

CleanAtlantic

Tackling marine litter in the Atlantic Area

Marine Litter Status in the Atlantic Area

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Cefas

Marine Litter in the Atlantic Area

Clean Atlantic work package aim:

- Gather and assess data, knowledge and gaps
- Seafloor Litter
- Beach Litter
- Floating Litter



Seafloor Litter Assessment

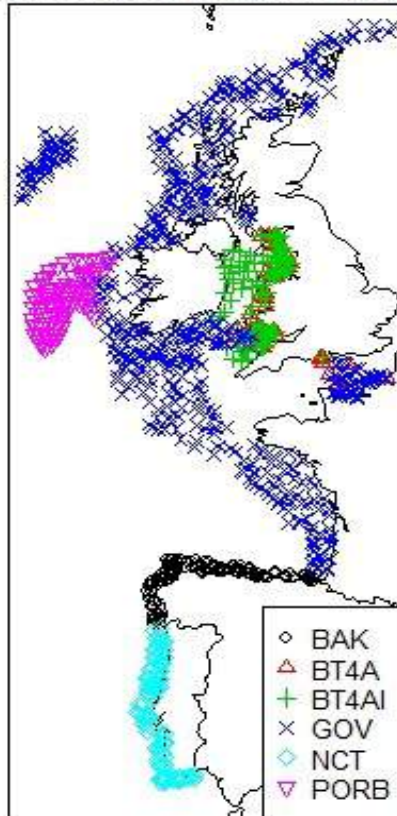


CEFAS

Marine Litter in the Atlantic Area

Seafloor Litter Assessment

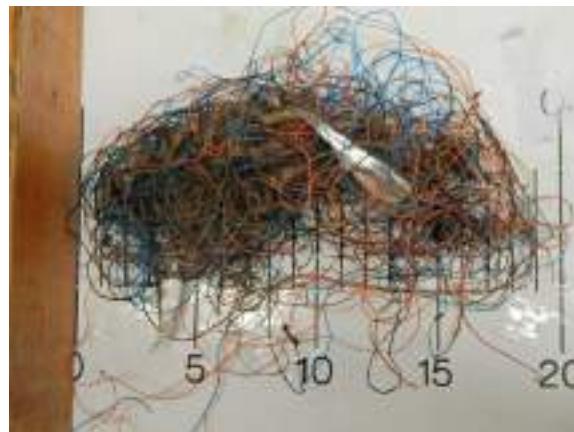
Gear locations in Atlantic in 2016



- Adapted from EU seafloor assessment
- Expert group feedback and adaptations

Marine Litter in the Atlantic Area

Seafloor Litter Assessment



Marine Litter in the Atlantic Area

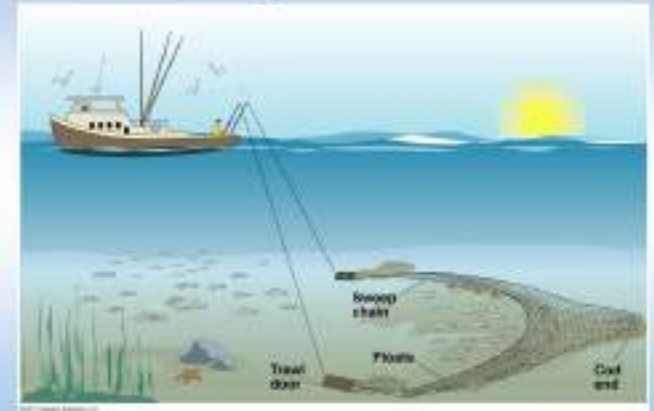
Atlantic Area Seafloor Litter Assessment

Other things to consider...

- No rocky substrate/ reef data
- Gear types (standardised to Gov)
- Counting methods- presence/ absence
- Haul length (3200m)
- Unequal sampling effort



Bottom trawling



Marine Litter in the Atlantic Area

Seafloor Litter Assessment

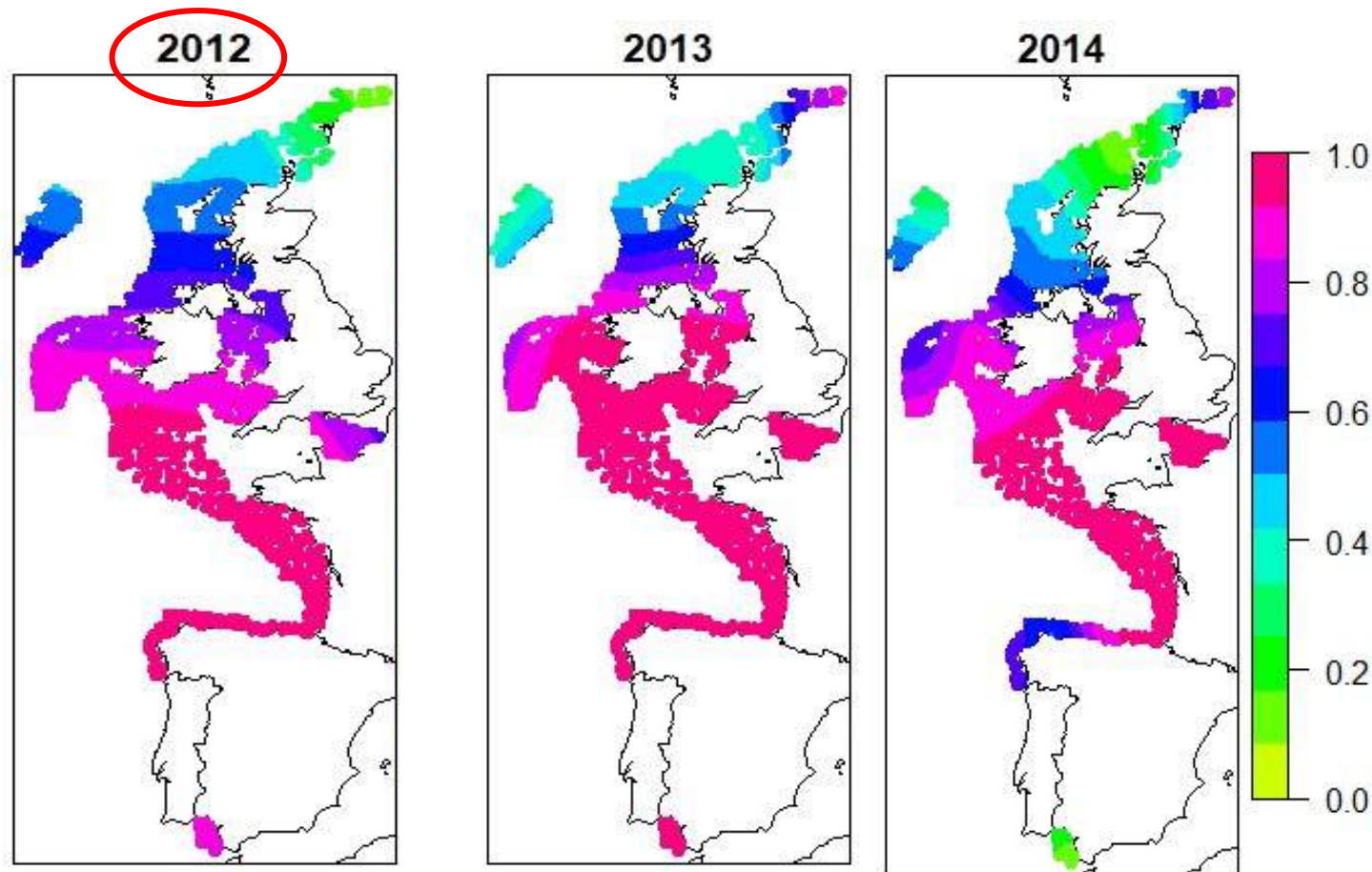
Presence and absence of plastic in 2018 hauls for GOV

A: Plastic	B: Metals	Related size category	
A1. Bottle	B1. Cans (food)	A: <5*5 cm= 25 cm ²	
A2. Sheet	B2. Cans (beverage)	B: <10*10 cm= 100 cm ²	
A3. Bag	B3. Fishing related	C: <20*20 cm= 400 cm ²	
A4. Caps/ lids (monofilament)	B4. Drums	D: <50*50 cm= 2500 cm ²	
A6. Fishing line (entangled)	B5. appliances	E: <100*100 cm= 10000 cm ² = 1 m ²	
A7. Synthetic rope	B6. car parts	F: >100*100 cm = 10000 cm ² = 1 m ²	
A8. Fishing net	B7. cables		
A9. Cable ties	B8. other		
A10. Strapping band			
A11. crates and containers			
A12. diapers			
A13. sanitary towel/tampon			
A14. other			
C: Rubber	D: Glass/ Ceramics	E: Natural products	F: Miscellaneous
C1. Boots	D1. Jar	E1. Wood (processed)	F1. Clothing/ rags
C2. Balloons	D2. Bottle	E2. Rope	F2. Shoes
C3. bobbins (fishing)	D3. piece	E3. Paper/ cardboard	F3. other
C4. tyre	D4. other	E4. pallets	
C5. Glove		E5. other	
C6. other			



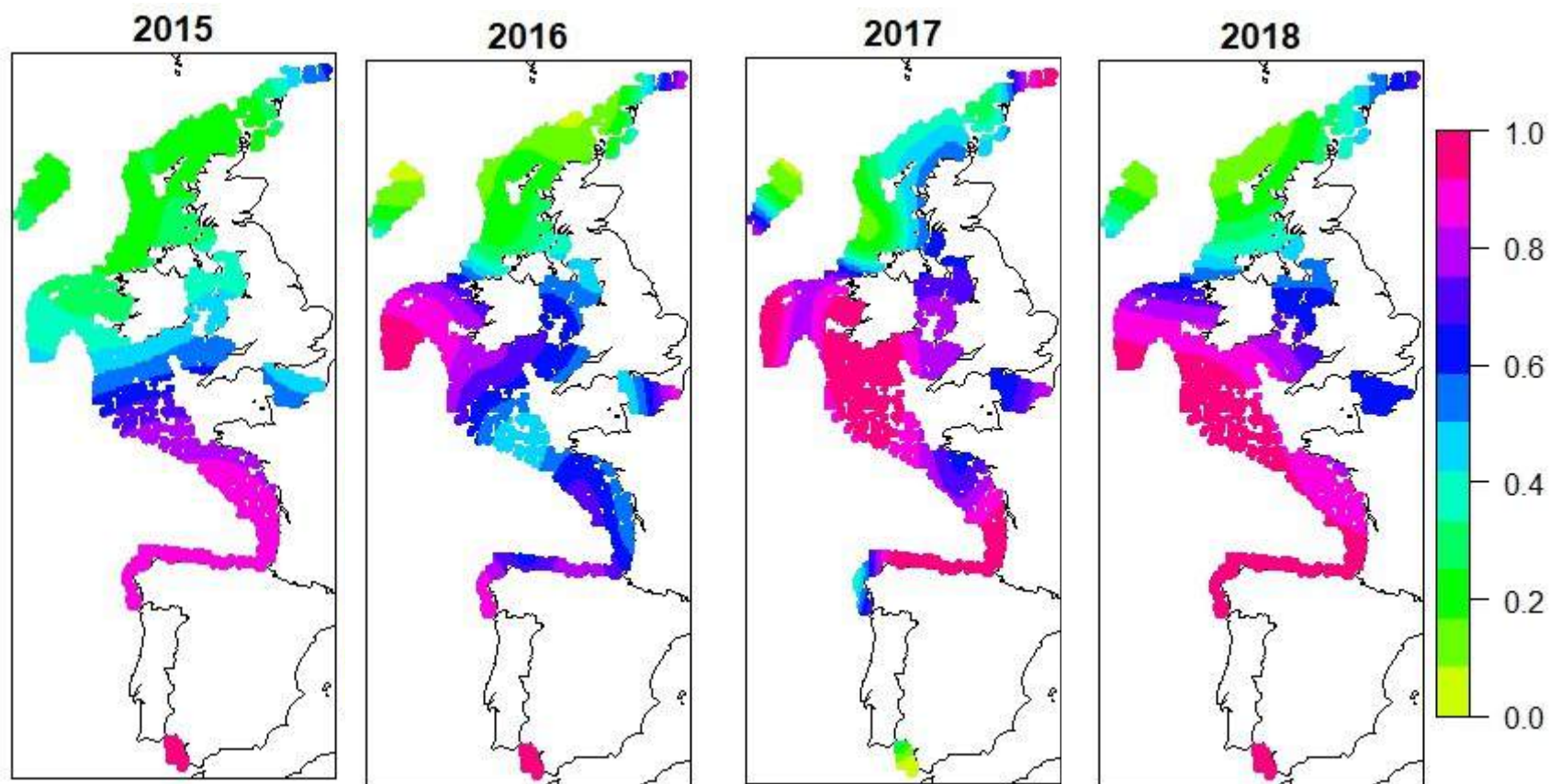
Plastic is more common in southern areas

Seafloor Litter Assessment

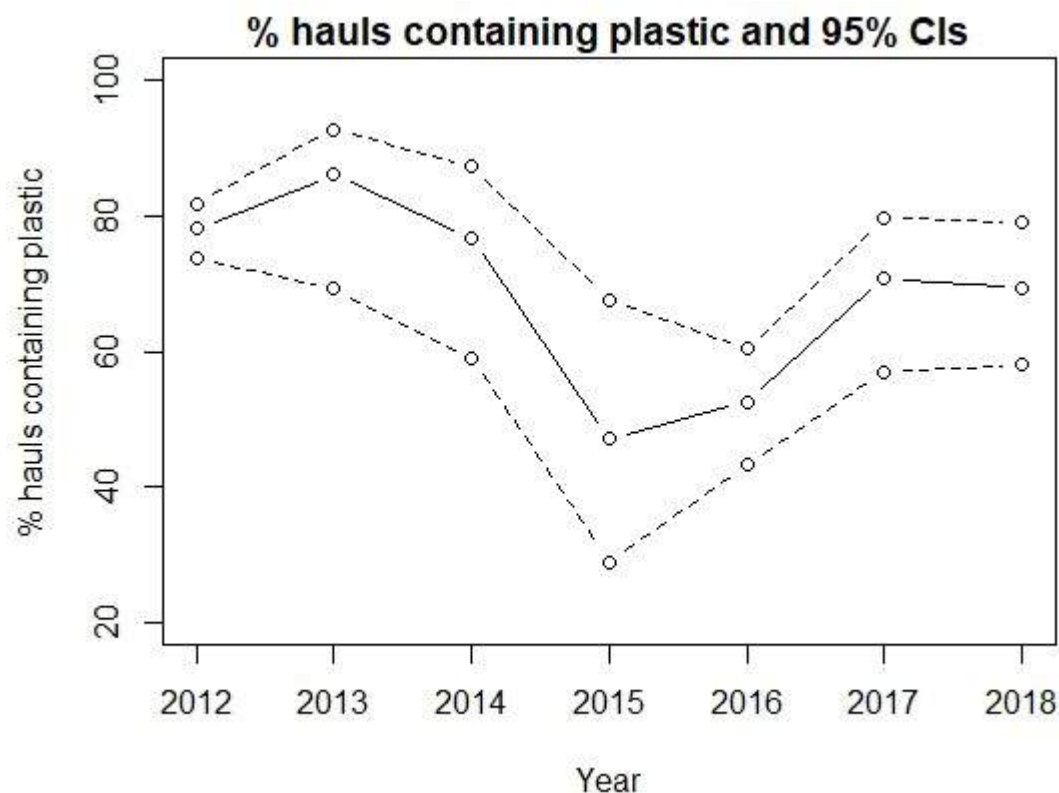


Smoothed probability of plastic

Seafloor Litter Assessment



Seafloor Litter Assessment



Marine Litter in the Atlantic Area

Seafloor Litter Assessment

Litter	2012	2013	2014	2015	2016	2017	2018
Total	87 (72, 93)	92 (78, 97)	82 (69, 90)	57 (45, 67)	55 (46, 62)	79 (61, 86)	70 (58, 80)
Plastic	78 (74, 82)	86 (69, 93)	77 (59, 87)	47 (29, 68)	53 (43, 60)	71 (57, 80)	69 (58, 79)
Metal	6 (3, 12)	4 (1, 18)	5 (1, 28)	2 (1, 8)	4 (1, 13)	6 (3, 16)	13 (7, 26)
Rubber	2 (1, 10)	5 (1, 29)	1 (0, 14)	1 (1, 4)	3 (1, 9)	5 (2, 11)	6 (2, 18)
Glass	7 (*)	2 (*)	1 (*)	0 (*)	8 (*)	5 (*)	0 (*)
Natural	23 (14, 45)	13 (5, 38)	8 (1, 45)	5 (3, 12)	6 (3, 17)	0 (*)	2 (1, 7)
Fishing	67 (60, 71)	76 (59, 89)	66 (49, 79)	38 (23, 58)	40 (31, 50)	51 (38, 63)	56 (47, 64)
Human	26 (22, 33)	34 (21, 51)	39 (15, 68)	21 (11, 38)	25 (18, 34)	37 (25, 47)	41 (28, 54)
Bags	3 (1, 22)	18 (11, 32)	23 (10, 42)	7 (3, 15)	6 (4, 12)	8 (4, 16)	13 (8, 21)
Bottles	4 (2, 13)	0 (*)	17 (5, 37)	1 (0, 15)	4 (2, 13)	12 (6, 27)	6 (3, 14)

Table 3: Modelled estimates of percentages of hauls containing a litter item for the Atlantic region (standardised to the GOV gear and haul distance of 2330m). The 95% confidence interval is shown between brackets.

* Numerical difficulties meant confidence interval could not be calculated.



Clean
Atlantic



Interreg
Atlantic Area
European Regional Development Fund



Beach Litter Assessment



CEDRE



**OSPAR
COMMISSION**

Protecting and conserving the
North-East Atlantic and its resources

Marine Litter in the Atlantic Area

Beach Litter Assessment

- OSPAR Beach Litter Database
(4 surveys per year planned on fixed spots)
- Review of indicators commonly used
- Total Abundance, Median, Mean, % of TA (for category, specific litter), Top-5-items, Distributions ...



Beach Litter Assessment

Statistical method : selected parameters

- Adapted from EU Marine Beach Litter Baseline (GES_22-2019-13) of MSFD Technical Group on Marine Litter
- Applied
 - At a different scales: specific sites, countries, OSPAR regions, entire Atlantic area
 - **From 2016 to 2019 (excluding 2019 season 4, inclusion in progress)**
 - With indicators: mean, median, top 5 items, category distribution...
 - Considering different groups: materials, single use plastics, fishery related items, plastic bags

Beach Litter Assessment



Total abundance distribution

Clogherhead - South (IR004)



Top 5



Groups:

- Single use plastics
- Fishery items
- Plastic bags

specific items:

- Cigarette butts
- Cotton bud sticks
- Balloons
- Hunting cartridges



Comparison with Atlantic area

Reporting period: 2014-2019

Source: OSPAR survey data, calculations performed using formula

Page 10/10

Marine Litter in the Atlantic Area

Beach Litter Assessment

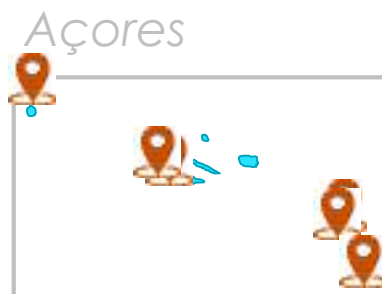
- At a different scales: specific sites, countries, OSPAR regions, entire Atlantic area

Scales considered

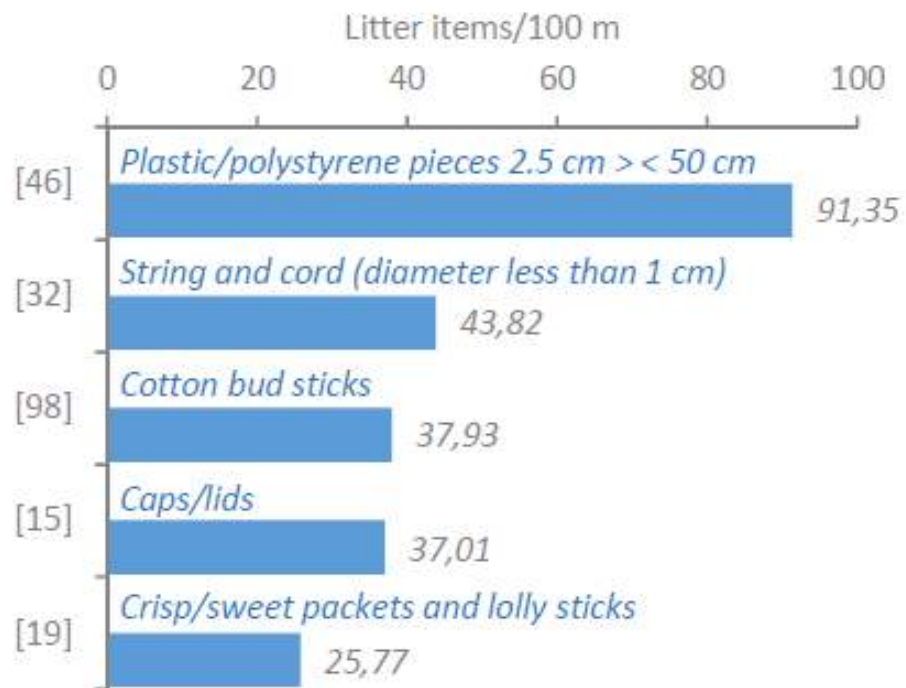
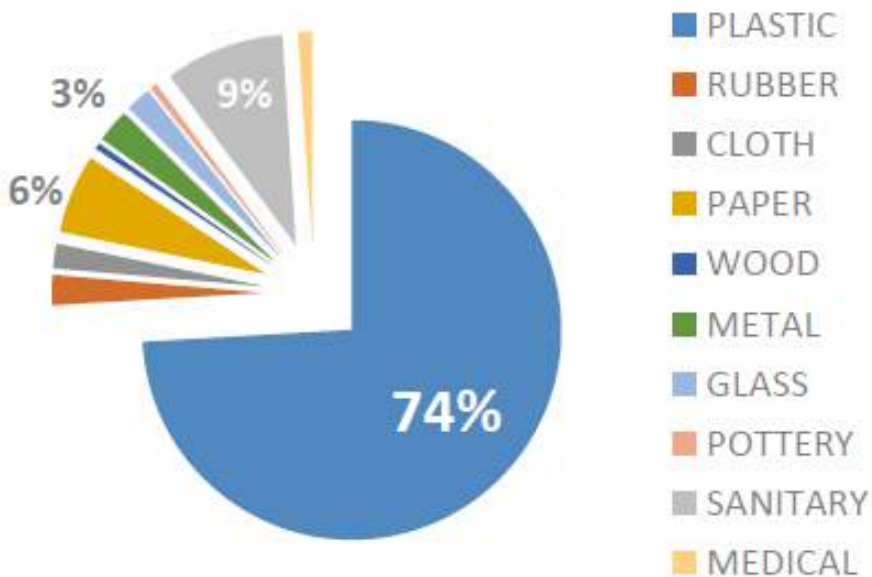
Entire Atlantic area

59 sites retained

5 countries

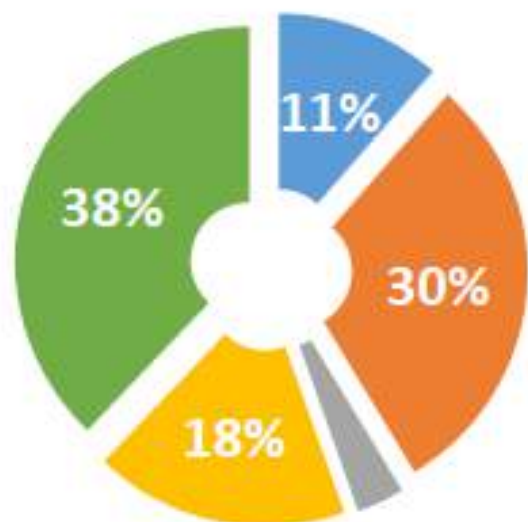


Beach Litter Assessment Atlantic Area



Marine Litter in the Atlantic Area

Beach Litter Assessment Atlantic Area



- Spain
- France
- Ireland
- Portugal
- United Kingdom

Marine Litter in the Atlantic Area

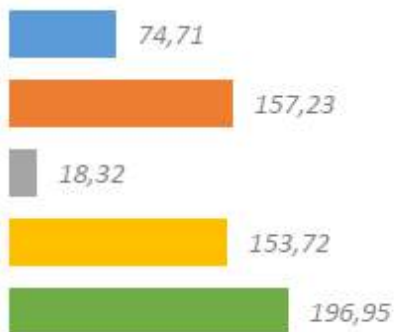
Beach Litter Assessment Atlantic Area



Single Use Plastics

142,19 items/100 m

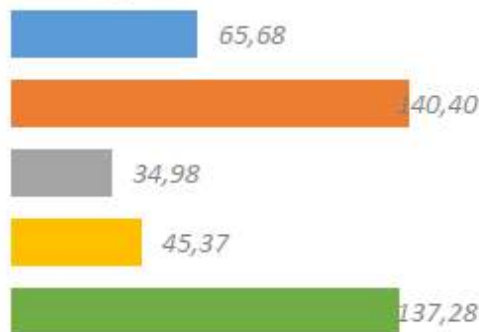
SUP items/100 m



Fishery related litter items

91,33 items/100 m

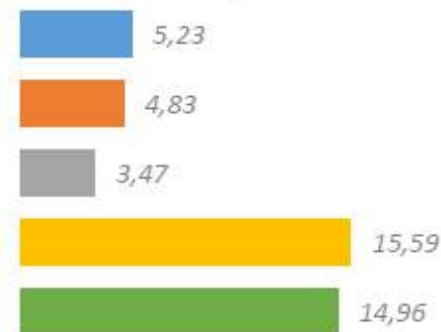
Fishery related items/100 m



Plastic bags

10,83 items/100 m

Plastic bags/100 m



■ Spain ■ France ■ Ireland ■ Portugal ■ United Kingdom

Marine Litter in the Atlantic Area

Beach Litter Assessment

Statistics of specific litter items



Cigarette butts represent

5,3%

of the total abundance,
distributed as exposed



Cotton bud sticks represent

7,8%

of the total abundance,
distributed as exposed



Balloons represent

0,3%

of the total abundance,
distributed as exposed



Hunting cartridges represent

0,6%

of the total abundance,
distributed as exposed



■ Spain ■ France ■ Ireland ■ Portugal ■ United Kingdom

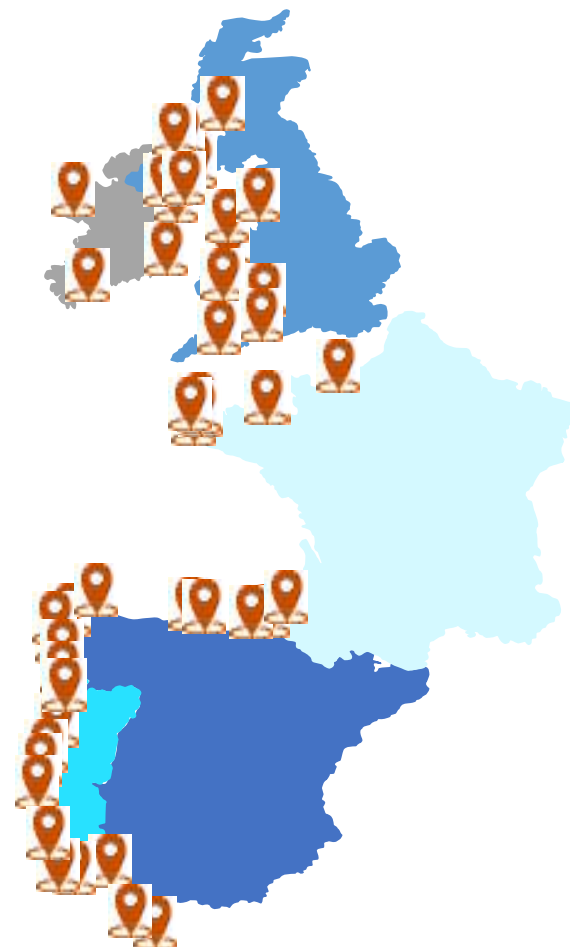
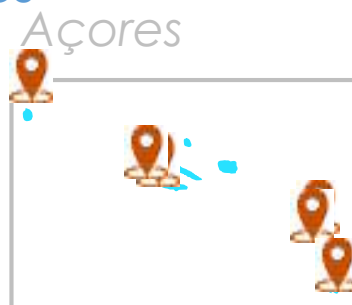
Marine Litter in the Atlantic Area

Beach Litter Assessment

Scales considered

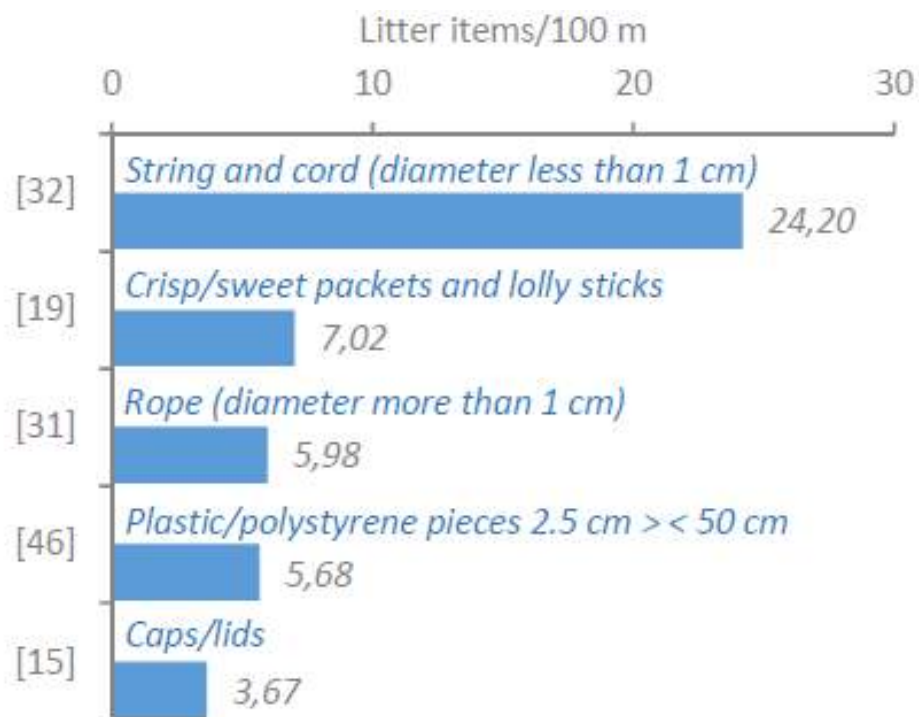
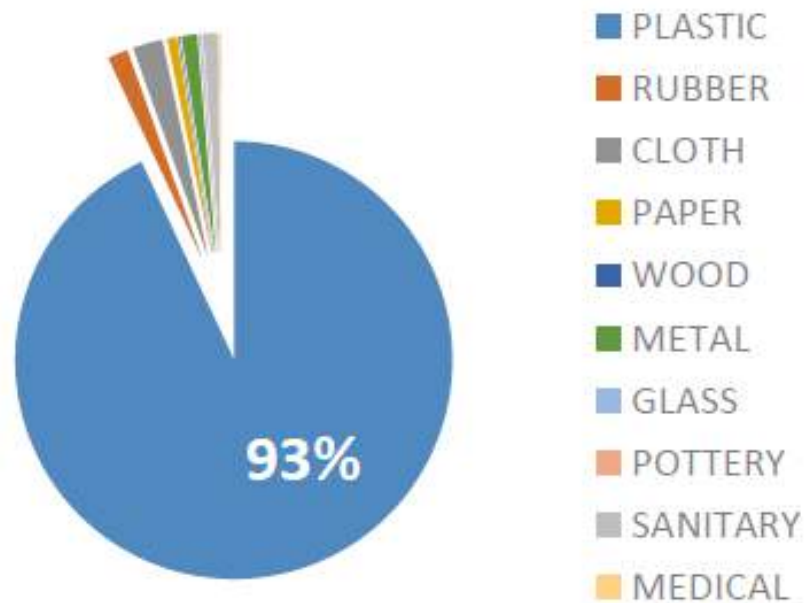
5 countries

Spain (Atlantic area)	12 sites
France (Atlantic area)	9 sites
Ireland (Atlantic area)	4 sites
Portugal (Atlantic area)	16 sites
United Kingdom (Atlantic area)	18 sites



Beach Litter Assessment

Ireland



Beach Litter Assessment

Ireland



Single Use Plastics

18,32 items/100 m



Fishery related litter items

34,98 items/100 m



Plastic bags

3,47 items/100 m

Beach Litter Assessment

Ireland

Statistics of specific litter items



Cigarette butts represent

0,6%

of the total abundance,
distributed as exposed



Cotton bud sticks represent

0,3%

of the total abundance,
distributed as exposed



Balloons represent

0,8%

of the total abundance,
distributed as exposed



Hunting cartridges represent

0,5%

of the total abundance,
distributed as exposed



■ IR001 ■ IR002 ■ IR003 ■ IR004

Marine Litter in the Atlantic Area

Beach Litter Assessment

Scales considered

5 OSPAR regions

Greater North sea

Celtic seas

Bay of Biscay and Iberian coast

Wider Atlantic

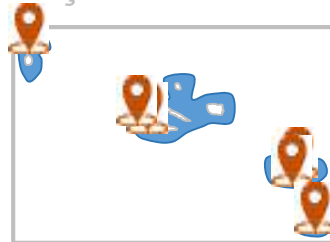
3 sites

27 sites

23 sites

6 sites

Açores



Marine Litter in the Atlantic Area

Beach Litter Assessment

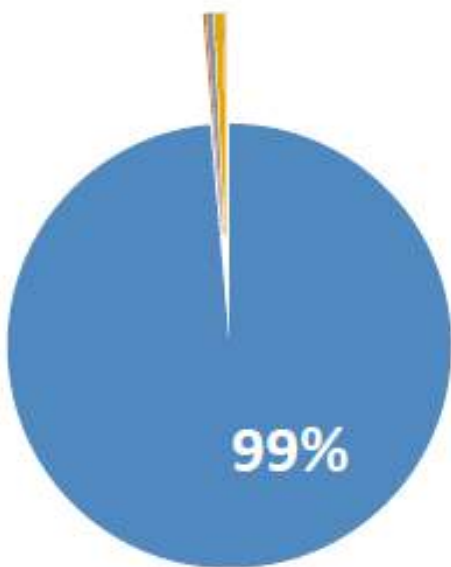
**Clogherhead – South
Carnesore
Silver Strand
Long Strand**



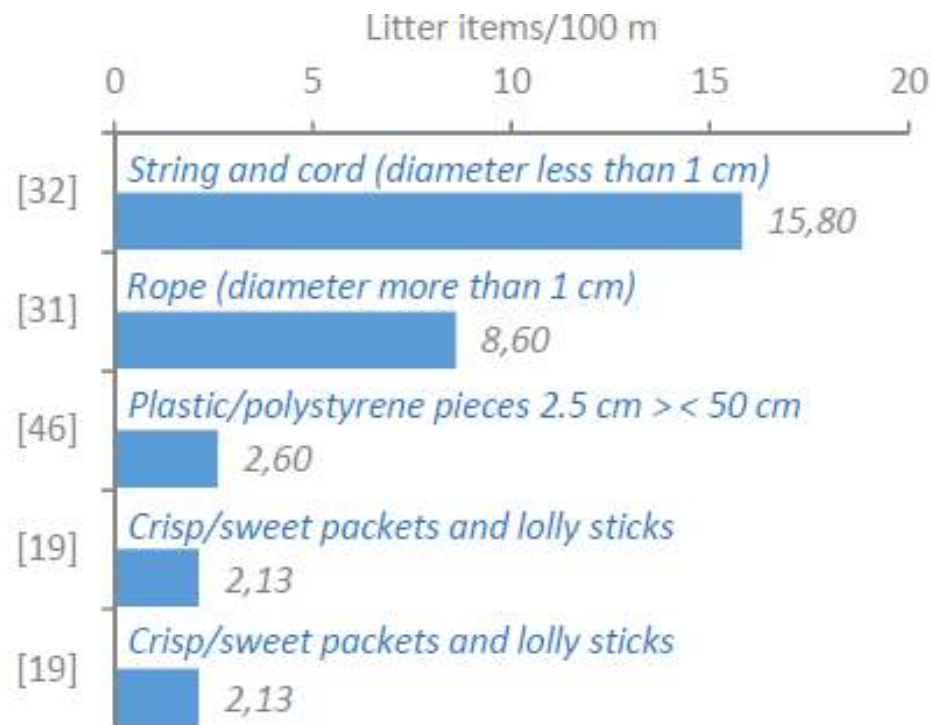
Marine Litter in the Atlantic Area

Beach Litter Assessment

Silver Strand Site



- PLASTIC
- RUBBER
- CLOTH
- PAPER
- WOOD
- METAL
- GLASS
- POTTERY
- SANITARY
- MEDICAL



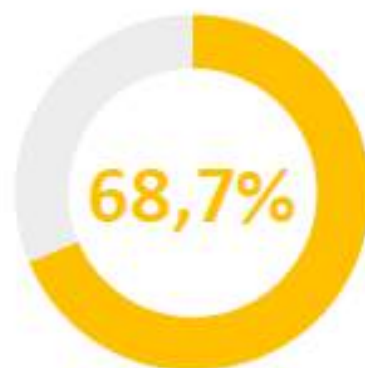
Beach Litter Assessment

Silver Strand Site



Single Use Plastics

6,6 items/100 m



Fishery related litter items

29,67 items/100 m



Plastic bags

0,87 items/100 m

Marine Litter in the Atlantic Area

Beach Litter Assessment

Silver Strand Site



Cigarette butts represent

0,3%

of the total abundance of the site



Cotton bud sti. represent

0,0%

of the total abundance of the site



Balloons represent

0,0%

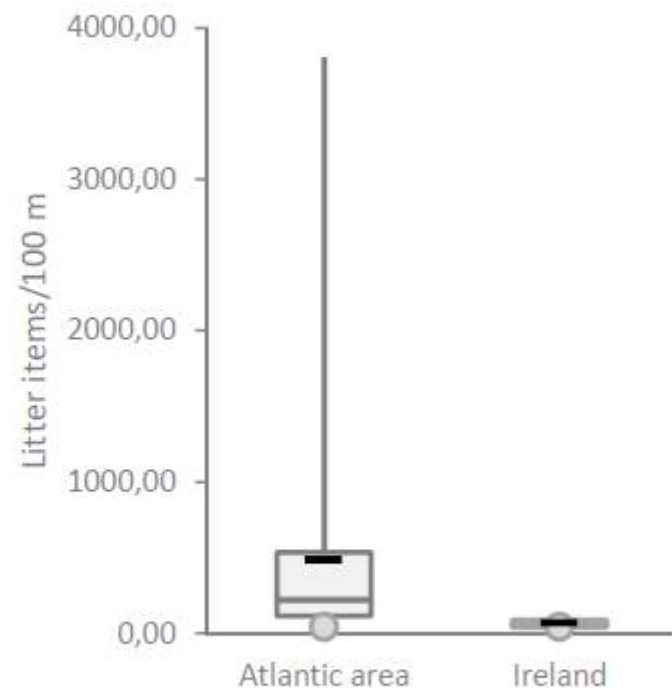
of the total abundance of the site



Hunting cartr. represent

0,5%

of the total abundance of the site



● Average number of litter items of the site

— Mean site average number of Ireland

Floating Litter Assessment



IEO

Floating Litter Assessment

Spatial and temporal variability of floating litter in spring in the NW and N Iberian Shelf (2007-2017)

Protocol development

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¹ Instituto Español de Oceanografía. Centro Oceanográfico de Vigo. Subida a Radio Faro, 50-52. 36390 Vigo (Spain)

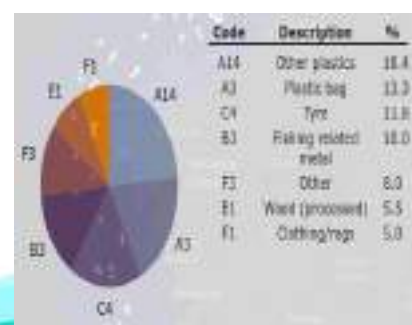
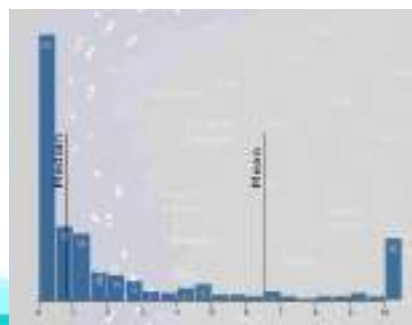
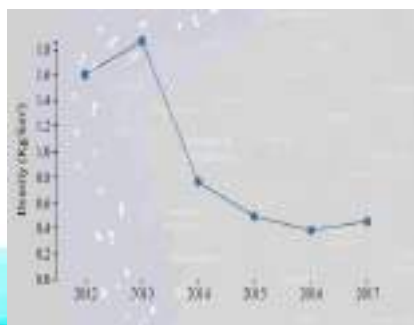
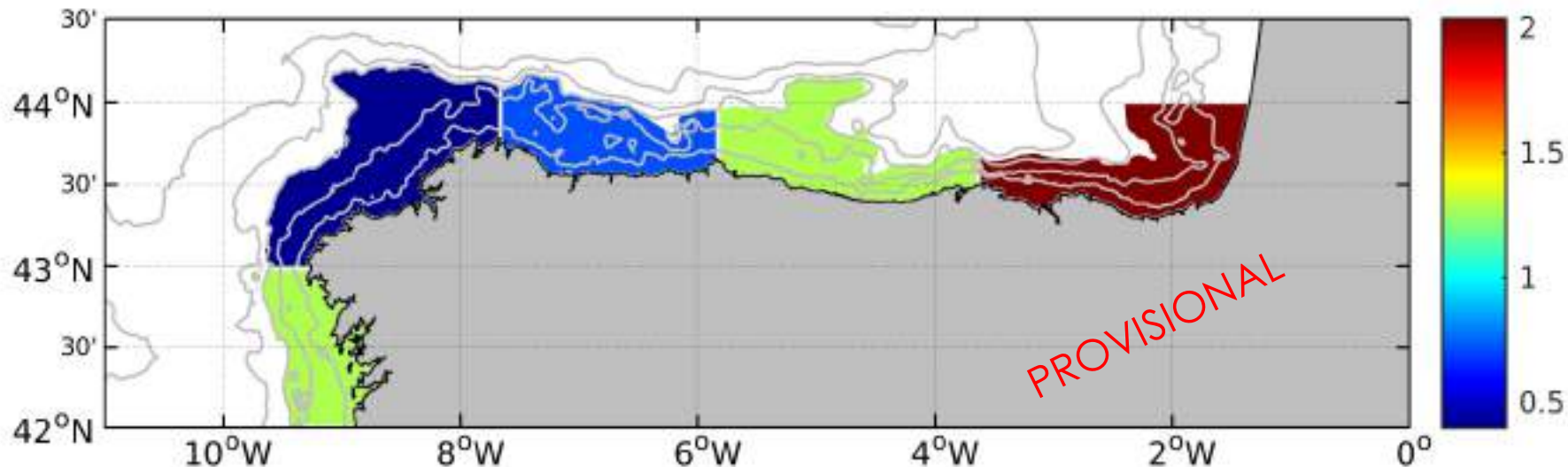
email: gonzalo.gonzalez@leo.es

1. Abstract

Marine litter has become a global concern, affecting all the world oceans. Every year, millions of tonnes of litter end up in the ocean worldwide, creating environmental, economic, health and aesthetic problems. European legislation requires under the Marine Strategy Framework Directive (MSFD) that Member States ensure that, by 2020, *"properties and quantities of marine litter do not cause harm to the coastal and marine environment"*.

Floating litter has been monitored in the North Iberian Shelf from 2007 to 2012, as part of the objectives of the annual Pelagus multidisciplinary surveys carried out by the Spanish Institute of Oceanography during the winter spring transition (April). These surveys, co-financed by the EU Data Collection Framework, are used to provide an index of small pelagic fish abundance independent from the fishery using acoustic methods. In addition, environmental information and data on top predator abundance and distribution are obtained by observers who record also

Floating Litter Assessment



Floating Litter Assessment

FLOATING

Statistical Analysis: Spatial and temporal variability of floating litter in spring in the NW and N Iberian Shelf (2007-2017). Data from Spanish annual pelagic fisheries assessment survey.

With the aim to avoid the bias introduced by different weather conditions (e. g. reduction of visibility and consequently the capability of sighting detections) we use the Beaufort scale data to filter the database. Only sightings of litter that took place under “good” (Beaufort lower than 5) weather conditions, were analyzed. The surveyed area was divided into 5 zones; Rias Baixas, Rias Altas, West Cantabrian sea, Central Cantabrian sea and West Cantabrian sea. These spatial divisions were used to cluster and to average the density of floating litter. This segmentation was based in the main capes of the area and group zones with common hydrographic conditions (Cabal et al., 2008; Rodriguez et al., 2009).

Data baseline: established in the above work.

Gaps: Only Spain and France data. Madeira data with a different protocol.

Added Value: Improvement of the current protocol.

Marine Litter in the Atlantic Area

Why is it important to understand?

MSFD



Policy



Science evidence

