
Marine litter from coastal areas, Gulf of Arauco in Central Chile

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Abstract

Plastic pollution is a global problem that is generating harmful impacts on abiotic and biotic environments. In Chile, the highest population densities are in the coastal environments such as rivers, beaches, lakes and wetlands, which directly influence the occurrence of anthropogenic plastic material. The objective of this study was to characterize the marine litter collected from tourist beaches in the Gulf of Arauco. The Gulf of Arauco is located between 36° 45' and 37° 20'S, in central Chile. The samples were collected in three beaches: i) Playa blanca, Maule, both in the province of Coronel, and Arauco beach, located in the commune of Arauco. Plastic debris was collected in the spring (September 2021) and summer (January 2022). The sampling methodology was taken from Gómez et al. (2020). The identification of each polymer was performed by Fourier transform infrared spectroscopy (FTIR-ATR), Jasco, FT/IR-4600LE. The results indicate that the most predominant size determined was > 5 cm (40-50%) and 2.5 to 5 cm (40-60%) during summer and spring all sampling sites. With exception of blanca beach (Playa Blanca-Coronel city) which showed plastic fragments between 1-2.5 cm (28%) (spring) and > 5 cm (58%) (summer). The predominant color in all periods and beaches corresponds to white (50%), and the forms most frequently detected it were fibers (cords) (60%) and pieces solid (40%) and film (wrapping) (45%). The results obtained by FTIR-ART indicate that predominant polymer in Playa Blanca is polypropylene (51%) (spring) and polyurethane (57%) (summer), while in Arauco beach it was polypropylene (> 40%) in both sampling periods, in Maule beach it was polypropylene (42%) (spring). This study contributes with new information to assess the status of plastic garbage management in the touristic beaches and along the coast of the Gulf of Arauco.

Keywords: Plastic pollution, Southern Pacific areas, Golfo de Arauco, Chile

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