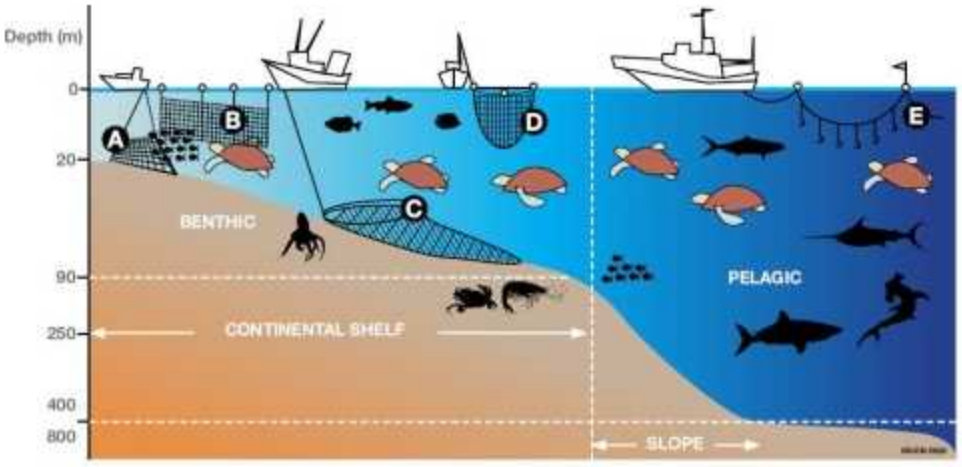
Main fisheries types in the Mediterranean. Most capture marine turtles.



A Artisanal fishing (gillnets) B Illegal, unreported and unregulated (IUU) gillnets C Bottom trawl fishing
D Purse-seiners E Surface longline fishing

MARINE TURTLE BYCATCH IN MEDITERRANEAN FISHERIES

Bycatch, the unintentional capture of non-targeted species during fishing operations, has been described as an important factor causing the decline of marine species worldwide, including vulnerable species such as sea turtles. Data on sea turtles bycatch in the Mediterranean Sea have increased over time and become more reliable as monitoring programs (including on-board observers, interviews with fishers and logbooks) have increased along with data standardization. However, the current available information is still biased since efforts have been unequal over the Mediterranean and Black Sea.

Interactions between sea turtles and fisheries occur wherever fishing activities overlap with sea turtle habitats and migratory corridors. Here, different factors (e.g. fishing effort, gear type, practices on board) and environmental and biological parameters (e.g. sea turtle habitats, movement patterns, environmental conditions, depth and sea turtle survival to fishing gear) affect sea turtle bycatch rates and impact on their survival.

A recent review of incidental catch of vulnerable species in the Mediterranean estimated that between 124,000 and 150,000 sea turtles can be bycaught in the Mediterranean and that between 33,000 and 39,000 of them might die from different fishing activities on an annual basis[1]. Bottom trawls and pelagic longlines are the fisheries mainly impacting sea turtles, with around 50,000 and 30,000 annual capture-events, respectively. Bottom trawl and fixed gears (e.g. gillnets, trammel nets, combined nets) mainly interact with sea turtles in the foraging habitat, while sea turtles feed on the bottom or rest on the seabed in wintering grounds. The impact of the latter could be most important especially in the continental shelves of the northern Adriatic Sea, Egypt, Israel, Tunisia and Turkey. Pelagic longlines mainly interact with sea turtles in the water column, while sea turtles feed on the pelagic prey or migrate between different basins. Other gears seem to have a negligible impact on sea turtles, although impacts vary and certain practices could have a considerable impact in some areas.

In the last decades, a number of research studies, particularly with pelagic longlines, have been undertaken to find technical solutions to reduce sea turtle bycatch. Further efforts are still needed to implement mitigation measures taking the initial results with pelagic longlines as well as to reduce sea turtle bycatch in bottom trawl and in fixed nets. Involving fishers and establishing a permanent cooperation with them in the conservation of sea turtles is a fundamental factor to increase the chances of sea turtles' survival.

1. Carpentieri *et al.* 2020