



WEBINAR REPORT

Bali Reef Rehabilitation Network: Restoration Practices



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Coral Triangle Center - Center for Marine Conservation

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Contents

| | |
|--|----|
| ACKNOWLEDGEMENT | 3 |
| WEBINAR SUMMARY | 4 |
| INTRODUCTION | 4 |
| Background | 4 |
| Objectives | 5 |
| WEBINAR FORUM | 5 |
| Opening | 5 |
| Participants | 6 |
| Presentations and Discussion | 6 |
| Conclusion and Recommendation | 7 |
| References | 7 |
| APPENDICES | 9 |
| Appendix 1. Rundown | 9 |
| Appendix 2. Keynote Speakers and Panelists | 10 |
| Appendix 3. Webinar Flyer and Photos | 11 |
| Appendix 4. List of Participants | 14 |
| Appendix 5. Minutes of Webinar | 18 |
| Appendix 6. Recording and Presentations | 23 |

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Finally, we would like to thank Ms. Kitty Currier for her invaluable support and assistance on reviewing the Webinar report.

WEBINAR SUMMARY

Coral Triangle Center (CTC) hosted the coral reef restoration webinar ***Bali Reef Rehabilitation Network: Praktik-Praktik Restorasi*** on August 20th 2021, from 15:00 – 18:26 (Bali Time) via Zoom meeting. The webinar objectives were to facilitate a platform for members of the Bali Reef Rehabilitation Network to update and share experience and knowledge; commemorate two years since the network was formed; raise awareness of resilience-based reef restoration among partners and the general public; and expand the network of reef restoration practitioners throughout Indonesia.

The webinar was opened by Ir. Made Sudarsana, M.Si (Head of the Marine Affairs and Fisheries Agency of Bali Province) along with Ms. Rili Djohani, M.Sc (CTC's Executive Director), Ms. Pauline Vaskou, M.Sc (Environment Advocacy Manager, Bloomberg Philanthropies) and Mr. Permana Yudiarso, S.T, M.T (Head of BPSPL Denpasar - Ministry of Marine Affairs and Fisheries).

The webinar consisted of three sessions: one keynote speaker session and two panelist sessions with Q&A after each session (Appendix 1). The keynote speakers were Dr. Rahmadi Prasetya, S.Si, M.Si from Dhyana Pura University and Dr. Beginer Subhan, S.Pi, M.Si from IPB University. In his speech, Dr. Rahmadi gave an overview of various restoration methods that have been used by practitioners and talked about the Indonesia Coral Reef Garden as a case study. Dr. Beginer pointed out that a restoration project must be started with a set goal in mind.

Eight panelists from different organizations in Bali presented their programs and activities in coral restoration using various methods and techniques (Appendix 2). Panelists included Ms. Phillipa Mansell of Mars Sustainable Solutions, Mr. I Nyoman Januarsa of Biorock Indonesia, Ms. Parima Hutasoit of Nusa Dua Reef Foundation, Ms. Ryannyka Dwi of LINI, Mr. Bram Bredero of Bali Hai Cruises, Mr. Andrew Taylor, MSc. of Blue Corner Dive, Mr. Aryo Damar of Livingseas, and Mr. I Nyoman Karyawan of Kelompok Nuansa Pulau.

The discussion was led by Mr. Marthen Welly, S.Pi, M.Si of CTC as the moderator. There were 152 registrants and 121 participants present from the government and general public (Appendix 4). The primary language used was Bahasa Indonesia, with separate interpreters for English and Bahasa Indonesia. Minutes of the webinar were taken (Appendix 5) and a video recording is available on YouTube (Appendix 6).

INTRODUCTION

Background

Coral reefs are facing mounting anthropogenic pressures that are threatening biodiversity and ecological integrity, foreshadowing fundamental problems in the future. Coral reef restoration, as one way to actively reduce threats to coral reefs, have been widely implemented all over the world by academics, conservationists, environmental managers, tourism and recreation communities. Various restoration methods have been invented, adopted and implemented.

There is concern, however, that enthusiasm for reef restoration without proper training has caused some projects to be ineffective at best and ecologically harmful at worst (Scott 2019). Practitioners who fail to consider the functional, structural and genetic diversity of a coral reef could end up creating a reef that is more susceptible to disease and bleaching, with a lower capacity for sexual reproduction than one left alone (Baums 2008).

The Bali Reef Rehabilitation Network was created on August 2nd 2019 through a forum facilitated by CTC in collaboration with the Marine Affairs and Fisheries Agency of Bali Province (DKP) and the Coastal and Marine Resources Management Agency in Denpasar, Ministry of Marine Affairs and Fisheries (BPSPL Denpasar). The network was created to encourage discussion and collaboration to explore common issues regarding coral restoration projects that have been initiated around Bali. The network

currently has more than 20 members from environmental organizations, universities, tourism professionals, government agencies and local communities.

Throughout the years, some of the Bali Reef Rehabilitation Network (BRRN) members have started coral restoration projects. Each project has its own unique method, benefit and challenges. There is information and lessons that can be shared through these experiences. CTC, in collaboration with DKP and BPSPL, as well as BRRN members, hosted a Webinar to share information and awareness through a discussion.

Objectives

1. Facilitate a platform for members of the Bali Reef Rehabilitation Network to update and share experience and knowledge, as well as to commemorate two years since the network was formed.
2. Raise awareness of resilience-based reef restoration strategies among wider audiences.
3. Expand the network of reef restoration practitioners throughout Indonesia.

WEBINAR FORUM

Opening

The webinar ***Bali Reef Rehabilitation Network: Praktik-Praktik Restorasi*** was held on August 20th 2021, from 15:00 – 18:26 (Bali Time) via Zoom meeting, hosted by Coral Triangle Center (CTC) (Appendix 1; Appendix 3). In accordance with the purpose of the webinar, i.e., to facilitate a platform for members of the Bali Reef Rehabilitation Network ("A Community of Practice," 2020) to share experience and knowledge among themselves and with the general public, as well as to expand the network of reef restoration practitioners throughout Indonesia, an introduction was delivered by CTC Executive Director Rili Djohani, M.Sc; Ms. Pauline Vaskou, M.Sc. (Environment Advocacy Manager, Bloomberg Philanthropies); Mr. Permana Yudiarso, S.T, M.T (Head of BPSPL Denpasar – Ministry of Marine Affairs and Fisheries); and Ir. I Made Sudarsana, M. Si (Head of the Marine Affairs and Fisheries Agency of Bali Province) (Appendix 2).

In her greetings, Ms. Rili of CTC contextualized coral restoration in the age of climate change and the COVID-19 pandemic. As articulated in the recent report by the International Panel on Climate Change (IPCC), global collaboration to address climate change is imperative. Coral restoration can play a role by enhancing reef resilience, in conjunction with initiatives like the "30x30" campaign to protect 30% of the world's oceans by 2030 and Sustainable Development Goal (SDG) 14: Life Below Water. Ms. Rili also gave a brief introduction about the Bali Reef Rehabilitation Network and several community-based restoration projects in Nusa Penida.

Ms. Pauline from Bloomberg Philanthropies gave an overview of Indonesian projects supported by Bloomberg including the Coral Reef Restoration Task Force project with CTC in collaboration with Mars Sustainable Solutions and Nusa Dua Reef Foundation (NDRF). She emphasized the importance of partnerships among non-governmental organizations (NGOs), government agencies and other stakeholders in restoration to foster sharing of lessons learned and inspire motivation.

Mr. Permana, Head of BPSPL Denpasar, discussed current threats faced by coral reefs around Bali, such as spearfishing, polluted runoff, increasing crown-of-thorns starfish (COTS) sightings and several bleaching reports, especially in Tejakula and Singaraja in North Bali. He stressed the importance of monitoring and collecting data that allow restoration projects to be evaluated in light of their goals.

The webinar was officially opened by Ir. I Made, Head of DKP Bali Province, who described his hope that the webinar would be a platform for raising enthusiasm for community-based coral reef restoration.

Participants

The webinar was attended by 121 participants from various organizations across Indonesia, such as non-profit organizations, universities, tourism businesses and government agencies (Appendix 4).

Presentations and Discussion

The two keynote speakers set the theme around coral restoration practices in Indonesia. The first keynote speaker, Dr. Rahmadi Prasetya, S.Si, M.Si of Dhyana Pura University gave an overview of various restoration methods that have been used by practitioners, using Indonesia Coral Reef Garden (ICRG) as a case study. Dr. Rahmadi also discussed the definition of 'success' in a restoration project, as well as several approaches leading to a successful restoration. Dr. Beginer Subhan, S.Pi, M.Si of IPB University gave an overview of possible purposes of a restoration project and what is needed to carry out a sustainable project, as well as challenges one might encounter during restoration, be they environmental or social challenges. Dr. Beginer stressed the importance of human resources in order to achieve successful restoration.

The keynote session was followed by eight short presentations by members of the Bali Reef Rehabilitation Network, who described their restoration projects and lessons learned from each project (Appendix 2; Appendix 6).

Ms. Phillipa Mansell of Mars Sustainable Solutions talked about the success of the Mars Assisted Reef Restoration (MARRS) method, which has been implemented all around the world, and she showed the change in an area before and after restoration. She also described the formation of the Coral Reef Restoration Task Force in 2021, in collaboration with CTC and Bloomberg Philanthropies. Mr. I Nyoman Januarsa from Biorock Indonesia described the Biorock method and installations in Pemuteran, Pejajaran and Nusa Dua. Mr. Nyoman also explained how the contribution of local community, village governance, stakeholders and volunteers played an important role in the success of Biorock's implementations.

Ms. Pariama Hutasoit of Nusa Dua Reef Foundation (NDRF) talked about the various methods that have been used by NDRF since 2010, starting with the concrete method, table and rope nurseries and the MARRS method, with which they have restored over 7,000 m² of reef. Ms. Ryannyka Dwi of LINI described the seven restoration sites they are currently maintaining in Buleleng and how the restored areas have attracted marine life such as octopus and turtles, as well as how these sites are utilized as part of LINI's citizen monitoring program.

Mr. Bram Bredero of Bali Hai Cruises, Mr. Aryo Damar of Livingseas and Mr. Andrew Taylor, MSc. from Blue Corner Dive showed how dive operators can play a part in bringing positive changes to the marine environment by getting involved in reef restoration. Bali Hai Cruises has dedicated an area under their pontoon as a restoration site using the MARRS method, restoring corals across an area of 400 m² over the course of four years. Blue Corner Dive has a restoration site at Sental Reef, Northern Nusa Penida, where they have used several methods including a rope nursery and placing coated rebar structures and mesh over rubble substrate. They also have several training courses and an internship program as part of their education and community development plans. Livingseas has been using the MARRS method since 2017 at three sites: Mimpang and Baung Penyu (Bali) and Sekati Island (Jakarta). They also found that massive and plate corals attach well to glass bottles. Mr. Damar described lessons they have learned throughout the years in terms of site selection, growing corals, coral attachments and reef biodiversity.

Mr. I Nyoman Karyawan from Kelompok Nuansa Pulau talked about how the youth group of Ped Village, Kelompok Nuansa Pulau, was founded in June 2020. Their members have worked together with CTC and NDRF to set up their own restoration project using the MARRS method in addition to other methods such as using concrete blocks and rope nurseries. Kelompok Nuansa Pulau is working together with CTC in a coral adoption program.

Following the panelists' presentations, a discussion moderated by Mr. Marthen Welly, S.Pi, M.Si of CTC addressed topics such as (Appendix 5):

- The importance of monitoring and maintenance plans for restoration projects, especially for projects with big investment and funding such as ICRG
- How one is able to choose an appropriate restoration method on a small island with diverse coral reef characteristics
- The importance of properly introducing the methods and proper maintenance steps to volunteers who conduct them in the field
- Coral reef protection and permitting in a utilization zone

ICRG was discussed as a big reef restoration project in Bali. There are five locations where restoration was carried out. In terms of sustainable maintenance, it has not yet been established and is still being discussed, and it can be used as a study case in planning a restoration method.

One participant asked about the best way to choose a restoration method, especially in several areas with different characteristics. Dr. Rahmadi suggested first creating a small-scale plan, developing it together with the local community. Sometimes, multiple methods are needed, even when a project is conducted within the same island.

Another participant raised a discussion on regulations related to restoration of reefs in the marine utilization zone of a marine protected area. Dr. Begin explained that every utilization zone should already have its own body that is in charge of creating permits and regulations. The permits and regulations for each area will be different, depending on their locations. For example, how close they are to a port or sailing zone will affect their permits and regulations. A participant suggested that use of marine spaces needs permission arranged by *Pelayanan Terpadu Satu Pintu, Pengelolaan Ruang Laut, Kementerian Kelautan dan Perikanan* (PTSP PRL KKP; One-Stop Service, Marine Spatial Management, Ministry of Marine Affairs and Fisheries).

One participant mentioned how he was amazed when he found out through the webinar that there are many organizations throughout Bali that are involved in various restoration projects, and that visual learning might generate more interest for the general public. Several participants shared links to YouTube videos on various restoration projects they were involved in. Another participant suggested that CTC, along with the Network, could gather references for various other reef restoration methods that have been done outside of Bali, as well.

The webinar was closed by Mr. Permana of BPSPL Denpasar, who thanked participants for their input and participation and encouraged future events to explore the topics discussed in the webinar in more depth.

Conclusion and Recommendation

There are various organizations and communities in Bali involved in coral reef restoration. In a coral restoration project, it is important to determine a set goal and human resources at the initial stage. Participants were eager to discuss various restoration projects and suggested conducting a similar webinar on coral restoration in a national scope. CTC will plan for a future webinar with expert speakers from organizations with coral restoration experience throughout Indonesia.

References

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- Scott, C. 2019. Coral Fragging Should be Banned. Conservation Diver. <http://conservationdiver.com/coral-fragging-should-be-banned/>.

A Community of Practice for Coral Reef Rehabilitation – Bali Reef Rehabilitation Network, Bali, Indonesia. 2020.

Commonwealth Blue Charter. https://bluecharter.thecommonwealth.org/wp-content/uploads/2021/02/CBC-Case-Studies_15_CoralBaliRestor.pdf

APPENDICES

Appendix 1. Rundown

| Time | Topic | Speaker |
|-------------------------------|---|---|
| 15:00 – 15:05 (5 minutes) | Welcoming the audience | Moderator |
| 15:05 – 15:10 (5 minutes) | Greetings | CTC Executive Director |
| 15:10 – 15:15 (5 minutes) | Greetings | Bloomberg Philanthropies, VOI |
| 15:15 – 15:20 (5 minutes) | Greetings | Head of BPSPL Denpasar |
| 15:20 – 15:25 (5 minutes) | Webinar opening | Head of DKP Bali Province |
| 15:25 – 15:30 (5 minutes) | Rules of Webinar | Moderator |
| 15:30 – 16:00 (30 minutes) | Session 1: Keynote speakers | <ol style="list-style-type: none">1. Dr. Rahmadi Prasetya, S.Si, M.Si (Dhyana Pura University)2. Dr. Beginer Subhan, S.Pi, M.Si (IPB University) |
| 16:00 – 16:20 (20 minutes) | Session Q&A | Moderator |
| 16:20 – 16:40 (20 minutes) | Session 2: Speakers presentation (5 minutes each) | Bali Reef Rehabilitation Network Members: <ol style="list-style-type: none">1. Philippa Mansell (Mars Sustainable Solutions)2. Nyoman Januarsa (Biorock Indonesia)3. Pariama MD Hutasoit (NDRF)4. Ryannyka Dwi (LINI) |
| 16:40 – 17:00 (20 minutes) | Session Q&A | Moderator |
| 17:00 – 17:25 (25 minutes) | Session 3: Speakers presentation (5 minutes each) | Bali Reef Rehabilitation Network Members: <ol style="list-style-type: none">1. Bram Bredero (Bali Hai Cruises)2. Andrew Taylor (Blue Corner)3. Aryo Damar (Livingseas)4. I Nyoman Karyawan (Nuansa Pulau) |
| 17:25 – 17:45 (20 minutes) | Session Q&A | Moderator |
| 17:45 – 17:50 (5 minutes) | Webinar Closing | BPSPL Denpasar and Moderator |

Appendix 2. Keynote Speakers and Panelists

| No. | Name | Organization |
|-----|----------------------|----------------------------|
| 1 | Dr. Rahmadi Prasetya | Dhyana Pura |
| 2 | Dr. Beginer Subhan | Institut Pertanian Bogor |
| 3 | Philippa Mansell | Mars Sustainable Solutions |
| 4 | I Nyoman Januarsa | Biorock Indonesia |
| 5 | Pariama MD Hutasoit | Nusa Dua Reef Foundation |
| 6 | Ryannyka Dwi | LINI |
| 7 | Bram Bredero | Bali Hai Cruises |
| 8 | Andrew Taylor | Blue Corner |
| 9 | Aryo Damar | Livingseas |
| 10 | I Nyoman Karyawan | Kelompok Nuansa Pulau |

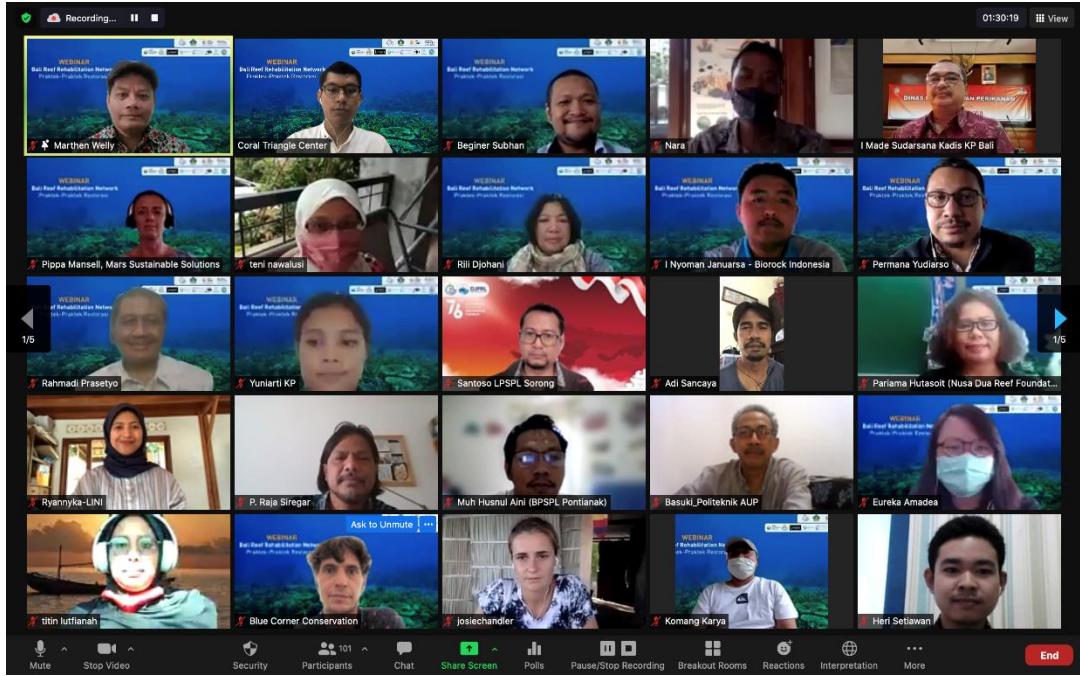
Appendix 3. Webinar Flyer and Photos



Picture 1. Webinar Flyer

A screenshot of a video conference interface. At the top, it says "You are viewing Eureka Amadea's screen" and "View Options". On the right, there is a video feed of a woman with glasses, identified as Ms. Rili. The main content area has two sections: "REEF RESILIENCE NETWORK" which discusses the network's mission and members, and "INTERNATIONAL CORAL REEF INITIATIVE" which provides information about ICRI's actions and goals. Both sections include logos and URLs. The footer of the video conference includes standard controls like Unmute, Start Video, Security, Participants (68), Chat, Share Screen, Polls, Pause/Stop Recording, Breakout Rooms, Reactions, Interpretation, More, and an End button.

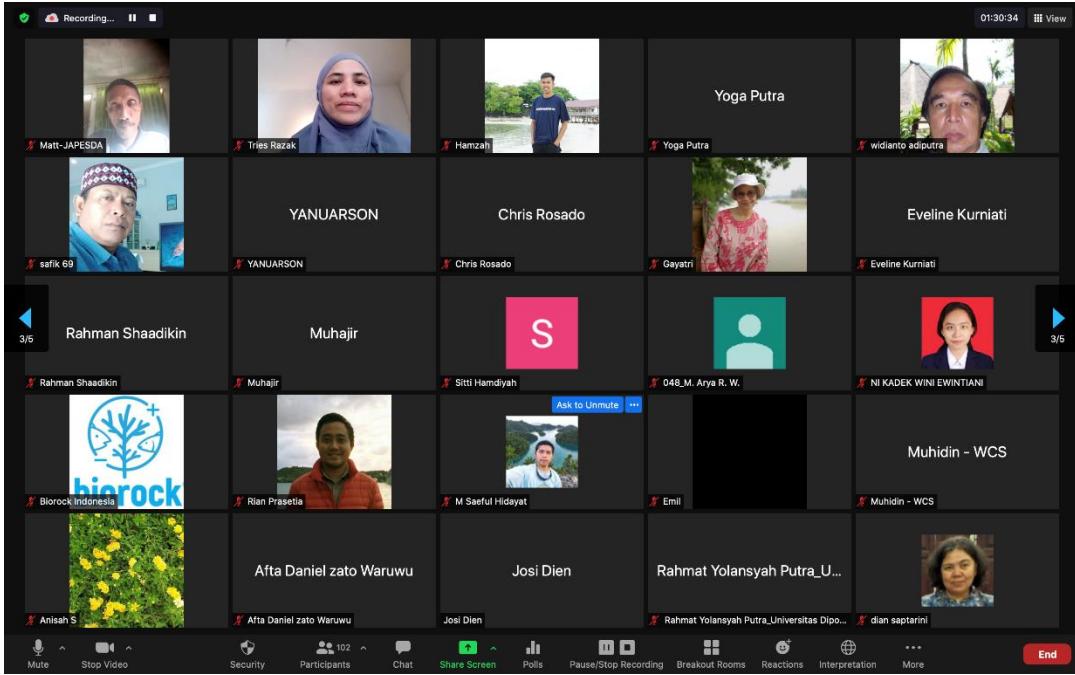
Picture 2. Ms. Rili's greeting



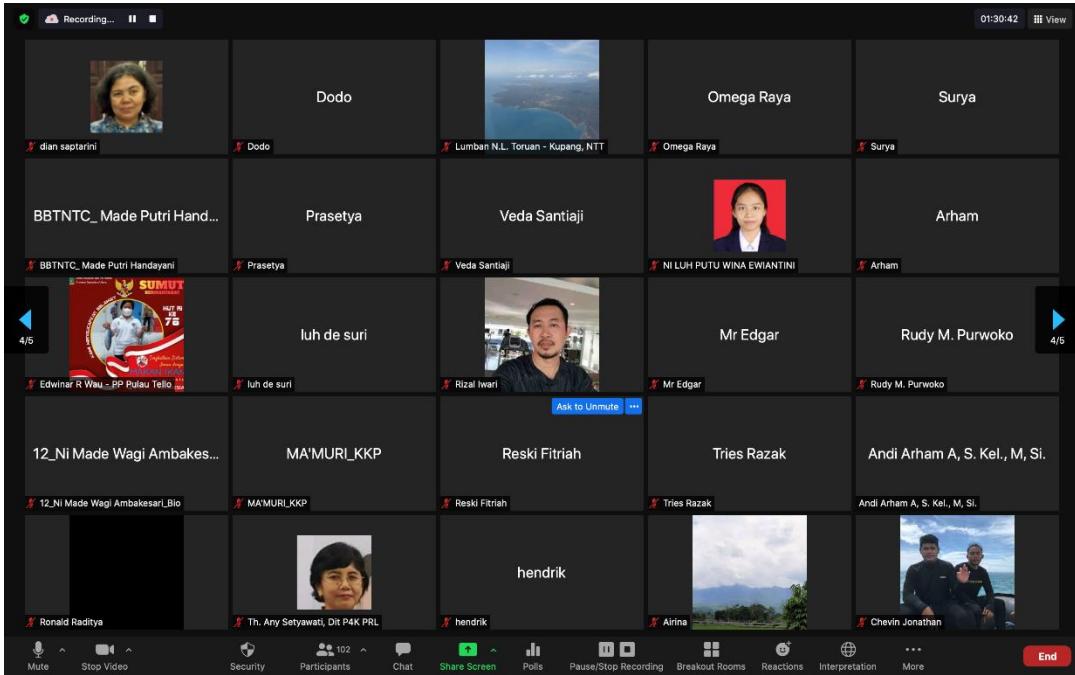
Picture 3. Group photo



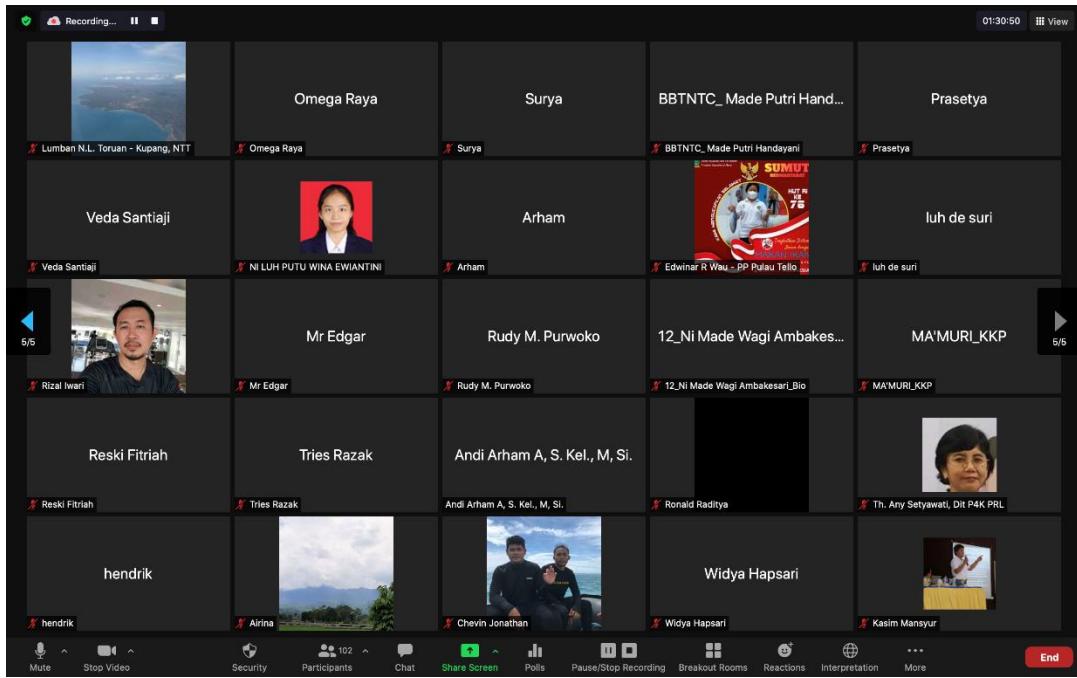
Picture 4. Group photo



Picture 5. Group photo



Picture 6. Group photo



Picture 7. Group photo

Appendix 4. List of Participants

List of participants according to the attendance sheet:

| Full Name | Organization | Role / Position |
|-----------------------------|--|---|
| Evi Nurul Ihsan | Coral Triangle Center | Staff |
| Barnard Ceisaro Purba | KKP | PELP Ahli Muda/Sub Koordinator Adaptasi Perubahan Iklim |
| Rahmat Yolansyah Putra | DIPONEGORO UNIVERSITY | STUDENT |
| Philippa Jane Mansell | Mars | Indonesian Program Manager |
| Barnard Ceisaro Purba | KKP | PELP Ahli Muda |
| SAFIK | Cabdin kp situbondo | Staf |
| Muhidin | Wildlife Conservation Society | Coral Reef Science Officer |
| Sandra Augusta | None | None |
| Edwinar Rashinaya Wau, S.Pi | UPT PPP Pulau Tello Dinas Kelautan dan Perikanan Provinsi Sumatera Utara | Kasi Operasional Pelabuhan Perikanan |
| Bram Bredero | Bali Hai Cruises | Diving manager |
| Ratna Suharti | Politeknik Ahli Usaha Perikanan | Dosen |
| Lumban Nauli Lumban Toruan | Universitas Nusa Cendana | Lecturer |
| Titin Lutfianah | Dinas Kelautan dan Perikanan Provinsi Jawa Timur | Staf |
| Lily Damayanti | PT Mars Symbioscience Indonesia | Marine Program Manager of Mars Sustainable Solutions |

| | | |
|---|---|--|
| Farhan Ryandi | Badan Pelaksana Otorita Labuan Bajo Flores | Kepala Divisi Amenitas & Daya Tarik Wisata |
| Widya Hapsari | Freelance dive guide | Professional scuba diver |
| Ir. Widianto Adiputra , Dipl.SE , M. Eng | PK3DAI | Senior Engineer |
| I NYOMAN KARYAWAN | Kelompok Nuansa Pulau | Ketua |
| Suyanto Nawawi | Jaladharma diving club | Ketua Klub |
| Nyoman Adi Sancaya | Bahari Prawara MPA | Team Leader |
| Muhammad Arya Raqi Wardhana | Universitas Padjadjaran | Pelajar |
| Ratna Suharti | Politeknik Ahli Usaha Perikanan | Peserta |
| I Made Cahya Narayana | Coral Triangle Center | Junior Communications Officer |
| Ir. Ketut Astari,M.Si | DKP Bali | Kabid Kelautan |
| Muhajir, S.Pi., M.Kes. | Universitas Dr. Soetomo | Dosen |
| Fahrizal Ari Iwari | KKP | Analis Konservasi dan Rehabilitasi Wilayah Pesisir |
| Ni Made Putri Handayani, S.Pi | Balai Besar Taman Nasional Teluk Cenderawasih | Pengendali Ekosistem Hutan Ahli Pertama |
| Andi Arham Atjo | Universitas Sulawesi Barat | Lecture |
| Kasim Mansyur, ST., M.Si | Pusat Penelitian Kelautan (PPKPMP) Universitas Tadulako | Sekretaris & Researcher |
| Ronald Raditya | KKP | Pelp |
| Ni Kadek Wini Ewintiani | Universitas Dhyana Pura | Mahasiswa |
| Teni Nawalusi, S.Pt., MP | Dinas Kelautan dan Perikanan Provinsi Jawa Barat | Jawa Barat |
| Ahmad Bahsoan | JAPESDA | Dewan Pengawas |
| Ni Luh Putu Wina Ewiantini | Universitas Dhyana Pura | Mahasiswa |
| Anak Agung Puteri Citrawati | DPKP Kota Denpasar | Peserta |
| cahyo widodo | Yayasan Baileo Maluku | Site Coordinator |
| Kasman | Coral Triangle Center | Lease MPA Coordinator |
| Mochyudho Eka Prasetya | PT.Mars Indonesia | Marine Conservation Program |
| I Made Gde Sudyadnyana Sandhika, S.Si., M.Si. | Universitas Dhyana Pura | Lecturer |
| ANDREW TAYLOR | BLUE CORNER CONSERVATION | DIRECTOR |
| Permana Yudiarso | BPSPL Denpasar | Head |
| Akbar Reza | UGM | Lecturer |
| AFTA DANIEL ZATO WARUWU | Universitas Dhyana Pura | Mahasiswa |
| Permas Bagya Maulana | Mars symbioscience | Program officer |
| Mohamad Saeful Hidayat | IPB University | Graduate Student |
| Santoso Budi Widiarto | Loka Pengelolaan Sumberdaya Pesisir dan Laut Sorong | Kepala |
| Rahman Shaadikin, S.Pi., M.Si | Institut Teknologi dan Bisnis Muhammadiyah Wakatobi | Dosen Ilmu Perikanan |
| Moh. Reza Sabda Firdaus | BPSPL Pontianak | PELP |
| I Nyoman Suyasa | Poltek. AUP | Lektor Kepala |
| Veda Santiaji | WWF | MPA and Coastal Community Specialist |
| Wahyu Kurniallah, S.Pi | Cabang Dinas Kelautan dan Perikanan Kabupaten Situbondo | Analis Konservasi Kawasan |
| Widyana Ayu Kristantina, S.Pi | Cabdin KP Situbondo | Staf |
| Hamzah, S.Kel | DFW Indonesia | - |
| Ai Rina Irmayanti | Dinas Kelautan dan Perikanan Provinsi Jawa Barat | Analis Pencemaran Laut |

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|----------------------------|---|--|
| DR IR UMI ZAKIYAH, MSc | Dept. of Aquatic Resources Management, Fac. of Fisheries and Marine Science, Brawijaya University | Senior Lecturer/Researcher |
| beginer subhan | IPB University | Lecturer |
| Basuki Rachmad | Jakarta Technical University of Fisheries | Lecturer |
| I Nyoman Januarsa | Biorock Indonesia | Koordinator Program |
| Ni Made Wagi Ambakesari | Universitas Dhyana Pura | Peserta |
| UMI ZAKIYAH | Dept. of Aquatic Resources Management, Fac. of Fisheries and Marine Science, Brawijaya University | Lecturer/Researcher |
| Th Any Setyawati | KKP | Pelaksana |
| muhammad husnul aini | BPSPL Pontianak | Sub Koord PE |
| Heri Setiawan | BPSPL Pontianak | Staf PP |
| Reski Fitriah | Universitas Sulawesi Barat | Dosen |
| MA'MURI | Kementerian Kelautan dan Perikanan | Peserta |
| Suryati Musram | BPSPL Makassar | Staf |
| Yusron Alifi, S.Kel | Cabang Dinas Kelautan dan Perikanan Kabupaten Situbondo | Analis Konservasi Kawasan |
| Tries Blandine Razak | IPB University | Research fellow |
| YANUARSON | DINAS PERIKANAN | ASN |
| Omega Raya Simarangkir | Stiper Kutim | Dosen |
| Dian Saptarini | Institut Teknologi Sepuluh Nopember, Surabaya | Lecture in Biology Department |
| Sariamin Sahari, S.Pd.M.Si | Community Collage of Marine and Fisheries of Wakatobi | Lecturer |
| Shifa Fauziah | IPB | Mahasiswa |
| Rikardus Guru | Organisasi Penyelam Profesional Komodo (p3kom) | Wakit Ketua |
| P. Raja Siregar | Konsultan Individual | Konsultan |
| Faishal Widiaputra Nugraha | Cabang Dinas Kelautan Wilayah Barat | Analis Konservasi dan Rehabilitasi Wilayah Pesisir |
| Divo Ario | SIL UI | Alumni |
| Egi Pamungkas | LINI Foundation | Project Coordinator |
| Agung Nugroho | Dinas Lingkungan Hidup | Staff |
| Adityo Harmawan | CDKWB Prov. Jateng | Staff Analis Konservasi dan Rehabilitasi Pesisir |
| Fikhi Andika Roska | Politeknik kelautan dan perikanan bone | Mahasiswa |
| Nasruddin, S.Kel | DFW Indonesia | Koordinator Program KBA Wabula |
| RUDY MASUSWO PURWOKO | pusriskan | peneliti |
| Sabina anasya | Unpad | Mahasiswa |
| Ricky | Bpspl pontianak | Pelp Muda |
| Rohmani Sulisyati | Balai TN Karimunjawa | Staf / PEH Madya |
| Sandrianto Buntubatu | Mulawarman University | student |
| Raditya Andrean Saputra | Indonesia Biru Foundation | Director |
| Agung Nugroho, S.Si, M.Si | Environmental Agency of West Sumatra | Staff |
| Dr. Tarzan Purnomo, M.Si. | Universitas Negeri Surabaya | Lecturer |
| Anwar | Daerah Perlindungan Laut Basis Masyarakat (DPL-BM) | Anggota |
| Sitti Hamdiyah | KKP | Staf kerjasama |
| Dining Aidil Candri | Universitas mataram | Lecture |
| Yuniarti Karina Pumpun | BPSPL Denpasar | PELP Ahli Pertama |

| | | |
|--|---|--|
| Puji Rahmawati, S.Pi | Cabang Dinas Kelautan dan Perikanan Kabupaten Situbondo | ASN |
| Ryannyka Dwi | Yayasan LINI | Outreach&Science Coordinator |
| DR IR UMI ZAKIYAH, MSi | Dept of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Brawijaya University | Senior Lecturer/Researcher |
| Reski Fitriah | Universitas Sulawesi Barat | Dosen |
| Abdul Wahab, A.Md | UPT Pelabuhan Perikanan Nusantara Brondong | AP3T |
| Christiana Eko Maiyati,S.Sos | KKP | Tindak lanjut kami tunggu |
| Emilio de la Rosa | Rare | Associate |
| Mutiara Faramitha Tarigan,S.St.Pi,M.Tr.Pi | PPS Belawan | Medan |
| Reski Fitriah | Universitas Sulawesi Barat | Dosen |
| Maria Waroi | BPPP AMBON | Penyuluhan perikanan |
| Ilten Lakoro | Perikanan | -- |
| Capt.Edison Marhusa Siregar MMTr MMar. | UMKM LOBUSONAK SMART | Supervisor |
| MAYA HARIS | . | . |
| JULIANA EMA BAIBABA | Penyuluhan | Tole |
| SAPRIYUN,S.ST.Pi | SMKN 2 Ketapang | Ketua Program Keahlian Nautika Kapal Penangkap Ikan |
| Muhammad Anas | DPKP | Staf |
| Edison | ITL TRISAKTI | STUDENT |
| SAFIK | Cabdin kp situbondo | Staff |

Appendix 5. Minutes of Webinar

Bali Reef Rehabilitation Network Webinar

Praktik-Praktik Restorasi

20 Agustus 2021

15.00-18.00 WITA

14.00-17.00 WIB

Masukan dan Diskusi Sesi Keynote Speaker

P. Raja Siregar

Apakah ada bentuk tanggap darurat (early action) Terhadap terumbu karang setelah menghadapi guncangan (*shock*), misalnya El Nino, siklon tropis? Apakah bentuknya sama seperti restorasi yang disebut tadi atau ada bentuk tahapan awal yang perlu dilakukan?

Respon dari Dr. Beginer: Kalau kaitannya dengan tanggap darurat, sepengetahuan saya sampai saat ini baru ada *coral bleaching network* yang mendata sejauh mana kondisi terumbu karang ketika ada informasi dari NOAA tentang *bleaching alert*. Sampai saat ini baru pada batasan mencatat bagaimana persebaran dan mencari informasi sebanyak-banyaknya. Untuk pelaksanaanya sampai saat ini sepengetahuan saya belum ada, misalnya ada daerah yang *bleaching* apakah kawasan harus ditutup dari wisatawan atau ada langkah yang lain. Yang pasti kita memang diperlukan aksi tanggap darurat yang memperlihatkan *flowchart* aksi-aksi yang perlu dilakukan ketika terjadi permasalahan. Infrastruktur juga perlu dipersiapkan adalah *smart monitoring* yang bisa membantu kita dalam mengambil keputusan ketika terjadi permasalahan seperti kenaikan suhu permukaan laut, badai siklon, hal yang harus dilakukan terhadap *coral garden* kita. Sampai saat ini memang masih belum ada, baru sebatas pendataan.

I Nyoman Suyasa

ICRG merupakan investasi yang sangat besar terkait kegiatan restorasi terumbu karang. Persoalannya sekarang adalah siapa yang bertanggung jawab untuk memonitor dan memelihara serta mengevaluasi apa yang telah dilakukan. Jangan sampai kegagalan akan terjadi pula pada kegiatan restorasi lainnya, sekedar menanam dan selesai.

Response dari Dr. Rahmadi: ICRG kemarin adalah sebuah investasi yang luar biasa, serta kemarin saya sempat berbicara

dengan Pak Direktur, dimana ICRG memang seharusnya bisa menghasilkan minimal Doktor dan 10 Master di bidang transplantasi karang. Ada banyak topik yang bisa diambil dari restorasi yang dilakukan di 5 tempat pelaksanaan ICRG. Tentang bagaimana cara pemeliharaannya dan penelitiannya itu masih dalam proses diskusi dan sedang dikoordinasikan. Oleh karena itu Pak Yudi dari BPSPL Denpasar serta Pak Made dari DKP Provinsi Bali untuk bisa mendiskusikan hal ini. Akademisi dan masyarakat sangat peduli dan siap untuk mendukung termasuk kebutuhan mahasiswa, kita siap untuk memonitor. Kunci dari proses restorasi tersebut selain merestorasi manusanya, kita memang harus menjaga proses restorasi dengan benar. Kita sepakat ICRG menjadi tempat yang kurang berhasil karena kurangnya perawatan yang berkelanjutan. Hingga kita harapkan bersama muncul ide-ide baru melalui wadah diskusi seperti ini untuk mengadakan penelitian atau hal lainnya di banyak tempat.

Sulis Rahmani

Bagaimana memilih metode yang tepat untuk restorasi di pulau - pulau kecil dengan kondisi terumbu karang yang Berbeda?

Respon Dr. Rahmadi: Memilih metode yang paling tepat saya kira hanya bisa dilakukan membuat *small scale*/skala kecil terlebih dahulu dan terus mendiskusikan dengan masyarakat setempat. Keunikan suatu tempat/pulau kadang tidak bisa menggunakan satu metode saja.

Arham

Coral Rehabilitation menurut saya harus terus digalakkan untuk mengimbangi kerusakan. Namun ada masalah yang sering saya dapatkan di lapangan, salah satunya adalah para relawan yang belum mengetahui metodenya sehingga karang yang ditransplantasikan banyak yang mati.

Respon Dr. Rahmadi: saya sepakat, kita perlu mengedukasi banyak teman-teman, relawan, penyelam dan turis.

Masukan dan Diskusi Sesi Panelis

Agung Nugroho

Yth Bapak Ibu Narasumber, Bagaimana menentukan baku tingkat kerusakan terumbu karang dan menghitung persentase kerusakannya sebagai dasar menentukan rusak tidaknya suatu ekosistem terumbu karang, terima kasih

Respon dari Tries Razak: Baku tingkat kerusakan terumbu karang telah diatur dalam KEPMEN KLH No. 04 Tahun 2001

Lumban N. L Toruan

Sebenarnya saya takjub melihat berbagai logo di webinar ini yang menunjukkan beragamnya lembaga yang terlibat dalam restorasi terumbu karang di Bali. Sayangnya ketika saya mencari *lesson learn* restorasi terumbu karang di youtube, sangat susah sekali menemukan tahapan-tahapan yang didokumentasikan dengan rinci untuk setiap metode restorasi oleh suatu lembaga yang terlibat dalam restorasi, hanya bagaikan berita lepas atau dokumentasi sekilas saja, itupun hanya tahapan yang awalnya tidak tahu seperti apa. Entah apakah metode tersebut rahasia atau harus "dibayar" pelatihnya supaya tahapan, tips dan triknya diketahui atau harus seperti apa sehingga jarang didokumentasikan dalam bentuk video di youtube secara bertahap dan rinci pada masing-masing lembaga. Saya sempat menemukan *lesson learn* secara bertahap dari youtube Metamorfosa Bali. Salah atau benar, saya tidak tahu, tetapi penjelasannya menarik.

Menurut saya perlu dokumentasi video, baik tahapan sekaligus penjelasannya dari tiap metode restorasi pada setiap lembaga pelaku restorasi sehingga banyak pembelajaran yang bisa diperoleh masyarakat terutama di daerah - daerah yang jauh, susah pendanaan (apalagi kalau harus menerangkan pakar/trainer ke lokasi), namun memiliki keinginan kuat untuk memperbaiki ekosistem karangnya.

Respon Dr. Beginer: Pak Lumban ini mungkin bisa dilihat
<https://www.youtube.com/watch?v=ZIT7uqi4dEE>

Respon Gayatri: Pak Lumban silahkan visit:
https://www.youtube.com/watch?v=ZpQ11Glnb_M

I Nyoman Suyasa

Melihat apa yang disampaikan teman-teman semua terkait Pengalaman dalam kegiatan restorasi terumbu karang dengan metode yang berbeda-beda, Saya mengusulkan mungkin Ibu Rili/Pak Marthen dengan CTC dapat mengumpulkan informasi dimaksud untuk dijadikan sumber referensi atau pembelajaran kegiatan serupa di daerah lain yang kondisi perairannya relatif sama.

Respon dari Marthen Welly: Usul yang baik Pak Nyoman Suyasa, CTC bersama *Network* dan *Task Force* akan mengumpulkan berbagai referensi dan metode yang berbeda beda terkait restorasi karang.

Lumban N. L Toruan

Selain referensi, juga perlu pengumpulan metode beserta penyebarannya secara visual. Masyarakat Indonesia itu umumnya visual dengan tingkat literasi yang tidak terlalu tinggi, kalau akademisi wajar banyak baca. Oleh karena itu *lesson learn* secara visual itu penting bagi masyarakat.

Respon Marthen Welly: Siap Pak Lumban Toruan, tadi Pak Begin sudah mulai dengan Peta Distribusinya, bisa dimulai dari sana sepertinya agar terlihat lebih visual, dan peta tersebut bisa menarik kalau bisa dibuat interaktif disertai gambar dan video jika titik titik di klik pada peta.

Veda Santiaji

Salut utk para presenter. Bagus nih sesi berbagi pembelajarannya. Baik kalau sesi berbagi ini dilanjutkan dengan mengundang pembicara-pembicara untuk berbagi pembelajaran *reef rehabilitation* dari luar Bali.

Respon dari Marthen Welly: noted Bli Veda dan akan di *follow up* dengan kerjasama banyak pihak tentunya.

Sandra Augusta

Saya setuju mengenai visual tentang restorasi & rehabilitasi ataupun keadaan terumbu karang itu sendiri. karena saya mencoba mencari beberapa video melalui beberapa platform mengenai isu ini, tp jarang saya temukan. Saya juga membaca beberapa jurnal mengenai degradasi terumbu karang, tetapi saya jarang menemukan visual mengenai isu itu secara baik, mungkin saya hanya melihat dari beberapa dokumenter yang dilakukan oleh orang luar. Akhirnya tahun ini saya mencoba melihat sendiri, kebetulan Bali menjadi tujuan pertama saya, dan saya membuat sedikit video pendek di Instagram saya mengenai Terumbu Karang. Karena isu mengenai lingkungan ini menjadi tugas kita semua, sebagai masyarakat Indonesia untuk ikut serta menjaga sumber daya alam itu sendiri. Terima Kasih untuk ilmu-ilmunya, sangat bermanfaat.

Dian Saptarini

Bapak/ibu narsum, mohon ijin bertanya. Untuk terumbu

karang yang berada di zona pemanfaatan laut, misal : zona pengembangan permukiman, pengembangan kegiatan industri, alur pelayaran dll, bagaimanakah status perlindungan dan perizinan dalam pemanfaatan ruang laut. Terimakasih

Respon Dr. Begin: Sudah aturan di semua daerah bahwa terumbu karang adalah suatu ekosistem yang sensitif. Jadi perlindungannya sudah diatur. Kalau misalkan ada yang menabrak memang berkewajiban untuk mengganti. Terkait pertanyaan Ibu Dian, memang setiap zonasi mempunyai pemangku kepentingan yang mengeluarkan perizinan. Misalkan daerah-daerah dekat pelabuhan atau pelayaran menjadi tanggung jawab otoritas setempat yang perlu mengordinasikan. Karena selain dia mempunyai otoritas dia juga mempunyai tanggung jawab jika terjadi kerusakan dan hal lainnya.

Respon Dian Saptarini: Soalnya ada hal yang membingungkan Pak Marthen. Terumbu karang itu kan berada di wilayah sekitar pelabuhan seperti yang disampaikan Dr. Begin. Namun kadang-kadang ada kapal yang datang untuk muatan bahan baku dan lain hal. Hal yang membingungkan adalah status perlindungannya seperti apa.

Respon Kasman CTC: Sedikit menginformasikan bahwa pemanfaatan ruang laut baik di luar maupun di dalam Kawasan konservasi harus memperoleh izin dari PTSP PRL KKP.

Respon Marthen Welly: Terima kasih Dr. Begin dan Kasman dari CTC telah memberikan jawaban. Semoga bisa menjawab pertanyaan dari Ibu Dian. Benar sekali perencanaan tata ruang laut menjadi penting yang ditunjang dengan data yang valid. Sehingga penetapan zona-zona tersebut bisa sesuai dengan keberadaan lokasi terumbu karang. Yang jelas pemanfaatan terumbu karang sudah mempunyai aturan.

Appendix 6. Recording and Presentations

A recording of the webinar can be accessed through CTC's YouTube channel at:

<https://www.youtube.com/watch?v=EHE1mW0REuo>

Presentations of the webinar speakers can be accessed through this link:

<https://drive.google.com/drive/folders/1VkdF4XuBtUwaLbj-axkBZB0Uu5D-Zqz0>