Progress of Implementation of Northwest Pacific Action Plan

NOWPAP Regional Coordinating Unit,
UN Environment

16th CEARAC FPM
10-11 May 2018， Toyama， Japan

DINRAC

- Continues to maintain databases on:
  - major environmental data,
  - NOWPAP coastal and marine environmental GIS and Remote Sensing applications,
  - marine litter,
  - coastal and marine nature reserves,
  - NOWPAP publications,
  - NOWPAP institutions and experts
- Launched new DINRAC website and web GIS
- Collected Major environmental data

DINRAC

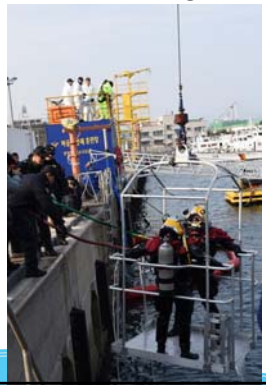
- Collected information on endangered/threatened species (Phase II)
- Collected Marine environmental standards
- Provided administrative and financial support to POMRAC
- 3 new Projects approved by 22nd IGM:
  - Sea reclamation state and management
  - Human marine activity objects
  - Collecting information about endangered/threatened species (Phase 3)

MERRAC

- Information system based on Web GIS
- Information sharing platform on oil and HNS spills
- Report on oiled wildlife response
- Establishment of oil sample exchange procedure for transboundary marine pollution,
- Review and analysis of existing prediction models for floating marine litter.
- New format for databases on oil and HNS experts and equipment
- New online pollution reporting system

MERRAC

MERRAC



MERRAC

- Three new projects approved by 22nd IGM
  - Guidelines on the assessment of oil spill response capability
  - The use of unmanned aircraft in marine pollution response
  - Minimum response requirements for oil and HNS spills, which may arise from the offshore units
- Regional report on floating marine litter
- Organize workshop to identify regional capacity gaps on sea-based pollution

POMRAC

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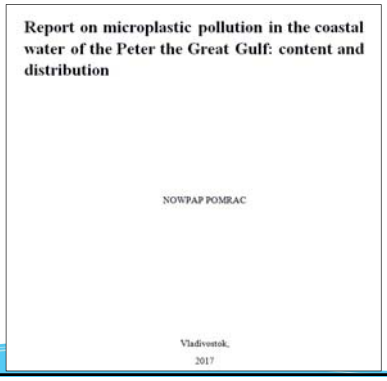
POMRAC

- 
Report on microplastic pollution in the coastal water of the Peter the Great Gulf: content and distribution

NOWPAP POMRAC

Vladivostok,
2017

POMRAC

- Projects approved by IGM:
  - Microplastics abundance in river runoff and coastal waters with a case study in the Russian coastal water
  - Develop regional NOWPAP EcoQO targets aligned with SDG indicators (Phase 1)
  - Development of the Regional Overview: Assessment of trends in river and direct Inputs of contaminants to the marine and coastal environment

Building partnerships

YSLME Phase II Project meeting, Dalian, China, Mar 2018

Building partnerships

- 6th International Marine Debris Conference in San Diego, California, 12-16 Mar 2018

Building partnerships

- The Third 2018 UNEP Forum of The Japan's Association For The UN Environment Programme, March 20th, 2018, Tokyo, Japan

Building partnerships

- Japan Seaology Symposium,

17th February 2018, Toyama, Japan

Building partnerships

- NOWPAP attends Global Dialogue on Technology for Resilient Cities , 17-18 Oct 2017

Building partnerships

- Strengthening regional ocean governance and partnership towards clean seas event at the 1st Asia-Pacific Ministerial Summit on the Environment, September 5-8 2017, Bangkok, Thailand

Building partnerships

- Strengthening co-operation between NOWPAP and North Pacific Marine Science Organization (PICES), 22 Sep 2017

Regional Action Plan on Marine Litter (RAP MALI)

China

- Draft Regulation on Mandatory Garbage Classification (2016)
- Action plan for prevention and control of pollution from ships and ports（2015-2020)
- Action Plan for Prevention and Control of Water Pollution
- US$ 2.5 million project on micro-plastic pollution

Japan

- US$ 27 million to remove and prevent marine litter

Regional Action Plan on Marine Litter (RAP MALI)

Korea

- Implementing the 2nd Framework Plan for ML Management (with US$294 million by 2018).
- Act on Fishing Equipment Control and an Act on Marine waste management enacted in 2017

Russia

- Far East movement to clean up the coastline of debris
- legislation has been amended to improve waste management

NOWPAP-TEMM ML Workshop and ICC held in Toyama, Japan 2017.

NOWPAP-TEMM ML Workshop and ICC held in Toyama, Japan 2017.

NOWPAP-TEMM ML Workshop and ICC held in Toyama, Japan 2017.

22nd NOWPAP IGM held in Toyama, Japan, 21-23 Dec 2017

Resolution 1 of 22nd NOWPAP IGM

Approves the NOWPAP Programme of Work with the total budget of **US$1,300,000**

Adopts the revised **TOR of the RCU**

Requests also RAC Directors when reporting to the NOWPAP IGM to provide summary of their Focal Point Meetings and indicate clearly **relevance of their activities to the NOWPAP Medium-term** Strategy (MTS) 2018-2023

Resolution 1 : Budget

Activity	Approved Budget	Suggested Budget Option B
	2016-2017	2018-2019
CEARAC	140	**185**
DINRAC	140	185
MERRAC	140	185
POMRAC*	140	185
RAP MALI	70	91
Public Awareness (RCU)	19	20
Coordination of RACs (RCU)	16	127
Implementation of NOWPAP (RCU)	83	
RCU Operation (RCU)	78	50
Resource Mobilization (RCU)	15	27
NOWPAP Special Projects	-	95
Sub-total	841	1150
13% of the sub-total as PSC	109	150
TOTAL	950	1,300

Resolution 2: Contributions

Table 1. Scale of contributions to NOWPAP Trust Fund for 2018

	Annual contribution (US$)
China	125,000
Japan	125,000
Republic of Korea	125,000
Russian Federation	125,000
Total	**500,000**

Resolution3: NOWPAP MTS

Agrees on the principles contained in the MTS 2018-2023 and to this effect requests:

- NOWPAP RCU to prepare a revised version reflecting upon agreed principles of the MTS 2018-2023 considering comments received by Member states by March 1st , 2018 and submit for one month review by Member States, followed by the **adoption by correspondence by June 30th**, 2018
- NOWPAP RCU and RACs in consultation with the Focal Points, to **develop the monitoring and evaluation framework** for MTS 2018-2023 for adoption by the 23rd NOWPAP IGM.

Resolution 4: RAP MALI

3. Requests **DINRAC to provide hosting services** and management of the **Regional Node**

4. Requests RCU in consultation with the RAP MALI Focal Points to prepare the **TOR of RAP MALI** Focal Points for the adoption by NOWPAP Focal Points by correspondence no later than two months before the 2018 RAP MALI Focal Points Meeting

Resolution 4: RAP MALI

	Budget, US$
2018 NOWPAP ICC campaign and NOWPAP-TEMM Workshop in R. Korea	20,000
2019 NOWPAP ICC campaign and NOWPAP-TEMM Workshop in P.R. China	20,000
Enhancing NW Pacific regional node of the Global Partnership on Marine Litter (GPML)	20,000
CEARAC: Regional overview of national efforts to address microplastics	**9,250**
DINRAC: Updating and visualizing database on marine litter	9,250
MERRAC: Understanding floating marine litter sources and flows	9,250
POMRAC: Research on micro-plastics content and migration in the Peter the Great Gulf	9,250
RCU supported by all RACs: Third Regional Overview of marine litter in the NOWPAP region	6,000
RCU: Support for regional cooperation, travel and development of public awareness materials	8,000
Total:	**91,000**

Follow-up and review of SDG 14 through the Regional Seas programmes

Recommendations to the Governing Bodies of the Regional Seas programmes (RSP)

1. to use their respective regional **reporting mechanisms** on the state of the marine environment
2. If not in place, setting it up to an **indicator-based monitoring programme** on the state of the marine environment,
3. Allow the RSP to **share data and information** relevant to SDG indicators, particularly 14.1.1 and 14.2.1 with UN Environment, Science Division, SDG Data and Information Unit

Follow-up and review of SDG 14 through the Regional Seas programmes

4. Consider using these **existing reporting mechanisms** to the Secretariats to collect any **additional data on marine pollution, coastal management, and Marine Protected Areas** on a voluntary basis,

2030 Agenda for SD and the Follow-up and review process

1. On 25 Sep 2015, **17 SDGs and 169 targets** adopted;
2. The Sustainable Development Goals Indicators Framework
3. The National Statistical Systems are the central compilers of data and indicators; UN Statistical Division (UNSD), which is the custodian of the Global SDG Indicators Database
4. The RSP agreed to work through the Regional Seas Indicators Working Group to prepare their outlook documents
5. The First Working Group meeting adopted **22 indicators as the Regional Seas Core Indicators Set.**

UN Environment proposed approach to the reporting on SDG 14 indicators

Indicator 14.1.1 (**Index of Coastal Eutrophication** [ICEP] and **Floating Plastic debris Density**) is an indicator for which there are no established methodology and standards, or methodology/ standards are being developed/tested

UN Environment proposes:

1.allows the use of proxy indicators for nutrients pollution and eutrophication, as the methodology for ICEP is still under development. **Chlorophyll-a concentration** has been identified as proxy indicator for nutrient pollution.

UN Environment proposed approach to the reporting on SDG 14 indicators

- 2. additional indicators added to a "dashboard of indicators", including **nitrates, nitrites, ammonium, phosphates and dissolved oxygen**.

- The ICEP will be included in the dashboard of indicators when the related methodology will be made available, tentatively in 2020.
- It is proposed that reporting on these indicators related to nutrients pollution to UN Environment be carried out by the RSP

UN Environment proposed approach to the reporting on SDG 14 indicators

Floating Plastic debris Density

- Start reporting on beach litter as a proxy indicator for marine litter.
- GESAMP to develop harmonized monitoring methodologies on marine litter and microplastics
- Reporting on the actual SDG indicator will be carried out by RSP by adding information on macro- and micro-plastics to a "dashboard of indicators on marine litter".

UN Environment proposed approach to the reporting on SDG 14 indicators

On indicator 14.2.1 (Proportion of national Exclusive Economic Zones managed using ecosystem-based approaches)

- **ICZM protocols** as a proxy indicator for coastal zones management
- Additional information on **Marine Spatial Planning** and other forms of EEZs management will be provided to inform the "dashboard of indicators on coastal zones management"

UN Environment proposed approach to the reporting on SDG 14 indicators

Indicator 14.5.1 (Coverage of protected area in relation to marine areas)

- Established methodology and standards are available and data are regularly produced by Countries
- Reporting is currently carried out using the World Database on Protected Areas (WDPA)

UN Environment proposed approach to the reporting on SDG 14 indicators

Guidance will be provided by the joint publication that UN Environment will release in early 2018, bringing together the results of a collaboration with UN Environment WCMC for the compilation of a **Global Manual on Oceans Statistics**, which will target SDG indicators 14.1.1, 14.2.1 and 14.5.1 and provide linkages with the other SDG 14 indicators and the results of the Regional Seas Indicators Working Group

UN Environment proposed approach to the reporting on SDG 14 indicators

14.1.1 Relevant indicator - Chlorophyll-a

Regional Seas	Method	Data flow	Database
Northwest Pacific	Remote sensing In situ sampling	Remotely sensed Chl-a: • Northwest Pacific Region Environmental Cooperation Center • NASA In situ Chl-a: Local governments and government-designated organizations monitor the indicator	NOWPAP CEARAC database (http://ocean.nowpap3.go.jp/?page_id=862)

UN Environment proposed approach to the reporting on SDG 14 indicators

14.1.1 Relevant indicators - marine litter

Regional Seas	Method	Data flow	Database
Northwest Pacific	Monitoring follows the Guidelines for Monitoring Marine Litter on the Beaches and Shorelines of the Northwest Pacific Region All participating countries also use the International Coastal Cleanup (ICC) data cards	The Northwest Pacific Region Environmental Cooperation Center and the Korea Marine Environment Management Corporation monitor marine litter	NOWPAP DINRAC website

Report on CEARAC activities in 2016-2017

NOWPAP CEARAC FPM16
10-11 May 2018

CEARAC Activities for 2016-2017

- **2 FPMs and 1 Expert Meeting**
- **Maintenance of Websites**
- **Specific Projects (2)**
  on marine biodiversity and seagrass
- **Cooperation/Coordination with other RACs and regional/international organizations**
- **Activities on Marine litter (RAP MALI)**

FPMs and Expert Meeting

- **15th FPM** (29-30 August 2017 in Toyama)
  - Reviewing progress of 2016-2017 activities
  - Discussing workplan of 2018-2019 activities

- **CEARAC Expert Meeting on Eutrophication Assessment in the NOWPAP Region**
  (18 Oct. 2017 in Qingdao, China)
  - Reviewing progress on trial application of screening procedure and discussed how to refine the current assessment method

Maintenance of Websites

- Renewing the web structure to be more user-friendly and updating posted information/data

http://cearac.nowpap.org/

Specific Projects in 2016-2017

- **Assessment of major pressures on marine biodiversity in the NOWPAP region**

- **Feasibility study towards assessment of seagrass distribution in the NOWPAP region**

Cooperation/Coordination with other RACs and regional/int'l organizations

- Attending meetings/workshops of other RACs and NOWPAP partners for sharing info./data
  - NOWPAP ICC (19-20 Sep.)

Marine Litter Activities (RAP MALI)

- Harmonizing/summarizing monitoring data from the member states and submitting to DINRAC
- Collecting info. on governmental measures for prevention of ML input

Budget (US$146,000) and Expenditure

Activity	Budget & Expenditure	
	Budget	Expenditure
FPMs (14th & 15th) + Expert Meeting	54,000	**53,215**
Website Maintenance	12,000	**12,098**
Assessment of major pressures on marine BD	30,000	**30,156**
Feasibility study for seagrass assessment	40,000	**40,288**
Cooperation/Coordination	4,000	**4,824**
Marine Litter (RAP MALI)	6,000	**5,419**
TOTAL	**146,000**	**146,000**

Thank you very much

Workplan and budget for CEARAC Activities for the 2018-2019 biennium

NOWPAP CEARAC FPM16
10-11 May 2018

CEARAC Activities for 2018-2019

- **FPMs (16th and 17th) + Expert Meeting**
- **Maintenance of Websites**
- **3 Specific Projects: on marine biodiversity and seagrass**
- **Cooperation and Coordination**
- **Marine Litter (RAP MALI)**

FPM and Expert Meeting

- **16th FPM** (May 2018)
  - Reviewing results of 2016-2017 activities and revised workplan of 2018-2019 activities
- **17th FPM** (fall 2019)
  - Reviewing progress of on-going activities
  - Discussing workplan of 2020-2021 activities
- **Expert Meeting on eutrophication assessment** (2018 and 2019)
  - Sharing latest info. on eutrophication status in the NOWPAP region

Maintenance of Websites

- **Updating web contents**
- **Moving to cloud server**

Specific Projects in 2018-2019

- Development of a CEARAC Medium-term Strategy on Marine Biodiversity (MTS on MB)

- Development of a roadmap for Regional Action Plan for Marine and Coastal Biodiversity Conservation in the NOWPAP region

- Development of a tool for mapping seagrass distribution in the NOWPAP region

Cooperation/Coordination with other RACs and regional/int'l organizations

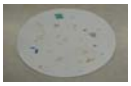
- Participating NOWPAP meetings and other events
  - RAC FPMs, IGMs, ICC, etc..
- Organizing events with other RACs and NOWPAP partners

⬇

Enhancing regional capacity to conserve the marine and coastal environment

Marine Litter activities (RAP MALI)

- Harmonizing/summarizing monitoring data by the member states and submitting to DINRAC
- Collecting information on countermeasures against microplastics in the member states
- Translating info. in the NW Regional Node into Japanese



Budget (US$194,250)

Activity	Budget (USD)
FPMs + Expert Meeting	54,000
Web Maintenance including moving existing sites/data to cloud server	27,000
CEARAC MTS on marine BD	30,000
Roadmap for Regional Action Plan for Marine and Coastal Biodiversity Conservation	30,000
Tool for mapping seagrass distribution	40,000
Cooperation/Coordination	4,000
Total	185,000
Marine Litter (RAP MALI)	9,250

Thank you very much !

Biodiversity Activity I: Development of a CEARAC Medium-term Strategy on marine biodiversity

16th CEARAC FPM
10-11 May 2018
Toyama, Japan

Background

Past CEARAC Marine Biodiversity Activities

2010-2011
- Development of a coastal environmental assessment tool for marine biodiversity conservation (in-kind by NPEC)

2012-2013
- Publishing "Monitoring and management of MPAs in the NOWPAP region"

2014-2015
- Pilot assessment of the impacts of major threats on marine biodiversity
- Case studies on seagrass mapping in the selected sea areas in the NOWPAP region

2016-2017
- Assessment of major pressures on marine biodiversity in the NOWPAP region
- Feasibility study towards assessment of seagrass distribution in the NOWPAP region

NOWPAP

NOWPAP Medium-term Strategy 2012-2017
- Theme 4: Biodiversity conservation (including NIS)

Development of a NOWPAP Action Plan for Biodiversity Conservation

NOWPAP Medium-term Strategy 2018-2023
- Publishing "Monitoring and management of MPAs in the NOWPAP region"

Regional Action Plan has not been developed yet

➡ Biodiversity Activity I

No clear vision for marine biodiversity conservation in the NOWPAP region

Future direction is necessary for CEARAC ASAP

Objective

- To develop the CEARAC Medium-term Strategy on marine biodiversity

CEARAC Medium-term Strategy on marine biodiversity shows following elements
- Basic policy on marine biodiversity activities of CEARAC
- Role of CEARAC for marine biodiversity conservation in NOWPAP
- Future direction and priorities in CEARAC's marine biodiversity activities
- Workplans on CEARAC's marine biodiversity activities in 2020-2021 & 2022-2023 biennia

Comments from CEARAC FPs at the 15th CEARAC FPM

- Narrowing down the target of topics on marine biodiversity
- Reflecting national needs of member states in activities

Task 1: Development of a list of potential topics for future CEARAC activities

Proposed country	Potential topics	Potential activities
China	Assessment of Marine biodiversity	Development of assessment methodology and indicator
China	List of marine biological species and its distribution	Development of list Collection of information
Japan/Korea	Specific migration species	Conservation of specific species
Japan	Tidal flat, salt-marsh and seagrass/seaweed bed	Habitat mapping
Korea/Russia/China	Harmful species and invasive species	Monitoring and assessment
Korea	Marine litter	Monitoring and assessment
Korea	Ballast water	Assessment
Russia	Plankton	Monitoring
Expert	Environmental DNA	Training course

Task 2: Feasibility study of potential topics and activities

- CEARAC FPs nominate expert
- CEARAC Secretariat prepares the feasibility study report format Question-and-answer format
- Nominated experts conduct feasibility study on proposed 9 topics and make a report
- Feasibility study report includes following points
  - need/situation in your country on each proposed topic
  - data availability
  - feasible activity

Assessment of marine biodiversity:

- Development of methodology and indicators of marine biodiversity assessment

First Question (feasibility/need of proposed topics/activities)

- Is this topic/activity feasible in your country?
- Relationship to the national strategy, basic plan and law

Second Question (Reason of feasible/unfeasible)

- What kind of data/information on diversity of marine species is available?
- Situation of submission of data to OBIS/BISMaL/other international database
- Is there any specific species/genus/family that assessment can be done?
- Is there any experts who implement this topic/activity

Third Question (Candidate activity)

- What kind of activity can be implemented as CEARAC activity?

List of marine biological species and its distribution:

- Development of a list of the main marine biological species and invasive species
- Understanding of distribution and quantity of the main marine biological species and invasive species

First Question (feasibility of proposed topics/activities)

- Is this topic/activity feasible in your country?
- Relationship to the national strategy, basic plan and law

Second Question (Reason of feasible/unfeasible)

- What kind of data/information on marine species and/or invasive species is available?
- Situation of submission of data to OBIS/BISMaL/other international database
- Is there any experts who implement this topic/activity

Third Question (Candidate activity)

- What kind of activity can be implemented as CEARAC activity?

Remark

- Differences from DINRAC/PICES database? Can we update them?

Specific migration species:

- Detection of migratory endangered species
- Environmental assessment of sea areas where endangered species migrate
- MPA network for conservation of migratory species

First Question (feasibility of proposed topics/activities)

- Is this topic/activity feasible in your country?
- Relationship to the national strategy, basic plan and law

Second Question (Reason of feasible/unfeasible)

- What kind of data/information on specific migration species is available?
- How many species (from list of species of The Convention on the Conservation of Migratory Species of Wild Animals) is found in your country?
- Is there any experts who implement this topic/activity

Third Question (Candidate activity)

- What kind of activity can be implemented as CEARAC activity?

Remark

- NOWPAP member states don't adopt the CMS
- YSLME implement MPA network on migration species, NEASPEC has NEAMPAN

Conservation of tidal flat, salt-marsh and seagrass/seaweed beds:

- Seagrass/seaweed mapping

First Question (feasibility of proposed topics/activities)

- Is this topic/activity feasible in your country?
- Relationship to the national strategy, basic plan and law

Second Question (Reason of feasible/unfeasible)

- What kind of data/information on tidal flat and salt-marsh is available?

Third Question (Candidate activity)

- What kind of activity can be implemented as CEARAC activity?

Remark

- CEARAC implements seagrass mapping project

Impact of marine litter:

- Distribution of foreign marine litter

First Question (feasibility of proposed topics/activities)

- Is this topic/activity feasible in your country?
- Relationship to the national strategy, basic plan and law

Second Question (Reason of feasible/unfeasible)

- Is there any pressures on marine biodiversity?
- Is there any specific sea areas/habitats where marine litter influence
- Is there any experts who implement this topic/activity?

Third Question (Candidate activity)

- What kind of activity can be implemented as CEARAC activity?

Remark

- NOWPAP Marine Litter Monitoring

Impact of Ballast water:

- Effect of ballast water on introduction of invasive species

First Question (feasibility of proposed topics/activities)

- Is this topic/activity feasible in your country?
- Relationship to the national strategy, basic plan and law

Second Question (Reason of feasible/unfeasible)

- Is there any data/information on ballast water?
- Is there any survey on introduction of NIS through ballast water?
- Is there any experts who implement this topic/activity

Third Question (Candidate activity)

- What kind of activity can be implemented as CEARAC activity?

Remark

- MERRAC's activity

Plankton species which related to aquaculture and fisheries:

- Monitoring system in order to control the possible emergence of microalgae
- Control the impact of nutrient
- Development of monitoring tool using remote sensing

First Question (feasibility of proposed topics/activities)

- Is this topic/activity feasible in your country?
- Relationship to the national strategy, basic plan and law

Second Question (Reason of feasible/unfeasible)

- Is there any data/information on plankton?
- Is there any expert who implement this topic/activity

Third Question (Candidate activity)

- What kind of activity can be implemented as CEARAC activity?

Remark

- Fishery issue

Environmental DNA

- Spread methodology of biodiversity monitoring using environmental DNA

First Question (feasibility of proposed topics/activities)

- Is this topic/activity feasible/need in your country?
- Relationship to the national strategy, basic plan and law

Second Question (Reason of feasible/unfeasible)

- Is there any researches/activities on e-DNA in your country?
- Is there any experts who implement this topic/activity?

Third Question (Candidate activity)

- Is there needs of training course?

Remark

- Japanese scientists group plans to establish an academic society
- They also plan to develop manual on monitoring using e-DNA

Task 3: Organization of a marine biodiversity workshop and a meeting for development of CEARAC Medium-term Strategy on marine biodiversity

- Marine Biodiversity Workshop:
  Objectives are to share information on
  (1) National actions/needs, and (2) Feasibility of proposed topics
  and to identify the common foci in the NOWPAP region
  Expected participants: Governmental officials and experts

- Meeting for development of CEARAC MTS on marine biodiversity
  Objectives are to prioritize the proposed topics/activities
  and to develop the outline of CEARAC MTS
  This meeting will be held back-to-back with the workshop above

Task 4: Development of CEARAC Medium-term Strategy on marine biodiversity

- Objective is to develop the CEARAC Medium-term Strategy on marine biodiversity which shows basic policy and future vision of CEARAC marine biodiversity activities
- The draft MTS will be reviewed by CEARAC FPs and be submitted to the IGM to be held in 2019.

- Draft table of contents
  - Background (Past activities and Responsibilities of CEARAC, NOWPAP MTS)
  - Basic policy and future direction of CEARAC's marine BD activities
  - Expected roles of CEARAC in NOWPAP
  - Draft workplan for the 2020-2021 and 2022-2023 biennium

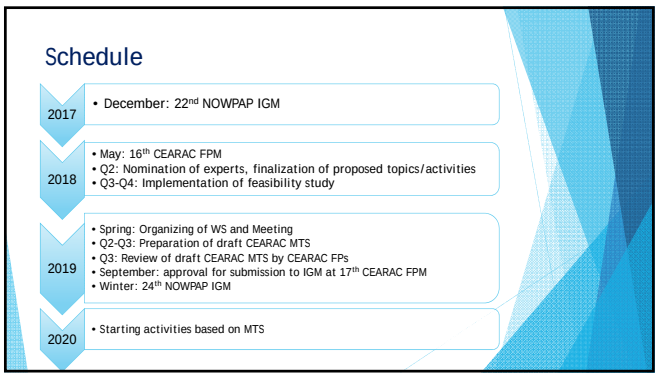
Expected outcomes

- Future vision of CEARAC marine biodiversity activities
- Future workplans (after 2020) of CEARAC marine biodiversity activities
- Contribution to the NOWPAP Regional Action Plan on Marine and Coastal Biodiversity Conservation (Biodiversity Activity II)

- Expectation of CEARAC Secretariat: Smooth operation of future activities
  - ✓ Priority of marine biodiversity activities based on its feasibility and national needs
  - ✓ Strong support on collection of sufficient data/information from member states and experts

Budget

Activities	Budget (US$)	Main Body
Collecting information on other potential topics	1,000	CEARAC Secretariat Consultant
Implementing feasibility study	12,000 (3,000 * 3 member states expect for Japan)	Nominated experts
Organizing Marine Biodiversity Workshop and Meeting on development of CEARAC Medium-term Strategy on Marine Biodiversity	15,000	CEARAC FPs Governmental officials Experts CEARAC Secretariat
Developing a draft CEARAC Medium-term Strategy on marine biodiversity	2,000	CEARAC Secretariat
Total	30,000	


Schedule
2017
• December: 22nd NOWPAP IGM
2018
• May: 16th CEARAC FPM
• Q2: Nomination of experts, finalization of proposed topics/activities
• Q3-Q4: Implementation of feasibility study
2019
• Spring: Organizing of WS and Meeting
• Q2-Q3: Preparation of draft CEARAC MTS
• Q3: Review of draft CEARAC MTS by CEARAC FPs
• September: approval for submission to IGM at 17th CEARAC FPM
• Winter: 24th NOWPAP IGM
2020
• Starting activities based on MTS

Biodiversity Activity II: Development of a roadmap for Regional Action Plan for Marine and Coastal Biodiversity Conservation in the NOWPAP region

16th CEARAC FPM
10-11 May 2018
Toyama, Japan

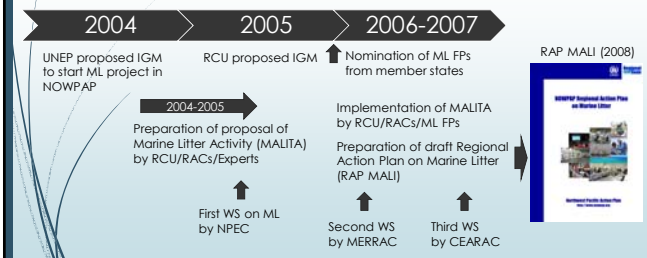
Background

- NOWPAP Medium-term Strategy 2012-2017
  Theme 4: Marine biodiversity
  Development of Regional Action Plan for marine and coastal biodiversity
  - Future direction of the NOWPAP marine biodiversity conservation
  - Guidelines for member states and RACs activities

  Extended to the NOWPAP Medium-term Strategy 2018-2023

- CEARAC marine biodiversity activity 2018-2019
  Development of the CEARAC Medium-term Strategy on marine biodiversity

Background (RAP MALI)



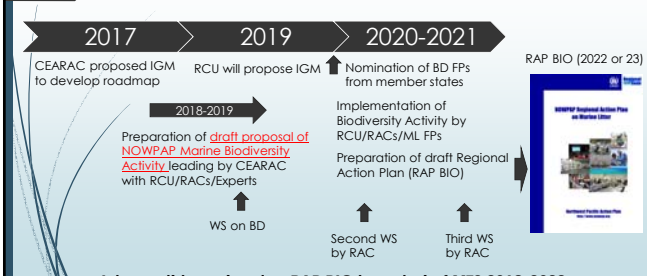
It took 5 years to develop RAP MALI!!

Objective

- To develop a roadmap for Regional Action Plan for Marine and Coastal Biodiversity Conservation in the NOWPAP region (RAP BIO) with NOWPAP RCU and all RACs.

To achieve this objective, the procedure of RAP MALI development will be applied

Image of a roadmap to RAP BIO



It is possible to develop RAP BIO in period of MTS 2018-2023

Difference between RAP MALI and RAP BIO

- International convention, national law
  [Biodiversity]
  Convention on Biological Diversity → Strategic Plan for Biodiversity 2011-2020
  Each member state has own national strategies and/or policies
  [Marine litter]
  No direct convention, London Convention, MARPOL
  All member states didn't have laws and/or strategies

- Position of RACs
  [Biodiversity]
  Some RACs have already implemented activities on BD
  [Marine litter]
  Role of RACs was decided before starting project, CEARAC=land-based sources

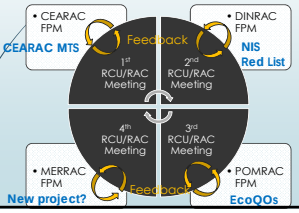
Task 1: Collection of relevant information on marine biodiversity conservation

- To collect information on past and current projects of marine biodiversity conservation and regional action plans on marine biodiversity in other Regional Seas Programmes
- To review the national reports on biodiversity submitted to CBD

  The latest reports will be submitted by the end of 2018

Task 2: Organization of RCU and RAC Meeting on Marine Biodiversity

- To organize Marine Biodiversity RCU/RAC Meeting back-to-back with RACs' FPMs in order to discuss collaboration among RACs and roles of each RAC



Points:
- Interesting Topics for each RAC
- Collaboration among RACs/RCU
- Role of each RAC/RCU in future on marine biodiversity conservation in the NOWPAP region

DINRAC FPM: 30-31 May
POMRAC FPM: 4-5 July
MERRAC FPM: 17-20 July

Task 3: Organization of Brainstorming Meeting

- To organize a brainstorming meeting back-to-back with the Marine Biodiversity Workshop to be held in Biodiversity Activity I.

Discussion points:
- ✓ Basic concept of marine biodiversity conservation in NOWPAP
- ✓ Future direction of NOWPAP marine biodiversity activities
- ✓ Draft outline of NOWPAP Marine Biodiversity Activity

Expected participants: Government officials and/or experts who will participate in the CEARAC Marine Biodiversity Workshop

Task 4: Organization of meeting for development of NOWPAP Marine Biodiversity Activity

- Organize a meeting to discuss and develop a draft NOWPAP Marine Biodiversity Activity

  Based on the discussion at the RCU/RAC Meeting, Brainstorming Meeting and comments from each RAC FPM, the draft NOWPAP Marine Biodiversity Activity will be developed.

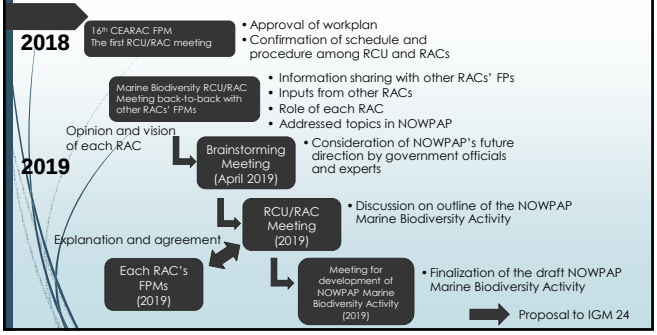
Expected participants:

Representatives of RCU, RACs and each RAC FP

Outcome of project: Proposal of NOWPAP Marine Biodiversity Activity

Draft Contents
- Introduction
  - General information on marine biodiversity
  - Situation in the NOWPAP region and NOWPAP member states
- NOWPAP Marine Biodiversity Activity
  - Objective
  - Organizational arrangement
  - Workplan
- Proposed elements of the Regional Action Plan on Marine and Coastal Biodiversity Conservation (RAP BIO)

Schedule



Budget

Activity	Budget (US$)	Main Body
Collection of relevant info. on marine biodiversity	5,000	CEARAC Secretariat Consultant
Marine Biodiversity RCU/RAC Meeting	4,000 (1,000 x 2 in 2018 & 2019)	RCU and all RACs
Brainstorming Meeting	7,000	RCU, RACs and government officials/experts
Meeting for development of NOWPAP Marine Biodiversity Activity	14,000	RCU, RACs and representative of RAC FPs
Total	30,000	

Rationale and proposed steps for the development of the NOWPAP Regional Action Plan on Marine and Coastal Biodiversity: NOWPAP RCU Inputs

Lev Neretin, NOWPAP Coordinator

NOWPAP Biodiversity Issues Identified in SOMER-2 Report (2014)

- Fragmentation, degradation and loss of habitats and landscapes
- Chemical contamination of waters, sediments and biota resulting from pollution from land-based sources
- Eutrophication caused by the increased input of nutrients into marine waters and associated harmful algal blooms (HABs) and increased hypoxia
- Introduction of invasive non-indigenous species
- Marine litter pollution

Setting the Framework for NOWPAP Biodiversity Activities: Focus on species and habitat protection

NOWPAP → SDGs (and Aichi Targets) → Medium Term Strategy 2018-2023 → NOWPAP Good Environmental Status (EQOs)

Status of NOWPAP Knowledge

2005 | 2008 | 2010 | 2011, 2013 | 2013

2014

- Feasibility study towards assessment of seagrass distribution in the NOWPAP region (2017)
- Assessment of major pressures on marine biodiversity in the NOWPAP region (2018)
- Third Phase of Red List Species Project (2018-19)
- NOWPAP Special Project "Identification of key indicator species and ecosystems of biodiversity change in the NOWPAP region" (2018-…)
- Further development of SDG-related indicators for NOWPAP EQOs (2018-2019)

What could we learn from others: Experience of OSPAR and HELCOM

OSPAR COMMISSION

Protecting and conserving the North-East Atlantic and its resources

The North-East Atlantic Environment Strategy

Strategy of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic 2010–2020

(OSPAR Agreement 2010-3)

- guides OSPAR work towards 2020
- incorporates the Ecosystem Approach
- identifies objectives for 5 Thematic Strategies

Intermediate Assessment (IA) 2017

OSPAR COMMISSION

Spatial Coverage of Assessments (by Strategy)

Assessments by Theme

OSPAR Intermediate Assessment 2017: https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/

OSPAR COMMISSION
Protecting and conserving the North-East Atlantic and its resources

OSPAR List of Threatened and/or Declining Species and Habitats (Reference Number: 2008-6)

(a) Selection criteria for species

1.	**Global importance**: Global importance of the OSPAR area for a species. Importance on a global scale, of the OSPAR Area, for the species is when a high proportion of a species at any time of the life cycle occurs in the OSPAR Area.
2.	**Regional importance**: Importance within the OSPAR Area, of the regions for the species where a high proportion of the total population of a species within the OSPAR Area for any part of its life cycle is restricted to a small number of locations in the OSPAR Area.
3.	**Rarity**: A species is rare if the total population size is small. In case of a species that is sessile or of restricted mobility at any time of its life cycle, a species is rare if it occurs in a limited number of locations in the OSPAR Area, and in relatively low numbers. In case of a highly mobile species, the total population size will determine rarity.
4.	**Sensitivity**: A species is "very sensitive" when: a. it has very low resistance (that is, it is very easily adversely affected by human activity); and/or b. it has very low resilience (that is, after an adverse effect from human activity, recovery is likely to be achieved only over a very long period, or is likely not to be achieved at all). A species is "sensitive" when: a. it has low resistance (that is, it is easily adversely affected by human activity); and/or b. it has low resilience (that is, after an adverse effect from human activity, recovery is likely to be achieved only over a long period).
5.	**Keystone species**: a species which has a controlling influence on a community.
6.	**Decline**: means an observed or indicated significant decline in numbers, extent or quality (quality refers to life history parameters). The decline may be historic, recent or current. "Significant' need not be in a statistical sense.

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OSPAR COMMISSION
Protecting and conserving the North-East Atlantic and its resources

OSPAR List of Threatened and/or Declining Species and Habitats (Reference Number: 2008-6)

(c) Selection criteria for habitats

1.	**Global importance** (importance of the OSPAR Area for the habitat in a global context): a high proportion of the habitat occurs in the OSPAR Area.
2.	**Regional importance** (importance of the sub-regions of the OSPAR Area for the habitat): a high proportion of the habitat occurs within a specific biogeographic region and/or region of national responsibility within the OSPAR Area.
3.	**Rarity**: a habitat is assessed as being rare if it is restricted to a limited number of locations or to small, few and scattered locations in the OSPAR area.
4.	**Sensitivity**: A habitat is "very sensitive" when: a. it has very low resistance (that is, it is very easily adversely affected by human activity); and/or b. it has very low resilience (that is, after an adverse effect from human activity, recovery is likely to be achieved only over a very long period, or is likely not to be achieved at all). A habitat is "sensitive" when: a. it has low resistance (that is, it is easily adversely affected by human activity); and/or b. it has low resilience (that is, after an adverse effect from human activity, recovery is likely to be achieved only over a long period).
5.	**Ecological significance**: the habitat is very important for the wider significance of the ecological processes, functions and species that it supports.
6.	**Status of decline**: Decline means a significant decline in extent or quality. The decline may be historic, recent of current. The decline can occur in the whole OSPAR maritime area or regionally.

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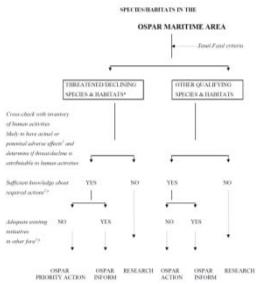
OSPAR List of Threatened and/or Declining Species and Habitats (Reference Number: 2008-6)



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HELCOM

What could we learn from others: Experience of OSPAR and HELCOM

GOALS AND OBJECTIVES

Eutrophication

Baltic Sea unaffected by eutrophication

- Clear water
- Natural level of algal blooms
- Natural distribution and occurrence of plants and animals
- Natural oxygen levels

Biodiversity

Favourable status of Baltic Sea biodiversity

- Natural marine and coastal landscapes
- Thriving and balanced communities of plants and animals
- Viable populations of species

Hazardous Substances

Baltic Sea undisturbed by hazardous substances

- Concentrations of hazardous substances close to natural levels
- All fish are safe to eat
- Healthy wildlife
- Radioactivity at the pre-Chernobyl level

Maritime activities

Environmentally friendly maritime activities

- Enforcement of international regulations – no illegal discharges
- Safe maritime traffic without accidental pollution
- Efficient emergency and response capabilities
- Minimum sewage pollution from ships
- No introductions of alien species from ships
- Minimum air pollution from ships
- Zero discharges from offshore platforms
- Minimum threats from offshore installations

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HELCOM

HELCOM - Baltic Marine Environment Protection Commission - Helsinki Commission

HELCOM has adopted Ecological Objectives coverin g topics referring to:

- restoring and maintaining sea floor integrity at a level t hat safeguards the functions of the ecosystems;

- that habitats, including associated species, show a distribution, abundance and quality in line with prevailing physiographic, geographic and climatic conditions; and

- a water quality that enables the integrity, structure and functioning of the ecosystem to be maintained or recovered.

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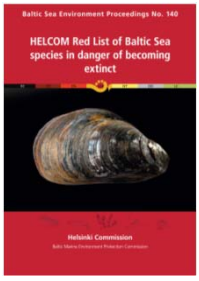
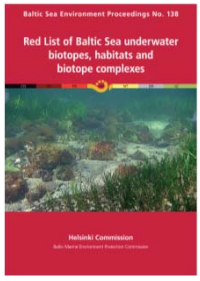
HELCOM

HELCOM - Baltic Marine Environment Protection Commission - Helsinki Commission





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Why does NOWPAP Need Regional Action Plan on Marine and Coastal Biodiversity?

- Biodiversity loss continues and will be exacerbated by the climate change impacts
- Action Plan does not have specific provisions and action items to conserve and sustainably use marine and coastal biodiversity
- SDG 14 calls for conservation and sustainable use of marine and coastal biodiversity
- NOWPAP MTS 2018-2023 has specific priority theme focused on marine and coastal biodiversity conservation
- NOWPAP needs Regional Action Plan to provide a framework for cooperation

RCU suggestions for the next steps in 2018-2019

CEARAC
- Technical Leadership
- Development of Criteria for NOWPAP "Red List" of Species and Habitats
- Seagrass beds mapping
- Compilation of the List
- Development of Marine Biodiversity Project (together with RCU)

DINRAC
- Third Phase of Red List Project
- Inclusion of BD criteria in Identifying "Red List" habitats (Project on sea reclamation sites)

MERRAC
- Review of the non-indigenous species list

POMRAC
- Development of indicators for BD-related EQOs;
- Best practices in area-based management of biodiversity (part of ICARM activities)

RCU
- Connecting to regional and global expertise;
- Support CEARAC in RACs coordination
- Support development of Special Project

NOWPAP Special Project: Identification of key indicator species and ecosystems of biodiversity change in the NOWPAP region

EXTRA SLIDES

EcoQO 1: Biological and habitat diversity are not changed significantly due to anthropogenic pressure

Operational criteria	Suggested indicators	Relevant SDG Indicators	China	Japan	Korea	Russia
1.1. Species diversity of marine mammals and waterbirds	1.1.1. Abundance, distribution and population growth rates of marine mammals 1.1.2. Abundance and productivity of key waterbird species		1.1.1. No available data **1.1.2. Possible (abundance only, mostly data from scientific research)**	1.1.1. Not enough data (mostly scientific research) 1.1.2. Not enough data (mostly scientific research)	**1.1.1. Possible (protected species only)** **1.1.2. Possible (endangered species only)**	1.1.1. No reliable data **1.1.2. Possible**
1.2.Species, age and size structure of fish stocks	1.2.1. Catch/biomass ratio 1.2.2. Spawning Stock Biomass (SSB) 1.2.3. Proportion of large fish (for selected species at the top of food webs)	14.4.1. Proportion of fish stocks within biologically sustainable levels (measures the % of the assessed stocks are within biologically sustainable levels)[1]	1.2.1. Not enough data 1.2.2. Not enough data 1.2.3. Not enough data	**1.2.1. Possible** 1.2.2. Not enough data 1.2.3. Not enough data	**1.2.1. Possible** **1.2.2. Possible** **1.2.3. Possible**	**1.2.1. Possible** **1.2.2. Possible** **1.2.3. Possible (for sturgeon only)**
1.3.Distribution of benthic and pelagic communities and their status	1.3.1. Distribution 1.3.2. Condition of the typical species and communities 1.3.3. Hydrological and chemical conditions		**1.3.1. Possible** **1.3.2. Possible** 1.3.3. Not enough data	Not at this moment (some national/local scientific data might be available)	**1.3.1. Possible** **1.3.2. Possible** **1.3.3. Possible**	**1.3.1. Possible** **1.3.2. Possible** **1.3.3. Possible**

EcoQO 2: Alien species are at levels that do not adversely alter the ecosystems

Operational criteria	Suggested indicators	Relevant SDG Indicators	China	Japan	Korea	Russia
2.1. Abundance and state characterization of alien species	Trends in spatial distribution and biomass of alien species	Indicator is proposed only for alien species on land and water ecosystems and could be applied only for coastal river systems: 15.8.1: Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	Data are limited	Not at this moment (some national/local scientific data might be available)	Under development	Data are limited
2.2. Environmental impact of alien species	Ratio between alien species and native species and their interaction at the level of ecosystem, habitats and species		Data are limited	Not at this moment (some national/local scientific data might be available)	Under development	Data are limited

EcoQO 3: Eutrophication adverse effects are absent						
Operational criteria	**Suggested indicators**	**Relevant SDG Indicators**	**China**	**Japan**	**Korea**	**Russia**
3.1. Nutrients concentration	3.1.1. Nutrients concentration in the water column 3.1.2. Nutrient ratios (silica, nitrogen and phosphorus)	14.1.1. Index of coastal eutrophication (indicator with established methodology and standards is absent, but initial proposal is to focus on *Chlorophyll a* as a core parameter with progressive identification of additional parameters)	**3.1.1. Possible** **3.1.2. Possible (though data are limited, mostly from scientific studies)**	**3.1.1. Possible** **3.1.2. Possible (mostly from scientific studies)**	**3.1.1. Possible** **3.1.2. Possible**	**3.1.1. Possible** **3.1.2. Possible (though data are limited)**
3.2. Direct effects of nutrient enrichment	3.2.1. *Chlorophyll a* concentration in the water column 3.2.2. Species composition and abundance of toxic microalgae 3.2.3. Harmful algal blooms (HABs) 3.2.4. Abundance of opportunistic macroalgae		**3.2.1. Possible** 3.2.2. Data are limited **3.2.3. Possible** **3.2.4. Possible (though data are limited)**	**3.2.1. Possible** **3.2.2. Possible** **3.2.3. Possible** 3.2.4. Data not available	**3.2.1. Possible (though data are limited)** **3.2.2. Possible (though data are limited)** **3.2.3. Possible (though data are limited)** 3.2.4. Data not available	**3.2.1. Possible (though data are limited)** **3.2.2. Possible (though data are limited)** **3.2.3. Possible (though data are limited)** **3.2.4. Possible (though data are limited)**
3.3. Indirect effects of nutrient enrichment	Seasonal hypoxia, dissolved oxygen changes and size of the area concerned		Data are limited	**Possible**	**Possible (though data are limited)**	**Possible (though data are limited)**

EcoQO 4: Contaminants cause no significant impact on coastal and marine ecosystems and human health						
Operational criteria	**Suggested indicators**	**Relevant SDG Indicators**	**China**	**Japan**	**Korea**	**Russia**
4.1. Concentration of contaminants	4.1.1. Concentration of the contaminants in sediments, water and organisms 4.1.2. Exceeding of MPC in aquatic organisms and frequency of such cases	None at this moment	**4.1.1. Possible (in sediments and water only)** 4.1.2. Not at this moment (some national/local scientific data might be available)	**4.1.1. Possible** 4.1.2. Not at this moment (some national/local scientific data might be available)	**4.1.1. Possible (in sediments and organisms)** **4.1.2. Possible**	**4.1.1. Possible (in sediments and organisms)** **4.1.2. Possible**
4.2. Effects of contaminants	Levels of pollution effects on the ecosystem components concerned, where a cause/effect relationship has been established		Not at this moment	Not at this moment (some national/local scientific data might be available)	**Possible**	Not at this moment

EcoQO 5: Marine litter does not adversely affect coastal and marine environments						
Operational criteria	**Suggested indicators**	**Relevant SDG Indicators**	**China**	**Japan**	**Korea**	**Russia**
5.1. Characteristics of litter in the marine and coastal environment	5.1.1. Trends in the amount and composition of litter washed ashore 5.1.2. Trends in the amount of litter in the water column and deposited on the seafloor 5.1.3. Trends in the amount, distribution and composition of micro-particles	14.1.1. Floating plastic debris density (indicator with established methodology and standards is absent, but initial proposal is to focus on beach litter as a proxy indicator)	**5.1.1. Possible** 5.1.2. Data are very limited 5.1.3. Under development	**Possible (using data from national/local surveys)**	**5.1.1. Possible** **5.1.2. Possible** **5.1.3. Possible**	**5.1.1. Possible** 5.1.2. Data are very limited 5.1.3. Data are very limited
5.2. Impacts of litter on marine life	Trends in the amount and composition of litter ingested by marine animals		Not at this moment	Data not available	Not at this moment, under development	Not at this moment

Workplan and budget on development of a tool for mapping seagrass distribution in the NOWPAP region

Genki Terauchi
NOWPAP CEARAC

May 10, 2018
Toyama, Japan

1. Background

Conservation of biodiversity

Mitigation of climate change

"Sustainable Development Goals (SDGs)" of Rio+20 (2012)
By 2020, conserve at least 10 percent's of coastal and marine areas, consistent with national and international law and based on best available scientific information.

Aichi Biodiversity Target (Target 11)
By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved.

1. Background

Outcome of the first International workshop on assessment of seagrass distribution in the NOWPAP region reached consensus of the followings:

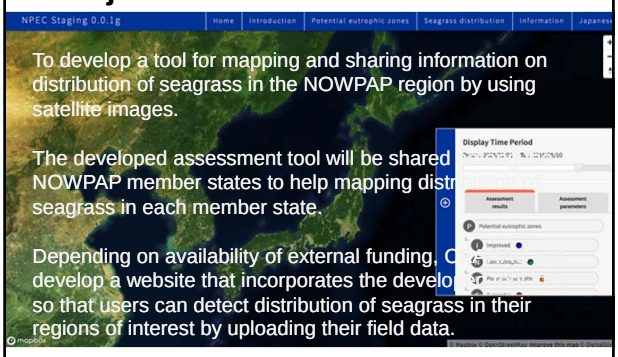
- Use of freely available satellite images
- Involvement of the public to collect field survey information and map distribution of seagrass
- Development of a tool using cloud computing technology.

https://news.gefblueforests.org/seagrass-carbon-in-the-nowpap-region

1. Background

- Discussion at the 15th CEARAC Focal Point Meeting
  34 Dr. Kim and Dr. ISHIZAKA pointed out the description of t he task 3.1, detection potential seagrass habitat and collection of water depth information, is not clear.

2. Objective



To develop a tool for mapping and sharing information on distribution of seagrass in the NOWPAP region by using satellite images.

The developed assessment tool will be shared NOWPAP member states to help mapping distr seagrass in each member state.

Depending on availability of external funding, C develop a website that incorporates the develo so that users can detect distribution of seagrass in their regions of interest by uploading their field data.

3. Tasks

- 3.1 Update of information on seagrass distribution
  ("Detection of potential seagrass habitats and collection of water depth information" at the 15th CEARAC FPM)
- 3.2 Development of a tool for mapping seagrass distribution with satellite image using cloud computing technology
- 3.3 Development of a website for mapping seagrass distribution with satellite images

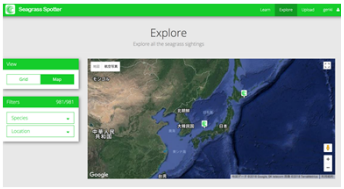
3.1 Update of information on seagrass distribution

Information in China, Korea and Russia is sparse and addition of information is requested.

jp
(open to the public very soon)

Providing smartphone applications to collect field data and information

Reality in global databases



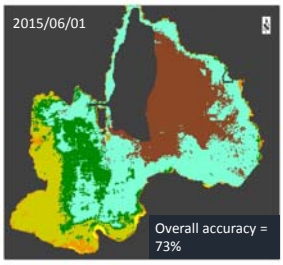
Location of seagrass in Toyama Bay is wrong

Incentives are important

Incentives are important

Class (number of pixels)

- Seagrass with sargussum (114)
- Dense Seagrass (104)
- Few seagrass or no vegitation (223)
- Sargassum (97)
- Mud (45)
- Exposed sand (19)



By providing field data on seagrass, larger spatial scale information around the filed data can be obtained

3.2 Development of a tool for mapping seagrass distribution with satellite images

CEARAC will develop a standalone software program that can carry out the following tasks:

a. Input user specified coordinates (row/path or latitude/longitude) for downloading Landsat 8 OLI and Sentinel 2 MSI satellite images from cloud server;
b. Apply radiance to reflectance calculation;
c. Use infrared data to identify land areas for masking;
d. Remove effect of sun glint;
e. Correct water column by Depth Invariant Index or Bottom Reflectance Index method;
f. Create true color images from Red, Green and Blue band;
g. Import training datasets in GIS format;
h. Test supervised and unsupervised machine learning methods to distinguish sea floor substrates; and
i. Assess accuracy of the classified image against training dataset.

Learning existing tools for mapping geo spatial information

Global Surface Water Explorer

The Global Surface Water Explorer is a water dataset developed in the Copernicus Programme. This maps the location and temporal distribution of water surfaces at the global scale over the past 32 years and provides statistics on the extent and change of those water surfaces.

https://global-surface-water.appspot.com/

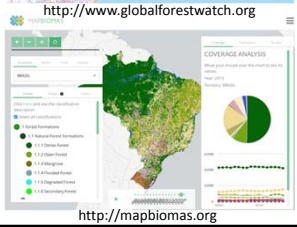
Global Forest Watch

Global Forest Watch is an interactive online platform that offers a variety of data and tools to help you monitor forests. Whether you're looking for general facts or specialized information about fires, climate, or commodities, we can help you learn how to use GFW to achieve your goals.

http://www.globalforestwatch.org

MapBiomas

MapBiomas is a multi-institutional initiative involving universities, NGOs and technology companies that have come together to contribute to the understanding of Brazilian territory transformations based on the annual mapping of land cover and use in Brazil.



http://mapbiomas.org

Evaluation of tools for mapping seagrass

Studying how Google Earth Engine works

Test of water column correction with MATLAB

Evaluation of "Coastal Mapper Of Bathymetry And Habitat Types (CMOBAH)" developed by RESTEC

3.3 Detection of a website for mapping seagrass distribution with satellite images

- The website to be developed provides services of:
  - Obtaining freely available satellite images from cloud server
  - Graphical User Interface (GUI) to import (upload) field survey data
  - GUI to analyze distribution of seagrass and share obtained results

External funding is necessary to realize this task

Google Earth Engine

amazon web services

4. Expected outcomes

- With the use of the developed mapping tool, various stakeholders including governments, citizens, fisheries and/or politicians can share the same knowledge of distribution of seagrass. When the area of seagrass beds in coastal areas is identified, such information can be used for planning policies to conserve and/or recover seagrass beds, and also to estimate the amounts of CO_2 absorbed in the sea.
- In addition, this activity can cooperate with a project of Ocean Remote Sensing in IOC/WESTPAC, and can be applied in the Southeast Asian countries as well.

5. Schedule

Time		Action	Main body
2018	May	Review of this proposal	CEARAC FPs CEARAC Secretariat
	June to October	-Update of field data/information of seagrass distribution - Baseline design of a tool for mapping seagrass distribution with satellite images using cloud computing technology	-Consultant and nominated experts -CEARAC Secretariat and Consultant
	November	Development of a tool for mapping seagrass distribution with satellite images using cloud computing technology	CEARAC and consultant
2019	October		
	Q3 to Q4	Construction of web-based service for mapping seagrass distribution	CEARAC and consultant

Key events in the near future

This project will be introduced at a 3 mins lightning talk.

Participating in WS4 to develop a smartphone tool for NOWPAP to collect field information on seagrass and WS6 to prepare a proposal for external funding.

6. Budget

Task	Time	Deliverables	To be completed	Main body	Budget (US$)
Update of field data/information of seagrass distribution	2018 Q2	-Updated field data /info. of seagrass distribution	2018 Q3	Consultant and nominated experts	15,000
Development of a tool for mapping seagrass distribution	2018 Q4	A tool for mapping seagrass distribution	2019 Q3	CEARAC	25,000
Construction of web-based service for mapping seagrass distribution	2019 Q3	Web-based service for mapping seagrass distribution	2019 Q4	CEARAC	External fund
Total					40,000