

Turtles Help Tackle Ocean Plastic Pollution in Europe

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A new directive adopted by the European Union aims to reduce marine litter impacts on sea turtles and other species throughout European waters. © Jérôme Bourjea



Plastic litter is now ubiquitous in the world’s oceans, and it has considerable impacts on marine wildlife. More than 700 species are known to be affected by litter, primarily through ingestion and entanglement, including all species and age classes of sea turtles globally.

To address this growing problem, and other threats to the marine environment across Europe, in 2008 the European Union (EU) adopted the Marine Strategy Framework Directive (MSFD), which commits EU member states to actions that improve ocean health. Among the 11 descriptors outlined by the MSFD, the aim is to tackle this scourge by reducing the amount of marine litter so that it “no longer cause[s] harm to the coastal and marine environment.” Several indicators were developed to assist in monitoring the distribution, abundance, and impacts of plastic litter in the oceans.

Sea turtles, especially loggerheads, are valuable indicators of ocean health in EU waters because they have large spatial distributions and use many different marine habitats throughout their lives. In the case of plastic litter, sea turtles ingest plastic both directly, by confusing it with their natural prey, and indirectly, when it is mixed in with their natural food items. Although plastic ingestion is rarely found to have been a certain, direct cause of death for turtles, it has many negative health impacts. Thus, sea turtles were chosen as a focal species for monitoring the marine litter component of the MSFD.

To support the MSFD, as well as the Regional Sea Conventions (the Oslo/Paris-Macaronesia Convention in the Atlantic Ocean, the Barcelona Convention in the Mediterranean, and the Helsinki Commission in the Baltic), a two-year, EU-funded project was launched in 2017 to evaluate marine litter impacts on sea turtles. The project, called INDICIT (Implementation of Indicators of Marine Litter on Sea Turtles and Biota in Regional Sea Conventions and Marine Strategy Framework Directive Areas) began by developing and disseminating standardized tools for monitoring litter impacts on turtles, including a multilingual monitoring protocol, observation forms, and other data recording tools. To help stakeholders use the new protocols, INDICIT launched an online video tutorial that detailed field and laboratory methods for properly handling turtles and recording data concerning ingested litter.

More than 100 institutions, including stranding networks, rescue centers, veterinary institutes, and

research laboratories, participated in measuring litter impacts on sea turtles using the INDICIT protocol during 2017–19. Data were collected on the digestive tract contents of more than 1,000 sea turtles found throughout EU waters. Alarming, plastic litter was found in more than 60 percent of autopsied turtles, and locally the occurrence can reach 100 percent. The plastics were often single-use items and consisted of fragments of hard plastics, sheet-like packaging, plastic bags, and threadlike materials that generally come from fishing gear. INDICIT’s findings have clearly demonstrated the extent of marine litter impacts on wildlife in EU waters, and they provide a strong justification for European countries to take action to address the problems through a variety of actions, such as imposing limits on single-use plastics.

On the basis of these findings, the INDICIT consortium—made up of 10 partner institutions in seven countries, supported by an advisory board of member state representatives and experts—developed marine litter impact indicators to monitor the effectiveness of measures to address marine litter impacts on marine fauna. For the indicator of “litter ingested by sea turtles,” the consortium also proposed thresholds below which marine litter is supposed to no longer cause harm to individual sea turtles’ health (“good environmental status” may be reached).

A second two-year project, called INDICIT II, was launched in early 2019 to better understand how to deliver measurable impacts in lowering “litter ingested by sea turtles” by reducing plastic litter, such as through bans of single-use plastics. The project will also study the impacts of litter ingestion on individual turtles’ health. Beyond sea turtles, INDICIT II aims to develop indicators related to entanglement and ingestion of microplastic particles (smaller than 5 millimeters).

The greatest hope of INDICIT’s hundreds of partners across Europe is that their work can advance efforts to reduce the threats to the ocean posed by plastic litter and thereby improve the lives of sea turtles, ocean biodiversity, and people everywhere. •

To access the monitoring tools developed by INDICIT and view a short documentary about the project, visit <https://indicit-europa.eu/>. The INDICIT II consortium is seeking new collaborators to help collect more data on litter impacts, not only in the areas targeted by the project, but also on a larger scale. To join, send an email to coordination@indicit-europa.eu.