ABSTRAK

KELIMPAHAN MIKROPLASTIK PADA AIR DAN BIOTA LAUT DI PERAIRAN PESISIR KOTA BANDAR LAMPUNG

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Produksi sampah di Kota Bandar Lampung pada tahun 2020-2023 mengalami kenaikan setiap tahunnya dari 276.679 menjadi 287.057 ton/tahun. Berdasarkan total sampah tersebut, sebanyak 8.444 ton/tahun sampah masuk ke perairan pesisir Kota Bandar Lampung. Sampah plastik di perairan dapat terdegradasi hingga menghasilkan partikel mikroplastik yang dapat berdampak buruk terhadap biota laut, sistem rantai makanan, dan kesehatan manusia. Penelitian ini bertujuan mengidentifikasi karakteristik dan kelimpahan mikroplastik pada sampel air, sedimen, dan biota. Penelitian ini dilaksanakan pada bulan Mei-Juli 2024 pada 4 stasiun yaitu Pulau Pasaran (Stasiun 1), Kelurahan Keteguhan (Stasiun 2), Pantai Sukaraja (Stasiun 3), dan Kelurahan Karang Maritim (Stasiun 4). Sampel biota yang diambil terdiri atas kerang darah, kerang hijau, ikan layur, ikan kembung, dan ikan kurisi. Sampel yang telah diambil, kemudian dianalisis di laboratorium melalui tahap persiapan sampel, destruksi material organik, penyaringan, dan pengamatan. Mikroplastik yang ditemukan terdiri atas bentuk fiber, film, fragmen, foam, dan pellet yang memiliki ukuran < 1 mm. Warna mikroplastik terdiri atas hitam, biru, merah, ungu, putih, transparan, coklat, abu-abu, kuning, merah muda hijau toska, hijau, dan orange. Hasil FTIR pada sampel air, sedimen, dan biota terdapat 8 jenis polimer plastik yaitu *high density polyethylene* (HDPE), *low density polyethylene* (LDPE), *polivinyl clorida* (PVC), *polietilen tereptalat* (PET), *polistirena* (PS), *etilena vinyl asetat* (EVA), *polypropylene* (PP), dan nilon. Kelimpahan mikroplastik tertinggi pada sampel air berada pada Pulau Pasaran (Stasiun 1) yaitu 97,7 partikel/m^3, pada sampel biota kelimpahan tertinggi berada pada ikan layur (*Trichiurus* sp) yaitu 44,2 partikel/ind, dan pada sedimen kelimpahan tertinggi pada Pantai Sukaraja (Stasiun 3) yaitu 1.280 partikel/kg. Upaya dalam meningkatkan kesadaran masyarakat terhadap pengelolaan sampah plastik diperlukan untuk meminimalisir pencemaran plastik di wilayah Pesisir Kota Bandar Lampung.

Kata kunci: Air, sedimen, ikan ekonomis, kekerangan, mikroplastik, sedimen

ABSTRACT

ABUNDANCE OF MICROPLASTICS IN WATER AND MARINE BIOTA IN COASTAL WATERS OF BANDAR LAMPUNG CITY

By

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Waste production in Bandar Lampung City in 2020-2023 increased annually from 276,679. to 287,057 tons/year. Based on the total waste, as much as 8,444 tons/ year of waste enter the coastal waters of Bandar Lampung City. Plastic waste in waters can degrade to produce microplastic particles that can have a negative impact on marine biota, the food chain system, and human health. This study aimed to identify the characteristics and abundance of microplastics in water, sediment, and biota samples. This study was conducted in May-July 2024 consisting of 4 stations, namely Pasaran Island (Station 1), Keteguhan Village (Station 2), Suka-raja Beach (Station 3), and Karang Maritim Village (Station 4). The biota samples taken consisted of blood cockles, green mussels, ribbon fish, mackerel, and kurisi fish. The samples that had been taken were then analyzed in laboratory through the stages of sample preparation, organic material destruction, filtration, and observation. Microplastics found consisted of fibers, films, fragments, foams, and pellets that were <1 mm in size. Microplastic colors consisted of black, blue, red, purple, white, transparent, brown, gray, yellow, pink, green, and orange. FTIR results on water, sediment, and biota samples showed 8 types of plastic polymers, namely high density polyethylene (HDPE), low density polyethylene (LDPE), polyvinyl chloride (PVC), polyethylene terephthalate (PET), polystyrene (PS), ethylene vinyl acetate (EVA), polypropylene (PP), and nylon. The highest abundance of microplastics in water samples was on Pasaran Island (Station 1) which was 97.7 particles/m^3, in biota samples the highest abundance was in rinnon fish (*Trichiurus* sp) which was 44.2 particles/ind, and in sediment the highest abundance was on Sukaraja Beach (Station 3) which was 1,280 particles/kg. Efforts to increase public awareness of plastic waste management are needed to minimize plastic pollution in the coastal area of Bandar Lampung City.

Keywords: Economic fish, microplastics, sediment, shellfish, water