FROM THE MAINLAND TO SEA AND BACK: PLASTIC'S PATH IN DEMERSAL COMMUNITIES EXPLOITED BY FISHING

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Plastics and microplastics (particles Ø <5 mm) are the most persistent litter categories in the marine environment, due to their high resistance to environmental degradation and their widespread distribution. The impacts of these wastes on marine ecosystems are widely debated and researched. Recently, many studies have focused on the ingestion of macro debris and microplastics by marine species, including commercial species. The potential adverse effects of this phenomenon include physical obstructions, reduction of fitness and accumulation/transfer of chemical contaminants along the food web. Moreover, if plastic litter "replaces" natural food, it is important to investigate whether they affect the trophic ecology of marine species including key fishing resources and stocks exploited for the human consumption. Hence, studies on fisheries and stock management associated with research on plastics ingestion is a very important task to fill knowledge gap, while a challenging topic is represented by the standardization of investigation methods. The ingestion of plastics by species of commercial importance could reduce fishing quality. The reduction in body-mass growth of exposed fish can consequently decrease the economic value of a species and therefore also negatively affect the system production. Plastics ingested by commercial species could be ingested by other species, including humans, and thus fishing activities represent a return flow of these pollutants to the mainland and to the anthropic components of the ecosystems. However, our knowledge about the fate and impacts of plastics remains incomplete.

The project aims to combine data collected through experimental campaigns and samples collected through professional fishing in order to: investigate the correlation between levels of environmental contamination (i.e. distribution and abundance of macro debris in the sea bottom) and amount of plastics ingested by marine species at different trophic level; analyze the diet of individuals ingesting plastics (ecological effects); model the return flow of plastics ingested by demersal species to the mainland. The data and results produced in this project will contribute to the reconstruction of a *plastic's circular path* model, which from the mainland reaches the fishing ground and then, through the fishing activity itself, returns to the mainland up to the food supply chain. Finally, the collected data will be used to map fishing grounds according to the level of anthropogenic contamination. This will make it possible to assess the quality of fish based on their contamination of fishing grounds.

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