

BIODIVERSITY OF ASTEROIDEA IN BIDONG ISLAND

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BIODIVERSITY OF ASTEROIDEA IN BIDONG ISLAND

By

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the requirements for the degree of
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LIST OF ABBREVIATIONS

LIT	-	Line intercept transect
PVC	-	Polyvinyl chloride
E	-	East
N	-	North
°	-	Degree
°C	-	Degree Celsius
ha	-	Hectare
cm	-	Centimeter
m	-	Meter
'	-	Minute
“	-	Second
%	-	Percentage
±	-	Plus-minus sign

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ABSTRACT

Astroidea are regarded as important inhabitants of the marine benthic environment. Research on the distribution and biodiversity of Astroidea receives little attention in Malaysia. This present study was conducted to determine the species of Astroidea; population size and substrate preference of Astroidea in Bidong Island. Three species of asteroid starfish; *Acanthaster planci*, *Culcita novaeguineae* and *Fromia milleporella* were recorded in the water of Bidong Island. *Acanthaster planci* was the most abundant species of asteroid starfish found in Bidong Island which occurred mostly at the coral reef substratum while *Culcita novaeguineae* and *Fromia milleporella* were found to be associated with sandy substratum. Coral reef area at the depth of six meters has recorded the highest mean population density of 0.016 ± 0.011 ind/m² followed by the sandy area at the depth of 13 meters which has the population density of 0.012 ± 0.004 ind/m². Coral rubble area at the depth of four meters recorded the lowest mean population density of 0.004 ± 0.003 ind/m². Food availability, types of substrate and depth were responsible for the variation in the population density of Astroidea between sites. *Acanthaster planci* was found to shown high preference for *Acropora* branching, *Acropora* digitate and *Acropora* tabulate. Similarly, *Culcita novaeguineae* has also exhibited a strong preference for *Acropora* branching. Meanwhile, *Fromia milleporella* strongly prefers the sandy substratum. Preference for a particular substrate can mainly be linked to their feeding behaviors.

ABSTRAK

Asteroidea merupakan organisma penting di dalam persekitaran marin bentik. Kajian mengenai taburan dan biodiversiti Asteroidea kurang mendapat perhatian di Malaysia. Kajian yang dijalankan ini bertujuan untuk menentukan spesis Asteroidea; saiz populasi dan pemilihan substrat oleh Asteroidea di Pulau Bidong. Tiga spesis tapak sulaiman; *Acanthaster planci*, *Culcita novaeguineae* dan *Fromia milleporella* telah berjaya direkodkan di dalam perairan Pulau Bidong. *Acanthaster planci* merupakan spesis yang paling banyak ditemui di Pulau Bidong dan biasanya terdapat di kawasan batu karang. Manakala bagi spesis *Culcita novaeguineae* dan *Fromia milleporella* pula didapati menghuni kawasan yang berpasir. Kawasan batu karang pada kedalaman enam meter telah merekodkan purata kepadatan individu yang tertinggi dengan nilai sebanyak 0.016 ± 0.011 ind/m² dan diikuti oleh kawasan berpasir pada kedalaman 13 meter yang mencatatkan nilai purata kepadatan individu sebanyak 0.012 ± 0.004 ind/m². Kawasan batu karang mati pada kedalaman empat meter pula mempamerkan nilai purata kepadatan individu yang terendah dengan jumlah sebanyak 0.004 ± 0.003 ind/m². Kelimpahan bekalan makanan, jenis substrat serta kedalaman air didapati merupakan antara faktor penyebab utama kepada berlakunya perbezaan nilai kepadatan populasi antara stesen kajian. *Acanthaster planci* didapati menunjukkan kecenderungan untuk memilih substrat *Acropora* bercabang, *Acropora* digitat dan *Acropora* tabulat. *Culcita novaeguinea* juga didapati mempunyai kecenderungan yang tinggi untuk memilih substrat *Acropora* bercabang. Manakala *Fromia milleporella* pula lebih menyukai substrat pasir. Pemilihan substrat didapati adalah berkait rapat dengan tabiat pemakanan.