## Northwest Pacific Region

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1 About

1.1 Overview

The Governing Council of UNEP at its Fifteenth Session (Decision 15/1: "Strengthening the role and effectiveness of the United Nations Environmental Programme", part VI.3) approved the "preparation of new action plans for seas not yet covered by the regional seas programme (Northwest Pacific region, Black Sea)". As a first step in this process, UNEP initiated a series of consultations with representatives of the governments of the region and with other organizations within the United Nations system. This culminated in the First Meeting of Experts and National Focal Points (NFPs) on the Development of the Northwest Pacific Action Plan (NOWPAP) which was held in Vladivostok, from 28 - 31 October 1991 in co-operation with the Centre for International Projects and the Pacific Oceanological Institute.

Experts and the NFPs presented reports on the aspects of the marine environment in their region. They also agreed on the scope and format of national reports which they undertook to prepare and which were to review the state of the marine environment and coastal areas within the countries, comment on national policies, measures and relevant activities dealing with marine pollution problems, make proposals on ways and means for solving environmental problems and finally propose activities for the Action Plan. The meeting also agreed on a workplan and timetable towards the preparation of a draft Action Plan and a draft Regional Overview.

At the Second Meeting of Experts and NFPs on the Development of the NOWPAP, in co-operation with the National Environmental Protection Agency, the first draft of the Action Plan was discussed. Subsequently, UNEP arranged for revisions and improvements to the draft and a final draft was discussed and agreed to by the participants at the Third Meeting of Experts and NFPs on the Development of NOWPAP. This led to 1st Intergovernmental Meeting (Seoul, 14 September 1994) during which four countries adopted the Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific and three supporting Resolutions. The Plan entered in force in 1995 and is currently supported by four countries (People’s Republic of China, Republic of Korea, Japan and Russian Federation), with a hope of full participation Democratic Republic of Korea.

The Northwest Pacific is among the most highly populated parts of the world, resulting in enormous pressures and demands on the environment. Its people are particularly dependent on the sea for their food and livelihoods. Yet their health and their environment are under growing threat, mainly from land-based activities and sources of pollution. Coastal development, industry, transport, and activities such as land reclamation and intensive mariculture take a huge toll on coastal ecosystems. Chemical and industrial wastes, untreated municipal sewage, agricultural pesticides and nutrients run-off stimulate eutrophication and harmful algal blooms (red tides). Added to these are oil pollution from wastewater’s and accidental spills, atmospheric pollution and marine and coastal litter.

In order to support the implementation of NOWPAP, a network of Regional Activity Centres (RAC) were established for this purpose:
These centres are responsible for carrying out their activities at the regional level and serve all member states. NOWPAP Regional Co-ordinating Unit (RCU), that is co-hosted by Japan and the Republic of Korea, serves as nerve centre and command post for the Action Plan's activities. NOWPAP priorities are: to set up a regional monitoring and assessment system; to develop a network of public outreach and environmental education; to put in place a contingency plan for oil and chemical spills; and to prepare a regional strategic plan to abate pollution from land-based activities (in accordance with UNEP-GPA); to set up regional programmes to protect marine and coastal biodiversity; and to initiate programmes for sustainable management of living marine resources based on the ecosystem approach. NOWPAP has not yet adopted a legally binding convention, however, the future is hopeful.

1.2 Key Dates

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>First Meeting of Experts and National Focal Points on the Development of the Northwest Pacific Action Plan, held in Vladivostok</td>
</tr>
<tr>
<td>1992</td>
<td>Second Meeting of Experts and National Focal Points on the Development of the Northwest Pacific Action Plan, held in Beijing - the first draft of the Action Plan was discussed.</td>
</tr>
<tr>
<td>1993</td>
<td>Third Meeting of Experts and National Focal Points on the Development of the North West Pacific Action Plan, held in Bangkok - the final draft of the Action Plan was issued.</td>
</tr>
<tr>
<td>1994</td>
<td>1st Intergovernmental Meeting/IGM (Seoul, Korea): - adopted NOWPAP and three supporting Resolutions including five priority projects</td>
</tr>
<tr>
<td>1996</td>
<td>2nd Intergovernmental Meeting, Japan</td>
</tr>
<tr>
<td>1998</td>
<td>3rd Intergovernmental Meeting, the Russian Federation</td>
</tr>
<tr>
<td>1999</td>
<td>4th IGM (Beijing, China): - agreed to establish four Regional Activity Centres (RACs)</td>
</tr>
<tr>
<td>2000</td>
<td>5th Intergovernmental Meeting, the Republic of Korea</td>
</tr>
<tr>
<td>2000</td>
<td>6th IGM (Tokyo, Japan): - agreed in principle to establish a co-hosted NOWPAP Regional Coordinating Unit (RCU) in Toyama, Japan, and Busan, Korea</td>
</tr>
<tr>
<td>2002</td>
<td>7th IGM (Vladivostok, Russia): - agreed on the detailed plan for the establishment of the RCU RAC activities got underway</td>
</tr>
<tr>
<td>2002</td>
<td>8th IGM (Hainan, China): - adopted the NOWPAP Regional Oil Spill Contingency Plan</td>
</tr>
<tr>
<td>2004</td>
<td>9th IGM (Busan, Republic of Korea) -Opening of the co-hosted NOWPAP RCU,</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
</tr>
</tbody>
</table>
| 2005 | 10th IGM (Toyama, Japan): | - approved new directions of work for RACs  
- expanded geographical coverage of the NOWPAP Oil Spill Contingency Plan  
- approved the Marine Litter Activity (MALITA) |
| 2006 | 11th IGM (Moscow, Russia): | - adopted NOWPAP Policy of Data and Information Sharing  
- decided to evaluate NOWPAP RACs performance |
| 2007 | 12th IGM (Xiamen, China): | - Approved in principle the draft Regional Action Plan on Marine Litter  
- Approved the draft text of the NOWPAP Regional Oil and HNS Spill Contingency Plan (RCP) |
| 2008 | 13 IGM (Jeju, Republic of Korea): | - adopted the NOWPAP Regional Oil and Hazardous and Noxious Substance Spill Contingency Plan  
- approved the new directions of work for NOWPAP Regional Activity Centres for 2008-2011. |

## 1.3 Geographic and General Information

**Region:** Northwest Pacific  
**Participating States:** People’s Republic of China, the Republic of Korea, Japan and Russian Federation.  
**Total Population:** 1,637.92 (million, World Bank 2007)  
**Total sea area:** Each Member state has an EEZ of 200 NM  
**Length of coastline:** 84,317 km

### 1.3.1 Oceanographic Information

The region is influenced by the warm Kuroshio and the cold Oyashio current system (Simard 2003). The fronts of these current systems meet off northern Japan and induce one of the most productive marine areas in the world. The Kuroshio current extends along the Ryukyu archipelago and divides at the Southern tip of Kyushu, entering the Yellow Sea and the eastern region of NOWPAP sea area as the Tsushima current. In the North, the Oyashio divides at the tip of Hokkaido and enters the NOWPAP sea area. The strongest currents occur along the Ryukyu archipelago where the Kuroshio exceeds 10 knots all year round (Simard 2003).

The region includes an outer area and an inner area which are divided by the archipelagic arch which includes Japan. The inner includes several seas known as the Asian Inland Seas (or marginal seas). From south to north these are: South China Sea (including Beibu Gulf) East China Sea, Yellow Sea, Bohai Sea, the eastern region of the NOWPAP sea area, Okhotsk Sea and Bering Sea. These seas include a number of local current patterns which are more or less under the influence of the Kuroshio-Oyashio system, as well as local influences like the large rivers and the monsoon cycle (Simard 2003).
There are tides of various patterns along the coasts; the more notable areas being the East China Sea and the Yellow Sea where tidal amplitude reaches 6 -7 m in western Kyushu and more than 10 -12 m in some areas of Korea (Simard 2003).

Surface water temperatures in the East China Sea, temperatures range between 8-Ç and 26-Ç. In the Bohai Sea, the range is between 3-Ç and 24-Ç. In the Pacific Ocean, south of Kyushu, temperatures range between 20-Ç and 28-Ç. In the north, Liaodong Bay is frozen for more than 100 days a year. Water temperature at a depth of 10 meters ranges from 25-Ç (winter) to 30-Ç (summer) in the south, from 0-Ç (winter) to 5-Ç (summer) in the north. Salinity is normally between 32 - 34 o/oo but where influenced by continental waters, can be as low as 28 o/oo (e.g. Bohai Sea) (Simard 2003).

1.3.2 Coastal Geography and Geology

The inner seas are shallower (e.g. less than 50m for the Bohai Sea) than the outer seas (e.g. Okhotsk Sea reaches 5,200m) (Simard 2003). Despite these significant depths, the seas are separated from the open ocean by quite shallow passes and straits (a few hundred meters). Off the archipelagic arch, the sea bed is very steep and reaches great depths (e.g. 9,600 m off Japan) (Simard 2003). South of Japan, the Pacific Ocean becomes the Philippines Sea and is bounded by deep trenches: Philippines trench, Marianas trench, Japan trench and the ridges of South Honshu and Yap. The continental shelf is wide in some areas, particularly in the northern part of the inland seas (the continental shelf in the Yellow Sea is amongst the widest in the world), whilst on the oceanic side there is almost no continental shelf. The archipelagic arch is one of the most volcanic regions in the world (Simard 2003).

The coastline is influenced by rivers. Some of the largest rivers in the world are present for example Amur 1,840,000 km 2 of drainage area. In China alone there are more than 150 rivers covering a drainage area over 10,000,000 km 2. In Japan the rivers are numerous but all are very short with small drainage areas, the largest river is the Tonegawa 322 km in length with a drainage areas of 16,840 km 2 (Simard 2003).

1.3.3 Ecosystem Diversity

1.3.3.1 Seagrass Beds

Sea grass beds are found throughout the region, with the most extensive beds around Japan (Simard 2003) and cover some 402 km 2 (Nakmura, 2004). Of the 12 genus of seagrasses, eight are present in the realm (Zostera, Phyllospadix, Halodule, Cynodocea, Syringodium, Enhalus, Thalassia, Halophila) (Simard 2003).

1.3.3.2 Wetlands

There are a number of important wetlands in the region. Bays and estuaries with intertidal sand and mud flats and other wetland types are found in most parts. In Japan the three largest localities are the bay of Tokyo, the bay of Ise and the sea of Ariake. On
the Korean peninsula, there are the Kyongi Bay and the Korea Bay; in China the Bohai Sea and Liaodong Bay are major wetland areas. There are also important locations in Russia, for example the delta of Anadyr (François Simard 2003).

There are a few coastal barrier lagoons and brackish water coastal lakes, on the west coast of Sakhalin Island, on the north coast of Hokkaido Island, the Hamana-Lake in Honshu and at the Southwest coast of Taiwan. The estuaries of the three largest rivers in China (Chang jiang, Huanghe and Zhujiang) also support mudflats and wetland features (Simard 2003).

**1.3.3.3 Beaches, Dunes and Cliffs**

Sandy beaches, rocky shores and cliffs are found throughout the region. Rocky shores are especially important in all the islands of the archipelagic arch. There are famous dunes in Tottori, south of Honshu and also near Tianjin in the Bohai Sea. There are also a good variety of sandy beaches from white to black sands and from fine sand to large pebbles (Simard 2003).

**1.3.3.4 Islands**

The archipelagic arch is formed by thousands of islands ranging in size. The largest islands are Honshu (Japan) 230,000 km², Hokkaido (Japan) 78,000 km² and Sakhalin (Russia) 76,400 km². The numerous mid-sized islands (between 1,000 and 5,000 km²) for example Karaginskiy (Russia), Cheju (Republic of Korea), Okinawa (Japan), Chongming (China) and Zhoushan (China). There is a multitude of small islands (100-1,000 km²) and several archipelagos of significant size. The main archipelagos are the Kuryl Archipelago, Ogasawara Archipelago, West Kyushu Archipelago, Amami Archipelago, Ryukyu Archipelago, Yaeyama Archipelago, West and Southwest Korea islands, Changshan Archipelago, Miaodao Archipelago, Penghu (Taiwan, also named Pescadores), Dongsha, Xisha (also named Paracels), Zhongsha, and Nansha (also named Spratly) (Simard 2003).

**1.3.4 Species Diversity**

The meeting of the warm Kuroshio current and the cold Oyashio current contributes to an enormous profusion of fish species. The region as a whole has a high diversity as it stretches between all latitudes between the arctic and the tropics (Simard 2003).

**1.3.4.1 Algae and Invertebrates**

In Japan seaweeds are extremely well-known and there are almost 600 species of seaweeds. In China there are about 610 species (Simard 2003). Amongst these, the most important ones are Chlorophyta (Ulva, Codium and Caulerpa), Phaeophyta (Nemacystus, Laminaria, Kjellmaniella, Eisenia, Ecklonia, Undaria, Hizikia and Sargassum) and Rhodophyta (Helminthocladia, Scinaia, Gelidium, Gloiopeletis, Chondrus and Ceramium). Many types are edible and consumed in great quantities like the Nori
(Porphyra sp.), Wakame (Undaria pinatifida) and Kombu (Laminaria japonica) (Simard 2003).

There are a large number of invertebrates in the region. For example, in Japan, there are about 6,000 species of molluscs, 1,000 species of crabs (Brachyura), 480 species of shrimps and prawns (Dendrobrachiata), 320 species of Anomura and 50 species of Stomatopoda. In China, there is about one quarter of the total world species: 1,400 molluscs, 800 annelida and 2,800 anthropoda. A large number of these species are of commercial importance including mollusks (gasteropods, bivalves, cephalopods), crustaceans (crabs, shrimps and others, ascidians, echinoderms) (Simard 2003).

1.3.4.2 Fish

The region is one of the most important for fisheries. The number and the diversity of fish in the region are very high. There are about 2,000 species of fish in Japan and 3,032 in China (Simard 2003). Fishes such as Sardinops melanosticta (sardin) and Seriola quinqueradiata (Yellow tail) spawn in the western Japan, mainly off the coast of Honshu and in the East China Sea, and fishing grounds for these species are widely distributed in the eastern NOWPAP region. Todarodes pacificus (Japanese common/flying squid) is widely distributed in fairly high numbers (Nakmura, 2004).

1.3.4.3 Reptiles

Four species of marine turtle have been recorded in Chinese waters, the green, loggerhead, leatherback and hawksbill. Eighteen species of sea snake have been recorded in the region (Simard 2003).

1.3.4.4 Birds

The north of the region is very rich in seabirds. In the Bering Sea, the Okhotsk Sea and the Kuryl Islands there are many seabird colonies: northern fulmar, Leach's storm petrel, fork-tailed storm petrel, pelagic cormorant, red-face cormorant, slaty-backed gull, black-legged kittiwake, red-legged kittiwake, Brunnick's guillemot, common guillemot, spectacled guillemot, parakeet auklet, crested auklet, least auklet, Aethia sp, rhinoceros auklet and horned puffin are all present (Simard 2003). The following species also breed in the region great cormorant, Temminck's cormorant, pomerine skua, arctic skua, long-tailed skua, Aleutian tern, marbled murrelet, Kittlitz's murrelet, ancient murrelet and the tufted puffin. More than one million seabird pairs breed in the Russian sector, with the most important colonies occurring in the Komandorskiye Islands where the estimated total population size of breeding seabirds is between 500,000 and 2,100,000 pairs (Simard 2003). Great Peter's Bay, off Vladivostok, is also an important location for seabird nesting.

In Japan there are 37 species of seabirds. The most important species breed in the Ogasawara Archipelago and the Ryukyu Archipelago. These are: three albatrosses, Bonin petrel, Bulwer's petrel, wedge-tailed shearwater, Audubon's shearwater, Swinhoe's storm petrel, Tristram's storm petrel, Matsudaira's storm petrel, red-tailed
tropic bird, greater crested tern and Japanese murrelet. The areas off China do not seem to hold large numbers of seabirds, 33 species of seabirds have been recorded (Simard 2003). Between Japan and China, and between Japan and Russian, there are respectively treaties for the protection of migratory birds (227 species for China-Japan; 287 species for Russia-Japan) (Nakmura, 2004).

1.3.4.5 Mammals

The region is rich in cetaceans, however they have been depleted in great numbers by Japanese and Korean fishermen. Some coastal and marine animals in the region, which are considered to be at risk, are listed in the table below. The Kuril and the Kommandorskiye Islands are good locations for seals and for the threatened sea otter. The dugong is found in coastal waters on the southern coast of China and also in Taiwan (Simard 2003).

<table>
<thead>
<tr>
<th>Common name</th>
<th>Latin name</th>
<th>status</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue whale</td>
<td>Balaenoptera musculus</td>
<td>endangered</td>
<td>Regional</td>
</tr>
<tr>
<td>Fin whale</td>
<td>Balaenoptera physalis</td>
<td>vulnerable</td>
<td>Regional</td>
</tr>
<tr>
<td>Humpback whale</td>
<td>Magnaptera novaeangliae</td>
<td>vulnerable</td>
<td>Regional</td>
</tr>
<tr>
<td>Bowhead whale</td>
<td>Balaena mysticetus</td>
<td>vulnerable</td>
<td>Regional</td>
</tr>
<tr>
<td>Northern right whale</td>
<td>Eubalaena glacialis</td>
<td>endangered</td>
<td>Regional</td>
</tr>
<tr>
<td>Japanese sea lion</td>
<td>Zalophus c. japonicus</td>
<td>Unknown if extinct</td>
<td>Japan, DPRK and ROK</td>
</tr>
<tr>
<td>Short-tailed albatross</td>
<td>Diomedea albatrus</td>
<td>Rare</td>
<td>Japan</td>
</tr>
<tr>
<td>Chinese egret</td>
<td>Egretta eulophotes</td>
<td>Endangered</td>
<td>China, DPRK, ROK</td>
</tr>
<tr>
<td>Oriental white stork</td>
<td>Ciconia byciana</td>
<td>Rare</td>
<td>China, Japan, ROK</td>
</tr>
<tr>
<td>Crested ibis</td>
<td>Nipponia nippon</td>
<td>Endangered</td>
<td>China, Japan</td>
</tr>
<tr>
<td>Back-faced spoonbill</td>
<td>Platatea minor</td>
<td>Endangered</td>
<td>China, DPRK</td>
</tr>
<tr>
<td>Baykal teal</td>
<td>Anas formosa</td>
<td>Vulnerable</td>
<td>Regional</td>
</tr>
<tr>
<td>Relict gull</td>
<td>Larus relictus</td>
<td>Rare</td>
<td>China, ROK Japan</td>
</tr>
<tr>
<td>Horseshoe crab</td>
<td>Carcinoscorpius rotundicaudata</td>
<td>Insufficiently known</td>
<td>Japan</td>
</tr>
<tr>
<td>Horseshoe crab</td>
<td>Tachypleus spp.</td>
<td>Insufficiently known</td>
<td>Japan</td>
</tr>
</tbody>
</table>

1.3.5 Information on Participating States

1.3.5.1 People’s Republic of China

1.3.5.2

**Total Population**: 1,319.98 (Million, World Bank 2007)

**Total GDP($)**: 3,280.05 (Billion, World Bank 2007)

**Total sea area**:
- contiguous zone: 24 NM
- exclusive economic zone: 200 NM
- continental shelf: 200 NM or to the edge of the continental margin
- territorial sea: 12 NM

**Length of coastline**: 14,500 km (CIA, 2003)

Marine and Coastal Nature Reserves of China in NOWPAP region (from DINRAC)

<table>
<thead>
<tr>
<th>Name of nature reserves</th>
<th>Location</th>
<th>Rank</th>
<th>Area (ha)</th>
<th>Designated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yalu River Estuary and Coastal Wetlands</td>
<td>Donggang City, Liaoning province</td>
<td>national</td>
<td>108,057</td>
<td>1987-07-01</td>
</tr>
<tr>
<td>Changdao</td>
<td>Changdao County, Shandong province</td>
<td>national</td>
<td>5,300</td>
<td>1982-01-01</td>
</tr>
<tr>
<td>Yancheng Littoral Wetland and Rare Bird Species</td>
<td>Yancheng city, Jiangsu Province</td>
<td>national</td>
<td>453,000</td>
<td>1984-01-01</td>
</tr>
<tr>
<td>Dafeng Pere Davis Deer (Elaphurus davidianus)</td>
<td>Dafeng county, Jiangsu Province</td>
<td>national</td>
<td>2,776</td>
<td>1986-02-08</td>
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<tr>
<td>Shanshan Marine Rare Species</td>
<td>Dalian, Liaoning Prov.</td>
<td>city</td>
<td>1,103</td>
<td>1986-12-01</td>
</tr>
<tr>
<td>Shanghai Marine Rare Species</td>
<td>Shanghai County, Liaoning Prov.</td>
<td>province</td>
<td>220</td>
<td>1985-04-01</td>
</tr>
<tr>
<td>Changshang Isle Marine Species</td>
<td>Changshang County, Liaoning Prov.</td>
<td>city</td>
<td>413</td>
<td>2004-01-01</td>
</tr>
<tr>
<td>Haiwang Nine Islands</td>
<td>Shanghai County, Liaoning Prov.</td>
<td>city</td>
<td>2,143</td>
<td>2000-08-01</td>
</tr>
<tr>
<td>Laopian Island-Yuhuang Ding</td>
<td>Dalian, Liaoning Prov.</td>
<td>city</td>
<td>1,580</td>
<td>2000-08-01</td>
</tr>
<tr>
<td>Dagong Island</td>
<td>Qingdao, Shandong Prov.</td>
<td>province</td>
<td>1,603</td>
<td>2001-03-01</td>
</tr>
<tr>
<td>Qingdao Amphioxus</td>
<td>Qingdao, Shandong Prov.</td>
<td>city</td>
<td>6,181</td>
<td>2004-08-01</td>
</tr>
<tr>
<td>Miao Isle Seals</td>
<td>Changdao, Prov.</td>
<td>province</td>
<td>173,100</td>
<td>2001-06-01</td>
</tr>
<tr>
<td>Qiansan Island</td>
<td>Rizhao, Shandong Prov.</td>
<td>city</td>
<td>10,000</td>
<td>1992-12-01</td>
</tr>
<tr>
<td>Qianliyan Island</td>
<td>Haiyang, Shandong Prov.</td>
<td>province</td>
<td>1,824</td>
<td>1999-12-01</td>
</tr>
<tr>
<td>Rongcheng City Shantou</td>
<td>Rongcheng, Shandong Prov.</td>
<td>province</td>
<td>6,366</td>
<td>2002-12-01</td>
</tr>
<tr>
<td>Rongcheng Sanggou Bay nature reserves</td>
<td>Rongcheng, Shandong Prov.</td>
<td>county</td>
<td>13,333</td>
<td>1987-05-01</td>
</tr>
<tr>
<td>Rongcheng Swan</td>
<td>Rongcheng, Shandong Prov.</td>
<td>province</td>
<td>10,500</td>
<td>1984-01-01</td>
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1.3.5.3 Japan

**Total Population:** 127.77 (Million, World Bank 2007)
**Total GDP ($):** 4,376.70 (Billion, World Bank 2007)

**Total sea area:**
- *contiguous zone:* 24 NM
- *exclusive economic zone:* 200 NM
- *territorial sea:* 12 NM; between 3 NM and 12 NM in the international straits - La Perouse or Soya, Tsugaru, Osumi, and Eastern and Western Channels of the Korea or Tsushima Strait

**Length of coastline:** 29,751 km (CIA, 2003)

**Marine park areas in National Parks of Japan (from DINRAC)**

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<tr>
<th>No.</th>
<th>Name of National Park</th>
<th>Name of Marine Park Area</th>
<th>Location</th>
<th>Rank</th>
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</table>
1.3.5.4 The Russian Federation

**Total Population**: 141.64 (Million, World Bank 2007)
**Total GDP ($)**: 1,291.01 (Billion, World Bank 2007)

**Total sea area:**
- *continental shelf*: 200-m depth or to the depth of exploitation
- *exclusive economic zone*: 200 NM
- *territorial sea*: 12 NM

**Length of coastline**: 37,653 km (CIA, 2003)

---

### Marine and Coastal Nature Reserves of Russian Federation

<table>
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<tr>
<th>No.</th>
<th>Name of nature reserves</th>
<th>Location</th>
<th>Rank</th>
<th>Area, ha</th>
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<td>Khabarovsk Territory</td>
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### Marine and Coastal Nature Partial Reserves and Natural Parks of Russian Federation

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1.3.5.5 The Republic of Korea

Total Population: 48.53 (Million, World Bank 2007)
Total GDP($): 969.79 (Billion, World Bank 2007)
Total sea area:
contiguous zone: 24 NM
territorial sea: 12 NM; between 3 NM and 12 NM in the Korea Strait
continental shelf: not specified
exclusive economic zone: 200 NM
Length of coastline: 2,413 km (CIA, 2003)

Marine and Coastal Nature Reserves of Korea

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<td>6.860</td>
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</tbody>
</table>

### 1.4 Organization

DINRAC - Data and Information Network Regional Activity Centre  
POMRAC - Pollution Monitoring Regional Activity Centre  
MERRAC - Marine Environmental Emergency Preparedness and Response Regional Activity Centre  
CEARAC - Special Monitoring and Coastal Environment Assessment Regional Activity Centre  
RCU - Regional Coordinating Unit

#### 1.4.1 Intergovernmental Meeting

NOWPAP Intergovernmental Meeting (IGM) serves as the Conference of Parties for NOWPAP. The IGMs are held every 12 months. The venue is determined on a rotational basis.

**Composition**  
- Representatives of the four Member States of NOWPAP;  
- The Chair is from the country hosting the meeting and elects the vice Chairs;  
- Vice Chairs – representatives from the 2 countries that the hosted the 2 last IGM; and  
- Rapporteur – representative from the country that will host the next IGM.
1.4.2 Coordinating Unit

NOWPAP has a co-hosted Regional Co-ordinating Unit (RCU) in Toyama, Japan and Busan, the Republic of Korea. Before the establishment of the RCU in 2004, Regional Seas Branch had acted as Interim Secretariat for NOWPAP.

1.4.3 Regional Activity Centres

1.4.3.1 CEARAC

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

CEARAC is hosted by the Northwest Pacific Region Environmental Cooperation Centre (NPEC) in Toyama, Japan. Its main activities are to monitor and assess harmful algal blooms, to develop new monitoring tools using remote sensing and to assess land-based sources of marine litter.

Director:
Mr. Hidemasa YAMAMOTO
Special Monitoring and Coastal Environmental Assessment Regional Activity Centre
5-5 Ushijimashin-machi, Toyama 930-0856, Japan
Tel: +81-76-445-1571, Fax: +81-76-445-1581, E-mail: h-yamamoto@npec.or.jp
http://www.cearac.nowpap.org

1.4.3.2 DINRAC

Data and Information Network Regional Activity Centre (DINRAC)

DINRAC is based in the Policy Research Centre for Environment & Economy of the Ministry of Environmental Protection in Beijing, People’s Republic of China. The objectives of DINRAC are to develop a region-wide data and information exchange network, to promote regional cooperation and exchange of information on the marine and coastal environment in the NOWPAP region and eventually to serve as a NOWPAP Clearinghouse.

Director:
Mr. Jianguo WANG
Data and Information Network Regional Activity center
No. 1 Yuhuinanlu, Chaoyang District, Beijing 100029 People’s Republic of China
Tel: +86-10-8464-0869, Fax: +86-10-8463-0849, E-mail: jqwang@sepa.gov.cn
http://www.dinrac.nowpap.org
1.4.3.3 MERRAC

Marine Environmental Emergency Preparedness and Response Regional Activity Centre (MERRAC)

Established in the Maritime and Ocean Engineering Research Institute under Korea Ocean R&D Institute (MOERI/KORDI) in Daejeon, the Republic of Korea, MERRAC is a joint effort of UNEP and IMO to develop effective regional cooperative measures in response to marine pollution incidents including oil and hazardous and noxious substance (HNS) spills. MERRAC is also working on marine-based sources of marine litter.

**Director:**
Dr. Seong-Gil KANG
Marine Environmental Emergency Preparedness & Response Regional Activity Centre
P.O. Box 23, Yuseong, Daejeon 305-600, Republic of Korea
Tel: +82-42-868-7281, Fax: +82-42-868-7738, E-mail: kangsg@moeri.re.kr
http://www.merrac.nowpap.org

1.4.3.4 POMRAC

Pollution Monitoring Regional Activity Centre (POMRAC)

Located at the Pacific Geographical Institute (PGI) of the Far East Branch of the Russian Academy of Sciences in Vladivostok, Russian Federation, POMRAC is responsible for cooperative measures related to atmospheric deposition of contaminants and river and direct inputs of contaminants into the marine and coastal environment. In 2007, POMRAC started a new project on integrated coastal zone and river basin management and compiled the state of marine environment report.

**Director:**
Dr. Anatoly N. KACHUR
Pollution Monitoring Regional Activity Centre
Pacific Institute of Geography, Far–Eastern Branch of the Russian Academy of Sciences
7 Radio Street, Vladivostok 690022, Russian Federation
Tel: +7-4232-313-071, Fax: +7-4232-312-833, E-mail: kachur@tig.dvo.ru
http://pormac.nowpap.org

1.4.4 National Focal Points

1.4.4.1 NOWPAP NFP

Japan

Mr. Masayoshi MIZUNO
NOWPAP Focal Point for Japan
Director, Global Environment Division
International Cooperation Bureau
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E-mail: masayoshi.mizuno@mofa.go.jp

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   International Cooperation Bureau  
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   Tokyo 100-8919, Japan  
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People’s Republic of China

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Programme Officer,  
Division of International Cooperation  
Department of International Cooperation  
Ministry of Environmental Protection (MEP)  
115 Xizhimennei Nanxiaojie,  
Beijing 100035, People’s Republic of China  
Tel: (86 10) 6655-6515; Fax: (86 10) 6655-6513  
Email: zhangmh@mep.gov.cn

Republic of Korea

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Director, Environmental Cooperation Division  
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Seoul 110-787, Republic of Korea  
Tel: (82-2)-2100-7794; Fax: (82-2)-2100-7991  
E-mail: hekim92@mofat.go.kr
CC:  Ms. Eunju AHN  
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Climate Change and Environment Division  
Ministry of Foreign Affairs and Trade  
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Mr. Seon-Tae KIM  
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Marine Policy Bureau  
Ministry of Land, Transport and Maritime Affairs  
2F, K-water, 188 Joongang-ro, Gwacheon-si, Gyeonggi-do 427-100 Republic of Korea  
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Mr. Sun-Bae HONG  
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Marine Policy Bureau  
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**Russian Federation**

Mr. Igor MAYDANOV  
NOWPAP Focal Point for the Russian Federation  
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Ministry of Natural Resources  
4/6 B. Gruzinskaya Street  
Moscow 123995, Russian Federation  
Tel: (7- 495)-254-0300; Fax: (7- 495)-254-8283  
E-mail: maydanov@mnr.gov.ru

CC:  Mr. Sergey TIKHONOV
1.5 Financial Arrangements

The implementation of the Action Plan is financed principally by contributions from the NOWPAP member states. Direct financial support from UNEP and in-kind contributions from United Nations and other bodies were made available in the initial stages. The participating Governments established a Trust Fund.

1.5.1 Trust Fund

The NOWPAP Trust Fund has been contributed to by each of the member States. The NOWPAP Trust Fund is established to provide financial support for the implementation of the Action Plan adopted by the Intergovernmental Meeting on the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region.

Decisions on the Trust Fund and the level of contributions from the countries are made by the Intergovernmental Meeting of NOWPAP through the relevant Governing Councils of UNEP. The initial target of contribution was 500,000 US$ and the scale of current contribution is shown in the table below.

Scale of contributions to the NOWPAP Trust Fund (in $US)

<table>
<thead>
<tr>
<th>NOWPAP Member</th>
<th>Basic %</th>
<th>Additional %</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td>Japan</td>
<td>5</td>
<td>20</td>
<td>125,000</td>
</tr>
<tr>
<td>People’s Republic of China</td>
<td>5</td>
<td>3</td>
<td>40,000</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>5</td>
<td>15</td>
<td>100,000</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>5</td>
<td>5</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>43</strong></td>
<td><strong>315,000</strong></td>
</tr>
</tbody>
</table>
1.6 Partners

1.6.1 Japan

Northwest Pacific Region Environmental Co-operation Centre (NPEC)
Government affiliated organization
Host of CEA/RAC

Ministry of Foreign Affairs
Government organization

Ministry of Land, Infrastructure and Transport
Government organization

Ministry of the Environment
Government organization

Japan Oceanographic Data Centre
Academic organization
Ocean data, monitoring and assessment

Marine Information Research Centre
Academic organization

National Institute for Environmental Studies
Academic organization

1.6.2 People’s Republic of China

Ministry of Environmental Protection (MEP)
Government organization
Host of DINRAC through its Policy Research Centre for Environment & Economy

State Maritime Administration
Ministry of Transportation
Government organization
Involved in NOWPAP MERRAC activities related to oil and chemicals spills

State Oceanic Administration
Government organization

Chinese Research Academy of Environmental Science
Academic organization
Focal point of NOWPAP marine litter activity
1.6.3 Republic of Korea

National Fisheries Research and Development Institute
Academic organization
Host of NOWPAP RCU Busan Office

Maritime and Ocean Engineering Research Institute / Korea Ocean Research and Development Institute (MOERI/KORDI)
Academic organization
Host of MERRAC

Ministry of Foreign Affairs and Trade
Government organization

Ministry of Land, Transport and Maritime Affairs
Government organization
Marine pollution, monitoring, mapping

Korea Maritime Institute
Academic organization

1.6.4 Russian Federation

Pacific Geographical Institute (PGI) of the Far Eastern Branch of the Russian Academy of Science (FEB-RAS)
Academic organization
Host of POMRAC

Far Eastern Regional Hydrometeorological Research Institute (FERHRI)
Academic organization

Primorsky Territorial Centre for Monitoring of Federal Committee for Hydrometeorology
Government organization

Ministry of Natural Resources and the Environment
Government organization

1.6.5 International and Regional

International Maritime organization (IMO)
International organization
IMO, as being the secretariat for the International Oil Pollution Preparedness, Response and Co-operation Convention (OPRC 90), in co-operation with UNEP, has been assisting the MERRAC and NOWPAP member States in the development of a
NOWPAP Regional Oil Spill Contingency Plan and an associated regional MOU as well as other activities.

GPA
UN organization
Address Land-Based Activities in the Asia-Pacific Region.

IOC /UNESCO and IOC sub-commission for the south Pacific (IOC/WESTPAC)
WESTPAC
International organization

North Pacific Marine Science Organizations (PICES)
International organization

Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)

Yellow Sea Large Marine Ecosystem Project (YSLME)

2 Our Work

2.1 Northwest Pacific Action Plan

Northwest Pacific Action Plan
Year Adopted: September 1994, in Seoul, Republic of Korea
Signatories / Participating Countries: four China, Japan, the Republic of Korea and the Russian Federation

Goals:
- The wise use, development and management of the coastal and marine environment so as to obtain the utmost long-term benefits for the human populations of the region, while protecting human health, ecological integrity and the region's sustainability for future generations;
- The control, halting and prevention of any further degradation and deterioration of the coastal and marine environment and its resources;
- The recovery and rehabilitation of coastal and marine environments that have been degraded and which still have the potential for such a recovery; and
- The long-term sustainability of coastal and marine environmental quality and resources as assets for the present and future human populations of the region.

Objectives:
- To assess regional marine environmental conditions by co-ordinating and integrating monitoring and data-gathering systems on a regional basis, making the best use of the expertise and facilities available within the region on a consistent and collective basis;
- To collate and record environmental data and information to form a comprehensive database and information management system which will serve as a repository of all relevant available data, act as the sound basis for decision-making, and serve as a source of information and education for specialists, administrators and others;
• To develop and adopt a harmonious approach towards coastal and marine environmental planning on an integrated basis and in a pre-emptive, predictive and precautionary manner;

• To develop and adopt a harmonious approach towards the integrated management of the coastal and marine environment and its resources, in a manner which combines protection, restoration, conservation and sustainable use; and

• To develop and adopt effective measures for mutual support in emergencies, collaboration in the management of contiguous bodies of water and co-operation in the protection of common resources as well as in the prevention of coastal and marine pollution.

Like other regional seas programme, NOWPAP is also turning its attention to building synergies with international environment conventions and related agreements, as involving in the Global Programme of Action for the Protection of the Marine Environment from Land-based Sources of Pollution (GPA).

For full text of the North West Pacific Action Plan:
http://www.nowpap.org/

2.2 Convention

There is currently no Convention for the NOWPAP region.

2.3 Activities

2.3.1 Marine Pollution

• Atmospheric Input of Contaminants into the Marine and Coastal Environment;
• River Input of Contaminants into the Marine and Coastal Environment;
• NOWPAP Regional Oil and Hazardous and Noxious Substances Spill Contingency Plan.

2.3.2 Marine and Coastal Management

• Harmful Algal Bloom (HAB);
• Remote Sensing (RS) of the marine and coastal environment;
• State of the Marine Environment Report;
• Integrated Coastal and River Basin Management (ICARM);
• Regional Clearing House and Data and Information Network.
2.4 Issues

2.4.1 Need for Preparedness and Response to Oil Spills

As a result of the increase in oil transport following a period of economic growth, there has been a remarkable increase in the amount of oil pollution in the NOWPAP region in recent years. For example the heavy fuel oil spill from the Russian tanker, the Nakhodka, which occurred on 2 January 1997 and brought about extensive and serious environmental damages to the coastal areas of Japan (UNEP 1998), and the disastrous “Hebei Spirit” oil spill occurred in December 2008 off the coast of Taean, Republic Korea.

At the 8th Intergovernmental Meeting (Sanya, 5-7 November 2003) the Regional Oil Spill Contingency Plan was adopted (Adler 2004). This is the first regional full-scale operational marine environmental arrangement aimed at practical/operational cooperation during situations of emergencies of large oil spills (Adler 2004). A Memorandum of Understanding (MoU) was signed later on by the NOWPAP countries in 2004. The MoU contains the text on the Regional Cooperation Regarding Preparedness and Response to Oil Spills in the Marine Environment of the NOWPAP Region (Adler 2004). In 2008 member states agreed to incorporate the Hazardous and Noxious Substances (HNS) into the Regional Plan as potential risk of shipping HNS is increasing in the region.

2.4.2 Marine Litter

NOWPAP has initiated a project on marine litter activity (MALITA) since November 2005, after approval by the tenth NOWPAP Intergovernmental Meeting. NOWPAP MALITA was a part of the UNEP Global Initiative on marine litter, together with 10 other individual Regional Seas Programmes. NOWPAP Regional Action Plan on Marine Litter (RAP MALI) was developed and adopted at the twelfth NOWPAP Intergovernmental Meeting (October 2007). The detailed workplan of RAP MALI was finalized at the NOWPAP RAP MALI Meeting (November 2007). RAP MALI is the second phase of the NOWPAP activities related to marine litter which is initiated in 2008.

2.4.3 Water Quality

In the region, the environmental problems affecting the marine and coastal areas include land-based sources of pollution, oil spills and coastal alterations including land reclamation and excessive groundwater extractions (Nakmura, 2004).

Eutrophication of coastal waters and occurrence of harmful algal blooms are limited to localities, but are notably reported in the south coast of the Korean Peninsula, particularly in the Chinhae and Masan Bays. In 1998 there was a report on the red tide in the Republic of Korea. The symptom of eutrophication has decreased in some coastal waters where the reduction of nutrient input has been substantiated (Nakmura, 2004).
Overall, coastal-marine waters of the eastern Korean Peninsula are subject to pollution with wastewater from the coastal settlements and industries on one hand, and to the heavy impact of pollutants brought by current from the Liaotung Bay in China on the other ((Nakmura, 2004). The Great Peters Bay in Russia is suffering from severe pollution originating from the sewage in Vladivostok and its environs. The Naktong delta is considered to be an important area for bird species, which is experiencing degradation of habitats. The Nakaumi Lagoon in Japan, due to the construction of a gate has changed its limnological conditions for living resources (Nakmura, 2004).

In terms of the river mouth input, the input of the Yangtze into the East China Sea, particularly during flood periods, coupled with the Kuroshio Branch into the eastern NOWPAP region, reportedly has impacts on the quality of the southern NOWPAP region (Nakmura, 2004). The Tuman river input is considered to be significant in terms of suspended solids and heavy metals, affecting the coastal waters around the river mouth and possibly up to the Great Peters Bay (Nakmura, 2004).

2.4.4 Land Reclamation

Land reclamation and coastal modification has been practised mainly in the Republic of Korea and Japan. These practices have destroyed the important habitats for a range of species. In case of the Shihwa Dike in the Republic of Korea, 17,300 ha of land and 180 million tonnes of water resources for supply have been secured, but the water quality worsened due to the increased pollution loads (Nakmura, 2004).

2.4.5 Atmospheric Pollution

Concerning the atmospheric deposition onto the NOWPAP sea area, it is estimated that 73% of pollutants originate from China, and the most heavily polluted air masses come from the east along the trajectories from Japan and the Korean Peninsula (Nakmura, 2004). Principle pollutants are SO$_2$, NO$_2$, CO and dust. The North Pacific has been reported to be high in concentration of Persistent Organic Pollutants (POPs) according to the model studies (Nakmura, 2004). A Japanese research also identified endocrine disrupting effects of some chemicals on mussels in the region. Due to the sub-polar climate, POPs and endocrine disrupters are considered to be deposited onto the marine surface. Atmospheric transfer in winter is assessed to be a factor bringing long-range atmospheric pollutants to the region. The East Asia Acid Rain Monitoring Network, as well as the established UNEP/GEF MSP on Dust and Sand Storm will investigate further the atmospheric transport and deposition in the region (Nakmura, 2004).

2.4.6 Climate Change and Sea Level Rise

According to the Japanese research, in the event of doubling of CO$_2$ from the 1990 level, the surface temperature of the regional waters would increase by 1.6°C and the sea level rise of approximately 20-40 cm. It has been suggested that the Pacific Deep Water has an ability to absorb more atmospheric CO$_2$ than the Atlantic. The net amount of atmospheric CO$_2$ dissolved into the North Pacific is estimated to be greater than 2.0
GtC/year (Nakmura, 2004). Climate change and sea level rise is still an uncertain factor yet a growing concern for the future.

2.4.7 A Co-ordinated Information and Database System

In the past there has been a lack of co-ordinated information and response on both a national and regional scale. At the 1st IGM in Seoul, 14 September 1995 one of the resolutions adopted was: ‘Establishment of a Comprehensive Database and Information Management System’. This led to the formation of the Data and Information Network Regional Activity Centre (DINRAC).

In order to share data and information, NOWPAP has made considerable effort to establish links with partners in the region and beyond such as COBSEA, IOC/WESTPAC, PICES, PEMSEA, YSLME.

3 Publications

3.1 Overview

State of marine environment in the NOWPAP region
http://www.nowpap.org >>> Projects

Regional overview on legal instruments, institutional arrangements and programmes related to marine litter in the NOWPAP region
http://dinrac.nowpap.org >>> NOWPAP Publications
>>> DINRAC

Regional overview of legal aspects of the protection and management of the marine and coastal environment of the Northwest Pacific region
http://dinrac.nowpap.org >>> NOWPAP Publications
>>> DINRAC

National reports on coastal and marine environmental data and information networks in the Northwest Pacific region
http://dinrac.nowpap.org >>> NOWPAP Publications
>>> DINRAC

Regional report and national reports on marine and coastal biodiversity data and information in the Northwest Pacific region
http://dinrac.nowpap.org >>> NOWPAP Publications
>>> DINRAC

Regional overview and national reports on marine and coastal nature reserves in the Northwest Pacific region
http://dinrac.nowpap.org >>> NOWPAP Publications
>>> DINRAC
### 3.2 Marine Litter

**NOWPAP regional action plan on marine litter (RAP MALI)**
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents

**Regional overview: marine litter in the NOWPAP region, second edition**
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents

**Guidelines for monitoring marine litter on the beaches and shorelines of the Northwest Pacific region**
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents >>> Marine litter guidelines

**Guidelines for monitoring marine litter on the seabed of the Northwest Pacific region**
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents >>> Marine litter guidelines

**Guidelines for providing and improving port reception facilities & services for ship-generated marine litter in the Northwest Pacific region**
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents >>> Marine litter guidelines

**Marine litter guidelines for tourists and tour operators in marine and coastal area**
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents >>> Marine litter guidelines

**Recycling of plastic marine litter**
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents >>> MALITA leaflets and brochures

**Sectoral guidelines for marine litter management**
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents >>> Marine litter guidelines

### 3.3 Oil Spill Response

**Guidelines for shoreline clean-up**
http://merrac.nowpap.org >>> Publications >>> Technical reports

**Guidelines for the use of dispersants**
http://merrac.nowpap.org >>> Publications >>> Technical reports

**Sensitivity mapping**
http://merrac.nowpap.org >>> Publications >>> Technical reports

### 3.4 Pollutants Input

**Regional overview on river and direct inputs of contaminants into the marine and coastal environment in NOWPAP region**
http://pomrac.nowpap.org >>> Publications
Regional overview on atmospheric deposition of contaminants to the marine and coastal environment in NOWPAP region
http://dinrac.nowpap.org >>> NOWPAP Publications >>> POMRAC

3.5 Harmful Algal Blooms and Remote Sensing
Eutrophication monitoring guidelines by remote sensing for the NOWPAP region
http://cearac.nowpap.org >>> Special Monitoring >>> Publications

Integrated report on harmful algal blooms for the NOWPAP region
http://cearac.nowpap.org >>> Coastal Environmental Assessment >>> Publications

Integrated report on ocean remote sensing for the NOWPAP region
http://cearac.nowpap.org >>> Special Monitoring >>> Publications

Countermeasures against harmful algal blooms in the NOWPAP region
http://cearac.nowpap.org >>> Coastal Environmental Assessment >>> Publications

National reports (and regional overview) on coastal and marine environmental GIS and RS applications in the NOWPAP region
http://dinrac.nowpap.org >>> NOWPAP Publications >>> DINRAC

3.6 Other Publications

1st international workshop on marine litter in the Northwest Pacific region
1st and 2nd NOWPAP workshop on marine litter
http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents

Marine litter, growing threat to marine environment

Sea-based marine litter, problem and solution

What can we do about marine litter?

http://www.nowpap.org >>> Projects >>> Marine litter >>> Documents >>> MALITA leaflets and brochures

Cochlodinium
Not available on line (Please contact NOWPAP RCU)

3.7 Meeting Reports

3.7.1 Intergovernmental Meetings on the NOWPAP

Reports on thirteen Intergovernmental Meetings since 1994
3.7.2 CEARAC Meetings

Reports on six focal points meetings and reports on relevant working groups meetings since 2001

3.7.3 DINRAC Meetings

Reports on seven focal points meetings and reports on relevant experts meetings since 1998

3.7.4 MERRAC Meetings

Reports on eleven focal points meetings and reports on relevant working groups meetings since 2002

3.7.5 POMRAC Meetings

Reports on six focal points meetings and reports relevant working groups meetings since 2001

3.7.6 Other Related Meetings


3.8 Newsletter

Each RAC and RCU publish their newsletters which are available on their website and in hard copies.

3.9 Website Links

NOWPAP: http://www.nowpap.org

CEARAC: http://cearac.nowpap.org/
4 Professionals

4.1 List of Coastal and Marine Environmental Experts

Link to the DINRAC website: http://dinrac.nowpap.org/NowpapExpert.php3

4.2 List of Coastal and Marine Environmental Institutions

Link to the DINRAC website: http://dinrac.nowpap.org/NowpapInstitution/NowpapInstitution_display.php3