

## RINGKASAN

WINDI NUR AINI. Distribusi Spasial Sedimen Dasar Laut Berbasis Teknologi Hidroakustik di Perairan Mantang. Dibimbing oleh ASEP MA'MUN dan TRY FEBRIANTO.

Desa Mantang adalah desa yang berada di wilayah Kecamatan Mantang, Kabupaten Bintan, Provinsi Kepulauan Riau. Sedimen merupakan pecahan, mineral, atau material organik yang ditransportkan dari berbagai sumber dan diendapkan oleh media udara, angin, es, atau oleh air dan juga termasuk didalamnya material yang diendapkan dari material yang melayang dalam air atau dalam bentuk larutan kimia (Pipkin, 1977). Pemahaman tentang distribusi jenis sedimen juga memengaruhi kontur topografi dasar laut di suatu wilayah dan kajian biologis, juga berpengaruh terhadap topografi dasar laut di suatu wilayah perairan. Proses sedimentasi di perairan berpotensi menyebabkan perubahan kedalaman, seperti pendangkalan pada area tertentu (Fauziyah et al., 2023). Substrat dasar merupakan salah satu faktor ekologis utama yang mempengaruhi struktur komunitas makrozoobentos. Oleh karena itu, penelitian ini bertujuan melakukan perekaman data akustik serta pengambilan sampel sedimen menggunakan metode purposive sampling dengan beberapa stasiun yang tersebar di seluruh perairan Mantang agar dapat mengetahui beragam karakteristik sedimen yang ada. Penelitian ini dilaksanakan di perairan Desa Mantang, Kabupaten Bintan, pada bulan Juli 2024 dengan tujuan untuk memetakan distribusi sedimen yang sebelumnya belum terdokumentasi. Pengumpulan data dilakukan menggunakan metode purposive sampling dengan total 30 stasiun pengambilan sampel sedimen serta perekaman data akustik menggunakan alat singlebeam echosounder Simrad EK15 pada frekuensi kerja 200 kHz. Data akustik yang diperoleh kemudian diekstrak menggunakan perangkat lunak ESP3 untuk mendapatkan nilai volume backscattering strength (SV) dan surface backscattering strength (SS), sementara sampel sedimen di olah di laboratorium menggunakan sieve shaker untuk melihat berat sedimen perayakan kemudian hasilnya dianalisis menggunakan program Gradistat 9.1 untuk menentukan klasifikasi ukuran butiran. Hasil penelitian menunjukkan bahwa perairan Mantang memiliki tiga jenis sedimen utama, yaitu Very Coarse Sand (nilai SS antara -22,35 dB hingga -26,99 dB), Coarse Sand (- 27,00 dB hingga -32,99 dB), dan Medium Sand (-33,03 dB hingga -41,20 dB). Distribusi sedimen didominasi oleh Very Coarse Sand (64%) yang tersebar hampir merata di seluruh jalur survei, diikuti oleh Coarse Sand (30%) yang ditemukan di dekat pantai, di tengah lajur, dan pada ujung perairan. Sedangkan Medium Sand (6%) hanya ditemukan di beberapa titik, terutama di ujung jalur serta sebagian kecil area dekat pesisir.

Kata kunci: Hambur Balik Akustik, Sedimen, Perairan Mantang

## SUMMARY

WINDI NUR AINI. Spatial Distribution of Seafloor Sediments Based on Hydroacoustic Technology in Mantang Waters. Supervised by ASEP MA'MUN dan TRY FEBRIANTO.

Mantang Village is a village in the Mantang District, Bintan Regency, Riau Islands Province. Sediments are fragments, minerals, or organic materials that are transported from various sources and deposited by the media of air, wind, ice, or by water and also include materials deposited from materials floating in water or in the form of chemical solutions (Pipkin, 1977). Understanding the distribution of sediment types also affects the topographic contours of the seafloor in a region and biological studies, also affect the topography of the seafloor in a water area. The sedimentation process in waters has the potential to cause changes in depth, such as siltation in certain areas (Fauziyah et al., 2023). Bottom substrate is one of the main ecological factors that affect the structure of the macrozoobenthos community. Therefore, this study aims to conduct acoustic data recording and sediment sampling using a purposive sampling method with several stations scattered throughout the region. Sampling method with several stations scattered throughout the waters of Mantang in order to find out the various characteristics of existing sediments. This research was conducted in the waters of Mantang Village, Bintan Regency, in July 2024 with the aim of mapping the distribution of sediments that had not previously been documented. Data collection was carried out using a purposive sampling method with a total of 30 sediment sampling stations and acoustic data recording using a Simra singlebeam echosounder. The acoustic data obtained were then extracted using ESP3 software to obtain the volume backscattering strength (SV) and surface backscattering strength (SS) values, while sediment samples were processed in the laboratory using a sieve shaker to see the weight of the sieved sediment then the results were analyzed using the Gradistat 9.1 program to determine the grain size classification. The results showed that Mantang waters have three main sediment types, namely Very Coarse Sand (SS value between -22.35 dB to -26.99 dB), Coarse Sand (-27.00 dB to -32.99 dB), and Medium Sand (-33.03 dB to -41.20 dB). Sediment distribution was dominated by Very Coarse Sand (64%) which was spread almost evenly throughout the survey line, followed by Coarse Sand (30%) which was found near the shore, in the middle of the line, and at the end of the water. Meanwhile, Medium Sand (6%) was only found at a few points, especially at the end of the lane as well as a small area near the coast.

Keywords: Acoustic Backscatter, Sediment, Mantang waters