RINGKASAN

SHATYA ABELARYAN PURWNADIKA. Pola Migrasi Zooplankton Menggunakan *Acoustic Doppler Current Profiler* (ADCP) Di Perairan Sei Enam, Bintan Timur. Dibimbing oleh TRY FEBRIANTO dan DONY APDILLAH.

Perairan Sei Enam, Kijang, di Kecamatan Bintan Timur memiliki air jernih, zona intertidal terluas, dan produktivitas tinggi yang sebagian besar ekosistemnya berada di zona ini. Salah satu indikator produktivitas adalah plankton, organisme mikroskopis yang melayang di kolom air dan pergerakannya dipengaruhi arus. Zooplankton berperan penting sebagai konsumen utama, mentransfer energi dari fitoplankton ke organisme tingkat trofik lebih tinggi seperti larva dan ikan kecil. Kelimpahan zooplankton dapat diukur dengan metode konvensional seperti *water bottle*, *van dorn*, pompa hisap, dan *plankton net*, maupun metode modern seperti *Acoustic Doppler Current Profiler* (ADCP). ADCP memanfaatkan efek Doppler untuk mendeteksi partikel seperti plankton dengan keunggulan mengukur pada beberapa lapisan, mendeteksi arus vertikal, dan menghasilkan data resolusi tinggi. Selain perikanan tangkap, aktivitas wisata di Sei Enam berpotensi menghasilkan limbah yang memengaruhi kualitas perairan, sehingga kajian kelimpahan dan pola migrasi vertikal zooplankton di wilayah ini menjadi penting dilakukan. Penelitian in berlokasi di perairan Sei Enam, Kabupaten Bintan. Instrmen ADCP diletakkan di dasar perairan pada koordinat 0° 48' 43.38" LU dan 104° 36' 15.37" LS selama 6 hari pada 29 Mei-02 Juni. Metode yang digunakan dalam penelitian ini yaitu metode survei dan laboratorium dengan pendekatannya adalah kuantitaif dan deskriptif. Tahap analisis meliputi komputasi data ADCP, identifikasi sampel yang dilakukan di laboratorium Biologi Laut, Fakultas Ilmu Kelautan dan Perikanan, Universitas Maritim Raja Ali Haji, perhitungan kelimpahan zooplankton dan parameter lingkungan, serta uji statistik untuk validasi hasil. Hasil nilai MVBS yang didapat berkisaran -84,96 dB hingga -70,00 dB pada kedalaman 4,5-7,5 m yang merupakan layer pergerakan vertikal migrasi zooplankton. Nilai rata-rata MVBS tertinggi didapatkan pada waktu sore dan terendah pada waktu malam. Kelimpahan zooplankton akustik berdasarkan analisis sebesar 154.393 ind/L sedangkan laboratorium kelimpahan sebesar 41.990 ind/L. Dilihat berdasarkan waktu, nilai kelimpahan zooplankton akustik relatif tinggi didapatkan pada malam hari sedangkan nilai kelimpahan relatif rendah didapatkan pada waktu sore hari.

Kata kunci: ADCP, Migrasi Vertikal, Perairan Sei Enam, Zooplankton

SUMMARY

SHATYA ABELARYAN PURWNADIKA. Zooplankton Migration Patterns Using an Acoustic Doppler Current Profiler (ADCP) in the Sei Enam Waters, East Bintan. Supervised by TRY FEBRIANTO and DONY APDILLAH.

The The Sei Enam waters in Kijang, East Bintan District, have clear water, the widest intertidal zone, and high productivity, with most of its ecosystems located in this zone. One indicator of productivity is plankton—microscopic organisms that drift in the water column and whose movement is influenced by currents. Zooplankton play an important role as primary consumers, transferring energy from phytoplankton to higher trophic level organisms such as larvae and small fish. The abundance of zooplankton can be measured using conventional methods such as a water bottle, van Dorn sampler, suction pump, and plankton net, or modern methods such as the Acoustic Doppler Current Profiler (ADCP). The ADCP utilizes the Doppler effect to detect particles such as plankton, with advantages including the ability to measure across multiple layers, detect vertical currents, and produce high-resolution data. In addition to capture fisheries, tourism activities in Sei Enam have the potential to generate waste that affects water quality, making the study of zooplankton abundance and vertical migration patterns in this area important. This research was conducted in the waters of Sei Enam, Bintan Regency. The ADCP instrument was deployed on the seabed at coordinates 0°48′43.38″ N and 104°36′15.37″ E for six days from May 29 to June 2. The methods used in this study were survey and laboratory methods, with a quantitative and descriptive approach. The analysis stages included ADCP data computation, sample identification conducted at the Marine Biology Laboratory, Faculty of Marine Science and Fisheries, Universitas Maritim Raja Ali Haji, calculation of zooplankton abundance and environmental parameters, as well as statistical tests to validate the results. The measured MVBS values ranged from -84.96 dB to -70.00 dB at depths of 4.5–7.5 m, representing the vertical migration layer of zooplankton. The highest average MVBS value was recorded in the afternoon and the lowest at night. Based on acoustic analysis, zooplankton abundance was 154,393 ind/L, while laboratory analysis showed an abundance of 41,990 ind/L. By time of day, acoustic-based zooplankton abundance was relatively high at night, whereas it was relatively low in the afternoon.

Keywords: ADCP, Sei Enam Waters, Vertical Migration, Zooplankton