

DAFTAR PUSTAKA

- Alongi, D. M., Wattayakorn, G., Boyle, S., Tirendi, F. & Payn, C. (2004). Influence of roots and climate on mineral and trace metal accumulation in tropical mangrove sediments. *Marine Geology*, 2(4). 115–131. DOI: <https://doi.org/10.1016/j.margeo.2004.04.013>
- Amin, A.A., Baihaqi, V.K., Prawitma, P. & Kurniawan, A. (2019). Analisis Daya Serap Mangrove *Avicennia marina* dan *Rhizophora mucronata* Terhadap Logam Berat (Zn) di Kawasan Mangrove Wonorejo, Surabaya, Jawa Timur. *Seminar Nasional Kelautan XIV*, 7-14.
- Auni, A.H., Bachtiar, B., Paembonan, S.A. & Larekeng, S.H. (2020). Growth Analysis of Mangrove (*Rhizophora apiculata* bl) Propagule Toward Differences in Types of Water and Planting Media at Makassar Mangrove Center. *IOP Conf. Series: Earth and Environmental Science*, 1-14. DOI: 10.1088/1755-1315/575/1/012137.
- Awaliyah, H.F., Yona, D. & Pratiwi, D.C. (2018). Akumulasi Logam Berat Pb dan Cu pada akar dan daun Mangrove *Avicennia marina* di Sungai Lamong, Jawa Timur. *Jurnal Ilmu-Ilmu Perairan, Pesisir dan Perikanan*, 7(3), 187-197. DOI: <https://doi.org/10.13170/depik.7.3.11020>.
- Badan Pusat Statistik Indonesia, (2023). Statistik Transportasi Laut 2022. Situs:<https://www.bps.go.id/id/publication/2023/11/27/945749d88a6234417d01c337/statistik-transportasi-laut-2022.html>.
- Basri, S.A.A., Samawi, M.F. & Fahrudin. (2024). Bioconcentration and Translocation of Heavy Metals in Mangrove *Avicennia* sp. and *Rhizophora* sp. in Diesel Powel Plant. *Ecological Engineering & Environmental Technology*, 25(9), 223–230. DOI: <https://doi.org/10.12912/27197050/190754>.
- Chen, X., Li, H. & Zhang, Y. (2020). Effect of overlying water pH, dissolved oxygen, and salinity on the release of heavy metals from sediments in estuarine environments. *Environmental Pollution*. DOI: <https://doi.org/10.1016/j.envpol.2020.114835>.
- Dewi, I. M. (2023). Peluang Investasi di Sektor Maritim Indonesia di Masa Depan. *Jurnal Maritim Indonesia*, 11(3), 218-226. DOI: <https://doi.org/10.52307/jmi.v912.142>.
- Fadhilah, A., Hamdani, H., Sunarto & Sahidin, A. (2018). Daya Serap Akar Mangrove *Avicennia marina* Terhadap Logam Berat Timbal (Pb) di Perairan Taman Wisata Alam Angke Kapuk Jakarta. *Jurnal Perikanan dan Kelautan*, 9(2), 80-86.

- Haidir, M. (2022). Strategi Pengelolaan Berkelanjutan Ekosistem Mangrove Dikawasan Mangrove Biringkassi Kabupaten Pangkep. Tesis Universitas Hasanuddin.
- Hamzah, F., & Pancawati, Y. (2013). Fitoremediasi Logam Berat dengan Menggunakan Mangrove (Phytoremediation of Heavy Metals Using Mangroves). *Indonesian Journal of Marine Sciences*, 18(4): 203-212. DOI: <https://doi.org/10.14710/ik.ijms.18.4.203-212>.
- He, H., Boehringer, T., Schafer, B., Heppell, K. & Beck, C. (2024). Analyzing Spatio-Temporal Dynamics of Dissolved Oxygen for the River Thames Using Superstatistical Methods and Machine Learning. *Research Square*, 1-23. DOI: <https://doi.org/10.21203/rs.3.rs-4654354/v1>
- Hossain, M. A., Haque, M. M., Chowdhury, M. A. Z. & Chowdhury, D. A. (2022). Bioconcentration and Translocation of Heavy Metals in Mangrove *Avicennia* sp. and *Rhizophora* sp. in Diesel Power Plant Area. *Biology*, 11(8), DOI: <https://doi.org/10.3390/biology11081144>.
- Islam, M. S., Rahman, M. M., Rahman, M. Z. & Hossain, M. B. (2015). Accumulation of heavy metals in sediments and mangrove root-leaves from Sundarbans mangrove forest, Bangladesh. *Environmental Science and Pollution Research*, 22, 18–26. DOI: <https://doi.org/10.1007/s11356-015-4403-1>.
- Juswardi, J., Mulyani, I.S., Tanzerina, N., Lamin, S., Junaidi, E. & Sarno. (2023). The potential of *Avicennia alba* Blume in Phytoremediation of Heavy Metal Pb and Cu in the Area East Coast Mangrove Forest Reserve Jambi, Indonesia. *International Journal of Science and Research Archive*, 9(2), 912–919. DOI: <https://doi.org/10.30574/ijrsra.2023.9.2.0647>.
- Khalifah, A., Saad, A.A. & Dalming, T. 2024. Analysis of Lead Heavy Metal (Pb) Levels in The Skin and Flesh of Golek Mango (*Mangifera indica* L.) around minasate'ne cement industry by ICP-MS method. *Journal Pharmacy Of Pelamonia*, 4(1), 7-11.
- Khotimah, N.N., Rozirwan, Putri, W.A.E., Fauziyah, Aryawati, R., Isnaini & Nugroho, R.Y. (2024). Bioaccumulation and Ecological Risk Assessment of Heavy Metal Contamination (Lead and Copper) Build Up in the Roots of *Avicennia alba* and *Excoecaria agallocha*. *Journal of Ecological Engineering*, 25(5), 101–113. DOI: <https://doi.org/10.12911/22998993/185716>
- Komalasari, A., Afriyansyah, B., Ihsan, M. & Nugraha, M.A. (2019). Bioakumulasi Logam Berat Pb dan Cu terhadap *Penaeus merguensis* di Perairan Teluk Kelabat Bagian Dalam. *Jurnal Kelautan Tropis*, 22(1), 1–8. DOI: <https://doi.org/10.14710/jkt.v22i1.3727>.

- Lagerstrom, M., Wrangle, A.L., Oliveira, D.R., Granhag, L., Larsson, A.I. & Ytreberg, E. (2022). Are Silicone Foul-Release Coatings A Viable and Environmentally Sustainable Alternative to Biocidal Antifouling Coatings in The Baltic Sea Region?. *Marine Pollution Bulletin*, 18(4), 1-16. DOI : <https://doi.org/10.1016/j.marpolbul.2022.114102>.
- Larance, S., Wang, J., Delavar, M. A. & Fahs, M. (2025). Assessing Water Temperature and Dissolved Oxygen and Their Potential Effects on Aquatic Ecosystem Using a SARIMA Model. *Environments*, 12(25), 1-18. DOI: <https://doi.org/10.3390/environments12010025>
- Liu, Y., Wang, J., Wu, T., & Zhao, H. (2024). Effect of pH, temperature, and salinity on heavy metal fraction in lake sediments: A case study of Wuliangshuai Lake. *Chemosphere*. DOI: <https://pubmed.ncbi.nlm.nih.gov/39058146>.
- MacFarlane, G. R. & Burchett, M. D. (2002). Toxicity, growth and accumulation relationships of copper, lead and zinc in the grey mangrove *Avicennia marina* (Forsk.) Vierh. *Marine Environmental Research*, 54(1), 65–84. DOI: [https://doi.org/10.1016/S0141-1136\(01\)00102-3](https://doi.org/10.1016/S0141-1136(01)00102-3)
- MacFarlane, G.R., Koller, C.E. & Blomberg, S.P. (2007). Accumulation and Partitioning of Heavy Metals in Mangroves: A Synthesis of Field-Based Studies. *Chemosphere*, 69. 1454-1464.
- Mahmudi, M., Adzim, A., Fitri, D.H., Lusiana, E.D., Buwono, N.R., Arsad, S. & Musa, M. (2021), Performance of *Avicennia alba* and *Rhizophora mucronata* as Lead Bioaccumulator in Bee Jay Bakau Resort, Indonesia. *Journal of Ecological Engineering*, 22(2), 169–177. DOI: <https://doi.org/10.12911/22998993/131032>.
- Maulida, G., Supriharyono & Suryanti. (2019). Valuasi Ekonomi Pemanfaatan Ekosistem Mangrove di Kelurahan Kandang Panjang Kota Pekalongan Provinsi Jawa Tengah. *Journal of Maquares*, 8(3). 133-238. DOI: <https://doi.org/10.14710/marj.v8i3.24247>.
- Mentari, R.J., Soenardjo, N. & Yulianto, B. (2022). Potensi Fitoremediasi Mangrove *Rhizophora mucronata* Terhadap Logam Berat Tembaga di Kawasan Mangrove Park, Pekalongan. *Journal of Marine Research*, 11(2), 83-188, DOI: <https://doi.org/10.14710/jmr.v11i2.33246>.
- Musie, W. & Gonfa, G. (2023). Fresh Water Resource, Scarcity, Water Salinity Challenges and Possible Remedies. *Heliyon*, 9, 1-18. DOI: <https://doi.org/10.1016/j.heliyon.2023.e18685>.
- Omer, N.H. (2019). Water Quality Parameters. *Water Quality Science and Management*, 1-18. DOI: <http://dx.doi.org/10.5772/intechopen.89657>.
- Paundanan, M., Ikbal, Fachruddin & Khaery, A. (2023). Studi Pencemaran Logam Berat Timbal (Pb) dan Tembaga (Cu) Berdasarkan Nilai Ambang Batas (NAB) di Sungai Motui Kabupaten Konawe Utara. *Jurnal Ilmu Alam dan Lingkungan*, 14(1), 1-7.

- Pemerintah Republik Indonesia. (2021). Peraturan Pemerintah Republik Indonesia Nomor 22 Tahun 2021 tentang Penyelenggaraan Perlindungan dan Pengelolaan Lingkungan Hidup. Ditetapkan tanggal 2 Februari 2021. Lembaran Negara RI Tahun 2021 Nomor 31. Situs: <https://peraturan.bpk.go.id/Details/161852/pp-no-22-tahun-2021>.
- Permatasari, F.D., Aditya, H.F. & Mindari, W. (2025). Potensi Fitoremediasi *Avicennia marina*, *Rhizophora mucronata* dan *Bruguiera gymnorrhiza* di Kawasan Pesisir Perkotaan yang Terkontaminasi Timbal (Pb). *Jurnal Ilmiah Pertanian*, 22(1), 1-12. DOI: <https://doi.org/10.31849/jip.v22i1.24112>.
- Rachmawati, Yona, D. & Kasitowati, R.D. (2018). Potensi Mangrove *Avicennia alba* Sebagai Agen Fitoremediasi Logam Berat Timbal (Pb) Dan Tembaga (Cu) di Perairan Wonorejo, Kota Surabaya. *Jurnal Kelautan*, 11(1): 80-87.
- Retnosari, D. A., Lubis, A. D. & Sugiharto, S. D. (2024). Bioakumulasi Logam Berat Pb, Cu, dan Zn oleh Akar *Avicennia marina* di Perairan Panceng, Kabupaten Gresik. *Jurnal Marine and Coastal Science (JMCS)*, 13(1), 78-92. DOI: <https://doi.org/10.20473/jmcs.v13i2.52524>.
- Rochyatun, E., Kaisupy, M.T. & Rozak, A. (2006). Distribusi Logam Berat dalam Air dan Sedimen di Perairan Muara Sungai Cisadane. *Makara Sains*, 10(1): 35-40.
- Samosir, A.M., Syarifah, M., & Sulistiono. (2023). Akumulasi Logam Berat Tembaga dan Timbal pada Mangrove *Rhizophora Mucronata* Di Karangsong, Indramayu. *Jurnal Teknologi Perikanan dan Kelautan*, 14(1), 101-112. DOI: <https://doi.org/10.24319/jtpk.14.101-112>.
- Sari, D.P., Hidayati, E. & Webliana, K. (2024). Bioakumulasi Logam Berat Pb dan Cu Pada *Rhizophora Mucronata* di Kawasan Mangrove Sekitar Pelabuhan Lembar Kabupaten Lombok Barat. *Jurnal Hutan Tropis Volume 12(2)*, 227-235. DOI: <https://doi.org/10.20527/jht.v12i2.19773>.
- Setiawan, H. (2014). Pencemaran Logam Berat di Perairan Pesisir Kota Makassar dan Upaya Penanggulangannya. *Jurnal Info Teknis Eboni*, 11(1), 1-13.
- Shabrina, M.H. (2022). Bioakumulasi Logam Berat Timbal (Pb) dan Kadmium (Cd) pada Kerang Darah *Anadara Granosa L.* di Perairan Biringkassi, Kabupaten Pangkep Sulawesi Selatan. Skripsi Universitas Hasanuddin.
- Singh, P., Sharma, V. & Yadav, K. K. (2023). Comparative evaluation of heavy metal accumulation and translocation in different mangrove species for phytoremediation potential. *Ecotoxicology and Environmental Safety*. DOI: <https://doi.org/10.1016/j.ecoenv.2023.114386>.
- Soenardjo, N. & Mentari, R.J. 2023. Akumulasi Logam Pb dan Cu pada Akar, Daun dan Serasah Mangrove di Perairan Pekalongan. *Buletin Oseanografi Marina*, 12(3), 456-464. DOI: <https://doi.org/10.14710/buloma.v12i3.48984>.

- Sulistyo, A.A.H., Suprijanto, J. & Yulianto, B. (2024). Analisis Kualitas Air dan Kandungan Logam Berat Timbal (Pb) Pada Air Laut di Perairan Pelabuhan Tanjung Emas Kota Semarang Jawa Tengah. *Journal of Marine Research*, 13(1), 108-114. DOI: <https://doi.org/10.14710/jmr.v13i1.38751>.
- Suryawanshi, A., Deshmukh, N. & Patil, V. (2022). Comparative assessment of heavy metal accumulation in mangrove species along contaminated estuarine zones of western India. *Environmental Nanotechnology, Monitoring & Management*, 17. DOI: <https://doi.org/10.1016/j.enmm.2021.100673>.
- Suryono, C.A. & Indardjo, A. 2023. Konsentrasi Logam Berat Timbal (Pb) dan Tembaga (Cu) pada Hasil Tangkapan Nelayan Pesisir Semarang dan Tegal Jawa Tengah. *Jurnal Kelautan Tropis*, 26(1), 155-162. DOI: <https://doi.org/10.14710/jkt.v26i1.17321>.
- Suryono, C. A. & Rochaddi, B. (2013). Konektivitas Logam Berat dalam Air tanah Dangkal, Sedimen dan Air Laut di Wilayah Pesisir (Connectivity Heavy Metals in Shallow Groundwater, Sediment and Seawater in Coastal Area). *ILMU KELAUTAN: Indonesian Journal of Marine Sciences*, 18(2), 91-96. DOI: 10.14710/ik.ijms.18.2.91-96.
- Tam, N.N.F.Y. & Wong, Y.S. (2000). Retention and Distribution of Heavy Metals in Mangrove Soils Receiving Wastewater. *Environmental Pollution*, 94(3): 283-291. DOI: [https://doi.org/10.1016/S0025-326X\(00\)00045-0](https://doi.org/10.1016/S0025-326X(00)00045-0).
- Tumangger, B.S. & Fitriani. (2019). Identifikasi dan Karakteristik Jenis Akar Mangrove Berdasarkan Kondisi Tanah dan Salinitas Air Laut di Kuala Langsa. *Jurnal Biologica Samudera*. 1(1), 9-16.
- Usman, A, Budimawan, F. & Prastawa, B. (2015). Kandungan Logam Berat Pb-Cd dan Kualitas Air Di Perairan Biringkassi, Bungoro, Pangkep. *Jurnal Agrokompleks*, 4(9), 103-107.
- Wahyuni, I., Mardiyati, E., & Hartono, T. (2021). Effect of salinity on the release of Cu, Pb and Zn from tailings. *Indonesian Journal of Chemistry*, 21(4), 901–908. DOI: <https://doi.org/10.22146/ijc.21956>
- Wailisa, R., Putuhena, J.D. & Soselisa, F. (2022). Analisis Kualitas Air Di Hutan Mangrove Pesisir Negeri Amahai Kabupaten Maluku Tengah. *OJS Unpatti*, 57-71. DOI:10.30598.jhppk.2022.6.1.57.
- Wardhani, E., Roosmini, D. & Notodarmojo, S. (2016). Pencemaran kadmium di sedimen Waduk Saguling Provinsi Jawa Barat. *Jurnal Manusia dan Lingkungan*, 23(3):285-294. DOI: <https://doi.org/10.22146/jml.18802>.
- Wawakhi, S. (2015). Kajian *Avicennia alba* Sebagai Agen Fitoremediasi Upaya Mengurangi Konsentrasi Logam Berat Pb di Ekosistem Mangrove Kelurahan Wonorejo, Kota Surabaya. *FPIK Universitas Brawijaya*, Malang.

- Werbowski, L.M., Gilbreath, A.N., Munno, K., Zhu, X., Grbic, J., Wu, T., Sutton, R., Sedlak, M.D., Deshpande, A.D. & Rochman, C.M. (2021). Urban Stormwater Runoff: A Major Pathway for Anthropogenic Particles, Black Rubbery Fragments, and Other Types of Microplastics to Urban Receiving Waters. *ACS EST Water*, 1(6), 1420–1428. DOI: <https://doi.org/10.1021/acsestwater.1c00017>.
- Wilda, R., Hamdan, A.M. & Rahmi, R. (2020). A review: The use of Mangrove for Biomonitoring on Aquatic Environment. *IOP Conference Series: Materials Science and Engineering*. DOI: <https://doi.org/10.1088/1757-899X/980/1/012083>.
- Wiwiyani, Werorilangi, S. & Saru, A. (2023). The Impact of Mangrove Forest Density on Marine Debris Accumulation: Implications For Ecosystem Health and Sustainable Coastal Management. *Jurnal Bisnis Kehutanan dan Lingkungan*, 2(2), 105- 121. DOI: <https://doi.org/10.61511/jbkl.v2i2.2025.1629>.
- Yunasfi, Tampubolon, D. S., & Utomo, B. (2020). Logam Berat Tembaga (Cu) dan Timbal (Pb) Pada Mangrove *Avicenia marina* Dan Pengaruhnya Terhadap Kualitas Air Laut fi Kawasan Pesisir Belawan Sumatera Utara. *Talenta Conference Series: Agricultural and Natural Resources (ANR)*, 3, 130-140. DOI: <https://doi.org/10.32734/anr.v3i1.843>.
- Zhang, R., Zhou, Y. & Wang, Y. (2020). Redox potential and heavy metal mobility in sediments of aquatic systems: A review. *Journal of Environmental Management*. Doi: <https://doi.org/10.1016/j.jenvman.2020.111235>.