



# PERSATUAN PENCINTA ALAM MALAYSIA

## Malaysian Nature Society (Society No. 1288/50)



10 Mac 2021

Awards received:

Asst. Prof. Dr. Muhammad Zahir bin Ramli  
Kulliyyah of Science,  
International Islamic University Malaysia,  
Jalan Sultan Ahmad Shah,  
Bandar Indera Mahkota,  
25200 Kuantan, Pahang Darul Makmur,  
Malaysia

Dr.,

JEMPUTAN UNTUK MENGHADIRI BENGKEL GURU CLEAN SEAS MALAYSIA 2021 – SALAH SATU PROGRAM BERASASKAN COMMUNICATION, EDUCATION AND PUBLIC AWARENESS (CEPA) DI BAWAH JAWATANKUASA KERJA PROJEK SEA CIRCULAR, UNITED NATION ENVIRONMENTAL PROGRAMME (UNEP) MALAYSIA DAN KEMENTERIAN ALAM SEKITAR DAN AIR (KASA)

Dengan segala hormatnya perkara di atas adalah dirujuk.



MEMBERS :



5. Bengkel tersebut akan diadakan mengikut ketetapan berikut:

Tarikh	Siri Bengkel dan Peserta	Bilangan peserta
23 Mac - 25 Mac 2021	Bengkel Guru Clean Seas Malaysia (Zon Utara & Zon Tengah & Sarawak: Guru-guru dari negeri Perlis, Kedah, Perak dan Pulau Pinang, Wilayah Persekutuan Kuala Lumpur, Wilayah Persekutuan Putrajaya, Selangor dan Sarawak)	60 guru
30 Mac - 1 April 2021	Bengkel Guru Clean Seas Malaysia (Zon Selatan, Zon Timur & Sabah: Guru-guru dari negeri Johor, Melaka dan Negeri Sembilan, negeri Kelantan, Terengganu, Pahang)	60 guru

Bengkel akan diadakan menerusi aplikasi Zoom. Bersama-sama surat ini, kami lampirkan cadangan Bengkel Guru Clean Seas Malaysia untuk makluman Dr. Kami amat berharap agar Dr. dapat menghadiri bengkel tersebut dan menjadi ahli panel forum tersebut

6. Sekiranya maklumat lanjut diperlukan, Dr. boleh menghubungi Pn. Eda Izanie binti Ahmad Kamil melalui emel kepada [ee\\_programs@mns.org.my](mailto:ee_programs@mns.org.my)

7. Segala jasa baik dari pihak Dr. amatlah dihargai dan didahulukan ucapan ribuan terima kasih. Semoga Dr. memperoleh kebaikan dan keberkatan dengan kerjasama yang diberikan.

Sekian, terima kasih.

Yang benar,

(EDA IZANIE BINTI AHMAD KAMIL)

Pengurus

Bahagian Pendidikan Alam Sekitar, MNS

## Cadangan Program Bengkel Guru Clean Seas

### Hari 1: 23 Mac 2021 / 30 Mac 2021

- 2.30 – 2.35 petang: Kata-kata aluan dari Yang Berusaha Dr. Nagulendran a/l Kangayatkarasu, Timbalan Ketua Setiausaha (Alam Sekitar), Kementerian Alam Sekitar dan Air
- 2.35 – 2.40 petang: Pengenalan Program Kesedaran Clean Seas oleh Jacqueline Chang, National Marine Litter & Plastic Value Chain Consultant, UN Environment Program & Coordinating Body of the Seas of East Asia
- 2.40 – 4.30 petang: Sesi Forum: "Ekosistem Marin di Malaysia dan Ancaman *Marine Debris*"  
Moderator:  
Muhammad Fardy Md Ibrahim, Pegawai Eksekutif, Yayasan Penyelidikan Antartika Sultan Mizan.
- 4.30 petang: Bersurai

### Hari 2: 24 Mac 2021 / 31 Mac 2021

- 2.30 - 2.45 petang: Pembentangan: Sisa pencemaran marine / marine debris - Impak ekologi, ekonomi dan sosial dan sesi soal jawab
- 2.45 – 3.20 petang: Perbincangan di dalam kumpulan:  
"Pelan cadangan amalan terbaik pengurusan sisa norma baharu di sekolah"
  - Pemakaian pelitup muka fabrik
  - Penggunaan bekas guna semula semasa pembelian makanan di kantin
  - Pengurusan sisa plastik menurut Roadmap to Single use plastics 2030
  - Cadangan "Tiada plastik sekali guna di sekolah-sekolah KPM"

Pembentangan kumpulan

3.20 – 4.30 petang: Perbincangan di dalam kumpulan:  
Penerapan isu marine debris di dalam subjek pengajaran dan pembelajaran di sekolah:

- Geografi
- Pendidikan Seni
- BM
- BI
- Asas Kelestarian

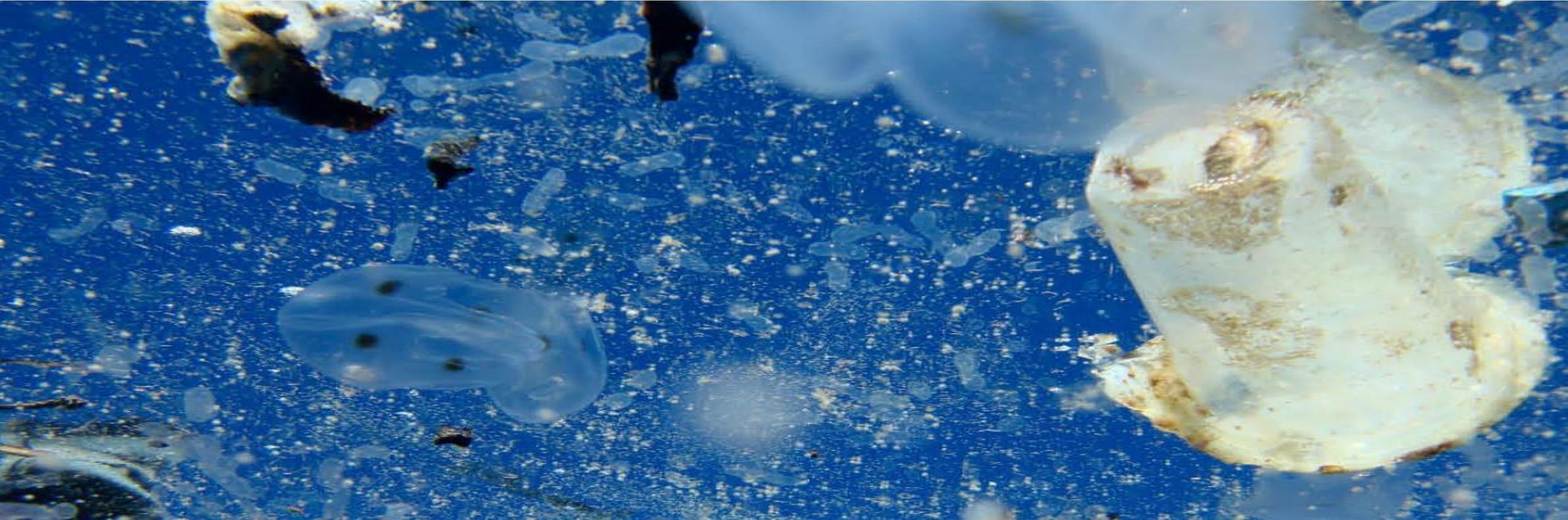
Pembentangan kumpulan

Hari 3: 25 Mac 2021 / 1 April 2021

2.30 - 4.00 petang: Cadangan aktiviti Sekolah Clean Seas

1. Aktiviti Badan Beruniform - *The Plastic Tide Turners Challenge Badge*
2. Aktiviti di dalam talian: Google Classroom *Water Vision*
3. Aktiviti di dalam talian: Ecobrick
4. Pertandingan Melukis Komik Peringkat Kebangsaan

4.00 – 4.30 petang Perbincangan: Peranan guru di dalam Program Kesedaran Clean Seas



**Ts. Dr. Muhammad Zahir Ramli**  
Institute of Oceanography and  
Maritime Studies (INOCEM)  
IIUM Kuantan Campus  
[mzbr@iium.edu.my](mailto:mzbr@iium.edu.my)

# What is Marine Debris?



# Plastics are everywhere





# How does ocean gyre contribute to debris patch?

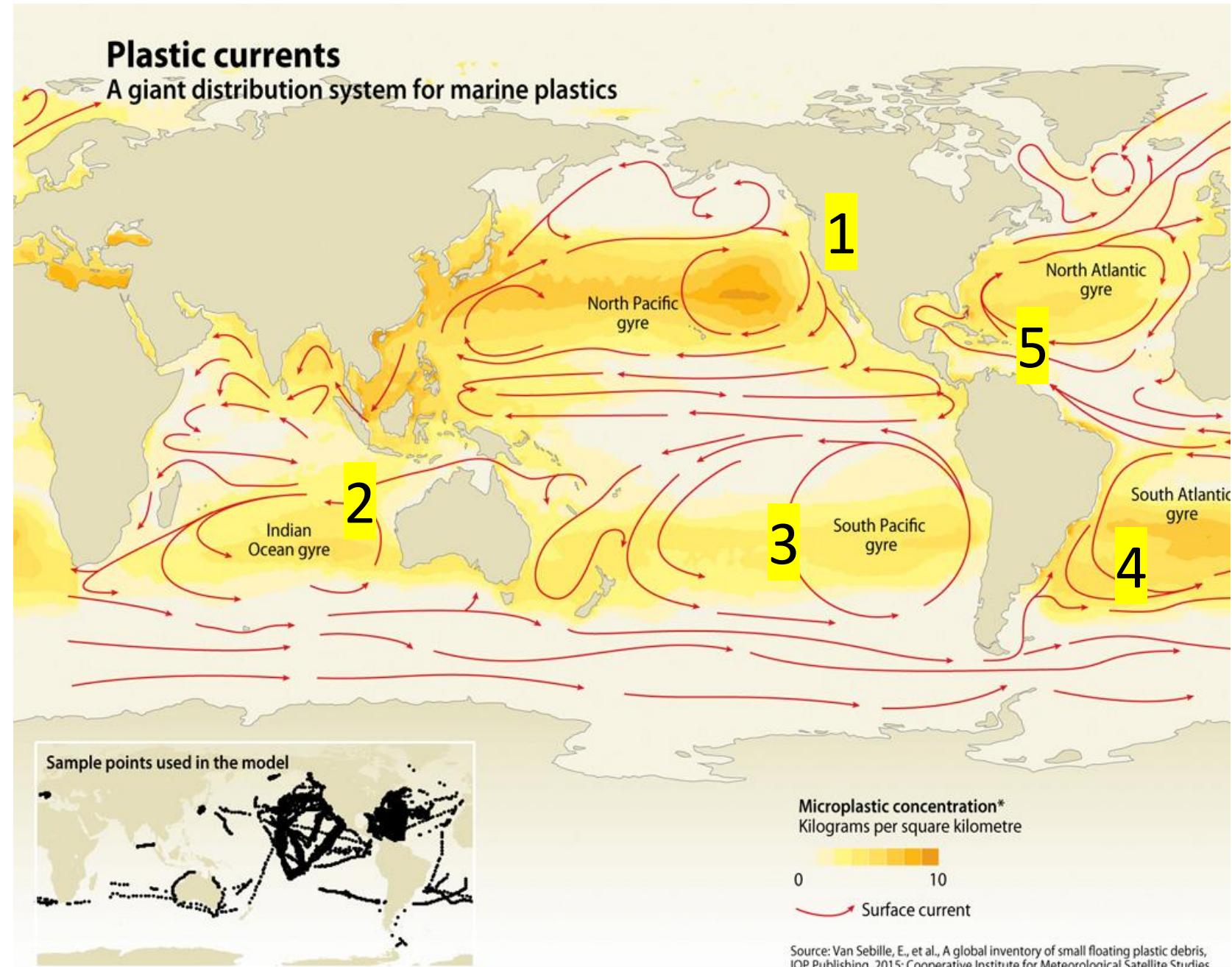


**The largest of the five offshore plastic accumulation zones in the world's oceans.**

**It is located halfway between Hawaii and California.**

## Great Pacific Garbage Patch (GPGP)

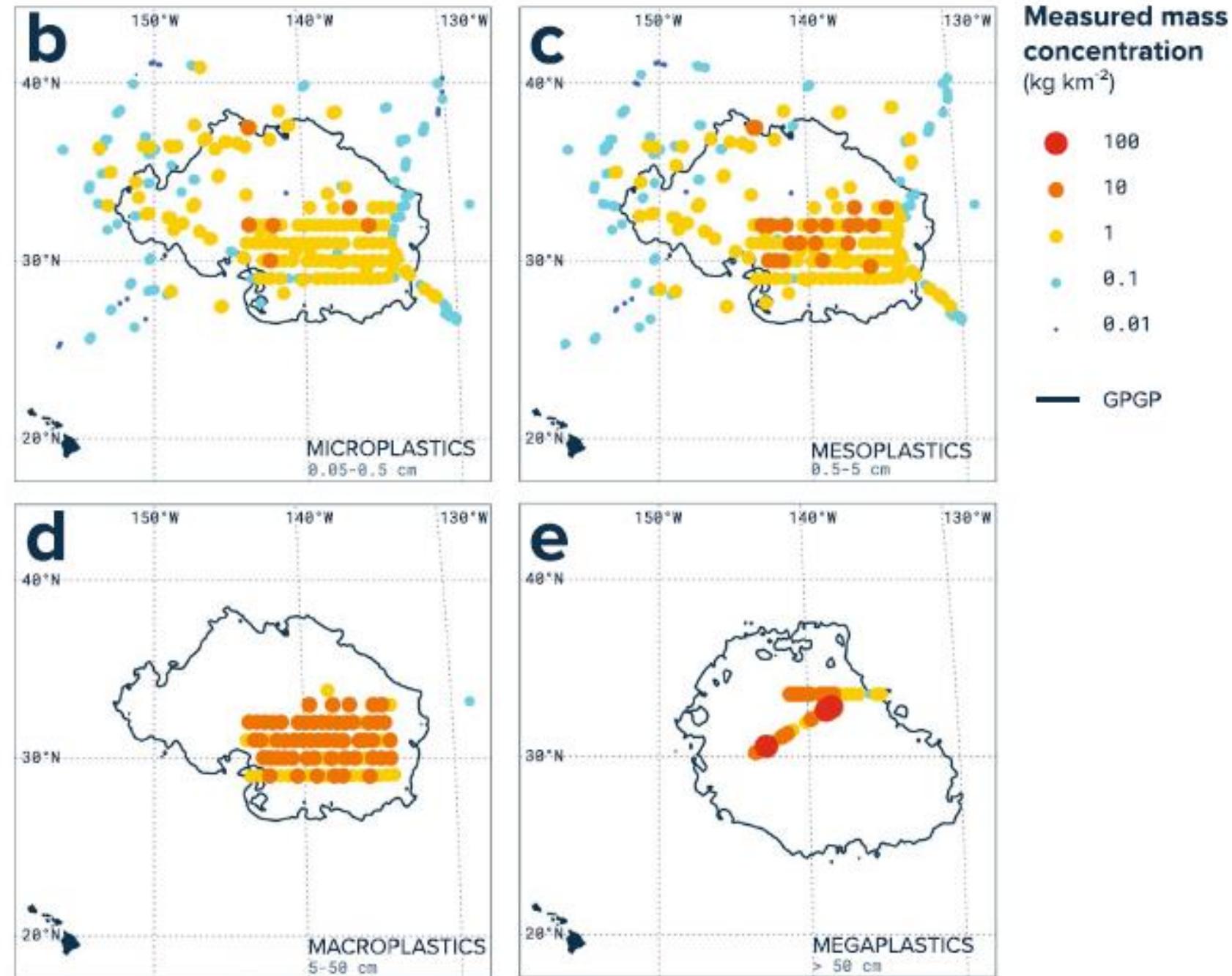
Based on over 40 cruises conducted by US and European countries



Source: Van Sebille, E., et al., A global inventory of small floating plastic debris, IOP Publishing, 2015; Cooperative Institute for Meteorological Satellite Studies

Plastic within the patch was categorized into four size classes:

- **Microplastics**  
(0.05 – 0.5 cm)
- **Mesoplastics**  
(0.5 – 5 cm)
- **Macroplastics**  
(5 – 50 cm)
- **Megoplastics**  
(anything above 50 cm)



# Oceans Plastic Input

**Ocean Detritus | Much of the world's mismanaged plastic waste ends up fouling global waters**

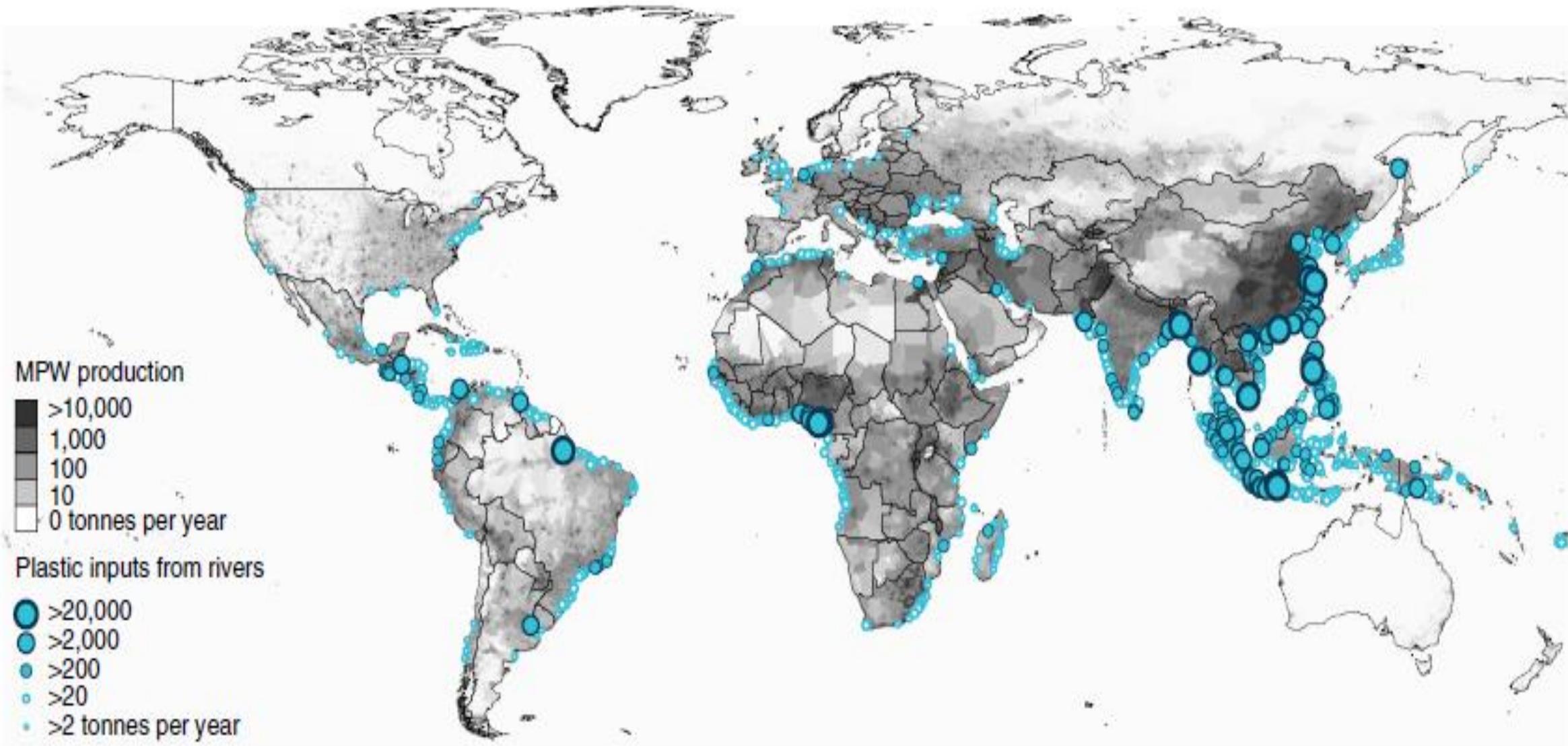


# Top 20 countries ranked by mass of mismanaged plastic waste (in units of millions of metric tons per year)

Rank	Country	Econ. classif.	Coastal pop. [millions]	Waste gen. rate [kg/ppd]	% plastic waste	% mismanaged waste	Mismanaged plastic waste [MMT/year]	% of total mismanaged plastic waste	Plastic marine debris [MMT/year]
1	China	UMI	262.9	1.10	11	76	8.82	27.7	1.32–3.53
2	Indonesia	LMI	187.2	0.52	11	83	3.22	10.1	0.48–1.29
3	Philippines	LMI	83.4	0.5	15	83	1.88	5.9	0.28–0.75
4	Vietnam	LMI	55.9	0.79	13	88	1.83	5.8	0.28–0.73
5	Sri Lanka	LMI	14.6	5.1	7	84	1.59	5.0	0.24–0.64
6	Thailand	UMI	26.0	1.2	12	75	1.03	3.2	0.15–0.41
7	Egypt	LMI	21.0	1.27	12	69	0.97	3.0	0.15–0.39
8	Malaysia	UMI	22.9	1.52	13	57	0.94	2.9	0.14–0.37
9	Nigeria	LMI	27.5	0.79	15	85	0.85	2.7	0.15–0.54
10	Bangladesh	LI	70.9	0.43	8	89	0.79	2.5	0.12–0.31
11	South Africa	UMI	12.9	2.0	12	56	0.63	2.0	0.09–0.25
12	India	LMI	187.5	0.34	3	87	0.60	1.9	0.09–0.24
13	Algeria	UMI	16.6	1.2	12	60	0.52	1.6	0.08–0.21
14	Turkey	UMI	34.0	1.77	12	18	0.49	1.5	0.07–0.19
15	Pakistan	LMI	14.6	0.79	13	88	0.48	1.5	0.07–0.19
16	Brazil	UMI	74.7	1.03	16	11	0.47	1.5	0.07–0.19
17	Burma	LI	19.0	0.44	17	89	0.46	1.4	0.07–0.18
18*	Morocco	LMI	17.3	1.46	5	68	0.31	1.0	0.05–0.12
19	North Korea	LI	17.3	0.6	9	90	0.30	1.0	0.05–0.12
20	United States	HIC	112.9	2.58	13	2	0.28	0.9	0.04–0.11

\*If considered collectively, coastal European Union countries (23 total) would rank eighteenth on the list

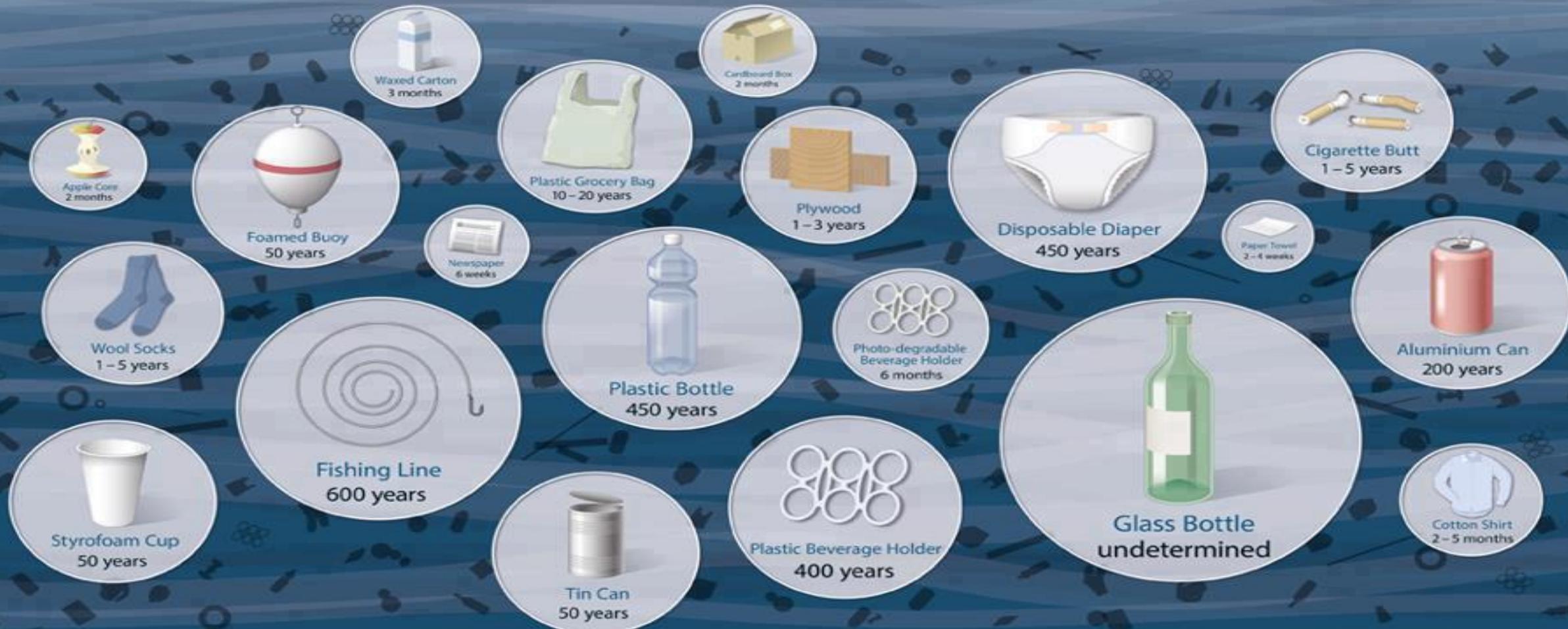
# River Plastic Input into Oceans





# HOW LONG UNTIL IT'S GONE?

Estimated decomposition rates of common marine debris items



Estimated individual item timelines depend on product composition and environmental conditions.

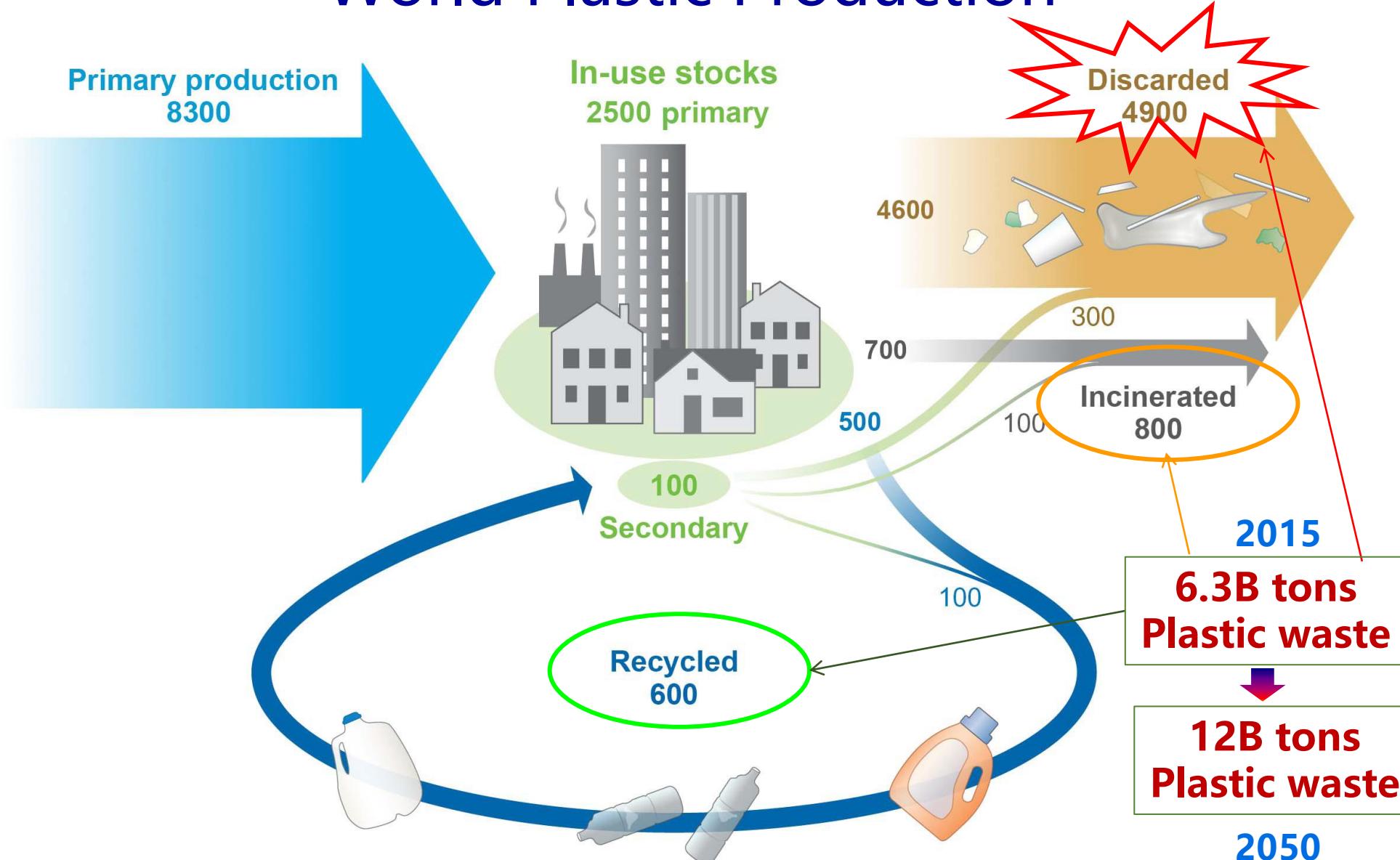
Source: NOAA (National Oceanic and Atmospheric Administration, US) / Woods Hole Sea Grant, US  
Graphics: Oliver Lüke / Museum für Gestaltung Zürich, ZHdK



How much  
do we know about our  
litter?

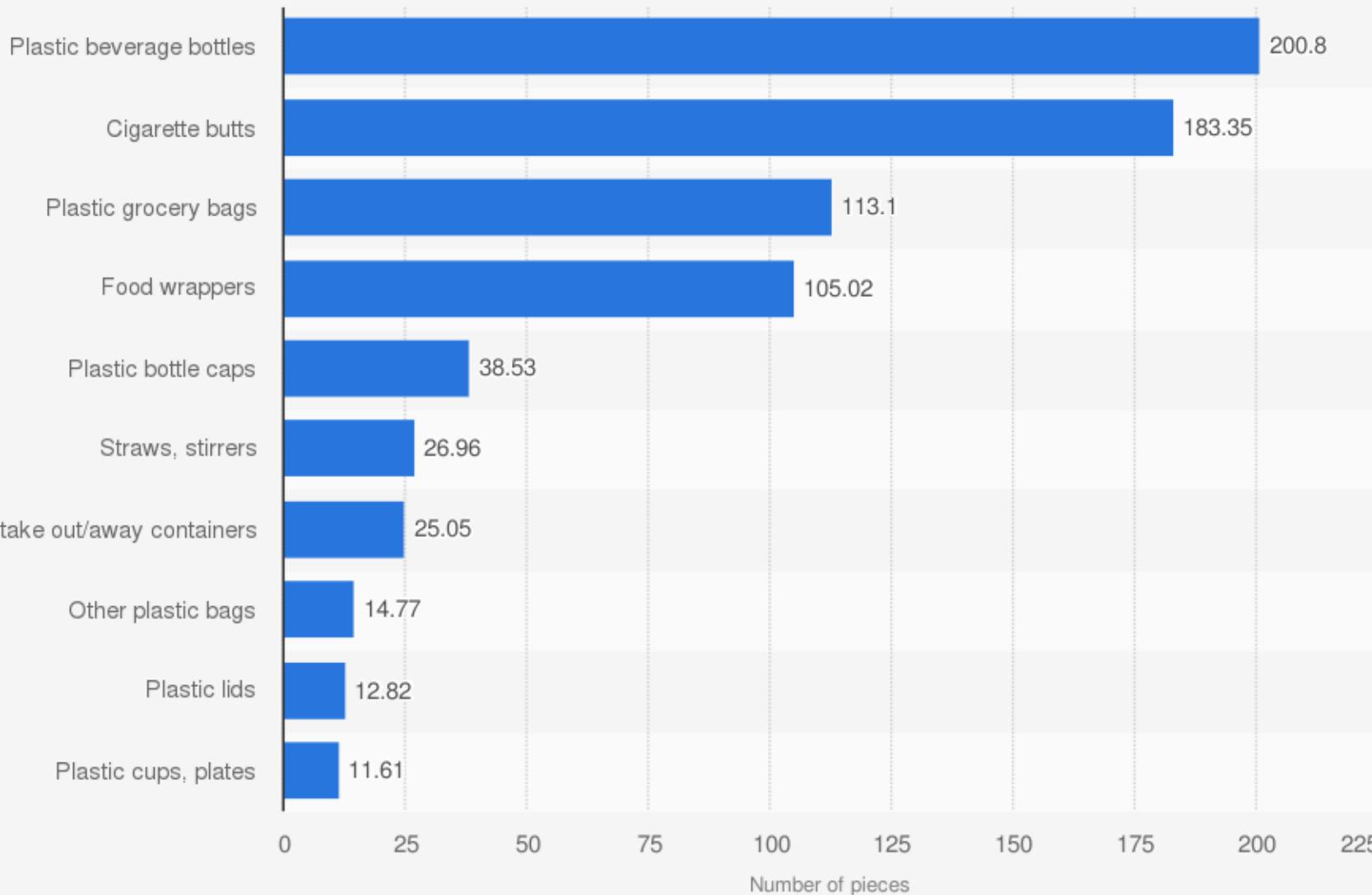


# World Plastic Production



Global production, use, and fate of plastics (1950 to 2015; in million metric tons).  
Geyer, Jambeck, Law Sci. Adv. 2017;3: e1700782

## Most collected types of marine waste in Malaysia in 2019 (in 1,000s)



### Source

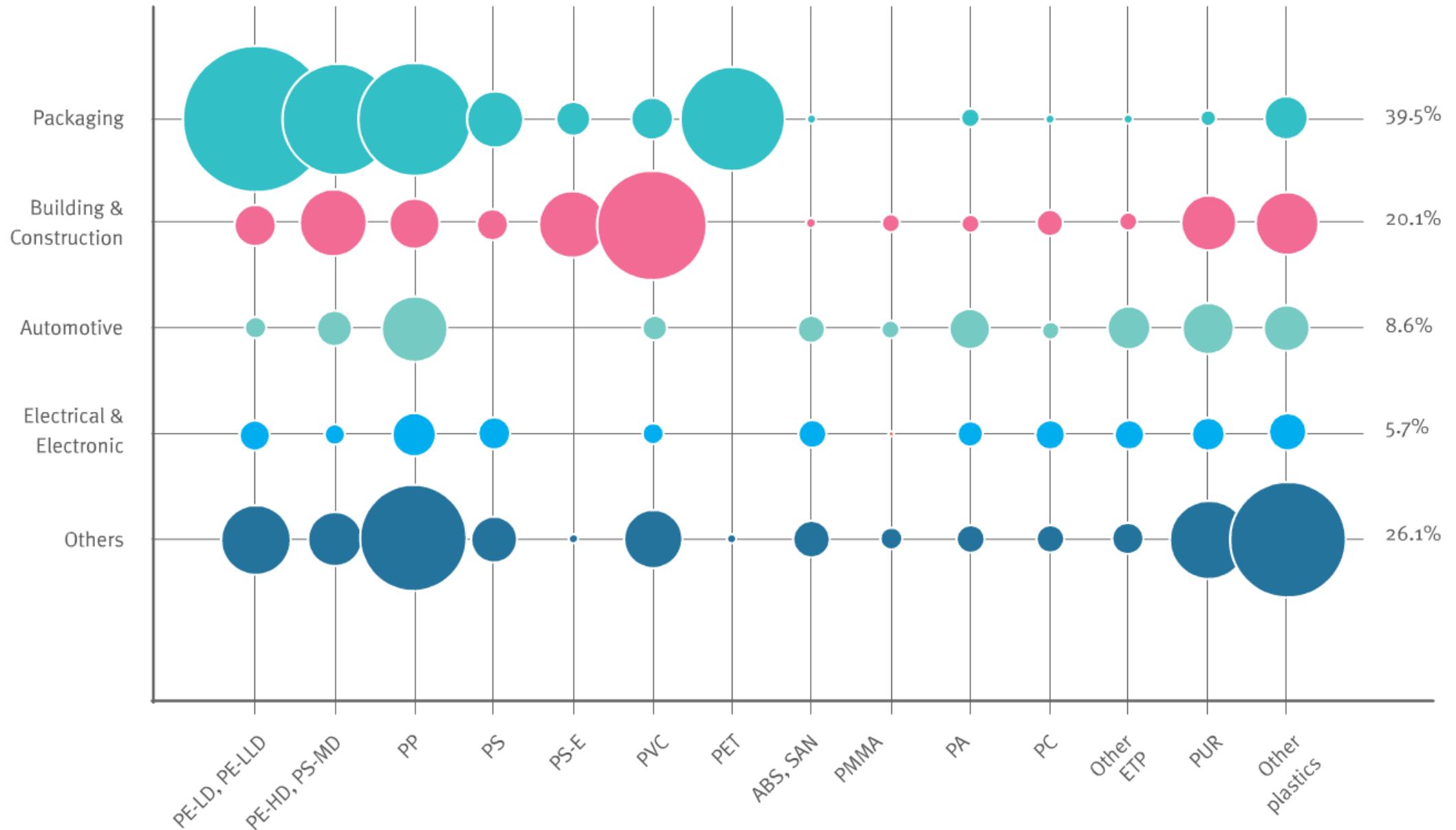
Ocean Conservancy  
© Statista 2020

### Additional Information:

Malaysia; Ocean Conservancy; 2019

# Plastic Resin Identification Codes

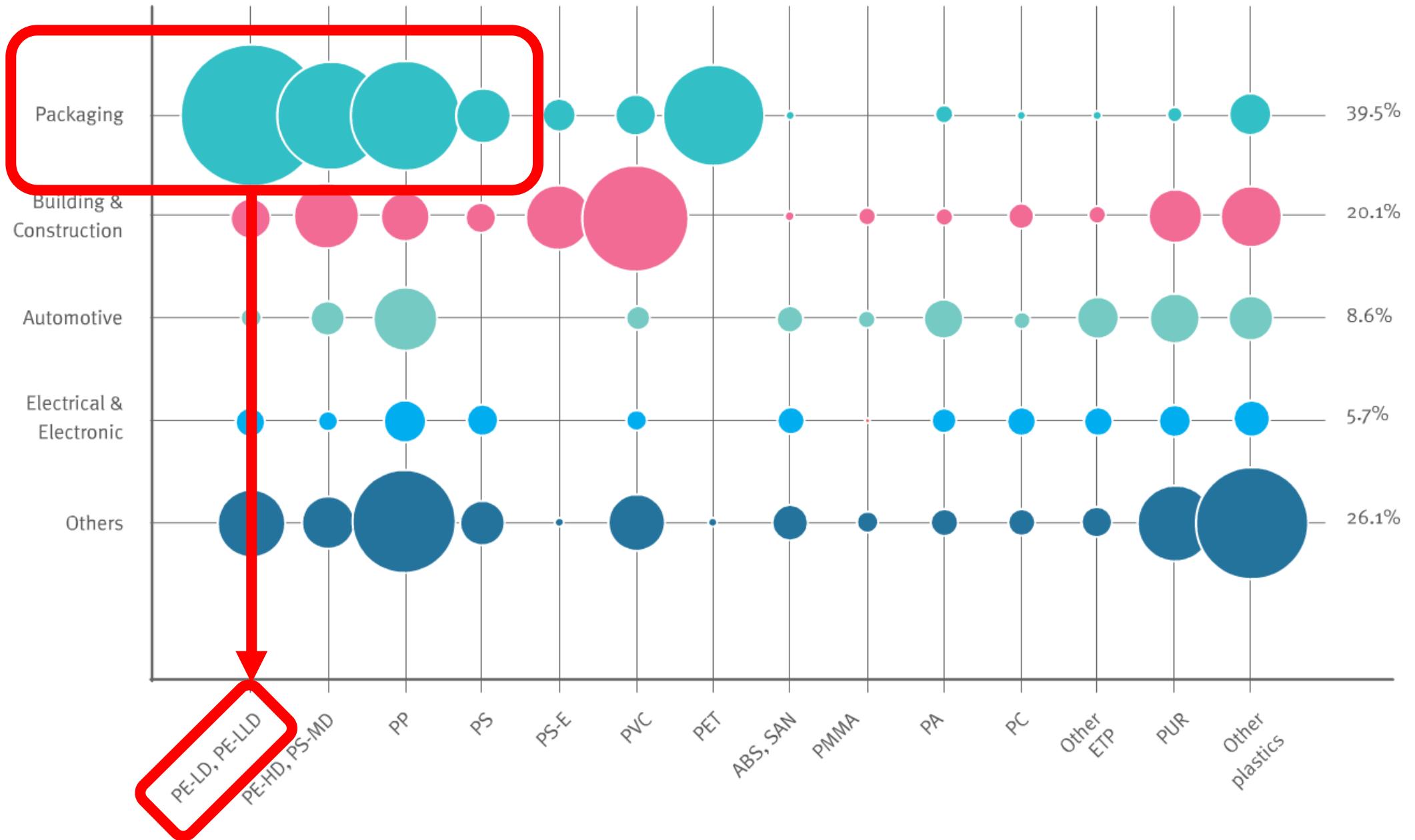
 PETE	 HDPE	 PVC	 LDPE	 PP	 PS	 OTHER
Polyethylene Terephthalate	High-Density Polyethylene	Polyvinyl Chloride	Low-Density Polyethylene	Polypropylene	Polystyrene	Other
Common products: soda & water bottles; cups, jars, trays, clamshells  Recycled products: clothing, carpet, clamshells, soda & water bottles	Common products: milk jugs, detergent & shampoo bottles, flower pots, grocery bags  Recycled products: detergent bottles, flower pots, crates, pipe, decking	Common products: cleaning supply jugs, pool liners, twine, sheeting, automotive product bottles, sheeting  Recycled products: pipe, wall siding, binders, carpet backing, flooring	Common products: bread bags, paper towels & tissue overwrap, squeeze bottles, trash bags, six-pack rings  Recycled products: trash bags, plastic lumber, furniture, shipping envelopes, compost bins	Common products: yogurt tubs, cups, juice bottles, straws, hangers, sand & shipping bags  Recycled products: paint cans, speed bumps, auto parts, food containers, hangers, plant pots, razor handles	Common products: to-go containers & flatware, hot cups, razors, CD cases, shipping cushion, cartons, trays  Recycled products: picture frames, crown molding, rulers, flower pots, hangers, toys, tape dispensers	Common types & products: polycarbonate, nylon, ABS, acrylic, PLA; bottles, safety glasses, CDs, headlight lenses  Recycled products: electronic housings, auto parts,
						



European plastics demand\* by segment and polymer type 2014

Source: PlasticsEurope (PEMRG) / Consultic / myCeppi

\* EU-28+NO/CH



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Source: PlasticsEurope (PEMRG) / Consultic / myCeppi

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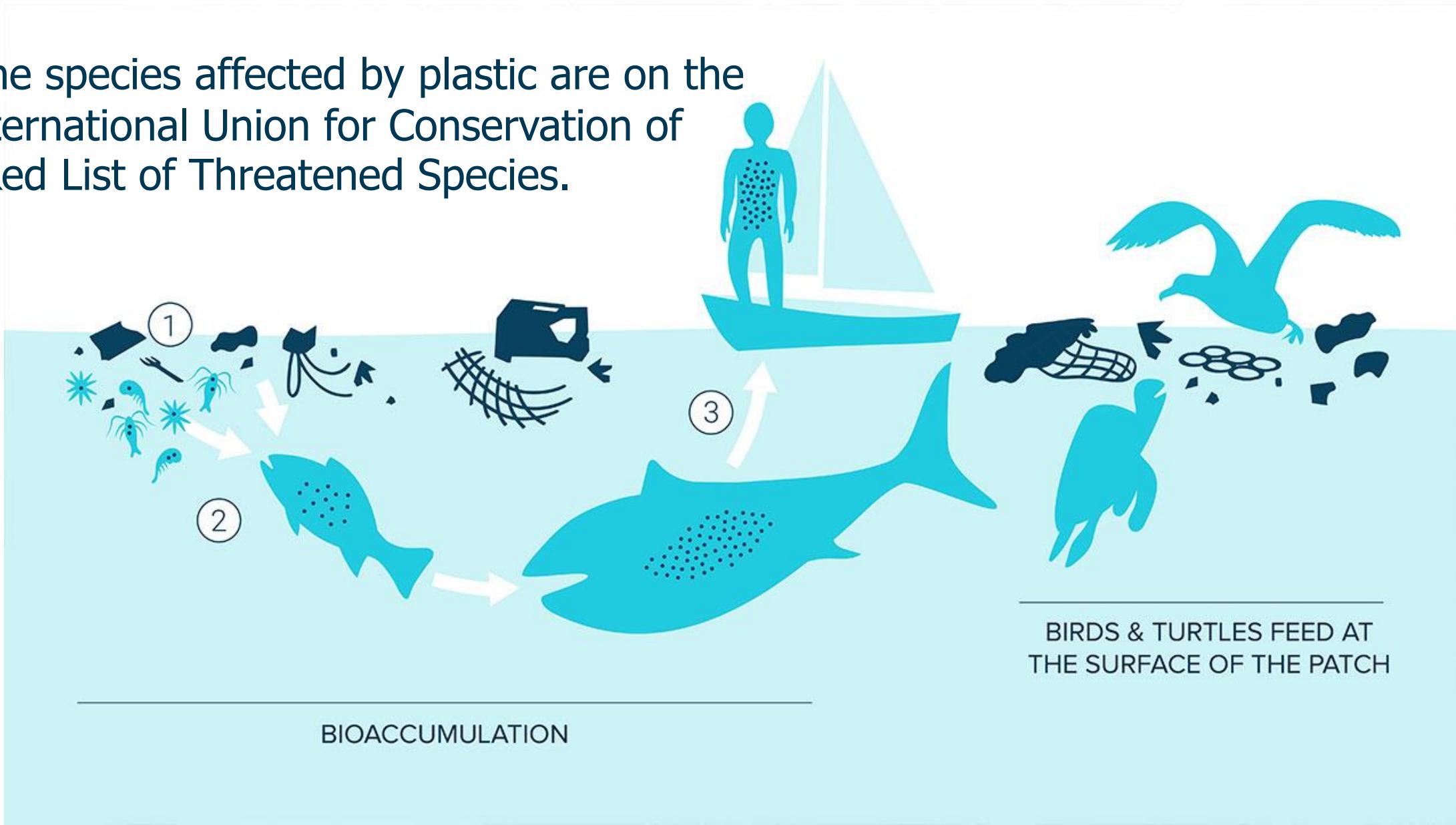


## Effects on marine life and humans



700 species have encountered marine debris, and 92% of these interactions are with plastic.

17% of the species affected by plastic are on the IUCN (International Union for Conservation of Nature) Red List of Threatened Species.





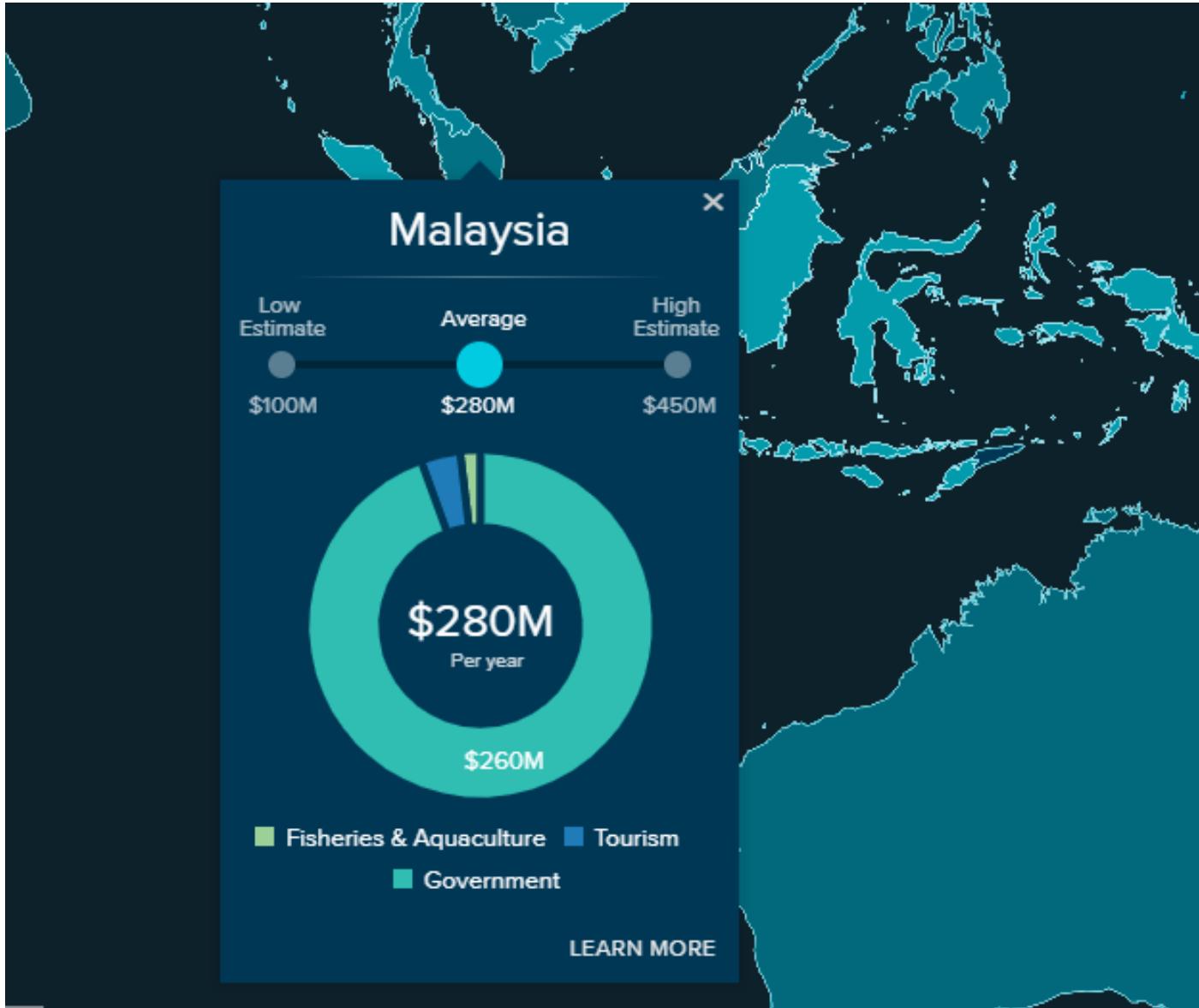
**A sea turtle entangled in a ghost net.**



# A bird surrounded by ocean plastic



# Costs emerging from Marine Plastic Pollution



Based on a [model developed](#) by The Ocean Cleanup to estimate global emission of waste from rivers into oceans.

# How did we create awareness?



An aerial photograph of a coastal landscape. On the left, the ocean with small waves meets a long, sandy beach. To the right of the beach is a strip of green vegetation, including several large trees. Further inland, a river or inlet flows into the sea, creating a narrow channel. The background shows a flat, green landscape under a blue sky with scattered clouds.

# Institute of Oceanography and Maritime Studies (INOCEM) IIUM Kuantan Campus

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## EDUCATION & LEADERSHIP OUTREACH

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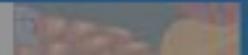
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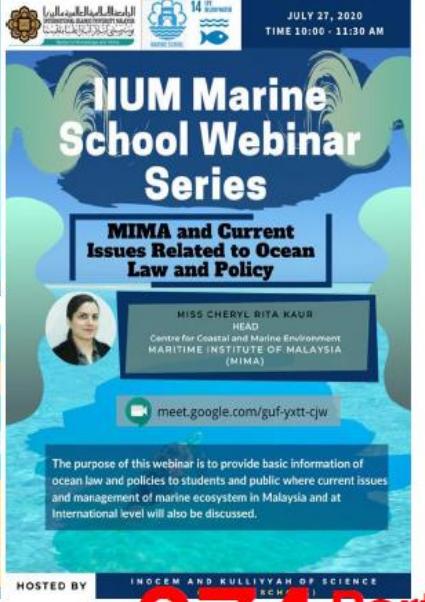
# >1000 Website Visitors

Interacting to IIUM Official Website

Activate

way2bank Foundation - Perpaduan Leadership  
Foundation Writing & Photo Contest is currently...





**374 Participants**

From All Webinar Series



11<sup>th</sup> SEPTEMBER 2019  
Marine School booth at Karnival STEM BeSS for Schools in Pahang



**22<sup>nd</sup> SEPTEMBER 2019**  
**World Clean Up Day 2019**



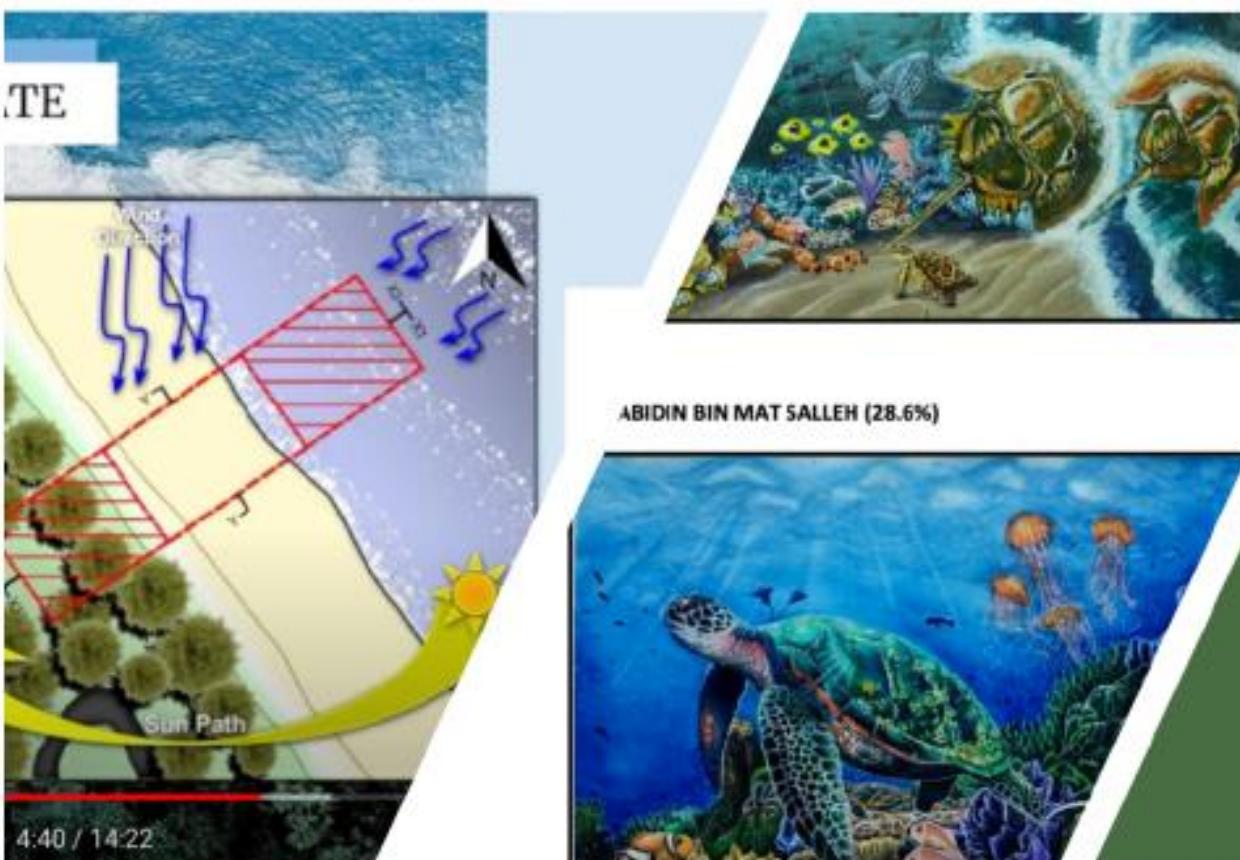
**13<sup>th</sup> November 2019**  
**In-House Program with staff –**  
**Marine Litter Assessment**



10<sup>th</sup> October 2020  
Gaming 4 Humanity:  
Ocean Series

Activate V  
Go to PC set





6<sup>th</sup> November 2020

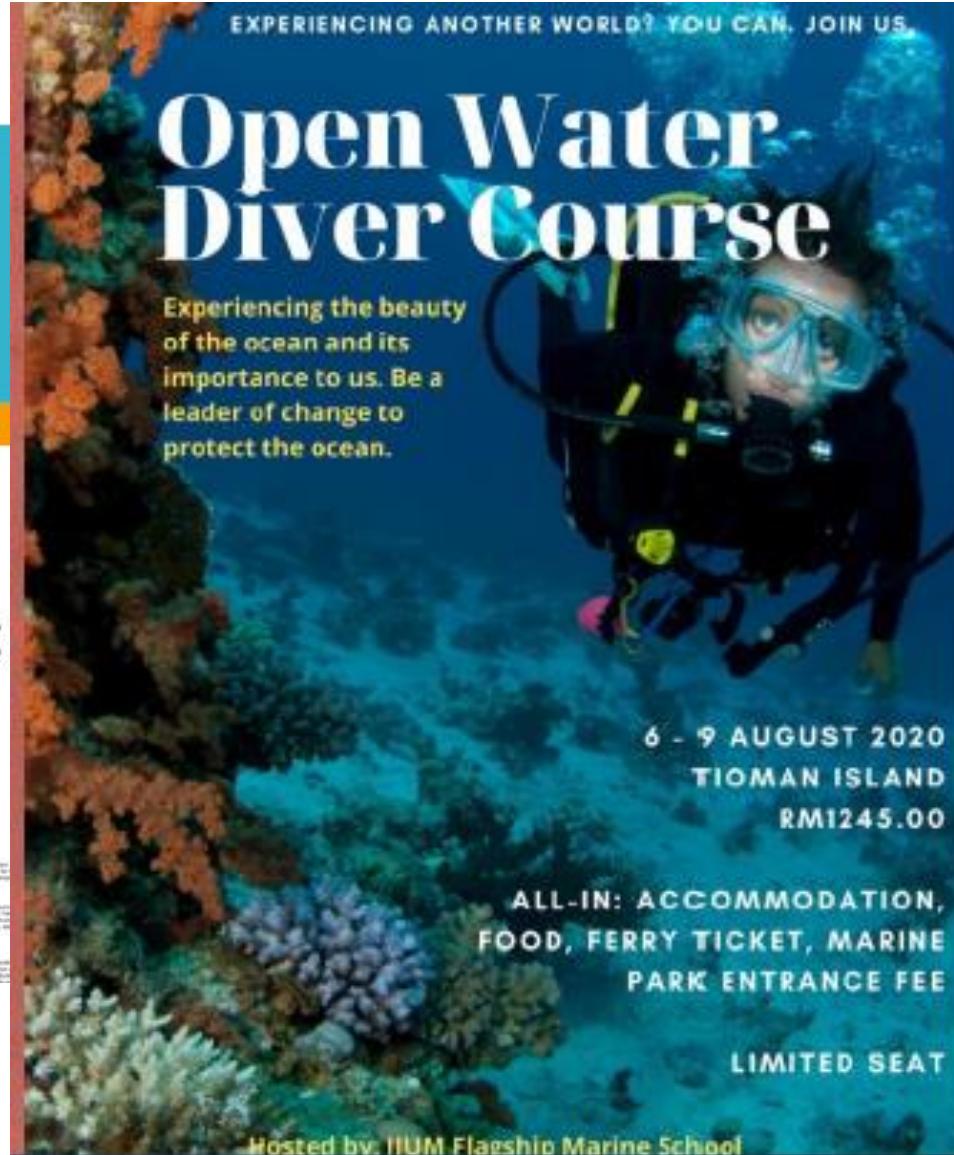
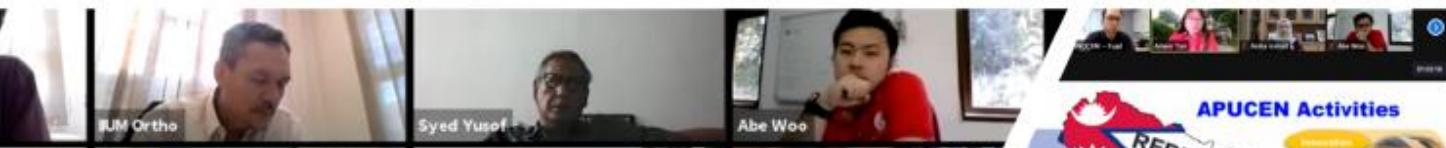
Collaboration  
with KAED

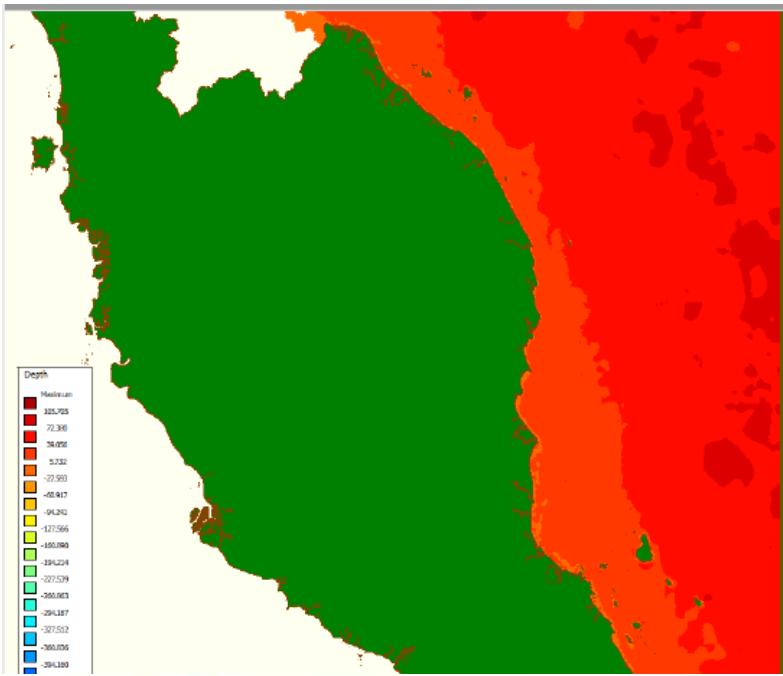
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16<sup>th</sup> November 2020

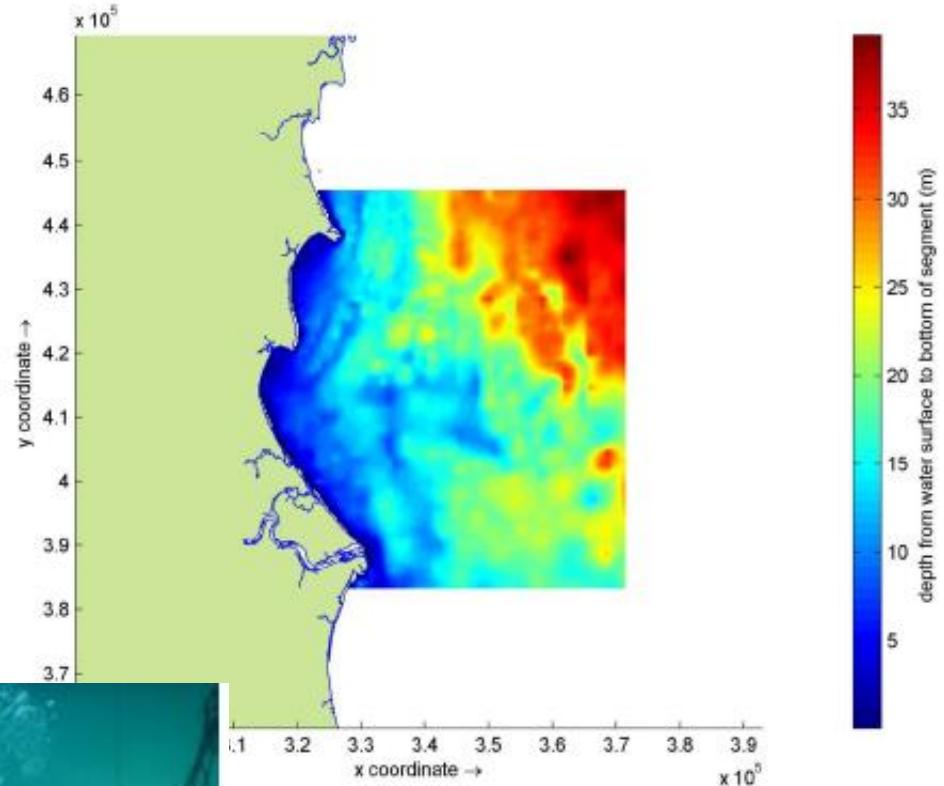
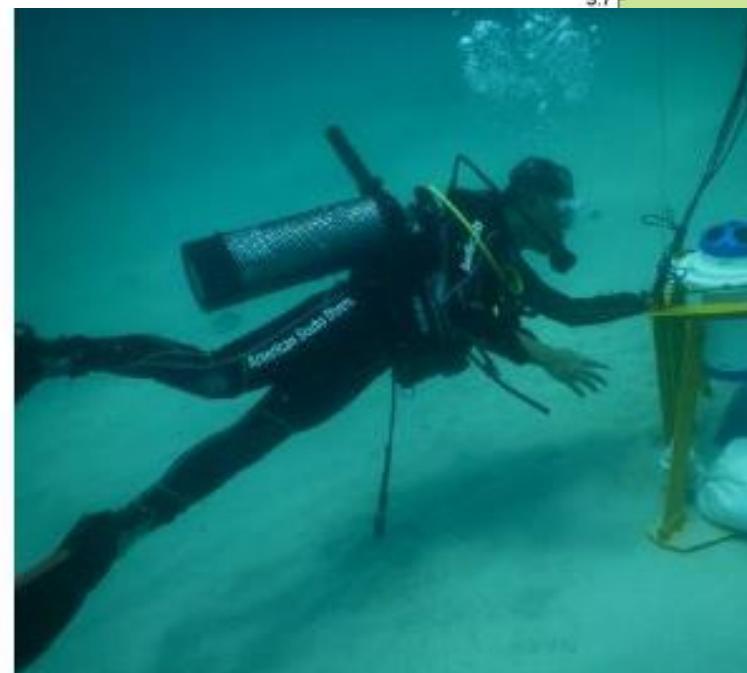
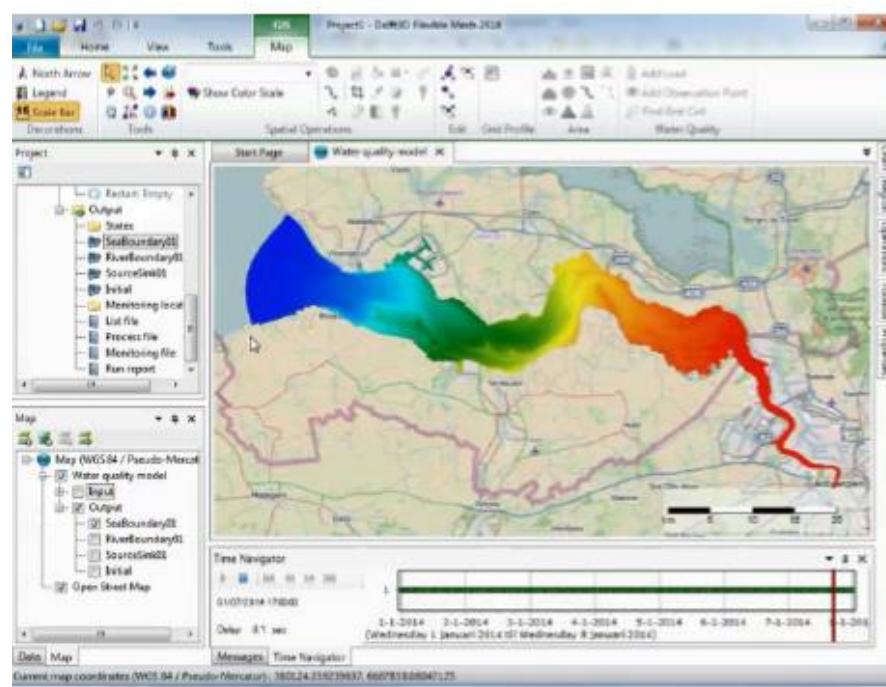
# Community Engagement in Research: Hands on, How to Do





## 1. Study Area

- a) Regional Model
1. Covers the whole East Coast of Malaysia
  2. Grid size around 2 km x 2 km



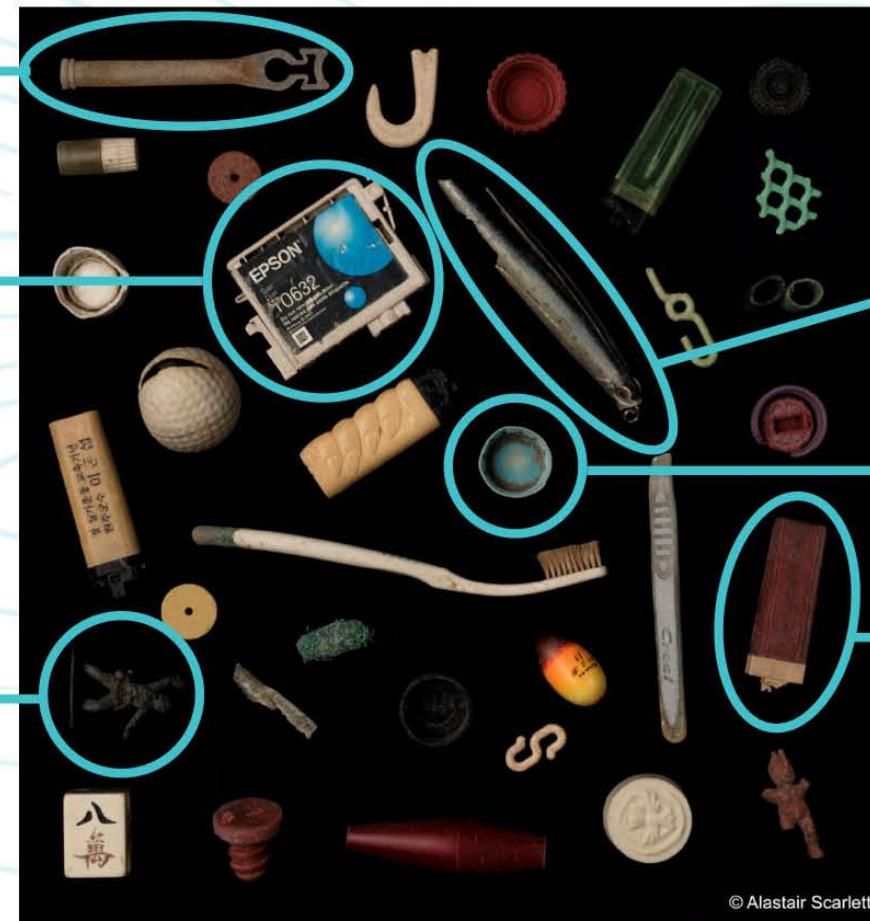
How many items can you identify in the picture



© Alastair Scarlett

# These were all found in Albatross chicks

Glow stick  
Printer cartridge  
Toy soldier



Fishing lure  
Bottle top  
Lighter

© Alastair Scarlett

**This image shows all of the plastic found in one 90 day old chick**



# Thank you. Come and join us at IIUM's Marine School

