

RINGKASAN

ISMI DWI YULIANTI. Estimasi Simpanan Nitrogen (N) pada Lamun di Perairan Pesisir Timur dan Utara Pulau Bintan. Dibimbing oleh ANDI ZULFIKAR dan WINNY RETNA MELANI.

Pulau Bintan memiliki luas ekosistem lamun sekitar 2.600 hektar, telah ditetapkan sebagai kawasan konservasi di beberapa desa pesisir bagian Timur dan Utara. Lamun memiliki produktivitas primer tinggi dan sangat bergantung pada ketersediaan nitrogen sebagai unsur hara utama yang mendukung pertumbuhan, fotosintesis, dan biomassa. Mengingat di kawasan Timur dan Utara Pulau Bintan memiliki kondisi lamun yang berbeda, maka penelitian ini dilakukan dengan tujuan untuk menganalisis kandungan nitrogen dalam lamun serta hubungan antara kerapatan, tutupan, dan biomassa lamun terhadap simpanan nitrogen guna mendukung pengelolaan konservasi yang berkelanjutan di wilayah tersebut. Penelitian dilakukan pada bulan Agustus 2024-Mei 2025. Pengambilan sampel air, lamun dan substrat menggunakan metode nested hierarchical design berdasarkan systematic random sampling. Pengukuran kandungan Nitrogen menggunakan metode spektrofotometri dengan larutan H_2SO_4 H_2O_2 dalam proses disgetion dan reagen fenat. Berdasarkan hasil penelitian kerapatan tertinggi berada di Pengudang dengan nilai ($816,1$ tegakan/ m^2) sedangkan kerapatan lamun terendah berada di Berakit_2 dengan nilai ($106,8$ tegakan/ m^2). Tutupan lamun tertinggi berada di T_Bakau_1 dengan rata-rata ($83,46$ %). Sedangkan yang terendah berada di T_Bakau_2 dengan rata-rata ($43,09$ %). Biomassa pada lamun tertinggi berada di Pengudang dengan rata-rata sebesar ($138,56$ gr/ m^2) sedangkan biomassa terendah berada di Berakit_2 dengan rata-rata biomassa sebesar ($19,03$ gr/ m^2). Nitrogen tertinggi berada pada 2 lokasi yaitu Pengudang sebesar ($0,758$ %) dan T_Bakau_2 sebesar ($0,758$ %) sedangkan yang terendah berada di Berakit_1 dengan rata-rata total nitrogen sebesar ($0,359$ %). Terdapat hubungan yang positif berdasarkan korelasi antara kerapatan dan biomassa terhadap simpanan nitrogen pada lamun. Berdasarkan regresi kerapatan dan biomassa lamun berpengaruh signifikan terhadap simpanan nitrogen dengan nilai regresi = $0,642$.

Kata kunci: Bintan, Konservasi, Lamun, Nitrogen.

SUMMARY

ISMI DWI YULIANTI. Estimation of Nitrogen (N) Storage in Seagrass in the East and North Coastal Waters of Bintan Island. Supervised by ANDI ZULFIKAR and WINNY RETNA MELANI.

Bintan Island has a seagrass ecosystem area of approximately 2,600 hectares, which has been designated as a conservation area in several coastal villages in the East and North. Seagrass has high primary productivity and is highly dependent on the availability of nitrogen as the main nutrient that supports growth, photosynthesis, and biomass. Considering that the East and North of Bintan Island have different seagrass conditions, this study was conducted with the aim of analyzing the nitrogen content in seagrass and the relationship between density, cover, and biomass of seagrass to nitrogen stores to support sustainable conservation management in the region. The study was conducted in August 2024-May 2025. Water, seagrass and substrate sampling used a nested hierarchical design method based on systematic random sampling. Nitrogen content measurement used a spectrophotometric method with H_2SO_4 H_2O_2 solution in the digestion process and phenate reagent. Based on the results of the study, the highest density was in Pengudang with a value of (816.1 stands/ m^2) while the lowest seagrass density was in Berakit_2 with a value of (106.8 stands/ m^2). The highest seagrass cover is in T_Bakau_1 with an average of (83.46%). While the lowest is in T_Bakau_2 with an average of (43.09%). The highest seagrass biomass is in Pengudang with an average of (138.56 gr/ m^2) while the lowest biomass is in Berakit_2 with an average biomass of (19.03 gr/ m^2). The highest nitrogen is in 2 locations, namely Pengudang at (0.758%) and T_Bakau_2 at (0.758%), while the lowest is in Berakit_1 with an average total nitrogen of (0.359%). There is a positive relationship based on the correlation between density and biomass on nitrogen storage in seagrass. Based on the regression, density and biomass of seagrass have a significant effect on nitrogen storage with a regression value = 0.642.

Keywords: Bintan, Conservation, Nitrogen, Seagrass.