

Ecology of Intestinal Parasites of Medical Importance in Thailand

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OBJECTIVE: To study the life history, prevalence and pathology of two newly discovered intestinal trematodes, Phaneropsolus bonnei and Prosthodendrium molenkampi.

DESCRIPTION: Autopsy material was examined for intestinal parasites at the Udornthani Provincial Hospital (for a detailed description see 1970 Annual Report). Animal species living in and around the village of Ban Phran Muan were captured and necropsied. Life cycle studies were also carried out in Ban Phran Muan, as this site was considered to be an area where active transmission was occurring.

PROGRESS: Adult P. bonnei were recovered from the duodenum and jejunum of the first autopsy case. On a subsequent autopsy, P. bonnei and P. molenkampi were both found. To date, 24 autopsies have been examined: 15 positive for P. bonnei and 14 for P. molenkampi. Autopsy material from two cases was sent to AFIP for evaluation. There appears to be little host pathology, other than a decrease in the height of the epithelial cells situated between the host and parasite. This probably results from the pressure exerted by the presence of the flukes. However, additional study is required before we can unequivocally state that these trematodes cause no appreciable pathology.

Search for animal reservoirs has revealed Rattus rattus, Scotophilus kuhlii and Taphozous melanopogon naturally infected with P. molenkampi. No alternate hosts for P. bonnei have been found in or around the study site, but Macaca fascicularis captured from other areas in Thailand have been found to be naturally infected. This evidence suggests a rather widespread distribution of the fluke.

Ten villages, from the provinces of Udornthani and Nongkhai, were surveyed and the prevalence of P. bonnei and P. molenkampi ranged from 10–40%, based on a single stool examination. In addition, stool specimens submitted from patients in Laos have been found positive for both P. bonnei and P. molenkampi. Thus, the endemic area covers at least Thailand and Laos.

Several thousand aquatic insects were examined in the search for a second intermediate host or source of infection. Metacercariae were found in naiads of the Order Odonata. The metacercariae were fed to experimental animals and both trematode species were recovered. These immature insects are frequently eaten raw by the villagers. In the search for a snail intermediate host, several ponds where infected naiads had been collected were extensively surveyed. The only snail species collected was Bithynia goniomphalus. Many different cercariae were shed by the snails, but specific identification was not possible. Though this is not conclusive, it strongly suggests that B. goniomphalus serves as intermediate host for both P. bonnei and P. molenkampi. Confirmation has not been possible as B. goniomphalus does not breed readily under laboratory conditions. Summary of the life cycles of P. bonnei and P. molenkampi are presented in Figures 1 and 2.

During the aforementioned study two additional species of intestinal trematodes were found which had never been recorded from man in Thailand. They are: Haplorchis yokogawai and Haplorchis taichui. Metacercariae recovered from three species of fish, Labiobarbus leptocheilus, Puntius sarana and P. simus were fed to dogs and adult flukes were recovered at necropsy. Other piscine hosts are probably also involved in the transmission of these two species of flukes. Isoparorchis hypselobagri, a parasite which has been recorded from man, was found infecting fish in the province of Sakol Nakorn. Though no human

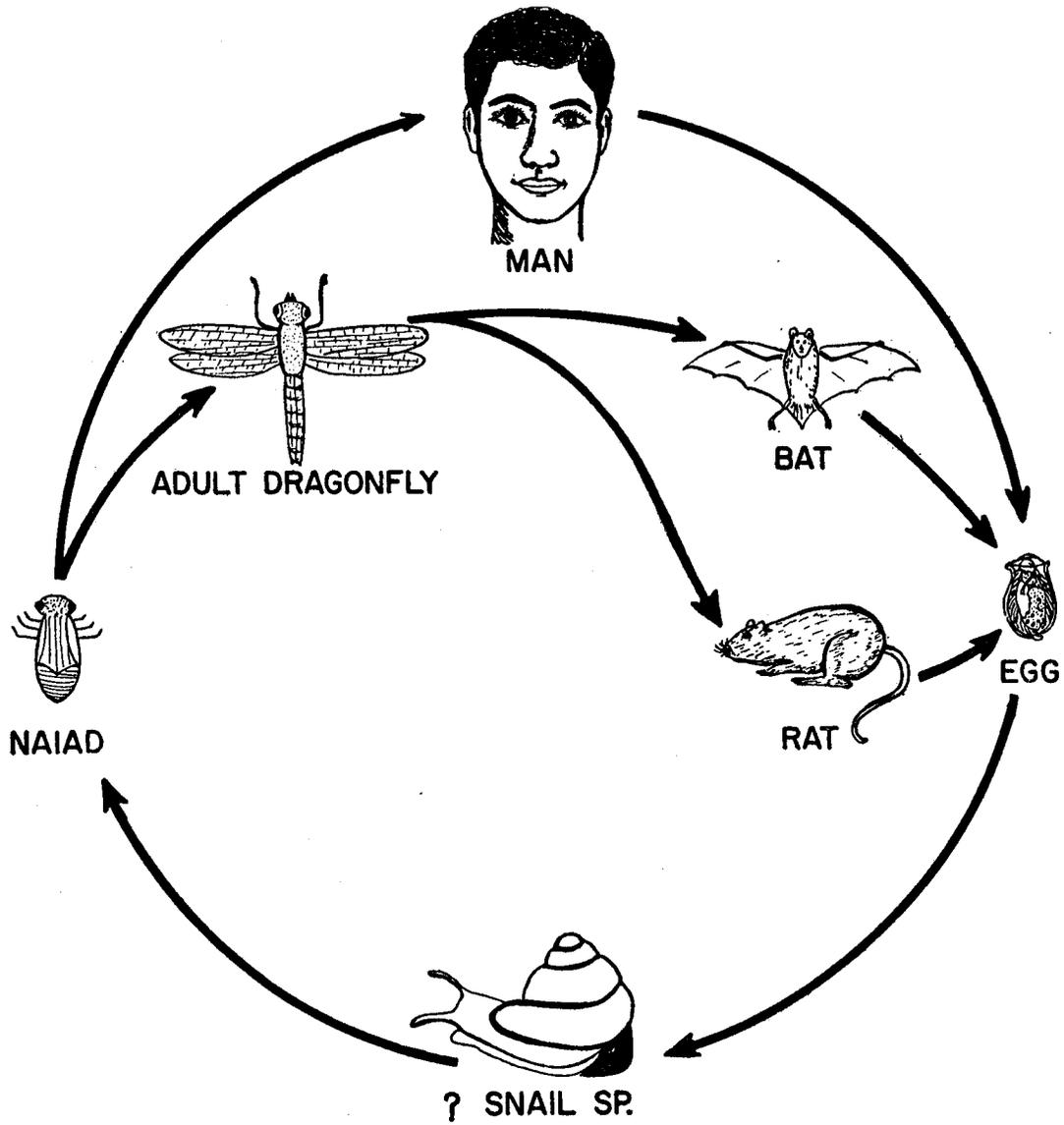
infections have been found in Thailand, it is quite likely that they do occur as infection is acquired from the ingestion of raw parasitized fish, and raw fish constitute a major part of the diet for residents in the northeastern provinces.

SUMMARY: Four species of Intestinal trematodes have recently been found to be endemic in northeastern Thailand. They are: Phaneropsolus bonnei, Prosthodendrium molenkampi, Haplorchis yokogawai and Haplorchis taichui. P. bonnei and P. molenkampi are transmitted through insects of the Order Odonata. H. yokogawai and H. taichui are transmitted through small freshwater fish. Isoparorchis hypselobagri was also recorded for the first time in Thailand.

Publications:

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4. Manning, G.S. and Viyanant, V. 1971. New Host and Distribution Records for Anchitrema sanguineum (Sonsino, 1894) Loss, 1899. J. Parasit. 57: 184.
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LIFE CYCLE OF PROSTHODENDRIUM MOLENKAMPI



LIFE CYCLE OF PHANEROPSOLUS BONNEI

