Newsletter from
NOWPAP CEARAC

Northwest Pacific Action Plan
Special Monitoring & Coastal Environmental Assessment
Regional Activity Centre

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Contents

Greetings from CEARAC

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CEARAC (Special Monitoring and Coastal Environmental Assessment Regional Activity Centre) is one of the four Regional Activity Centres established in the four member states (China, Japan, Korea and Russia) of the Northwest Pacific Action Plan (NOWPAP) in the Regional Seas Programme of UNEP. Since its inception in 2002, CEARAC has worked on monitoring and assessing the marine and coastal environment by various means including remote sensing technique.

In environmental study, application of remote sensing technique has advantages over on-site surveys as satellite images can cover wider areas. With this useful technique and conventional on-site surveys, CEARAC has implemented activities such as mapping of seagrass beds which are very important habitats for marine species, and developing assessment methods of marine biodiversity and eutrophication in the Northwest Pacific sea areas.

Regarding an emerging issue of marine litter, CEARAC has taken a pioneering role in the Northwest Pacific region. Since the CEARAC's development of guidelines for monitoring marine litter on the beaches, the member states have implemented the surveys with the guidelines. Then, CEARAC has compiled and harmonized survey data collected in the member states.

CEARAC Newsletter Vol.12 introduces CEARAC activities for the 2014-2015 biennium and the list of the next biennium (2016-2017). I hope this newsletter helps its readers understand the marine environment in the Northwest Pacific region more deeply and start thinking how to conserve our precious sea.

Views too good to miss! From the top of the largest cable-stayed bridge on the west coast of Japan, you can have breathtakingly nice views of Toyama Bay, the Tateyama Mountain Range and the Noto Peninsula.

Activities in 2015

1. Organization of Meetings

The 4th CEARAC Expert Meeting

The 4th CEARAC Expert Meeting was held on 24 August 2015 in Toyama, Japan. Experts on marine biodiversity, eutrophication and seagrass/seaweed mapping from the NOWPAP member states as well as representatives of NOWPAP Regional Coordinating Unit (NOWPAP RCU), the pollution Monitoring Regional Activity Centre (NOWPAP POMRAC) and the United Nations Economic and Social Commission for Asia and the Pacific (NEASPEC) participated in the meeting. Since this meeting was held on the previous day of the Focal Points Meeting (see below), CEARAC Focal Points also joined the meeting.

The meeting reviewed the progress of the above three on-going CEARAC activities for the 2014-2015 biennium with presentations by contracted experts. For details of respective projects, please take a look at the reports of the CEARAC activities for the 2014-2015 biennium.

The 4th CEARAC Expert Meeting

The 13th NOWPAP CEARAC Focal Points Meeting

The 13th NOWPAP CEARAC FPM was held on 25-26 August 2015 in Toyama, Japan with the participation of CEARAC Focal Points, representatives of NOWPAP RCU, POMRAC, NEASPEC and the Intergovernmental Oceanographic Commission/Sub-Commission for the Western Pacific (IOC/WESTPAC).

Discussion during the Focal Points Meeting

The CEARAC Focal Points Meeting is a NOWPAP arrangement consisting of representatives of the NOWPAP members in order to promote smooth and effective implementation of special monitoring and assessment of the marine and coastal environment.

The meeting reviewed the progress of on-going CEARAC activities for the 2014-2015 biennium and also discussed the new activities for the 2016-2017 biennium. The draft workplan and budget of CEARAC activities for the 2016-2017 biennium was agreed to be submitted to the 20th NOWPAP IGM which was held on 28-30 November 2015 in Beijing.

The workplan for the 2016-2017 biennium includes two new specific projects:

(1) Development of a draft common procedure for assessment of the impacts of major pressures on marine biodiversity in the NOWPAP region

(2) Feasibility study towards assessment of seagrass in the NOWPAP region

The 13th NOWPAP CEARAC Focal Points Meeting

Report and Documents of CEARAC FPM13: http://cearac.nowpap.org/fpm/fpm13.html

2. Reports of the activities for the 2014-2015 biennium

Activity on Marine Biodiversity (development of a regional report on pilot assessment on the impacts of major threats to marine biodiversity in the selected sea areas in the NOWPAP region)

During the 2014-2015 biennium, CEARAC has implemented pilot assessment on the impacts of major threats to marine biodiversity. Among obvious and potential threats to marine biodiversity including habitat alteration, climate change, excessive nutrient loads, overexploitation, unsustainable use of the marine environment and non-indigenous species, CEARAC has focused on three problematic things in the NOWPAP region, namely eutrophication, habitat alteration and indigenous species. Based on the experiences from the past CEARAC activities (e.g. eutrophication assessment) and collected available data from the member states, CEARAC has conducted pilot assessment at the selected sea areas. The contracted experts and selected sea areas in each member state are as follows:

Members	Selected sea areas	Contracted experts/organization
China	Coastal area of Yantai and Dalian	Dr. Bei Huang
Japan	North Kyushu sea area Coastal area of Hokuriku region	Northwest Pacific Region Environmental Cooperation Center (NPEC)
Korea	Saemanguem	Dr. Young Nam Kim
Russia	The Peter the Great Bay	Dr. Tatiana Orlova

Using the collected available data on eutrophication, habitat alternation and non-indigenous species (both in English and the language of respective member states), the experts evaluated the current status of each assessment area and assessed the influences of the pressures to marine biodiversity. In case of Korea, for example, the expert has pointed out negative impacts of a large dike in Saemanguem area, which was constructed to reclaim the tidal flat.

Results of pilot assessment in each selected area will be compiled and published as a regional report in the near future.

Activity on Eutrophication (Trial applications of the screening procedure of the NOWPAP Common Procedure for eutrophication assessment)

Eutrophication, caused by excessive nutrient loading by over population and run-off from industries or agricultural activities, affects the marine environment in various ways, and it has been a problematic phenomenon in the NOWPAP region. Since developing a procedure to assess the eutrophication (the NOWPAP Common Procedure) in 2009, CEARAC has been conducting eutrophication assessments in the NOWPAP member states. In the 2014-2015 biennium, CEARAC is trying to identify potential eutrophic zones in the NOWPAP region by the screening procedure of the revised NOWPAP Common Procedure with the contracted experts in each member state as follows:

Country	Contracted experts/organization
China	Dr. Zhiming Yu Dr. Xupeng Hu
Japan	Northwest Pacific Region Environmental Cooperation Center (NPEC)
Korea	Dr. Changkyu Lee
Russia	Dr. Vladimir Shulkin

The experts collected data and information on COD, red tides and hypoxia, and field chlorophyll-a (Chl-a) concentration, and CEARAC has been developing a WebGIS map to show the potential eutrophic zones in the NOWPAP region based on the collected data. However, due to a delay in preparing remotely sensed Chl-a data, CEARAC decided to continue this activity in the next biennium (2016-2017) to prepare a reliable map of potential eutrophic zones in the NOWPAP region.

Activity on Seagrass (Case studies on seagrass mapping in the selected sea areas in the NOWPAP region)

Seagrass and seaweed provide various ecosystem services, and in recent years, their potentiality to help conserve the marine environment has been paid more attention worldwide. CEARAC has implemented a new activity on case studies on seagrass mapping in the selected sea areas in the NOWPAP region in the 2014-2015 biennium. First, a manual for seagrass and seaweed beds mapping with satellite images was developed in March 2015 under the MoU with Dr. Teruhisa Komatsu of University of Tokyo. With the manual, the contracted experts in each member state implemented case studies in the selected sea areas in the member states as shown below.

Country	Selected sea areas	Contracted experts/organization
China	Swan Lake (head of the Shandong peninsula)	Dr. Yang Dingtian
Japan	West part of Toyama Bay (Himi) Nanao Bay (West Bay)	Northwest Pacific Region Environmental Cooperation Center (NPEC)
Korea	Jangheung Bay (Jangheung province)	Dr. Jong-Kuk Choi
Russia	Eastern section of the Far Eastern Marine Reserve	Dr. Vasilii Zharikov

While case studies in China, Korea, and Russia have been completed and the reports have been submitted to CEARAC from the experts, the case study in Japan is still ongoing. Upon completion of the Japanese case study, all the data and case study results will be uploaded to the CEARAC website at the beginning of 2016.

3. Cooperation with NOWPAP Partners and Organizations

NOWPAP International Coastal Cleanup

NOWPAP International Coastal Cleanup (ICC) started in 2006 in Yamagata in Japan. Since then, it has been held every year, rotating among the four member states. NOWPAP ICC 2015 was held on 24-25 September in Yantai, China.

Beach cleanup activity and Joint Workshop

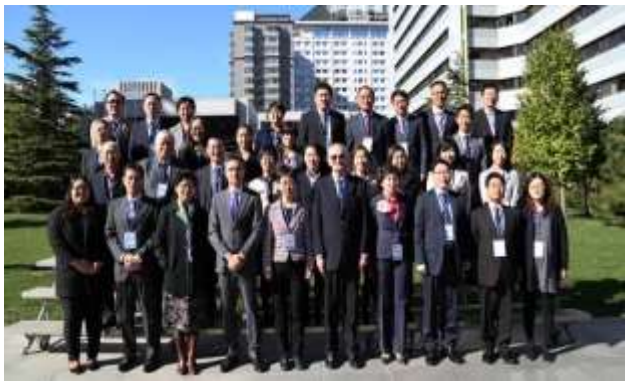
On the first day, a joint workshop of TEMM*-NOWPAP "Joint Workshop on marine litter management" was held, and latest information and data on marine litter were presented as well as on-going actions taken by the member states, coastal cleanup and educational events by NGOs and relevant organizations and survey results on marine litter monitoring.

On the second day, participants joined a beach cleanup activity with local college students. The beach is a large mud flat, and there were many burrows of ghost crabs there. Also, people were enjoying clamming. The target area was cleaner than expected and well-managed, but still there were many plastic fragments, cigarette buds and food packages collected.

*TEMM = Tripartite Environment Ministers Meeting of China, Japan and Korea

The 20th Intergovernmental Meeting of the Northwest Pacific Action Plan

The Intergovernmental Meeting (IGM) is the high-level governing body of NOWPAP that provides policy guidance and makes decisions for the entire activities of NOWPAP. It is organized annually on a rotational basis by one of the NOWPAP member states and consists of government representatives of each member states. Representatives of the four RACs and RCU also participate in the IGM.



The 20th NOWPAP IGM

The 20th NOWPAP IGM was held on 28-30 October 2015 in Beijing, China. The meeting approved the report of the four regional activity centres (CEARAC, DINRAC, MERRAC and POMRAC) on its activities during the 2014-2015 biennium and the workplans for the 2016-2017 biennium. They also discussed the new NOWPAP medium-term strategy for the 2018-2023.

The next IGM will be held in Korea in 2016.

PICES 2015 Annual Meeting

2015 PICES Annual Meeting was held in October in Qingdao, China. PICES is one of the partner organizations of NOWPAP and their working areas and themes of symposiums/workshops are closely related to NOWPAP activities. So, NOWPAP experts joined some events, including the second meeting of the Joint PICES-NOWPAP Study Group on Scientific Cooperation in the North Pacific Ocean (SG-SCOOP), Joint Workshop: Identifying major threats to marine biodiversity and ecosystems in the North Pacific (W2), and Workshop on Harmful Algal Blooms (HABs): Contrasting conditions for success of fish-killing flagellates in the western and eastern Pacific (W1).

In the SG-SCOOP meeting, it was suggested to hold joint events on HABs, marine pollution and marine biodiversity as many as possible, which were recognized as common concerned themes to be addressed in priority in the first SG-SCOOP meeting last year. Also, it was recommended to develop PICES scientific reports on them. Then, Joint WS (W2) was organized with Dr. Takafumi Yoshida of CEARAC as Co-convenor. Besides presentations by the four experts of CEARAC activity (pilot assessment on the impacts of major threats to marine biodiversity), other researchers reported their studies on deep sea coral etc. In January 2015, PICES established a new working group (WG32: Biodiversity of Biogenic Habitats) which focuses on coral and sponge as target species. Between NOWPAP and PICES, focusing topics on biodiversity are different.

So, NOWPAP and CEARAC will continue closer communications and information exchange and discuss areas of collaboration in the future.

PICES 2016 annual meeting will be held in November in San Diego, the U.S.A.

Opening Session, Workshop 2 (W2) and Workshop 4 (W4) of PICES 2015 Annual Meeting

Workplan for 2016-2017 biennium

CEARAC plans and implements its activities biennially. In the 2016-2017 biennium, the following activities will be conducted.

Major Activity	Tasks
Organization of Meetings	- Focal Points Meeting (FPM) in 2016 and 2017 - Expert Meeting in 2017
Maintenance of Website	- Reconstruction of CEARAC website with more user-friendly functions and updated information/data - Regular update of web contents - Upgrade of Marine Environmental Watch System - Upload of annual CEARAC newsletters
2 Specific Projects 1 Development of a draft common procedure for assessment of the impacts of major pressures on marine biodiversity in the NOWPAP region	(1) Collection of information of member states (2) Development of a draft common procedure (3) Organization of a workshop
2 Feasibility study towards assessment of seagrass distribution in the NOWPAP region	(1) Development of seagrass database in the NOWPAP region (2) Preparation of inventory of satellite images for seagrass mapping (3) Organization of an international workshop (4) Development of a feasibility study report
Marine litter (RAP MALI)	- Compilation/harmonization of marine litter monitoring data collected from the member states and submission of the data to DINRAC - Update of the website contents in the Northwest Pacific Regional Node

Voice from the CEARAC Expert

Seagrass mapping in NOWPAP region toward conserving marine biodiversity

Dr. Teruhisa Komatsu

Atmosphere and Ocean Research Institute, The University of Tokyo

Coastal ecosystems fostering biodiversity and having high productivity provide numerous ecological services such as foods, protection of coasts from strong waves through buffering effect, fixation of CO2 through photosynthesis etc. However, increasing human impacts and climate change decrease or degrade costal ecosystems. Since the Western Pacific region is developing most rapidly in the world, it is necessary to grasp present spatial distributions of coastal ecosystems as a baseline data with standardized mapping methods. Remote sensing is one of the most effective methods for mapping coastal ecosystems because high spatial resolution satellite images have been now available at reasonable cost. Intergovernmental Oceanographic Commission/Sub-Commission for the Western Pacific (IOC/WESTPAC) under UNESCO renewed Ocean Remote Sensing of New Generation Seasurface Temperature and Ocean Color Projects to Ocean Remote Sensing Project (ORSP) of Integrated Coastal Area Management (ICAM) at Eighth Intergovernmental Session of the IOC Sub-Commission for the Western Pacific in Bali in May 2010, where I was nominated as Project Leader of the ORSP of the ICAM. Kick off workshop of the project in Busan in April of 2011 decided to target seagrass for mapping because seagrasses distributed mainly in shallow sand beds are

Picture 1. Photo on meadows of *Zostera marina* L. in Nanao Bay located in western Toyama Bay taken by Dr. G. Terauchi in 2015

under human pressure such as reclamation and pollution. Then seagrass mapping methods have been standardized to be suitable for WESTPAC region including ground truthing through workshops in Johor Bahru in Malaysia and Nha Trang in Vietnam. Information on seagrass distribution is not well known among stakeholders especially policy makers and citizens, then this project delivered such information to them. Detected changes will provide an insight on alters in environmental setting such as human impacts and climate change.

NOWPAP has started seagrass mapping since 2013 for protecting marine biodiversity in North Western Pacific Region. I was invited as an expert by CEARAC at the start of the project in NOWPAP in 2013. I have transferred our experiences to the experts in the NOWPAP member states by supplying a manual of seagrass mapping methods based on experiences in the WESTPAC ORSP of seagrass mapping. Last August, an expert meeting of CEARAC was held in Toyama with participation of the experts (Picture 2) for discussing results on seagrass mapping analyzed with the manual. Such event is a good occasion to pursue collaboration and sharing experiences on seagrass mapping in Western Pacific region between NOWPAP and IOC/WESTPAC that are both UN regional organizations related to marine environments and sciences, respectively, for realizing the healthy and sustainable ocean for future generations.

Picture 2. Group photo of The Fourth CEARAC Expert Meeting held in Toyama on 24 August 2015. The author is sixth person from right end in the second line.

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