INTERNATIONAL CORAL REEF INITIATIVE (ICRI)
29th General Meeting
20-23 October 2014 – Okinawa, Japan

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	Sekisei Lagoon Nature Restoration Project
Location	Sekisei Lagoon and the surrounding sea areas of Ishigaki and Iriomote Islands
Dates	Feb 2006 when the Sekisei Lagoon Nature Restoration Committee established, to present
Main Organizer(s)	Sekisei Lagoon Nature Restoration Committee (President: Dr. Makoto Tsuchiya, Honorary Professor of University of the Ryukyus)
Main Stakeholder(s)	Local community members, local NPOs/NGOs, fishery and tourism industries, researchers, local governments, national agencies (Members 113)
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The Sekisei Lagoon is the largest coral reef in Japan which extends between Iriomote and Ishigaki Islands. In species richness of reef building corals, the Sekisei Lagoon is the equivalent of the Great Barrier Reef in Australia, and has been appreciated at home and abroad. The lagoon, on the other hand, provides fields for a variety of socio-economic activities in the Yaeyama Islands, such as fisheries, tourism, building materials, environmental education and sea routes—hence, various stakeholders are involved. Due to environmental pressures, such as the crown-of-thorns starfish outbreak, coral bleaching which has become more frequent in recent years, and land-based water pollution including the red clay runoff and domestic wastewater, the coral reef ecosystem in the Sekisei Lagoon has been degraded in steep, compared with the time of its designation as a national park in 1972. In accordance with the Law for the Promotion of Nature Restoration, the Sekisei Lagoon Nature Restoration Committee was established by a group of local stakeholders in 2006 in response to a call by the Ministry of the Environment (MOE), Cabinet Office and the Okinawa Prefectural Government. In 2007, the committee drew up the Overall Plan for the Sekisei Lagoon Nature Restoration with its long-term goal: "Realize a relation between people and nature, and regain the bountiful coral reefs, as it was when the national park designated in 1972". This project aims at integrated restoration of the coral reef ecosystem, including terrestrial areas, mangrove forests, seagrass beds and tidal flats, and targets the Sekisei Lagoon area including the Ishigaki and Iriomote Islands. The overall plan identifies main threats to the coral reef ecosystem, and defines necessary measures to address them and the role of each member

organization. We will implement adaptive management of the project through mutual evaluation in accordance with the framework of the project and committee.

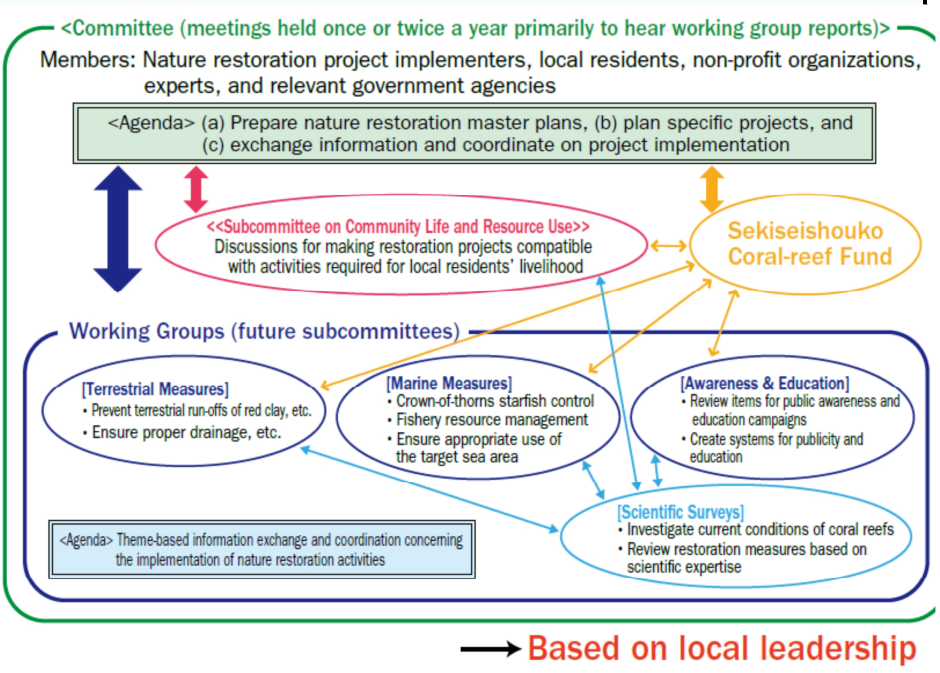
As shown in the figure below, the current organization of the committee consists of a "General Assembly", "Subcommittee on Community Life and Resource Use", and four Working Groups, each functioning practically: "Terrestrial Measures", "Marine Measures", "Awareness & Education", and "Scientific Surveys".

Specific activities in the Subcommittee and each working group are as follows:

- Subcommittee on Community Life and Resource Use: To coordinate between human resource use for fisheries, tourism and maritime traffic, etc. and nature restoration, the subcommittee is developing a "Rule map for the use and conservation of the Sekisei Lagoon waters".
- Terrestrial Measures WG: To mitigate impacts caused by red-clay runoff and waste water, the WG is carrying out activities to raise awareness in local communities through lectures/meetings reporting impacts of red clay runoff on coral reefs and experimental agricultural methods for preventing red clay runoff.
- Marine Measures WG: The WG has been working on fisheries resource management and control of the crown-of-thorns starfish. In regards to the crown-of-thorns starfish control, it has, in particular, formed a small group to discuss more technical matters. Private organizations and government agencies are effectively implementing the starfish control, sharing their plans and activities together
- Awareness & Education WG: To raise the public awareness, the WG has been disseminated scientific knowledge and importance of coral reef conservation to the public through organizing events and environmental education programmes.
- Scientific Surveys WG: As a group of experts, the WG has been conducting the monitoring of the coral reef ecosystem in the Sekisei Lagoon, researching factors degrading coral reefs, and examining necessary measures for their restoration. In addition, the WG evaluates the effectiveness of the restoration project.

Moreover, the "Sekiseishouko Coral-reef Fund", established in 2009 to support activities of the Committee, has been using the funds raised for coral reef restoration, such as promotion of sugar cane cultivation by stump shooting and crown-of-thorns starfish extermination by an acetic acid injection method. As mentioned above, since this project covers very comprehensive activities, the "General Assembly" of the committee provides a venue to report on and coordinate between activities by the subcommittee, WGs and the fund.

As a member of the committee, MOE has drawn up an implementation plan in accordance with the overall plan. Under the implementation plan MOE is conducting monitoring surveys and collecting basic data on the coral reef ecosystem including coral coverage, the number of larval recruitment and settlement, the coral-dwelling fishes, and factors threatening coral such as the number of the crown-of-thorns starfish, amount of Suspended Particles in Sea Sediment (SPSS), and occurrence of coral disease. These data are provided for restoration measures and evaluation of project effectiveness. In addition, based on the idea of enhancing the coral reef natural recovery, since 2004, MOE has been working to restore coral reefs directly by recovering the coral

	communities through coral transplantation by sexual reproduction method using coral settlement devices. MOE has also been contributing to the restoration of coral reef ecosystem in Sekisei Lagoon by developing techniques and raising public awareness. Aside from these activities, MOE organizes events to observe marine lives and provides opportunities for local people and students to learn about the coral reef ecosystem in Sekisei Lagoon and its significance. As described above, the Sekisei Lagoon Nature Restoration Committee is a framework in which various stakeholders from the entire community are participating, in order to promote the conservation and management of Sekisei Lagoon that is the foundation of activities in the local society. To share information and collaborate among the committee members and to promote more comprehensive and effective management as well as nature restoration, the committee has set up a common goal and organized the role of each member in accordance with the overall plan, so as to conduct an integrated management approach, recognizing connectivity within and among ecological, social, economic and institutional systems. 
Outcome (Expected outcome)	Even before the establishment of the committee, individual entities had carried out their own measures to conserve the coral reef ecosystem, including control of the crown-of-thorns starfish and management of marine fishery resources. However, there were no collaborations or networks among them, and most measures were carried out by each entity alone. Establishing the committee and implementing the project in accordance with the overall plan, the restoration project has been functioning effectively, and building networks and collaborating among members, and evaluating effectiveness of the activities one another. The outcomes of the project are as follows: <u>Control of the crown-of-thorns starfish by collaborations between the public and private sectors</u> • Developing the crown-of-thorns starfish control map (MOE, Okinawa Prefecture, Ishigaki City)

- The number of crown-of-thorns starfish removed by MOE: 54,881 (2005-2013) (Contractors: Yaeyama Fisheries Cooperatives, Ishigaki Island Marine Leisure Cooperatives etc.)

Establishment of coral communities transplantation technology by coral sexual reproduction

- Cumulative number of transplanted corals: 43,857 (area: 4,039 m^2) (2004-2013)
- Development of coral settlement devices to collect coral larvae and enhancement of efficiency of larvae collection through improvement of the transplantation technique (Collection rate: 2004: 5.7%→2013: 30.1%)

Coral Transplantation at a dredging site in Taketomi sea route (MOE and Okinawa General Bureau (OGB))

- OGBstarted the coral transplantation from a dredging site in Taketomi sea route in 2011
- Collaborating with OGB, in 2013MOE transplanted coral communities from Taketomi sea route to the areas that are considered to be important sources of coral spawning.

Development of rules for sustainable resource use in Sekisei Lagoon involving local governments, fishery and tourism industries)

- In 2010, developed short-term and mid/long-term rules for marine resource use, including fishery resources, diving tourism.
- Developing a rule map for resource use and conservation of the Sekisei Lagoon waters

Training and environment education program on coral reef

- "Waku-waku Sango" (literally translated as "Excited about corals") Ishigaki Island Project
- Events for marine lives observation collaborated by MOE and Coral Cultivation Team of Yaeyama Fishery Cooperatives

Continual monitoring of coral reefs

- There are no clear signs of coral communities recovering significantly at Sekisei Lagoon as a whole, but there are declines in the north and southeast areas and recoveries in northern Kuroshima and Yonara Waterways.
- The accumulation and publication of data on coral communities in Sekisei Lagoon:
  - Coral communities (coral coverage, number of coral species appeared, coral larval recruitment, coral-dwelling fishes, etc.)
  - Coral population dynamics (coral larval settlement, population dynamics of *Acropora hyacinthus*, etc.)
  - Disturbing factors (water quality, water temperature, salinity, underwater visibility, light photons, SPSS, coral diseases etc.)
  - Ocean environment observations by observatory buoys (water temperature, salinity, underwater visibility, water level, wave height, etc.)
- The survival rate of transplanted corals (2-5 years; 20-40 % survived)
- Spawning of transplanted corals: first observed in 2010; since

	then, observed annually) • Coral-dwelling fishes inhabiting transplanted corals (*Upeneus*, *Paragobiodon*, Trapeziidae (coral-dwelling crabs), etc.) Establishment of the Sekiseishouko Coral-reef Fund to raise funds for WG activities (2009) • Management body: NPO Sekiseishouko Coral-reef Fund • Raised funds (cumulative): 5250,000 JPY (~2013) • Grants for 14 projects (2010~), total: 4200,000 JPY (Projects: Crown-of-thorns starfish control in the Yaeyama waters, validation of the use of asetic acid for killing the crown-of-thorns starfish, Coral Watch Project, promoting the conversion of farming to sugar cane cultivation by stump shooting, etc.) Since reducing environmental impacts takes long time, its effects are not readily visible; however, under the project overall plan, each participating entity has been making steady efforts, sharing information and collaborating with one another. Monitoring and evaluating the progress and effectiveness of the activities at General Meeting and each WG, monitoring recovery status of the coral reef ecosystem, and enhancing or maintaining the coral reef resilience, the committee has been promoting the natural restoration of the Sekisei Lagoon.
Lessons learned	To effectively promote the restoration of natural ecosystems that provide a variety of ecosystem services, we have to accomplish the project integrally, formulating a framework participated by a variety of stakeholders including not only marine but also terrestrial fields, taking into consideration the scale of targeting natural ecosystems and the surrounding social activities. In particular, it is important to set up a common goal among parties, which enables each party, that might have been carrying out its own activity, to recognize its role and evaluate the effectiveness of its activity from a holistic view. In addition, building up networks among parties under the project framework can facilitate collaboration among the project activities, and provide opportunities for mutual evaluation and information sharing. Furthermore, we learned the importance of adaptive management according to scientific information collected by the coral reef ecosystem monitoring, and evaluation of the effectiveness of the project implementation. It should be noted that the structure of the committee itself can be reviewed, which is also a vital point in adaptive management. The establishment of the WGs in 2012 is one of the outcomes, and it is our hope that it will increase the effectiveness and practicality of the project.
Related websites (English preferred)	Sekisei Lagoon Portal (http://sekiseisyouko.com/szn. Japanese only)

Project 2

Cornerstone(s) implemented through the project	Check all that apply: ☐ Integrated Management ☐ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Research funds to support environmental policies (led by Prof. Kazuo Nadaoka)
Location	Sekisei Lagoon
Dates	2014 (ongoing)
Main Organizer(s)	Ministry of the Environment, Tokyo Institute of Technology
Main Stakeholder(s)	
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	MOE is funding Tokyo Institute of Technology's research on "contributing to the Sekisei Nature Restoration Project though understanding the integrated network/connectivity of island – coral reefs – outer sea." Also, MOE strives to bridge the gap between research outcomes and policies.
Outcome (including expected outcome)	The findings will be summarized in 2015, and will be reflected in the Sekisei Lagoon Nature Restoration Project.
Lessons learned	By having the government support academic research, it becomes possible to match the information needed for policy-making with specific research plans, and this match brings mutual benefit to both researchers and policymakers.
Related websites (English preferred)	N/A

Project 3

Cornerstone(s) implemented through the project	Check all that apply: ☐ Integrated Management ☐ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	The monitoring of areas with important ecosystems (Monitoring Sites 1000)
Location	Main coral sites: Tokara Archipelago, Amami Islands, Okinawa Island and its surrounding islands, Kerama Islands, Daito Islands, Miyakojima Islands, Ishigaki Island, Sekisei Lagoon, Iriomote Island and its surrounding islands, Ogasawara Islands High-latitude coral communities: Yakushima/Tanegashima Island areas, Tateyama, Iki area, Kushimoto area, southeast coast of Shikoku (Uwakai~Cape Ashizuri), south coast of Kagoshima, Amakusa area
Dates	Since 2003
Main Organizer(s)	Biodiversity Center of Japan, Nature Conservation Bureau, Ministry of the Environment
Main Stakeholder(s)	Japan Wildlife Research Center, Inc.
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	To understand the conditions of Japan's coral reef ecosystems and collect information for their conservation, we are monitoring coral cover, bleach rate, the number of crown-of-thorns starfish, Suspended Particles in Sea Sediment (SPSS), and water temperature.
Outcome (Expected outcome)	We produce a report every fiscal year and a summary report every five years.
Lessons learned	
Related websites (English preferred)	http://www.biodic.go.jp/moni1000/coral_reef.html (only available in Japanese)

Project 4

Cornerstone(s) implemented through the project	Check all that apply: ☐ Integrated Management ☐ Capacity Building ☒ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	Investigation of high-latitude coral communities
Location	Kagoshima Prefecture
Dates	2013
Main Organizer(s)	Ministry of the Environment
Main Stakeholder(s)	Biodiversity Center of Japan
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	Investigation of the high latitude coral communities (in Kagoshima Prefecture) from the point of view of the social sciences and the natural sciences.
Outcome (Expected outcome)	The findings from this investigation will be used as reference when revising our national Coral Reef Ecosystem Conservation Action Plan.

Lessons learned	N/A
Related websites (English preferred)	N/A

Project 5

Cornerstone(s) implemented through the project	Check all that apply: ☐ Integrated Management ☒ Capacity Building ☐ Science & Monitoring ☐ Periodic Assessment (Review)
Project Title	The holding of international symposia on climate change and coral reef conservation in island regions
Location	Okinawa Institute of Science and Technology Graduate University (OIST)
Dates	Since 2013
Main Organizer(s)	Ministry of the Environment
Main Stakeholder(s)	Okinawa Prefecture, OIST, University of the Ryukyus
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	Recognizing the commonalities among island regions, we are able to effectively share information through addressing measures, practices, and initiatives on climate change and coral reefs. Furthermore, by seeking potential opportunities for collaboration in the future, the symposia contribute to capacity development.
Outcome (Expected outcome)	We have uploaded reports on the meeting webpage and created a Chair's Summary (see links below).
Lessons learned	We have held two symposia to date. Using the outcome of the first symposium as a basis, the second symposium had a more specific focus. This approach of having a clear focus appears to be effective in linking the symposia to specific initiatives/measures in the future.
Related websites (English preferred)	http://www.env.go.jp/en/nature/npr/iccccrc2013/ http://www.env.go.jp/nature/biodic/ecdisso2014/en/index.html

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

a. Engaging other sectors

The Sekisei Lagoon Nature Restoration Project exemplifies cross-sectoral management (see Project 1 above).

b. Reef zoning for multiple use

Location where a zoning plan has been implemented	
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

[Insert text here]

3. Publications.

Title (incl. author and date)	**Website URL if available**	**Type of publication** (Paper, report, etc.)

4. General Information.

Member type (Country / Organization):	Country: Japan
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