

Proposal for feasibility study towards assessment of seagrass in the NOWPAP region

1. Backgrounds

Since its inception, Special Monitoring and Coastal Environmental Assessment Regional Activity Centre (CEARAC) has implemented various activities focusing on assessment of the state of the marine, coastal and associated freshwater environments. Since 2007, when the Mid- and Long-term strategies of CEARAC was developed, CEARAC has expanded its working areas from NOWPAP Working Group 3 (red tide and harmful algal blooms) and Working Group 4 (ocean remote sensing) to assessment the status of eutrophication and development of new environmental assessment methods in the coastal areas using biological diversity as a main indicator. In the 2014-2015 biennium, three projects have been implemented based on the outcomes of past activities and in line with the CEARAC mid- and long-term strategies: (1) pilot assessment on the impacts of major threats to marine biodiversity in selected sea areas in the NOWPAP region; (2) trial applications of the screening procedure of the NOWPAP Common Procedure for eutrophication assessment; and (3) case studies on seagrass mapping in selected sea areas in the NOWPAP region. Then, a regional report on the impacts of major threats to marine biodiversity in the NOWPAP region, an interactive web-based map of potential eutrophic zones in the NOWPAP region, and a map of seagrass distribution in the selected sea areas in the NOWPAP region will be developed by the end of 2015 as outcomes of these projects,

In case of CEARAC's on-going activity on eutrophication assessment, firstly, a common procedure to be used among the NOWPAP member states was developed (2008-2009). Then, eutrophication assessment was conducted in selected sea areas in each NOWPAP member state (2010-2013) with the developed (and revised) procedure. In this biennium, as abovementioned, the assessment is being applied to the entire NOWPAP region although the used parameters are limited. While this transboundary assessment is expected continued implementation, other CEARAC activities should also widen its geographical working area to the entire NOWPAP region despite limitations of both financial and human resources.

Seagrass and seaweed beds are important in terms of their function to maintain marine biodiversity and mitigate climate change; however, information on their distribution is very limited. Even the information on UNEP seagrass database is sparse and rather outdated.

The current CEARAC project on seagrass mapping aims to detect their detailed spatial distribution and to understand its change associated with environmental changes in case study areas of each member state, by using on-site observations and analysis of high resolution satellite images. When the same procedure is applied to the entire sea areas of NOWPAP, hundreds of satellite images needs to be analyzed with more on-site information. Also, identifying threats to seagrass requires much cost and time.

On the other hands, following the discussion and agreement at Rio+20 (2012), the United Nations developed the "Sustainable Development Goals (SDGs)," in which it is stated to conserve

and sustainably use the oceans, seas and marine resources for sustainable development. One of the targets on ocean goal sets “by 2020, conserve at least 10 percents of coastal and marine areas, consistent with national and international law and based on best available scientific information.”

In line with this targets and focusing on its value in coastal ecosystem, and taking into account difficulty in gathering information, CEARAC proposes to implement feasibility study towards assessment of seagrass in the NOWPAP region for the purpose of providing useful information in consideration of establishing 10 percents marine protected areas in each member state in the NOWPAP region.

2. Objective

Objective of this activity is to investigate the feasibility for assessment of seagrass in the NOWPAP region, including identifying obstacles and required resources and/or tasks for implementing the assessment.

3. Tasks

3.1 Development of a seagrass database in the NOWPAP region

CEARAC will, through nominated national experts, collect on-site information of seagrass from literature and reports and make a list by observation date, location (latitude and longitude), and types of seagrass. A database will be constructed based on collected information of seagrass for further mapping their distribution by analysis of satellite images. The database should be easily and voluntarily updated by organizations and/or groups which work for restoration of seagrass. Involvement of such organizations/groups will be promoted through possible opportunities such as the National Amamo (seagrass) Summit in Japan or other NGOs that promote conservation and restoration of seagrass in the NOWPAP region. Collected information in the database will also be registered to Ocean Biogeographic Information System (ORBIS).

3.2 Preparation of inventory of satellite image data and estimation of analysis cost

CEARAC will prepare an inventory of satellite images from past satellite images which can be used to estimate distributions of seagrass beds in the NOWPAP region. The collected information is listed by wavelength, spatial resolution, purchasing price and so on. Then, cost for image analysis will be estimated to implement assessment of seagrass beds (current status of seagrass beds and their changes from the past).

3.3 Review of literatures on threats to seagrass

CEARAC will, through nominated national experts, review literatures on threats to seagrass in each country to identify threats to seagrass such as urban/industrial runoff, urban/port infrastructure development, agricultural runoff, dredging, trawling, aquaculture, boat damage,

shipping accident (e.g. oil spills) and changes in sea surface temperature in the NOWPAP region. Through the literatures review process, applicability of remote sensing techniques to detect identified threats will also be reviewed for future monitoring.

3.4 Organization of International Workshop on assessment of seagrass in the Northwest Pacific region

An international workshop on assessment of seagrass in the NOWPAP region will be organized with inviting researchers in and out of the NOWPAP region. As an outcome of the international workshop, the required actions for assessment of seagrass will be compiled. Structure and contents of a feasibility study report will also be discussed at the international workshop.

3.5 Publication of a feasibility study report.

Based on the tasks from 3.1-3.4 and obtained knowledge through the past projects on eutrophication assessments, CEARAC will prepare and publish a feasibility study report including a draft workplan for assessment of seagrass in the NOWPAP region and share it among the NOWPAP member states as well as NOWPAP partners.

4. Expected outcomes

Development of the seagrass database in the NOWPAP region will help mapping seagrass beds with satellite images in the future. A feasibility study report to be published includes identified resources and tasks required for assessment of seagrass, and it enables for CEARAC to mobilize a wide range of funding for the assessment. Collected information will also be contributed to Ocean Biogeographic Information System (OBIS) so as to increase information in worldwide as well as to be utilized for setting marine protected areas.

5. Schedule

The time line of tasks in this activity is shown as follows.

Time	Action	Main body
2015 Q3 (August)	(CEARAC FPM13) - Proposing a workplan	CEARAC Secretariat and FPs
Q4 (October)	20th NOWPAP IGM - Approval of CEARAC activities and budget for the 2016-2017 biennium	IGM
2016 Q1	14th CEARAC FPM - Review and approval of the workplan	CEARAC FPs
2016 Q2 to 3	- Collecting existing on-site information on seagrass beds in each member state and developing database - Developing satellite image inventory	National experts and CEARAC
2016 Q4 to 2017 Q1	- Estimating image analysis cost for implementing assessment -Reviewing literatures on threats to seagrass	National experts and CEARAC
Q1 to 2	(International Workshop) - Compiling required actions for assessment of seagrass - Discussing structure and contents of the feasibility study report	National experts and CEARAC
Q3 to Q4	- Preparing/Publishing the feasibility study report	CEARAC and consultant

6. Budget

Task	Time	Outcome	To be completed	Main body	Budget (US\$)
- Collecting existing on-site information on seagrass and developing a database - Reviewing literatures on threats to seagrass	2016 Q2	- A database of seagrass in the NOWPAP region - List of parameters for assessment of threats to seagrass	2016 Q3	Expert in China	4,000
				Consultant in Japan	4,000
				Expert in Korea	4,000
				Expert in Russia	4,000
- Preparing inventory of satellite image - Estimating image analysis cost for implementing assessment	2016 Q4	- Inventory of satellite images to be used to estimate seagrass beds distribution - Estimation of image analysis cost	2017 Q1	CEARAC	4,000
- Organizing International Workshop	2017 Q1-2	- Proceedings of International Workshop	2017 Q1-2	National experts and CEARAC	15,000
Preparing and publishing report	2017 Q3	- A feasibility study report including draft workplan for assessment of seagrass in the NOWPAP region	2017 Q3-4	CEARAC	5,000
Total					40,000