

Plastic Busters MPAs Final Conference
Athens, 12-13 April 2022



Brijuni National Park, Croatia

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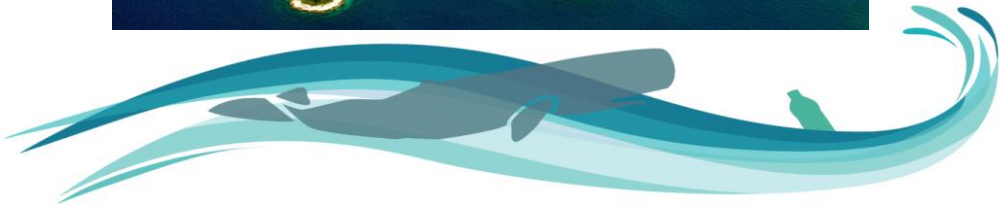


Brijuni National Park



- West coast of Istria, Croatia (northern Adriatic sea)
- 14 islands and islets
- total area 33.9 km²
- island and sea area (80 % sea)
- management structure (National, no private owners)

- Beach litter (macro and micro litter)
- Floating litter (macro and micro litter)
- Seafloor litter
- Litter in biota



- 4 locations, 2 seasons
- Semi-rural, remote/natural
- 12 648 items analyzed
- Total weight of litter: 382 kg

Beach litter

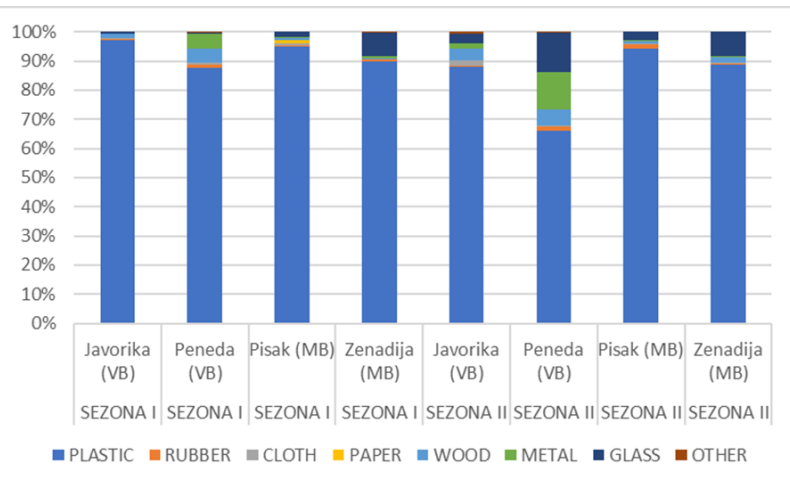
AVG: 3.02 ± 2.17 items/m²

Season	Location	items/m ²	CCI
Season I	Javorika (VB)	5.10	102
Season I	Peneda (VB)	0.67	13
Season I	Pisak (MB)	5.42	108
Season I	Zenadija (MB)	4.90	98
Season II	Javorika (VB)	0.48	10
Season II	Peneda (VB)	0.70	14
Season II	Pisak (MB)	2.62	52
Season II	Zenadija (MB)	4.32	86



AVG: 3919 ± 1097 particles/kg

	particles/kg
Javorika (VB)	3236 ± 664
Peneda (VB)	3592 ± 15
Pisak (MB)	4851 ± 2146
Zenadija (MB)	3997 ± 695



PLASTIC: 88 ± 9 %

25% G67 Sheets, industrial packaging, plastic

SOURCE: 19 ± 5.81 % COSTAL ACTIVITES

$18\% \pm 9.50$ % FISHERY

Floating litter



AREA 51 060 m² (transects - 12 km)

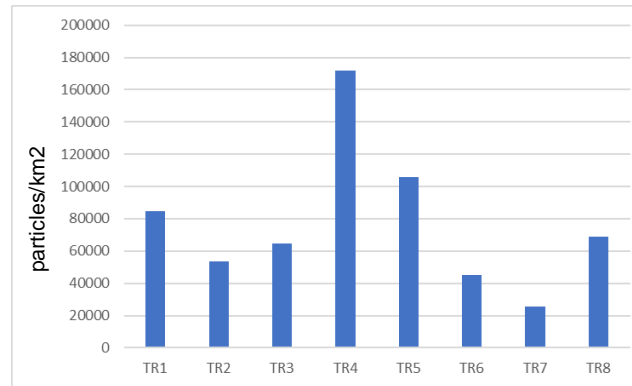
MACROLITTER:

	items/km ²
Transekt 1	23.50
Transekt 2	70.51
Transekt 3	376.03
Transekt 4	399.53
Transekt 5	47.00
Transekt 6	0
Transekt 7	0
Transekt 8	0
Transekt 9	47.00
Transekt 10	0
Transekt 11	0
Transekt 12	0

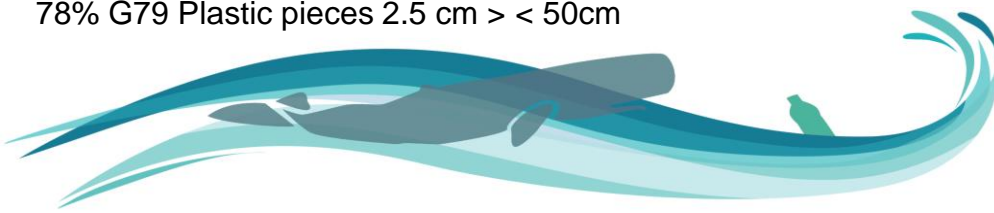
AVG 80.30 ± 145.72 items/km²

78% G79 Plastic pieces 2.5 cm > < 50cm

MICROLITTER:



AVG 77.6E+03 ± 45.3E+03 particles/km²

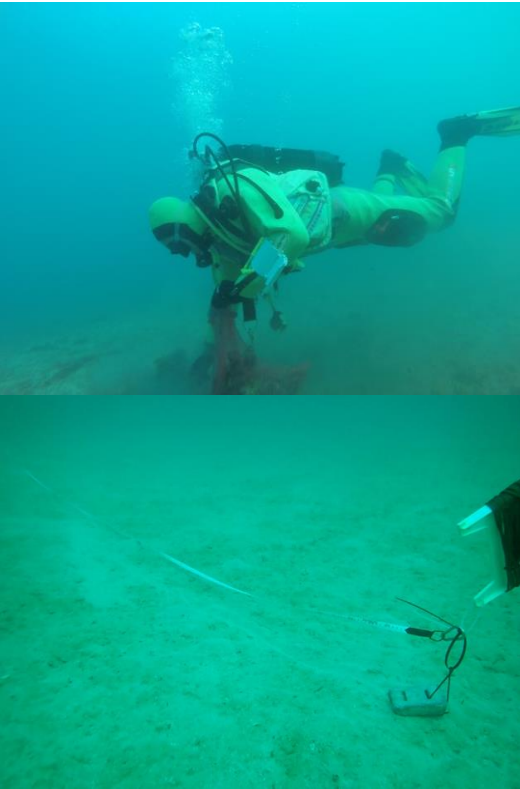


Interreg
Mediterranean



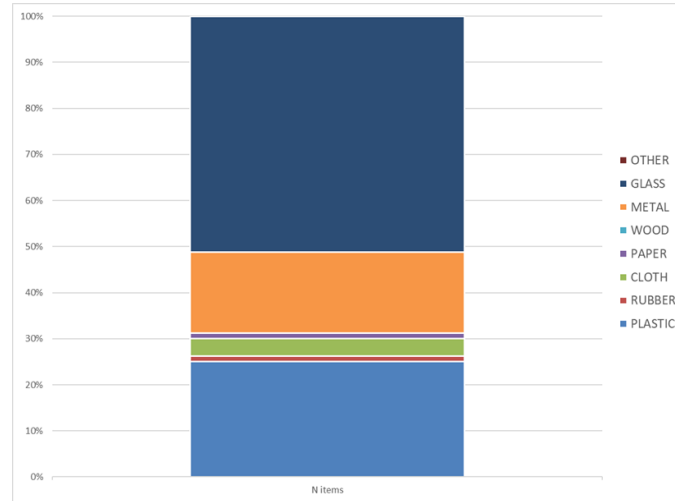
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Seafloor litter



8 items/100 m²

Source: 18 % Coastal activities, 5% Fishery



51 % G208 Glass or ceramic fragments >2.5cm
17% G198 Other metal pieces < 50 cm

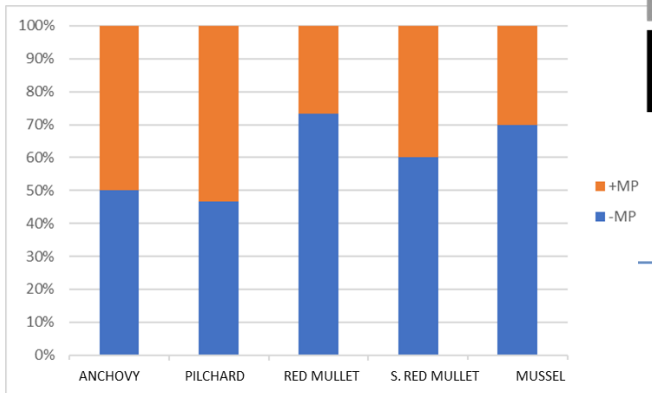
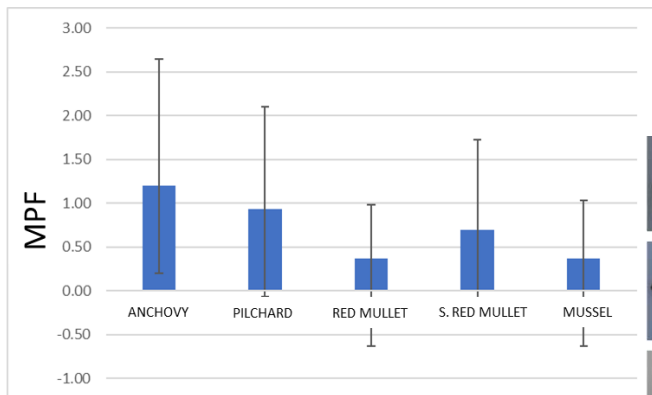


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Litter in biota



European anchovy (*Engraulis encrasicolus*)



European pilchard (*Sardina pilchardus*)



Red mullet (*Mullus barbatus*)



Striped red mullet (*Mullus surmuletus*)



Mediterranean mussel (*Mytilus galloprovincialis*)



Frequency + MP: 1-2
 $\leq 40\%$ +MP



Overall



Beach Macrolitter	3.02 ± 2.17 items/m ²
Beach Microlitter	3919 ± 1097 particles/kg
Floating Macrolitter	80.30 ± 145.72 items/km ²
Floating Microlitter	77.6E+03 ± 45.3E+03 particles/km ²
Bottom Litter	8 items/100 m ²
Litter in biota	40% +MP individua

Red: above Croatian AVG (*IPA DeFishGear 2017*)
Blue: under Croatian AVG (*IPA DeFishGear 2017*)

Prevention & mitigation

1. Adopt-a-beach
2. Banning SUP
3. Developing a network of collection points



Implementation of the mitigation measures

- “Adopt-a-beach”
 - team building – beach cleaning
 - special certificate that will be issued to concessionaires that include such activities.
- Launched the project “For an island without plastic”
 - 0 plastic for the hotel guests
 - promo material to incentivize the reduction of waste
- Additional points with recycling bins –
 - Applied for funds (20 000 €)
 - 3 additional points at the main island (Veliki Brijun) and several in hotels and at the congress hall (smaller volume that would serve guests but also maids)
 - for the island of Jerolim a flyer will be made and a disposable biodegradable bag will be donated when buying tickets (to carry waste and not dispose of it in the environment)
- Education for employees (maids and receptionists)



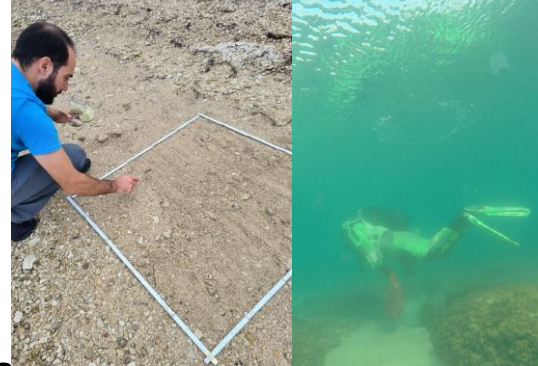
Lessons learned

- The majority of the litter source: costal activities and fishery
- Composition of the litter: the litter is not produce in the MPA
- Indication that the major input is from the cities near the MPA
- Specificity of the costal morphology, high CCI (“funnel bay effect”)
- Beach microlitter “concentration” – very high due the lack of sand beaches
- Good example – cooperation with the MPA management



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- Faculty of Civil Engineering, Architecture and Geodesy, Split, Croatia
- NP Brijuni
- Croatian Army
- MINGOR
- CIM Team



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Thank you!

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