

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 2010



財団法人 環日本海環境協力センター  
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 is a cooperative joint effort undertaken to understand the extent of coastal pollution caused by marine litter washing ashore. It was stated 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 cooperation of 37 local governments across four countries, covering 176 beaches — a total of 26,821 people participated in the survey.

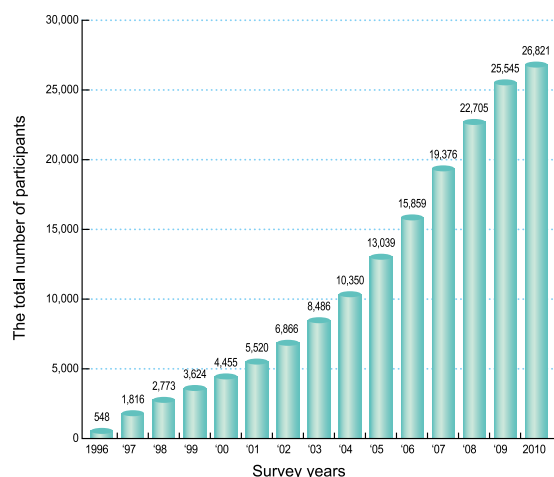


Figure 1. Change in the total number of participants involved in the survey

## Summary of Survey of Marine Litter 2010

### Survey period

The survey was conducted from August to November of 2010.

### Survey participants and beaches surveyed

The survey was performed in each prefecture and town with the cooperation of local governments, NGOs and NPOs, and elementary and middle schools. For the survey 2010, a total of 1,276 people across 14 local governments from Japan, China, Korea and Russia, participated, covering 30 beaches.

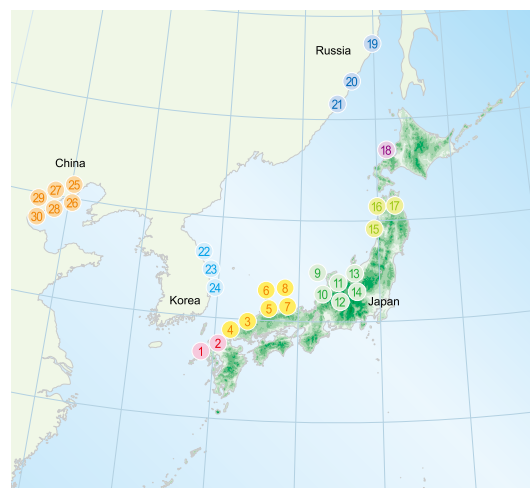


Figure 2. Surveyed beaches, 2010

### 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 321 pieces. Of this, plastic was the most prevalent at an average of 269 pieces (or 84% of the total). The next most common type was styrene foam, averaging 34 pieces (10%).

The average weight of marine litter per 100 m<sup>2</sup> was 1,749g. Of this, plastic was the most prevalent at 1,114g (or 64% of the total). The next most prevalent type was other artificial objects, averaging 295g (17%).

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 materials 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 D had the largest amount at 1,026 pieces, followed by Area B at 607. Areas E to I had the smallest amount at less than 20 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.

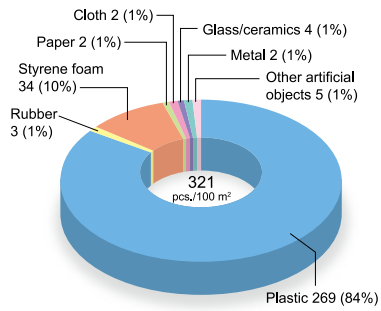


Figure 3. Average number of marine litter per 100 m<sup>2</sup> (2010)

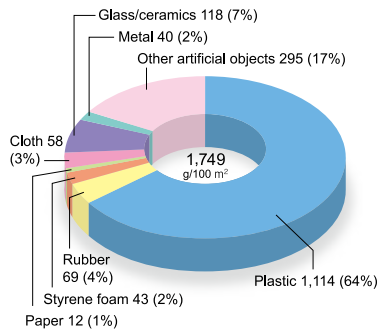


Figure 4. Average weight of marine litter per 100 m<sup>2</sup> (2010)

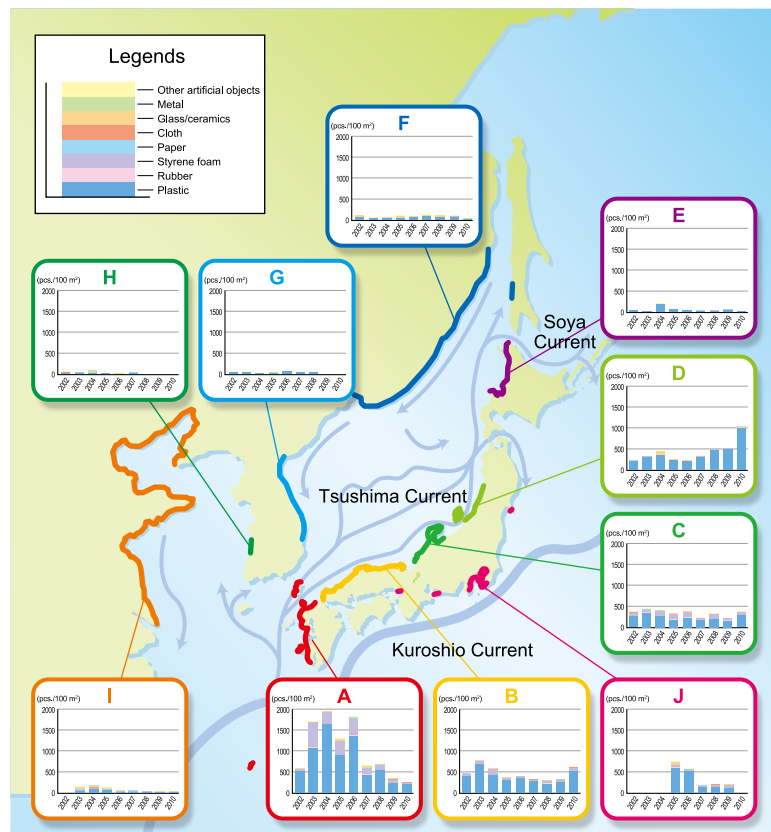


Figure 5. Change in the number of pieces of marine litter per 100 m<sup>2</sup> by area

Table 1. Beaches surveyed in 2010

| 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                    | Saga Prefecture      | Ouganohama Beach            | 301   | 6,709.7  | Prefectural Government; Karatsu City; Karatsu City Minato Junior High School  |
|   | 2                    | Fukuoka Prefecture   | Oguchi Beach                | 194   | 1,020.2  | Prefecture's Waste Management Division; Tsukushi Health and Welfare Office; Itoshima City Consumer and Environmental Protection Division; Itoshima City Hikitsu Elementary School   |
| B   | 3                    | Yamaguchi Prefecture | Ninohama Beach              | 667   | 4,522.5  | Prefecture's Waste Management & Recycling Promotion Division; Nagato Health and Welfare Center; Nagato City; Nagato City Hioki Junior High School   |
|   | 4                    |                      | Ohama Beach                 | 1,670   | 12,909.4   | Prefecture's Waste Management & Recycling Promotion Division; Nagato Health and Welfare Center; Nagato City Consumer and Environmental Protection Division; Nagato City Hioki Junior High School  |
| B   | 5                    | Tottori Prefecture   | Uradome Beach               | 892   | 1,390.0  | 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; Uratomi Tourist Association; Makidani Community Association; Higashihama Tourist Association |
|   | 6                    |                      | Yumigahama Beach            | 152   | 163.0  | Prefecture's Recycling Society Promotion Division; Seibu Life Environment Office; Yonago City Environment Division; Sakaiminato General Technical high school   |
| B   | 7                    | Hyogo Prefecture     | Keinohama Beach             | 94  | 1,089.6  | Prefecture's Environment Division; Yabu City Yabu Elementary School; NPO Tajima Umi no Gakko  |
| B   | 8                    | Kyoto Prefecture     | Kotohikihama Beach          | 169   | 282.8  | Prefectural Government; Prefectural Amino High School   |
| C   | 9                    | Ishikawa Prefecture  | Chirihama Beach             | 122   | 529.7  | Prefectural Government; Hakui City; Hakui School Board; Hakui City Regional Association; Kanazawa Seiryu University; Clean Beach Ishikawa   |
|   | 10                   | Toyama Prefecture    | Shimao/Matsudae Beach       | 366   | 1,804.5  | Prefecture's Environment Preservation Division; Himi City Environment Division; Himi City Kubo Elementary School; University of Toyama Nakamura's Laboratory; Himi Seaside Botanical Garden; NPEC; Nihonkai Environmental Service Inc.  |
|   | 11                   |                      | Matsudae-hama Beach         | 164   | 100.3  | 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.                                    |
|   | 12                   |                      | Ebie Beach                  | 954   | 1,928.5  | Prefecture's Environment Preservation Division; Imizu City Ports & Harbors Promotion Division & Environment Division; Imizu City Tomei Elementary School; Toyama Prefectural University; NPEC; Nihonkai Environmental Service Inc.  |
|   | 13                   |                      | Iwasehama Beach             | 563   | 1,325.7  | Prefecture's Environment Preservation Division; Toyama City Environment Preservation Division; Toyama City Iwase Elementary School; NOWPAP RCU; Kintaro Club; NPEC; Nihonkai Environmental Service Inc.   |
| 14  | Miyazaki-Sakai Beach |                      | 94                          | 803.5   | NPEC; Nihonkai Environmental Service Inc.  |   |
| D   | 15                   | Yamagata Prefecture  | Hamanaka Asari Beach        | 1,110   | 1,376.7  | Prefecture's Environment Division; Prefecture's Mogami Office; Mamurogawa Town  |
|   | 16                   | Aomori Prefecture    | Dekishima Beach             | 124   | 2,487.3  | Prefecture's Environment Policy Division; Tsugaru City Environmental Sanitation Division  |
|   | 17                   |                      | Fukkoshi Beach              | 1,842   | 11,398.7   | Prefecture's Environment Policy Division; Aomori Environmental Management Office; Yokohama Town Citizens Assistance Division; NPO EGG   |
| E   | 18                   | Hokkaido             | Ishikarihama Beach          | 18  | 148.5  | Prefecture's Environment Enhancement Division   |
| F   | 19                   | Khabarovsk Krai      | Toki Bay                    | 36  | 1,894.7  | Public School No. 2; Botschinsky National Nature Reserve  |
|   | 20                   |                      | Andrya Bay                  | 1   | 17.5   | Botschinsky National Nature Reserve   |
|   | 21                   |                      | Obmanyana Bay               | 23  | 292.7  | Public School No. 2; Botschinsky National Nature Reserve  |
| G   | 22                   | Gangwon Province     | Hajodae Beach               | 6   | 101.7  | Songyang Elementary School  |
|   | 23                   |                      | Gyeongpo Beach              | 0   | 0.0  | Songyang Elementary School  |
|   | 24                   |                      | Mangsang Beach              | 1   | 37.3   | Songyang Elementary School  |
| I   | 25                   | Hebei Province       | Dongshan Beach              | 13  | 29.7   | Qinhuangdao Environmental Conservation Promotion Center; No. 12 Junior High School  |
|   | 26                   |                      | Laolongtou Beach            | 14  | 11.7   | Qinhuangdao Environmental Conservation Promotion Center; Shanhaiguan Nanyuan Junior High School   |
|   | 27                   |                      | Beidaihe Pingshuiqiao Beach | 12  | 28.0   | Qinhuangdao Environmental Conservation Promotion Center; Beidaihe Junior High School No. 1  |
|   | 28                   |                      | Gold Coast Beach            | 9   | 17.7   | Qinhuangdao Environmental Conservation Promotion Center; Beidaihe Junior High School No. 1  |
|   | 29                   |                      | Qinhuangdao West Beach      | 13  | 43.0   | Qinhuangdao Environmental Conservation Promotion Center; Haigang District Experimental Elementary School  |
| I   | 30                   | Laohushi Beach       | 12                          | 12.3  | Qinhuangdao Environmental Conservation Promotion Center; Beidaihe Junior High School No. 1 |   |
| Total 4 countries, 14 local governments, 30 beaches |                      |                      |                             |   |  |   |
| Average across all surveyed beaches                 |                      |                      |                             | 321   | 1,749.2  | Total of 1,276 participants   |



# Meeting of Participants in the Survey of Marine Litter on Beaches (Feb. 18, 2011)

Toyama Prefecture and NPEC held a meeting for participants in the Survey of Marine Litter on Beaches as the NEAR Project.

At the meeting, 30 individuals representing 11 local governments across Japan, China, Korea, and Russia, the Northwest Pacific Action Plan Regional Coordinating Unit (NOWPAP RCU) and the Ministry of the Environment met to discuss the findings of the Survey of Marine Litter on Beaches and plans for future measures.



Opening

## <Outline of the Meeting>

At the start of the meeting, the Oceanic Wildlife Society gave a keynote speech on the harmful effects of marine litter on wildlife worldwide, and shared the importance of learning about the environment.

Next, 5 local governments from all 4 countries presented a total of 6 case studies. China and Russia announced that participation in the Survey of Marine Litter on Beaches was effective to increase people's environmental awareness, and that it was a good opportunity as the environmental education.

Japan pointed out the need to implement the environmental education program after analysis and reviews. Further, Japan reported the efforts to prevent litter at its source, including the promotion of proper garbage disposal, public awareness raising, cooperation with neighboring countries, and research activities.

Korea announced a master plan to not only collect marine litter, but to systematically encourage citizens to participate in marine environmental conservation activities.

NPEC explained the reasoning behind their Marine Litter Actions to promote measures against marine litter, and called for local governments to spread awareness based on the idea of Marine Litter Action.

Finally, following the exchange of ideas and information, all meeting attendees shared things as follows.



Keynote speech



Presentation

- Marine litter affects our precious wildlife — it is a serious environmental problem on a global scale.
- The marine litter problem cannot be solved by a single country or even a single region. It affects localities along all coasts and rivers, therefore cooperation is necessary from everyone. It is vital to develop this cooperative system.
- It is crucial to exchange ideas and information with local governments in coastal areas regarding the state of marine litter in their areas and measures to reduce it.
- We hope that local governments in coastal areas will address the marine litter problem through developing measures and policies and applying them consistently to stop the problem at its source.
- Local governments in coastal areas should raise the public awareness about marine litter surveys, cleanup activities, and other related activities. It is vital to have grassroots efforts to implement NPEC's Marine Litter Actions in everyday life.
- We hope that individuals will realize that each and every one of us has to do our part to improve the global environment, and work together to help address this problem worldwide.

# 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 step toward the problem in their own towns, and that the movement will spread in various localities.

## ■ The Marine Litter Action Forum (February 19, 2011)

Toyama Prefecture and NPEC held a workshop forum for the prefecture's high school students with the intent of not only raising the awareness about the marine litter problem among the people of coastal areas, but also planning the promotion of the ordinary efforts as the Marine Litter Actions.

At the forum, participants were called upon to think about what they could do as individuals, based on the Marine Litter Actions, to prevent the spread of litter in their daily lives.



Workshops for high school students

## ■ Organizing events to raise awareness about marine litter for and visiting lectures (NPEC)



Exhibition of marine litter art works



Making crafts with marine litter



Visiting lecture for elementary school students

## Marine Litter Actions

### <The Thoughts of the People>

We have only one ocean spreading from you.

Our own sea is connected to the rest of the world.

Anything littered at your feet will soon be making its way to anywhere in the world. Our first step is to change what we do, then spread the change worldwide.

### <Citizen Action>

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

Keep clean : Keep rivers, coasts, and local areas clean.

Think well : Join in cleaning, surveying and studying activities about marine litter and think well what you can do to solve the marine litter problem.



# Each and Every One of Us Can Follow the Marine Litter Actions!

Many different types of litter wash up on the beaches.

Marine litter isn't just bad for the scenery — it's bad for everything that lives there, and is becoming a problem on a global scale.

This problem has a number of human causes, especially everyday trash flowing downstream from rivers or mountains to the ocean, where it washes up on beaches.

Since we use the ocean in our lives, it's important for us all not to litter, and to take the first step you can to protect the ocean.



# Reference Materials

The survey of marine litter on beaches has the aims not to simply understand the current state of marine litter on the beaches, but also to speculate as to the origins of litter. All 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 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.

#### 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

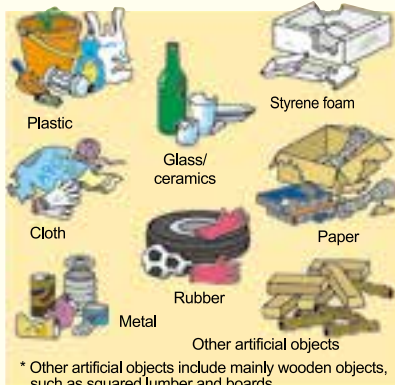
\* Other artificial objects include mainly wooden objects, such as squared lumber and boards.



① Set up the survey blocks.



② Pick up and collect marine litter.



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?

