

Urban occupation and environmental degradation of the shore flats of Fortaleza, Ceará State, Brazil

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The most notable features on the shore flats of Fortaleza are dune fields between coastal ecosystems. These present the greatest hindrance to human occupation. However, urbanization is expanding in a disordered fashion in this environment, covering recharge zones and affecting the potential of the main regional aquifer. Additionally, conditions of high porosity and permeability render the dune fields highly vulnerable to groundwater contamination. The occurrence of potential contamination sources such as drains, rubbish dump, service stations, cemeteries and polluted surface waters, cause the continued degradation of the mangrove swamps.

In some places in the metropolitan district of Fortaleza, the mobile dunes perform an important role in the maintenance of the equilibrium of the beaches and the movement of sediment towards the coastline. The occupation of these areas, principally by summer cottages, causes the obstruction of aeolian transport, which consequently contributes to coastal erosion.

The growing demand for raw material for civil construction has stimulated the removal of sand from the dunes. The principal environmental impact resulting from this activity is related to the removal of the vegetation that preserves the dunes, with consequent topographic alteration, which modifies the coastal dynamics by causing disequilibrium of the transport mechanisms and the accumulation of sand. This interference results in the infilling of the aquatic ecosystems, coastline retreat, the mobilization of sediment over urban and agricultural areas, in addition to causing a strong impact on the countryside.