

Seminário sobre Lixo Marinho
20 Maio 2015, Gare Marítima da Rocha Conde
d'Óbidos



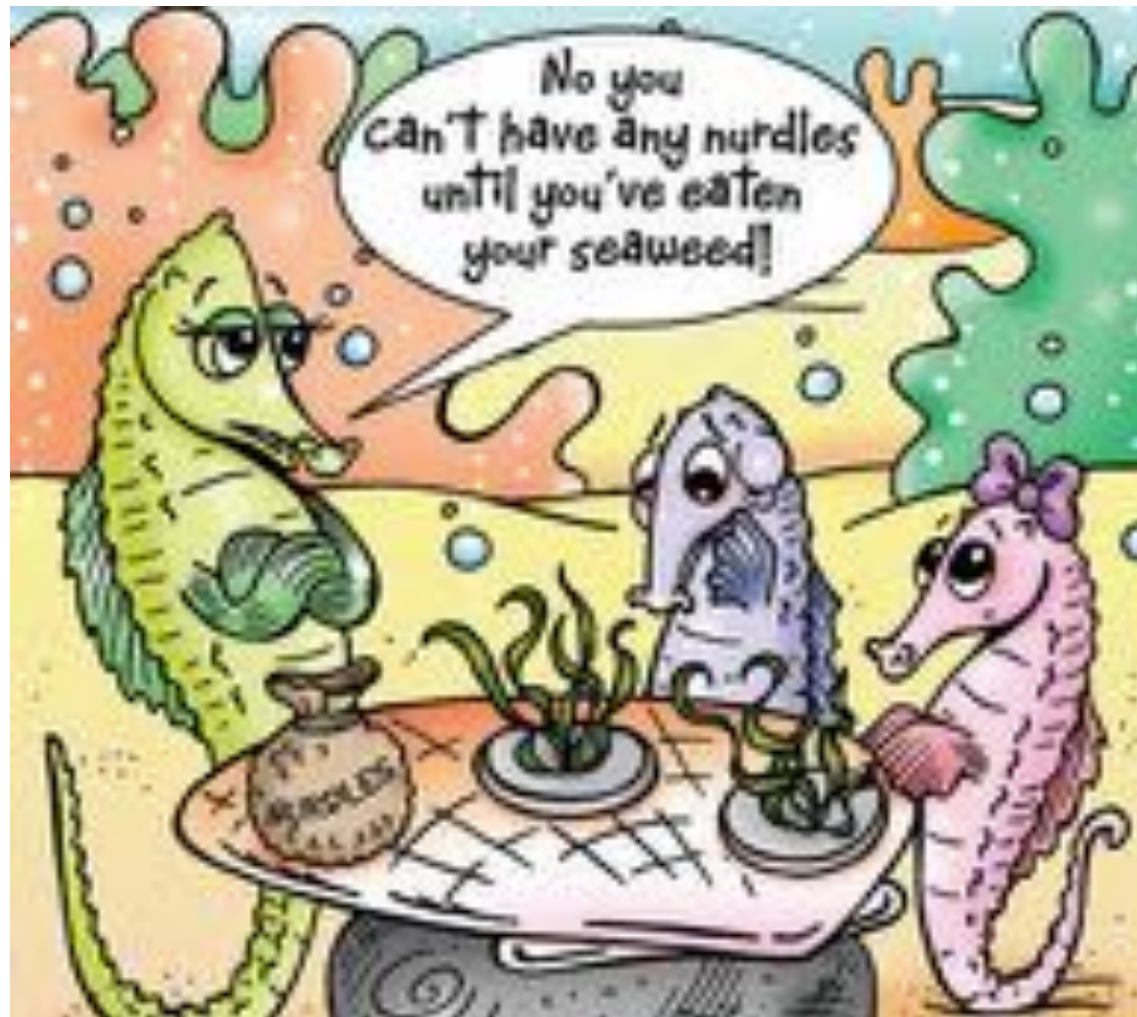
Microplásticos: uma ameaça invisível

Paula Sobral
FCTUNL - MARE



O problema das pastilhas de resina

The trouble with nurdles



Frontiers in Ecology, 2007







Austrália

Almogrove, Portugal

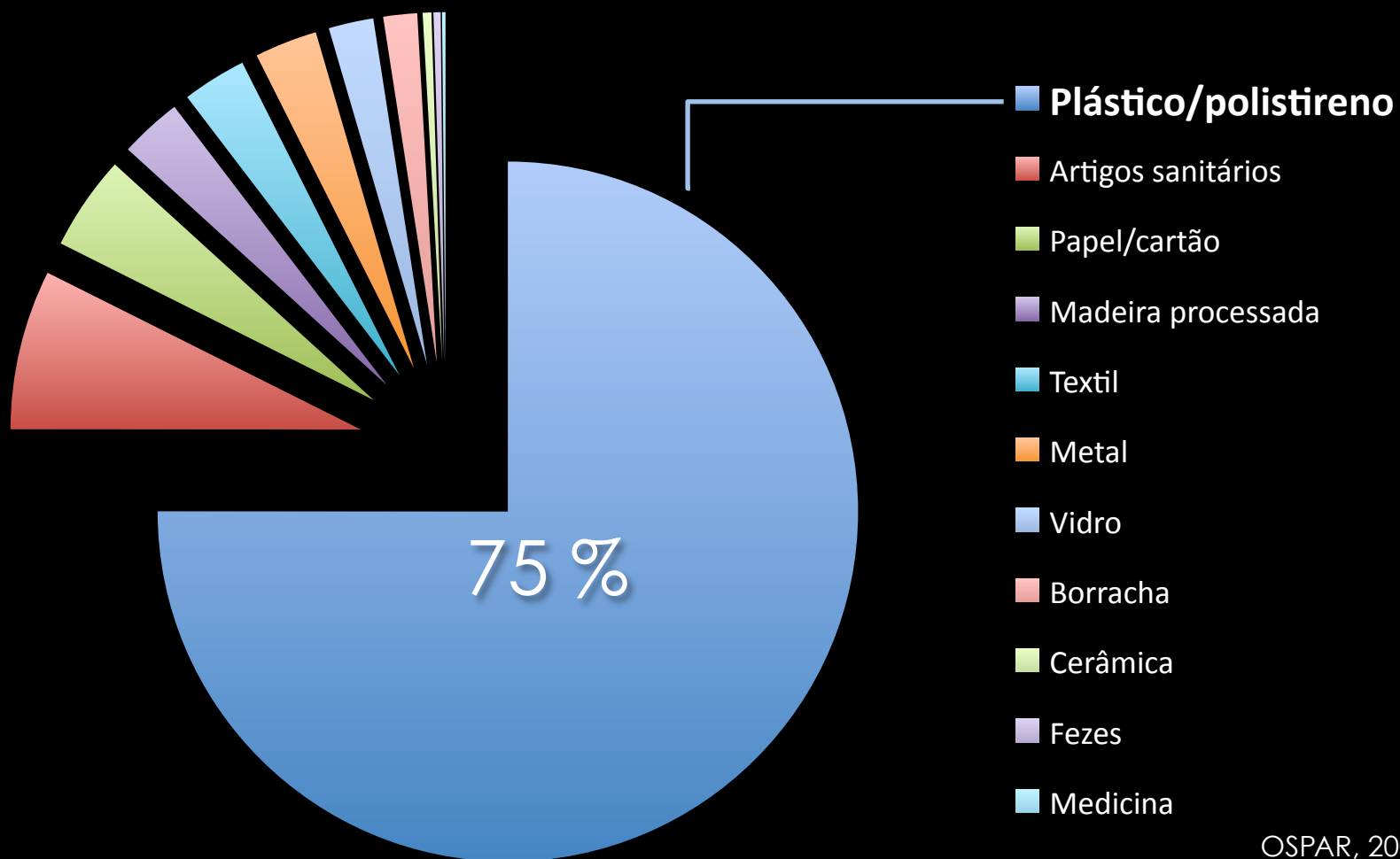


Foto Isabel Palma



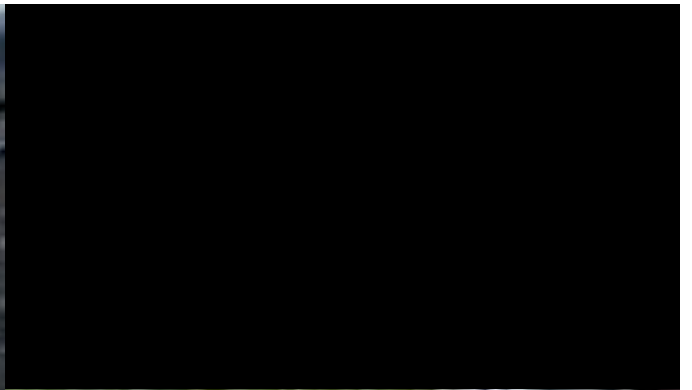
Lixo marinho encontrado nas praias

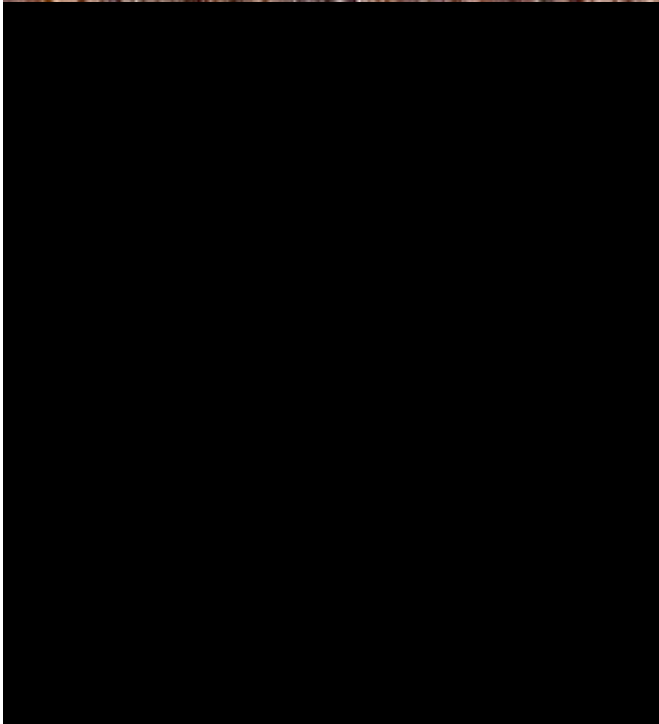
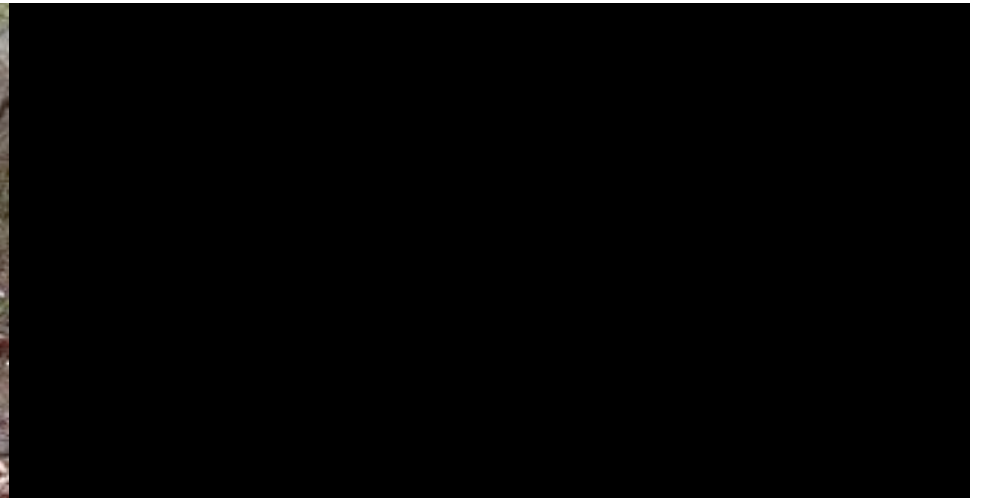
(2001-2006)



OSPAR, 2007

Resultados de 609 campanhas de recolha de lixo marinho em 51 praias da Europa







Rio poluído em Manila, Filipinas

(Março, 2009)

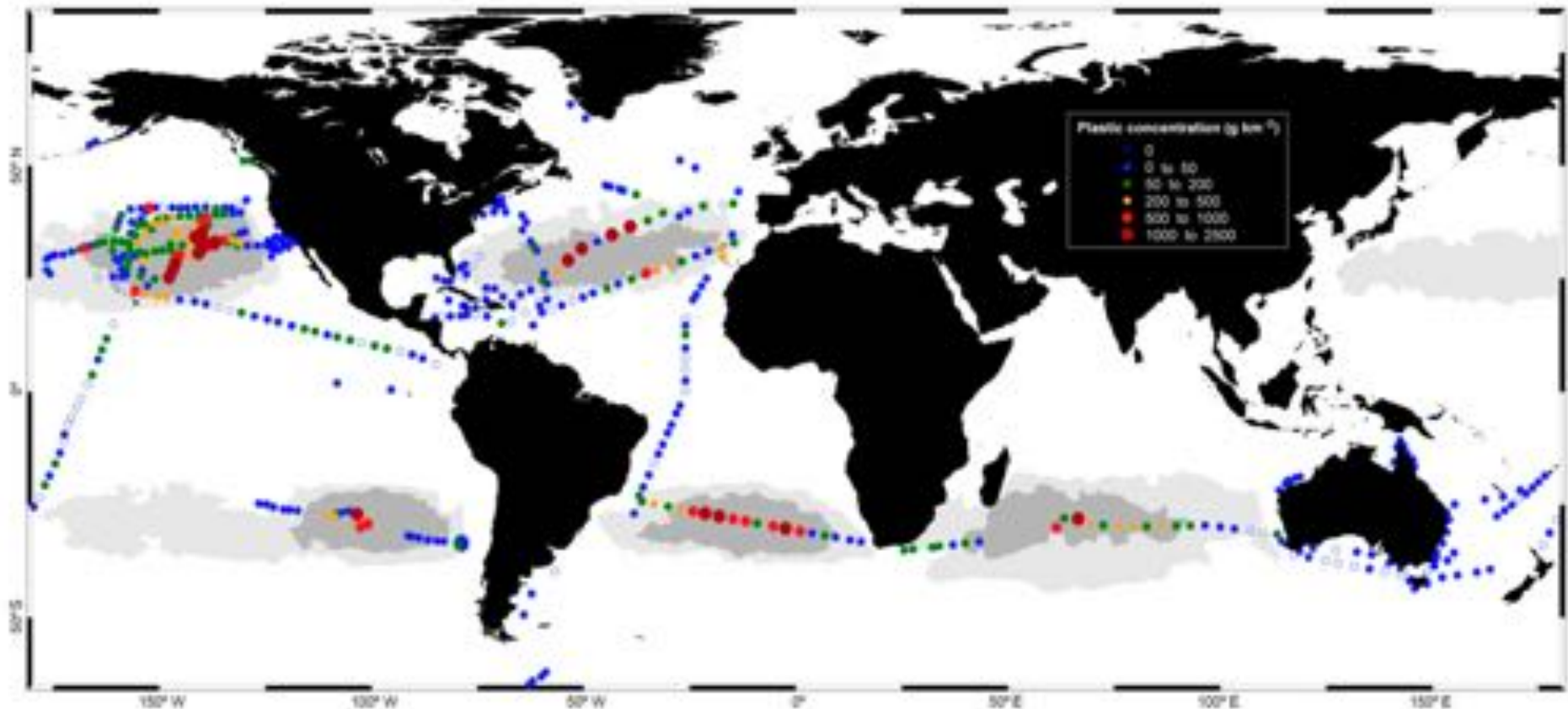


Image by Plastic Pollution Coalition

Marine litter – where does it go?



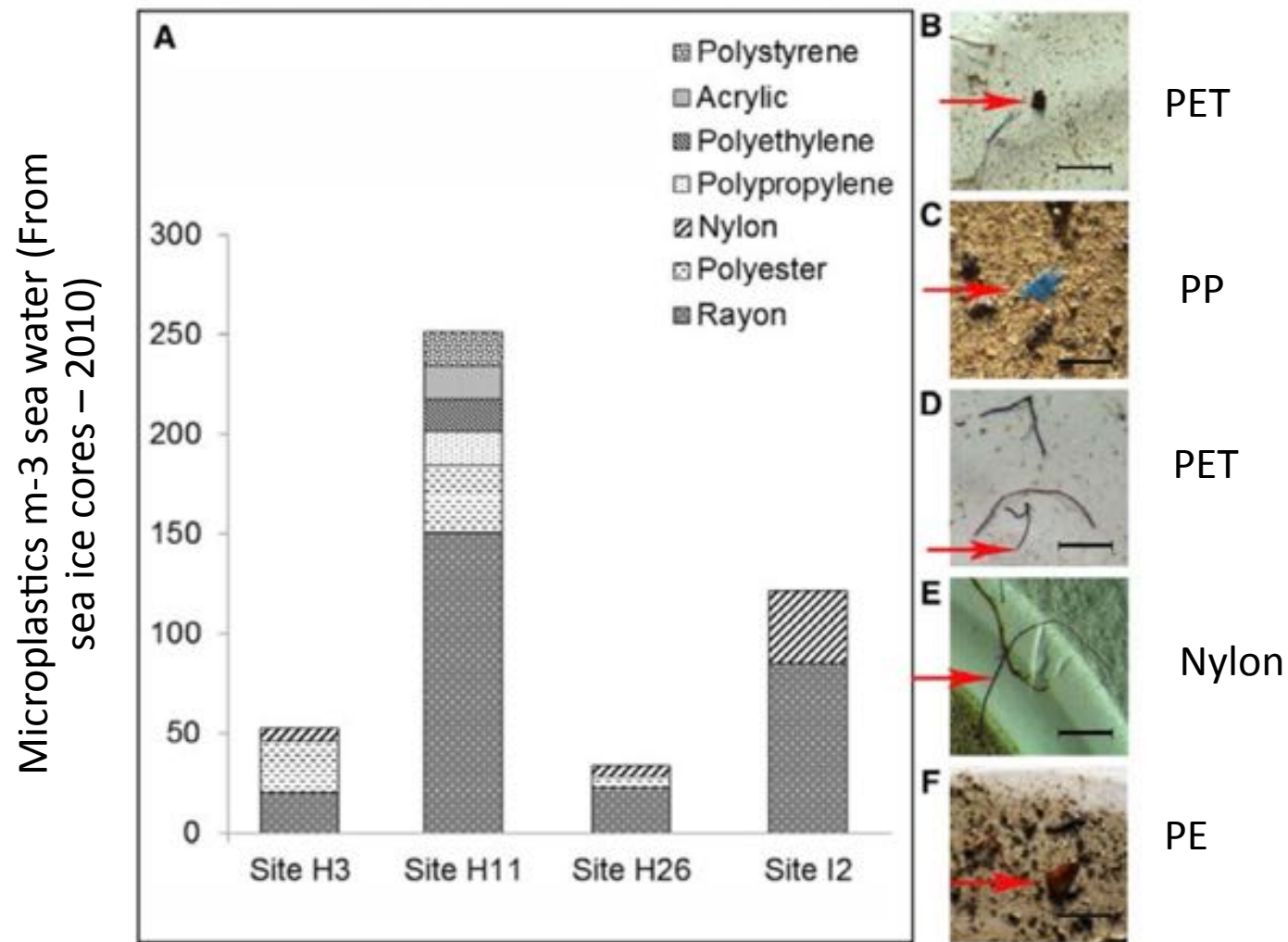
Plástico nos oceanos



Concentração à superfície (g km^{-2})

Cózar e al, 2014

Microplásticos no gelo do Ártico



Obbard, et al. 2014. **Global warming releases microplastic legacy frozen in Arctic Sea ice.** doi:10.1002/2014EF000240 (Earth's Future)



Projecto POIZON



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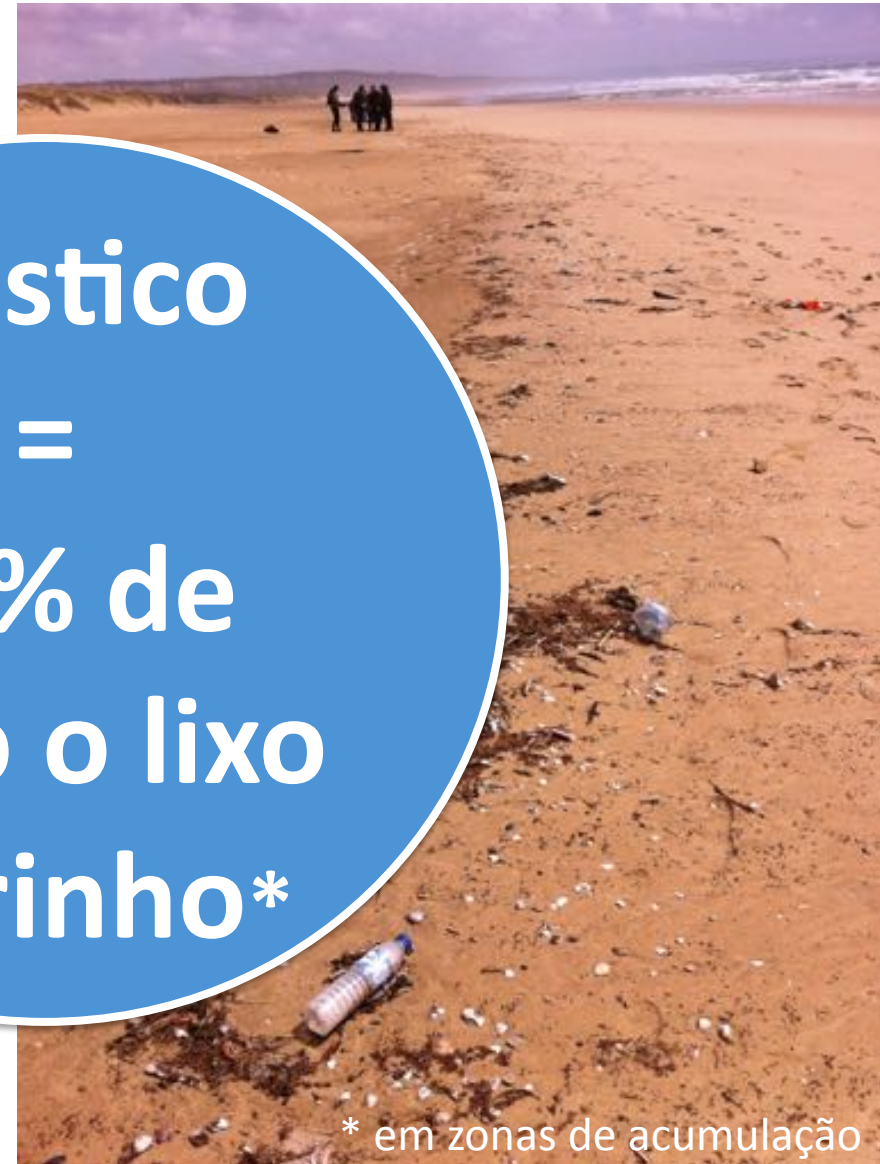
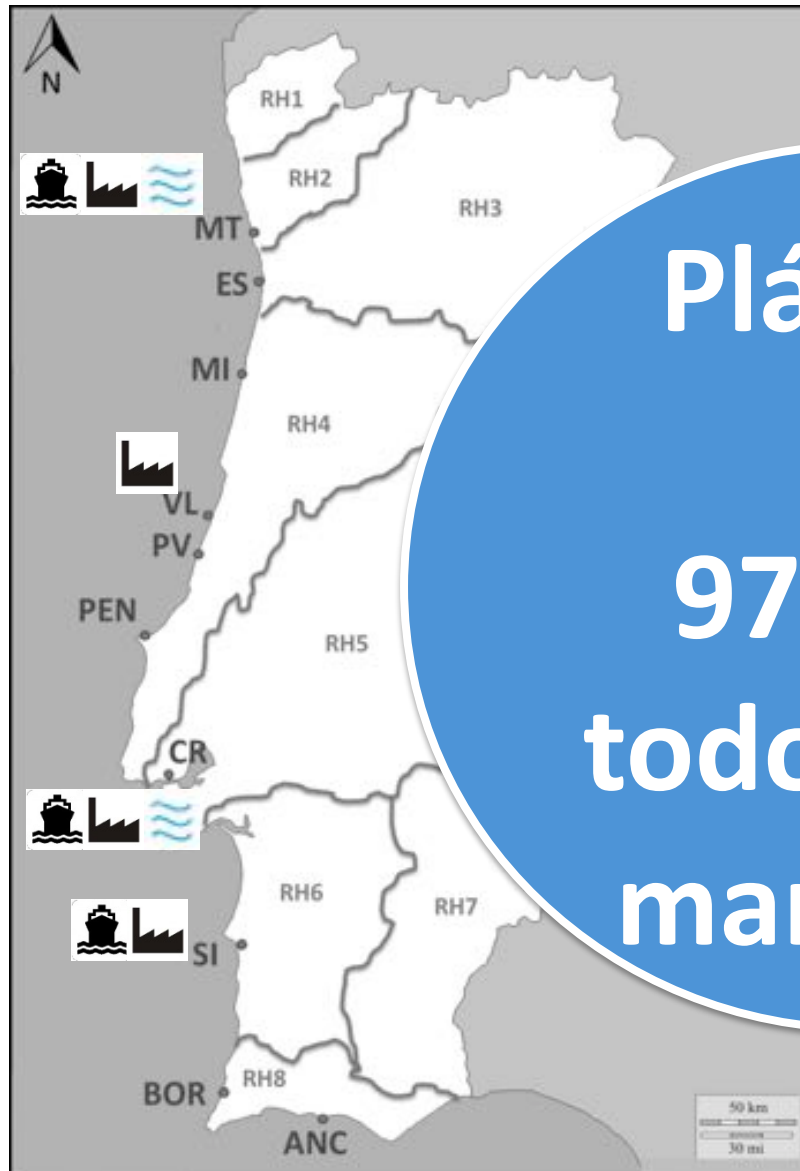
Departamento de Ciências e Engenharia do Ambiente



Ref PDCT/MAR/102776/2008



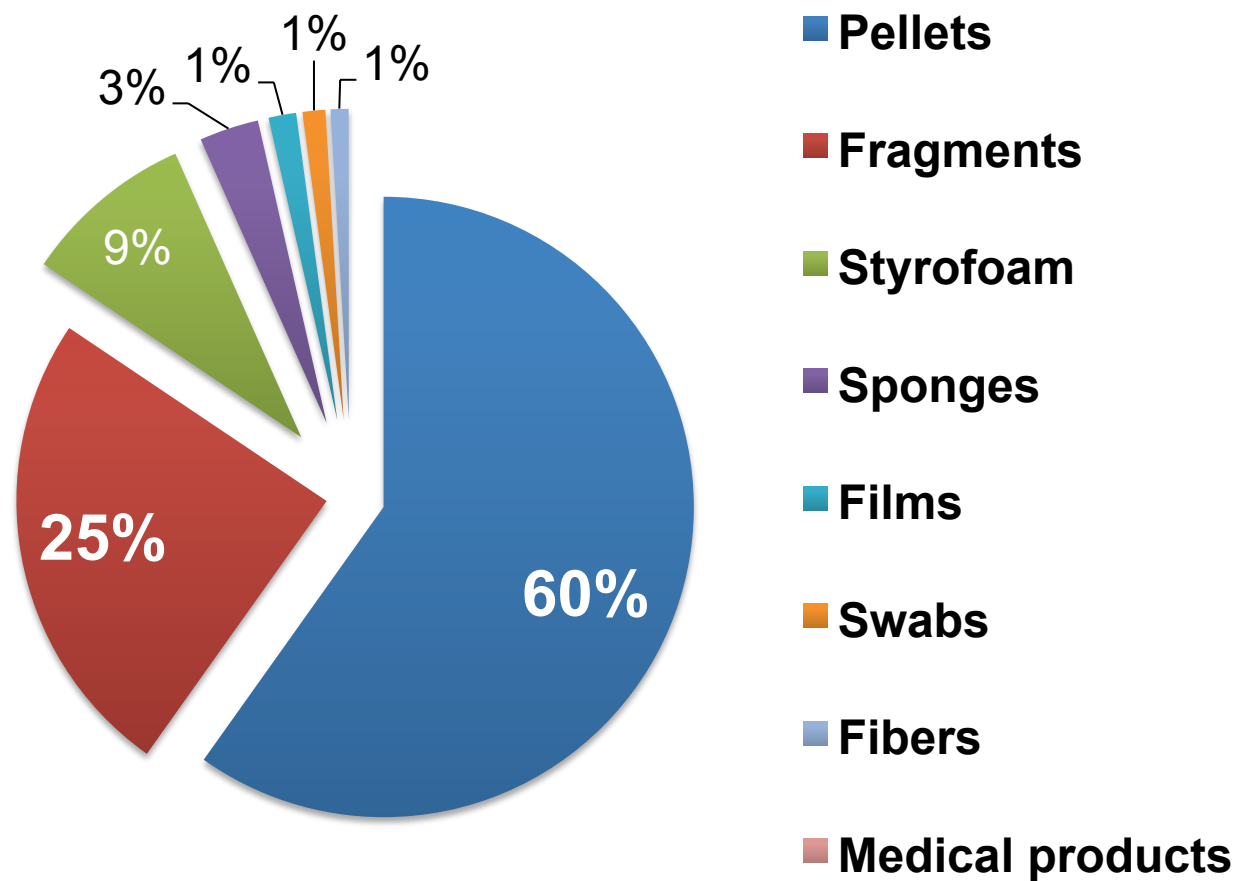
www.poizonproject.org



Plástico
=
97% de
todo o lixo
marinho*

* em zonas de acumulação

Plástico - itens m⁻²



Size sorting



POIZON Project



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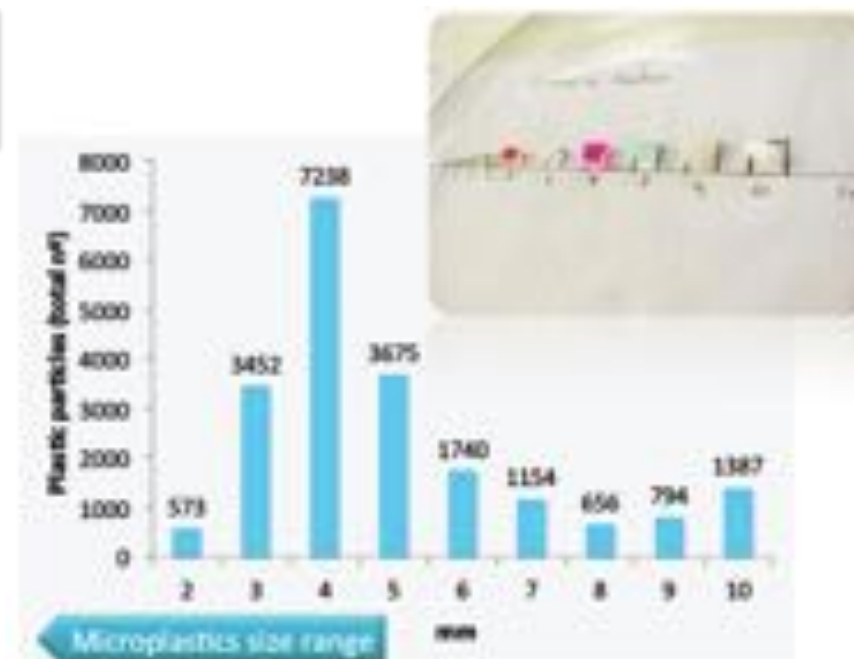
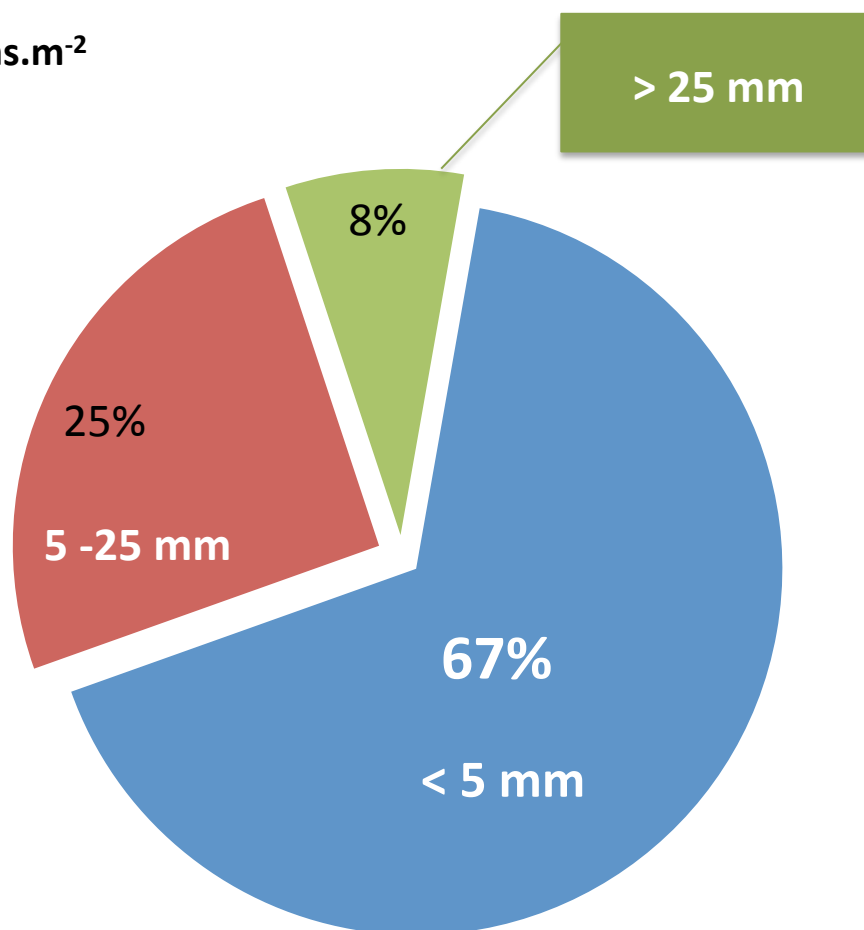


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Dimensões

Itens.m⁻²



A teal-colored plastic bottle cap is centered on a sandy beach. The cap has a textured, ribbed edge. Scattered around the cap are several small pieces of trash, including a piece of red and white checkered fabric and some white debris. The text "92 % do lixo plástico é mais pequeno que a tampa de uma garrafa" is overlaid on the cap in white.

92 % do lixo
plástico é mais
pequeno que a
tampa de uma
garrafa

Degradação do plástico nos oceanos

- Foto-degradação (raios solares, UV)
- Abrasão (fricção com água ou outros plásticos)
- Salinidade
- Temperatura

Fragmentos cada vez
mais pequenos >>
microplásticos





Fragments collected in Portugal
Joana Martins UNEP-CMS

Microplásticos



Via directa
(primários)

Via indirecta
(secundários)

Microplásticos em produtos de higiene pessoal e de limpeza



Exfoliantes (20 μm – 1 mm)

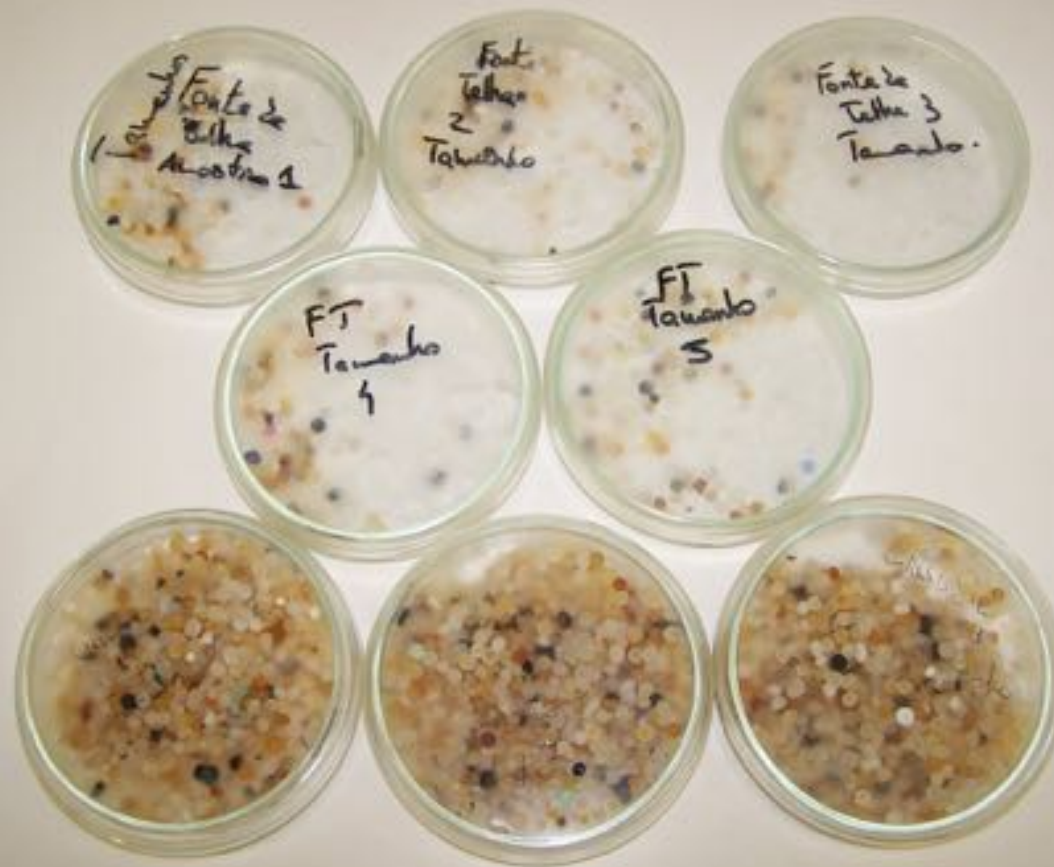
Introdução directa no meio aquático

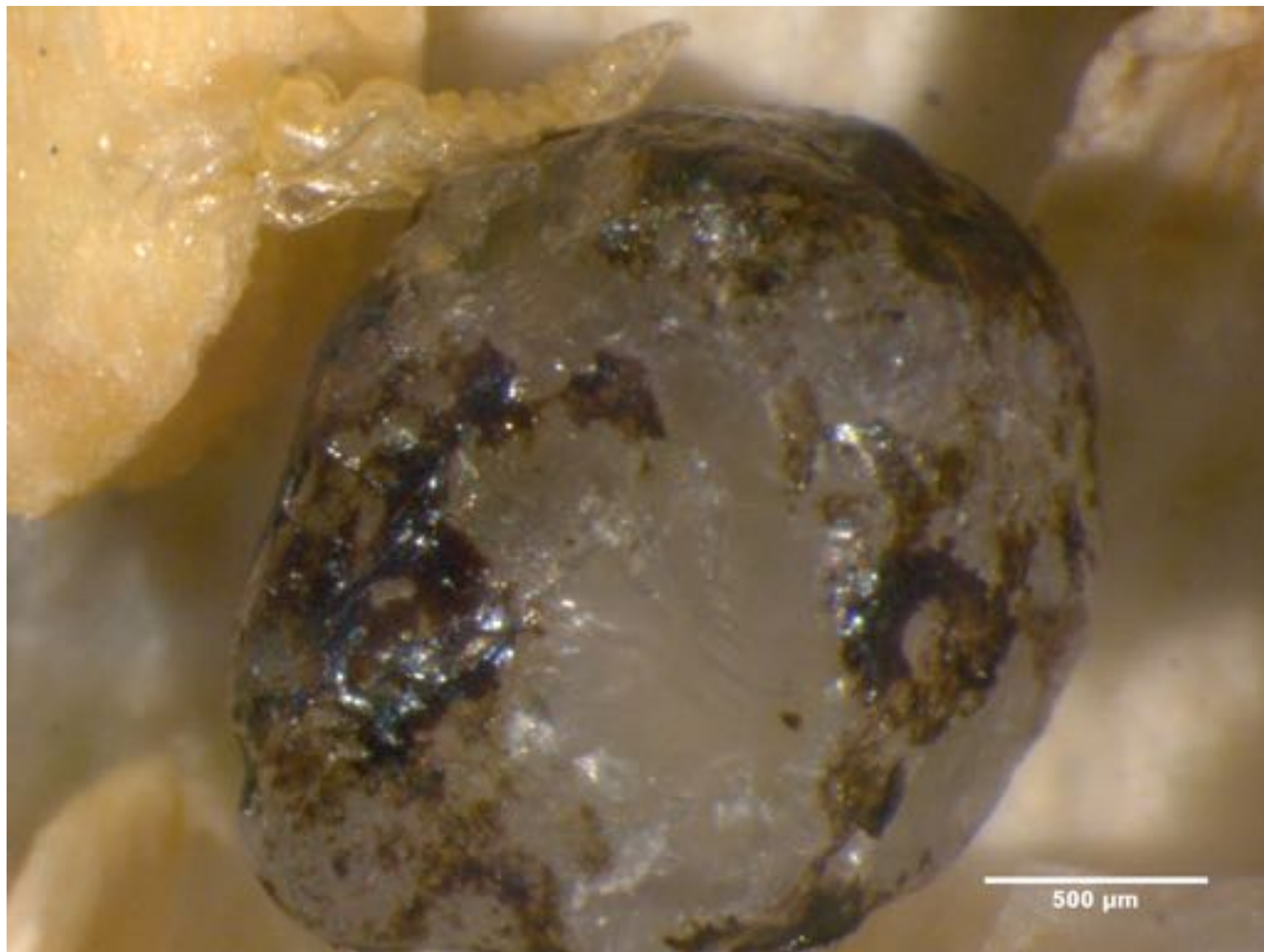




Pastilhas de resina - pellets

Resina virgem e reciclada



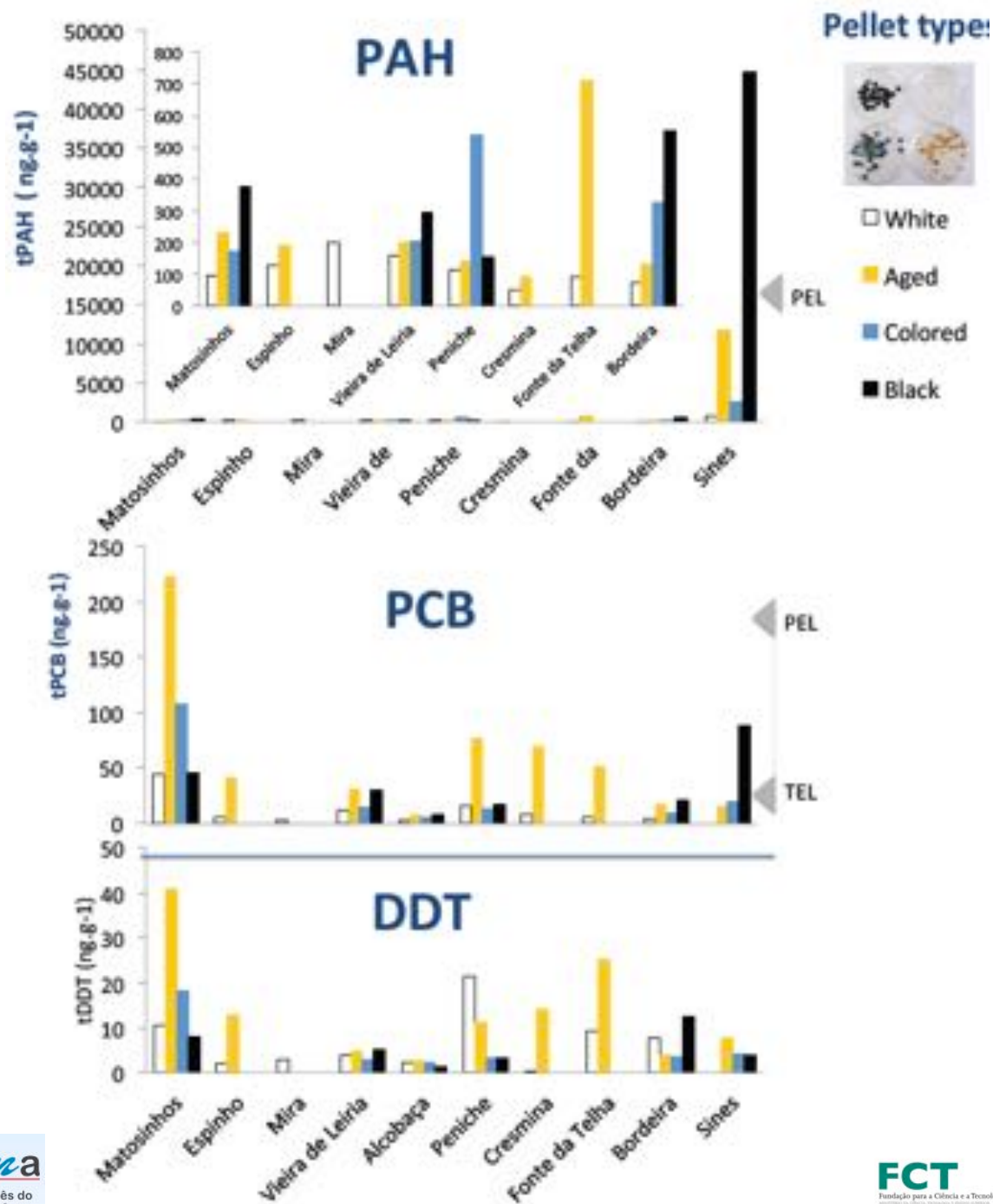


Persistent organic pollutants

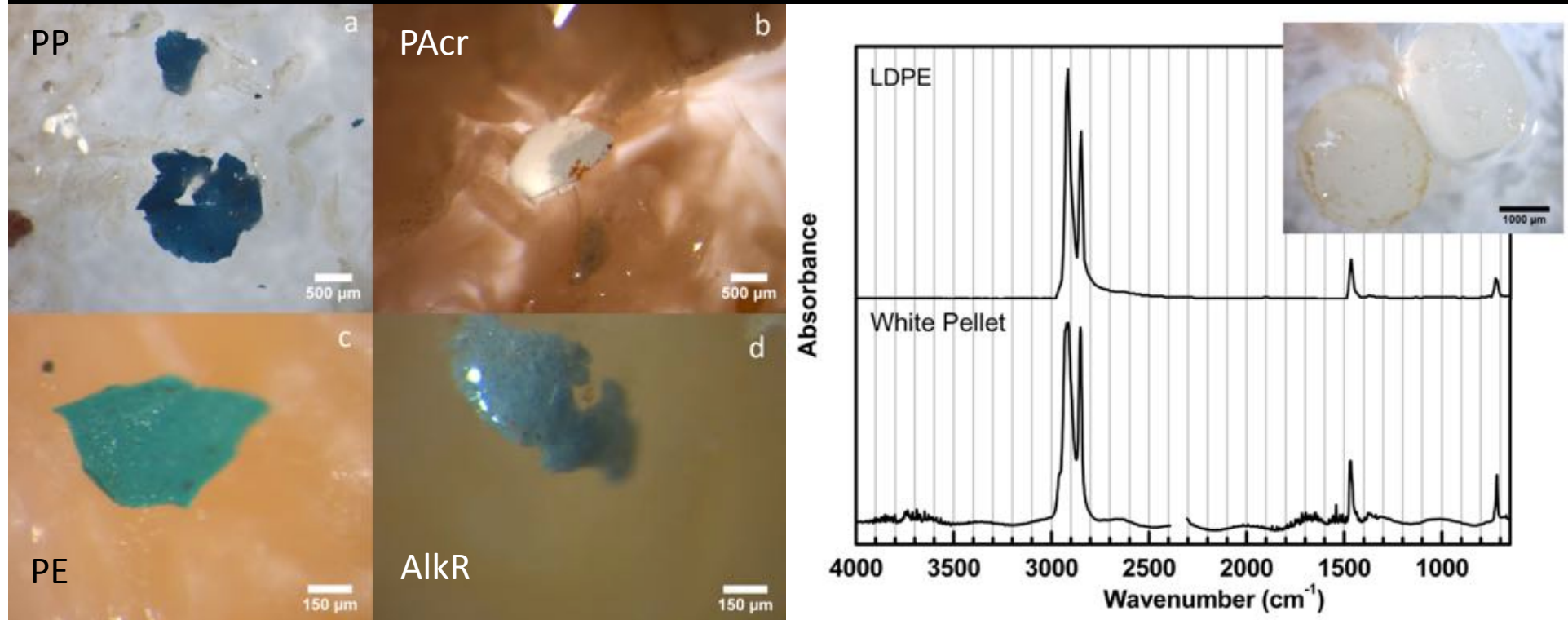
Spring 2012

Antunes et al. 2013. Estuarine, Coastal and Shelf Science, 130: 62-69. doi:<http://dx.doi.org/10.1016/j.ecss.2013.06.016>

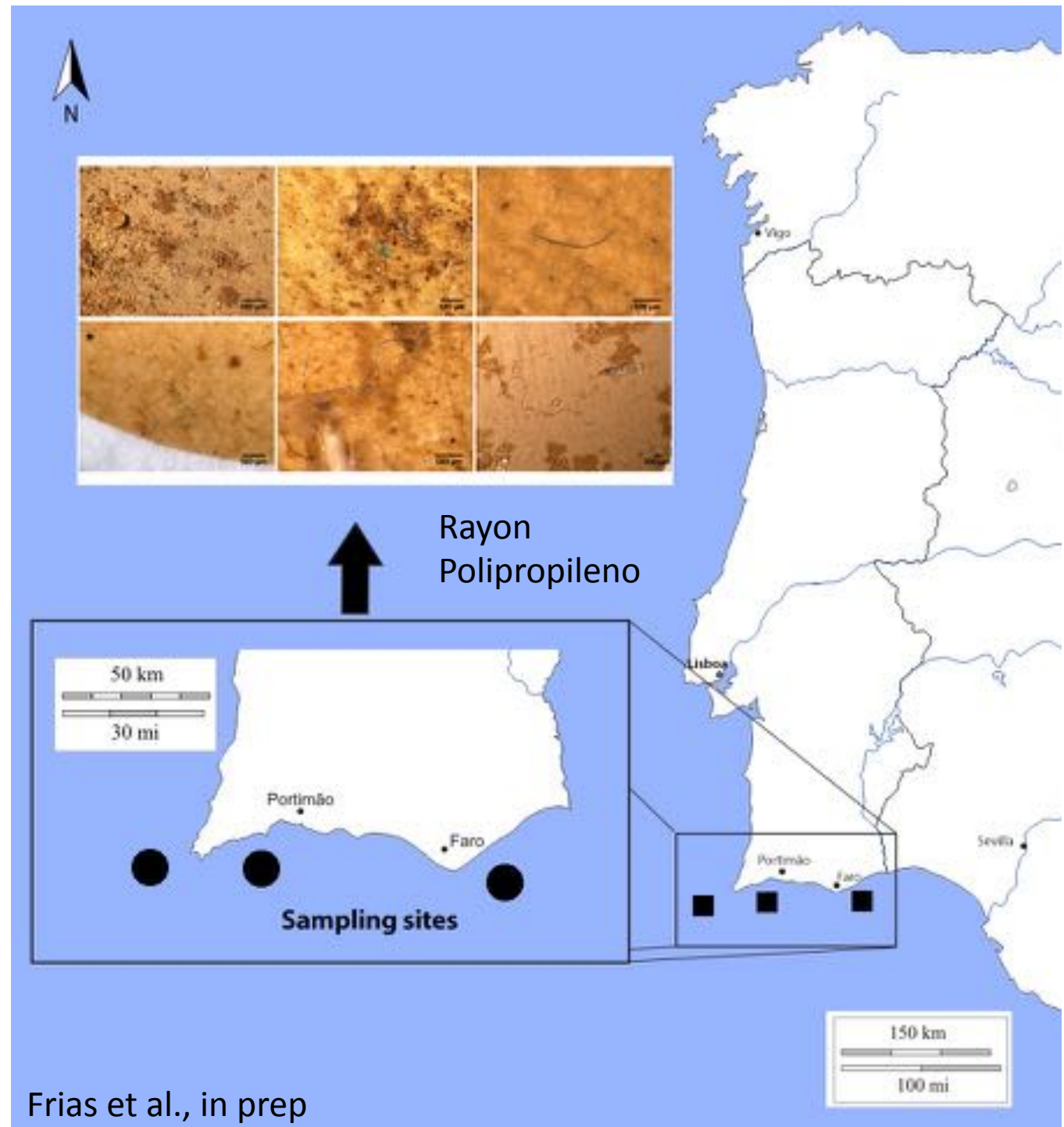
Mizukawa, et al. 2013. Mar. Poll. Bull. (70), 296-302. <http://dx.doi.org/10.1016/j.marpolbul.2013.02.008>

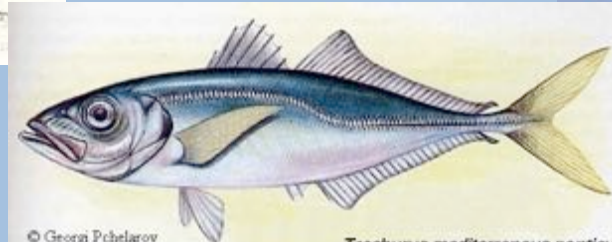
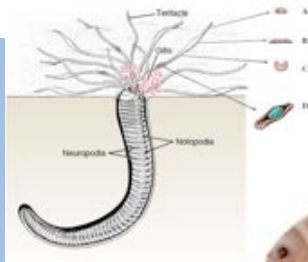


Microplastics in zooplankton samples



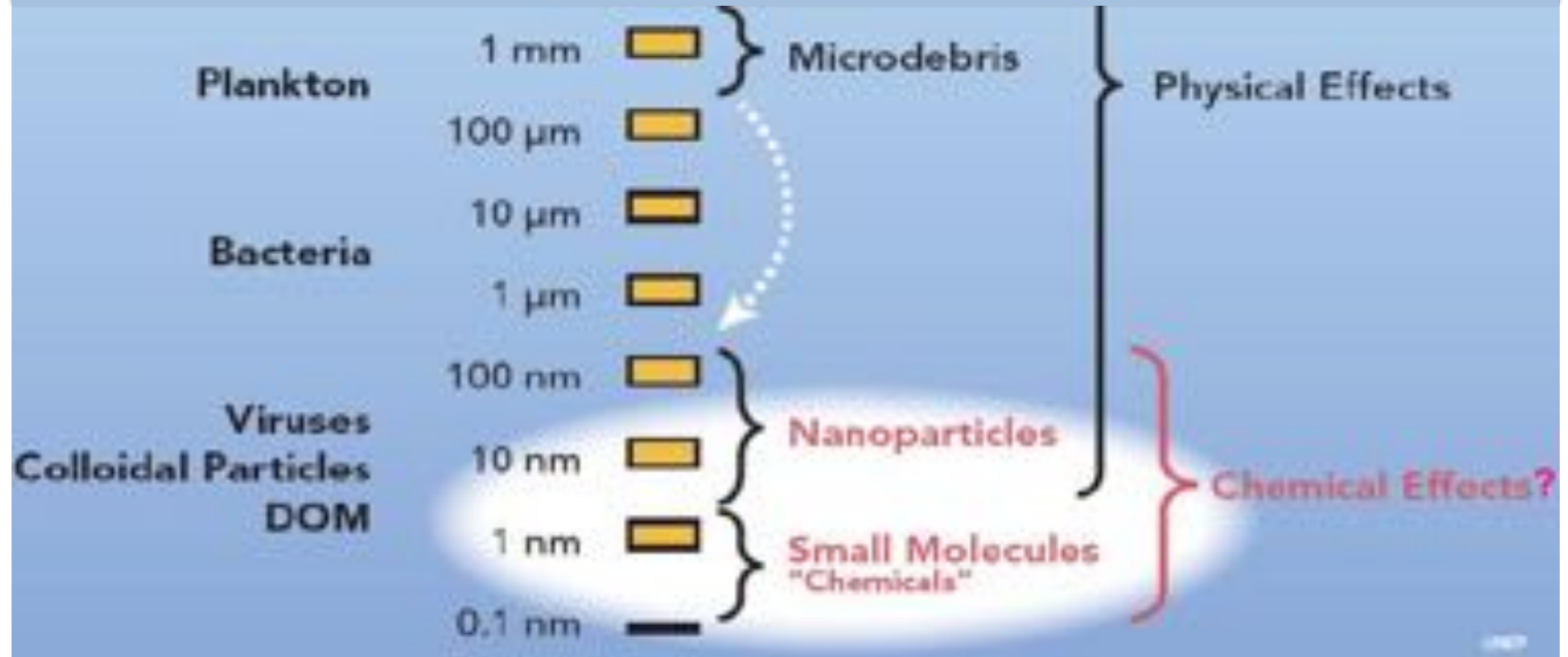
Microplásticos em sedimentos costeiros



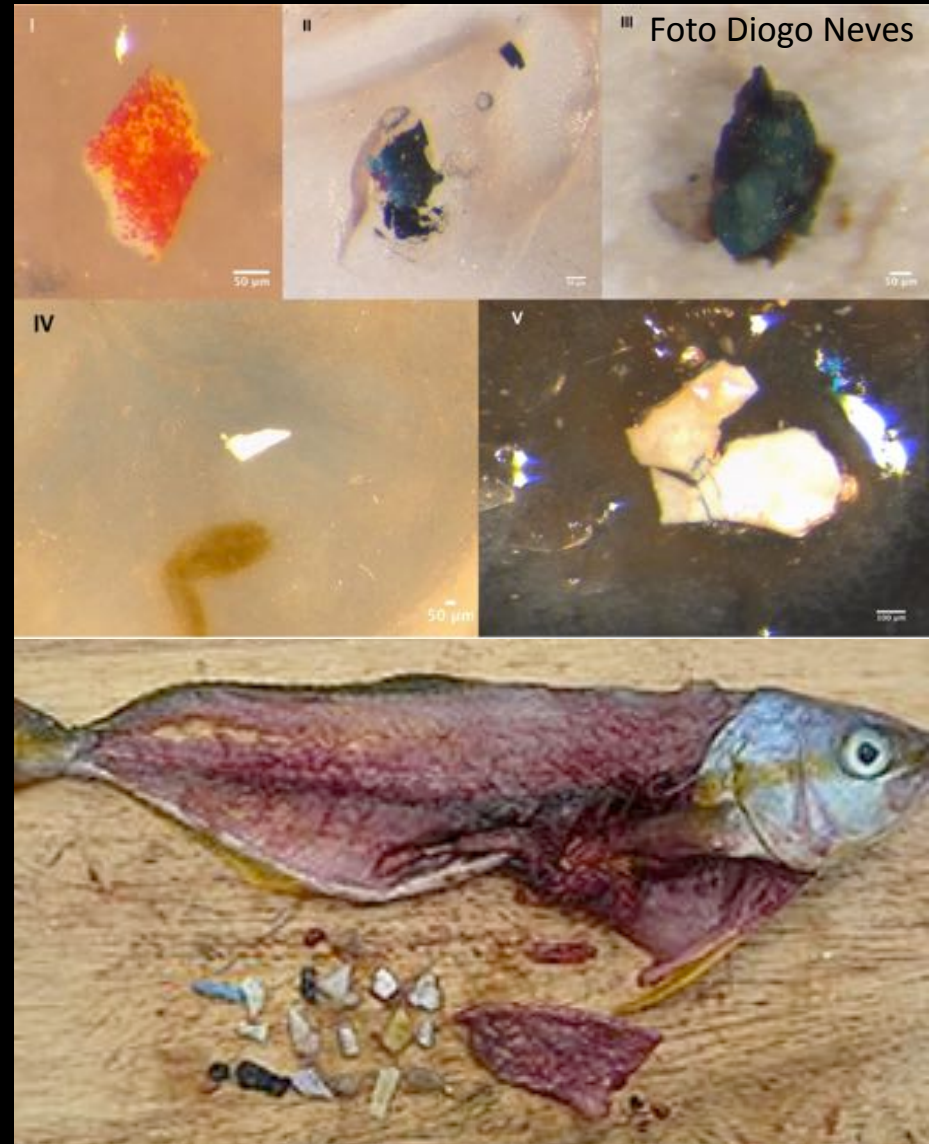


© Georgi Pchelarov

Trachurus mediterraneus ponticus

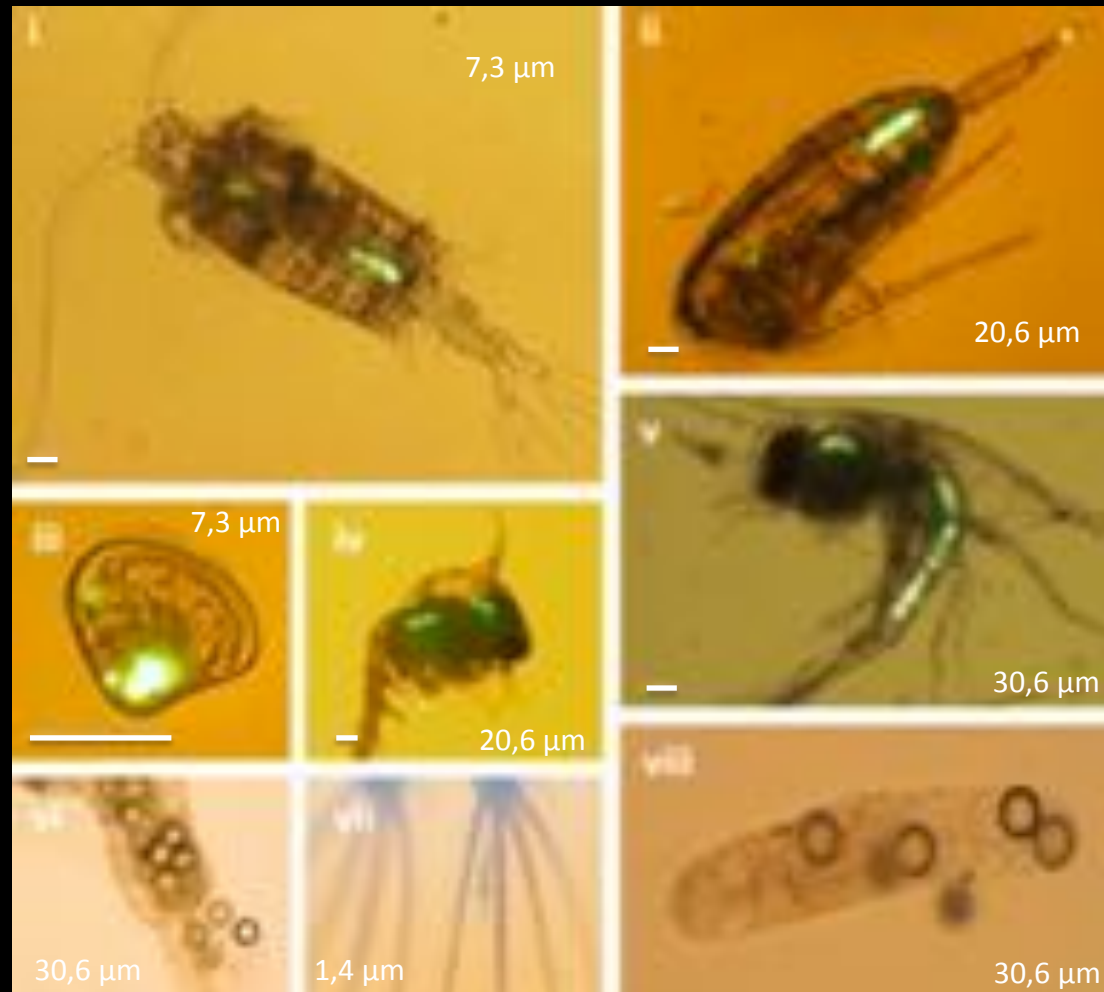


Ingestão de microplásticos



Microplásticos em zooplankton

Partículas de polistireno

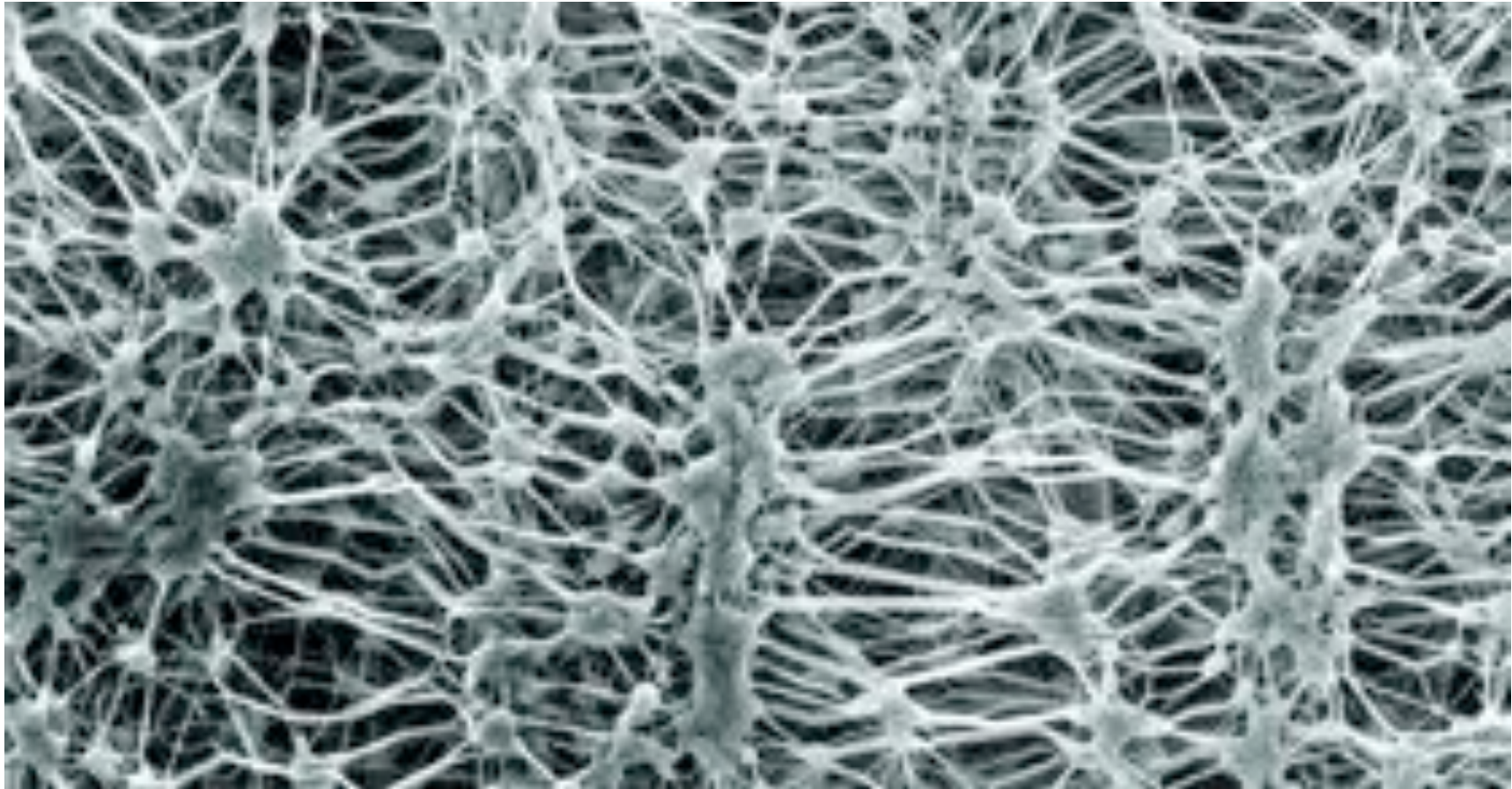


Scale: 100 µm

Cole, M. 2013. Environ. Sci. Technol., 47, 6646–6655



Fibras sintéticas



Browne et al., 2011
[dx.doi.org/10.1021/es201811s](https://doi.org/10.1021/es201811s)

Beat the microbead - the App

- Unilever (2015)
- Beiersdorf
- Colgate-Palmolive (2013)
- L'Oréal
- Johnson & Johnson
- Procter & Gamble (2017)
- The Body Shop (2015)
- Rituals (2014)
- Lush (descontinuados)



<http://www.beatthemicrobead.org/en/>

**INTERNATIONAL CAMPAIGN AGAINST
MICROBEADS IN COSMETICS**

Zero pellet loss



Plastics Associations Report
Progress on Global Marine Litter
Commitments

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Why Ocean Trash is Everyone's
Problem [*Earth911*]

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Clean Sweep®**

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Tools & Resources

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Ocean Bottle

LOGOPLASTE (PT)



...mal a onda começou a encolher, correu atrás dela, pegou na bainha de espuma e levantou-a como se fosse um simples pano (O Anjo Mudo, Al Berto)

Just because you can't see it, doesn't mean it isn't there



Advertisers Without Borders Campaign, 2011