

## Review Article

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## Your Garbage in the Garbage - It is Necessary to Educate to Aware Awareness

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### ABSTRACT

In Brazil, due to its extensive coastline and climate, there is a great potential for tourism, showing over time the increase in waste that has been incorrectly disposed of. These residues have clearly affected marine animals and even some birds due to being trapped or ingested, leading to the extinction of some species. This work aims to classify the main types of waste left by the population on the beaches of the West Zone of Rio de Janeiro, in addition to promoting the awareness of bathers about the impacts on the environment and aquatic life, caused by this waste disposed in incorrect locations. The most abundant items cataloged on the analyzed beaches were cigarette butts, tin rings, bottle caps, charcoal used in barbecues, straws, leftover food that attract many pigeons, among other microwaves. Thus, it is important to emphasize that the best measure to reduce the number of residues on the beaches as well as in other ecosystems is Environmental Education, through awareness about the consequences that residues can generate marine life biota.

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### Introduction

Brazil has 8,500 km of coastline with natural beauty, which represents a high potential for tourism [1]. The Brazilian is a frequent visitor to the beaches, given the low cost of this type of leisure and the prone climate, which often entails an environmental and social burden [2]. The average daily production of domestic waste in the country has increased in recent years from 0.5 kg to 1.2 kg per person in the capitals, the consumption of food packaging has grown by more than 100%, this increase has significantly changed the type and quantity of waste generated [3].

The National Solid Waste Policy in its article 3, item XVI defines solid waste as: material, substance, object or disposed good resulting from human activities in society.

Currently, solid waste is one of the biggest polluters of the marine environment and marine waste is the result of the disposal of this waste in inappropriate places, often originating from places far from the coast. Among the factors that influence this production are the number of inhabitants in the territory, their educational level, purchasing power and the production area, in addition to the frequency and efficiency of the urban cleaning collection system. Marine litter consists of any solid waste of anthropogenic origin introduced in some way into the marine environment, being subdivided into categories such as plastic, glass, rubber, Styrofoam, fabric, metals, organic matter and anthropogenic wood and consisting mainly of little degradable material or non-degradable [4,5]. The origin of these residues can be classified as

terrestrial or marine. Marine sources are domestic and industrial waste deposited directly at sea, waste from oil and gas platforms and materials used in fishing [4]. Meanwhile, land-based sources include waste from tourism, landfills, domestic and industrial sewage, river drainage and runoff [6]. Since the 1970s, marine litter, especially plastic waste, has been given more prominence due to the increase in its daily use by the population. These residues have clearly affected the lives of marine animals, as well as birds, causing the extinction of some species [7]. In the Southeast region of the country, it was possible to observe the highest index of the population's lack of knowledge about environmental problems that affect the quality of the landscape for tourism [7]. Users' interest in beach areas makes them more susceptible to contamination by solid waste. This contamination is a concrete, challenging fact that requires a collective effort by society and government agencies to be reversed [8]. Thus, this work aims to classify the main types of waste left by the population on the beaches of the West Zone of Rio de Janeiro, in addition to promoting the awareness of bathers about the impacts on the environment and aquatic life, caused by these residues disposed in places incorrect.

### Methodology

To carry out the proposal, three activities were carried out in situ, on two beaches in the West Zone of Rio de Janeiro, at Praia do Recreio, at post 12 (23 ° 01'56.0 "S 43 ° 28'16.1" W) and at Praia from Barra de Guaratiba (23 ° 04'02.8 "S 43 ° 34'04.5" W). During the waste collection activities, 100 educational leaflets were also distributed, in each activity, on the importance of preserving the terrestrial and maritime environment produced by the Seu Lixo No Lixo Project, with the participation of 15 undergraduate students from the biological sciences at Castelo Branco University.

## Results and Discussion

Barra de Guaratiba beach is classified as small in size due to its limited size. This beach is known to receive many bathers, including tourists, 4 on weekends and holidays. The local population has people with a stable financial situation for the upper class, many of these hostel, restaurant and inn owners, as well as a population with no financial resources. However, the majority of visitors to this beach are considered to be of lower middle class, as it is one of the beaches that receives the most residents from the entire length of the Guaratiba Region [8]. During the sand collection activity, the main residues found excessively were cigarette butts, tin rings, bottle caps, charcoal used in barbecues, straws, food scraps that attract many pigeons, among other micro-waste. In an informal conversation with the residents and merchants of Barra de Guaratiba beach, we were welcomed and many volunteered to help with the project's activities. They showed dissatisfaction with the behavior of bathers, since they are not concerned with the cleanliness of the place and leave their residues in the sand. Residents also pointed out that the agency responsible for urban cleaning works satisfactorily, however the sand cleaning system is efficient only for removing residues made up of larger particles, which causes the accumulation of small particles in the sand, such as what was observed in the activity. The local population and those attending were receptive to the delivery of information leaflets and showed concern for local cleanliness and environmental problems. At Recreio beach, the project group counted on the help of the regulars to collect waste in the sand, there was also a good receptivity on the part of the bathers who received the leaflets. On this beach, the main waste collected was the same found on the sand of Guaratiba beach, in addition to fishing net, bandages, pet bottles, can, plastic bags, perfume bottles, biscuit packaging. Which may indicate that the urban cleaning system is not as efficient in this region. It is worth mentioning that even after the delivery of the information leaflets on environmental problems, it was possible to observe some bathers discarding their waste in the sand.

## Conclusions

With the activities carried out it was possible to perceive that part of the bathers is concerned with the environment and the information was receptive. While, another considerable part, it is in the habit of leaving its garbage on the beaches. Thus, it is important to emphasize that the best measure to reduce the number of residues on the beaches as well as in other ecosystems is Environmental Education, through awareness about the consequences that garbage can generate marine life biota, since these residues can be ingested when confused with food, which can cause damage to your life or even your death.

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