

## MOVEMENT PATTERNS OF BLUE SWIMMING CRAB, *Portunus pelagicus* IN THE SARAWAK COASTAL WATER, SOUTH CHINA SEA

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**Abstract:** A study was carried out to determine the movement patterns of *P. pelagicus* within the near-shore marine embayment of the Sarawak coastal water, South China Sea. These mark-recapture tagging studies were conducted for about five months from 26<sup>th</sup> March till 30<sup>th</sup> August 2005 comprising 48 sampling trips. Out of 976 crabs tagged and released, 212 (21.72%) were recaptured. The mean distances moved by male and female crabs were 7.36 km  $\pm$  1.78 and 9.15 km  $\pm$  1.87 respectively. The study shows that the female crabs moved significantly ( $p=0.01$ ;  $p<0.05$ ) further than males. The percentage of tagged crabs recaptured within the original release site were 50.0% for male and 45.83% for female crabs. The result shows that the male crabs only significantly ( $p=0.01$ ;  $p<0.05$ ) moved towards the deeper off-shore areas as compared to the near-shore areas. On the other hand, the female crabs moved significantly more towards both deeper off-shore and shallow near-shore areas. Most of the tagged crabs were recaptured within the sampling site of 2 km radius after a minimum of 30 days at liberty. The movement activities from the study were not necessarily limited because only 21.72% of the tagged-and-released crabs were recaptured. Thus, the main movement activities were attributed to the migration movements associated with reproduction and this can be seen from the tagged crabs which were recaptured at the off-shore deeper water.

**KEYWORDS:** Movement patterns, mark-recapture, tagging, *Portunus pelagicus*, Sarawak coastal water

### Introduction

The blue swimming crab, *Portunus pelagicus*, is distributed throughout the Indo-Pacific region and is closely associated with sheltered near-shore marine water and estuaries (Ikhwanuddin, M., Shabdin, M.L. & Abol-Munafi, 2009a, b; de Lestang, 2003). Large numbers of *P. pelagicus* frequently enter estuaries as juveniles (Potter & de Lestang, 2002) and the female *P. pelagicus* sometimes become ovigerous in estuaries (Potter & de Lestang, 2002). Studies also showed that the portunid crabs that often occupied the marine embayment would not leave this environment to spawn which always occur in high-salinity regions (Potter & de Lestang, 2002). Literature reviews shows that the movement of *P. pelagicus* in and out of estuaries into open ocean occurs for spawning and as a reaction to lower salinity

(Potter & de Lestang, 2002). Study shows that *P. pelagicus* has strong swimming ability and are capable of moving through substantial distances of 20 km per day as in Queensland, Australia (Sumpton & Smith, 1991). However, a tagging study by Potter *et al.* (1991) in Queensland, Australia showed fairly small-scale movement of crab populations, where, of the recaptures, 79% were caught less than 2 km from their release point and only 4% were recaptured more than 10 km from the release point. Literature reviews shows that there is no study on the movement patterns of *P. pelagicus* in any of the water bodies of Malaysia. Thus, the main objective of the present study was to determine the movement patterns of *P. pelagicus* within the near-shore marine embayment of the Sarawak coastal water, South China Sea. The movement patterns of crabs were assessed through the tagging study within the study area.