



Member's report on activities related to ICRI

Reporting period December 2015 – November 2016

1. **Contribution to the ICRI Plan of Action and GM.** *Your responses to the following questions will assist the Secretariat in assessing contributions towards the major themes of the current ICRI Plan of Action (<http://www.icriforum.org/icri-secretariat/current>) and objectives of the general meeting.*

a. Bleaching event

Were you affected by the Third Global Coral Reef event? Did you do some monitoring, if yes what are the results and could you explain what method did you use? Would you like to report during the ICRI Meeting?

Yes, WCS field programs in Fiji, Solomon Islands, Indonesia, Kenya and Madagascar experienced varying intensities of coral bleaching. We used a standard monitoring methodology using a roving diver survey to monitor bleaching in these countries, and led a global collaboration to monitor coral bleaching with other monitoring partners. A short summary is below and YES, we would like to report on this during the ICRI meeting.

- Between February and June 2016, WCS and colleagues from the University of Copenhagen, Reef Conservation, IUCN, Muséum National d'Histoire Naturelle, the Université de la Réunion, James Cook University, Nature Conservation Foundation, the Tata Institute of Fundamental Research, the University of Rhode Island, and the Department of Parks and Wildlife for Western Australia have conducted standardized bleaching surveys using a common underwater survey methodology that requires one roving diver, an underwater slate, and a pencil.
- We reported on the global bleaching response of hard corals from 234 sites in 13 countries (Kenya, Tanzania, Madagascar, Mauritius, Réunion, Maldives, India, Indonesia, Philippines, Japan, Australia, Solomon Islands and Fiji) across the Indian and Pacific Oceans. In total, we recorded 61,410 hard coral colonies in 66 hard coral genera across ~6300m² of reef area. Approximately 58% of all observed colonies were bleached (n =35,634 colonies), and bleaching was recorded in 61 genera (~92% of observed genera). Individual sites were highly variable in their response to bleaching and ranged from 0% to 100% of bleached colonies with an average of 56.1% + 29.2% (SD).
- Common genera including Acropora, Porites (massive and branching growth forms), Montipora, Pocillopora, Favia and Favites all displayed > 50% bleaching of colonies, suggesting bleaching has affected important framework builders of Indo-Pacific reefs.
- Overall, we demonstrate how a simple and standardized field method can be used by a global team of coral scientists. We have also adopted a 'code and cloud' approach using open-access platforms like R, GitHub and Dropbox to automate survey results in near real-time.

- b. Nature-based Solutions to address Climate Change** - *Do you have some example(s) of Nature-based (coral reef and related ecosystems) Solutions to address climate change? If yes, could you please provide use some details?*

The WCS Marine Programs around the world have adopted a variety of nature-based solutions to address climate change. For instance, in Fiji, PNG, Solomon Islands and Madagascar we work with local communities and partner organizations to improve community resilience to climate and other environmental changes through such activities as better incorporation of traditional knowledge into modern planning, enhancing the sustainability and security of local food systems (through improved small-scale farming activities that utilize drought- and salt-tolerant crops and more resilient planting methods), reducing negative impacts on coral reefs from small-scale fishing practices (by working with local communities to eliminate damaging gear, protecting key functional fish groups, etc), and building local support for the protection of mangroves and seagrass ecosystems. We also work to protect forests and river systems in order to reduce negative impacts downstream on coral reefs and nearshore ecosystems.

- c. **UN Sustainable Development Goals** – *Do you have example(s) showing how coral reefs and related ecosystems address the SDG (SDG 14 but also other related ones such as SDG 1 – End poverty in all its form; SDG 2 – End hunger, achieve food security and improved nutrition...)*

As noted in the response above, WCS works with national and local governments and local communities in a number of countries, including Belize, Kenya, Madagascar, Indonesia, PNG, Solomon Islands and Fiji, to protect marine and coastal environments, while simultaneously ensuring the health, well-being and resilience of local communities who depend upon those environments. We work collaboratively to establish and implement management activities in MPAs (including locally managed marine areas (LMMAs)) to protect coral reefs and related ecosystems. Supporting sustainable coral reef fisheries is an important and complementary component of this work and also helps address SDG 14. WCS is also working in a number of countries, including Belize, to help governments meet the goal of 10% protection of marine and coastal waters, and ensuring that coral reef ecosystems are well represented in protected areas is a critical.

- d. *Do you have notional measure(s) – existing or in development - to ban the sale and manufacture of cosmetics and personal care products containing plastic microbeads? And plastic bags?*

The Microbead-Free Waters Act of 2015 has been signed and enacted by the United States Congress on December 28, 2015. It prohibits the sale of rinse-off cosmetics that contain intentionally-added plastic microbeads beginning on January 1, 2018, and to ban manufacturing of these cosmetics beginning on July 1, 2017. Through education and awareness raising in the US (especially through the NY Aquarium and New York City zoos, which are operated by WCS), WCS was involved in building support for these initiatives.

- e. **Upcoming events** - *Do you plan to attend:*

- *November 2016 - Marrakech Climate Change Conference / The twenty-second session of the Conference of the Parties (COP 22) - YES, WCS will have representatives attending*
- *December 4, 2016 to December 17, 2016 - Convention on Biological Diversity COP13 - YES, WCS will have representatives attending*
- *June 2017 - Oceans & Seas Global Conference, Fiji*
- *Other(s):*
 - *Economist Ocean Summit, Bali, Indonesia, Feb 22-24*
 - *UN Ocean conference (to support SDG#14), NYC, June 5-9 (this may be the same as referenced above) - WCS will be represented by Dr. Cristián Samper (WCS President and CEO), Sangeeta Mangubhai (WCS Fiji Director), among others*
 - *Our Oceans Conference, Malta, Oct 5-6*

2. **Updates on your activities.** The following table is a summary of ICRI's *Framework for Action* (FFA) and its four cornerstones. (The full text of the FFA is available in English,

French, and Spanish at <http://icriforum.org/icri-documents/icri-key-documents/continuing-call-action-2013>).

Integrated Management	Objective	Manage coral reefs and related ecosystems using an ecosystem approach, recognizing place based activity; connectivity within and among ecological, social, economic, and institutional systems; as well as with attention to scale; resilience of ecological and social systems; and long-term provision of ecosystem services.
	General Approach	Integrated management, using a strategic, risk-based, informed approach, provides a framework for effective coral reef and related ecosystem management which supports natural resilience, ecosystem service provision, and enhances the ability to withstand the impacts of climate change and ocean acidification.
	Desired outcome	There is a demonstrable reduction in the threats to coral reefs and related ecosystems through management action.
Capacity Building	Objective	To build capacity in all facets of management of coral reefs and related ecosystems and support dissemination and application of best practices to achieve the widest possible engagement of all stakeholders in planning and management activities.
	General Approach	Continued collaboration, partnerships, outreach, information sharing and education to ensure the uptake of best practices and encourage behavioural change. This can only be successful if the diversity of cultures, traditions and governance among nations and regions are taken into account.
	Desired outcome	Persons who have influence in the management of coral reef and related ecosystems have the knowledge, tools and capital necessary to apply best practices, adapted to the cultural and socio-economic context.
Science & Monitoring	Objective	To support research and citizen science approaches to enable countries and communities assess and report on the status of and threats to their coral reefs and related ecosystems in a coordinated, comparable and accessible manner.
	General Approach	Research and monitoring programs are essential to ensure that management of coral reefs and related ecosystems is based on best available (scientific) information.
	Desired outcome	Knowledge of the status and trends in coral reefs and related ecosystems health is enhanced and used to inform planning and management, improving management outcomes.
Periodic Assessment (Review)	Objective	To engage in periodic review of the impact and effectiveness of all elements of management to enable evaluation and refinement of management measures in an adaptive framework.
	General Approach	Periodic assessments of management effectiveness and evaluation of projects and activities to ensure the efficacy of management tools and systems in tackling the range of pressures affecting coral reefs and related ecosystems and protecting the values associated with them.
	Desired outcome	Management processes and activities are regularly reviewed and improved using a structured approach, to enhance their ability to effectively reduce pressures and threats.

Project 1

Cornerstone(s) implemented through the project	Check all that apply: <input checked="" type="checkbox"/> Integrated Management <input checked="" type="checkbox"/> Capacity Building <input checked="" type="checkbox"/> Science & Monitoring <input checked="" type="checkbox"/> Periodic Assessment (Review)
Project Title	Aligning coral reef monitoring across global priority seascapes
Location	Western Indian Ocean, Melanesia, Indonesia, Caribbean
Dates	April 2014 – April 2017
Main Organizer(s)	Wildlife Conservation Society (Emily Darling (edarling@wcs.org))
Main Stakeholder(s)	Wildlife Conservation Society and key global partners
Description of Project (Please elaborate on)	WCS Global Marine Programs and key global partners are developing a systematic monitoring and evaluation program of pressures on small-

how the project implements the FFA cornerstones)	scale coral reef fisheries to determine changes to the status of coral reef biodiversity and resources associated with impact and success of conservation and management actions, and the associated benefits of coral reef resources to local stakeholders and communities. This project considers the integrated socio-ecological coral reef system, will build capacity for monitoring and analysis in key countries, develops a global monitoring protocol to support the conservation science of coral reefs, and will engage in 3-year periodic assessments of the pressures, state, responses and benefits identified in this monitoring protocol.
Outcome (Expected outcome)	(1) A global monitoring framework for linked socio-ecological systems on coral reefs; (2) A suite of online data entry and storage tools to promote scientific research and global collaborations for coral reef conservation; (3) A better scientific understanding of pressures, state and management effectiveness for small-scale coral reef fisheries worldwide.
Lessons learned	Linking long-term monitoring programs across seascapes can help scientists and stakeholders scale up to the global challenges posed by climate change, and increasing human pressures to support data-driven local conservation and management strategies for coral reefs, their resources and dependent communities.
Related websites (English preferred)	http://www.wcs.org/our-work/solutions/oceans-and-fisheries

Project 2

Cornerstone(s) implemented through the project	Check all that apply: <input checked="" type="checkbox"/> Integrated Management <input checked="" type="checkbox"/> Capacity Building <input checked="" type="checkbox"/> Science & Monitoring <input checked="" type="checkbox"/> Periodic Assessment (Review)
Project Title	Strengthening the capability of Kenyan communities to conserve coral reefs
Location	Kenya
Dates	April 2013 – March 2016
Main Organizer(s)	Wildlife Conservation Society – Kenya
Main Stakeholder(s)	Kenya Fisheries Department (State Department of Fisheries), local communities
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The project addressed the problem of coral reef degradation and low capacity by fishers dependent on these reefs to manage them. Small-scale fishing communities are highly dependent on coral reefs, contributing up to 80% of the marine landed catch in Kenya. Weak governance has led to unselective and destructive fishing practices resulting in degraded coral reef ecosystems. As a result, this has undermined the provision of ecosystem services and resilience to climate change putting at risk coral reef biodiversity, livelihoods and food security. Early experiences in Kenya suggest that community-managed fisheries closures (Tengefu) can align previously conflicting interests by addressing diverse values (i.e., community empowerment, fisheries protection, benefit sharing) in the management process. The project was designed to address the poverty challenge of target communities that were composed of fishers with less than five years of formal education (on average), a bi-weekly expenditure of USD 64 and households dependent on fishing. The project was designed to build the capacity of target tengefu communities in adaptive management of their tengefu and surrounding fishing grounds. This was accomplished

	through training in adaptive management, participatory situation analysis of the ecological, socioeconomic and institutional context, participatory management planning, implementation and monitoring of management actions.
Outcome (including expected outcome)	The project outcome was to increase the capacity of 8 tengefu communities in the management of their fisheries closures. This was achieved with 5 of the 8 tengefu showing the most progress and achieving a high level of compliance of the total enforcement of the closure, removal of destructive gears and implementation of a monitoring program.
Lessons learned	The project would possibly have been more effective if the number of sites had been reduced, focusing on the sites where more progress had been made in community adoption of the tengefu. In addition, it became clear once the project was underway that the Kenya Fisheries Department (SDF) was looking to evaluate community management initiatives in order to develop a national co-management process, so instead of developing management plans for individual tengefu, management guidelines were produced.
Related websites (English preferred)	http://www.wcs.org/our-work/regions/madagascar-and-western-indian-ocean

Project 3

Cornerstone(s) implemented through the project	Check all that apply: <input checked="" type="checkbox"/> Integrated Management <input checked="" type="checkbox"/> Capacity Building <input checked="" type="checkbox"/> Science & Monitoring <input checked="" type="checkbox"/> Periodic Assessment (Review)
Project Title	Securing livelihoods, health and biodiversity through seascape-scale sustainable fisheries co-management
Location	Madagascar
Dates	April 2015 – September 2017
Main Organizer(s)	Wildlife Conservation Society, Harvard School of Public Health
Main Stakeholder(s)	Communities of Antongil Bay, Ministry of Marine Resources and Fisheries, Ministry of Public Health
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	Antongil Bay in northeastern Madagascar, covering an area of 3,660 km² embodies the challenge of balancing conservation and development priorities. The Bay supports coral reefs and a wide diversity of marine species, as well as around 100,000 poor and mostly rural people live in approximately 100 communities along the 360 km coast who rely strongly on aquatic resources to sustain their health and livelihoods. Overexploitation due to an increasing human population, decreasing availability of productive agricultural land, destructive fishing practices and lack of compliance with gear restrictions are driving degradation of coastal habitat and the Bay's fisheries, loss of coral reefs and declines in fish and invertebrate abundance. The project aims aim to reverse the decline in fisheries resources and consequently improve livelihoods, food security and health aspects for 11,000 coastal people dependent upon Antongil Bay's resources, and help to ensure improved sustainable fishing and farming practices that will have an overall positive impact on the marine and terrestrial environment of the Bay. This is being accomplished through strengthening the ability of these communities

	to effectively manage their network of 24 locally managed marine areas (LMMAs), monitoring to assess impact of LMAAs on coral reef health and fisheries, and diversification of livelihoods and reduction of poverty through agricultural training and technical support.
Outcome (Expected outcome)	Sustainable fisheries management and livelihoods diversification in northeastern Madagascar protects coral reefs (7,000 hectares), improves food security, livelihoods and health for 11,000 people, and becomes a model for the region.
Lessons learned	We learned that better planning processes, a prioritization of actions, and more importantly the strengthening of collaborations and relationships with local authorities, are the best approaches to obtain the issuing of official licenses for traditional fishermen. The operationalization of community control was best facilitated by the existence of a legal framework for decentralised management. This could also be successfully utilised to increase the management across the country with its limited monitoring and surveillance capacity. In addition, voluntary compliance of all fishermen to licensing and access laws is still limited and it is necessary to continue to apply existing regulations to ensure compliance of all fishermen in the Bay.
Related websites (English preferred)	http://www.wcs.org/our-work/regions/madagascar-and-western-indian-ocean

Project 4

Cornerstone(s) implemented through the project	Check all that apply: <input checked="" type="checkbox"/> Integrated Management <input type="checkbox"/> Capacity Building <input type="checkbox"/> Science & Monitoring <input type="checkbox"/> Periodic Assessment (Review)
Project Title	Integrated coastal management across the Vatu-i-Ra Seascape, Fiji
Location	Fiji
Dates	July 2012 – September 2017
Main Organizer(s)	Wildlife Conservation Society
Main Stakeholder(s)	Fiji Government, coastal communities in Fiji, key NGO partners, private sector stakeholders
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	Since working with the communities of Kubulau District to develop Fiji's first ecosystem-based management (EBM) plan in 2009, WCS was asked by the Bua provincial government to replicate the model in the 8 other districts of the province. To date, this has resulted in the establishment of 181.5 km² of new marine no-take areas (largely covering coral reef ecosystems) and 96.3 km² of forest parks in adjacent watersheds managed by local communities in Fiji.
Outcome (Expected outcome)	Improved coordination of management across terrestrial and marine sectors to reduce the impacts of land-based activities and coastal development on coral reef ecosystems and small-scale fisheries.
Lessons learned	We learned that better planning processes, a prioritization of actions, and more importantly the strengthening of collaborations and relationships with local authorities, are the best approaches to obtain the issuing of official licenses for traditional fishermen. The operationalization of community control was best facilitated by the existence of a legal framework for decentralised management. This could also be successfully utilised to increase the management across the country with its limited monitoring and surveillance capacity. In

	addition, voluntary compliance of all fishermen to licensing and access laws is still limited and it is necessary to continue to apply existing regulations to ensure compliance of all fishermen in the Bay.
Related websites (English preferred)	http://www.wcsfiji.org.fj/

Project 5

Cornerstone(s) implemented through the project	Check all that apply: <input type="checkbox"/> Integrated Management <input checked="" type="checkbox"/> Capacity Building <input checked="" type="checkbox"/> Science & Monitoring <input type="checkbox"/> Periodic Assessment (Review)
Project Title	Research and monitoring of coral reefs in the Western Indian Ocean
Location	Kenya, Madagascar, Tanzania, Mozambique
Dates	Ongoing since 1996
Main Organizer(s)	Wildlife Conservation Society and partners in the WIO region including national management and research institutions
Main Stakeholder(s)	National management institutions (fisheries and conservation), national research institutions, local government management, communities
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The program consists of research and monitoring activities in coral reefs across the region. Monitoring is conducted on a biannual basis at 17 sites in Kenya and periodically at sites in Tanzania, Madagascar and Mozambique; to date 340 sites across the WIO have been surveyed. The program is also used as a training platform for managers and young scientists in the region.
Outcome (Expected outcome)	
Lessons learned	
Related websites (English preferred)	

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

Title (incl. author and date)	Website URL if available	Type of publication (Paper, report, etc.)
After El Niño, a Global Strategy to Save Corals by Tim McClanahan and Emily Darling (June 2016)	http://voices.nationalgeographic.com/2016/06/22/after-el-nino-a-global-strategy-to-save-corals/	Blog op-ed
Computers on the Reef by Jeff Tollefson (August 2016) feat. WCS global bleaching surveys	http://www.nature.com/news/computers-on-the-reef-1.20497	Nature Commentary
Ahmadia, G. N., Glew, L., Provost, M., Gill, D., Hidayat, N. I., Mangubhai, S. , & Fox, H. E. (2015). Integrating impact evaluation in the design and implementation of monitoring marine protected areas. <i>Phil. Trans. R. Soc. B</i> , 370(1681), 20140275.		Paper
Cinner, J. E., Huchery, C., MacNeil, M. A., Graham, N. A., McClanahan, T. R. , Maina, J. , ... & Allison, E. H. (2016). Bright spots among the world's coral reefs. <i>Nature</i> , 535(7612), 416-419.		Paper
Jaiteh, V. F., Lindfield, S. J., Mangubhai, S. , Warren, C., Fitzpatrick, B., & Loneragan, N. R. (2016). Higher Abundance Of Marine Predators And Changes In Fishers' Behavior Following Spatial Protection Within The World's Biggest Shark Fishery. <i>Frontiers in Marine Science</i> , 3, 43.		Paper
McClanahan, T. R. , Maina, J. M., Graham, N. A., & Jones, K. R. (2016). Modeling Reef Fish Biomass, Recovery Potential, and Management Priorities in the Western Indian Ocean. <i>PLoS one</i> , 11(5), e0154585.		Paper
McClanahan, T. R. , & Muthiga, N. A. (2016). Geographic extent and variation of a coral reef trophic cascade. <i>Ecology</i> .		Paper
McClanahan, T. R. , & Rankin, P. S. (2016). Geography of conservation spending, biodiversity, and culture. <i>Conservation Biology</i> .		Paper
Cinner, J. E., and T. R. McClanahan (2015) A sea change on the African coast? Preliminary social and ecological outcomes of a governance transformation in Kenyan fisheries. <i>Global Environmental Change</i> 30:133-139.		Paper
Daw, T., S. Coulthard, W. W. L. Cheung, K. Brown, C. Abunge , D. Galafassi, G. D. Peterson, T. R. McClanahan , J. O. Omukoto, and L. Munyi (2015) Evaluating taboo trade-offs in ecosystems services and human well-being. <i>Proceedings of the National Academy of Sciences</i> 112(22): 6949-6954		Paper
Goetze JS, Jupiter SD , Langlois TJ, Wilson SK, Harvey ES, Bond T, Naisilisili W (2015) Diver operated video most accurately detects the impacts of fishing within periodically harvested closures. <i>Journal of Experimental Marine Biology and Ecology</i> 462:74-82		Paper
Gurney GG, Pressey RL, Ban NC, Álvarez-Romero JG, Jupiter S , Adams VM (2015) Efficient and equitable design of marine protected areas in Fiji through inclusion of stakeholder-specific objectives in conservation planning. <i>Conservation Biology</i> DOI: 10.1111/cobi.12514		Paper
Hicks, C. C., Cinner, J. E., Stoeckl, N. and McClanahan, T. R. (2015), Linking ecosystem services and human-values theory. <i>Conservation Biology</i> .		Paper
MacNeil MA, Graham NAJ, Cinner JE, Wilson SK, William ID, Maina J , Newman S, Friedlander AM, Jupiter S , Polunin NVC, McClanahan TR (2015) Recovery potential of the world's coral reef fishes. <i>Nature</i> 520:341-344		Paper
Maina, J. , Kithiia, J., Cinner, J.E., Neale, E. , Noble, S. , Charles, D. & Watson, J.E.M. (2015) Integrating social-ecological vulnerability assessment with climate forecasts to improve local climate adaptation planning for coral reef fisheries in Papua New Guinea. <i>Regional Environmental Change</i> .		Paper

McClanahan, T. R., and C. A. Abunge (2015). Perceptions of management options and the disparity of benefits among stakeholder communities and nations of southeastern Africa. Fish and Fisheries DOI: 10.1111/faf.12118.		Paper
McClanahan, T. R., J. Maina, and M. Ateweberhan (2015) Regional coral responses to climate disturbances and warming predicted by multivariate stress model and not temperature threshold metrics. Climatic Change		Paper
McClanahan, T., Allison, E. H. and Cinner, J. E. (2015), Managing fisheries for human and food security. Fish and Fisheries, 16: 78–103.		Paper
McClanahan, T. R., N. A. J. Graham, M. A. MacNeil, and J. E. Cinner (2015) Biomass-based targets and the management of multispecies coral reef fisheries. Conservation Biology 29:409-417.		Paper
Sampson GS, Sanchirico JN, Roheim CA, Bush SR, Taylor JE, Allison EA, Anderson JL, Ban NC, Fujita R, Jupiter S , Wilson JR (2015) Secure sustainable seafood from developing countries. Science 348:504-506		Paper
Sampson GS, Sanchirico JN, Roheim CA, Bush SR, Taylor JE, Allison EA, Anderson JL, Ban NC, Fujita R, Jupiter S , Wilson JR (2015) Secure sustainable seafood from developing countries. Science 348:504-506		Paper

3. **General Information.** (Note that this information will be posted on the ICRI website on your member page: <http://www.icriforum.org/about-icri/members-networks>.)

Member type (Country / Organization):	Organization
Focal Point 1:	
<i>Name:</i>	Jason Patlis
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<i>Title/Organization:</i>	Associate Director, Marine Conservation/ Wildlife Conservation Society
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