ESTIMASI STOK KARBON MANGROVE DI KAWASAN MANGROVE BAROS KABUPATEN BANTUL

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INTISARI

Penelitian ini bertujuan untuk mengestimasi nilai stok karbon vegetasi atas permukaan (AGC), bawah permukaan tanah (BGC), dan tanah (SOC) di Kawasan Konservasi Mangrove Baros, dengan membagi wilayah penelitian menjadi dua area, yaitu area barat dan timur. Pembagian area penelitian ini disebabkan adanya karakteristik mangrove yang berbeda sehingga dilakukan pembagian area untuk melihat bagaimana karakteristik mangrove yang berbeda dapat mempengaruhi total stok karbon.

Estimasi stok karbon AGC dan BGC dilakukan menggunakan persamaan alometrik untuk dua genus mangrove yang dominan di kawasan ini. Metode klasifikasi genus mangrove dilakukan melalui interpretasi kanopi untuk mengidentifikasi jenis mangrove. Sementara itu, estimasi stok karbon tanah (SOC) dilakukan dengan menggunakan uji laboratorium *Walkley-Black* untuk mengukur kandungan karbon organik tanah.

Hasil penelitian menunjukkan bahwa Mangrove Baros di dominasi oleh genus *Avicennia* dan *Rhizophora*. AGC berkontribusi sebesar 38.46% dengan nilai total 411.31 ton C/ha, sementara BGC berkontribusi 24.94% dengan nilai 266.73 ton C/ha. Kawasan ini memiliki ekosistem yang produktif dalam menyimpan karbon melalui biomassa mangrove, terutama di area barat yang menunjukkan nilai stok karbon lebih tinggi pada AGC dan BGC dibandingkan dengan area timur. Estimasi stok karbon tanah (SOC) mencatatkan nilai total 391.25 ton C/ha, berkontribusi sekitar 36.58% terhadap total stok karbon, dengan area barat memiliki nilai SOC lebih tinggi (203.03 ton C/ha) dibandingkan area timur (170.51 ton C/ha). Meskipun stok karbon total di Mangrove Baros masih terbilang rendah dibandingkan ekosistem mangrove lainnya, kawasan ini memiliki potensi yang baik dalam menyimpan karbon, terutama di area barat, dengan total karbon berdasar luas area Mangrove Baros sebesar 1001.05 ton C dengan rata-rata 500.53 ± 74.04 ton C. Adapun perbedaan nilai stok karbon dipengaruhi dari karakteristik vegetasi dan karakteristik tanah yang terdapat di area barat dan timur Mangrove Baros.

Kata kunci: estimasi karbon, genus mangrove, mangrove, stok karbon, stok karbon tanah

ESTIMATION OF MANGROVE CARBON STOCK IN THE MANGROVE AREA OF BAROS BANTUL REGENCY

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ABSTRACT

This study aims to estimate the value of carbon stock in above-ground vegetation (AGC), below-ground vegetation (BGC), and soil organic carbon (SOC) in the Mangrove Conservation Area of Baros. The research area is divided into two regions, namely the western and eastern areas. This division is based on the differing characteristics of mangroves, allowing the study to examine how these variations in mangrove characteristics influence the total carbon stock.

AGC and BGC carbon stock estimations were conducted using allometric equations for the two dominant mangrove genera in the area. The mangrove genus classification method involved canopy interpretation to identify mangrove species. Meanwhile, the estimation of soil carbon stock (SOC) was carried out using the Walkley-Black laboratory test to measure soil organic carbon content.

The results indicate that the Baros Mangrove is dominated by the genera Avicennia and Rhizophora. AGC contributed 38.46% of the total carbon stock, with a value of 411.31 tons C/ha, while BGC contributed 24.94%, with a value of 266.73 tons C/ha. This area has a productive ecosystem for storing carbon through mangrove biomass, particularly in the western area, which showed higher AGC and BGC carbon stock values compared to the eastern area. The estimated soil carbon stock (SOC) recorded a total value of 391.25 tons C/ha, contributing about 36.58% to the total carbon stock, with the western area having higher SOC values (203.03 tons C/ha) compared to the eastern area (170.51 tons C/ha). Although the total carbon stock in the Baros Mangrove is relatively low compared to other mangrove ecosystems, the area shows good potential for carbon storage, especially in the western area. The total carbon stock for the entire Baros Mangrove area is estimated at 1001.05 tons C, with an average of 500.53 ± 74.04 tons C. The difference in carbon stock values is influenced by the characteristics of vegetation and soil found in the western and eastern areas of the Baros Mangrove

Keywords: carbon estimation, carbon stock, mangrove genus, mangroves carbon stock, soil carbon stock