

DAFTAR PUSTAKA

- Adhani, R., dan Husaini. 2017. Logam Berat di Sekitar Manusia. Lambung Mangkurat University Press. Banjarmasin.
- Ali, H., Khan, E., Sajad, M.A., 2013. Phytoremediation of Heavy Metals-Concepts and Applications. *Chemosphere*. **91** 869-881.
- Almeida, J.A., Barreto, R.E., Novelli, L.B., Castro, F.J., Moron, S.E. 2009. Oxidative Stress Biomarkers and Aggressive Behavior in Fish Exposed to Aquatic Cadmium Contamination. *Neotropical Ichthyology*. Vol (7):103 - 108.
- Ambreen, F, and Javed, M. 2016. Effects of 30 Day Sub-Lethal Exposure of Cadmium and Lead Mixture on DNA Damage in Fish. *The Journal of Animal & Plant Sciences*. **26** (3): 674-679.
- Andersen, O., and Klungland, H. 1993. The Salmon GnRH Encoding Gene in Teleost Fish. *International Review of Cytology*, **147**: 165-191.
- Aryulina, D., Muslim, C., Manaf, S., Winarni, E.W. 2006. Biologi 3. Jakarta. ESIS. 356 hlm.
- Asmawi, S. 1983. Pemeliharaan Ikan Dalam Keramba. PT.Gramedia. Jakrata.
- ATSDR. 2013. *Toxicological Profile For Endosulfan*. Atlanta, GA: Agency for Toxic Substances and Disease Registry.
- Bernier, N., Kraak, G., Farrel., Brauner. 2009. *Fish Neuroendocrinology in Fish Physiology* Vol 28. Academic Press. London.
- Bhagawati, A.D.M.N., dan Nuryanto, A. 2009. Penelusuran Status Species Tiga Jenis Ikan Nilem Hasil Budidaya di Kabupaten Banyumas Berdasarkan Karakter Morfologi. *Prosiding Nasional III Taksonomi Fauna Indonesia dan Konggres II MTFI, LIPI*. Cibinong Bogor, 10-11 November 2009.
- Branco, G. S., Melo, A. G., Ricci, J.M.B., Digmayer, M., De Jesus, L.W.O., Habibi, H. R., Nobrega, R.H. 2018. Effect of GnRH and The Dual Regulatory Actions of GnRH in The Pituary Explants and Brain Slice of *Astyanax Altiparanae* Males. *General and Comparative Endocrinology*. In Press.
- Brodeur,J.C., C. Daniel,A.C. Richard, Hontela,A.1998. In-Vitro Response to ACTH of the Interrenal Tissue of Rainbow Trout (*Oncorhynchus mykiss*) exposed to Cadmium. *Aquat Toxicol*, **42**:103-113p
- Chandra, P. and A. R. Khuda-Bukhsh. 2004. Genotoxic Effects Of Cadmium Chloride And Azadirachtin Treated Singly And In Combination In Fish. *Ecotoxicology and Environmental Safety*. **58**:194-201p
- Chinabut, S., Chanratchakool, P., Primpol, M. 1991. Histopathological studies of infected walking catfish, *Clarias macrocephalus* Gunther. In *Seminar on Fisheries 1991, Bangkok (Thailand)*, 16-18 Sep 1991.
- Cholik, F., Poernomo, R.P., Jauzi, A. 2005. *Akuakultur, Masyarakat Perikanan Nusantara*. Taman Akuarium Air Tawar. Jakarta.

- Connel, D.W. and Miller, G.J. 1995. Kimia Ekotoksikologi Pencemaran. Universitas Indonesia Press. Jakarta.
- Connel, D.W. and Miller, G.J. 2006. *Kimia dan Ekotoksikologi Pencemaran*. Y. Koestoer (Penerjemah). Universitas Indonesia Press. Jakarta.
- Darmono. 1995. *Logam dalam Sistem Biologi Mahkluk Hidup*. UI press. Jakarta.
- Dewi, N. K. 2018. Efek Paparan Logam Berat Terhadap Kadar Malandialdehida dan Aktifitas Katalase Ikan Mas dan Ikan Nila di Sungai Kaligarang. *Jurnal Mipa*. **41**(2): 69-75 hal
- Dodi, P. 2009. Efektivitas Aromatase Inhibitor Dalam Pematangan Gonad Dan Stimulasi Ovulasi Pada Ikan Sumatra (*Puntius Tetrazona*) . Skripsi. Fakultas Perikanan dan Ilmu Kelautan. Institut Pertanian, Bogor.
- Djajadiredja, R.S. 1997. *Buku Pedoman Pengenalan Perikanan Darat*. Kajian I. Dirjen Perikanan. Departemen Pertanian. Jakarta.
- Djuhanda, T. 1985. *Dunia Ikan*. Armico. Bandung. 191 hlm.
- Effendi, H. 2003. *Telaah Kualitas Air*. Kansius. Yogyakarta.
- Effendie, M.I. 1997. *Biologi Perikanan*. Yogyakarta.Yayasan Pustaka Nusatama. 163 hlm.
- Forlenza, M., Kasier, T., Savelkuol, H.F.J., Wiwgertjes, G.F. 2011. The Use of Real-Time Quantitative PCR for the Analysis of Cytokine Mrna Levels. *Cytokine Protocol*, 7-23.
- Fornies, M.A, Carrillo,M., Mananos, E., Sorbera, L.A., Zohar, Y., Zanuy.,S. 2003. Relative potency of the forms of GnRH and their analogs on LH release in sea bass. *Journal of Fish Biology*, **63** (1):73-89
- Fujaya, Y. 2004. *Fisiologi Ikan*. Jakarta. PT. Rineka Cipta. 179 hlm.
- Geneaid. 2017. Total RNA Mini Kit Protocol. Geneaid Biotech Ltd. New Taipei, Taiwan.
- Hasibuan, R. 2012. Analisa Kandungan Timbal (Pb) dan Minyak Sebelum dan Sesudah Penggorengan yang Digunakan Pedagang Gorengan Sekitar Kawasan Traffict Light Kota Medan. *Departemen Kesehatan Lingkungan FKM USU, Medan*. Vol.1 No. 1.
- Hastuti, E.D., Anggoro, S., Pribadi R. 2013. Pengaruh Jenis dan Kerapatan Vegetasi Mangrove terhadap Kandungan Cd dan Cr Sedimen di Wilayah Pesisir Semarang dan Demak. *Prosiding Seminar Nasional Pengelolaan Sumberdaya Alam dan Lingkungan*. Universitas Diponegoro. Semarang.
- Hermawan, Y., Rosmawati., Mulyana. 2015. Pertumbuhan dan Kelangsungan Hidup Benih Ikan Nile, (*Osteochillus hasselti*) yan Diberi Pakan dengan Feeding Rate Berbeda. *Jurnal Mina Sains*, **1**(1): 18-23.
- IMPLEN. 2011. NanoPhotometer®P-Class User Manual P 300 / P 330 / P 360 Version 2.1. Implen Inc, Los Angeles Country, USA. 1-70p.

- Irawan, F., Sugiharto, Bhagawati, D. 2009. Anatomi dan sistem rangka ikan nilem seruni, mangut, dan nilem gunung (*Osteochillus spp*). Prosiding Seminar nasional Ikan VI: 217-224. Fakultas Biologi Universitas Jenderal Soedirman. Purwokerto.
- Istarani, F., dan Pandebesie, E.S. 2014. Studi Dampak Arsen (As) dan Kadmium (Cd) terhadap Penurunan Kualitas Lingkungan. *Jurnal Teknik Pomits.* **3** (1) : 53-58.
- Javed, M.T., Tanwir, K., Akram, M.S., Shahid, M., Niazi, N.K., Lindberg, S. 2019. Phytoremediation of Cadmium-Polluted Water/Sediment by Aquatic Macrophytes: Role of Plant-Induced pH Changes. In *Cadmium Toxicity and Tolerance in Plants*. Academic Press.
- Kah, O., Lethimonier, C., Somoza, G., Guigur, L.G., Vaillant, C., Lareyre, J.J., 2007. GnRH and GnRH receptors in metazoa: a historical, comparative, and evolutive perspective. *Gen. Comp. Endocrinol.* **153** (1-3), 346-364.
- Kang, K.S., Shimizu, K., Azuma, M., Ui, Y., Nakamura, K. 2011. Gonadotropin-Releasing Hormone II (GnRH II) Mediates the Anorexigenic Actions of α Melanocyte-Stimulating Hormone (α MSH) And Corticotropin-Releasing Hormone (CRH) in Goldfish. *Peptides*, **32**(1): 31-35.
- KAPABIOSYSTEM. 2017. *KAPA SYBR® FAST One-Step qRT-PCR Master Mix (2X) Kit protocol*. Manufacturing, R&D Cape Town, South Africa.
- Khairuddin, M. Y., dan Syukur, A. 2018. Analisis Kandungan Logam Berat pada Tumbuhan Mangrove Sebagai Bioindikator di Teluk Bima. *Jurnal Biologi Tropis.* **18** (1).
- Kristanto, P. 2002. Ekologi Industri. Penerbit Andi. Yogyakarta.
- Lestari, W. dan Sastrawijaya, M.H. 2012. Diversitas Ikan Introduksi dan Indigenus di Sungai Banjaran dan Pelus Kabupaten Banyumas. *Prosiding Seminar Nasional*.
- Luo, Y., Shan, D., Zhong, H., Zhou, Y., Xu, P. 2015. Subchronic Effects of Cadmium on The Gonads, Expressions of Steroid Hormones and Sex-Related Genes in Tilapia *Oreochromis Niloticus*. *Ecotoxicology*. **24** (10): 13-23.
- Madigan, M.T., Martinko, J.M., Dunlap, P.V., Clark, D.P. 2009. Brock: Biology of Microorganism. 12th ed. Person Education, San Fransisco xxviii + 1061 + A-12 + G-17 + P-1. Hal 1-36.
- Manik, K.E.S. 2007. Pengelolaan Lingkungan Hidup. Penerbit Djambatan. Jakarta.
- Meador, M.R., Brown, L.R., Gray, R.H., Hughes, R.M. 2005. Introduction to Effects of Urbanization on Stream Ecosystems. *American Fisheries Society Symposium.* **47** : 1-8.
- Nagahama, Y. 1994. Endocrine Regulationof Gametogenesis in Fish. *Int. J. Dev. Biol.* **38**:217-229.

- Oka, Y. 2002. Physiology and Release Activity of GnRH Neurons. *Prog. Brain Res.* **141**: 259-281.
- Omar, S.B.A. 2010. Aspek Reproduksi Ikan Nilem, *Osteochilus vittatus* (Valenciennes, 1842) di Danau Sidenreng, Sulawesi Selatan. *Jurnal Iktiologi Indonesia*. **10(2)**: 111-122.
- Padian, T. J. 2013. Endocrine Sex Differentiation in Fish. CRC Press. India.
- Palar, H. 2004. Pencemaran dan toksikologi logam berat. Rineka cipta. Jakarta. 152 hlm.
- Patang. 2018. Dampak Kadmium dan Timbal pada Perairan. Badan Penerbit UNM. Makassar.
- Putri, D.S.J., Abulias, M.N., Bhagawati, D. 2014. Studi Kekerabatan Ikan Familia Cyprinidae yang Tertangkap di Sungai Serayu Kabupaten Banyumas. *Scripta Biologica*, **1(2)**: 129-135.
- Podhorec, J. Kouril. 2009. Induction of final oocyte maturation in Cyprinidae fish by hypothalamic factors: a review. *Veterinarni Medicina*, **54**, 2009 (3): 97-110
- Prado, M., Boix, A., Holst, C.V. 2013. Development of A Real-Time PCR Method for The Simultaneous Detection of Mackerel and Horse Mackerel. *Food Control*. **34**: 19-23.
- Pranawaty, R. N., Buwono, I.D., Liviawaty, E. 2012. Aplikasi Polymerase Chain Reaction (PCR) Konvensional dan Real Time PCR untuk White Spot Syndrome Virus pada Kepiting. *Jurnal Perikanan dan Kelautan*. **3** (4): 61-74.
- Prayogo, N.A., Hidayati, A., Siregar, A.S., Yusnafi. 2016. Uji Toksisitas Letal dan Subletal logam Berat Merkuri (Hg) terhadap Ikan Nilem (*Osteochilus hasselti*). *OmniAkuatika*. **12(1)**: 86-94.
- Purbonegoro, T. 2017. Faktor-Faktor yang Mempengaruhi Toksisitas Bahan Pencemar Terhadap Organisme Perairan. *Oseana*. **42** (2): 12-22.
- Radiopoetro. 1997. Zoologi. Erlangga. Jakarta. 691 hlm.
- Riani, E. 2004. Utilization of green mussel as a biofilter of a heavy metals on Jakarta Bay. Institute of Research and Community Services, Bogor Agricultural University and Government of DKI Jakarta Province.
- Rochmatin, S.Y., Solichin, A., Saputra, S.W. 2014. Aspek Pertumbuhan dan Reproduksi Ikan Nilem (*Osteochilus hasselti*) di Perairan Rawa Pening Kecamatan Tuntang Kabupaten Semarang. *Diponegoro Journal of Maquares*, **3** (3): 153-159.
- Saanin, H. 1984. Taksonomi dan Kunci Identifikasi Ikan Jilid I. Binatijpta. Bandung.
- Safitri, Deviana. 2016. Ekspresi Gen Pada Sel Prokariotik Dan Eukariotik. Online. <https://www.scribd.com/Doc/97237329/Makalah-Ekspresi-Gen-Dan-Regulasinya>. Diakses pada tanggal 10 Oktober 2020. 13.57

- Santoso, R. H. 2011. *Uji Coba Penggunaan Pelet yang Mengandung Imunoglobulin-Y (Ig-Y) Anti Koi herpesvirus Sebagai Pencegah Penyakit pada Ikan Mas (Cyprinus carpio)*. (Skripsi). Departemen Ilmu Penyakit Hewan dan Kesehatan Masyarakat Veteriner. Fakultas Kedokteran Hewan. Institut Pertanian Bogor. 51 Hal.
- Setiawan, S. 2013. Kumulasi Dan Distribusi Logam Berat Pada Vegetasi Mangrove Di Perairan Pesisir Sulawesi Selatan. *Jurnal Ilmu Kehutanan*. 7 (1).
- Setyaningrum, N., dan Winowo, E. S. 2016. Potensi Reproduksi Ikan Air Tawar Sebagai Baby Fish. *Jurnal Biosfera*. 33(2):85-91.
- Sevcikova, M., Modra, H., Kruzikova, K., Zitka, O., Hynek, D., Adam, V., Celechovska, O., Kizek, R., Svobodova, Z. 2013. Effect of Metals on Metallothionein Content in Fish from Skalka and Želivka Reservoirs. *Int. J. Electrochem. Sci.* 8: 1650-1663.
- Shah, S. L., and Altindag, A. 2005. *Effects of Heavy Metal Accumulation on the 96-h LC_50 Values in Tench Tinca tinca L.*, 1758. Turkish Journal of Veterinary and Animal Sciences, 29(1): 139-144.
- Sharma, H., Rawal, N., Mathew, B.B. 2015. The Characteristic, Toxicity and Effect of FCadmium. *International Journal of Nanotechnology and Nanoscience*, 3: 1-9.
- Simoniello, P., Francesca, T., Rosaria, S., Silvana, F., Chiara, M.M. 2010. Cadmium in *Podaris sicula* Disrupts Prefollicular Oocyte Recruitment by Mimicking FSH Action. *The Open Zoology Journal*, 3: 37-41.
- Siregar, A.S dan Prayogo, N.A. 2017. The Disruptive Effect of Mercury Choride (HgCl) on Gene Expression of Gonadotropin Hormones and Testosterone Level in Male Silver Sharkminnow (*Osteochilus hasseltii* C.V.) (Telestoi, Cyprinidae). *The European Zoological Journal*, 84(1): 436-443.
- Siregar, A.S., Sulistyo,I., Prayogo,N.A. 2020. Heavy metal contamination in water, sediments and *Planiliza subviridis* tissue in the Donan River, Indonesia. *Journal of Water and Land Development*, 45(4-6):157-164p.
- Sumantadinata, K. 1983. Pengembangbiakan Ikan-ikan Pemeliharaan di Indonesia. P.T. Sastra Hudaya. Cetakan 2.
- Susanne, H., and Andrezej, B. 1998. The Endocrine System. 22(3): 163-164.
- Susanto, H. 2001. *Budidaya Ikan di Pekarangan*. Penebar Swadaya. Jakarta.
- Suwarsito dan Sarjanti, E. 2014. Analisa Spasial Pencemaran Logam Berat pada Sedimen dan Biota Air di Muara Sungai Serayu Kabupaten Cilacap, *Geoedukasi*, 3(1):30-37hal.
- Swanson,P., Bernard , M., Nozaki, M., Suzuki, K., Kawauchi., h., Dickhoff,W.W. 1989. Gonadotropin I and II in Juvenile Coho Salmon. *Fish Physiology and Biochemistry*, 7(1):169-176p.
- Szczerbik, P., Mikołajczyk, T., Sokołowska-Mikołajczyk, M., Socha, M., Chyb, J., Epler, P. 2006. Influence of long-term exposure to dietary cadmium on

- growth, maturation and reproduction of goldfish (subspecies: Prussian carp *Carassius auratus gibelio* B.). *Aquatic Toxicology*, **77** : 126-135.
- Thermo Scientific. 2016. *DNase I, RNase-free : Removal of genomic DNA from RNA preparations*. Thermo Fisher Scientific Inc. California.
- Vetillard, A., and Bailhache, T., 2005. Cadmium : An Endocrine Disrupter That Affects Gene Expression in the Liver and Brain of Juvenile Rainbow Trout. *Biology of Reproduction*, **72**: 119-126.
- Wijayanti, G.E., Soeminto, Simanjuntak, S.B.I. 2009. Profil Hormon Reproduksi dan Gametogenesis pada Gurame (*Osphronemus gouramy*). *Jurnal Akuakultur Indonesia*, **8**(1):77-89 hal.
- Willoughby, S. 1999. *Manual of Salmonid Farming*. Black Well Science. London.
- Yashuvi, Y., Klenke, U., Palevitch, O., Abraham, E., Zohar, Y., Gothilf, Y. 2006. Ontogeny of Gonadotropin-Releasing Hormone (GnRH) Neurons in Hybrid Striped Bass *Morone* sp. : Whole-Mount in Situ Hybridization analysis. *Journal of Fish Biology* (**69**): 20-30.
- Yulaipi, S., dan Aunurohim. 2013. Bioakumulasi Logam Berat dan Hubungannya dengan Laju Pertumbuhan Ikan Mujair (*Oreochromis mossambicus*). *Jurnal Sains dan Seni Pomits*. **2** (2): 166-170.
- Yorio, M.P.D., Sirkin, D.I., Cueto,J.A., Delgadin, T.H., Tsutsui,K., Somoza, G.M., Vissio, P.G. 2019. Morphological Relationship between GnIH and GnRH Neurons in the Brain of the Neotropical Cichlid Fish *Cichlasoma Dimerus*. *General and Comparative Endocrinology*, **273**: 144-151p.
- Yuniar, I. 2017. Biologi Reproduksi Ikan. Surabaya: Hang Tuah University Press, 138 Hal.
- Zohar, Y., Elizur, A., Sherwood, N.M., Powell, J.F.F., Rivier, J.E., Zmora, N., 1995. Gonadotropin-releasing activities of the three native forms of gonadotropin-releasing hormone present in the brain of gilthead seabream, *Sparus aurata*. *Gen. Comp. Endocrinol.* **97** (3), 289–299.
- Zohar, Y., Munoz-Cueto, J.A., Elizur, A., Kah, O., 2010. Neuroendocrinology of Reproduction in Teleost Fish. *Gen Corp Endocrinol*, **165**(3): 435-455.
- Zohar, Y., Mylonas, C.C., 2001. Endocrine manipulations of spawning in cultured fish: from hormones to genes. *Aquaculture* **197** (1-4), 99–136.