



CSIRO Marine Debris Newsletter

A look back at what has surely been the most challenging year to date – 2020!

Dear partners,

As mentioned in our last newsletter in April, we really felt for you all during this most challenging of times. We continue to hope that you and your loved ones are remaining safe and secure while the COVID-19 wreaks havoc across the world.

Our decision to postpone our Global Plastic Losses conference earlier this year inspired us to come up with an alternative plan, and in mid-late October we launched three webinars to our global partners – you! Please read about them in greater detail below and click on the links that take you to them if you haven't already had the opportunity to.

We really hope you enjoy reading this – and please, feel free to share with it with your colleagues and networks.

As ever, if you have any news or photos you would like to share, we welcome your contributions, so please email us at MarineDebrisAdmin@csiro.au.

A belated Happy Holidays, including Happy New Year from the Marine Debris Team at CSIRO!



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Team news – Webinars

Webinar 1 - Intro and survey design

Participants hailed from South Korea, Indonesia, Taiwan, Sri Lanka, South Africa, Bangladesh, Kenya, China, and Viet Nam.

Denise opened the meeting with a Welcome to Country and provided an introduction into the Global Plastics Losses project. We then had an introduction into the Project Module, followed by a brief introduction into Survey Design. This was followed by a discussion about how CSIRO carries out site selection (using a stratified random sampling process), before we discussed techniques for measuring Before And After Changes or Interventions (BACI). The team then addressed some questions which were raised, with some questions left for a future webinar (as we ran out of time)!

[\(Click here for link to Webinar 1\)](#)

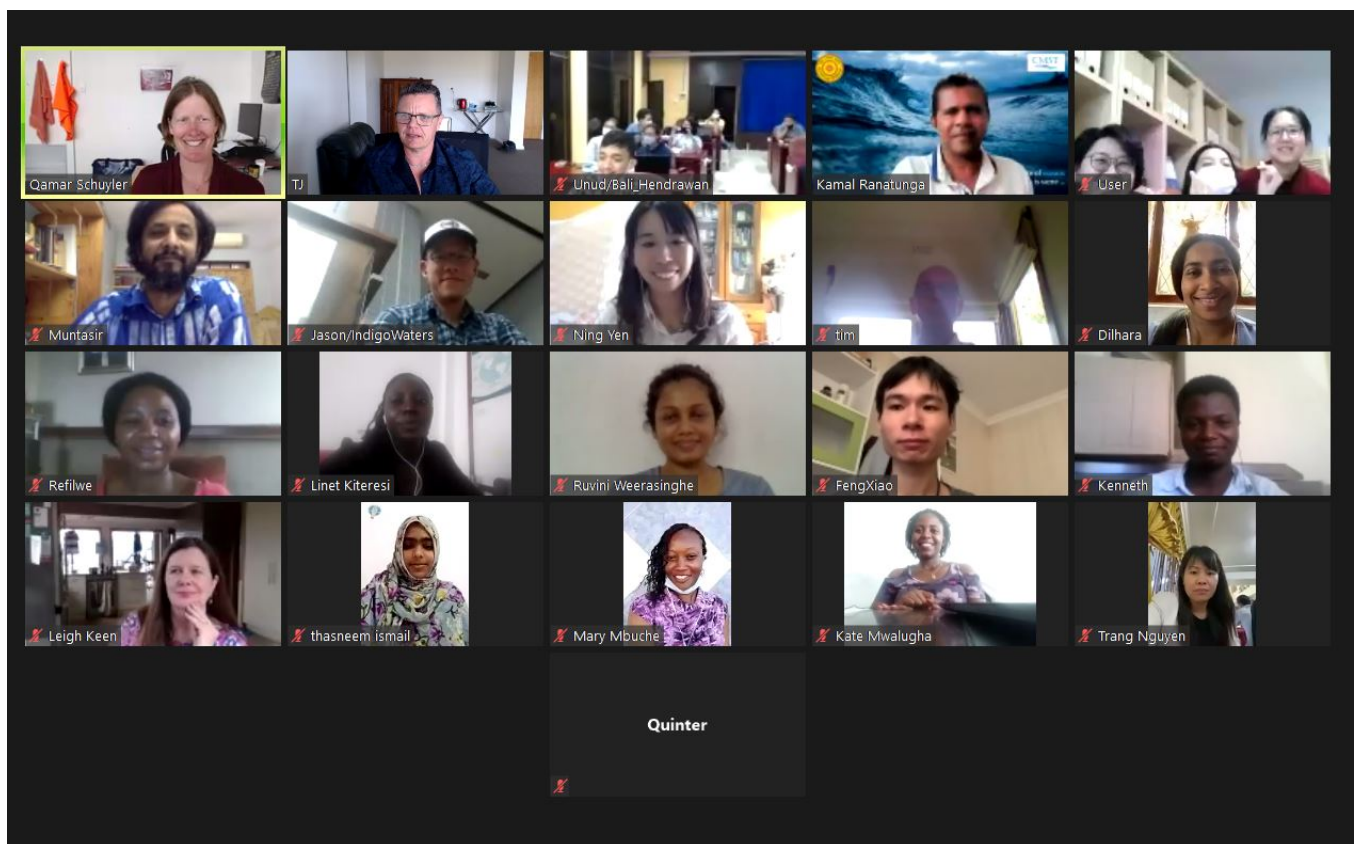


Webinar 2 - Mapping and basic data analysis

We had attendees from South Korea, Indonesia, Taiwan, Sri Lanka, South Africa, Bangladesh, Kenya, China, and Viet Nam.

Qamar opened the meeting with a Welcome to Country acknowledgment and gave a brief introduction of how the webinar would run. TJ gave a brief introduction to Visualisation and Mapping. Qamar led a discussion on Basic Statistics. Chris went through techniques and analysis in order to answer the question “How much is out there? This was followed by a Q&A section where most questions were answered, but again time ran out, so some were carried over to [Webinar 3](#).

[\(Click here for link to Webinar 2\)](#)



Webinar 3 - Advanced data analysis

Participants hailed from South Korea, Indonesia, Taiwan, Sri Lanka, Bangladesh, and Viet Nam. This third webinar provided more of an interactive discussion opportunity for participants to ask questions and for us to (hopefully!) be able to answer them. We used a great tool (Mintimeter) to learn from participants about how well they thought the webinar and video sessions worked). People asked questions about the following main topics:

- Survey Design.
- Site Selection.
- Number of Sites.
- COVID-19-related issues of Sampling.
- Basic Statistics.

Overall, it seems that some participants would like more in-depth analysis videos/webinars, though not all participants felt this was relevant or would be as useful for them.

[\(Click here for link to Webinar 3\)](#)



New and Upcoming Projects:

UN Project – Capacity Building in ASEAN

We're excited to be working closely with United Nations Environment through the COBSEA program. The project contributes directly towards achieving the COBSEA Regional Action Plan on Marine Litter (RAP MALI) in line with the COBSEA Strategic Directions 2018-2022.

We are particularly focusing on mapping existing monitoring efforts and identifying common objectives, core indicators and standards to help information harmonization of marine litter monitoring efforts in the region. We hope this guidance will enable targeted support to strengthen national marine litter monitoring programmes, improve data comparability and that it builds the foundation for regional monitoring of marine litter status and trends to inform transboundary action. Please let us know if you would like to know more about this project – noting that we have reached out to many of you already to help is in our efforts – Thank you!!!

UN Project – Migratory Species

Another project that is underway with United Nations Environment is a project focused in the Mekong and Ganges which aims to investigate the risk of plastic pollution to CMS (Convention on the Conservation of Migratory Species of Wild Animals) listed species. The objective is to produce an overlay map of plastic accumulation hotspots occurring in the distribution areas of migratory species in the Mekong and Ganges River Basins. Please let us know if you would like to learn more about this project and some of the key target species on which it focuses!

Indonesia Plastics Hub

Stemming from our work at CSIRO which aims to End Plastic Waste (we're targeting a 90% reduction of plastic leaking to the environment by 2025!), we have support for a Plastics Hub which we hope will serve as a catalyst to bring innovative project ideas to fruition, in an effort to increase circularity, reduce waste leakage, innovate with plastic packaging, and other key areas. If you would like to learn more, please let us know!

Great News - Global Plastics Leakage Project Continuation Funding!

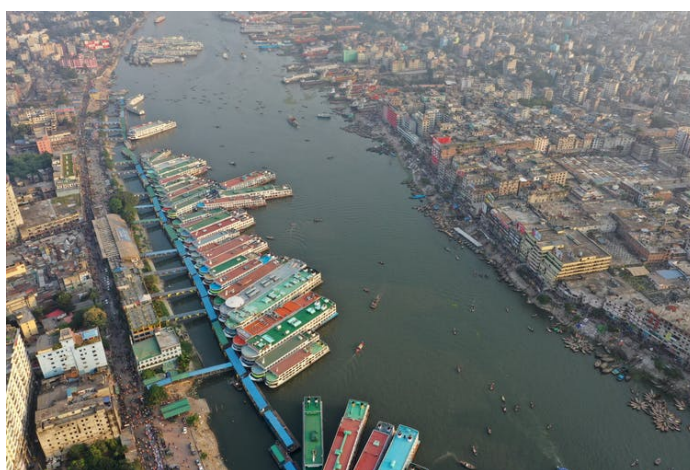
We are also very pleased to report that we have received supplemental funding from Oak Family Foundation, one of our core foundational funders who have been supporting the global plastics leakage project in which you have all been participating. We also continue to seek additional funding partners so we can grow and continue this important work. The funding will allow us to continue and extend the work to additional countries, so if you have colleagues, partners, or know of others who may be interested, please let us know!

Recent Papers

While we realize you can access these from our website, below are links to some of the recent peer-reviewed papers and popular articles that have been published by our team in the last several months. If for any reason you have difficulty accessing something and you would like the PDF, please send us an email and we can share a copy with you.

Popular Articles:

- Roman, L, BD Hardesty, C Wilcox and Q Schuyler. 14 December 2020. **These are the plastic items that most kill whales, dolphins, turtles and seabirds.** The Conversation. [Access here.](#)
- Olivelli, A and U Rosebrock. 1 December 2020. **From Hobart to London, to Dhaka: using cameras and AI to build an automatic litter detection system.** The Conversation. [Access here.](#)
- Hardesty BD and C Wilcox. 13 March 2020. **For decades, scientists puzzled over the plastics 'missing' from our oceans – but now it's been found.** The Conversation. [Access here.](#)
- **Science-based solutions to plastic pollution (2020).** One Earth. [Access here.](#)



(L) CSIRO's Chris Wilcox setting up a fixed camera to monitor litter in Hobart; (R) The Buriganga river flows by Dhaka. It's one of Bangladesh's most polluted rivers due to the ongoing dumping of industrial waste (such as from leather tanneries) and human waste. Shutterstock

Peer Reviewed Journal Articles:

- Roman, L, L Lowenstine, K Gilardi, C Wilcox, BD Hardesty. 2020. **The need for attention to confirmation bias and confounding in the field of plastic pollution and wildlife impacts: Comment on ‘Clinical pathology of plastic ingestion in marine birds and relationships with blood chemistry’.** Environmental Science and Technology. [Access here](#).
- Roman L, BD Hardesty, GH Leonard, H Pragnell-Raasch, N Mallos, I Campbell, et al. 2020. **A global assessment of the relationship between anthropogenic debris on land and the seafloor.** Environmental Pollution. [Access here](#)
- Roman L, Q Schuyler, C Wilcox, BD Hardesty. 2020. **Plastic pollution is killing marine megafauna, but how do we prioritize policies to reduce mortality?** Conservation Letters. [Access here](#)
- Roman L, F Kastury, S Petit, R Aleman, C Wilcox, BD Hardesty, et al. 2020. **Plastic, nutrition and pollution; relationships between ingested plastic and metal concentrations in the livers of two Pachyptila seabirds.** Scientific Reports. [Access here](#)
- Roman L, Hardesty BD, Hindell MA, Wilcox C. 2020. **Disentangling the influence of taxa, behaviour and debris ingestion on seabird mortality.** Environmental Research Letters. [Access here](#)
- Barrett, J, Z Chase, J Zhang, MM Banaszak Holl, K Willis, BD Hardesty and C Wilcox. 2020. **Microplastic pollution in deep-sea sediments from the Great Australian Bight.** Frontiers in Marine Science. [Access here](#)
- Jambeck, J., E. Moss, B. Dubey, Z Arifin, L Godfrey, BD Hardesty, IG Hendrawan, TT Hien, L Junguo, M Matlock, S Pahl, K Raubenheimer, M Thiel, R Thompson and L Woodall. 2020. **Leveraging Multi-Target Strategies to Address Plastic Pollution in the Context of an Already Stressed Ocean.** Washington DC: World Resources Institute. [Access here](#)
- Galloway, T, M Haward, SA Mason, JO Babayemi, BD Hardesty, S Krause, J Lamb, IA Hinojosa and A. Horton. 2020. **Science-based solutions to plastic pollution.** One Earth 2: 5-7. [Access here](#).
- Olivelli A, BD Hardesty and C Wilcox. 2020. **Coastal margins and backshores represent a major sink for marine debris: insights from a continental-scale analysis.** Environmental Research Letters. [Access here](#)

Opportunity to publish your work!

If you have a chapter or part of a chapter (or report(!) that you may be interested to publish here, we'd welcome a submission for a special issue on plastics leakage in the journal Sustainability that we are editing. The deadline for manuscript submission is May 10 and we hope to include some of the important work you, our partners, have been doing to tackle this issue. Please see https://www.mdpi.com/journal/sustainability/special_issues/Plastic_Environment for more details, and get in touch with us if you are interested and/or need assistance to submit a paper.

We're aiming for around 10-12 papers (or more!) for the special issue and are working with multiple partners/colleagues to help support them to submit papers.

Fieldwork:

CSIRO Global Plastic Leakage Project in Lagos and Ogun State, Nigeria.

By Adegbile Oyeronke M.

The Nigerian global plastic leakage project commenced on the 22nd July 2020 with a training of 2 research officers and volunteers on the survey methods at a beach on the Water Corporation drive, Victoria-Island, Lagos. The selected beach was a test site to train the research team as most beaches in Lagos were still closed at the time due to the COVID 19 pandemic lockdown. The pandemic made fieldwork tricky, though with perseverance and excellent teamwork, we managed to get it all done, finishing up in late November.



Photo: Research Team practicing Plastic survey methods using coastal transects at test training site on Water Corporation drive, Victoria-Island, Lagos on 22nd July 2020.



Photo: Coastal survey site from Lagos.



Photo: Team members and community volunteer at Plastic survey coastal site NLC06- Okun Ajah Beach, Eti-osa, Lagos



Photo: (L) River Site survey on 10th November 2020; (R) beach on 13th November 2020.

CSIRO Global Plastic Pollution Project - Fieldwork in South Africa

By Dr RP Mofokeng, Durban South Africa

Research suggests that, as it is the case with the majority of developing countries, South Africa has a single-use plastic-dependence challenge coupled with poor waste management which costs millions Rands to clean each year. In recent years, taxpayers have been forced to foot the bill for waste generated by companies that produce and distribute plastic material, particularly single use plastics, on a large scale. It was, therefore, with much excitement that I welcomed the opportunity to partake in the CIRO Global Plastic Pollution Project. This opportunity has enabled me and my team to conduct a much needed survey in South Africa, particularly in the east coast where there is minimal research regarding plastic pollution in the marine environment.

It was quite an interesting experience as some of the areas we visited had virtually no previous scientific study conducted. Amongst the challenges we were met with was constructing the road as we go or having to convince traditional leaders that we are not about to contaminate their water. Our satisfaction, however, came not only from acquiring the data but also from the hope that the project brings. We believe that while the results of this study are important in the global context, they are even more important for local communities as they can lead to other productive projects. The success of this project will contribute positively for local communities as it will lead to their development and empowerment through possible job creation as well as further enlightenment on their contribution in marine water pollution and subsequently what mitigation measures can be put in place.



Photos: (L) Celebratory picture after climbing one of the most challenging hills; and (R) Refilwe (in big hat) celebrating after climbing one of the most challenging hills



Photo: Group picture at introductory dinner

Update on Informal Solutions Recipes for Success Cookbook

Project is progressing well with several of the stories already with our publisher. We have stories from across Africa, South America, Central America/Caribbean, South Asia and Southeast Asia. A variety of informal waste management systems have been described from repurposing waste materials, placing a price on plastic, creating a circular economy. All programs have shown to not only reduce waste in the environment, but also provide social benefits to communities such as health care, employment, women empowerment, education.

This project is inspiring as it is Incredible to read the fantastic initiatives that are occurring around the globe in multiple environmental and cultural contexts. Many organisations have had to overcome similar challenges and we hope to include these in our book so everyone can learn from them. If you have a story to share or know of a group doing something creative that is working well and helping to reduce plastic waste and plastic pollution. Let us know ASAP, as we are hoping the book will be published before the end of 2021. Please get in touch if you have a story to share with either Denise.Hardesty@csiro.au or Kathy.Willis@csiro.au. Recipes and photos will be properly credited.

We would love your feedback...

Interested in attending a webinar?

We are willing to run personalised webinars to give you more knowledge on the marine debris survey analyses. The purpose of the webinars is to give you an update on the analysis details and to give you some information on the analysis methods. This training would take place in the comfort of your office or home – you need a computer and an internet connection! *Please let us know if you're interested.*

Data collection

Database

A reminder that our database is online and available for all our partners to use. You can enter survey information, photos and collections data directly into our online database. You must be a registered user to access the site. Email Qamar.Schuyler@csiro.au, or TJ.Lawson@csiro.au to register.

Access the data base here: <https://marine-data.csiro.au/global-debris>

Dropbox Folder

We have created folders for each individual country in the Dropbox. We have included a sub-folder for photos and would love it if country partners could upload photos from the training and surveys. We especially would like group photos and pictures of the fun and memorable times of the participants.

If you haven't uploaded your transect photos directly onto the database, you can also include survey photos in this folder as well. Please make sure they're labelled properly!

Completed Datasheets Reminder

In addition to having the data entered into the database, we would also like to maintain a library of the completed datasheets to refer to in case of any questions about the data. If you have digital or hard copies of completed datasheets, please either post them to us at the following address:

Marine Debris Team
CSIRO Oceans & Atmosphere
GPO Box 1538
Hobart, TAS 7001 Australia

or send scanned copies via email to marinedebrisadmin@csiro.au. **Please scan and email to us before you send anything via the post.** You can also upload to Dropbox which may be easier than email if internet speeds are slow.

Please remember to upload and/or send us your photos of the start and end points of every transect onto the database if you haven't already!

As Australia's national science agency and innovation catalyst, CSIRO is solving the greatest challenges through innovative science and technology.

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