

Microplastic Extraction, Abundance and Structure from the Sediments of Sandspit Backwaters Mangrove Area, Karachi Pakistan

Dur-e-shahwar, Noor Us Saher

Centre of Excellence in Marine Biology, University of Karachi, Karachi, Pakistan

*E-mail: shahwar.smroo@gmail.com

ABSTRACT

Introduction: Micro plastic presence is identified as rising worldwide predicament in environments. Micro plastics are defined as debris of plastic, smaller than 5 mm (Thompson et. al., 2004; Cole et. al., 2011) and are identified as an emerging worldwide issue in freshwater and marine environments (Avio et al. 2017). Micro plastics had been discovered in every corner of the ocean, which include along the coastlines, the water column, sediments and in sea shores or even in the bottom of sea and Polar region (Yu et al. 2016; Waller et al.2017). Pakistan has been facing the troubles of marine garbage and pollution cause by micro plastic. On the land, majority of marine litter originates, from sewage water, seashore visitors, negative waste management, business fishing, shipping, and different industrial activities like ship breaking (Qaimkhani, 2018). In present study, types and shapes of micro plastic and there identification were done in the mangrove sediments.

Objectives: Extraction of micro plastic's from sediment of Sandspit backwater mangrove areas of Pakistani coast, and determination of size, shape and the structure of micro plastic is the aim of current study.

Materials and Methods: Sediments sampling were done with the help of core from the three tidal levels. Two (02) samples were collected from each tidal height during September- October 2021 all the samples were stored in aluminium foil and refrigerated at -20oC before further analysis and processes.

All the samples were air dried at constant temperature of 60oC for 3 days and than 50 gram of sediment from each core were separated and processed through the process of Thompson et al (2004).

Results: The abundance and distribution of microplastic were observed through all tides sediments. The beads and fibers were observed in all sediment samples. Abundance of microplastic varies in accordance with the tidal height. The highest microplastic abundance was observed in high tide level. Furthermore, the microplastic abundance was less at low tide samples as compare to high and mid tide likely due to periodical water movement.

Conclusion: The microplastic abundance in sea sediments was observed through the analysis and results revealed that there is abundance of microplastic at sea sediments due to human activities.

Keywords: *Microplastic, Sediments, abundance, Coast of Pakistan.*

REFERENCES

1. Avio, Carlo Giacomo, Stefania Gorbi, and Francesco Regoli. "Plastics and microplastics in the oceans: from emerging pollutants to emerged threat." *Marine environmental research* 128 (2017): 2-11.
2. Cole, Matthew, et al. "Microplastics as contaminants in the marine environment: a review." *Marine pollution bulletin* 62.12 (2011): 2588-2597.

3. Ahmed, Quratulan, et al. "Preliminary Study on Abundance of Microplastic in Sediments and Water Samples Along the Coast of Pakistan (Sindh and Balochistan)-Northern Arabian Sea." *Turkish Journal of Fisheries and Aquatic Sciences* 22.1 (2021).
4. Thompson, Richard C., et al. "Lost at sea: where is all the plastic?." *Science* 304.5672 (2004): 838-838.
5. Waller, Catherine L., et al. "Microplastics in the Antarctic marine system: an emerging area of research." *Science of the total environment* 598 (2017): 220-227.
6. Yu, Xubiao, et al. "Occurrence of microplastics in the beach sand of the Chinese inner sea: the Bohai Sea." *Environmental pollution* 214 (2016): 722-730.