Proposal on CEARAC's activities for marine biodiversity conservation for the 2020-2021 biennium

1. Background

In the 2018-2019 biennium, CEARAC is developing the CEARAC Medium-term Strategy for marine biodiversity conservation in the NOWPAP region (CEARAC MTS) which shows the future vision of CEARAC's marine biodiversity activities. Based on the needs of the NOWPAP member states, six potential topics for future activities were selected, and they were prioritized through feasibility assessments implemented in each member state. CEARAC Secretariat is preparing a draft CEARAC MTS based on the feasibility assessment reports submitted from the nominated experts. The CEARAC MTS will be reviewed by CEARAC FPs and the experts, and approved to submit to the 24th NOWPAP IGM to be held in December 2019. It is expected that the CEARAC MTS will be approved at the IGM.

Please notice that the CEARAC MTS has not been approved by CEARAC FPs and the member states yet; therefore, the proposed workplan in this document is explaining three candidate activities for the 2020-2021 biennium. There may be some changes applied later aligned with the approved CEARAC MTS.

2. Proposed activities for marine biodiversity conservation in the 2020-2021 biennium

CEARAC Secretariat would like to propose following three activities for the 2020-2021 biennium. CEARAC Secretariat plans to organize a workshop to discuss detailed workplan with national experts after CEARAC FPs' selection of activity/-ies from the following three at the 17th CEARAC FPM, if the 17th CEARAC FPM agree the revision of workplan and budget for developing the CEARAC MTS.

2.1 Assessment of distribution of tidal flats and salt marshes in the NOWPAP region

[Background and objective]

Habitat conservation is selected as a high priority topic in the CEARAC MTS. CEARAC has attempted to understand the status of seagrass beds in the NOWPAP region through the development of a manual for mapping seagrass/seaweed beds in the NOWPAP region using remote sensing techniques, and a web-based tool for seagrass distribution mapping. In addition to seagrass/seaweed beds, tidal flats and salt marshes are important habitats for marine species. Tidal flats are widely distributed in the Yellow Sea and salt marshes are distributed in the member states. Tidal flats and salt marshes are feeding sites and wintering spots for migratory birds, and are habitats for endangered marine species such as Japanese horseshoe crab (*Tachypleus tridentatus*). However, these habitats face anthropogenic pressures such as coastal development including land fill and marine pollution; therefore, conservation of them is a high priority issue in the NOWPAP region. NOWPAP Ecological Quality Objectives (EcoQOs) developed by Pollution Monitoring Regional Activity Centre (POMRAC) include one objective on habitats "Biological and habitat diversity are not changed significantly due to anthropogenic pressure", and activities for conservation of habitats are recommended.

Objective of this activity is to understand the distribution and historical changes of tidal flats and salt marshes in

the NOWPAP region, and assess the anthropogenic pressures on these habitats. This project focuses on tidal flats and salt marshes, while mapping distribution of seagrass beds is continued in the 2020-2021 biennium by the existing seagrass project of CEARAC.

[Tasks]

Murray et al. (2019) developed a tidal flat distribution mapping tool and shows the global distribution of intertidal areas through Global Intertidal Change using Google Earth Engine. Using this tool, it is not necessary to develop an original mapping tool for the NOWPAP region, so to implement this activity, the tool developed by Murray et al. (2019), the outputs of Global Intertidal Change and information and data which the member states have will be used.

(1) Mapping of tidal flats and salt marshes in the NOWPAP region

Based on the available data from Global Intertidal Change, distribution of tidal flats and salt marshes will be mapped. Distribution of intertidal areas by Global Intertidal Change is not classified into tidal flats, salt marshes or intertidal areas. Each member state will review the distribution map and classify into three types of habitats using their national data.

(2) Assessment of the historical change of tidal flats and salt marshes and its causes

Global Intertidal Change shows the change of intertidal areas between 1980s and 2010s, and it is possible to understand the change of habitat distribution during the past 3 decades. Using the information on the change of distribution, anthropogenic pressures on habitats in the NOWPAP region will be assessed.

[Budget]

Development of a tidal flat and salt marsh map in the NOWPAP region	5,000 US$
Review of the tidal flat and salt marsh map	9,000 US$ for 3 member states
Assessment of the change of tidal flats and salt marshes and its causes	6,000 US$ for 3 member states
Total	20,000 US$

2.2 Organizing a training course on e-DNA analysis

[Background and objective]

Environmental DNA (e-DNA) has a big potential to contribute to biodiversity conservation, and its possibility is expected in the feasibility assessment. E-DNA is used globally to assess the biodiversity and to identify the distribution of specific species, it becomes a strong tool in biodiversity study field. However, e-DNA is a newly developed technique; therefore, the analysis method is not standardized and the level of its use among the member states may be different. In addition, analytical equipment and analytical cost is high, thus we have to discuss how to use the e-DNA technique for NOWPAP activities.

Objective of this activity is to help capacity building by increasing knowledge of the participants on the methodology of e-DNA which can be utilized in the future NOWPAP activities.

[Tasks]

(1) Development of an analytical manual for e-DNA

NOWPAP common analytical manual for e-DNA will be developed in order to share and standardize the analytical method among the member states. The draft manual will be prepared using a manual developed by the eDNA Society, Japan. The draft manual will be reviewed by relevant experts of the member states and finalized as NOWPAP common manual.

(2) Organizing a training course on e-DNA analysis

In order to disseminate the e-DNA methodology introduced in the NOWPAP common manual to young experts of the member states, the first training course of e-DNA analysis will be held in Japan. The training course includes lectures and analytical practices.

It is expected that the training course will be held jointly with other international organization(s), such as North Pacific Marine Science Organization (PICES) and Partnership for Observation of Global Ocean (POGO), and so on.

[Budget]

Development of an analytical manual for e-DNA	5,000 US$
Organizing a training course on e-DNA analysis	20,000 US$
Total	25,000 US$

2.3 Updating HAB database and HAB Reference Database

[Background and objective]

CEARAC Working Group 3 developed HAB Database/Reference Database to share information among the member states. Objective of this activity is to update HAB Database and HAB Reference Database adding the latest information on HAB in the member states. In recent years, the distribution change of causative species due to climate change and ballast water has been reported in the member states, massive algal blooms occurred in the NOWPAP region. Such latest information will be added.

Specific project “Identification of key indicator species and ecosystem of biodiversity change in the NOWPAP region” was proposed by Russian experts. If key indicator species are selected from plankton species, HAB databased and HAB reference database can be one of the useful resources for the special project.

[Tasks]

(1) Updating of HAB Database and HAB Reference Database

HAB Database and HAB Reference Database will be updated by adding the latest information on HAB occurrences in the member states.

[Budget]

Updating of HAB Database and HAB Reference Database	9,000 US$
Total	9,000 US$

4. Expected outcomes

CEARAC MTS shows CEARAC's future vision of activities on marine biodiversity conservation, which is one major theme in NOWPAP MTS 2018-2023Therefore, CEARAC MTS will not only contribute to the development of NOWPAP RAP BIO, but also contribute to the achievement of NOWPAP MTS 2018-2023.

Efforts on marine biodiversity conservation has been enhanced nationally, regionally and globally to achieve the Aichi Biodiversity Targets and Sustainable Development Goal 14, and active discussion on the Post Aichi Biodiversity Targets has also been conducted. Future CEARAC activities are expected to provide useful information to the NOWPAP member states to contribute to the achievement of global goals on marine biodiversity conservation

5. Schedule

Timing		Actions	Main body
2019	9-10 September	The 17th CEARAC FPM - Review and approval of CEARAC MTS - Discussion of activities for the 2020-2021 biennium	CEARAC FPs and CEARAC Secretariat
	November	Workshop for discussing detailed workplan for 2020-2021 activities	Experts and CEARAC Secretariat
	24-27 December	The 24th NOWPAP IGM - Approval of workplan and budget for the 2020-2021 biennium	NOWPAP National FPs
2020	Spring	The 18th CEARAC FPM - Review of workplan	CEARAC FPs and CEARAC Secretariat