

Orelia Fernanda. NPM 18.03.4.1.1.00051. Pemanfaatan Citra Sentinel 2-A untuk Analisa Tutupan kanopi Mangrove di Kecamatan Sepulu. Dibawah bimbingan **Ach. Fachruddin Sya, S.Pi., M.Si., P.hD.**

ABSTRAK

Ekosistem mangrove memiliki banyak manfaat, baik dari segi ekonomi maupun ekologi. Salah satu daerah di Kabupaten Bangkalan yang memiliki ekosistem mangrove adalah Kecamatan Sepulu. Penelitian ini bertujuan untuk memetakan tutupan kanopi mangrove di Kecamatan Sepulu, Bangkalan. Penelitian ini memanfaatkan data citra multitemporal Sentinel-2 pada tahun 2021. Beberapa algoritma indeks yang digunakan untuk mengevaluasi tutupan kanopi vegetasi mangrove seperti NDVI (*Normalized Difference Vegetation Index*), SAVI (*Soil Adjusted Vegetation Index*), RVI (*Ratio Vegetation Index*) dan DVI (*Difference Vegetation Index*). Hasil penelitian menunjukkan nilai NDVI dan RVI dengan kondisi lebat (0,62 dan 0,194) serta SAVI dan RVI dengan kondisi jarang (0,356 dan 5,47). Indeks vegetasi terbaik untuk memetakan tutupan kanopi mangrove di Sepulu adalah NDVI ($r = 0,997$; $RMSE = 0,671$). Selain itu, metode hemispherical photography juga dapat digunakan untuk menghitung tutupan kanopi mangrove. Secara umum keempat indeks vegetasi tersebut menunjukkan bahwa kondisi mangrove di Kecamatan Sepulu dalam kondisi jarang dan lebat. Selain itu, foto *hemispherical* juga menunjukkan kondisi mangrove dalam kondisi lebat (63,38%). Hal ini menunjukkan bahwa keempat indeks vegetasi tersebut cukup mampu memprediksi tutupan kanopi ekosistem mangrove di lokasi penelitian.

Kata Kunci: Mangrove, Pemetaan, NDVI, SAVI, DVI, RVI, Sentinel-2, *Hemispherical photography*

Orelia Fernanda. NPM 18.03.4.1.1.00051. Application Of Remote Sensing And Hemispherical Photography In Mapping Mangrove Density. Under Guidance **Ach. Fachruddin Sya, S.Pi., M.Si., P.hD.**

ABSTRACT

Mangrove ecosystems have many benefits, both from an economic and ecological perspective. One of the areas in Bangkalan Regency that has a mangrove ecosystem is Sepulu District. This study aims to map the density of mangroves in the district of Sepulu, Bangkalan. This study utilizes Sentinel-2 multitemporal image data in 2021. Several index algorithms were used evaluate mangrove vegetation density such as NDVI (Normalized Difference Vegetation Index), SAVI (Soil Adjusted Vegetation Index), RVI (Ratio Vegetation Index) and DVI (Difference Vegetation Index). The results showed the value of NDVI and RVI with dense conditions (0.62 and 0.194) and SAVI and RVI with moderate conditions (0.356 and 5.47). The best vegetation index for mangrove density in Sepulu is NDVI ($r = 0.997$; $RMSE = 0.671$). In addition, the hemispherical photography method is also used to calculate mangrove density. In general, the four vegetation indices show that the condition of mangroves in Sepulu District is in moderate and dense condition. Furthermore, hemispherical photography also shows that the condition of the mangroves is in dense condition (63.38%). This shows that the four vegetation indices are quite capable of predicting the density of the mangrove ecosystem in the research location.

Keyword: *Mangrove, Mapping, NDVI, SAVI, RVI, DVI, Sentinel-2, hemispherical photography*