

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 2013



公益財団法人 環日本海環境協力センター
NPEC Northwest Pacific Region Environmental Cooperation Center

Survey of Marine Litter on Beaches

The Survey on Marine Litter on Beaches along the Northwest Pacific Region by the Northwest Pacific Region 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 38 local governments across 4 countries, covering 199 beaches — a total of 31,214 people have participated in the survey.

*The Association of North East Asia Regional Governments (NEAR)

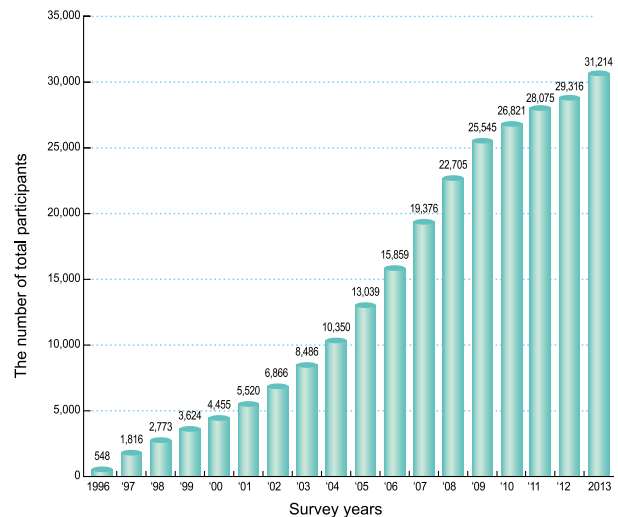


Figure 1. Change in the total number of participants involved in the survey

Summary of Survey of Marine Litter 2013

Survey period

The survey was conducted from June to December of 2013.

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 2013, a total of 1,898 people across 18 local governments from Japan, Korea, and Russia, participated covering 48 beaches.



Figure 2. Surveyed beaches 2013

Survey results

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

The average amount of marine litter per 100 m² (Figure 3) was 191 pieces. Of this, plastic was the most prevalent at an average of 141 pieces (or 74% of the total). The next most common type was styrene foam, averaging 24 pieces (13%).

The average weight of marine litter per 100 m² was 2,986g. Of this, plastic was the most prevalent at 1,308g (or 44% of the total). The next most prevalent type by weight was glass/ceramics, averaging 537g (16%).

By far the most significant types of marine litter found on beaches were light materials such as plastic, styrene foam, and glass/ceramics, which includes glass fragments.

Additionally, looking at average amounts of marine litter per 100 m² broken down by area (Table 1), Area B had the largest amount at 320 pieces, followed by Area C at 285. Area G had the smallest amount at only 9 pieces.

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.

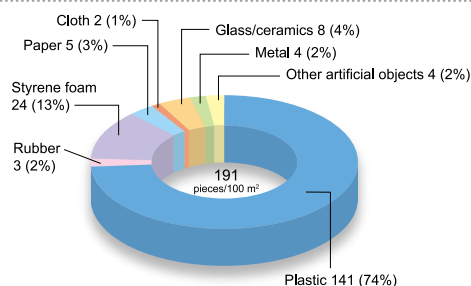


Figure 3. Average number of marine litter per 100 m² (2013)

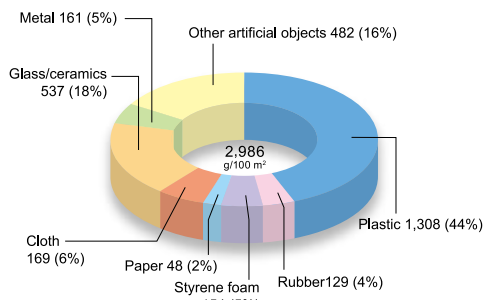


Figure 4. Average weight of marine litter per 100 m² (2013)

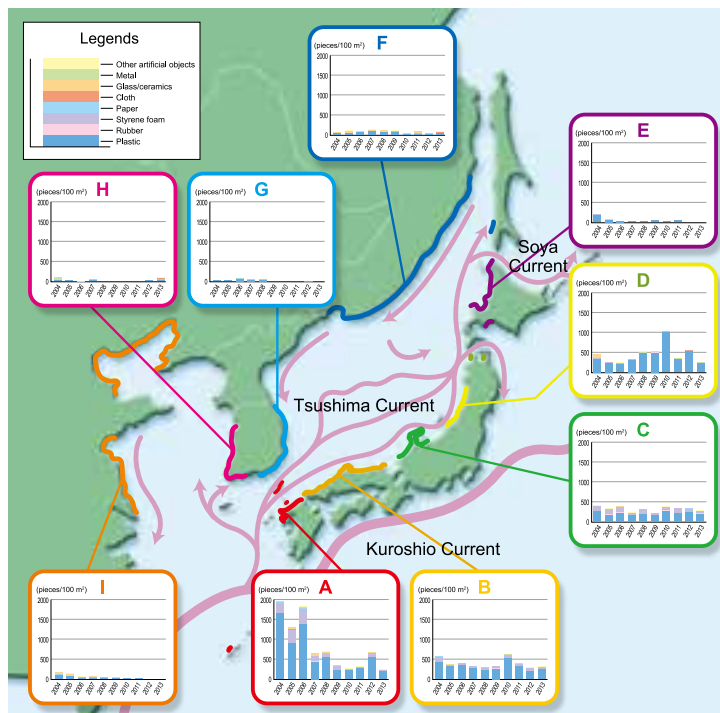


Figure 5. Change in the number of marine litter per 100 m² by area

Table 1. Beaches surveyed in 2013

Area	No.	Location	Surveyed beaches	Number of pieces collected per 100 m ²	Weight of pieces collected per 100 m ²	Participating organizations
A	1	Nagasaki Prefecture	Shirahama Beach	107	4,334	Tsushima Health Center; Tsushima City Hall; Prefecture's Waste Management Division
	2	Saga Prefecture	Ouganohama Beach	500	3,051	Prefecture's Environment Division; Karatsu City; Karatsu City Minato Junior High School
	3	Fukuoka Prefecture	Oguchi Beach	106	1,930	Prefecture's Waste Management Division; Tsukushi Health and Welfare Office; Itoshima City Consumer and Environmental Protection Division; Itoshima City Hatae Elementary School
B	4	Yamaguchi Prefecture	Niinohama Beach	684	1,384	Prefecture's Waste Management & Recycling Promotion Division; Nagato Health and Welfare Center; Nagato City; Nagato City Hioki Junior High School
	5		Waiba Beach	465	2,069	Nagato City Consumer and Environmental Protection Division; Nagato Health and Welfare Center; Nagato City Hishikai Junior High School; Local Residents
	6		Atohama Beach	270	6,258	Shimonoseki City Environmental Policy Division; Shimonoseki City Kogushi Elementary School
	7		Kiami Beach	451	13,435	Shimonoseki City Environmental Policy Division; Shimonoseki City Kogushi Elementary School
	8	Shimane Prefecture	Mochiishi Beach	107	575	Prefecture's Waste Management Division; Masuda Health Center; Masuda City Hall; Masuda City Regional Association; Yoshika Town Kuragi Elementary School
	9		Ohama Beach	322	3,601	Prefecture's Waste Management Division; Masuda Health Center; Masuda City Regional Association; Yoshika Town Kuragi Elementary School
	10	Tottori Prefecture	Uradome Beach	264	146	Prefecture's Recycling Society Promotion Division; Rivers Division; Tobu Life Environment Office; Iwami Town Water Supply Division; Iwami-cho Tourist Association; Uratomi Tourist Association; Makidani Community Association; Tottori University of Environmental Studies; Higashihama Tourist Association
11	Hyogo Prefecture	Yumigahama Beach	226	954	Prefecture's Recycling Society Promotion Division; Yonago City Environment Division; Sakaminato General Technical high school	
12		Keinohama Beach	121	722	Prefecture's Environment Division; Toyooka City Nakasuji Elementary School; NPO Tajima Umi no Gakko	
13	Kyoto Prefecture	Kotohikhama Beach	291	255	Kotohikhama no Narisuna o Mamoruikai; Amino High School; Kyoto Prefecture	
C	14	Fukui Prefecture	Mikuni Sunset Beach	211	6,816	Prefecture's Environmental Policy Division; Sakai City Isobe Elementary School
	15	Ishikawa Prefecture	Chirihama Beach	284	2,911	Prefecture's Waste Management Division; Hakui City; Hakui School Board; Hakui City Regional Association; Clean Beach Ishikawa; Kanazawa Seiryu University
	16		Shibuta Beach	314	7,647	Wajima City Najimi Elementary School
	17	Toyama Prefecture	Shirasaki Beach	57	1,378	Wajima City Environmental Management Division
	18		Shimao/Matsudae Beach	350	3,663	Prefecture's Environment Preservation Division; Himi City Environmental Division; Himi City Kubo Elementary School; NPEC; Nihonkai Environmental Service Inc.
	19		Matsudae-hama Beach	605	1,930	Prefecture's Environment Preservation Division; Takaoka City Environmental Service Division; Takaoka City Ota Elementary School; Ota Senior Citizens' Club; Association of Corporate Executives; NPEC; Nihonkai Environmental Service Inc.
	20		Ebie Beach	238	287	Prefecture's Environment Preservation Division; Imizu City; Imizu City Tomei Elementary School; Department of Environmental Biology and Chemistry, University of Toyama; NOWPAP Toyama Office; Association of Corporate Executives; NPEC; Nihonkai Environmental Service Inc.
	21	Iwasehama Beach	356	2,138	Prefecture's Environment Preservation Division; Toyama City Environmental Preservation Division; Toyama City Iwase Elementary School; Department of Environmental Biology and Chemistry, University of Toyama; Kintaro Club; Soroplmiat International of Toyama; Association of Corporate Executives; NPEC; Nihonkai Environmental Service Inc.	
	22	Miyazaki-Sakai Beach	151	1,152	Prefecture's Environment Preservation Division; Asahi Town Citizens & Children Division; Asahi Town Samisato Elementary School; NPEC; Nihonkai Environmental Service Inc.	
	D	23	Yamagata Prefecture	Hamanaka Asari Beach	422	918
24		Aomori Prefecture	Dekishima Beach	94	1,557	Prefecture's Environment Policy Division; Hirosaki Environmental Management Office; Tsugaru City Environmental Sanitation Division
25			Fukkoshi Beach	283	6,111	Prefecture's Environment Policy Division; Aomori Environmental Management Office; Yokohama Town Citizens Assistance Division; Mameda Land Improvement District
E	26	Khabarovsk Krai	Toki Bay	69	3,410	Khabarovsk Krai Ministry of Natural Resources and Environment; Vaninsky district Education Bureau; Wanino Town Public School No. 2; Wanino Town Education Center
	27		Andreyka Bay	2	132	Khabarovsk Krai Ministry of Natural Resources and Environment; Sovetskaya Gavan District Natural Utilization Division
	28	Obmanyana Bay	86	491	Khabarovsk Krai Ministry of Natural Resources and Environment; Sovetskaya Gavan District Natural Utilization Division; Maysky Town Public School No. 15; Mayskaya Public School; Parada Youth Art Center	
	29	Primorsky Krai	Vamar Coast of Nakhodka Bay A	51	4,310	Primorsky Krai Natural Resources and Environment Preservation Department; Nakhodka District Public School No. 3
	30		Vamar Coast of Nakhodka Bay B	41	2,189	Primorsky Krai Natural Resources and Environment Preservation Department; Nakhodka District Polyus Public School No. 1
	31	Lashkevicha Inlet of Nakhodka Bay A	23	378	Primorsky Krai Natural Resources and Environment Preservation Department; Partisansky Local Government; Ekaterinovka Village Public School	
	32	Lashkevicha Inlet of Nakhodka Bay B	42	1,300	Primorsky Krai Natural Resources and Environment Preservation Department; Partisansky Local Government; Zolotaya Dolina Village Public School; "Eco-lighthouse" Eco Club; Golubovka Village Public School; "Youth-Eco" Eco Club; Vladimiro-Aleksandrovskoe Village Public School	
	33	Sukhodol Inlet of Ussuri Bay A	89	5,582	Primorsky Krai Natural Resources and Environment Preservation Department; Shikotovskiy District Education Bureau; Romanovka Village Public School No. 25	
	34	Sukhodol Inlet of Ussuri Bay B	148	5,100	Primorsky Krai Natural Resources and Environment Preservation Department; Bolshoy Kamen City Government; Bolshoy Kamen City Public School No. 4	
	35	Sukhodol Inlet of Ussuri Bay C	81	2,306	Primorsky Krai Natural Resources and Environment Preservation Department; Bolshoy Kamen City Government; Bolshoy Kamen City Public School No. 2	
	36	Amur Bay (Grozny Cape)	61	16,526	Primorsky Krai Natural Resources and Environment Preservation Department; Vladivostok City Government; Vladivostok City Public School No. 58	
	37	Muravynaya Inlet	105	2,227	Primorsky Krai Natural Resources and Environment Preservation Department; Artyom Local Government; Artyom City Youth Environmental Organization "Rainbow"; Artyom District Creation Development/Education Center; Artyom District, Students from 9 schools	
	38	Amur Bay (Nadezhdinsky District)	390	2,298	Primorsky Krai Natural Resources and Environment Preservation Department; Nadezhdinsky Local Government; Tavrichanka Village Public School No. 4	
	39	Five Hunter's Bay	29	735	Primorsky Krai Natural Resources and Environment Preservation Department; Shikotovskiy District Education Bureau; Mysovoe Village Orphanage	
40	Olga Inlet	81	7,525	Primorsky Krai Natural Resources and Environment Preservation Department; Olginsky Local Government; Olga Town Public School; Olgales Inc.		
G	41	Gangwon Province	Hajodae Beach	12	178	Gangneung-si Gujeong Elementary School
	42		Gyeongpo Beach	8	188	Gangneung-si Gujeong Elementary School
	43		Mangsang Beach	9	63	Gangneung-si Gujeong Elementary School
H	44	South Chungcheong Province	Chunjangdae Beach	1	33	Daejeon Chungnam Environment Preservation Association
	45		Muchangpo Beach	1	12	Daejeon Chungnam Environment Preservation Association
	46	South Gyeongsang Province	Mangilbong Coast	253	5,379	Marine Environmental Management Organization; Yong-nam Siglent; Chungmu Elementary School
	47		Jungnimman Coast	85	2,457	East Asia Ocean Cooperation; Chungmu Elementary School
48	Donam Beach	211	5,294	East Asia Ocean Cooperation; Chungmu Elementary School		
Total: 3 countries, 18 local governments, 48 beaches						
Average across all surveyed beaches				191	2,986	Total of 1,898 participants

*Note: Areas E and I were unable to be surveyed in 2013.

Spreading Awareness about the Marine Litter Problem

The marine litter problem is one that is solved not just through researches and discussions of the current state of affairs, but through practical measures. 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 step toward the marine litter problem in their own towns, and that the movement will spread in the various localities.

To this end, Toyama Prefecture and NPEC are working to raise and spread awareness about marine litter problem.

Exhibition of Marine Litter Art Works

In order to bring the marine litter problem to the attention of a wider audience, NEPC organizes the exhibition of marine litter art works along with the Himi Seaside Botanical Garden, the faculty of Art and Design of University of Toyama, and Kubo Elementary School.

Period: June 6–24, 2013

Venue: Special Gallery, Himi Seaside Botanical Garden

Sponsors: Himi Flowers and Green Association, NPEC

Producer: Professor Toshinobu Goto, Faculty of Art and Design,
University of Toyama



Students of Faculty of Art and Design,
the University of Toyama



Students creating art works at Kubo Elementary
School, Himi City (June 10, 2013)



Display

Spreading Awareness through Events

In various environmental events with the local communities and schools, we hold panel exhibitions, marine litter art exhibitions, and hands-on art workshops using marine litter, to raise and spread the awareness about the marine litter problem.

< Marine Litter Art Works Caravan >



Toyama Environmental Fair 2013 (Oct.19–20, 2013)



Imizu City Environmental and Living Fair (Oct. 6, 2013)

< Hands-on Workshop of the Marine Litter Art Works >

In order to help more children understand the marine litter problem, since 2012 we have been working in association with local governments and schools to hold hands-on workshops where children can make marine litter art works. In 2013, we held these events 11 times.

【Flow of Hands-on Workshop Making of Marine Litter Art Works】



①Survey of marine litter



②Study on marine environmental conservation



③Making marine litter art works

■ Spreading Awareness in the Northeast Asian region

< Marine Litter Art works as the Model Project >

The hands-on workshop of marine litter art works was conducted based on the policies of the Meeting of Participants in the Survey of Marine Litter held in Toyama Prefecture on November 10, 2011. In 2012, “the NEAR North East Asia Regional Environmental Program for the Youth Training through the Experience” in Toyama Prefecture held a trial hands-on workshop of marine litter art works. In 2013, 6 workshops were finally organized as the model project along with schools and local governments in Japan and Primorsky Krai, Russia.

◆Activities in Japan (Ishikawa/Fukui Prefectures)



Survey of marine litter



Creating art work



Art sample

◆Activities in Primorsky Krai, Russia (Vladivostok, Nakhodka)



Instruction in the workshop
(Nakhodka Public School No. 3)



Creating art works
(Vladivostok Public School No. 58)



Art exhibition:
The 7th International Environmental Forum (Vladivostok)

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

Our coastal waters are connected to the whole world's seas.

Keeping our own nearby sea clean and abundant leads to preservation of the environment in all around the Northwest Pacific region.

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

To this end, Toyama Prefecture and NPEC have started Northwest Pacific Region Environmental Supporters system since June, 2011.

Today, there are some 1,400 registered Supporters of children and adults from companies, NPOs, and civilian groups, and schools. These Supporters work in their communities, including cleaning beaches and surrounding areas, performing surveys of marine litter, revitalizing sea plant beds, and working on reforestation efforts.

Let's do what we can to preserve our beautiful, 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 beaches, but also to speculate as to the origins of the litter. The litter collected is 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 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.

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.
- Collect the litter (artificial objects) from the blocks and classify it for each survey block into the following 8 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

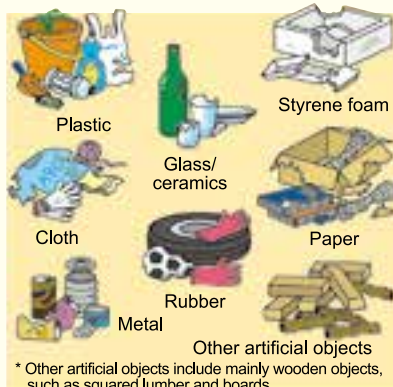
* Other artificial objects include mainly wooden objects, such as squared lumber and boards.



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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