



DAFTAR PUSTAKA

- Afero, F., Miao, S., & Perez, A. A. 2010. Economic analysis of tiger grouper *Epinephelus fuscoguttatus* and humpback grouper *Cromileptes altivelis* commercial cage culture in Indonesia. *Aquaculture International*, **18**: 725-739
- Al-Jandal, N. J., & Wilson, R. W. 2011. A comparison of osmoregulatory responses in plasma and tissues of rainbow trout (*Oncorhynchus mykiss*) following acute salinity challenges. *Comparative Biochemistry and Physiology, Part A*, **159**: 175-181
- Anonymous. 2011. Ikan kerapu cantang: hibrida antara ikan kerapu macan betina dengan ikan kerapu kertang jantan. (www.djpb.kkp.go.id) diakses Februari 2014
- Arjona, F. J., Sangiao-Alvarellos, S., Polakof, S., Garcia-Lopez, A., Martin del Rio, M. P., Martinez-Rodriguez, G., Soengas, J. L., & Mancera, J. M. 2008. Interaction of short-term testosterone treatment with osmotic acclimation in the gilthead sea bream *Sparus auratus*. *Marine Biology*, **153**: 661-671
- Arjona, F. J., Vargas-Chachoff, L., Ruiz-Jarabo, I., Goncalves, O., Pascoa, I., del Rio, M. P. M., & Mancera, J. M. 2009. Tertiary stress responses in Senegalese sole (*Solea senegalensis* Kaup, 1858) to osmotic challenge: Implications for osmoregulation, energy metabolism and growth. *Aquaculture*, **287**: 419-426
- Bernier, N. J. 2006. The corticotropin-releasing factor system as a mediator of the appetite-suppressing effects of stress in fish. *General and Comparative Endocrinology*, **146**: 45-55
- Blanco, G. & Mercer, R. 1998. Isozyme diversity of the Na-K-ATPase: heterogeneity in structure, diversity in function. *American Journal of Physiology, 275 (Renal Physiology)*, **44**: F633-F650
- Boeuf, G, & Payan, P. 2001. How Should Salinity Influence Fish Growth?. *Comparative Biochemistry & Physiology Part C*, **130**: 411 – 423
- Bone, Q, & Moore, R.M. 2008. *Biology of Fishes Third Edition*. Taylor & Francis Group: New York, USA
- Bornancin, M., Cuthbert, A. W., & Maetz, J. 1972. The effects of calcium on branchial sodium fluxes in the sea-water adapted eel, *Anguilla anguilla*. *Journal of Physiology*, **222**: 487-496



Bradford, M. M. 1976. A rapid and sensitive method for the quantification of microgram quantities of protein utilizing the principle of protein-dye binding. *Analytical Biochemistry* **72**: 248-254

Bradley, T. J. 2009. *Animal Osmoregulation*. Oxford University Press: New York, USA

Breves, J. P., McCormick, S. D., & Karlstrom, R. O. 2014. Prolactin and teleost ionocyte: new insights into cellular and molecular targets of prolactin in vertebrate epithelia. *General and Comparative Endocrinology*, <http://dx.doi.org/10.1016/j.ygcen.2013.12.014>

Brown, J. A., & Hazon, N. 2008. The renin-angiotensin systems of fish and their roles in osmoregulation. In Baldisserotto, B., Mancera, J. M., & Kapoor, B. G (Eds.) *Fish Osmoregulation*. Science Publishers: British Isle, USA

Caberoy, N. B. & Quinitio, G. F. 2000. Changes in Na^+ , K^+ -ATPase activity and gill chloride cell morphology in the grouper *Epinephelus coioides* larvae and juveniles in response to salinity and temperature. *Fish Physiology and Biochemistry*, **23**: 83-94

Carrier, J. C., & Evans, D. H. 1976. The role of environmental calcium in freshwater survival of the marine teleost, *Lagodon rhomboides*. *Journal of Experimental Biology*, **65**: 529-538

Cataldi, E., Di Marco, P., Madich, A., & Cataudella, S. 1998. Serum parameters of Adriatic sturgeon *Acipenser naccarii* (Pisces: Acipenseriformes): effects of temperature and stress. *Comparative Biochemistry and Physiology Part A*, **121**: 351 – 354

Chapman, F.A., Garcia, L. N., Atencio, V. J., Munoz, R. J., Silva, A., & Flores, H. 2014. Low-salinity acclimation of juvenile marine goliath grouper *Epinephelus itajara*. *Journal of Applied Aquaculture*, **26**: 179-186

Chasiotis, H., Kolosov, D., Bui, P., & Kelly, S. P. 2012. Tight junctions, tight junction proteins and paracellular permeability across the gill epithelium of fishes: A review. *Respiratory Physiology & Neurobiology*, **184**: 269-281

Cheng, S-Y., Chen, C-S., and Chen, J-C. 2013. Salinity and temperature tolerance of brown-marbled grouper *Epinephelus fuscoguttatus*. *Fish Physiology and Biochemistry*, **39**: 277-286

Crocker, P. A., Arnold, C. R., DeBoer, J. A., & Holt, G. J. Blood osmolality shift in juvenile red drum, *Sciaenops ocellatus* L. exposed to freshwater. *Journal of Fish Biology*, **3**: 315-319



de Mitcheson, S. Y., Craig, M. T., Bertoncini, A. A., Carpenter, K. E., Cheung, W. W. L., Choat, J. H., Cornosh, A. S., Fernnessy, S. T., Ferreira, B. P., Heemstra, P. C., Liu, M., Myer, R. F., Pollard, D. A., Rhodes, K. L., Rocha, L. A., Russel, B. C., Samoilys, M. A., & Sanciangco, J. 2013. Fishing grouper toward extinction: a global assessment of threats & extinction risks in a billion dollar fishery. DOI: 10.1111/j.1467-2979.2011.00455.x

Ernst, O., & Zor, T. 2010. Linearization of the Bradford Protein Assay. *Journal of Visual Experiment* 38, <http://www.jove.com/details.php?id=1918>, DOI: 10.3791/1918

Evans, D. H., Piermarini, P. M., & Choe, K. P. 2005. The Multifunctional Fish Gill: Dominant Site of Gas Exchange, Osmoregulation, Acid-Base Regulation, & Excretion of Nitrogenous Waste. *Physiological Review*, 85: 97-177

Evans, D. H. 2008. Teleost fish osmoregulation: what have we learned since August Krogh, Homer Smith, and Ancel Keys. *Am J Physiol Regul Integr Comp Physiol*, 295: R704-713

Flemming, W. R., Nichols, J., & Potts, W. T. W. 1974. The effects of low-calcium sea water and actinomycin-d on the sodium metabolism of *Fundulus kansae*. *Journal of Experimental Biology*, 60: 267-273

Flik, G., Verbost, P. M., & Atsma, W. 1994. Calcium transport in gill plasma membrane of the crab *Carcinus maenas*: evidence for carriers driven by ATP and a Na⁺ gradient. *Journal of Experimental Biology*, 195: 109-122

Forsberg, J. A. & neill, W. H. 1997. Saline groundwater as an aquaculture medium: physiological studies on the red drum, *Sciaenops ocellatus*. *Environmental Biology of Fishes* 49: 119-128

Freire, C. A., Amando, E. M., Souza, L. R., Veiga, M. P. T., Vitule, J. R. S., Souza, M. M., & Prodocimo, V. 2008. Muscle water control in crustaceans and fishes as a function of habitat, osmoregulatory capacity, and degree of euryhalinity. *Comparative Biochemistry and Physiology, Part A*, 149: 435-446

Havird, J. C., henry, R. P., & Wilson, A. E. 2013. Altered expression of Na⁺/K⁺-ATPase and other osmoregulatory genes in the gill of *euhaline* animals in response to salinity transfer: a meta-analysis of 59 quantitative PCR studies over 10 years. *Comparative Biochemistry and Physiology, Part D* 8: 131-140

Hwang, P-P., & Lee, T-H. 2007. New insight into fish ion regulation & mitochondrion-rich cells. *Comparative Biochemistry & Physiology, Part A* 148: 479-497



Hwang, P-P., Lee, T-H., & Lin L-Y. 2011. Ion regulation in fish gills: recent progress in the cellular & molecular mechanisms. *Am J Physiol Regul Integr Comp Physiol*, **301**: R28-R47

Ismi, S., Sutarmat, T., Giri, N. A., Rimmer, M. A., Knuckey, R. M. J., Berding, A. C & Sugama, K. 2012. Nursery Management of Grouper: A Best-practice Manual. *ACIAR Monograph No. 150. Australian Centre for International Agricultural Research: Canberra.* 44 pp.

Jensen, M. K., Madsen, S. S., & Kristiansen, K. 1998. Osmoregulation and salinity effects on the expression and activity of Na^+ , K^+ -ATPase in the gills of European sea bass, *Dicentrarchus labrax* (L.). *The Journal of Experimental Zoology*, **282**: 290-300

Kongkeo. H, Wayne. C, Murdjani. M, Bunliptanon. P, & Chien. T. 2010. Current Practices of Marine Finfish Cage Culture in China, Indonesia, Thailand & Viet Nam. *Aquaculture Asia Magazine*, **XV** (2): 32-40

Kammerer, B. D., Cech Jr., J. J., & Kultz, D. 2010. Rapid changes in plasma cortisol, osmolality, and respiration in response to salinity stress in tilapia (*Oreochromis mossambicus*). *Comparative Biochemistry and Physiology, Part A*, **157**: 260-265

Kumai, Y. & Perry, S. F. 2012. Mechanisms & regulation of Na^+ uptake by freshwater fish. *Respiratory Physiology & Neurobiology*, **184**: 249–256

Laiz-Carrion, R., Guerreiro, P. M., Fuentes, J., Canario, A. V. M., Rio, M. P. M., & Mancera, J. M. 2005. Branchial osmoregulatory response to salinity in the gilthead sea bream, *Sparus auratus*. *Journal of Experimental Zoolagy*, **303A**: 563-576

Lemarie, G., Baroiller, J. F., Clota, F., Lazard, J., & Dosdat, A. 2004. A simple test to estimate the salinity resistance of fish with specific application to *O. niloticus* and *S. melanotheron*. *Aquaculture*, **240**: 575-585

Li, J., Wang, J., Yang, L., Chen, Y., & Yang, Z. 2014. Changes in plasma osmolality and Na^+/K^+ ATPase activity of juvenile obscure puffer *Takifugu obscurus* following salinity challenge. *Biochemical Systematics and Ecology*, **56**: 111-117

Lucu, C., & Flik, G. 1999. Na^+/K^+ -ATPase and $\text{Na}^+/\text{Ca}^{2+}$ exchange activities in gills of hyperregulating *carcinus maenas*. *Am J Physiol*, **276** (2 Pt 2): R490-R499



- Martinez-Alvarez, R. M., Hidalgo, M. C., Domezain, A., Morales, A. E., Garcia-Gallego, M., & Sanz, A. 2002. Physiological changes of sturgeon *Acipenser naccarii* caused by increasing environmental salinity. *The Journal of Experimental Biology*, **205**: 3699-3706
- McCormick, S. D., & Bern, H. A. 1989. *In vitro* stimulation of Na^+/K^+ -ATPase activity and ouabain binding by cortisol in coho salmon gill. *Am. J. Physiol. Regul. Integr. Physiol.*, **256**: 707-715
- McCormick, S. D. 1993. Method for nonlethal biopsy and measurement of Na^+/K^+ -ATPase activity. *Can. J. Fish. Aquat. Sci.*, **50**: 656-658
- McCormick, S. D. 2001. Endocrine Control of Osmoregulation in Teleost Fish. *Amer. Zool.*, **41**: 781-794
- McCormick, S. D. & Bradshaw. 2006. Hormonal control of salt and water balance in vertebrates. *General and Comparative Endocrinology*, **147**: 3-8
- McCormick, S. D., regish, A. M., & Christensen, A. K. 2009. Distinct freshwater and seawater isoform of the Na^+/K^+ -ATPase in gill chloride cells of atlantic salmon. *The Journal of Experimental Biology* **212**: 3994-4001
- Menteri Kelautan dan Perikanan. 2012. Keputusan Menteri Kelautan dan Perikanan Republik Indonesia nomor KEP.38/MEN/2012 tentang pelepasan ikan kerapu cantang. Jakarta
- Nelson, J. S. 2006. *Fishes of the World, Fourth Edition*. John Wiley & Sons, Inc: New Jersey, USA
- Nimon, K. F. Statistical assumptions of substantive analyses across the general linear model: mini review. *Frontiers in Physiology*, **3**, Article 322: 1-5
- Noh, G. E., Rho, S., Chang, Y. J., Min, B., H., & Kim, J-M. 2013. Gene encoding prolactin in cinnamon clownfish *Amphiprion melanopus* and its expression upon acclimation to low salinities. *Aquatic Biosystems*, **9**: 1
- Nordlie, F. G. 2009. Environmental influences on regulation of blood plasma/serum component in teleost fishes: a review. *Rev Fish Biol Fisheries*, **19**: 481-564
- Parra, J. E. G. & Baldissarotto, B. 2008. Effect of water pH and hardness on survival and growth of freshwater teleosts. pp. 135-150. In Baldissarotto, B., Mancera, J. M., & Kapoor, B. G (Eds.) *Fish Osmoregulation*. Science Publishers: British Isle, USA



- Pickford, G. E., Pang, P. K. T., Stanley, J. G., & Felming, W. R. 1966. Calcium and fresh-water survival in the euryhaline cyprinodonts, *Fundulus kansae* and *Fundulus heteroclitus*. *Comparative Biochemistry and Physiology*, **18**, issue 3: 503-509
- Pierre, S., Gaillard, S., Prevot-D'Alsive, N., Aubert, J., Rostaing-Capaillon, O., Leung-Tack, D., & Grillasca, J-P. 2007. Grouper Aquaculture: Asian Success & Mediterranean Trials. *Aquatic Conservation: Marine & Freshwater Ecosystems (In. Press)* DOI: 10.1002/aqc.840
- Polakof, S., Arjona, F. J., Sangio-Alvarellos, S., Martin del Rio, M. P., Mancera, J. M., & Soengas, J. L. 2006. Food deprivation alters osmoregulatory and metabolic responses to salinity acclimation in gilthead sea bream *Sparus auratus*. *J Comp Physiol B*, **176**: 441-452
- Price, E. E., Donahue, M. J., Dickson, K. L., & Rodgers, Jr., J. H. 1990. Effects of elevated calcium concentration on Na-K-ATPase activity of two euryhaline species, *Cyprinodon variegatus* and *Mysidopsis bahia*. *Bull. Environ. Contam. Toxicol.*, **44**: 121-128
- Resley, M. J., Webb Jr., K. A., & Holt, G. J. 2006. Growth and survival of juvenile cobia, *Rachycentron canadum*, at different salinities in a recirculating aquaculture system. *Aquaculture*, **253**: 298-407
- Rimmer, M.A., McBride, S., & Williams, K.C. 2004. Advances in Grouper Aquaculture. *ACIAR Monograph 110*
- Sampaio, L. E., & Bianchini, A. 2002. Salinity effects on osmoregulation and growth of the euryhaline flounder *Paralichthys orbignyanus*. *Journal of Experimental Marine Biology and Ecology*, **269**: 187-196
- Sardella, B. A. & Kultz, D. 2009. Osmo- and ionoregulatory responses of green sturgeon (*Acipenser medirostris*) to salinity acclimation. *J Comp Physiol B*, **179**: 383-390
- Saoud, I. P., Kreydiyyeh, S., Chalfoun, A., & fakih, M. 2007. Influence of salinity on survival, growth, plasma osmolality and gill Na⁺-K⁺-ATPase activity in the rabbitfish *Siganus rivulatus*. *Journal of Experimental Marine Biology and Ecology*, **348**: 183 – 190
- Schwarz, D. E., & Allen, P. J. 2014. Effect of salinity on growth and ion regulation of juvenile alligator gar *Atractosteus spatula*. *Comparative Biochemistry and Physiology, Part A* **169**: 44-50
- Seale, A. P., Mita, M., Hirano, T., & Grau, E. G. 2011. Involvement of the cAMP messenger system & extracellular Ca²⁺ during hyposmotically-induced



prolactin release in the Mozambique tilapia. *General & Comparative Endocrinology*, **170**: 401-407

Sturrock, A. M., Hunter, E., Milton, J. A., & Trueman, C. N. 2013. Analysis method and reference concentrations of 12 minor and trace elements in fish blood plasma. *Journal of Trace Elements in Medicine and Biology*, **27**: 273 - 285

Sugama, K., Rimmer, M. A., Ismi, S., Koesharyani, I., Suwirya, K., Giri, N. A., & Alava, V. R. 2012. Hatchery management of tiger grouper (*Epinephelus fuscoguttatus*): a best-practice manual. *ACIAR Monograph No. 149. Australian Centre for International Agricultural Research: Canberra*. 66 pp

Szuster, B.W, & Albasri, H. 2010. Site Selection for Grouper Mariculture in Indonesia. *International Journal of Fisheries & Aquaculture*, **2(3)**, 87-92

Tsui, W-C., Chen, J-C., & Cheng S-Y. 2012. The effects od sudden salinity change on cortisol, glucose, lactate, and osmolality levels in grouper *Epinephelus malabaricus*. *Fish Physiology and Biochemistry*, **38**: 1323-1329

van Rooij, J. M., & Videler, J. J. 1996. Estimating oxygen uptake rate from ventilation frequency in the reef fish *Sparisoma viride*. *Marine Ecology Progress Series*, **132**: 31-41

Volkoff, H., Hoskins, L. J., & Tuziak, S. M. 2010. Influence of intrinsic signals and environmental cues on the endocrine control of feeding in fish: potential application in aquaculture. *General and Comparative Endocrinology*, **167**: 352-359

Wurtz, W. A., & Stickney, R. R. 1989. Responses of Red Drum (*Sciaenops ocellatus*) to Calcium and Magnesium Concentrations in Fresh and Salt Water. *Aquaculture*, **76**: 21-35

Young, S. P., Smith, T. I. J., & Tomasso. 2006. Survival & water balance of black sea bass held in a range of salinities & calcium-enhanced environments after abrupt salinity change. *Aquaculture*, **258**: 646-649

Zhao, F., Wang, Y., Zhang, L., Zhuang, P., & Liu, J. 2013. Survival, Growth, Food conversion efficiency & Plasma Osmolality of Juvenile *Siganus guttatus* (Bloch, 1787): Experimental Analyses of Salinity Effects. *Fish Physiol Biochem*, **38**: 1025-1030