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Research Article

Change Detection of a Coastal Woodland Mangrove Forest in Fiji by Integration of Remote Sensing with Spatial Mapping

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ABSTRACT

Mangroves play key ecological role in structuring the availability of coastal resources. The current study was focused on change detection in a large mangrove patch located in Votua area of the Ba province in Fiji. Globally, the mangrove population continues to decline with the changes in climatic conditions and anthropogenic activities. Baseline information through wetland maps and time series change are essential references for the development of effective mangrove management plans. These maps reveal the status of the resource over a period of time and the impacts from anthropogenic activities. Remote sensing techniques were integrated with geographic information system tools for mapping and detecting temporal change over a period of 20 years. Remotely sensed imagery data from Landsat satellite was sourced from the year 1999 to 2018 for this investigation. The mapping analysis of temporal changes in mangrove forests was carried using the versatile ArcGIS and ENVI software. The pilot change detection analysis revealed a small but important change in the mangrove patch over these years. Landward creep of mangroves was also detected. The outcomes of this study serve as baseline and conservation information for the development and implementation of effective management plans for one of Fiji's largest mangrove patches.

Key words: Coastal, GIS, Landsat, temporal change, climate change, anthropogenic activities