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Primeiras and Segundas Protected Area, Mozambique: fish, coral, and previously unmapped deep reef structures¹

The Primeiras and Segundas Environmental Protected Area, located in the waters of northern Mozambique, is the largest marine protected area in Africa, extending over 200 km of coastline. Despite the region's importance for the local economic, information on the marine ecosystem, notably benthic habitat is very scarce.

Twelve islands surrounded by coral reefs were mapped in the region using very high resolution satellite images and descriptions of the sea bottom gathered in the field. The resulting maps allow the differentiation of sand, rubble and rock on the sea bottom; the detection of different types of maritime vegetation; and of three distinct types of coral cover. Three types of maps were produced, with different detail levels. The most detailed map has a maximum of 24 classes with an overall accuracy above 50%.

The analysis of coral and fish biodiversity data indicate the local ecosystems decline – both quantity and diversity of coral and fish have registered a decrease when compared to 2006 values. It was not possible to verify that fish stocks are decreasing because of current fishing practices, nor that the southern islands, further away from the main fishing harbour, support larger and healthier fish communities.

Unidentified structures extending from mapped coral were observed, suggesting the existence of a deeper benthic cover. Further research is recommended, as this additional extension of the coral reef systems could prove of great importance for local and regional ecosystems.

With this work it was possible to provide a detailed description of local marine habitats and its coral and fish biodiversity, essential to the Protected Area management and planning, while contributing to the advance of the application of remote sensing to nature conservation.

Keywords: Physical Geography and Ecosystem analysis, Very-high resolution remote sensing, Object-based image classification, Benthic habitats, Coral reef, Fish biodiversity

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Master degree project 30 credits in Geomatics, 2015

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¹ Exploring the relationships between biodiversity and benthic habitat in the Primeiras and Segundas Protected Area, Mozambique