

GHOST CRAB (*Ocyropode* spp.) PREDATION ON GREEN TURTLE
(*Chelonia mydas*) NESTS AND HATCHLINGS IN CHAGAR
HUTANG, PULAU REDANG.

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(*CHELONIA MYDAS*) NESTS AND HATCHLINGS IN CHAGAR HUTANG,
PULAU REDANG.**

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**This project report is submitted in partial fulfilment of the requirements for the
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ABSTRACT

This report presents the results of a study on ghost crab (*Ocypode* spp.) predation on green turtle (*Chelonia mydas*) nests and hatchlings on Chagar Hutang, Pulau Redang, conducted from 26 May – 10 October, 1997. Two species of ghost crabs coexist at Chagar Hutang - *Ocypode ceratophthalmus* and *Ocypode kuhlii*.

Ghost crab density was highest at the beginning of the nesting season (May) with a count of 177.88 crabs/ 100 m. The density decreased throughout the following months with 43.44 crabs/ 100 m in October, 1997. *Ocypode* was dispersed randomly without any significant preferences to the berm or the intertidal flat. The abundance of juveniles peaked at the start of the season, whereas adults peaked in September and October, 1997. *Ocypode* in Chagar Hutang show a marked preference for beach areas between sectors 10 – 13 with 27.30 % of average density occurring in these three sectors alone. The density of crabs did not correlate with the length of each sector (from vegetation to HWM).

This study also showed that the the presence of crab burrows on nests during incubation only had a significant impact on ghost crab predation on nests and did not show any significant impact on the percentage of occurrence of other causes of mortality (fire ants, fungus, insect larvae and varanid lizards). Hatching success in nests with crab burrows was lower (81.65 ± 24.64 %) than in nests without crab burrows (84.28 ± 18.60 %). *Ocypode* was the most prominent nest predator in the study site, occurring in 56.67% of the nests. Fire ants attacked 38.85 % of the nests and insect larvae infested 37.80 % of the total number of nests (n = 120). Fungus was found to occur in 94.61 % of the total number of nests studied.

Hatchling predation was determined through simulated emergences. Correlation analysis showed that the percent of predation was dependent on the length of the release event and was inversely correlated with the number of hatchlings released. Crab predation was observed to be greater in small releases with 9.6 % (n = 25) and 7.6 % (n = 50), as compared to larger releases with 2.39 % (n = 75) and 2 % (n = 100). Throughout the six months, 49.20 ± 6.86 % of total crab population were potential predators. Potential predators of turtle hatchlings generally have a carapace width larger than 30mm with an average of 38 ± 5.2 mm (n = 72).

A control method namely trapping and removal of ghost crabs was tested for the effect on the overall density of ghost crabs. Analysis showed that the total number of crabs caught did not differ according to the days the traps were placed but differed according to the areas in which the traps were set. Correlation analysis showed that the number of crabs caught in the control method significantly affected the abundance of ghost crabs on the beach.

ABSTRAK

Laporan ini menunjukkan keputusan mengenai kajian pemangsaan ketam angin (*Ocypode* spp.) ke atas sarang dan anak penyu agar (*Chelonia mydas*) di Chagar Hutang, Pulau Redang yang dijalankan dari 26 May hingga 10 Oktober, 1997. Dua species ketam angin dijumpai di pantai ini dan dikenalpasti sebagai *Ocypode ceratophthalmus* dan *Ocypode kuhlii*.

Kepadatan ketam angin di kawasan kajian adalah tertinggi pada awal musim persarangan (May) dengan jumlah 177.88 ekor ketam/ 100 m. Bilangan ini menurun sehingga 43.44 ekor/ 100 m di Oktober. *Ocypode* didapati tersebar secara rawak antara berma dan dataran pasang-surut. Ketam juvenil paling banyak didapati pada awal musim manakala ketam dewasa adalah mencapai bilangan maksimum pada bulan September dan Oktober, 1997. Kepadatan ketam berbeza mengikut sektor pantai di mana jumlah yang tertinggi di dapati di sekitar sektor 10 –13 dan purata kepadatan ketam pada sektor-sektor ini merangkumi 27.30 % dari keseluruhan kepadatan di pantai tersebut. Panjang sektor (dari tumbuhan sehingga garisan air pasang) didapati tidak mempengaruhi kepadatan ketam.

Analisis chi kuasa dua dengan pembetulan Yates membuktikan bahawa kehadiran lubang ketam berhampiran sarang mempengaruhi kadar pemangsaan ke atas sarang oleh ketam angin, tetapi tidak bagi semut api, kulat, larva serangga dan biawak. Kadar penetasan telur penyu bagi sarang dengan kehadiran lubang ketam didapati lebih tinggi 81.65 ± 24.64 % berbanding dengan kadar penetasan bagi sarang tanpa kehadiran lubang ketam iaitu 84.28 ± 18.60 %. Di Chagar Hutang, *Ocypode* menduduki tempat ketiga

sebagai pemangsa sarang penyu yang paling membinasakan, dengan kadar pemangsaan sarang setinggi 56.67 %. Semut api telah menyerang 38.85 % dari jumlah sarang manakala larva serangga menyerang 37.80 % dari jumlah sarang di pantai tersebut. Kulat didapati hadir di dalam 94.61 % daripada jumlah sarang yang dikaji (n = 120).

Kadar pemangsaan ke atas anak penyu pula adalah bergantung kepada tempoh pelepasan anak penyu dan juga bilangan anak penyu yang dilepaskan. Kadar pemangsaan ketam ke atas anak penyu diperhatikan lebih tinggi dalam eksperimen pelepasan anak penyu dalam bilangan yang lebih kecil (n < 50) dengan 9.6 % (n = 25) dan 7.6 % (n = 50). Kadar pemangsaan menurun apabila anak penyu dilepaskan dalam bilangan yang besar (n > 75) dengan kadar pemangsaan 2.39 % (n = 75) dan 2 % (n = 100). Sepanjang musim persarangan penyu, 49.20 ± 6.86 % dari keseluruhan populasi ketam berpotensi menangkap dan memegang ketam. Saiz ketam yang berpotensi sebagai pemangsa mempunyai lebar karapas > 30 mm dengan purata lebar 38 ± 5.2 mm (n = 72).

Kaedah memerangkap dan membunuh ketam angin dijalankan untuk melihat kesan ke atas kepadatan ketam di pantai itu. Jumlah ketam yang ditangkap tidak berbeza dengan ketara mengikut hari perangkap dipasang tetapi berbeza mengikut kawasan di mana perangkap tersebut dipasang. Analisis korelasi menunjukkan bahawa terdapat perhubungan rapat di antara bilangan ketam yang ditangkap dan kepadatan ketam di kawasan kajian tersebut.