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	Survey on Conditions of Coral Reefs and Seagrass Communities in the Gulf of Thailand and the Andaman Sea
Location	Gulf of Thailand and Andaman Sea
Dates	2013 – 2014
Main Organizer(s)	Department of Marine and Coastal Resources (DMCR)
Main Stakeholder(s)	Department of Marine and Coastal Resources (DMCR)
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The main objective of the project was examining composition, condition and long-term change of coral and seagrass communities. The project emphasized on (1) assessment of healthy and damaged coral and seagrass communities and the causes of damages; (2) potential of natural recovery, patterns and resilience of coral and seagrass communities to environmental stresses; (3) gathering information in the geographic information database of DMCR.
Outcome (Expected outcome)	A published report showing the conditions of coral and seagrass communities in the Gulf of Thailand and the Andaman Sea, identified causes of their degradation and recommendations for measures to prevent the environmental impacts and providing conservation and restoration guidelines.
Lessons learned	- Establish community networks for conservation of coastal resources, including monitoring the changes of coral and seagrass communities. - Determine measures for mitigation impacts of sedimentation from the coastal development. - Determine measures for mitigation impacts from tourism development, especially construction of marina and jetty in the vicinity of coral and seagrass communities. - Determine research projects for knowledge on seagrass restoration and publicizing. - Determine measures for effective preservation of coral and seagrass communities outside the national park and declare environmental
Related websites (English preferred)	www.dmcr.go.th

Project 2

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Monitoring Coral Recovery and Management of Coral Reefs in Marine National Parks Following the Coral Bleaching Event
Location	Gulf of Thailand
Dates	2013 – 2014
Main Organizer(s)	Chumphon Marine National Parks and Protected Areas Innovation Center, Department of National Parks, Wildlife and Plant Conservation, Chumphon Province, THAILAND
Main Stakeholder(s)	Department of National Parks, Wildlife and Plant Conservation
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The project aimed to monitor the impacts of coral bleaching event on coral reef ecosystem and the potential of coral recovery in marine national parks. The project also enhanced capacity building for researchers of the Department of National Parks, Wildlife and Plant Conservation and provided recommendation and a management plan for sustainable uses of coral reefs in the marine national parks.
Outcome (including expected outcome)	- Knowledge on impacts of coral bleaching and potential of coral recovery in the marine national park; - Measures for rehabilitation of degraded coral reefs with participation of other stakeholders; - Geographic information database for physical-biological parameters, sensitivity, vulnerability, resilience, restoration guidelines, measures for prevention and mitigation of impacts at particular reef sites; - Enhancing capacity of young researchers, publishing scientific papers; - Management plan for diving sites in the marine national parks.
Lessons learned	Require long-term monitoring program and financial supports
Related websites (English preferred)	www.dnp.go.th

Project 3

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Recovery Potential of Corals from the 2010 Coral Bleaching Event at Mu Ko Surin, Mu Ko Similan and Mu Ko Phi Phi
Location	Mu Ko Surin, Mu Ko Similan and Mu Ko Phi Phi, the Andaman Sea
Dates	October 2014 – September 2016
Main Organizer(s)	Marine Biodiversity Research Group, Faculty of Science, Ramkhamhaeng University, Thailand
Main Stakeholder(s)	universities, MPA managers, local communities, tourist companies
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The project examines potential of coral recovery at several reef sites in the Andaman Sea. It is hypothesized that coral recruitment is a limiting factor for recovery of coral communities. Knowledge on coral recruitment at the study sites can be applied for coral reef restoration projects in Thailand. The major concerns of coral reef restoration were simple and cheap techniques and methods, involvement of local communities, private sector and NGOs, selecting high tolerant coral species to bleaching and multi-species of coral transplantation.

Outcome (Expected outcome)	The potential for recovery of reefs from coral bleaching since 2010 around the Surin, Similan And the Phi Phi Islands can be assessed for implementation of appropriate measures and methods for restoring degraded reefs, according to the local conditions. This project also highlights the importance of mitigation measures to cope with additional anthropogenic stressors on coral reefs in the Andaman Sea.
Lessons learned	Lessons learned from coral reef restoration activities in Thailand have showed that prevention and mitigation of coral reef degradation are more important than active coral reef restoration. However, coral reef restoration projects may be carried out in limited demonstration areas where they can be easily controlled and managed for the benefits of tourism and education
Related websites (English preferred)	www.thaicoralreef.in.th

Project 4

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Recruitment and Genetic Connectivity of Corals in the Gulf of Thailand
Location	Gulf of Thailand
Dates	October 2014 – September 2017
Main Organizer(s)	Marine Biodiversity Research Group, Faculty of Science, Ramkhamhaeng University, Thailand
Main Stakeholder(s)	Ramkhamhaeng University
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The project aims to investigate coral recruitment patterns and genetic connectivity of coral in the Gulf of Thailand following the impacts of global climate change and anthropogenic disturbances. It is expected to determine measures and guidelines for management of coral reefs with emphasis on community participation. The project also improve geographical information database concerning sensitivity, vulnerability, resistant, resilience and guidelines for managing sustainable uses of coral reefs in Thailand.
Outcome (Expected outcome)	- Knowledge on coral recruitment and potential of coral recovery in the Gulf of Thailand; - Appropriate coral rehabilitation programs with community participation; - Improving geographic information database for coral reef research, conservation and management; - Capacity building for coral reef scientists in Thailand; - Publishing research papers in international journals.
Lessons learned	Long-term research funding for studies on ecology and molecular genetics of coral reef organisms is needed.
Related websites (English preferred)	www.thaicoralreef.in.th

Project 5

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Impacts of the Oil Spill Incident on Coral Reef Ecosystem at Mu Ko Samet, Rayong Province
Location	Coral reefs in Rayong Province, the Eastern Gulf of Thailand
Dates	2013 – 2014
Main Organizer(s)	Marine Biodiversity Research Group, Faculty of Science, Ramkhamhaeng University, Thailand
Main Stakeholder(s)	Ramkhamhaeng University, Thailand Environmental Institute, National Research Council of Thailand
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The project aimed to examine impacts of the oil spill on coral mortality, partial mortality of corals coral diseases, recruitment of coral reef organisms and impacts on coral reef infauna.
Outcome (Expected outcome)	- Knowledge on impacts of oil spills on coral reef organisms, including sedimentary communities and ecosystem function and process; - Publishing research papers in journals; - Publicizing knowledge to relevant agencies, e.g. universities, Department of Marine and Coastal Resources, Department of National Parks, Wildlife and Plant Conservation, Department of Fisheries, Department of Pollution Control, NGOs, etc.
Lessons learned	Sublethal effects on corals were clearly observed. Some colonies of *Porites* spp. showed signs of recent stress, especially bleaching and obvious production of mucus. The project implies that reef fish and macrofauna communities generally exhibit high resistant to oil spill impacts. However the long-term ecological impacts of the oil spill on coral communities, particularly during the larval stages and sublethal effects remain to be quantitatively examined.
Related websites (English preferred)	www.thaicoralreef.in.th

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

a. Engaging other sectors

Department of Marine and Coastal Resources and Department of National Parks, Wildlife and Plant Conservation are the main agencies with the responsibility for managing coral reef sites in Thai waters. The decentralization concept has been applied in Thailand. Therefore, local administrative offices and local communities become important agencies to manage marine and coastal resources including coral reefs. The tourism sector is also a very important stakeholder for the country incomes. It is urgently needed for the government agencies to work in collaboration with local communities, local administrative offices and tourism business companies. There are some case studies of engaging other sectors for coral reef management in Thailand at certain localities, such as Ko Tao, Ko Chang in the Gulf of Thailand, Mu Ko Phi Phi, Mu Ko Tarutao in the Andaman Sea.

b. Reef zoning for multiple use

Location where a zoning plan has been implemented	Ko Tao
Year when the zoning plan was implemented	2012
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

A good example of reef zoning for multiple use in Thailand is coral reefs at Ko Tao, the Western Gulf of Thailand. Department of Marine and Coastal Resources has worked in collaboration with relevant government agencies, international organizations, private companies, NGOs, local communities and the local administrative office for planning, implementing and monitoring. Preliminary plans for coral reef zoning at some locations have been prepared, such as Ko Chang in Trat Province, the Eastern Gulf of Thailand and Phuket Province in the Andaman Sea.

3. **Publications.**

Title (incl. author and date)	**Website URL if available**	**Type of publication** (Paper, report, etc.)
Brown, B. E., Dunne, R. P., Phongsuwan, N., Patchim, L., Hawkridge, J. M. **2014**. The reef coral *Goniastrea aspera*: a 'winner' becomes a 'loser' during a severe bleaching event in Thailand.	Coral Reefs 33 (2): 395-401.	Paper
Wongthong, P., Harvey, N. **2013.** Integrated coastal management and sustainable tourism: A case study of the reef-based SCUBA dive industry from Thailand.	Ocean & Coastal Management 95: 138-146	Paper
Jantzen, C. Schmidt, G.M, Wild, C. Roder, C. Khokiattiwong, S. Richter, C. **2013.** Benthic Reef Primary Production in Response to Large Amplitude Internal Waves at the Similan Islands (Andaman Sea, Thailand).	PLOS ONE 8 (11): e81834, DOI:10.1371 /journal.pone.0081834	Paper
Phongsuwan, N., Chankong, A., Yamarunpatthana, C., Chansang, H., Boonprakob, R., Petchkumnerd, P., Thongtham, N., Chanmethakul, T., Panchaiyapoom, P., Bundit, O. **2013**. Status and changing patterns on coral reefs in Thailand during the last two decades.	Deep Sea Research Part II 96: 19-24	Paper
Sutthacheep, M., Pengsakun, S., Yucharoen, M., Klinthong, W., Sangmanee, K., Yeemin, T. **2013.** Impacts of the mass coral bleaching events in 1998 and 2010 on the western Gulf of Thailand.	Deep-Sea Research II 96: 25–31.	Paper
Yeemin, T., Pengsakun, S., Yucharoen, M., Klinthong, W., Sangmanee, K., Sutthacheep, M. **2013**. Long-term changes of coral communities under stress from sediment.	Deep-Sea Research II 96: 32–40.	Paper
Hong, G. H., Kima, C. J., Yeemin, T., Siringan, F. P., Zhang, J, Lee, H. M., Choi, K. Y., Yang, D. B., Ahn, Y. W., Ryu, J. H.	Deep-Sea Research II 96: 41–49.	Paper

Title (incl. author and date)	**Website URL if available**	**Type of publication** (Paper, report, etc.)
2013. Potential release of PCBs from plastic scientific gear to fringing coral reef sediments in the Gulf of Thailand.		
Hoeksema, B.W., Scott, C., True, J.D. **2013.** Dietary shift in corallivorous Drupella snails following a major bleaching event at Koh Tao, Gulf of Thailand	Coral Reefs 32 (2): 423–428	Paper
Singkran, N. **2013.** Classifying risk zones by the impacts of oil spills in the coastal waters of Thailand.	Marine Pollution Bulletin 70 : 34–43	Paper
Yeemin, T., Pengsakun, S., Yucharoen, M., Klinthong, W., Sangmanee, K., Sutthacheep, M. **2013.** Long-term decline in Acropora species at Kut Island, Thailand, in relation to coral bleaching events.	Marine Biodiversity 43:23–29.	Paper
Suraswadi, P., Yeemin, T. **2013.** Coral reef restoration plan of Thailand.	Galaxea 15S: 428–433.	Paper
Sutthacheep, M., Saenghaisuk,C., Pengsakun, S., Donsomjit, W., Yeemin, T. **2013.** Quantitative studies on the 2010 mass coral bleaching event in Thai waters.	Galaxea 15S: 379-390	Paper

4. General Information.

Member type (Country):	
Focal Point 1:	
Name:	Mr. Niphon Phongsuwan
Title/Organization:	Inspector general, Department of Marine and Coastal Resources (Thailand)
Email:	niphon.ph@dmcr.mail.go.th
Focal Point 2:	
Name:	Dr. Thamasak Yeemin
Title/Organization:	Lecturer, Coral Reef Biologist and Manager Ramkhamhaeng University (Thailand)
Email:	thamasakyeemin@yahoo.com