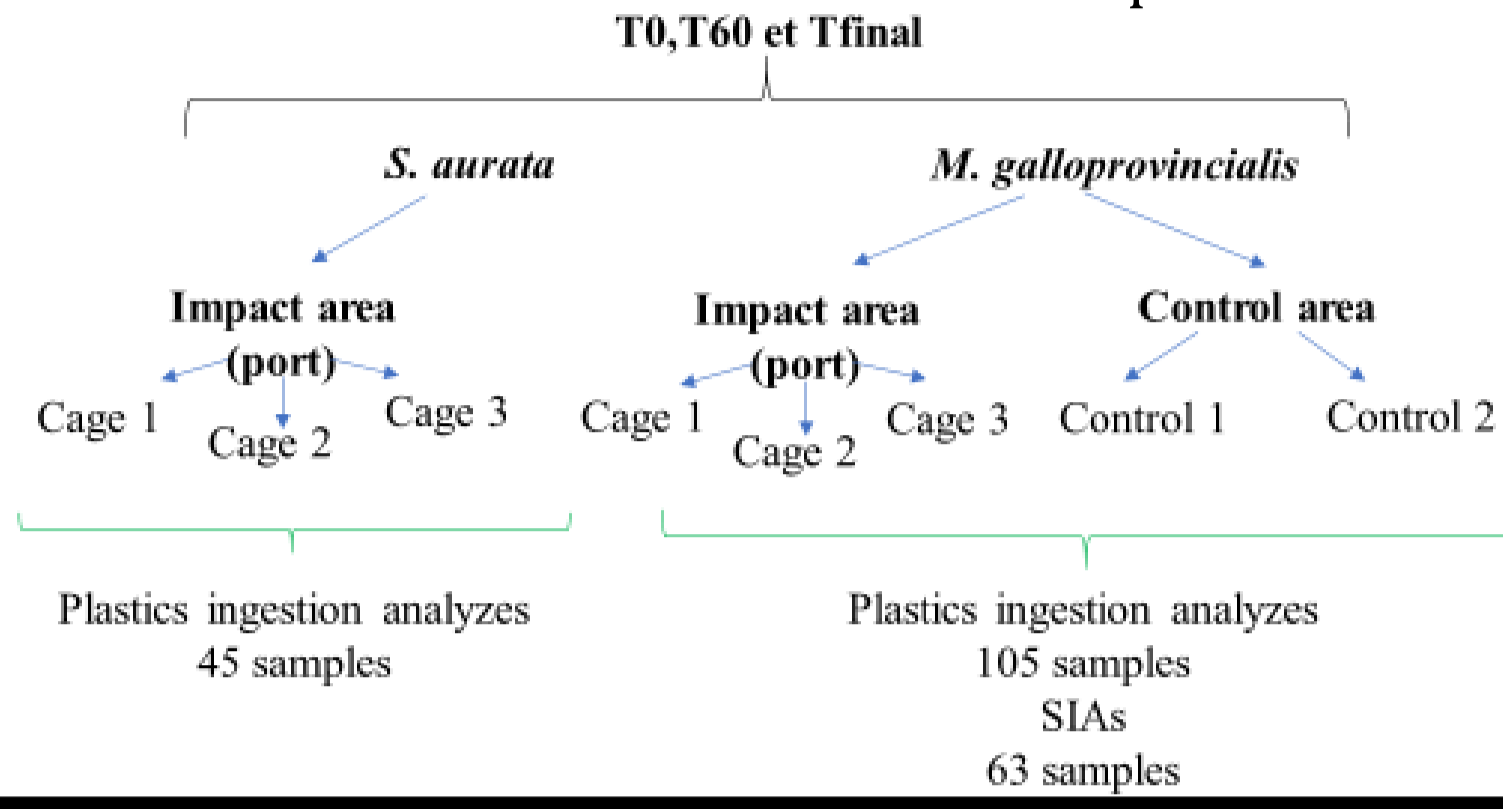


CONTEXT

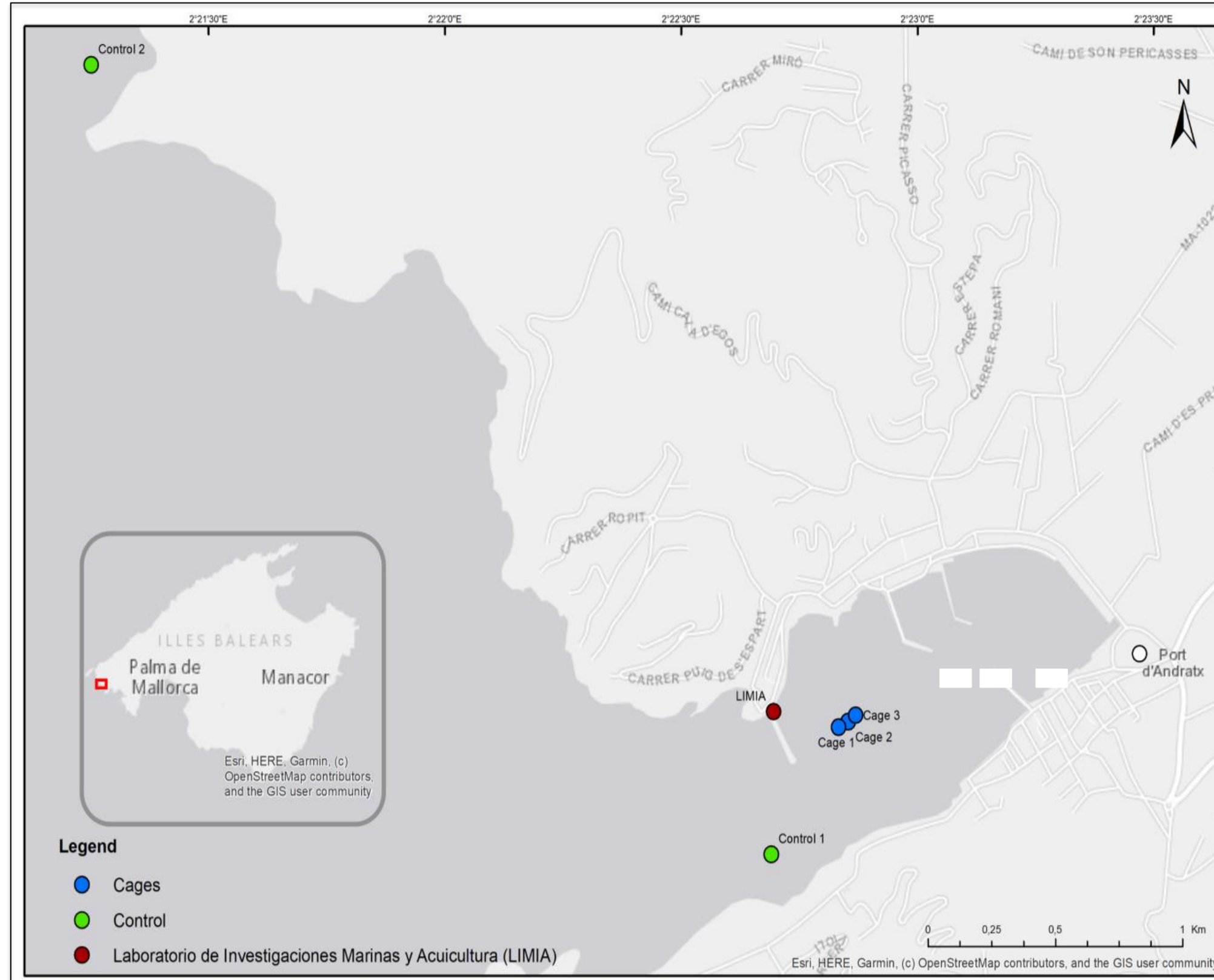
Plastic debris are ubiquitous and are found in marine aquaculture. It is essential to recognize the occurrence and potential impacts of plastics from aquaculture and estimate the general impact of this practice on the quality and safety of cultured organisms.  
 Two key species: *Sparus aurata* and *Mytilus galloprovincialis*  
 Tested for four months to assess the effects of plastics derived from a multi-trophic aquaculture system into the natural environment and impacts on biological parameters



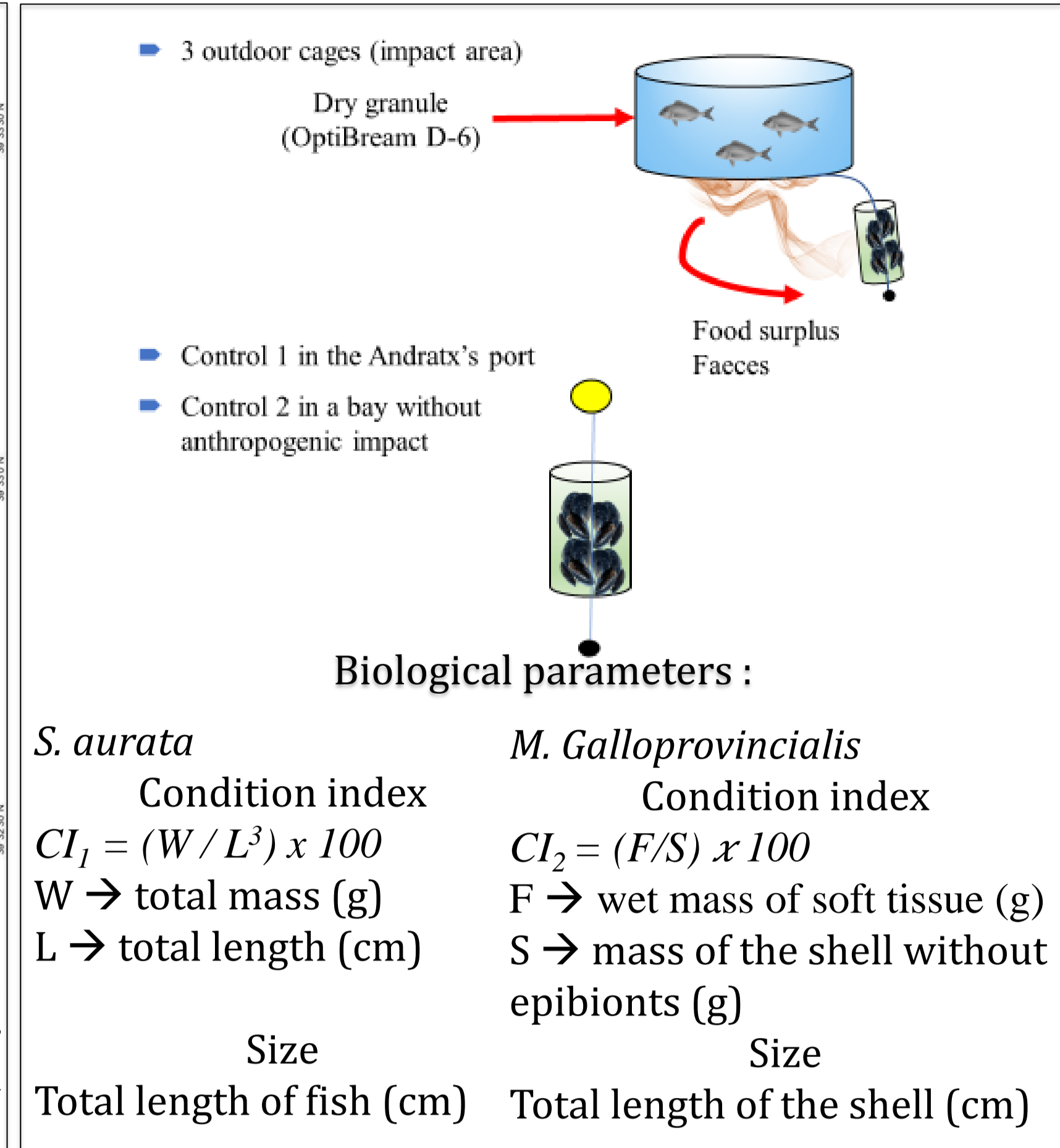
AIM

- ✓ Assess the occurrence of plastics derived from aquaculture facilities in *Sparus aurata* and *Mytilus galloprovincialis*
- ✓ Assess changes in *Mytilus galloprovincialis* grown in outdoor cages compared to wild mussels using stable isotope analyzes (SIAs) and biological parameters

STUDY AREA AND BIOLOGICAL PARAMETERS



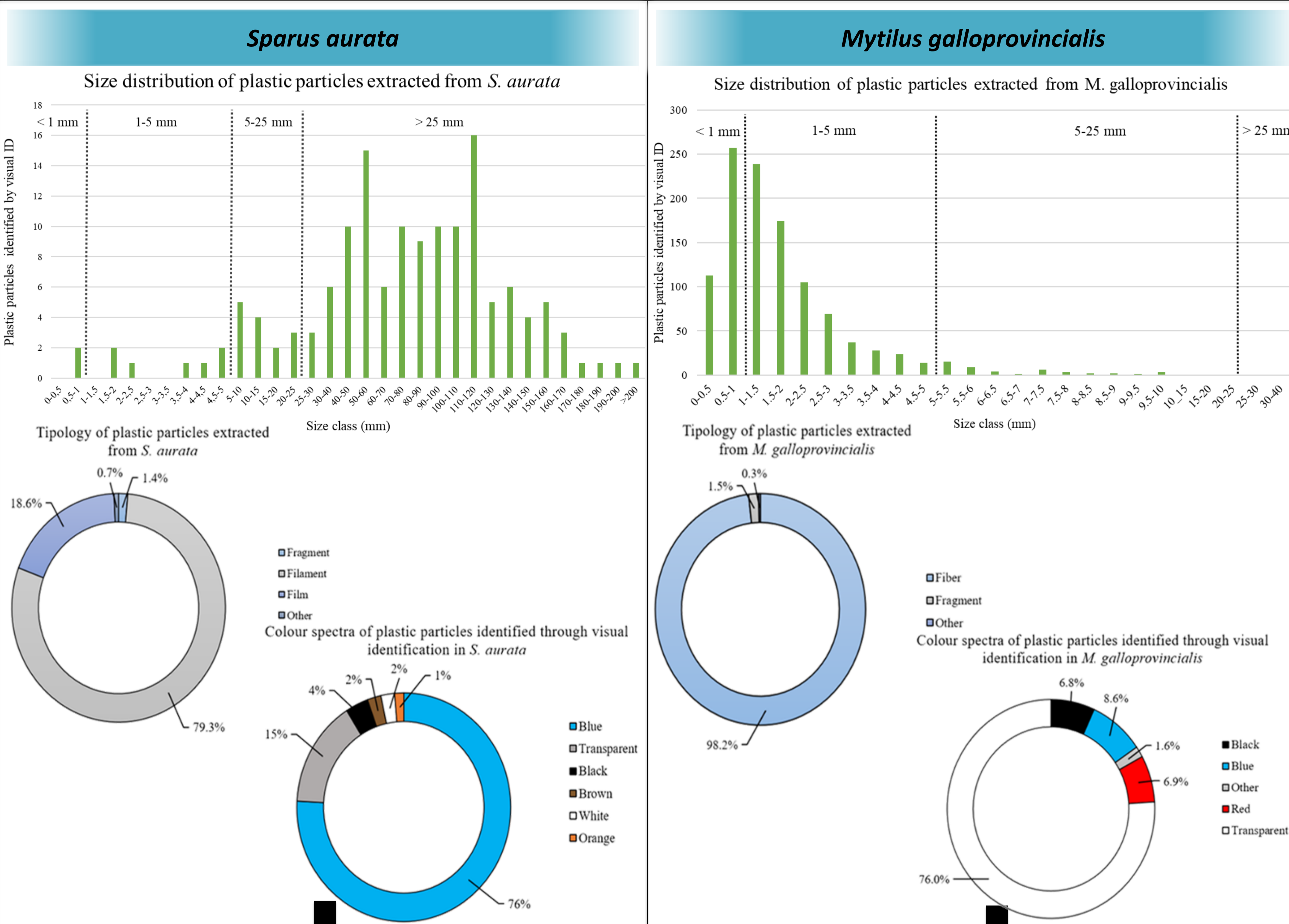
Map of the study area, port of Andratx in Mallorca (Balearic Islands). The circles indicate sampling sites. The three outer cages in blue, control sites in green.



RESULTS

Occurrence of plastics derived from aquaculture facilities in *Sparus aurata* and *Mytilus galloprovincialis*

Method : digestion of soft tissues (*M. galloprovincialis*) and gastro-intestinal tracts (*S. aurata*) with potassium hydroxide (KOH) followed by a visual sorting.

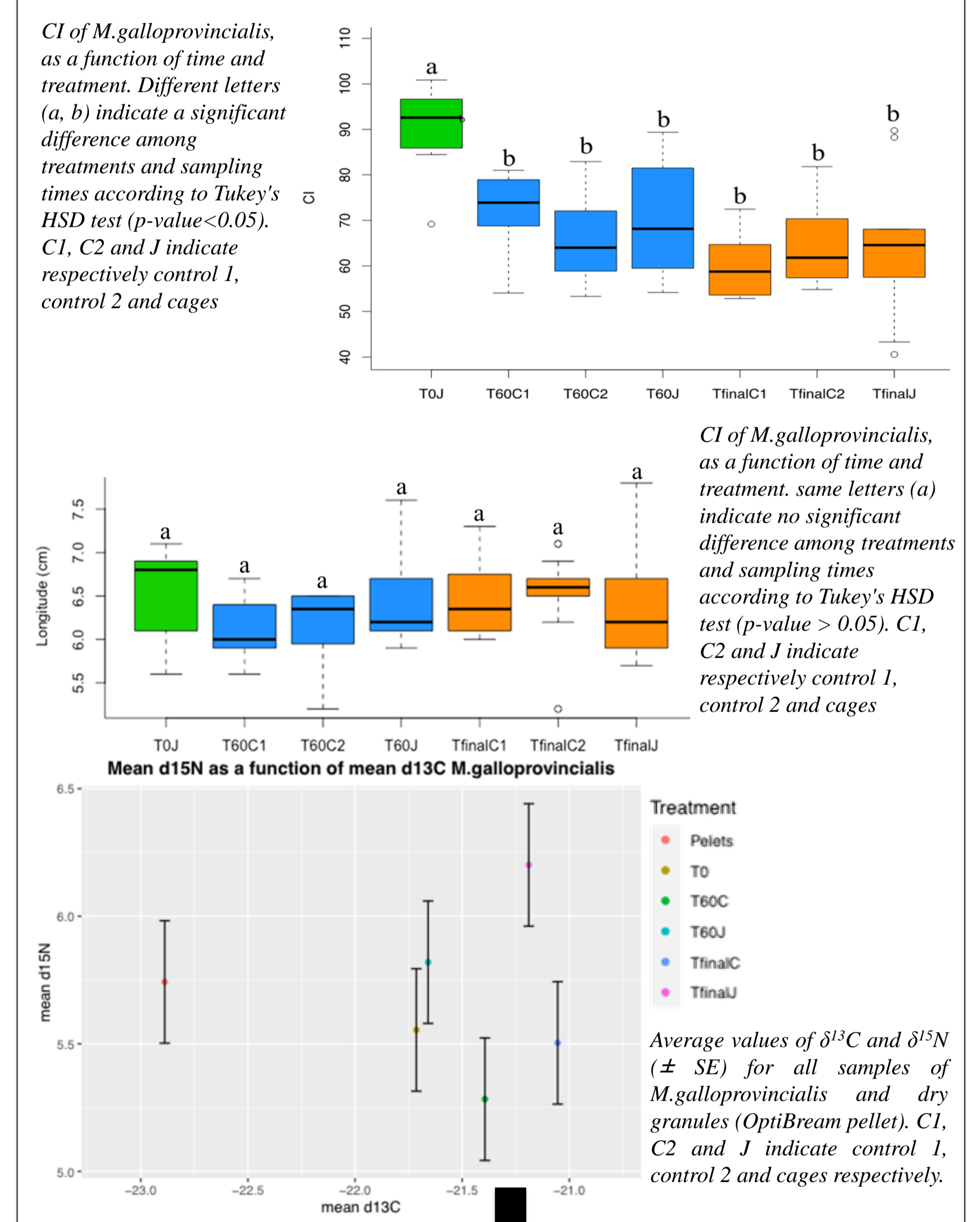


- ✗ No significant differences observed over time and between cages for CI and FI (ANOVA, p-value > 0.05)
- ✗ No correlation was observed between the abundance of plastic items ingested with the CI and the total length of the fish (Kendall's correlation, p-value > 0.05)
- ➡ Physical damage has been observed : false feeling of fullness, ulcers ...

- ✗ No correlation was observed between the abundance of plastic items ingested with the CI and the total length of the mussels (Kendall's correlation, p-value > 0.05)
- 🐚 Mussels could acclimatize to exposure to plastic pollution in the Mediterranean

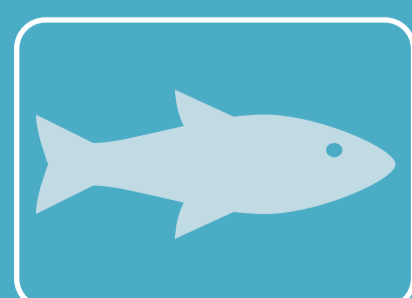
Changes in *Mytilus galloprovincialis* grown in outdoor cages compared to wild mussels using stable isotope analyzes and biological parameters

Method : Soft tissues from *M. galloprovincialis* were dried at 60°C for 72 hours and grounded into a fine powder for SIAs. For each sample 2 ± 0.1 mg of powder were weighed. Isotopic signatures of δ<sup>13</sup>C and δ<sup>15</sup>N were analysed with a continuous flow mass spectrophotometer (Thermo Finnegan Delta x-plus).



- ✗ No correlation between stable isotopes and the abundance of ingested plastic items has been identified (Kendall correlation, p-value > 0.05)
- 📈 Changes in stable isotope values reflects environmental conditions and food uptake and is not related to plastic ingestion
- 👤 Represents a first step in the study of the effect of the ingestion of plastic on the stable isotopes and mussels.

CONCLUSION



*S. aurata*

- Mainly ingestion of macrofilaments from aquaculture (visually)
- This ingestion does not influence the biological parameters studied but a physical impact was observed



*M. galloprovincialis*

- Ingestion of transparent microfibers and accumulation of microplastics observed
- CI and size → unaffected by ingestion of microplastics
- Under the influence of sea bream culture → filtration of organic waste