

# A SWAMPY OCEAN OF PLASTIC DEBRIS

## Role Played By Microplastics In Transferring Pollutants To The Food Web Has Added A Scary Dimension To Marine Pollution

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**Kochi:** From the riff-raff floating on contaminated waters to microplastics in the guts of fishes, the menace of marine debris is widespread and has now started impacting the livelihood of coastal communities.

"It was never acknowledged as a problem earlier but for the last couple of years, we have been getting serious complaints from fisherfolk who say that their catches have more plastic waste than fishes. We are getting reports and evidence of microplastics found in the guts of fishes," said V Kripa, head, fisheries environment management division, Central marine fisheries research institute (CMFRI).

Stakeholder meetings have seen fishermen complaining of various plastic objects that get caught in their stake nets. "Since we are in a tropical zone, our waters are turbid and carry lot of mud in the flow. When a plastic kit is dumped into the water, mud settles in along with everything else that's there in the waters. This makes it heavy and it sinks to the sea-bed. These objects get entangled in the stake nets. When they get it, it has lot of weight and this leads to damage of the nets also," she said.

The debris include nylon ropes, parts of fishing nets, plastic covers, carry bags, PET bottles, containers of milk, creams, oil, ointments, synthetic slippers, glass bottles, electric bulbs, CFL bulbs and e-waste like TV/computer hardware, mobile phone handsets or parts, chargers, battery-operated toys and Styrofoam.

Let another problem is ghost nets - fishing gear and

nets that have been abandoned or lost due to damage or accidents. Often dolphins, turtles, crabs and other organisms that reside in the bottom of the sea get caught in the ghost nets which gets entangled in nets of trawlers.

"We need to work out long-term solutions for the fishermen who are directly affected by ghost nets. It is important to address the removal of ghost gear with the participation of fishing communities. In case of gill nets, there are higher chances of it being lost, so we need to look at modifying of fishing vessels so that there is not much loss of gear," said Ajay Venkataraman, marine programme officer, World Wildlife Fund, Delhi.

Almost 90% of the waste found in oceans are plastics. "In addition to plastic waste, hazardous electronic waste is also contributing to the destruction of marine ecosystem," said N G K Pillai, former director, CMFRI.

Role played by microplastics, pieces of plastics less than five millimetres, in transferring persistent organic pollutants to the food web has opened a new dimension to marine pollution. "As plastic gets smaller and smaller, they release chemicals. One of those chemicals has been identified as Bisphenol A which can interfere with reproductive systems of marine fauna. Micro and macro plastics have been observed at all trophic levels starting from sardines to tunas and sea birds," Kripa said. The quantity of debris flowing into the coastal ecosystem was found to be considerably higher during the full moon and new moon period coinciding with the spring tides, she added.



## 'Volume of plastic waste in coastal panchayats underestimated'

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**Kochi:** Coastal panchayats have often refused to acknowledge the quantity of non-biodegradable waste being generated in their area. "When we took up the waste audit study in the Ezhikkara panchayat close to North Paravur municipality in Ernakulam, the panchayat president told us that they didn't have much solid waste. But when we did a door-to-door survey of the households to check out the amount of waste generated, we found around 10% of the waste generated was plas-

tic. Normally, everybody likes to say that they generate around 7-8 percent only," said Nirmala Padmanabhan, head, department of economics, St Teresa's College, who led the study. The main canals in this coastal panchayat are Puthenthodu, Ambathodu, Kuriyathodu and Kundekathodu and the primary lake is Kottuvally. The people are mostly traditional fish farmers and most water-bodies were used for pokkali and prawn farming. The survey showed that the population of 18,019 persons is generating an average of 35.51 tonnes of waste

per week. Around 11% of it was solid waste with plastic bags, paper/cardboard waste accounting for nine percent. A significant quantity of sanitary pads and diapers was also being generated. While the bio-waste was used for feeding livestock and other pets or thrown out into the open, the plastic waste was being burnt or dumped into water bodies. Another trend was the disposal of electronic waste including tube lights and batteries into canals and backwaters. Slaughter waste was also being thrown into the rivers by neighbouring local bodies.



Despite 90% of the households living in semi-pucca and pucca houses, they were disposing their liquid waste from kitchens and bathrooms into the water bodies. As for the septage, though 60% had

septic tanks, around 13% used pit toilets, 19% used ring type. Around three per cent households discharged septage directly into the backwaters. "Much of the waste from the backwaters flows into the sea during the monsoon," Nirmala said. The World Bank-funded study was on the role of grama panchayats in environmental protection. According to data collected by the CMFRI during the pre-monsoon period, almost 204 kg of plastics enter the Arabian Sea per month through barmouth at Moothakunnam.