

Plastic Pollution Threatens the Sundarbans

Plastic waste is emerging as a growing threat to the Sundarbans, the world's largest contiguous mangrove forest, as discarded bottles, fishing gear, polythene bags, packaging materials and other plastic items are increasingly being found across its waterways and forest areas.

Fishermen and other people who depend on the forest say they are witnessing plastic waste even in remote parts of the Sundarbans.

"We are repeatedly warned by the Forest Department not to carry polythene or other plastic items when we collect permits to enter the forest for fishing," said Khobir Sheikh, 65, a fisherman from Mongla in Bagerhat.

"But even when we do not find fish in our nets, we find plastic bottles, fishing-net buoys, plastic packaging, foam sheets, sandals and gas lighters in different parts of the forest," he said, describing his experience of working in the Sundarbans.

Local residents, forest-dependent communities, tourism operators and forest officials have expressed concern over the increasing pollution, warning that the ecological significance of the Sundarbans could be undermined unless plastic waste is addressed through coordinated action.

At a consultation meeting held at the Bagerhat Deputy Commissioner's conference room on Tuesday, participants called for stronger cooperation among government agencies, private organisations, elected representatives, media outlets and young people to reduce plastic pollution and improve waste segregation and recycling.

Researchers have also raised concerns over the accumulation of microplastics and toxic heavy metals in waterways connected to the Sundarbans.

A study by the Department of Environmental Science and Technology at Jashore University of Science and Technology, published in the international journal *Emerging Contaminants* in January this year, found microplastics and heavy metals such as cadmium and lead in sediment from the Bhairab and Rupsha rivers.

The researchers detected up to 5,700 microplastic particles per kilogram of sediment collected from depths of 10 to 30 centimetres. Polyethylene accounted for about 23 percent of the identified plastic particles, while polystyrene accounted for around 21 percent.

The study also found the presence of lead, copper, nickel, cadmium and chromium, raising concerns over the combined impact of plastic pollution and heavy-metal contamination on aquatic ecosystems.

Another joint study by researchers from Bangladesh and India, published in the *Journal of Hazardous Materials Advances* in 2022, warned of increasing plastic and microplastic pollution in the Sundarbans and the Bay of Bengal.

The Sundarbans stretches across more than 200 islands and is criss-crossed by a network of major rivers and hundreds of interconnected tidal waterways. The forest is a critical ecological barrier for the densely populated coastal region and supports the livelihoods of millions of people in Bangladesh and India.

The study estimated that around three billion microplastic particles enter the Bay of Bengal every day through the Ganges-Brahmaputra-Meghna river system. It also reported that millions of tonnes of plastic waste from the rivers of Bangladesh and India enter the Bay of Bengal and the wider

Sundarbans region each year.

Researchers have warned that plastic waste does not remain confined to water and sediments. Tidal flows can transport the particles into different parts of the mangrove ecosystem, potentially allowing them to enter the food chain.

Tourism operators say inadequate waste management is one of the major factors behind the growing pollution.

Although efforts have been made to control waste generated directly by tourists, the large-scale use of single-use plastics and inadequate waste management in urban and rural areas are contributing to the problem, they said.

“After the three-month closure of the Sundarbans, the Tour Operators Association of Sundarbans (TOAS) conducted a clean-up campaign in the first week of September,” said Shah Zaman Khan Popul, general secretary of the association.

“Within just three days, we collected 15 sacks of plastic waste. The waste included plastic bottles, sandals, lighters, fishing buoys, foam sheets and polythene,” he said.

According to Popul, not all of the waste originates from tourists visiting the forest.

“Plastic waste is also reaching the Sundarbans through rivers and the sea. Tour operators are working strictly to prevent pollution, but the forest cannot be protected without an effective overall waste-management system,” he said.

There are around 70 vessels operating for tourism in the Sundarbans, according to people familiar with the sector. The tourism season began in September, although visitor numbers have so far remained below expectations. Operators expect tourist arrivals to increase in November and December.

The Forest Department says it has taken a strict position against pollution in the Sundarbans and is working to raise

awareness among local communities, young people and forest-dependent groups.

“The Forest Department is taking a strict position to prevent pollution in the Sundarbans,” said Mohammad Imran Ahmed, regional forest conservator in Khulna.

“We are working to raise awareness among local communities, young people and forest-dependent people. But ultimately, everything depends on collective awareness,” he said.

“The Sundarbans has been protecting and sustaining us. If we fail to protect the forest, a major disaster could follow,” he added.

Environmental experts say controlling plastic pollution in the Sundarbans will require action well beyond the forest itself, including improved waste collection and recycling systems in upstream towns and cities, stricter control of single-use plastics, and greater cooperation between government agencies, businesses and local communities.

For a forest whose rivers and tidal channels connect it directly to the wider Bay of Bengal, they say, preventing plastic from entering the waterways may be as important as cleaning it up after it reaches the mangrove ecosystem.