OSEAN Training Report

on Fishery and Aquaculture Marine Debris Survey

in Yellow Sea Area

Written By Shanghai Rendu Ocean NPO Development Center[1] *

[1*] This report was made through the support provided by the UNDP/GEF Yellow Sea Large Marine Ecosystem (YSLME) Phase II Project.

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Grant Case No. CFP_91007_2019_01_19

Background

The Yellow Sea is a very important fishing ground in China, which is among the 4 biggest. However, with the rapid development of China's capture fishery and aquaculture, considerable fishing debris is generated. It not only damages marine ecosystem, but makes fishing industry itself pay a lot as well. But the current state of this issue remains unclear. Hence, 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 and cleanup and collect relevant data regularly. Despite the 5 years' experience, our methodology was not designated for fishing debris monitoring, so we need to learn from experts to re-design our survey methods and revise our recording form.

Our Sea of East Asia Network (OSEAN) is an established Korean NGO excellent at marine debris research, including fishery and aquaculture debris. They have numerous monitoring sites locating by the Yellow Sea and their leaders are already our friends. As a result, OSEAN was invited to share us with their expertise and help us modify our methods.

Our partner organizations in the Yellow Sea region were also invited to learn together with us so that they could get the first-hand information, learn our new methods designed on the night of the first day in person, practice the new methods with us and strengthen one another's relationships.

Participants on OSEAN Training Workshop

Totally 14 participants, 2 experts from OSEAN in Korea, and 12 trainees from 9 survey sites along China Yellow Sea coastline, they are:

Dr. Sunwook Hong, research scientist and President of OSEAN. She began marine debris issue as a researcher in 2001 and served as country coordinator of ICC since 2002. She founded OSEAN in 2009.

Dr. Jongmyoung Lee, Chief Science Officer of OSEAN. He has published tens of papers on marine debris research in scientific journals. He began his career as an environmental activist in 2000, joined OSEAN in 2009, and has been committed to many marine debris research projects and public awareness programs which include the development of marine debris monitoring methods.

Nan Li, **Outreach Manager,** Shanghai Rendu Ocean NPO Development Center
Organizer and Coordinator of the Workshop
LLB in Social Work, Luoyang Normal University. Two years' full-time working in Rendu Ocean. The Principal of China Coastal Monitoring and Cleanup Project.

Yanrong Hu, **Project Assistant,** Shanghai Rendu Ocean NPO Development Center
Coordinator and Interpreter of the Workshop
BSc in Environment and Sustainability, Keele University and then joined Rendu Ocean in 2018.

Wei Huang, **Co-founder,** Lianyungang Coastal Cleanup Volunteering Service Center
Coordinator of the Workshop
Reporter for Lianyungang Daily. Has organized more than 100 environmental protection volunteering activities for more than 10 years with over 30,000 participation counts. Have received awards including "100 Excellent Ecological Protection Volunteer" by the Ministry of Ecology and Environment, "Jiangsu Province Excellent Environment Guard" and "Lianyungang Excellent News Worker".

Feng Xiao, **Research Assistant,** Shanghai Rendu Ocean NPO Development Center
Interpreter, Methods Re-designer and Field Practice Guider of the Workshop
BSc in Civil Engineering, Huaqiao University. Two years' full-time working in Rendu Ocean, being responsible for the analysis of marine debris data and relevant research.

Weicai Zhang, **Research Assistant,** Shanghai Rendu Ocean NPO Development Center
Interpreter, Methods Re-designer and Field Practice Guider of the Workshop
BSc in Biological Sciences, Xiamen University and MSc in Biodiversity and Conservation, University of Leeds. During 2013 to 2014, planned the 5th China Solid Waste Management Summit. And in 2018 joined Rendu Ocean, carrying out research and science popularization work.

Wenqi Zhuang, **Deputy Chief,** Shanghai Rendu Ocean NPO Development Center
Rendu Ocean's Representative of the Workshop
BSc in Geology, East China Normal University. Worked in the marketing field in foreign-owned enterprises from 1996 to 2018 and then joined Rendu Ocean in 2019.

Weiwei Xu, **Founder,** Exploring Nature Camp
Attendee of the Workshop
Co-founder of Dalian Exploration Camp (Ivy Nature School), Director of Dalian Collegial

Environment Association, Senior lecturer of Leave No Trace, Friends of Nature Dalian Group Leader.

***Jianmou Wang,* Founder,** Yantai Benyuan Life NPO Development Center
Attendee of the Workshop
With experience of project management in Shenzhen Happiness Charitable Funds.

***Da Feng,* Volunteer,** Yantai Benyuan Life NPO Development Center
Attendee of the Workshop
Team leader of Jiahe monitoring site. Part-time participant of non-profit social or environmental activities. Joined China Coastal Monitoring and Cleanup Project in 2017.

***Dongmei Jiang,* Volunteer,** Qidong Environmental Protection Volunteering Association
Attendee of the Workshop
Joined the Association in 2017 and joined China Coastal Monitoring and Cleanup Project in 2018. Be active in various environmental protection NGOs.

***Keming Quan,* Supervisor,** Dalian College School Environmental Association
Attendee of the Workshop
Current undergraduate studying Environmental Engineering, the principal of Bejing Roots and Shoots Community Teenager Service Center North District, Supervisor of Waterkeeper Alliance Black Reef Coast.

***Junfei Fang,* President,** BlueRibbon Ocean Conservation Association, China University of Petroleum
Attendee of the Workshop
Current undergraduate studying Safety Engineering. Be active in social practice activities and awarded as "3-Star Volunteer".

Summary

It was a brilliant workshop with intensity and abundance in Lianyungang, Jiangsu Province during 18th to 19th May. We had five sessions on 18th and one session on 19th given by two founders of OSEAN, a renowned Korean NGO, Dr. Jongmyoung Lee and Dr. Sunwook Hong, and a discussion on monitoring methods between two researchers of Rendu Ocean and them. 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 19th, we also practiced debris monitoring at a local beach severely polluted by marine debris and visited a local harbor to see fishing gear in-use.

Venue

No. 187, Yanhe North Rd. Haizhou District, Lianyungang, Jiangsu Province, China

Schedule

18th May, 2019	
9:00 – 9:30	Introduction & Networking
9:30 – 10:30	The training session to new monitoring sites & The communication among senior monitoring sites
10:30– 11:00	Tea break & Group photos
11:00– 12:00	Introduction to OSEAN and Asia Pacific Civil Forum on Marine Debris (Dr. Sunwook Hong, OSEAN)
12:00 – 13:30	Lunch
13:30 – 14:30	Outcome and Lessons of Korea National Marine Debris Monitoring Program (Phase I) (Dr. Sunwook Hong, OSEAN)
14:30 – 14:50	Tea break
14:50 – 15:50	Protocol of Korea National Marine Debris Monitoring Program (Phase II) (Dr. Jongmyoung Lee, OSEAN)
15:50 – 17:00	Introduction to Marine Debris Issues (Dr. Jongmyoung Lee, OSEAN)
17:30 – 18:30	Dinner
19:00 – 20:00	Navigational Threat to Naval Ships Due to Derelict Fishing Gear and Fishermen's Perception in Korea (Dr. Sunwook Hong, OSEAN)
20:30 – 21:30	Discussion on methods re-design between two researchers of Rendu Ocean and the OSEAN lecturers and materials and methods re-design.
19th May, 2019	
8:30 – 9:00	China Yellow Sea Fishing Debris Monitoring Methods (Feng Xiao, Rendu Ocean)
9:00 – 12:00	Field Practice
12:20 – 14:00	Lunch
14:00 – 15:30	Finding Solutions for Styrofoam Buoy Debris in Korea (Dr. Jongmyoung Lee, OSEAN)
15:30 -	Finish

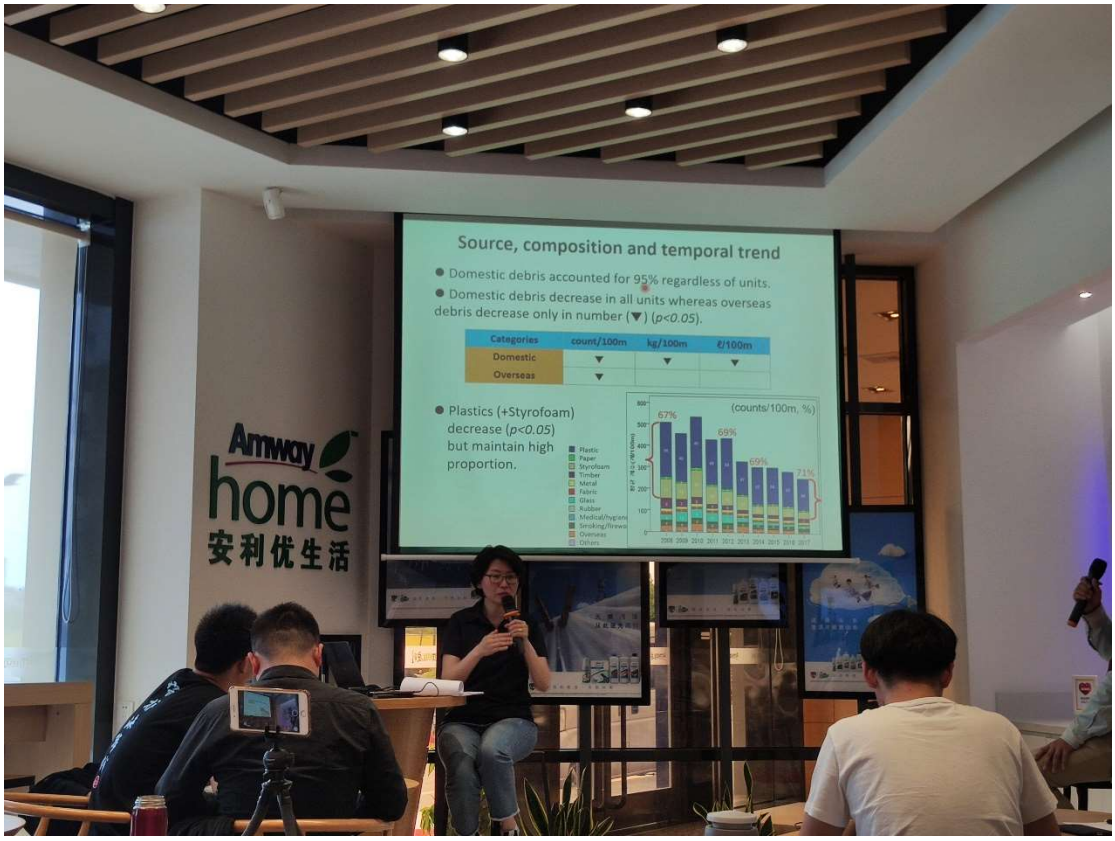
Contents

- **Indoors sessions**

1. Introduction to OSEAN and Asia-Pacific Civil Forum on Marine Debris

Dr. Sunwook Hong

OSEAN's marine debris monitoring project was explained, including the units used, distribution, source identification of marine debris and evaluation of the negative impacts of it on wildlife, tourism, navigation.



Besides, Dr. Hong shared their way of public advocation (e.g. monthly newsletter), academic activities (e.g. Korea Marine Debris Conference), policy development, capacity building (e.g. weekly webinar) and international cooperation (e.g. biannual Marine debris News).

2. Outcome and Lessons of Korea National Marine Debris Monitoring Program (Phase I)

Dr. Sunwook Hong

Dr. Hong explained specifically about the framework, site selection, classification, source identification and 10-year results of Korea National Marine Debris Monitoring Program. Additionally, she analyzed the source, composition, abundance, source and temporal trend of marine debris in Korea and possible reasons for reduced litter input.

3. Protocol of Korea National Marine Debris Monitoring Program (Phase II)

Dr. Jongmyoung Lee

Dr. Lee compared different monitoring protocols of US, EU, Australia, UNEP, and Korea (including previous and current), on classification system and transect selection in particular.

4. Introduction to Marine Debris Issues

Dr. Jongmyoung Lee

Dr. Lee talked about the global marine debris issues and potential solutions including relevant technology and directives, which were introduced in a comprehensive and critical way.

5. Navigational Threat to Naval Ships Due to Derelict Fishing Gear and Fishermen's Perception in Korea

Dr. Sunwook Hong

The frequency that naval ships are entangled by derelict fishing gear, the number of divers, the time required for disentanglement and the potential economic loss were analyzed. Apart from that, Dr. Hong also introduced their measurement of fishermen's perception on the cause and mitigation measures of derelict fishing gear their motivation for change.

6. Finding Solutions for Styrofoam Buoy Debris in Korea

Dr. Jongmyoung Lee

This session addressed distribution and impact of EPS buoy debris, finding solutions to EPS buoy problem, policy changes and future plans.

- **Field Practice**

The shocking beach condition, high amount of marine debris including different kinds of fishing gear and even a few animal corpses, raised our consciousness about health risks

brought by marine debris. We implemented monitoring but with unrevised data cards, the new fishing gear items to add in plan were recorded in the comment area.

- **Reflections**

1. Research would better to be solution oriented.

OSEAN's monitoring project (Korea National Marine Debris Monitoring Program) is not just for collecting basic information of marine debris and presenting them. It has multiple goals such as to initialize active response among neighboring countries and to enhance cooperation between government and civil societies, both of which are focusing on stimulating stake-holders into collaborations to solve the issue. In the research on the navigational threat to naval ships posed by derelict fishing gear, they also investigated how many divers and how much time is required for disentanglement, which partially is an investigation on the cost of a solution. In another study on styrofoam buoy, solving the problem is the key objective, as a result of which, a conceptual model of EPS buoy debris management is made. With an emphasis on solutions, OSEAN's researches are directly making differences to the communities, cities and environments. So in the designing process of a research project, solution finding should be an integral and prioritized part.

2. Data representing should be clear and informative in an insightful way.

In the slides of OSEAN, all data were clearly illustrated and delivered messages supported by statistics, for example, temporal trends and regional differences. That is much better than descriptive data listing and charting.

3. Tailor-made advocation and campaigning are vitalizers of data.

From a discussion with a participant, we realized that monitoring data itself can hardly make any differences unless it is integrated with local social, cultural, economic and geological information, by which tailor-made advocation and campaigning can be planned and thus local specific problems can be overcome.

- **Outcomes**

1. Data card revised to collect fishing gear data more detailedly.

We used to have 58 items in 8 categories in the data card with only 4 items of fishing gear (Fishing lines, Mooring lines, Fishing nets and its debris, Buoy/Creel/Jar) in the category General Plastic. To collect more detailed data on fishing gear, we added or divided several items and now there are 6 items of fishing gear in category General Plastic, with the former Buoy/Creel/Jar divided into Hard plastic buoy and Creel/Jar, and category Foam/Polystyrene, with EPS buoy added. On top of that, Foam box is added into Foam/Polystyrene, because it is widely used in China by fishermen to store harvests.

2. Monitoring method modified to ensure data quality.

Our previous monitoring method was not well designed for extreme situations., After the field practice we realized that some monitoring sites have too much debris for volunteers to monitor and produce data with quality. So we modified our monitoring method allowing volunteers to subsample to relief the burden of those who work in sites with extremely high debris load or when the transect is extremely long (could be couple hundred meters in some situations).

3. **Participants learned how to execute fishing gear monitoring with the new methods both in theory and in the field.**

All participants, including two representatives of newly joined organizations of our monitoring network, which run 8 sites by Yellow Sea in total, learned the new materials and methods and through a lecture, Q&A as well as field practice.

- **Follow-ups**

1. **Conduct fishing gear monitoring**

   We will cooperate with the 6 partner organizations to carry out fishing gear monitoring at 8 sites 3 times from late May to late September. So 24 monitoring activities will take place.

2. **Make monitoring report**

   We will write the monitoring report after all planned monitoring activities are executed. Then we will ask OSEAN to review it and we will also visit them for an in-person discussion. The report will be finalized in November.

- **Feedbacks**

- We asked for feedbacks from the 7 attendees by online questionnaire and got 6 responses with all organizations covered. And nearly all of them were 'highly satisfied' about our organization and coordination (6/6) as well as time arrangement (5/6, the only exception was 'satisfied').

- The Field Practice impressed all participants a lot. The sessions *Introduction to Marine Debris* and *Navigational Threat to Naval Ships Due to Derelict Fishing Gear and Fishermen's Perception in Korea* were also regarded as 'very impressive'.

- And participants think they have benefitted from communication with other attendees (5/6), understood more knowledge (3/6) and gained more monitoring experience (2/6).

- Furthermore, some participants gave us advice on how to improve our work. For example, one partner thinks that the contents should be better organized to avoid repeating in different sessions.

Shanghai Rendu Ocean NPO Development Center

May 29, 2019