

ABSTRAK

Penelitian ini bertujuan untuk mengestimasi biomassa dan stok karbon ekosistem mangrove di Pulau Lusi Tlocor, Desa Kedungpandan, Kecamatan Jabon, Kabupaten Sidoarjo. Pulau Lusi merupakan pulau hasil endapan lumpur yang telah mengalami proses reklamasi dan penanaman mangrove, sehingga perlu dilakukan kajian terkait potensi biomassa dan simpanan karbonnya. Penelitian dilaksanakan pada bulan Januari 2024 dengan metode survei lapangan menggunakan teknik line transect dan stratified random sampling. Pengamatan dilakukan pada 5 stasiun dengan masing-masing 3 plot berukuran 10×10 m untuk kategori pohon dan 5×5 m untuk kategori belta. Data yang dikumpulkan meliputi identifikasi jenis mangrove, pengukuran diameter batang (DBH), tutupan kanopi menggunakan metode hemispherical photography, serta perhitungan Indeks Nilai Penting (INP), biomassa, dan stok karbon menggunakan persamaan alometrik secara non-destructive. Hasil penelitian menunjukkan bahwa ekosistem mangrove di Pulau Lusi terdiri atas beberapa spesies mangrove dengan nilai INP yang bervariasi pada setiap stasiun. Estimasi biomassa dan stok karbon menunjukkan bahwa mangrove di Pulau Lusi memiliki potensi simpanan karbon yang signifikan dan berperan dalam mitigasi perubahan iklim. Tutupan kanopi dan nilai Mangrove Health Index (MHI) menunjukkan kondisi ekosistem mangrove yang tergolong baik. Secara keseluruhan, ekosistem mangrove di Pulau Lusi memiliki potensi biomassa dan stok karbon yang cukup tinggi serta berperan penting dalam penyerapan karbon dan pelestarian lingkungan pesisir.

Kata kunci: mangrove, biomassa, stok karbon, INP, Pulau Lusi

ABSTRACT

This study aimed to estimate the biomass and carbon stocks of the mangrove ecosystem on Lusi Tlocor Island, Kedungpandan Village, Jabon District, Sidoarjo Regency. Lusi Island is a mudflat island that has undergone reclamation and mangrove planting, necessitating a study of its biomass and carbon storage potential. The study was conducted in January 2024 using a field survey using line transect techniques and stratified random sampling. Observations were conducted at five stations, each with three plots measuring 10x10 m for the tree category and 5x5 m for the belta category. Data collected included identification of mangrove species, measurement of stem diameter (DBH), and canopy cover using hemispherical photography. The calculation of the Importance Value Index (IVI), biomass, and carbon stock using non-destructive allometric equations was also conducted. The results showed that the mangrove ecosystem on Lusi Island consists of several mangrove species, with IVI values varying at each station. Biomass and carbon stock estimates indicate that mangroves on Lusi Island have significant carbon storage potential and play a role in climate change mitigation. Canopy cover and Mangrove Health Index (MHI) values indicate the mangrove ecosystem is in good condition. Overall, the mangrove ecosystem on Lusi Island has relatively high biomass and carbon stock potential and plays a vital role in carbon sequestration and coastal environmental conservation.

Keywords: mangrove, biomass, carbon stock, INP, Lusi Island