

**Composition, spatial distribution and source of floating marine macro litter, in the Tuscan-Corsica marine ecosystem in the Pelagos Sanctuary, monitored along a transborder transect**  
 Cristina Luperini<sup>1,2</sup>, Antonella Arcangeli<sup>3,4</sup>, Alberto Castelli<sup>5</sup>.

<sup>1</sup>Università di Pisa, Dipartimento di Scienze della Terra; <sup>2</sup>Accademia del Leviatano; <sup>3</sup>ISPRA, Dipartimento Difesa della Natura; <sup>4</sup>Università Roma 3, Dipartimento di Scienze; <sup>5</sup>Università di Pisa, Dipartimento di Biologia

E-mail contact: [livornomonitoraggio@accademiadelleviatano.org](mailto:livornomonitoraggio@accademiadelleviatano.org)

Plastic/litter is nowadays part of the marine ecosystem. Waste sourcing from land and sea floats on the sea water column threatening marine life through ingestion or entanglement (i.e. ghost nets). Floating Marine Litter (ML) can end at the bottom of sea or be washed on the beach and, in time, is fragmented in microlitter. The recent MSFD considers ML as one of the main causes of pollution of the marine ecosystem and stated that the GES of the waters needs to be determined also on the “*Properties and quantities of marine litter*”. In addition, EU Directive 2008/98/EC on waste requires prevention programmes not later than December 2013; also the MARPOL Convention calls on to the need to assess how much litter enters the sea.

The use of ferries/large ship as platform of observation along a fixed transect for the assessment of floating ML has been already used by several international monitoring programs. Advantages of the method include low cost, the repeatedly of the monitoring also in high sea water and the transborder synergy within marine sub-regions. Furthermore, the monitoring program can be integrated with other environmental surveys.

A dedicated observer located on the ship deck monitored a 100m wide transect/strip (the stat-unit) in which all floating object greater of 30cm were detected (sea state <2) without uncertainly along the Livorno-Bastia ferry route. Samplings were categorized according to the OSPAR guidelines and the transect was divided in four areas.

The final goal of this systematic monitoring is to be able to calculate the composition, the spatial distribution and, where possible, the source of floating ML.

In addition, considering the risk for large marine vertebrates, in particular squid eaters that can mistake plastic bags for preys, litter and cetacean spatial distribution were overlaid to assess potential risk areas.

Preliminary results (Fig.1), based on 880 km travelled during 8 transects, showed a density of  $2 \pm 0,2 \text{ Km}^{-2}$  of items. Litter density was uniformly distributed along the monitored transect and plastic represent 84% of the sightings.

Further monitoring of floating ML will be useful to set baselines both for the MSFD and the “Waste-Directive” in particular because, unlike microlitter, trend in reduction, following waste prevention measures, could be measured also in the short term. In addition results could be compared with beach litter surveys.

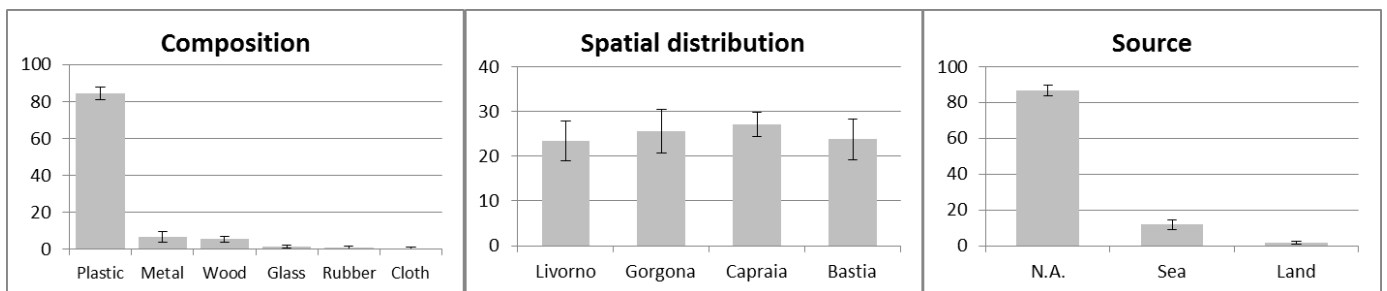


Fig.1 % values of Composition, Spatial Distribution, Source  $\pm$  S.E. of floating litter items larger than 30 cm.