

REMOTE SENSING STUDY OF MANGROVE DENSITY IN WARMON VILLAGE, SORONG REGENCY, SOUTHWEST PAPUA USING LANDSAT 8 NDVI: CONSERVATION AND ECOTOURISM STRATEGY

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Abstract. Mangroves are significant ecological and economic ecosystems that thrive along coastlines and river estuaries where tidal seawater is present. Indonesia is home to approximately 3 million hectares of mangrove forests, which span 95,000 kilometers and account for 23% of the global mangrove ecosystem. One notable region with these ecosystems is Papua. However, Indonesia has seen a decline in mangrove areas due to high rates of deforestation. Affected regions include the mangroves in Sorong Regency. Therefore, it is essential to monitor the health of these mangroves, particularly in Warmon Village, by assessing their density through remote sensing technology. This study aims to measure the distribution and density of mangrove forests in Warmon Village, Sorong Regency, Southwest Papua using Landsat 8 imagery with the Normalized Difference Vegetation Index (NDVI) method. This study uses primary and secondary data. Direct observation was also conducted in the mangrove area to assess density using Landsat 8 satellite imagery data. Secondary data was obtained from the Sorong Regency and City Spatial Planning Map. Data analysis was conducted spatially using ArcGIS version 10.8.1 to produce a mangrove density map with a scale of 1:8.000. The results of the NDVI analysis can be used to promote mangrove areas as ecotourism destinations. Data indicating healthy mangrove density can draw in tourists and investors, while also enhancing awareness of the significance of conserving mangrove ecosystems. The study revealed that the mangrove distribution in Warmon Village spans 1,261 hectares. The specific areas recorded at three observation stations were 18.34 ha, 17.54 ha, and 20.11 ha, respectively. These findings indicate that the mangrove forest in Warmon Village, Sorong Regency, falls within a density classification of 0.17 to 0.67, ranging from bad to good. This data can serve as a foundational basis for developing conservation efforts, aquaculture, and sustainable tourism or ecotourism initiatives. The application of NDVI with Landsat 8 satellite imagery is highly effective for conducting density analyses in the mangrove areas of Warmon Village, as infrared aerial images show a strong and significant correlation that supports ecotourism development.

Keyword: Mangrove, NDVI, Sustainable Ecotourism, Warmon Village, Southwest Papua.