

Azyuardzi Azranasyiar Akbar. NIM 220341100025. Karakteristik Mikroplastik Pada Karang Keras (*Scleractinia*) Di Perairan Sepulu Dan Pulau Gili Genting. Pembimbing Prof. Wahyu Andy Nugraha, S.T., M.Sc., Ph.D

ABSTRAK

Mikroplastik merupakan salah satu polutan yang banyak ditemukan di ekosistem terumbu karang dan berpotensi terakumulasi pada karang, sedimen, serta kolom perairan. Penelitian ini bertujuan menganalisis kelimpahan dan karakteristik mikroplastik pada karang keras, sedimen, dan air laut di Perairan Sepulu, Bangkalan dan Pulau Gili Genting, Sumenep, serta mengevaluasi pengaruh lokasi dan genus karang terhadap akumulasi mikroplastik. Sampel karang keras (*Acropora* sp., *Favites* sp., dan *Porites* sp.), sedimen, dan air laut dianalisis melalui metode destruksi H_2O_2 , pemisahan densitas menggunakan larutan NaCl jenuh, serta identifikasi mikroskopis. Analisis statistik dilakukan menggunakan *Two-way ANOVA*, uji *Post-Hoc* dan uji *T-Test*. Hasil penelitian menunjukkan bahwa kelimpahan mikroplastik pada karang keras, sedimen, dan air laut lebih tinggi di Perairan Sepulu dibandingkan Pulau Gili Genting. Hasil uji *Two-way ANOVA* menunjukkan bahwa faktor lokasi dan genus berpengaruh signifikan terhadap kelimpahan mikroplastik pada karang keras ($p < 0,05$), sedangkan interaksi keduanya tidak berpengaruh signifikan, sedangkan uji *T* pada kelimpahan mikroplastik pada sedimen dan air laut juga berbeda signifikan antar lokasi, yang menunjukkan pengaruh tingkat tekanan antropogenik terhadap akumulasi mikroplastik. Karakteristik mikroplastik menunjukkan pola yang berbeda antar kompartemen, dimana karang keras didominasi oleh fiber berwarna biru dengan ukuran $<100\ \mu m$ di Sepulu dan $101\text{--}250\ \mu m$ di Pulau Gili Genting. Sedimen didominasi oleh fragment berwarna transparan dengan ukuran $<100\ \mu m$ di Sepulu, sedangkan di Pulau Gili Genting didominasi oleh fiber berwarna transparan dengan ukuran $>250\ \mu m$. Pada air laut, mikroplastik didominasi oleh fragment berwarna transparan dengan ukuran $<100\ \mu m$ pada kedua lokasi.

Kata kunci: mikroplastik, karang keras, sedimen, air laut, terumbu karang.

Azyuardzi Azranasyiar Akbar (Student ID: 220341100025). *Microplastic Characteristics in Hard Corals (Scleractinia) from Sepulu Waters and Gili Genting Island. The Supervisor Prof. Wahyu Andy Nugraha, S.T., M.Sc., Ph.D.*

ABSTRACT

Microplastics have emerged as pervasive pollutants in coral reef ecosystems and can accumulate within coral tissues, sediments, and the water column. This study aimed to investigate the abundance and characteristics of microplastics in hard corals, sediments, and seawater from Sepulu Waters, Bangkalan, and Gili Genting Island, Sumenep, and to evaluate the effects of location and coral genus on microplastic accumulation. Samples of hard corals (*Acropora* sp., *Favites* sp., and *Porites* sp.), sediments, and seawater were analyzed using hydrogen peroxide (H₂O₂) digestion, density separation with saturated NaCl solution, and microscopic identification. Statistical analyses were performed using two-way analysis of variance (Two-way ANOVA), followed by post hoc multiple comparison tests and independent-samples t-tests. The results revealed consistently higher microplastic abundances in hard corals, sediments, and seawater from Sepulu Waters compared to Gili Genting Island. Two-way ANOVA indicated that both location and coral genus significantly affected microplastic abundance in hard corals ($p < 0.05$), whereas their interaction was not significant. Independent t-tests further demonstrated significant differences in microplastic abundance between locations for both sediment and seawater samples, highlighting the influence of anthropogenic pressure on microplastic accumulation. Microplastic characteristics varied among environmental compartments. Hard corals were predominantly contaminated by blue fibers, with dominant particle sizes of $<100\ \mu\text{m}$ in Sepulu and $101\text{--}250\ \mu\text{m}$ in Gili Genting. Sediments in Sepulu were dominated by transparent fragments $<100\ \mu\text{m}$, whereas transparent fibers $>250\ \mu\text{m}$ predominated in Gili Genting. In seawater, transparent fragments $<100\ \mu\text{m}$ were the dominant microplastic type at both locations.

Keywords: microplastics, hard corals, sediment, seawater, coral reef ecosystem.