



EMBLAS

Environmental Monitoring
in the Black Sea



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Improving marine litter monitoring in the Black Sea region – towards evidence-based decision making

Jaroslav Slobodnik

EMBLAS-II and EMBLAS+ EU/UNDP projects

International High-level Conference “Inter-basin Cooperation on Marine Litter: a focus on the Danube River and the Black Sea”

4 April 2019

Sofia, Republic of Bulgaria



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<http://emblasproject.org/>

- **EMBLAS-II - Improving Environmental Monitoring in the Black Sea**
 - Georgia, Russian Federation, Ukraine (observers BG, RO, TK)
 - April 2014 – May 2018
 - 2.7 mil EUR
- **EMBLAS+ - Improving Environmental Monitoring in the Black Sea – Selected Measures**
 - Georgia, Russian Federation, Ukraine (observers BG, RO, TK)
 - March 2018 – September 2020
 - 1.5 mil EUR



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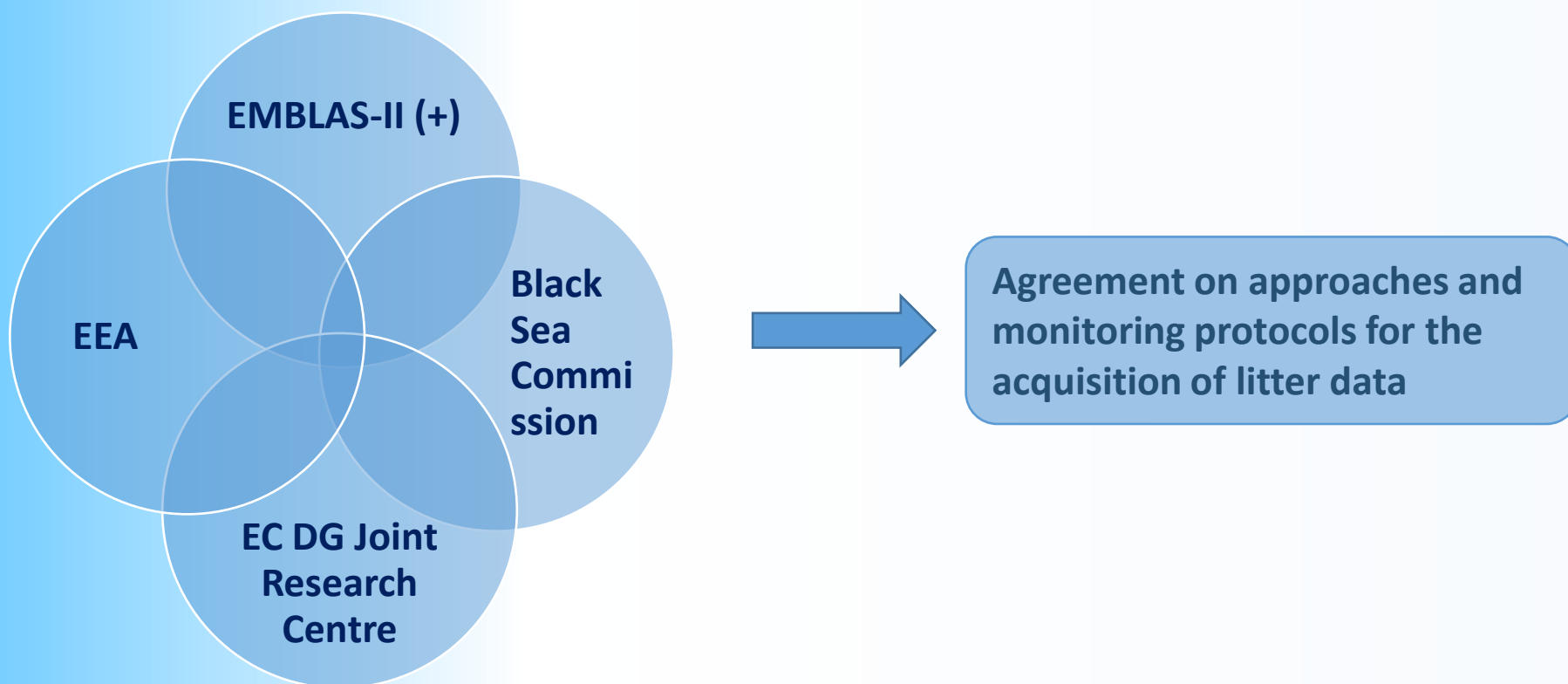
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Marine Litter Workshops

April 2016, Istanbul, Turkey
July 2019, Constanta, Romania





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EMBLAS Floating litter monitoring surveys 2016-2017



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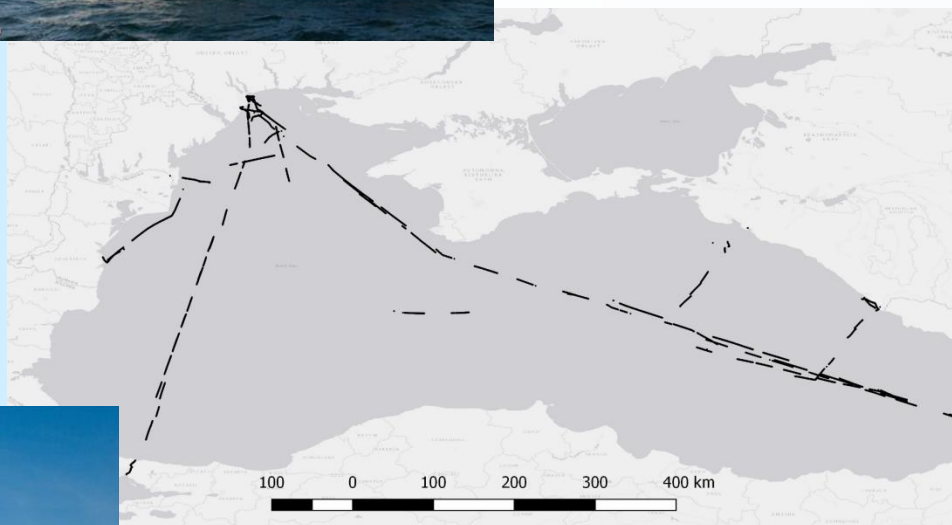
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Ukrainian-Georgian
surveys



Ships of
opportunity
(ferries)



Russian surveys



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Results 2016



Georgian waters
28-31 May 2016
322 Litter Items/km²

Sea transects
24-27 May 2016
810 Litter Items/km²
1-4 June 2016
582 Litter Items/km²



Kerch Strait 7-9 August 2016
0,16 Litter Items/km²



Sochi 23 Nov-1 Dec 2016
3,8 Litter Items/km²



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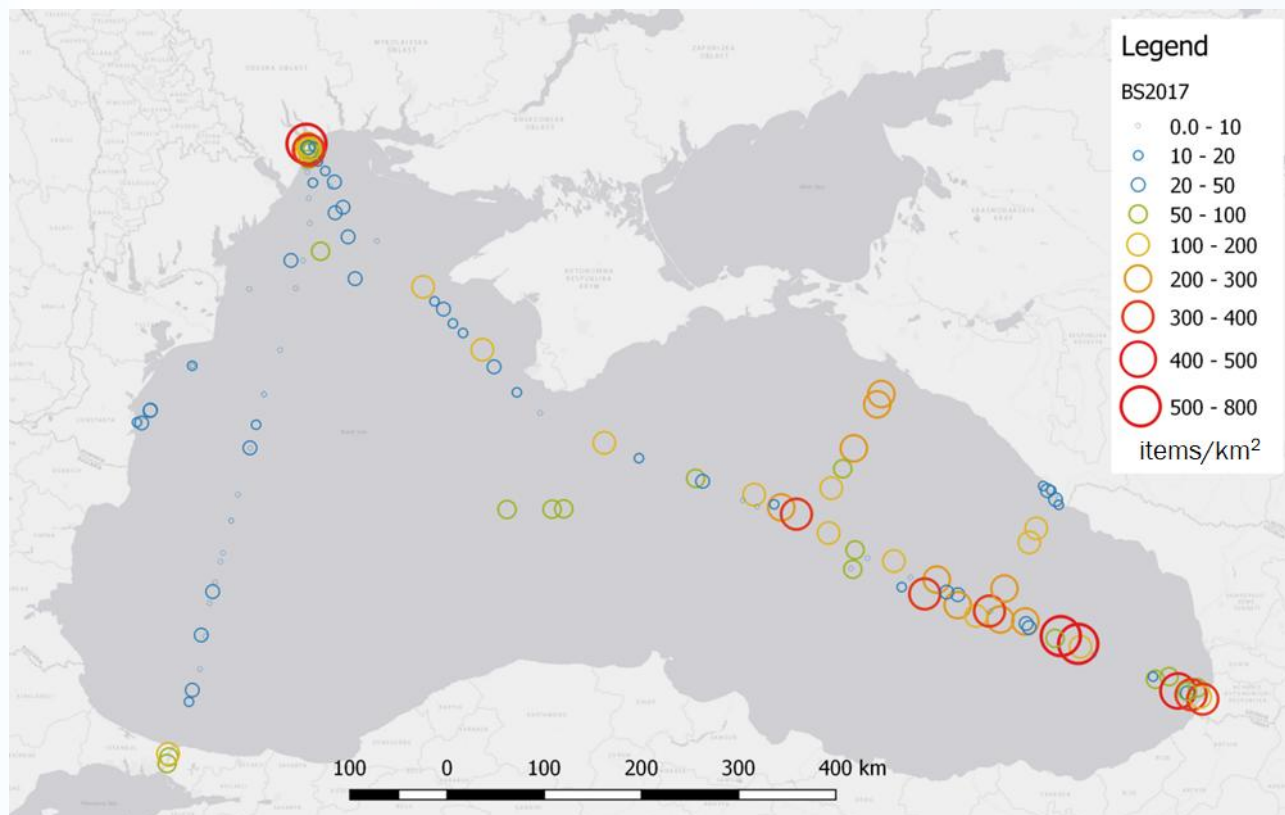
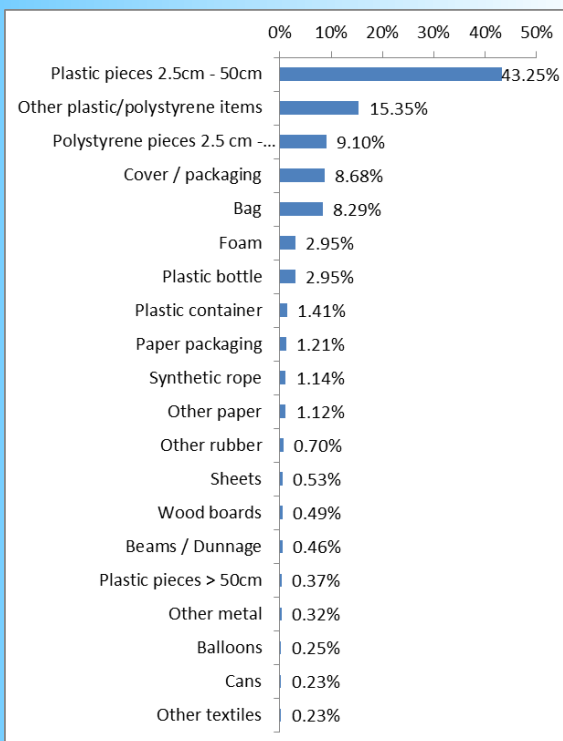
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Results 2017

Top Items





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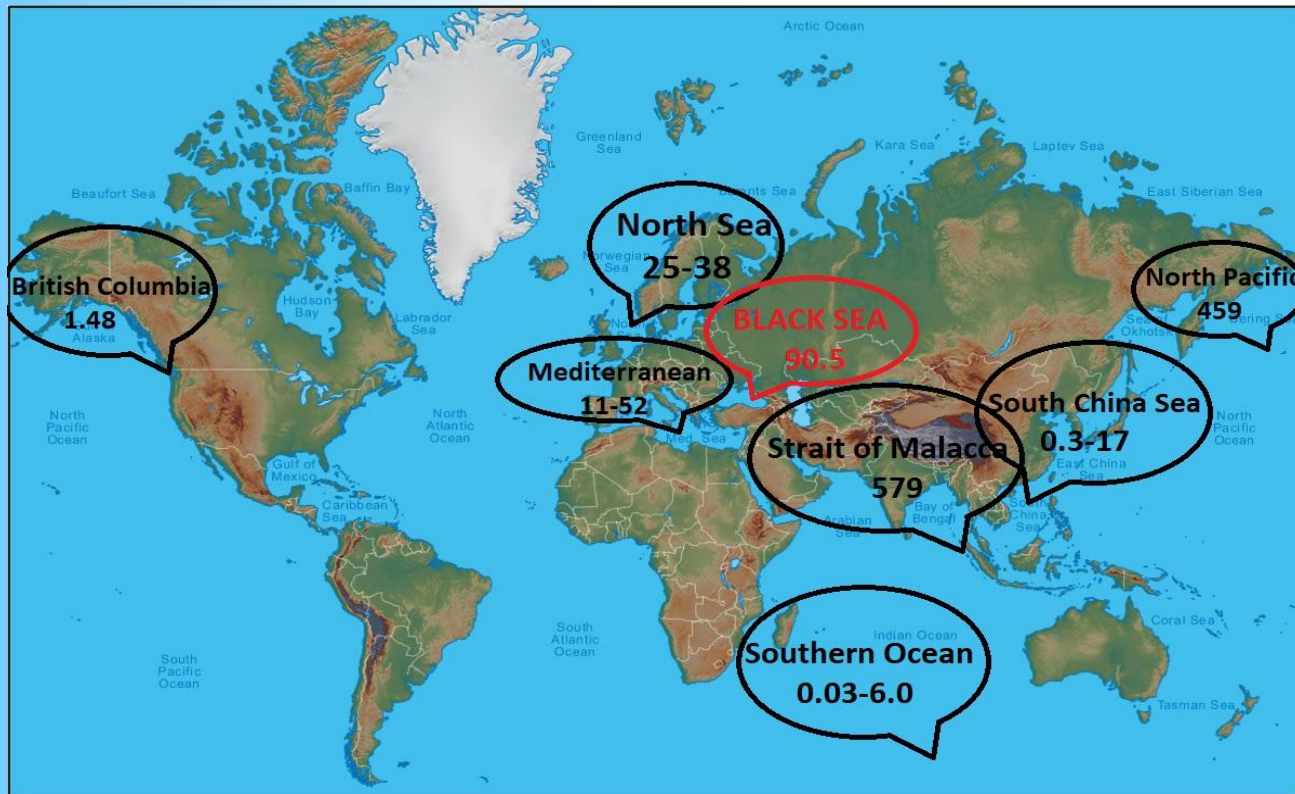


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Comparison with other areas



Mean litter densities on the sea surface from worldwide data (Litter Items/km²).*

* "Marine Anthropogenic Litter"
Bergmann M., Gutow L., Klages M., 2009



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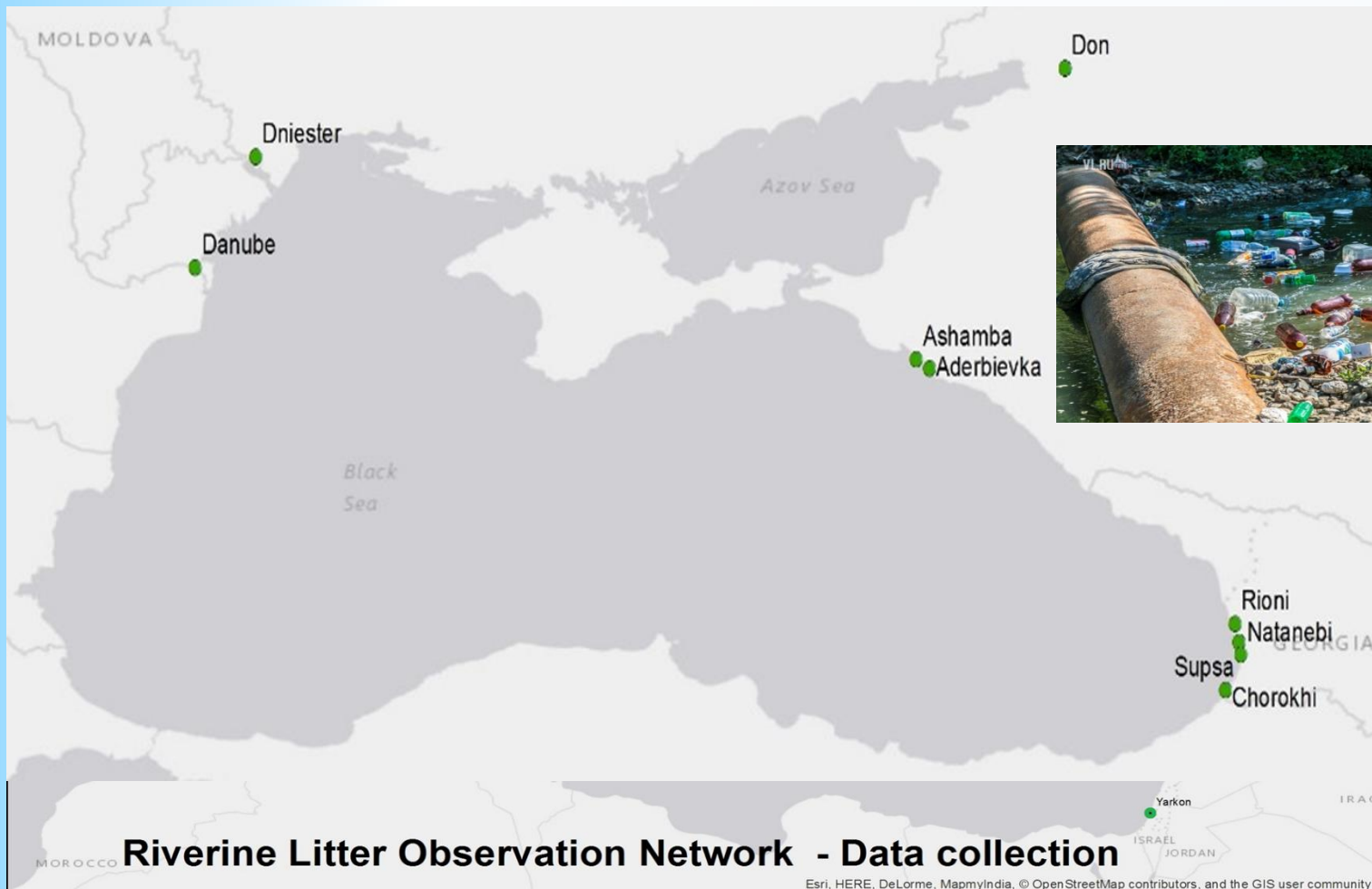
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Riverine litter monitoring – RIMMEL (JRC)

Rivers in the European marine basins; EMBLAS-II bi- weekly over a period of
one year (September 2016 – September 2017)





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Results of riverine litter monitoring in the Black Sea in 2016-2017

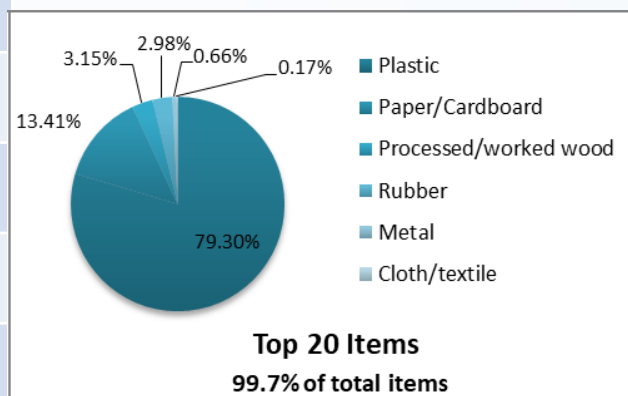
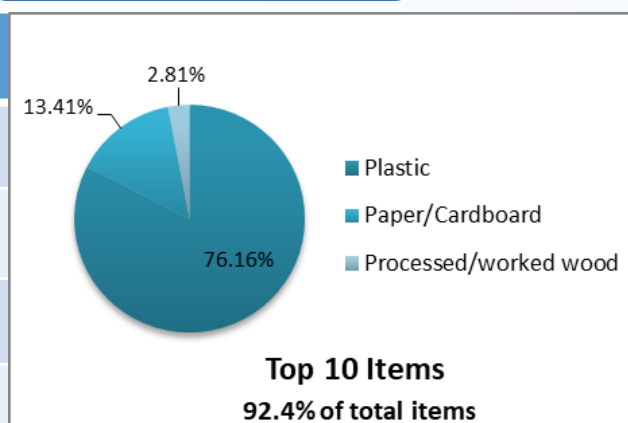
8 rivers

58 datasets

45 hours of
monitoring

604 litter items
identified

Ranking	Items	Material	MSFD Code	% of Total Items
1	Bottles	Plastic	G6	19.70%
2	Plastic pieces 2.5 cm > < 50cm, > 50 cm	Plastic	G79 + G80	13.74%
3	Cover / packaging	Plastic	G38	13.74%
4	Bags	Plastic	G2	10.43%
5	Crates and containers / baskets	Plastic	G18	9.27%
6	Paper packaging	Paper/Cardboard	G149	7.12%
7	Other paper items	Paper/Cardboard	G158	6.29%
8	Other plastic/polystyrene items (identifiable)	Plastic	G124	4.80%
9	Polystyrene pieces 2.5 cm > < 50cm, > 50 cm	Plastic	G82 + G83	4.47%
10	Pallets	Processed wood	G160	2.81%





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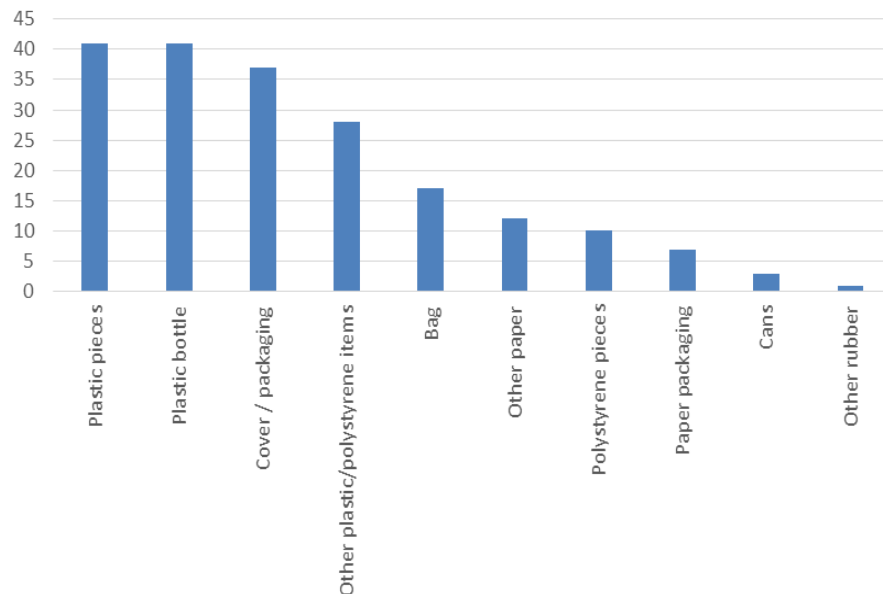
Danube and Dniester – major litter input to the Black Sea

21 hour of visual
observations

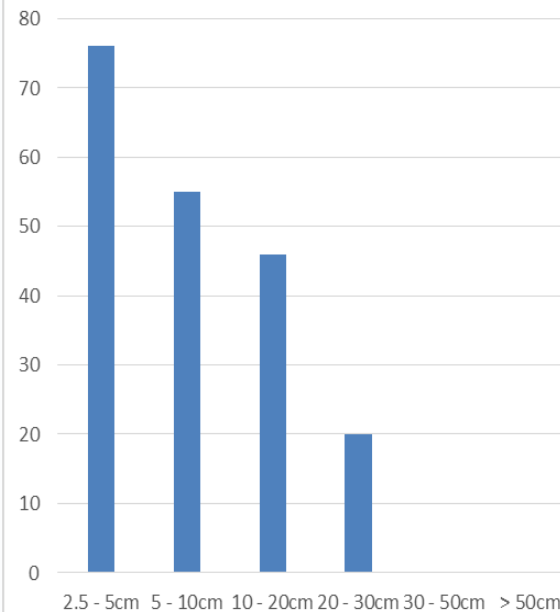
24 datasets

197 litter items
identified

Floating Macro Litter - Items number



Items by size





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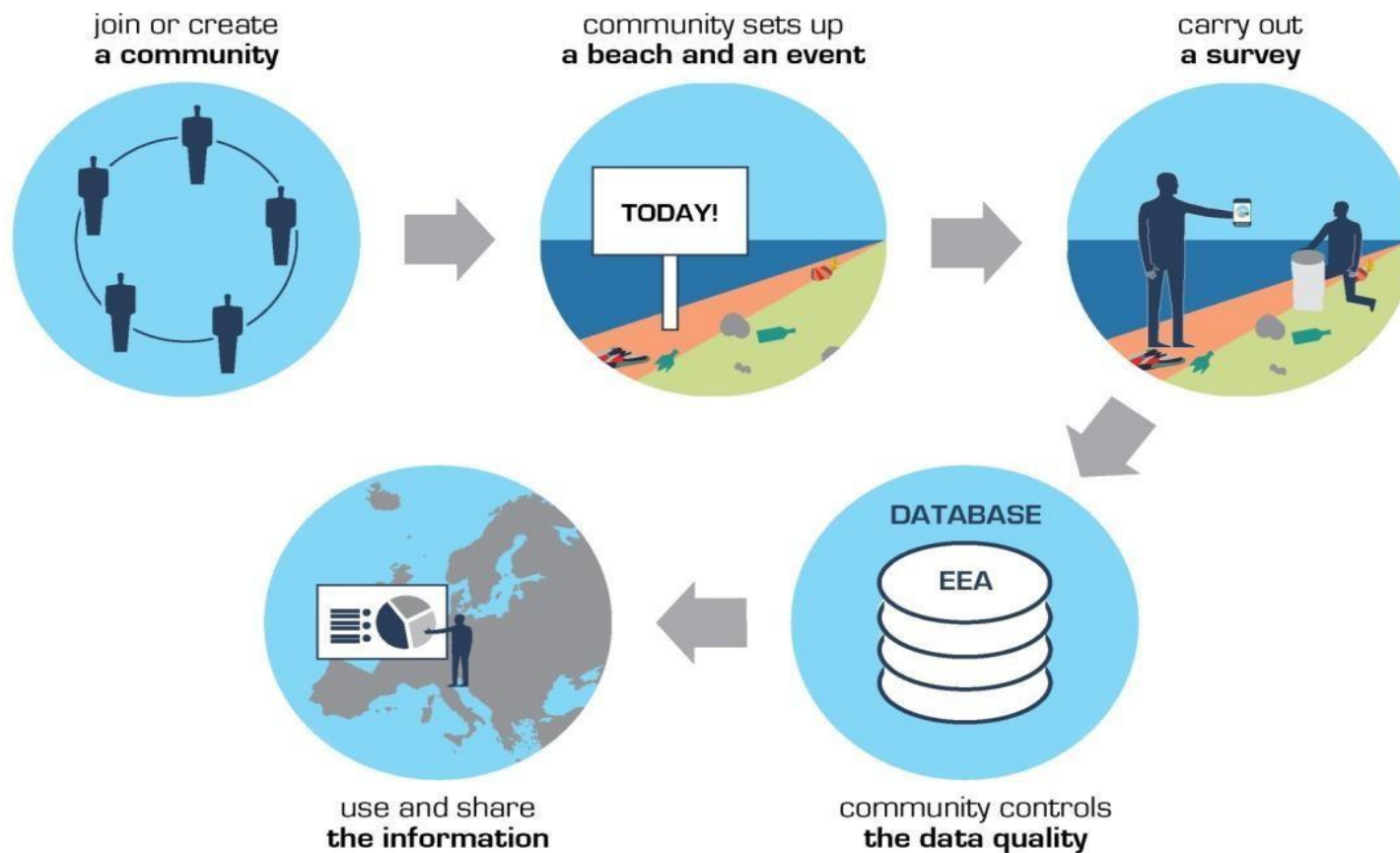
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Marine Litter Watch App – EEA mobile application for collecting beach litter data





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Beach litter monitoring sites in EMBLAS-II





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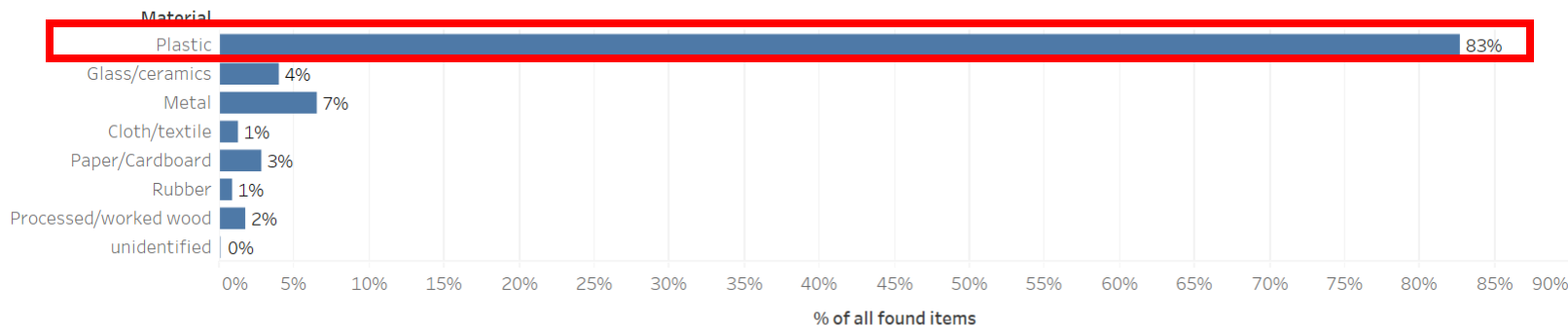
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Overview of Results

This dashboard gives an overview of the distribution of collected litter items by material and the top 10 items. Data can be filtered by time, community, type of event and regional sea

Total collected items 6 295
Total events 8

Distribution by material



Time interval
All values

Community

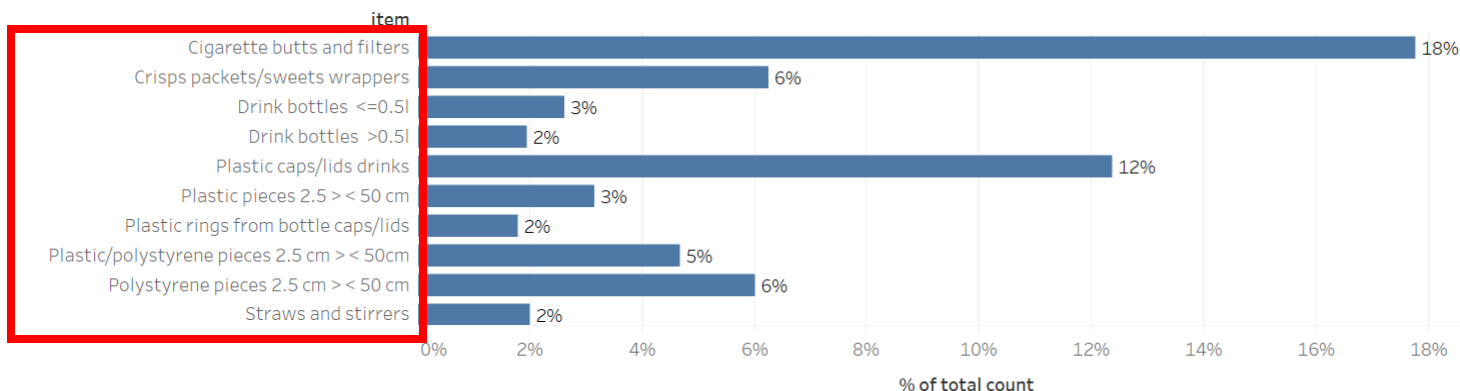
- ☐ Aarhus University, De..
- ☐ Archipelagos
- ☐ Archipelagos Institute ..
- ☐ Athens Goulandri Natu..
- ☐ Black Sea NGO Network
- ☐ Čista obala Slovenia
- ☐ Clean Coasts
- ☐ Clean Sea LIFE
- ☐ CleanPiterCoast
- ☐ DeFishGear - Slovenia
- ☒ EMBLAS Russia
- ☐ Estonian Green Move..
- ☐ European Association ..
- ☐ European Environmen..
- ☐ eXXpedition
- ☒ GEO BSMARINELITTER
- ☐ HCMR@School
- ☐ HELMEPA
- ☐ Hold Danmark Rent
- ☐ ICES Secretariat
- ☐ Independent
- ☐ Institute for Water of ..
- ☐ Keep Sweden Tidy
- ☐ Legambiente Onlus

Event type

- ☒ Cleanup
- ☒ Monitoring

Regional sea
All

Top 10 items





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Black Sea Clean Beach Day campaigns in GE, RF and UA





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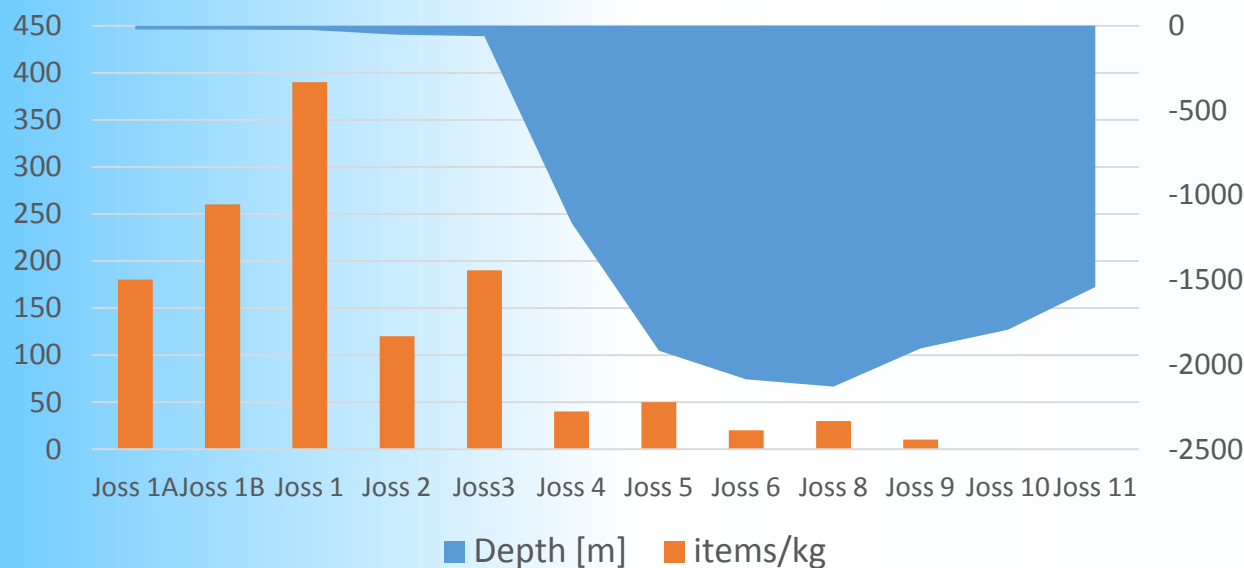


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Microplastics in sediments - EMBLAS-II

- 12 sediment samples - JOSS (Constanta-Odessa-Batumi)
- University of Florence, Italy

Correlation of MPs abundance in sediments with depths



MPs in 83% of samples.
Average abundance in all
samples 107 items/kg.

Abundance of MPs on the
North-Western shelf 10
times higher than in the
deeper open sea sediments.



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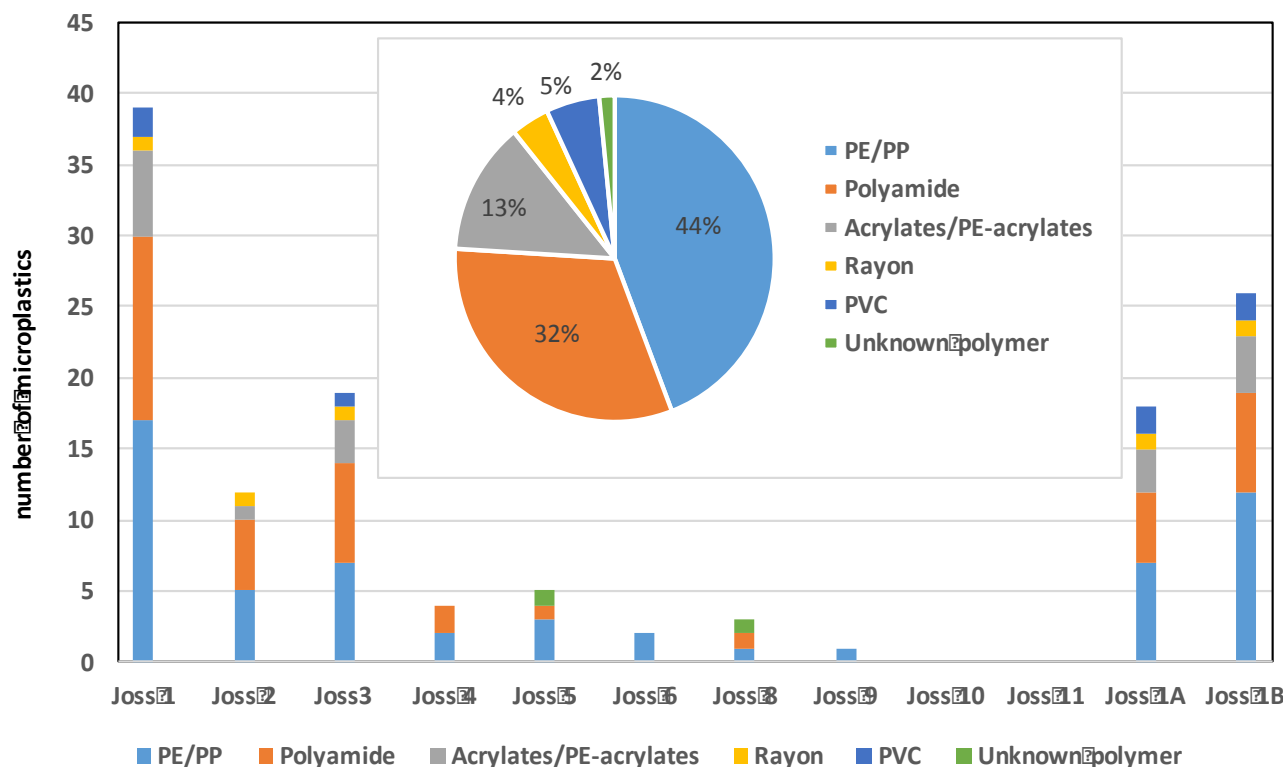


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Abundance of MP's types



Predominant abundance
of PE/PP, polyamide and
acrylate MPs

Good correlation with
the global plastics
production:

PE - plastic bags, bottles,
netting, drinking straws
- up to 38%

PP - ropes, bottle caps,
netting - up to 24%



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Conclusions

- Need for regular monitoring of:
 - Marine floating litter in the Black Sea region at both the national (six countries, coastal and territorial waters) and regional (Black Sea Commission, open sea) level – **Black Sea Surveys**
 - Riverine floating litter from all major rivers entering the Black Sea
 - Beach litter in a dense network
- Collection of data in a harmonised format in the central database - Black Sea Water Quality Database
- Involvement of general public
- A mechanism for informing decision-makers – input for new national regulations/legislation upgrade



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Thank you for your attention!

