

DISTRIBUTION AND ECOLOGY OF  
THE MALAYSIAN MANSEER (GENUS: FORN)  
IN KEMERU LAKE, MALAYSIA

LEANG SOEHA

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**DISTRIBUTION AND ECOLOGY OF THE  
MALAYSIAN MAHSEER (GENUS: *TOR*)  
IN KENYIR LAKE, MALAYSIA**

By

**LIENG SOPHA**

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<b>TABLE OF CONTENTS</b>		<b>Pages</b>
ACKNOWLEDGEMENTS .....		ii
LIST OF FIGURES .....		x
LIST OF TABLES .....		xii
LIST OF PLATES .....		xiii
ABSTRACT .....		xiv
ABSTRAK .....		xvii
LIST OF ABBREVIATIONS .....		xx
<b>CHAPTER</b>		
<b>I INTRODUCTION</b> .....		<b>1</b>
Background of the Study .....		1
Statement of the Problems .....		7
Significance of the Study .....		12
Objectives of the Study .....		14
<b>II. DESCRIPTION OF THE STUDY AREA</b> .....		<b>15</b>
General Features .....		15
Flora and Fauna .....		22
Limnological Profile .....		23
Sampling Sites .....		26
<b>III. LITERATURE REVIEW</b> .....		<b>27</b>
Taxonomy .....		27
Fish Distribution .....		32
Habitat Selection .....		36
Microhabitat .....		37

Macrohabitat .....	39
Feeding Ecology .....	40
<b>IV. MAHSEER DISTRIBUTION AND HABITAT PROFILE</b> .....	<b>43</b>
Introduction .....	43
Objectives .....	47
Materials and Methods .....	48
Mahseer Distribution and Abundance .....	48
Habitat Profile .....	51
Water Depth .....	51
Water Velocity .....	51
Transition Zone .....	51
Pool .....	52
Riffle .....	53
Run .....	53
Substrate .....	55
Aquatic Plants and Leaves of Tree.....	55
Shade .....	55
Effects of Man .....	55
Tree Trunk .....	56
Water Chemistry .....	56
Results .....	58
Mahseer Distribution and Abundance.....	58
<i>Tor tambroides</i> .....	58
<i>Tor soro</i> .....	64
Habitat Profile.....	65
Water Depth .....	65
Water Velocity .....	65
Transition Zone, Pools, Riffle and Run .....	66
Substrate .....	66
Aquatic Plants and Leaves of Trees .....	67



	Shade .....	67
Results	Effect of Man .....	67
	Tree Trunk .....	68
	Water Chemistry .....	68
	Water Temperature .....	68
	Water Transparency .....	69
	pH .....	69
	Conductivity .....	70
	Dissolved Oxygen .....	70
	Hardness of Water .....	70
	Calcium and Magnesium .....	71
	Discussions .....	72
	Mahseer distribution .....	72
	Habitat Profile .....	76
VI. FEEDING OF THE MALAYSIAN MAHSEER	Water chemistry .....	81
	Water Temperature .....	81
	Water Transparency .....	81
	pH .....	81
	Conductivity .....	82
	Dissolved Oxygen .....	82
	Hardness of Water .....	83
	Calcium and Magnesium .....	83
	Result .....	133
V. HABITAT UTILIZATION OF <i>TOR SORO</i> (C & V)		85
	Feeding Apparatus .....	135
	Introduction .....	85
	Objectives .....	88
	Materials and Methods .....	89
	Microhabitat .....	89
	Availability of Microhabitat .....	93
	Microhabitat Analysis .....	94
	Statistical Analysis .....	95

VII. SUMMARY AND CONCLUSION .....	96
Results .....	97
Summary Microhabitat .....	97
Conclusion Water Depth .....	97
Further Study Water Velocity .....	102
Substrate .....	105
BIBLIOGRAPHY Cover .....	109
APPENDICES Fish Aggregation .....	114
VITAE Species Association .....	117
Distance from Fish Position to the Edge of Stream .....	118
Macrohabitat .....	119
Discussions .....	123
 VI. FEEDING ECOLOGY OF THE MALAYSIAN MAHSEER	128
 Introduction .....	128
Materials and Methods .....	131
Food Composition .....	131
Feeding Apparatus .....	132
Relative Length of Gut .....	132
 Result .....	133
Food composition .....	133
Feeding Apparatus .....	135
Relative Length of Gut .....	138
Discussions .....	139

VII. SUMMARY AND CONCLUSION .....	146
Figure	Page
Summary .....	146
1. Map of the Peninsular Malaysia Showing the Location of Kenyir Lake .....	153
Conclusion .....	153
2. Map of the Peninsular Malaysia Showing the Malaysian mahseer Distribution .....	155
Further Study .....	155
3. Monthly Rainfall Fluctuation in Kenyir Lake .....	19
BIBLIOGRAPHY .....	157
APPENDICES .....	174
VITAE.....	197
6. Water Depth Used by, Available to, and Preferred by <i>Tor soro</i> at Sg. Buluh Nipis II and Sg. Mandak II .....	98
7. Depth Used by <i>Tor soro</i> of Different Size Classes at Sg. Buluh Nipis II and Sg. Mandak II .....	101
8. Water Velocity Used by, Available to, and Preferred by <i>Tor soro</i> at Sg. Buluh Nipis II and Sg. Mandak II .....	103
9. Water Velocity Used by <i>Tor soro</i> of Different Size Classes at Sg. Buluh Nipis II and Sg. Mandak II .....	105
10. Substrate Used by, Available to, and Preferred by <i>Tor soro</i> at Sg. Buluh Nipis II and Sg. Mandak II .....	106
11. Different Use of Substrate in Pre-monsoon and in Monsoon at Sg. Buluh Nipis II .....	108
12. Different Use of Substrate in Pre-monsoon and Monsoon at Sg. Mandak II .....	108
13. The Use of Cover by <i>Tor soro</i> Compared with Cover Available at Sg. Buluh Nipis II and Sg. Mandak II .....	109
14. Distance from Fish Focus Point to Nearby Cover at Sg. Buluh Nipis II .....	110
15. Distance from Fish Focus Point to nearby Cover at Sg. Mandak II .....	110
16. Aggregation of <i>Tor soro</i> in Pre-monsoon and in Monsoon at Sg. Buluh Nipis II .....	114

17. Aggregation of *Tor soro* by **LIST OF FIGURES** Sg. Buluh Nipis II 115

<b>Figure</b>	<b>Page</b>
1. Map of the Peninsular Malaysia Showing the Location of Kenyir Lake	16
2. Map of Kenyir Lake .....	17
3. Monthly Rainfall Fluctuation in Kenyir Lake. ....	19
4. Map of Kenyir Lake Showing the Malaysian mahseer Distribution	59
5. Water Level Fluctuation in Kenyir Lake .....	79
6. Water Depth Used by, Available to, and Preferred by <i>Tor soro</i> at Sg. Buluh Nipis II and Sg. Mandak II .....	98
7. Depth Used by <i>Tor soro</i> of Different Size Classes at Sg. Buluh Nipis II and Sg. Mandak II .....	101
8. Water Velocity Used by, Available to, and Preferred by <i>Tor soro</i> at Sg. Buluh Nipis II and Sg. Mandak II .....	103
9. Water Velocity Used by <i>Tor soro</i> of Different Size Classes at Sg. Buluh Nipis II and Sg. Mandak II .....	105
10. Substrate Used by, Available to, and Preferred by <i>Tor soro</i> at Sg. Buluh Nipis II and Sg. Mandak II .....	106
11. Different Use of Substrate in Pre-monsoon and in Monsoon at Sg. Buluh Nipis II .....	108
12. Different Use of Substrate in Pre-monsoon and Monsoon at Sg. Mandak II .....	108
13. The Use of Cover by <i>Tor soro</i> Compared with Cover Available at Sg. Buluh Nipis II and Sg. Mandak II .....	109
14. Distance from Fish Focus Point to Nearby Cover at Sg. Buluh Nipis II	110
15. Distance from Fish Focus Point to nearby Cover at Sg. Mandak II	110
16. Aggregation of <i>Tor soro</i> in Pre-monsoon and in Monsoon at Sg. Buluh Nipis II .....	114

17. Aggregation of <i>Tor soro</i> by Fish Size Categories at Sg. Buluh Nipis II	115
18. Aggregation of <i>Tor soro</i> in Pre-monsoon and in Monsoon at	Pages
1. Sg. Mandak II	116
19. Aggregation of <i>Tor soro</i> by Fish Size Categories at Sg. Mandak II	116
20. Association of <i>Tor soro</i> with other Fish Species at Sg. Buluh Nipis II	50
4. and at Sg. Mandak II	117
21. Distance from Fish Focus Point to the Edge of Stream at	61
Sg. Buluh Nipis II	118
22. Distance From Fish Focus Point to the Edge of Stream at	63
7. Sg. Mandak II	119
23. Macrohabitat Use of <i>Tor soro</i> by Habitat Types at Sg. Buluh Nipis II.	120
24. Macrohabitat Use of <i>Tor soro</i> by Habitat Types at Sg. Mandak II	121
25. Macrohabitat Use of <i>Tor soro</i> by Fish Size Categories at	99
9. Sg. Buluh Nipis II	121
at Sg. Buluh Nipis II and Sg. Mandak II	102
26. Macrohabitat Use of <i>Tor soro</i> by Size Categories at Sg. Mandak II	122
27. Percentage of Food Items Encountered in Gut Contents of <i>Tor soro</i> .	134
28. Number of Guts Contained Food and no Food	134
Categories at Sg. Mandak II	112
12. Relation between Fish and the Use of Cover by Season at	113
Sg. Buluh Nipis II	113
13. Relation between Fish and the Use of Cover by Season	113
at Sg. Mandak II	113
14. Relative Length of Gut (R.L.G.) of <i>Tor soro</i> (C & V)	138
Caught from Sg. Buluh Nipis II and <i>Tor tambroides</i>	
(Bleeker) Caught from Sg. Berang.	

## LIST OF TABLES

Table	Pages
1. Morphometric Index Data of the Lake Kenyir .....	18
2. Limnological Profile of Lake Kenyir .....	24
3. Fish Abundance Categories .....	50
4. Location of the Malaysian Mahseer were Distributed in Lake Kenyir	60
5. Mahseer Distribution and Characteristics of their Habitat	61
6. Distribution and Abundance of <i>Tor tambroides</i> in Lake Kenyir	63
7. Distribution of Microhabitat Used and Available (Depth, and Water Velocity), Between and within Sites, and Distribution of Fish Sizes at Sg. Buluh Nipis II and Sg. Mandak II. ....	99
8. Range of Depth and Velocity that have a Suitability Index $\geq 0.5$ Based on Site-Specific Use and Preference Model that have been Normalised to 1.0. ....	99
9. Seasonal Use and Availability of Depth and Velocity Distribution at Sg. Buluh Nipis II and Sg. Mandak II. ....	102
10. Relation between the Use of Cover and Fish of Different Size Categories at Sg. Buluh Nipis II .....	111
11. Relation between the Use of Cover and Fish of Different Size Categories at Sg. Mandak II .....	112
12. Relation between Fish and the Use of Cover by Season at Sg. Buluh Nipis II .....	113
13. Relation between Fish and the Use of Cover by Season at Sg. Mandak II .....	113
14. Relative Length of Gut (R.L.G.) of <i>Tor soro</i> (C & V) Caught from Sg. Buluh Nipis II and <i>Tor tambroides</i> (Bleeker) Caught from Sg. Berang. ....	138

Abstract of the thesis presented to Universiti Putra Malaysia in  
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## LIST OF PLATES

Plate	Pages
1. <i>Tor tambroides</i> (Bleeker) (left) and <i>Hampala macrolepidota</i> van Hasselt (right) in Kenyir Lake .....	11
2. Juvenile <i>Tor tambroides</i> in Kenyir Lake .....	44
3. Juvenile <i>Tor soro</i> in Lake Kenyir .....	45
4. Under Water Observation of Fish .....	49
5. Direct Visual Observation of Fish .....	50
6. Transition Zone .....	52
7. Pool Zone .....	53
8. Riffle Zone .....	54
9. Run Zone .....	54
10. Activities of Data Collection at the Field .....	91
11. Photo Showing that both the Juvenile <i>Tor soro</i> (right) and <i>Tor tambroides</i> (left) have no Teeth on the lower and upper Jaw and both Fish Species have Thick Lips. ....	136
12. Photo showing that both the Juvenile <i>Tor soro</i> (above) and <i>Tor tambroides</i> (below) have Pharyngeal Teeth on the lower and upper Pharyngeal Arch. ....	136
13. Side view of the Mouth of Juvenile <i>Tor soro</i> (left) and <i>Tor tambroides</i> (right) showing that both Fish Species have the Same Protracted, and Slightly Inferior Mouth. ....	137
14. Photo of the Alimentary Canals of Juvenile <i>Tor soro</i> (the photo above) and <i>Tor tambroides</i> (the photo below ) showing that the Stomachs of both Fish Species had a Slightly Extended Tube. ....	137

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by

**LIENG SOPHA**

**October 1999**

**Chairman: Prof. Dr. Hj. Mohd. Azmi Bin Ambak**

**Faculty: Faculty of Applied Science and Technology**

A study on distribution and ecology of the Malaysian mahseer (*Tor soro* Cuvier & Valenciennes and *Tor tambroides* Bleeker) was carried out in lotic and lentic habitats in Lake Kenyir, Malaysia.

The fish distribution and habitat profile of the Malaysian mahseer were studied to investigate the ecological condition and their relationship with the environment and to determine the present spatial distribution and abundance in the lake system. The results showed that there is a habitat selection by fish of different sizes, (fingerling 2.0 - 7.0 cm, juveniles 7.1 - 20.0 cm and adults >20.0 cm TL) in relation with size of stream, water depth, current velocity, substrate, water temperature, water transparency, dissolved oxygen, and habitat types.

The adults of *Tor tambroides* were most abundant in deeper parts or pools in upstream reaches of large streams (26-60 m width) of Sg. Tembat and Sg. Terengganu and medium-sized stream (12-25 m width) of Sungai Kiang. The



juvenile were found in all sizes of sampled streams in the lake. The adult of *T. soro* were found in less abundance in small and medium-sized streams of Sg. Buluh Nipis II, Sg. Mandak I and II, Sg. Siput, and Sg. Lancang. However, the juveniles and fingerlings were mostly found in the small stream reaches and were most abundant at water depths ranging from 10 to 187 cm with velocity ranging from 1 to 118 cm.s<sup>-1</sup>. The adults occurred in habitats where the water depth was about 5.4 m and current velocity ranged from 1 to 66 cm.s<sup>-1</sup>. The fingerling and juvenile of both species were frequently found in streams where pools represented from 3 to 9%, runs 5 to 32%, riffles 61 to 91% of the total area. The fingerlings and juveniles were mostly found in habitats where boulders were predominant followed by bedrock, sand, gravel, cobble and pebble. The adults mostly occurred in habitats where the substrate comprised of boulders and rock. The young mahseers were frequently found in clear-running water, while the adults occurred in slow-running and more turbid water as compared to the young mahseer. The temperature profile ranged from 23.0 to 25.3°C. the dissolved oxygen varied from 6.7 to 8.8 mg.l<sup>-1</sup>. The water hardness of the mahseer habitat nullifies the effect of toxic metals to the fish.

The microhabitat and macrohabitat analysis of habitat use and preference of *T. soro* in the two small stream reaches of Sg. Buluh Nipis II and Sg. Mandak II showed that *T. soro* preferred depths between 52 cm and 120 cm and water velocity between 0 and 35 cm.s<sup>-1</sup>. Different size classes of *T. soro* used different mean depths at both sites. The seasonal use of depth and velocity by *T. soro* were significantly different at both sites ( $p < 0.05$ ). *T. soro* preferred sand and gravel as substrate. *T. soro* preferred cover up to 70% and the fish of all size had similar preference for cover at both sites ( $p > 0.05$ ). *T. soro* generally aggregated in groups

ranging from 1 to 7 fish and were found to associate with *Acrossocheilus dearatus* (C & V) and *Osteochilus vittatus* (C & V). The adults of *T. soro* were found in pools. The juveniles were quite well spread in all habitat types, pools, runs and riffles, while the fingerlings were most abundant in riffle habitat.

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It was found that *T. soro* fed mainly on algae and other available fauna and flora at the stream of Sg. Buluh Nipis II. Examining their feeding apparatus, the teeth of *T. soro* (7.0 -26.0 cm in TL) and *T. tambroides* (17.0 - 25.0 cm in TL) were not developed on the lower and upper jaw, but there is a presence of pharyngeal teeth on the upper and lower pharyngeal arch. Their mouths were protracted and slightly inferior. The lips of both fish species were thick. Being a typical cyprinid, both fish species had no conventional stomach and possessed an extended long intestine. The fish employed suction feeding in adaptation with their feeding apparatus. The relative length of gut (R.L.G.) for the *T. soro* with the size range from 7.0 to 26.0 cm in total length has been found to vary from the lowest 0.77 to the highest 2.85. The value of R.L.G. for *T. tambroides* with size ranging from 17.0 to 25.0 cm in total length also varies, ranging from 1.11 to 2.50. Both fish species were omnivores as evident from gut content analysis and the relative length of gut.

It could be concluded that the mahseer is a highly territorial fish species. The physical and chemical parameters are significant in determining spatial distribution and abundance of the Malaysian mahseer and also important in the application of habitat-based management of the mahseer population in Lake Kenyir.