



ICRI Member's Report

Panama

Reporting period December 2017 – November 2018

1. **Reporting on the ICRI Plan of Action 2016-2018.** *Your responses will help inform the Secretariat about members' contributions toward the previous Plan of Action.*

a. **Please list any relevant examples from your organisation/country of investment/projects to protect and restore the natural infrastructure of reefs and mangroves.** (See Goal (1) 2 [ICRI Recommendation for supporting investments in the natural infrastructure of reefs and mangroves to increase climate resilience](#)).

***All concern to conservation, protection and management to marine coastal resources move from Authority of Aquatic Resources to Ministry of Environment since 2015.**

Ministry of Environment (MiAMBIENTE) is the government entity of the State in terms of protection, conservation, preservation and restoration of the environment and the sustainable use of natural resources, biodiversity to ensure compliance and enforcement of laws, regulation and national environmental policy. Among its functions is that of review and approval of the permits for access to genetic resources, the verification and control of the coral samples for research is maintained. In the period from 2016- 2018 we have approved and issued 16th investigation of coral reefs throughout the national territory, both for Caribbean and Pacific.

- On 2017, in Panama has been restored almost 50 hectares of mangrove, and we develop a Mangrove with Carbon sinks restoration project since 2015-2018.
- Restoration Guide, achieving a human capacity building of at least 100 peoples on this thematic.
- We started the development of geomap of our coastal marine resources in the Pacific side, with the assessment of the Standing Committee of the South Pacific (CPPS in spaninsh), and this tool will helps us to create a monitoring program for our reefs, mangrove and other coastal marine resources. In relation to the cost plan as such, the only thing that can be mentioned is that in the National Climate Change Plan we have the marine coastal vulnerability component at a national level, in the future biodiversity will be integrated

Budget amount: is part of the application of funds to the climate change agreement. This would start with external input the other year.

A proposal to develop a National Coastal Erosion Plan was presented with the Association of Caribbean States AEC. The support of her will basically be

the team to monitor the coastal erosion associated with climate change, focused on the vulnerability of people living on the coasts and seas. Currently there is no integrated vision to corals, but we could integrate it into the local contribution project if possible to obtain funds to develop it. The estimated amount that is required is USD. 40,000.00

- b. **Has your organisation/country made any progress in the following areas to target anthropogenic pressures?** Please give detail below. Note: If no change since your last ICRI member report, please write 'no change'.

Encourage ban of plastic microbeads in cosmetic products. (See Goal (3) 2 & [See ICRI Recommendation to reduce plastic microbeads pollution in marine environment](#)):

Not yet , we are added to Global Gear network initiative
No Changes

Improve regulation and enforcement to reduce direct anthropogenic damage due to dredging and physical alteration of reef structures. (See Goal (3) 3 & [ICRI Recommendation to reduce damage due to dredging and dumping on coral reefs](#)):

No change

Deployment of mooring devices limiting the mechanical destruction of coral reefs and seagrasses. (See Goal (3) 4).

No Change, Only improve the monitoring of the important areas

- c. **Did your organisation/country celebrate International Year of the Reef?** Please give details below. (See Goal (5) 1 & [ICRI Recommendation designating 2018 as the third International Year of the Reef](#)):

2. **Contribution to the ICRI Plan of Action 2018-2020 and upcoming ICRI general meetings.** *Your responses to the following questions will assist the Secretariat in assessing contributions towards the major themes of the draft ICRI Plan of Action 2018-2020.*

Theme 1 – Promote effective and adaptable solutions to improve the protection of coral reefs

- a. **Which of the below topics do you consider to be the three top challenges that your organisation faces in managing coral reefs?** Please select from the options below:

- Climate change impacts
- Inadequate planning, zoning and management
- Unsustainable resource extraction
- Tourism and recreation
- Shipping
- Coastal development
- Dredging

- Illegal and destructive fishing
- Fish and coral trade
- Marine debris
- Other. Please specify:

- b. **Please list any examples of innovative management practices that your organisation/country is involved in, such as use of VMS, drones & ecological mooring devices.** Include their limits, conditions of implementation, financing and an assessment of their results and links for more information if possible.
- c. **Please list any examples of innovative funding for management that your organisation/country is involved in.** Include their limits, conditions of implementation, financing and an assessment of their results and links for more information if possible.
- d. **Please list any examples of leading practices, techniques and strategies for building reef resilience that your organisation/country is involved in.** Include their limits, conditions of implementation, financing and an assessment of their results and links for more information if possible.
- *We are implementing two strategies, the fishing tournament of the lionfish in the Caribbean, and underwater cleaning (Ghost fishing net project).*
 - **Futhers Actions for management Coral Reef Communities Status:**
 MiAmbiente and Maritime International University of Panama in alliance are improve the project to determine the current and healht status of coral reef communities and key species for the fishery in the Coiba National Park that is a nucleo area from theEastern Tropical Pacific (Colombia, Costa Rica and Ecuador) to propose measures for Monitoring, Management and Conservation of Marine and Coastal resources. To know the current state of reef communities and key species for fisheries in pursuit of regional patterns of biodiversity and generate suggestions to support the management and conservation programs for the Coiba National's Park and know about the pressure from tuorist activities in this important area . Update and improve the existing protocol for monitoring reef areas and key species of Coiba National park to be adopted by the Ministry as a management tool to strengthen conservation processes in this areas. The general objective of this proposal is to establish the current condition status of the reefs of the Coiba National Park (PNC), by estimating ecological indicators of the key communities for the ecosystem.

The specific objectives that are to be achieved according to the main objective are:

Evaluate the condition indicators of the reef ecosystem (biomass and fish diversity, density and diversity of benthic macro invertebrates and coral health coverage and status) and characterize the community of species of fishing importance for the PNC region.

Establish regional patterns of biodiversity of the reef community and compare what is found with other regions of the Eastern Tropical Pacific

Characterize the threats of natural and anthropic origin to which the coral reefs of the PNC are subjected.

Establish an environmental quality index for the reefs of the PNC and its surroundings that is useful as a tool in decision making for conservation.

Establish temporal differences in the condition of the reefs by comparing the indicators and the survey that are done helps us to establish the biological baseline of the park's coral reef community and be able to make comparisons over time and between periods.

This research will generate an updated knowledge of the state of condition of the reef ecosystems of the Coiba National Park, as well as its variations in association with the state of protection thereof. It will also provide information regarding the threats of natural or anthropic origin that the species and the ecosystem itself face for their permanence in the region.

The information generated from the proposed project will be useful for science in a descriptive way, since it allows knowing the current condition of the visited sites and their similarity with respect to the composition of the species and their abundances, but will also mark a starting point for studies that seek to evaluate in the future the level of change in the composition and structure of the faunas of interest within the Pacific of Panama.

Budget amount: 30,000 USD and any support to the stateholders

- e. **Please list any examples of leading practice reef restoration mechanisms that your organisation/country is involved in.** Include their limits, conditions of implementation, financing and an assessment of their results and links for more information if possible.

Theme 3 – Support communities reliant on coral reefs

- f. **Is sustainable tourism development a significant challenge for your organisation?** If so please include detail below of the kinds of challenges faced and your strategies to deal with them.
On this sector Panama has been working with the Tourism Authority of Panama for create a lay about certification in sustainable tourism, that will be obligatory for the

tour operator in the Protected Areas.

- g. Is your organisation involved in activities to raise awareness and encourage action to support communities reliant on coral reefs?** Please include details below.

Panamanian authorities should incorporate the results of such studies in the management of marine ecosystems and resources are related. Increase the capacity of the authorities for monitoring and evaluation of these ecosystems and species. And it is necessary to increase investment and build technique capacity by the state to support marine monitoring programs.

Theme 4 - Help to reduce anthropogenic threats to coral reefs, particularly those that occur at a global or regional scale

- h. What activities is your organisation involved in to elevate awareness of the global nature of the threat of climate change to coral reefs?** Please include details below
- **Estudio de vulnerabilidad en las costas**
 - **Proyecto sobre las costas arenosas del Caribe en conjunto con la Asociación de Estados del Caribe**
- i. Has your organisation made any progress in dealing with destructive fishing and trade?** Please include details below.
- j. Has your organisation made any progress in dealing with marine debris?** Please include details below.
- On this aspect we are working on different areas, one of them area the Cleaning beach program at national level, this effort achieve in 2017 with 4,895 volunteers we collected 90 tons of garbage from the beaches.
 - The Ministry of Health are implemented of the Sanitation Program of Panama, (<http://saneamientodepanama.gob.pa>).
 - One of the big steps for reduce the marine pollution will be reinforce compliance with the new law that prohibits plastic bags.

- 3. Would you like to report on your activities during the ICRI GM?** Please give details below.

Y / N for the moment

- 4. International events.** Please list any upcoming international events relevant to ICRI which someone from your organisation plans to attend in 2018-2019.

ICRI GM, Monaco, 5-7 Dec 2018

Conference of the Parties to the United Nations Framework Convention on Climate Change, 3-14 Dec 2018

5. Publications. Please list relevant publications and reports you have released during this reporting period.

Title (Incl. author and date)	Website URL if available	Type of publication (paper, report, etc)
Breedy, Odalisca and Guzman, Hector M. 2018. "A new alcyonacean species (Cnidaria: Anthozoa: Octocorallia) from a seamount in the tropical Pacific Ocean." <i>Bulletin of Marine Science</i> . 94 (4):1515–1524.	https://doi.org/10.5343/bms.2018.0027	paper
Sletten, Hillary R., Andrus, C. Fred T., Guzman, Hector M., and Halfar, Jochen. 2017. "Re-evaluation of using rhodolith growth patterns for paleoenvironmental reconstruction: An example from the Gulf of Panama." <i>Palaeogeography palaeoclimatology palaeoecology</i> . 465 (Part A):264–277.	https://doi.org/10.1016/j.palaeo.2016.10.038	paper
Sletten, Hillary R., Gillikin, David P., Halfar, Jochen, Andrus, C. F., and Guzman, Hector M. 2017. "Skeletal growth controls on Mg/Ca and P/Ca ratios in tropical Eastern Pacific rhodoliths (coralline red algae)." <i>Chemical Geology</i> . 465:1–10.	https://doi.org/10.1016/j.chemgeo.2017.05.010	paper
Maté JL, Brandt M, Grassian B, Chiriboga A (2017) Chapter 22. Field Guide to Select Eastern Pacific Corals 22. 593-637. In Coral Reefs of the Eastern Pacific. Glynn PW, Enochs I, Manzello D (Eds). Springer and Associated Coral Reef Biota		paper
Samonte-Tan G, D Suman, J Maté, D Quiroga, C Mena, A Catzim-Sanchez, P Fong, X Wang (2014) Chapter 27: Governance is Critical to Managing Coastal and Marine Resources: pp 485-498. Effects of Marine Management Areas. In Economics of Biodiversity and Ecosystem Services (eds. P Nunes, P Kumar, T Dedeurwaerdere). Edward Elgar Publisher House. 608 pp		paper
Glynn PW, Grassian B, Kleemann KH, Maté JL (2016) The true identity of <i>Siderastrea glynni</i> Budd & Guzman, 1994, a highly endangered eastern Pacific scleractinian coral. Coral Reefs DOI 10.1007/s00338-016-1470-8		
Glynn PW, JJ Alvarado, S Banks, J Cortés, JS Feingold, C Jiménez, JE Maragos, P Martínez, JL Maté, DA Moanga, S Navarrete, H Reyes-Bonilla, B Riegl, F Rivera, B Vargas-Ángel, EA Wieters, FA Zapata (2017). Chapter 5. Eastern Pacific Coral Reef Provinces, Coral Community Structure and Composition: An Overview. Pp 107-176. In Coral Reefs of the Eastern Pacific. Glynn PW, Enochs I, Manzello D (Eds). Springer		
Pineda, Jesús, Cho, Walter, Starczak, Victoria, Govindarajan, Annette F., Guzman, Hé, Girdhar, Yogesh, Holleman, Rusty C., Churchill, James, Singh, Hanumant, and Ralston, David K. 2016. "A crab swarm at an ecological hotspot: patchiness and population density from AUV observations at a coastal, tropical seamount." <i>PeerJ</i> . 4:	https://doi.org/10.7717/peerj.1770	
Sangil, Carlos and Guzman, Hector M. 2016. "Assessing the herbivore role of the sea-urchin <i>Echinometra viridis</i> : Keys to determine the structure of communities in disturbed coral reefs." <i>Marine environmental research</i> . 120:202–213.	https://doi.org/10.1016/j.marenvres.2016.08.008	

Sangil, Carlos and Guzman, Hector M. 2016. "Macroalgal communities on multi-stressed coral reefs in the Caribbean: Long-term changes, spatial variations, and relationships with environmental variables." <i>Journal of Sea Research</i> . 117:7–19.	https://doi.org/10.1016/j.seares.2016.09.001	
Torres-Mendoza, Daniel, González, Yisett, Gómez-Reyes, José, Guzman, Hector M., López-Perez, José, Gerwick, William, Fernandez, Patricia, and Gutiérrez, Marcelino. 2016. "Uprolides N, O and P from the Panamanian Octocoral <i>Eunicea succinea</i> ." <i>Molecules</i> . 21 (6):819.	https://doi.org/10.3390/molecules21060819	
Alvarado, J. J., Cortés, J., Guzman, Hector M., and Reyes-Bonilla, H. 2016. " <u>Density, size, and biomass of <i>Diadema mexicanum</i> (Echinoidea) in Eastern Tropical Pacific coral reefs.</u> " <i>Aquatic Biology</i> . 24 (3):151–161.	https://doi.org/10.3354/ab00645	
Alvarado, Juan José, Cortés, Jorge, Guzman, Hector M., and Reyes-Bonilla, Héctor. 2016. "Bioerosion by the sea urchin <i>Diadema mexicanum</i> along Eastern Tropical Pacific coral reefs." <i>Marine Ecology</i> . 37 (5):1088–1102.	https://doi.org/10.1111/maec.12372	
Ament-Velásquez, Sandra L., Breedy, Odalisca, Cortés, Jorge, Guzman, Hector M., Wörheide, Gert, and Vargas, Sergio. 2016. " <u>Homoplasious colony morphology and mito-nuclear phylogenetic discordance among Eastern Pacific octocorals.</u> " <i>Molecular phylogenetics and evolution</i> . 98:373–381.	https://doi.org/10.1016/j.ympev.2016.02.023	
Breedy, Odalisca and Guzman, Hector M. 2016. "Corrigenda: Breedy O, Guzman HM (2015) A revision of the genus <i>Muricea</i> Lamouroux, 1821 (Anthozoa, Octocorallia) in the eastern Pacific. Part I: <i>Eumuricea</i> Verrill, 1869 revisited. <i>ZooKeys</i> 537: 1-32. doi: 10.3897/zookeys.537.6025." <i>ZooKeys</i> . 149–153.	https://doi.org/10.3897/zookeys.553.7471	
Breedy, Odalisca and Guzman, Hector M. 2016. "A revision of the genus <i>Muricea</i> Lamouroux, 1821 (Anthozoa, Octocorallia) in the eastern Pacific. Part II." <i>ZooKeys</i> . 581:1–69.	https://doi.org/10.3897/zookeys.581.7910	
Breedy, Odalisca and Guzman, Hector M. 2016. "A new <i>Muricea</i> species (Cnidaria, Anthozoa, Octocorallia) from the eastern tropical Pacific." <i>ZooKeys</i> . 1–10.	https://doi.org/10.3897/zookeys.629.10828	
<p>STATUS AND MONITORING OF THE REEF COMMUNITIES AND KEY SPECIES FOR THE FISHERIES IN THE COIBA NATIONAL PARK (PERIOD 2016-2017): EFFECTIVENESS OF THE PROTECTED AREA FOR ITS CONSERVATION</p> <p>Summary: Since 2014, the UMIP has been developing monitoring projects within the Coiba National Park, looking for ecological indicators that allow us to know the health status of the reef communities and the commercial species found in this area. For this 2017, areas outside the protected area have been included in the project to determine if there is a real conservation effect from the delimitation of this Park. For this reason, we set as a general objective "To determine the current status of reef communities and key species for the fishery in the Coiba National Park (PN), and compare it with other locations outside its boundaries and the Eastern Tropical Pacific. For this, a standard methodology used in reef ecosystem assessments was used in the POT Conservation Marine Corridor. In Coiba, 17 sites were visited and outside the protection area, seven reefs located in the zones were</p>		

<p>visited, also in the Province of Veraguas, but in its coastal zone. For this, in each of the sampling sites, visual censuses were taken along 20 m long transects parallel to the coastline, located in two depth strata (shallow <6m and deep> 6m). A total of 175 visual censuses were carried out, of which 46 were carried out in the area surrounding the Coiba National Park and the remaining 129 transects were carried out within the protected area of the Park. In total 108 species of fish were recorded, belonging to two classes that comprise 11 orders, 38 families and 71 genera. This Project was developed with the funding of Conservation International and with the scientific and technical support of the Autonomous University of Baja California Sur (Mexico), the Ministry of Environment and the Water Resources Authority of Panama.</p> <p>Excute: Faculty of Marine Sciences of the International Maritime University of Panama</p> <p>Financing by Conservation International-Panama</p> <p>This month of December within the framework of the agreement that is maintained between maritime and miambiente universities will begin with the monitoring of health status of the coral reefs in the Coiba National Park.</p>	
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6. ICRI Member Feedback. What do you find most valuable about the ICRI member reports? If you have any ideas for improvement please list below:

The Smithsonian Tropical Research Institute continues it's research on coral reef biodiversity and ecological responses to El Niño event and climate change. Research on major themes of the draft ICRI Plan of Action 2018-2020 can be addressed as funding opportunities become available.

7. General Information. (Note that this information will be posted on the ICRI website on your member page:

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