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SHORT COMMUNICATION

ON THE ENDOPARASITIC FAUNA OF SOME PADDY-FIELD FISHES FROM KEDAH, PENINSULAR MALAYSIA

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Abstrak: Fauna endoparasit ikan air tawar sawah padi di Negeri Kedah, Semenanjung Malaysia dilaporkan. Sejumlah enam spesies parasit telah diperoleh daripada enam spesies ikan. Walau bagaimanapun, hanya empat spesies ikan yang dijangkiti parasit. Sejumlah empat spesies nematod telah diperoleh berbanding hanya satu sahaja bagi setiap trematod dan akantosefala.

Kata kunci: Fauna Endoparasit, Ikan Air Tawar Sawah Padi, Kedah

Abstract: The endoparasitic fauna of freshwater paddy fishes caught in Kedah, Peninsular Malaysia were described. A total of six species of parasites were recovered from six species of fish. However, only four species of fish were infected with parasites. A total of four species of nematodes were recovered as compared to one species each for trematodes and acanthocephalans.

Keywords: Endoparasitic Fauna, Paddy-field Fishes, Kedah

Our knowledge on the parasite fauna of Malaysian freshwater fish is limited. Parasite species had been recovered from *Clarias batrachus* (Furtado 1965; Hanek & Furtado 1973; Furtado & Tan 1973; Rahman & Ali 1991), *Channa* (Fernando & Furtado 1963; Furtado & Lau 1968; Rahman & Ali 1991), and also from less important freshwater fishes like *Butta pugnax, Trichogaster trichoptera* and *Rasbora*.

Peninsular Malaysia has some 320 000 hectares of wet paddy cultivation, and of these about 120 000 hectares are 'deep' paddy areas which holds water to a depth of 15–16 cm, an ideal habitat for paddy-field fishes (Report of 4th Malaysia Plan 1981).

In Kedah, paddy-field fishes provide farmers a substantial amount of protein, in addition to additional income from the sale of the fish. But despite the importance of paddy-field freshwater fishery, our knowledge of their helminthic fauna that can infect these fishes is lacking. The present paper describes some helminths of freshwater fishes caught from the paddy-fields in Kedah, Peninsular Malaysia.

Using seine and hand nets, freshwater fishes were caught from various paddy-fields around the districts of Yan, Pendang, Baling, Sungai Petani and Alor Setar, Kedah. The fishes were kept alive in aerated coolers and brought back to the laboratory and examined fresh. The fishes that died were frozen and examined at a later date. The external features were visually examined for

ectoparasites. The gills were removed and examined for helminths under a dissecting microscope. The fishes were slit opened and the contents collected in Petri dishes, and examined for helminths under a dissecting microscope.

All parasites were picked individually and kept in small bottles. Trematodes and acanthocephalans were preserved in formaline-alcohol-acetic acid, while nematodes were preserved in 5% glycerine in 70% alchohol. Trematodes were stained with semichon's acetic carmine stain and mounted permanently in Canada balsam. Nematodes and acanthocephalans were cleared in lactophenol and examined in temporary mounts.

A total of 200 fishes, belonging to six species, *Clarias batrachus*, (number examined 61), *Trichogaster pectoralis* (53), *Channa striata* (45), *Anabas testudineus* (23), *Notopterus notopterus* (13) and *Puntius gonionotus* (5) were examined for parasites (Table 1). The largest fish examined was *Clarias batrachus* (mean length = 27.8 cm) and the smallest *A. testudineus* (mean length = 11.9 cm) (Table 1).

Only four species of fish examined were infected with one or more species of parasites; *P. gonionotus* and *T. pectoralis*, which were not infected (Table 2). *Clarias batrachus* were infected with two species of parasites, namely the trematode, *Orientocreadium* spp. (70.5%) and the nematode, *Procamallanus clarias* (86.3%). All *C. striata* examined were infected with the acanthocephalan, *Pallisentis* spp. with a high mean intensity (33.9%); a large majority of the this fish species (73.2%) were also infected with the nematode, *Camallanus yehi* (Figs. 1 & 2). A large proportion of the *A. testudineus* population (79.4%) was infected with the nematode, *Zeylanema anabantis*, whilst some *N. notopterus* fish were infected with the nematode, *Spinitectus* sp. (Figs. 3 & 4).

From the results, it can been seen that parasites were very species specific; no fish have the same species of parasite. Dogiel *et al.* (1970) suggested that a large number of parasites are very specific to particular hosts, especially fishes. Furthermore, some parasites are specific to a single species of fish host, others to several species belonging to related genera or to an entire family. This is probably due to the evolution of the fish host – various species of a genus, various general of a family, from a common ancestor, and that the common parasites, thus less specific, remain within the group of hosts despite the evolutionary changes of the hosts.

Table 1: The various species of fish caught and their respective mean lengths.

Species	Number caught	Length (cm)	
		Mean	Range
Clarias batrachus	61	27.8	16.5–33.5
Trichogaster pectoralis	53	16.3	11.7–23.2
Channa striata	45	24.1	17.3–25.8
Anabas testudineus	23	11.9	8.3–13.0
Notopterus notopterus	13	20.3	18.7–23.6
Puntius gonionotus	5	17.3	16.6–19.6

Table 2: Prevalence of parasites in the respective species of fish caught in paddy-fields in Kedah (number within parenthesis denotes mean intensity).

	Clarias batrachus	*Channa striata*	*Trichogaster pectoralis*	*Anabas testudineus*	*Notopterus notopterus*	*Puntius gonionotus*
Trematode						
Orientocreadium spp.	70.5 (115.0)	–	–	–	–	–
Nematode						
Procamallanus clarias	86.3 (28.6)	–	–	–	–	–
Camallanus yehi	–	73.2 (4.6)	–	–	–	–
Zeylanema anabantis	–	–	–	79.4 (12.2)	–	–
Spinitectus spp.	–	–	–	–	37.5 (3.6)	–
Acanthocephala						–
Pallisentis spp.	–	100 (33.9)	–	–	–	–
Total of species	2	2	–	1	1	–

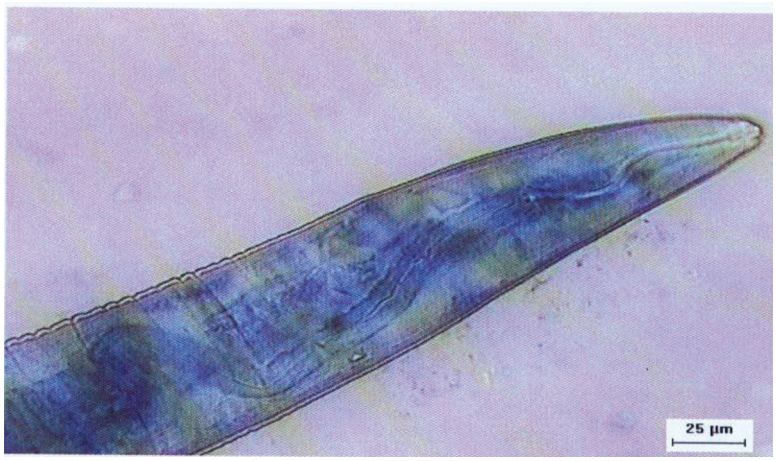

Figure 1: *Camallanus* sp. (anterior part)

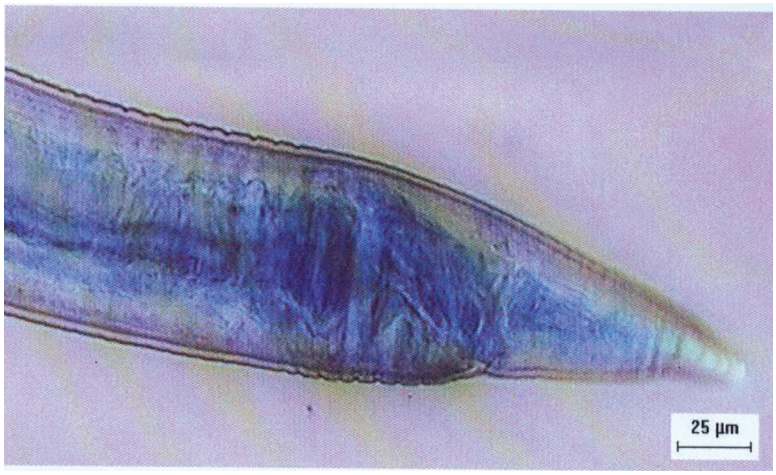

Figure 2: *Camallanus* sp. (posterior part)

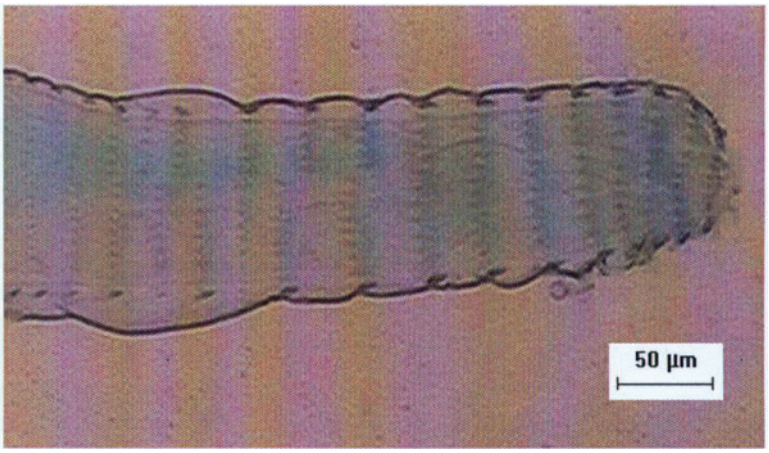

Figure 3: *Spinitectus* sp. (anterior part)

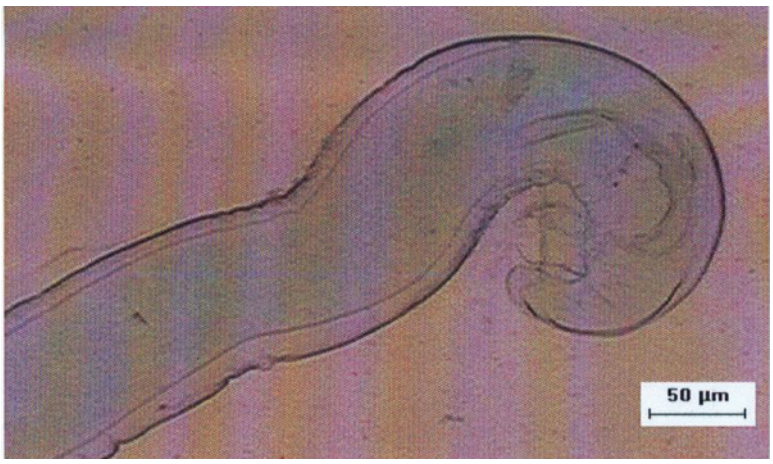

Figure 4: *Spinitectus* sp. (posterior part)

The six species of fish present in the paddy-fields of Kedah have different patterns of feeding behavior. *C. striata* and *A. testudineus* are predatory in their daily feeding, as compared to *Clarias batrachus* which known to be omnivorous and are bottom dwellers, feeding on substrate fauna. *Puntius gonionotus* and *T. pectoralis* are herbivorous, whilst *N. notopterus* are known to feed both on algae and aquatic insects.

The trematode identified in this study was *Orientocreadium* spp. found in *Clarias batrachus*. Being a trematode, this parasite utilizes a freshwater snail for its transmission. *Clarias batrachus* being omnivorous and a bottom-feeder, could easily pick up infection when feeding infected snails present at the bottom of the paddy-fields.

The four nematodes recovered in the present study belong to two families, i.e. Camallinidae (3 species) and Rhabdochonidae (1 species). The camallanids are known to have copepods as their intermediate hosts (Hoffman 1970; Yamaguti 1961). Therefore, they can reach their definitive host in two ways, depending on the specific species. Some may require one intermediate host which would most likely be a copepod, and a second intermediate host, possibly a fish, is required for completion of their life-cycles. Mayfly nymphs are known to serve as intermediate hosts for *Spinitectus* spp. (Fernando & Furtado 1963). Thus the infection of *N. notopterus* with *Spinitectus* spp. suggests that this fish species may have previously consumed mayfly nymphs.

The intermediate host for the acanthocephalan, *Pallisentis* spp. can either be an invertebrate host (such as insects or crustaceans), or vertebrates (such as fishes, amphibians or reptiles) (Yamaguti 1963). Both invertebrate and vertebrate hosts for this parasite are found in large numbers in the paddy-fields of Kedah, and would readily take up their role in the transmission of this parasite.

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