

# The North-Eastern Aegean Sea as a model for marine litter assessment

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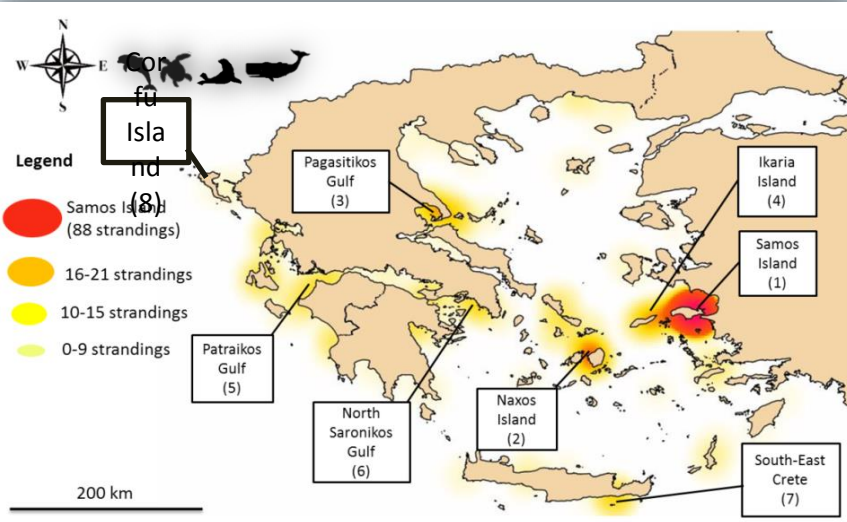






no-data  
data-deficient  
no MPA

50 km



## 2017/2018

- 8 dolphins  
(3 species: *D. delphis*, *S. coeruleoalba*, *T. truncatus*)
- 4 monk seals (*M. monachus*)
- 22 sea turtles  
(2 species: *C. mydas*, *C. caretta* - 9 with macrolitter ingested)
- 3 birds  
(2 species: *Larus michahellis*, *Phalacrocorax carbo*)
- fish + invertebrates (seasonally)





*C. caretta*  
November  
2017

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#### Note

Plastic mistaken for prey by a colony-breeding Eleonora's falcon (*Falco eleonora*) in the Mediterranean Sea, revealed by camera-trap

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*Falco eleonora*  
camera trap  
monitoring on  
Anidro Islet, 2015



Fig. 1. The female Eleonora's falcon providing nestlings with plastic waste (snack wrapper), the boxed images is 2 × enlargement from two angles.



# WHAT ARE MICROPLASTICS

## THE SILENT THREAT

- pieces that are **less than 5 mm**;
- typically made from polypropylene (PP 5), polyethylene (PET 1), terephthalate, or nylon;
- Persistent Organic Pollutant **POP**.



# Protocol for preliminary analysis

## STEPS

### *1) Sample collection:*

- **all** compartments content;
- **fully rinse the organ**.

### *2) Sample pre-filtration:*

- sieve (different mesh).

### *3) Sample processing:*

- salt solution 1:1 saturation (24 hours) for **density separation**;
- supernatant mixed with  $H_2O_2$  1:1 and  $CH_3COOH$  to **remove remaining debris**.

### *4) Sample filtration:*

- filtration system (flask-pump/tot ml);
- Glass Fibre Filters (GFF - GC; pore size  $1.2\mu m$ )

### *3) Categorising:*

- x40 magnification stereoscope;
- “hot needle test”.



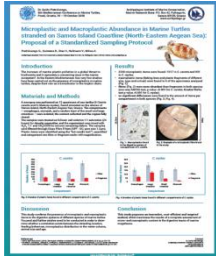
## ADVANTAGES

- Cost efficiency;
- Safety;
- Suitability (remote location, field, on-board);



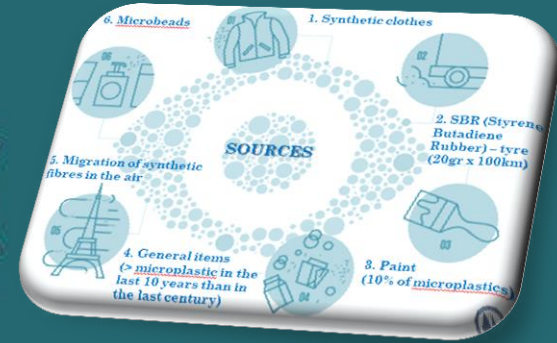
## CONTAMINATION:

- plastic-free tools and equipment (crystal jars, crystal Petri, metallic tools);
- filtered distilled water;
- random environmental contamination test (necropsy, dissection, sampling, filtration, analysis).





# FINDING PLASTIC



CHANGE THE FOCUS: multidisciplinary/factorial approach

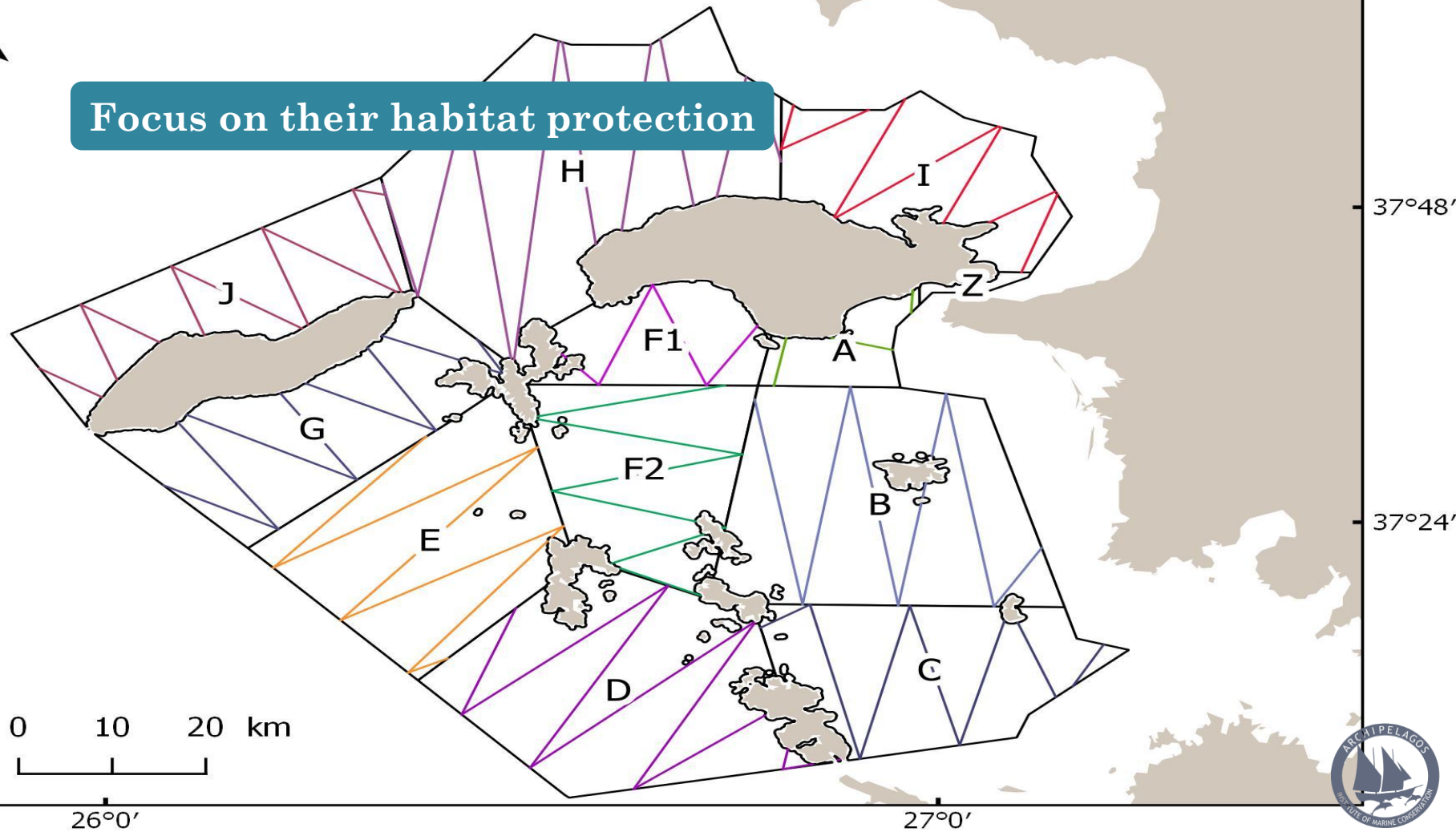
target the **cause** while treating the **symptoms**





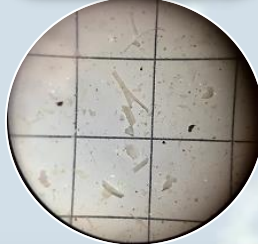
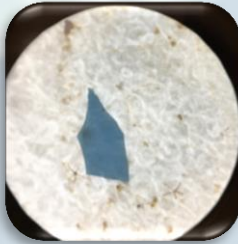
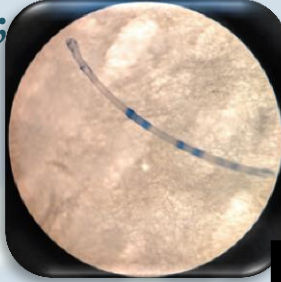


Focus on their habitat protection



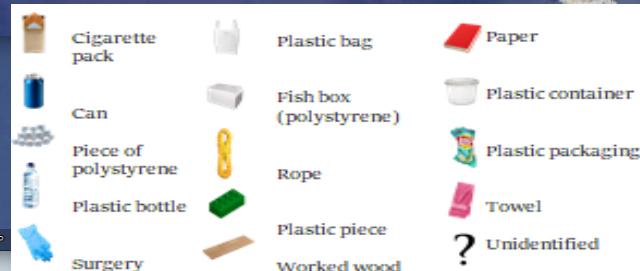
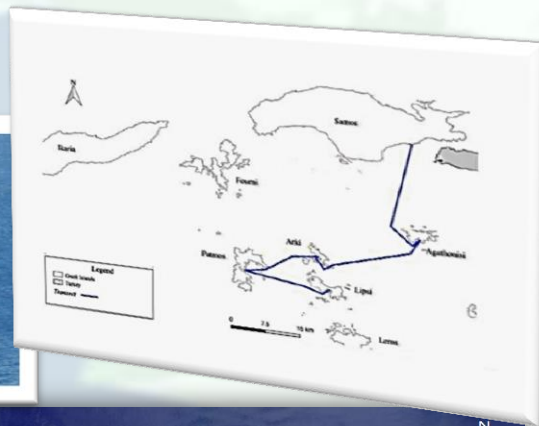


- Boat-based & kayak-based survey;
- sea surface distribution: plankton & Manta net;
- vertical distribution (water column);
- sea floor & river bed sediment;
- fresh water + salt (saltmarsh);
- tap water.

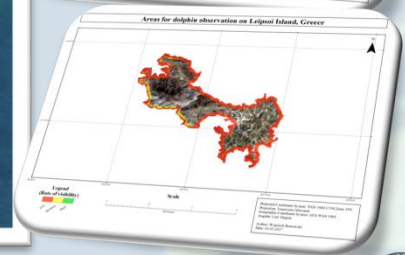




# MARINE LITTER MONITORING



# Onshore and onland MACROPLASTIC survey (daily+seasonal)







## Resources

Basic equipment & facility



Human resources (researchers, students, volunteers)  
Citizen science + awareness campaigns







**COSA PREFERISCI?**

# Grazie per l'attenzione!



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