

## An Investigation on Endoparasites from Some Freshwater Fishes at Loikaw Markets

Ni Ni Win<sup>1</sup>, Saw Rupa Tint<sup>2</sup> and Bauk Ra<sup>3</sup>

### Abstract

An investigation on alimentary endoparasites from some freshwater fishes was conducted during August 2010 to June 2011. A total of 480 specimens of freshwater fishes such as Nga-yant *Channa* spp., Tilapia *Oreochromis* spp., Ka-tha-boe *Glossogobius giuris* and Nga-ku *Clarias batrachus* were collected from the Loikaw markets (Thirimingala, Kandyawady and Naung-ya market) during period and examined for endoparasites collection. Twelve individuals in each species were carried out monthly. Recorded endoparasite specimens were divided into four groups, Acanthocephala, Nematoda, Trematoda and Cestoda. A total of nine species of endoparasites such as *Pallisentis allahabadii*, *Contracaecum balistic*, *Raphidascaris* sp., *Metanisakis* sp., *Procamallus batrachus*, *Cucullanus* sp., *Comephoronema* sp., *Dactylostomum* sp., *Ancistrocephalus polyptera* were identified. Recorded of each group endoparasites, nematodes and cestodes were significant different infestation in *Channa* spp.  $p < 0.05$  within the study host species. Nematodes were mostly collected in December, and acanthocephalans and cestodes were also mostly collected in November within the study period. Incidence of nematodes was higher than that of acanthocephalans, trematodes and cestodes.

**Key words:** endoparasites

### Introduction

Fish and rice form the basis for the food security of Myanmar people. Fishes, like the other animal, must eat to get the energy required for living. Traditionally Myanmar people prefer freshwater fish to marine fish. Fish consumption in Myanmar is 21 kg per caput per year. Myanmar has vast potential for the development of aquaculture and it has grown rapidly in recent year. Although the fish disease problem appeared to be rather in Myanmar compared to the other countries, disease out break have gradually become more frequently. Fishes are usually infected with parasites, virus and bacteria. One of the main factors determining the variety of the parasite fauna, as well as the intensity and incidence of infection, are the diet of the host, possibly including intermediate hosts of parasites. Parasitic infections of man are responsible for loss of appetite, inhibition of digestion and absorption in gut swollen abdomen, general unthrijtines and wasting (Ash *et al.*, 1984).

Loikaw is located at 19° 40' 60N and 97° 13' 0E, altitude 2896 feet (882 meters) (<http://en.wikipedia.org/wiki/Loikaw#Education>). Loikaw has a population of 139,898 in 2008 (Myo Myint Oo, 2009) and most of the local people consume mainly on fish (Su Su, 2011). Many studies on ecto and endoparasites of freshwater fishes have widely done in various countries from an ecological standpoint (Khin Hla Yee *et al.*, 2004). There is no report on this study at Loikaw. So we take interest to do the study of parasitic helminthes in some freshwater fishes from Loikaw. The aims of our study are to detect infestation of helminth parasites on some freshwater fishes and identify them, to study the distribution pattern and prevalence rate of these parasites.

### Materials and Methods

This study was conducted between August 2010 and May 2011. Some freshwater fishes were collected from Loikaw markets of Thirimingala, Kandyawady and Naung-ya. These freshwater fishes such as Nga-yant (*Channa* sp.), Tilapia (*Oreochromis* sp.), Ka-tha-boe

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(*Glossogobius giuris*) and Nga-ku (*Clarias batrachus*) were chosen as candidates for endoparasites collection. Fishes were identified according to the references of Talwar and Jingran (1991). Endoparasites were investigated on gastrointestinal (GI) tracts of these species due to the method of Sprent *et al.* (1967). Recorded endoparasites were divided into four groups by using key based on their outstanding character (Leong, 1994). Specific species of endoparasites were detailed identified with Yamaguti (1959, 1961a & b).

Twelve individuals of each fish species were dissected ventrally in the wax tray. After opening, each gut was washed with water by using of fine brush to obtain the endoparasites. The stagnant debris was put in the petri-dish and repeatedly washed down with gently flow of tap water. Finally the worms were traced to pick up with the brush or forceps and cleaned in 3 per cent saline solution. Each live specimen was placed on a glass slide, covered with a cover slip, observed under the dissecting microscope (HMC-006, manual for XSJ-II, 40X) and light microscope, and recorded a specific species of helminth parasites. Some were preserved and labeled in bottles containing 70 percent alcohol for further detailed examination.

Recording endoparasites data from the study host species were analyzed with SPSS (Statistical Package for the Social Science) software.

### Results

Helminth parasites were collected from four species of freshwater fishes, Nga-yant (*Channa* spp.), Tilapia (*Oreochromis* spp.), Ka-tha-boe (*Glossogobius giuris*) and Nga-ku (*Clarias batrachus*) (Plate 1, Table 1). These species are commonly used by the local people. All are carnivores except Tilapia (*Oreochromis* spp.), an omnivore. Four species is included in Perciformes and one in siluriformes.

Recorded endoparasites were divided into four groups, Acanthocephala, Nematoda, Trematoda and Cestoda. One species of Acanthocephala, *Pallisentis allahabadii*; six species of Nematoda, *Contraecum balistic*, *Raphidascaris* sp., *Metanisakis* sp., *Procamallus batrachus*, *Cucullanus* sp., *Comephoronema* sp.; one species of Trematoda, *Dactylostomum* sp. and one species of Cestoda, *Ancistrocephalus polyptera* were identified as shown in Plates 2, 3 and Table 2.

Among recorded endoparasites, one species Acanthocephala, five species of Nematoda and one species of Cestoda were hosted in Nga-yant (*Channa* spp.). One species of Acanthocephala and three species of Nematoda were hosted in Ka-tha-boe *G. giuris*. Two species of Nematoda and one species of Trematoda were hosted in *C. batrachus*. Seven, four and three species of endoparasites were found in carnivores of Nga-yant *Channa* spp., Ka-tha-boe (*G. giuris*) and Nga-ku (*C. batrachus*), respectively. Endoparasites species were mostly found in Nga-yant (*Channa* spp.), but no was found in omnivore Tilapia (*Oreochromis* spp.) (Table 2).

Prevalence rate of helminth parasites found in four groups were described in Table 3. A total of 75 individuals of helminth parasites were encountered in Nga-yant (*Channa* spp.). A total of 21 and 6 individuals of helminth parasites were also found in Ka-tha-boe (*G. giuris*) and Nga-ku (*C. batrachus*). The incidence of nematodes was higher than that of acanthocephalans, cestodes and trematodes. The acanthocephalans were mostly found in Ka-tha-boe (*G. giuris*), the nematodes and cestodes were mostly found in Nga-yant (*Channa* spp.) and trematodes only found in Nga-ku (*C. batrachus*).

Recorded of each group endoparasites, nematodes and cestodes were significant different ( $p \leq 0.05$ ) infestation in *Channa* spp. ( $df = 3$ ,  $\chi^2 = 16.923$ ,  $P = 0.001$  and  $df = 3$ ,  $\chi^2 = 15.877$ ,  $P = 0.001$ ) within the study host species.

According to the monthly distribution pattern of endoparasites occurrence from study fishes (Fig. 2), the helminth parasites were highest occurred in November and December within the study period.

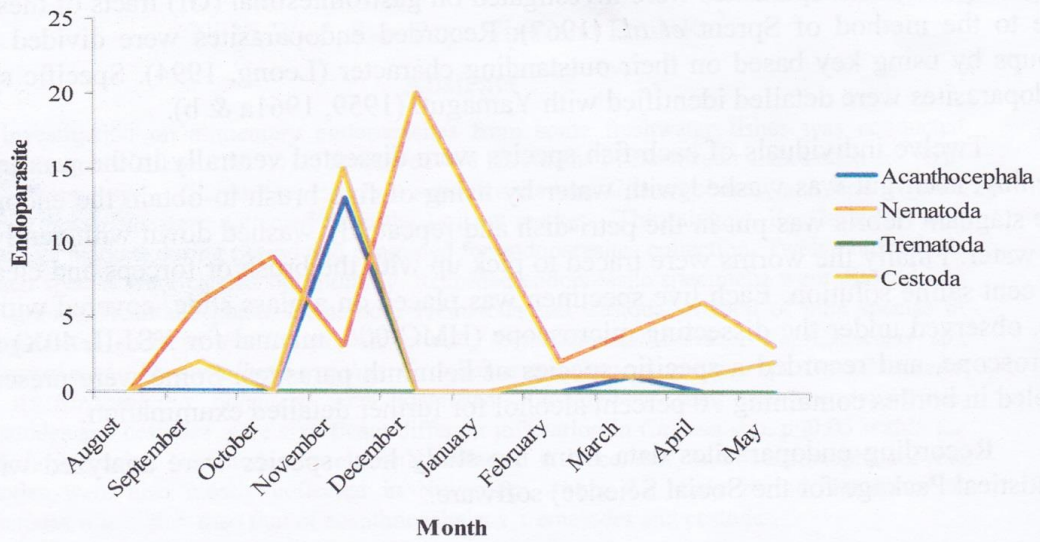
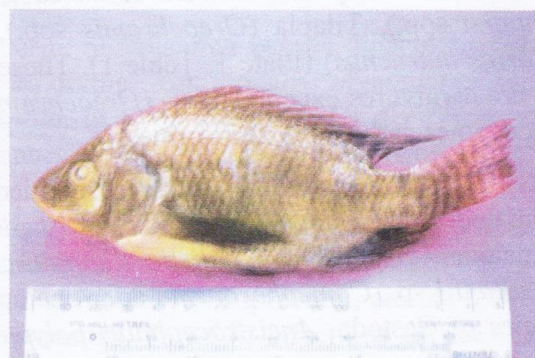


Fig. 2. Monthly distribution patterns of helminth parasites found in study fishes



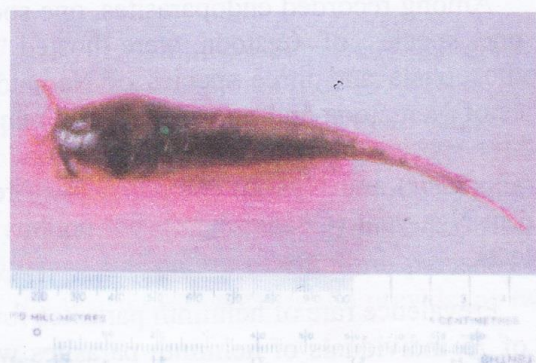
*Channa sp.*



*Oreochromis sp.*

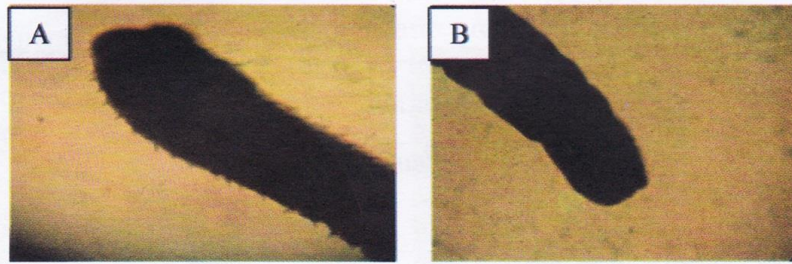


*Glossogobius giuris*

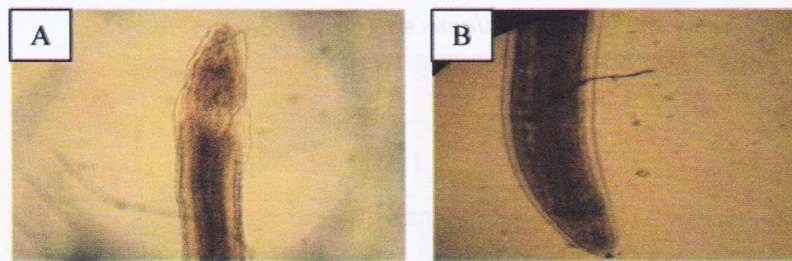


*Clarias batrachus*

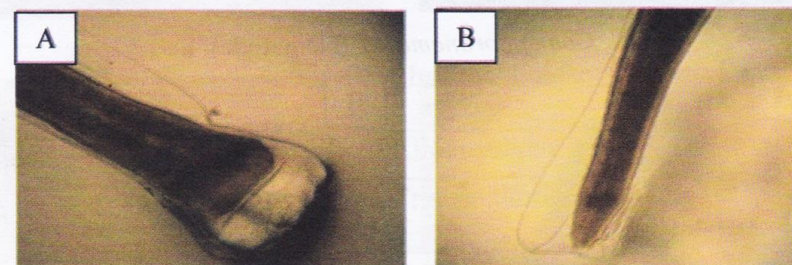
Plate 1. Some freshwater fish species examined for endoparasites collection



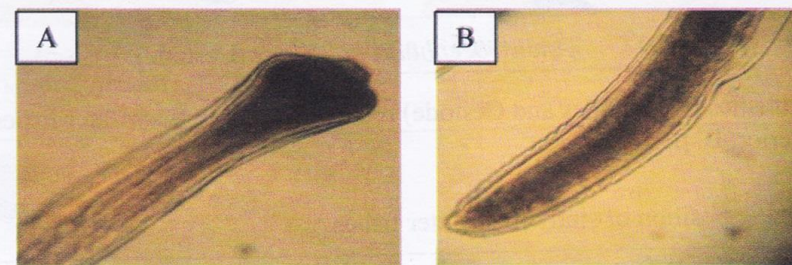
*Pallisentis allahabadii* (Acanthocephalan)



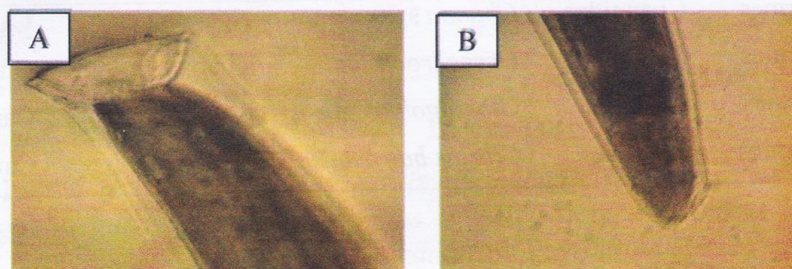
*Contraecaecum balistic* (Nematode)



*Rhabdiascaris* sp. (Nematode)



*Metanisakis* sp. (Nematode)



*Procamallus batrachus* (Nematode)

Plate 2. Endoparasites (Acanthocephalan and Nematodes) recorded in study freshwater fishes (A. anterior, B. posterior)

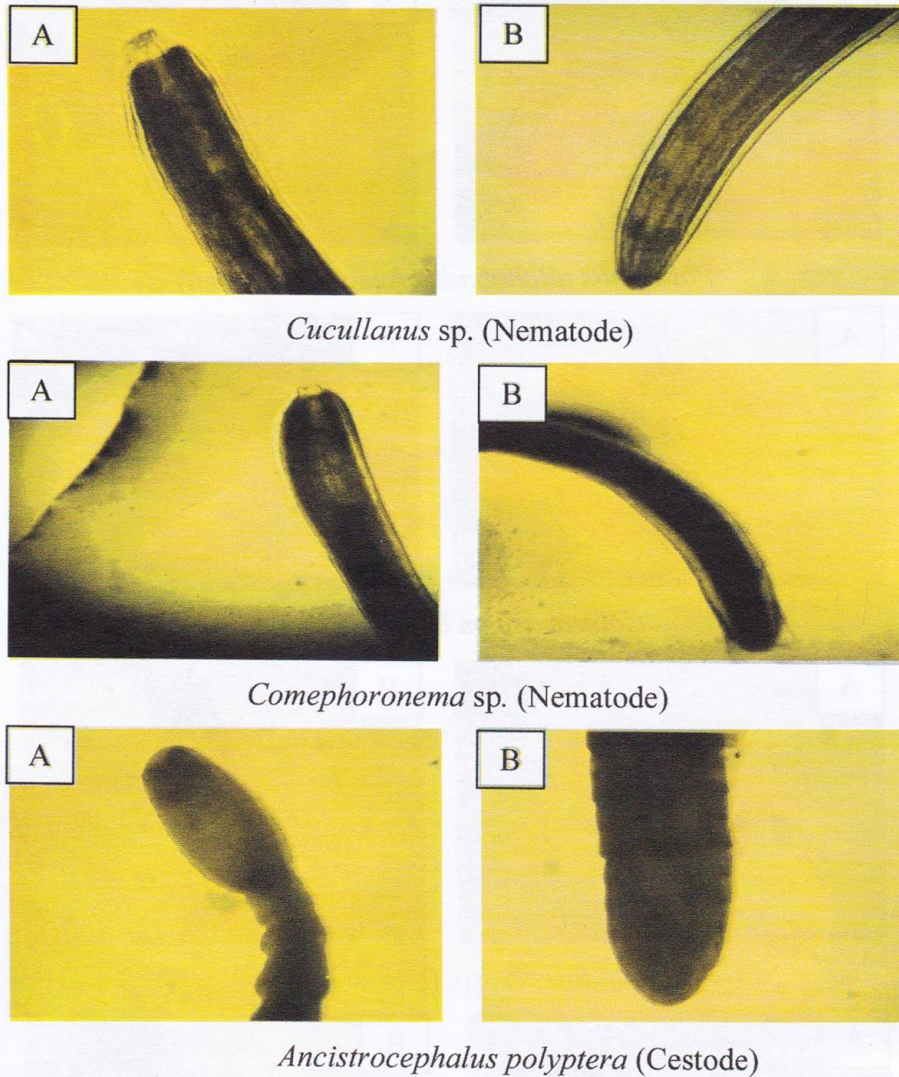


Plate 3. Endoparasites (Nematodes and Cestode) recorded in study freshwater fishes (A. anterior, B. posterior)

Table 1. Systematic position of study freshwater fishes

No.	Order	Family	Species	Local Name	Feeding Habit
1	Perciformes	Channidae	<i>Channa</i> sp.	Nga-yant	Carnivores
2	Perciformes	Cichlidae	<i>Oreochromis</i> sp.	Tilapia	Omnivores
3	Perciformes	Gobiidae	<i>Glossogobius giuris</i>	Ka-tha-boe	Carnivores
4	Siluriformes	Claridae	<i>Clarias batrachus</i>	Nga-ku	Carnivores

Table 2. General grouping of helminth parasites recorded from study fishes

Group (Phylum/Class)	Order	Family	Species	Host
Acanthocephala	Neoechinorhyidae	Quadrigyridae	<i>Pallisentis allahabadii</i>	Nga-yant, Ka-tha-boe
Nematoda	Ascaridiea	Heterocheilidae	<i>Contracecum balistic</i>	Ka-tha-boe, Nga-ku
			<i>Raphidascaaris</i> sp.	Nga-yant, Ka-tha-boe
			<i>Metanisakis</i> sp.	Nga-yant
	Spiruridea	Camallanidae	<i>Procamallus batrachus</i> <i>Cucullamus</i> sp.	Nga-yant, Nga-ku Nga-yant, Ka-tha-boe
		Rhabdochonidae	<i>Comephoronema</i> sp.	Nga-yant
Trematoda	Digenea	Allocreadidae	<i>Dactylostomum</i> sp.	Nga-ku
Cestoda	Eucestoda	Triaenophoridae	<i>Ancistrocephalus polyptera</i>	Nga-yant

Table 3. Total comparison of prevalence rates of helminth parasites recorded in study fishes

Fishes	Total exam fishes	Acanthocephala		Nematoda		Trematoda		Cestoda		Total Count
		No.	%	No.	%	No.	%	No.	%	
<i>Channa</i> sp.	120	4	5.33	53	70.67	0	0	18	24	75
<i>Oreochromis</i> sp.	120	0	0	0	0	0	0	0	0	0
<i>Glossogobius giuris</i>	120	10	47.62	7	33.33	0	0	4	19.05	21
<i>Clarias batrachus</i>	120	0	0	4	66.67	2	33.33	0	0	6

### Discussion

In the present study, *Pallisentis allanabadii* was collected from *Channa* sp. and *Glossogobius giuris*. *P. allahabadii* was collected from *Nemipterus japonicus* by Aung Latt (1987), also collected from *Channa pundatus* by Phyu Phyu (1992) and from *Wallago attu* by Myint Myint Win (1987). May Kyi Htun (1983) who reported that the difference in distribution of these parasites could be due to the difference in location where fishes were collected. She observed in some species of *Pallisentis* sp., *P. gaboos* and *P. allahabadii* had a wide host range. This could be due to the host having the same feeding habit or it could be due to the same living environment.

*P. planorantus* and *P. clarias* are not resembled but possess characteristics of the species *P. batrachus*, recorded by Soe Soe Oo (1978) and Aung Latt (1987). Aung Latt

recorded it from the host *Formio niger*. *P. batrachus* was recorded from *Channa* sp. and *C. batrachus* in this study.

Yamaguti (1961a, 1961b) found *Contraecaecum balistic* from the host *Balistis mitis* and *B. stellaris*. Baylis and Daubnery (1923) mentioned that the larvae of *C. ballistic* were also found in *Barilius bola*, *Callichorous pobda* and *Wallago Attu*. However Kyaw Aung (1980) recorded the adult specimen of this endoparasite was recorded from *W. attu*. This endoparasite was collected from *G. giuris* and *C. batrachus* in this research.

Helminth parasites were found in carnivores *Channa* sp., *G. giuris* and *C. batrachus*. No helminth parasites were found in *Oreochromis* sp. Khin Hla Yee *et al.* (2004) described that the carnivores are haboured with larger number of endoparasites than omnivores and herbivores. This may be due to the fact that carnivore fishes usually ingest various invertebrates which can be served as intermediate host by endoparasites to complete their development stages. The number of endoparasites was lowest in herbivorous, due to their feeding habit on debris and plankton and their habitat mainly over mud banks, mud and sand.

The incidence of nematodes was mostly higher than that of acanthocephalans, trematodes and cestodes were found in this study. Nwe Nwe San (1991) also described that the incidence of acanthocephalans was higher than that of trematodes, cestodes and nematodes. The incidence of infection and distribution of the parasites differed from Kyaw Aung (1980) and May Kyi Htun (1983).

Khin Hla Yee *et al.* (2004) described that fish diseases cannot be transmitted to man with the exception of certain parasite such as tapeworm (Cestode). Only one species of cestodes was found during this study collection.

### Conclusions

1. Freshwater fishes were collected from three Loikaw markets. Four species of freshwater fishes such as Nga-yant (*Channa* sp.), Ka-tha-boe (*Glossogobius giuris*), Tilapia (*Oreochromis* sp.) and Nga-ku (*Clarias batrachus*) were chosen for doing the collection of helminth parasites. Recorded helminth parasites were divided into four main groups, namely Acanthocephala, Nematoda, Trematoda and Cestoda.
2. A total of nine species of these helminth parasites, one species of Acanthocephala, six species of Nematoda, one species of Trematoda and one species of Cestoda were recorded. Seven, four and three species of helminth parasites were found in Nga-yant (*Channa* sp.), Ka-tha-boe (*G. giuris*) and Nga-ku (*C. batrachus*) respectively but no were found in Tilapia (*Oreochromis* sp.). Nematodes and cestodes were significant different infestation in *Channa* sp. ( $p \leq 0.05$ ) within the study host species.
3. According to the monthly distribution within the study months, nematodes were mostly collected in December, and acanthocephalans and cestodes were mostly collected in November. Very few trematodes were only found in September. Incidence of nematodes was mostly higher than that of acanthocephalans, trematodes and cestodes.

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