

Marine litter in the coastal environment of Mangalore

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The continuous flow of large quantities of plastics and waste from land and sea based sources result in a gradual build up of litter in the marine and coastal environment. Plastics and other man-made objects cause serious impacts on environment, economics, safety and health. Worldwide, millions of marine mammals, birds, turtle and fish perish as a result of entanglement or ingestion of discarded debris. Marine litter spoils beaches, floats on the sea surface, drifts in the water column due to the current and is also found on the deep sea bed.

Monitoring of the three beaches in Mangalore viz., Chitrapur, Panambur and Thaneerbhavi has shown that Chitrapur has the highest rate of marine litter of 901.5g/m^2 (Fig. 1) followed by Thaneerbhavi 689.85g/m^2 and Panambur 83.33g/m^2 . The items in the marine litter varied (Fig. 2) consisting of ice cream spoons, caps, toothbrush, plastic straw, small bottle caps, plastic sachets, nylon ropes, plastic mats, slipper, shoes, thermocole, sponges *etc.* The size of



Fig. 1. Marine litter in Chitrapur beach

the plastic debris ranged from 0.01 cm to 110 cm. The changing profile of the beach with seasonal shifts and highly eroding coastline takes the marine debris directly to the sea. The sandy beaches loses its binding ability during the dry weather phase and buries part of the marine litter. This can then leach into the soil and cause further health hazard by contaminating the water column.



Fig. 2. Variety of plastics found in the beach

In Mangalore, an examination of the guts of oilsardine and mackerel (Fig.3 and 4) revealed nylon ropes of length 1 mm to 4 mm. Sardines and mackerel being plankton feeders, it could have accidentally ingested along with the plankton. UNEP has estimated that in the Central Pacific there are 3 kg of marine litter for every kilogram of plankton. Off Mangalore, it was estimated that at present there are 0.00168 kg of plastic for every kg of plankton. Plastic covers are often mistaken for the feed of turtles as it resembles jellyfish, a food item of turtles. Experimental trawling in grounds off Mangalore also indicated the presence

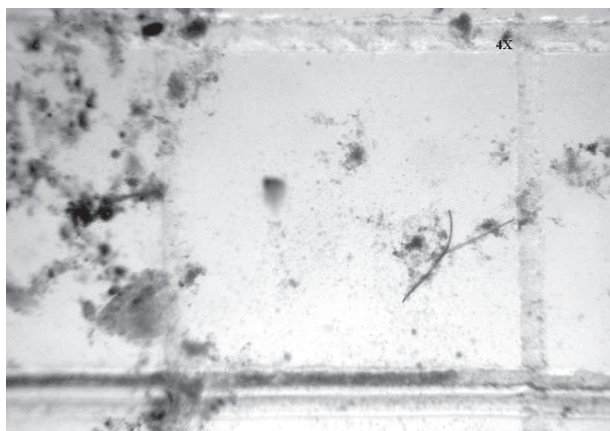


Fig. 3. Plastic strands of less than 0.05 mm observed in the gut of oilsardine along with digested food

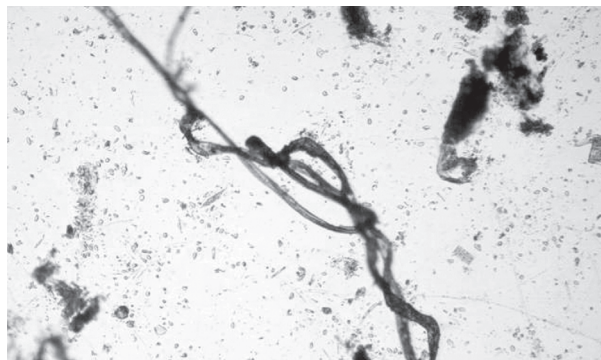


Fig. 4. Plastic strand found in twisted form in the gut of Mackerel along with digested copepods

of marine litter (Table 1). Benthos collected from the coast off Chitrapur beach using Petersen grab indicated the presence of plastic strands (Fig. 5) entangled along with polychaete larvae.



Fig. 5. Polychaete larvae entangled with assorted plastic and nylon bits

Marine litter is entirely due to human activity and therefore can and has to be controlled by human management. The best way is to reduce plastic usage at source and also prevent the waste from reaching the coastal environment. Public awareness combined with better solid waste management can help protect our environment. A lesser consumerist attitude can go a long way in preventing marine litter build-up.

Table 1 Quantity of plastic obtained in trawling ground off Mangalore for two months in the year 2010

Station	Starting station	Ending station	Time duration of trawling	Depth in m	Plastic in g/m ²
1	N 12° 48' 995" E 74° 42' 796"	N 12° 50' 349" E 74° 42' 099"	45 min	18-28	0.48486
2	N 12° 50' 934" E 74° 42' 410"	N 12° 50' 495" E 74° 43' 709"	45 min	12-13	1.21215
3	N 12° 50' 708" E 74° 45' 043"	N 12° 49' 705" E 74° 46' 240"	45 min	9-10	0.40405