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**Hubungan Kerapatan Perakaran dengan Keanakeragaman Biota Perairan Hutan Mangrove Segara Anakan
Bagian Timur (RPH Tritih) Cilacap**
Shafaa Yuwana Nur Hapsari, Prof. Dr. Ir. Erny Poedjirahajoe, M.P., IPU
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HUBUNGAN KERAPATAN PERAKARAN MANGROVE DENGAN KEANEKARAGAMAN BIOTA PERAIRAN DI HUTAN MANGROVE SEGARA ANAKAN BAGIAN TIMUR (RPH TRITIH) CILACAP

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INTISARI

Ekosistem mangrove berfungsi sebagai penyedia habitat, penyedia nutrien, serta tempat asuhan bagi berbagai biota perairan. Struktur perakaran mangrove yang kompleks menentukan ketersediaan ruang hidup dan sumber makanan bagi plankton, benthos, serta nekton. Namun, aktivitas manusia mempengaruhi kondisi mangrove di Segara Anakan bagian timur (RPH Tritih), yang dapat mempengaruhi keberadaan biota perairan. Penelitian ini bertujuan untuk mengidentifikasi komposisi vegetasi, kerapatan perakaran mangrove, kondisi habitat perairan, serta indeks keanekaragaman plankton, makrobenthos, dan nekton, serta menganalisis hubungan antara kerapatan perakaran mangrove dengan keanekaragaman biota perairan di RPH Tritih, Segara Anakan, Cilacap.

Penelitian dilakukan pada Maret – April 2026 menggunakan metode *systematic sampling*. Data vegetasi dikumpulkan melalui *nested plot*. Data plankton, makrobenthos, dan nekton diamati menggunakan plot 1 m ×1 m melalui pengamatan visual dan pengambilan sampel. Parameter lingkungan yang diukur meliputi suhu, pH, salinitas, oksigen terlarut, dan tebal substrat. Analisis data meliputi kerapatan vegetasi dan perakaran, indeks diversitas *Simpson* setiap biota perairan, serta uji korelasi dan regresi linear sederhana maupun berganda model *Backward Elimination Procedure* setelah melalui uji normalitas.

Hasil penelitian menunjukkan bahwa hutan mangrove Segara Anakan memiliki 14 jenis vegetasi dengan kerapatan vegetasi yang meningkat dari zona proksimal ke distal, sedangkan kerapatan akar tertinggi terdapat pada zona medial. Indeks diversitas plankton tergolong tinggi, makrobenthos sedang, dan nekton sedang hingga rendah. Analisis regresi menunjukkan bahwa kerapatan akar dan tinggi akar paling berpengaruh terhadap keanekaragaman plankton, makrobenthos, dan nekton, sedangkan salinitas dan ketebalan substrat berpengaruh terhadap kerapatan vegetasi dan keanekaragaman plankton.

Kata Kunci: ekosistem mangrove, keanekaragaman jenis, plankton, makrobenthos, nekton, kerapatan perakaran mangrove, karakteristik habitat

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THE RELATIONSHIP BETWEEN MANGROVE ROOT DENSITY AND AQUATIC BIODIVERSITY IN THE EASTERN PART OF THE SEGARA ANAKAN MANGROVE FOREST (RPH TRITIH) CILACAP

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ABSTRACT

Mangrove ecosystems provide habitats, nutrients, and nursery grounds for aquatic organisms. Their root systems create living space and food resources for plankton, macrobenthos, and nekton. However, anthropogenic pressures have degraded the mangrove ecosystem in the eastern part of Segara Anakan (RPH Tritih), potentially affecting aquatic biodiversity. This study aimed to identify mangrove vegetation composition, root density, habitat characteristics, and the diversity of plankton, benthos, and nekton, and to analyze the relationships among mangrove structure, habitat characteristics, and aquatic biodiversity.

The study was conducted from March to April 2026 using systematic sampling. Vegetation was surveyed using nested plots, while plankton, macrobenthos, and nekton were sampled through visual observations and direct collection. Environmental parameters included temperature, pH, salinity, dissolved oxygen, and substrate thickness. Data were analyzed using Simpson's diversity index and simple and multiple linear regression with the Backward Elimination Procedure.

The mangrove forest comprised 14 vegetation species. Vegetation density increased from the proximal to the distal zone, while root density was highest in the medial zone. Plankton diversity was high, macrobenthos diversity was moderate, and nekton diversity ranged from moderate to low. Regression analysis showed that root density and root height were the main vegetation variables influencing plankton, macrobenthos, and nekton diversity, whereas salinity and substrate thickness significantly affected vegetation density and plankton diversity. These findings indicate that mangrove root structure is more important than vegetation density in supporting aquatic biodiversity.
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Keywords: mangrove ecosystems, species diversity, plankton, macrobenthos, nekton, mangrove root density, habitat characteristics