



# Science for Environment Policy

## Extent of plastics in the Mediterranean Sea: a growing problem

**The extent of marine litter in the Mediterranean Basin** has been revealed by a new study. Researchers reviewed previous studies to show that the northwest Mediterranean Sea is a hotspot for plastic debris. They found that marine litter harmed 134 species in the Mediterranean Sea and call for more to be done to manage the growing problem of debris, especially plastics, littering the Sea.

**Marine litter is a problem of increasing concern that threatens [marine life](#)** in all the world's oceans. [Plastic debris](#) is particularly worrying because it is resistant to environmental breakdown. Plastics are found throughout the [marine environment](#), from the surface of the water down to the seafloor.

One of the most polluted areas is the Mediterranean Sea. An estimated 82% of all man-made litter found floating on its surface is plastic, and it is the most common debris on the seafloor.

To understand the extent of the plastic litter problem in the Mediterranean Basin, researchers reviewed past scientific literature and project reports. They found 24 studies collectively covering the period 1979 to 2014 that detailed where plastic items were found. The northwestern Mediterranean was most polluted with plastic litter (76–96% of all items being plastic), especially in the Tyrrhenian Sea (96% plastic litter). The lowest amount was found in the Lybian Sea (18% plastic litter) in the southern part of the Mediterranean Basin.

The researchers also identified 29 studies from 1986 to 2014 that documented how marine organisms interact with marine litter. Most studies focused on the effects of marine organisms ingesting plastic and/or becoming entangled in plastic debris. Fewer studies examined how organisms colonise marine litter or use it as rafts. Of the species studied, the majority were sea turtles and marine mammals. There were very few studies on invertebrates and fish.

In all, the researchers found reference to 17 334 individual organisms from 134 different species affected by marine litter. Algae, seagrass, invertebrates, fish, sea turtles and mammals were all affected. The researchers produced a list of the marine life that interact with or are affected by marine litter, especially plastics. This number of species is half the reported number affected worldwide in one study, excluding seabirds which were left out of this study.

For example, some species, including the wreckfish *Polyprion americanus*, pilot fish *Naucrates ductor*, basking shark *Cetorhinus maximus* (listed as 'vulnerable' on the [IUCN Red List of Threatened Species](#)), stingray *Pteroplatytrygon violacea*, loggerhead sea turtle *Caretta caretta*, sea whale *Balaenoptera physalus* (both of which are endangered), and sperm whale *Physeter microcephalus* appeared to be especially susceptible to ingesting plastic, although the numbers of individuals sampled in the studies varied.

The feeding strategies of some species, such as filter feeders (the basking shark, for example), makes them especially vulnerable to ingesting plastics. One study revealed that deep water fish in the eastern Mediterranean ingested plastic debris. The researchers say this highlights the need for further understanding of the ecological consequences of plastics in the food web in deeper layers of the sea, which may have been underestimated previously.

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The researchers say it is important to bear in mind that the studies were not evenly distributed around the Mediterranean Basin, and had different sample sizes and methods. The fact that some species affected by plastic debris are on the IUCN Red List highlights the need for marine litter to be included in management plans and to ensure policies to safeguard protected species are enforced, say the researchers.

In contrast, some species, such as the *Merluccius merluccius* (hake), *Chelidonichthys cuculus* (red gurnard), *Mullus surmuletus* (red mullet), *Zeus faber* (John Dory), *Scyliorhinus canicula* (catshark) and *Raja clavata* (thornback ray), seemed to show little sign of ingesting plastic. Over 133 individuals of each species were sampled in these studies.

