

RINGKASAN

Sampah plastik yang terus bertambah dapat terbawa hingga ke daerah perairan, yang berbahaya bagi organisme laut dan manusia. Sampah plastik mengalami degradasi menjadi mikroplastik. Perairan yang tercemar dengan mikroplastik memerlukan bioindikator sebagai alat pemantau kualitas lingkungan. Salah satu organisme yang digunakan sebagai bioindikator adalah tiram *Saccostrea* spp. dengan sifat sebagai *filter feeder*. Perairan yang memerlukan pengujian bioindikator salah satunya adalah di pesisir Semarang. Tujuan penelitian untuk membandingkan jumlah dan jenis mikroplastik pada tiram, sedimen dan air laut berdasarkan karakteristik fisik dan komposisi kimia serta menghitung *Bio Concentration Factor* (BCF) pada tiram sebagai spesies bioindikator pencemaran mikroplastik di perairan pesisir Semarang.

Penelitian dilakukan pada empat stasiun berbeda di pesisir Semarang dengan metode *purposive sampling*. Pelaksanaan dilakukan dari bulan Oktober 2024 hingga April 2025. Variabel yang digunakan adalah total jumlah, karakteristik berdasarkan fisik, komposisi kimia partikel mikroplastik dan penghitungan faktor biokonsentrasi (BCF). Data jumlah, kelimpahan, ukuran, bentuk, warna, dan jenis polimer partikel mikroplastik dianalisis menggunakan uji normalitas *Shapiro-wilk* dilanjutkan korelasi *pearson* bila data terdistribusi secara normal dengan dua variabel yaitu data rata-rata panjang tiram setiap replikasi dan rata-rata ukuran partikel mikroplastik setiap replikasi.

Hasil penelitian menunjukkan jumlah mikroplastik pada tiram 171 partikel, sedimen 134 partikel dan air laut 56 partikel. Ukuran mikroplastik yang bervariasi dari 38,47 hingga 4949,34 μm . Tiga bentuk teramati adalah fiber, fragmen dan film dengan warna berbeda merah, hijau, transparan, biru, ungu, coklat, hitam, putih, dan kuning. Komposisi kimia mikroplastik berupa tiga polimer yang mendominasi *polypropylene*, *polyethylene* dan *polyethylene terephthalate*. Hasil pengujian antara rata-rata panjang tiram dengan rata-rata ukuran partikel mikroplastik berdistribusi secara normal, tetapi tidak terdapat hubungan yang signifikan.

Kata kunci : *bioindikator, Semarang, mikroplastik, pesisir, tiram*

SUMMARY

Plastic waste that continues to accumulate can be carried into aquatic environments, posing a threat to marine organisms and humans. Plastic waste undergoes degradation into microplastics. Waters contaminated with microplastics require bioindicators to monitor environmental quality. One organism commonly used as a bioindicator is the oyster (*Saccostrea* spp.), which acts as a filter feeder. One of the coastal areas that requires bioindicator assessment is the coast of Semarang. The aim of this study is to compare the abundance and types of microplastics found in oysters, sediments, and seawater based on their physical characteristics and chemical composition, and to calculate the Bio-Concentration Factor (BCF) in oysters as a bioindicator species for microplastic pollution in the coastal waters of Semarang.

The study was conducted at four different stations on the coast of Semarang using a purposive sampling method. The implementation was carried out from October 2024 to April 2025. The variables used were the total number, characteristics based on fisiks, chemical composition of microplastic particles and calculation of the bioconcentration factor (BCF). Data on the number, abundance, size, shape, color, and type of microplastic particle polymers were analyzed using the Shapiro-Wilk normality test followed by Pearson correlation if the data was normally distributed with two variables, namely the average oyster length data for each replication and the average size of microplastic particles for each replication.

The results of the study showed that the number of microplastics in oysters was 171 particles, sediment 134 particles and seawater 56 particles. The size of microplastics varied from 38.47 to 4949.34 μm . Three forms were observed fiber, fragments and films with different colors red, green, transparent, blue, purple, brown, black, white, and yellow. The chemical composition of microplastics is in the form of three polymers that dominate polypropylene, polyethylene and polyethylene terephthalate. The test results between the average length of oysters and the average size of microplastic particles were normally distributed, but there was no significant relationship.

Kata kunci : bioindicator, Semarang, microplastic, coastal, oysters