

RINGKASAN

SYAHBANA ADVANI ALSHA. Estimasi Simpanan Karbon pada Lamun di Perairan Pesisir Timur dan Utara Pulau Bintan. Dibimbing oleh ANDI ZULFIKAR dan WINNY RETNA MELANI.

Lamun memiliki kemampuan menyimpan karbon dengan memanfaatkan CO₂ sebagai komponen fotosintesis yang berpotensi sebagai karbon biru. Penelitian ini bertujuan untuk mengetahui kerapatan, tutupan, biomassa, dan simpanan karbon yang terdapat pada lamun di Perairan Pesisir Timur dan Utara Pulau Bintan serta mengetahui hubungan antara kerapatan, tutupan, biomassa, dan simpanan karbon pada lamun di Perairan Pesisir Timur dan Utara Pulau Bintan. Penelitian dilakukan di Teluk Bakau, Malang Rapat, Berakit, dan Pengudang pada bulan Agustus 2024 hingga Mei 2025. Alat dan bahan yang digunakan yaitu transek kuadran 50 x 50 cm², oven, *sieve net*, kamera *underwater*, *plastic bag*, sampel lamun, dan sampel substrat. Penelitian menggunakan metode *systematic random sampling* dan desain sampling yaitu rancangan tersarang bertingkat. Perhitungan nilai simpanan karbon pada lamun menggunakan metode Walkley and Black. Pengolahan data dilakukan dengan menghitung nilai kerapatan, tutupan, biomassa dan simpanan karbon pada lamun, serta analisis data dilakukan dengan menguji hubungan antara kerapatan, tutupan, biomassa, dan simpanan karbon pada lamun. Kerapatan pada wilayah timur berkisar 284,3-577,1 tegakan/m² dan wilayah utara berkisar 106,8-816,1 tegakan/m². Tutupan pada wilayah timur berkisar 43,09-83,46% dan wilayah utara berkisar 58,39-75,16%. Biomassa pada wilayah timur berkisar 39,32-83,00 gr/m² dan wilayah utara berkisar 19,03-138,56 gr/m². Simpanan karbon pada wilayah timur berkisar 27,46-31,03% dan pada wilayah utara berkisar 23,93-28,30%. Hasil uji korelasi kerapatan dan biomassa memiliki hubungan sedang 0,51; kerapatan dan tutupan memiliki hubungan sangat lemah -0,11 dan simpanan karbon -0,09. Tutupan dan biomassa memiliki hubungan sangat lemah 0,02 dan simpanan karbon 0,02; biomassa dan simpanan karbon memiliki hubungan lemah -0,24.

Kata kunci: Biomassa, Karbon, Kerapatan, Lamun, Pulau Bintan

SUMMARY

SYAHBANA ADVANI ALSHA. Estimation of Carbon Storage in Seagrass in the East and North Coastal Waters of Bintan Island. Supervised by ANDI ZULFIKAR and WINNY RETNA MELANI.

Seagrass has the ability to store carbon by utilizing CO₂ to be used as a photosynthesis component which has the potential as blue carbon. This research was aimed to determine density, cover, and biomass in the East and North Coastal Waters of Bintan Island; determine the carbon storage contained in seagrass in the East and North Coastal Waters of Bintan Island; and determine the relationship between density, cover, biomass, and carbon storage in seagrasses in the East and North Coastal Waters of Bintan Island. The research was conducted in Teluk Bakau, Malang Rapat, Berakit, and Pengudang from August 2024 to May 2025. The tools and materials used were 50 × 50 cm², oven, sieve net, underwater camera, plastic bag, seagrass samples, and substrate samples. The research procedures used systematic random sampling method and the sampling design used in determining sampling points was a nested hierarchical design. The method of calculating the value of carbon storage in seagrasses used the Walkley and Black method. The data analysis was carried out by calculating the value of density, cover, biomass; then calculating the value of carbon storage in seagrasses, and testing the relationship between density, cover, biomass, and carbon storage in seagrasses. Density in the eastern region ranged from 284,3-577,1 shoot/m² and in the northern region ranged from 106,8-816,1 shoot/m². Cover in the eastern region ranged from 43,09-83,46% and in the northern region ranged from 58,39-75,16%. Biomass in the eastern region ranged from 39,32-83,00 gr/m² and in the northern region ranged from 19,03-138,56 gr/m². Carbon storage in the eastern region ranged from 27,46-31,03% and in the northern region ranged from 23,93-28,30%. The correlation test results of density and biomass have a moderate relationship of 0,51; density and cover have a very weak relationship of -0,11 and carbon storage of -0,09. Cover and biomass have a very weak relationship of 0,02 and carbon storage of 0,02; biomass and carbon storage have a weak relationship of -0,24.

Keywords: Bintan Island, Biomass, Carbon, Density, Seagrass