

Kajian keragaman genetik aspek pertumbuhan dan reproduksi udang mantis *harpiosquilla raphidea fabricius 1798*, di Perairan Teluk Banten sebagai upaya konservasi = genetic diversity growth and reproductive aspect mantis shrimp *harpiosquilla raphidea* in the waters of the Banten bay as conservation efforts

Mugi Mulyono, author

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Abstrak

Penelitian mengenai kajian keragaman genetik, aspek pertumbuhan dan reproduksi udang mantis di perairan Teluk Banten Serang Propinsi Banten sebagai upaya konservasi dalam pengelolaan sumber daya udang mantis, khususnya *Harpiosquilla raphidea* telah dilakukan dari bulan Desember 2011 sampai dengan September 2013. Penelitian bertujuan untuk mengkaji dan mengetahui aspek-aspek biologi populasi (keragaman genetik, aspek pertumbuhan dan reproduksi). Penelitian dilakukan menggunakan metode survei dan purposive sampling. Lokasi pengambilan sampel udang mantis *Harpiosquilla raphidea* di perairan Teluk Banten (Provinsi Banten). Hasil Penelitian menunjukkan bahwa keragaman morfologi udang mantis (*H. raphidea*) yang terekspresi dari perbedaan karakter ukuran tubuh, dari 22 karakter morfologi 20 karakter morfologi berbeda sangat nyata sedangkan 2 karakter lainnya tidak berbeda nyata yaitu lebar abdomen ruas kelima (ASL) dan ruas keenam (ASN). Analisis sekuens nukleotida daerah COI mtDNA udang mantis *H. raphidea* diperoleh sekuens udang mantis *H. raphidea* asal Indonesia yang saat ini belum ada di Gene Bank. Pola pertumbuhan udang mantis relatif sama antara jantan dan betina Allometrik (-). Laju pertumbuhan udang mantis *Harpiosquilla raphidea* tidak jauh berbeda dengan udang mantis lainnya dari Ordo Stomatopoda. Rentang hidup udang mantis di Teluk Banten relatif lebih panjang (5,6 -- 6,7 tahun), dengan nilai pertumbuhan (K) udang mantis jantan lebih tinggi dibandingkan betina. Faktor kondisi udang betina lebih tinggi dari pada jantan dengan nilai pertumbuhan (L \times) antara jantan dan betina pada kisaran yang sama adalah sebesar 369,08 mm. Tingkat kematangan gonad (TKG) udang mantis *H. raphidea* teridentifikasi dalam empat tingkat perkembangan. Ukuran matang gonad pertama udang mantis betina 199 mm dan udang mantis jantan adalah 230 mm. Udang mantis betina pada TKG II, III dan IV memiliki fekunditas berkisar 24,600--76,809 dengan rata-rata fekunditas $54,082 \pm 13,456$ butir, sedangkan diameter telur pada TKG III, 510 \pm 675 m dengan rata-rata diameter 574 ± 6.98 m. Pengelolaan sumber daya udang mantis di Teluk Banten diarahkan pada kegiatan perbaikan populasi melalui kegiatan konservasi atau upaya domestikasi. Upaya konservasi polulasi melalui pengendalian penangkapan berdasarkan ukuran tangkapan dengan perbaikan habitat serta upaya domestikasi. Populasi Teluk Banten dapat dijadikan sebagai sumber induk dan dapat disilangkan dengan populasi Jambi sebagai selective breeding.

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This study describes the variation in quantitative characters of both *Harpiosquilla raphidea* only from different location in Indonesia Research on the study of genetic diversity growth and reproductive aspects of mantis shrimp in the waters of the Banten Bay Banten Province as an initial effort in the mantis shrimp resource management particularly *Harpiosquilla raphidea* been done.

The study aims to assess and determine aspects of population biology genetic differentiation growth and reproductive biology aspects The study was conducted from December 2011 to September 2013 using the

survey method and purposive sampling Sampling sites *Harpiosquilla raphidea* mantis shrimp in the waters of the Banten Bay Banten Province For comparison samples were taken mantis shrimp in the waters of Kuala Tungkal Jambi waters Gebang Kulon Cirebon West Java and water Kubu Raya Pontianak West Kalimantan especially for the analysis of genetic differentiation Research addressing the diversity of morphology of mantis shrimp *H. raphidea* expressed from differences in body size characters morphometric 20 morphometric characters of 22 different characters are very real and 2 were not significantly different character is the fifth segment of the abdomen width ASL and a sixth segment ASN Value farthest distance Banten Bay population is the population of Edinburgh while the population closest to Cirebon Nucleotide sequence analysis of mtDNA COI region of 4 mantis shrimp population dendrogram obtained with the 3 groups clusters first main cluster consisting population Cirebon Jambi Pontianak second cluster population and the third cluster Banten Bay population Farthest genetic distance values based on mtDNA COI sequences are among the Banten Bay population with a population of Jambi While the population closest to Pontianak Aspects of the growth of mantis shrimp have the same relative weight of the long relationship between male and female is a pattern of allometric growth In general the rate of growth of mantis shrimp *Harpiosquilla raphidea* almost the same and not much different from other mantis shrimp of the order stomatopods but have a life span that is slightly longer ie 5 6 years to 6 7 years Value growth K is higher than male shrimp shrimp females because the female mantis shrimp growth offset to gonadal development and reproductive organs but from the condition factor obtained higher scores than males meaning that the weight gain is also influenced by the gonads and reproductive organs the female mantis shrimp Value growth L only between males and females in the same range of 369 08 mm Reproductive biology into basic information in an effort to better management and conservation efforts of domestication therefore it is very necessary to search the biological aspects of reproduction So the reproductive biology research can provide data and information on the morphological and histological characteristics of gonadal female mantis shrimp and mantis shrimp male *Harpiosquilla raphidea* so levels and gonad maturity index can be determined Gonadal matry level of mantis shrimp *H. raphidea* identified in four stages of development Size mature gonads first female mantis shrimp mantis shrimp 199 mm and males is 230 mm Gonadal matry level of mantis shrimp females in II III and IV have fecundity ranged from 24 600 to 76 809 with an average of 54 082 13 456 grains fecundity whereas the diameter of the eggs at Gonadal matry level of III 510 675 m with an average diameter of 574 6 98 m Descriptive method with univariate and multivariate analyses based on quantitative character ratio was used in this study The study aims to assess the distribution of population structure growth and exploitation rate of mantis shrimp *Harpiosquilla raphidea* Fabricius 1798 Growth coefficient K *H. raphidea* is 0 16 for males and 0 14 for females and Loo is 369 08 same for males and females The value K mantis shrimp *H. raphidea* is same relatively with some other mantis shrimp species such as *Squilla* mantis *Oratosquilla oratoria* and *O. stephensoni* but *H. raphidea* have longer life span wich is 5 5 to 6 7 years Mantis shrimp *Harpiosquilla raphidea* in an abundant marine crustacean in Indonesia It is common among the most important predators in many shallow tropical and subtropical marine habitats The objective of this study is to provide information on the histological characteristics of the ovary of female mantis shrimp *Harpiosquilla raphidea* and spawned egg The ovaries and spermatogonia a pronounced macroscopic differentiation in size and color with maturation of the ovary and spermatogonia in four developmental The average size of female 199 mm and males mantis shrimp first maturity is 230 mm Female mantis shrimp has a relatively small fecundity which is ranged from 24 600 to 76 809 eggs and eggs diameter in matry stage III is ranged from 510 to 675 m Mantis shrimp resource management in Banten

Bay are focused on the repair and conservation of the population Polulasi conservation improvements with domestication and control efforts based on the size of the catchment arrest Banten Bay population may serve as a source of stem and can be crossed with a population of Pontianak and Jambi Recommendations effort did domestication activities in Banten Bay waters can be done by using floating cages enlargement of selected activities on measures that category have not entered the market or small 12 cm Key words genetic diversity growth and reproductive aspects mantis shrimp Banten Bay