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Monitoring and management of Marine Protected Areas in the NOWPAP region

CEARAC Report 2013

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Published in 2013
By the NOWPAP Special Monitoring and Coastal Environmental Assessment
Regional Activity Centre (NOWPAP CEARAC)
Established at the Northwest Pacific Region Environmental Cooperation Center (NPEC)
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For bibliographical purposes, this document may be cited as:
NOWPAP CEARAC 2013: Monitoring and management of Marine Protected Areas
in the NOWPAP region
ISBN 978-4-9902809-6-3

Cover photos: San'in Kaigan National Park, Tottori Prefecture
Tottori Prefectural Photograph Library
(http://db.pref.tottori.jp/photograph.nsf/index.htm)

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Preface

In 2010, the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP10) was held in Nagoya, Japan, where the Post 2010 Targets (Aichi Targets) were adopted. Three years have passed since that time, and the Contracting Parties and relevant international organizations have implemented a variety of different measures to achieve the Aichi Targets.

One of the Aichi Targets (Target 11 on marine and coastal biodiversity conservation) states "10 percent of marine and coastal areas in the world are designated as marine protected areas (MPAs)" recognizing that establishing a MPA is an effective tool in promoting conservation of marine and coastal biodiversity. Based on the Aichi Targets, especially Target 11, the NOWPAP member states (China, Japan, Korea, and Russia) are enhancing their efforts to expand the area and improve the management of the respective MPAs to conserve the biodiversity of their territorial waters.

This regional report compiles basic information on the existing MPAs in the NOWPAP member states, including the laws and regulations stipulating the establishment of MPAs as well as the monitoring programs and management practices employed. In addition, the possibility of applying internationally emerging concepts and ideas for marine and coastal biodiversity conservation to the NOWPAP region is also discussed. The information contained in this report is expected to help policymakers in the NOWPAP region to facilitate implementation of policies for the conservation of marine and coastal biodiversity.

The development of this regional report is part of the ongoing activities of NOWPAP CEARAC for marine and coastal biodiversity conservation. Reviewing the status of existing MPAs and the challenges to marine and coastal biodiversity conservation are important initial steps in developing future activities and projects. Making full use of collected information, NOWPAP CEARAC will contribute to marine and coastal biodiversity conservation in the NOWPAP region through ongoing and future activities.

CEARAC would like to thank the national experts who collected and summarized information on MPAs in each member state, and CEARAC Focal Points for their contribution to this publication.

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Executive summary

The NOWPAP region is one of the most biologically diverse marine areas in the world. However, the area faces the threats of eutrophication, harmful algal blooms, hypoxia, pollution, and overfishing. Since establishing marine protected areas (MPAs) is a useful tool in the conservation of marine biodiversity, the NOWPAP member states have enhanced their efforts to establish new MPAs and to improve management of existing MPAs based on the Aichi Targets. Nevertheless, MPAs in the NOWPAP region account only for four percent of the entire NOWPAP sea area—significantly below the 10 percent goal of the Aichi Targets.

As of 2012, 277 MPAs have been designated in the NOWPAP region and the area covered by MPAs is 67,483 km^2. An overview of MPAs in the NOWPAP region is reported in **Chapter 2**. The NOWPAP member states designate MPAs based on relevant national laws and regulations using their own or internationally recognized MPA definitions. Each member state designated MPAs within the range of MPA categories of the IUCN even if the IUCN categorization system was not explicitly employed. Some member states now plan to increase the area and number of MPAs to achieve the Aichi Targets.

Monitoring programs and management practices for selected MPAs in the NOWPAP member states are reported in **Chapter 3**. While the Korean government has a national monitoring program in Korean waters, other member states are implementing regular monitoring only in some MPAs. Overall, current monitoring programs (including monitoring parameters) are not considered sufficient to understand the status of marine biodiversity for protected and endangered species. In terms of management, activities permitted (or prohibited) in MPAs are clearly stipulated by laws and regulations in most member countries. However, even if relevant laws and regulations are in place, actual management practices are not always sufficient due to e.g. budget limitations.

To help policymakers enhance marine

biodiversity conservation, three internationally emerging concepts and ideas are introduced and the possibilities of their application in the NOWPAP region are discussed in **Chapter 4**. As it is difficult to provide sufficient management for all MPAs, self-evaluation of the effectiveness of MPAs management would be helpful in clarifying the issues and identifying priority management practices in each MPA. While most of the existing MPAs in the member states are located along coastal areas, the concept of *ecologically or biologically significant marine areas* (EBSAs) could be useful in the protection of open seas and deep seas. Japan and Russia have begun a study on EBSAs in their waters. To protect common endangered marine species migrating across national boundaries, regional networking of MPAs could be an effective tool.

Based on the findings of this report, the following actions are recommended to the NOWPAP member states:

- Increase the area of MPAs to achieve the Aichi Targets by 2020.
- Improve monitoring programs in MPAs, including the implementation of regular monitoring of marine environment, and enhance information collection of endangered marine species.
- Realize effective and efficient management of MPAs by identifying priority issues to be addressed in each MPA.
- Study internationally emerging concepts and ideas for the conservation of marine biodiversity and consider possibilities of their application.

1. Introduction

The northwest Pacific, where the NOWPAP region is located, is one of the most biologically diverse marine areas in the world. There are 22,629 species of marine organisms in Chinese waters (Liu, 2013); 33,629 species in Japanese waters (Fujikura *et al*., 2010); and 9,534 species in Korean waters (Republic of Korea, 2009). According to Fujikura *et al*., there may be 155,524 species around the Japanese archipelago, and the number of marine species found in the NOWPAP region will increase along with the development of observation techniques.

Such diverse ecosystems in the NOWPAP region can nurture rich fishery resources. The average catch in the northwest Pacific is 20 million tons, which is one-fourth of the world's total (FAO 2010). The target fish includes low trophic level fish species, such as sardines that graze on phytoplankton, to high-level predacious species, such as tuna and bonito.

The marine trophic level, which is calculated from fish catch, is a good indicator of the sustainable use of marine living resources as the Convention of Biological Diversity (CBD) chose it as an indicator for assessing progress towards the 2010 biodiversity target in 2004. Overfishing of high trophic level predatory species leads to decrease of their biomass, which consequently results in the decline of the marine trophic level, namely "fishing down marine food webs". In the NOWPAP region, the marine trophic level has been maintained at around 3.5 during last ten years. This figure is considered relatively good indicating that sustainable fishery has been conducted in this region.

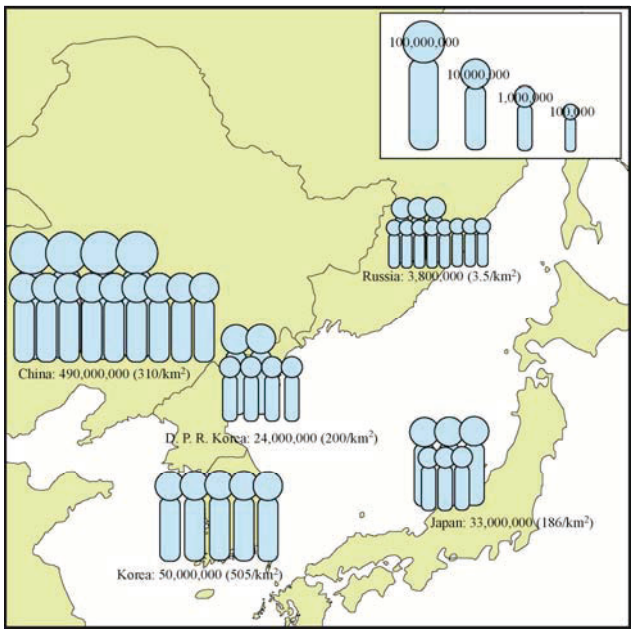


Figure 1. Population of the coastal areas in the NOWPAP region.

However, since this area is one of the most populated in the world (Figure 1) with quite high economic growth rate, increased discharge of waste and chemical substances associated with daily and economic activities is threatening the health of the marine environment. In addition, climate change is also one of the major multiple stressors in the NOWPAP region. As Figure 2

indicates, the increase of sea surface temperature in the past 100 years in this region is faster than other marine areas. Such warming of seawater may change the condition of marine biodiversity including the change of species and their habitat distribution.

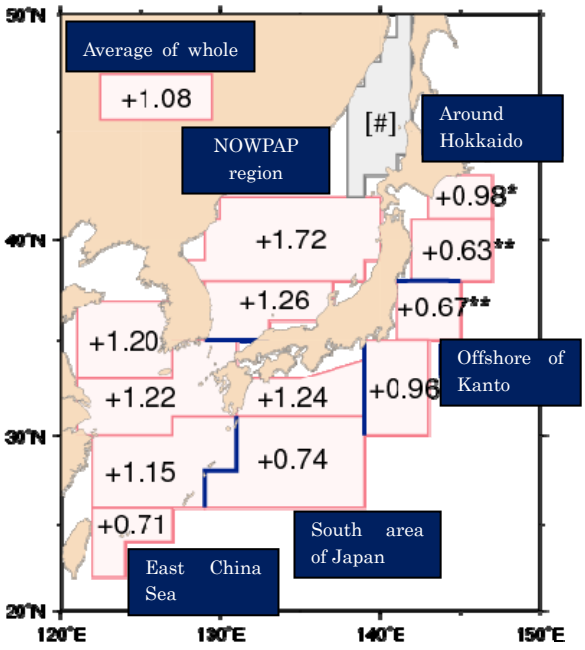


Figure 2. Change of the sea surface temperature in the past 100 years in the NOWPAP region. (Source: Japan Meteorological Agency (2012))

In order to conserve the rich marine ecosystems in the region against such multiple anthropogenic stressors for the future, it is urgent and necessary to promote effective measures including the development and implementation of appropriate management schemes.

2. An overview of MPAs in the NOWPAP region

Establishing MPAs is one of the most effective tools in promoting conservation of marine and coastal biodiversity. CBD defines a marine and coastal protected area as “any defined area within or adjacent to a marine environment, together with its overlying waters and associated flora, fauna, and historical and cultural features, which has been reserved by legislation or other effective means, including customs, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings.” In the NOWPAP member states, MPAs have been designated according to national laws and regulations. In 2010, a total of 87 selected MPAs within the NOWPAP region was reported as shown in Figure 3 (20 in China, 31 in Japan, 22 in Korea, and 14 in Russia) covering an area of 40,900 km^2 (NOWPAP DINRAC 2010). These MPAs account for 2.4 percent of the whole sea area of the NOWPAP region. However, the reported MPAs include some terrestrial areas; therefore, the exact percentage of the marine coverage may be smaller.

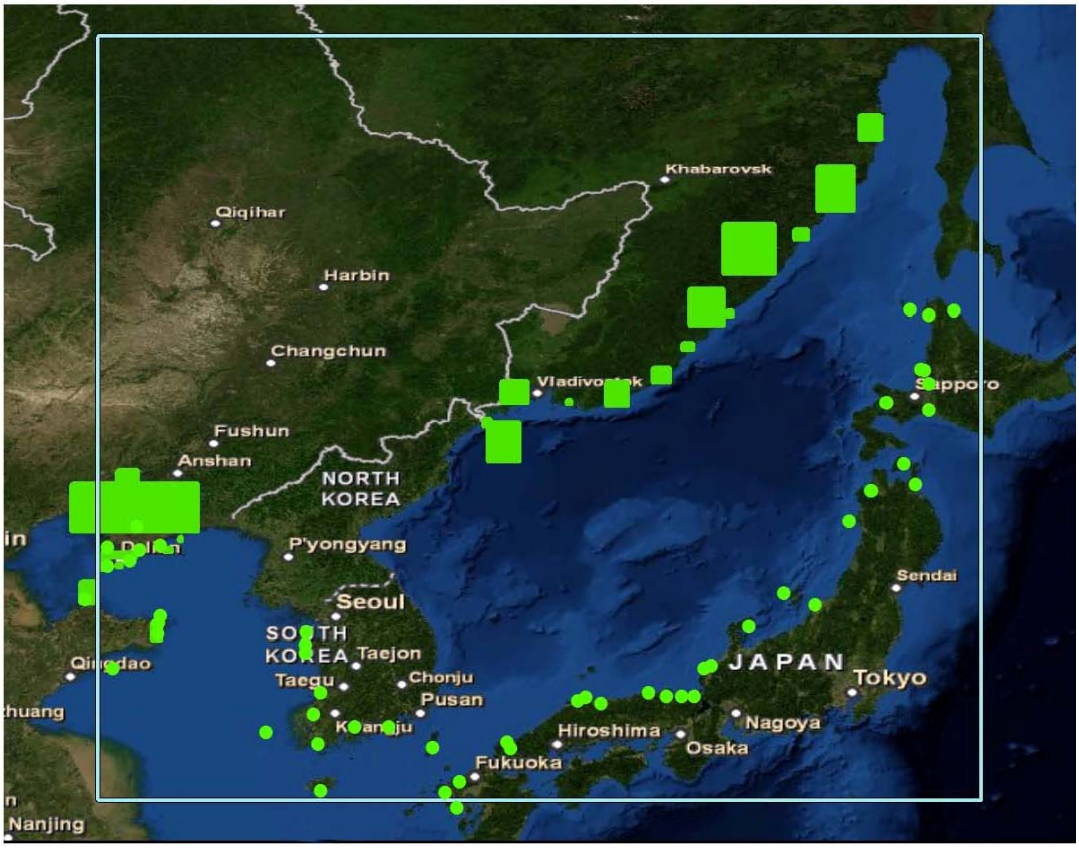


Figure 3 Location of MPAs in the NOWPAP region

(Source: NOWPAP DINRAC 2010)

2-1 Number and area of MPAs

In 2010, the tenth meeting of Convention on Biological Diversity (CBD COP10) convened in Nagoya, Aichi, Japan, and the Aichi Targets were adopted, which set post-2010 targets on biodiversity conservation. One of the Aichi Targets (Target 11) is for the coastal and marine areas: “By 2020, at least 10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes” (See http://www.cbd.int/sp/targets/). Agreeing on the goals of the Aichi Targets, more efforts have been made to enhance marine biodiversity conservation in the NOWAP and other regions in the world.

NOWPAP DINRAC updated the MPA database (http://dinrac.nowpap.org/NowpapMPA.php) in 2012, and the total number of the selected MPAs is 277 (84 in China, 99 in Japan, 29 in Korea and 65 in Russia). The total area covered by MPAs has also increased to 67,483 km^2. The coverage of MPAs (both area and number) increased after the adoption of the Aichi Targets; however, the current percentage of MPAs in the NOWPAP region is still only 4% of the entire sea area, and there is still a huge gap between the status and Aichi Target 11.

2-2 Definition and categorization of MPAs

Among four NOWPAP member states, Japan has set a clear definition for the MPAs. The definition is stipulated in existing national laws and regulations, characteristics of Japanese waters, and the status of utilization of marine areas and is based on the definitions set at the CBD COP 7 and International Union for Conservation of Nature and Natural Resources (IUCN). The Marine Biodiversity Conservation Strategy of Japan, formulated in 2013, states the definition of MPAs as follows: “Marine areas designated and managed by law or other effective means, in consideration of use modalities, aimed at the conservation of marine biodiversity supporting the sound structure and function of marine ecosystems and ensuring the sustainable use of marine ecosystem services.”

In Russia, the definition of MPAs has been under development by the Centre of International Projects of Ministry of Nature Resources. The draft concept defines the definition as follows: “Specially marine protected areas (coastal and marine areas) can be regarded as marine reserves planned for biodiversity protection and designated to be used in other aims, but not contradicting biodiversity protection, or sites where definite activities (for example, fishery or navigation) is limited or forbidden as it widely accepted that an ecosystem is especially vulnerable to economic activities.”

Definitions in both Japan and Russia aim to conserve marine ecosystems and sustainably use ecosystem services under appropriate management. Building on the solid basis of the MPA definition and taking into consideration relevant national laws, Japan has designated different types of MPAs to include national parks, important habitats, and marine areas where fishermen and relevant fishery associations work on resource management for sustainable use of fishery resources. In Russia, developing a clear definition of MPAs will lead to enhanced establishment of MPAs based on the existing national laws.

In the case of China and Korea, MPAs have been established in accordance with their national laws and regulations on the natural environment. The definitions of MPAs in these states are based on the definitions specified by the CBD COP7 and IUCN, but not clearly defined compared with those of Japan and Russia.

Annex 1 shows the list of laws and regulations that justify establishment of each MPA in the member states. Table 1 shows the relationship between MPA categories of IUCN and MPA categories of each member state. Each member state designated MPAs within the range of MPA categories of IUCN even when the IUCN categorization system was not explicitly employed. The guidelines for Applying the IUCN Protected Area Management Categories to Marine Protected Areas (Dudley 2008) encourage to establish MPAs of different categories properly and categorize MPAs to meet the objectives of the relevant national laws and regulations. Seen from this perspective, MPAs of each NOWPAP member state fall into most of the IUCN categories of either conservation of nature, conservation of ecosystems, or

sustainable use of natural resources. However, close analysis of the categorization of each member state reveals that one MPA can be matched to multiple IUCN categories. NOWPAP member states establish MPAs in their waters with multiple goals. One of the characteristics in the NOWPAP region is establishment of MPAs for the sustainable use of fishery resources (IUCN Category VI) as shown in China, Japan, and Korea. A summary of MPAs in each member state is explained in the following section.

[China]

There are three main types of MPAs based on national laws: 1) *Marine Nature Reserve* to protect the natural environment and resources; 2) *Special Marine Reserve* to protect marine biodiversity and the ecosystem service; and 3) *Fisheries Genetic Resources Reserve* to protect important aquatic genetic resources for their survival, to promote sustainable development of the fishery, to establish a protective network, and to alleviate the adverse effect of human activities. In addition, there are geological parks and scenic spots in Chinese coastal area, these two types of protected area are not included in this report.

While the other three member states utilize laws and regulations to cover terrestrial areas, China applies laws specially focusing on marine areas. Another characteristic is establishing Fisheries Genetic Resources Reserves for sustainable use of ecosystem services, especially fishery resources. The total number of Chinese MPAs is estimated at 235 and the estimated area is 206,700 km^2, accounting for 4.28% of the national waters.

Another difference from the other member states is that while the designation of MPAs is authorized by the State Council, State Oceanic Administration, Ministry of Agriculture or provincial governments, each MPA is managed by the relevant departments of local governments: the Marine Nature Reserve is managed by marine departments that work on marine or environmental protection; the Special Marine Reserve by management institution established by local governments or above the country level; and the Fisheries Genetic Resources Reserve by the fisheries department.

[Japan]

There are ten categories of Japanese MPAs set by national regulations, yet not all categories apply to existing MPAs in the NOWPAP region. The *Natural Coastal Protected Zone* is set for conservation of the Seto Inland Sea, so no MPAs are established in the NOWPAP region under this category. Also, only one area (Sakiyama Bay in Okinawa) has been designated an MPA under Nature Conservation Area which does not belong to the NOWPAP region. In the case of the Natural Habitat Conservation Area, which is one of the MPA categories, no marine area has been protected by this category.

Applied laws and regulations as the basis of ten categories are authorized by several different ministries: Ministry of the Environment; Ministry of Economy, Trade and Industry; Ministry of Aquaculture, Forestry, and Fisheries of Japan; and Agency of Cultural Affairs.

Furthermore some areas managed by local fisheries associations are designated MPAs in Japan. In these areas, local fishermen are actively involved in management and set no-fishing zones and/or closing period for sustainable use of fishery resources of the areas. This type of area is recognized as areas with joint fishing rights and distributed almost all coastal areas in Japan. The majority of the current MPAs in Japan fall into this category. This is unique since only Japan has such category among the NOWPAP member states. According to the Japanese government, 369,000 km^2 of sea is designated as MPAs as of 2011, which corresponds to 8.3% of Japanese waters, including territorial waters and the exclusive economic zone (EEZ).

[Korea]

There are nine MPA categories in Korea set by domestic laws and regulations on national parks, natural monuments, and conservation of marine resources. Due to various regulations to be applicable, authorized ministries and agencies are different, such as the Ministry of Ocean and Fisheries, Korea Fisheries Resource Agency, and Cultural Heritage Protection Administration.

One unique characteristic of MPAs in Korea is that wetland protection has significant importance, and a number of wetlands in the west coast facing the Yellow Sea and the East China Sea, have been protected. Small islands scattered around the Korean waters are under protection of the Specific Islands category, and 167 islands are designated as MPAs.

Similar to Japan, Korea has a MPA category for fishery resources protection and its sustainable use, and areas belonging to this category account for 30 % of the total MPAs in Korea. The total number of MPAs in Korea is 565 and the area is 10,003 km^2, accounting for 14.1% of Korean waters.

[Russia]

As described previously, the definition of MPAs in Russia has been under development and it is expected that more MPAs will be established in accordance with existing and newly developed laws and regulations. At present, there are nine MPA categories for forest parks and botanical gardens under which no MPA has been designated yet. Like other member states, Russia has a MPA category for sustainable use of marine resources. While in China, Japan, and Korea, such MPA category focuses on fishery resources conservation, the main target for the sustainable use of marine resources in Russia is not the fishery but plant resources, which is significantly different from other member countries.

Table 1 Categories on MPAs in the NOWPAP member states and relationship with IUCN MPA categories

Category of MPA by IUCN	China	Japan	Korea	Russia
Strict Nature Reserve (Ia): Strictly Protected Area	Marine Nature Reserve	Nature Conservation Area	None	State Natural Reserve including biosphere State Natural Park
Wildness Area (Ib): Large unmodified or slightly modified area	Marine Nature Reserve	None	Marine Ecosystem Protected Area	State Natural Reserve including biosphere State Natural Park
National Park (II): Large natural or near natural area	Special Marine Reserve	Natural Park	National Park	State Natural Park
Natural Monument of feature (III): Protected area aim to protect specific natural monument	Marine Nature Reserve	Natural Monument	Marine Ecosystem Protected Area	Natural Park National Monument
Habitat and Species Management Area (IV): Protected areas aim to protect particular species or habitats	Marine Nature Reserve	Natural Habitat Conservation Area Wildlife Protection Area Protected Water	Marine Ecosystem Protected Area Coastal Wetland Protected Area	Refuges of various significance
Protected Landscape and Seascape (V): Protected area where the interaction of people and nature	Marine Nature Reserve Special Marine Reserve (Ocean Park)	Natural Park Natural Seashore Conservation Area	Marine Ecosystem Protected Area	Refuges of local significance
Protected Area with Sustainable use of Natural Resources (VI): Protected areas conserve ecosystem and habitats	Fisheries Genetic Resources Reserve	Coastal Fishery Resources Enhancement Area Designated Marine Area Common Fishery Right Area Protected Water Various Areas designated by Prefecture Government, Fishery Cooperative Groups of local fishers	Fishery Resources Conservation Area	Refuge of various significance (with limited activities) Dendrological Parks Bothanic Gardens Health improvement localities and resorts

2-3 Actions to achieve Aichi Targets

At present, each NOWPAP member state has developed and has implemented the conservation of marine biodiversity to increase the number and area of MPAs to achieve the Aichi Targets. The following are some reported highlights of such actions.

In China, the Ministry of Environmental Protection developed the “China National Biodiversity Conservation Strategy and Action Plan (2011-2030)” in 2010 in cooperation with other ministries and agencies. This action plan involves 35 prior actions on biodiversity conservation, among which 3 prior areas are for the coastal and marine biodiversity. In the NOWPAP region major target areas include main estuaries and adjacent sea areas in Liaoning Province and Shandong Province, and cold water masses in the central part of the Yellow Sea. Environmental conservation actions newly developed include the improvement of conservation and management of marine biodiversity in priority areas and the strengthening of wetland protection in the Bohai Sea and Yellow Sea.

In Japan, based on the formulated Marine Biodiversity Conservation Strategy, various actions to conserve marine biodiversity are actively promoted to achieve the Aichi Targets. The Ministry of the Environment has reviewed the current national parks and considered the new establishment of marine parks and/or expansion of the existing park areas. Also, scientific studies on marine biodiversity and ecologically or biologically significant marine areas have been initiated with target flora and fauna, such as sea grass beds, coral reefs, plankton, and benthos. Their quantitative assessments and temporal and spatial variation are estimated, and outcomes of the studies can be utilized to develop criteria to identify significant marine areas for marine species.

In Korea, the central government has considered establishing new MPAs and/or expanding current MPAs. At present, various monitoring programs are conducted to obtain data on marine biodiversity in order to set the foundation for establishing new MPAs, so new action will be taken in the future based on the monitoring results.

Russia has also taken action to establish new MPAs. At the same time as developing new MPA definitions by the Ministry of Nature Reserve, experts have selected potential MPA areas in Russian waters.

3. Monitoring and management of selected MPAs in the NOWPAP region

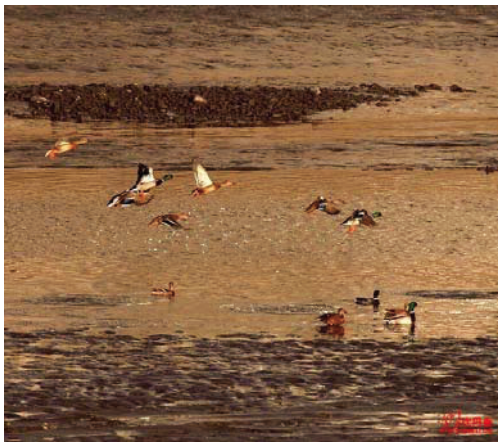
In order to understand the monitoring and management status of MPAs in the NOWPAP region, each member state has selected a few MPAs from each MPA category. The selected MPAs in the NOWPAP member states are listed up in Table 2 and the locations of selected MPAs are shown in Figure 4.

Table 2 List of selected MPAs in the NOWPAP member states

Country	Selected MPAs	
	Category of MPA	Name of MPA
China	Marine Nature Reserve	Haiyang Qianliyan Island Marine Ecosystem Provincial Nature Reserve Yalujiang River Estuary Wetland National Nature Reserve Kongdong Islands Provincial Nature Reserve Changdao National Nature Reserve
	Special Marine Reserve	Zhifu Archipelago National Special Marine Reserve Jiaozhou Bay Wetland Provincial Special Marine Reserve Haizhou Bay National Ocean Park
	Fishery Genetic Resource Reserve	Rongcheng Bay National Fisheries Genetic Resource Reserve Rizhao Sea Area *Coelomactra Antiquata* National Fisheries Genetic Resource Reserve Rushan National Fisheries Genetic Resources Reserve
Japan	Natural Monument	Danjyo Guntou Islands Breading Habitat of Streaked Shearwater and Japanese Cormorant in Awashima Island
	Natural Park	Daisen-Oki National Park San'in Kaigan National Park Niseko-Shakotan-Otaru Kaigan Quasi National Park Genkai Quasi National Park
	Wildlife Protection Area	Kanmurijima-Kutsujima National Wildlife Protection Area Kosado-toubu National Wildlife Protection Area
	Coastal Marine Resource Development Area	Toyama Bay
Korea	Marine Protected Ecosystem Area	Sindu-ri Sand Dune Mun-Sum Oryuk-do
	Coastal Wetland Protected Area	Muan Suncheon Bosung Bulgyo Buan Julpo Bay Gochang Seocheon Jeung-do
Russia		Far Eastern Marine Nature Biosphere Reserve Lazovsky Sikhote-Alin Land of the Leopard Tumninsky Vostok Bay Moneron Island

Figure 4 Location of selected MPAs in the NOWPAP region

Haiyang Qianliyan Island Marine Ecosystem Provincial Nature Reserve, China



Yalujiang River Estuary Wetland National Nature Reserve, China

Genkai Quasi National Park, Japan
(Source: Saga Prefecture)

Kam,irijima-Kutsujima National Wildlife Protection Area, Japan
(Source:
http://www.geocities.jp/k_saito_site/doc/index.html)

Peter the Great Bay, Russia

Moneron Island Shelf, Russia

Detailed information on each selected MPA is shown in Annex 2. As shown in Figure 5, the selected MPAs are scattered from the north to the south in the region with different marine environmental features: from the subarctic zone in Primorsky Krai in Russia to the tidal flat in Yellow Sea.

3-1 Monitoring programs and parameters

Monitoring of the marine environment and marine species is important for adequate management of MPAs. The information on monitoring programs and monitoring parameters is useful in determining the availability of the necessary data in the assessment of marine biodiversity. Monitoring parameters used in the selected MPAs are shown in Annex 3. The following section provides an overview of the monitoring status in each member state. This report deals only with monitoring programs and parameters so that the analysis of monitoring results is not within the scope of this report.

In China, irregularly scheduled investigation and monitoring of the marine environment and

marine species are conducted in some of the MPAs; however, available data are different in each MPA. In MPAs in the category of Marine Nature Reserve, marine environmental parameters of water temperature, salinity, COD and nutrient concentrations are monitored, while among marine species, phytoplankton is the only one commonly monitored. In MPAs under the category of Special Marine Reserve, on top of the parameters monitored in Marine Nature Reserve, pH and DO are also monitored; however, monitoring parameters are different among protected areas. In the case of marine species, phytoplankton is the only common monitoring parameter and zooplanktons and benthos are monitored only in some protected areas. The situation is similar in the Fishery Genetic Resources Reserve, and only seawater temperature and salinity are common parameters while other parameters including pH, DO and COD are not always monitored.

In Japan, no standardized monitoring programs are in place for the MPAs. Some MPAs are designated “Monitoring Site 1000,” which is a monitoring program established by the Ministry of the Environment to collect long-term data. Regular monitoring of sea grass beds and coral reefs has been conducted for such sites while no common monitoring parameters are employed. In coastal areas where some MPAs are designated, environmental monitoring of public waters is periodically conducted by local governments, and monitoring of environmental parameters and phytoplankton, zooplankton, macro-benthos, and sea grass/seaweed beds are regularly conducted at prefectural fisheries experimental stations.

In Korea, national monitoring activities have been conducted since 2006 to improve the understanding of marine biodiversity. The national waters are divided into eight areas, and one area is monitored with common parameters every year on a rotational basis, so all monitoring is completed every eight years. The physical, chemical, and biological monitoring parameters of water temperature, nutrient concentrations, and phyto- and zoo-planktons are recorded and still in process. In wetlands, the benthic environment, habitats, and their distribution are monitored. The second phase of the national wetland monitoring program has been started since 2008.

In Russia, while monitoring programs have been established only in the Far Eastern Marine area and Vostok Bay by analyzing the parameters of water quality, bottom environment, both phyto- and zoo-planktons, macro-benthos, and sea grass/seaweed beds, there is no monitoring programs in other MPAs.

Korea is the only state with a national monitoring program covering all MPAs and is the only state that collects information in an effective and efficient manner. Other NOWPAP member states have monitoring programs; however, they cover part of the MPAs and their monitoring parameters are not standardized. Common parameters include water temperature, nutrient concentrations, and phytoplankton, while other parameters of pH, DO, COD, zooplanktons, macro-benthos, and sea grass/seaweed beds are occasionally monitored depending on the types of MPAs and monitoring programs. In the NOWPAP region as a whole, due to incomplete national monitoring programs and insufficient monitoring parameters directly relevant to marine biodiversity, current monitoring programs and parameters are not considered sufficient tools to

understand the status of marine biodiversity in MPAs. The IUCN guidelines request proper categorization and management based on the purpose of protection of each category. In the case of MPA monitoring in the NOWPAP member states, since there are some different monitoring practices being applied to MPAs in the same categories, it should be necessary to develop standardized monitoring schemes with common parameters.

Another problem in the NOWPAP region is that monitoring data are collected by various ministries and/or agencies. While all monitoring information is accumulated in the Marine Protected Area Center housed at the Korea Marine Environment Management Corporation (KOEM) in Korea, monitoring data are kept by each organization and/or agency in other member states. This is one of the difficulties in grasping the overall picture of the state of the marine environment and species in MPAs. Thus, a system must be developed to consolidate and share all MPA data and information in each member state.

3-2 Management practices set forth by laws and regulations

Adequate management is crucial for marine biodiversity conservation in MPAs so that management practices in MPAs among the member states could help policymakers extend their knowledge learned from other states. The details are shown in Annex 4. This report deals only with management practices set forth by relevant laws and regulations and does not include observation of the actual implementation of management practices and the evaluation of their effects.

In China, Japan, and Korea, activities allowed and/or prohibited in MPAs are clearly specified by relevant laws and regulations, while in Russia, detailed management practices are not specified by national laws and regulations. Specifically in China and Japan, relevant national laws and regulations precisely state the provisions applicable to the MPAs, which lead to differences among MPAs in the same IUCN category in terms of the requirements for management and control. For example, both the Fishery Genetic Resources Reserve in China and the Coastline Marine Resources Development Area and Designated Area in Japan are matched to Category VI of IUCN: Protected Area with Sustainable use of natural resources. The management objective of the Chinese reserves is conservation of generic resources of important aquatic species and their living circumstances in order to promote the sustainable development of fishery, so the practices are set to these MPAs to protect the important fishery resources and their habitats such as hatchery, feeding ground, wintering spot and migration path and so on. On the other hand, a wider range of action is required in Japanese waters, including protection and nurturing of marine species, water quality management, and patrolling to prevent illegal activities, for the purpose of the conservation and growth of aquatic fauna and flora and sustainable use. In Korea, the Fisheries Resource Protection Area is under ICUN Category VI, and emission limits from land to sea are set in these areas. Integrated management approach with the idea of considering terrestrial and marine areas as one

connected area is applied in Korea. Now, it is obvious that MPAs in the same IUCN category are managed in a different way based on different management objectives of the member states.

Though it is not a management practice itself, another important focus of the NOWPAP member states is increasing public awareness through ecological tourism activities while prohibiting activities entailing negative impacts on biodiversity. The role of MPAs is not only to conserve the marine environment and biodiversity but also to let people understand the importance of marine biodiversity and conservation. IUCN states that “Category II areas should be managed for ecosystem protection but should also provide for visitation, non-extractive recreational activities, and nature tourism (e.g. snorkeling, diving, swimming, and boating) and research (including managed extractive forms of research)”. In Japan, along with the formulation of Ecotourism Promotion Policy, more effort has been put into development of ecotourism and environmental education in recent years. So, designating some of MPAs as ecotourism spots without damaging the marine ecosystem can be one of the strategies to expand MPA areas in each member state.

Reportedly, one member state has not conducted regular monitoring and management in MPAs due to a limited budget. This may be a common challenge for all member states. In Europe, in order for a management organization or administrator to identify priority issues for each MPA and to take appropriate action to address the issues even with a limited budget, self-evaluation programs are being implemented on a trial basis.

3-3 Protected species

Annex 5 shows the list of target species to be protected in selected MPAs, which include both endangered and non-endangered species. As shown in the list, protected species include both marine species and onshore species, such as birds and plants. Among the marine species, common endangered species in all of the NOWPAP member states are not found. However, the whooper swan (*Cygnus cygnus*) is designated as a protected species both in Korea and China. To protect such common endangered species, in particular migratory species, bilateral or multilateral efforts among relevant states will be necessary, which may include the development of regional programs/actions with common conservation targets by networking relevant MPAs. Accumulation and sharing information on marine species will contribute to such regional efforts among the NOWPAP member states.

4. Emerging concepts and ideas for marine biodiversity conservation

NOWPAP member states are making serious efforts in order to comply with the Aichi Targets. They are also implementing monitoring programs even though they may partially cover MPAs, as well as enforcing national laws and regulations to ensure adequate management in MPAs. Such efforts need to be continued and strengthened; however, serious challenges were identified that may require new approaches. They include ways to enhance the effectiveness and efficiency in MPA management, ways to conserve biodiversity in open seas and deep seas, and ways to protect common endangered marine species. This section will introduce three internationally emerging concepts and ideas useful for addressing such challenges, and discuss possibility of applying them in the NOWPAP region.

4-1 Self-evaluation of MPA management

Following the adoption of the Aichi Targets, some member states reviewed the regulations and enhanced management practices in MPAs. In order to facilitate such actions on a wider scale and enhance understanding of the issues and challenges by MPA managers, an action taken by the Oslo and Paris Conventions for the protection of the marine environment of the Northeast Atlantic (OSPAR) is a good example. OSPAR developed guidelines for self-evaluation of MPA management (OSPAR 2007) to enhance management effectiveness in MPAs and has applied them to existing MPAs. The guidelines encourage self-evaluation with a scorecard for MPA managers in OSPAR member states. The managers simply mark either 1-4 (Low to High) on each item in the scorecard for the basic management conditions related to development of a management plan, features of a MPA, and the management status, and by this action, the manager can recognize the degree of management and existing problems and try to improve management efficiency and effectiveness. When such a managers' self-review tool is applicable in the NOWPAP region as a continuous improvement system, enhanced effectiveness and efficiency may be realized in terms of MPA management. Therefore, it is worthwhile learning from the experience of OSPAR looking at possible replication in the NOWPAP member states.

4-2 Ecologically or biologically significant marine areas (EBSAs)

Along with expanding MPAs, the concept of *ecologically or biologically significant marine areas* (EBSAs) has attracted attention around the world. The concept of EBSAs is used to help identify potential MPAs in open seas and deep seas where states have no jurisdiction. At CBD COP10, Contracting Parities were requested to collect information on EBSAs along with achieving the Aichi Targets. In the case of OSPAR, some significant marine areas have already been selected in open seas, and related states have been working together to coordinate their joint management. CBD has prepared guidelines for identification of EBSAs. In the NOWPAP region, some member states have been considering application of this concept.

In China, Chinese experts have initiated researches of EBSAs in Chinese territorial waters

and EEZ, and the *China National Marine Biodiversity Conservation Action Plan* will be published in near future.

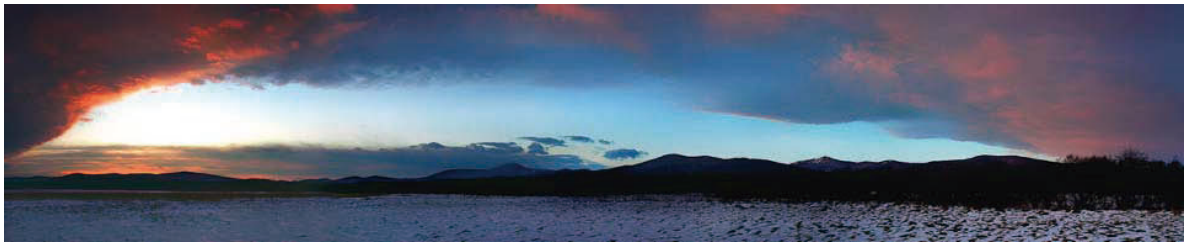
In Japan, a relevant research project is being carried out, funded by the Environment Research and Technology Development Fund of the Ministry of the Environment. The project will collect information on marine species, including sea grass/seaweed, coral reefs, plankton, and benthos, and will implement quantitative assessment and estimation of future temporal and special variations. Making use of the collected information, application of the EBSAs concept has been under consideration by the Ministry of the Environment to identify EBSAs along the Japanese archipelago in the near future.

Russian experts have also initiated identification of EBSAs in its territorial waters and EEZ. The North Pacific Regional Workshop to Facilitate the Description of ecologically or biologically significant marine areas (EBSAs) was held in Moscow in 2013, and the following nine marine areas were suggested as potential EBSAs in Far Eastern Russia:

1. Peter the Great Bay
2. West Kamchatka Shelf
3. South East Kamchatka Coastal Waters
4. Eastern Shelf of Sakhalin Island
5. Moneron Island Shelf
6. Shantary Island Self, Amur and Tugur Bays
7. Commandor Islands Shelf and Slope
8. East and South Chukotka Coast
9. Yamskie Islands and Western Shelikhov Bay.

Among the nine marine areas mentioned above, numbers 1, 4, 5, and 6 were identified as EBSA candidates in the North Pacific at the workshop, and the result of workshop will help promote EBSA identification in the area.

While the NOWPAP member states have established and expanded MPAs in their coastal areas, no mechanism is available so far to establish MPAs in offshore areas. Therefore, it is worthwhile considering the possibility of applying EBSAs concept to both coastal and offshore areas for the NOWPAP member states. In the case of offshore EBSAs, regional cooperation among neighboring states and cooperative management by multiple states, which is implemented by OSPAR members, could be considered.



4-3 Regional networking of MPAs

MPA networking is one of the globally emerging ideas that will help strengthen cooperation among states and relevant national, regional, and international organizations for biodiversity conservation. There are two types of networking modalities: one is connecting neighboring MPAs among multiple states through exchanges between management authorities, and another is networking important areas for spawning and nursery grounds and feeding areas by establishing corridors for migratory species.

Networking of MPAs has been realized in European frameworks, such as OSPAR, the Helsinki Commission (HELCOM), and United Nations Environment Programme Mediterranean Action Plan for the Barcelona Convention (MAP). In Asia, UNDP/GEF Yellow Sea Large Marine Ecosystem Project (YSLME), which aims for ecosystem-based, environmentally sustainable management and use of the Yellow Sea, has been promoting MPA networking among people (e.g. governments, scientists, and NPOs) through cooperation between China and Korea. In addition, the Northeast Asian Subregional Programme for Environmental Cooperation (NEASPEC) initiated a new activity on MPA networking among its member states in 2013.

Although some NOWPAP member countries share borders having similar biota and common threats, regional networking of MPAs has not been realized. However, there are common endangered species in the NOWPAP region and networking of relevant MPAs among member states could be effective in protecting such species. An initial step toward regional networking of MPAs may be to share relevant information with neighboring states including a Red List of endangered marine species developed by each member state.

Korea has developed an integrated management system to consolidate national MPA information. Research data on MPAs have been collected and updated by Marine Protected Area Center housed at the Korea Marine Environment Management Corporation (KOEM). While the center is conducting joint research activities with the National Oceanic and Atmospheric Administration (NOAA, USA) and a research institute in the Wadden Sea, other activities to raise public awareness are also undertaken. This is a good example of cooperation with another region in the respective NOWPAP member states.

5. Recommendations

Based on the findings of this report, it is recommended that NOWPAP member states:

(i) Increase the area of MPAs to achieve the Aichi Targets by 2020.

In the NOWPAP region, while Korea has already established MPAs that account for over 10% of their respective territorial waters, the total area of MPAs is approximately 4% of the whole NOWPAP sea area in 2012. Therefore, it is necessary for member states to increase the area of MPAs to achieve the Aichi Targets by 2020.

(ii) Improve monitoring programs in MPAs, including the implementation of regular monitoring of indicator species, and enhance information collection on endangered marine species.

For the NOWPAP region as a whole, due to incomplete national monitoring programs and insufficient monitoring parameters directly relevant to marine biodiversity, current monitoring programs and parameters need to be improved to adequately understand the status of marine biodiversity in MPAs. In addition, to protect common endangered species in the NOWPAP region, an initial step may be to share a Red List of endangered marine species by each member state and the exchange of such information with neighboring states.

(iii) Realize effective and efficient management of MPAs by identifying priority issues to be addressed in each MPA.

One member state has not conducted regular monitoring and management of MPAs due to a limited budget. This may be a common challenge for all member states. In Europe, in order for a management organization or administrator to identify priority issues for each MPA and take appropriate action to address such issues even with a limited budget, self-evaluation programs are being implemented on a trial basis.

(iv) Study internationally emerging concepts and ideas for the conservation of marine biodiversity and consider possibilities of their application.

In order to address the serious challenges of the enhancement of effectiveness and efficiency in MPA management, conservation of biodiversity in open seas and deep seas, and protection of common endangered marine species, internationally emerging concepts and ideas of self-evaluation of MPA management, EBSAs and regional networking of MPAs may also be useful in the NOWPAP region. NOWPAP may serve as a corporative framework to consider the possibilities of application of such potential concepts and ideas for marine biodiversity conservation.

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Annex I

Categories of MPAs

Categories of MPAs and a brief summary in China

Category of MPA	Number	Covered area	Purpose	Laws and regulations	Authority	Appropriate sea area	Remarks
Marine Nature Reserve	171	128,000 km^2	To protect the natural environment and resources	Management Regulation of Marine Nature Reserve	Oceanic Administration in coastal provinces, autonomous regions, and municipalities	1. Sea areas with a typical ecosystem 2. Sea areas with high marine biodiversity or sea area with a natural and dense distribution of rare and endangered marine species 3. Sea areas with natural marine remains of great scientific and cultural value 4. Sea areas, seashores, islands, coastal wetlands, estuaries, and bays with special protective value 5. Sea area requiring special protection	
Special Marine Reserve	40	6,700 km^2	To protect marine biodiversity and ecosystem services	Management Regulation of Special Marine Reserve	Local government	1. Sea areas with high marine biodiversity or sea area with a natural and dense distribution of rare and endangered marine species 2. Sea areas with a representative natural ecosystem 3. Sea areas with an ecological sensitive and fragile area 4. Sea areas and islands with important value in terms of marine rights, interests and special oceanographic hydrology 5. Sea areas and surrounding waters with marine ecological landscapes, historic cultural relics, and unique geological and geomorphologic landscape 6. Sea areas possessing important biological resources, mineral resources, petroleum resources, and marine energy.	Special Marine Geographic Reserve, Ocean Ecosystem Reserve, Marine Resource Reserve and Ocean Park are included in this category

Fisheries Genetic Resources Reserve	24	72,000 km^2	To protect important aquatic genetic resources and the circumstances of survival, to promote sustainable development of the fishery, to establish a protective network, and to alleviate the adverse effect from human activity	Interim Regulation on Fisheries Genetic Resources Reserve	Fishery administration under local governments at or above the country level	1. Breeding areas for protected aquatic species 2. Breeding areas with a unique distribution of aquatic genetic resources 3. Breeding areas with a distribution of fingerlings of important aquatic species 4. Sea areas with a distribution of genetic resources of great economic and heritage value	
Total	235	206,700 km^2	4.28% of Chinese territorial sea is covered by these systems.				

Annex I

Categories of MPAs and a brief summary in Japan

Category of MPA	Number	Covered area	Purpose	Laws and regulations	Objectives of law	Authority	Remarks
Natural Park	86 (36 sites cover the sea area)	18,600 km^2	To protect outstanding natural scenery and promote its use	Natural Park Act.	The purpose of this act is to protect the places of natural scenic beauty and through the promoted utilization thereof, contribute to the conservation and sustainable use of biological resources, as well as the health, recreation, and culture of the people.	Ministry of Environment or local government	National Park and Quasi National Park are included.
Natural Coastal Protected Zone	91 (Sites are located only in the Seto Inland Sea)	Unknown	To maintain the natural state of the seashores and ponds for bathing, shellfish gathering, and other ocean activities in the future	Act on Special Measures Concerning Conservation of the Environment of the Seto Inland Sea	The purpose of this law is to promote the conservation of the Seto Inland Sea environment by stipulating the matters necessary for the formulation of effective plans and strategies for environmental conservation. The law also provides special measures for restrictions on the installment specified facilities, prevention of damage from eutrophication, and conservation of the natural seashore.	Local government	

Nature Conservation Area	1	1.28 km^2	To conserve the outstanding natural environment requiring particular conservation	Nature Conservation Law	Along with Natural Park Law and other laws for conserving the natural environment, this law will allow the people to enjoy the blessings of the natural environment and sustain it for future generations by ensuring the biological diversity of the areas where conservation of the natural environment is particularly necessary and promoting other integrated conservation measures. The law also aims to contribute to the provision of the healthy cultural lives of the people at present and in the future.	Ministry of Environment	The only site is Sakiyama Bay located in Okinawa Prefecture
Wildlife Protection Area	3,888 (73 sites are designated by MOE and 3,815 sites are designate by prefecture governments)	36,500 km^2 (Sea area is 2,950 km^2)	To protect wildlife	Wildlife Protection and Proper Hunting Act	This act implements activities to protect wildlife by promoting proper hunting and by preventing damage by wildlife to the environment and the agriculture, forestry, and fisheries industries by ensuring biological diversity and by preventing risks through the use of hunting equipment. The act also allows the people to enjoy the blessings of the natural environment by ensuring that the local communities make sound development decisions through contributions to securing biological diversity.	Ministry of Environment or local government	

Natural Habitat Conservation Area	9	Unknown	To conserve national endangered species of wild fauna and flora	Act for the Conservation of Endangered Species of Wild Fauna and Flora	This act aims to conserve the natural environment in a better way by preserving endangered wildlife, while recognizing that wildlife are an essential component of ecosystems in the rich lives of the people and thereby will contribute to the healthy cultural lives of the people at present and in the future.	Ministry of Environment, Ministry of Economy, Trade and Industry or Ministry of Agriculture, Forestry and Fisheries	All sites are located in inland area, not cover sea area
Natural Monument	75	Unknown	To protect animals, plants, geographic features, and minerals of high scientific value	Act for the Protection of Cultural Properties	The purpose of this act is the cultural improvement of the people and advancement of a global culture through the preservation and wise use of cultural assets.	Agency for Cultural Affairs or local government	11 sites cover the sea area
Protected Water Surface	55	29.5 km^2	To protect and cultivate aquatic animals and plants	Act for the Protection of Fishery Resources	The purpose of this act is to ensure the protection and culture of fishery resources, to maintain those advantages for the future, and contribute to the development of the fishery.	Ministry of Agriculture, Forestry and Fisheries	
Coastline Marine Resource Development Area and Designated	31	309,900 km^2	To promote the streamlining of the development and use of marine fishery resources through measures	Marine Resources Development Promotion Act		Ministry of Agriculture, Forestry and Fisheries or local government	

Area			to systematically promote the multiplication and aquaculture of aquatic animals and plants				
Area designated by prefecture, fishery operator group	Unknown	Unknown	To protect and cultivate aquatic animals and plants, and to secure their sustainable use	Fishery Act Act for the Protection of Fishery Resources Fishery Cooperative Act	The purpose of these acts is to establish a basic fisheries production system in which fisheries adjustment organizations consisting of fishery managers and fishery employees can be operated for the systematic use of national waters to enhance fisheries productivity and to democratize the fishing industry.	Local government or fishery operator group	
Common Fishery Right Area	Unknown	89,587 km^2	To enhance fisheries productivity (protect and cultivate aquatic animals and plants, and ensure sustainable use)	Fishery Act		Local government or fishery operator group	
Total	4,236	454,618 km^2	8.3% of the Japanese territorial sea and exclusive economic zone is covered by these systems.				

Categories of MPAs and a brief summary in Korea

Category of MPA	Number	Covered area	Purpose	Laws and regulations	Authority	Remarks
Protected Marine Area (Marine Ecosystem Protected Area)	6	219 km^2	To protect and conserve the marine ecosystem, sea areas are designated MPAs and managed by 10-year plans and surveys	Conservation of Marine Ecosystem Act (Marine Ecosystem Conservation and Management Law)	Ministry of Ocean and Fisheries, Korea Marine Environment Management Cooperation	
Wetland Protection (Coastal Wetland Protected Area)	12	141.4 km^2	To protect and conserve the inland and tidal wetlands, human activities and anthropogenic influences are minimized through five-year plans and surveys	Wetland Conservation Act	Ministry of Ocean and Fisheries/Ministry of Environment, Korea Marine Environment Management Cooperation	
Marine Environment Conservation	4	1,882 km^2	To enhance the sustainable usage of marine environments and understand the status of marine environmental quality, five-year plans and periodic surveys are prepared and executed	Marine Environment Management Act	Ministry of Ocean and Fisheries	
Fisheries Resource Protection	10	3,034 km^2	To enhance fisheries resources and the	National Land Planning and Utilization Act	Ministry of Ocean and Fisheries, Korea	

(Fisheries Resource Protected Area)			sustainable use of the marine environment for the fisheries industry	(Fisheries Resources Protection Law)	Fisheries Resource Agency	
Specific Island	167	10.5 km^2	To protect specific islands for their ecological value and significance	Special Law for Specific Island Conservation and Management	Ministry of Environment	
National Park	4	3,348 km^2	To protect significantly valuable natural resources from human activities and anthropogenic inputs and to provide natural resources for human welfare	Natural Park Act	Ministry of Environment, Korea National Park Service	
Ecosystem/Landscape Conservation	3	34.6 km^2	To protect the conserved ecosystem and landscape	Natural Environment Conservation Act	Ministry of Environment	
Wildlife Protection	166	207.8 km^2	To protect endangered living organisms and increase the populations of those species	Wildlife Act	Ministry of Environment	
Natural Heritage	193	1,126 km^2	To conserve and protect natural monuments and special indigenous species	Cultural Heritage Protection Act	Cultural Heritage Protection Administration	
Total	565	10,003 km^2	14.1% of the Korean territorial sea area is covered by these systems.			

Categories of MPAs and a brief summary in Russia

Category of MPA	Number	Covered area	Purpose	Laws and regulations	Authority	Remarks
State Natural Reserve including biosphere	Unknown	Unknown	The main objectives of the reserve are the preservation of intact ecosystems and the study of natural processes.	On Specially Protected Natural Areas		Zapovednik is an established term on the territory of the former Soviet Union for a protected area that is kept forever wild. This is the highest degree of environmental protection for assigned areas that are strictly protected.
State Natural Park	Unknown	Unknown	Conservation, recreation and education	On Specially Protected Natural Areas		National parks are environmental, ecological, and educational and research territories (areas) that include natural complexes and objects of special ecological, historical, and aesthetic value and that are intended for environmental, educational, scientific, and cultural purposes and controlled tourism.
Natural Park	Unknown	Unknown	Conservation, recreation and education	On Specially Protected Natural Areas		Only the local, municipality significance level
National Monument	Unknown	Unknown	To preserve small natural areas (groves, gorges, breeding colonies etc.)	On Specially Protected Natural Areas		
Refuges of various	Unknown	Unknown	To preserve some natural	On Specially Protected		The natural complexes and objects are

significance			complexes and objects	Natural Areas		limited to certain types of economic activities.
Refuges of local significance	Unknown	Unknown		On Specially Protected Natural Areas		
Dendrological Park	Unknown	Unknown		On Specially Protected Natural Areas		
Botanic Garden	Unknown	Unknown		On Specially Protected Natural Areas		
Health Improvement Localities and Resort	Unknown	Unknown		On Specially Protected Natural Areas		
Total	Unknown	Unknown				

Annex II

Overview of the selected MPAs

Overview of the selected MPAs

Country	Selected MPA	Characteristic and oceanic condition around MPAs
China	Haiyang Qianliyan Island Marine Ecosystem Provincial Nature Reserve	Qianliyan Island is located in the southern Yellow Sea and the reserve consists of 1,823 hectares with a core area of 52 hectares, a buffer area of 207 hectares, and an experimental area of 1,564 hectares. This island is abundant in bird species, and many are birds and plants are found there. Among the species in the area are rare Japanese camellia and medical honeysuckle, Chinese wolfberry and *Radix bupleuri*. With many peaks and valleys, this island has a reputation for scenic beauty. This sea area is abundant in rare seafood resources like *Abalon* and *Holothurioidea*. The annual mean temperature is 11.4˚C, the range of seawater temperature is 5.2˚C to 29.1˚C, and the range of salinity is from 30.17 to 38.8 psu.
	Yalujiang River Estuary Wetland National Nature Reserve	The Yalujian River serves as the border between China and North Korea. The MPA conserves 311 km^2 of land, 60 km^2 of reed marshes, 242 km^2 of tidal flats, and 466 km^2 of sea. The annual mean temperature is 8.9˚C. This area has a high tide range and the mean tide range is 4.6 m.
	Kongdong Islands Provincial Nature Reserve	Kongdong Island is located offshore of Yantai City. The annual mean temperature is 12.5˚C. The mean sea surface temperature is 12.6˚C, and the mean salinity is 29.98 psu.
	Changdao National Nature Reserve	Changdao Island is located between the Bohai Sea and Yellow Sea and consists of 32 islands. The annual mean temperature is 11.9˚C. The annual mean SST is 11.5˚C, and the mean salinity is 31.33 psu.
	Zhifu Archipelago National Special Marine Reserve	The Zhifu Archopelago is located offshore of Yantai City. The annual mean temperature is 12.5˚C. The annual mean SST is 12.6˚C, and the annual mean salinity is 29.98 psu.
	Jiaozhou Bay Wetland Provincial Special Marine Reserve	Jiozhou Bay is located in the southern Yellow Sea near Qingdao. The annual mean temperature is 12.5˚C. The transparency in the bay is between 0.5 m to 6.0 m.
	Haizhou Bay National Ocean Park	Haizhou Bay is located to the south of the Yellow Sea. The annual mean temperature is 14.3˚C. The SST in summer is 27.7˚C and in winter is 3.1˚C. The annual mean salinity is 30.69 psu.
	Rongcheng Bay National Fisheries Genetic Resource Reserve	Rongcheng Bay is located at the tip of the Shadong Peninsula. The annual mean temperature is 11.1˚C. The annual mean SST is 13.3˚C, and the annual mean salinity is 31.75 psu.

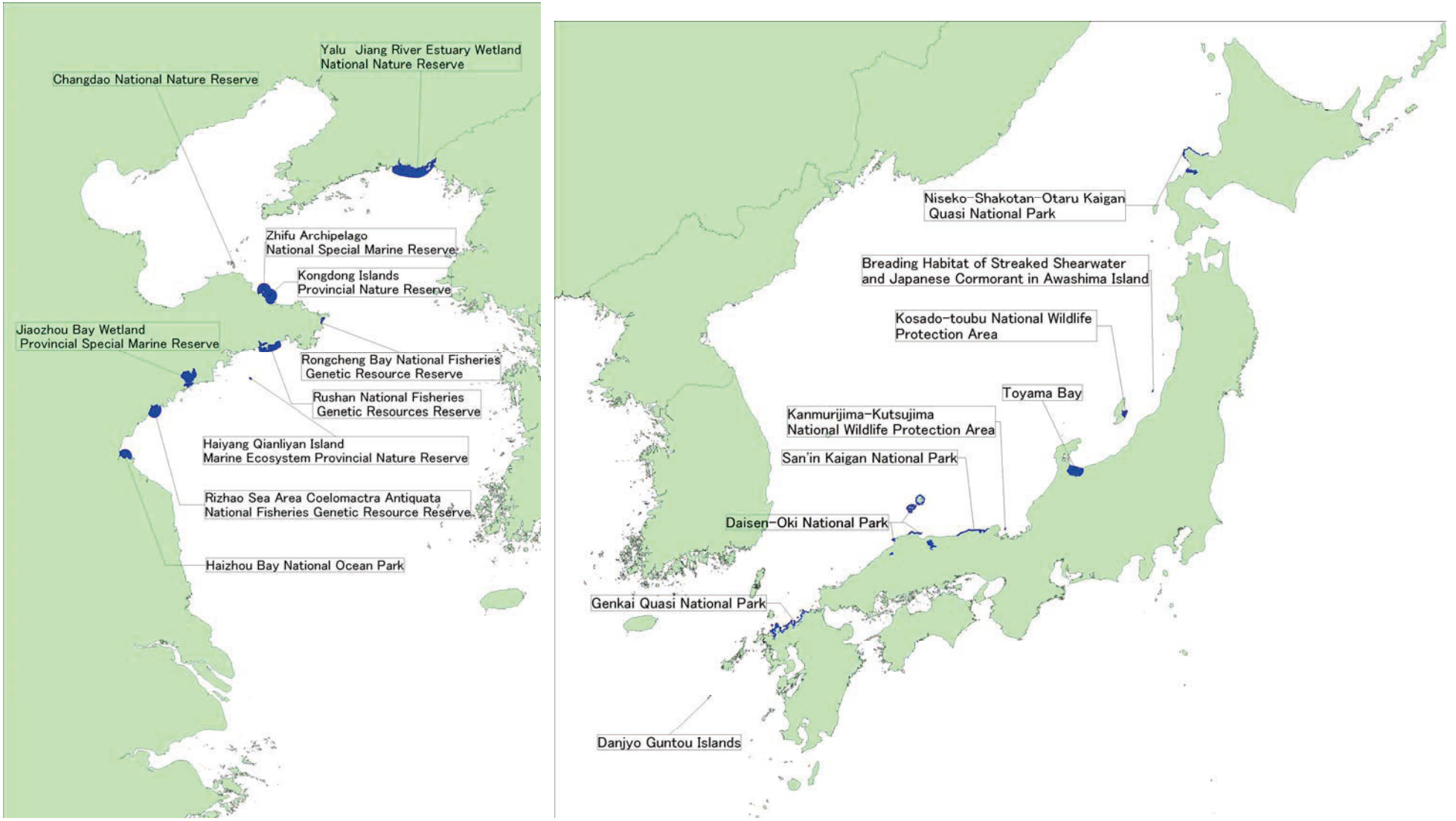
	Rizhao Sea Area Coelomactra Antiquata National Fisheries Genetic Resource Reserve	The Rizhao Sea area is located between Jiaozhou Bay and Haizhou Bay. This area is habitat for the *Coelomactra antiquata* (antiqua mactra). The annual mean temperature is 12.7˚C, and the maximum current velocity is 1.2 m/s.
	Rushan National Fisheries Genetic Resources Reserve	Rushan is located at the mouth of Jiaozhou Bay. The annual mean temperature is 11.7˚C.
Japan	Danjyo Guntou Islands	The Danjyo Guntou Islands are located in Nagasaki Prefecture and consist of five islands. The Kuroshio and Tsushima Currents flow around the islands making the climate temperate. Therefore, the islands have some kinds of southern plants but are also the northern limit of the habitat for *Cinnamomum daphnoides*. This area is a good fishing ground.
	Breading Habitat of Streaked Shearwater and Japanese Cormorant in Awashima Island	This island is located offshore of Niigata Prefecture. Most of the island is rocky and serves as the breeding grounds for the streaked shearwater and the Japanese cormorant.
	Daisen-Oki National Park	The national park is located in Shimane Prefecture. The Tsushima Current flows around the National Park creating a southern temperate zone for a variety of biota that make the park their habitat. In the shallow area, sea grass beds are formed. Daisen-Oki National Park has five marine park areas: Shimane Peninsula Marine Park Area (7 ha), Jyoudogaura Marine Park Area (2 sites, 20.8 ha), Shiro Marine Park Area (14.8 ha), Kuniga Marine Park Area (7.3 ha), and Ama Marine Park Area (7.6 ha).
	San'in Kaigan National Park	This National Park covers the coastline of Kyoto, Hyogo, and Tottori prefectures. The Tottori dunes area is characteristic of this national park. San'in Kaigan National Park has five marine park areas: Goshiki-hama Marine Park Area (20.7 ha), Toyooka Marine Park Area (7.6 ha), Takeno Marine Park Area (9.9 ha), Hamasaka Marine Park Area (2 sites, 19.2 ha), and Uratomi Marine Park Area (9.8 ha).
	Niseko-Shakotan-Otaru Kaigan Quasi National Park	This quasi-national park is located on the western side of Hokkaido Prefecture. The oceanic climate is subarctic. However, the warm Soya Current flows offshore of the park creating ideal conditions for temperate and subarctic biota.

		In Niseko-Shakotan-Otaru Kaigan Quasi-National Park, there are two marine park areas: Shakotan Peninsula Marine Park Area (3 sites, 28.9 ha) and Otaru Coast Marine Park Area (3 sites, 14.7 ha).
	Genkai Quasi-National Park	Genkai Quasi-National Park is located in the northern part of Kyushu Island. The Tsushima Current flows offshore of the park creating a temperate environment. Around the park, finless porpoises and common dolphins are found. In Genkai Quasi-National Park, there is one marine park area: Genkai Marine Park Area (5 sites, 45.5 ha).
	Kanmurijima-Kutsujima National Wildlife Protection Area	This MPA is located offshore of Kyoto Prefecture. These Islands are the largest habitat for the streaked shearwater in Japan. In addition, many birds, such as Swinhoe's storm-petrel listed on the Red List of Japan have their habitat. These islands are in the temperate zone.
	Kosado-toubu National Wildlife Protection Area	Sado Island is located offshore of Niigata Prefecture. The climate of this area is temperate.
	Toyama Bay	Toyama Bay is located in the middle of Japan as one of the deepest bays in the country. Surface water is influenced by the Tsushima Current. In the other hand, under 300 m in depth, the water temperature is under 2˚C.
Korea	Sindu-ri Sand Dune	This MPA is located on the west coast of Korea (Taean, Chungchoengnam) and faceas to Yellow Sea. This MPA has the largest coastal sand dunes of Korea and is famous for the unique landscapes and colony of sand dune plants. It is approximately 4 km in length and 1 km wide. The surface sediment is dominated by well-sorted sand and muddy sand.
	Mun-Sum	This MPA is located on Jeju Island (Seoguipo, Jeju). Munsum MPA is famous for its unique coral community and endemic marine organisms, such as sea cockscombs and seaweed in Korea. This MPA consists of Munsum Island, Bamsum Island, and Supsum Island. This area is a rocky shore habitat with a sand bottom.
	Ohryuk-do	This MPA is located in the southeast coast of Korea near Busan. Ohryuk-do MPA is famous for pristine landscape, cliffs, rocks, and organisms. It consists of Bangpae Island, Songkot Island, Suri Island, and Deungdae Island, etc.

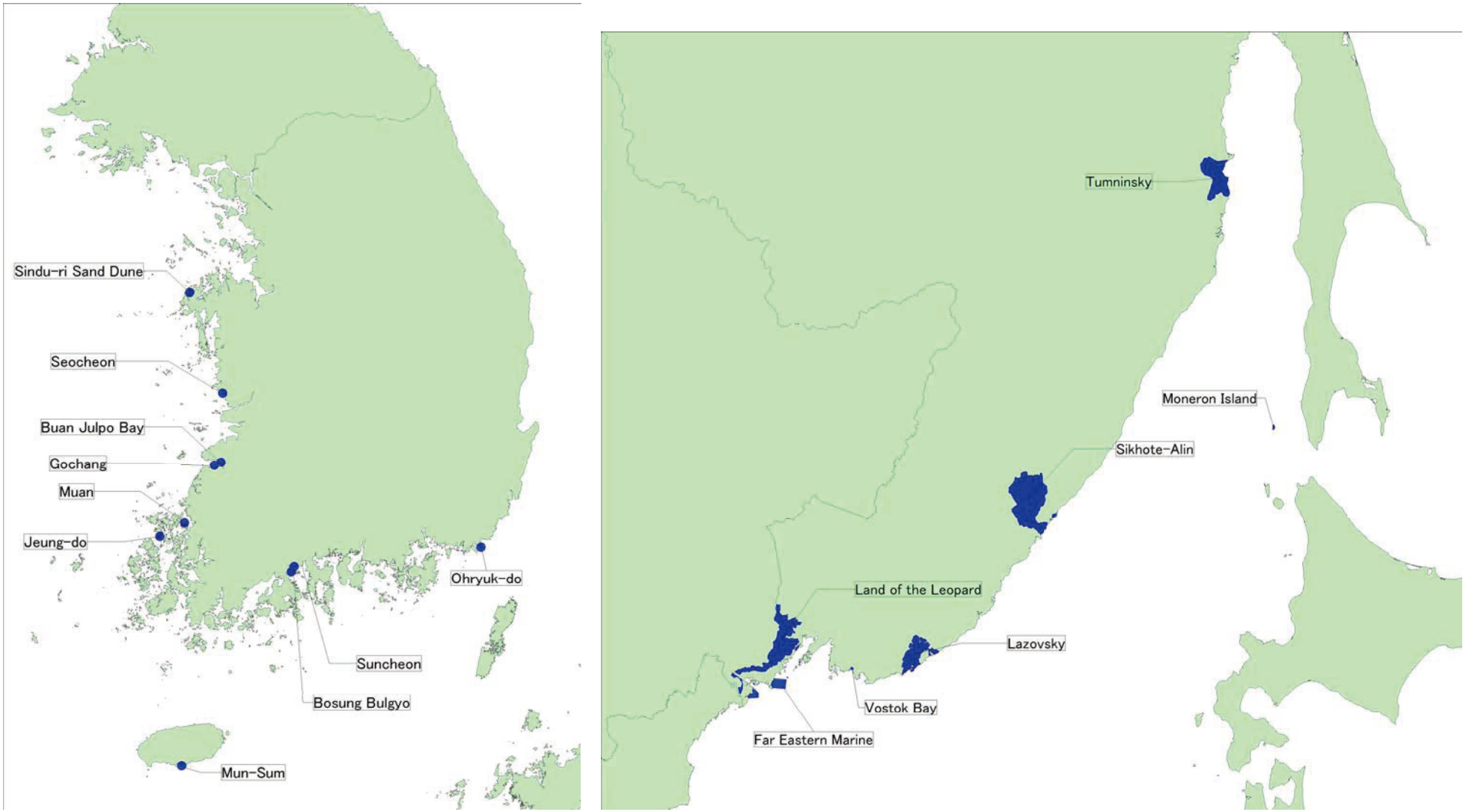
	Muan	This MPA is located in the southwest coast of Korea (Muan, Jeollanam). The Muan tidal flat is part of Hamhae Bay. This area has been designated the first Coastal Wetland Protected Area in Korea because of the geological biodiversity. This MPA was designated a Ramsar Site in Jan. 2008.
	Suncheon	This MPA is located in Suncheon Bay on the south coast of Korea. The Suncheon Bay tidal flats are part of the inner Yeoja Bay located in south-central Korea. This area has been designated for habitat conservation of migratory birds such as the hooded-crane *Grus monacha* and the huge colony of reeds.
	Bosung Bulgyo	This MPA is located on the south coast of Korea (Boseong, Jeollanam). This MPA is distinct for its mud dominated sediment composition and provides major habitats for blue spotted mud hoper *Boleophthalmus pectinirostris* and the Malaysia clam *Tegillarca granosa*.
	Buan Julpo Bay	This MPA is located on the west coast of Korea (Buan, Jeollabuk). It has a primitive ecosystem and a variety of halophytes: *Phragmites communis, Suaeda japonica,* and *Suaeda asparagoides*.
	Gochang	This MPA is located on the west coast of Korea (Gochang, Jeollabuk). This MPA is designated by its natural primitiveness, high biodiversity, high abundance of macrobenthos and habitats for birds. The Gochang tidal flat is a main production area for the Manila clam *Ruditapes phillippinarum*.
	Seocheon	This MPA is located on the west coast of Korea (Seocheon, Chungnam). Various macrobenthic organisms and commercial species live in this area due to its primitive habitat and high heterogeneity of sediment composition. This MPA is composed of two parts: one is designated along the coastal line and the other is designated adjacent to Yoobu Island.
	Jeung-do	This MPA is located on the offshore islands in the southwest of Korea (Shinan). This MPA is composed of two area: one is the area around Jeungdo Island, the other is around Byeongpungdo Island. Before designation as a MPA, some parts of Jeungdo had been designated a UNESCO-MAB Biosphere reserve in May 2009.

Russia	Far Eastern Marine	Total area 64,316.3 ha, including 63,000 ha of sea areas. Four plots of waters with different levels of protection, the 12 islands, and the coast of the Gulf. The eastern section covers an area of 45,900 hectares, south - 15,200 hectares, north - 216.3 hectares, and west - 3000 ha. The purpose of the reserve - the preservation of the richest composition of coastal fauna and flora and their natural environment, as well as the island fauna and flora of the Gulf of Peter the Great for scientific research and education in the field of marine environments.
	Lazovsky	Lasovsky Zapovednik encloses 120,989 hectares surrounded by a protected area of an additional 15,000 hectares. The length is 240 km with 36 km along the seacoast. The objectives of the creation of the reserve are the preservation and study of natural systems of coniferous and deciduous forests of southern Sikhote-Alin and the protection and recovery of populations of rare and valuable animals, especially mountain and spotted deer.
	Sikhote-Alin	A total of 401,428 hectares, including 2,900 hectares of sea area. In the UNESCO classification, it is shown as an object that includes the most important or considerable habitat for conservation of biological variety, including endangered species of exclusive global value from the point of view of science and protection.
	Land of the Leopard	Preservation of the Amur leopard and the whole natural complex. Total area more 280 000 ha.
	Tumninsky	An area of 143 100 ha serves as the main object of protection for the eastern forest macro-Sikhote-Alin, adjacent to the coast of the Tatar Strait. Among the protected species - the Amur tiger, white-tailed eagle, Steller's sea eagle, golden eagle, fish owl, the osprey, mandarin duck, merganser, spruce grouse, black crane, black stork, Far stork, and peregrine falcon.
	Vostok Bay	The reserve was established in 1989 to preserve the marine flora and fauna of the East Bay for research, development of biological principles, and the organization and development of plantations of mariculture. The reserve consists of 1820 ha. The main problem is the study of genetic differentiation of populations and species of marine animals, the genetic basis of speciation analysis of the adaptive significance of protein polymorphism, heterozygosity for enzyme conjugate loci with the variability of morphological characters, the

		study of genetically effective population size, ecological and genetic monitoring of populations.
	Moneron Island	This is a biodiversity hotspot, high diversity of benthic communities. The intact marine ecosystem hosts sponges and bryozoans aggregations, and red hydrocorals. This is the northern boundary of the abalone (Haliotis) range. The density of abalone changes and is caused by natural factors. This area is the only rookery for Steller's sea lions in the southern part of the Sea of Okhotsk (boundary water mass between Sea of Okhotsk and the Sea of Japan).The sea around the island has the highest density of zooplankton. A branch of the Kuroshio Current causes high biodiversity of the area. High density of marine flora and zooplankton is the result of local upwelling, which also results in a high diversity of fish species and benthic organisms. Moneron island and the smaller island contain large seabird colonies with nesting areas for many species of birds connected to the marine realm. There is no human activity in the area now, except for occasional tourists. If this situation remains unchanged, the Moneron shelf will not degrade. The area is currently protected under Russian national law for its biodiversity values.



Location of the selected MPAs in China (left), and in Japan (right)



Location of the selected MPAs in Korea (left), and in Russia (right)

Annex III

Monitoring parameters in the selected MPAs

Monitoring parameters in the selected MPAs

Country	Category of MPA	The selected MPA	Monitoring parameters on marine environment (ME), bottom environment (BE) and marine species (MS)
China	Marine Nature Reserve	Haiyang Qianliyan Island Marine Ecosystem Provincial Nature Reserve	ME: temperature, sea surface temperature (SST), salinity MS: none
		Yalujiang River Estuary Wetland National Nature Reserve	ME: chemical oxygen demand (COD), phosphate, inorganic nitrogen, oil and grease MS: phytoplankton, benthic animal
		Kongdong Islands Provincial Nature Reserve	ME: phosphorus, chlorophyll a, inorganic nitrogen MS: phytoplankton
		Changdao National Nature Reserve	ME: pH, dissolved oxygen (DO), phosphorus, inorganic nitrogen MS: phytoplankton
	Special Marine Reserve	Zhifu Archipelago National Special Marine Reserve	ME: pH, DO, COD, phosphate, oil and grease MS: phytoplankton
		Jiaozhou Bay Wetland Provincial Special Marine Reserve	ME: pH, DO, COD, inorganic nitrogen MS: phytoplankton, zooplankton, benthic animal
		Haizhou Bay National Ocean Park	ME: pH, DO, COD, phosphorus, ammonium MS: phytoplankton
	Fishery Genetic Resource Reserve	Rongcheng Bay National Fisheries Genetic Resource Reserve	ME: temperature, SST, salinity MS: phytoplankton, benthic animal
		Rizhao Sea Area *Coelomactra Antiquata* National Fisheries Genetic Resource Reserve	ME: pH, salinity MS: phytoplankton
		Rushan National Fisheries Genetic Resources Reserve	ME: salinity, pH, DO, COD, phosphorus, ammonium, nitrate, nitrite MS: phytoplankton

Japan	Natural monument	Danjyo Guntou Islands	ME: none MS: none
		Breading Habitat of Streaked Shearwater and Japanese Cormorant in Awashima Island	ME: none MS: seabirds with video camera, Streaked shearwater
	Natural park	Daisen-Oki National Park	ME: none MS: seaweed, seagrass
		San'in Kaigan National Park	ME: none MS: seaweed, seagrass
		Niseko-Shakotan-Otaru Kaigan Quasi National Park	ME: none MS: none (If trouble is happen, monitoring will be conducted)
		Genkai Quasi National Park	ME: none MS: none
	Wildlife protection area	Kanmurijima-Kutsujima National Wildlife Protection Area	ME: none MS: birds
		Kosado-toubu National Wildlife Protection Area	ME: none MS: none, only regular patrol
	Coastal marine resource development area	Toyama Bay	ME: water temperature, salinity, water color, transparency, pH, turbidity, DO, COD, nitrate, ammonia, nitrogen, phosphate, silicate, chlorophyll a, BE: temperature in sediment, color of sediment, grain size, ignition loss, sulfide, COD MS: phytoplankton, zooplankton, macrobenthos, seaweed, sea grass

Korea	Marine Ecosystem Protected area	Sindu-ri Sand Dune Mun-Sum Oryuk-do	ME: water temperature, salinity, pH, DO, COD, suspended solids, particulate organic carbon, total organic nitrate, silicate, dissolved inorganic nitrate, dissolved inorganic phosphate, chlorophyll a BE: grain size, TOC, TN, $CaCO_3$, heavy metals MS: Microbiological parameters; total cell number, distribution of heterotrophic bacteria, molecular-based phylogenic analysis, bacterial community analysis by pyrosequencing Phytoplankton; chlorophyll a, species composition, cell number, diversity index, dominant species Zooplankton; seasonal and spatial biomass, species composition/community analysis, diversity index, cluster analysis Benthic organisms; number, species composition Ichthyoplankton; non-vertebrates, vertebrate
	Coastal wetland protected area	Muan Suncheon Bosung Bulgyo Buan Julpo Bay Gochang Seocheon Jeung-do	

Russia		Far Eastern Marine Nature Biosphere Reserve	ME: water temperature, salinity, water color, transparency, pH, turbidity, DO, COD, nitrate, ammonia nitrogen, phosphate, silicate, chlorophyll a, heavy metals BE: temperature in sediment, color of sediment, grain size, ignition loss, sulfide, COD MS: phytoplankton, zooplankton, macrobenthos, seaweed/sea grass
		Lazovsky	ME: none MS: none
		Sikhote-Alin	ME: none MS: none
		Land of the Leopard	ME: none MS: none
		Tumninsky	ME: none MS: none
		Vostok Bay	ME: water temperature, salinity, water color, transparency, pH, turbidity, DO, COD, nitrate, ammonia nitrogen, phosphate, silicate, chlorophyll a, heavy metals BE: temperature in sediment, color of sediment, grain size, ignition loss, sulfide, COD MS: Phytoplankton, Zooplankton, Macrobenthos, Seaweed/Sea grass
		Moneron Island	ME: none MS: none

Annex IV

Management practices in each MPA category

Management practices in each MPA category in China

Category of MPA	Authorities of management	Contents of management
Marine Nature Reserve	Oceanic administration in coastal provinces, autonomous regions and municipalities	- Implementation of polices, regulations and laws that are related to marine nature protection - Enacting of detailed regulations and rules, and the centralization of the administration of all activities - Drafting of overall construction planning of nature reserve - Installation of landmarks, makers and relevant protection facilities - Organization and implementation of the works of basic investigation, monitoring and surveillance - Organization and implementation of scientific researches and ecosystem restoration - Public awareness on marine nature protection
Special Marine Reserve	Local people's government at or above the country level	- Working out and implementing the management regulation - Organizing the facility construction of supervision, scientific research, tourism, propaganda, management and the protection - Organizing and conducting the routine patrol management - Organizing and enacting the ecological compensation project as well as ecological restoration and protection plan, practicing the measures of restoration and ecological compensation and protection - Organizing and managing the ecological tourism activities - According to relevant technological index, the management institution of Special Marine Reserve should conduct the status investigation regularly including the extents of socio-economic conditions, exploration of resources and ecological environment work of monitoring, surveillance and assessment
Fishery Genetic Resources Reserve	Fishery administration under local governments at or above the country level	- Setting special protection periods to crucial growth and breeding stages, including breeding and larval growth period of major protected objects - In charge of the regular work of aquatic genetic resources reserves

Regulations in each MPA category in China

Category of MPA	Actions that are forbidden	Actions that require permission
Marine Nature Reserve	- Moving, relocating or damaging landmarks, marker and relevant protection facilities - Illegal collecting and fishing marine organisms - Illegal quarrying, sand excavation and exploring mine - Other behavior damaging protected objectives and nature environment and resources	- To build facilities with the permission of authorities - Inspection, scientific tourism, and teaching practice - During relative protection period, activities can be implemented except hunting or injuring protected objects
Special Marine Reserve	- Hunting and collecting bird egg - Cutting the mangrove, excavating coral and damaging coral reef - Use of explosives, poison and electricity to fishing - Directly discharging pollutant to the sea - Collecting, Processing and selling the products of mineral, wild flora and fauna illegally - Moving, staining and damaging the protection facilities	- Scientific research - Ecological tourism - Propaganda - The status investigation including the extents of socio-economic conditions, exploration of resources - Ecological environment monitoring
Fishery Genetic Resources Reserve	- Fishing, blasting operation and other activities damaging ecological resources and environment during special protection period - Reclaim land from lakes and sea or undertake sea reclamation - To build new outlet	- Survey on aquatic resources, scientific research - Tourism - Teaching practices and film shooting - Engaged in construction project in reserves

Regulations in three classes of areas in Marine Nature Reserve

Area	Regulations
Core area	Activities harmful or adverse to the reserve are forbidden, except investigation, observation and scientific researches approved by management authorities.
Buffer area	Activities such as fishery production, tourism, scientific research, and teaching practice are permitted in limited times and spheres after being approved by management authorities.
Experimental area	Proper explorations can be executed under the unified planning and conduction of the reserve management authorities.

Management practices in each MPA category in Japan

Category of MPA	Authorities of management	Contents of management
Natural Park	National Park: Ministry of Environment Quasi National Park: Local government	- Formulating park plans concerning the regulation or works for the protection or utilization of the National Parks or Quasi-national Parks - Deciding and executing the works based on the Park Plan - Maintaining the cleanliness of facilities such as the roads, picnic grounds, camping grounds, ski slopes, swimming areas, and other public use sites located in National and Quasi-national Parks - Planning and executing measures to ensure the diversity of the ecosystem and creatures in the natural parks for conserving the scenic beauty of the parks
	Park management organizations	- Managing and preserving natural scenic beauty - Maintaining and managing the facilities within the National or Quasi-national Park including repairs. - Collecting and providing information/materials concerning the protection of the National or Quasi-national Park and promotion their proper use. - Offering appropriate advice/guidance concerning the protection of the National or Quasi-national Park and promotion their proper use - Studying and researching the protection of the National or Quasi-national Park and promotion of their proper use.
Natural Coastal Protected Zone	Ministry of Environment, local government	- Formulating basic plans and strategies on conservation of water quality and natural scenery to promote the conservation of the Seto Inland Sea environment - Formulating prefectural plans and strategies for conservation of the Seto Inland Sea environment based on the basic plans - Reducing discharges of phosphorus and other designated substances to the public water areas for preventing damage by eutrophication - Designating areas for conservation of natural beaches - Promoting establishment/improvement of facilities for

		conservation of water quality in the Seto Inland Sea such as sewages, treatment facilities of wastes, dredging of sludge, monitoring and measurement of water quality
Nature Conservation Area	Ministry of Environment	- Conducting baseline surveys on landscape, geographical conditions, vegetation, and wildlife every five years, which is necessary to formulate measures on conservation of the natural environment - Formulating basic policies on conservation of the natural environment - Formulating conservation plans for Nature Conservation Areas - Formulating and Implementing plans on preservation and recovery of ecosystem based on the Conservation Plan
Wildlife Protection Area	Ministry of Environment or local government	- Formulating management plans on specific wildlife - Implementing Conservation of wildlife in Wildlife Protection Areas - Designating closed season of hunting in Special Protection Areas
Natural Habitat Conservation Area	Ministry of Environment	- Designating National Endangered Species of Wild Fauna and Flora - Understanding the situations/conditions of wild fauna and flora - Formulating integrated measures to conserve endangered species of wild fauna and flora - Implementing integrated measures to conserve endangered species of wild fauna and flora
Natural Monument	Agency of Cultural Affairs	- Installing equipment for management such as signs, markers and boundary fences - Restoring natural monuments - Conserving the Environment - Conducting researches for preservation
Protected Water Surface	Ministry of Agriculture, Forestry and Fisheries, and Local government	Formulating management plans - Summary of marine fauna and flora to increase, increasing methods and its facilities - List of marine fauna and flora of which hunting is restricted or prohibited, and details of the restriction or prohibition - List of fishing gear and/or fishing boats by which hunting is restricted or prohibited, and details of the restriction or prohibition

Coastline Marine Resource Development Area, and Designated Area	Ministry of Agriculture, Forestry and Fisheries, and Local government	Formulating development plans of coastal marine resources - List of marine fauna and flora to increase and/or cultured and goals - Matters of breeders, stock and seedling of marine fauna and flora - Matters on development and improvement of fishery production and relevant facilities - Matters on conservation of growing environments of marine fauna and flora- Matters to promote increase and culture of marine fauna and flora - Monitoring of water contamination - Concluding an agreement on resource management - Lists of marine areas to be targeted in the agreement, marine resources and types of fishing - Managing methods of marine resources - Duration of the agreement - Measures/Punishment for violation of the agreement - Other matters stipulated in the Ordinance of the Ministry of Agriculture, Forestry and Fisheries
Area designated by prefecture, fishery operator group Common Fishery Right Area	Local government and Fishery association	Fishery management by a fixed gear fishery right, a demarcated fishery right or a common fishery right Resource management by setting closed areas and seasons by local government and fishery associations

Subarea in National Parks and Quasi National Parks

Natural Park	Special Zone	Zones to preserve scenic beauty of natural parks. There are three categories.	
		Class I	Priority Zones which possess important scenery next to Special Protection Zones. Preserving scenic beauty of the zones is necessary.
		Class II	Zones where special coordination with agriculture, fishery, and forestry activities is necessary
		Class III	Zones where ordinary agriculture, fishery, and forestry activities do not give impact on preservation of their scenic beauty
	Special Protection Zone	Special Protection Zones in Special Zones	
	Marine Park Zone	Marine Zones to preserve seascapes	
	Use Coordination Zone	Zones to promote preservation and appropriate use of scenic beauty of natural parks	
	Ordinary Zone	Other areas in natural parks	

Regulations in each MPA category in Japan

MPA categories	Actions which need permission
Natural Park (National Park and Quasi National Park)	Special Zone 1. Constructing and/or renovating structures and/or building extensions 2. Felling trees 3. Damaging trees in the designated areas by Minister of the Environment 4. Mining minerals and/or quarrying 5. Influencing the change and/or volume of water in rivers, and/or lakes 6. Discharging wastewater by installing facilities on or near the lakes and/or wetlands and/or waterways on the designated lakes and wetlands by the Minister of the Environment and their surrounding areas (1kilometers) 7. Installing advertising materials 8. Collecting and keeping stones and rocks and others in open areas, that are designated by the Minister of the Environment 9. Land filling and/or digging marine areas 10. Developing land and changing its landscape 11. Collecting and/or damaging designated alpine flora by the Minister of the Environment 12. Planting and/or sowing seeds of non-indigenous plants that are designated by the Minister of the Environment as potential harm to preservation of the scenic beauty in the designated areas by the Minister 13. Hunting, killing and/or damaging designated alpine fauna by the Minister of the Environment, and/or collecting and/or damaging eggs 14. Releasing non-indigenous fauna that are designated by the Minister of the Environment as potential harm to preservation of

	scenic beauty in the designated areas by the Minister 15. Changing colors of roofs. walls, fences, bridges, steel towers, waterlines, and/or others 16. Entering designated areas by the Minister of the Environment in wetlands and relevant areas during the permitted season 17. Using vehicles, horse-drawn carriages, and/or motorboats, and/or landing aircrafts in the designated areas by the Minister of the Environment, expect for roads, fields, rice and vegetable fields, farms and/or residential areas 18. Besides the abovementioned actions, taking any action which is potential harm to preservation of scenic beauty of Special Zones and which is designated by the Ordinance
	Special Protection Zone (In addition to 1, 2, 4, 5, 6, 7, 9, 10, 15, and 16 in Special Zone) 1. Damaging trees 2. Planting trees 3. Releasing fauna 4. Collecting and keeping materials in open areas 5. Having a bonfire 6. Collecting and/or damaging plants other than trees, and/or collecting fallen leaves and branches 7. Planting plants other than trees and/or sowing seeds 8. Hunting and/or damaging/killing fauna, and/or collecting/damaging eggs 9. Using vehicles, horse-drawn carriages, and/or motorboats, and/or landing aircrafts in the areas expect for roads and fields 10. Besides the abovementioned actions, taking any action which is potential harm to preservation of scenic beauty of Special Zones and which is designated by the Ordinance
	Marine Park Zone (In addition to 1, 4, and 7 in Special Zone) 1. Hunting, damaging/killing and/or collecting tropical fish, coral, seaweed and/or other fauna and flora under permission by the Minister of the Environment or the Agriculture, Forestry and Fisheries in the designated areas by the Minister of the Environment 2. Land filling and/or diking marine areas 3. Changing the form s of sea bottom 4. Mooring things 5. Discharging wastewater by installing facilities 6. Using motor boats during the designated seasons in the designated areas by the Minister of the Environment 7. Besides the abovementioned actions, taking any action which is potential harm to preservation of scenic beauty of Marine Park Zones and which is designated by the Ordinance
Nature Conservation Area	1. Constructing and/or renovating structures and/or building extensions 2. Changing landscape by residential development and/or reclamation 3. Mining minerals and/or quarrying 4. Land filling and/or diking water areas

	5. Influencing the water level and volume of water in rivers and/or lakes 6. Felling and/or damaging trees 7. Collecting and/or damaging plants other than trees, and/or collecting fallen leaves and branches 8. Planting trees 9. Hunting and/or damaging/killing fauna, and collecting and/or damaging eggs 10. Releasing fauna 11. Having a bonfire 12. Disposing and/or leaving wastes 13. Collecting and/or keeping things in open areas 14. Using vehicles and/or horse-drawn carriages, and/or landing aircrafts 15. Besides the abovementioned actions, taking any action which is potential harm to preservation of the natural environment in the Wildlife Conservation Areas and which is designated by the Ordinance
	Special Zone (In addition to 1-5 above) 1. Felling trees 2. Damaging trees in the designated areas by the Minister of the Environment 3. Planting and/or sowing seeds of non-indigenous plants that are designated by the Minister of the Environment as potential harm to preservation of the natural environment in the designated areas by the Minister 4. Releasing non-indigenous fauna that are designated by the Minister of the Environment as potential harm to preservation of the natural environment in the designated areas by the Minister 5. Discharging wastewater by installing facilities on or near the lakes and/or wetlands and/or waterways on the designated lakes and wetlands by the Minister of the Environment and their surrounding areas (1kilometers) 6. Using vehicles, horse-drawn carriages, and/or motorboats, and/or landing aircrafts in the designated areas by the Minister of the Environment, expect for roads, fields, rice and vegetable fields, farms and/or residential areas 7. Besides the abovementioned actions, taking any action which is potential harm to preservation of the natural environment in Special Zones and which is designated by the Ordinance

	Special Marine Zone 1. Constructing and/or renovating structures, and/or making extensions 2. Changing forms of the sea bottom 3. Mining minerals and collecting stones and rocks 4. Land filling and/or diking marine areas 5. Hunting, damaging/killing and/or collecting tropical fish, coral, seaweed and/or other fauna and flora under permission by the Minister of the Environment or the Agriculture, Forestry and Fisheries in the designated areas by the Minister of the Environment 6. Using motor boats during the designated seasons in the designated areas by the Minister of the Environment 7. Besides the abovementioned actions, taking any action which is potential harm to preservation of the natural environment in Special Marine Zones and which is designated by the Ordinance
	Ordinary Zone 1. Constructing and/or renovating structures and/or making extensions, and the scale of which exceeds the standard stipulated by the Ordinance of the Ministry of the Environment 2. Changing the landscape by residential development and/or reclamation 3. Mining minerals and/or collecting stone and rocks 4. Land filling and/or diking sea areas 5. Influencing the water level and/or the volume of water in rivers and/or lakes
Wildlife Protection Area	1. Hunting of fauna and/or collections of bird eggs 2. Feeding fauna and selling them 3. Hunting fauna by the methods using explosive materials, poisons and others, that are stipulated by the Ordinance of the Ministry of the Environment
	Special Protection Zone 1. Constructing and/or renovating structures and/or making extensions 2. Land filling and/or diking water areas 3. Felling trees 4. Taking any action which is potential harm to the protection of fauna in the designated areas: national designated protection areas by the Minister of the Environment and prefectural designated protection areas by the respective governors
Natural Habitat Conservation Area	Managing Zone 1. Constructing and/or renovating structures and/or making extensions 2. Changing landscape by residential development and/or reclamation 3. Mining minerals and/or collecting stone and rocks 4. Land filling and diking water areas 5. Influencing the water level and the volume of water in rivers and/or lakes

	6. Felling trees 7. Hunting wild fauna and flora that are designated by the Minister of the Environment as necessary for inhabitation and growth of endangered national wildlife 8. Discharging wastewater by installing facilities on or near the lakes and/or wetlands and/or waterways on the designated lakes and wetlands by the Minister of the Environment 9. Using vehicles, horse-drawn carriages, and/or motorboats, and/or landing aircrafts in the designated areas by the Minister of the Environment, expect for roads, fields, rice and vegetable fields, farms and/or residential areas 10. Hunting wild fauna and flora, that are designated by the Minister of the Environment, and others 11. Releasing fauna and flora and/or planting and/or sowing seeds of flora, that are designated by the Minister of the Environment as potential harm to inhabitation and growth of endangered national wildlife 12. Dispersing materials that are designated by the Minister of the Environment as potential harm to inhabitation and growth of endangered national wildlife 13. Having a bonfire 14. Observing wildlife by the methods that are designated by the Minister of the Environment as potential harm to inhabitation and growth of endangered national wildlife
Natural Monument	When recognized its necessity for preservation of natural monuments, certain actions are restricted and/or prohibited and/or necessary facilities are installed in designated areas.
Protected Water Surface	High-level land-filling and/or dredging, and any constructing actions in waterways and/r rivers, which may influence the water level and the volume of water
Coastline Marine Resource Development Area, and Designated Area	Developing area 1. Changing forms of sea bottom by excavation and/or other actions 2. Any action which is potential harm to increase of fisheries production by promoting increase/culture of marine fauna and flora, and which is stipulated by the Ordinance Designated marine area 1. Excavation of sea bottom, installment of any structure and/or any other action which may reduce/terminate benefits of fishing grounds, and which is stipulated by the Ordinance

Management practices in each MPA category in Korea

Category of MPA	Contents of management	Regulation
Protected Marine Area (Marine Ecosystem Protected Area)	Baseline Plan and monitoring (every 10 years)	Commercial usage, Human activities
Wetland Protection (Coastal Wetland Protected Area)	Baseline Plan and monitoring (every five years)	Commercial usage, human activities, reclamation, restoration of wetland
Marine Environment Conservation	Baseline Plan and monitoring (every five years) Categorization of marine environment	Marine environment usage except purpose of each category
Fisheries Resource Protection (Fisheries Resource Protected Area)	Central and local government monitor the proper usage of land and sea area	Monitoring especially proper use of land area and discharge of land-based discharge to marine environment
Special Island	Central and local government monitor marine environment	Usage of islands and modification of landscape
National Park	Basically authority prohibit all human activities except guided activities	All human activities prohibited except climbing, tracking and traditional life style
Ecosystem/landscape Conservation	No information	No information
Wildlife Protection	No information	No information
Natural Heritage	No information	No information

Annex V

Protected species in the selected MPAs

The Protected Species in the selected MPAs in China

Name of MPA	Protected species
Haiyang Qianliyan Island Marine Ecosystem Provincial Nature Reserve	Japanese camellia Japanese honeysuckle (*Lonicera japonica thumb*) Barbary wolfberry (*Lycium barbarum L*) Chinese thorowax (*Bupeurum scorzonerifolium willd*)
Zhifu Archipelago National Special Marine Reserve	Marine biological resources
Rongcheng Bay National Fisheries Genetic Resources Reserve	*Chlamys farreri, Anthocidaris crassispina*
Rushan National Fisheries Genetic Resources Reserve	*Tegillarca granosa*
Jiaozhou Bay Wetland Provincial Special Marine Reserve	*Grus japonensis, Grus grus, Cygnus cygus, Aquila chrysaetos*
Yalujiang River Estuary Wetland National Nature Reserve	*Glycine soja* (wild soybean) **First-class protected animals**: *Ciconia ciconia, Ciconia nigra, Aquila chrysaetos, Aquila heliacal, Grus japonensis, Grus leucogeranus* **Second-class protected animals** (30): *Cygnus Cygnus, Platalea leucorodia* Endangered animal: *Larus saundersi*
Haizhou Bay National Ocean Park	Marine biological resources
Kongdong Islands Provincial Nature Reserve	*Saxidomus purpurarurs* *Apostichopus japonicas* *Haliotis discus hannai*
Changdao National Nature Reserve	*Grus japonensis, Grus leucogeranus, Cygnus Cygnus, Aquila heliacal* *Aquila chrysaetos, Aegypius monachus* 11 species of birds are protected and 39 species are first-class and second-class protected wild animals
Rizhao Sea Area Coelomactra Antiquata National Fisheries Genetic Resources Reserve	*Coelomactra antiquata*

The protected species in the selected MPAs in Japan

Name of MPA	Protected species
Danjyo Guntou Islands	Streaked Shearwater (*Calonectris leucomelas*) Japanese murrelet (*Synthliboramphus wumizusume*)
Breading Habitat of Streaked Shearwater and Japanese Cormorant in Awashima Island	All species in MPAs
Daisen-Oki National Park	**Animal**: *Spirastrella insignis*, *Haliclona (Reniera) cinerea*, *Callyspongia elegans*, *Halocordyle disticha*, *Plumularia setacea*, *Solanderia secunda*, *Dendronephthya* Kukenthal, Melithaeidae Gray, Acanthogorgia Gray, *Ellisella rubra*, *Euplexaura* Verrill, Actiniidae Rafinesque, *Stichodactyla tapetum*, *Oulastrea crispate*, *Tubastraea faulkneri* Wells, *Dendrophyllia arbuscula*, *Alveopora japonica*, *Psammocora profundacella* Gardiner, *Palythoa tuberculosa* Esper, *Myriopathes japonica*, *Lodictyum axillare*, *Lepidozona coreanica*, *Acanthopleura japonica*, *Acanthochitona defilippii*, *Cellana grata*, Trochidae, *Lottia dorsuosa*, *Astralium haematragum*, *Lunella coronatus coreensis*, *Hipponix conica*, *Cypraea* (*Purpuradusta*) *gracilis* Gaskoin, *Echinolittorina (Granulilittorina) radiate*, *Murex troscheli*, *Pyrene punctata*, *Epitonium japonicum*, Aplysiidae Lamarck, *Chromodoris orientalis* Rudman, *Arca navicularis* Bruguière, *Lithophaga curta*, *Septifer virgatus*, *Sporochnus radiciformis*, Balanidae Leach, *Capitulum mitella*, *Pachygrapsus crassipes* Randall, *Oedignathus inermis*, *Oxycomanthus japonicus*, *Lamprometra palmata*, *Certonardoa semiregularis*, *Gorgonocephalus eucnemis*, Ophiurida, *Styela clava* Herdman, *Chromis notata*, *Goniistius zonatus*, *Pterogobius elapoides*, *Pterogobius zonoleucus*, *Cirrhilabrus temminckii* Bleeker, *Thalassoma cupido*, *Rudarius ercodes*, *Takifugu niphobles* **Plant**: *Ulva pertusa* Kjellman, *Ulva intestinalis* Linnaeus, *Ulva conglobata* Kjellman, *Microdictyon japonicum* Setchell, *Cladophora* Kützing, *Chaetomorpha* Kützing, *Caulerpa okamurae*, *Codium* Stackhouse, Bryopsidaceae Bory de Saint-Vincent, *Sphacelaria yamadae* Segawa, *Dictyota dichotoma* Lamouroux, *Zonaria diesingiana* J. Agardh, *Anthogorgia* Verrill, *Dictyopteris* J. V. Lamouroux, *Sphaerotrichia divaricata* (C. Agardh) Kylin, *Ishige okamurae* Yendo, *Leathesia* S. F. Gray, *Myelophycus simplex* (Harvey) Papenfuss, *Scytosiphon lomentaria* (Lyngbye) Link, *Colpomenia* (Endlicher) Derbès & Solier, *Carpomitra costata* (Stackhouse) Batters, *Chorda asiatica* Sasaki & Kawai, *Sargassum horneri* (Turner) C. Agardh, *Sargassum hemiphyllum* (Tuener) C. Agardh, *Sargassum thunbergii* (Mertens ex Roth) Kuntze, *Sargassum yendoi*, *Sargassum ringgoldianum*, *Myagropsis myagroides*, *Sargassum nigrifolium*, *Sargassum macrocarpum*, *Sargassum piluliferum*, *Sargassum patens*, *Sargassum siliquastrum*, *Dichotomaria falcata*, Corallinaceae Lamouroux, *Delisea japonica*, *Caulacanthus ustulatus*,

	Hypnea charoides, *Peyssonnelia caulifera*, *Ahnfeltiopsis flabelliformis*, *Chondracanthus* Kützing, *Portieria hornemannii*, *Schizymenia dubyi*, *Polyopes affinis*, *Grateloupia* C. Agardh, *Plocamiaceae* Kützing, *Gracilaria* Greville, *Chrysymenia wrightii*, Champiaceae Kützing, Ceramiaceae Dumortier, Delesseriaceae Bory, *Dasya sessilis*, *Leveillea jungermannioides*, *Chondria crassicaulis*, Symphyocladia Falkenberg, Laurencia J. V. Lamouroux
San'in Kaigan National Park	**Animal**: *Callyspongia confoederata*, *Aglaophenia whiteleggei*, *Solanderia secunda*, *Aurelia aurita*, Melithaeidae Gray, Euplexaura Verrill, Actiniidae Rafinesque, *Acanthopleura japonica*, *Aplysia kurodai*, Doridiidae Rafinesque, *Sporochnus radiciformis*, *Tropiometra afra macrodiscus*, *Oxycomanthus japonicus*, Astropectinidae Gray, Ophidiasteridae Verrill, Asterias Linnaeus, *Plotosus japonicus*, Pomacentridae, *Pterogobius elapoides*, *Pterogobius zonoleucus*, *Enneapterygius etheostomus* **Plants**: Cladophora Kützing, Chaetomorpha Kützing, *Caulerpa okamurae*, Codium Stackhouse, Dictyota J. V. Lamouroux, Dictyopteris J. V. Lamouroux, Ishige Yendo, Colpomenia (Endlicher) Derbès & Solier, *Chorda asiatica*, Myagropsis Kützing, Scinaia Bivona-Bernardi, Corallinaceae Lamouroux, Delisea J. V. Lamouroux, *Ahnfeltiopsis flabelliformis*, Chondracanthus Kützing, *Schizymenia dubyi*, Plocamium J. V. Lamouroux, Chrysymenia, Martensia K. Hering, Acrosorium Zanardini ex Kützing, Symphyocladia Falkenberg, *Phyllospadix iwatensis*
Niseko-Shakotan-Otaru Kaigan Quasi National Park	**Animal**: Halichondria, *Aglaophenia whiteleggei*, *Plumularia setacea*, *Moerisia horii*, *Solanderia misakinensis*, Actiniidae Rafinesque, *Haliplanella lineata*, *Metridium senile*, *Rhizopsammia minuta mutsuensis*, *Beroe cucumis* Fabricius, Ischnochitonidae Dall, *Cryptoplax japonica*, Mopaliidae Dall, Trochidae, Littorinidae Children, Aplysiidae Lamarck, *Septifer virgatus*, *Hydroides ezoensis*, *Chthamalus challengeri*, *Diodon holocanthus*, Diogenidae Ortmann, *Botryllus primigenus*, *Botryllus tuberatus*, *Aulichthys japonicus*, Syngnathidae, Pholidae, Liparidae, *Aptocyclus ventricosus*, Agonidae **Plant**: *Ulothrix flacca*, Monostroma Thuret, Cladophora Kützing, Chaetomorpha Kützing, *Urospora penicilliformis*, *Codium fragile*, Bryopsis, Ectocarpus Lyngbye, *Ralfsia fungiformis*, *Dictyota dichotoma*, *Dictyopteris divaricata*, *Sphaerotrichia divaricata*, Leathesia, *Dictyosiphon foeniculaceus*, *Coilodesme japonica*, *Punctaria latifolia*, *Scytosiphon lomentaria*, Colpomenia, Desmarestiaceae, *Chorda asiatica*, *Cystoseira hakodatensis*, Sargassum C. Agardh, Palmaria Stackhouse, Corallinaceae Lamouroux, *Bonnemaisonia hamifera*, *Trailliella introcata* Batters, Gloiosiphoniaceae, *Ahnfeltiopsis flabelliformis*, *Tichocarpus crinitus*, Chondracanthus Kützing, Chondrus Stackhouse, *Schizymenia dubyi*, Prionitis J. Agardh, Grateloupia C. Agardh, *Neodilsea yendoana*, *Hyalosiphonia caespitosa*, Dumontia J. V. Lamouroux, Gracilaria Greville, *Chrysymenia wrightii*, *Champia parvula*, Lomentaria Lyngbye, *Antithamnion nipponicum*, Ceramium Roth, Psilothallia F. Schmitz, Delesseriaceae Bory, Heterosiphonia

	Montagne, *Neorhodomela aculeate*, *Enelittosiphonia stimpsonii*, *Chondrai crassicaulis*, Laurencia J. V. Lamouroux, *Phyllospadix iwatensis*
Genkai Quasi National Park	**Animal**: *Lytocarpia Kirchenpauer*, *Aglaophenia whiteleggei*, *Solanderia secunda*, *Melithaea flabellifera*, *Menella rigida*, *Euplexaura erecta*, *Anthoplexaura dimorpha*, *Tubastraea faulkneri*, *Dendrophyllia coarctata*, *Balanophyllia ponderosa*, *Hydnophora pilosa*, Acropora Oken, *Sabellastarte japonica*, Comatulida, *Linckia laevigata*, *Certonardoa semiregularis*, *Patiria pectinifera*, *Kyphosus vaigiensis*, *Petroscirtes breviceps*, *Ditrema temminckii*, Pomacentridae, *Hypoatherina valenciennei*, **Plant**: *Halimeda discoidea*, Codium, *Dictyota dichotoma*, *Anthogorgia bocki*, *Dictyopteris pacifica*, *Ishige sinicola*, Corallina, *Plocamium telfairiae*, *Champia parvula*
Kanmurijima-Kutsujima National Wildlife Protection Area	*Calonectris leucomelas*, *Oceanodroma monorthis*, *Synthliboramphus wumizusume*, *Falco peregrines*, *Columba janthina*
Kosado-toubu National Wildlife Protection Area	No information
Toyama Bay	Sea cucumber (May 1 – October 31) Gelidium (September 1 – October 31) Ayu (December 1 – June 15) *Chionoecetes japonicus* (June 1 – August 31: male, All year: female)

The protected species in the selected MPAs in Korea

Name of MPA	Protected species
Sindu-ri Sand Dune	No information
Mun-Sum	*Dendronephthya suensoni*, *Dendronephthya castanea*, *Dendronephtya molli*, *Dendronephthya putteri*, *Dendronephthya alba*, *Dendrophyllia cribrosa*, *Dendrophyllia micrantus*, *Plumarella spuinosa*, *Euplexaura crassa*, *Plexauroidea reticulate*, *Verrucella stellata*, *Tubastraea coccinea*, *Plumarella adhaerans*, *Plexauroidea complexa*, *Antipathes japonica*
Ohryuk-do	No information
Muan	**Endangered species**: Chinese Egret, Spoon-billed Sandpiper, Eastern Curlew and Buzzard
Suncheon	Huge colony of Reed (*Phragmites communis*), Habitat of Hooded Crane (*Grus monacha*) Endangered species: March Crab (*Sesarma intermedium*), Eurasian Spoonbill (*Platalea leucorodia*), Black-faced Spoonbill (*Platalea minor*), Bean goose (*Anser fabalis*), Wooper swan (*Cygnus cygnus*), Hooded crane (*Grus monacha*), Baikal teal (*Anas formusa*), Eurasian oyster catcher (*Haematopus ostralegus*), Far eastern curlew (*Numenius madagascariensis*), Saunders' gull (*Larus saunders*)
Bosung Bulgyo	**Endangered species**: Black-faced spoonbill (*Platalea minor*), Bean goose (*Anser fabalis*), Wooper swan (*Cygnus cygnus*), Hooded crane (*Grus monach*), Baikal teal (*Anas formusa*), Eurasian oyster catcher (*Haematopus ostralegus*), Far eastern curlew (*Numenius madagascariensis*), Saunders' gull (*Larus saunders*)
Buan Julpo Bay	No information
Gochang	No information
Seocheon	**Endangered species**: Eurasian oyster catcher (*Haematopus ostralegus*), Whooper swan (*Cygnus cygnus*), Mongolian plover (*Charadrius mongolus*), Asian dowitcher (*Limnodromus semipalmatus*), Eurasian curlew (*Numenius arquata*), Far eastern curlew (*Numenius madagascariensis*), Spotted greenshank (*Tringa guttifer*), Terek sandpiper (*Xenus cinereus*), Dulin (*Calidris alpina*)
Jeung-do	No information

The protected species in the selected MPAs in Russia

Name of MPA	Protected species
Far Eastern Marine	Far Eastern trepang, Japanese scallop, Pacific needlefish, Giant octopus, King crab, Large-scaled rudd, Japanese sandfish, Eastern rockfish, Sea calf, Chinese egret, Spoon-bill, Island cricket, Japanese yew, omatsu, Boston ivy, Tiger and nodding lilies, Schlippenbach's rosebay, Caltrop goral.
Lazovsky	No information
Sikhote-Alin	Wild dappled deer, Amur tiger, Amur wood cat, goral, Manchuria hare, raccoon dog, paleheaded chiffchaff, rock thrush, grosbeak
Land of the Leopard	The National Park marked species, the protection of which is of international significance, indicator species whose habitats are threatened, and rare and endangered species. Currently, about 40 rare and endangered species require urgent conservation measures, 10 of them are classified in the first category of protection adopted in the PRC and 23 are protected in accordance with Russian legislation. Apart from tigers and leopards in these places there are species such as black bear, brown bear, ungulates (spotted deer, musk deer, roe deer, Goral and wild boar), and the lynx, the Far Eastern leopard cat, fox, badger, hedgehog, raccoon dog, speakers , otters, bats and shrews, Manchurian hare, squirrel, chipmunk, 7 species of amphibians and 12 species of reptiles. In the south-west Primorye lives 65 species of mammals. The highest value for the conservation of the natural complex are species listed in the Red Data Book of IUCN and Russia. For the fauna of the world most serious situation is currently developed with the preservation of the Far Eastern leopard subspecies. According to the last census (2013) in the south-west Primorye 48-50 leopards inhabit. This - the last center of the living subspecies of the big cats on the planet.
Tumninsky	Among the protected species - the Amur tiger, white-tailed eagle, Steller's sea eagle, golden eagle, fish owl, the osprey, mandarin duck, merganser, spruce grouse, black crane, black stork, Far stork, peregrine falcon.
Vostok Bay	The total number of marine and terrestrial organisms than 2600. The most abundant species of large invertebrates represent Lena bivalves (sea scallop *Patinopecten yessoensis*, Pacific mussel *Mytilus trossulus* and mussel Gray *Crenomytilus grayanus*), belly-legged shellfish (littoriny *Littorina brevicula*, *L. mandshurica* and others nutsella *Nucella heiseana*), cephalopods molluscs (octopus *octopus conispadiceus*, squid *Todarodes pacificus*), echinoderms (black and gray sea urchins *Strongy-locentrotus intermedius*, *S. nudus*, flat sea urchins *Echinarachnius parma*, *Scaphechinus mirabilis*, sea cucumber *Stichopus japonicus*, starfish - *Patiria Grebe shkovaya*

	Patiria pectinifera and Amur star *Asterias amurensis*), crustaceans (grass shrimp *Pandalus kessleri*, king crab *Paralithodes kamtschatica*). Vegetation is represented by an abundance of sea grasses (eelgrass *Zostera marina*, *Z. asiatica*, *phyllospadix Phyllospadix iwatensis*), brown algae (Sargassum *Sargassum miyabei*, kelp *Laminaria japonica*), green algae (Ulva *Ulva fenestrata*), etc. World presents a wide variety of fish species. Among the most valuable - a pass-Sim salmon, smelt, catfish and smelt, perch, mackerel, pelingas (kefalevye)
Moneron Island	The flora of the island is peculiar. Most of treeless spaces covered by so-called "grape" meadows, where the grass, reaching 2-2.5 m in height, entwined vines of wild grapes. In July and August the meadows blooming bluebells, daisies and umbrella. The island is also found viburnum, rowan, rose hip wrinkled, various species of willow, mulberry, velvet Sakhalin, small-leaved maple, stone birch, green alder, common Kuril bamboo. In the eastern part of the island has a small depression, which, if protected from the cold north-westerly winds, increasing Ayan spruce. There are breeding colonies of seabirds that live mainly not on the island, and on the islets and rocks surrounding it, which is associated with the penetration of the island of carnivorous mammals (fox, sable). Have the greatest number of black-tailed gull and puffin rhinoceros. Also inhabit the northern storm petrel, Ussuri Cormorant, Pelagic Cormorant, Pacific sea gull, etc. In some parts of the coast arrange rookery sea lions and seals. The influence of the warm Tsushima Current determines the existence in the waters around the island of subtropical species of mollusks (such as Abalone) redkoiglyh sea urchins, sea stars and multipath