Komposisi dan Kelimpahan Mikroplastik pada Air, Sedimen, dan Ikan Bandeng Chanos chanos (Forsskal, 1775) di Muara Sungai Blanakan, Subang, Jawa Barat = Composition and Abundance of Microplastics in Water, Sediment, and Milkfish Chanos chanos (Forsskal, 1775) in the Blanakan Estuary, Subang, West Java

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Abstrak

Mikroplastik merupakan potongan plastik kecil berukuran 1 m hingga 5 mm bersifat bioavailable dan ubiquitous. Muara disebut sebagai titik panas mikroplastik karena saat mikroplastik dari sungai memasuki muara, gelombang, pasang surut, dan angin mampu memengaruhi lintasan dan kecepatan partikel masuk ke laut serta pengendapan mikroplastik. Penelitian ini bertujuan untuk menganalisis kelimpahan dan komposisi bentuk, ukuran, serta jenis polimer mikroplastik yang terakumulasi pada air, sedimen, dan ikan bandeng Chanos chanos di muara Sungai Blanakan, Subang, Jawa Barat. Pengambilan sampel dilakukan di empat titik lokasi. Sampel air disaring menggunakan plankton net 300 m, sampel sedimen diambil menggunakan Van Veen Grab, dan sampel ikan diambil menggunakan bubu. Sampel air diekstraksi dengan larutan H2O2 30% serta FeSO4 0,05 M. Begitu pula dengan sampel sedimen yang sebelumnya telah disuspensi larutan NaCl. Sementara itu, jaringan dan organ daging, insang, dan saluran pencernaan dari 11 sampel ikan bandeng Chanos chanos diisolasi dan diekstraksi menggunakan larutan KOH. Sampel mikroplastik diamati di atas kertas Whatman cellulose nitrate dan dianalisis menggunakan mikroskop. Identifikasi mikroplastik dikelompokkan berdasarkan bentuk yaitu fiber, fragmen, film, pellet, dan foam, serta ukuran yaitu <300 m, 300-500 m, 500-1000 m, dan >1000 m. Identifikasi jenis polimer dilakukan dengan metode Raman spektrometeri. Kelimpahan mikroplastik pada sampel air berkisar 526,67 - 946,67 partikel/m3, sedangkan sedimen berkisar 674,07 - 1074,07 partikel/kg dengan dominasi bentuk fiber baik di air maupun sedimen. Kelimpahan mikroplastik ikan bandeng Chanos chanos adalah 43,06 partikel/individu dengan urutan kelimpahan mikroplastik jaringan tertinggi yaitu insang, daging, dan saluran pencernaan. Jenis polimer mikroplastik yang terdeteksi adalah polyethylene terephthalate (PET), polypropylene (PP), dan poly(vinyl chloride) (PVC). Uji korelasi menunjukkan tidak adanya hubungan antara keberadaan mikroplastik pada air dan sedimen terhadap ikan bandeng Chanos chanos.

.....Microplastics are small pieces of plastic range in size from 1 m to 5 mm that are bioavailable and ubiquitous. Estuaries are known as "microplastic hot spots" due to the fact that when river microplastic enters an estuary, then waves, tides, and wind can change the direction and speed of the particles entering the sea and the deposition of microplastic. This study aims to analyze the abundance and composition of shape, size, and types of microplastic polymers that accumulate in water, sediment, and milkfish Chanos chanos in the estuary of Blanakan River, Subang, West Java. Sampling was carried out at four sampling points. Water samples were filtered using a 300 m plankton net, sediment samples were taken using a Van Veen Grab, and fish samples with a trap. Water sample were extracted with 30% H2O2 solution and 0,05 M FeSO4. The same was applicable to sediment samples that had been previously suspended in NaCl solution. Meanwhile, tissues and organs of muscles, gills, and digestive tract from 11 samples of milkfish Chanos chanos were isolated and extracted using KOH solution. Microplastic samples were observed on Whatman

cellulose nitrate paper and analyzed using a microscope. Microplastics are categorized according to form, namely fiber, fragment, pellet, film, foam, and size, namely <300 m, 300-500 m, 500-1000 m, and > 1000 m. The Raman spectrometry method was used to determine the type of polymer. In sediment samples, the amount of microplastics ranged from 674,07 to 1074,07 particles/kg, while the abundance in water samples ranged from 526,67 to 946,67 particles/m3. Fiber predominated in both water and sediment. The abundance of microplastics in milkfish Chanos chanos was 43,06 particles/individual with the biggest tissue microplastic abundance starting with the gills, meat, and digestive tract. The types of microplastic polymers detected were polyethylene terephthalate (PET), polypropylene (PP), and poly(vinyl chloride) (PVC). The correlation test revealed that there was no relationship between the abundance of microplastics in water and sediment for the milkfish Chanos chanos.