

## DAFTAR PUSTAKA

- Alfonso, M.B., Scordo, F., Seitz, C., Mansretta, G.M.M., Ronda, A.C., Arias, A.H., Tomba, J.P., Silva, L.I., Perillo, G.M.E., Piccolo, M.C. 2020. First evidence of microplastics in nine lakes across Patagonia (South America). *Science of the Total Environment* 733 (2020) 139385. <https://doi.org/10.1016/j.scitotenv.2020.139385>
- Allen, S., Allen, D., Phoenix, V.R., Le Roux, G., Jiménez, P.D., Simonneau, A., Binet, S., Galop, D., 2019. Atmospheric transport and deposition of microplastics in a remote mountain catchment. *Nat. Geosci.* 12, 339–344. <https://doi.org/10.1038/s41561-019-0335-5>
- Azizi, N., Khoshnamvand, N., Nasseri, S. 2021. The quantity and quality assessment of microplastics in the freshwater fishes: A systematic review and meta-analysis. *Regional Studies in Marine Science*. <https://doi.org/10.1016/j.rsma.2021.101955>
- Barnes, D.K.A., Galgani, F., Thompson, R.C., Barlaz, M., 2009. Accumulation and fragmentation of plastic debris in global environments. *Philosophical Transactions of the Royal Society B: Biological Sciences* 364, 1985–1998. <https://doi: 10.1098/rstb.2008.0205>
- Besseling, E., Joris T.K., Quik, Sun, M., Albert, A., Koelmans. 2016. Fate of nano- and microplastic in freshwater systems: A modeling study. *Environmental Pollution* xxx (2016) 1-9. <http://dx.doi.org/10.1016/j.envpol.2016.10.001>
- Boucher, J., Friot, D., 2017. Primary microplastics in the oceans: A global evaluation of sources, *Primary microplastics in the oceans: A global evaluation of sources*. Gland, Switzerland. <https://doi.org/10.2305/iucn.ch.2017.01.en>
- Cauwenberghe, L.V., Vanreusel, A., Mees, J., Janssen, C.R. 2013. Microplastic pollution in deep-sea sediments. *Enviromental Pollution* 182 (2013) 495-499. <http://dx.doi.org/10.1016/j.envpol.2013.08.013>
- Chen, C.Y., Lu, T.H., Yang, Y.F. Liao, C.M. 2020. Toxicokinetic/toxicodynamic-based risk assessment of freshwater fish health posed by microplastics at environmentally relevant concentrations. *Science of the Total Enviroment*. <https://doi.org/10.1016/j.scitotenv.2020.144013>
- Choi, J.S., Jung, Y., Hong, N., Hee, S., Park, J., 2018. Toxicological effects of irregularly shaped and spherical microplastics in a marine teleost , the sheepshead minnow (*Cyprinodon variegatus*). *Mar. Pollut. Bull.* 129, 231–240. <https://doi.org/10.1016/j.marpolbul.2018.02.039>
- Choi, J.S., Hong, S.H., Park, J.W. 2019 . Evaluation of microplastic toxicity in accordance with different sizes and exposure times in the marine copepod *Trigriopus japonicas*. *Marine Environmental Research*. <https://doi.org/10.1016/j.marenvres.2019.104838>
- Chubarenko, I.P., Esiukova, E.E., Bagayev, A.V., Bagayeva, M.A., Grave, A.N. 2018. Three-dimensional distribution of anthropogenic microparticles in the body of sandy beaches. *Science of the Total Environment*. <https://doi.org/10.1016/j.scitotenv.2018.02.167>

- Cole, M., Lindeque, P., Halsband, C., Galloway, T.S. 2011. Microplastics as contaminants in the marine environment: A review. *Marine Pollution Bulletin* 62 (2011) 2588–2597. <http://dx.doi.org/10.1016/j.marpolbul.2011.09.025>
- Cole, M., Lindeque, P., Fileman, E., Halsband, C., Goodhead, R., Moger, J., Galloway, T.S., 2013. Microplastic ingestion by zooplankton. *Environ. Sci. Technol.* 47, 6646–6655. <https://doi.org/10.1021/es400663f>
- Costa, D.J.P., Duarte, A.C., Santos, T.A.P.R. 2017. Micrplastics – occurrence, fate and behavior in the environment. *Comprehensive Analytical Chemistry*. Vol. 75. <http://dx.doi.org/10.1016/bs.coac.2016.10.004>
- Covernton, G.A., Pearce, C.M., Smith, H.J.G., Chastain, S.G., Ross, P.S., Dower, J.F., Dudas, S.E. 2019. Size and shape matter: A preliminary analysis of microplastic sampling technique in seawater studies with implications for ecological risk assessment. *Science of the Total Environment* 667 (2019) 124-132. <https://doi.org/10.1016/j.scitotenv.2019.02.346>
- Dantas, N.C.F.M., Duarte, O.S., Ferreira, W.C., Ayala, A.P., Rezende, C.F., Feitosa, C.V. 2020. Plastic intake does not depend on fish eating habits: Identification of microplastics in the stomach contents of fish on an urban beach in Brazil. *Marine Pollution Bulletin* 153 (2020) 110959. <https://doi.org/10.1016/j.marpolbul.2020.110959>
- Diah, H.K., Setyarsih, W., Putri, N.P. 2008. Studi pengaruh arus polimerisasi terhadap konduktivitas listrik polianilin yang disentesis dengan metode galvanostatik. *Jurnal Fisika dan Aplikasinya*. Vol. 4, No. 1.
- Ding, L., Mao, R.F., Guo, X., Yang, X., Zhang, Q., Yang, C. 2019. Microplastics in surface waters and sediments of the Wei River, in the northwest of China. *Science of the Total Environment*. <https://doi.org/10.1016/j.scitotenv.2019.02.332>
- Eckert, E.M., Cesara, A.D., Kettner, M.T., Andres, M.A., Fontaneto, D., Grossart, H.P., Corno, G. 2018. Microplastics increase impact of treated wastewater on freshwater microbial community. *Environmental Pollution* 234 (2018) 495-502. <https://doi.org/10.1016/j.envpol.2017.11.070>
- Eerkes-Medrano, D., Thompson, R.C., Aldridge, D.C., 2015. Microplastics in freshwater systems: a review of the emerging threats, identification of knowledge gaps and prioritisation of research needs. *Water Res.* 75, 63–82. <http://dx.doi.org/10.1016/j.watres.2015.02.012>
- Egessa, R., Nankabirwa, A., Ocaya, H., Pabire, WG. 2020. Microplastic pollution in surface water of Lake Victoria. *Science of The Total Environment* Vol. 741, 140201. <https://doi.org/10.1016/j.scitotenv.2020.140201>
- Failasuf, M.I. 2019. Pengaruh variasi jenis cat primer terhadap laju korosi. *Fakultas Teknik. Universitas Negeri Semarang*. Indonesia.
- Ferreira, G.V.B., Barletta, M., Lima, A.R.A., Morley, S.M., Justino, A.K.S., Costa, M.F. 2018. High intake rates of microplastics in a Western Atlantic predatory fish, and insights of a direct fishery effect. *Environmental Pollution* 236 (2018) 706-717. <https://doi.org/10.1016/j.envpol.2018.01.095>
- Fischer, E.K., Paglialonga, L., Czech, E., Tamminga, M., 2016. Microplastic pollution in

lakes and lake shoreline sediments - A case study on Lake Bolsena and Lake Chiusi (central Italy). Environ. Pollut. 213, 648–657. <https://doi.org/10.1016/j.envpol.2016.03.012>

Fitriani, M., Muslim, Jubaedah, D. 2011. Ekologi ikan betok (*Anabas testudineus*) di perairan Rawa Banjiran Indralaya. Agria. Vol. 7. No. 1, 33-39.

Foekema, E.M., Gruijter, C.D., Mergia, M.T., Franeker, J.A.V., Murk, A.T.J., Koelmans, A.A. 2013. Plastic in North Sea Fish. Environmental Science & Technology. 47, 8818–8824. <https://doi.org/10.1021/es400931b>

Free, C.M., Jensen, O.P., Mason, S.A., Eriksen, M., Williamson, N.J., Boldgiv, B., 2014. Highlevels of microplastic pollution in a large, remote, mountain lake. Mar. Pollut. Bull. 85, 156–163. <https://doi.org/10.1016/j.marpolbul.2014.06.001>

Frias, J.P.G.L., Nash, R. 2019. Microplastics: Finding a consensus on the definition. Marine Pollution Bulletin 138 (2019) 145–147. <https://doi.org/10.1016/j.marpolbul.2018.11.022>

GESAMP. (2019). Guideserats or the monitoring and assessment of plastic litter and microplastics in the ocean. Kershaw P.J., Turra A., Galgani F. (Eds.), (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP/ISA Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection. Rep. Stud. GESAMP No. 99, 130p.

Grbic, J., Helm, P., Athey, S., Rochman, C.M. 2020. Microplastic entering northwestern Lake Ontario are diverse and linked to urban sources. Water Research. Vol. 174 115623. <https://doi.org/10.1016/j.watres.2020.115623>

Haffner, G. D., Hehanussa, P.E., Hartoto, D.I. 2001. The biology and physical processes of large lake of Indonesia. Backhuys. Leiden. 183-194.

Hedianto, D.A., Sentosa, A.A., Satria, H. 2018. Aspek reproduksi ikan louhan hybrid sebagai ikan asing invasieve di Danau Matano, Sulawesi Selatan. Bawal. 10 (2) Agustus 2018: 85-98. <http://ejournal-balitbang.kkp.go.id/index.php/bawal>

Hu, D., Zhang, Y., Shen, M. 2020. Investigation on microplastic pollution of Dongting Lake and its affiliated Rivers. Marine Pollution Bulletin. <https://doi.org/10.1016/j.marpolbul.2020.111555>

Jabeen, K., Li, B., Chen, Q., Su, L., Wu, C., Hollert, H., Shi, H., 2018. Effects of virgin microplastics on goldfish (*Carassius auratus*). Chemosphere. <https://doi.org/10.1016/j.chemosphere.2018.09.031>

Jambeck, J.R., Geyer, R., Wilcox, C., Siegler, T.R., Perryman, M., Andrade, A., Narayan, R., Law, K.L., 2015. Plastic waste inputs from land into the ocean. Science. Vol. 347, 768–771. <https://doi.org/10.1126/science.1260352>

Jiang, C., Yin, L., Li, Z., Wen, X., Luo, X., Hu, S., Yang, H., Long, Y., Deng, B., Huang, L., Liu, Y. 2019. Microplastic pollution in the rivers of the Tibet Plateau. Environmental Pollution 249 (2019) 91-98. <https://doi.org/10.1016/j.envpol.2019.03.022>

Jiang, Y., Zhao, Y., Wang, X., Yang, F., Chen, M., Wang, J. 2020. Characterization of microplastics in the surface seawater of the South Yellow Sea as affected by

- season. Science of the Total Environment 724 (2020) 138375. <https://doi.org/10.1016/j.scitotenv.2020.138375>
- Kasamesiri, P., Thaimuangpho, W., 2020. Microplastics ingestion by freshwater fish in the Chi River, Thailand. Int. J. GEOMATE 18 (67), 114–119. <http://dx.doi.org/10.21660/2020.67.9110>.
- Koelmans, A.A., Nor, N.H.M., Hermsen, E., Kooi, M., Mintenig, S.M., France, J., 2019. Microplastics in freshwaters and drinking water: critical review and assessment of data quality. Water Res. 155, 410–422. <http://dx.doi.org/10.1016/j.watres.2019.02.054>.
- Kusch, P. 2017. Application of pyrolysis-gas chromatography/mass spectrometry (py-gc/ms). Comprehensive Analytical Chemistry. Vol. 75. <http://dx.doi.org/10.1016/bs.coac.2016.10.003>
- Leslie, H., Velzen, M., Vethaak, A., 2013. Microplastic survey of the dutch environment. In: Novel Data Set of Microplastics in North Sea Sediments, Treated Wastewater Effluents and Marine Biota. The Netherlands.
- Lewis, P.A. 2004. Organic Colorants. Coloring of Plastics: Fundamentals 0-471-13906-8.
- Li, F., Huang, J., Zeng, G., Yuan, X., Li, X., Liang, J., Wang, X., Tang, X., Bai, B. 2013. Spatial risk assessment and sources identification of heavy metals in surface sediments from the Dongting Lake, Middle China. Journal of Geochemical Exploration. 132 (2013) 75-83. <http://dx.doi.org/10.1016/j.gexplo.2013.05.007>
- Li, J., Liu, H., Chen, J.P., 2018. Article in water research. Water Res., 362–374 <https://doi.org/10.1016/j.watres.2017.12.056>
- Liana, Asriyana, Irawati, N. 2020. Kebiasaan Makanan Ikan Gabus (*Channa striata*) di perairan Rawa Aopa Watumohai, Desa Pewutaa Kecamatan Angata Kabupaten Konawe Selatan. Jurnal Manajeme Sumberdaya Perairan 5(3): 148-156
- Loder, M.G.J., Gerdts, G. 2015. Methodology used for the detection and identification of microplastics – A critical appraisal. Marine Anthropogenic Litter. Marine. [http://10.1007/978-3-319-16510-3\\_8](http://10.1007/978-3-319-16510-3_8)
- Lusher, A.L., McHugh, M., Thompson, R.C., 2013. Occurrence of microplastics in the gastrointestinal tract of pelagic and demersal fish from the English Channel. Mar. Pollut. Bull. 67 (1–2), 94–99. <http://dx.doi.org/10.1016/j.marpolbul.2012.11.028>
- Lusher, A.L., Welden, N.A., Sobral, P., Cole, M. 2016. Sampling, isolating and identifying microplastics ingested by fish and invertebrates. Royal Society of Chemistry. <http://www.rsc.org/methods>
- Mamangkey, J.J. 2010. Biopopulasi ikan endemik butini (*Glossogobius matanensis*) di Danau Towuti, Sulawesi Selatan. Sekolah Pascasarjana. Institut Pertanian Bogor
- Mao, R., Yuanyuan, H., Zhang, S., Wu, R., Guo, X. 2020. Microplastics in the surface water of Wuliangsuhai Lake, northern. Science of the Total Environment. <https://doi.org/10.1016/j.scitotenv.2020.137820>

- Masura, J., Baker, J., Foster, G., Arthur, C., Herring, C. 2015. Laboratory Methods for the analysis of microplastics in the marine environment: Recommendations for quantifying synthetic particles in water and sediments. NOAA Technical Memorandum NOS-OR&R-48
- Matsui, K., Ishimura, T., Mattonai, M., Iwai, I., Watanabe, A., Teramae, N., Ohtani, H., Watanabe, C. 2020. Identification algorithm for polymer mixtures based on Py-GC/MS and its application for microplastic analysis in environmental samples. *Journal of Analytical and Applied Pyrolysis.* <https://doi.org/10.1016/j.jaat.2020.104834>
- Meng, Y., Kelly, F.J., Wright, S.L., 2020. Advances and challenges of microplastic pollution in freshwater ecosystems: a UK perspective. *Environ. Pollut.* 256, 113445. <https://doi.org/10.1016/j.envpol.2019.113445>
- Naidoo, T., Glassom, D. 2019. Decreased growth and survival in small juvenile fish, after chronic exposure to environmentally relevant concentrations of microplastic. *Marine Pollution Bulletin* 145 (2019) 254-259. <https://doi.org/10.1016/j.marpolbull.2019.02.037>
- Plieiter, M.G., Velazquez, D., Edo, C., Carretero, O., Gago, J., Sola, A.B., Hernandez, L.E., Yousef, I., Quesada, A., Leganes, F., Rosal, R., Pinas, F. 2020. Fibers spreading worldwide: Microplastics and other anthropogenic litter in an Arctic freshwater lake. *Science of the Total Environment* 722 (2020) 137904. <https://doi.org/10.1016/j.scitotenv.2020.137904>
- Possatto, F.E., Barletta, M., Costa, M.F., Sul, J.A.I.D., Dantas, D.V. 2011. Plastic debris ingestion by marine catfish: An unexpected fisheries impact. *Marine Pollution Bulletin* 62 (2011) 1098-1102. <http://dx.doi.org/10.1016/j.marpolbul.2011.01.036>
- Qiao, R., Deng, Y., Zhang, S., Wolosker, M.B., Zhu, Q., Ren, H., Zhang, Y. 2019. Accumulation of different shapes of microplastics initiates intestinal injury and gut microbiota dysbiosis in the gut of zebrafish. *Chemosphere* 236 (2019) 124334. <https://doi.org/10.1016/j.chemosphere.2019.07.065>
- Rochman, C.M., 2015. The complex mixture, fate and toxicity of chemicals associated with plastic debris in the marine environment, in: Bergman, M., Gutow, L., Klages, M. (Eds.), *Marine Anthropogenic Litter*. Springer Open, pp. 117–140. [https://doi.org/10.1007/978-3-319-16510-3\\_5](https://doi.org/10.1007/978-3-319-16510-3_5)
- Rosana, N., Putri, N.P. 2012. Penambahan *fly ash* pada komposit polianilin/hcl/*fly ash*. *Sains dan Matematika.* Vol. 1, No. 1.
- Samina, M., Karim, A., Venkatachalam, A. 2011. Corrosion study of iron and copper metals and brass alloy in different medium. *E-Journal of Chemistry.* 8(S1), S344-S348
- Santillo, D., Miller, K., Johnston, P., 2017. Microplastics as contaminants in commercially important seafood species. *Integr. Environ. Assess. Manag.* 13, 516–521. <https://doi.org/10.1002/ieam.1909>
- Sun, D., Wang, J., Xie, S., Tang, H., Zhang, G., Xu, G. 2021. Characterization and spatial distribution of microplastics in two wild captured economic freshwater

fish from north and west rivers of Guangdong province. Ecotoxicology and Environmental Safety. <https://doi.org/10.1016/j.ecoenv.2020.111555>

Suryaningsih, S., Harjo, D.H., Demen, T.A., 1998. Analisis konduktivitas bahan polianilin sebagai fungsi konsentrasi elektrolit. Fakultas Matematika dan Ilmu Pengetahuan Alam. Universitas Padjadjaran. Indonesia.

Taha, Z.D., Amin, R.M., Anuar, S.T., Nasser, A.A.A., Sohaimi, E.S. 2021. Microplastics in seawater and zooplankton: A case study from Terengganu estuary and offshore waters, Malaysia. Science of The Total Environment. Vol. 786 (2021) 147466. <https://doi.org/10.1016/j.scitotenv.2021.147466>

Tahir, A., Taba, P., Samawi, M.F., Werorilangi, S. 2019.. Microplastics in water, sediment and salts from traditional salt producing ponds. Global Journal Environmental Science Management. 5(4): 431-440, Autumn 2019. <http://doi.org/10.22034/gjesm.2019.04.03>

Thompson, R.C., Olsen, Y., Mitchell, R.P., Davis, A., Rowland, S.J., John, A.W.G., McGonigle, D., Russell, A.E., 2004. Lost at sea: where is all the plastic? Science, 838.

Thompson, R.C., Moore, C.J., Saal, F.S.V., Swan, S.H., 2009. Plastics, the environment and human health: Current consensus and future trends. Philos. Trans. R. Soc. B Biol. Sci. 364, 2153–2166

Vali, S.A., Baghdadi, M., Ali, M. 2018. Immobilization of polianilin nanoparticles on the polyurethane foam derived from waste materials: A porous reactive fixed-bed medium for removal of mercury from contaminated waters. Journal of Environmental Chemical Engineering. <https://doi.org/10.1016/j.jece.2018.09.042>

Vendel, A.L., Bessa, F., Alves, V.E.N., Amorim, A.L.A., Patrício, J., Palma, A.R.T. 2017. Widespread microplastic ingestion by fish assemblages in tropical estuaries subjected to anthropogenic pressures. Marine Pollution Bulletin. <http://dx.doi.org/10.1016/j.marpolbul.2017.01.081>

Wang, F., Wong, C.S., Chen, D., Lu, X., Wang, F., Zeng, E.Y. 2018. Interaction of toxic chemicals with microplastics: A critical review. Water Research. <https://doi.org/10.1016/j.watres.2018.04.003>

Wang, W., Ge, J., Yu, X. 2019. Bioavailability and toxicity of microplastics to fish species: A review. Ecotoxicology and Environmental Safety. <https://doi.org/10.1016/j.ecoenv.2019.109913>

Wicaksono, E.D., Werorilangi, S., Tahir, A. 2020. The influence of weirs on microplastic fate in the riverine environment (case study: Jeneberang River, Makassar City, Indonesia). MARSAVE. Earth and Environmental Science 763 (2021) 012054. <http://doi:10.1088/1755-1315/763/1/012054>

Wijaya, D., Samuel, Masak, P.R.P. 2009. Kajian kualitas air dan potensi produksi sumber daya ikan di Danau Towuti, Sulawesi Selatan. Bawal. Vol. 2 No. 6-Desember 2009: 291-297

Wu, J., Lai., M., Zhang, Y., Li, J., Zhou, H., Jiang, R., Zhang, C. 2020. Microplastics in the digestive tract of commercial fish from the marine ranching in east China

sea, China. Case Studies in Chemical and Environmental Engineering.  
<https://doi.org/10.1016/j.cscee.2020.100066>

Yin, L., Chen, B., Xia, B., Shi, X., Qu, K. 2018. Title: Polystyrene microplastics alter the behavior, energy reserve and nutritional composition of marine jacopever (*Sebastes schlegelii*). Journal of Hazardous Materials.  
<https://doi.org/10.1016/j.jhazmat.2018.07.110>

Yin, L., Wen, X., Du, C., Jiang, J., Wu, L., Zhang, Y., Hu, Z., Hu, S., Feng, Z., Zhou, Z., Long, Y., Gu, Q. 2019. Comparison of the abundance of microplastics between rural and urban areas: A case study from East Dongting Lake. Chemosphere.  
<https://doi.org/10.1016/j.chemosphere.2019.125486>

Yuan, W., Liu, X., Wang, W., Di, M., Wang, J. 2019. Microplastic abundance, distribution and composition in water, sediments and wild fish from Poyang Lake, China. Ecotoxicology and Environmental Safety.  
<https://doi.org/10.1016/j.ecoenv.2018.11.126>

Zhang, Z., Wu, H., Peng, G., Pei, X., Li, D. 2020. Coastal ocean dynamics reduce the export of microplastics to the open ocean. Science of the Total Environment.  
<https://doi.org/10.1016/j.scitotenv.2020.136634>

Zheng, K., Fan, Y., Zhu, Z., Chen, G., Tang, C., Peng, X., 2019. Occurrence and species-specific distribution of plastic debris in wild freshwater fish from the Pearl River catchment, China. Environ. Toxicol. Chem. 38 (7), 1504–1513.  
<http://dx.doi.org/10.1002/etc.4437>.

## **LAMPIRAN**

1. Data yang diukur pada sampel

| No. | Sampel / Jumlah Sampel   | Parameter     | Alat / Metode     | Satuan         |
|-----|--|---------------|-------------------|----------------|
| 1.  | Mikroplastik pada perairan danau / 9 titik lokasi x 5 kali ulangan = Total 45 sampel air | Konsentrasi   | Mikroskop         | partikel/liter |
|     |  | Ukuran        | Mikroskop         | µm             |
|     |  | Bentuk        | Mikroskop         | -              |
|     |  | Warna         | Mikroskop         | -              |
|     |  | Jenis Polimer | FT-IR             | -              |
| 2.  | Ikan / Total dari 5 spesies, 71 ekor   | Bobot Tubuh   | Timbangan Digital | g              |
|     |  | Panjang Total | Mistar            | cm             |
| 3.  | Mikroplastik pada ikan / Total 5 spesies, 71 ekor  | Konsentrasi   | Mikroskop         | partikel/gram  |
|     |  | Ukuran        | Mikroskop         | µm             |
|     |  | Bentuk        | Mikroskop         | -              |
|     |  | Warna         | Mikroskop         | -              |
|     |  | Jenis Polimer | FT-IR             | -              |

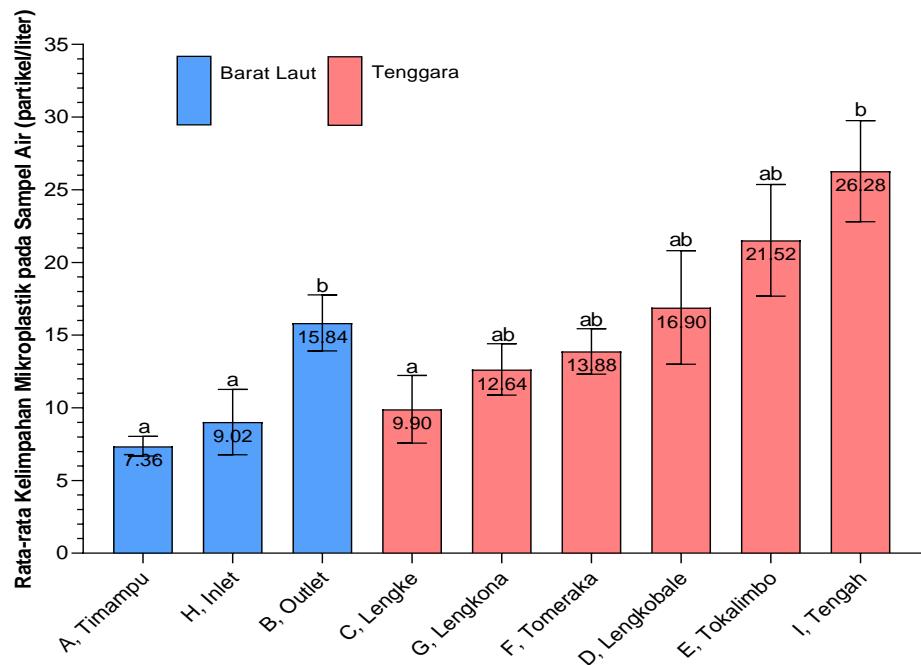
2. Data ukuran ikan yang biasa dikonsumsi oleh masyarakat sehari-hari

| Spesies                        | Rata-rata Panjang Total (cm) | Rata-rata Bobot Tubuh (g) | Percentase Kontaminasi |
|--------------------------------|------------------------------|---------------------------|------------------------|
| <i>Glossogobius matanensis</i> | 20.27 ± 1.42                 | 82.61 ± 15.90             | 100%                   |
| <i>Cichlasoma trimaculatum</i> | 13.34 ± 1.14                 | 49.04 ± 10.65             | 93%                    |
| <i>Anabas testudineus</i>      | 14.70 ± 1.27                 | 61.20 ± 21.67             | 91%                    |
| <i>Oreochromis niloticus</i>   | 18.87 ± 0.94                 | 150.07 ± 25.31            | 100%                   |
| <i>Channa striata</i>          | 25.91 ± 1.84                 | 165.63 ± 43.01            | 93%                    |

3. Data identifikasi ikan yang biasa dikonsumsi oleh masyarakat sehari-hari

| Spesies                | Kebiasaan Makan                 | Makanan                 | Wilayah  |
|------------------------|---------------------------------|-------------------------|----------|
| <i>G. matanensis</i>   | Karnivor (Mamangkey, 2010)      | Ikan-ikan kecil         | Demersal |
| <i>C. trimaculatum</i> | Karnivor (Hedianto, 2018)       | Ikan kecil, zooplankton | Pelagis  |
| <i>A. testudineus</i>  | Karnivor (Fitriani et al, 2011) | Udang-udang, larva ikan | Demersal |
| <i>O. niloticus</i>    | Herbivor (Mamangkey, 2010)      | Fitoplankton            | Pelagis  |
| <i>C. striata</i>      | Karnivor (Liana et al, 2011)    | Ikan, krustasea         | Demersal |

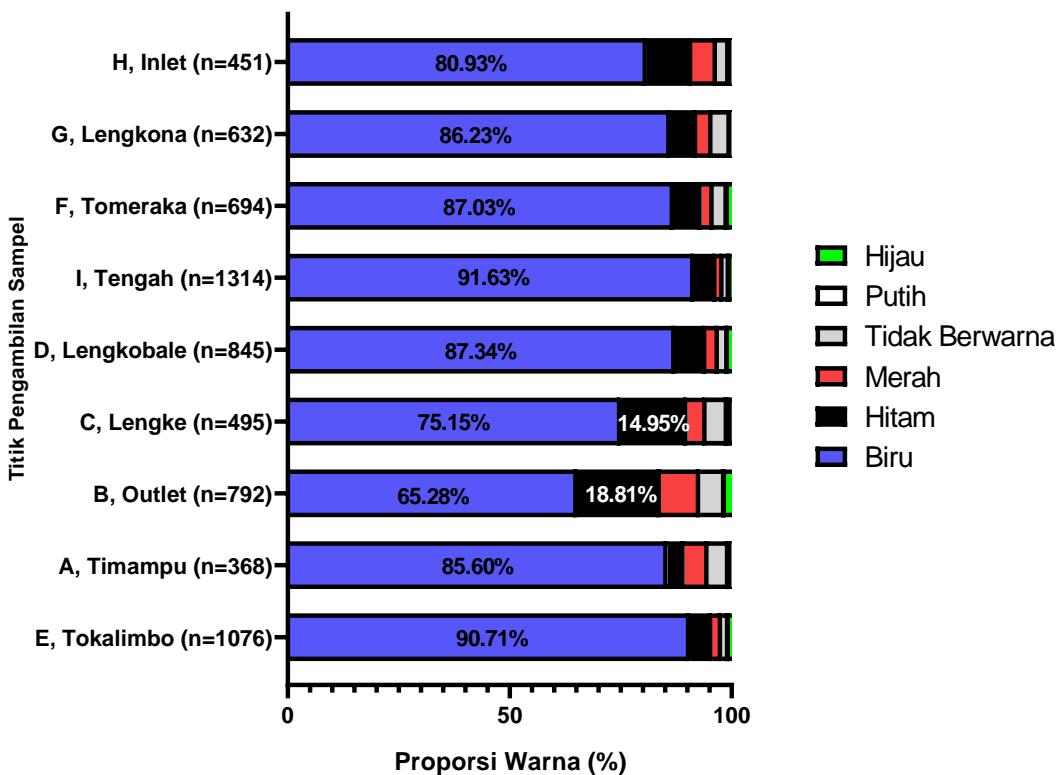
#### 4. Rata-rata Konsentrasi Mikroplastik pada Sampel Air



#### 5. Konsentrasi Warna Mikroplastik pada Sampel Air

| Lokasi        | Partikel Mikroplastik (partikel/liter) |                             |                             |                            |                             |  | Tidak Berwarna          |
|---------------|--|-----------------------------|-----------------------------|----------------------------|-----------------------------|--|-------------------------|
|               | Biru                                   | Hitam                       | Merah                       | Putih                      | Hijau                       |  |                         |
| A, Timampu    | 31,5 ±<br>1,09 <sup>a</sup>            | 1,4 ±<br>0,25 <sup>b</sup>  | 2,0 ±<br>0,32 <sup>b</sup>  | 0,1 ±<br>0,04 <sup>b</sup> | 0,1 ±<br>0,04 <sup>b</sup>  |  | 1,7 ± 0,26 <sup>d</sup> |
| B, Outlet     | 51,7 ±<br>3,18 <sup>a</sup>            | 14,9 ±<br>1,20 <sup>b</sup> | 7,0 ±<br>0,40 <sup>bc</sup> | 0,1 ±<br>0,04 <sup>c</sup> | 1,0 ±<br>0,16 <sup>bc</sup> |  | 4,5 ± 0,78 <sup>d</sup> |
| C, Lengke     | 37,2 ±<br>4,50 <sup>a</sup>            | 7,4 ±<br>0,83 <sup>b</sup>  | 2,1 ±<br>0,24 <sup>b</sup>  | 0 <sup>b</sup>             | 0,4 ±<br>0,08 <sup>b</sup>  |  | 2,4 ± 0,29 <sup>d</sup> |
| D, Lengkobale | 73,8 ±<br>8,20 <sup>a</sup>            | 5,9 ±<br>0,62 <sup>b</sup>  | 2,4 ±<br>0,26 <sup>b</sup>  | 0,1 ±<br>0,04 <sup>b</sup> | 0,5 ±<br>0,14 <sup>b</sup>  |  | 1,8 ± 0,21 <sup>d</sup> |
| E, Tokalimbo  | 97,6 ±<br>7,61 <sup>a</sup>            | 5,3 ±<br>0,83 <sup>b</sup>  | 2,4 ±<br>0,20 <sup>b</sup>  | 0,2 ±<br>0,05 <sup>b</sup> | 0,4 ±<br>0,18 <sup>b</sup>  |  | 1,7 ± 0,25 <sup>d</sup> |
| F, Tomeraka   | 60,4 ±<br>3,07 <sup>a</sup>            | 4,3 ±<br>0,30 <sup>b</sup>  | 1,9 ±<br>0,18 <sup>b</sup>  | 0,2 ±<br>0,05 <sup>b</sup> | 0,4 ±<br>0,04 <sup>b</sup>  |  | 2,2 ± 0,37 <sup>d</sup> |
| G, Lengkona   | 54,5 ±<br>3,24 <sup>a</sup>            | 3,8 ±<br>0,49 <sup>b</sup>  | 2,2 ±<br>0,17 <sup>b</sup>  | 0 <sup>b</sup>             | 0,1 ±<br>0,04 <sup>b</sup>  |  | 2,6 ± 0,24 <sup>d</sup> |
| H, Inlet      | 36,5 ±<br>5,29 <sup>a</sup>            | 4,6 ±<br>0,29 <sup>b</sup>  | 2,5 ±<br>0,21 <sup>b</sup>  | 0 <sup>b</sup>             | 0,20 ±<br>0,09 <sup>b</sup> |  | 1,3 ± 0,18 <sup>d</sup> |
| I, Tengah     | 120,4 ±<br>8,20 <sup>a</sup>           | 6,5 ±<br>0,62 <sup>b</sup>  | 2,1 ±<br>0,31 <sup>b</sup>  | 0,4 ±<br>0,11 <sup>b</sup> | 0,1 ±<br>0,04 <sup>b</sup>  |  | 1,9 ± 0,31 <sup>d</sup> |

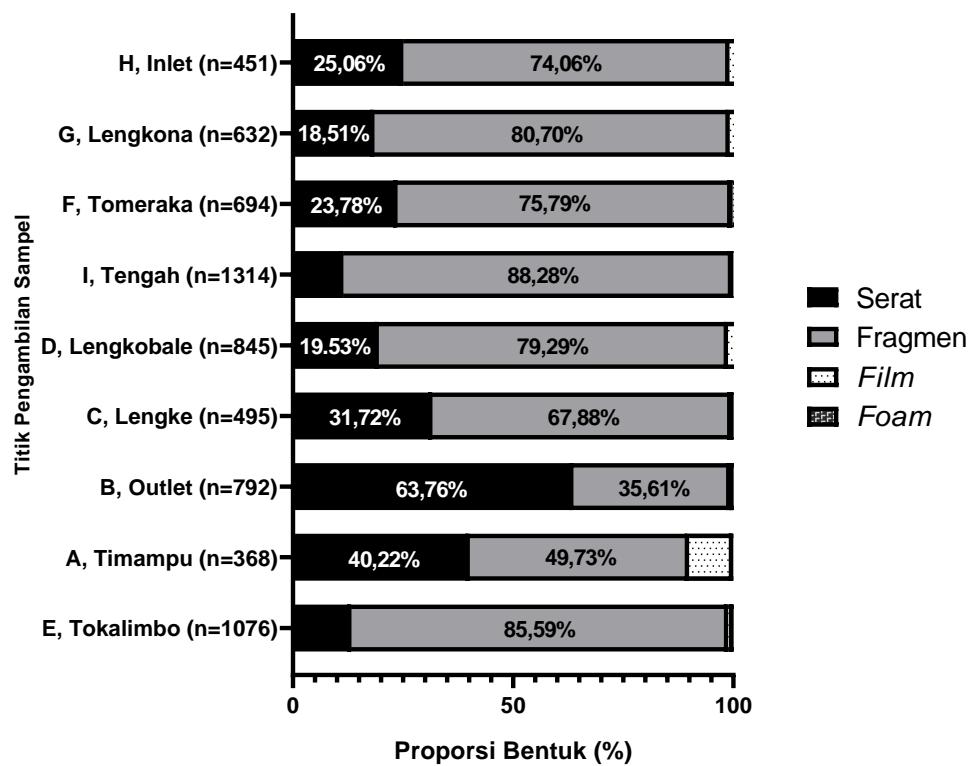
## 6. Proporsi Warna Mikroplastik pada Sampel Air



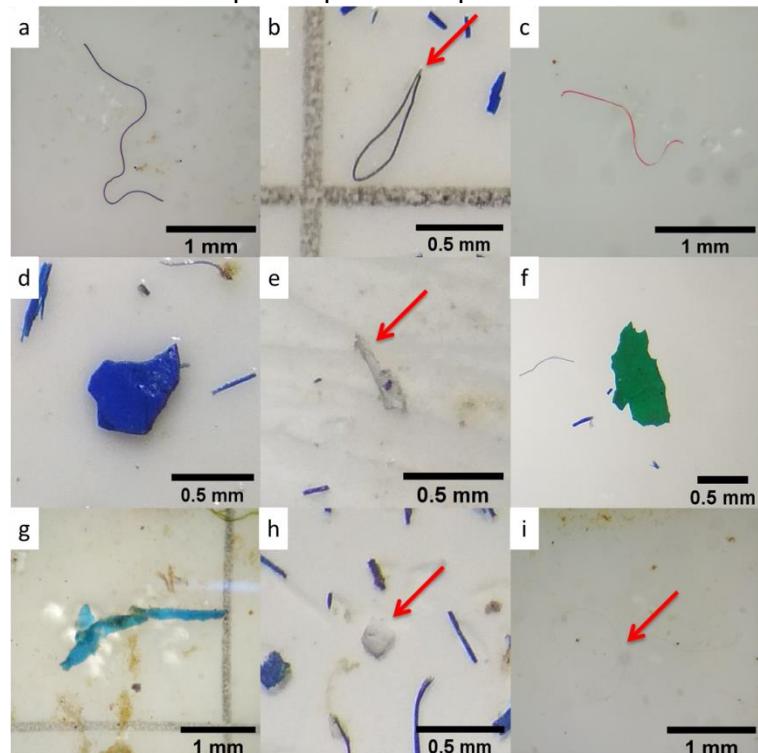
## 7. Konsentrasi Bentuk Mikroplastik pada Sampel Air

| Lokasi        | Bentuk Partikel Mikroplastik (partikel/liter) |                           |                         |                         |
|---------------|---|---------------------------|-------------------------|-------------------------|
|               | Serat   | Fragmen                   | Film                    | Foam                    |
| A, Timampu    | 14,8 ± 1,39 <sup>a</sup>                      | 18,3 ± 0,59 <sup>a</sup>  | 3,7 ± 0,66 <sup>b</sup> | 0 <sup>b</sup>          |
| B, Outlet     | 50,5 ± 4,12 <sup>a</sup>                      | 28,2 ± 1,85 <sup>b</sup>  | 0,5 ± 0,14 <sup>c</sup> | 0 <sup>c</sup>          |
| C, Lengke     | 15,7 ± 0,94 <sup>ab</sup>                     | 33,6 ± 4,36 <sup>a</sup>  | 0,2 ± 0,09 <sup>b</sup> | 0 <sup>b</sup>          |
| D, Lengkobale | 16,5 ± 1,35 <sup>b</sup>                      | 67,0 ± 7,81 <sup>a</sup>  | 1,0 ± 0,16 <sup>b</sup> | 0 <sup>b</sup>          |
| E, Tokalimbo  | 14,3 ± 1,26 <sup>b</sup>                      | 92,1 ± 7,48 <sup>a</sup>  | 1,2 ± 0,11 <sup>b</sup> | 0 <sup>b</sup>          |
| F, Tomeraka   | 16,5 ± 1,43 <sup>a</sup>                      | 52,6 ± 2,94 <sup>b</sup>  | 0,2 ± 0,05 <sup>c</sup> | 0,1 ± 0,04 <sup>c</sup> |
| G, Lengkona   | 11,7 ± 1,05 <sup>b</sup>                      | 51,0 ± 3,04 <sup>a</sup>  | 0,5 ± 0,00 <sup>b</sup> | 0 <sup>b</sup>          |
| H, Inlet      | 11,3 ± 0,54 <sup>b</sup>                      | 33,4 ± 4,84 <sup>a</sup>  | 0,4 ± 0,04 <sup>b</sup> | 0 <sup>b</sup>          |
| I, Tengah     | 15,1 ± 1,15 <sup>b</sup>                      | 116,0 ± 8,56 <sup>a</sup> | 0,1 ± 0,04 <sup>b</sup> | 0,2 ± 0,05 <sup>b</sup> |

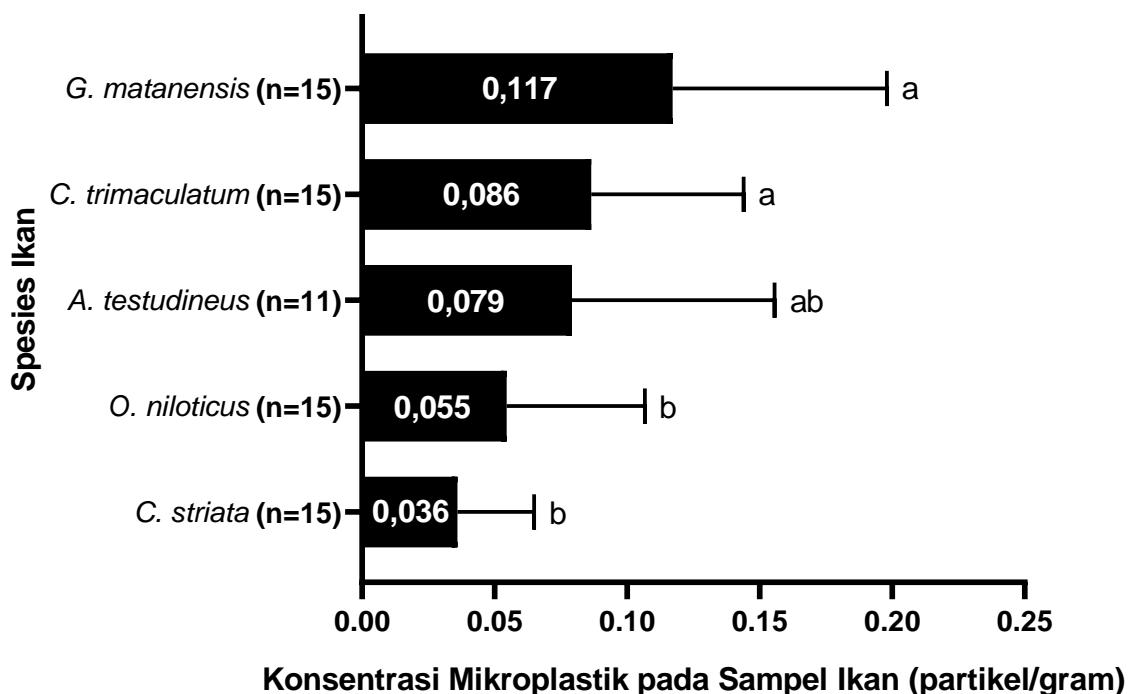
## 8. Proporsi Bentuk Mikroplastik pada Sampel Air



## 9. Bentuk dan Warna Mikroplastik pada Sampel Air



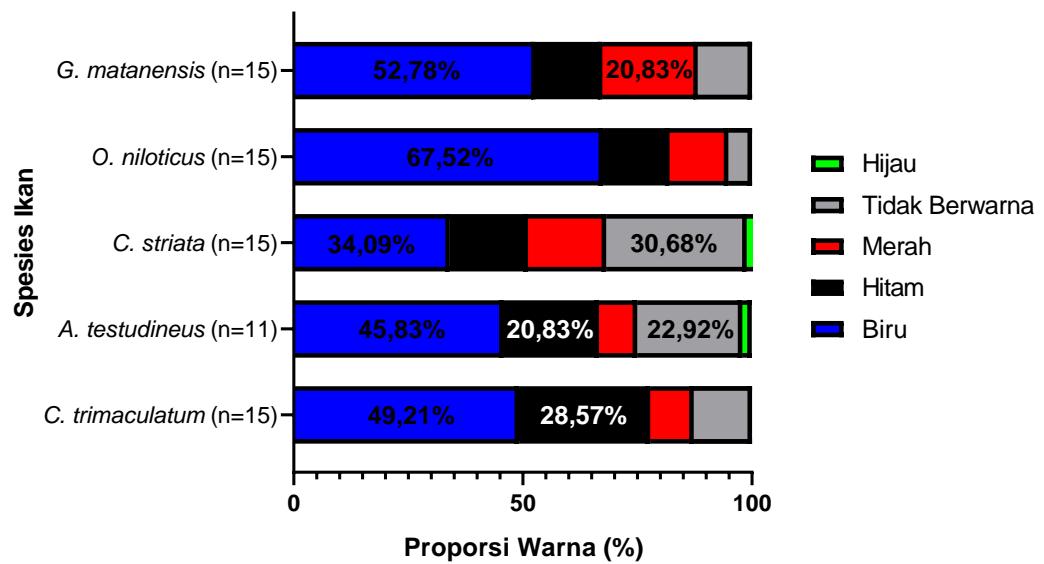
10. Rata-rata Konsentrasi Mikroplastik pada Usus Ikan



11. Konsentrasi Warna Mikroplastik pada Usus Ikan

| Spesies                       | Partikel Mikroplastik (partikel/gram) |                                   |                                   |                      |                            |
|-------------------------------|---------------------------------------|-----------------------------------|-----------------------------------|----------------------|----------------------------|
|                               | Biru                                  | Hitam                             | Merah                             | Hijau                | Tidak Berwarna             |
| <i>G. matanensis</i> (n=15)   | 0,061                                 | 0,016                             | 0,026                             | 0 <sup>b</sup>       | 0,015 ± 0,026 <sup>d</sup> |
|                               | ± 0,045 <sup>a</sup>                  | ± 0,016 <sup>b</sup>              | ± 0,032 <sup>b</sup>              |                      |                            |
| <i>C. trimaculatum</i> (n=15) | 0,042                                 | 0,025                             | 0,009                             | 0 <sup>c</sup>       | 0,010 ± 0,013 <sup>d</sup> |
|                               | ± 0,031 <sup>a</sup>                  | ± 0,033 <sup>a</sup> <sub>b</sub> | ± 0,015 <sup>b</sup>              |                      |                            |
| <i>A. testudineus</i> (n=11)  | 0,041                                 | 0,014                             | 0,006                             | 0,002                | 0,017 ± 0,022 <sup>d</sup> |
|                               | ± 0,045 <sup>a</sup>                  | ± 0,020 <sup>a</sup> <sub>b</sub> | ± 0,011 <sup>b</sup>              | ± 0,005 <sup>b</sup> |                            |
| <i>O. niloticus</i> (n=15)    | 0,035                                 | 0,008                             | 0,007                             | 0 <sup>b</sup>       | 0,003 ± 0,005 <sup>d</sup> |
|                               | ± 0,042 <sup>a</sup>                  | ± 0,008 <sup>b</sup>              | ± 0,008 <sup>b</sup>              |                      |                            |
| <i>C. striata</i> (n=15)      | 0,012                                 | 0,007                             | 0,006                             | 0,0004               | 0,011 ± 0,010 <sup>d</sup> |
|                               | ± 0,010 <sup>a</sup>                  | ± 0,009 <sup>a</sup> <sub>b</sub> | ± 0,010 <sup>a</sup> <sub>b</sub> | ± 0,001 <sup>b</sup> |                            |

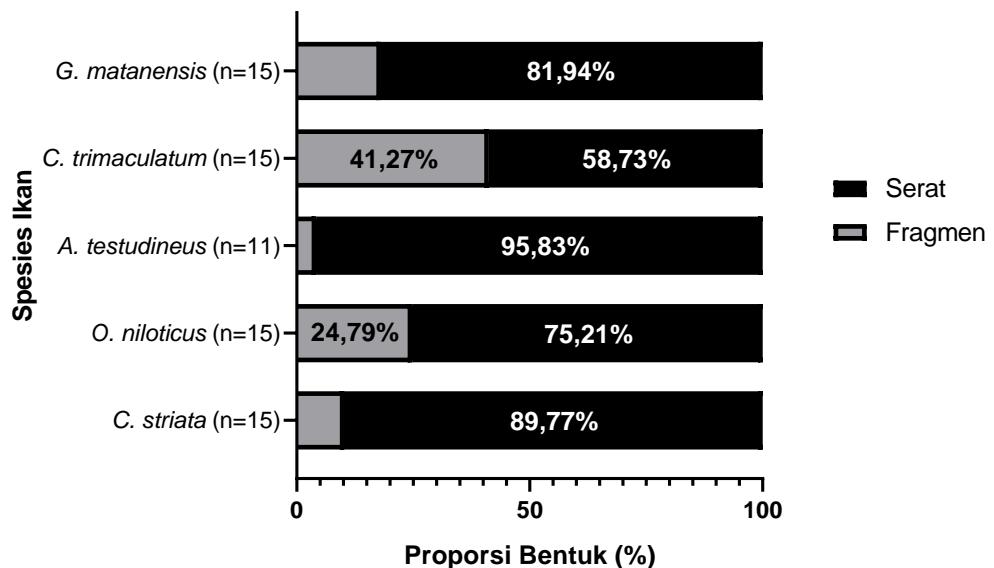
## 12. Proporsi Warna Mikroplastik pada Usus Ikan



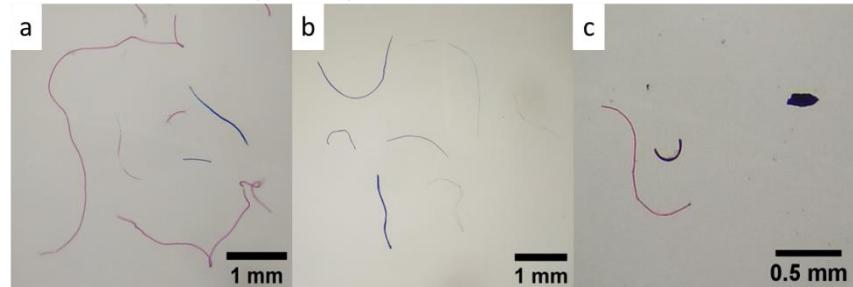
## 13. Konsentrasi Bentuk Mikroplastik pada Usus Ikan

| Spesies                       | Bentuk Partikel Mikroplastik (partikel/gram) |                            |
|-------------------------------|--|----------------------------|
|                               | Serat  | Fragmen                    |
| <i>G. matanensis</i> (n=15)   | 0,097 ± 0,081 <sup>a</sup>                   | 0,020 ± 0,014 <sup>b</sup> |
| <i>C. trimaculatum</i> (n=15) | 0,053 ± 0,042 <sup>a</sup>                   | 0,034 ± 0,042 <sup>a</sup> |
| <i>A. testudineus</i> (n=11)  | 0,077 ± 0,077 <sup>a</sup>                   | 0,003 ± 0,006 <sup>b</sup> |
| <i>O. niloticus</i> (n=15)    | 0,038 ± 0,020 <sup>a</sup>                   | 0,014 ± 0,036 <sup>b</sup> |
| <i>C. striata</i> (n=15)      | 0,033 ± 0,023 <sup>a</sup>                   | 0,004 ± 0,005 <sup>b</sup> |

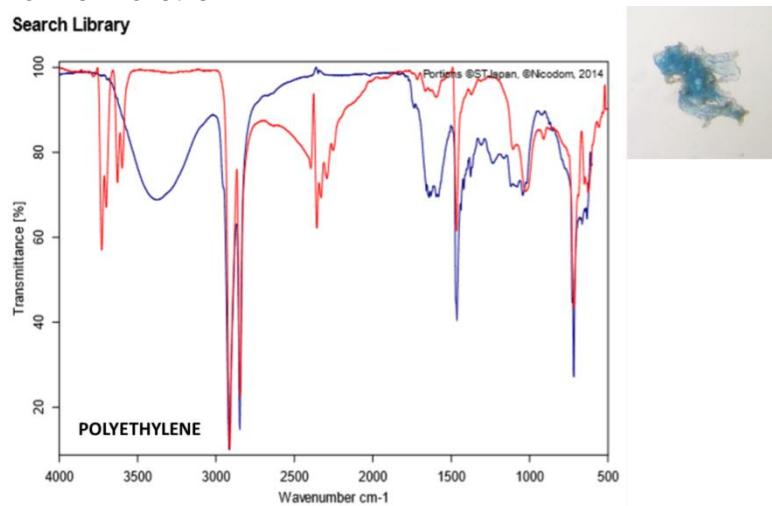
## 14. Proporsi Bentuk Mikroplastik pada Usus Ikan



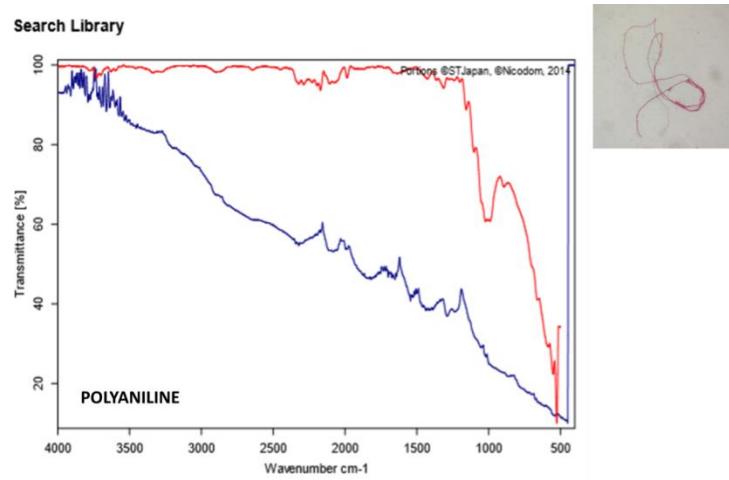
15. Bentuk dan Warna Mikroplastik pada Usus Ikan



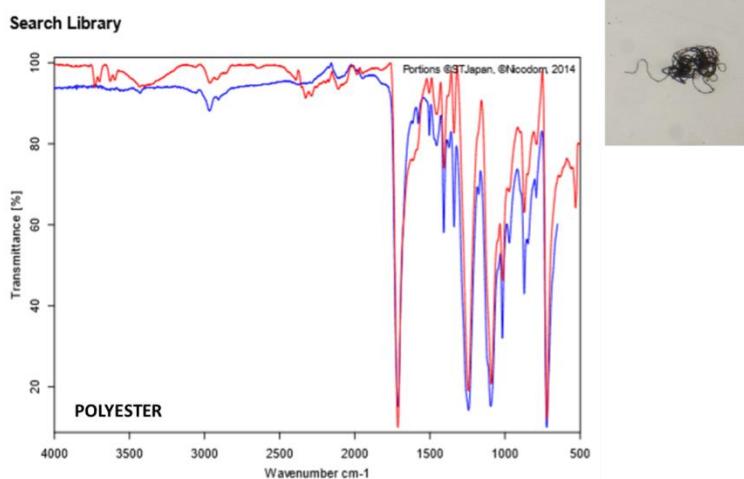
16. Spektrum Polimer Polietilen



17. Spektrum Polimer Polianilin



### 18. Spektrum Polimer Polyester



### 19. Spektrum Cat Anti Korosi/Anti Fouling

