

## Annex XI

### CEARAC workplan for implementation of Marine Litter Activity (MALITA)

The work plan for MALITA was approved in the 10<sup>th</sup> IGM. According to the work plan, the activities on the below list (Table 1) are designated to CEARAC. Consulting with NOWPAP RCU, CEARAC will give priorities to activities and try to conduct activities in order of high priority.

Table 1. Activities designated to CEARAC for MALITA

- Development of regional and national strategies on integrated management of marine litter (No.9 in the work plan of MALITA)
- Development and implementation of long-term regional and national monitoring programmes on land-based ML, including formats for data gathering and storage (No.12-1)
- Formulation and implementation of awareness and education campaigns for general public, various groups within the tourism sector, industry, municipal authorities, local communities (No.13-1)
- Preparation of brochures in English for the purpose of promoting public awareness on the reduction of ML (No.15)
- Preparation of brochures in Japanese for the purpose of promoting public awareness on the reduction of ML (No.15-1)
- Development of sectoral guidelines for management of marine litter for tourism, costal construction, recycling (No.16-2)
- Development of responsible citizenship guidelines for children and youth (No.19-1)
- Practical demonstration through awareness raising campaigns in selected destinations and with selected tourism campaigns (No.19-2)

At first, CEARAC started activities related to Activity No.12-1 in Table 1. The progress of activities, expected works and outcomes to develop national monitoring programmes are shown in Appendix 1.

## **Appendix 1 :**

### **Interim report of the progress of research on methods for monitoring of marine litter**

#### **1. Objectives**

According to the workplan of MALITA, it is required to develop and implement long-term regional and national monitoring programmes. In fact, some methods of monitoring of marine litter have already been applied in the NOWPAP Region. Among them, one or two monitoring methods can be recommended as standards to monitor marine litter in this region for NOWPAP Members. Therefore, the purposes of this research are to find advantages and disadvantages of monitoring methods already implemented by Japanese organizations and to identify methods suitable for long-term monitoring in the NOWPAP Region among them for the first stage of an investigation of monitoring methods of marine litter in the NOWPAP Region.

#### **2. Methods**

3 monitoring methods for marine litter are compared, which have been used by the Northwest Pacific Environmental Cooperation Center (NPEC), the Ocean Conservancy, and Japan Environmental Action Network (JEAN), respectively.

3 main categories with 8 sub-categories, which are shown below, were selected for comparison (See Table A1):

(1) General information of monitoring activity

- (a) Objective of monitoring activity
- (b) Information about participants
- (c) Results of monitoring

(2) Monitoring method

- (a) Procedure of selecting of monitoring area(s)
- (b) Procedure of monitoring of marine litter

(3) Data sheet

- (a) Way of distribution of data sheets
- (b) General Entry
- (c) Categories on data sheet

After comparison of the methods, advantages and disadvantages of each method are reviewed, and then suggestions for suitable monitoring methods of marine litter for the NOWPAP Region are made.

### 3. Results

The results of comparison among 3 methods are explained below by each main category (such as (1) General information of monitoring activity, (2) Monitoring method, and (3) Data sheet.)

#### (1) General information of monitoring activity

The main purposes of monitoring activities of the three organizations here are education. However, NPEC intends to educate children through monitoring marine litter. The Ocean Conservancy and JEAN are trying to educate people through cleanup and monitoring of marine litter picked up. Another difference among the three is that monitoring activities of the Ocean Conservancy and JEAN include “cleanup”, but that of NPEC does not intend cleanup of beaches.

#### (2) Monitoring method

NPEC conduct preliminary work to obtain the monitoring result as accurate as possible. The work is to remove marine litter on the study area prior to monitoring. The actual monitoring is conduct after a few weeks of preliminary work so that the amount of marine litter washed up in some period can be understand.

There is no preliminary work for monitoring conducted by the Ocean Conservancy and JEAN. The organizations just designate places for cleanup. Their monitoring can be applied to any type of beaches.

NPEC sets a 10m-squared area on a beach, which is fixed as a study area every year. Litter is picked up and monitored in the study area, and the monitoring results can be compared among study areas yearly.

Monitoring activities of the Ocean Conservancy and JEAN are a part of cleanup activities. Marine litter is gathered from the whole cleanup sites. It means that the more effort and the more time volunteers take, the more litter they can collect and monitor. In this respect, it seems difficult to compare the results of monitoring at different sites.

#### (3) Data sheet

NPEC uses a data sheet with 8 categories and 98 sub-categories are on the list to classify marine litter by material types. ICC data sheet of the Ocean Conservancy has 6 categories with 43 sub-categories. There are 4 categories with 64 categories in JEAN's data sheet. Categorization in data sheets used by the Ocean Conservancy and JEAN are based on sources of marine litter, which shows what kinds of human activities dispose of litter into the marine environment. (See Table A2)

The data sheets of NPEC and JEAN are modified version of ICC format to apply a

different methodology and to understand characteristics of marine litter on Japanese coasts. Although some efforts are needed for the data transformation, data of NPEC and JEAN can be transformed into ICC format to compare the data in places where ICC Campaign conducts around the world

#### **4. Conclusion**

Advantages and disadvantages in the three monitoring methods are discussed below. Then method of the Ocean Conservancy is quite similar to that of JEAN. Therefore, these two methods are evaluated together.

##### **Advantage of NPEC monitoring methods**

NPEC has a 10-year monitoring experience in the NOWPAP Region and constructed a monitoring network among local governments and NGOs in the NOWPAP Members. All the four countries of the NOWPAP Members participate in monitoring activities of marine litter. Although the number and weigh of marine litter monitored by this method fluctuate year by year, the monitoring method and analysis are kept as scientific as possible.

##### **Disadvantage of NPEC monitoring methods**

Since this quasi scientific method is more complicated and needs more preparation than the other two methods, it requires capable instructors to lead participants and collect data.

##### **Advantage of monitoring methods of the Ocean Conservancy and JEAN**

Monitoring activities conducted by the Ocean Conservancy and JEAN are much simpler than that of NPEC in that there is no preliminary work, and participants just counted marine litter which is picked up during cleanup activity. There are fewer regulations to apply these monitoring methods. Simple monitoring methods might be good for extending monitoring activities, increasing the number of participants, and managing them for a long time.

##### **Disadvantage of monitoring methods of the Ocean Conservancy and JEAN**

The amount and number of marine litter counted through these methods depend on how much efforts participants make and how many hours they spend for cleanup. In this point, the methods are less scientific than that of NPEC.

At this stage of the research, one method cannot be chosen for a standard method for monitoring of marine litter. Other methods in Japan and those in Korea should be also

reviewed to standardize a monitoring method in the NOWPAP Region.

It would be necessary to clarify and show purposes of monitoring, conducting organizations of monitoring, support system of monitoring, and history of monitoring as well as advantages and disadvantage of monitoring methods in order to reach a consensus among the NOWPAP Members in the Intergovernmental Meetings in the future.

**Table A1. Comparison among Methods for monitoring of marine litter**

Organization	Northwest Pacific Region Environmental Cooperation Center (NPEC)	The Ocean Conservancy	Japan Environmental Action Network (JEAN)
Activity	Survey of Washed-up Driftage along the Coast of the Japan Sea and Yellow Sea	International Coastal Cleanup Campaign	International Coastal Cleanup Campaign
Outline	<p>The Research on Washed-up Driftage on the Coast of the Northwest Pacific aims to grasp the current status of contamination by artificial articles such as the plastics at the beaches along the Coasts of the Japan Sea and Yellow Sea.</p> <p>The survey will also make its participating residents gain a deeper understanding towards the marine environment and have a higher awareness of the importance of not throwing garbage and trying to protect it.</p>	<p>The mission of the ICCO is as follows:</p> <ul style="list-style-type: none"> <li>Remove debris from the shorelines, waterways, and beaches of the world's lakes, rivers, and bordering oceans.</li> <li>Collect and catalog information on the amounts and types of debris.</li> <li>Educate people on the issue of floatable debris.</li> <li>Use the information collected from the cleanup to effect positive change—on all levels, from the individual to the international—to reduce floatable debris and enhance marine conservation.</li> </ul>	<p>JEAN cooperated on International Coastal Cleanup, which American NGO "The Ocean Conservancy" is holding, since 1990.</p>
Information about Participant	Local governments in cooperation Elementary and junior high schools and private organizations in the region	Volunteers who want to take part in cleanup campaign	Volunteers who want to take part in cleanup campaign
Results of monitoring	<p><b>【Results of 2003 research】</b>                      Frequency ; Once/year                      Number of coasts ; 48 coasts                      Number of Participants ; 1,620 persons                      Count of Grand Total ; 70,652 pieces                      Weight of Grand Total ; 377.769 kg                      Count per 100m<sup>2</sup> ; 427 pieces/100m<sup>2</sup>                      Weight per 100m<sup>2</sup> ; 2,133 g/100m<sup>2</sup>                      Total area ; 18,761 m<sup>2</sup></p>	<p><b>【Results of 2002 International Coastal Cleanup】</b>                      Frequency ; once/year                      Number of Participants ; 391,733                      Count of Grand Total ; 6,262,958 pieces                      Weight of Grand Total ; 3,731,668 kg                      Count per person ; 15.99 pieces/person                      Weight per person ; 9.526 kg/person                      Distance of coastlines ; 19,967 km</p>	<p><b>【Results of Cleanup Campaign 2003】</b>                      Frequency ; 2 times/year                      Number of site ; 365 sites                      Number of Participants ; 26,104 persons                      Count of Grand Total ; 842,207 pieces                      Weight of Grand Total ; 130,752.6 kg                      Count per person ; 35.55 pieces/person (Spring campaign)                      ; 30.65 pieces/person (Autumn campaign)                      Distance of coastlines ; 73.1255 km</p>
Monitoring Method	<p>Coastal areas along the Northwest Pacific</p> <p><b>【Procedure of selection】</b>                      Selection of places for the Research                      (1)The research is to be conducted in sand beaches ; 1 or 2 beaches in each municipality.                      (2)In the case of a bathing beach, the research should be conducted after the bathing season is over and litters are cleaned up.                      (3)Basically the research should not be conducted in a place such as followings.                      • a place within 1 km from a side of a big river mouth                      • a beach with wave-dissipating blocks offshore                      Preliminary research                      Prior to the main research, preliminary research is conducted to check on the use of the beach, circumstance around beaches and cleaning activities.</p>	<p>Coastlines, rivers and lakes in the world</p> <p><b>【Procedure of selection】</b>                      Place where affected by marine litter.</p>	<p>Coastlines, rivers and lakes in Japan</p> <p><b>【Procedure of selection】</b>                      Place where affected by marine litter.</p>



Table A2. Comparison among data sheets of NPEC, the Ocean Conservancy and JEAN

ICC legends

- Shoreline and recreational activities
- Ocean/Waterway activities
- Smoking-related activities
- Dumping activities
- Medical/Personal hygiene
- Debris items of local concern

JEAN legends

- Fragmented objects
- Land based
- Sea based
- Debris items of local concern

NPEC categories		Ocean Conservancy (ICC format)	JEAN categories
Plastic	Bags	Plastic bags for food or package	Bags/Food Wrappers
		Plastic bags of shopping	Bags/Food Wrappers
Bottles		Plastic bags for snack	bags (except for agriculture)
		others	bags (except for agriculture)
		Plastic bottles for drinking	Beverage Bottles (plastic) 2 liters or less
		Plastic bottles for detergent or bleach	Bleach/Cleaner Bottles
Containers		Plastic bottles for seasonings or sources	Bleach/Cleaner Bottles
		others	
		Plastic containers for food, dish	Cups, Plates, Forks, Knives, Spoons
		Plastic containers food tray	Cups, Plates, Forks, Knives, Spoons(割り箸)
Line		Plastic containers for seasonings	Bags/Food Wrappers
		others	Bags/Food Wrappers
		Plastic line: string	Caps, Lids
		Plastic line: rope	Rope
Miscellaneous goods		Plastic line: tape	Rope-string
		drinking straw	Straws, Stirrers
		cigarette filter	Cigarettes/Cigarette Filters
		lighter	Cigarette Lighters
Fishing gears		toy	Cigarette Lighters
		stationery	Toys
		others	groceries ( ? ) 生活雑貨のこと
		fishing line	Fishing Line
Broken pieces		lure, float	Fishing Lures
		buoy	Buoys/Floats
		others	Buoys/Floats
		sheet or bag	pieces of plastic bag/sheet
Resin pellets(plastic grain)	others(be specific as possible)	plastic	pieces of plastic(hard)
			Resin pellets(plastic grain)
			Shotgun Shells/Wadding
			Shotgun Shells/Wadding
			Batteries
			Appliances (refrigerators, washers, etc.)
			Cars/Car Parts
			bags for pesticides and fertilizers for agriculture
			shoes sandals
			medical materials (except syringes)
			Tampons/Tampon Applicators
			Syringes
Rubber			oyster cultivation pipe
			Plastic Sheetina/Tarps
			6-Pack Holders
			6-Pack Holders
Styrene foam	containers: packages	balls	Balloons
		balloon	Balloons
		gloves	
		rubber bands	
Paper	containers	broken pieces	Condoms
		others(be specific as possible)	Condoms
		food trays	Tires
		cups	Bags/Food Wrappers
Cloth	clothes	for lunch box or noodle	Bags/Food Wrappers
		packing materials	Bags/Food Wrappers
			stvrene foam floats
			pieces of styrene foam: small
Glass/Ceramic	Glass products		pieces of styrene foam: large
			Cups, Plates, Forks, Knives, Spoons
			Cups, Plates, Forks, Knives, Spoons(割り箸)
			Cups, Plates, Forks, Knives, Spoons(割り箸)
Metal	Can	drinking containers	Beverage Bottles (glass)
		food containers	Beverage Bottles (glass)
		cosmetic containers	
		tableware	Cups, Plates, Forks, Knives, Spoons
Other Artificial Object	Wood (synthetic)	fluorescents	Light Bulbs/Tubes
		bulbs	Light Bulbs/Tubes
		tableware	Cups, Plates, Forks, Knives, Spoons
		tiles, bricks	Cups, Plates, Forks, Knives, Spoons(割り箸)
	Pieces of glass		pieces of glass/ceramic
			pieces of glass/ceramic
			Syringes
			Syringes
	Pieces of ceramic		medical materials (except syringes)
			Beverage Cans
			Beverage Cans
			Beverage Cans
	others(be specific as possible)		Oil/Lube Bottles
			Oil/Lube Bottles
			Oil/Lube Bottles
			Oil/Lube Bottles
	Miscellaneous goods		Caps, Lids
			Pull Tabs
			Caps, Lids
			Pull Tabs
	Pieces of metal		nails-wires
			nails-wires
			pieces of metal
			pieces of metal
	others(be specific as possible)		Shotgun Shells/Wadding
			55-Gal. Drums
			Appliances (refrigerators, washers, etc.)
			Batteries
	Bulk waste		Construction Materials
			Construction Materials
			fireworks
			Cups, Plates, Forks, Knives, Spoons(割り箸)
	Oil ball		Crates
			Pallets
			Cars/Car Parts
			bicycles-bikes
	others(be specific as possible)		Appliances (refrigerators, washers, etc.)
			Appliances (refrigerators, washers, etc.)
			oil balls
			fish containers
			Shotgun Shells/Wadding
			Shotgun Shells/Wadding
			Batteries
			Batteries
			Appliances (refrigerators, washers, etc.)
			Appliances (refrigerators, washers, etc.)
			Cars/Car Parts
			Cars/Car Parts
			bicycles-bikes
			Strapping Bands
			Strapping Bands
			Fishing Nets
			Bait Containers/Packaging
			Bait Containers/Packaging
			Crab/Lobster/Fish Traps
			Crab/Lobster/Fish Traps
			pot for seedlings
			DEBRIS ITEMS OF LOCAL CONCERN
			DEBRIS ITEMS OF LOCAL CONCERN
			DEBRIS ITEMS OF LOCAL CONCERN