

Mapping and Assessment of Benthic Habitats Using the High Precision Telescope (HPT) of Diwata-2

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The need for regular assessment and mapping of benthic habitats cannot be overstated given the ecosystem services that they provide. In this study, images from the High Precision Telescope (HPT) of Diwata-2 were used for benthic habitat mapping. The HPT is equipped with a ~5 meter resolution camera, which is useful in mapping shallow coastal waters. Pixel based Support Vector Machine (SVM) classification is used to map benthic habitat at the most general level i.e. coral reefs, seagrass, and mangroves. Moreover, image transformations such as Principal Component Analysis (PCA) and Depth Invariant Index (DII) were implemented. Diwata-2 derived benthic habitat maps were then assessed using the National Mapping and Resource Information Authority (NAMRIA) Coastal Resource Map of 2016 and Allen Coral Atlas. Results showed that the accuracy of satellite-derived maps with NAMRIA Coastal Resource Map ranges from 45-95%, while with Allen Coral, 68-99% was achieved. It was observed that the overall accuracy varies per region which may be influenced by the habitat complexity, turbidity, quality and resolution of the image, and the limitations of reference maps.

Keywords: benthic habitat mapping, Diwata-2 , High Precision Telescope, Support Vector Machine