Uttar Pradesh J. Zool. 15 (3) : 189-193, 1995 *ISSN 0256-971X*

SITE SELECTION AND FREQUENCY DISTRIBUTION OF *GYRODACTYLUS NEONEPHROTUS MALMBERGI* SINGH AND AGRAWAL, 1994

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Present communication deals with the frequency distribution and site selection of *Gyrodactylus neonephrotus malmbergi* Singh and Agrawal, 1994 on its host, *Heteropneustes fossilis* (Bloch).

INTRODUCTION

Freshwater stinging cat fish, *Heteropneustes fossilis* (Bloch), was found heavily infected with a monogenean, *Gyrodactylus neonephrotus malmbergi* Singh and Agrawal, 1994, causing ulcers, haemorrhages and partial loss of fins. A number of worms were found infecting different fishes which enabled the authors to describe the site selection and frequency distribution of the monogenean.

MATERIALS AND METHODS

Study of site selection and frequency distribution was made by first examining the narcotized fish, *H. fossilis* (Bloch), with naked eye. Later, desired parts of body was amputed off with the help of fine knife and subjected to relaxation, process of the parasite in well labelled petridishes with the help of chloritone technique of Hargis (1952).

For the study of site selection of parasite on fish body, the fish body was divided into 13 parts (Fig. 1) (7 body parts *viz.* head, antero-dorsal, antero-ventral, mid-dorsal, mid-ventral, postero-dorsal, postero-ventral and 6 fin parts *viz.* dorsal fin, ventral fin, pectoral fin, anal fin, caudal fin, barbles. The data for the number of parasite and their length and frequency distribution was plotted.

OBSERVATIONS

In all total 581 specimens from 7 hosts were examined. Site of monogenean attachment is represented by a dot on the fish. It was observed (Fig. 2) that no parasite was found on the gill and operculum of the fish. Parasites were more abundant on dorsal surfaces as compared to ventral surface of the body.

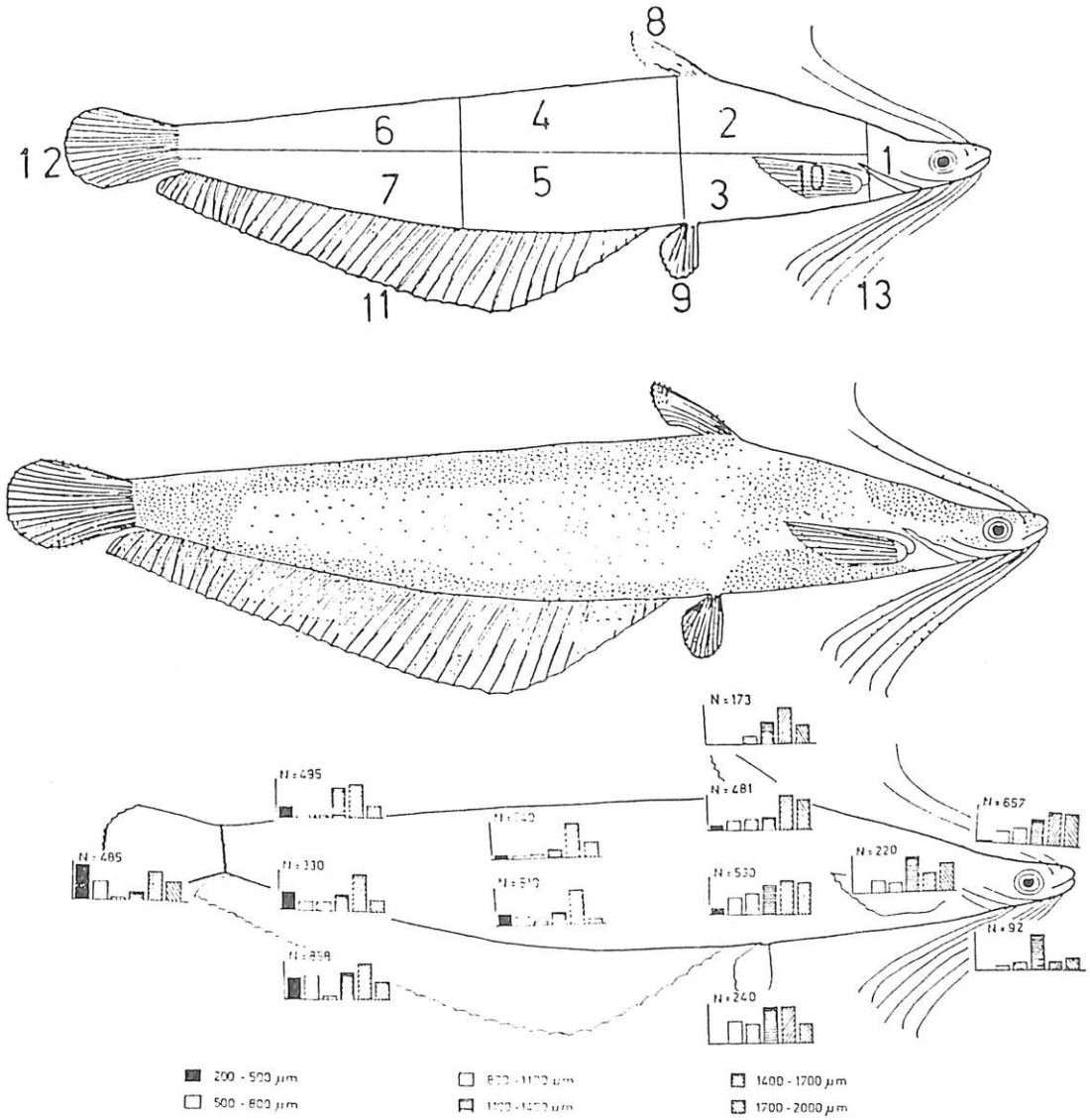
On the dorsal surface heaviest infection was noticed on head region (ethmoidal, postorbital), behind the dorsal fin upto caudal peduncle. Caudal peduncle was heavily infected. On the ventral surface of body, most of the parasite were present in the region between pelvic and pectoral fin, moreover, ventral surface was also found occupied with these parasite in the region of attachment of ventral fin with the body throughout the length. However, jaw and ventral surface of the jaw were free from the parasites. A few specimens were however, present on barbles.

All the fins have infection. Distal part of the dorsal fin has few parasites but the proximal part has no parasite. However, half of the caudal fin has more parasite than the upper half. Irregular distribution was recorded on the anal fin but the distal part of the ventral fin was mainly infected in the caudal peduncle region. Ventral fin has uniform distribution but on the pectoral fin number of parasites is very meagre.

As far as frequency distribution of body length of parasites on each part of fish is concerned, it was observed (Table I, Fig. 3) small specimens of 200-500 µm size were maximum on caudal fin and minimum on the head. However, they are absent on barbles and dorsal, ventral, pectoral, anal and caudal fin. Specimens of 500-800 µm were maximum on anal fin, minimum on barbles and absent

Table I : Showing frequency distribution of *Gyrodactylus neonephrotus malmbergi* Singh and Agrawal, 1994 on different parts of *H. fossilis.*

Body size in µm	Head	Ant Dorsal	Ant Ventral	Mid Dorsal	Mid Ventral	Post Dorsal	Post Ventral	Dorsal	Ventral	Pec-toral	Anal	Caudal	Barbles	Total
200–500	5	25	25	45	80	60	60	–	–	–	143	150	–	593
500–800	62	45	65	30	60	15	30	–	40	25	155	80	5	612
800–1100	85	51	80	40	25	15	30	15	35	20	20	10	10	436
1100–1400	140	60	110	90	85	160	55	45	65	75	180	35	48	1148
1400–1700	185	160	128	375	225	180	115	75	65	40	240	125	12	1925
1700–2000	180	140	122	160	35	65	40	38	65	60	120	85	17	1097



Figs. 1-3. 1. *H. fossilis* (Bloch) showing 13 parts (7 body parts and 6 fin parts); **2.** Showing site selection of *G. neonephrotus malmbergi* Singh and Agrawal, 1994, on 13 body parts of host; **3.** Frequency distribution of the body length of *G. neonephrotus malmbergi* Singh and Agrawal, 1994, on 13 body parts of host.

on the dorsal fin. Specimens of 800-1100 µm were maximum on anal fin, minimum on caudal fin. Specimens of 1400-1700 µm were also present on every part of the body. Highest infection was at mid-dorsal part and lowest was at the barbles. The highest size of specimens (1700-2000 µm) were also represented at every part of the body maximum at head and minimum at barbles.

Frequency distribution of body length of all the worms 5811 is expressed in (Table II; Fig. 4). In all two peaks are visible in the distribution first at body length 400-500 µm and the second at 1100-1800 µm. Number of worms tends to stay low between the body length 600-1500 µm.

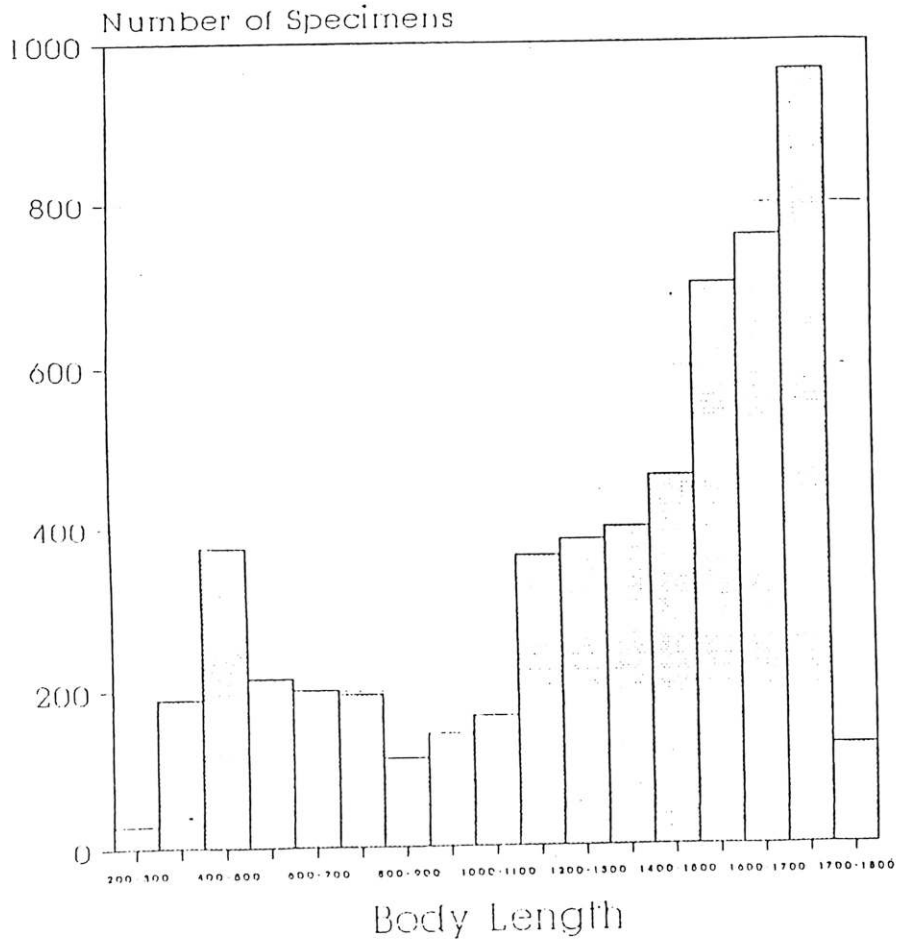


Fig. 4. Frequency distribution of body length of *G. neonephrotus malmbergi* Singh and Agrawal, 1994, collected from 7 hosts.

DISCUSSION

Absence of parasites on the gill and operculum is quite likely as the juveniles of *Gyrodactylus* sp. are carried to the fishes by the water current and through the movement of themselves not by gill and ventilating current of host as also reported by Malmberg (1970). This suggests that parasites attaches itself directly on the body surface and fins of the host.

Adult worms were abundant on mid dorsal, mid ventral parts of body and anal fin. It is probable to spaculate that the observed difference in the occurrence between very small worms and adult can be explained by migration of small worms from their original site of attachment to their favourite sites as also observed by Ogawa (1984).

It was also observed that the number of worms on the host sharply decreased as they grow bigger than 100 μm and similar is the case with worms less than 500 μm. In our opinion, two different explanations are possible for this phenomenon :

1. There was sharp increase in juvenile worms successfully attached to the host at that time of year.

2. Most of the immature worms had detached themselves from the host for some reason before attaining the size of 1700 μm.

Table II : Showing frequency distribution of the body length of *G. neonephrotus malmbergi* Singh and Agrawal, 1994 collected from 7 hosts (N = 5811).

Body size (μm)	No. of parasites
200–300	29
300–400	190
400–500	3
500–600	374
600–700	214
700–800	201
800–900	196
900–1000	118
1000–1100	148
1100–1200	170
1200–1300	364
1300–1400	384
1400–1500	400
1500–1600	464
1600–1700	700
1700–1800	964
1800–1900	133
Total	5811

Hirakawa *et al.* (1984) and Ogawa (1984) made experimental studies and found that number of worms sharply decreases when they grow bigger as observed by us also in the present investigation.

ACKNOWLEDGEMENTS

Authors are grateful to Dr. S.S. Lal, Head, Department of Zoology, C.C.S. University, Meerut for his keen interest and providing the laboratory facilities. We are also thankful to CSIR for the financial assistance.

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