# Microplastic Accumulation in Edible Fish; *Etroplus suratensis* (Pearl Spot), from the Anavilundawa Ramsar Sanctuary and Surrounding Area

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Microplastic (MP) pollution is an emerging global concern due to its widespread distribution, persistence and risks to aquatic ecosystems and humans. Wetlands such as the Anawilundawa Ramsar Sanctuary may act as sinks for MPs due to their downstream connectivity and dense vegetation. This study focused on assessing MPs contamination in *Etroplus suratensis*, an omnivorous edible fish species, together with associated water and sediment from connected freshwater and brackish habitats. Between November 2024 and May 2025, five fish were collected from each of six locations (n=30): Dutch canal (DC), Shrimp Pond Outlets (SPO) (man-made canal, brackish water), Anawilundawa and Suruwila tanks (ST) (Freshwater, cascade systems), Mundel lagoon (ML) and Kurumankalliya water body (Stagnant, brackish water). The gastrointestinal tract (GIT) and muscle tissue of fish were subjected to chemical digestion (10% KOH), followed by density separation with NaCl, filtration (0.45µm, nitrocellulose filter papers), and morphological and polymer identification through stereomicroscopic and µ-FTIR spectroscopic analysis, respectively. MPs concentrations were significantly higher in the GIT (0.28±0.33 particles $g^{-1}$) than in muscle tissues (0.05±0.08 particles $g^{-1}$), indicating limited translocation into edible tissues. In fish samples, SPO recorded the highest levels of contamination in GIT (0.62±0.58 particles $g^{-1}$), whereas ST showed the lowest (0.01±0.02 particles $g^{-1}$). Environmental samples supported these findings, recording the highest water and sediment MPs levels in ML (0.63±0.21 particles $L^{-1}$) and DC (18.06±7.59 particles $g^{-1}$), respectively. Most identified particles were blue-coloured fibres composed of nylon and olefin polymers. Overall, the findings suggest that MPs enter fish primarily through ingestion, with limited movement into muscle tissues. The higher contamination levels near aquaculture outlets suggest a potential influence of localized human impacts. This study highlights the combined influence of feeding behaviour and environmental exposure in detecting MP contamination patterns and emphasizes the need for improved management of pollution sources in sensitive wetland ecosystems.

Keywords: *Microplastics, Anawilundawa Ramsar Wetland, Etroplus suratensis, µ-FTIR spectroscopy*