

Occurrence of plastic debris in the stomach of yellowfin tuna (*Thunnus albacares*) from the Arabian Sea: A cause for concern

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The ingestion of plastic debris is the result of huge and continuous release of this pervasive type of pollutant into the marine environment. Marine plastic debris significantly affects marine wild life and biodiversity. The present study reports the ingestion of plastic debris by yellowfin tuna (*Thunnus albacares*) from the southeastern Arabian Sea.

The fishes sampled in this study were caught from 1200 m depth, 410 km west of Kochi, India (10° 43' N 72° 50' E) during a routine oceanic squid jigging cruise carried out by *MV Titanic* under the NAIP Scheme on oceanic squids. On 08.02.2013, at around 1700 hours two specimens of yellowfin tuna were caught by using hook and line. The fish had a length (FL) of 65 and 62 cm and weighed 4.10 and 3.80 kg respectively. Fishes were immediately iced, and subsequently thawed at room temperature and stomachs were carefully removed for analysis on board the vessel. The stomachs were preserved in 5% formalin and observations were done in the laboratory.

Out of the two tuna stomachs examined, one had polyethylene material (piece of plastic carry bag about 3 cm length and 0.5 cm width) inside the gut. Stomachs also contained *Squilla*, zooplankton such as megalopa, decapods, chaetognaths, partially digested fish, fish bones and otoliths.

The ingestion of such plastic marine debris probably happened during the normal feeding activity, but the fact that it occurred very far from the coast indicates that plastics of terrestrial origin, have reached the oceanic realm. The source of this debris might be from Lakshadweep islands or from Indian mainland or from merchant ships.



Fig. 1. Stomach contents of yellow fin tuna including plastic debris (inside the yellow circle)

Many studies have documented the effect of large plastic debris in marine mammals through entanglement and ingestion. The plastics observed were mainly nylon rope fragments, fragments of lines or gillnet and fragments of fishery ropes, but in this investigation the fish stomach contained piece of plastic carry bag. Considering that the presently observed yellowfin tuna is a young adult of about one year age, it is liable to predation by larger marine fishes, sharks and mammals. This can cause vertical transfer of plastics from small fishes to large animals. Presence of plastics in digestive tracts can reduce the fish's feeding drive and may lead to eventual starvation. More damaging is the danger of degraded plastic compounds getting into the fish tissue which can lead to the bioaccumulation as it passes from one trophic level to another in the food chain and eventually to humans. Impact of smaller plastic debris on the marine environment and fishes will need more extensive research.