

# Distribusi Spasial dan Temporal Habitat Terumbu Karang Pulau Derawan Tahun 2003, 2011, dan 2021 Menggunakan Algoritma Klasifikasi Machine Learning = Spatial and Temporal Distribution of Derawan Island Coral Reef Habitat in 2003, 2011, and 2021 Using Machine Learning Classification Algorithms

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## Abstrak

Penelitian dilakukan untuk mengetahui pola sebaran spasial perubahan habitat terumbu karang di kawasan pesisir Pulau Derawan tahun 2003, 2011, dan 2021. Selanjutnya dampak resolusi spasial dan tingkat kemampuan algoritma klasifikasi machine learning pada pemetaan distribusi habitat terumbu karang akan dinilai. Penelitian ini menggunakan citra satelit Landsat 7 ETM+ dan Sentinel-2 untuk memetakan sebaran spasial habitat terumbu karang. Selanjutnya, citra satelit Landsat 9 tahun 2022, citra satelit Sentinel-2 tahun 2022, dan Foto Udara Multispektral tahun 2021 digunakan untuk menilai tingkat kemampuan algoritma klasifikasi pembelajaran mesin untuk resolusi spasial. Algoritma klasifikasi non-parametrik seperti Random Forest (RF), Support Vector Machine (SVM), dan Classification and Regression Tree digunakan (CART). .....The research was done to determine the pattern of the spatial distribution of changes in coral reef habitat in the coastal areas of Derawan Island in 2003, 2011, and 2021. Furthermore, the impact of spatial resolution and the level of ability of machine learning classification algorithms on mapping the distribution of coral reef habitats will be assessed. The study used Landsat 7 ETM+ and Sentinel-2 satellite images to map the spatial distribution of coral reef habitat. Furthermore, Landsat 9 satellite imagery from 2022, Sentinel-2 satellite imagery from 2022, and Multispectral Aerial Photographs from 2021 are used to assess the ability level of the machine learning classification algorithm for spatial resolution. Non-parametric classification algorithms such as Random Forest (RF), Support Vector Machine (SVM), and Classification and Regression Tree are used (CART).