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Preface

Dear Readers

Plastic waste issue has been gaining attention from many people around the world. After the development of “Plastic” about 100 years ago, human beings can’t live without plastic for a single day until they were borne and died. It makes the problem difficult to be solved. However, we are happy to hear great news from countries in the Asia Pacific to solve these difficult problems.

This issue is characterized by the achievements of citizen science. First, OSEAN published its recent citizen science program supported by Korean government, which is a rapid assessment of beach litter pollution by visual scoring. Taiwanese member applied the same method to the coastline of Taiwan and triggered to improve the governmental policy. In mainland China, with the support of international organization, a report was released to determine the distribution and contamination of debris from fishing activities among coastal debris.

Another feature is two programs to increase the capacity of human resources in the Asia Pacific region : ‘AMETEC Marine Litter Expert Training Workshop’ and ‘Cooperation between Indonesia and South Korea on addressing marine debris’. This allowed participants from 12 countries to study marine debris issues and practice how to monitor coastal debris. In this issue, one of the participants in the training course in Indonesia contributes to a news introducing the Indonesian government’s ambitious goal to reduce 70% of marine litter in near future through Marine Litter Management Action Plan. One participant from Malaysia in the training course held in South Korea shares the Reef Check Malaysia’s International Coastal Cleanup event with thousands of people. The news of the beach adoption of Korean company is also interesting news.

Another good news is that a new member from Vietnam has entered our Asia Pacific Civil Forum on Marine Litter (APML). The Center for Environment and Community Research (CECR) is introduced in the text. We hope you’ll be all welcome and interested in its activities.

There are very spectacular activities going on from coastal cleanup events, publication of academic paper, citizen science programs, changing local government policies, to establishing national policies. I don’t know how precious and proud each effort is. This newsletter is a great way to promote the cooperation of NGOs in the Asia Pacific region and various entities involved in reducing marine litter. We have been waiting for more people’s contribution to these efforts through sharing experiences and learning from each other.

With love,

Sunwook Hong

Editor, **Sunwook Hong**
(*Ph.D., President of OSEAN*)

Assistant editor, **Jongsu Lee**
(*Researcher of OSEAN*)

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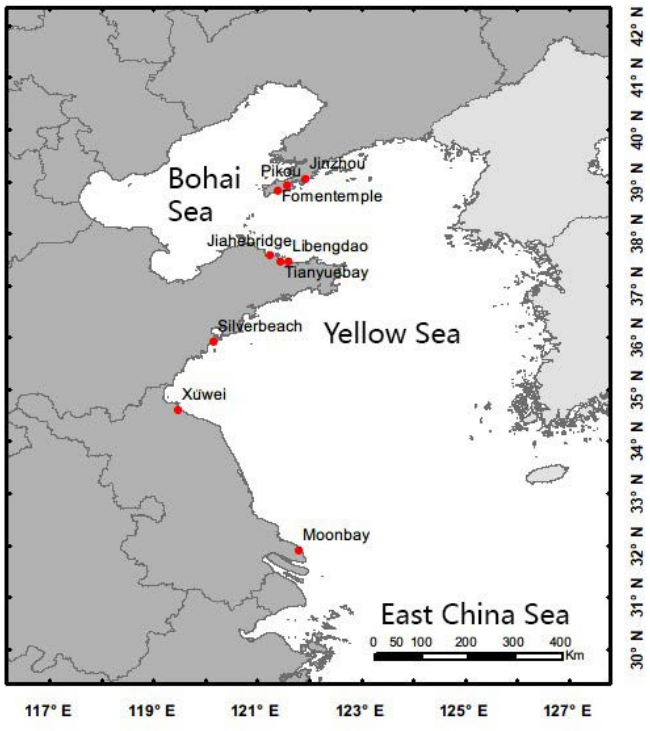
Fishery and Aquaculture Marine Debris Survey Report in the Yellow Sea Area of China

Feng Xiao
Research Assistant
xiaofeng@renduocean.org

Yanrong Hu
Project Assistant
huyanrong@renduocean.org

The Yellow Sea is a very important fishing ground in China, and is among the 4 biggest in the region. With the rapid development of China's capture fishery and aquaculture, considerable fishing debris is generated. This new development will not only damage the marine's ecosystem, it will also lower the fishing industry's income. The current state of this issue remains unclear. Therefore, it is necessary to conduct a survey on fishing debris in this region to fill the knowledge gap.

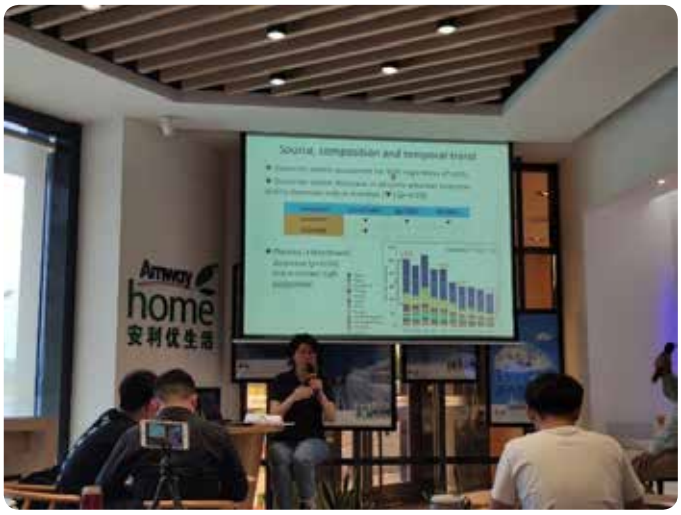
Shanghai Rendu Ocean NPO Development Center (Rendu Ocean) launched 'Guard the Coastline' China Coastline Monitoring and Cleanup (CCMC) in 2014 to motivate China coastal NGOs and volunteers to join in marine debris monitoring, cleanup and routine data collection. Despite the experience the CCMC gained over the past 5 years, the previous practices and methodology were not designed for fishing debris monitoring. There is a need to reevaluate the survey method and revise the recording form to capture debris generated from fishing.



Location of monitoring sites in Yellow sea coastline of China

Our Sea of East Asia Network (OSEAN) is an established Korean NGO that is excellent at marine debris research, including fishery and aquaculture debris. With numerous monitoring sites located by the Yellow Sea and expertise in fishery debris, Rendu Ocean invited OSEAN to share their expertise and provide assistance in modifying their methods.

A brilliant workshop with great energy was held in Lianyungang, Jiangsu Province during 18th -19th May 2019. Fourteen participants, including 2 experts from OSEAN in Korea, and 12 trainees from 9 survey sites along China Yellow Sea coastline participated in the workshop. Two founders of OSEAN, Dr. Jongmyoung Lee and Dr. Sunwook Hong, led five sessions on the 18th and one session on the 19th, including a discussion on monitoring methods between two researchers of Rendu Ocean. They shared rich information and experience such as the impacts of fishing gear debris, Korean beach monitoring methods and finding out styrofoam buoy debris solutions. On the 19th, the team practiced debris monitoring at a local beach severely polluted by marine debris and visited a local harbor to see fishing gear in-use.



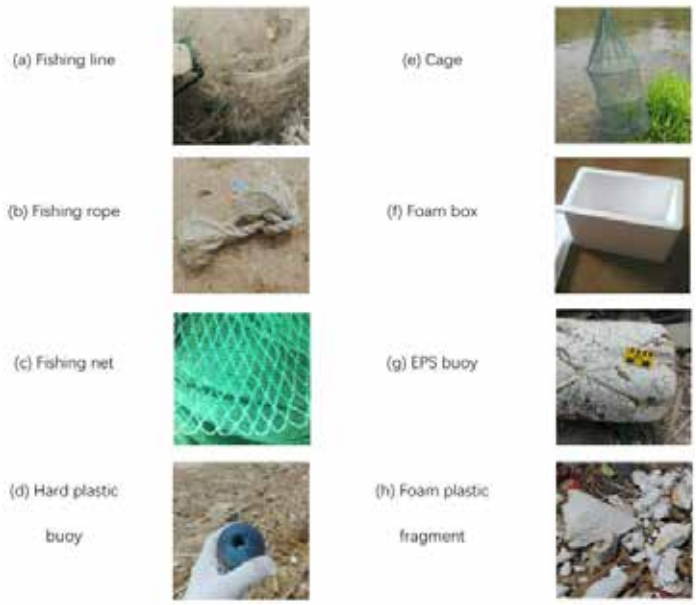
Workshop training


Field practice

Group photo on Lianyungang's beach

Eight items of fishing gears (hard plastic buoy, cage, fishing line, rope, fishing net, EPS buoy, foam box and foam fragment) were included as fishing-related items in this study. Foam fragments were recorded as fishing gear since fishing gear like EPS buoys are comprised primarily out of foam. After the survey, all debris was removed for the following surveys.

This study was designed to assess the level of fishery-based debris in the Yellow Sea Area of China with contributions from trained local civil groups. We conducted 3 replications at 9 sites along the Yellow Sea coastline from May to September 2019.



Photos of fishing-related items

During November 14th-17th, Rendu visited OSEAN's office in Korea to have in-person discussion about the monitoring report. Friends from OSEAN shared their expertise and hospitality. The report was revised and finalized with great contributions of Dr. Jongmyoung Lee, Dr. Sunwook Hong and Ms. Jongsu Lee.

The results show that the average distribution of fishery-based beach debris was 1,249 count per 300 meter and 30,668 g per 300 meter. Foam fragments are the most common debris in terms of count (48.3%) and weight (36.0%), followed by fishing nets in terms of quantity (18.2%) and weight (31.9%). The main source of these items could potentially be from the floats placed to mark the position of fishing gear installation in combination with bamboo sticks and ropes for aquaculture.

Relative proportions of fishing gear debris at 9 sites (3 replications)

During the study, foam fragment is no doubt the most frequently found item along the coastline. Foam plastic like polystyrene has been wildly used in fishery and aquaculture industries. This type of material is fragile after prolonged exposure to waves, sunlight, or other forces including chemical works. These combined forces deteriorate the foam fragments, breaking them down into even smaller pieces that become extremely difficult to cleanup.

The high abundance of foam fragment in most survey sites in this study implicates aquaculture as a key contributing source, like in Korea. Actions against uncontrolled usage of foam plastic in fishery work should be taken into consideration. A recollection system of EPS buoys and foam boxes should be a top priority. However, lack of information on how to use those abundant items in fishing grounds should be studied.

This study was made through the support provided by the UNDP/GEF Yellow Sea Large Marine Ecosystem (YSLME) Phase II Project. We are grateful to Nature-Exploring Camp, Environmental League of Colleges in Dalian, Yantai Original Life Public Welfare Development Center, Blue Ribbon Marine Conservation Association in China University Of Petroleum, Lianyungang Shoreline Cleanup Volunteer Service Center and Qidong Environmental Protection Volunteer Association for conducting the surveys. We also thank all the volunteers for participating in our surveys to collect data.

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AMETEC Marine Litter Expert Training Workshop

Jihye Kim
Visiting Scholar, Our Sea of East Asia Network
jhkim@osean.net

Translated by Eunkyung Lee
Our Sea of East Asia Network
eklee@osean.net

The AMETEC Marine Litter Expert Training Workshop was held in Yeongdo, Busan for six days from October 12th to 17th. The workshop was co-organized by the APEC Marine Environmental Training & Education Center (AMETEC) and supported by the Asia-Pacific Economic Cooperation (APEC), Our Sea of East of Asia Network (OSEAN), Korea Institute of Ocean Science & Technology (KIOST) and Korea Marine Environment Management Corporation (KOEM). The overall program was organized using OSEAN's know-how in marine debris and the event was hosted by Dr. Sunwook Hong, CEO of OSEAN.

AMETEC Training Workshop Schedule

7th October		
Lecture I.		Chair: Dr. Sunwook Hong
13:30-14:00	Marine debris overview	Dr. Sunwook Hong (OSEAN)
14:00-14:30	Korea's Response to Marine Debris	Mr. Kyung-Shin Kim (KMI)
14:30-15:00	NOWPAP Marine Debris Regional Action Plan (RAP MALI)	Dr. Ning Liu (NOWPAP/UNEP)
15:00-15:30	International efforts to respond to marine debris	Dr. Jongmyoung Lee (OSEAN)
Country Report II.		Chair: Dr. Sunwook Hong
15:45-18:00	Announcing efforts to respond to marine debris by country	Trainees
8th October		
Country Report II.		Chair: Dr. Sunwook Hong
09:30-11:15	Announcing efforts to respond to marine debris by country	Trainees
Lecture II.		Chair: Dr. Jongmyoung Lee
11:30-12:30	Coastal debris Survey	Dr. Sunwook Hong (OSEAN)
13:30-15:30	Marine debris monitoring and evaluation I	Ms. Jongsu Lee (OSEAN)
15:45-17:00	Marine debris monitoring and evaluation II	Dr. Jongmyoung Lee (OSEAN)
17:00-18:00	Coastal Survey Preparation	Ms. Jongsu Lee (OSEAN)
9th October		
Coastal Survey I.		Ms. Jongsu Lee
09:00-12:00	Coastal Survey	Songdo Beach Ms. Eunkyung Lee and Ms. Jihye Kim
13:00-15:00	Coastal Debris Survey Results: Data Analysis, Group Discussions, Presentation Preparation (1)	Lecture room Ms. Eunkyung Lee and Ms. Jihye Kim

15:30-18:00	Coastal Debris Survey Results: Data Analysis, Group Discussions, Presentation Preparation (1)	Lecture room Ms. Eunkyung Lee and Ms. Jihye Kim
10th October		
Coastal Survey II.		Chair: Dr. Jongmyoung Lee
09:00-10:45	Coastal Debris Survey Results (1)	Trainees
11:00-12:30	Coastal Debris Survey Results (2)	Trainees
Field Trip I		
13:30-18:00	Technology tour I	Namhae Research Institute, KIOST
11th October		
Field Trip II		
09:00-12:00	Technology tour II: Chunghang Line	Busan international passenger terminal (KOEM)
Lecture III.		Chair: Dr. Jae-Young Lee
13:00-13:30	Korea's Marine Debris Management Policy and Recycled Foam Styrene Buoy Recycling	Mr. Kyung-Shin Kim (KMI)
13:30-14:00	Korea's Marine Debris Survey and Collection Technology	Mr. Jin-Hwan Lee (MATEC)
14:30-15:00	Marine life impacts of marine debris	Dr. Sunwook Hong (OSEAN)
Lecture IV.		Chair: Dr. Jongmyoung Lee
15:30-16:00	Marine & Fine Plastics Overview	Dr. Won Joon Shim (KIOST)
16:00-16:30	Sea and Ocean Garbage Movement	Dr. Young-Gyu Park (KIOST)
16:30-17:00	Marine Debris-Related Toxic Chemicals	Dr. Sang Hee Hong (KIOST)
12th October		
Closing		
09:00-12:00	Course review Course evaluation and opinion exchange Closing	

The 14 trainees from 12 countries (Brunei, Cambodia, Taiwan, Indonesia, Laos, Malaysia, Peru, Philippines, Russia, East Timor, Singapore, Philippines and Korea) attended the international event. Visitors from Kiribati, Indonesia and Jamaica also attended the training workshop.

The workshop was designed to help trainees develop the skills needed for marine litter specialists, giving them the opportunity to learn marine litter expertise, international policy trends and practice Korea's coastal debris monitoring methodology.

AMETEC Marine Debris Expert Training Workshop

The trainees had a good time filled with country report session, lectures and field trips.
At country report session, the trainees introduced marine debris response monitoring and policies that they are conducting.

In addition, Dr. Sunwook Hong, Dr. Jongmyoung Lee, Ms. Jongsu Lee, Mr. Kyung-Shin Kim of the Korea Fisheries Research and Development Institute, Dr. Ning Liu of the United Nations Environment Program, Dr. Won Joon Shim of Korea Institute of Ocean Science & Technology, Dr. Young-Gyu Park, and Dr. Sang Hee Hong also gave in-depth lectures on marine debris policy, research and monitoring programs.

Particularly, in the field training, they visited Busan Songdo Beach and learned Korea's national marine debris monitoring methodology, and presented the statistical results by group. Also they visited the Namhae branch of Korea Institute of Korea Institute of Ocean Science & Technology, the survey vessel and Chunghang Line of Korea Marine Environment Management Corporation. The trainees were given a brief introduction to the microplastic research methods and equipment and were able to see the debris collection site in Korea.

AMETEC trainees giving presentations at Country Report

AMETEC trainees in group training

AMETEC trainees on the cruise line

At the end the individuals were enthusiastic about the training and presented well informed data about marine debris. After the workshop, the trainees shared notes and exchanged information. The individuals involved were made up of government officials, NGO activists, and researchers from each country, and the training is expected to contribute to the formation of an influential international network of marine debris.

Group photos of 2019 AMETEC trainees and OSEAN

The workshop was sponsored by the Ministry of Oceans and Fisheries and Partnerships in Environmental Management for the Seas of East Asia (PEMSEA).

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Cooperation between Indonesia and South Korea on addressing marine debris: A workshop for strengthening and improvement for marine litter response in Indonesia held successfully

Jihye Kim
Visiting scholar, Our Sea of East Asia Network
jhkim@osean.net

Indonesia is one of the countries that seriously suffers from marine litter. In a 2015 paper published in Science, Jambeck, a prominent environmental engineer, and her colleagues estimated that Indonesia was the second largest land-based plastic waste dumping country in the world. At the same time, Indonesians are also struggling to solve the marine plastics problem in many ways including cooperation with international organizations or other states. “Indonesia Marine Waste Management Improvement Project Marine Waste Monitoring Capacity Enhancement Workshop” is also one of the cooperative programs between Korea and Indonesia. Korea Marine Environment Management Corporation (KOEM) and Our Sea of East Asia Network (OSEAN) held the workshop where more than 30 Indonesian officials, researchers and activists took part in. It was one of the projects by the Korea Ministry of Oceans and Fisheries (International Cooperation Division) and was held from October 28th to November 1st in Labuan Bajo, a beautiful Indonesian island.

Fig. 1. Group photo of participants in the capacity building workshop on marine litter monitoring

The event brought together various stakeholders in Indonesia. They included officers from relevant Indonesian central and municipal ministries such as Coordinating Ministry for Maritime Affairs, Ministry of Maritime Affairs and Fisheries, the Ministry of Maritime Coordination, Ministry of National Development Planning, Ministry of Tourism, and Komodo national park, researchers from Indonesian national institutes or universities, and activists dealing with Indonesia's waste issues. To organize and lecture this program, five people from OSEAN (Dr. Sunwook Hong, Dr. Jongmyoung Lee, Ms. Jongsu Lee, Ms. Eunkyung Lee, and Ms. Jihye Kim), and Mr. Juyoung Park form Korea Marine Environment Management Corporation came from Korea to Labuan Bajo.

On the 29th of October, the lecturing program started in the morning. Dr. Sunwook Hong gave a lecture on the marine debris problem, comparing the plastic-free world and the present reality showing a picture of Jakarta 30 years ago and a picture of Seoul 100 years ago. Dr. Sunwook Hong also emphasized the two aspects of waste, quantity and impact to address on marine debris. Dr. Jongmyoung Lee, who lectured in a row, gave a presentation on the trend of dealing with marine debris at the international level. Furthermore, there was a time to compare the Korean policy with that of Indonesia, which was introduced by Dr. Andreas Futahaean and Indonesian Researcher Reza Cordova. Indonesia already launched a marine debris response plan at the national level and had experience on monitoring with the support of several international organizations.

Fig. 2. Participants listening to a speech of Mr. Juyoung Park form Korea Marine Environment Management Corporation introducing the workshop. Group photo of participants in the capacity building workshop on marine litter monitoring

Fig. 3. OSEAN president Dr. Sunwook Hong gives a lecture on marine debris

The next day, as part of the lecture and demonstration of monitoring methods, the participants worked on a tight schedule but enthusiastically. Participants in particular asked how Korea's policies and monitoring methods could be applied in Indonesia's reality and wondered how Korean policies could be settled. In practice, they went to a beach and did monitoring together. Monitoring is not only important for policy, but participants can have a good time in the process of picking up, sorting and recording marine debris. During this exercise, participants tried to classify marine debris by both the Korean monitoring method and the existing Indonesian method. Participants commented that the Korean method was an easier method to apply in broad cases.

Participants practicing monitoring

Participants sorting the marine debris collected during the demonstration of monitoring

On October 31st, participants, divided into five groups, took part in beach litter monitoring exercises along the coast-line of Labuan Bajo. Each group traveled by bus or boat to a designated location and followed the field survey method of Korea national beach litter monitoring program (Table 1).

Table 1 Workshop Time Table

1st Day (29th October, Tuesday)	
09:30 - 09:50	Opening Ceremony - Welcoming address (KOEM) - Congratulatory remarks (Indonesia)
09:50 - 10:20	Course introduction (Dr. Sunwook Hong, OSEAN)
10:20 - 10:30	Photo Session
10:30 - 11:00	Coffee Break
11:00 - 11:30	Overview of marine debris (Dr. Sunwook Hong, OSEAN)
11:30 - 12:00	Introduction of the work of KOEM (Mr. Juyoung Park, KOEM)
12:00 - 13:30	Lunch
13:30 - 14:30	Trends in the international actions against marine litter and International Coastal Cleanup (Dr. Jongmyoung Lee, OSEAN)
14:30 - 15:30	Status of marine litter pollution (Dr. Sunwook Hong, OSEAN)
15:30 - 16:00	Coffee Break
16:00 - 16:30	Governmental policy of marine litter in Korea (Dr. Jongmyoung Lee, OSEAN)
16:30 - 18:00	Status quo of Marine Litter and relevant policies in Indonesia and Labuan Bajo (Mr. Reza Cordova, LIPI)
	Rapid assessment of beach litter using a visual scoring indicator (Ms. Jongsu Lee, OSEAN)

Outdoor activity

2nd Day (30th October, Wed)	
09:30 - 10:00	Status quo of Marine Litter and relevant policies in Indonesia and Labuan Bajo (Dr. Nani Hendiarti, CMMA)
10:00 - 10:30	Beach litter monitoring method and lesson learned through Phase I (Dr. Sunwook Hong, OSEAN)
10:30 - 11:00	Beach litter monitoring method in Korea and Indonesia (Mr. Reza Cordova, LIPI) (in Indonesian)
11:00 - 11:30	Coffee Break
11:30 - 12:00	Finding solution to the most serious marine litter from national monitoring result (Dr. Jongmyoung Lee, OSEAN)
12:00 - 13:30	Lunch
13:30 - 14:30	Guide to field excursion: site selection, preparation, safety, marine litter monitoring on a beach (Ms. Jongsu Lee, OSEAN)
14:30 - 15:30	Transportation to the field excursion venue (nearby beach)
15:30 - 17:00	Demonstration of Korean beach litter monitoring method and Indonesian method (Ms. Jongsu Lee, OSEAN, Mr. Reza Cordova, LIPI)

Outdoor activity

3rd Day (31st October, Thu)	
09:00 - 10:00	Transportation to 5 beaches (one beach each group by boat or bus) (OSEAN team and participants in 5 groups)
10:00 - 12:00	Practice at each designated beach (OSEAN team and participants): collecting marine litter in the designated areas at each site according to Korean and Indonesian methods
12:00 - 13:00	Transportation to Hotel (by boat or bus)
13:00 - 15:00	Lunch and break
15:00 - 18:00	Sorting and recording their number and weight in the survey card (Group activity) (nearby beach)

4th Day (1st November, Fri)	
09:00 - 09:30	Preliminary data result of the survey in Labuan Bajo (Ms. Jongsu Lee, OSEAN)
09:30 - 10:00	How to estimate flow and stock of marine litter in national level (Ms. Jongsu Lee, OSEAN)
10:00 - 10:30	Case study in marine litter management in marine protected area (Dr. Jongmyoung Lee, OSEAN)
10:30 - 11:00	Survey on the satisfaction of curriculum and coffee break (KOEM)
11:00 - 12:00	Completion ceremony (KOEM)

Table 2 The field survey procedure

1	Before collecting the litter, take a picture of the survey site so that the whole survey area can be seen.
2	Enter the site information on the monitoring survey cards including date, organization name, site name, people participating the survey, temperature, wind speed, meteorological condition, start and end time, and leader's name. High tide time closest to the survey start time should be entered as precise as possible.
3	Place 100 m tape measure at the start point and spread it horizontally to the coastal line and make the survey length 100 m long.
4	Divide the survey line (100 m) into 5 m-long transect so that 20 transects are made.
5	Randomly select four 5 m-long transects using a random number generator or random number table.
6	Go to the first survey transect and spread tape measure from back shore to the water edge, perpendicular to the coastal line. Enter the transect number and length on the card.
7	Collect the beach litter larger than 2.5 cm.
8	Place the transect number indicator and take a picture of all the collected litter with the indicator.
9	Fill in the litter number and weight on the survey card. For the convenience, count and weigh the foreign debris first, do the domestic debris next. If there is litter which weight is under the minimum weight of the scale, report the weight of the debris as 1 g.
10	Repeat ⑦⑧⑨ on the other 3 transects.
11	After recording all debris on four transects, collect all the litters outside the survey transects on the trash bag and place them on the designated spot.
12	Take a photo 6 on the opposite side of the survey site.

Participants practiced collecting and sorting the litter and recording the data in Excel. Unlike Korea, Indonesian debris is primarily from households rather than the fishing industry. This is presumably due to the lack of adequate facilities and systems to deal with household waste and the ease of dumping garbage on the beach. However, fishing waste is also present. According to one participant, fishermen use and dump many plastic bags for refrigerating fish. In addition, because the water supply is not qualified, many water bottles and plastic packagings are found. Monitoring can be used to record this waste well and use them to produce or improve policies addressing garbage disposal.

A team, which includes Researcher Ms. Eunkyung Lee, is taking a picture after practicing monitoring.

Dr. Jongmyoung Lee's team goes by boat to the farthest monitoring point

Sorting and recording beach litter by group

Indonesian participants fill out their own monitoring data

The results of the monitoring exercise were analyzed by researcher Ms. Jongsu Lee and shared with participants on the last day. Participants expressed their hopes that the cooperation among KOEM, OSEAN and Indonesia will continue. Even at the end of the last lecture, the eager participants who have strong motivation to solve the marine debris issue shared their experiences and gratitude to KOEM and OSEAN. At the completion ceremony, all participants received certificates and souvenirs.

Participants listening to Ms. Jongsu Lee's lecture

Labuan Bajo, where the workshops are held, is located at the west end of Flores Island. It is a tourist destination of Indonesia due to its beautiful natural environment, coral reef community and transparent sea. However, this place was also selected as the site for the workshop because it is one of the places where marine debris problems are serious due to the lack of recognition and disposal system. Labuan Bajo already has the latest waste disposal facility, but it is not operating due to the lack of manpower and disposal systems. When OSEAN visited here, there were individual waste incinerations everywhere, and large garbage was dumped all over the coast near the town. Marine debris floated around the port. Looking into the white sand, which looks clean at first, we easily recognize the styrofoam grains used as the bean bag's peeling agents were mixed with the sand. Of course, many people here also seemed to try to make a good difference about the litter problem. In Labuan Bajo, visitors can see shops that have a sticker called "Trash Hero". It is said that plastic zero movements such as "Trash Hero" are spreading around local divers who are wary of the marine debris. In this situation, it is important to improve the system and change the way of life. The workshop will be the opportunity to help Indonesia and Korea cope with marine debris together.

Participants and staffs from OSEAN and KOEM after finishing the workshop

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International Coastal Clean-up Event by Dow Korea

Dow Korea Adopts Yongyu-do beach, Bimonthly Voluntary Coastal Clean-up Until 2020

Dr. Jongmyoung Lee
Country coordinator of International Coastal Cleanup
Chief Science Officer, Our Sea of East Asia Network
jmlee@osean.net

Jihye Kim
Visiting scholar, Our Sea of East Asia Network
jhkim@osean.net

Dow Korea, the first Korean company to participate in the "Adopt-a-Beach Program," adopted Yongyu-do beach in Incheon along with Our Sea of East Asia Network (OSEAN). Adopt-a-Beach is a volunteer organization that continuously monitors and collects marine debris on beaches. In the 1980s, the case of the highway cleanup was known to have been settled by a local volunteer organization supported by the Texas Department of Transportation. Adopting the Youngyu-do beach is also part of Dow's **"#PullingOurWeight"** campaign to help solve marine debris problems.

At the first event held on the 21st of September 2019, more than 60 employees of the headquarters and partner companies, including Woojong Ryu, the president of Dow Korea, participated. The litter picked up by the participants was 200 kilograms. It consisted of household waste and fishing gear. There are many beaches in Yongyu-do, a large sum of the rubbish came from tourists, but also fishing nets and traps. The second event took place on 15th of November. The event was almost canceled due to the unpredictable weather, but fortunately, it did not rain during the clean-up, so more than 50 Korean Dow employees and partners were able to participate in the event. The event also collected more marine debris than in September, and about 230 kg of litter, including waste fishing gear, household waste, construction materials and tires, were collected. After the summer season, Yongyu-do beach seemed to have a lot of garbage dumped due to the characteristics of the quiet and outland beach, so it seems that a fundamental solution is needed to cope with the dumping. The collected waste was disposed by Incheon regional office of Korea Marine Environment Corporation (KOEM).

Dow Korea has regularly cleaned the coast every other month until 2020, starting with the international coastal clean-up event in September 2019. Volunteers in this Adopt-a-Beach Program use the smartphone app “Clean Swell” to investigate what kind of marine debris is accumulating. The program will be a great opportunity to bring awareness of the marine debris problem of this coast and generate more social attention. The survey results will be used to find ways to manage the waste at Yongyu-do’s shoreline and establish sustainable management plans through discussions with the Ministry of Maritime Affairs and Fisheries and Incheon City. Based on the survey results, next year, we will also launch a campaign to promote clean beach at Seon-nyeo rock beach in Yongyu-do.

Participants collecting marine debris and recording its information in the “Clean Swell” application

Weighing marine debris Collected

Loading collected litter

Group photo at ICC event

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2019 International Coastal Clean-up Malaysia: Malaysians Unite Against Marine Debris

Pricynthia Nesha
cynthia@reefcheck.org.my (Communications Officer, main author)

Theresa Ng
theresa@reefcheck,org.my (Programme Development Manager)

Julian Hyde
julian@reefcheck.org.my (General Manager)

Nadhirah Mohd Rifai
nadhirah@reefcheck.org.my (Programme Manager)

On September 21st , Reef Check Malaysia, Yinson Holdings Berhad and Trash Hero Malaysia, along with other partners, joined forces with thousands of people and numerous partners across Malaysia to participate in a nationwide clean-up effort. This was done in conjunction with the 33rd International Coastal Clean-up (ICC) Day 2019, as well as the World Clean-up Day (WCD), which fell on the same day.

The International Coastal Clean-up (ICC) is the world's biggest annual volunteer effort to protect the oceans. Every year millions of people around the world gather to collect trash along beaches and record information on the types of trash they collect. This process helps provide insights into ways to tackle the ever-growing problem of marine debris.

In previous years, Reef Check Malaysia (RCM) has conducted clean-ups and educational programmes in conjunction with ICC on Tioman and Mantanani Islands, but on a much smaller scale. In 2018, RCM organised the first large scale clean-up, which attracted nearly 5,000 volunteers across all states in Malaysia. This year, with clean-ups organised in all 13 states plus Labuan FT, about 11900 people participated in this nation-wide event. According to Faisal Abdur Rani, the leader of Trash Hero Malaysia, most locations had too much trash which made it difficult for the volunteers to gather and record data. The Trash Hero teams conducted clean-ups in urban areas in addition to the group's typical coastal area clean-ups.

This year, Yinson Holdings Bhd was the platinum sponsor for the ICC effort in Malaysia. Yinson's Group Chief Executive Officer Mr. CY Lim said, "Marine debris and plastics pollution affects the same ocean that Yinson's vessels operate in, and the same shorelines that our site offices share with the local communities. As a listed company with global offshore operations, we play an important role taking care of the environment and the community where we operate - and we don't take this responsibility lightly. Although the amount of rubbish Yinsonites picked up during International Coastal Clean-up Day was a small fraction of the total amount of rubbish that is polluting Maylasia's coastal waters, their volunteer efforts have created great awareness of the issue in hundreds of Yinsonites worldwide. So now, our people are thinking hard about whether their decisions create unnecessary plastic waste, whether when buying groceries, or when operating a billion-dollar vessel. They are telling their friends about it, they're becoming environment and sustainability ambassadors. And that's what counts."
Staff from Coca Cola, RCM's social media partner this year, were also actively involved in the beach clean-ups. Apart from running beach clean-up events with their associates and partners nationwide, Coca Cola ran a social media campaign with Reef Check Malaysia to invite more Malaysians to be part of the event. These efforts are in line with their World Without Waste vision; for every purchased bottle or aluminium can, Coca-Cola will collect and recycle one in return by 2030. Coca-Cola will achieve this goal by partnering with governments, communities, the private sector, and NGOs. By taking on a more collaborative approach, Coca-Cola hopes to achieve their World Without Waste goals and keeps our environment clean for future generations.

These beach clean-ups are part of RCM's long-term campaign to reduce marine debris, specifically plastic waste. RCM is currently part of a multi-stakeholder group that is working to develop a Malaysian Plastics Pact (led by MESTECC) to reduce plastic waste in our landfills and environment. RCM is conducting a recycling pilot project in a neighbourhood in Kuala Lumpur to better understand why households are not segregating recyclables from general waste (in accordance with Act 672). This will ultimately help to find mechanisms to incentivise households to segregate waste so that it can be available for recycling, rather than being dumped into landfills and ultimately escaping into the environment.

The clean-up this year was conducted at more than 100 locations around Malaysia. Almost 37,000 kg of trash was removed from beaches, with the most common items being plastic beverage bottles, food wrappers and cigarette butts. Plastic grocery bags were also listed in the top 5 most common items found, besides plastic bottle caps. Some organizers have not recorded the number of individual items, as the sheer quantity of trash in some locations made it very difficult to count each individual article of debris. These volunteers had to shovel the trash along the beach into bags instead of picking them up one by one. They reported a net close to 200 kg and more than 1,500 polystyrene chips. The amount of trash collected in this location filled a 3 tonne skip.

Julian Hyde, General Manager of RCM, added: "It is rewarding to see this event attracting even more people this year than last. Marine debris has widespread impacts on life in the ocean, and much of it is plastic and other trash that we discard without thinking. We would like to thank our sponsors and the thousands of volunteers who participated in the event this year; let's make next year even bigger, continue to raise awareness about the problem to a new level, and make sure that government takes note – and takes action."

Reef Check was established in the USA in 1996 to raise awareness on the importance of, and threats to, coral reefs. The local chapter, Reef Check Malaysia (RCM), was registered in 2007 as a non-profit company to engage with local stakeholders to protect, restore and revive coral reefs in Malaysia. Its surveys have highlighted various problems facing coral reefs in Malaysia, including overfishing, pollution and sedimentation from land-based development.

RCM also conducts education and awareness programmes for schools, organizations and local communities. It runs coral reef rehabilitation programmes that contribute towards the scientific understanding of coral reef ecology.

Reef Check is active in 82 countries and territories throughout the world. Visit www.reefcheck.org.my for more information.

Some photos of the 2019 ICC Day

A diver removing a fishing net stuck in a reef area; Miri, Sarawak (Photo credit: Edmund Lau, RCM)

Volunteers beginning the clean-up activity in Tg. Aru, Sabah (Photo credit: Go Green Club)

Group photo after the clean-up at Kg. Kebagu. Lead by UMS Borneo Marine Research Institute and Sutera Harbour Marina. (Photo credit: Ahmad Faizi, Sustaining KK Marine Heritage Project)

Volunteers from USM sorting out the trash collected after a clean-up in Penang (Photo credit: Javier Deng)

Clean Up Result

Clean Up Summary	Total
People	11,904
Kilograms	34,664.99

Most Likely to Find Items	Total Items		Total Items
Cigarette Butts	59,418	Beverage Bottles (Plastic)	137,865
Food Wrappers (candy, chips, etc.)	77,075	Beverage Bottles (Glass)	2,644
Take Out/Away Containers (Plastic)	17,650	Beverage Cans	2,811
Take Out/Away Containers (Foam)	3,841	Grocery Bags (Plastic)	44,621
Bottle Caps (Plastic)	20,041	Other Plastic Bags	14,962
Bottle Caps (Metal)	450	Paper Bags	13
Lids (Plastic)	8,655	Cups, Plates (Paper)	73
Straws, Stirrers	9,058	Cups, Plates (Plastic)	3,339
Forks, Knives, Spoons	1,994	Cups, Plates (Foam)	637
Fishing Gear		**Packaging Materials**	
Fishing Buoys, Pots & Traps	9	6-Pack Holders	0
Fishing Net & Pieces	2	Other Plastic/Foam Packaging	1,278
Fishing Line (1 yard/meter = 1 piece)	2	Other Plastic Bottles (oil, bleach, etc.)	1
Rope (1 yard/meter = 1 piece)	86	Strapping Bands	0
Fishing Gear (Cleanswell)	1,791	Tobacco Packaging/Wrap	3
		Other Packaging (Cleanswell)	2,916
Other Items		**Personal Hygiene**	
Appliances (refrigerators, washers, etc.)	1	Condoms	0
Balloons	762	Diapers	23
Cigar Tips	0	Syringes	0
Cigarette Lighters	146	Tampons/Tampon Applicators	0
Construction Materials	102	Personal Hygiene (Cleanswell)	1,056
Fireworks	0		
Tires	5	Tiny Trash Less Than 2.5 cm	
Toys	882	Foam Pieces	150
Other Trash (Cleanswell)	9,643	Glass Pieces	40
		Plastic Pieces	12,969

(*Data published based on reports received as of the 30th September 2019. The top 5 items are highlighted in yellow.)

State	Clean-up Locations
Selangor	Pantai Acheh
	Pantai Aceh
	Pantai Tanjung Piai
	Pantai Redang
	Pantai Jeram
	Pantai Kelanang
Perak	Pantai Pasir Bogak, Pangkor
	Pantai Pasir Panjang, Manjung
	Teluk Batik, Lumut
	Teluk Katapang, Pangkor
Kedah	Pantai Merdeka, Kuala Muda
	Pantai Tanjung Dawai, Merbok
	Pantai Cenang, Langkawi
Pulau Pinang	Pantai Teluk Kumbar
Melaka	Pantai Kemunting
	Pantai Puteri
	Pantai Klebang
	Pulau Undan
Johor	Pantai Mawar, Endau
	Pantai Pasir Lanun
	Pantai Timur, Bandar Penawar
	Pantai Stulang
	Pantai Tanjung Balau
	Pantai Minyak Beku, Batu Pahat
	Pantai Tanjung Sepang Kota Tinggi
	Desaru Offshore Fishing
	Pantai Kampung Sedili Kecil
	Pantai Senibong
	Twin Beach, Pulau Sibu
	Pantai Batu Layar, Kota Tinggi
Negeri Sembilan	Pantai Saujana
	Pantai Purnama
	Blue Lagoon
	Pantai Teluk Kemang
	Waterfront, PD
Kelantan	Pantai Kandis
Terengganu	Pantai Batu Pelanduk, Dungun
	Pantai Sura
	Pantai Sura
	Pulau Kapas
	Pantai Pandak, Kuala Terengganu
	Pantai Teluk Ketapang

State	Clean-up Locations
	Pantai Tok Jembal, Kuala Nerus
	Pantai Wakaf Tengah
	Pulau Perhentian
	Pulau Tenggol
	Pulau Bidong
	Long Beach, Redang
Pahang	Pantai Ayer Hantu, Tioman
	Mangrove Bay, Tioman
	Pantai Sepat, Kuantan
	Monkey Bay, Tioman
	Pantai Teluk Berus
	Pantai Indera Mahkota, Cherating
Sarawak	Pantai Belawai, Sibu
	Piasau Boat Club
	Sungai Kemena
Sabah	Pantai Bak Bak
	Mamutik Island
	Tanjung Aru, KK
	Kg. Tanjung Aru
	Pantai Tanjung Lipat
	Manukan Island Beach
	Pantai Merakit, Kampung Mengkabar
	Pantai Tanjung Aru, Sandakan
	Mabul Resort
	Pulau Kalapuan
	Pulau Bum Bum Semporna
	Pantai Teringai
	Pantai Dalit Beach
	Pantai Manis Papar
	Pantai Sabandar Tuaran
	Pantai Angkat SK Lambidan, Kuala Penyu
	Kg. Kibagu
	Mantanani Adventure Beach
	Kg. Padang
	Kg. Siring Bukit
	underwater, Mantanani Island
	Harbor square
	Tembok Sandakan
	Pizza Habormall Sandakan
	Berdepan Hotel Maya, Wilayah
	Bandar Wilayah Lahad Datu
WP Labuan	Pantai Tanjung (Tiara) Batu

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National Plan of Action for Marine Debris: Indonesia's Commitment to Combat Marine Debris

Ariel Adimahavira[1]
adimahavirariel@gmail.com

Wednes Suci Pradafitri[1]
wednespradafitri@gmail.com

Marine debris is an increasingly severe problem and puts a huge burden on ecosystems, biodiversity and the national economy. Plastic waste that constitutes the majority of marine debris can be ingested directly from the environment, or indirectly consumed via plastic contaminated prey (Setälä et al., 2014), killing species such as whales and turtles who often consume plastic bags accidentally. Marine debris can physically entangle and damage commercial fisheries and aquaculture, thus reducing their efficiency and productivity (Mouat et al., 2010), and potentially decreasing the income from fishery. Since Indonesia is an archipelago with many of its societies dependent on marine resources, the marine debris problem is putting the country in a disadvantaged condition.

Indonesia is committed to solving this pressured matter by issuing Presidential Regulation No. 18 Year 2018 regarding Marine Debris Handling that aims for an ambitious goal; reducing Indonesian marine debris by 70% by 2025. Included in the Regulation is the National Plan of Action for Marine Debris that contains strategic direction for ministry/institutions in resolving Indonesian marine debris problem for 8 years, from 2017 to 2025. To ensure all the activities in are conducted accordingly to the target, objectives, and time frame, a National Coordinating Team was formed. The Coordinating Minister for Maritime Affairs of Indonesia serves as the Chairman for this team while the Minister of Environment and Forestry (MoEF) as Executive Chairwoman.

Supporting the National Coordinating Team, Implementing Team of National Plan of Action for Marine Debris was also formed and is being led by the Director General of Solid Waste, Waste and Hazardous Substances Management, MoEF. In conducting the tasks, the Implementing Team directly reports to the Executive Chairwoman of National Coordinating Team. To achieve 70% marine debris reduction by 2025, five strategies became the focus for five different working

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[1]*Project Officers of National Plan of Action for Marine Debris Secretariat*

groups, which are National Action for Stakeholders' Awareness Raising Working Group, Land-based Waste Management Working Group, Countermeasure of Waste in Coast and Sea Working Group, Funding Mechanism, Institutional Strengthening, Monitoring, and Law Enforcement Working Group, and Research and Development Working Group. These working groups consist of ministries/institutions related to the strategies such as Ministry of Education and Culture, Ministry of Marine Affairs and Fisheries, Ministry of Finance, and Ministry of Research and Technology.

The National Plan of Action has made some remarkable progresses and achievements in handling marine debris problem since its establishment. In raising the awareness of marine debris' danger, for example, Coordinating Ministry for Maritime Affairs and Investment has conducted Indonesia Clean Act in nine provinces in Indonesia, which were joined by more than nine million people. MoEF made an effort in land-based waste management improvement by building eight recycling centers in some Indonesian cities. The ministry also enhanced waste flow in the country by distributing 2,425 garbage-collecting motorcycles in 2018.

Other efforts on combating the marine debris problem in Indonesia are through policy and regulation. The Ministry of Tourism and Creative Economy has formulated Ministerial Regulation regarding the Guideline for Waste Management from Activity in Marine Tourism Destination. According to the plan, the regulation will be implemented first in 10 key Indonesia tourism destinations. Ministry of Home Affairs has decreed Ministerial Regulation No 31 Year 2019 on Guideline for the Formulation of Regional Government Work Plan, in which waste management is one of the priority programs. Ministerial Regulation on waste management retribution is also currently being discussed by the same ministry.

Through the National Plan of Action for Marine Debris, for the first time ever the Indonesian ministries and institutions now have a common platform and goals to cooperate and work together in solving the marine debris matter. This is crucial because marine debris is a national crisis that requires country-wide, synchronized efforts from the stake holders. Seeing the progress and the achievements made by the National Plan of Action for Marine Debris, reducing 70% of Indonesian marine debris by 2025 does not seem to be an overwhelming task at all.

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Fig. 1. Minister of Environment and Forestry (middle) inaugurated recycling center in Bandung, recycling center is necessary to reduce land-based waste leaking into the sea

Fig. 2. Indonesia Clean Act program that is being coordinated by the Coordinating Ministry for Maritime Affairs and Investment

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Assessment of Marine Debris: the First Systematic Datafrom Citizen Scientists

Ning Yen
co-founder of IndigoWaters Institution
ning@indigowaters.org

Marine debris poses an ever more serious threat to the world's oceans, imperilling wildlife, coastal communities and ecosystems across the globe. Increasingly, official and civil society organizations are working with scientists to research solutions to the problem. They are looking into everything from the chemical toxicity of microplastics, the accidental ingestion of plastics by wildlife, and the strangling and maiming to death of sea creatures by marine debris. They have been studying its distribution along shorelines, ocean surfaces, the sea bed and the Poles; its impacts on societies and economies; how to get to grips with pollution levels; as well as looking beyond policy tools to source management. Taiwan has been considering this growing issue as well, but still lacks complete data on the amounts and distribution of marine debris polluting its shores.

In July 2018, Greenpeace and the Society of Wilderness began a rapid assessment of the entire coastline of Taiwan's main island, which lasted one year and was repeated once every season. By visually estimating the volume of marine debris, they obtained a picture of the distribution of the pollution in a short amount of time across a large expanse of coastline. The rapid assessment helped estimate the volume of marine debris along the entire coastline of Taiwan's main island and identified the most polluted beaches and main types of marine debris. This information helped make coastal clean ups more efficient, accurate, and ensure that more marine debris is removed from beaches.

Findings:

1 The volume of garbage on the coastline of the main island of Taiwan is estimated at 12,272,000 liters. This is equivalent to 13 large black garbage bags (each bag equal to 80 liters) filled with debris every 100 m of coastline (if the garbage was distributed evenly). The total weight was 646 tons. That is equivalent to one large fridge (weighing 53 kg) every 100 m of coastline.

Results of the rapid assessment in Japan, Korea and Taiwan

	Investigation length (km) percentage of total coastline length	Coastline length (km)	The marine debris volume accumulates in 10% coastline	Estimate the total volume of marine debris (L)	Estimate the total weight of marine debris (t)	Average volume of marine debris per Kilometer (L/km)
Japan[1]	325 | 0.9%	34,913	70%	147,000,000	25,700	4,210
Korea[2]	38.2 | 0.25%	149,623	50%	86,158,073	17,318	5,758
Taiwan	12.1 | 1%	1,210	50%	12,272,000	646	10,142

2 One half of the marine debris was concentrated along just 10% of the coastline. The pollution was greatest along the northern coast (Keelung, New Taipei City and Taoyuan) and the southwestern coast (Changhua, Yunlin, Chiayi and Tainan). These areas should be assigned priority for clean-up.

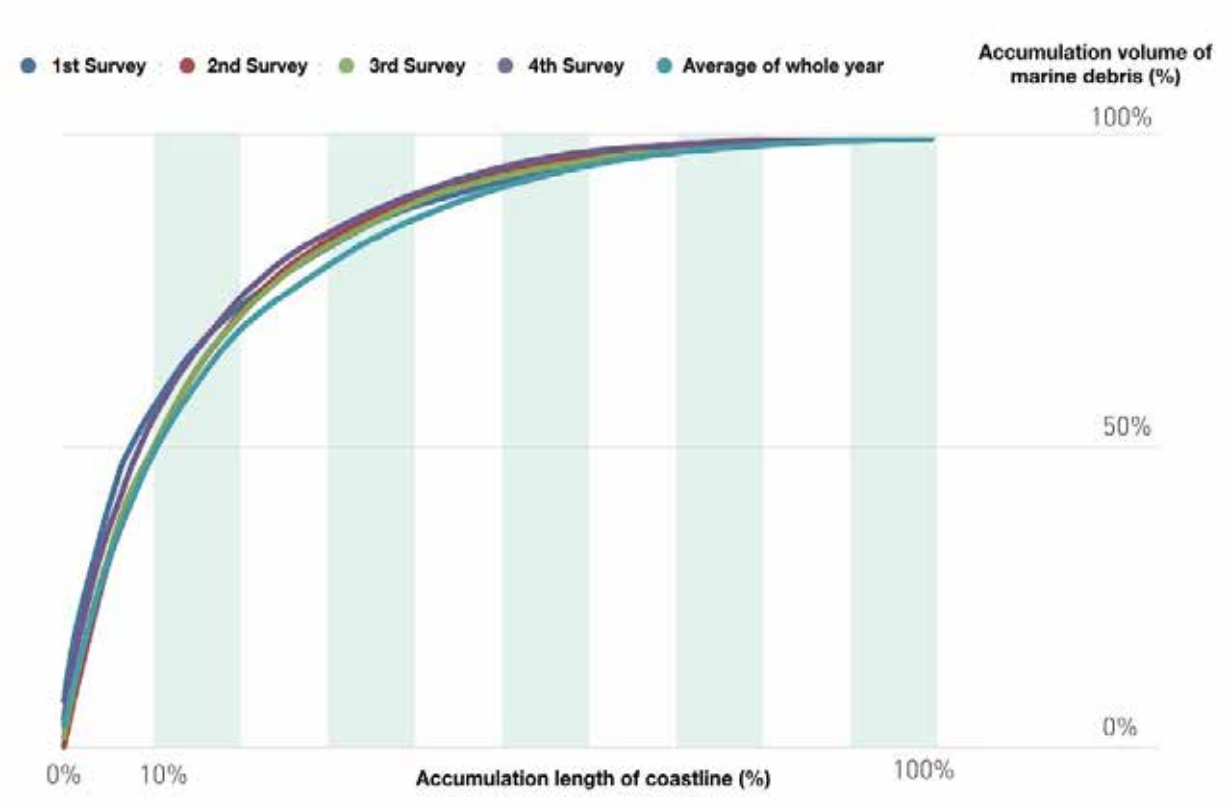

Fig. 1. The accumulation rate of marine debris on the coastlines

1 日本國土交通省(2007)全国海岸の漂着ゴミの実態調 · Available online: http://www.mlit.go.jp/common/000109000.pdf

2 Jongmyoung Lee, Sunwook Hong & Jongsu Lee (2018) *Rapid assessment of marine debris in coastal areas using a visual scoring indicator*. OSEAN.

Fig. 2. Pollution level of marine debris

3 The quantity of marine debris and shoreline orientation, location, and topography.

Sixty five % of the marine debris was concentrated on north-facing, northwest-facing and northeast-facing coastlines. In particular, almost 20% of the garbage was found on north-facing shorelines, which made up less than 5% of the total length of coastline of the main island of Taiwan.

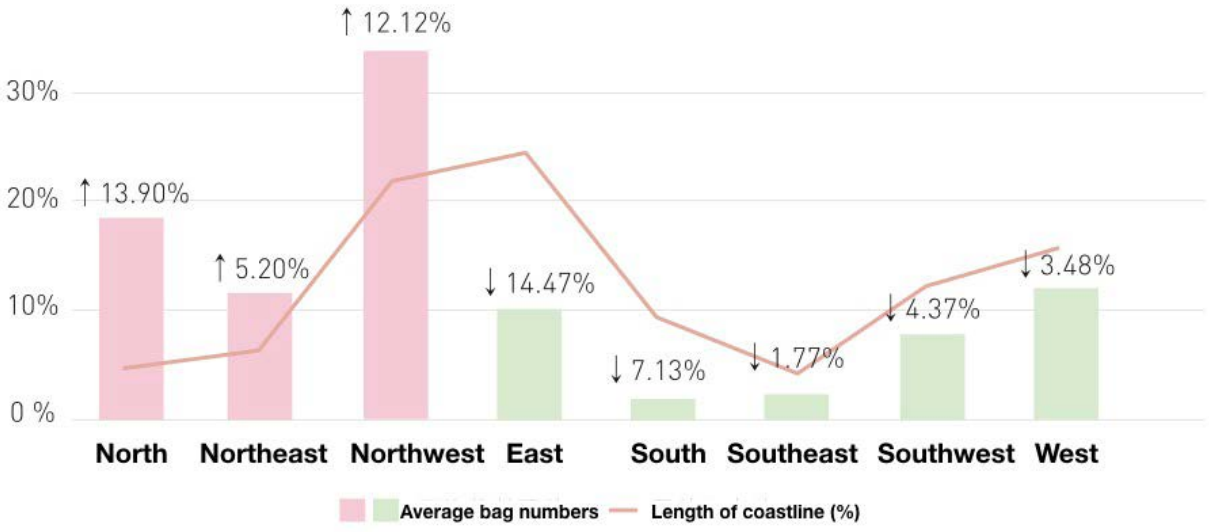

Fig. 3. The relationship between coastline's orientation and its polluted level

4 There was a correlation between the type of marine debris and the proximity of fishing ports and scenic spots, but no significant correlation between marine debris type and the proximity of landfill sites. Coastlines closer to scenic spots tended to have more plastic bags, while those closest to fishing ports were more likely to have fishing-related debris.

5 Taiwan should draft specific laws on marine debris management and pollution control standards for its coastline. Clean up strategies for different coastlines should be determined according to the severity of the marine debris problem.

Currently, the government lacks a systematic plan for budgeting clean ups or a mechanism to track results. Some coastal management bureaus conduct beach clean ups only after major storms or when there is a significant build-up of marine debris on the coast. They currently do not allocate funds for regular beach clean ups. It will only be possible for the central authorities to evaluate the severity of the marine debris problem and establish systematic controls if they first set up pollution control standards for marine debris and a pollution classification system. With this information, local governments could then formulate realistic budget requests for clean-up operations. Considering Taiwan's rugged and varied coastal terrain and the richness of its biodiversity, the use of manpower is the most efficient beach clean-up approach and the one that has the least ecological impact. In situations where the marine debris is too bulky to be removed by hand, machinery or boats can be brought in to help.

We call on the government, as a matter of the utmost urgency, to establish specific laws on marine debris management and coastline pollution control standards. Counties and cities should devise coastal clean-up strategies according to the severity of the marine debris problem, decide on the appropriate clean up approach for their coastlines, and prioritize the clean-up of hot spot areas. A follow-up system to assess marine debris should be established to understand the rate at which marine debris is accumulating on a particular shoreline and whether it is greater during a particular season, in order to better calculate the necessary budget for clean-up according to the needs of the county, city or stretch of coastline. In addition, the Environmental Protection Administration (EPA) should shorten the timetable for reducing plastics at source and cutting single-use plastic waste. The Fisheries Agency and Ocean Conservation Administration should also start discussions on how to control debris from the fishing industry, develop alternatives to buoys and improve the recycling of fishing nets and gear. Everyone can start to reduce their consumption of plastic in their daily lives and help out at a beach clean up to protect our beautiful oceans.

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OSEAN Researchers Publish Article on Rapid Assessment of Marine Debris in Coastal Areas Using a Visual Scoring Indicator

Dr. Jongmyoung Lee
Country coordinator of International Coastal Cleanup
Chief Science Officer, Our Sea of East Asia Network
jmlee@osean.net

Quickly identifying the distribution and hot spot of coastal debris

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Rapid assessment of marine debris in coastal areas using a visual scoring indicator

Jongmyoung Lee, Sunwook Hong*, Jongsu Lee

Korea Marine Litter Institute, Our Sea of East Asia Network, #101-210, 23-57 Jukrim 3-ro, Gwangdo, Tongyeong, Gyeongnam 53020, Republic of Korea

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ABSTRACT

Information regarding the spatial distribution and standing stock of marine debris in coastal areas is a prerequisite for efficient cleanup and management. We conducted a rapid assessment of marine debris on the coasts of South Korea using a visual scoring indicator. The indicator consisted of a table and photographs representing nine pollution levels that were quantitatively tested. Locations at every 10 km were selected along the natural coastline for a total of 382 locations, and a length of 100 m at each location was assessed. Approximately 40 participants were trained and assessed the pollution levels using a smartphone application. The surveys were conducted four times in 2017, in April, June, August, and October. The total amount of marine debris stock in the natural coastal areas was estimated to be approximately 17 thousand tons. It suggests that approximately 60% of the marine debris can be cleaned from 10% of the coastline.

1. Introduction

Marine debris has recently been recognized as an urgent global pollution issue (Jambeck et al., 2015; Rochman et al., 2013; Vince and Hardesty, 2017). It can be found on the coast, at the sea surface, on the seabed, and even in remote areas (Eriksen et al., 2014; Hirai et al., 2011; Ivar do Sul et al., 2009). In particular, plastic debris poses serious threats to fish, seabirds, and mammals through entanglement and ingestion (Boerger et al., 2010; CBD, 2016; Hong et al., 2013; Jacobsen et al., 2010; Laist, 1997; van Franeker et al., 2011). From the socio-economic aspect, it damages the tourism industry (Jang et al., 2014a), threatens navigational safety (Hong et al., 2017), and reduces the revenue of fisheries (Donohue et al., 2000; Gilardi et al., 2009). Moreover, its removal incurs high costs (Ballance et al., 2000).

Several studies have focused on estimating the abundance or density of marine debris on the coast, at the sea surface, and on the seabed (Eo et al., 2018; Galgani et al., 2015; Hardesty et al., 2017), and considerable efforts have been made to reduce the debris input to the marine environment. These efforts include beach cleanups, monitoring programs, countermeasure policies, and legislations (Schuyler et al., 2018; Xanthos and Walker, 2017). For establishing these measures, a quantitative assessment of marine debris is a prerequisite, and the majority of these measures rely on marine debris monitoring in various compartments, especially beaches (Ariza et al., 2008; Bravo et al., 2009; Ribic, 1998; Ribic et al., 2010). However, monitoring marine debris requires extensive efforts, and often incurs high costs because the monitoring requires detailed information such as number/weight, types, and sources of debris. It is likely that this fact limits the number of sampling sites and impedes the comprehensive quantification of marine debris over a broad area or along numerous coasts.

Several studies have adopted rapid assessment of marine debris (Alkalay et al., 2007; Cheshire et al., 2009; De Araujo et al., 2006; Lippiatt et al., 2013; Moore et al., 2007). However, these studies were mostly based on counts of debris items, and still required extensive efforts in terms of time, manpower, and survey costs and were limited to assessing geographically broad areas within a short period.

A visual scoring indicator can be an alternative tool for surveying marine debris along coasts. In particular, a visual scoring indicator was originally developed by the Japanese government and NGOs (MLIT, 2007; Table 1). The indicator includes nine pollution levels, and each level has a standard photograph that the surveyors can compare with in situ pollution. Using this method, a surveyor can assess the degree of debris pollution scattered in a designated area. The method is easy to follow and does not require special techniques, and therefore, once accustomed to it, many people can conduct the survey. Furthermore, the method enables the coverage of extensive areas and numerous sites in a relatively short time. With this survey, researchers can obtain valuable information on marine debris pollution that can be used for planning and conducting cleanup projects (MLIT, 2007).

This study provides a guide to obtain baseline information using a

A paper on how to rapidly investigate the distribution of marine debris in coastal areas has been published in an international journal, Marine Pollution Bulletin. This paper is based on the results of the '2017 Korea national beach litter rapid assessment' conducted by Our Sea of East Asia Network (OSEAN), which was ordered by the Ministry of Maritime Affairs and Fisheries and the Korea Marine Environment Management Corporation. Dr. Sunwook Hong, the corresponding author of the paper, said, "The most necessary information in marine waste management is to know how the litter is spatially distributed along the coastline and where it is concentrated. In particular, when establishing a coastal clean-up plan, garnering the information can be quickly carried out using the rapid assessment method introduced in this paper. Results from this assessment can be used to invest budget and manpower according to the expected quantity of each location." In fact, this paper also reveals that about 60% of marine debris is concentrated in 10% of the natural coastline of Korea. Marine Pollution Bulletin, where the paper is published, is one of the most prestigious international journals on marine debris research, listed in the SCI.

Bibliographic information

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Abstract

Information regarding the spatial distribution and standing stock of marine debris in coastal areas is a prerequisite for efficient cleanup and management. We conducted a rapid assessment of marine debris on the coasts of South Korea using a visual scoring indicator. The indicator consisted of a table and photographs representing nine pollution levels that were quantitatively tested. Locations at every 10 km were selected along the natural coastline for a total of 382 locations, and a length of 100 m at each location was assessed. Approximately 40 participants were trained and assessed the pollution levels using a smartphone application. The surveys were conducted four times in 2017, in April, June, August, and October. The total amount of marine debris stock in the natural coastal areas was estimated to be approximately 17 thousand tons. It suggests that approximately 60% of the marine debris can be cleaned from 10% of the coastline.

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Vessela Yordanova Volunteers as an English Proofreader for Marine Litter News

Jongsu Lee
Our Sea of East Asia Network
jongsulee@osean.net

Welcome Vessela Yordanova as a new proofreader for Marine Litter News

I am very pleased to introduce Vessela Yordanova as an English proofreader for Marine Litter News. We, all of OSEAN members, deeply appreciate her work for Marine Litter News.

In her spare times, she enjoys making work with her hands and browsing second hand markets. She was born in Bulgaria and lived in the US for 22 years. Now she is residing in South Korea.

Vessela Yordanova

"APML welcomes CECR!"

Center for Environment and Community Research (CECR)
R.501-502, E1 Building, Trung Tu Diplomatic Compound,
No 6 Dang Van Ngu, Dong Da, Ha Noi,Vietnam.
Phone: +84 243 972 8063/64. Email:cecr.vn@gmail.com.
Website:www.cecr.vn

Introduction of CECR:

The Center for Environment and Community Research (CECR) was established in 2009 with the strong belief that solutions to environmental problems are the best enacted locally. CECR envisions the long-term protection, restoration, and management of all aquatic resources in Vietnam. Its mission is to promote and support organizations, businesses, and community participation in environmental protection and response to climate change effectively. CECR aims to become the leading center in the field of institutional analysis and policy development, policy dialogue, education, and communication in order to create the highest social benefits based on solutions and recommendations and the best practices on environmental protection participation. CECR partner with others to advocate and advance scientific research, environmental education, public policy, stewardship, and community involvement as priority method to sustain and improve Vietnam's existing aquatic resources for future generations.

Prioritize areas:

1. Plastic Waste Reduction, Recycling Program: Program on "Ocean without Plastic" has supported to technical tools to empower communities in waste reduction, reuse, and recycling and advocate for participatory approach in solid waste management, particularly on plastic waste. The program strengthens capacity of authorities on development of strategic plan and management of solid waste management.

2. Supporting Enterprises in Cleaner Production: Development of capacity of the private sectors in tourism to comply with the Law on Environmental Protection in Bac Ninh and Hue city.

3. Policy Advocacy and Law development support: Research on regulation/policy analysis, reviews and assessments on current legislation policy gaps related to Water Pollution Control and environmental protection in the bottom-up approaches to pose recommendations to National Assembly and the Government to improve development of law. Vietnam Clean Water Act development in the Congress of XIV (2016-2021), and introduced and implemented to ensure safe access of economic and living activities to clean water. CECR works and closely coordinates with partners like scientific institutions, governmental organizations, business, and communities, institutional and environmental work together for clean water and advocate for Act on Water Pollution Control (Clean Water Act) in Vietnam.

4. Gender and Climate Change Adaptation: (i) CECR has implemented successfully women-led lake protection model in Hanoi and Ninh Binh; (ii) implementing Female Youth School of Pioneers in Environmental Protection and Climate Change in Ha Noi, Thai Binh, Nam Dinh and Hai Phong; (iii) research study on Women role in Urban climate change in Trang An Landscape Complex. CECR chaired international workshop on Disaster Risk Management: Climate Change Adaption, organized by International Networks of Women Engineers and Scientists – Asia and Pacific Nation Network, Vietnam Women Unions.

What is Asia Pacific Civil Forum on Marine Litter?

Asia Pacific Civil Forum on Marine Litter is a network established in 2009, made of NGO groups dedicated to protection of marine environment from marine litter in Asia Pacific countries.

Network member groups are:

Japan Environmental Action Network (JEAN)
Our Sea of East Asia Network (OSEAN)
Taiwan Ocean Cleanup Alliance (TOCA)
Shanghai Rendu Ocean NPO Development Center
Kewkradong Bangladesh
ICC Philippines
Tangaroa Blue Foundation
Ocean Conservancy
Greenhub

To the readers,

East Asian countries are connected to each other environmentally, geographically, historically, or culturally through shared regional seas. The East Asian region is one of the most dynamic economic centers with some of the busiest shipping lanes in the world. With the spread of mass production and consumption over the last decades came the huge increase in solid waste generation. There are, however, not enough waste treatment facilities and management measures, which makes the region vulnerable to marine debris pollution.

Entering the seas in large amounts, floating debris has become a source of concerns and conflicts among some neighboring countries. This transboundary environmental problem requires concerted efforts of all the relevant stakeholders beyond sectoral and political boundaries. In this regard, OSEAN (Our Sea of East Asia Network) and JEAN (Japan Environmental Action Network), the marine debris NGOs in Korea and Japan, have shared a vision in which people in the East Asia could act together as one community in protecting our precious marine ecosystems. We believe that NGOs in the East Asian countries have an important role in sharing experiences and acting together to address the marine debris issue in the region from the bottom up.

The city governments of Shimonoseki and Nagato, and JEAN co-organized '2009 Marine Litter Summit - Shimonoseki•Nagato Meeting' on October 16-18, 2009, in Shimonoseki, Japan. OSEAN suggested in the meeting to start an 'East Asian Civil Forum on Marine Litter' through which relevant NGOs and organizations in the East Asia could share experiences and information and work together on the marine debris problems. OSEAN and JEAN have reached a consensus to launch the forum and publish biannual newsletters. So we have launched the East Asian Civil Forum on Marine Litter and we are delivering marine debris news from member countries via e-mail to people who are concerned with this problem on local, national, and regional levels. In late 2012 now, we have four members above. We hope that the forum could provide a venue for all of us to share our vision, experiences, and creative actions.

This is the first effort to link the East Asian people beyond geographical and language barriers to a common goal of protecting our seas from marine debris pollution. NGOs and organizations that have interests and passion to make our seas clean and healthy are more than welcome to join us. For more information, you can contact us at loveseakorea@empas.com. Please let us know if you have any problem in receiving the newsletter. These articles are also available online at http://cafe.naver.com/osean.

Secretariat,
Sunwook Hong (OSEAN) and Kojima Azusa (JEAN)

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Asia Pacific Civil Forum on Marine Litter

Japan Environmental Action Network (JEAN)
202, Mansion SOPHIA,
3-4-12, Minami-Cho, Kokubunji-Shi, Tokyo, Japan
URL http://www.jean.jp E-mail Cleanup@jean.jp
TEL +81-42-322-0712 FAX +81-42-324-8252

Our Sea of East Asia Network (OSEAN)
717, Leadersvill, 23-96, Jukrim 4ro, Tongyeong, Gyeongnam, 650-826, South Korea
URL http://cafe.naver.com/osean E-mail loveseakorea@empas.com
TEL +82-55-649-5224 FAX +82-303-0001-4478

Taiwan Ocean Cleanup Alliance (TOCA)
97057, No.87, Fuyang Rd., Hualien City, Hualien County, Taiwan
URL http:// www.icctaiwan.org.tw E-mail kuroshio@seed.net.tw
TEL +886-3-857-8148 FAX +886-3-857-8948

Shanghai Rendu Ocean NPO Development Center
Room 222, Building C, No.633, Eshan Rd, Shanghai, China, Zip Code 200127
URL http://www.jintan.org E-mail liuyonglun@163.com
TEL +86-21-61762119

Kewkradong Bangladesh
C4 Arambag Eastern Housing, Mirpur-7, Dhaka 1216, Bangladesh
Muntasir@gmail.com
TEL +88 01911 310 275

ICC Philippines
Units 8 & 9, CCP Bay Terminal, CCP Complex, Roxas Blvd., Pasay City, Philippines,
URL http://sites.google.com/site/iccphilippines/home
Blog: coastalcleanupphilippines@blogspot.com
Email: iccphilippines@gmail.com
Mobile No. : +63917 372 87.02

Tangaroa Blue Foundation
PO Box 757, Port Douglas, QLD 4877, Australia
Web: www.tangaroablue.org Email: info@tangaroablue.org
TEL+61.410166684

Ocean Conservancy
1300 19th Street, NW, 8th Floor, Washington, DC 20036, USA
Web: ww.oceanconservancy.org Email: cleanup@oceanconservancy.org
TEL +1-202-429-5609

Greenhub
Planning and Investment Ministry Building, 10th floor, office 1008, 8b Ton That Thuyet, Hanoi, Vietnam
Web: www.greenhub.org.vn Email: info@greenhub.org.vn
TEL +84 4 629 26764

CECR
R.501-502, E1 Building, Trung Tu Diplomatic Compound, No 6 Dang Van Ngu, Dong Da, Ha Noi,Vietnam.
Web: www.cecr.vn Email:cecr.vn@gmail.com
TEL +84 243 972 8063/64.