

# 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 1<sup>st</sup> 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:

- CEARAC, Toyama, Japan - The Special Monitoring and Coastal Environment Assessment Regional Activity Centre;
- DINRAC, Beijing, China - the Data and Information Network RAC;
- MERRAC, Taejon, Republic of Korea - the Marine Environmental Emergency Preparedness and Response Regional Activity Centre; and;
- POMRAC, Vladivostok, Russian Federation - the Pollution Monitoring Regional Activity Centre.

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

1991	First Meeting of Experts and National Focal Points on the Development of the Northwest Pacific Action Plan, held in Vladivostok
1992	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.
1993	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.
1994	1st Intergovernmental Meeting/IGM (Seoul, Korea): - adopted NOWPAP and three supporting Resolutions including five priority projects
1996	2 <sup>nd</sup> Intergovernmental Meeting, Japan
1998	3 <sup>rd</sup> Intergovernmental Meeting, the Russian Federation
1999	4th IGM (Beijing, China): - agreed to establish four Regional Activity Centres (RACs)
2000	5 <sup>th</sup> Intergovernmental Meeting, the Republic of Korea
2000	6th IGM (Tokyo, Japan): - agreed in principle to establish a co-hosted NOWPAP Regional Coordinating Unit (RCU) in Toyama, Japan, and Busan, Korea
2002	7th IGM (Vladivostok, Russia): - agreed on the detailed plan for the establishment of the RCU RAC activities got underway
2002	8th IGM (Hainan, China): - adopted the NOWPAP Regional Oil Spill Contingency Plan
2004	9 <sup>th</sup> IGM (Busan, Republic of Korea) -Opening of the co-hosted NOWPAP RCU,

	MOU on Regional Co-operation Regarding Preparedness and Response to Oil Spills was signed
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-C and 26-C. In the Bohai Sea, the range is between 3-C and 24-C. In the Pacific Ocean, south of Kyushu, temperatures range between 20-C and 28-C. 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-C (winter) to 30-C (summer) in the south, from 0-C (winter) to 5-C (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<sup>2</sup> of drainage area. In China alone there are more than 150 rivers covering a drainage area over 10,000,000 km<sup>2</sup>. 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<sup>2</sup> (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<sup>2</sup> (Nakamura, 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 km<sup>2</sup>, Hokkaido (Japan) 78,000 km<sup>2</sup> and Sakhalin (Russia) 76,400 km<sup>2</sup>. The numerous mid-sized islands (between 1,000 and 5,000 km<sup>2</sup>) 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 km<sup>2</sup>) 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 (*Ulvales Codium* and *Caulerpa*), Phaeophyta (*Nemacystus*, *Laminaria*, *Kjellmaniella*, *Eisenia*, *Ecklonia*, *Undaria*, *Hizikia* and *Sargassum*) and Rhodophyta (*Helminthocladia*, *Scinaia*, *Gelidium*, *Gloiopeltis*, *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 (Nakamura, 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, pomarine 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) (Nakamura, 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 Kuryl 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).

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

Source: Nakamura (2004)

## 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)

Name of nature reserves	Location	Rank	Area (ha)	Designated
Yalu River Estuary and Coastal Wetlands	Donggang City, Liaoning province	national	108,057	1987-07-01
Changdao	Changdao County, Shandong province	national	5,300	1982-01-01
Yancheng Littoral Wetland and Rare Bird Species	Yancheng city, Jiangsu Province	national	453,000	1984-01-01
Dafeng Pere Davis Deer ( <i>Elaphurus davidianus</i> )	Dafeng county, Jiangsu Province	national	2,776	1986-02-08
Shanshan Marine Rare Species	Dalian, Liaoning Prov.	city	1,103	1986-12-01
Changhai Marine Rare Species	Changhai County, Liaoning Prov.	province	220	1985-04-01
Changshan Isle Marine Species	Changhai County, Liaoning Prov.	city	413	2004-01-01
Haiwang Nine Islands	Changhai County, Liaoning Prov.	city	2,143	2000-08-01
Laopian Island-Yuhuang Ding	Dalian, Liaoning Prov.	city	1,580	2000-08-01
Dagong Island	Qingdao, Shandong Prov.	province	1,603	2001-03-01
Qingdao Amphioxus	Qingdao, Shandong Prov.	city	6,181	2004-08-01
Miao Isle Seals	Changdao, Prov.	province	173,100	2001-06-01
Qiansan Island	Rizhao, Shandong Prov.	city	10,000	1992-12-01
Qianliyan Island	Haiyang, Shandong Prov.	province	1,824	1999-12-01
Rongcheng City Shantou	Rongcheng, Shandong Prov.	province	6,366	2002-12-01
Rongcheng Sanggou Bay nature reserves	Rongcheng, Shandong Prov.	county	13,333	1987-05-01
Rongcheng Swan	Rongcheng, Shandong Prov.	province	10,500	1984-01-01
Qidong Yangtze River Northern Estuary	Qidong, JiangsuProv.	province	47,734	1985-08-01

### 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)

No.	Name of National Park	Name of Marine Park Area	Location	Rank	Area (ha)	Designated
1	Rikuchu Kaigan	Kesen'numa	Kesen'numa City, Miyagi	national	23.4	1971-1-22
2	Ogasawara	Ogasawara	Ogasawara Village, Tokyo	national	463.0	1972-11-6
3	Fuji Hakone Izu	Miyake Jima Island	Miyake Village, Tokyo	national	51.6	1994-11-7
4	Yoshino Kumano	Kumano Nada, Niki Shima Island	Kumono City, Mie	national	14.4	1975-12-19
		Kushimoto	Kushimoto Town, Wakayama	national	52.9	1970-7-1
5	San'in Kaigan	Goshikihama	Kyoutango City, Kyoto	national	20.7	1990-4-6
		Toyooka	Toyooka City, Hyogo	national	7.6	1971-1-22
6		Takeno	Toyooka City, Hyogo	national	9.9	1971-1-22
		Hamasaka	Shin Onsen Town, Hyogo	national	19.2	1971-1-22
		Uratomi Kaigan	Iwami Town, Tottori	national	9.8	1971-1-22
7	Daisen Oki	Shimane Penninsula	Izumo City, Shimane	national	7.0	1972-10-16
		Jodogaura	Okinosima Town, Shimane	national	20.8	1975-12-11
		Shiro	Okinosima Town, Shimane	national	14.8	1975-12-11
		Kuniga	Nishinoshima Town, Shimane	national	7.3	1975-12-11
		Kaisi	Kaishi Town, Shimane	national	7.6	1997-9-18
8	Ashizuri Uwakai	Uwakai	Ainan Town, Ehime	national	58.2	1972-11-10
		Okinosima Island	Sukumo City, Kouchi	national	36.3	1972-12-10

		Kasai	Ootsuki Town, Kouchi	national	16.8	1972-12-10
		Tutomezaki	Ootsuki Town, Kouchi	national	8.3	1995-8-21
		Shirigai	Ootsuki Town, Kouchi	national	10.4	1995-8-21
<b>9</b>	Saikai	Fukue	Goto City, Nagasaki	national	11.2	1972-10-16
		Wakamatsu	Shin Kami Goto Town, Nagasaki	national	19.2	1972-10-16
<b>10</b>	Unzen Amakusa	Tomioka	Reihoku Town, Kumamoto	national	16.2	1970-7-1
		Amakusa	Amakusa City, Kumamoto	national	5.1	1970-7-1
		Ushibuka	Amakusa City, Kumamoto	national	94.4	1970-7-1
<b>11</b>	Kirishima Yaku	Sakurajima Island	Kagoshima City, Kagoshima	national	14.7	1970-7-1
		Sata Misaki	Minami Oosumi Town, Kagoshima	national	11.8	1970-7-1
		Kuriu	Yaku Town, Kagoshima	national	114.4	2002-2-19
<b>12</b>	Iriomote	Taketomi Jima Island, Takidonguchi	Taketomi Town, Okinawa	national	36.7	1977-7-1
		Taketomi Jima Island, Shimobishi	Taketomi Town, Okinawa	national	83.1	1977-7-1
		Kuro Shima Island, Kyan'guchi	Taketomi Town, Okinawa	national	45.5	1977-7-1
		Aragusuku Jima Island, Maibishi	Taketomi Town, Okinawa	national	48.2	1977-7-1

### Marine park areas in Quasi-National Parks of Japan

No.	Name of Quasi-National Park	Name of Marine Park Area	Location	Rank	Area (ha)	Designated
<b>1</b>	Niseko Shakotan Otaru Coast	Shakotan Penninsula	Shakotan Town, Hokkaido	national	28.9	1972-10-16
		Otaru Coast	Otaru City, Hokkaido	national	14.7	1972-10-16
<b>2</b>	Shimokita Penninsula	Hotogegaura	Sai Village, Aomori	national	5.7	1975-12-11
		Taishima Island	Mutsu City, Aomori	national	3.6	1975-12-11
<b>3</b>	South Bousou	Katsuura	Katuura City, Chiba	national	14.5	1974-7-7

4	Sado Yahiko Yoneyama	Tokaifu	Sado City, Niigata	national	10	1971-1-22
		Aikawa	Sado City, Niigata	national	6	1971-1-22
		Ogi	Sado City, Niigata	national	5	1971-1-22
5	Noto Penninsula	Konoura	Tamasu City, Ishikawa	national	6.3	1971-1-22
		Uchiura	Noto Town, Ishikawa	national	32	1971-1-22
6	Wakasa Bay	Mikata	Wakasa Town, Fukui	national	30.2	1971-1-22
7	Kitanagato Coast	Susa Bay	Hagi City, Yamaguchi	national	33	1997-9-18
8	Muroto Anan Coast	Awa Oshima Island	Muki Town, Tokushima	national	15.5	1971-1-22
		Awa Takegashima Island	Kaiyou Town, Tokushima	national	9.9	1972-10-16
9	Genkai	Genkai	Karatsu City, Saga	national	45.5	1970-7-1
10	Iki Tsushima	Iki Tatsunoshima Island	Iki City, Nagasaki	national	8.6	1978-6-16
		Iki Tenagajima Island	Iki City, Nagasaki	national	9.7	1978-6-16
		Iki Tsumagashima Island	Iki City, Nagasaki	national	9.3	1978-6-16
		Tsushima Asaga Bay	Tsushima City, Nagasaki	national	9.5	1978-6-16
		Tsusima Kanzaki	Tsushima City, Nagasaki	national	10.4	1978-6-16
11	Nippou Coast	Urae	Saeki City, Ooita	national	33.5	1974-2-15
		Nannboku Ura	Nobeoka City, Miyazaki	national	48.7	1974-2-15
12	Nichinan Coast	Nichinan	Nichinan City, Miyazaki	national	55.9	1970-7-1
13	Amami Islands	Kasari Penninsula Eastcoast	Amami City, Kagoshima	national	93	1974-2-15
		Nadeko Zaki	Amami City, Kagoshima	national	70	1974-2-15
		Setonaikai	Setouchi Town, Kagoshima	national	58	1974-2-15
		Kametoku	Tokunoshima Town, Kagoshima	national	70	1974-2-15
		Yoron Island	Yoron Town, Kagoshima	national	155	1974-2-15
14	Okinawa Coast	Okinawa Coast	Nago City, Okinawa	national	140	1972-5-15
		Tokashiki	Tokashiki Town, Okinawa	national	120	1978-12-9
		Zamami	Zamami Town, Okinawa	national	233	1978-12-9

### 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

No.	Name of nature reserves	Location	Rank	Area, ha	Designated
1	Far Eastern State Marine Nature Biospheric Reserve	Peter the Great Bay	global	64,220	1978
2	L.G. Kaplanov Lazovskiy State Nature Reserve	Primorskii Krai	national	121,000	1940
3	K.G. Abramov Sikhote-Alin State Nature Biospheric Reserve	Primorskii Krai	global	401,430	1935
4	State Nature Reserve "Botchinskiy"	Khabarovsk Territory	national	267,300	1994
5	V.L. Komarov Ussuriyskiy State Nature Reserve	Primorskii Krai	national	40,430	1934
6	State Nature Biospheric Reserve "Kedrovaja Pad"	Primorskii Krai	global	17,900	1916
7	Khankaiskiy State Nature Biospheric Reserve	Primorskii Krai	global	39,290	1990

#### Marine and Coastal Nature Partial Reserves and Natural Parks of Russian Federation

No.	Name of nature partial reserves and natural parks	Location	Rank	Area, ha	Designated
1	State Marine Partial Reserve "Vostok Bay"	Peter the Great Bay	sub-national/province	1,820	1989
2	Federal Partial Reserve "Barsovyi"	Primorskii Krai	national	106,900	1979
3	State Zoological Partial Reserve "Vasil'kovskiy"	Primorskii Krai	sub-national/province	34,000	1973
4	State Zoological Partial Reserve "Chiernyie Skaly"	Primorskii Krai	sub-national/province	12,400	1984
5	State Zoological Partial Reserve "Losinyiy"	Primorskii Krai	sub-national/province	26,000	1986

6	State Zoological Partial Reserve "Goraliy"	Primorskii Krai	sub-national/province	4,700	1976
7	State Zoological Partial Reserve "Borisovskoie Plato"	Primorskii Krai	sub-national/province	63,430	1996
8	State Zoological Partial Reserve "Taiezhnyi"	Primorskii Krai	sub-national/province	29,000	1978
9	State Zoological Partial Reserve "Tikhiy"	Primorskii Krai	sub-national/province	12,600	1957
10	State Zoological Partial Reserve "Poltavskiy"	Primorskii Krai	sub-national/province	119,000	1963
11	State Zoological Partial Reserve "Beriezoviy"	Primorskii Krai	sub-national/province	60,000	1963
12	State Nature Landscape Partial Reserve "Verkhnebikinskiy"	Primorskii Krai	sub-national/province	746,500	1998
13	Federal Partial Reserve "Tumninskiy"	Khabarovsk Territory	national	143,100	1987
14	Natural Park "Khasanskiy"	Primorskii Krai	sub-national/province	9,500	1997

### 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

No.	Name of nature reserves	Location	Rank	Area (ha)	Designated
1	Nakdong River estuary	Busan	national	34.20	1999-8-9
2	Muan tidal flat	Jeonnam	national	35.59	2001-12-28
3	Jindo tidal flat	Jeonnam	national	1.238	2002-12-28
4	Suncheon tidal flat	Jeonnam	national	28.0	2003-12-31
5	Boseong-Beolgyo tidal flat	Jeonnam	national	7.5	2003-12-32
6	Ongjin-Jangbong islands tidal flat	Incheon	national	68.4	2003.12.31
7	Nakdong River estuary	Busan	national	34.20	1989-3-10

8	Sohwang sand dune	Chungnam	national	0.121	2005-10-28
9	Sinduri sanddune coastal ecosystem	Chungnam	national	0.639	2002-10-9
10	Moonseom and adjacent marine ecosystem	Jeju	national	13.684	2002-11-5
11	Oryukdo and adjacent marine ecosystem	Busan	national	0.35	2003-12-31
12	Daeijakdo and adjacent marine ecosystem	Incheon	national	55.7	2003.12.31
13	Hanryeo	Gyeongnam	national	545,63	1968-12-31
14	Taeon	Chungnam	national	326.57	1978-10-30
15	Dok-do Natural Heritage Protected Area	Gyeongbuk	national	0.180	1982-11-16
16	Seongsan Ilchul-bong Natural Heritage Protected Area	Jeju	national	5.878	2000-7-18
17	Moon-seom and Beom-seom Natural Heritage Protected Area	Jeju	national	9.751	2000.7.18
18	Chagui-do Natural Heritage Protected Area	Jeju	national	6.721	2000-7-18
19	Mara-do Natural Heritage Protected Area	Jeju	national	6.860	2000-7-18

## 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

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<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:**

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Data and Information Network Regional Activity center

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### **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.

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Dr. Seong-Gil KANG

Marine Environmental Emergency Preparedness & Response Regional Activity Centre

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### **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.

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### **1.4.4.1 NOWPAP NFP**

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## **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)**

<b>NOWPAP Member</b>	<b>Basic %</b>	<b>Additional %</b>	<b>Total</b>
Japan	5	20	125,000
People's Republic of China	5	3	40,000
Republic of Korea	5	15	100,000
Russian Federation	5	5	50,000
<b>Total</b>	<b>20</b>	<b>43</b>	<b>315,000</b>

## **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 8<sup>th</sup> 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 (Nakamura, 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 (Nakamura, 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 ((Nakamura, 2004). The Great Peters Bay in Russia is suffering from severe pollution originating from the sewage in Vladivostok and its environ. 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 (Nakamura, 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 (Nakamura, 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 (Nakamura, 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 (Nakamura, 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 (Nakamura, 2004). Principle pollutants are SO<sub>2</sub>, NO<sub>2</sub>, CO and dust. The North Pacific has been reported to be high in concentration of Persistent Organic Pollutants (POPs) according to the model studies (Nakamura, 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 (Nakamura, 2004).

#### **2.4.6 Climate Change and Sea Level Rise**

According to the Japanese research, in the event of doubling of CO<sub>2</sub> 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<sub>2</sub> than the Atlantic. The net amount of atmospheric CO<sub>2</sub> dissolved into the North Pacific is estimated to be greater than 2.0

GtC/year (Nakamura, 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 1<sup>st</sup> 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**

Intersessional Workshop of the Northwest Pacific Action Plan, 25-26 July 2005, Seoul, Republic of Korea

## **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/>

DINRAC: <http://dinrac.nowpap.org>

MERRAC: <http://merrac.nowpap.org>

POMRAC: <http://pomrac.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](http://dinrac.nowpap.org/NowpapInstitution/NowpapInstitution_display.php3)