

DAFTAR PUSTAKA

- Affandi, R., Budiardi, Irawan, Azbas. 2013. Pemeliharaan ikan sidat dengan sistem air bersirkulasi. *Jurnal Ilmu Pertanian Indonesia*, 18 (1): 55-60.
- Andriani, D., Masyitha, D., Zainuddin, dan Fitriani. 2017. Struktur Histologi Kulit Ikan Gabus (*Channa striata*). *JIMVET*. Fakultas Kedokteran Hewan Universitas Syiah Kuala. 01(3): 432-438.
- Arai T., Limbong D., Otake T., Tsukamoto K. 1999. Metamorphosis and inshore migration of tropical eels *Anguilla* spp, in the Indo-Pacific. *Marine Ecology Progress Series*. 182: 283-293.
- Arasu, A., Kumaresan, V., Sathyamoorthi, A., Palanisamy, R., Prabha, N., Bhatt, P., Roy, A., Thirumalai, MK., Gnanam, AJ., Pasupuleti, M., Marimuthu, K and Arockiaraj, J. 2013. Fish lily type lectin-1 contains β -prism 2 architecture: immunological characterization. *Molecular Immunology*. 56: 497-506.
- [AOAC] Association of Official Analytical Chemist. 2005. *Official Method of Analysis of The Association of Official Analytical of Chemist*. Arlington, Virginia, USA: Association of Official Analytical Chemist, Inc.
- Aoyama J. 2009. Life history and evolution of migration in Catadromous Eels (Genus *Anguilla*). *Aqua Biosci. Monogr.* 2, 1–42 10.5047.
- Balasubramanian S, Baby Rani P, Arul Prakash A, Prakash M, Senthilraja P, Gunasekaran G. 2012. Antimicrobial properties of skin mucus from four freshwater cultivable fishes (Catla catla, Hypophthalmichthys molitrix, Labeo rohita and Ctenopharyngodon idella). *AJMR*. 6(24): 5110–20.
- Bertin, L. 1956. *Eels-A Biological Study*, 192 pp. London: Cleaver-Humer Press.
- Bob McDowall. 2007. *Freshwater fish-Evolution and characteristics*. Encyclopedia of New Zealand, <http://www.TeAra.govt.nz/en/diagram/11104/eel-life-cycle> (accessed 6 August 2019)
- Bouchereau, J.L., C. Marques, P. Pereira, O. Guelorget, Y. Vergne. 2009. Food of the European ell *Anguilla Anguilla* in the Mauguio lagoon (Mediterranean, France). *Journal of Acta Adriatica*, 50(2): 159-170.
- Burgalassi, S., L. Panichi, R. Bernicchi, U. Urbano, and M.F. Saettone. 1997. Eel skin as a model substrate for mucoadhesion studies. *S.T.P. Pharma Sciences*. 7 (2): 129-134.
- Burhanuddin, A.I. 2014. *Ikhtiologi, Ikan dan Segala Aspek Kehidupannya*. Deepublish, Yogyakarta.

- Christian K., Elisabeth Y., Gerrit T., Vibeke H., Sigurd H., Sven M., Aleksei K. 2018. *Atlantic salmon skin barrier functions gradually enhance after seawater transfer*. *Scientific Reports* volume 8, Article number: 9510.
- Costa, S.D., J.C. Lobon. 2008. Diel feeding activity and intensity in the European eel *Anguilla anguilla* (L.) during annual cycle in a Cantabrian stream. *Journal of Knowledge and Management of Aquatic Ecosystems*, 1(1): 1
- Davey, A. J. and Jellyman, D. J. 2005. Sex determination in freshwater eels and management options for manipulation of sex. *Reviews in fish biology and fisheries*, 15(1-2):37–52.
- Douglas S. Fudge, Nimrod L., Scott C., and John M. Gosline. 2005. Composition, morphology and mechanics of eel skin slime. *Journal of Experimental Biology*. 208: 4613-4625; doi: 10.1242/jeb.01963.
- Dou, S.-Z., Yamada, Y., Okamura, A., Shinoda, A., Tanaka, S., Tsukamoto, K. 2008. *Temperature influence on the spawning performance of artificially matured Japanese eel, *Anguilla japonica*, in captivity*. *Environmental biology of fishes*, 82 (2) : 151–164.
- Durif C. Dufour S, Elie P. 2005. The silvering process of *Anguilla anguilla*: a new classification from the yellow resident to the silver migrating stage. *Journal of Fish Biology* 66:1.025–1.043.
- Durif CMF, van Ginneken V, Dufour S, Müller T, Elie P. 2009. Seasonal evolution and individual differences in silvering eels from different locations. In: van den Thillart G, Dufour S, Rankin JC (Eds.). *Spawning migration of the European eel*. *Springer Science*. pp. 13-38.
- Esteban M. A. 2012. An overview of the immunological defenses in fish skin. *ISRN Immunol*. 853470 10.5402/2012/853470
- Fahmi, M. R. 2015. Short Communication: Conservation genetic of tropical eel in Indonesian waters based on population genetic study. *Prosiding Seminar Nasional Masyarakat Biodiversitas Nasional*. Balai Riset dan Pengembangan Budidaya Ikan Hias. 1 (1) : 38-43.
- Fudge, D., & Schorno, S. 2016. *The Hagfish Gland Thread Cell: A Fiber-Producing Cell Involved in Predator Defense*. *Cells*, 5(2), 25. doi:10.3390/cells5020025.
- Ghattas, S.M., Yanai, Tokuma. 2010. Light Microscopical Study on the skin of European Eel (*Anguilla anguilla*). *World Journal of Fish and Marine Science* 2 (3) : 152-161.
- Harris, J.E. and Hunt, S. 1975. The Fine Structure of the Epidermis of Two Species of Salmonids Fish, the Atlantic Salmon *Salmo salar*, and the

Brown Trout, *Salmo trutta*. II. Mucous Cell. *Cell and Tissue Research* 163, 535-543.

- Harrison, A. J., Walker, A. M., Pinder, A. C., Briand, C., and Aprahamian, M. W. 2014. A review of glass eel migratory behaviour, sampling techniques and abundance estimates in estuaries: implications for assessing recruitment, local production and exploitation. *Reviews in fish biology and fisheries*, 24(4):967–983.
- Haryono, H., Wahyudewantoro, G. 2017. Pemetaan habitat ruaya benih ikan sidat (*anguilla bicolor*) dan potensinya di pantai selatan jawa. *Omni-Akuatika*, 12(3).
- Herianti, I. 2005. Rekayasa lingkungan untuk memacu perkembangan ovarium ikan sidat (*anguilla bicolor*). *Oseanologi dan Limnologi*, 37:25–41.
- Huertas, M, Scott, A.R, Hubbard, P.C., Canario, A.V.M. & Cerda, J. 2006. European eels (*Anguilla anguilla* L.) stimulate gonadal development males: possible involvement of chemical communication. *Mini Review - Gen. Comp.* 147:304-313.
- Hulbert, W. C. & Moon, T. W. 1978. The potential for lactate utilisation by red and white muscle of eel *Anguilla rostrata*. *Can. J. Zool.* 56, 128-135.
- Inge Botius & Jan Boétius. 1985. Lipid and protein content in *Anguilla anguilla* during growth and starvation. *Fisheries and Marine journal*, Charlottenlund Castle, DK-2920 Charlottenlund, Denmark. Dana, vol. 4, pp. 1-17, 1985.
- Jellyman, D.J. 1989. Diet of two species eel (*Anguilla* spp.) in Lake Pounui, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 23(1): 1-10.
- Kapoor, B.G. dan B. Khanna. 2004. *Ichthyology Handbook*. Narosa Publishing House, India.
- Kim, W. S., Yoon, S. J., Kim, J. W., Lee, J. A., and Lee, T. W. 2006. *Metabolic response under different salinity and temperature conditions for glass eel anguilla japonica*. *Marine Biology*, 149(5):1209–1215.
- Laflamme, S., Côté, C., Gagnaire, P.-A., Castonguay, M., Bernatchez, L. 2012. *RNA/DNA ratios in American glass eels (Anguilla rostrata): evidence for latitudinal variation in physiological status and constraints to oceanic migration? Ecology and Evolution*, 2 (5), 875–884. doi:10.1002/ece3.212.
- Lestari, N.S., Rachmawati, F.N., Susilo, U. 2017. Perubahan Kadar Protein dan Status Lipostatik *Anguilla Bicolor* Stadia *Silver* yang dipelihara pada Salinitas yang Berbeda. *Scripta Biologica journal*. Volume 4 (1): 41–45.

- Lewis and clarkcc. 2016. *The Amazing American Eel: A Journey from the Sargasso Sea*. Published 01/22/2016.
- Lin, X.; Zhang, W. N.; Lin, S. G.; Jiang, D. P. & Wang, S. K. 2008. Type and distribution of mucous cells in skin, gills and digestive tracts of *Anguilla anguilla*. *Fujian J. Agric. Sci.*, 2008(1):39-43
- Lin, X. J.; Peng, X. L. & Qiao, Z. G. 2010. Studies on the types, distribution and secretion of mucous cells in the skin and gill of *Silurus asotus*. *J. Shanghai Ocean Univ.*, 19(6):751-5
- Leonard, J.B., R.G. Summers. 1976. The ultrastructure of the integument of the American Eel, *Anguilla rostrata*. *Cell Tiss.* 171:1-30.
- Lucas, M. C., and E. Baras. 2001. *Migration of Freshwater Fishes*. Blackwell Science. Oxford.
- McKinnon, L. J. 2006. *A Review of Eel Biology: Knowledge and Gaps*. EPA Victoria and Audentes Investments Pty, Ltd. Australia.
- Miller MJ., Kimura S., Friedland KD., Knights B., Kim H., Jellyman JD., Tsukamoto K. Riview of Ocean-atmospheric Factors in the Atlantic and Pacific Oceans Influencing Spawning and Recruitment of Anguillid eel. In: Haro A, Avery T, Beal K, Cooper J, Cunjak R, Dadswell M, Klauda R, Moffitt C, Rulifson R, Smith K (eds). *Challenges for Diadromous Fishes in a Dynamic Global Environment*. American Fisheries Society Symposium Publication. Bethesda, Maryland. 2009, in press.
- 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. ISSN: 1979-5971.
- Ndobe Samliok. 2012. *Struktur ukuran glass eel ikan sidat (Anguilla marmorata) di muara sungai palu, kota Palu, Sulawesi Tengah*. Media litbang sulteng. 3(2): 144–150.
- Nick Upton. 2016. Uropean eel (*Anguilla anguilla*) elver, part of a shipment prepared by UK Glass Eels for transport to Wales for a reintroduction project, Gloucester, UK.
- Päkk, P., P. Hussar, T. Järveots, and T. Paaver. 2011. Club cells active role in epidermal regeneration after skin hyperplasia of koi carp *Cyprinus carpio*. *Aquaculture, Aquarium, Conservation & Legislation International Journal of the Bioflux Society*. 4(4): 455-462.
- Palstra A. 2006. Energetic requirements and environmental constraints of reproductive migration and maturation of European silver eel (*Anguilla anguilla* L.). Dissertation, University of Leiden.

- Patil R N, J S Kadam, J R Ingole, T V Sathe, A D Jadhav. 2015. Antibacterial activity of fish mucus from *Clarias batrachus* (Linn .) against selected microbes. *Biolife*. 3(4): 788–91.
- Pickering,A.J. 1974. The Distribution Of Mucous Cells In The Epidermis Of The Brown Trout, *Salmo trutta* L. and the Char, *Salvelinus alpinus* L. *Journal of Fish Biology* 6, 111-118.
- Rakers, S., Lars, N., Dieter, S., Charli, K., Schaubert, J., Kristina Sundell, K. 2013. Antimicrobial peptides (AMPs) from fish epidermis: perspectives for investigative dermatology. *JID*. 133(5): 1140– 9.
- Rao Vengkades, Marimuthu Kasi, Kupusamy T, Rathinam X, Arasu M V, AlDhabi N A et al. 2015. *Defense properties in the epidermal mucus of different freshwater fish species*. *AACL Bioflux*. 8(2): 184-92.
- Rinindar MI, Tia ZB, Abdul H, Sugito, Herrialfian. 2015. Analisis Proksimat Kadar Lemak Ikan Nila yang Diberi Suplementasi Daun Jaloh yang Dikombinasikan dengan Kromium dalam Pakan setelah Pemaparan Stres Panas. *Jurnal Medika Veterinaria*. 9(1), pp. 60-63.
- Ritonga, T. P. T. 2014. *Respons benih ikan sidat (Anguilla bicolor bicolor) terhadap derajat keasaman (ph)*.
- Rosenthal, G.G. & Lobel, PS. 2006. *Communication*. - In: *Behaviour and physiology of fish* (Sloman, K.A., Wilson, R.W. & Balshine, S., eds). Elsevier, San Diego, CA, p. 39-78.
- Rupasinghe, H dan M. V. E. Attygalle. 2006. Food and feeding of brown-stage eels of *Anguilla bicolor* in the Bolgoda Estuary. *Vidyodaya Journal of Science*. Vol. 13: 1-8.
- Senturk, G. Erkanli., Canilloğlu, Y. Ersoy. 2014. *Which Histochemical Staining Technique Should I Choose for Biological Specimens*. Microscopy: advances in scientific research and education (A. Méndez-Vilas, Ed.).
- Setiawan AN, Wylie MJ, Forbes EL, Lokman PM. 2012. The Effects 11-ketotestosterone on occupation of downstream location and seawater in the New Zealand shortfinned eel, *Anguilla australis*. *Zoological Science* 29(1): 1-5.
- Sheehan, D.C., and Hrapchak, B.B. 1987. *Theory And Practice Of Histotechnology, 2nd Edition*. Battelle Memorial Institute. Columbus. OH.
- Sugeha, H. Y., S. R. Suharti., S. Wouthuyzen., K. Sumadhiharga. 2008. Biodiversity, Distribution and Abundance of the Tropical Anguillid Eels in The Indonesian Waters. LIPI-Oceanografi. Jakarta. *Jurnal. Marine Research in Indonesia*. ISSN 0079-0435. 33 (2) : 129-137.

- Sugeha, H.Y., M.U. Genisa. 2015. External and internal morphological characteristics of glasseels *Anguilla bicolor bicolor* from the Cibaliung River Estuary, Banten, Indonesia. *Jurnal Oseanologi dan Limnologi Indonesia*, 41(1): 37-48.
- Tesch, F.W. 2003. *The Eel Third edition*. Blackwell Publishing Company. London.
- Tesch, F.W., 1977. *The Eel*. Biology and Management of Anguillid Eels. Chapman and Hall, London.
- Van Oosten, J. 1957. The skin and scales. In *The Physiology of Fishes*, Vol. 1. *Metabolism* (M. E. Brown, ed.), pp. 207-244. New York: Academic Press.
- Versnoren BJ, Goemans G, Belpaire C, Janssen CR. 2004. Vitellogenin content in European eel (*Anguilla anguilla*) in Flanders, Belgium. *Environmental Pollution* 128(3): 363-371.
- Widyasari R A H. 2013. Disain terpadu pengembangan industri perikanan sidat Indonesia (*Anguilla* spp) berkelanjutan di Palabuhanratu Kabupaten Sukabumi Provinsi Jawa Barat [thesis]. Institut Pertanian Bogor.
- Yang, S., Fu, H. M., Xiao, Q., Liu, Q., Wang, Y., Yan, T. M., Zhao, L. 2019. The Structure of the Skin, Types and Distribution of Mucous Cell of Yangtze Sturgeon (*Acipenser dabryanus*). *International Journal of Morphology*, 37(2), 541–547. doi:10.4067/s0717-95022019000200541
- Zonneveld N, Huisman EA, Boon JH. 1991. *Prinsip-prinsip Budidaya Ikan*. Gramedia. Jakarta.
- Zuchelkowski, E.M., C.A. Pinkstaff and D.E. Hinton. 1985. Mucosubstance Histochemistry in Control and Acid-Stress Epidermis of Brown Bull Head. *Anatomical Record Journal.*, 212: 327-335.