

DAFTAR PUSTAKA

- Acharya, S., Pradhan, M., Mahalik, G., Babu, R., Parida, S., Mohapatra, P. K. 2023. Abiotic stress tolerance in mangroves with a special reference to salinity. *Plant Science Today*, **10**(2): 58–68.
- Aini, A., Budihastuti, R., Hastuti, E. D. 2016. Pertumbuhan Semai *Rhizophora mucronata* Pada Saluran Tambak Wanamina Dengan Lebar Yang Berbeda. *Jurnal Biologi*, **5**(1): 48–59.
- Akhrianti, I., Nurtjahya, E., Syari, I. A. 2019. Kondisi Komunitas Mangrove di Pesisir Utara Pulau Mendanau dan Pulau Batu Dinding, Kabupaten Belitung. *Akuatik: Jurnal Sumberdaya Perairan*, **13**(1): 12–26.
- Alsumaiti, T. S., and Shahid, S. A. 2018. Comprehensive Analysis of Mangrove Soil in Eastern Lagoon National Park of Abu Dhabi Emirate. *International Journal of Business and Applied Social Science*, **4**(5): 39–56.
- Annisa, W., and Purwanto. 2010. Retention P by Iron Oxide in Acid Sulphate Soil after Land Reclamation. *Jurnal Sumberdaya Lahan*, **4**(1): 47–56.
- AOAC, 2000. *Official methods of analysis (17th ed.)*. Gaithersburg, MD. USA. Association of Official Analytical Chemists.
- APHA, 2012. *Standard methods for the examination of water and wastewater*, 22nd edition edited by E. W. Rice, R. B. Baird, A. D. Eaton and L. S. Clesceri. American Public Health Association (APHA), American Water Works Association (AWWA) and Water Environment Federation (WEF), Washington, D.C., USA.
- Ardiansyah, A. R., Anggara, A., Sartimbul, A. 2022. Pemetaan Sebaran Mangrove di CMC Tiga Warna, Malang Selatan. *Buletin Oseanografi Marina*, **11**(1): 1–10.
- Arfan, A., Sanusi, W., Rakib, M. 2023. Analisis Kerapatan Mangrove dan Keanekaragaman Makrozoobenthos di Kawasan Ekowisata Mangrove Lantebung Kota Makassar. *Journal of Marine Research*, **12**(3): 493–500.
- Arief, A. 2003. *Hutan Mangrove (Fungsi dan Peranannya)*. Yogyakarta: Kanisius.
- Arifanti, V. B., Novita, N., Subarno, Tosiani, A. 2021. Mangrove deforestation and CO₂ emissions in Indonesia. *IOP Conf. Ser.: Earth Environ. Sci.* **874**, **874**(1), 012006.
- Atwell, M. A., Wuddivira, M. N., Gobin, J. F. 2016. Abiotic water quality control on mangrove distribution in estuarine river channels assessed by a novel boat-mounted electromagnetic-induction technique. *Water SA*, **42**(3): 399–407.
- Ayu, N., dan Kresnasari, D. 2023. Konsentrasi Benzalkonium Klorida Di Perairan Segara Anakan, Cilacap. *Journal of Marine Research*, **12**(3): 537–546.

- Azizah, M. 2014. Korelasi Antara Kelimpahan Vegetasi Mangrove Dan Kerang Totok Polymesoda erosa Dengan Faktor Lingkungan Di Segara Anakan, Cilacap. *Jurnal Sains Natural Universitas Nusa Bangsa*, 4(1): 76-84.
- Baderan, D. W. K. 2019. Struktur Vegetasi Dan Zonasi Mangrove Di Wilayah Pesisir Kecamatan Kwandang Kabupaten Gorontalo Utara Provinsi Gorontalo. *BIOMA: JURNAL BIOLOGI MAKASSAR*, 4(1): 20-30.
- Balai Pengujian Standar Instrumen Tanah dan Pupuk. 2023. Analisis Kimia Tanah, Tanaman, Air, Dan Pupuk (Vol. 3). Kementerian Pertanian Republik Indonesia.
- Ball, M. C. 1988. Salinity Tolerance in the Mangroves *Aegiceras corniculatum* and *Avicennia marina* I. Water Use in Relation to Growth, Carbon Partitioning, and Salt Balance. *Aust. J. Plant Physiol*, 15, 447-464.
- Bomfim, M. R., Santos, J. A. G., Costa, O. V., Conceição, J. N. da, Silva, A. A. da, Souza, C. de S., Almeida, M. da C. de. 2018. Morphology, Physical and Chemical Characteristics of Mangrove Soil under Riverine and Marine Influence: A Case Study on Subaé River Basin, Bahia, Brazil. In *Mangrove Ecosystem Ecology and Function* (pp. 133-162). InTech.
- BPAP. 1994. *Pendoman Analisis Kualitas Air dan Tanah Sedimen Periaran Payau*. Jepara: Direktorat Jendral Perikanan.
- Buamona, D., Djamaluddin, R., Windarto, A. B. 2017. Indeks Daun *Sonneratia alba* Pada Zona Tumbuh Berbeda Di Pesisir Desa Tiwoho Kabupaten Minahasa Utara. *Jurnal Pesisir Dan Laut Tropis*, 1(1): 36-40.
- Budiasih, R., Supriharyono, Muskananfola, M. R. 2015. The analysis of Organic Content, Nitrate, Phosphate in the Sediment at Mangrove *Rhizophora* dan *Avicennia* at Timbulsloko Village, Demak. *DIPONEGORO JOURNAL OF MAQUARES*, 4(3): 66-75.
- Cheablam, O., Chanklap, B. 2020. Sustainable Nipa Palm (*Nypa fruticans* Wurmb.) Product Utilization in Thailand. *Scientifica*, 2020, 1-10.
- Chen, Y., and Ye, Y. 2014. Effects of salinity and nutrient addition on mangrove *excoecaria agallocha*. *PLoS ONE*, 9(4): e93337.
- Citra, L. S., Supriharyono, Suryanti. 2020. Analisis Kandungan Bahan Organik, Nitrat dan Fosfat pada Sedimen Mangrove Jenis *Avicennia* dan *Rhizophora* di Desa Tapak Tugurejo, Semarang. *JOURNAL OF MAQUARES*, 9(2): 107-114.
- Dahdouh-Guebas, F., De Bondt, R., Abeysinghe, P. D., Kairo, J. G., Cannicci, S., Triest, L., Koedam, N. 2004. Comparative Study Of The Disjunct Zonation Pattern Of The Grey Mangrove *Avicennia marina* (Forsk.) Vierh. In Gazi Bay (Kenya). *Bulletin of Marine Science*, 74(2): 237-252.

- Daris, L., Jaya, Wahyuti, Arianto, I. F. 2023. Kajian Ekosistem Mangrove Berdasarkan Jenis dan Karakteristik Substrat di Desa Tompotana Kecamatan Kepulauan Tanakeke Kabupaten Takalar. *LUTJANUS*, **28**(1): 16–27.
- Daris, L., Massiseng, A. N. A., Jaya, Wahyuti. 2023. Identifikasi jenis mangrove berdasarkan karakteristik substrat di Kelurahan Borimasunggu, Kecamatan Labakkang, Kabupaten Pangkep. *Akuatikisle: Jurnal Akuakultur, Pesisir Dan Pulau-Pulau Kecil*, **7**(1): 93–100.
- Darwati, H., Poedjirahajoe, E., Sadono, R., Soewarno, H. B. 2022. Characteristics of Waters and Dominant Mangrove Species in Padang Tikar II, Kubu Raya District, West Kalimantan. *Jurnal Hutan Lestari*, **10**(4): 1002–1009.
- Dewi, S. K., dan Herawatiningsih, R. 2017. Soil conditions in mangrove area In Nusapati Village Mempawah Regency West Kalimantan. *Jurnal Hutan Lestari*, **5**(2): 177–182.
- Dewiyanti, I., Darmawi, D., Muchlisin, Z. A., Helmi, T. Z., Imelda, I., Defira, C. N. 2021. Physical and chemical characteristics of soil in mangrove ecosystem based on differences habitat in Banda Aceh and Aceh Besar. *IOP Conf. Ser.: Earth Environ. Sci.* **674**, **674**(1): 012092.
- Dharmawan, I. W. E., Renyaan, J., Nurdiansah, D. 2022. Mangrove zonation, community structure and healthiness in Kei Islands, Maluku, Indonesia. *Biodiversitas*, **23**(9): 4918–4927.
- Djamaluddin, R. 2018. *Mangrove Biologi, Ekologi, Rehabilitasi, dan Konservasi*. Unsrat Press.
- Dookie, S., Jaikishun, S., Ansari, A. A. 2022. Soil and water relations in mangrove ecosystems in Guyana. *Geology, Ecology, and Landscapes*, 1–25.
- Dookie, S., Jaikishun, S., Ansari, A. A. 2023. The Influence of Soil-Water Relations in Mangrove Forests on Ecosystem Balance. *World Environment*, **13**(1): 9–28.
- Fahmi, A., dan Noor, M. 2022. *Sifat dan Pengelolaan Tanah Sulfat Masam dan Gambut*. Depok: Rajawali Persada.
- Febriawan, A. 2023. Structure And Composition of The Mangrove Vegetation in The Pinotu Village Plantation Area. *Biocелеbes*, **17**(1): 27–38.
- Febrina, W. K., Marjenah, Sumaryono. 2018. Restoration of mangrove forest landscape in Babulu Laut village, sub district of Babulu, Penajam Paser Utara district. *IOP Conference Series: Earth and Environmental Science*, **144**(1): 012033.
- Hamka, M., Basyuni, M., Agustina, L. 2013. Karakterisasi Senyawa Isoprenoid dan Pertumbuhan Semai Mangrove *Avicennia alba* Bl. *Peronema Forestry Science Journal*, **1**(1): 156066.
- Hapsari, R. W., Hendrarto, B., Rudolf, M. 2017. Pemetaan Karakteristik Fisik Sedimen Di Pantai Bermangrove Di Pesisir Desa Timbulsloko, Kabupaten Demak. *JOURNAL OF MAQUARES*, **6**(3): 283–292.

- Hariphin, Linda, R., Elvi, R. P. W. 2016. Analisis Vegetasi Hutan Mangrove Di Kawasan Muara Sungai Serukam Kabupaten Bengkayang. *Protobiont*, 5(3): 66-72.
- Hariyadi. 2018. Peran Masyarakat dalam Pengelolaan Ekosistem Mangrove untuk Mitigasi Bencana: Studi di Segara Anakan, Kab. Cilacap. *Kajian*, 23(1): 43-61.
- Harun, M. K., Anwar, S., Putri, E. I. K., Arifin, H. S. 2020. Sifat Kimia Dan Tinggi Muka Air Tanah Gambut Pada Tiga Tipe Penggunaan Lahan Di Fisiografi Kubah Gambut Dan Rawa Belakang Khg Kahayan-Sebagau. *Jurnal Hutan Tropis*, 8(3): 315-327.
- Haya, N., Zamani, N. P., Soedharma, D. 2015. Analisis Struktur Ekosistem Mangrove Di Desa Kukupang Kecamatan Kepulauan Joronga. *Jurnal Teknologi Perikanan Dan Kelautan*, 6(1): 79-89.
- Heltria, S., Retiana Endang, E. G., Ramdhani, F., Yarkhasy Yuliardi, A., Janatul Magwa, R., Hermala, L., Wulanda, Y. 2024. Studi Karakteristik Oseanografi Sebagai Rekomendasi Waktu Penanaman Mangrove. *Jurnal Kelautan*, 17(1): 9-18.
- Herawati, V. E., Hartoko, A., Suminto. 2012. The suitability of Segara Anakan waters, Cilacap, Central Java as cultivation area of Polymesoda erosa based on primary productivity using satellite image. *International Journal of Bonorowo Wetlands*, 2(2): 41-51.
- Heriyanto, N. M., dan Suharti, S. 2019. Kualitas Perairan, Kesuburan Tanah Dan Kandungan Logam Berat Di Hutan Mangrove Nusa Penida, Bali. *Jurnal Penelitian Hutan Dan Konservasi Alam*, 16(1): 25-33.
- Hickmah, N., Maslukah, L., Wulandari, S. Y., Sugianto, D. N., Wirasatriya, A. 2021. Kajian Stok Karbon Organik dalam Sedimen di Area Vegetasi Mangrove Karimunjawa. *Indonesian Journal of Oceanography*, 3(4): 88-95.
- Hilmi, E., Amron, Sari, L. K., Cahyo, T. N., Siregar, A. S. 2021. The Mangrove Landscape and Zonation following Soil Properties and Water Inundation Distribution in Segara Anakan Cilacap. *Jurnal Manajemen Hutan Tropika*, 27(3): 152-164.
- Hilmi, E., Anwar, N., Santosa, I., Mahdiana, A., Rachman, T. M., Wardoyo, T. 2024. Mangrove Landscaping As An Adaptation Pattern To Reduce The Impact of Climate Change in Segara Anakan Lagoon, Cilacap Regency Indonesia. *Baghdad Science Journal*, 21(2): 338-357.
- Hilmi, E., Junaidi, T., Mahdiana, A., Prayogo, N. A., Dewi, R., Rahayu, S. 2024. The Specific Ordination And Clustering Of Mangrove Ecosystem In Segara Anakan. *Indonesian Journal of Forestry Research*, 11(1): 47-63.
- Hilmi, E., Prayogo, N. A., Junaidi, T., Mahdiana, A., Fikriyya, N. 2023. Adaptive pattern of mangrove species and the mangrove landscaping in the heavy

- metal polluted area of Eastern Segara Anakan Lagoon, Indonesia. *Biodiversitas*, **24**(5): 2927–2937.
- Hilmi, E., Sari, L.K., Amron, A. 2019. Distribusi Sebaran Mangrove dan Faktor Lingkungan pada Ekosistem Mangrove Segara Anakan Cilacap. Prosiding Seminar Nasional "Pengembangan Sumber Daya Perdesaan dan Kearifan Lokal Berkelanjutan IX" 19-20 November 2019 23–33.
- Hilmi, E., Sari, L. K., Mahdiana, A., Junaidi, T., Muslih, M., Samudra, S. R., Prayogo, N. A., Baedowi, M., Cahyo, T. N., Putra, R. R. D., Sari, F. A. 2022. Mapping of Mangrove Ecosystem In Segara Anakan Lagoon using Normalized Different Vegetation Index and Dominant Vegetation Index. *Omni-Akuatika*, **18**(2): 165–178.
- Hilmi, E., Siregar, A. S., Febryanni, L., Novaliani, R., Amir, S. A., Syakti, A. D. 2015. Struktur Komunitas, Zonasi Dan Keanekaragaman Hayati Vegetasi Mangrove Di Segara Anakan Cilacap. *OmniAkuatika*, **11**(2): 20–32.
- Hutahaean, E. E., Kusmana, C., Helmy, D., Dewi, R. 1999. Studi Kemampuan Tumbuh Anakan Mangrove Jenis *Rhizophora mucronata*, *Bruguiera gymnorrhiza* Dan *Avicennia marina* Pada Berbagai Tingkat Salinitas. *Jurnal Manajemen Hutan Tropika*, **5**(1): 77–85.
- Ilyasu, R., and Etikan, I. 2021. Comparison of quota sampling and stratified random sampling. *Biometrics & Biostatistics International Journal*, **10**(1): 24–27.
- Irawan, A., Chikmawati, T., Sulistijorini. 2021. Diversity and zonation of mangrove flora in belitung Island, Indonesia. *Biodiversitas*, **22**(5): 2981–2992.
- Irpan, F. B., Manurung, T. F., Muflihati. 2017. Mangrove Tanjung Prapat Muda-Tanjung Bakau Kabupaten Kubu Raya. *Jurnal Hutan Lestari*, **5**(1): 104–112.
- Ismail, I., Sulistiono, S., Hariyadi, S., Madduppa, H. 2019. Hubungan Antara Degradasi Mangrove Segara Anakan dan Penurunan Hasil Tangkapan Kepiting Bakau (*Scylla sp.*) di Kabupaten Cilacap, Provinsi Jawa Tengah. *Jurnal Ilmu Pertanian Indonesia*, **24**(3): 179–187.
- Ismoyo, U., Hendrarto, B., Suryanti. 2017. Analisis Bahan Organik Dengan Kualitas Tanah Terhadapukuran Daun Bakau (*Rhizophora mucronata* Lamk) Di Hutan Mangrove Desa Mojo, Ulujami, Pemalang. *Indonesian Journal of Fisheries Science and Technology (IJFST)*, **12**(2): 134–138.
- Istomo, dan Ghifary, S. 2021. Asosiasi Bakau (*Rhizophora apiculata* Blume.) dengan Jenis-Jenis Mangrove Lainnya di Pantai Bama Taman Nasional Baluran Jawa Timur JAWA TIMUR. *Journal of Tropical Silviculture*, **12**(3): 135–143.
- Juniarti, L., Jumarang, Muh. I., Apriansyah. 2017. Analisis kondisi suhu dan salinitas perairan barat Sumatera menggunakan data Argo Float. *Physics Communication*, **1**(1): 74–84.
- Karina, T. P., Arianto, W., Wiryono. 2022. Dekomposisi Serasah Daun Di Kawasan Hutan Dengan Tujuan Khusus (KHDTK) Universitas Bengkulu,

- Bengkulu Utara. *Journal of Global Forest and Environmental Science*, **2**(2): 106–112.
- Karminarsih, E. 2007. Pemanfaatan Ekosistem Mangrove bagi Minimasi Dampak Bencana di Wilayah Pesisir. *JMHT*, **13**(3): 182–187.
- Kathiresan, K., and Bingham, B. L. 2001. *Biology of mangroves and mangrove ecosystems* (pp. 81–251). Academic Press.
- Kholifi, K., Wardhani, M. K., Muhsoni, F. F. 2021. Parameter Lingkungan Habitat Mangrove Di Kecamatan Modung Kabupaten Bangkalan. *Juvenil:Jurnal Ilmiah Kelautan Dan Perikanan*, **2**(2): 76–86.
- Kinasih, A. R. N., Purnomo, P. W., Ruswahyuni. 2015. Analisis Hubungan Tekstur Sedimen Dengan Bahan Organik, Logam Berat (Pb dan Cd) Dan Makrozoobentos Di Sungai Betahwalang, Demak. *JOURNAL OF MAQUARES*, **4**(3): 99–107.
- Konsten, C. J. M., and Sarwani, M. 1990. Actual and potential acidity and related chemical characteristics of acid sulphate soils in Pulau Petak, Kalimantan. In *Papers workshop on acid sulphate soils in the humid tropics*. Bogor, Indonesia: AARD & LAWOO (pp. 30–50).
- Kresnasari, D., dan Gitarama, A. M. 2021. Struktur Dan Komposisi Vegetasi Mangrove Di Kawasan Laguna Segara Anakan Cilacap. *Jurnal Bioterdidik*, **9**(3): 202–216.
- Kusmana, C. 1991. Soil As A Factor Influencing The Mangrove Forest Communities In Talidandang Besar, Riau. *BIOTROPIA*, **4**: 9–18.
- Kusmana, C. 1997. *Metoda survey vegetasi*. Bogor: IPB Press.
- Kusumaningrum, T. E., dan Sukojo, B. M. 2014. Analisa Kesehatan Mangrove Berdasarkan Nilai Normalized Difference Vegetation Index Menggunakan Citra ALOS AVNIR-2. *GEOID*, **9**(2): 142–149.
- Lambs, L., Mangion, P., Mouglin, E., Fromard, F. 2016. Water cycle and salinity dynamics in the mangrove forests of europa and juan de nova islands, Southwest Indian ocean. *Rapid Communications in Mass Spectrometry*, **30**(2): 311–320.
- Mantiquilla, J. A., Shiao, M. S., Shih, H. C., Chen, W. H., Chiang, Y. C. 2021. A review on the genetic structure of ecologically and economically important mangrove species in the Indo-West Pacific. *Ecological Genetics and Genomics*, **18**, 1–8.
- Martuti, N. K. T., Setyowati, D. L., Nugraha, S. B. 2019. *Ekosistem Mangrove (Keanekaragaman, Fitoremediasi, Stok Karbon, Peran dan Pengelolaan)*. Lembaga Penelitian dan Pengabdian kepada Masyarakat, Universitas Negeri Semarang.

- Masruroh, L., dan Insafitri, I. 2020. Pengaruh Jenis Substrat Terhadap Kerapatan Vegetasi *Avicennia marina* di Kabupaten Gresik. *Juvenil:Jurnal Ilmiah Kelautan Dan Perikanan*, 1(2): 151-159.
- Matatula, J., Poedjirahajoe, E., Pudyatmoko, S., Sadono, R. 2019. Keragaman Kondisi Salinitas Pada Lingkungan Tempat Tumbuh Mangrove di Teluk Kupang, NTT. *Jurnal Ilmu Lingkungan*, 17(3): 425-434.
- Miththapala, S. 2008. *Mangroves Coastal Ecosystems Series (Volume 2)*. Ecosystems and Livelihoods Groups Asia, IUCN.
- Mughofar, A., Masykuri, M., dan Setyono, P. 2018. Zonasi Dan Komposisi Vegetasi Hutan Mangrove Pantai Cengkong Desa Karanggandu Kabupaten Trenggalek Provinsi Jawa Timur. *Jurnal Pengelolaan Sumberdaya Alam Dan Lingkungan (Journal of Natural Resources and Environmental Management)*, 8(1): 77-85.
- Muhaimin, M., Jumriani, Arisanty, D., Hastuti, K. P., Angriani, P. 2022. Landscape metrics analysis in the proboscis monkey habitat in Kuala Lupak Wildlife Reserve. *Jurnal Pengelolaan Sumberdaya Alam Dan Lingkungan*, 12(2): 301-316.
- Mukherjee, N., Sutherland, W. J., Khan, M. N. I., Berger, U., Schmitz, N., Dahdouh-Guebas, F., Koedam, N. 2014. Using expert knowledge and modeling to define mangrove composition, functioning, and threats and estimate time frame for recovery. *Ecology and Evolution*, 4(11): 2247-2262.
- Mulyaningsih, D., Hendrarto, B., Muskananfola, M. R. 2017. Perubahan Luas Hutan Mangrove di Wilayah Pantai Indah Kapuk, Jakarta Utara Tahun 2010-2015. *JOURNAL OF MAQUARES*, 6(4): 442-448.
- Mustafa, A., Rachmansyah, Kamariah. 2011. Karakteristik Tanah Di Bawah Tegakan Jenis Vegetasi Mangrove Dan Kedalaman Tanah Berbeda Sebagai Indikator Biologis Untuk Tanah Tambak Di Kabupaten Mamuju Provinsi Sulawesi Barat. *J. Ris. Akuakultur*, 6(1): 139-156.
- Niesterowicz, J., and Stepinski, T. F. 2016. On using landscape metrics for landscape similarity search. *Ecological Indicators*, 64: 20-30.
- Noor, Y. Rusila., Khazali, M., Suryadiputra, I. N. N. 1999. *Panduan pengenalan mangrove di Indonesia*. PHKA/WI-IP.
- Nugraha, B. A., Purnomo, P. W., Rahman, A. 2023. Effect of Lime Dolomite on The Decomposition of Mangrove Sulfic Soil Laboratory Scale. *JOURNAL OF MAQUARES*, 10(1): 49-56.
- Patang. 2013. Pengaruh Sifat Fisik Dan Kimia Tanah Terhadap Komunitas Hutan Mangrove (Kasus Di Kabupaten Sinjai). *Jurnal Galung Tropika*, 2(3): 136-141.
- Patel, A. D., Lalcheta, K., Gill, S., Tuteja, N. 2014. Salinity Tolerance of *Avicennia officinalis* L. (Acanthaceae) from Gujarat Coasts of India. In *Climate Change and Plant Abiotic Stress Tolerance* (pp. 189-208).

- Patel, N. T., Gupta, A., Pandey, A. N. 2010. Strong positive growth responses to salinity by *Ceriops tagal*, a commonly occurring mangrove of the Gujarat coast of India. *AoB PLANTS*, **2010**: plq011.
- Patty, S. I., dan Akbar, N. 2019. Sebaran Horizontal Fosfat, Nitrat dan Oksigen Terlarut di Perairan Pantai Bolaang Mongondow, Sulawesi Utara. *Jurnal Ilmu Kelautan Kepulauan*, **2**(1): 13-21.
- Pazi, A. M. M., Gandaseca, S., Rosli, N., Hamzah, A. H., Tindit, A. E., Nyangon, L. 2016. Soil pH and Carbon at Different Depth in Three Zones of Mangrove Forest in Sarawak, Malaysia. *The Malaysian Forester*, **79**(1-2): 164-173.
- Poedjirahajoe, E., Marsono, D., Wardhani, K. F. 2017. Penggunaan Principal Component Analysis dalam Distribusi Spasial Vegetasi Mangrove di Pantai Utara Pemalang. *Jurnal Ilmu Kehutanan*, **11**: 29-42.
- Polidoro, B. A., Carpenter, K. E., Collins, L., Duke, N. C., Ellison, A. M., Ellison, J. C., Farnsworth, E. J., Fernando, E. S., Kathiresan, K., Koedam, N. E., Livingstone, S. R., Miyagi, T., Moore, G. E., Nam, V. N., Ong, J. E., Primavera, J. H., Salmo, S. G., Sanciangco, J. C., Sukardjo, S., ... Yong, J. W. H. 2010. The loss of species: Mangrove extinction risk and geographic areas of global concern. *PLoS ONE*, **5**(4): e10095.
- Pratama, M. T., Zahidah, Bachtiar, E., Prasetiawan, N. R., Arief, M. C. W. 2023. Keanekaragaman Gastropoda Pada Berbagai Kondisi Kawasan Ekowisata Mangrove. *JST (Jurnal Sains Dan Teknologi)*, **12**(3): 790-803.
- Prayudha, B., Siregar, V., Ulumuddin, Y. I., Prasetyo, L. B., Agus, S. B., Suyadi, Suyarso, Salatalohi, A., Anggraini, K. 2023. Mangrove forest encroachment by *Nypa fruticans*, *Derris trifoliata*, and *Acanthus* spp. in Segara Anakan Lagoon. *IOP Conference Series: Earth and Environmental Science*, **1251**(1): 012017.
- Pribadi, R., Hartati, R., Suryono, C. A. 2009. Komposisi Jenis dan Distribusi Gastropoda di Kawasan Hutan Mangrove Segara Anakan Cilacap. *Ilmu Kelautan*, **14**(2): 102-111.
- Prihandana, P. K. E., Nurweda Putra, I. D. N., Indrawan, G. S. 2021. Struktur Vegetasi Mangrove berdasarkan Karakteristik Substrat di Pantai Karang Sewu, Gilimanuk Bali. *Journal of Marine Research and Technology*, **4**(1): 29-36.
- Prihantono, J., Nakamura, T., Nadaoka, K., Solihuddin, T., Pryambodo, D. G., Ramdhan, M., Adi, N. S., Ilham, Wirasatriya, A., Widada, S. 2023. Seasonal groundwater salinity dynamics in the mangrove supratidal zones based on shallow groundwater salinity and electrical resistivity imaging data. *Wetlands Ecology and Management*, **31**(3): 435-448.
- Primayuda, A., Suriadikusumah, A., Solihin, M. A. 2022. Identifikasi Kedalaman Pirit dan Kaitannya Terhadap Kesehatan dan Produktivitas Tanaman Kelapa Sawit (*Elaeis guineensis* Jacq.) (Studi Kasus di Perkebunan PT Sawit Sumbermas Sarana Tbk). *Jurnal Ilmu Tanah Dan Lingkungan*, **24**(1): 6-13.

- Purwono, R., dan Mustika, L. 2020. Kajian Kondisi Lanskap Pegunungan. *SABUA*, **9**(1): 59–69.
- Putri, K. A., Ulumuddin, Y. I., Maslukah, L., Wulandari, S. Y. 2024. Stok Karbon Organik Sedimen Mangrove di Laguna Segara Anakan. *Buletin Oseanografi Marina*, **13**(2): 279–290.
- Radja, C. H., Nauli, L., Toruan, L., Kangkan, A. L. 2023. Variabel Kondisi Lingkungan pada Ekosistem Mangrove di Kota Kupang. *JVIP*, **4**(1): 19–28.
- Rahman, Wardiatno, Y., Yulianda, F., Rusmana, I. 2020. Distribution of species and density status of mangrove ecosystems on the coast of West Muna Regency, Southeast Sulawesi. *Jurnal Pengelolaan Sumberdaya Alam Dan Lingkungan*, **10**(3): 461–478.
- Rahwarin, Y. Y. 2005. Komposisi Vegetasi Mangrove di Muara Sungai Siganoi Sorong Selatan-Papua. *Biota*, **10**(3): 134–140.
- Ramanathan, A. L., Singh, G., Majumdar, J., Samal, A. C., Chauhan, R., Ranjan, R. K., Rajkumar, K., Santra, S. C. 2008. A study of microbial diversity and its interaction with nutrients in the sediments of Sundarban mangroves. *Indian Journal of Marine Sciences*, **37**(2): 159–165.
- Rambu, L. P., Runtuboi, F., Loinenak, F. A. 2019. Mangrove Diversity and Distribution Based on Substrates Type in Coastal Coast of Syoribo Village East Numfor District Biak Numfor District Papua Province. *Jurnal Sumberdaya Akuatik Indopasifik*, **3**(1): 31–44.
- Rangkuti, A. Muhtadi, Cordova, M. R., Rahmawati, A., Adimu, H. E. 2017. *Ekosistem Pesisir dan Laut Indonesia*. Jakarta: PT Bumi Aksara.
- Reed, J., Deakin, L., Sunderland, T. 2014. What are “Integrated Landscape Approaches” and how effectively have they been implemented in the tropics: A systematic map protocol. *Environmental Evidence*, **4**(2): 1–7.
- Reef, R., Feller, I. C., Lovelock, C. E. (2010). Nutrition of mangroves. In *Tree Physiology* (Vol. 30, Issue 9, pp. 1148–1160).
- Reithmaier, G. M. S., Johnston, S. G., Junginger, T., Goddard, M. M., Sanders, C. J., Hutley, L. B., Ho, D. T., Maher, D. T. 2021. Alkalinity Production Coupled to Pyrite Formation Represents an Unaccounted Blue Carbon Sink. *Global Biogeochemical Cycles*, **35**(4): 1–20.
- Ridwan, M., Suryono, Azizah, R. 2018. Studi Kandungan Nutrien Pada Ekosistem Mangrove Perairan Muara Sungai Kawasan Pesisir Semarang. *Journal of Marine Research*, **7**(4): 283–292.
- Rizki, R., dan Leilani, I. 2020. Sebaran Jenis Tumbuhan Mangrove Di Teluk Buo Bungus Padang Indonesia. *Biotropika: Journal of Tropical Biology*, **8**(1): 1–7.
- Rofi'i, I., Poedjirahajoe, E., Marsono, D. 2022. Keanekaragaman dan Pola Sebaran Jenis Mangrove di SPTN Wilayah I Bekol, Taman Nasional Baluran. *Jurnal*

- Kelautan: Indonesian Journal of Marine Science and Technology*, **14**(3): 210–222.
<https://doi.org/10.21107/jk.v14i3.9293>
- Safira, N., Erniati, E., Syahrial, S., Hadinata, F. W., Anggraini, R., Ikhsan, N., Utami, R. T., Ayhuan, H. V., Ezraneti, R. 2023. Populasi Mangrove *Rhizophora stylosa* Griff. di Desa Kuala Langsa Kota Langsa: Distribusi Geografi, Struktur Demografi, Morfometrik Organ dan Karakteristik Penciri Morfometriknya. *Buletin Oseanografi Marina*, **12**(3): 347–356.
- Safiroh W.P, P. N., Nama, G. F., Komarudin, M. 2022. Sistem Pengendalian Kadar PH dan Penyiraman Tanaman Hidroponik Model Wick System. *Jurnal Informatika Dan Teknik Elektro Terapan*, **10**(1): 17–23.
- Safitri, Y., Saputro, S., Hariadi. 2017. Hubungan Laju Sedimentasi Terhadap Kerapatan Mangrove Di Pantai Pasar Banggi Kabupaten Rembang. *JURNAL OSEANOGRAFI*, **6**(4): 553–563.
- Sani, L. H., Candri, D. A., Ahyadi, H., Farista, B. 2019. Struktur Vegetasi Mangrove Alami dan Rehabilitasi Pesisir Selatan Pulau Lombok. *Jurnal Biologi Tropis*, **19**(2): 268–276.
- Sari, R. S., Wulandari, S. Y., Maslukah, L., Kunarso, Wirasatriya, A. 2022. Konsentrasi Ion Fosfat di Perairan Wisu, Ujungbatu, Jepara. *Indonesian Journal of Oceanography*, **4**(1): 88–95.
- Sartimbul, A., Nakata, H., Rohadi, E., Sari, S. H. J., Najib, M., Alisafira, S., Ikhsani, S. N., Listiyaningsih, D. 2018. Water temperature variation of Segara Anakan, Sempu Island, South Malang, Indonesia in relation to the climate variation. *IOP Conference Series: Earth and Environmental Science*, **162**(1): 012017.
- Saru, A., Amri, K., Mardi. 2017. Mangrove Structural Vegetation Connectivity with Acidity and Total Organic Materials on Sediments in Wonomulyo District of Polewali Mandar Regency. *SPERMONDE*, **3**(1): 1–6.
- Schaduw, J. N. W. 2018. Distribusi Dan Karakteristik Kualitas Perairan Ekosistem Mangrove Pulau Kecil Taman Nasional Bunaken. *Majalah Geografi Indonesia*, **32**(1): 40–49. <https://doi.org/10.22146/mgi.32204>
- Schmiegelow, J. M. M., and Gianesella, S. M. F. 2014. Absence of zonation in a mangrove forest in southeastern Brazil. *Brazilian Journal of Oceanography*, **62**(2): 117–131.
- Siallagan, E. J., Wawan, Nelvia. 2019. Hubungan Perbedaan Tinggi Muka Air Tanah terhadap Kadar Cu dan Zn Daun dan Pertumbuhan Tanaman Kelapa Sawit (*Elaeis guineensis* Jacq.) di Lahan Gambut. *J. Agrotek. Trop*, **8**(1): 17–30.
- Siddique, M. R. H., Saha, S., Salekin, S., Mahmood, H. 2017. Salinity strongly drives the survival, growth, leaf demography, and nutrient partitioning in seedlings of *Xylocarpus granatum* J. König. *IForest*, **10**(5): 851–856.

- Sofawi, A. B., Nazri, M. N., Rozainah, M. Z. 2017. Nutrient variability in mangrove soil: Anthropogenic, seasonal and depth variation factors. *Applied Ecology and Environmental Research*, **15**(4): 1983–1998.
- Sreelekshmi, S., Preethy, C. M., Varghese, R., Joseph, P., Asha, C. V., Bijoy Nandan, S., Radhakrishnan, C. K. 2018. Diversity, stand structure, and zonation pattern of mangroves in southwest coast of India. *Journal of Asia-Pacific Biodiversity*, **11**(4): 573–582.
- Su, C. J., Hsieh, S. Y., Chiang, M. W. L., and Pang, K. L. 2020. Salinity, pH and temperature growth ranges of Halophytophthora isolates suggest their physiological adaptations to mangrove environments. *Mycology*, **11**(3): 256–262. <https://doi.org/10.1080/21501203.2020.1714768>
- Sunarni, Maturbongs, M. R., Arifin, T., Rahmania, R. 2019. Zonasi Dan Struktur Komunitas Mangrove Di Pesisir Kabupaten Merauke. *Jurnal Kelautan Nasional*, **14**(3): 165–178.
- Supriyantini, E., Santoso, A., Soenardjo, N. 2018. Nitrate and Phosphate Contents on Sediments Related to the Density Levels of Mangrove Rhizophora Sp. in Mangrove Park Waters of Pekalongan, Central Java. *IOP Conference Series: Earth and Environmental Science*, **116**(1): 012013.
- Suyadi. 2009. Satu Dekade Kondisi Hutan Mangrove di Teluk Ambon, Maluku. *2012*, **8**(1): 197–203.
- Tatongjai, S., Kraichak, E., Kermanee, P. 2021. Comparative anatomy and salt management of *Sonneratia caseolaris* (L.) Engl. (Lythraceae) grown in saltwater and freshwater. *PeerJ*, **9**, 1–20.
- Tefarani, R., Martuti, N. K. T., Ngabekti, S. 2019. Keanekaragaman Spesies Mangrove dan Zonasi di Wilayah Kelurahan Mangunharjo Kecamatan Tugu Kota Semarang. *Life Science*, **8**(1): 41–53.
- Thalib, M., Baderan, D. W. K., Katili, A. S. 2021. Produksi dan Laju Dekomposisi Serasah Ceriops tagal di Cagar Alam Tanjung Panjang (The Production and Decomposition Rate of Ceriops tagal Litter in Tanjung Panjang Nature Reserve). *Jurnal Sylva Lestari*, **9**(1): 151–160.
- Tran, T. T., Takahashi, K., Nishikawa, H., Nguyen, V. H. T., Hoang, T. T., Nguyen, T. H. T., Dau, T. K., Vo, V. T., Tran, D. D. 2023. Evaluation of Mangrove Ecosystem Importance for Local Livelihoods in Different Landscapes: A Case Study of the Hau and Hoang Mai River Estuaries in Nghe An, North-Central Vietnam. *Sustainability (Switzerland)*, **15**(4): 3843.
- Upara, U., Kusen, J. D., Sondak, C. F. A., Schadow, J. N. W., Tilaar, S. O., Lasabuda, R. 2021. Struktur Komunitas Dan Zonasi Vegetasi Mangrove Desa Darunu Kecamatan Wori Kabupaten Minahasa Utara. *Jurnal Pesisir Dan Laut Tropis*, **9**(1): 65–73.

- Usman, U., Hilmi, E., Iqbal, A. 2023. The distribution of mangrove area, mangrove density, and species diversity on the North Coast of Jakarta. *Omni-Akuatika*, **19**(1): 88-104.
- Wakano, D., dan Ukaratalo, A. M. 2022. Mangrove Zonation Patterns In Passo Village, Ambon Bay, Part In Baguala District, Ambon City. *Biofaal Journal*, **3**(1): 1-11.
- Wakushima, S., Kuraishi, S., Sakurai, N. 1994. Soil Salinity and pH in Japanese Mangrove Forests and Growth of Cultivated Mangrove Plants in Different Soil Conditions. *J. Plant Res*, **107**: 39-46.
- Wang, W., Xin, K., Chen, Y., Chen, Y., Jiang, Z., Sheng, N., Liao, B., Xiong, Y. 2024. Spatio-temporal variation of water salinity in mangroves revealed by continuous monitoring and its relationship to floristic diversity. *Plant Diversity*, **46**(1): 134-143.
- Wang'ondy, V. W., Kairo, J. G., Kinyamario, J. I., Mwaura, F. B., Bosire, J. O., Dahdouh-Guebas, F., Koedam, N. 2010. Phenology of *Avicennia marina* (Forsk.) Vierh. in a Disjunctly-zoned Mangrove Stand in Kenya. *Western Indian Ocean J. Mar. Sci*, **9**(2): 135-144.
- Ward, R. D., Friess, D. A., Day, R. H., Mackenzie, R. A. 2016. Impacts of climate change on mangrove ecosystems: a region by region overview. *Ecosystem Health and Sustainability*, **2**(4): 1-25.
- Widistya, B. A., Hardiansyah, Noorhidayati. 2022. Kajian *Sonneratia caseolaris* (Rambai Padi) Di Kawasan Mangrove Desa Aluh-Aluh Besar Kabupaten Banjar Sebagai Bahan Pengayaan Konsep Keanekaragaman Hayati Biologi SMA Dalam Bentuk Booklet. *JUPEIS: Jurnal Pendidikan Dan Ilmu Sosial*, **1**(3): 70-80.
- Widodo, P., Sukarsa, Herawati, W., Hidayah, H. A., Chasanah, T., Proklamasiningsih, E. 2020. Distribution and Characteristics of *Nypa Palm* (*Nypa fruticans* Wurmb.) in Southern Part of Cilacap Regency. *IOP Conference Series: Earth and Environmental Science*, **550**(1): 012010.
- Wiens, J. A., and Moss, M. R. 2007. *Issues and perspectives in landscape ecology*. Cambridge University Press.
- Yoshikai, M., Nakamura, T., Suwa, R., Sharma, S., Rollon, R., Yasuoka, J., Egawa, R., Nadaoka, K. 2022. Predicting mangrove forest dynamics across a soil salinity gradient using an individual-based vegetation model linked with plant hydraulics. *Biogeosciences*, **19**(6): 1813-1832.
- Zabel, J., and Tschardtke, T. 1998. Does fragmentation of *Urtica* habitats affect phytophagous and predatory insects differentially? *Oecologia*, **116**: 419-425.
- Zalindri, M., dan Sastranegara, Moh. H. 2015. Struktur Komunitas Kepiting Intertidal pada Mangrove yang Terdegradasi di Segara Anakan Cilacap. *Biosfera*, **32**(3): 154-161.