RINGKASAN

Perairan Pesisir Kota Semarang merupakan wilayah yang padat akan aktivitas manusia dan memungkinkan pencemaran mikroplastik yang tinggi. Mikroplastik memiliki ukuran yang kecil berkisar 1-5 mm menyebabkan penyebarannya yang sangat cepat sehingga membutuhkan pengendalian dan monitoring. Dalam hal tersebut, teritip merupakan salah satu organisme makrozoobentos yang berpotensi sebagai biomonitoring pencemaran mikroplastik.

Penelitian dilakukan dengan metode *purposive sampling* di Perairan Pesisir Kota Semarang di 4 stasiun yaitu Kampung Nelayan Tambakrejo (1), Pantai Marina (2), Pantai Tirang (3) dan Semarang Mangrove Center (4) dengan pertimbangan keberadaan habitat teritip. Sampel yang diteliti berupa sampel teritip, sampel air, dan sampel sedimen. Pengambilan sampel mikroplastik dari perairan laut menggunakan plankton net, sampel dari sedimen menggunakan *bottom grab*, sedangkan sampel teritip menggunakan palu dan pahat. Pengambilan sampel air dan sedimen dilakukan sebanyak lima kali pengulangan untuk tiap lokasi. Identifikasi dan karakterisasi mikroplastik pada sampel air, sedimen dan teritip berdasarkan bentuk, warna dan ukuran dilakukan di laboratorium riset. Pengujian komposisi kimia mikroplastik dianalisis menggunakan FTIR-ATR di laboratorium BRIN. Data mikroplastik teritip, sedimen dan air dianalisis secara deskriptif. Konsentrasi mikroplastik dihitung menggunakan faktor biokonsentrasi (BCF).

Berdasarkan hasil penelitian ditemukan 399 partikel mikroplastik, terdiri atas 4 bentuk yaitu fiber, fragment, film dan granula dan 9 warna berbeda yang didominasi hitam dan biru. Ukuran mikroplastik yang mendominasi pada rentang 100-500 µm dan 500-1000 µm dan ditemukan 10 polimer yang didominasi oleh *Polypropylene* (PP), *Polyethylene* (PE), dan *Polyethylene Terephthalate* (PET). Mikroplastik yang ditemukan sebanyak 399 partikel dengan distribusi 209 partikel pada teritip dengan rata-rata konsentrasi 77,07 partikel/g, 134 partikel pada sedimen dengan rata-rata konsentrasi 0,0418 partikel/g, dan 56 partikel dengan rata-rata konsentrasi 0,0646 partikel/g. Nilai BCF *Amphibalanus amphitrite* pada air memiliki rata-rata 711,349 dan pada sedimen 844,367.

Kata kunci: *Bioindikator, Kota Semarang, Mikroplastik, Pesisir, Teritip*

SUMMARY

The coastal waters of Semarang City are areas dense with human activities, which contributes to high microplastic pollution. Microplastics have a small size, ranging from 1 to 5 mm, which enables their rapid spread, making them a concern that requires control and monitoring. In this case, barnacles are one of the macrozoobentos organisms that have the potential to biomonitor microplastic pollution.

The research was carried out using the purposive sampling method in the coastal waters of Semarang City at 4 stations, namely Tambakrejo Fishing Village (1), Marina Beach (2), Tirang Beach (3), and Semarang Mangrove Center (4), with consideration of the existence of barnacle habitat. The samples studied were barnacle samples, water samples, and sediment samples. Microplastic samples from marine waters were taken using plankton nets, samples from sediments were taken with bottom grabs, while barnacle samples were collected with hammers and chisels. Water and sediment sampling were carried out five times for each location. Identification and characterization of microplastics in water, sediment, and barnacle samples based on shape, color, and size was carried out in the research laboratory. Testing of the chemical composition of microplastics was analyzed using FTIR-ATR in the BRIN laboratory. Data on barnacle, sediment, and water microplastics were analyzed descriptively. Microplastic concentrations are calculated using the bioconcentration factor (BCF).

Based on the results of the study, 399 microplastic particles were found, consisting of 4 forms, namely fiber, fragment, film, and granules, and 9 different colors, dominated by black and blue. The size of microplastics dominated in the range of 100-500 µm and 500-1000 µm, and 10 polymers were found, dominated by *Polypropylene* (PP), *Polyethylene* (PE), and *Polyethylene Terephthalate* (PET). The microplastics found were 399 particles with a distribution of 209 particles in barnacles with an average concentration of 77.07 particles/g, 134 particles in sediments with an average concentration of 0.0418 particles/g, and 56 particles with an average concentration of 0.0646 particles/g. BCF values of *Amphibalanus amphitrite* in water had an average of 711,349 and in sediments 844,367.

Keywords: *Bioindicators, Barnacles, Coastal, Microplastics, Semarang City.*