

ABSTRAK

Konsentrasi CO₂ yang meningkat menjadi salah satu pemicu utama perubahan iklim global. Salah satu solusi menurunkan konsentrasi CO₂ adalah dengan penyerapan karbon oleh ekosistem mangrove yang memiliki kemampuan penyimpanan karbon jangka panjang, sehingga berperan penting dalam mitigasi perubahan iklim. Penelitian ini bertujuan untuk mengetahui karakteristik perairan dan vegetasi mangrove, cadangan karbon biomassa dan sedimen, serta hubungan antara kualitas perairan dan vegetasi terhadap simpanan karbon di ekosistem mangrove Kutawaru, Cilacap. Metode penelitian yang digunakan adalah metode survei dengan pengambilan sampel menggunakan purposive sampling sebanyak 3 stasiun pengamatan. Analisis karbon organik menggunakan metode Walkley and Black. Analisis data yang digunakan adalah analisis deskriptif kuantitatif. Hasil menunjukkan bahwa ditemukan delapan jenis mangrove di ekosistem mangrove Kutawaru diantaranya *Rhizophora apiculata*, *Rhizophora mucronata*, *Sonneratia alba*, *Avicennia alba*, *Aegiceras corniculatum*, *Ceriops tagal*, *Ceriops decandra* dan *Bruguiera gymnorrhiza*. Cadangan karbon sedimen berkisar antara 386,94 hingga 432,36 ton C/ha, lebih tinggi dibandingkan dengan karbon biomassa yang berkisar antara 272,5 hingga 341,5 ton C/ha. Uji korelasi Pearson menunjukkan bahwa karbon sedimen memiliki hubungan sangat kuat dengan parameter perairan seperti suhu ($r=0,999$), DO ($r=0,986$), dan pH ($r=0,956$). Sementara itu, karbon biomassa berkorelasi kuat salinitas ($r=0,984$) dan pH ($r=0,828$). Namun keduanya berkorelasi sangat kuat dengan kerapatan mangrove.

Kata kunci : Biomassa, cadangan karbon, Kutawaru, sedimen, mangrove.

ABSTRACT

The increasing concentration of CO₂ is one of the main triggers of global climate change. One solution to reduce CO₂ concentration is through carbon absorption by mangrove ecosystems that have long-term carbon storage capabilities, thus playing an important role in climate change mitigation. This study aims to determine the characteristics of mangrove waters and vegetation, biomass and sediment carbon stocks, and the relationship between water quality and vegetation to carbon storage in the Kutawaru mangrove ecosystem, Cilacap. The research method used is a survey method with sampling using purposive sampling at 3 observation stations. Organic carbon analysis used the Walkley and Black method. Data analysis used is quantitative descriptive analysis. The results show that eight mangrove species were found in the Kutawaru mangrove ecosystem including *Rhizophora apiculata*, *Rhizophora mucronata*, *Sonneratia alba*, *Avicennia alba*, *Aegiceras corniculatum*, *Ceriops tagal*, *Ceriops decandra* and *Bruguiera gymnorrhiza*. Sediment carbon reserves ranged from 386.94 to 432.36 tons C/ha, higher than biomass carbon which ranged from 272.5 to 341.5 tons C/ha. Pearson correlation test showed that sediment carbon had a very strong relationship with water parameters such as temperature ($r=0.999$), DO ($r=0.986$), and pH ($r=0.956$). Meanwhile, biomass carbon was strongly correlated with salinity ($r=0.984$) and pH ($r=0.828$). However, both were very strongly correlated with mangrove density.

Keywords: Biomass, carbon stocks, Kutawaru, sediment, mangrove.

