

MARINE LITTER IN THE STRAITS OF MALACCA – SOME CASE STUDIES

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The global estimated mass of mismanaged plastic waste generated in 2010

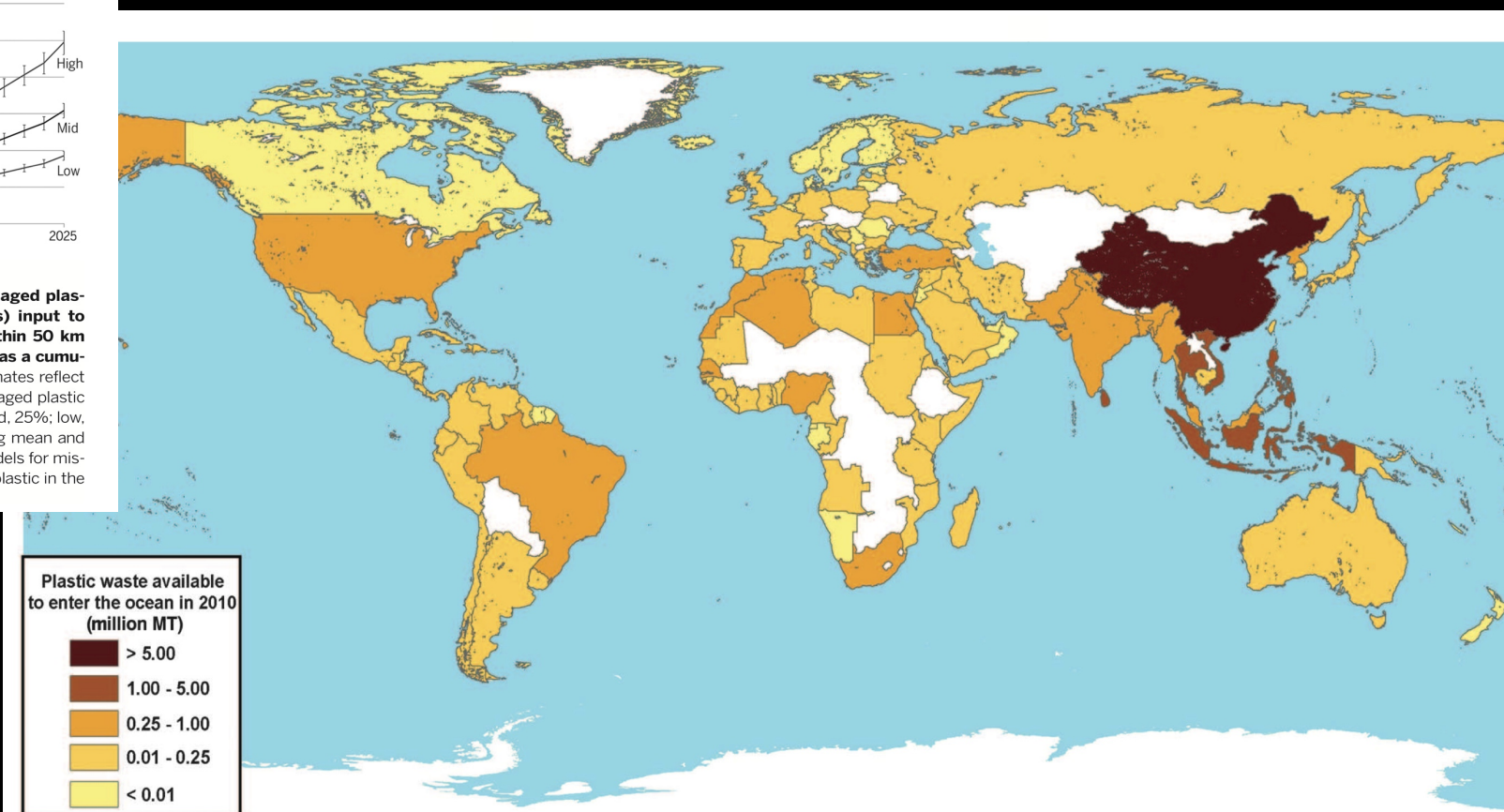
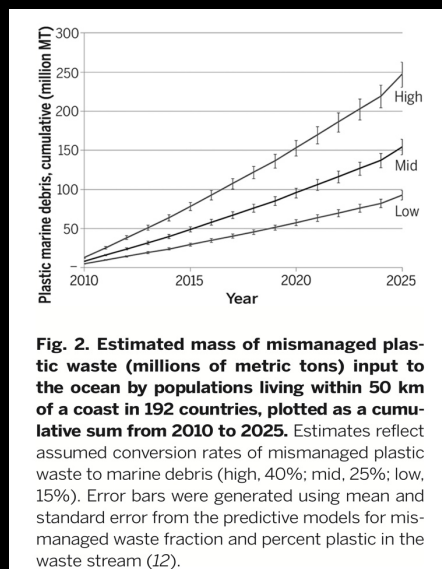
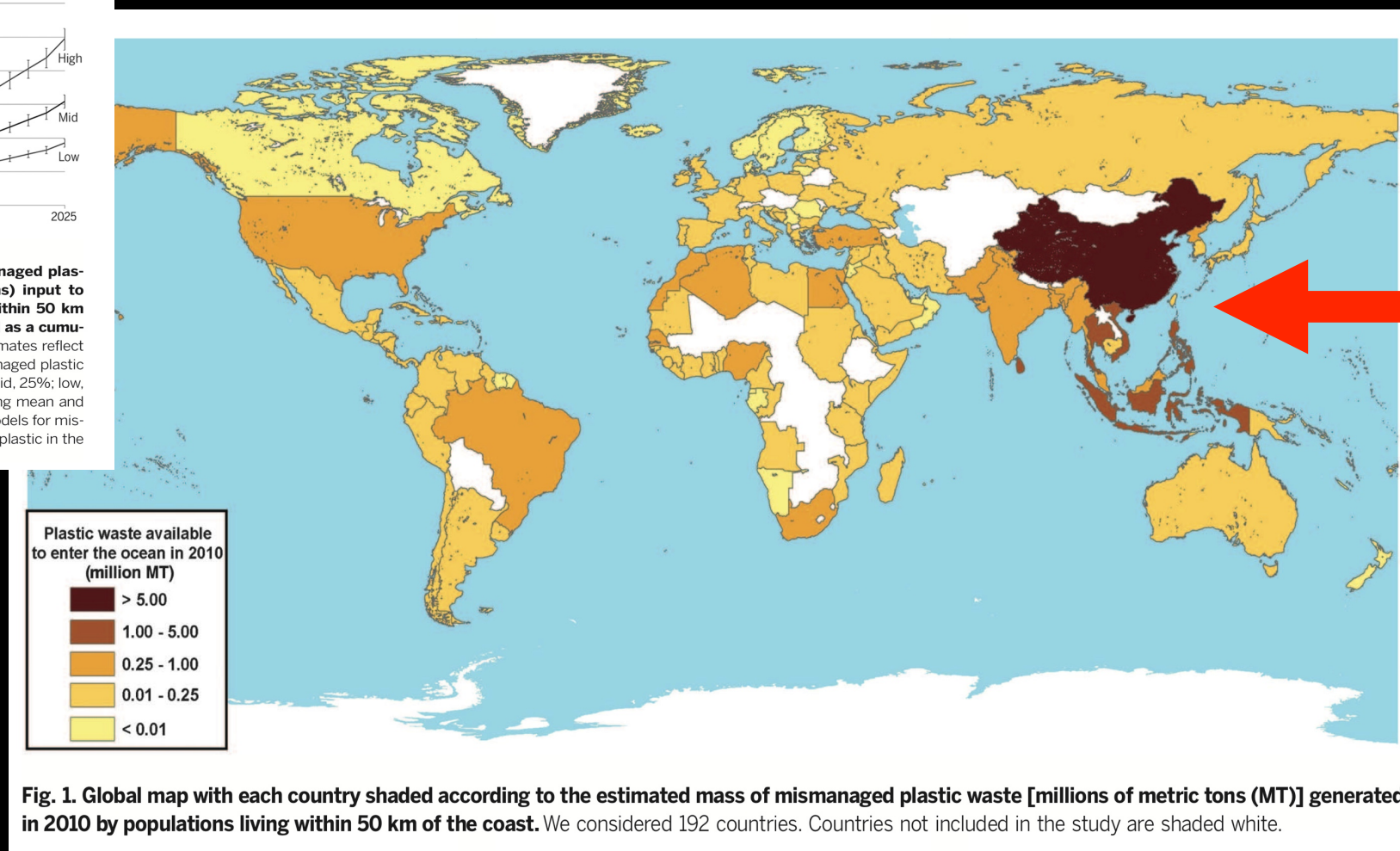
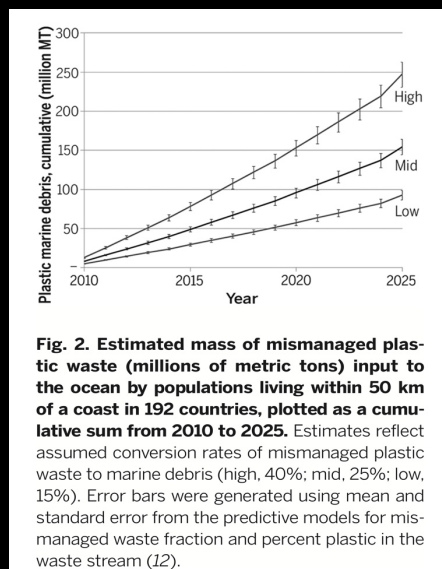
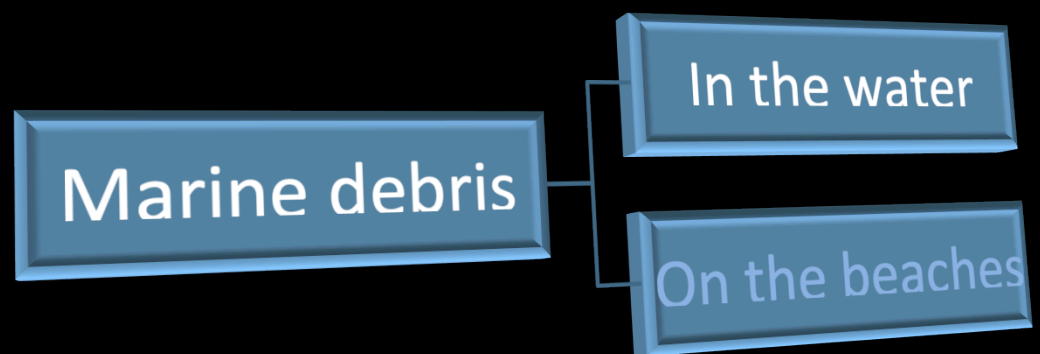


Fig. 1. Global map with each country shaded according to the estimated mass of mismanaged plastic waste [millions of metric tons (MT)] generated in 2010 by populations living within 50 km of the coast. We considered 192 countries. Countries not included in the study are shaded white.

The global estimated mass of mismanaged plastic waste generated in 2010





The abundance and composition of marine debris observed during transects in the Straits of Malacca (Ryan, 2013)



Type of litter	Straits of Malacca	
	<i>n</i>	%
All plastic items	17,524	98.8
Packaging	16,553	93.3
Bottles	1038	5.9
Tubs/cups	410	2.3
Bags/food wrappers	2932	16.5
Lids/lid-rings	452	2.5
Straws/sucker sticks	398	2.2
Polystyrene	11,211	63.2
Other packaging	112	0.6
Fishing/boating	243	1.4
Ropes	139	0.8
Floats	48	0.3
Other fishing/shipping	56	0.3
User items	131	0.7
Buckets	26	0.1
Shoes/gloves/hats	63	0.4
Other user items	42	0.2
Plastic fragments	597	3.4
All non-plastic items	216	1.2
Glass bottles	19	0.1
Light bulbs	36	0.2
Tins/aerosols	13	0.1
Wood	133	0.7
Cardboard/paper	15	0.1

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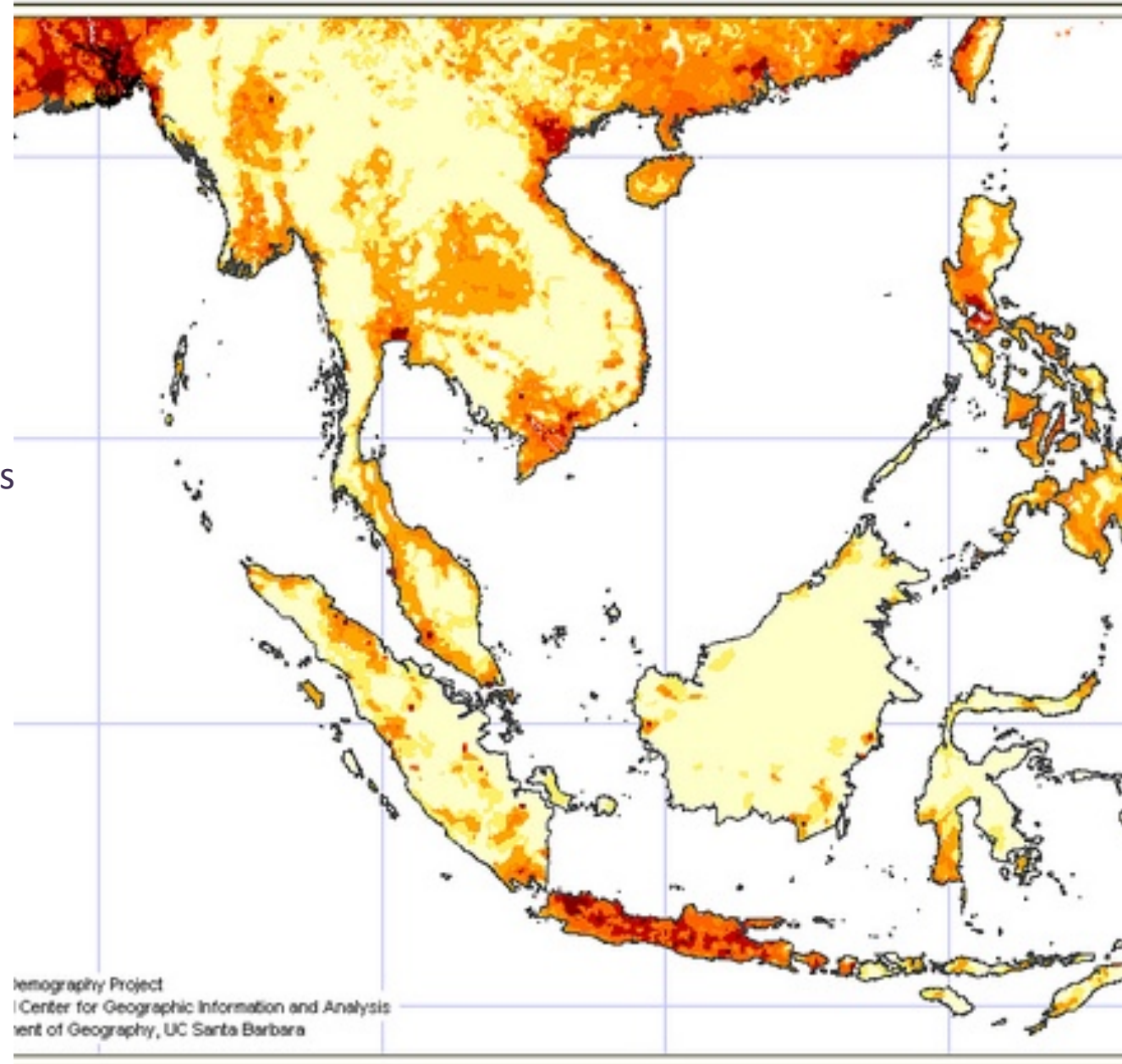
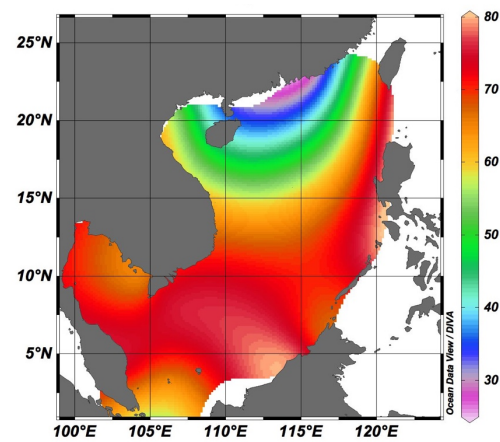
The proportion of litter items in different size classes
observed in the Bay of Bengal and Straits of Malacca (Ryan, 2013)



	<5 cm (%)	5–15 cm (%)	15–30 cm (%)	30–60 cm (%)	>60 cm (%)
Bay of Bengal overall	36.6	37.8	15.9	6.7	3.0
Northern area (A)	48.5	25.8	14.7	6.7	4.3
Remainder (B–D)	24.8	49.7	17.0	6.7	1.8
Straits of Malacca	25.1	51.6	17.5	4.8	1.0

Human Population
densities in the
Southeast Asian region
(inset: Coral Reef
diversity)

“Larger amount of debris
is associated with larger
population centres”
(Ryan 2013)



Marine debris

In the water

On the beaches



<http://shipmanagementinternational.com/>

Plastic debris nomenclature based on size

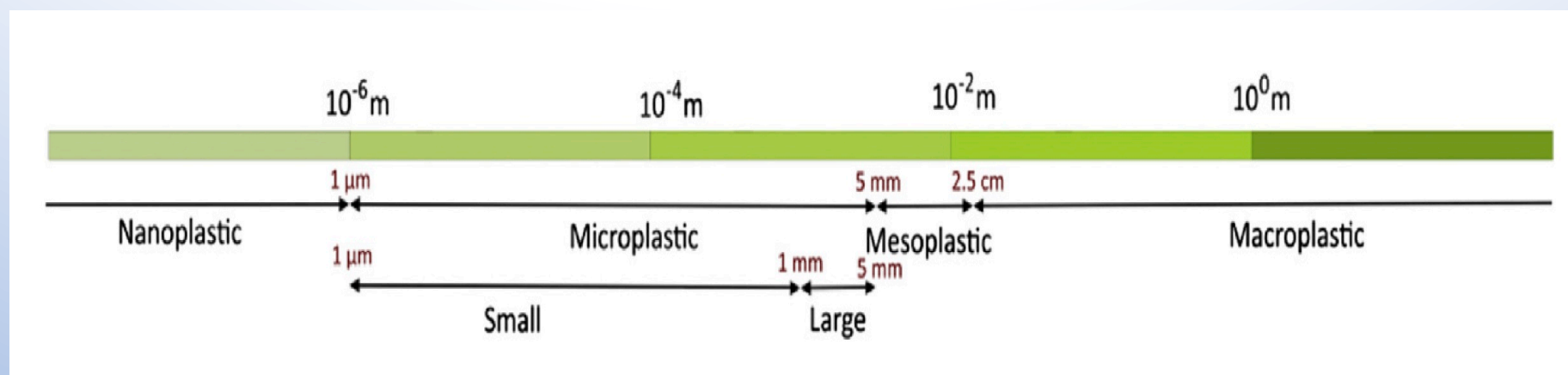


Fig. 2. Size matters. Suggestion of plastic debris nomenclature based on size, as proposed by the European MSFD technical subgroup on Marine Litter ([MSFD GES Technical Subgroup on Marine Litter, 2013](#)). The overall term “microplastic” is composed of small microplastics (SMPs, smaller than 1 mm) and large microplastics (LMPs, 1–5 mm), to differentiate between two commonly used definitions of microplastics.

(Source: Van Cauwenberghe, L., *et al.* "Microplastics in sediments: a review of techniques, occurrence and effects." *Marine Environmental Research* 111 (2015): 5-17)

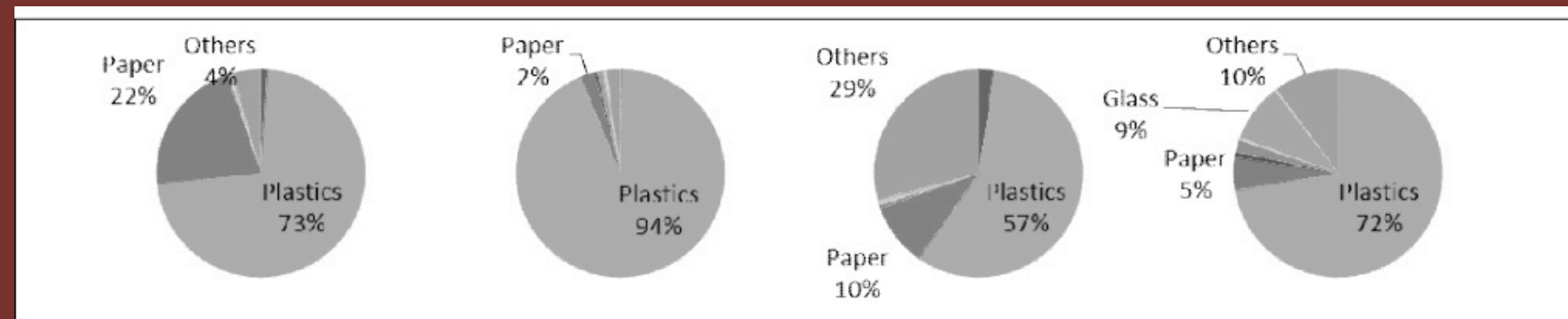


Figure 2 Composition of debris on four selected beaches based on number of item (From left: Teluk Kemang, Pasir Panjang, Batu Burok, and Seberang Takir)

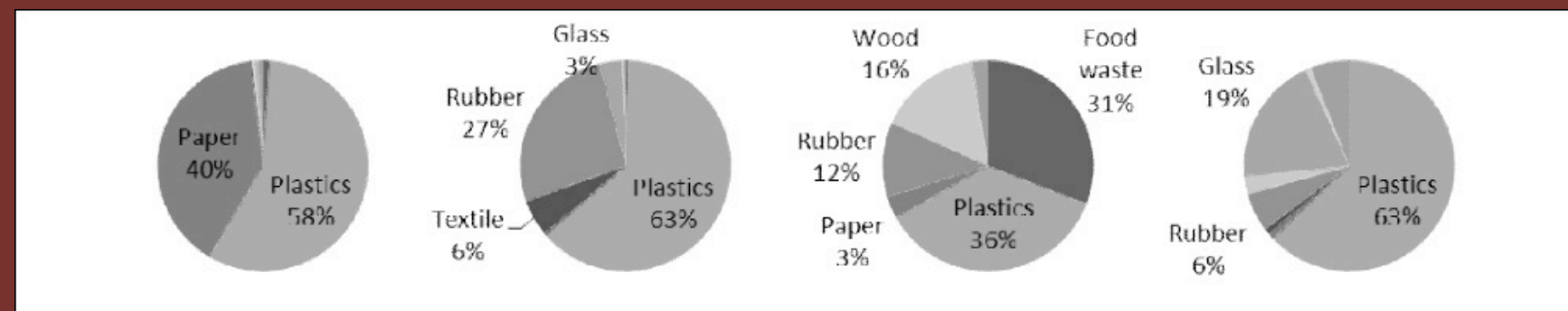


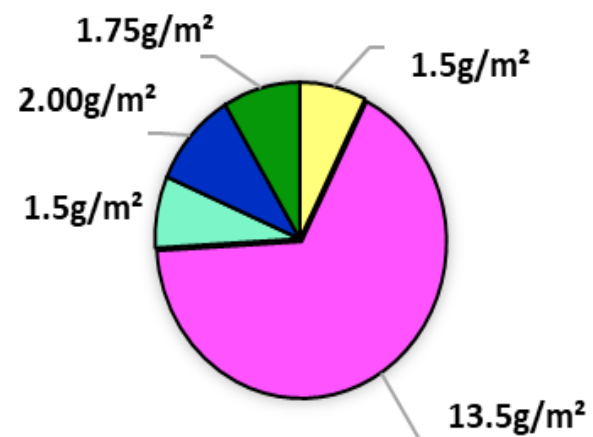
Figure 3 Composition of debris on four selected beaches based on weight (From left: Teluk Kemang, Pasir Panjang, Batu Burok, and Seberang Takir) (Agamuthu *et al.*, 2012)

PLASTICS PREDOMINATE

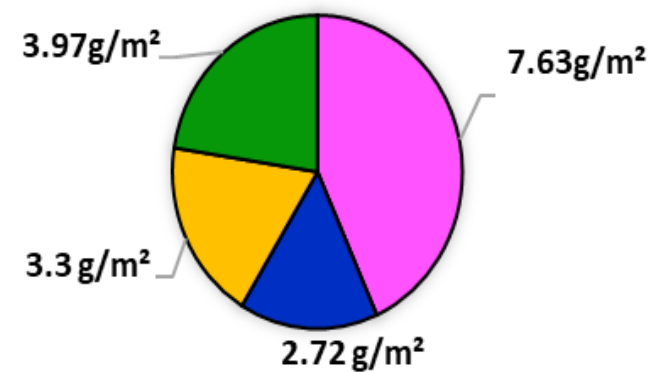
Macroplastic on Penang beaches

Generally: Packaging > Other > Agriculture > Household >...

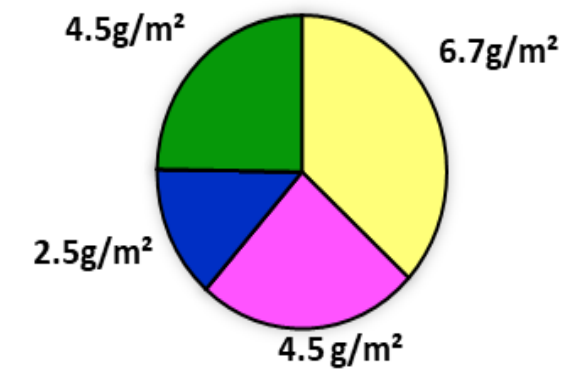
BALIK PULAU



PASIR PANJANG



TELUK ALING



Legend

Construction

Agriculture

Automotive

Other

Packaging

Household

Electrical and Electronic

INTERNATIONAL COLLABORATION ON MARINE LITTER

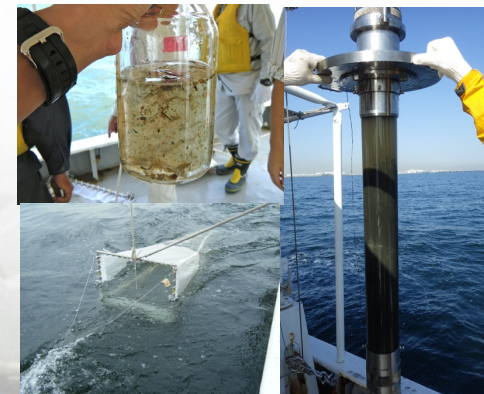


WESTPAC
10th International Scientific Conference
17-20 April 2017 Qingdao, China

***“Advancing Ocean Knowledge, Fostering
Sustainable Development:
from the Indo-Pacific to the Globe”***



Dr. Shige Takada (Japan)

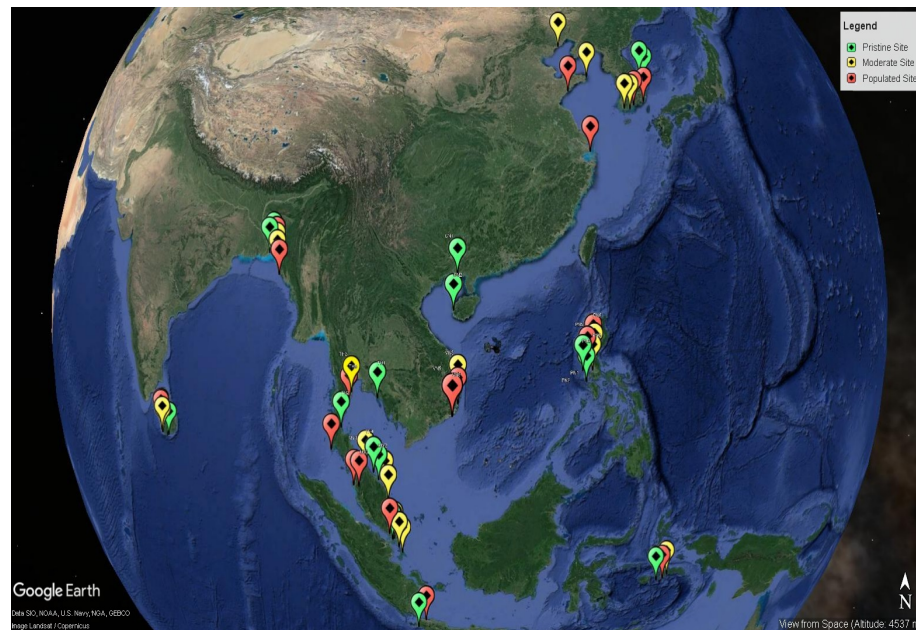


Marine plastics and microplastics: Threat to marine ecosystem



WESTPAC Microplastic Research Programme

Major activities in the inception phase

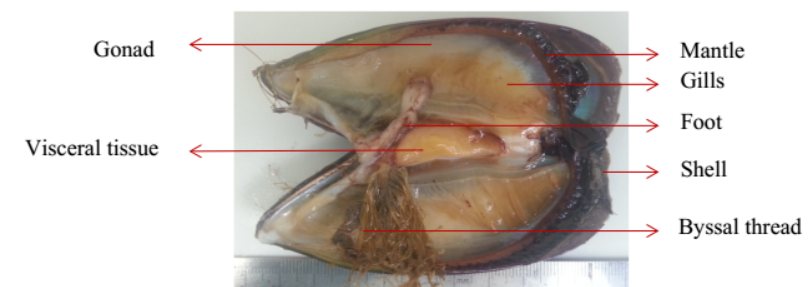


IV. Pilot sites selection in beaches

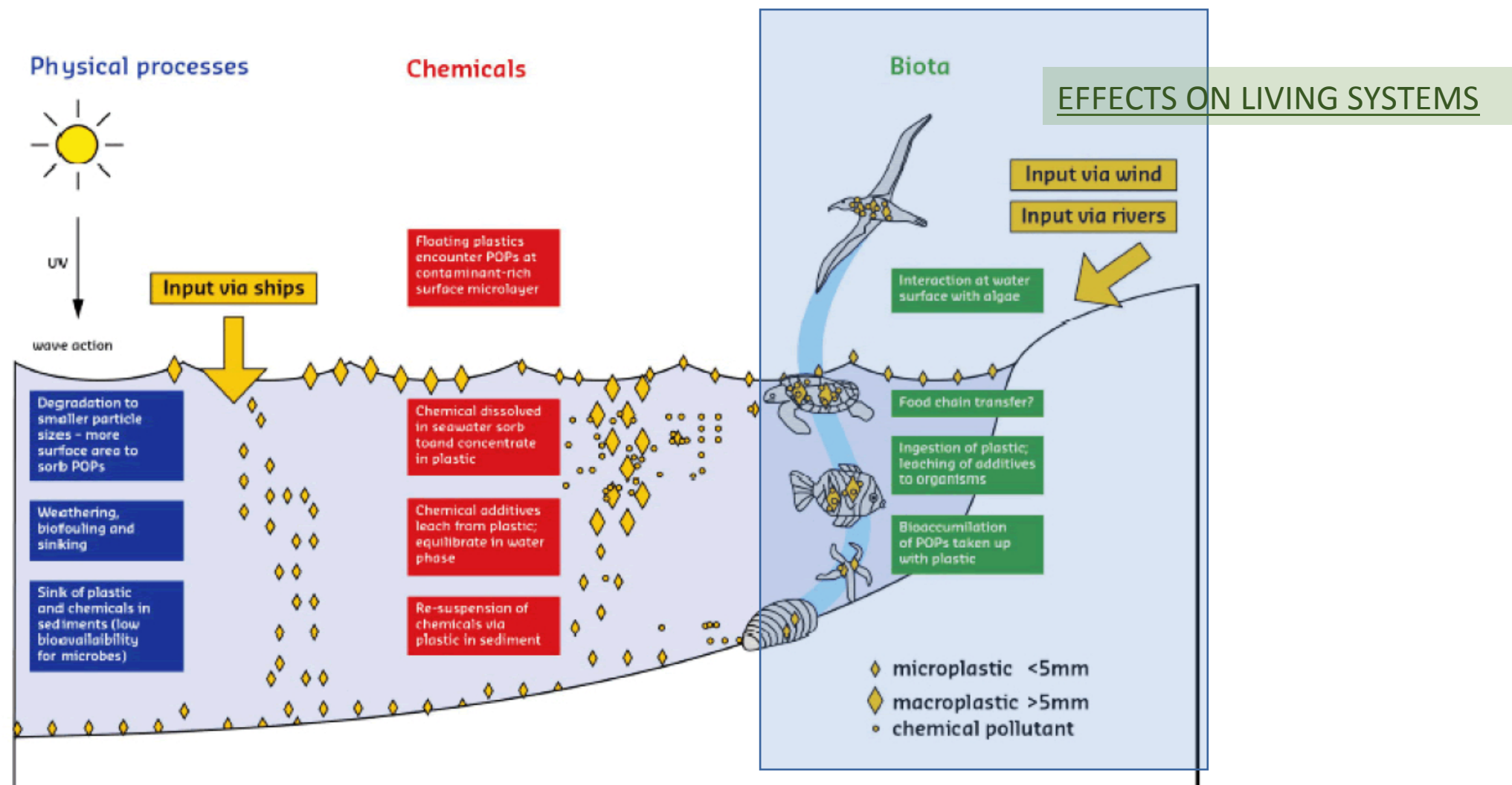
V. Establishment of open-ended Working Groups (WGs)

Two Working Groups:

- i. Microplastics in Surface Water WG:
- ii. Microplastics in Marine Organism WG:



Sources of marine MP & the various physical, chemical & biological processes affecting MP in the marine environment



(Source: Leslie H.A., *et al.* (2013) Microplastic survey of the Dutch environment. Novel data set of microplastics in North Sea sediments, treated wastewater effluents and marine biota. Amsterdam, The Netherlands: IVM Institute for Environmental Studies, Final report R-13/11)

COLLABORATION ON THE STRAITS OF MALACCA

