

MICROPLASTICS IN SANDY OCEAN BEACHES OF INSULAR REGIONS: ILHA GRANDE - RJ, BRAZIL

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Abstract

The world production of polymers increased significantly in the last decade, reaching 368 million tons, of which 4% were produced in Latin America. One of the major global concerns is microplastics (<5mm), due to their constant presence in different environmental matrices. Another major concern is the ingestion of microplastics by different organisms, being considered bioavailable and increasingly present in web chains. The effects of ingesting microplastics by species range from chronic (growth inhibition, interference in the reproduction rate and endocrine disruption) to bioaccumulation and acute (lethal). Depending on their composition and physicochemical properties, microplastics can release toxic compounds into water (leaching of plastic additives), in addition to the possible sorption of organic and inorganic pollutants. The objective was to quantify and characterize the presence of microplastics on sandy ocean beaches of Ilha Grande, an environmental preservation area on the southern coast of State of Rio de Janeiro. Three beaches were selected: Dois Rios-PR1, Santo Antônio-PR2 and Lopes Mendes-PR3. The collection was carried out at low tide, in ten sampling points per beach, five points in the high tide line (accumulation zone) and five points carried out 5m below this zone. At each point, surface layer of sand (<2cm) was collected in an area of 0.5m x 0.5m (0.25m²) and placed in glass pots (600mL). Furthermore, the slope, length, extension and granulometry of each beach were evaluated. The microplastics were classified into size and color classes. PR1, PR2 and PR3 showed a higher amount of white microplastics: 98; 115 and 158 items respectively. The size class with the highest number of microplastics was 1-2mm, with: 119 in PR1; 99 in PR2; and 182 in PR3. We hope that these results will help generate greater public awareness of microplastic pollution on beaches in environmental preservation areas, as they still have great biodiversity.

Keywords: Pellets, Sandy beaches, High tide line, Microplastic abundance.