# V. KESIMPULAN DAN SARAN

## A. Kesimpulan

Berdasarkan hasil dalam penelitian ini dapat disimpulkan bahwa

1. Perubahan kondisi pasang air laut selama dua siklus bulan berpengaruh pada jumlah sel telur yang ditunjukkan dengan 885,8 buah sel telur pada kondisi pasang rendah dalam *new moon* bulan November dan 904,5 buah sel telur pada kondisi pasang tinggi dalam *new moon* bulan Desember. Jumlah embrio sebanyak 882,9 buah pada pasang rendah dalam *full moon* bulan November merupakan peningkatan jumlah embrio dari 817,1 buah embrio pada kondisi pasang rendah dalam *first quarter* bulan November. Disisi lain, jumlah embrio sebanyak 852,1 buah pada kondisi pasang rendah dalam *full moon* bulan Desember merupakan penurunan jumlah embrio sebanyak 857,9 buah pada kondisi pasang tinggi dalam *first quarter* bulan Desember.
2. Rotasi bulan selama November sampai Desember berdampak pada perubahan ketingian pasang air laut pada *new moon*-2, *first quarter*-2 dan *full moon*-2. Ketinggian pasang air yang berbeda *new moon*-2 meghasilkan sel telur sebanyak 904,5 buah dan embrio sebanyak 899,7 buah. Jumlah tersebut lebih besar dibandingkan dengan *new moon*-1 dengan jumlah sel telur sebanyak 885,8 buah dan embrio sebanyak 880,4 buah.

## B. Saran

Berdasarkan penelitian yang telah dilakukan, terdapat beberapa saran untuk penelitian serupa:

1. Penambahan waktu penelitian dengan jumlah sampel yang proposional.
2. Pengamatan parameter lingkungan seperti jumlah dan jenis ketersediaan pakan.
3. Dapat mengamati individu *A. amphitrite* pada lokasi yang berbeda sebagai perbandingan hasil pada penelitian ini.
4. Dapat melakukan penelitian dalam lingkungan buatan untuk memperoleh data yang lebih lengkap.

## DAFTAR PUSTAKA


Anil. C. A., Khanderparker. L., Desai. V. D. Baragi V. Gaonkar. A. C. 2006. Larval Develpoment, Sensory Mechanisms and Physiological Adaptions in Acorn Barnecles with special reference to *Balanus amphitrite*. National Institute of Oeceanography. Inda.

Baker. P., Beker. S. M., and Fajans. J. 2004. *Nonindigenous marine species in the Greater Tampa Bay ecosystem*. Gainesville: Tampa Bay Estuary Program Technical Publication. no. 02-04,118 p.

Barnes, Robert D. (1983) Invertebrate Zoology., Saunders, Philadelphia.

Calcagno. J. A., López. G. J., and Tablado. A. 1998. Populatiom Dynamis Of The Barnecle *Balanus amphitrit, no. e* in an area affected by sewage pollution., Jurnal of Crustacean Biology, vol. 128-137.

Chambers. 2006. Modern approaches to marine antifouling coating. Surface and Coatings Technology 201. 3642-3652.

Chen. Z. F., Matsumura. K., Wang. H., Arellano. S. M., Yan. X., Alam. I., Archer. J. A. C., Bajic. V. B., Qian. PY. 2011. Toward an Understanding of the Molecular Maechanisms of Barnacle Larval Settelment: A Comperatif Transcriptomic Approach.

Crisp. D. J. 1950. *Breeding and distribution of Chthamalus stellatus*. Nature Lond 166:311.

Crisp, D. J., & Costlow, J. D. 1963. The tolerance of developing *cirri*pede embryos to salinity and temperature. *Oikos*, 22-34.

Crisp. D. J dan Patel. B. (1960a) Rates of development of the embryos of several species of barnacles.

Crisp. D. J danPatel. B. (1960b) The influence of temperature on the breeding and moulting activities of operculate barnacles. J Mar Biol Ass U K 39:667-680.

Cohen, Andrew N. (2005) Guide to the Exotic Species of San Francisco Bay. San Francisco Estuary Institute, Oakland, CA, www.exoticsguide.org

Costeron. J. W. 1999. Antifouling. Center of Biofilm Engeneering. Monta State Universsity. Bozeman. MT.

Desai. V. D., Anil. C. A., Venkat. K. 2004. Reproduction in *Balanus amphitrite* Darwin (*Cirri*pedia: Toracica); Influence of Temperature and Food Concentration. Marine Corrosion and Materials Research Division National Institute of Oceanography, Dona Paula. India.

Diego. M., Alderd. N., Clare. S. A., Hóeg. T. J. 2012. Metamorphisis in the *Cirri*ped Crustacean *Balanus amphitrite*. Departement of Biology, University of Padova. Italy.

Egan. S. 2001. Production and Regulation of Fouling inhibitory compouns by the marine bacterium. School of Microbiology and Immunology. Faculty of Life Science. The University of New South Wales. Sydney. Australia.

Goswami, S. C. dan Rao. T. S. S. 2004. Zooplankton Methodology, Collection and Identification-a field manual. National Intitue of Oceanography: 26.

Harrison. P. A. W. 1990. Reproduction, Diespersal and Recruitment of Scleractinian Corals in Ecosystems of The World: Coral Reefs, pp. 133-207. Elsevier. Amsterdam.

Harrison. P. L., Babcock. R. C., Bull. G. D., Oliver. J. K., Wallace. C. C., Willis. B. L. 1984. Mass Spawning in Tropical Reef Corals. Science 223, 1186-1189.

Himmelman. J. 1980. Synchronization of Spawning in Marine Invertebrates by Plankton. Eleviser. Amsterdam. (ed. Clarck W. H.) 3-19

Hines. A. H.1978. *Reproduction in three species of intertidal barnacles from Central California*. Biol Bull Mar Biol Lab, Woods Hole 154:262-281.

https://andersonsmaplesyrup.com/files/PH_METER_CT-6021A_MANUAL.pdf. CT-6021A *User Manual*. Diakss pada 24 April 2018

http://coastalroots.lsu.edu. *Salinity*. Diakses pada 24 April 2018.

https://www.space.com/18880-moon-phases.html. *Moon phase*. Diakses pada 29 Mei 2018.

Jokiel. P. L., Ito. R. Y., Liu. P. M. 1985. Night Irradience and Synchronization of Lunar Release of Planula Larvae in The Reef of *Pocillopora damicornis*. Mar. Bio. 88.167-174.

Kerr. A, C. M. Beveridge, M. J. Cowling, T. Hodgkiess, A.C.S. Parr and M.J. Smith. 1999. Some physical factors affecting the accumulation of biofouling. Journal of the Marine Biological Association of the UK (1999), 79:2:357-359.

Krishna, K. dan Balakrishnan, N. (1972) 'amphitrite communis ( Darwin ), of the South-west Coast of India'.

Kühl H (1950) Über die Besiedlung metallischer Oberflächen durch Balanus improvisus Darwin. Zool Anz 145: 461–477.

Macho, G., Molares, J. and Vázquez, E. (2005) 'Timing of larval release by three barnacles from the NW Iberian Peninsula', 298(1), pp. 251–260.

Marheni. B. 2014. Biofouling Pada Beberapa Jenis Substrat Permukaan Kasar dan Halus. Jurusan Perikanan dan Kelautan. Fakultas Sains dan Teknik.

Universitas Jenderal Soedirman. Purwokerto.

Maxey IV, C.E. 2006. Occurrence and Distribution of Irganol 1051 and its Natural Metabolites in Biotic and Abiotic Marine Samples, having been approved in respect to style and intellectual content, is referred to you for judgment. Florida International University.

Mittelman, M.W. 1999. Bacterial Biofilm and Biofouling: Translational Research in Marine Biotechnology. Proceeding Workshop: Opportunities Applications of Marine Biotechnology.

Michel. T dan Smith. M. 1995. Lectin Probe Moleculer Film in Biofouling: Characterization of Early Film on Non-Living and Living Surface. Mar.Ecol.Prog.Ser. vol. 199 :229-236.

Nasution. M. A., Mudzni AL. 2016. Kepadatan dan Sebaran Teritip (*Amphibalanus* spp.) di Pelabuhan Kota Dumai. Jurnal Perikanan Tropis Vol. 3.

Neuman. D. 1975. Lunar anda Tidal Rhythims in The Development and Reproduction of an Interdial Organism. In Physiological adaption to the environtment (ed. Vernberg. F. J) pp.451-463.

Neuman. D. 1988. The Timing of Reproduction to Disticnt Spring Tide Situations in The Interdial Insect Clunio. In Behavioral Adaption to Interdial Life (ed. Chelazzi. G. A. V). Plenum Publishing. New York.

Newman. W. A., and Ross. A. 1976. Revision of the balanomorph barnacles; including a catalog of the species. *Memoirs of the San Diego Society of Natural History*, vol. 9, p. 1-108.

Orton. P. L. 1920. Sea Temperature Breeding and Distribution in Marine Animals. J. Mar. Bio. Assoc UK 12. 339-366.

Patel, B., & Crisp, D. J. (1960). The influence of temperature on the breeding and the moulting activities of some warm-water species of operculate barnacles. *Journal of the Marine Biological Association of the United Kingdom*, *39*(03), 667-680.

Pillai, K. N. (1958). Development of *Balanus amphitrite*, with a note on the early larvae of Chelonibia testudinaria. *Bull. Central Res. Inst. Kerala*, *6*, 117-130.

Qiu. J. W., Qian. P. Y. 1999. Tolerance of the Barnacle Balanus Amphitrite to Salinity and Temperature Stress: Effects of Previous Experience. p-126.

Saigusa. M. 1985. Tidal Timing of Larval Release Activity in Non-Tidal Environment. Jpn. J. Ecol. 35, 243-251.

Saigusa. M. 1980. Entrainment of The Similar Rhythms by a Simulated Moonlight Cycle in The Terrestrial Crab (*Sesarma haematochier*). Oceologia. 46, 38-44.

Saigusa M. 1988. Entrainment of Tidal and Semilunar Rhythms by Artificial Moonlight Cycles. Biol. Bull. 174, 126-138.

Sasongko. S. 2008. Pengaruh Warna Cat Anti Corrosión (AC) Terhadap Penempelan Vortex Pada Bagian Badan Kapal. Undergraduate Theses Teknik Perkapalan Ekstensi. Institute Teknologi Surabaya.

Stanczak, M. 2004. Biofouling: It's Not Just Barnacles Anymore. All Rights Reserved, CSA.

Yan. G., Zhang. G., Huang. J., Lan. Y., Sun. J., Zeng. C., Wang. Y., Qian. Y. P., He. L. 2017. Comparative Transcriptomic Analysis Releals Candidate Genes and Pathways Involved in Larval Settelment of the Barnecle *Amphibalanus amphitrite*.