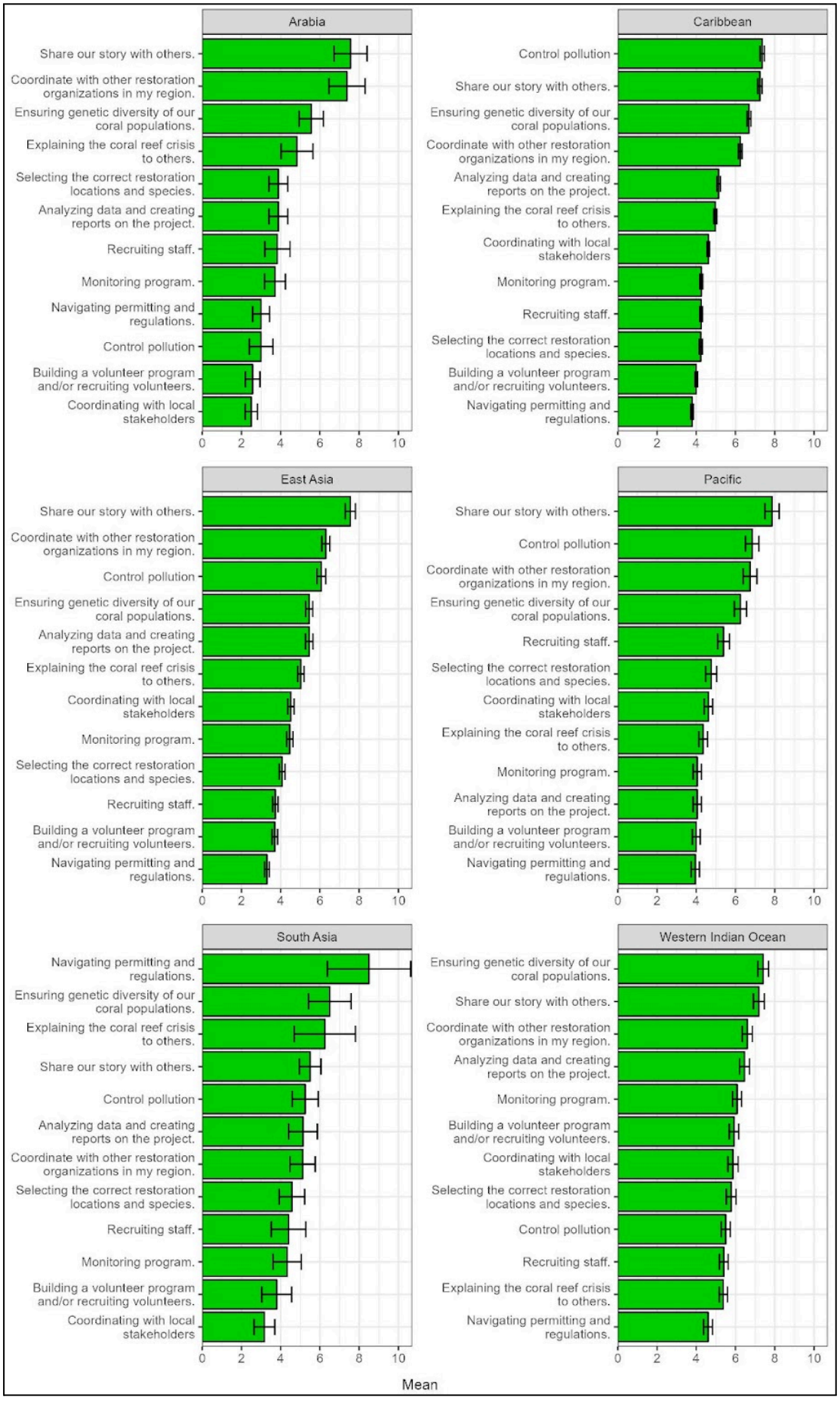
Looking more holistically to determine how the CRC may be able to best serve its constituents, respondents were asked to rank their organization's general needs for 2024. The top four needs that respondents indicated show the importance that people place on the social values of coral restoration and its role in supporting the health and resilience of reefs. Pooling responses that were 'needed' or 'greatly needed' highlighted some patterns. The response 'We would like to share our story with others' rated the highest (x = 7.0) followed by the need to 'control pollution' (x = 6.38). There were general desires to collaborate more effectively with local restoration proponents with 'We would like to coordinate with other restoration organizations in my region' rating highly (x = 6.3) as did 'We need help ensuring genetic diversity of our coral populations' (x = 6.05).

Figure 3: Results from respondents to the question "Rate the following GENERAL NEEDS for your organization". This graph illustrates the mean score of responses on a 10 point likert scale where 0 = low need and 10 = high need.



Dissecting the data by region shows the nuances of local issues on coral restoration. Storytelling and communications remained a high priority across all regions as well as ensuring genetic diversity of coral populations. ***However, in the South Asia region there was a specific need for 'Help navigating permitting and regulations'.***

Figure 4 (next page): Regional breakdown of results for the question "Rate the following GENERAL NEEDS for your organization". This graph illustrates the mean score of responses on a 10 point likert scale where 0 = low need and 10 = high need.


Arabia
Share our story with others.
Coordinate with other restoration organizations in my region.
Ensuring genetic diversity of our coral populations.
Explaining the coral reef crisis to others.
Selecting the correct restoration locations and species.
Analyzing data and creating reports on the project.
Recruiting staff.
Monitoring program.
Navigating permitting and regulations.
Control pollution
Building a volunteer program and/or recruiting volunteers.
Coordinating with local stakeholders
Caribbean
Control pollution
Share our story with others.
Ensuring genetic diversity of our coral populations.
Coordinate with other restoration organizations in my region.
Analyzing data and creating reports on the project.
Explaining the coral reef crisis to others.
Coordinating with local stakeholders
Monitoring program.
Recruiting staff.
Selecting the correct restoration locations and species.
Building a volunteer program and/or recruiting volunteers.
Navigating permitting and regulations.
East Asia
Share our story with others.
Coordinate with other restoration organizations in my region.
Control pollution
Ensuring genetic diversity of our coral populations.
Analyzing data and creating reports on the project.
Explaining the coral reef crisis to others.
Coordinating with local stakeholders
Monitoring program.
Selecting the correct restoration locations and species.
Recruiting staff.
Building a volunteer program and/or recruiting volunteers.
Navigating permitting and regulations.
Pacific
Share our story with others.
Control pollution
Coordinate with other restoration organizations in my region.
Ensuring genetic diversity of our coral populations.
Recruiting staff.
Selecting the correct restoration locations and species.
Coordinating with local stakeholders
Explaining the coral reef crisis to others.
Monitoring program.
Analyzing data and creating reports on the project.
Building a volunteer program and/or recruiting volunteers.
Navigating permitting and regulations.
South Asia
Navigating permitting and regulations.
Ensuring genetic diversity of our coral populations.
Explaining the coral reef crisis to others.
Share our story with others.
Control pollution
Analyzing data and creating reports on the project.
Coordinate with other restoration organizations in my region.
Selecting the correct restoration locations and species.
Recruiting staff.
Monitoring program.
Building a volunteer program and/or recruiting volunteers.
Coordinating with local stakeholders
Western Indian Ocean
Ensuring genetic diversity of our coral populations.
Share our story with others.
Coordinate with other restoration organizations in my region.
Analyzing data and creating reports on the project.
Monitoring program.
Building a volunteer program and/or recruiting volunteers.
Coordinating with local stakeholders
Selecting the correct restoration locations and species.
Control pollution
Recruiting staff.
Explaining the coral reef crisis to others.
Navigating permitting and regulations.
0 2 4 6 8 10
Mean

Our survey explored the subject of permitting with results suggesting that the permitting process presents challenges for a number of respondents. 83% of respondents (n=186) require permits to undertake and implement coral reef restoration projects and 57% (n=101) find the permissions process difficult to navigate while only 23% (n=41) consider the process they need to undertake to gain permission as easy.

> *"The tools and products that your organization provides are very useful for the program we are undertaking as the Galapagos National Park responsible for managing the protected areas of Galapagos."*
>
> *-Survey Respondent*

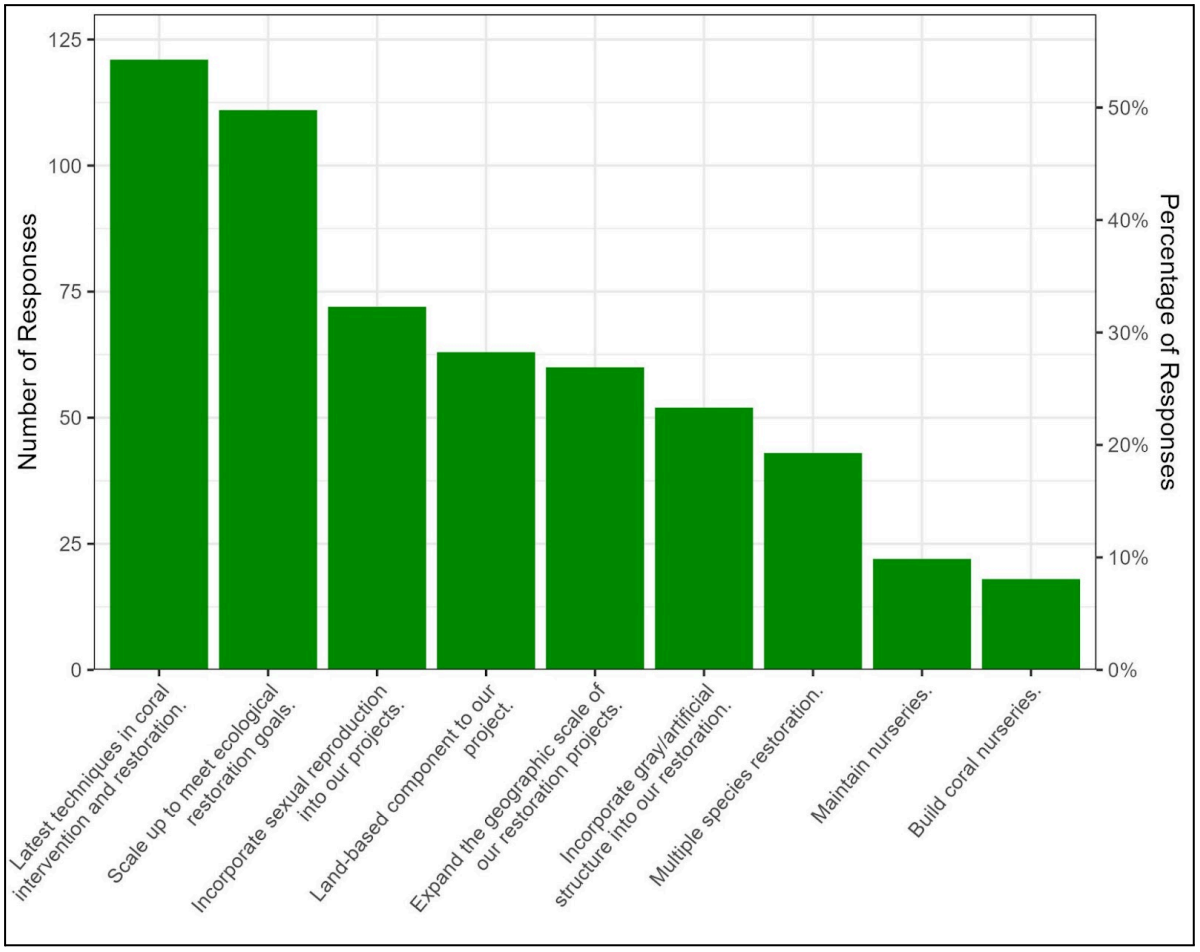
Despite the obvious challenges that accompany the permitting process, navigating permitting was one of the lowest ranked needs with a mean response score of 4.02, although in the South Asian Region it ranked >8.5. This may suggest that in most regions, permits and bureaucracy are a painful and complicated process, but organizations feel it is a necessary or required component of developing and implementing a restoration project. Generally, the permitting process for coral restoration is realized as challenging, but a necessary pain. It appears that organizations rank improvement in other areas as higher priority.

It is clear from our survey data that communications and getting the story out into the community was a common need amongst our respondents. This is exciting news and aligns well with the recent launch of the CRC's storytelling hub. The desire for communications assistance links well with another identified need to coordinate more with other restoration organizations within local regions.

Learning Needs

Attempting to gain a better understanding of what the salient learning needs of the restoration community was one of the main priorities of this survey. It provides quantifiable data to determine the ideal use of CRC resources going forward. We asked practitioners 'What are your organization's top three LEARNING NEEDS for 2024?'

Figure 5: Results from respondents to the question "What are your organization's top three LEARNING NEEDS for 2024?" This graph illustrates the number of responses for each learning need.



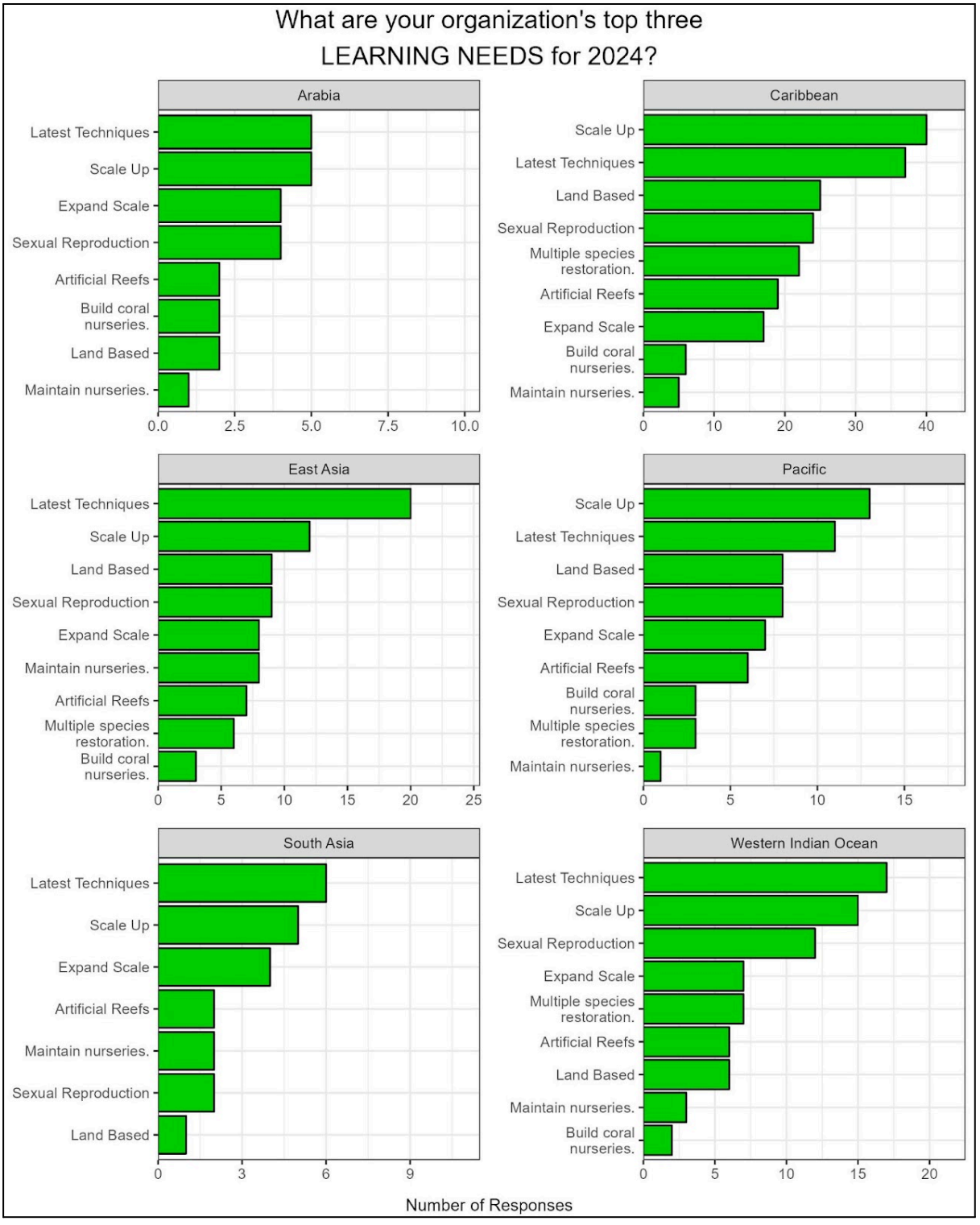
Overall respondents wanted to know:

a) What are the latest restoration methods and techniques that are being practiced around the world (n=121, 54%), and
b) How can organizations scale up their practices to meet ecological restoration goals (n=111, 50%) (Figure 5).

Responses to these first two learning needs were substantially greater than others which rated around 30% or lower. Respondents were keen to learn about the use of sexual coral reproduction as part of reef restoration projects and were keen to incorporate land-based components into their projects.

These two most popular learning needs responses feed into other highlighted areas of interest. For example, the desire to incorporate sexual reproduction methods into projects potentially combined with land based components likely reflects a desire to introduce latest techniques in this field and potentially look at scale.

Figure 6: Results, broken out by Region, to the question “What are your organization's top three LEARNING NEEDS for 2024”. This graph illustrates the number of responses for each learning need.



> *"CRC products are of great use to frame effective coral reef restoration practices. CRC has a treasure trove of information on coral restoration and hats off to the efforts of this amazing team."*
>
> *-Survey Respondent*

Coral reef restoration's enduring challenge is the need to try and implement restoration at scale and is reflected in the strong support to learn how to 'scale up to meet ecological restoration goals'. Similarly, the introduction of artificial reefs as part of restoration techniques was also desired which could also be seen as a way to scale up restoration.

Building and maintaining coral nurseries was at the low end of the needs from our community which may suggest our coral restoration community has what they consider sufficient experience in-situ coral nursery development and are already quite proficient in this area of the discipline.

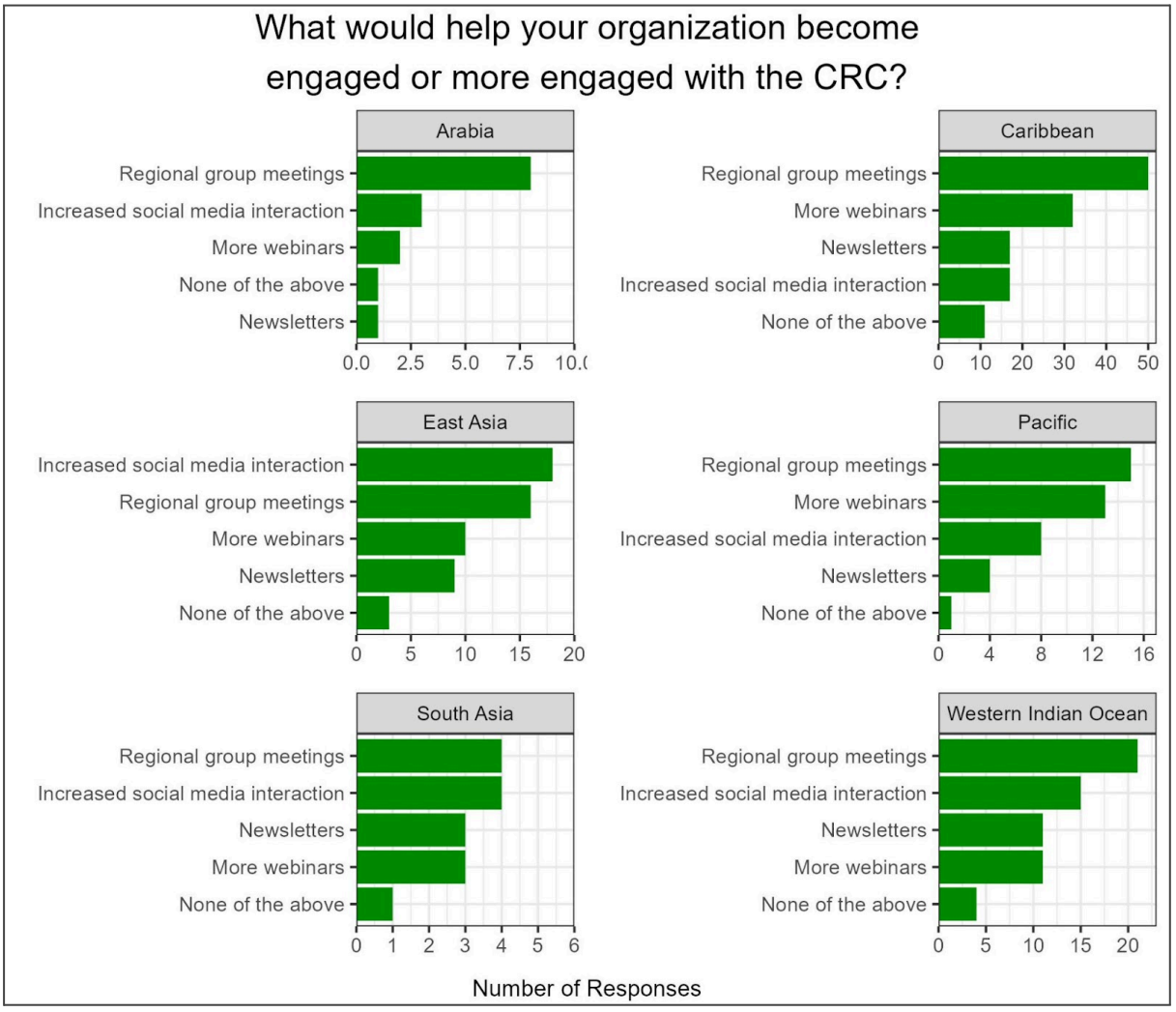
Finally, it is unclear from the data whether the response to '*expand the geographic scale of our restoration projects*' (27%, n=91) is a desire to learn how to set up operations in different locations (akin to franchising) or whether this question reinforces earlier responses to learn how to 'Scale up to meet ecological restoration goals'? Follow up discussion might be able to shed more light on this topic.

These learning needs provide the CRC with the ability to develop and disseminate material that is complementary to support these learning desires. The CRC already supports some of these needs through online tools and activities such as webinars and the online restoration course delivered in partnership with The Nature Conservancy through the Reef Resilience platform. However this data allows us to work with our partners and the constituents to better target resources to provide support for coral restoration practitioners.

Regional Engagement

One of the resounding results from the survey is that people want to have greater connections within and between regions. Engagement and creating a community of practice are key strategic goals of the CRC so it was fantastic to see the desire to create greater regional collaboration and knowledge sharing through regional groups. This desire was consistent across all regions and survey respondents (Figure 6).

Figure 7: Techniques that will help organizations become engaged or more engaged with the CRC.



The desire for Regional group meetings is strong and creating and maintaining momentum for regional groups requires dedication and commitment by all constituents within those groups. Community engagement and support is critical for Regional Groups to be successful. They are only worthwhile if diverse groups of people participate and they have a focus or objective. Therefore, objectives and goals need to be considered carefully in the development process and this is where the CRC may be able to play a crucial role. The CRC is using the Global Coral Reef Monitoring Network (GCRMN) to loosely define regions and gain a better understanding of existing regional coordination efforts to be able to complement these.

> *"It seems a uniquely welcoming and collaborative community, all working together with both a sense of hope and urgency in the face of great ecological challenges. Anything you can do to continue to foster that collaboration and to get the word out to interested individuals like me will be greatly appreciated. Thanks for your continued effort in that regard."*
>
> *Survey Respondent*

We are drilling into the data and reaching out to constituents to develop ways to foster deeper connections among practitioners in a region. In future, we hope to assist in the development of truly collaborative networks and share regional efforts outwardly through the CRC.

CRC Guides and Publications

Over the years, the CRC has been instrumental in developing guides and producing peer reviewed publications in its attempt to share knowledge and build capacity in the coral restoration community. The CRC produces a number of products and publications and seeks to better understand the usefulness of these products for our audience. To determine the value of products, we asked constituents 'How useful have the following CRC guides been for your organization?' (Figure 8).

Figure 8: Results from respondents to the question "How useful have the following CRC guides been for your organization". The Y-axis and the % represents the percentage of respondents who found the guide useful of those who had read the particular guide.

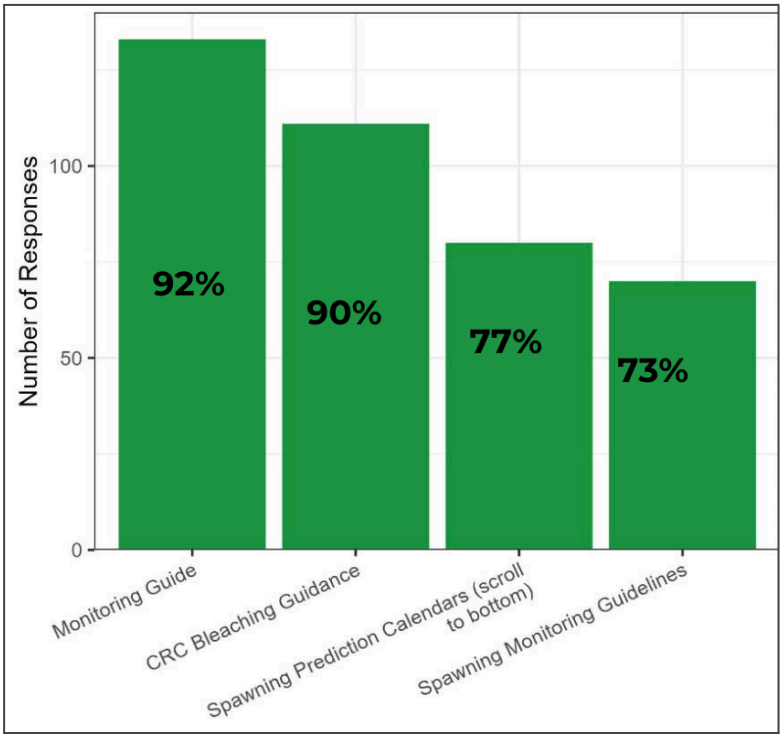
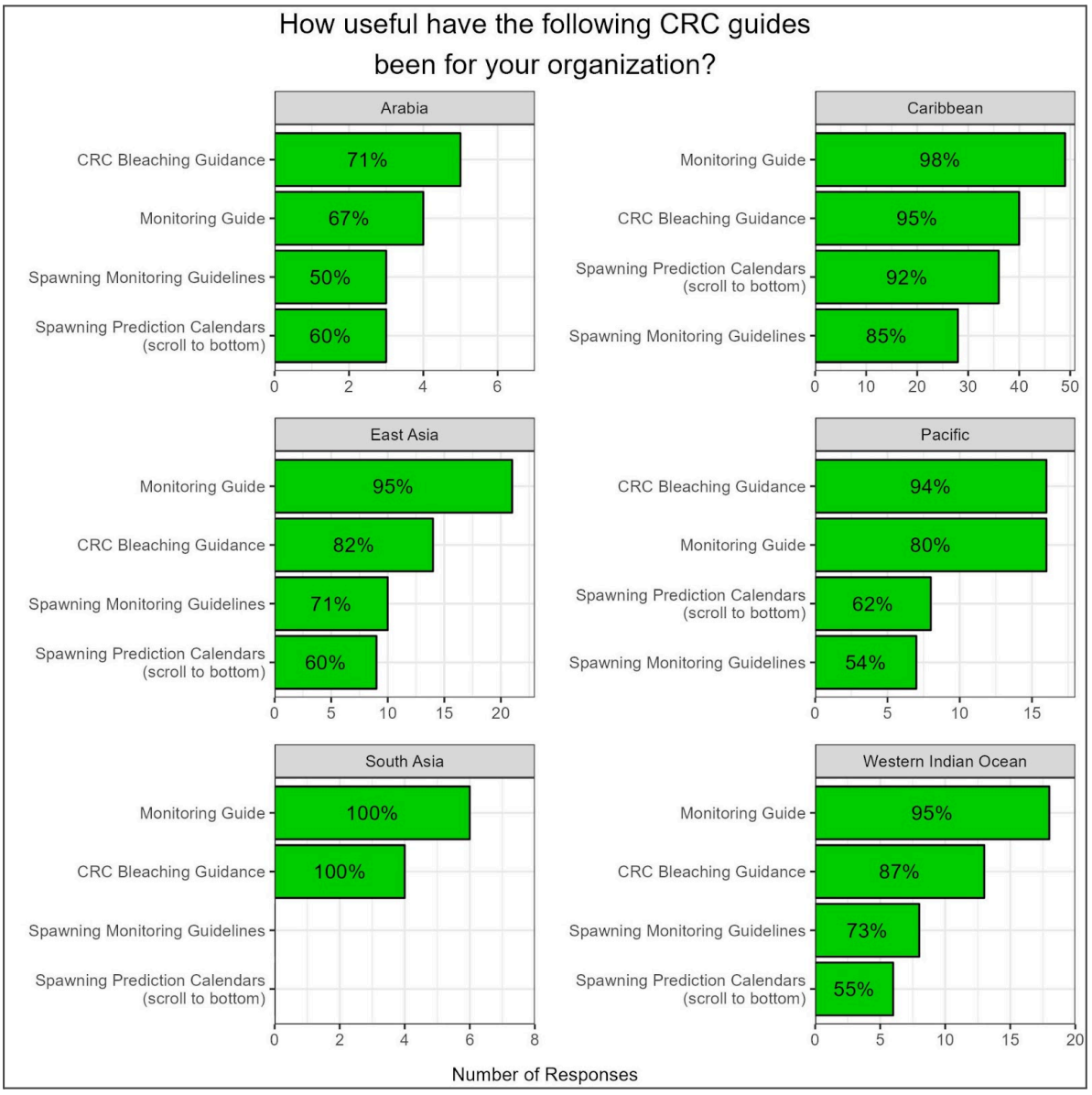


Figure 9: Responses to the question "How useful have the following CRC guides been for your organization" displayed by region. The X-axis represents the number of responses, the percentage reflected on the bars represents the percentage of respondents who read the guide *and* found it useful.



Most-used CRC Guides

The CRC Monitoring Guide (Goergen et al. 2020) was most widely read and used (92%) followed closely by the Bleaching *Guidance (90%)*. These statistics were similar in most regions except Arabia where it was found to be less useful to the respondents. More technical areas of interest relating to coral spawning calendars (77%) and spawning monitoring guidelines (73%) also were useful.

> *"We love all of the latest information CRC provides. We represent restoration that has little to no access to labs or other technical facilities."*
>
> *"Our team of Community-based Field Technicians consists of village residents who have the desire and time to invest into restoration work, however, most do not have a high level of literacy."*
>
> *-Survey Respondents*

The CRC has produced or supported a wide variety of web based products. We asked respondents about the usefulness of web-based products by querying 'How useful have the following CRC web-based products been for your organization'. These included a variety of online webinars and presentations (Table 1). While a majority of respondents had not used particular products, for those that had, they found them 'useful' or 'somewhat useful.' In a follow up question when respondents were asked 'what type of content is your organization most interested in hearing about' 73 people or 33% of respondents wanted to hear about upcoming webinars, conferences and events.

Table 1: List of CRC web-based products. Respondents were asked if they had used them and how useful they are for their organization. The % figure reflects results for those who had read the product and found it either 'useful or somewhat useful.'

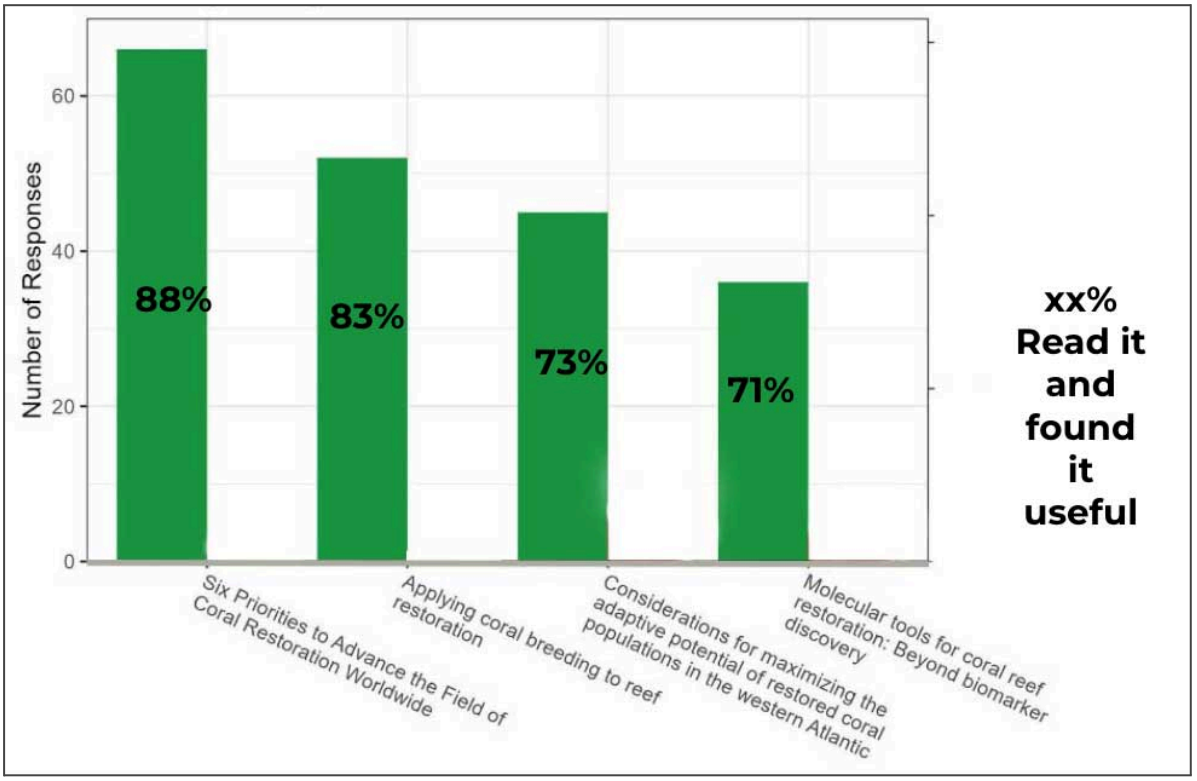
Product Title	Type	Useful or somewhat useful[1]	Not Used
Evaluating Success in Restoration	Webinar	87.50%	56.95%
Coral Reef Restoration Mentored Online Course	Webinar	81.17%	61.88%
Coping with the 2023 Bleaching	Webinar	84.34%	62.78%
Photomosaics as a Tool for Monitoring Coral Restoration Success	Webinar	84.34%	62.78%
Coral Spawning Research & Larval Propagation	Webinar	81.82%	70.40%
Maximizing the Adaptive Potential of Restored Coral Populations	Webinar	78.69%	72.65%

Product Title	Type	Useful or somewhat useful[1]	Not Used
Engineering and Innovation Working Group - Stakeholder Presentations	Webinar	73.77%	72.65%
Spawning of the grooved brain coral Diploria labyrinthiformis	Webinar	68.63%	77.13%

CRC Publications

Regarding peer reviewed publications, an average of >65% of respondents had not used many of the detailed publications listed. Of those that had used the products, the most useful were the peer reviewed publication 'Six Priorities to Advance the Field of Coral Restoration Worldwide' with almost 30% of respondents finding it 'useful' or 'somewhat useful' (Figure 10).

Figure 10: Results from respondents to the question "How useful have the following CRC publications been for your organization". The Y-axis and the % in bold represents the percentage of respondents who found the guide useful of those who had read the particular guide.



Similarly, with CRC supported publications the usefulness rating was very high despite the readership being lower than the guides. Readership may have been low due to the topic or region specific nature of the publication. Respondents also told us that CRC products are most helpful when the product is written in plain language with step-by-step guidance (68%), contains multiple descriptive graphics (50%), is published in an academic journal (31%) or is the subject of in person presentations to their organization (23%). Additionally, 13% of respondents noted that CRC products were useful when they are translated from english to the respondents preferred language.

Finally, regarding publications we asked respondents 'what type of content is your organization most interested in hearing about?'. Overwhelmingly respondents were interested in hearing about funding opportunities (n=145, 65%). Hearing about the latest restoration techniques (n=125, 56%) and recent research (n=88, 40%) were also popular, complementing findings from the most popular learning needs to understand what are the latest in restoration methods and techniques that are being practiced around the world and how can organizations scale up their practices to meet ecological scale goals.

Following on from the general needs identified earlier to collaborate more effectively with local restoration proponents within regions, respondents were keen to hear about 'opportunities to connect and network with others in the restoration community' (n=86, 39%).

Reef Futures

Reef Futures is the only global symposium focused solely on the interventions and actions necessary to allow coral reefs to thrive into the next century. The Coral Restoration Consortium is the convener of Reef Futures, and has supported two iterations of the symposium in Florida 2018 and 2022. A virtual version of the symposium was held in 2021 during the COVID-19 pandemic. Online material was produced and made available on the CRC website as part of the 2021 virtual gathering and the 2022 in-person gathering. To understand the value of these events we asked respondents a number of questions relating to their attendance and what they valued about their participation either in person or online.

66 respondents (30%) attended Reef futures in person in 2018 or 2022 and of those 51 people **(77%) felt that attendance impacted their organization's coral reef restoration practice,** while the additional 15 people (23%) felt that attendance may have impacted their practice. Similarly, when asked about Reef Futures online content 96 respondents (43%) said they had viewed Reef Futures content online with 28

people (29%) concluding that the content had influenced their practice. Another 61 people (64%) suggested that viewing content online might have impacted their practice. There appears to be significant value attributed to both direct and indirect participation in Reef Futures. This information allows the CRC to confidently move forward with preparations for the 2024 edition of Reef Futures in Riviera Maya, Mexico.

> *"Reef Futures 2022 was highly useful for networking, morale building (reef restoration can be a lonely, depressing field) and learning about new, innovative techniques from other practitioners"*
>
> *-Survey Respondent*

Learning from the Survey

The CRC is using the results of the survey to continue to develop products to support the global coral restoration community. Prior to the survey, the CRC had already begun development of the CRC Storytelling Hub. The results of the survey confirmed that sharing stories and knowledge exchange is a need for much of the restoration community. The CRC will continue to develop the Storytelling Hub to highlight global restoration stories. The CRC will also continue to expand and deepen its network of Regional Groups. Additionally, the CRC will continue to host webinars focused on communicating the latest techniques in coral restoration.

Acknowledgments

The survey was made possible with funding and in-kind support from the National Oceanic and Atmospheric Administration (NOAA) and the Coral Restoration Foundation (CRF). In-kind and volunteer support from several members of the CRC Advisory Board made it possible to develop, review, and process the results of the survey. The survey was developed in conjunction with the Oregon State University's Survey Research Center.

References

Goergen, E.A., Schopmeyer, S., Moulding, A.L., Moura, A., Kramer, P., and Viehman, T.S. 2020. Coral reef restoration monitoring guide: Methods to evaluate restoration success from local to ecosystem scales. NOAA Technical Memorandum NOS NCCOS 279. Silver Spring, MD. 158 pp. https://doi.org/10.25923/xndz-h538

R Core Team., 2022. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

Wickham. H., 2016 ggplot2: Elegant Graphics for Data Analysis. Springer-Verlag New York.

Appendix : Coral Restoration Consortium Survey