PERSEUS link with MERMAID: Marine litter surveys in Cilician Basin (MSFD D10)

MERMAID Project Website: http://mermaid-era.eu/

Marine **E**nvironmental targets linked to **R**egional **MA**nagement schemes based on **I**ndicators **D**eveloped for the Mediterranean (**MERMAID**)

Aim

To provide additional scientific understanding for assessing GES in a coherent and holistic manner by a state of the art methodology that will be developed and applied in three study areas (**Gulf of Lions, Saronikos Gulf and the Cilician Basin**) of the Mediterranean Sea, and proceed with linking the management measures designed for these areas to the targets set up for the achievement of GES.

- Commercially exploited fish and shellfish (D3),
- Permanent alteration of hydrographical conditions (D7),
- Pollution effects of contaminants (D8),
- Contaminants in fish and other seafood (D9)
- Marine litter (D10)

WP3. Design of integrated monitoring programmes for the assessment of "Ecological Status"

Task 3.3 Run short-term pilot surveys to test data gathering according to requirements of the proposed indicators.

Descriptive 10. Marine Litter

"Properties and quantities of marine litter do not cause harm to the coastal and marine environment"

Criteria 10.1 *Characteristics of litter in the marine and coastal environment*

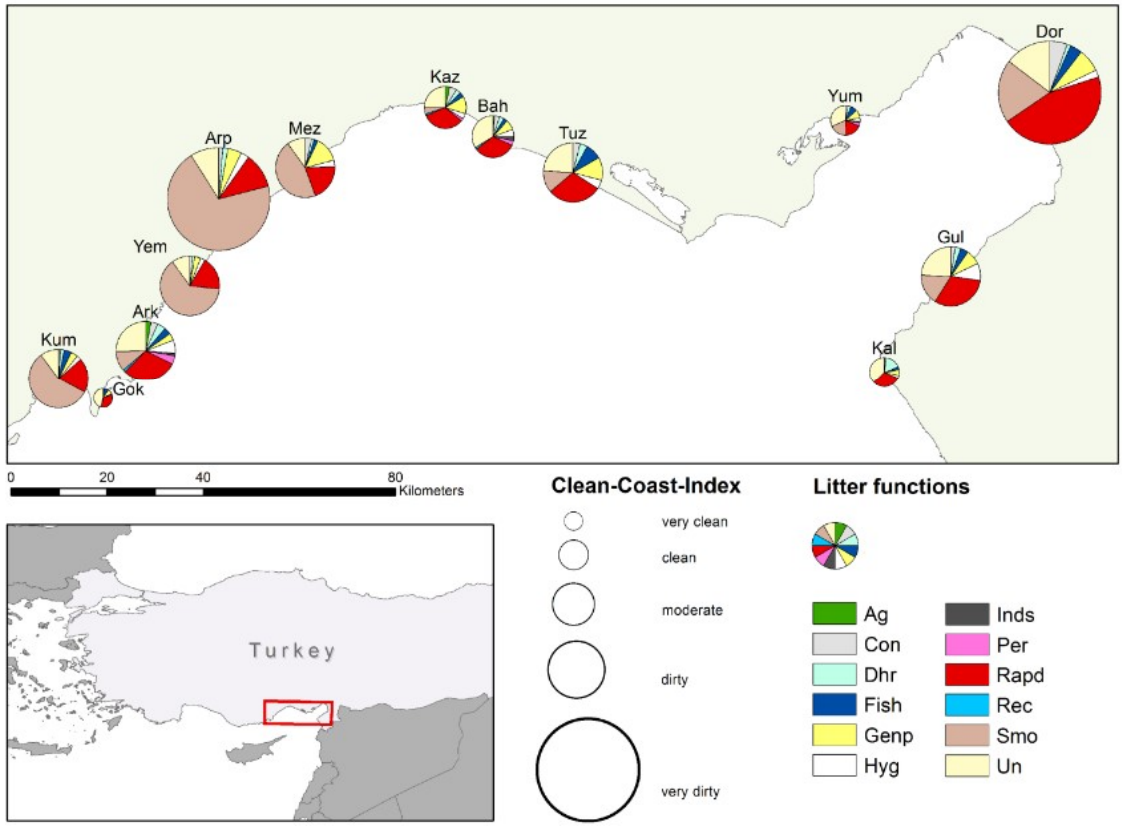
i. trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source **(10.1.1)**
ii. trends in the amount of litter in the water column (including floating at the surface) and deposited on the sea-floor, including analysis of its composition, spatial distribution and, where possible, source **(10.1.2)**
iii. trends in the amount, distribution and, where possible, composition of microparticles (in particular microplastics) **(10.1.3)**

Criteria 10.2 *Impacts of litter on marine life*

iv. trends in the amount and composition of litter ingested by marine animals (e.g. stomach analysis) **(10.2.1)"**

Cilician Basin Case;

1. The level of litter pollution, the major activities contributing to the pollution and the land-based origin of litter items in Cilician Basin beaches (April 2014)

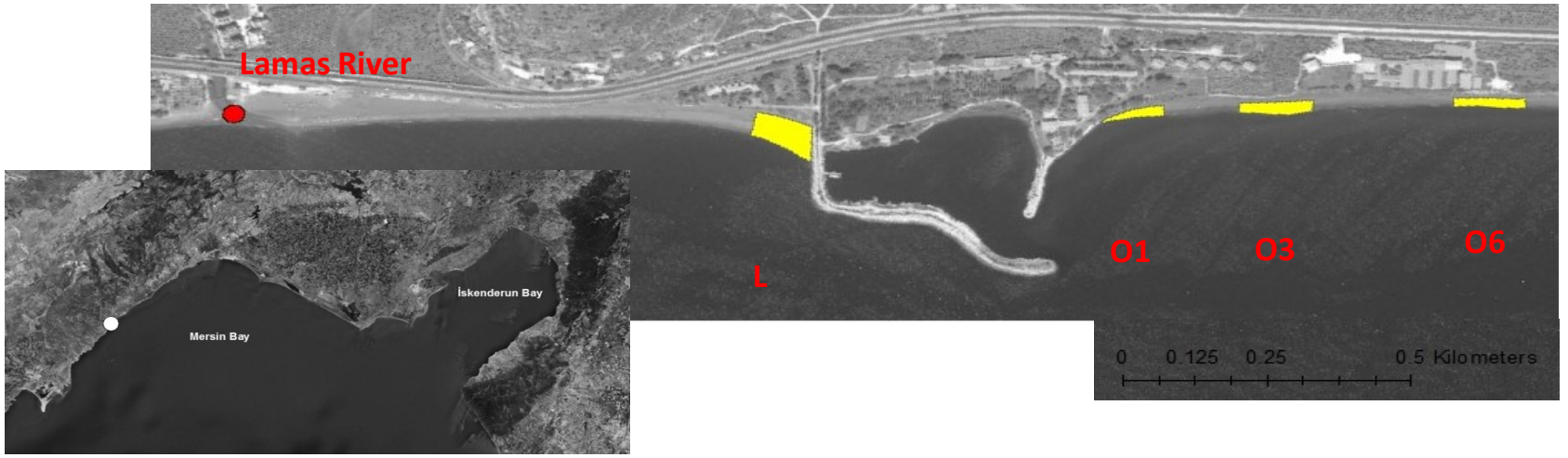


- April 2014 (snapshot sampling)
- Classification in accordance with MSFD Guidance on Monitoring of Marine Litter in European Sea

M.Sc. Thesis: Carina LİNDER

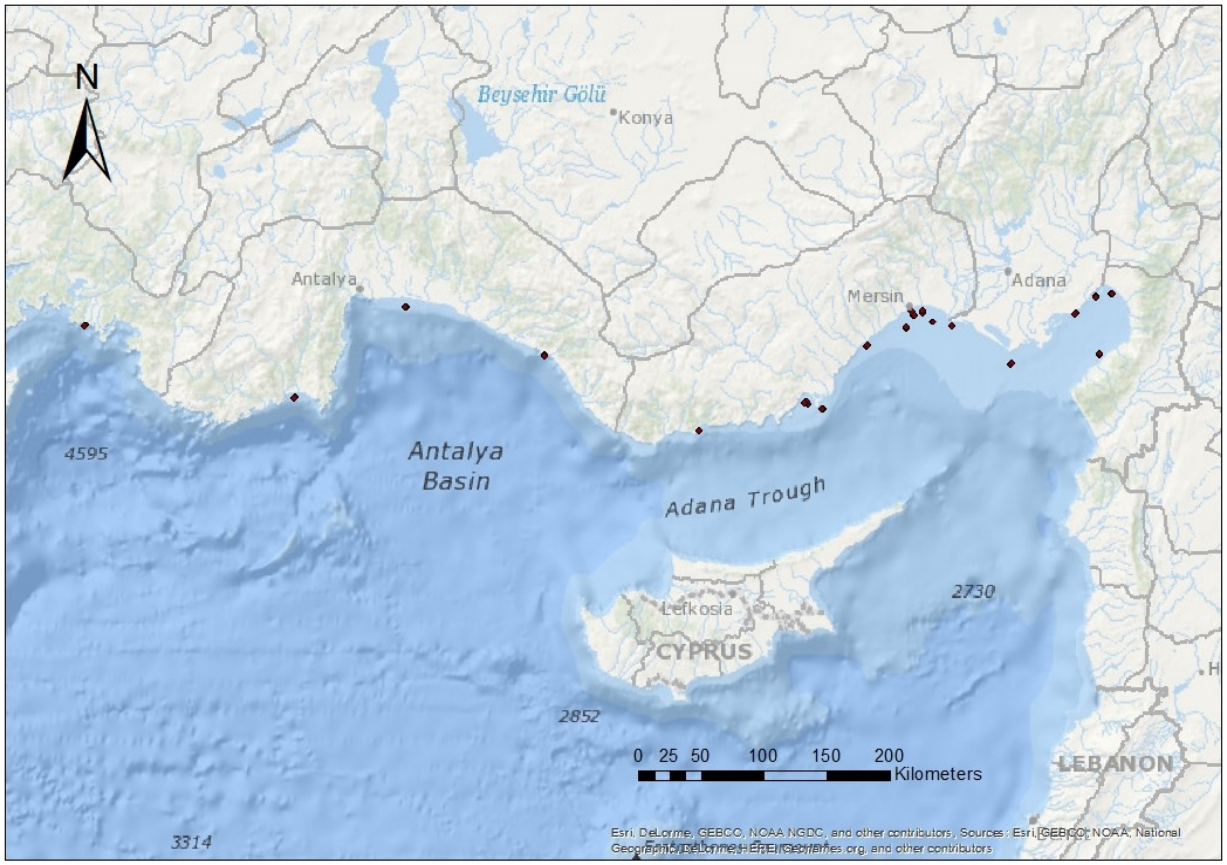
2. Evaluation of existence of macro litter and microplastic particles on a model beach in Cilician Basin (2013 - 2014)

- METU – IMS beach
- Starts from September 2013
- Weekly period for 12 month / Monthly since the start
- Classification in accordance with MSFD Guidance on Monitoring of Marine Litter in European Sea.



3. Evaluation of existence of microplastic particles on sea water and seafloor Cilician Basin (2014 - 2015)

- Water column (WP2 plancton net / 200 µm / 10 min)
- Water surface (Manta net / 333 µm)
- Sediment (Van Veen Grab Sampler / 50 ml)



Methodologies are in accordance with MSFD Guidance on Monitoring of Marine Litter in European Sea.

4. Evaluation of existence of microplastic particles digestive system of fish species Cilician Basin (2015)

- December 2014 (First look)
- Trawl samples
- Stomach content analysis
- 5 areas
- A total of 68 individuals
- 8 species

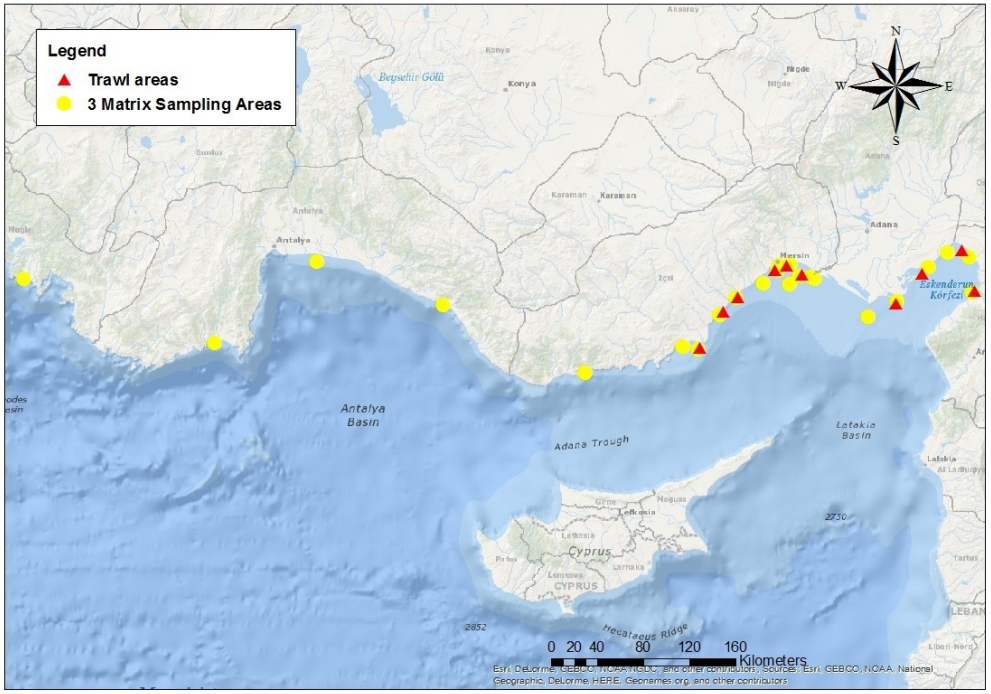
Species list

- *Lagocephelus spadiceus*
- *Saurida undosquamis*
- *Nemipterus randalli*
- *Pagellus erythrinus*
- *Pagellus acerna*
- *Mullus barbatus*
- *Upeneus mollucensis*
- *Upeneus pori*

National Funded New Project (114Y244)

Project Title: Estimating the quantity and composition of microplastic in Mediterranean cast of Turkey; its potential for bioaccumulation in seafood.

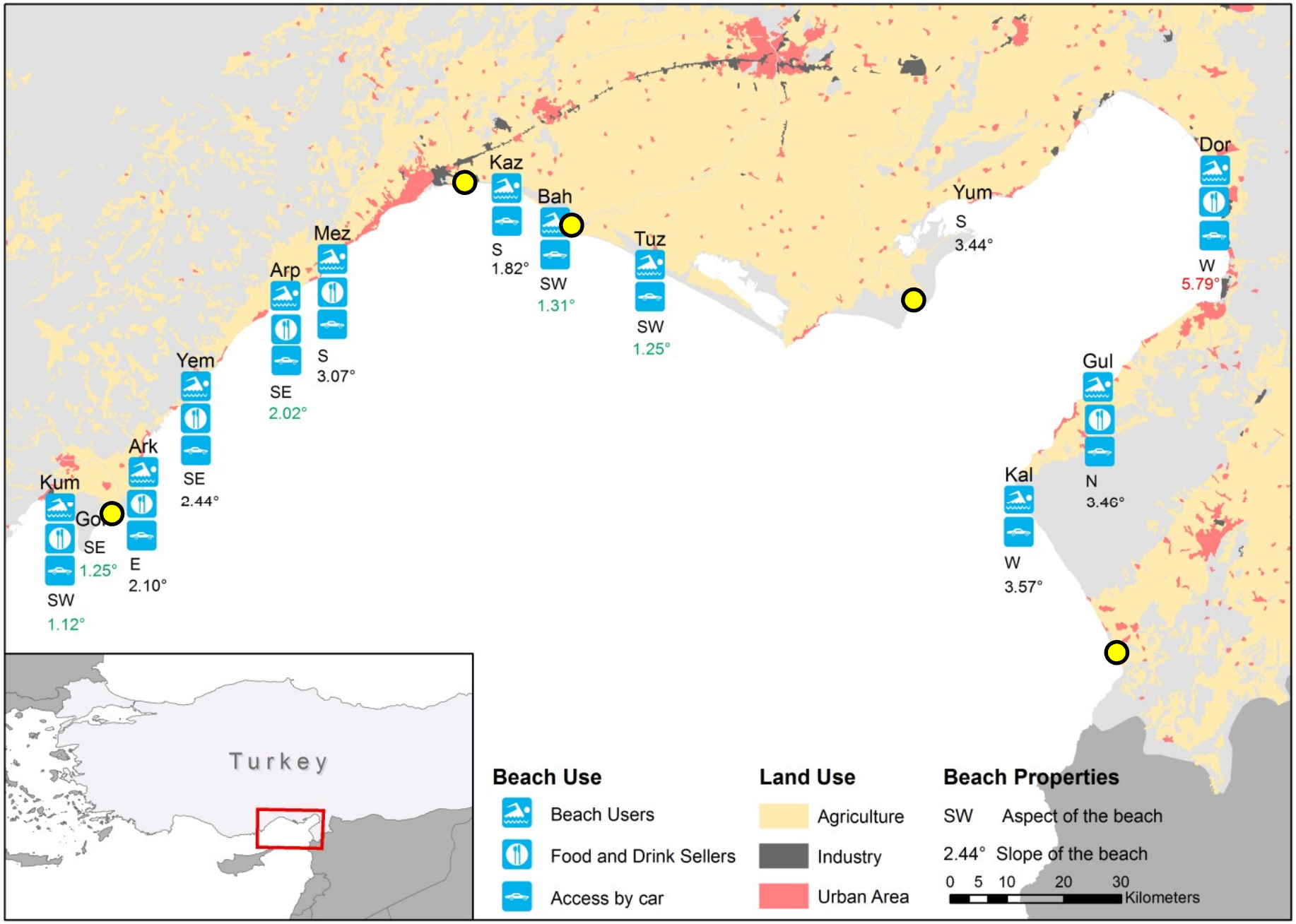
- Project will evaluate bioaccumulation potential of different types of micro-plastics(*) in the organs of fish upon dietary exposure and water exposure in controlled laboratory conditions. (*Sparus aurata*)
- The process of bioaccumulation of micro-plastic through the food chain will be monitored in marine environment by analyzing samples of trophic levels of marine fauna including filter feeders, zooplankton, plankton feeders, omnivorous, and carnivorous fish species.



İP3

(*) plastic polymers to be used in the experiments

- high density polyethylene (HDPE),
- low density polyethylene (LDPE),
- polyethylene terephthalate (PET),
- polypropylene (PP),
- polystyrene (PS),
- polyvinyl chloride (PVC),
- polyamide (PA)


Kum
SW
1.12°
Gol
SE
1.25°
Ark
E
2.10°
Yem
SE
2.44°
Arp
SE
2.02°
Mez
S
3.07°
Kaz
S
1.82°
Bah
SW
1.31°
Tuz
SW
1.25°
Yum
S
3.44°
Kal
W
3.57°
Gul
N
3.46°
Dor
W
5.79°
Turkey
Beach Use
Beach Users
Food and Drink Sellers
Access by car
Land Use
Agriculture
Industry
Urban Area
Beach Properties
SW Aspect of the beach
2.44° Slope of the beach
0 5 10 20 30
Kilometers

Olgaç GÜVEN