

RINGKASAN

Perairan Segara Anakan memiliki ekosistem mangrove yang berfungsi sebagai habitat bagi banyak organisme akuatik. Akibat beberapa faktor seperti konversi mangrove, pencemaran air, dan pencemaran domestik, ekosistem mangrove Segara Anakan terancam mengalami kerusakan. Pencemaran mikroplastik menjadi salah satu masalah serius yang dihadapi ekosistem ini, karena partikel-partikel plastik berukuran kecil tersebut terbuang dan dapat terakumulasi di lingkungan perairan. Sebagai organisme *filter feeder*, Bivalvia dapat menyaring dan memasukkan berbagai jenis partikel dan materi organik di lingkungan perairan, termasuk mikroplastik. Proses ini berpotensi membahayakan kesehatan Bivalvia dan organisme lain dalam rantai makanan, karena mikroplastik dapat membawa berbagai bahan kimia beracun yang dapat mempengaruhi kualitas makanan bagi hewan dan manusia. *Geloina expansa* atau kerang totok, menjadi salah satu spesies Bivalvia di perairan Segara Anakan yang masih dieksploitasi dengan sangat masif, karena merupakan kerang konsumsi penduduk setempat. Penelitian ini bertujuan untuk mengetahui kelimpahan tertinggi, karakteristik dan jenis polimer mikroplastik pada *G. expansa*, sedimen dan air di perairan mangrove Segara Anakan.

Penelitian ini dilakukan selama kurang lebih dua belas bulan dengan metode survei dan penentuan lokasi menggunakan teknik *purposive sampling*. Variabel penelitian meliputi karakteristik dan kelimpahan mikroplastik pada *G. expansa*, sedimen dan air. Parameter yang diamati pada variabel kelimpahan adalah jumlah mikroplastik, sedangkan parameter pada karakteristik mikroplastik meliputi tipe, warna, ukuran, dan jenis polimer. Data penelitian dianalisis menggunakan uji Kruskal-Wallis untuk melihat perbedaan variabel antar kelompok (*G. expansa*, sedimen dan air) dan Mann-Whitney untuk membandingkan dua kelompok.

Hasil penelitian menunjukkan terdapat kelimpahan rata-rata mikroplastik pada *G. expansa* sebesar 5,1 partikel/g, diikuti oleh air sebesar 1,17 partikel/L dan sedimen sebesar 0,32 partikel/g. Mikroplastik yang teridentifikasi berbentuk fiber, film, foam, fragmen, granule, dan pellet dengan ukuran berkisar antara 100-5000 μm dan warna yang mendominasi adalah hitam. Berdasarkan hasil analisis FTIR ditemukan enam jenis polimer yaitu *Polypropylene* (PP), *Polyethylene* (PE), *Polystyrene* (PS), *Polyethylene-terefthalat* (PET), *Polyvinyl Chloride* (PVC), *Polyamide* atau *nylon* (PA), dan *Acrylonitril Butadiene styrene* (ABS).

Kata kunci: *Bivalvia*, karakteristik mikroplastik, kelimpahan mikroplastik, Segara Anakan

SUMMARY

The Segara Anakan waters had a mangrove ecosystem that served as a habitat for many aquatic organisms. Due to several factors, such as mangrove conversion, water pollution, and domestic waste, the mangrove ecosystem in Segara Anakan was threatened with degradation. Microplastic pollution was one of the serious problems faced by this ecosystem, as small plastic particles were discharged and could accumulate in the aquatic environment. As filter-feeding organisms, bivalves were able to filter and ingest various types of particles and organic matter in the aquatic environment, including microplastics. This process had the potential to harm the health of bivalves and other organisms in the food chain, as microplastics could carry various toxic chemicals that might affect the food quality for animals and humans. *Geloina expansa*, or mangrove clam, was one of the bivalve species in Segara Anakan that was still being massively exploited, as it was consumed by the local population. This study purposed to determine the highest abundance, characteristics, and polymer types of microplastics in *G. expansa*, sediment, and water in the Segara Anakan mangrove waters.

The research was conducted over approximately twelve months using a survey method, with sampling locations determined by purposive sampling techniques. The research variables included the characteristics and abundance of microplastics in *G. expansa*, sediment, and water. The parameter observed for microplastic abundance was the number of particles, while the parameters for microplastic characteristics included type, color, size, and polymer type. The data were analyzed using the Kruskal–Wallis test to determine differences between groups (*G. expansa*, sediment, and water) and the Mann–Whitney test to compare two groups.

The results showed that the average microplastic abundance in *G. expansa* was 5.1 particles/g, followed by water with 1.17 particles/L, and sediment with 0.32 particles/g. The identified microplastics were in the form of fiber, film, foam, fragment, granule, and pellet, with sizes ranging from 100 to 5000 μm , and the dominant color was black. Based on FTIR analysis, six types of polymers were identified: Polypropylene (PP), Polyethylene (PE), Polystyrene (PS), Polyethylene terephthalate (PET), Polyvinyl chloride (PVC), Polyamide or nylon (PA), and Acrylonitrile butadiene styrene (ABS).

Key Words: *Bivalvia*, microplastic characteristics, microplastic abundance, Segara Anakan