Goldschmidt 2024 Abstract
https://doi.org/10.46427/gold2024.21638

The Mud Crab Buffet: Microplastics pollution in Scylla Serrata from Kota Mangroves

ANJALI TAMRAKAR, GOKUL VALSAN AND ANISH KUMAR WARRIER

Manipal Institute of technology

Presenting Author: tamrakaranjali98@gmail.com

Title: The Mud Crab Buffet: Microplastics pollution in Scylla Serrata from Kota Mangroves

Anjali Tamrakar, Gokul Valsan, Anish Kumar Warrier

Centre for Climate Studies, Department of Civil Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, Karnataka 576104, India

Presenting Author Name and Email ID: Anjali Tamrakar, tamrakaranjali98@gmail.com

Abstract

Scylla serrata is an important mud crab specie found in mangrove and estuarine habitats across the Indian and West Pacific coastal regions. These crabs are renowned for their nutritional richness and vitamin content making them a culinary delicacy. Notably, *Scylla serrata* exhibits remarkable adaptability to environments characterized by pronounced hydrological and biological variations which includes changes in salinity levels. Beyond their economic value, these crabs also serve as bioindicators of pollution helping us to assess the mangrove health. Realising this significance, we investigated the gastrointestinal tract of *Scylla serrata* from Kota mangroves in south-western Karnataka, India, to understand the extent of microplastic (MP) contamination. A total of 264 microplastic particles with a mean value of 29.33 MPs per individual were recovered from the gastrointestinal tract of mud crabs. The dominant categories were fibres (98.86%) and fragments (1.14%). These MPs primarily fell within the 0.1–0.3 mm (50.90%) and 0.3–1 mm (37.65%) size ranges. The most prevalent polymers were polypropylene (33.71%), high-density polyethylene (31.44%), and polyethylene terephthalate (17.80%). Scanning electron microscopy revealed evidence of weathering on the microplastic surfaces in form of pits and cracks. Risk assessment studies such as polymer hazard index (PHI) underscored severe risks to *S. serrata* due to microplastic ingestion emphasizing the urgent need to safeguard delicate ecosystems like mangroves and associated biota.

Keywords: Emerging contaminant, mud crabs, *Scylla serrata*, microplastics, mangroves, southwest India