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An assessment of diversity and quantity of macro-plastics and litter spread in the Vembanad Lake

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Anthropogenic impacts on sustainability of coastal ecosystems have always been a matter of concern for those who depend on these habitats for their livelihood. A slow and silent killer of the aquatic habitats is the non-degradable litter or debris which enters these water bodies due to improper treatment of solid waste on land. These either settle in the nearby areas or drift and finally settle in distant places. Ultimately most of the untreated and carelessly dumped solid wastes end up in the coastal waters or the seas. The Vembanad Lake (VL) in Kerala spread across three districts is one of the largest wetlands of the country. A survey was conducted to understand the spread of litter in the upstream and downstream areas of this water body. Five stations (ST) were fixed; Kumarakom (ST-1), Vaikom (ST-2), Nettoor (ST-3), Thevara (ST-4) and Cochin backwaters (ST-5) of which the first two were upstream, followed by middle stream (ST 3,4) and downstream (ST-5). It was observed that 30% of the surveyed area at Kumarakam (ST-1) and 40% of Nettor zones were without any submerged debris. The average quantity of submerged debris at ST -1, ST -2, ST -3 and ST -4 were 0.5, 1.5, 0.6, and 0.5 $kg.m^{-2}$ while in Cochin backwaters in the area adjacent to marine drive, the submerged litter was estimated as 111 $kg.m^{-2}$, which is ,100 times greater than in the upstream areas. While carry bags were the dominant litter in the upstream stations, ghost nets (40.6 $kg.m^{-2}$), nylon ropes (15.6 $kg.m^{-2}$) cables and metal cans (11.5 $kg.m^{-2}$) formed the major litter components in Cochin backwaters. The study brought out the urgent need to clean the Cochin backwaters to restore the ecosystem functioning. The paper presents the types of litter and its density in different areas of VL and suggests the remedial measures to prevent further degradation.