

海を汚している行動はどれですか？

How we pollute the sea?



# NEAR Project Report Survey of Marine Litter on Beaches

SUMMARY 2011



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Northwest Pacific Region Environmental Cooperation Center

# Survey of Marine Litter on Beaches

The Survey of Marine Litter on Beaches along the Northwest Pacific Region by the Northwest Pacific Environmental Cooperation Center (NPEC) is a cooperative joint effort undertaken to understand the extent of coastal pollution caused by marine litter washing ashore. It was started in 1996 and has been continued as the NEAR Project since 2010. The survey is an international collaboration among Japan, China, Korea, and Russia.

So far, we have had the cooperation of 37 local governments across four countries, covering 182 beaches — a total of 28,075 people have participated in the survey.

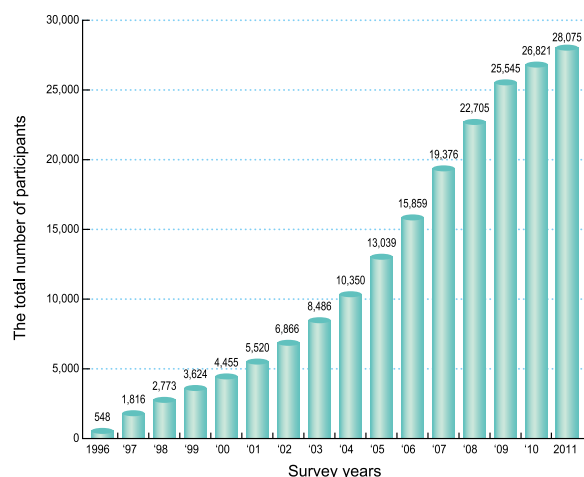


Figure 1. The total number of participants involved in the survey

## Summary of Survey of Marine Litter 2011

### Survey period

The survey was conducted from August to December of 2011.

### Survey participants and beaches surveyed

The survey was performed with the cooperation of local governments, NGOs and NPOs, and elementary and middle schools. For the survey 2011, a total of 1,254 people across 18 local governments of Japan, China Korea, and Russia, participated, covering 38 beaches.

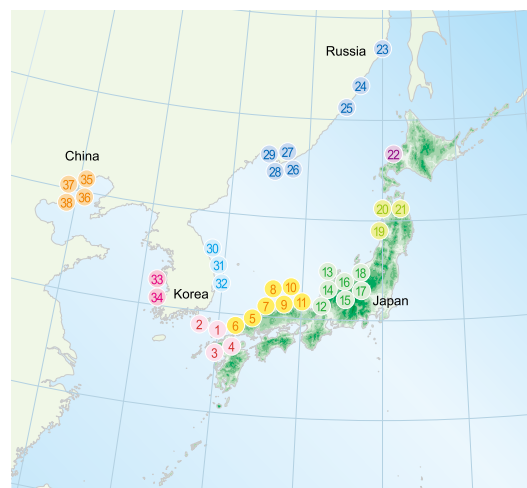


Figure 2. Surveyed beaches 2011

### Survey results

(Note: For details on survey methods, please consult the reference materials)

The average amount of marine litter per 100 m<sup>2</sup> was 213 pieces. Of this, plastic was the most prevalent at an average of 160 pieces (or 75% of the total). The next most common type was styrene foam, averaging 31 pieces (15%).

The average weight of marine litter per 100 m<sup>2</sup> was 1,922g. Of this, plastic was the most prevalent at 1,005g (or 52% of the total). The next most prevalent type was other artificial objects, averaging 351g (18%).

By far the most significant types of marine litter found on beaches were light materials such as plastic and styrene foam, as well as easily fragmented objects such as other artificial objects including lumber.

Additionally, looking at average amounts of marine litter per 100 m<sup>2</sup> broken down by area, Area B had the largest amount at 384 pieces, followed by Area D at 349. Areas E to I had the smallest amount at less than 90 pieces each.

Further, if we break down our results by country, Japan's beaches show a marked trend toward both a greater average quantity and weight of marine litter. Further examination of the cause of this will be necessary, taking into account the effects of litter drifting from one country to another, as well as differences in coastal management systems.

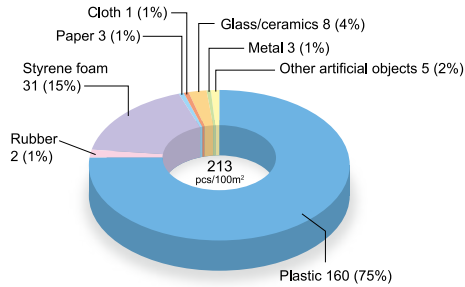


Figure 3. Average number of marine litter per 100 m<sup>2</sup> (2011)

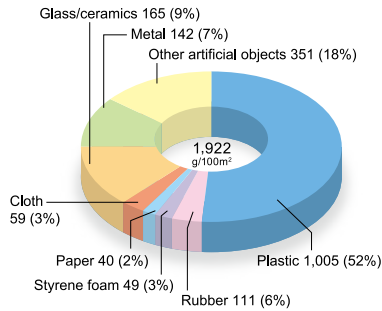


Figure 4. Average weight of marine litter per 100 m<sup>2</sup> (2011)

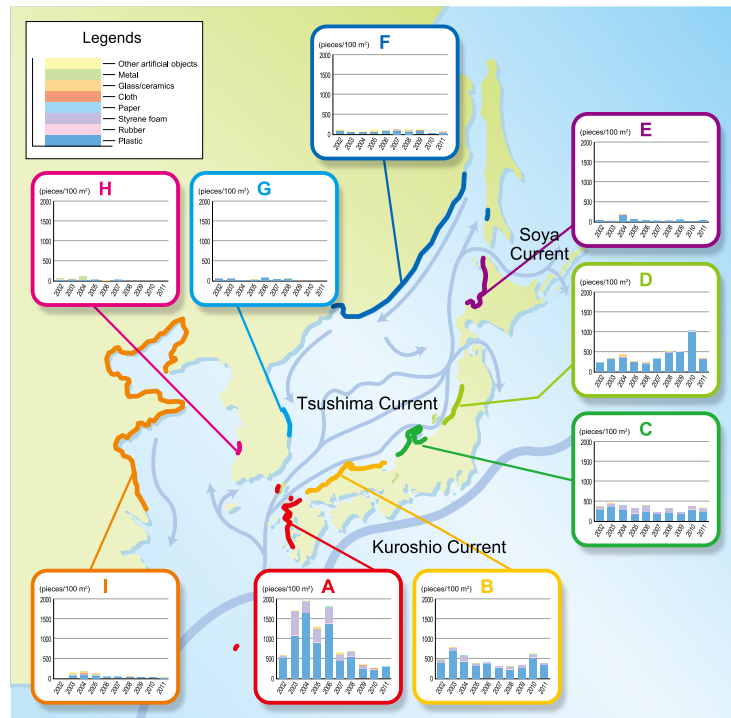


Figure 5. Change in the number of marine litter per 100 m<sup>2</sup> by area

Table 1. Beaches surveyed in 2011

Area	No.	Location	Surveyed beaches	Number of pieces collected per 100 m <sup>2</sup>	Weight of pieces collected per 100 m <sup>2</sup>	Participating organizations
A	1	Nagasaki Prefecture	Yoshihama Beach	375	4,485.3	Iki Health Center; Iki City Environmental Sanitation Division; Association of Environmental Problems in Ikinoshima
	2		Shirahama Beach	258	3,029.0	Tsushima Health Center; Tsushima City; Tsushima City Are Elementary School
	3	Saga Prefecture	Ouganoama Beach	474	4,305.0	Prefectural Government; Karatsu City; Karatsu City Minato Junior High School
	4	Fukuoka Prefecture	Oguchi Beach	169	4,100.1	Prefecture's Waste Management Division; Tsukushi Health and Welfare Office; Itoshima City Consumer and Environmental Protection Division; Itoshima City Maehara Elementary School
B	5	Yamaguchi Prefecture	Niinohama Beach	727	4,567.6	Prefecture's Waste Management & Recycling Promotion Division; Nagato Health and Welfare Center; Nagato City; Nagato City Hioki Junior High School
	6		Waiba Beach	131	7,810.0	Shimonoseki City Environmental Policy Division; Shimonoseki City Kogushi Elementary School
	7	Tottori Prefecture	Uradome Beach	359	596.1	Prefecture's Recycling Society Promotion Division; Tobu Life Environment Office; Iwami-cho Town Water Supply Division; Iwami Shizen o Aisuru Kai; Iwami-cho Tourist Association; Uradome Tourist Association; Makidani Community Association; Higashihama Tourist Association
	8		Yumigahama Beach	234	258.7	Prefecture's Recycling Society Promotion Division; Seibu Life Environment Office; Yonago City Environment Division; Sakaminato General Technical high school
	9	Hyogo Prefecture	Keinohama Beach	322	620.0	Prefecture's Environment Division; Toyooka City Koto Elementary School; NPO Tajima Umi no Gakko
	10	Kyoto Prefecture	Kasumihama Beach	388	3,255.0	Prefecture's Environment Division; Kami Town Nagai Elementary School; NPO Tajima Umi no Gakko
11	Kyoto Prefecture	Kotohikihama Beach	526	1,408.5	Prefectural Government; Prefectural Amino High School	
C	12	Fukui Prefecture	Hamaji Beach	103	81.4	Prefecture's Environmental Policy Division; Awara City Kanazawa Higashi Elementary School
	13	Ishikawa Prefecture	Chirihama Beach	425	820.7	Prefecture's Waste Management Division; NPEC
	14	Toyama Prefecture	Shimao/Matsudae Beach	862	7,117.3	Prefecture's Environment Preservation Division; Himi City Environment Division; Himi City Kubo Elementary School; Himi Seaside Botanical Garden; NPEC; Nihonkai Environmental Service Inc.
	15		Matsudae-hama Beach	393	1,511.8	Prefecture's Environment Preservation Division; Takaoka City Environmental Service Division; Fushiki Coast Guard Office; Takaoka City Ota Elementary School; Ota Senior Citizens' Club; Association of Corporate Executives; NPEC; Nihonkai Environmental Service Inc.
	16		Ebie Beach	141	1,023.3	Prefecture's Environment Preservation Division; Imizu City Ports & Harbors Promotion Division & Environment Division; Imizu City Tomei Elementary School; NPEC; Nihonkai Environmental Service Inc.
	17	Iwasehama Beach	382	380.3	Prefecture's Environment Preservation Division; Toyama City Environment Preservation Division; Toyama City Iwase Elementary School; Department of Environmental Biology and Chemistry, University of Toyama; NOWPAP Toyama Office; Kintaro Club; Soroptmist International of Toyama; NPEC; Nihonkai Environmental Service Inc.	
18	Miyazaki-Sakai Beach	47	304.3	Prefecture's Environment Preservation Division; Asahi Town Citizens & Children Division; Asahi Town Samisato Elementary School; NPEC; Nihonkai Environmental Service Inc.		
D	19	Yamagata Prefecture	Hamanaka Asari Beach	314	1,987.3	Prefecture's Environment Division
	20	Aomori Prefecture	Dekishima	160	1,790.3	Prefecture's Environment Policy Division; Tsugaru City Environmental Sanitation Division
	21		Fukkoshi Beach	572	7,596.3	Prefecture's Environment Policy Division; Aomori Environmental Management Office; Yokohama Town Citizens Assistance Division; NPO EGG
E	22	Hokkaido	Ishikarihama Beach	47	158.2	Prefecture's Environment Enhancement Division
	23	Khabarovsk Krai	Tokai Bay	99	2,917.0	Khabarovsk Krai Ministry of Natural Resources and Environment; Vaninsky district Education Bureau; Wanino Town Public School No. 2; Wanino Town Education Center
	24		Andreya Bay	1	0.7	Khabarovsk Krai Environmental Inspection Standardization Division; Sovetskaya Gavan District Natural Utilization Division
	25		Obmanyana Bay	50	227.3	Khabarovsk Krai Environmental Inspection Standardization Division; Sovetskaya Gavan District Natural Utilization Division; Maysky Town Public School No. 15; Pushkin Memorial Library
	26	Primorsky Krai	Lashkevicha Inlet of Nakhodka Bay A	12	1,583.5	Primorsky Krai Natural Resources and Environment Preservation Department; Partisanskyy District Zolblaya Dolina Village Public School
	27		Lashkevicha Inlet of Nakhodka Bay B	54	5,125.0	Primorsky Krai Natural Resources and Environment Preservation Department; Partisanskyy District Sergeevka Village Public School
28	Vostok Inlet of Vostok Bay		204	2,126.5	Primorsky Krai Natural Resources and Environment Preservation Department; Partisanskyy District Novolitskoye Village Public School	
29	Sukhodol Inlet of Ussuri Bay	195	2,837.5	Primorsky Krai Natural Resources and Environment Preservation Department; Bolshoy Kamen City Public School No. 2		
G	30	Gangwon Province	Hajodae Beach	7	519.0	Gujeong Elementary School
	31		Gyeongpo Beach	1	136.7	Gujeong Elementary School
	32		Mangsang Beach	2	27.0	Gujeong Elementary School
H	33	South Chungcheong Province	Chunjangdae Beach	4	217.0	Daejeon Chungnam Environment Preservation Association
	34		Daecheon Beach	1	10.0	Daejeon Chungnam Environment Preservation Association
I	35	Hebei Province	Dongshan Beach	12	24.7	Qinhuangdao Environmental Conservation Promotion Center; Experimental Foreign Language School
	36		Laolongtou Beach	12	13.7	Qinhuangdao Environmental Conservation Promotion Center; Shanhaiguan Nanyuan Junior High School
	37		Beidaihe Pingshuiqiao Beach	10	26.3	Qinhuangdao Environmental Conservation Promotion Center; Beidaihe Junior High School No. 1
	38		Qinhuangdao West Beach	13	43.3	Qinhuangdao Environmental Conservation Promotion Center; Bailaling Elementary School

Total: 4 countries, 18 local governments, 38 beaches			
Average across all surveyed coasts	213	1,922.1	Total of 1,254 participants



# Meeting of Participants in the Survey of Marine Litter on Beaches (Nov. 10, 2011)

Toyama Prefecture and NPEC held a meeting again this year for NEAR Project participants in the Survey of Marine Litter on Beaches. At the meeting, 30 individuals representing 13 local governments across Japan, China, Korea, and Russia, and the Northwest Pacific Action Plan Regional Coordinating Unit (NOWPAP RCU) met to discuss the findings of the Survey of Marine litter on Beaches and plans for future measures.

## <Outline of the Meeting>

At the start of the meeting, Toyama prefecture, which originated the project, reported the following information about the results of the Survey of Marine Litter on Beaches: 1) In recent years, the number of participants has been showing a downward trend, demonstrating a need to increase the number: 2) Over 80% of marine litter is of domestic origin, indicating the need to inform the local populace of the importance of preventing littering.

Next, 10 local governments across all 4 participating countries reported their efforts to cut down on the causes of marine litter. There was shared understanding of the need for further promotion of everyday grassroots efforts, which were demonstrated in the meeting in the previous year as Marine Litter Action, among the populace.

Finally, Toyama offered some suggestions on a course of action going forward regarding the Survey of Marine Litter on Beaches. After a lively discussion, they decided upon as follows.

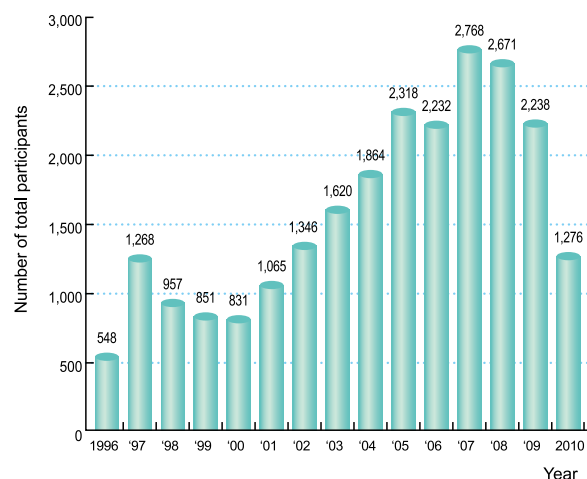


Figure 6. Change in the number of participants involved in the survey

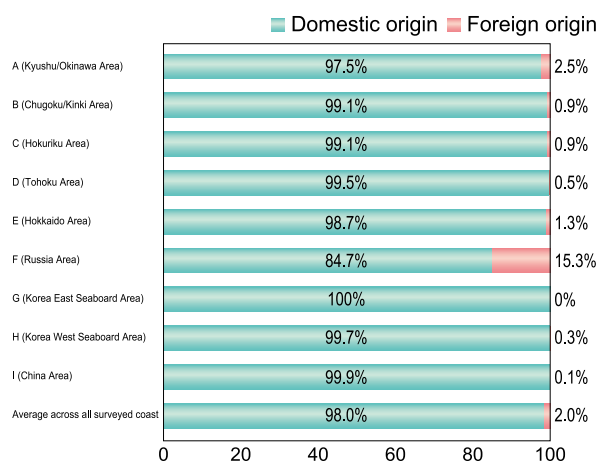


Figure 7. Breakdown by area of domestic/foreign origin proportions of marine litter on beaches (average across 10-year period, 2001-2010)

- The surveys in 4 countries should be conducted with more participants and stronger partnership with industries, academics, government, NPOs and other organizations.
- In order to further the promotion of measures to prevent marine litter at source, hands-on art workshops using marine litter are to be held in 4 countries.

\* In August of 2012, the North East Asia Regional Environmental Program for the Youth Training through the Experience held a trial workshop in Toyama, and based on the result, the program is to proceed officially.



Meeting opening



Presentation



Discussion



# Spreading Awareness about the Marine Litter Problem

For solving the marine litter problem not only researches and discussions of the current state of affairs, but also practical measures are necessary. However, ordinary individuals still largely do not fully understand the problem itself.

We aim to increase people's understanding of the marine litter problem as the global issue.

By spreading awareness, we hope that people take the first steps toward the problem in their own towns, and that the movement will spread in various localities.

## ■ Marine Litter Action Forum (February 5, 2012)

To solve the marine litter problem, it is crucial that each and every one of us do what we can to stop littering.

To this end, Toyama Prefecture and NPEC hold forums where individuals can learn about the importance of the sea, and where they are called upon to take practical action to reduce marine litter.

At this year's forum, Northwest Pacific Region Environmental Supporters reported what they did to protect the sea, and children called upon us all to follow the Five Actions in which everyone can work to make the sea clean and abundant. (For more information on the Five Actions, see the following page.)



Presentation of Activities by the Northwest Pacific Region Environmental Supporters



Announcement of the Five Actions by Children

## ■ Spreading Awareness about Marine Litter Problem



Make it clean together (Toyama Prefecture)



Japan-Korea clean-up activity in the strait (Yamaguchi Prefecture)



Japan-Korea citizen beach clean-up program (Nagasaki Prefecture)



Making craft with marine litter (NPEC)



Musical instruments made with waste materials (Qinhuangdao, Hebei, China)



Handicrafts made with waste objects (Russian Primorsky krai)

# Let's All Work Together to Make the Sea Clean and Abundant!

Our own coastal waters are connected to the whole world's seas. Keeping our own nearby sea clean and abundant leads to preserve the environment all around the Northwest Pacific region.

The first step is to take action where you are, working one by one to reduce marine litter, to improve the environment for marine life, and to develop abundant seas through reforestation and other efforts.

To this end, Toyama Prefecture and NPEC have started the program of "Northwest Pacific Region Environmental Supporters" in June of 2011.

Today, there are some 1,300 Supporters registered from companies, NPOs, civic groups and, schools ranging from children to adults. These Supporters work in their own local areas to clean beaches and surrounding areas, perform surveys of marine litter on beaches, re-cultivate sea plant beds, and work on reforestation efforts. We urge everyone to do what they can to help preserve our beautiful and abundant seas.

## Northwest Pacific Region Environmental Supporters The Five Actions

- 1 Don't litter. Let the society be free of littering.



- 2 Keep rivers, coasts, and local areas clean.



- 3 Join in activities of cleaning, surveys and studies on marine litter and do what you can to solve the marine litter problem.



- 4 Protect the environment for marine life.



- 5 Protect our forests to keep the sea abundant.



# Reference Materials

For the survey of marine litter on beaches, the goals are not to simply understand the current state of marine litter on the coasts; in order to speculate as to the origins of litter it was categorized by type, then subcategorized by function, and original usage. We call upon all participants to refer to the survey results and to put into practice whatever they can do themselves to help reduce marine litter.

## Survey method

### Survey of marine litter

#### ① Preliminary survey

- Conduct basic surveys in advance with regard to intended use of the beach, surrounding conditions, the recent clean-up activity, etc.

#### ② Setting up the survey blocks and subsequent operations

- As a general rule, select survey areas so as to be able to roughly comprehend the state of marine litter on the entire area of the target beach, and set continuous 10×10-meter blocks inland from the water's edge (hereafter referred to as "survey blocks").
- The number of survey blocks should, as a general rule, be 3 in 1 row; however, if it is not possible to allow 3 blocks in 1 row due to insufficient depth of the beach, set multiple rows.
- Plant a stake on each corner of the survey blocks and stretch nylon cord or something similar between each pair of stakes in order to define the survey blocks.
- Classify the marine litter (artificial objects) from each survey block into the following eight major categories, count their number, measure their weight, and separate the foreign litter from domestic one, judging by printed texts or other evidences.

① Plastic

② Rubber

③ Styrene foam

④ Paper

⑤ Cloth

⑥ Glass/ceramics

⑦ Metal

⑧ Other artificial objects

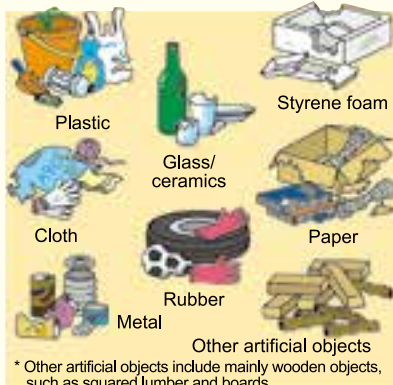
\* Other artificial objects include mainly wooden objects, such as squared lumber and boards.



① Set up the survey blocks.



② Pick up and collect marine litter.



\* Other artificial objects include mainly wooden objects, such as squared lumber and boards.

③ Sort the litter.



④ Count and weigh the litter, and fill in the table.

\*Survey methods are based on the guidelines of Japan Environmental Action Network.



海洋ごみがない海岸はどんなところ？

Can you imagine beaches without litter?



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