

KEBERHASILAN REHABILITASI MANGROVE DI KAWASAN EKOSISTEM ESENSIAL UJUNGPANGKAH KABUPATEN GRESIK

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INTISARI

Mangrove Ujungpangkah (MUP) di Kabupaten Gresik dan perairan sekitarnya seluas $\pm 1.554,27$ ha ditetapkan menjadi Kawasan Ekosistem Esensial (KEE) sebagai upaya mempertahankan fungsi ekologis pesisir serta mendukung mata pencaharian masyarakat lokal. Pengelolaan KEE MUP telah berjalan selama lima tahun sejak ditetapkan di tahun 2020. Sejak penetapannya, belum ditemukan laporan monitoring dan evaluasi keberhasilan pengelolaan KEE. Mendeteksi dinamika tutupan secara berkala dapat dilakukan melalui pengolahan data *time-series* salah satunya menggunakan algoritma LandTrendr. Penelitian ini bertujuan untuk mengkuantifikasi perubahan tutupan dan kerapatan dalam kawasan mangrove Ujungpangkah.

Penelitian ini memanfaatkan indeks vegetasi *Modular Mangrove Recognition Index* (MMRI) tahun 2015-2024 untuk mengidentifikasi perubahan tutupan dan kerapatan mangrove di wilayah KEE MUP. Terdapat lima kelas perubahan yang diidentifikasi yaitu revegetasi, densifikasi, stabil, degradasi, serta deforestasi. Analisis gangguan dan pemulihan dari *output* LandTrendr digunakan untuk menilai *magnitude* dan durasi. Identifikasi dan analisis pola *trajectory* LandTrendr pada tiap kelas perubahan juga dilakukan untuk memodelkan dinamika mangrove.

Hasil analisis menunjukkan keberhasilan rehabilitasi mangrove, ditandai dengan luasan revegetasi tertinggi dibanding kelas perubahan lainnya. Pengelolaan KEE Ujungpangkah efektif meningkatkan luasan dan kerapatan mangrove melalui deteksi tahun aktivitas pemulihan yang selalu muncul pada tahun 2020-2024. Peningkatan rerata *magnitude* menunjukkan pemulihan signifikan, terutama pada tahun 2020 hingga 2022, meskipun gangguan masih terdeteksi hingga 2023. Pola *trajectory* mencerminkan dinamika alami vegetasi yang tidak selalu mengindikasikan degradasi. Dominasi kelas hutan stabil sejak 2015 menandakan keberhasilan KEE dalam mempertahankan kerapatannya, meskipun abrasi dan konversi lahan masih memicu deforestasi di beberapa titik, terutama di Desa Pangkahwetan.

Kata Kunci: KEE, Mangrove, LandTrendr, MMRI

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*ASSESSING THE SUCCESS OF MANGROVE REHABILITATION IN THE
UJUNGPAKKAH ESSENTIAL ECOSYSTEM AREA, GRESIK REGENCY*

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ABSTRACT

Ujungpangkah Mangrove (MUP) in Gresik Regency and its surrounding waters, covering approximately $\pm 1,554.27$ hectares, was designated as an Essential Ecosystem Area (EEA) as part of efforts to maintain coastal ecological functions and support local livelihoods. The management of EEA MUP has been in place for five years since its designation in 2020. However, no monitoring and evaluation reports on the sustainability of EEA management have been identified since its establishment. Periodic detection of land cover dynamics can be conducted using time-series data analysis, one of which is through the LandTrendr algorithm. This study aims to quantify changes in mangrove cover and density within the Ujungpangkah mangrove area.

The research utilizes the Modular Mangrove Recognition Index (MMRI) from 2015 to 2024 to identify changes in mangrove cover and density within the EEA MUP area. Five change classes were identified: revegetation, densification, stable, degradation, and deforestation. Disturbance and recovery analysis from LandTrendr outputs was used to assess the magnitude and duration of changes. Additionally, identification and trajectory analysis for each change class were conducted to model mangrove dynamics.

The results indicate the success of mangrove rehabilitation, marked by the largest area of revegetation compared to other change classes. The management of KEE Ujungpangkah has proven effective in increasing mangrove cover and density, with recovery activities consistently detected during 2020–2024. The increase in average magnitude reflects significant recovery, especially from 2020 to 2022, although disturbances were still detected up to 2023. The trajectory patterns reflect natural vegetation dynamics that do not necessarily indicate degradation. The dominance of the stable forest class since 2015 signifies the effectiveness of KEE in maintaining mangrove density, although localized deforestation remains due to abrasion and land conversion, particularly in Pangkahwetan Village.

Keywords: EEA, Mangrove, LandTrendr, MMRI.

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