

## DAFTAR PUSTAKA

- Allendorf, F.W dan G.H. Luikart. 2007. *Conservation And The Genetics of Populations*. Blackwell Publishing. USA. 51-55.
- Anggereini, E. 2008. Random Amplified Polymorphic DNA (RAPD), Suatu Metode Analisis DNA Dalam Menjelaskan Berbagai Fenomena Biologi. *Biospecies*. 1(2): 73-76.
- Aoyama, J., S. Wouthuyzen., M.J. Miller., T. Inagaki, dan K. Tsukamoto. 2003. Short-Distance Spawning Migration of Tropical Freshwater Eels. *Biol. Bull.* 204: 104-108.
- Arai, T. 2020. Ecology and evolution of migration in the freshwater eels of the genus *Anguilla* Schrank, 1798. *Heliyon*. 11(803) : 1-11.
- Arai, T. 2014. Do We Protect Freshwater Eels or Do We Drive Them to Extinction?. *SpringerPlus*. 3:534.
- Arai, T. 2022 Early Life History and Recruitment Processes of a Tropical Anguillid Eel *Anguilla marmorata* to the Pacific Coast, as Revealed by Otolith Sr:Ca Ratios and Microstructure. *Biology*. 11 (803): 1-12.
- Arifin, O.Z., E. Nugroho., dan R. Gustiano. 2007. Keragaman Genetik Populasi Ikan Nila (*Oreochromis niloticus*) dalam Program Seleksi Berdasarkan RAPD. *Berita Biologi*. 8(6): 456-471.
- Chandra, G., A. Saxena, dan A. Barat. 2010. Genetic diversity of two riverine populations of *Eutropiichthys vacha* (Hamilton, 1822) using RAPD markers and implications for its Conservation. *Journal of Cell and Molecular Biology*. 8 (2): 77-85.
- Cresci, A., C.M. Durif., C.B. Paris., S.D. Shema., A.B. Skiftesvik., H.I. Browman. 2020. A comprehensive hypothesis on the migration of European glass eels (*Anguilla anguilla*). *Biol Rev Camb Philos Soc*. 2(366): 1-9.
- Culley, T.M., L.E. Wallace, K.M. Gengler-Nowak dan D.J. Crawford. 2002. A Comparison of Two Methods of Calculating G<sub>st</sub>, A Genetic Measure of Population Differentiation. *American Journal of Botany*. 89(3):460-465.
- Darlina, M.N., A.R. Masazurah., P. Jayasankar., A.F.J Jamsar., dan A.MN., Siti. 2011. Morphometric and molecular analysis of mackerel (*Rastrelliger* spp) From The West Coast of Peninsular Malaysia. *Genetics and Molekular Research*. 10(3): 2078-2092.
- Elsalam, K.A.A. 2003. Bioinformatic Tools and Guideline for PCR Primer Design. *African Journal of Biotechnology*. 2(5): 91-95.

- Fahmi, M.R. 2013. *Phylogeography of Tropical Eels (Anguilla spp.) In Indonesia Waters*. Disertasi. Institut Pertanian Bogor.
- Fahmi, M.R., L Pouyaud., dan P. Berrebi. 2012. Distribution Of Tropical Eel Genus *Anguilla* In Indonesia Water Based On Semi-Multiplex Pcr. *Indonesian Aquaculture Journal*.7(2): 139-146.
- Fahmi, M.R.. 2015. Short Communication: Conservation Genetic of Tropical Eel in Indonesian Waters Based on Population Genetic Study. *Pros Sem Nas Masy Biodiv Indon*. 1(1): 38-43.
- Fishbase. 2021. *Anguilla Bicolor*. Diakses dari <http://www.fishbase.org> pada 19 Desember 2021.
- Fishbase. 2021. *Anguilla Marmorata*. Diakses dari <http://www.fishbase.org> pada 19 Desember 2021.
- Frankham, R., J.D. Ballou, dan D.A. Briscoes. 2002. *Introduction to conservation genetic*. Cambridge University Press. 107-108.
- Freyhof, J. dan M. Kottelat. 2008. *Anguilla anguilla*. In: IUCN 2009 IUCN Red List of Threatened Species. Version 2009.2. [www.iucnredlist.org](http://www.iucnredlist.org).
- Garibyan, L., dan N. Avashia. 2014. Research Techniques Made Simple: Polymerase Chain Reaction (PCR). *Journal Invest Dermatol*. 1333(3): 1-8.
- Halliburton, R. 2004. *Introduction to Population Genetics*. Pearson Prentice Hall. USA.
- Handoyo, D., dan A. Rudiretna. 2000. Prinsip Umum dan Pelaksanaan Polymerase Chain Reaction (PCR). *Unitas*. 9(1): 17-29.
- Hayuningtyas, E.P., N. Listiyowati., dan D. Aritanto. 2010. Variasi Genetik Persilangan 3 Strain Ikan Nila (*Oreochromis niloticus*) Dengan Ikan Mujair (*O. mossambicus*) Dengan Metode Randomly Amplified Polymorphic DNA (RAPD). *Proseding Forum Inovasi Teknologi Akuakultur*. 573-570.
- Hedrick, P.W. 2005. A Standardized Genetic Differentiation Measure. *Evolution*. 59(8): 1633-1638.
- Heinsbroek, L.T.N., P.L.A.V. Hoff., W. Swinkels., M.W.T. Tanck., J.W. Schrama., J.A.J Verte. 2007. Effect of Feed Composition on Life History Development in Feed Intake, Metabolism, Growth, and Body Composition of European Eel, *Anguilla anguilla*. *Aquaculture*. 267: 175-187.
- Hongbao, M.. 2005. Development Application of Polymerase Chain Reaction (PCR). *The Journal of American Science*. 1(3): 1-47.
- Huyen, K.T., H.T. Hue., N.Q. Linh.. 2021. Genetic Diversity Of Giant Mottled Eel (*Anguilla Marmorata* Quoy & Gaimard, 1824) By RAPD In Thua Thien Hue

Province, Vietnam. *Hue University Journal of Science: Techniques and Technology*. 130(2B): 29–40.

- Huyen, K.T., T.N. Ngoc., H.T. Hue., V.V. Quy., N.Q. Linh. 2022. Morphological characteristics and Population Structure of Marbled Eels (*Anguilla marmorata*) in Thua Thin Hue, Vietnam. *Journal of Applied Animal Research*. 50(1): 54-60.
- Islam, M.N., A. Basak, Ashrafullah., M.S. Alam. 2011. Genetic Diversity in Wild and Hatchery Populations of Stinging Catfish (*Heteropneustes fossilis* Blonch) Revealed by RAPD Analysis. *J.bio-sci*. 19:81-87.
- Jia, J.Q., dan P.Y. Li. 1999. Random amplified polymorphic DNA analysis of eel genome. *Cell Research*, 9: 217–223.
- Jorde, L.B. 1995. *Population Spesific Genetic Markers abd Diseases*. In : Mayer (Ed). *Moleculer Biology and Biotechnology A Comprehensive Desk Reference*. VCH Publisher Inc. New York, USA. 724-728.
- Kalinowski, S.T. 2005. Do polymorphic loci require large sample sizes to estimate genetic distances. *Heredity*. 94: 33-36.
- Katoh, M., dan M. Kobayashi. 2001. Aquaculture and Genetic Structure in the Japanese Eel *Anguilla japonica*. *UJNR Technical Report*. (30): 87–92.
- Konopinski, M. K. 2019. Shannon Diversity Index: A Call to Replace the Original Shannon’s Formula With Unbiased Estimator in the Population Genetics Studies. *PeerJ*. 94: 33-35.
- Kumari, N., dan S.K. Takhur. 2014. Randomly Amplified Polymorphic DNA- A.Brief Review. *American Journal of Animal and Veterinary Sciences*. 9(1): 6-13.
- Kumla, S., S. Doolgindachbaporn., R. Sudmoon., dan N. Sattayasai. 2012. Genetic variation, population structure and identification of yellow catfish, *Mystus nemurus* (C&V) in Thailand using RAPD, ISSR and SCAR marker. *Molecular Biology Reports*. 39(5): 5201–5210.
- Kusminies, I. I., R. Gustiano., dan Mulyasari. 2011. Karakterisasi Genetik Ikan Kelabau (*Osteochilus kelabau*) Dari Berbagai Lokasi Di Kalimantan Barat Menggunakan Metode Rapd (Random Amplified Polymorphism DNA). *Berita Biologi*. 10: 449–454.
- Lante, S., A. Tenriulo., dan N.N. Palinggi. 2012. Variasi Genetik Ikan Beronang (*Siganus Guttatus*) Asal Perairan Barru, Lampung, Dan Sorong Menggunakan Penanda RAPD (Random Amplified Polymorfism DNA). *J. Ris. Akuakultur*. 7(2): 195-204.

- Lehman, D., H. Hettwer., dan H. Taraschewski. 2000. RAPD-PCR Investigations of Systematic Relationships Among Four Species of Eels (Teleostei: Anguillidae), particularly *Anguilla anguilla* and *Anguilla rostrata*. *Marine Biology*. 137: 195–204.
- Maes, G.E. dan F.A.M. Volckaert. 2002. Clinal genetic variation and isolation by distance in the European eel *Anguilla anguilla* (L.). *Biological Journal of the Linnean Society*. 77: 509–521.
- Marui, M., T. Arai., M.J. Miller., D.J Jellyman., K. Tsukamoto. 2001. Comparison of Early Life History Between New Zealand Temperate eels and Pacific Tropical Eels Revealed by Otolith Microstructure and Microchemistry. *Mar. Ecol. Prog. Ser.* 213: 273-284.
- Miller, M. J., dan J.D. McCleave. 2018. Eels. *Encyclopedia of Ocean Sciences. Change History*. 157–167. <https://doi.org/10.1016/B978-0-12-409548-9.10773-0>.
- Mitton, JB. 2013. *Brenner's Encyclopedia of Genetics*, 2<sup>nd</sup> Edition. 3: 192-196.
- Muchsin, I., Zairion, dan N. Samliok. 2003. *Upaya Meningkatkan Keberhasilan Migrasi Anadromous – Katadromous Ikan Sidat (Anguilla spp.) di Sungai Poso Kabupaten Poso, Sulawesi Tengah*. Laporan Akhir RUT VIII. Lembaga Penelitian Institut Pertanian Bogor.
- Muhajirah, E., M.M. Kamal., N.A. Butet., A. Wibowo. 2021. Keragaman genetik giant Snakehead (*Channa micropeltes*) menggunakan penanda Polymerase Chain Reaction (PCR) di perairan Taman Nasional Seabngau, Kalimantan Tengah. *JPSL*. 11(1): 141-151.
- Muharam, E.G., I.D Buwono., dan Y. Muyani. 2012. Analisis Kekerabatan Ikan Mas Koi (*Cyprinus carpio koi*) dan Ikan Mas Majalaya (*Cyprinus carpio carpio*) Menggunakan Metode RAPD. *Jurnal Perikanan Kelautan*. 3 (3): 15-23.
- Ndobe, S. 2010. Struktur Ukuran Glass Eel Ikan Sidat (*Anguilla marmorata*) di Muara Sungai Palu, Kota Palu, Sulawesi Tengah. *Media Litbang Sulteng III*. (2): 144-150.
- Nei, M. 1987. *Molecular Evolutionary Genetics*. New York. Columbia University Press. 512.
- Nugroho, E., K. Soewardi., dan A. Kurniawirawan. 2007. Analisis Keanekaragaman Genetik Beberapa Populasi Ikan Batak (*Tor soro*) dengan Random Amplified Polymorphism DNA (RAPD). *Jurnal Ilmu-Ilmu Perairan dan Perikanan Indonesia*. 14(1):53-57.
- Parenrengi, A. 2001. *Studies on genetic variability of groupers (Genus : Epinephelus) from Indo-Malaysian water using PCR-RAPD*. Thesis master of Science. Kolej Univerisity Terenggan, University Putra Indonesia.

- Pharmawati, M. 2009. Optimalisasi Ekstraksi DNA dan PCR-RAPD pada *Grevillea* spp. *Jurnal Biologi*. 13(1): 12-16.
- Pongratz, N., L. Gerace., dan N. Michiels. 2002. Genetic differentiation within and between populations of a hermaphroditic freshwater planarian. *Heredity*. 89: 64–69.
- Pratiwi, E. 1998. Mengenal Lebih Dekat Tentang Perikanan Sidat (*Anguilla* spp.). *Warta Penelitian Perikanan Indonesia*. 4(4): 8-12.
- Radona, D., D.T Soelistyowati., R. Gustino., O. Carman., I.I. Kusmini., S. Sundari. Ragam Genotipe Ikan Tengadak, *Barbonymus schwanefeldii* (Bleeker 1854) Persilangan Populasi Jawa dan Kalimantan Berdasarkan RAPD. *Jurnal Riset Akuakultur*. 11(2): 99-105.
- Ringuet, S., F. Muto., dan C. Raymakers. 2002. Eel : Their Harvest and Trade in Europe and Asia. *Traffic Bulletin*. 19(2).
- Robinet, T., dan E. Feunteun. 2002. First Observations of Shortfinned *Anguilla bicolor bicolor* and Longfinned *Anguilla marmorata* Silver Eels In the Reunion Island. *Bulletine Fr. Piscic*. 364: 87-95.
- Rocco, L., I.V. Valentino., G. Scapigliati. 2014. RAPD-PCR Analysis for molecular characterization and Genotoxic Studies of a New Marine Fish Cell Line Derive From *Dicentrarchus labrax*. *Cytotechnology*. 66 : 383-393.
- Roesma, D.I., D.H. Tjong., W. Munir., A.V. Agesi., dan A. Chornelia. 2017. Genetic diversity of *Tor douronensis* (Pisces: Cyprinidae) in West Sumatra, Indonesia. *Biodiversitas*. 18(3): 1018-1025.
- Santoso, B.I.P., D. Muthmainnah., N.K. Suryati., A.Bintaro., D. Apriyanti., R.S. Junianto., Y.P. Pamungkas. 2015. *Kajian Bioekologi dan Lingkungan Perikanan Sidat (Anguilla spp.) di Bengkulu dan Cilacap*. Balai Penelitian Perikanan Umum. Badan Penelitian dan Pengembangan Kelautan dan Perikanan Kementerian Kelautan dan Perikanan.
- Sari, N.P.M. 2017. *Variasi Genetik Glass Eels Anguilla Spp. Yang Bermigrasi Ke Beberapa Muara Sungai Di Pulau Pagai Utara Kepulauan Mentawai Menggunakan Teknik RAPD (Random Amplified Polymorphic DNA)*. Skripsi. Fakultas Matematika dan Pengetahuan Alam. Universitas Andalas.
- Schoch. 2020. *NCBI Taxonomy: a comprehensive update on curation, Resources and Tools*. Database (Oxford).
- Setiati, N., Partaya, dan N. Hidayah. 2010. The use of two pairs primer for CO1 gene amplification on traded stingray at fish auction Tasik Agung Rembang. *Journal of Physics: Conference Series*. 1567: -5.

- Setyono, B. D. H., M. Junaidi., M. Marzuki., P. Paryono., dan F. Azhar. 2018. Potency of Eel *Anguilla marmorata* in North Lombok Regency, West Nusa Tenggara Province. *AQUASAINS: Jurnal Ilmu Perikanan Dan Sumberdaya Perairan*. 6(2): 589–596.
- Shearer, T. L., dan M.A. Coffroth. 2008. Barcoding corals: Limited by interspecific divergence, not intraspecific variation. *Molecular Ecology Resources*. 8(2): 247–255.
- Shen, K.N., dan W.N. Tzeng. 2007. Population Genetic Structure of the Year-Round Spawning Tropical Eel, *Anguilla reinhardtii* in Australia. *Zoological Studies*. 46(4): 441-453.
- Silfvergrip, A.M.C. 2009. *CITES Identification Guide to the Freshwater eels (Anguillidae)*. The Swedish Environmental Protection Agency. Stockholm. 16-27.
- Stapley, J., P.G.D. Feulner., S.E. Johnston., A.W. Santure., C.M.Smadja. 2017. Recombination: the Good, the Bad, and the Variable. *Phil. Trans. R. Soc. B*. 372: 1-2.
- Sugeha, H.Y dan Arai, T. 2010. Contrasting Morphology, Genetic, and Recruitment Season of *Anguilla marmorata* Glass Eels from Northern, Western, and Central Sulawesi Island, Indonesia. *Ilmu Kelautan*. 1:1-19.
- Sugeha, H.Y., S.R. Suharti., S. Wouthuyzen., dan K. Sumadhiharga. 2008. Biodiversity, distribution, and abundance of the tropical anguillid eels in the Indonesian Waters. *Marine Research in Indonesia*. 33(2): 129-138.
- Suryono, T., dan M. Badjoeri. 2013. Kualitas Air Pada Uji Pembesaran Larva Ikan Sidat (*Anguilla* spp.) Dengan Sistem Pemeliharaan Yang Berbeda. *Limnotek*. 20(2): 169 – 177.
- Syahputra, A., K.H. Mutaqin., T.A. Damayanti. 2016. Komparasi Metode Isolasi DNA Patogen Antraknosa dan Bulai untuk Deteksi PCR. *J Fitopatol Indones*. 12 (4) : 124–132.
- Syaifullah, S., N.P.M. Sari., D.H. Tjong., Z.A. Muchlisin. 2019. Species Composition of Eels Larvae (*Anguillidae*) in Mentawai Island waters, Indonesia based genetic data. *IOP Conf. Ser.: Earth Environ. Sci*. 348 : 1-6.
- Syaifullah, S., S. Luqyana., D.H. Tjong., I. J. Zakaria., D.I. Roesma. 2022. Haplotype network of Three species of *Anguilla* (freshwater eels) in West Sumatra, Indonesia , based on cytochrome. *AAFL Bioflux*. 2(15): 774-787.
- Tagaki, M., dan T. Nabuhikoi. 1995. Rando, Amplified Polymorphic DNA (RAPD) for Identification of Tree Species of *Anguilla*, *A. japonica*, *A. australis*, and *A. bicolor*. *Fisheries Science*. 61(5): 884-885.

- Tamura, K., J Dudley, M. Nei., dan S. Kumar. 2007. Mega4 Molekuler Evolutionary Genetics Analysis (MEGA) software version 4.0. *Mol. Biol. Evol.* 24(8):1596–1599.
- Tesch, F.W., P. Bartsch., R. Berg, O. Gabriel., I.W. Henderonn., A. Kamastra., M. Kloppmann., L.W. Reimer., K. Soffker., T. Wirth. 2003. *The Eel*. White RJ. penerjemah; Thorpe JE. editor. German (ID). Penerbit Blackwell Publishing Company. Terjemahan dari : The Eel. Ed ke-3.
- Toro, M., dan A. Caballero. 2005. Characterization and conservation of genetic diversity in subdivided populations. *Phil. Trans. R, Soc.* 360: 1367-1378.
- Utomo, A.H.P., T.B. Pramono., H.T. Soedibya., P. Sukardi., dan H. Syakuri. 2020. Analisis Polimorfisme DNA Ikan Gabus (*Channa striata*) Berbeda Ukuran Menggunakan Teknik RAPD. *Sainteks.* 17(2): 133-143.
- Wadgyamar, S.M., R. MacTavish., J.T. Anderson. 2019. Evolutionary Consequences of Climate Change. *Ecosystem Consequences of Soil Warming.* 29-59.
- White, EM., B. Knights. 1997. Environmental factors affecting migration of the European eel in the Rivers Severn and Avon, England. *Journal of Fish Biology* 50(5): 1104– 111.
- Yamamichi, H., dan H. Innan. 2012. Estimating the Migration Rate From Genetic Variation Data. *Heredity.* 108: 362-363.
- Yeh, F. C., R.C.B.J. Yang., Z.H. Boyle., J.X.Y. Mao. 1999. POPGENE 1.31. The User Friendly Shareware for populations Genetics Analysis. *Molecular Biology and Biotechnology Centre.* University of Alberta. Canada. 1-8.
- Yoon, J.M. 2015. Differences and Variations among *Anguilla japonica* , *Muraenesox cinereus* and *Conger myriaster* from the Yellow Sea, *Dev. Reprod.* 19(3): 163– 166.
- Yuenleni. 2019. Langkah-langkah Optimasi PCR. *Indonesia Journal of Laboratory.* 1(3): 51-56.