INTISARI

Pengelolaan sampah plastik yang tidak tepat atau bahkan sampah yang tidak dikelola di ekosistem terestrial dapat menyebabkan penumpukan limbah plastik, dan dapat terdegradasi menjadi mikroplastik (<5 mm) melalui tekanan fisik, kimia, dan biologis lingkungan. Seluas 13.215 ha lahan masih bervegetasi, 10.219 ha sudah terbangun, dan 3.803 ha merupakan lahan terbuka di zona penyangga Sungai Gajahwong berhubungan dengan kelimpahan mikroplastik di air permukaan, sedimen permukaan, dan ikan dengan total 214 partikel. Lahan terbangun berkorelasi siginifikan dan berbanding terbalik dengan kelimpahan mikroplastik di sedimen ($r = -0.706$, $p = 0.034$, $\beta_0 = -0.8678$), sedangkan lahan bervegetasi berbanding lurus ($r = 0.546$, $p = 0.128$, $\beta_0 = 0.9424$), dan lahan terbuka berbanding terbalik ($r = -0.387$, $p = 0.304$, $\beta_0 = -2.5883$). *Mystacoleucus marginatus* mengakumulasi mikroplastik paling banyak (5.00 ± 5.44 partikel/ind), dan terdapat perbedaan signifikan terhadap kelimpahan mikroplastik warna merah antara S1 dan S7 (*Kruskal* $-$ *Wallis*, $p = 0.006$). Informasi mengenai hidrologi Sungai Gajahwong diperlukan untuk memahami bagaimana distribusi dan transportasi mikroplastik di dalam alirannya mempengaruhi kelimpahan mikroplastik.

Kata kunci: *Land-use, Spatial variation, Precipitation, Microplastic abundance.*

ABSTRACT

Improper plastic waste management, or plastic waste that is not managed at all in terrestrial ecosystems, can lead to the accumulation of plastic debris that degrades into microplastics (< 5 mm) through physical, chemical, and biological environmental processes. Within the riparian buffer zone of the Gajahwong River, an area of 13,215 hectares remains vegetated, 10,219 hectares have been developed, and 3,803 hectares consist of open land. These land-use types are associated with microplastic abundance in surface water, surface sediment, and fish, with a total of 214 microplastic particles recorded. Developed land shows a significant negative correlation with microplastic abundance in sediment ($r = -0.706$, $p = 0.034$, $\beta_0 = -0.8678$), whereas vegetated land shows a positive relationship ($r = 0.546$, $p = 0.128$, $\beta_0 = 0.9424$), and open land shows a negative relationship ($r = -0.387$, $p = 0.304$, $\beta_0 = -2.5883$). *Mystacoleucus marginatus* accumulated the highest number of microplastic particles (5.00 ± 5.44 particles individual^{-1}), and a significant difference in the abundance of red-colored microplastics was observed between sampling sites S1 and S7 (*Kruskal–Wallis,* $p = 0.006$). Information on the hydrological system of the Gajahwong River is required to better understand how microplastic distribution and transport within the river channel influence microplastic abundance.

Keywords: *Land-use, Spatial variation, Precipitation, Microplastic abundance*