Member's report on activities related to ICRI

Reporting period October 2013 – September 2014

1. **Updates on your activities.**

Project 1

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☒ 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 how the project implements the FFA cornerstones)	WCS Global Marine Programs and key global partners are developing a systematic monitoring and evaluation program of pressures on small-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/saving-wild-places/ocean.aspx

Project 2

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☐ Capacity Building ☐ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Integrated coastal management across the Vatu-i-Ra Seascape, Fiji
Location	Bua Province, 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 km^2 of new marine no-take areas (largely covering coral reef ecosystems) and 96.3 km^2 of forest parks in adjacent watersheds managed by local communities in Fiji. In May 2014, WCS staff assisted the Fiji Department of Environment to facilitate a workshop with national government, provincial councils, NGOs and private sector stakeholders to build consensus on a template and process for developing provincial-level ICM plans. WCS is presently awaiting endorsement of this ICM template by Fiji Cabinet prior to further engaging the Bua Provincial Council Office and district resource management committees to populate the template with relevant issues and information for Bua. We plan to work with stakeholders to consolidate all the district EBM plans into an ICM plan tailored to the needs of Bua Province that accounts for bottom-up local resource management concerns, as well as top-down government development agendas.
Outcome (including 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	As WCS expanded our efforts geographically, we refined the process of stakeholder engagement to allow considerably more time and scope for engagement by all sectors within each community.
Related websites (English preferred)	http://www.wcsfiji.org.fj/

Project 3

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Creation of the two largest co-managed Marine Protected Areas in Madagascar
Location	North West Madagascar
Dates	October 2013 – September 2014
Main Organizer(s)	Wildlife Conservation Society

Main Stakeholder(s)	Madagascar Ministry of Environment; Madagascar Ministry of Fisheries; community associations Ankarea and Ankivonjy
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	With a marine zone of over 1 million square kilometers – an area nearly double the national land surface - Madagascar supports greater total marine biodiversity than any other western Indian Ocean country. This island nation is among the top 15 countries harboring the largest area of coral reefs and mangroves in the world. Fifty percent of Malagasy population, including over one hundred thousand artisanal fishers, live near the coast and rely on marine and coastal ecosystems for food, revenue and livelihoods. In line with the Aichi targets of the UN Convention on Biological Diversity, the government of Madagascar has committed to expanding the country's network of protected marine areas. Toward this effort, it enlisted Wildlife Conservation Society as a leading technical partner. Together with the government and local communities, WCS has so far established eight Marine Protected Areas (MPAs), protecting over half a million hectares (2,346 square miles) of coastal and ocean habitats identified as conservation priorities. Half of those MPAs are managed by the State parks agency, Madagascar National Parks, while the other half, are co-managed by local communities. Two of these co-managed MPAs, Ankarea and Ankivonjy MPAs, have been established since 2010 around Nosy Be to protect vital mangroves, seagrasses, and coral reefs. Ankarea MPA, located 50 km NE of Nosy Be, includes a large island, Nosy Mitsio, and an archipelago of 16 islands and islets, and is home to the most diverse coral population of the Western Indian Ocean. Ankivonjy MPA, located 50 km SW of Nosy Be, includes coastal and marine ecosystems along the Ampasindava peninsula and offshore islands, including Nosy Iranja the most important nesting site for green turtle in Madagascar, and deep water habitats home to diverse, abundant and endangered cetacean populations (including humpbacks, blue whales, sperm whales, and beaked whales). These two MPAs are some of the few remaining refuges in the Western Indian Ocean for dugongs, whale sharks and critically endangered sawfish. WCS's investments in Ankivonjy and Ankarea MPAs have focused on: setting up governance structures, developing zoning and management plans and building trust and empowering local communities, building local management capacities, ensuring wider participation of local people in resource management, fostering greater support and involvement from government authorities, promote proper marine surveillance and law enforcement, monitoring ecological and socioeconomic impacts, and diversifying fisher's livelihoods.
Outcome (Expected outcome)	By 2015, definitive protected area status is granted to two MPAs. Improved fisheries management and livelihoods diversification in the two largest co-managed MPAs in Madagascar benefits biodiversity, improves livelihoods for local people and becomes a scalable model for the country.
Lessons learned	The success of the implementation of these co-managed MPAs shows that the Malagasy fishers are very responsive to projects aiming at regulating the fishery. However, considerable challenges remain: the MPAs' long-term financial sustainability, building local management capacities, building a policy environment supportive of local

	management, designing effective and efficient enforcement strategies, and dealing with potentially unsustainable large extractive and tourism industries.
Related websites (English preferred)	http://www.wcs.org/saving-wild-places/ocean/nosy-be-seascape-madagascar.aspx

Project 4

Cornerstone(s) implemented through the project	Check all that apply: ☐ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☐ 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)	In 2014 we published 10 scientific publications and generated knowledge that has contributed to improving management (for example in community managed areas in Kenya) and informing policy and management actions across the WIO region.
Lessons learned	Stakeholders require regular updates and information that is tailored to their understanding. Engaging with management organisations at the time of drafting regulations and policies is essential.
Related websites (English preferred)	[Insert text here]

Project 5

Cornerstone(s) implemented through the project	Check all that apply: ☐ Integrated Management ☐ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Spawning Aggregations of Nassau Groupers at Northeast Point, Glover's Reef Marine Reserve, Belize
Location	Glover's Reef Marine Reserve, Belize
Dates	January 19th – 23rd & February 17th – 21st, 2014
Main Organizer(s)	Wildlife Conservation Society
Main Stakeholder(s)	Sarteneja Fishermen Association, Hopkins Fishermen Association, Belize Federation of Fishers

Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The Nassau grouper, *Epinephelus striatus*, is considered as Endangered on The World Conservation Union (IUCN) Red List. In Belize, 12 of the 13 known spawning aggregation sites were granted protected status in an effort to preserve these sites. However, even with the fishing closure measures, the fish populations are still decreasing within these sites and are at risk of depletion. In 2001, an assessment of Nassau grouper spawning sites in Belize, determined that only two of the nine sites surveyed were still viable for fishery purposes in Belize, one of which is the Northeast Point site at Glover's Reef Marine Reserve. In 2005, a monitoring program was implemented at Glover's Reef Marine Reserve with the aim to evaluate the status of Nassau grouper at the Atoll. The data gathered is being used to determine the sizes, seasonality and number of various species that utilize the spawning sites. Since 2005 the Northeast Point site has been monitored annually in January and February three days after the full moon for five days. The maximum mean count of Nassau groupers at the spawning site for the 2014 season was 1,842 (s.d. - 262.5). For the past few years, since 2007 a gradual trend of increasing numbers of Nassau grouper have been observed at Northeast Point, Glover's.
Outcome (Expected outcome)	By protecting and monitoring spawning aggregation sites in Belize, such as Northeast Point, Glover's, these sites will replenish and sustain the local populations of Nassau groupers.
Lessons learned	Spawning Aggregations are extremely vulnerable to fishing pressures during December to March, so it is very important to focus enforcement efforts at the aggregation sites during these months. It has been ten years since the spawning sites were closed to fishing, and during this period Northeast Point (as well as many of the other spawning aggregation sites in Belize) has been surveyed on an annual basis to monitor its recovery. Results show a slow recovery, but this was expected as the Nassau grouper is a long-lived species, only reaching sexual maturity at 7 years.
Related websites (English preferred)	www.spagbelize.org

Project 6

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☐ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Implementing SMART (Spatial Monitoring and Reporting Tool) in Belize
Location	Belize – Nationwide
Dates	2013-2014
Main Organizer(s)	Wildlife Conservation Society

Main Stakeholder(s)	Belize Fisheries Department (BFD)/ Marine Protected Areas Toledo Institute For Development and Environment Southern Environmental Association Belize Audubon Society
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	SMART is a free, open-source software application that was designed and is being implemented by a consortium of partners (including the CITES-Monitoring Illegal Killing of Elephants (MIKE) program, Frankfurt Zoological Society, North Carolina Zoological Park, Panthera, WCS, WWF and Zoological Society of London), to help resource managers curb the illegal trade in wildlife. At its core, SMART helps rangers document where enforcement patrols go, what they see, and how they respond. Whether collected by direct observation or GPS, data is fed into a central system where it is converted into visual information in near real-time to help managers understand where the greatest threats are and how best to deploy patrols. This enables them to allocate scarce resources more effectively while also feeding the results back to the rangers themselves. Its success derives from a bottom-up approach, drawing directly on the needs identified by staff working in the field. Belize is the first formal SMART marine testing site, and is proving to be a useful model for expansion of the SMART Marine application to other sites. In Belize, WCS is working with staff of the Belize Fisheries Department and co-managers who are being trained in data collection, data entering and report generation. The Belize Fisheries Department adopted the use of SMART as part of their five-year Enforcement Strategy in a total of nine marine reserves and two marine national parks. This represents a significant expansion beyond the original single demonstration site of Glover's Reef. Following SMART implementation in Belize, the SMART Partnership has set up a Marine Working Group to establish lessons learned and best practices, with discussions underway to expand marine application in Thailand, Indonesia, and possibly Gabon. We anticipate SMART Marine to be a considerable area of growth and expansion under the SMART Partnership in 2014/2015.
Outcome (Expected outcome)	Improve enforcement throughout the marine sector. Strategic deployment of resources as a result of having better data and planning Mapping fishing grounds
Lessons learned	Training has to be targeted and as simple as possible. Staff are very motivated when equipment and tools are given to them that make their work easier. The software is very user friendly and versatile.

2. **Contribution to the ICRI Plan of Action and GM.**

a. Engaging other sectors

The Sectoral Innovation Facility for NGOs (FISONG) is a funding tool from Agence Française de Développement (AFD) which makes the most of NGOs' specialist know-how and ability to innovate. A call for themed projects was launched in 2012 around the theme 'Biodiversity and development: sharing the benefits of biodiversity for village communities'. Community management of natural resources can protect ecosystems better and ensure that they are used sustainably while at the same time improving the flow of socio- economic benefits back to local people, although it often meets political, technical, economic and cultural obstacles. NGOs were therefore asked to propose answers to these problems. A selection committee chose three projects, including the 'Biodiversity, development and governance: Towards a model for the new marine protected areas (MPAs) of Madagascar's project (Hafafi), run by the French development NGO GRET in association with the Wildlife Conservation Society and the Malagasy NGO Fanamby. One of the objectives of the FISONG project is to build and showcase a successful model (with Ankarea and Ankivonjy MPAs in the North West as pilot sites) for Madagascar's growing MPA network that integrates biodiversity conservation, poverty reduction and community-led management of natural marine resources. The project started just one year ago.

b. **Reef zoning for multiple use**

Location where a zoning plan has been implemented	Madagascar	
Year when the zoning plan was implemented		
Is the zoning plan accepted by the local community?	☒ Yes	☐ No
Did the zoning plan cause conflicts among stakeholders?	☒ Yes	☐ No
Did the zoning plan resolve conflicts among stakeholders?	☐ Yes	☒ No
Has there been effective enforcement for stakeholders to follow the zoning plan?	☐ Yes	☒ No
Overall, how would you rate the success of the zoning plan?	☐ Very successful ☒ Somewhat successful ☐ Not so successful ☐ Unsuccessful	

In North West Madagascar, the zoning plan for Ankivonjy and Ankarea MPAs have been implemented through a bottom-up approach and this is accepted by the local communities. However, the zoning plan causes conflicts with oil and gas companies that own concession blocks in these areas. This issue is currently being discussed among Government authorities (Ministry of Mines and Ministry of Environment), the oil and gas industry and Wildlife Conservation Society.

3. **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.)
Anthony KRN, Marshall PA, Abdullah A, Beeden R, Bergh C, Black R, Eakin M, Game ET, Gooch M, Graham NAJ, Green A, Heron S, van Hooidonk R, Knowland C, **Mangubhai S**, Marshall N, Maynard JA, McGinnity P, McLeod E, Mumby PJ, Nyström M, Obura D, Oliver J, Possingham HP, Pressey B, Rowlands GP, Tamelander J, Wachenfeld D, Wear S (in press). Operationalising resilience for adaptive coral reef management under global environmental change. *Global Change Biology*.		Paper

Baird A.H., Prachett, M.S., Hoey, A.S., **Herdiana, Y., Campbell, S.J.** (2013). *Acanthaster planci* is a major cause of coral mortality in Indonesia. *Coral Reefs*, **32**: 803-812.		Paper
Baker AC, **McClanahan TR**, Starger CJ, Boonstra RK. (2013) Long-term monitoring of algal symbiont communities in corals reveals stability is taxon dependent and driven by site-specific thermal regime. Marine Ecology Progress Series;479:85-97.		Paper
Bridge, T.C.L., Hoey, A.S., **Campbell, S.J., Muttaqin, E.,** Rudi, E., Fadli, N., Baird, A.H. (2013). Depth-dependent mortality of reef corals following a severe bleaching event: implications for thermal refuges and population recovery. *F1000Research*, **2**:187 (doi: 10.12688/f1000research.2-187.v1).		paper
Campbell, S.J., Kartawijaya T., Ardiwijaya R.L., Pardede S., Mukminin A., Clifton, J. (2013). Comanagement incentives driving marine protected area effectiveness in Karimunjawa National Park, Indonesia. *Marine Policy*, **41**: 72-79.		paper
Campbell, S.J., Pardede, S., Mukminin, A., Huchery, C., Cinner, J. (2014). Changes in a coral reef fishery along a gradient of harvesting intensity in an Indonesian marine protected area. *Aquatic Conservation: Freshwater and Marine Ecosystems*, **24**: 92-103.		paper
Cinner J, Hutchery C, **Darling E**, Humphries AT, Graham NAJ, Hicks CC, et al. (2013). Evaluating social and ecological vulnerability of coral reef fisheries to climate change. *PloS One*.		Paper
Condy M, Cinner JE, **McClanahan TR**, Bellwood DR. (2014). Projections of the impacts of gear-modification on they recovery of fish catches and ecosystem function in an improvished fishery. Aquatic Conservation: *Marine & Freshwater Ecosystems*; DOI 10:10.1002/aqc2482.		Paper
Darling ES, **McClanahan TR**, Cote IM. (2013). Life histories predict coral community disassembly under multiple stressors. *Global Change Biology*; 19:1930-40.		Paper
Dustan, P., Doherty, O., **Pardede, S.** (2013). Digital reef rugosity estimates coral reef habitat complexity *PLoSOne* 8(2): e57386.		paper
Edgar, G.J., Stuart-Smith, S.D., Willis,T.J., Kininmonth, S., Baker, S.C., Banks, S., Barrett, N.S., Becerro, M.A., Bernard, A.T.F., Berkhout, J., Buxton, C.D., **Campbell, S.J.,** Cooper, A.T., Davey, M., Edgar, S.E., Forsterra, G., Galvan, D.E., Irigoyen, A.J., Kushner, D.J., Moura, D., Parnell, P.E., Shears, N.T., Soler, G., Strain, E.M.A., Thomson, R.J. (2014). Global conservation outcomes depend on marine protected areas with five key features. *Nature*, doi:10.1038/nature13022		paper
Golden AS, **Naisilisili W**, Ligairi I, Drew JA (2014) Combining natural history collections with fisher knowledge for community-based conservation in Fiji. *PLoS ONE* 9:e98036		Paper
Gomes I, Erzini K, **McClanahan TR.** (2013). Trap modification opens new gates to achieve sustainable coral reef fisheries. *Aquatic Conservation: Marine and Freshwater Ecosystems*; DOI: 10.1002/aqc.2389		Paper
Gomes, I., et al. (2013). Trap modification opens new gates to achieve sustainable coral reef fisheries. *Aquatic Conservation: Marine and Freshwater Ecosystems.*		paper
Graham NAJ, **McClanahan TR.** (2013). The Last Call for Marine Wilderness? *BioScience*; 63(5):397-402.		Paper
Graham NAJ, Pratchett MS, **McClanahan TR**, Wilson SK. (2013). The status of coral reef fish assemblages in the Chagos Archipelago, with Implications for Protected Area Management and Climate Change. In: Sheppard CRC, editor. *Coral Reefs of the World 4*. Dordrecht: Springer. p. 253-70.		Book Chapter
Humphries AT, **McClanahan TR**, McQuaid CD. (2014). Differential impacts of coral reef herbivores on algal succession in Kenya. *Marine Ecology Progress Series*; 504:119-32.		Paper
Johnson AE, Cinner JE, Hardt MJ, Jacquet J, **McClanahan TR**, Sanchirico JN. (2013). Trends, current understanding and future research priorities for artisanal coral reef fisheries research. *Fish and Fisheries*. 14(3):281-92.		Paper

Jupiter SD, Cohen PJ, Weeks R, Tawake A, Govan H (2014). Locally-managed marine areas: multiple objectives and diverse strategies. *Pacific Conservation Biology* 20:165-179		Paper
Jupiter SD, Jenkins AP, Lee Long WJ, Maxwell SL, **Watson JEM**, Hodge KB, Govan H, Carruthers TJB (2013) *Pacific Integrated Island Management – Principles, Case Studies and Lessons Learned*. Secretariat of the Pacific Regional Environment Programme (SPREP) and United Nations Environment Programme, Apia and Nairobi, 72 pp		Report
Jupiter SD, Jenkins AP, Lee Long, WJ, Maxwell SL, Carruthers TJB, Hodge K, Govan H, Tamelander J, **Watson JEM** (2014) Principles for integrated island management in the tropical Pacific. *Pacific Conservation Biology* 20:193-205		Paper
Jupiter SD, **Mangubhai S**, Kingsford RT (2014) Conservation of biodiversity in the Pacific islands of Oceania: challenges and opportunities. *Pacific Conservation Biology* 20:206-220		Paper
Kastl B, **Gow S** (2014) *Economic valuation of tourism and fisheries in the Vatu-i-Ra Seascape, Republic of Fiji*. Wildlife Conservation Society, Suva, 19 pp		Report
Kingsford RT, **Jupiter SD** (2014) Conservation lessons from the Pacific Islands. *Pacific Conservation Biology* 20:134-13		Paper
Klein CJ, **Jupiter SD**, Possingham HP (2014) Setting conservation priorities in Fiji: Decision science versus additive scoring systems. *Marine Policy* 48:204-205		Paper
Klein CJ, **Jupiter SD**, Watts M, Possingham HP (2014) Evaluating the influence of candidate terrestrial protected areas on coral reef condition in Fiji. *Marine Policy* 44:360-365		Paper
Maina J, de Moel H, Zinke J, Madin J, **McClanahan TR**, Vermaat JE. (2013). Human deforestation outweighs future climate change impacts of sedimentation on coral reefs. *Nature communications*; p 4		Paper
Mbaru EK, **McClanahan TR**. (2013). Escape gaps in African basket traps reduce bycatch while increasing body sizes and incomes in a heavily fished reef lagoon. *Fisheries Research*; 148:90-9.		Paper
McClanahan TR, Allison EH, Cinner JE. (2013). Managing Marine Resources for Food and Human Security In: Barrett CB, editor. *Food Security and Sociopolitical Stability*. New York: Oxford University Press. Chapter 6.		Book Chapter
McClanahan TR, Cinner J, **Abunge C**. (2013). Identifying management preferences, institutional organizational rules and attributes, and their capacity to improve fisheries management in Pemba, Mozambique. *African Journal of Marine Science*; 35(1):47-56.		paper
McClanahan TR, Cinner JE, **Abunge C**, Rabearisoa A, Mahatante P, Ramahatratra F, et al. (2014). Perceived benefits of fisheries management restrictions in Madagascar. *Ecology and Society*; 19(1):5.		Paper
McClanahan TR, Graham NAJ, Darling ES. (2014). Coral reefs in a crystal ball: predicting the future from the vulnerability of corals and reef fishes to multiple stressors. *Current Opinion in Environmental Sustainability*. 7:59-64.		Paper
McClanahan TR, **Muthiga NA**. (2014). Community change and evidence for variable warm-water temperature adaptation of corals in Northern Male Atoll, Maldives. *Marine Pollution Bulletin*; 80:107-13.		paper
McClanahan TR, Starger CJ, Baker AC. (in press). Decadal changes in common coral populations and their associations with symbiont clades *Marine Ecology*.		paper
McClanahan TR. (2014). Decadal coral community reassembly on an African fringing reef. *Coral Reefs*. DOI 10.1007/s00338-014-1178-6.		Paper
McClanahan TR. (2014). Recovery of functional groups and trophic relationships in tropical fisheries closures. *Marine Ecology Progress Series*. 497:13-23.		Paper

Ningtias, P., Kartawijaya, T. Yulianto, I., Herdiana, Y., Warmadewa, IDG., Murtawan, H., Hasbi, K.M. (2013). *Ecosystem Approaches to Fisheries Management in West Nusa Tenggara Province*. Wildlife Conservation Society, Bogor, Indonesia, 19 p.		report
Ningtias, P., Yulianto, I., Soemodinoto, A., Kartawijaya, T., Herdiana, Y., Warmadewa, I.D.G., Hasbi, K.M., Murtawan, H. (2013). *Management Effectiveness of Marine Protected Areas, Coastal and Small Islands*. Wildlife Conservation Society, Bogor, Indonesia, 19 p.		report
Parravicini V, Villéger S, **McClanahan TR**, Arias-González JE, Bellwood DR, Belmaker J, et al. (2014). Global mismatch between species richness and vulnerability of reef fish assemblages. *Ecology Letters* 17:1101-10.		Paper
Ruiz Sebastian CR, **McClanahan TR**. (2013). Description and validation of production processes in the coral reef ecosystem model CAFFEE (Coral-Algae-Fish-Fisheries Ecosystem Energetics) with a fisheries closure and climatic disturbance *Ecological Modelling*. 263:326-48.		paper
Stuart-Smith, R.D., Bates, A.E., Lefcheck, J.S., Duffy, E., Baker, S.C., Thomson, R.J., Stuart-Smith, J.F., Hill, N.A., Kininmonth, S.J., Airoldi, L., Becerro, M.A., **Campbell, S.J.,** Dawson, T.P., Navarrete, S.A., Soler, G.A., Strain, E.M.A., Willis, T.J., Edgar, G.J. (2013). Integrating abundance and functional traits reveals new global hotspots of fish diversity. *Nature*, **501**: 539-542. doi:10.1038/nature12529		Paper
Torres-Pulliza D., Wilson J., Darmarwan A., **Campbell, S.J.,** Andréfouët, S. (2013). Ecoregional scale seagrass mapping: a tool supporting resilient MPA network design in the Lesser Sunda Ecoregion, Coral Triangle. *Ocean & Coastal Management*, **80**: 55-64.		Paper

4. General Information.

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