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BIOFOULING IN MARINE LITTER REGARDING PHYSICOCHEMICAL CHARACTERISTICS ON BEACHES IN GUANABARA BAY AND THE OCEANIC REGION OF NITERÓI, RIO DE JANEIRO, BRAZIL.

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RESUMO

Several organisms are fouled in different types of marine litter, providing a wide range of artificial substrates for these organisms. These organisms are dispersed through sea currents using the litter as vectors of biological invasion, in an ecological process called rafting and are later deposited on the strandline of sandy beaches. Several physical, chemical and biological factors can influence fouling in different types of marine litter. The objective of this study was to spatially and temporally characterize the biofouling found in different types of marine litter in terms of color, chemical composition, geometric shape, surface orientation and type of polymer. The study area of this research were four beaches of Guanabara Bay (Ingá, Icaraí, São Francisco and Charitas) and three beaches of the Oceanic Region of Niterói (Itaipu, Camboinhas and Piratininga) that were chosen according to the wind regime and the dominant currents in the region. Marine litter with fouled organisms were collected manually along the strandline ($\pm 1 \text{ m}^2$), in the morning before beach cleaning, on each beach during the spring tide period on two consecutive days, one day on the beaches of Guanabara Bay and another day on the beaches in the Oceanic Region. These litters were classified, separated and quantified in different categories. Litter with fouled organisms was classified according to the following physicochemical characteristics: degradation and geometric shape, surface, color and chemical composition through visual observation. Fouled species were classified taxonomically and had abundance determined by the frequency of occurrence. Organisms were classified based on different population stages of invasion as cryptogenic, invaders, detected, among others, using the Brazilian Bioinvasion Platform and other references. The results demonstrated the presence of several biofouling groups colonizing different types of marine litter such as bryozoans, barnacles, gastropods and polychaetes, some of which are considered invasive, mainly in plastic. The beaches of Ingá, Icaraí and Itaipu were the ones that most presented with fouled organisms. The

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different species found colonized intact litter, with a cylindrical and irregular geometric shape, with rough surfaces and in different colors. The main types of polymers that the species colonized were PET (Polyethylene), PP (Polypropylene), and PLA (Polylactic Acid). Therefore, species can colonize different types of marine litter with different physicochemical characteristics.

PALAVRAS-CHAVE: Bioinvasion, Fouling, Marine litter, Physical-chemical characteristics, Organisms