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DAFTAR PUSTAKA

Aaron, K.D., A.T. Greer, P.I. Duffy, L.M. Treible & M.E. Frischer. 2025. Stratification intensity structures zooplankton functional trait composition in a continental shelf system. ICES Journal of Marine Science. 82(6): fsaf089. https://doi.org/10.1093/icesjms/fsaf089

Andrade HA, Garcia CA. 1999. Skipjack tuna fishery in relation to sea surface temperature off the southern Brazilian coast. Fisheries Oceanography. 8: 245–254.

Baba, S. & T. Matsuishi. 2015. Pacific saury fishing forecasting by using random forest. Nippon Suisan Gakkaishi. 81(1): 2–9.

Barata, A., D. Novianto & A. Bahtiar. 2011. Sebaran ikan tuna berdasarkan suhu dan kedalaman di Samudera Hindia. Ilmu Kelautan. 16(3): 165–170.

Bas, M., J. Ouled-Cheikh, L. Julia, A. Fuster-Alonso, D. March, F. Ramírez, L. Cardona & M. Coll. 2024. Fish and tips: historical and projected changes in commercial fish species' habitat suitability in the Southern Hemisphere. Science of the Total Environment. 948: 174752. https://doi.org/10.1016/j.scitotenv.2024.174752

Berdnikov, S., S. Venevsky, V. Sorokina, A. Kleshchenkov, Y. Tyutyunov, V. Kulygin, G. Kovaleva & N. Bulysheva. 2023. Physical, chemical and biological changes in the Sea of Azov as indicators of climate change and anthropogenic impact from the mid-twentieth century till now. In: International Conference on Mediterranean Geosciences Union. Springer Nature Switzerland. Cham. 113–116. https://doi.org/10.1007/978-3-031-86777-4_21

Biau, G. & E. Scornet. 2016. A random forest guided tour. TEST. 25(2): 197–227. https://doi.org/10.1007/s11749-016-0481-7

Breiman, L. 2001. Random forests. Machine Learning. 45(1): 5–32. https://doi.org/10.1023/A:1010933404324

Brill, R.W. 1994. A review of temperature and oxygen tolerance studies of tunas pertinent to fisheries oceanography, movement models and stock assessments. Fisheries Oceanography. 3: 204–216. https://doi.org/10.1111/j.1365-2419.1994.tb00098.x

Chalmers, R., A. Oosthuizen, A. Götz, A. Paterson & W.H.H. Sauer. 2014. Assessing the suitability of commercial fisheries data for local-scale marine spatial planning in South Africa. African Journal of Marine Science. 36(4): 467–480. https://doi.org/10.2989/1814232X.2014.979228

Chang, Y.J., J. Hsu, P.K. Lai, K.W. Lan & W.P. Tsai. 2021. Evaluation of the impacts of climate change on albacore distribution in the South Pacific Ocean using ensemble forecasts. Frontiers in Marine Science. 8: 731950. https://doi.org/10.3389/fmars.2021.731950

Chen, I.C., P.F. Lee & W.N. Tzeng. 2005. Distribution of albacore *(Thunnus alalunga)* in the Indian Ocean and its relation to environmental factors. Fisheries Oceanography. 14(1): 71–80. https://doi.org/10.1111/j.1365-2419.2004.00322.x

Chen, K.S., P.R. Crone & C.C. Hsu. 2010. Reproductive biology of albacore *Thunnus alalunga.* Journal of Fish Biology. 77(1): 119–136. https://doi.org/10.1111/j.1095-8649.2010.02662.x

Chicco, D. & Jurman, G. 2020. The advantages of the Matthews correlation coefficient (MCC) over F1 score and accuracy in binary classification evaluation. BMC Genomics. https://doi.org/10.1186/s12864-019-6413-7

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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Childers, J., S. Snyder & S. Kohin. 2011. Migration and behavior of juvenile North Pacific albacore *(Thunnus alalunga).* Fisheries Oceanography. 20(3): 157–173. https://doi.org/10.1111/j.1365-2419.2011.00575.x

Collette, B.B. & C.E. Nauen. 1983. FAO species catalogue. Vol. 2. Scombrids of the world. An annotated and illustrated catalogue of tunas, mackerels, bonitos and related species known to date. FAO. Rome. 137 p.

Cosgrove, R., I. Arregui, H. Arrizabalaga, N. Goni & M. Sheridan. 2014. New insights to behaviour of North Atlantic albacore tuna *(Thunnus alalunga)* observed with pop-up satellite archival tags. Fisheries Research. 150: 89–99. https://doi.org/10.1016/j.fishres.2013.10.013

Dewi, I.C., M.R. Putri & A. Setiawan. 2018. The roles of mixed layer depth in affecting chemical and biological characteristics of Makassar Straits, Indonesia. IOP Conference Series: Earth and Environmental Science. 162(1): 012003. https://doi.org/10.1088/1755-1315/162/1/012003

Dhurmeea, Z., N. Nikolic, J. Bourjea & F. Ménard. 2016. Distribution patterns of albacore tuna *(Thunnus alalunga)* in the Indian Ocean inferred from longline fisheries data. Deep-Sea Research Part II: Topical Studies in Oceanography. 113: 50–60. https://doi.org/10.1016/j.dsr2.2014.10.016

Emery, T.J., R. Noriega, A.J. Williams & J. Larcombe. 2019. Measuring congruence between electronic monitoring and logbook data in Australian Commonwealth longline and gillnet fisheries. Ocean and Coastal Management. 168: 307–321. https://doi.org/10.1016/j.ocecoaman.2018.11.003

Fereidouni, F.J., Nahavandian, S., dan Mahmoudi, N. 2020. Seasonal variations of the water column structure and estimation of the mixed layer depth based on the temperature using threshold method in Babolsar and Ramsar regions. *Journal of the Earth and Space Physics*. 46(1): 159–174. https://doi.org/10.22059/jesphys.2020.286089.1007154

Froese, R. & D. Pauly (Eds.). 2020. FishBase. *Thunnus alalunga* (Bonnaterre, 1788). Tersedia pada: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=172419#null. Diakses 15 Mei 2026.

Gallo, N.D. & L.A. Levin. 2016. Fish ecology and evolution in the world's oxygen minimum zones and implications of ocean deoxygenation. Advances in Marine Biology. 74: 117–198. https://doi.org/10.1016/bs.amb.2016.04.001

Ganachaud, A., A.S. Gupta, J.N. Brown, K. Evans, C. Maes, L.C. Muir & F.S. Graham. 2013. Projected changes in the tropical Pacific Ocean of importance to tuna fisheries. Climatic Change. 119(1): 163–179. https://doi.org/10.1007/s10584-012-0631-1

Gaube, P., C.D. Braun, G.L. Lawson, P.I. Miller, J.M. Gove, N. Queiroz, G.B. Skomal, S.J. Bograd, D.K. Briscoe, H. Arrizabalaga, R. Koppelmann, E.M. Phillips, J. Wang, E.L. Hazen & S.R. Thorrold. 2018. Mesoscale eddies influence the movements of mature female white sharks in the Gulf Stream and Sargasso Sea. Scientific Reports. 8: 4285. https://doi.org/10.1038/s41598-018-20568-2

Geng, J. & Y. Zhai. 2023. Research and application of prediction model based on random forest algorithm. In: 2023 IEEE 3rd International Conference on Data Science and Computer Application (ICDSCA). 935–938. https://doi.org/10.1109/ICDSCA59871.2023.10393439

UNIVERSITAS GADJAH MADA
Pemodelan Zona Penangkapan Ikan Tuna Albakora (Thunnus alalunga Bonnaterre 1788) di Samudra Hindia Bagian Tenggara Menggunakan Random Forest Tahun 2006â€“2019
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Giunta, V. and Ward, B., 2022. Ocean mixed layer depth from dissipation. Journal of Geophysical Research: Oceans, 127(4), p.e2021JC017904. 10.1029/2021JC017904

Hino, H., T. Kitagawa, T. Matsumoto, Y. Aoki & S. Kimura. 2019. Changes to vertical thermoregulatory movements of juvenile bigeye tuna *(Thunnus obesus)* in the northwestern Pacific Ocean with time of day, seasonal ocean vertical thermal structure, and body size. Fisheries Oceanography. 28(4): 359–371. https://doi.org/10.1111/fog.12417

Huang, H., W. Wang, J. Lv, Q. Liu, X. Liu, S. Xie, F. Wang & J. Feng. 2022. Relationship between chlorophyll a and environmental factors in lakes based on the random forest algorithm. Water. 14(19): 3128. https://doi.org/10.3390/w14193128

Humphries, N.E., D.W. Fuller, K.M. Schaefer & D.W. Sims. 2024. Highly active fish in low oxygen environments: vertical movements and behavioural responses of bigeye and yellowfin tunas to oxygen minimum zones in the eastern Pacific Ocean. Marine Biology. 171(2): 55. https://doi.org/10.1007/s00227-023-04366-2

IOTC. 2013. Albacore tuna fisheries: Status report for 2013. Indian Ocean Tuna Commission. Victoria, Seychelles.

IOTC. 2017. Executive summary: albacore. Zenodo. https://doi.org/10.5281/zenodo.3263271

IOTC. 2025. Indian Ocean Tuna Commission database. Tersedia pada: https://data.iotc.org/browser/home/. Diakses 5 Juli 2025.

Iskandar 1, I., Rao 2, S.A. and Tozuka, T., 2009. Chlorophyll-a bloom along the southern coasts of Java and Sumatra during 2006. International Journal of Remote Sensing, 30(3), pp.663-671. https://doi.org/10.1080/01431160802372309

Jagannathan, S., A. Samraj & M. Rajavel. 2012. Potential fishing zone estimation by rough cluster predictions. In: 2012 Fourth International Conference on Computational Intelligence, Modelling and Simulation. 82–87. https://doi.org/10.1109/CIMSim.2012.34

Jiang, J.J., L.X. Xu, G.P. Zhu, Z.X. Guo & W.J. Zhu. 2019. Age and growth of albacore tuna *(Thunnus alalunga)* in the North Pacific Ocean based on sectioned fin ray. Journal of Fishery Sciences of China. https://doi.org/10.11964/jfc.20171111048

Klinger, D.H., J.J. Dale, A.C. Gleiss, T. Brandt, E.E. Estess, L. Gardner, B. Machado, A. Norton, L. Rodriguez, J. Stiltner & C. Farwell. 2016. The effect of temperature on postprandial metabolism of yellowfin tuna *(Thunnus albacares).* Comparative Biochemistry and Physiology Part A: Molecular and Integrative Physiology. 195: 32–38. https://doi.org/10.1016/j.cbpa.2016.01.005

Kusmedy, B., J. Hutajulu, E.S. Husen, H. Santoso, H. Prayitno, R. Mualim, M. Hermawan, T.E. Kusumo, E. Nugraha & A. Oktavildy. 2020. Study of tunas (*Thunnus* spp.) swimming layer using tuna longliner in the Northern Indian Ocean, Indonesia. AACL Bioflux. 13(6): 3482–3492.

Lee, M.A., A.H. Vayghan, D.C. Liu & W.C. Yang. 2017. Potential and prospective seasonal distribution of hotspot habitat of albacore tuna *(Thunnus alalunga)* in the South Indian Ocean using the satellite data. In: 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS). 5747–5750. https://doi.org/10.1109/IGARSS.2017.8128313

Lee, M.A., W.C. Yang, I.C. Hung & S.Y. Teng. 2018. Predicting winter potential fishing zones of albacore tuna *(Thunnus alalunga)* using maximum entropy models and remotely sensed data in the South Indian Ocean. In: IGARSS 2018 IEEE International

UNIVERSITAS GADJAH MADA
Pemodelan Zona Penangkapan Ikan Tuna Albakora (Thunnus alalunga Bonnaterre 1788) di Samudra Hindia Bagian Tenggara Menggunakan Random Forest Tahun 2006â€“2019
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Geoscience and Remote Sensing Symposium. 957–959. https://doi.org/10.1109/IGARSS.2018.8517359

Lerner, J.E., C. Marchese & B.P. Hunt. 2022. Stable isotopes reveal that bottom-up omnivory drives food chain length and trophic position in eutrophic coastal ecosystems. ICES Journal of Marine Science. 79(8): 2311–2323. https://doi.org/10.1093/icesjms/fsac171

Lian, P. & L. Gao. 2024. Contrasting physical mechanisms of yellowfin tuna fluctuations between the western and eastern Indian Ocean. Journal of Oceanology and Limnology. 42(3): 960–971.

Lisna, H.R. Febryanti, S. Heltria, Y. Toni, F. Ramadan, et al. 2024. Estimation of the fishing ground potential based on oceanography parameters (GIS-based) of yellowfin tuna *(Thunnus albacares)* in West Sumatra waters. AACL Bioflux.

Li Jianxiong, Dai Qian, Chen Feng, et al. Study on center of gravity prediction of albacore tuna *(Thunnus alalunga)* fishing grounds in the south Pacific[J]. Haiyang Xuebao. 2024, 46(7): 100–109 doi: 10.12284/hyxb2024098

Liu, L., R. Wan, F. Wu, Y. Wang, Y. Zhu & C. Zhou. 2025. An integrative machine learning approach to understanding South Pacific Ocean albacore tuna habitat features. ICES Journal of Marine Science. 82: fsaf003. https://doi.org/10.1093/icesjms/fsaf003

Luan, J., C. Zhang, B. Xu, et al. 2018. Relationship between catch distribution of Portunid crab (Charybdis bimaculata) and environmental factors based on three species distribution models in Haizhou Bay. Journal of Fishery Sciences of China. https://doi.org/10.11964/jfc.20170610878

Lubis, M.Z. & A.P. Daya. 2017. Pemetaan parameter oseanografi fisik menggunakan citra Landsat 8 di wilayah perairan Nongsa Pulau Batam. Jurnal Integrasi. 9(1): 9–15.

Maddumage, U.S., J. Rajapaksha & J. Gunatilake. 2023. Effect of ocean circulation and chlorophyll-a concentration on yellowfin tuna catch rates in Sri Lankan logline fishery. Ceylon Journal of Science. 52(3). https://doi.org/10.4038/cjs.v52i3.8208

Mannocci, L., F. Forget, M.T. Tolotti, P. Bach, N. Bez, H. Demarcq, D. Kaplan, P. Sabarros, M. Simier, M. Capello & L. Dagorn. 2020. Predicting bycatch hotspots in tropical tuna purse seine fisheries at the basin scale. Global Ecology and Conservation. 24: e01393. https://doi.org/10.1016/j.gecco.2020.e01393

Menkès, C.E., V. Allain, M. Rodier, F. Gallois, A. Lebourges-Dhaussy, B.P. Hunt, H. Smeti, M. Pagano, E. Josse, A. Daroux & P. Lehodey. 2015. Seasonal oceanography from physics to micronekton in the Southwest Pacific. Deep-Sea Research Part II: Topical Studies in Oceanography. 113: 125–144. https://doi.org/10.1016/j.dsr2.2014.10.026

Mondal, S. & M.A. Lee. 2023. Habitat modeling of mature albacore *(Thunnus alalunga)* tuna in the Indian Ocean. Frontiers in Marine Science. 10: 1258535. https://doi.org/10.3389/fmars.2023.1258535

Mondal, S., Y.C. Lan, M.A. Lee, Y.C. Wang, B. Semedi & W.Y. Su. 2022a. Detecting the feeding habitat zone of albacore tuna *(Thunnus alalunga)* in the southern Indian Ocean using multisatellite remote sensing data. Journal of Marine Science and Technology. 29(6): 794–807. https://doi.org/10.51400/2709-6998.2559

Mondal, S., Wang, Y.-C., Lee, M.-A., Weng, J.-S., & Mondal, B. K. 2022b. Ensemble three-dimensional habitat modeling of Indian Ocean immature albacore tuna (*Thunnus alalunga*) using remote sensing data. *Remote Sensing*, 14(16), 3902. https://doi.org/10.3390/rs14163902

UNIVERSITAS GADJAH MADA
Pemodelan Zona Penangkapan Ikan Tuna Albakora (Thunnus alalunga Bonnaterre 1788) di Samudra Hindia Bagian Tenggara Menggunakan Random Forest Tahun 2006â€“2019
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Moriarty, P.E., T.E. Essington, J.K. Horne, J.E. Keister, L. Li, S.L. Parker-Stetter & M. Sato. 2020. Unexpected food web responses to low dissolved oxygen in an estuarine fjord. Ecological Applications. 30(8): e02204. https://doi.org/10.1002/eap.2204

Musyaffa, F. & P.C. Hsu. 2025. Detection of potential fishing zones in Aceh waters using satellite-derived sea surface temperature and chlorophyll fronts. In: Proceedings of the 46th Asian Conference on Remote Sensing (ACRS 2025): Harnessing Remote Sensing for Global Sustainability and Innovation.

Narvekar, J. & S. Prasanna Kumar. 2014. Mixed layer variability and chlorophyll-a biomass in the Bay of Bengal. Biogeosciences. 11(14): 3819–3843. https://doi.org/10.5194/bg-11-3819-2014

Nieto, K., Y. Xu, S.L.H. Teo, S. McClatchie & J. Holmes. 2017. How important are coastal fronts to albacore tuna *(Thunnus alalunga)* habitat in the Northeast Pacific Ocean? Progress in Oceanography. 150: 62–71. https://doi.org/10.1016/j.pocean.2015.05.004

Nikolic, N., I. Montes, M. Lalire, A. Puech, N. Bodin, S. Arnaud-Haond, S. Kerwath, E. Corse, P. Gaspar, S. Hollanda, J. Bourjea & W. West. 2020. Connectivity and population structure of albacore tuna across southeast Atlantic and Southwest Indian Oceans inferred from multidisciplinary methodology. Scientific Reports. 10: 15657. https://doi.org/10.1038/s41598-020-72369-w

Nikolic, N., J. Bourjea, A. Puech & F. Ménard. 2017. Trophic ecology of albacore tuna *(Thunnus alalunga)* in the western Indian Ocean. Progress in Oceanography. 151: 49–60. https://doi.org/10.1016/j.pocean.2016.12.001

Novianto, D., Ozawa, T. and Nuarsa, I.W., 2018. Study of albacore tuna *(Thunnus alalunga)* abundance using Regional Ocean Modeling System (ROMS) data in Indian Ocean. Int. J. Environ. Geosci.| Vol, 2(2), pp.76-88. Int. https://doi.org/10.24843/ijeg.2018.v02.i02.p03

Nugraha, B. & Hufiadi. 2012. Produktivitas perikanan tuna longline di Benoa. Marine Fisheries. 3(2): 135–140.

Nugroho, S.C., R.Y. Setiawan, M.D. Setiawati, S.B. Priyono, R.D. Susanto, A. Wirasatriya & R.F. Larasati. 2022. Estimation of albacore tuna potential fishing grounds in the southeastern Indian Ocean. IEEE Access. 11: 1141–1147.

Pallavi, P., D. Parthasarathy, K. Narayanan, A.B. Inamdar & S. Budakoti. 2024. Examining the principal factors that limit the chlorophyll-a concentration across coastal waters of northern Maharashtra state using a robust generalised additive model. Regional Studies in Marine Science. 77: 103693. https://doi.org/10.1016/j.rsma.2024.103693

Pan, B., J. Zhu, Q. Lin, Z. Geng, F. Wu & Y. Zhang. 2024. Study on the catch, bycatch and discard of Chinese pelagic longline fisheries in the Atlantic Ocean. Aquaculture and Fisheries. 9(2): 280–286. https://doi.org/10.1016/j.aaf.2022.03.002

Pateraki, M., D.E. Raitsos, G. Krokos, I. Theodorou & I. Hoteit. 2025. Unravelling the influence of mixed layer depth on chlorophyll-a dynamics in the Red Sea. PLoS ONE. 20(3): e0318214. https://doi.org/10.1371/journal.pone.0318214

Peterson, W.T., J.L. Fisher, J.O. Peterson, C.A. Morgan, B.J. Burke & K.L. Fresh. 2014. Applied fisheries oceanography: ecosystem indicators of ocean conditions inform fisheries management in the California Current. Oceanography. 27(4): 80–89. https://doi.org/10.5670/oceanog.2014.88

UNIVERSITAS GADJAH MADA
Pemodelan Zona Penangkapan Ikan Tuna Albakora (Thunnus alalunga Bonnaterre 1788) di Samudra Hindia Bagian Tenggara Menggunakan Random Forest Tahun 2006â€“2019
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Ping, B., Y. Meng, F. Su, C. Xue & Z. Li. 2024. Retrieval of subsurface dissolved oxygen from surface oceanic parameters based on machine learning. Marine Environmental Research. 199: 106578. https://doi.org/10.1016/j.marenvres.2024.106578

Polovina, J.J., Howell, E., Kobayashi, D.R., and Seki, M.P. 2001. *The transition zone chlorophyll front, a dynamic global feature defining migration and forage habitat for marine resources*. Progress in Oceanography, 49(1–4), pp.469–483. https://doi.org/10.1016/S0079-6611(01)00036-2

Prince, E.D. & C.P. Goodyear. 2006. Hypoxia-based habitat compression of tropical pelagic fishes. Fisheries Oceanography. 15(6): 451–464. https://doi.org/10.1111/j.1365-2419.2005.00393.x

Pruzinsky, N.M., R.J. Milligan & T.T. Sutton. 2020. Pelagic habitat partitioning of late-larval and juvenile tunas in the oceanic Gulf of Mexico. Frontiers in Marine Science. 7: 257. https://doi.org/10.3389/fmars.2020.00257

Putri, S., A. Rani, M.A. Mustapha & R. Hidayat. 2021. Mapping potential fishing zones for skipjack tuna in the southern Makassar Strait, Indonesia, using Pelagic Habitat Index (PHI). Biodiversitas. 22(7). https://doi.org/10.13057/biodiv/d220758

Rasmuson, L.K., S.D. Groth, C.A. Edwards, E.S. Anderson, M.T. Blume & K.R. Smith. 2025. Importance of near-bottom oceanographic data in modeling the distribution of eulachon bycatch in the US West Coast shrimp trawl fishery. Frontiers in Marine Science. 12: 1703566. https://doi.org/10.3389/fmars.2025.1703566

Raup, S.A., Yonvitner, Sulistiono, Zulhamsyah, A. Mashar, S. Patmiarsih & R.D. Juniar. 2023. Integration of tuna fishery data collection in the southern waters of Java (FMA-573). In: IOP Conference Series: Earth and Environmental Science. 1221(1): 012007. https://doi.org/10.1088/1755-1315/1221/1/012007

Roche, K.F., M.G.A. Ferreira & D.F. Calheiros. 2022. Influence of nutrient levels, travel time and light availability on phytoplankton chlorophyll-a concentrations in a neotropical river basin. Acta Limnologica Brasiliensia. 34: e18. https://doi.org/10.1590/S2179-975X0522

Runcie, R.M., B. Muhling, E.L. Hazen, S.J. Bograd, T. Garfield & G. DiNardo. 2019. Environmental associations of Pacific bluefin tuna *(Thunnus orientalis)* catch in the California Current system. Fisheries Oceanography. 28(4): 372–388. https://doi.org/10.1111/fog.12418

Schober, P., C. Boer & L.A. Schwarte. 2018. Correlation coefficients: appropriate use and interpretation. Anesthesia and Analgesia. 126(5): 1763–1768. https://doi.org/10.1213/ANE.0000000000002864

Scornet, E., G. Biau & J.P. Vert. 201. Consistency of random forests. Annals of Statistics. 43(4): 1716–1741. https://doi.org/10.1214/15-AOS1321

Semedi, B., S. Mondal, M.A. Lee, Y.C. Wang & Y.C. Lan. 2023. Environmental variability associated with albacore tuna habitat in the southern Indian Ocean using satellite remote sensing data. Remote Sensing. 15(4): 1048.

Song, L. & Xu, H., 2021. *A review of tuna longline catch performance*. *Journal of Fishery Sciences of China*, **28**(7), pp.925–937. https://doi.org/10.12264/JFSC2020-6002

Song, L.M., Y. Zhang, L.X. Xu, W.X. Jiang & J.Q. Wang. 2008. Environmental preferences of longlining for yellowfin tuna *(Thunnus albacares)* in the tropical high seas of the Indian

UNIVERSITAS GADJAH MADA
Pemodelan Zona Penangkapan Ikan Tuna Albakora (Thunnus alalunga Bonnaterre 1788) di Samudra Hindia Bagian Tenggara Menggunakan Random Forest Tahun 2006â€“2019
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Ocean. Fisheries Oceanography. 17(4): 239–253. https://doi.org/10.1111/j.1365-2419.2008.00476.x

Srioktoviana, S.K., M. Zainuddin, R. Hidayat, A. Yuniar, M.A. Mustapha, S.A. Farhum & Safruddin. 2024. Exploring the relationship between salinity front and the distribution and abundance of yellowfin tuna (*Thunnus albacares*) in the western Banda Sea, center of the Indonesia Coral Triangle. In: IOP Conference Series: Earth and Environmental Science. 1410(1): 012040. https://doi.org/10.1088/1755-1315/1410/1/012040

Snyder, H.T. and Erbaugh, J.T. 2020. Fishery observers address arctic fishery discards. *Environmental Research Letters*, *15*(9), p.0940c4. 10.1088/1748-9326/aba57d

Šolić, M., D. Šantić, S. Šestanović, N. Bojanić, B. Grbec, S. Jozić, A. Vrdoljak, M. Ordulj, F. Matić, G. Kušpilić & Ž.N. Gladan. 2020. Impact of water column stability dynamics on the succession of plankton food web types in the offshore area of the Adriatic Sea. Journal of Sea Research. 158: 101860. https://doi.org/10.1016/j.seares.2020.101860

Susanto, R.D., Gordon, A.L. and Zheng, Q., 2001. Upwelling along the coasts of Java and Sumatra and its relation to ENSO. Geophysical research letters, 28(8), pp.1599-1602.

Talley, L.D. 2002. Salinity patterns in the ocean. In: Encyclopedia of Global Environmental Change. Volume 1. The Earth System: Physical and Chemical Dimensions of Global Environmental Change.

Tan, M.K. & M.A. Mustapha. 2023. Application of the random forest algorithm for mapping potential fishing zones of Rastrelliger kanagurta off the east coast of peninsular Malaysia. Regional Studies in Marine Science. 60: 102881. https://doi.org/10.1016/j.rsma.2023.102881

Tangke, U., S.S. Titaheluw, R. Laisouw, H. Popa, H. Bakari, M. Suasa, M. Baba, J. Namsa, M.A. Laitupa & L.A. Shah. 2024. Dynamics of chlorophyll-a concentration in Ternate Island waters and its effect on yellowfin tuna production. In: BIO Web of Conferences. 104: 00046. https://doi.org/10.1051/bioconf/202410400046

Teo, S.L., A. Boustany, H. Dewar, M.J. Stokesbury, K.C. Weng, S. Beemer, A.C. Seitz, C.J. Farwell, E.D. Prince & B.A. Block. 2007. Annual migrations, diving behavior, and thermal biology of Atlantic bluefin tuna, *Thunnus thynnus*, on their Gulf of Mexico breeding grounds. Marine Biology. 151(1): 1–18. https://doi.org/10.1007/s00227-006-0447-5

Thierry, N.N.B., Z. Cheng, N.P. Achille, K. Richard & L. Xu. 2021. Catch per unit effort, condition factor and length-weight relationship of albacore tuna *(Thunnus alalunga),* yellowfin tuna *(Thunnus albacares)* and bigeye tuna *(Thunnus obesus)* in the longline tuna fishery in the eastern Pacific Ocean. Indian Journal of Fisheries. 68(2): 23–32. https://doi.org/10.21077/ijf.2021.68.2.87673-04

Thygesen, U.H., L. Sommer, K. Evans & T.A. Patterson. 2016. Dynamic optimal foraging theory explains vertical migrations of bigeye tuna. Ecology. 97(7): 1852–1861.

Vayghan, A.H., Lee, M.A., Weng, J.S., Mondal, S., Lin, C.T. and Wang, Y.C. 2020. Multisatellite-based feeding habitat suitability modeling of albacore tuna in the southern Atlantic ocean. Remote Sensing, 12(16), p.2515. https://doi.org/10.3390/rs12162515

Williams, A.J., V. Allain, S.J. Nicol, K.J. Evans, S.D. Hoyle, C. Dupoux, E. Vourey & J. Dubosc. 2015. Vertical behavior and diet of albacore tuna *(Thunnus alalunga)* vary with latitude

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Pemodelan Zona Penangkapan Ikan Tuna Albakora (Thunnus alalunga Bonnaterre 1788) di Samudra Hindia
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Amaranova Arfiani Khusna, Dr.rer.nat. Riza Yuliratno Setiawan, S.Kel., M.Sc.; Prof.Dr.Ir. Eko Setyobudi, S.Pi.,M.Si.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

in the South Pacific Ocean. Deep-Sea Research Part II: Topical Studies in Oceanography. 113: 154–169. https://doi.org/10.1016/j.dsr2.2014.03.010

Xie, X., Wang, J., Chen, X. And Chen, P. 2021. Study on relationship between albacore catch rate and water depth and temperature in South Indian Ocean. South China Fisheries Science, 17(5), pp.86-92.

Xing, Y., G. Li, Z. Chen & X. Wang. 2024. Mesoscale eddies and their impacts on marine ecosystem dynamics: A review. Journal of Marine Science and Engineering. 12(3): 412. https://doi.org/10.3390/jmse12030412

Xu, S. & W. Guan. 2025. The spatial-temporal distribution of habitat of Indian Ocean albacore tuna *(Thunnus alalunga)* at different life history stages. Journal of Fishery Sciences of China. 32(2): 214–226. https://doi.org/10.12264/JFSC2024-0250

Zainuddin, M., A. Farhum, Safruddin, M.B. Selamat, Sudirman, Nurdin, M. Syamsuddin, M. Ridwan & S.I. Saitoh. 2017. Detection of pelagic habitat hotspots for skipjack tuna in the Gulf of Bone-Flores Sea, southwestern Coral Triangle tuna, Indonesia. PLoS ONE. 12(10): e0185601. https://doi.org/10.1371/journal.pone.0185601

Zhang, J., D. Fan, H. He, B. Xiao, Y. Xiong & J. Shi. 2023. Forecasting albacore *(Thunnus alalunga)* fishing grounds in the South Pacific based on machine learning algorithms and ensemble learning model. Applied Sciences. 13(9): 5485. https://doi.org/10.3390/app13095485

Zhao, Y. & H.C. Yuan. 2025. Prediction of Pacific *Thunnus alalunga* fishery based on multiple channel single regression module with explainability. Acta Hydrobiologica Sinica. https://doi.org/10.7541/2025.2024.0285

Zheng, Z., A. Dai, Y. Liu & T. Li. 2022. Sustainable alginate lyases catalyzed degradation of bio-based carbohydrates. Frontiers in Chemistry. 10: 1008010. https://doi.org/10.3389/fchem.2022.1008010

Zhou, C., P. He, L. Xu, P. Bach, X. Wang, R. Wan, H. Tang & Y. Zhang. 2020. The effects of mesoscale oceanographic structures and ambient conditions on the catch of albacore tuna in the South Pacific longline fishery. Fisheries Oceanography. 29(3): 238–251. https://doi.org/10.1111/fog.12467

Zhou, D., J. Feng, W. Guo, X. Jiang, R. Jin & Z. Dai. 2018. Analysis of differential proteome in back muscle of *Thunnus alalunga* and *Thunnus albacares.* Journal of the Chinese Institute of Food Science and Technology. https://doi.org/10.16429/j.1009-7848.2018.07.034