SPATIAL DISTRIBUTION OF *ERGASILUSPARVITERGUM* FROM *ETROPLUSSURATENSIS* OF BATTICALOA LAGOON

[1]V. Sujaraini, and [2]P. Vinobaba

[1]Faculty of Applied Sciences, South Eastern University, Sammanthurai
[2]Department of Zoology, Eastern University, Vantharumoolai, Chenkalady

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Introduction

Arthropod parasites of fish have been recognized by man since the time of Aristotle. Most species in the family Ergasilidae belong to the genus *Ergasilus*of which 65 species are parasitic on freshwater fish and 33 species on marine teleosts (Kabata, 1979). Some parasites have a greater affinity or specificity for certain sites on or in the host (Hanek& Fernando, 1978).

The gills of fish represent one of the biotype mostly exploited by different fish ectoparasites (Fernando and Hanek, 1978). In most cases, these pathogens showed preference for specific sites of the gill apparatus of their host. Each of four pairs of gill arches was found in all teleosts supported by a bony cartilagenous skeleton. From each arch, diverging rows of filaments branch off and on both sides of each filaments are located the plate-like lamellae where gaseous exchange occurs (Roberts, 1978).

Purpose of this research is to study the spatial distribution of the parasite *Ergasilusparvitergum* from *Etroplussuratensis* of Batticaloa lagoon which is very helpful to control the parasites.

Methodology

3 Proximal Dorsal	4 Distal Dorsal
2 Proximal Median	5 Distal Median
1 Proximal Ventral	6 Distal Ventral

One hundred *Etroplussuratensis*with a standard length of 2.95 ± 1.00cm and mean weight of 1.25 ± 0.77 g and with mean of 24.63± 2-308) *Ergasilusparvitergum* per fish were used to study the spatial distribution of the parasite. Fish were decerebrated and were then weighed, and the standard length recorded. Gill arches were separated individually and placed in small petri dishes with water from the same aquarium from which the fish were removed. They were numbered right and left I-IV. To count the number of *Ergasilusparvitergum*, the petri dish with a hemibranch (gill) was placed on an Olympus binocular stereo microscope stage and was observed under 40 magnification. Wilcoxon's signed rank test (paired samples) was performed to test the difference between the right and left sets of gill arches . The non parametric STP test and Dunn's test were employed to test

the difference in the number of parasites between the arches and between hemibranchs and hemibranch areas. Significance was noted at the 0.01,

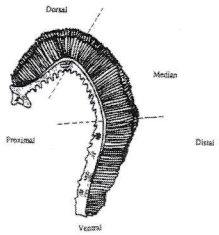

Figure 1: Illustration of the gill arch showing its division into the six arbitrary areas which were used in this study.

Table 1: The spatial distribution of *E. parvitergum* over the different areas of the gill apparatus of *Etroplussuratensis*

Gill Arch	side	Mean/ Standard deviation	1	2	3	4	5	6
I	Right	X	0.39819	0.831168	0.164556	0.15	0.405063	0.51898
		σ	1.291706	2.91277	0.705843	0.5758	1.138138	1.621995
	Left	X	0.71052	0.71212	0.3625	0.365156	0.56962	0.708841
		σ	2.249834	2.90743	1.519858	1.69665	2.484225	3.076594
II	Right	X	0.56962	0.506329	0.151899	0.215189	0.455696	0.36708
		σ	1.374526	1.663125	0.401038	0.929169	1.517399	1.210818
	Left	X	0.623077	0.455696	0.164557	0.202531	0.263158	0.551282
		σ	1.253766	0.984462	0.649049	0.740606	1.09992	1.608802
III	Right	X	0.518987	0.35443	0.171053	0.89744	0.329114	0.265823
		σ	1.893719	1.271361	0.885259	0.432026	1.268166	1.117562
	Left	X	0.423077	0.455667	0.164557	0.202532	0.263158	0.551282
		σ	1.253765	0.986642	0.69049	0.740404	1.09992	1.608802
IV	Right	X	0.630379	0.265823	0.139535	0.102564	0.25641	0.35443
		σ	1.247782	0.811912	0.689006	0.444	0.746175	1.16668
	Left	X	0.3875	0.481012	0.272727	0.088608	0.367089	0.506329
		σ	1.012501	1.385462	1.610826	0.364792	1.210818	2.31678

Table 2: Summary of Q values from the Dunn's test for comparisons of all areas.

	1	2	3	4	5	6
1						
2	0.628_{NS}					
3	1.159_{NS}	0.53_{Ns}				
4	4.23_{****}	3.601_{***}	3.071_{*}			
5	2.491_{NS}	1.862_{Ns}	1.332_{NS}	1.739_{NS}		
6	2.879_{NS}	2.251_{Ns}	1.72_{Ns}	1.351_{NS}	0.388_{Ns}	

*= Significant at 0.05 level, ***- Significant at 0.05, 0.01 and 0.005 level,
****-significant at 0.05, 0,01,0.005 and 0.001 level

Discussion and Conclusion

This study showed no significant difference in the numbers of *E.parvitergum* between the gill arches of *Etroplussuratensis*although many authors have recorded such differences in other host parasite systems. For example the site specificity of *Dicilidophoramacchimi* was similar to that of *D. paradoxum*. *D. amphibothrium* prefers gill arches II and III of *G. cernua* (Wootten, 1974).

Mor *E. parvitergum*were found on the left than on the right set of gills.The ventral segment of hemibranchs carried the greatest number of *E. parvitergum*and there was more parasites on the proximal rather than the distal parts of the filaments.There is no significant difference in parasite numbers between gill arches.There was a significant difference between area 4 and areas 1, 2 and 3. It shows little evidence for the niche restriction. The gill microhabitat for *E.parvitergum*could be restricted in several ways to certain gill arches, hemibranchs and or arches of the hemibranchs. However, *E.parvitergum*showed little evidence of niche restriction if all infections are aggregated, but at the individual host level there was strong evidence if restricted distribution. (Rohde, 1976, 1977 suggested that the site selection enhances the chances of intraspecific factors and thus mating and this could well be the reason for the observed aggregations of *E.parvitegum* of individual gills.The speed of the respiratory current may have an influence on the settlement of the infective larval stage or of immature In future, this study can lead to that the O_2 concentration influences the distribution of the parasites.

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