Regional report on the impact of major threats to marine biodiversity in the NOWPAP region

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Workshop 2
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NOWPAP CEARAC

CEARAC (Special Monitoring and Coastal Environmental Assessment Regional Activity Centre)

One of four regional activity centres of NOWPAP (The Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region)

Assessment of the state of the marine, coastal and associated freshwater environments
Development of tools for environmental planning and management
CEARAC Activities on Marine Biodiversity

- Toyama Bay Pilot Study 2010-2011
  - Gaps on data availability and difficulty of assessment using various parameters

- Monitoring and Management Status of MPAs in the NOWPAP region 2012-2013
  - Definition of MPA
  - Monitoring and management status

- Pilot Assessment on the impacts of major threats to marine biodiversity 2014-2015
  - Data availability
  - Pilot study for new assessment tool
Pilot assessment of major threats to marine biodiversity in the selected sea areas in the NOWPAP region

Objective:
- To clarify available data on major threats to marine biodiversity: eutrophication; non-indigenous species and habitat alteration
- To understand the current situation of threats using the available data
- To clarify the gaps among member states for developing new assessment method
1. Selection of target sea areas and nomination of experts

- **Selected target sea areas**
  - China: Coastal area of Yantai and Dalian
  - Japan: North Kyushu sea area and coastal area of Hokuriku region
  - Korea: Saemanguem
  - Russia: The Peter the Great Bay

- **Nominated experts**
  - China: Dr. Bei Huang
  - Japan: Secretariat
  - Korea: Dr. Young Nam Kim
  - Russia: Dr. Tatiana Orlova
## 2. Implementation of pilot assessment

<table>
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<th>Assessment parameters</th>
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<th>Contents of data</th>
<th>Sea area where data is available</th>
<th>Period of data</th>
<th>Monitoring frequency</th>
<th>Monitoring Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Inventory of China</td>
<td>✔</td>
<td>✔</td>
<td>✔ (Hakata Bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea)</td>
<td>-2012</td>
<td>4–12 times/year</td>
<td>Local government</td>
</tr>
<tr>
<td>Data Inventory of Japan</td>
<td>✔</td>
<td>✔</td>
<td>✔ (Kanazawa Bay, Nanao Bay)</td>
<td>-2012</td>
<td>4–12 times/year</td>
<td>Local government</td>
</tr>
<tr>
<td>Data Inventory of Russia</td>
<td>✔</td>
<td>✔</td>
<td>✔ (Hakata Bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea)</td>
<td>-2012</td>
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</tr>
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<td>Data Inventory of Korea</td>
<td>✔</td>
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<td>✔ (Hakata Bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea)</td>
<td>-2012</td>
<td>4–12 times/year</td>
<td>Local government</td>
</tr>
</tbody>
</table>

### Total nitrogen/Total phosphorus

- **Assessment parameters**: Total nitrogen/Total phosphorus
- **Data availability**: A
- **Contents of data**: Concentration of T–N and T–P (Only sea surface data)
- **Sea area where data is available**: ✔ (Kanazawa Bay, Nanao Bay) ✔ (Hakata Bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea) ✔ (Karatsu Bay, Imari Bay, Genkai Sea)
- **Period of data**: -2012
- **Monitoring frequency**: 4–12 times/year
- **Monitoring Organization**: Local government

### Dissolved Inorganic nitrogen/ phosphorus

- **Assessment parameters**: Dissolved Inorganic nitrogen/ phosphorus
- **Data availability**: A
- **Contents of data**: Concentration of DIN and DIP (Only sea surface data)
- **Sea area where data is available**: ✔ (Ryoutsu bay, DIN) ✔ (DIN, Nanao bay) ✔ (Hakata bay) ✔ (DIN, Katatsu, Imari, Genkai)
- **Period of data**: -2012
- **Monitoring frequency**: 4–12 times/year
- **Monitoring Organization**: Local government

### River input of nutrient

- **Assessment parameters**: River input of nutrient
- **Data availability**: A
- **Contents of data**: River discharge*T–N, T–P
- **Sea area where data is available**: ✔ (Hakata bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea) ✔ (Karatsu, Imari, Genkai)
- **Period of data**: -2012
- **Monitoring frequency**: 2–4 times/year
- **Monitoring Organization**: Local government

### Chlorophyll a

- **Assessment parameters**: Chlorophyll a
- **Data availability**: A
- **Contents of data**: Concentration of chrophyll a
- **Sea area where data is available**: ✔ (Hakata bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea) ✔ (Karatsu, Imari, Genkai)
- **Period of data**: -2012
- **Monitoring frequency**: 2–4 times/year
- **Monitoring Organization**: Local government

### Use of fertilizer

- **Assessment parameters**: Use of fertilizer
- **Data availability**: A
- **Contents of data**: Shipping volume of inorganic fertilizer
- **Sea area where data is available**: ✔ (Hakata bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea) ✔ (Karatsu, Imari, Genkai)
- **Period of data**: -2010
- **Monitoring frequency**: –
- **Monitoring Organization**: –

### Aquaculture

- **Assessment parameters**: Aquaculture
- **Data availability**: A
- **Contents of data**: Production
- **Sea area where data is available**: ✔ (Hakata bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea) ✔ (Karatsu, Imari, Genkai)
- **Period of data**: -2012
- **Monitoring frequency**: –
- **Monitoring Organization**: MAFF

- **Assessment parameters**: Aquaculture
- **Data availability**: A
- **Contents of data**: Feed dosage
- **Sea area where data is available**: ✔ (Hakata bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea) ✔ (Karatsu, Imari, Genkai)
- **Period of data**: -2012
- **Monitoring frequency**: –
- **Monitoring Organization**: JCG

### Land use

- **Assessment parameters**: Land use
- **Data availability**: A
- **Contents of data**: Area of landuse
- **Sea area where data is available**: ✔ (Hakata bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea) ✔ (Kanazawa Bay, Nanao Bay) ✔ (Hakata Bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea) ✔ (Karatsu Bay, Imari Bay, Genkai Sea)
- **Monitoring frequency**: –
- **Monitoring Organization**: GSI

### Population density

- **Assessment parameters**: Population density
- **Data availability**: A
- **Contents of data**: Population density
- **Sea area where data is available**: ✔ (Hakata bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea) ✔ (Kanazawa Bay, Nanao Bay) ✔ (Hakata Bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea) ✔ (Karatsu Bay, Imari Bay, Genkai Sea)
- **Period of data**: -2010
- **Monitoring frequency**: Once/5 years
- **Monitoring Organization**: MIC

### Water quality

- **Assessment parameters**: Water quality
- **Data availability**: A
- **Contents of data**: Transparence
- **Sea area where data is available**: ✔ (Hakata bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea) ✔ (Kanazawa Bay, Nanao Bay) ✔ (Hakata Bay, Dokai Bay, Suou–Nada Sea, Hibiki–Nada Sea, Chikuzen Sea) ✔ (Karatsu Bay, Imari Bay, Genkai Sea)
- **Period of data**: -2012
- **Monitoring frequency**: 4–12 times/year
- **Monitoring Organization**: Local government
3. Implementation of pilot assessment
Pilot assessment of major pressures

(Example of Japan)

- **Eutrophication**
  Direct indicators: TN/TP, DIN/DIP, River input and Chl-a
  Indirect indicators: Fertilizer, Land use, Aquaculture and Population

- **Non-indigenous species**
  Direct indicators: Number of NIS
  Indirect indicators: Num. of foreign ship and Aquaculture

- **Habitat alteration**
  Direct indicators: Reclamation, Natural coast and collection of sand
  Indirect indicators: Number of dam

- **Impacts on marine biodiversity**
  Indicators: Fish catches, seaweed/seagrass bed
Results of pilot assessment

Eutrophication

TN 1.5
1
0.5
0

River input

1000000
10000
100
0
1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011

Niigata
Ishikawa
Saga

Use of fertilizer

80000
60000
40000
20000
0
Niigata
Ishikawa
Saga

Seed release (Aquaculture)

100,000,000
10,000,000
1,000,000
100,000
10,000
1

NIS

<table>
<thead>
<tr>
<th>North Kyushu sea area</th>
<th>Coastal area of Hokuriku region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fukuoka</td>
<td>Niigata Toyama Ishikawa</td>
</tr>
<tr>
<td>Number of founded NIS</td>
<td>11 1 6 5</td>
</tr>
</tbody>
</table>

Branchiostegus...
Acanthopagrus...
Sebastiscus...
Paralichthys...
Takifugu rubripes
Metapenaeus ensis
Halioptis discus
Nordotis gigantea
Simoneocclus glans
Hemicentrus...
4. Preparation of a regional report on major pressures to marine biodiversity in the NOWPAP region

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1. Introduction
2. Pilot assessment on the impacts of major threats to marine biodiversity
3. Evaluation of pilot assessment
4. Recommendations
Chapter 1: Introduction

Overview of marine biodiversity

Activities by NOWPAP/CEARAC/other RACs
Chapter 2: Pilot assessment of the impact of major pressures to marine biodiversity

- **2.1 Threats to marine biodiversity**
  Potential threats to MB and priorities in the NOWPAP region

- **2.2 Target sea areas and their characteristic**

- **2.3 Eutrophication**
  Available data and results of pilot assessment of member states

- **2.4 Non-indigenous species**
  Available data and results of pilot assessment of member states

- **2.5 Habitat alteration**
  Available data and results of pilot assessment of member states
Chapter 3: Evaluation of pilot assessment

- Differences and difficulties of threats selected for pilot assessment
- Assessment of used indicators of three threats
- Assessment of impact of threats
Chapter 4: Recommendations

- Recommendations to new assessment method

Basic concept of assessment tool
  - Objective
  - Potential common assessment indicators
  - Assessment methodology

Assessment of eutrophication
Assessment of non-indigenous species
Assessment of habitat alteration
Regional report will be published by the end of this year

Thank you very much for your attention.