

## Daftar Pustaka

- Anjeli, U. G., Sartimbul, A., Sulistiyati, T. W., Yona, D., Irnawati, F., Seftiyawan, F. O., Aliviyanti, D., Lauro, F. M., Matallana-Surget, S., Fanda, A. M., & Winata, V. A. 2024. Microplastics contamination in aquaculture-rich regions: A case study in Gresik, East Java, Indonesia. *Science of the Total Environment*. 927: 1-13.
- Abbas, A., & Shameel, M. 2013. Occurrence of Padina Gymnospora (Phaeophycota) at The Coast of Karachi. *Pak. J. Bot.* 45(1): 341-344.
- Auta, H. S., Emenike, C & Fauziah, S. 2017. Distribution and importance of microplastics in the marine environment: A review of the sources, fate, effects, and potential solutions. *Environment International*. 102: 165–176.
- Baweja, P., Kumar, S., Sahoo, D., & Levine, I. 2016. Biology of Seaweeds. *Seaweed in Health and Disease Prevention*. 41–106.
- Balai Taman Nasional Karimunjawa. 2022. Statistik Balai Taman Nasional Karimunjawa (Jenis makroalga). (e-book) <https://tnkarimunjawa.id/publikasi/dokumen>.
- Bajt, O. 2021. From plastics to microplastics and organisms. *Febs Open Bio*. 11, 954-966. doi:10.1002/2211-5463.13120.
- Bullard, J. E., Ockelford, A., O'Brien, P., & McKenna Neuman, C. (2021). *Preferential transport of microplastics by wind*. *Atmospheric Environment*, 245, 118038. doi:10.1016/j.atmosenv.2020.11803
- Campanale, C., Savino, I., Massarelli, C., & Urcchio, V, F. 2023. Fourier Transform Infrared Spectroscopy to Assess the Degree of Alteration of Artificially Aged and Environmentally Weathered Microplastics. *polymers*. 15:1-15
- Chirapart, A. 2011. Morphometric and molecular analysis of Gracilaria salicornia and its adelphoparasite in Thailand. *ScienceAsia*. 37: 6-16..
- Cole, M., Pennie, L., Claudia, H., & Tamara, S. G. 2011. Microplastics as contaminants in the marine environment: A review. *Marine Pollution Bulletin*. 62: 2588–2597.
- Cole, M., Lindeque, P., Fileman, E., Halsband, C., Goodhead, R., Moger, J., & Galloway, T. S. 2013. Microplastic Ingestion by Zooplankton. *Environmental Science & Technology*, 47(12): 6650–6655.
- Crawford, C. B., & Quinn, B. 2017. Microplastic separation techniques. *Microplastic Pollutants*. 203–218.
- Cutroneo, L., Reboa, A., Besio, G., Borgogno, F., Canesi, L., Canuto, S., Dara, M., Enrile, F., Forioso, I., Greco, G., Lenoble, V., Malatesta, A., Mounier, S., Petrillo, M., Rovetta, R., Stocchino, A., Tesan, J., & Vagge, G. 2020. Microplastics in seawater: sampling strategies, laboratory methodologies, and identification techniques applied to Port environment. *Environmental Science and Pollution* (27):8938-8952.
- De Haan, W. P., Sanchez-V, A., & Canals, M. 2019. Floating microplastics and aggregate formation in the Western Mediterranean Sea. *Marine Pollution Bulletin*. 140: 523–535.

- Ding, J., Huang, Y., Liu, S., Zhang, S., Zou, H., Wang, Z., Zhu, W., & Geng, J. (2020). Toxicological effects of nano- and micro-polystyrene plastics on red tilapia: Are larger plastic particles more harmless? *Journal of hazardous materials*, 396:1-9.
- Diskominfo Jepara. 2023. Tambak Udang Karimunjawa Segera Ditutup. (<https://jatengprov.go.id/beritadaerah/tambak-udang-karimunjawa-segera-ditutup/>). Diakses April 2024
- El-Manawy, I & Shafik, M. A. 2008. Morphological Characterization of *Halimeda* (Lamouroux) from Different Biotopes on the Red Sea Coral Reefs of Egypt. *American-Eurasian J. Agric. & Environ. Sci.* 3 (4): 532-538.
- Fan, C., Huang, Y, Z., Lin, J, N & Lin, J et al. 2021. Microplastic constituent identification from admixtures by Fourier-transform infrared (FTIR) spectroscopy: The use of polyethylene terephthalate (PET), polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC) and nylon (NY) as the model constituents. *Environmental Technology & Innovation*. 23: 1-9.
- Faradilla, F., Putri, A. D., Agustin, G. A., Nurkaromah, L., Febrianti, M. W., Budhiman, M. A., Salamah, U., Chasani, A. R., & Nikmah, F. 2022. Macroalgae diversity at Porok Beach, Gunungkidul, Yogyakarta, Indonesia. *Journal of Agriculture and Applied Biology*. 3(1): 50-61.
- Farasat, N., Riahi, H., Sheidai, M., Koohdar, F., & Farasat, M. 2022. The Thallus Characteristics of Some Populations of *Chaetomorpha* and *Rhizoclonium* (Cladophoraceae) from the Persian Gulf. *Journal of Phycological Research*. 6(2): 869-878.
- Fathoniah, I & Patria, I. I. 2021. Abundance of microplastic in green mussel *Perna viridis*, water, and sediment in Kamal Muara, Jakarta Bay. *Journal of Physics: Conference Series*. 1725:1-5.
- Feng, Z., Zhang, T., Shi, H., Gao, K., Huang, W., Xu, J., Wang, J., Wang, R., Li, J., & Gao, G. 2020a. Microplastics in bloom-forming macroalgae: distribution, characteristics and impacts. *Journal of Hazardous Materials*. 397: 2-11.
- Feng, Z., Zhang, T., Wang, J., Huang, W., Wang, R., Xu, J., Fu, G., & Gao, G. 2020b. Spatio-temporal features of microplastics pollution in macroalgae growing in an important mariculture area, China. *Science of The Total Environment*. 719: 1-9
- Gao, X., Endo, H., & Agatsuma, Y. 2018. Seasonal changes in photosynthesis, growth, nitrogen accumulation, and salinity tolerance of *Chaetomorpha crassa* (Cladophorales, Chlorophyceae). *Journal of Applied Phycology*. 30: 1905 - 1912.
- Gao, F., Li, J., Hu, J., Li, X., and Sun, C. 2020. Occurrence of microplastics carried on *Ulva prolifera* from the Yellow Sea, China. *Case Studies in Chemical and Environmental Engineering*. 2(16): 1-5.
- Gaspar, R., Rita, F., & Leonel, P. 2020. Illustrated Guide to the Macroalgae of Buarcos Bay, Figueira da Foz, Portugal: Coimbra, Portugal. 128p.
- Gazali, M., Husni, A., Majid, F, A, A., Syahfitri, R., Wahyuni, S & Hidayat, D. 2023. The evaluation of antioxidant action of green seaweed *Boergesenia forbesii* extracts. *IOP Conf. Ser.: Earth Environ. Sci.* 1137: 1-4.

- Ghazali, M., Husni, A., Majid, F, A, A., Syahfitri, R., Wahyuni, S & Hidayat, D. 2023. Macroepiphyte biodiversity on *Kappaphycus alvarezii* surface and its interaction with environment in cultivation centers on Lombok Island, Indonesia; *Biodiversitasi*. 12(12): 6284-6292.
- GESAMP. 2015. Sources, fate and effects of microplastics in the marine environment: a global assessment (Kershaw, P. J., ed.). (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/ UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). Rep. Stud. GESAMP No. 90, 96 p.
- GESAMP. 2016. Sources, fate and effects of microplastics in the marine environment: part two of a global assessment. (Kershaw, P.J., and Rochman, C.M., eds). (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). Rep.Stud. GESAMP No. 93, 220 p
- Handayani, T. 2019. Macroalgae on the Rocky Shore of the Southern Coast of Garut, West Java, Indonesia. *IOP Conf. Ser: Earth Environ. Sci.* 278: 1-8.
- Huang, S., Ruitong Jiang, Nicholas J. Craig, Hua Deng, Wenhui He, Juan-Ying Li, Lei Su. 2023. Accumulation and re-distribution of microplastics via aquatic plants and macroalgae - A review of field studies. *Marine Environmental Research*. 187: 1-9.
- IUCN. 2021. Issue Brief: Marine Plastic Pollution. IUCN (International Union for Conservation of Nature and Natural Resources). <https://www.iucn.org/>
- Jaubet, M. L., Hines, E., Elias, R., & Garaffo, G. V. 2021. Factors driving the abundance and distribution of microplastics on sandy beaches in a Southwest Atlantic seaside resort. *Marine Environmental Research*. 171: 1-9.
- Jung, M., Orski, S., Horgen, D., Rodriguez V,C., Beers, K, L., Balazs, G, H., Jones, T, T., Work, T, M., Brignac, K, C., Royer, S, J., Hyrenbach, K, D., Jensen, B, A., & Lynch, J, M. 2018. Validation of ATR FT-IR to identify polymer of plastic marine debris, including those ingested by marine organisms. *Marine Pollution Bulletin*. 127:704-716.
- Kane, I. A & Clare, M. A. 2019. Dispersion, Accumulation, and the Ultimate Fate of Microplastics in Deep-Marine Environments: A Review and Future Directions. *Front. Earth Sci.* 7: 4-6
- Kerpen NB, Schlurmann T, Schendel A, Gundlach J, Marquard D and Hüggen M. 2020. Wave-Induced Distribution of Microplastic in the Surf Zone. *Front. Mar. Sci.* 7: 1-16.
- Kirwan, M, J., Sarah, P., & John, W, S. 2011. 7 Plastics in Food Packaging: Food and Beverage Packaging Technology. Second Edition. *Blackwell Publishing*. 159-170.
- Lambert, S & Wagner, M. 2018. Microplastics Are Contaminants of Emerging Concern in Freshwater Environments: An Overview. 7-8
- Lee, R, E. 2008. Phycology(e-book). Fourth edition. *Cambridge University Press*: New York. 455.
- Lenaker, P. L., Baldwin, A. K., Corsi, S. R., Mason, S. A., Reneau, P. C., & Scott, J. W. 2019. Vertical Distribution of Microplastics in the Water Column and

- Surficial Sediment from the Milwaukee River Basin to Lake Michigan. *Environmental science & technology*. 53(21): 12227–12237.
- Lima, A. R. A., Costa, M. F., & Barletta, M. 2014. Distribution patterns of microplastics within the plankton of a tropical estuary. *Environmental Research*. 132: 146–155.
- Li, Q., Feng, Z., Zhang, T., Ma, C., & Shi, H. 2020. Microplastics in the commercial seaweed nori. *Journal of hazardous materials*. 388: 1-7
- Li, Q., Lei, S., Cuizu, M., Zhihua, F., & Huahong, S. 2022. Plastic Debris in Coastal Macroalgae. *Environmental Research*. 205: 1-8.
- Lie, S., Ahmad, s., Aulia, R, E., Benarifo, A., Herdi, W, A., Istria, R, S., Ni-Putu, A, N, A., Najlaa, I, H., Nurulita, R., & Akbar, R. 2018. Measurement of Microplastic Density in The Karimunjawa National Park, Central Java, Indonesia. *Indo Pacific Journal of Ocean Life*. 2(2): 54-58.
- Lujan, V. C., Ortega, A. J., Cossaboon, J., Acuña, S., & Teh, S. 2021. How Are Microplastics Invading the World? *Front Young Minds*. 9:1-4.
- Laksono, A. N., & Mussano. Dampak Aktivitas Ekowisata di Pulau Karimunjawa Berdasarkan Persepsi Masyarakat. *Jurnal Teknik PWK*. 3(2): 262-273.
- Ma, H., Chao, L., Wan, H., & Zhu, Q. 2024. Microplastic Pollution in Water Systems: Characteristics and Control Methods. *Diversity*. 16(1): 1-12.
- Manas, H. M., Deshmukhe, G., Venkateshwarlu, G., Chakraborty, S. K., Jaiswar, A. K., Pankajkumar., Mugaonkar, H., & Dar, S. A. 2015. Morphological Comparison of Different Caulerpa J. V. Lamouroux Species Along Maharashtra and Gujarat Coast, India. *Indian Journal of Geo-Marine Science*. 44(5): 732-737.
- Marganita, D., Jarot, W., & Rikha, W. Kajian Pergerakan Mikroplastik dengan Parcels di Perairan Pulau Sintok, Kepulauan Karimunjawa. *IJOCE*. Vol. 4(2): 22-28.
- Mauludy, M, S., Agung, Y., Defri, Y. 2019. Kelimpahan Mikroplastik pada Sedimen Pantai Wisata Kabupaten Badung, Bali. *Jurnal Perikanan UGM*. 21 (2): 73-78.
- 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 waters and sediments. NOAA Technical Memorandum NOS-OR&R-48.
- Mercogliano, R., Santonicola, S., Raimo, G., Gasperi, M., & Colavita, G. 2021. Extraction and identification of microplastics from mussels: Method development and preliminary results. *Italian journal of food safety*. 10(1): 1-2.
- Miloloza, M., Grgic, D, K., Bolanca, T., Ukic, S., Cvetnic, M., Bulatovic, V, O., Dionysiou, D, D., & Kušic H. 2021. Ecotoxicological Assessment of Microplastics in Freshwater Sources—A Review. *water*. 13(56): 1-25.
- Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. 2019. Descriptive statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*. Vol.22(1), 67–72.
- Montoto, M. T., Hernáandez-Brito, J.J., & Gelado-Caballero, M.D. 2020. Pump-underway ship intake: An unexploited opportunity for Marine Strategy

- Framework Directive (MSFD) microplastic monitoring needs on coastal and oceanic waters. *PLoS ONE*. Vol.15(5): 1-14.
- Mushlihah, H., Khairul, A., & Ahmad, F. 2021. Diversity and Distribution of Macroalgae to Environmental Conditions of Makassar City. *Jurnal Ilmu Kelautan*. 7 (1): 16-26.
- Nabila, N. M., Sasmito, B., & Sukmono, A. 2020. Studi Karakteristik Gelombang Perairan Laut Jawa Menggunakan Satelit Altimetri Tahun 2016-2018 ( Studi Kasus : Perairan Laut Utara Jawa). *Jurnal Geodesi Undip*. 9(1): 67-76.
- Ng, K. L., Suk, K. F., Cheung, K. W., Shek, R. H. T., Chan, S. M. N., Tam, M. F. Y., Cheung, S. G., Fang, J. K. H., & Lo, H. S. 2022. Macroalgal morphology mediates microplastic accumulation on thallus and in sediments. *Science of the Total Environment*. 825: 1-7.
- Nguyen, B., Claveau-Mallet, D., Hernandez, L. M., Xu, E. G., Farner, J. M., & Tufenkji, N. 2019. Separation and Analysis of Microplastics and Nanoplastiks in Complex Environmental Samples. *Accounts of chemical research*. 52(4): 858–866.
- Ode, I. 2013. Kandungan Alginat Rumput Laut Sargassum Crassifolium Dari Perairan Pantai Desa Hutumuri, Kecamatan Leitimur Selatan, Kota Ambon. *Agrikan: Jurnal Ilmiah Agribisnis dan Perikanan*. 6(3):47-54.
- Oliveira, C, M., Pereira, S, M, B & F. Pedroche, F, F. 2010. Taxonomy and distribution of the green algal genus *Codium* (Bryopsidales, Chlorophyta) in Brazil. *Nova Hedwigia*. 91: 87-109.
- Othman, M, N, A., Hassan, R., Harith, Mohd, M, N., Md & Sah, A, S, R. 2015. Red Seaweed *Gracilaria Arcuata* in Cage Culture Area of Lawas, Sarawak. *Borneo Journal of Resource Science and Technology*. 5: 53-61.
- Pereira, L. 2021. Entry Macroalgae. *Encyclopedia Of Law*. 1(1): 177-188.
- Pittura L, Avio CG, Giuliani ME, d'Errico G, Keiter SH, Cormier B, Gorbi S & Regoli F. 2018. Microplastics as Vehicles of Environmental PAHs to Marine Organisms: Combined Chemical and Physical Hazards to the Mediterranean Mussels, *Mytilus galloprovincialis*. *Front. Mar. Sci*. 5:1-12.
- Prata, J. C., Maria, J. M., Joao, P. C., Armando, C. D., & Teresa, R. S. 2020. What Is the Minimum Volume of Sample to Find Small Microplastics: Laboratory Experiments and Sampling of Aveiro Lagoon and Vouga River, Portugal. *Water*. 12:2-10.
- Rahmawati, Susi., Irawan, Andri., & Supriyadi, Indarto. 2017. Panduan Pemantauan Penilaian Kondisi Padang Lamun Edisi 2. Jakarta: COREMAP CTI LIPI. 7-20
- Raintung, F, A., I Gede, H., Widiastuti. 2021. Rasio Jumlah Mikroplastik dan Plankton di Kawasan Perairan Teluk Benoa, Bali. *JMRT*. 4(2): 8-15.
- Rapp, J., Herrera, A., Martinez, I., Raymond, E., Santana, A., & Gomez, M. 2020. Study of plastic pollution and its potential sources on Gran Canaria Island beaches (Canary Islands, Spain). *Marine Pollution Bulletin*. 153:1-9.
- Reinold, S., Saliu, F., Herrera, A., & Hernandez-Gonzalez, C. 2021. Evidence of Microplastic Ingestion by Cultured European Sea Bass (*Dicentrarchus labrax*). *Marine Pollution Bulletin*. 168:1-10.



- Rifandi, R. A & Ratnasari, A. V. 2023. Abundance of Microplastics and Hazard to the Environment in Estuary Water in Pemalang, Central Java, Indonesia. 1211.1-5.
- Rodrigues, M. O., Gonçalves, A. M. M., Gonçalves, F. J. M., & Abrantes, N. 2020a. Improving cost-efficiency for MPs density separation by zinc chloride reuse. *MethodsX*. 7: 3-5.
- Rodrigues, D. D., Antunes, J. C., Otero, V., Sobral, P., & Costa, M.H. 2020b. Distribution Patterns of Microplastics in Seawater Surface at a Portuguese Estuary and Marine Park. *Front. Environ. Sci.* 8: 2-11.
- Roleda, M. Y & Catriona, L. H. 2019. Seaweed nutrient physiology: application of concepts to aquaculture and bioremediation. *Phycologia*. 58(5): 552-562.
- Schrank, I., Möller, J. N., Imhof, H. K., Hauenstein, O., Zielke, F., Agarwal, S., Löder, M. G. J., Greiner, A., & Laforsch, C. 2022. Microplastic sample purification methods - Assessing detrimental effects of purification procedures on specific plastic types. *The Science of the Total Environment*. 833: 1-11.
- Sfriso, A. A., Tomio, Y., Juhmani, A.S., Sfriso, A., Munari, C., Mistri, M. 2021. Macrophytes: A Temporary Sink for Microplastics in Transitional Water Systems. *Water*. 13, 3032.
- Steer, M., Cole, M., Thompson, R. C., & Lindeque, P. K. (2017). Microplastic ingestion in fish larvae in the western English Channel. *Environmental Pollution*. 226: 250–259.
- Thushari, G. G. N., & Senevirathna, J. D. M. 2020. Plastic Pollution in The Marine Environment. *Heliyon*, 6(8): 1-8.
- Uurasjärvi, E., Hartikainen, S., Setälä, O., Lehtiniemi, M., & Koistinen, A. (2020). Microplastic concentrations, size distribution, and polymer types in the surface waters of a northern European lake. *Water environment research : a research publication of the Water Environment Federation*. 92(1). 149–156.
- Veerasingham, S., Vethamony, P., Aboobacker, V. M., Giraldez, A. E., Dib, S., & Al-Khayat, J. A. 2021. Factors influencing the vertical distribution of microplastics in the beach sediments around the Ras Rakan Island, Qatar. *Environmental science and pollution research international*. 28(26): 34259–34268.
- Wang, Y., Yue, W., Fent, T., Mingzheng, Z. 2020. Ediacaran Macroalgal Holdfasts and Their Evolution: A Case Study from China. *Palaeontology*. 63(5): 821-840.
- Wei, Y., Wengang, M., Qiang, X., Chunyang, S., Xinyuan, W., & Fei, G. 2022. Microplastic Distribution and Influence Factor Analysis of Seawater and Surface Sediments in a Typical Bay with Diverse Functional Areas: A Case Study in Xincun Lagoon, China. *Front. Environ. Sci.* 10: 1-11.
- Widyartini, D. S., Widodo, P., & Susanto, A. B. 2017. Thallus variation of *Sargassum polycystum* from Central Java, Indonesia. *Biodiversitas*. 18(3): 1004-1011.
- Wungo, G. L., Mussadun., & Ma'rif, S. 2020. Edukasi Penerapan Konsep Ecotourism di Kepulauan Karimunjawa. *Jurnal Pasopati*. 2(3): 142-149.
- Zhang, H. 2017. Transport of microplastics in coastal seas. *Estuarine, Coastal and Shelf Science*. 199: 74–86.

- Zhang, X., Yu, K., Zhang, H., Liu, Y., He, J., Liu, X., & Jiang, J. 2020. A novel heating-assisted density separation method for extracting microplastics from sediments. *Chemosphere*. 256: 8-14.
- Zhang, T., Wang, J., Liu, D., Sun, Z., Tang, R., Ma, X., & Feng, Z. 2022. Loading of microplastics by two related macroalgae in a sea area where gold and green tides occur simultaneously. *The Science of the Total Environment*. 814: 1-8.
- Zhou, Q., Zhang, H., Fu, C., Zhou, Y., Dai, Z., Li, Y., Tu, C., Luo, Y. 2018. The distribution and morphology of microplastics in coastal soils adjacent to the Bohai Sea and the Yellow Sea. *Geoderma*. 322: 201–208.