

MARINE LITTER IN THE WESTERN MEDITERRANEAN SEA



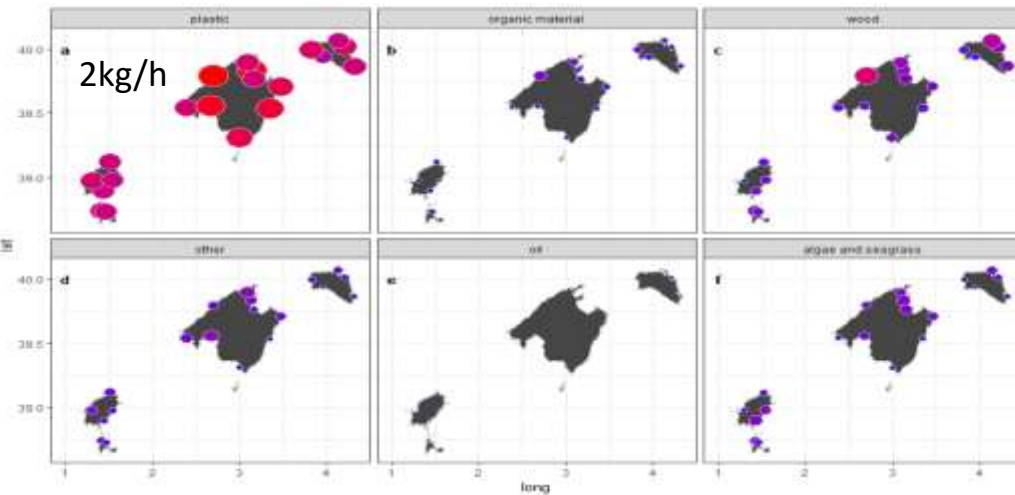
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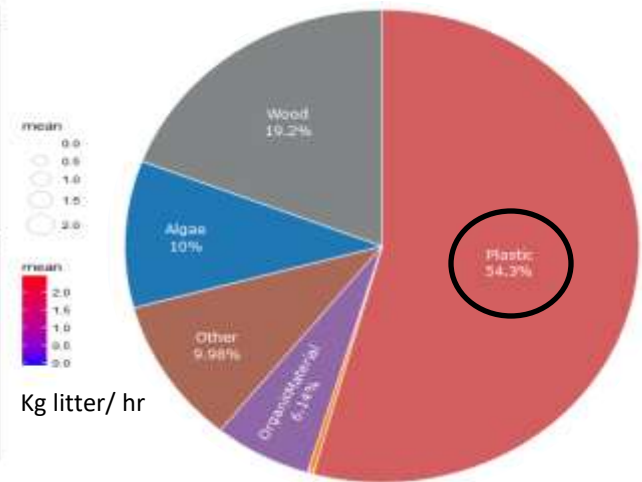
1st Union for the Mediterranean stakeholder
conference on the Blue Economy, Naples, 29-30
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AMOUNTS AND TYPES OF MARINE LITTER BALEARIC ISLANDS

Sea surface litter: Plastic dominant and widespread (2005-2015, 22,610 boat surveys)

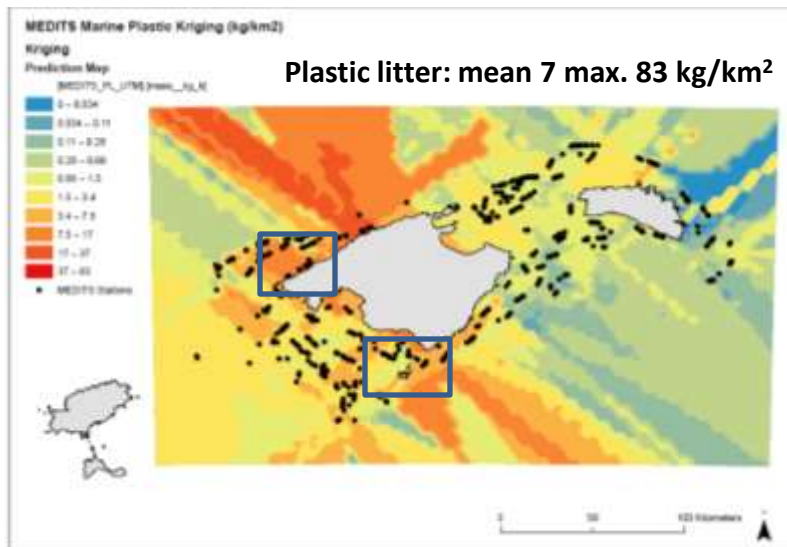


(Compa et al., in progress)

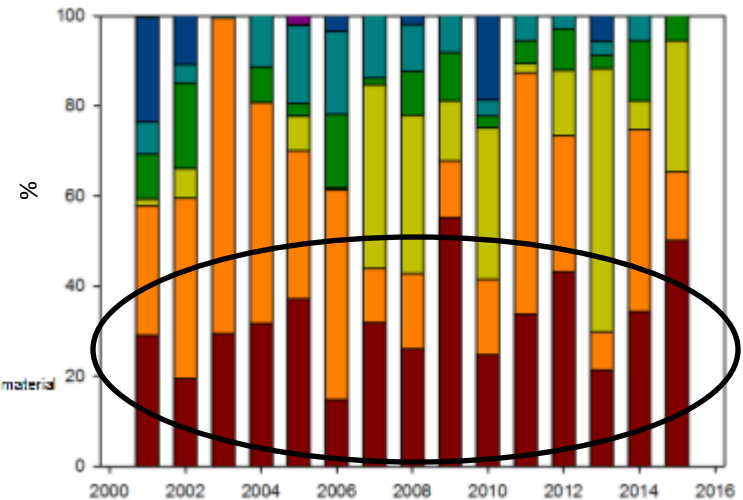


Plastic > 50% floating marine litter

Seafloor litter: Plastic and glass present all sampling area (2001-2015, 41-69 bottom trawls/year)



(Alomar et al., 2016)



> 50% seafloor litter plastic glass

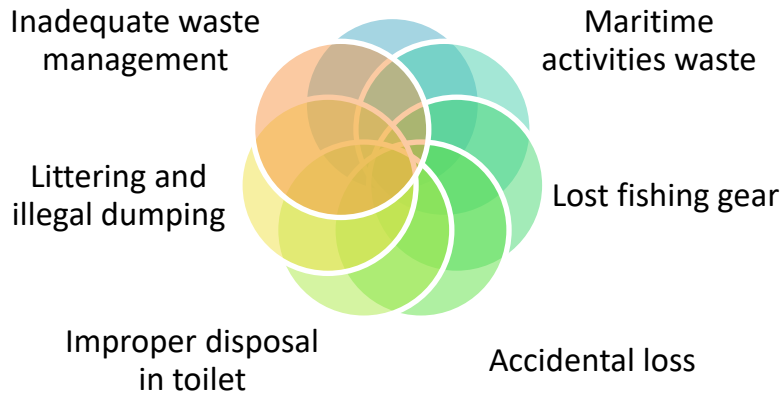


SOURCES AND ORIGIN OF MARINE LITTER AROUND BALEARIC ISLANDS

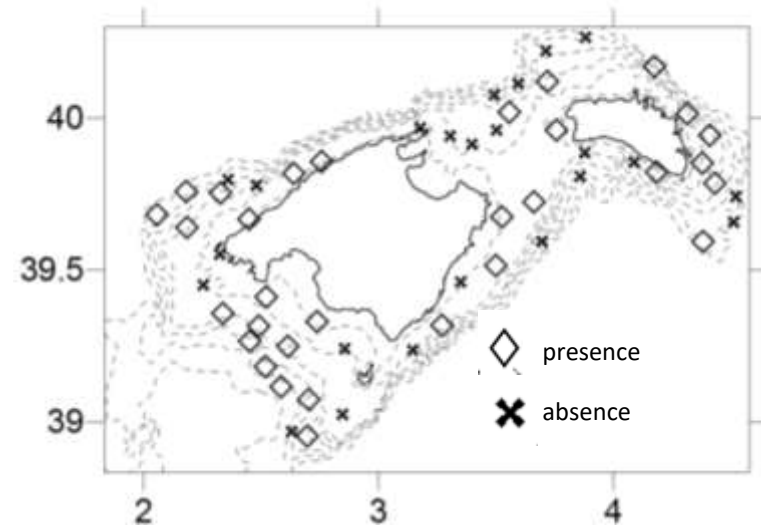
Land-based (80%): beach/coast, landfills, ports/harbours, cities

Sea-based (20%): recreational, fishing, shipping and aquaculture

Sea floor fishing material 2015



(Jambeck , 2015; UNEP 2016; MFSD 2016)



(Frank, 2017)

Polymer characterization: Subset ingested MPs (< 5 mm) from 915 fish and 127 sharks

Plastic polymer type	%
Cellophane	33.33
Polyacrylonitrile (PAN)	4.55
Polyethylene (PE)	4.55
Polyethylene terephthalate (PET)	27.27
Poly(Ethyl Acrylate)	1.52
Polyacrylate	12.12
Polyamide (PA)	3.03
Polypropylene (PP)	12.12
Alkyd	1.52



Human sources:

- Packaging
- Smoking items
- Building materials
- Plastic bags
- Hygiene products

IMPACT OF MARINE LITTER ON SPECIES

Ingestion microplastics commercial fish and shark: 15-30%

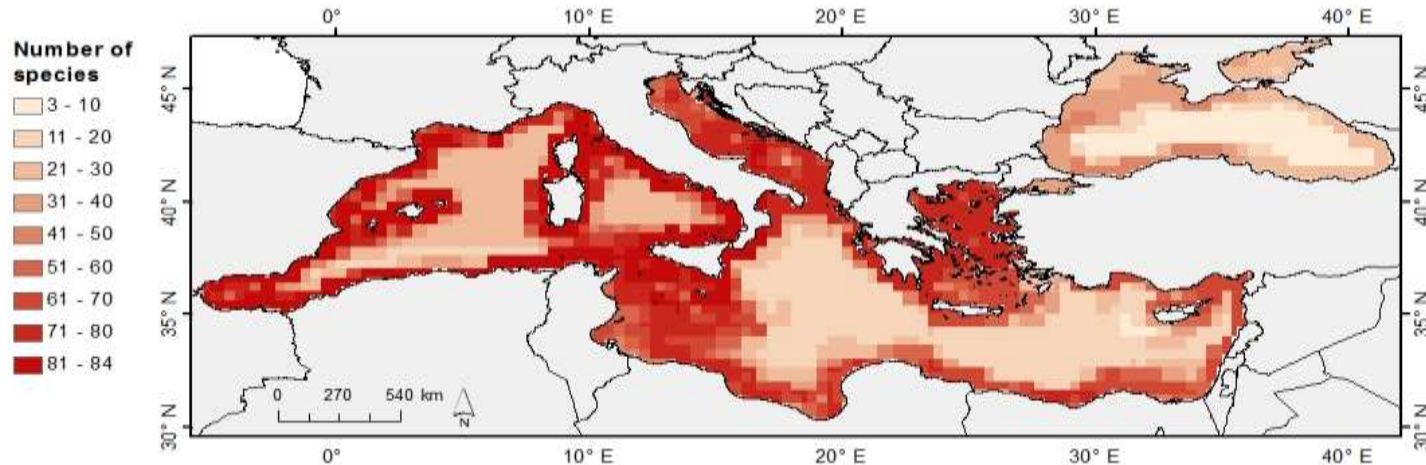
Species	sample size (n)	individuals showing ingestion	% ingestion	MPs (mean ± se)
<i>Sardina pilchardus</i>	105	16	15	0.21 ± 0.09
<i>Engraulis encrasicolus</i>	105	15	14	0.18 ± 0.08
<i>Boops boops</i>	288	198	68	3.75 ± 0.25
<i>Galeus melastomus</i>	125	21	17	0.34 ± 0.07
<i>Mullus surmuletus</i>	417	114	27	0.42 ± 0.04



(Compa et al. 2016, Nadal et al., 2016, Alomar and Deudero, 2017, Alomar et al., 2017)

Marine litter Med basin: ingestion, entanglement, rafting- (1986-2014, 17334 ind, 1344 species)
41% scientific studies exhibit interaction (Deudero & Alomar, 2015)

Marine litter in coastal habitats: a real threat for marine biodiversity in the Med basin

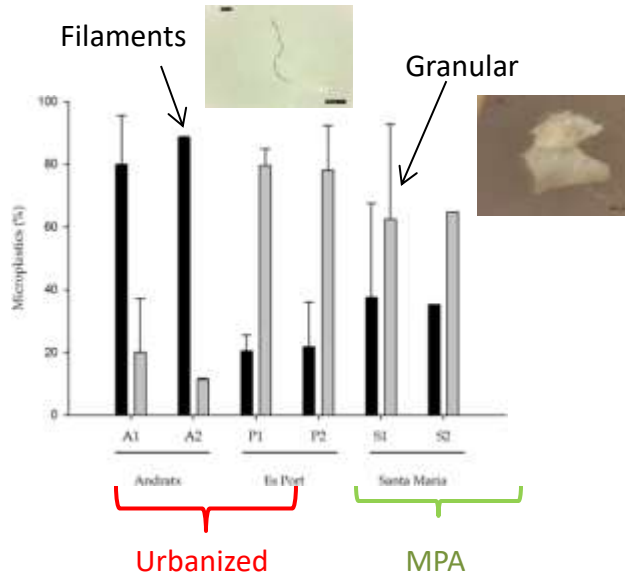


84 species impacted by marine litter mainly in coastal areas → Management efforts directed to minimize impacts on valuable ecological species and habitats

(Compa et al., in progress)

MARINE LITTER IN MARINE PROTECTED AREAS MPAs

Microplastics in sediments MPA vs urbanized areas: MPA up to 0.90 ± 0.10 MPs/g coastal sediment

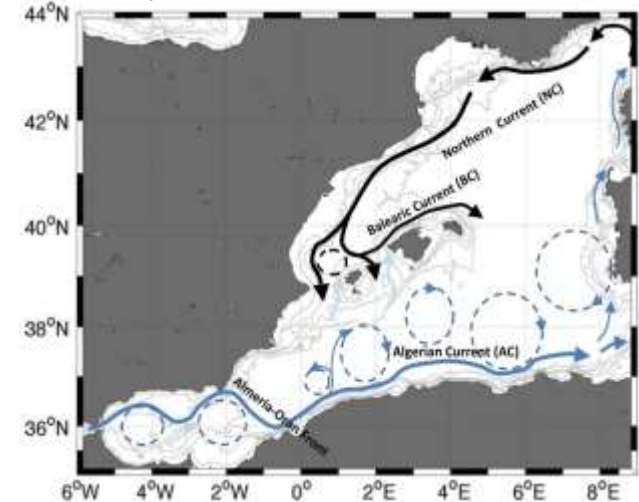
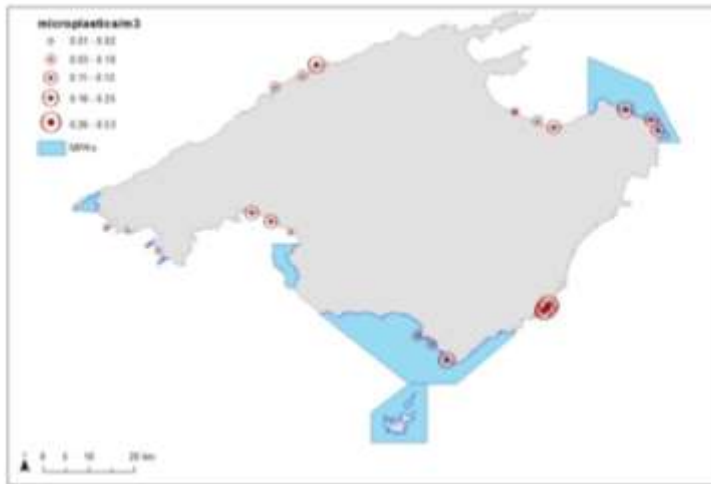


➤ Indirect estimation sources:
filaments=sewage inputs
granular= fragmentation

➤ Example of transferred contamination



MPs in sea surface waters: range 0.02 ± 0.01 to 0.38 ± 0.14 MPs/m³ (mean \pm SD)



(Alomar et al. 2016, Compa et al., in progress)

Balbín et al., 2014

MARINE LITTER IN THE WESTERN MEDITERRANEAN SEA

MFSD Descriptor 10: "Properties and quantities of marine litter do not cause harm to the coastal and marine environment" (10.1.2, 10.1.3, 1.2.1)



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