ABSTRAK

ANALISIS MIKROPLASTIK PADA AIR, SEDIMEN DAN BIOTA LAUT DARI TIGA EKOSISTEM DI KAWASAN PANTAI SARI RINGGUNG KABUPATEN PESAWARAN, PROVINSI LAMPUNG

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Sampah plastik yang mencemari lautan akan mengalami proses degradasi hingga menjadi partikel kecil berukuran < 5 mm yang disebut mikroplastik. Sifat daya tahan dan mikroskopis mikroplastik dapat memberikan dampak buruk bagi ekosistem mangrove, padang lamun, maupun terumbu karang. Tujuan penelitian ini adalah untuk menganalisis karakteristik dan kelimpahan mikroplastik yang terdapat pada air, sedimen, dan biota dari tiga ekosistem tersebut, kemudian menganalisis pengaruh kedalaman air dari setiap ekosistem terhadap kelimpahan mikroplastik. Penelitian dilakukan pada bulan Agustus 2024 di Pantai Sari Ringgung, Kabupaten Pesawaran, Provinsi Lampung. Sampel air, sedimen, dan biota diambil dari tiga stasiun yang mewakili tiga ekosistem. Hasil penelitian menunjukkan kontaminasi mikroplastik yang ditemukan berbentuk fiber, film dan fragmen. Ukuran mikroplastik didominasi ukuran kecil (< 1 mm), kecuali pada sedimen di ekosistem mangrove yang kebanyakan berukuran besar (1-5 mm). Mikroplastik yang ditemukan didominasi warna hitam, biru, merah, dan coklat. Hasil analisis FTIR menunjukkan polimer kontaminan berasal dari jenis nilon, polipropilena dan polietilena termasuk PET, HDPE dan LDPE. Kelimpahan mikroplastik pada air yang tertinggi dari ekosistem mangrove sebesar 410 partikel/m^3. Kelimpahan mikroplastik tertinggi pada sedimen dari ekosistem mangrove sebesar 466,67 partikel/kg. Kelimpahan mikroplastik di biota tertinggi pada spesies *Valamugil buchanani* dari ekosistem padang lamun sebesar 28 partikel/individu. Pengaruh perbedaan kedalaman air dari tiga ekosistem dengan kelimpahan mikroplastik hanya terdapat pada sampel sedimen dan biota. Data dan informasi terkait karakteristik mikroplastik yang mencemari Pantai Sari Ringgung dibutuhkan agar dapat dikelola lebih optimal dan berkelanjutan.

Kata Kunci: mikroplastik, ekosistem, mangrove, padang lamun, terumbu karang

ABSTRACT

MICROPLASTIC ANALYSIS OF WATER, SEDIMENT AND MARINE BIOTA FROM THREE ECOSYSTEMS IN THE SARI RINGGUNG COASTAL AREA, PESAWARAN DISTRICT, LAMPUNG PROVINCE

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Plastic waste that pollutes the ocean will lead a degradation process until it becomes small particles measuring < 5 mm called microplastics. The durability and microscopic properties of microplastics can have a negative impact on mangrove ecosystems, seagrass beds, and coral reefs. The purpose of this study was to analyze the characteristics and abundance of microplastics found in water, sediment, and biota from the three ecosystems, then analyze the effect of water depth from each ecosystem on the abundance of microplastics. The study was conducted in August 2024 at Sari Ringgung Beach, Pesawaran Regency, Lampung Province. Water, sediment, and biota samples were taken from three stations representing three ecosystems. The results of the study showed that the microplastic contamination found was in the form of fibers, films and fragments. The size of microplastics was dominated by small sizes (<1 mm), except in sediments in the mangrove ecosystem which were mostly large (1-5 mm). The microplastics found were dominated by black, blue, red and brown colors. The results of the FTIR analysis showed that the contaminant polymers came from nylon, polypropylene and polyethylene types including PET, HDPE and LDPE. The highest abundance of microplastics in water from the mangrove ecosystem was 410 particles/m^3. The highest abundance of microplastics in sediment from the mangrove ecosystem was 466.67 particles/kg. The highest abundance of microplastics in biota was in *Valamugil buchanani* from the seagrass ecosystem at 28 particles/individual. The effect of differences in water depth from the three ecosystems on the abundance of microplastics was only on sediment and biota samples. Data and information related to the characteristics of microplastics that pollute Sari Ringgung Beach are needed so that they can be managed more optimally and sustainably.

Keywords: microplastics, ecosystems, mangrove, seagrass, coral reefs