

Analysis of Mangrove Cover Changes in the Delta Mahakam, East Kalimantan
(Analisis Perubahan Tutupan Mangrove di Delta Mahakam, Kalimantan Timur)

Viola Cantika Amadea^{1*} & Emma Soraya²

¹Undergraduate Program, Faculty of Forestry, Universitas Gadjah Mada, Jogjakarta, 55281

²Forest Management Department, Faculty of Forestry, Universitas Gadjah Mada, Jogjakarta, 55281

Email : Viola.c.a@mail.ugm.ac.id; *esoraya@mail.ugm.ac.id

ABSTRACT

The Delta Mahakam is one of the IKN buffer areas dominated by mangroves, but is experiencing deforestation due to land cover changes. Land cover change is important to analyze in order to design forest management and determine the realization of rehabilitation before and after the organization of KPHP Delta Mahakam. Estimates of land cover change have errors from image interpretation that require uncertainty analysis. This study aims to identify land cover change and calculate the uncertainty value of the classification results of land cover change in the Mahakam Delta in 2014-2023.

The land cover map of the KPHP Delta Mahakam working area was generated from Landsat 8 classification through the Google Earth Engine (GEE) platform. The classification used the Random Forest (RF) algorithm and combined with NDVI to divide mangroves into three density classes. Land cover change analysis was made into 5 classes of change, namely Stable Forest (SF), Forest Gain (FG), Forest Degradation (FD), Deforestation (Df), and Stable Non Forest (SNF).

The results of this study indicate the role of KPHP Mahakam Delta and other stakeholders in mangrove rehabilitation efforts to increase forest land cover. The potential for improvement in the condition of the Delta Mahakam mangroves can be seen in the SF of the 2014-2019 period of 33.682,54 ha, despite the Df of 8.238,07 ha. The period 2019-2023 FG increased by 7.694,10 ha accompanied by a decrease in SNF of 7.111,28 ha and Df of 5.563,53 ha. The results of the highest uncertainty value in the 2014-2019 period were generated by the FD and FG classes at 14%, while other change classes had uncertainty below 10%. The 2019-2023 period was highest in the FG class at 18% and Df at 12%. The high uncertainty value is related to the inaccuracy of land cover image interpretation.

KEYWORDS : *Land use change, KPHP Delta Mahakam, Uncertainty*

¹ Mahasiswa Fakultas Kehutanan Universitas Gadjah Mada

² Dosen Fakultas Kehutanan Universitas Gadjah Mada

Analisis Perubahan Tutupan Mangrove di Delta Mahakam, Kalimantan Timur
(Analysis of Mangrove Cover Changes in the Delta Mahakam, East Kalimantan)

Viola Cantika Amadea^{1*} & Emma Soraya²

¹Undergraduate Program, Faculty of Forestry, Universitas Gadjah Mada, Jogjakarta, 55281

²Forest Management Department, Faculty of Forestry, Universitas Gadjah Mada, Jogjakarta, 55281

Email : Viola.c.a@mail.ugm.ac.id; *esoraya@mail.ugm.ac.id

INTISARI

Delta Mahakam merupakan salah satu kawasan penyangga IKN yang didominasi oleh mangrove, namun mengalami deforestasi akibat perubahan tutupan lahan. Perubahan tutupan lahan penting dianalisis guna merancang pengelolaan hutan dan mengetahui realisasi rehabilitasi sebelum serta sesudah pengorganisasian KPHP Delta Mahakam. Estimasi perubahan tutupan lahan memiliki kesalahan dari interpretasi citra yang memerlukan analisis ketidakpastian. Penelitian ini bertujuan untuk mengidentifikasi perubahan tutupan lahan dan menghitung nilai ketidakpastian hasil klasifikasi perubahan tutupan lahan di Delta Mahakam pada tahun 2014-2023.

Peta tutupan lahan wilayah kerja KPHP Delta Mahakam dihasilkan dari klasifikasi Landsat 8 melalui platform Google Earth Engine (GEE). Klasifikasi menggunakan algoritma *Random Forest* (RF) dan dikombinasikan dengan NDVI untuk membagi mangrove menjadi tiga kelas kerapatan. Analisis perubahan tutupan lahan dibuat menjadi 5 kelas perubahan yaitu *Stable Forest* (SF), *Forest Gain* (FG), *Forest Degradation* (FD), *Deforestation* (Df), dan *Stable Non Forest* (SNF).

Hasil penelitian ini menunjukkan adanya peran KPHP Delta Mahakam dan *stakeholder* lain dalam upaya rehabilitasi mangrove untuk meningkatkan tutupan lahan hutan. Potensi perbaikan kondisi mangrove Delta Mahakam terlihat pada SF periode 2014-2019 seluas 33.682,54 ha, meskipun Df seluas 8.238,07 ha. Periode 2019-2023 FG meningkat seluas 7.694,10 ha diiringi dengan penurunan SNF seluas 7.111,28 ha dan Df 5.563,53 ha. Hasil nilai ketidakpastian tertinggi pada periode 2014 -2019 dihasilkan oleh kelas FD dan FG sama sebesar 14%, sementara kelas perubahan lainnya memiliki *uncertainty* di bawah 10%. Periode 2019-2023 tertinggi pada kelas FG sebesar 18% dan Df sebesar 12%. Tingginya nilai ketidakpastian berkaitan dengan ketidaktepatan interpretasi citra tutupan lahan.

KATA KUNCI: Perubahan tutupan lahan, KPHP Delta Mahakam, Analisis ketidakpastian

¹ Mahasiswa Fakultas Kehutanan Universitas Gadjah Mada

² Dosen Fakultas Kehutanan Universitas Gadjah Mada