

The Living Fossil (Horseshoe crab)

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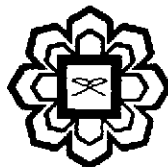
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Table of Contents

| Chapters | Titles | Page No |
|----------|---|---------|
| 1. | Global distribution and Taxonomy of extant horseshoe crabs..... (5410/18557) | 1 |
| 2. | Limiting factors on the global distribution of horseshoe crabs..... (5410/18558) | 11 |
| 3. | Site selection and nesting behaviour of horseshoe crabs with special reference to <i>Limulus polyphemus</i> (3575/18560) | 19 |
| 4. | Distribution of horseshoe crabs at their nesting grounds, East coast of Peninsular Malaysia..... (5410/18560) | 27 |
| 5. | Hydrology of horseshoe crab nesting ground at Pahang coast –Part 1..... (3575/18563) | 35 |
| 6. | Hydrology of horseshoe crab nesting ground at Pahang coast –Part 2..... (3575/18566) | 47 |
| 7. | Physicochemical parameters relationship at the horseshoe crab nesting grounds of Pahang coast, Malaysia..... (5410/18567) | 57 |
| 8. | Macrobenthic diversity at the Horseshoe Crab nesting ground, Balok station, Pahang, Malaysia – Part 1..... (3575/18568) | 69 |
| 9. | Macrobenthic diversity at the Horseshoe Crab nesting ground, Balok station, Pahang, Malaysia – Part 2..... (3575/18570) | 83 |
| 10. | Macrobenthic diversity at the Horseshoe Crab nesting ground, Pekan station, Pahang, Malaysia – Part 1..... (5410/18571) | 95 |
| 11. | Macrobenthic diversity at the Horseshoe Crab nesting ground, Pekan station, Pahang, Malaysia – Part 2..... (3575/18573) | 109 |
| 12. | Influence of physicochemical parameters on the macrobenthic diversity and abundance in horseshoe crab nesting grounds, East coast of Peninsular Malaysia..... (5410/18574) | 127 |
| 13. | <i>In-vitro</i> study on the effect of salinity on the hatching success of Malaysian Horseshoe crab eggs..... (3575/18575) | 137 |
| 14. | Effects of salinity on the early growth of <i>Tachypleus gigas</i> larvae - An <i>In-vitro</i> study..... (3575/18577) | 147 |

| | | |
|--|--------------|-----|
| 15. Sediment characteristics of horseshoe crabs nesting ground at Balok station, Pahang, Malaysia | (5410/18579) | 155 |
| 16. Sediment Profiling of the Estuarine Nesting Ground of Horseshoe Crabs at East Peninsular Malaysia | (3575/19587) | 165 |
| 17. Bioaccumulation of some essential metal concentration in Malaysian horseshoe crabs (<i>Tachypleus gigas</i>)..... | (5410/18584) | 175 |
| 18. Cu and Cd Bioaccumulation in Malaysian Horseshoe Crab | (5410/18585) | 183 |
| 19. Metal concentration in horseshoe crab nesting ground along Pahang coast, Malaysia..... | (5410/18586) | 193 |
| 20. Bionomics of Malaysian horseshoe crabs <i>Tachypleus gigas</i> | (5410/19718) | 203 |
| 21. Feeding Ecology of Mangrove horseshoe crab <i>Carcinoscorpius rotundicauda</i> | (5410/19717) | 213 |
| 22. Emerging interest on DNA barcoding technology and its application for high-tech biodiversity studies using COI gene as a reference sequence | (3575/19716) | 225 |
| 23. Can DNA barcode accurately delineate living fossil (Horseshoe crab) and its different developmental stages?..... | (5410/19715) | 237 |
| 24. Revision on the molecular phylogeny of horseshoe crabs – Part 1..... | (5410/19717) | 251 |
| 25. Revision on the molecular phylogeny of horseshoe crabs – Part 2..... | (5410/19720) | 267 |
| 26. Genetic Diversity of <i>Tachypleus gigas</i> Population from West coast of peninsular Malaysia | (3575/19727) | 275 |
| 27. Does continental drift influence in the genetic variability among the horseshoe crab population? | (3575/19727) | 287 |
| 28. Evolution of horseshoe crabs – paleontological and Molecular viewpoint..... | (3575/19731) | 297 |
| 29. Factors involving in the clot formation of horseshoe crab blood..... | (5410/19711) | 307 |
| 30. Methods for bacterial endotoxin quantification in reference to horseshoe crab blood studies | (5410/19740) | 317 |
| 31. ENDO SENSOR (TAL) production from Malaysian Horseshoe crab blood..... | (5410/19744) | 325 |
| 32. Characterization of <i>Tachypleus</i> Amebocyte Lysate (TAL)..... | (3575/19759) | 333 |

| | | |
|--|--------------|-----|
| 33. Environmental and Pharmaceutical applications of Amebocytes Lysate (LAL/TAL) from Horseshoe crabs | (5410/19751) | 343 |
| 34. <i>Tachypleus gigas</i> mortality due biomedical bleeding process | (3575/19756) | 351 |
| 35. Conservation measures on horseshoe crab population – A global view..... | (5410/19759) | 359 |
| Glossary..... | | 369 |

CHAPTER – 27

Does continental drift influence in the genetic variability among the horseshoe crab population?

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Abstract

An attempt was made to examine the influence of Malaysian continental drift on the genetic and haplotype diversity of Malaysian horseshoe crab (*Tachypleus gigas* [Muller, 1785]) distributed along the east coast of Peninsular Malaysia and distant Borneo Island. Mitochondrial DNA (AT rich region = 369bp) analysis showed that *T. gigas* has higher haplotype diversity in peninsular Malaysia compared to east Malaysian (Sarawak) samples. Highest haplotype diversity ($h \pm SD$) was observed among the Terengganu samples (0.813 ± 0.071) followed by Pahang samples (0.813 ± 0.065). There were no difference in nucleotide diversity (π) noted in east coast of Peninsular Malaysian (PM) samples. Overall haplotype ($h \pm SD$) and nucleotide ($\pi \pm SD$) diversity of *T. gigas* in PM samples including Sarawak was 0.827 ± 0.051 and 0.0078 ± 0.0014 respectively. A total of 6 unique haplotypes were recorded of which 2, 2 and 1 were unique to Terengganu, Sarawak and Pahang samples respectively. Pair wise haplotype frequency (F_{ST}) value was not statistically significant ($P > 0.05$) for all the groups indicating the limited gene flow among the population. In addition phylogenetic scrutiny visibly clustered *T. gigas* samples from *T. tridentatus* samples representing sound phylogenetic signals in mtDNA AT rich region. The findings from this study have important implications for proper management and conservation of horseshoe crab in Malaysia.

Key words: Haplotype diversity, Nucleotide diversity, mtDNA AT rich region, *Tachypleus gigas*. Genetic conservation.