

HELMINTHS IN HOUSE LIZARDS (REPTILIA : GEKKONIDAE)

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Abstract. A survey of helminths in house lizards captured in Amphoe Maung, Chiang Mai Province revealed that the prevalence of helminthic infections in *Cosymbotus platyurus* was 94.4% and in *Hemidactylus frenatus* was 100%. Six species of helminths were found from *C. platyurus*: two species of trematodes, *Postorchigenes* sp (16.7%), *Paradistomoides gregarium* (41.1%); one species of cestode, *Oochoristic* sp (3.3%); two types of acanthocephalan cystacant, Type I (4.4%), type II (3.3%); and one species of nematode, *Pharyngodon* sp (83.3%). The cystacant Type II was not found in *H. frenatus* lizard, but the other five worms were found with higher prevalence. *Pharyngodon* was the common species in both lizards with the highest intensity range. So far, these worms have not been reported in human beings.

INTRODUCTION

House lizards are commonly found in human dwellings in tropical countries, thus has a close association with human beings. It may be of interest to study whether house lizard is a reservoir host of parasites of man. Three digeneans, *Paradistomum geckonum*, *Mesocoelium sociale* and *Postorchigenes ovatus*, were reported in 7 species of lizards in families Gekkonidae, Agamidae, Lacertidae and Scincidae from Indonesia (Kennedy et al, 1986). There are 13 genera of lizard in Family Gekkonidae from Southeast Asia (Bellairs, 1969), among these, 7 species of 5 genera were reported in Thailand, *Cosymbotus platyurus*, *Gehyra* sp, *Gekko gecko*, *Hemidactylus frenatus*, *H. garnoti*, *Phyllodactylus melanostictus*, *P. siamensis* (Nabhitabhata J; Personal communication). The present study describes the worms recovered as well as determines the prevalence, intensity and habitat of helminths in house lizards collected in Chiang Mai.

MATERIALS AND METHODS

One hundred and twenty lizards were collected from houses around Amphoe Maung, Chiang Mai, Province Thailand. They were identified by Mr Jarujin Nabhitabhata, the curator of Amphibians and Research Department. At necropsy, worms were collected from various organs of the lizards and processed for

identification. The drawings were done with the aids of *Camera lucida*, and all measurements were given in millimeters. The species identification of helminths referred to Wardle and Mcleod (1952), Millemann (1955), Yamaguti (1958, 1959, 1961, 1963), Schmidt (1986). Statistical analysis was followed Kennedy et al (1986), Bundy et al (1987) and Goldberg et al (1993).

RESULTS

Two species were collected; 90 *Cosymbotus platyurus* and 30 *Hemidactylus frenatus*. The prevalence of helminthic infections in *C. platyurus* was 94.4%, six species of worms were recovered, *Postorchigenes* sp, *Paradistomoides gregarium*, *Oochoristica* sp, *Pharyngodon* sp, and cystacant Type I and II. *H. frenatus* lizard, there were five species of similar worms excluded cystacant Type II. *Pharyngodon* sp was the most common species in both lizards, the acanthocephalan and cestode were the least common species (Table 1).

Postorchigenes sp Tubangui, 1928

Description (Fig 1): Body oval, spinulate 1.9 - 2.3 long by 1.4-1.7 wide (15 specimens). Oral sucker bigger than acetabulum, 0.16-0.18 in diameter. Acetabulum small, pre-equatorial 0.13-0.15 in

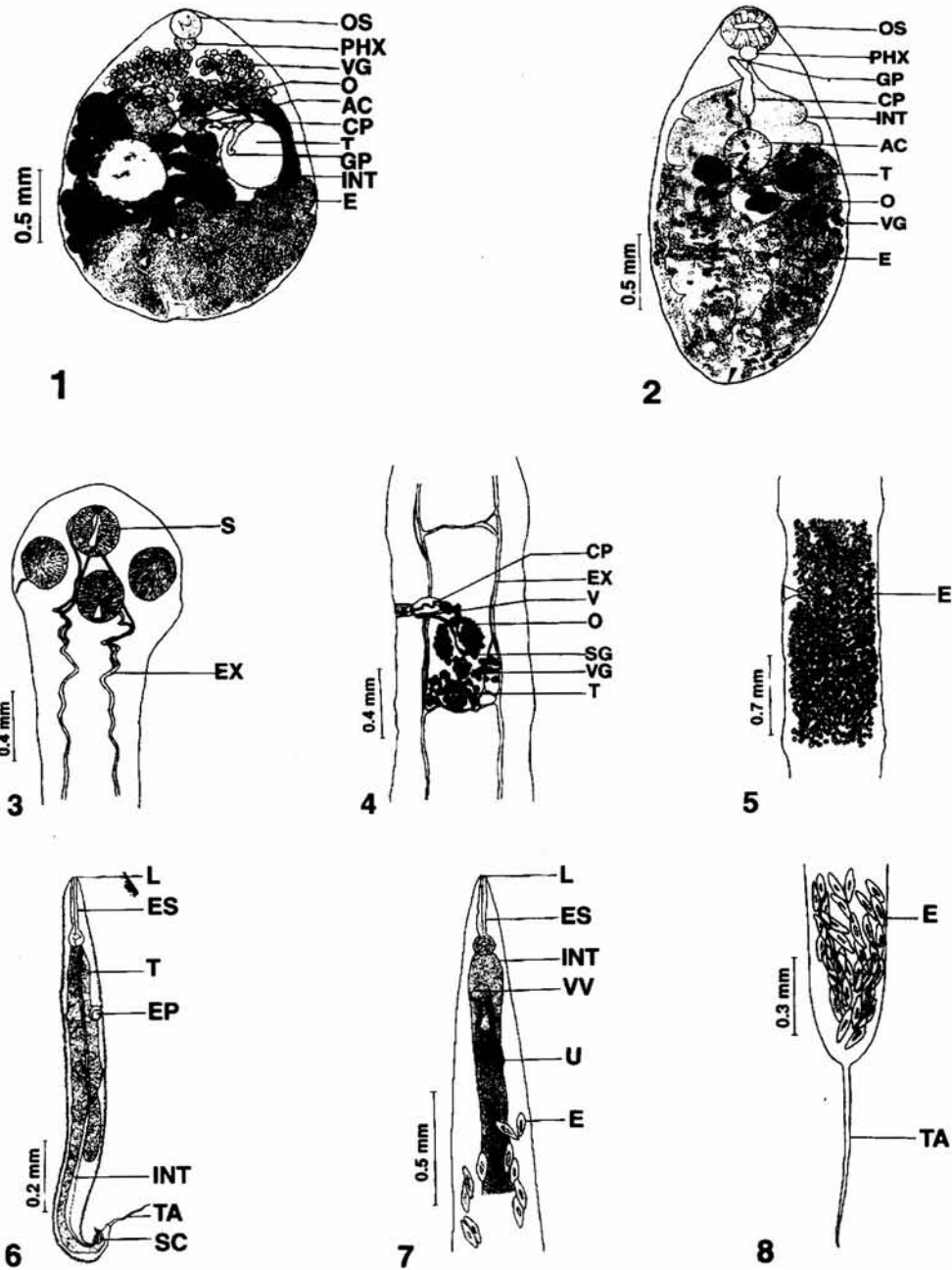


Plate I - Drawing (*Camera lucida*) of helminths from house lizards.

Fig 1 - *Postorchigenes* sp adult, Fig 2 - *Paradistomoides* sp adult, Fig 3 - *Oochoristica* sp scolex, Fig 4 - *Oochoristica* sp mature proglottid, Fig 5 - *Oochoristica* sp gravid proglottid, Fig 6 - *Pharyngodon* sp adult male, Fig 7 - *Pharyngodon* sp anterior part of female, Fig 8 - *Pharyngodon* sp posterior part of female.

AC = Acetabulum, CP = Cirrus pouch, E = Egg, EP = Excretory pore, ES = Esophagus, EX = Excretory canal, GP = Genital pore, INT = Intestine, L = Lip, O = Ovary, OS = Oral sucker, PHX = Pharynx, S = Sucker, VV = Vulva, SC = Spicule, SG = Shell acanthor, T = Testes, TA = Tail, U = Uterus, V = Vagina, VG = Vitelline gland,

diameter. Prepharynx absent, esophagus short, ceca extending posterior to testes 1.0-1.6 long by 0.17-0.22 wide. Testes oval, nearly symmetrical, post-acetabulum, in middle level of the body, 0.13-0.15 in diameter. Cirrus pouch on left side of acetabulum, 0.31-0.45 long by 0.10-0.16 wide. Genital pore posterolateral to acetabulum. Ovary on right side of acetabulum opposite cirrus pouch, 0.25-0.32 long by 0.20-0.25 wide. Vitelline glands extending transversely across the entire body between pharynx and acetabulum. Uterus occupying hind body and bifurcation. Egg small, numerous, 0.20-0.22 long by 0.09-0.12 wide. Excretory vesicle V-shaped.

Host : House lizards, *Cosymbotus platyurus*, *Hemidactylus frenatus*

Habitat : Small intestine

Locality : Maung Chiang Mai, Thailand

Deposition : Author's collection

***Paradistomoides gregarium* Travassos, 1944**

Description (Fig 2) : Body large, smooth, 2.25-3.75 long by 1.37-1.67 wide (10 specimens). Oral sucker larger than acetabulum, 0.33-0.40 in diameter. Prepharynx absent, esophagus short, ceca wide straight, terminating near posterior extremity, 1.62-2.12 long by 0.22-0.30 wide. Acetabulum in anterior half of body. Testes slightly lobed, symmetrical, partly in acetabulum zone, 0.23-0.40 in diameter. Cirrus pouch pre-acetabulum 0.39-0.50 long by 0.10-0.15 wide. Genital pore prebifurcation 0.24-0.30 in diameter. Vitelline follicles numerous, in extracecal fields, in middle third of the body. Uterus occupying post-testicular region. Egg, 0.02-0.04 long by 0.02 wide. Excretory bladder tubular.

Host : House lizards, *Cosymbotus platyurus*, *Hemidactylus frenatus*

Habitat : Gall bladder

Locality : Maung Chiang Mai, Thailand

Deposition : Author's collection

***Oochoristica* sp Lühe, 1898**

Description (Figs 3-5) : Medium sized worm. Scolex not well marked off, 0.95-0.97 wide. Sucker globular, 0.29-0.30 in diameter. Strobila containing 162-240 proglottids, 87-123 immature, 46-77 mature and 29-40 gravid, 1.70-2.32 long by 1.10-1.22 wide (6 specimens). Dorsal and ventral excretory stems with anastomosing branches. Testes numerous, 0.05-0.11 in

diameter. Cirrus pouch small, 0.17-0.19 long by 0.10-0.15 wide. Genital atrium thick walled, pore irregularly alternating, at anterior half of lateral margin. Genital ducts passing between two excretory stems. Ovary two-winged, median, 0.23-0.28 long by 0.13-0.18 wide. Vitelline follicles median post-ovarian. Gravid uterus breaking down into capsules each containing a single egg. Vagina passing opening immediately behind cirrus pouch. Egg, 0.05-0.06 in diameter.

Host : House lizards, *Cosymbotus platyurus*, *Hemidactylus frenatus*

Habitat : Small intestine

Locality : Maung Chiang Mai, Thailand

Deposition : Author's collection

***Pharyngodon* sp Diesing, 1861**

Description (Figs 6-8) : Cuticle rather thick, with distinct transverse striations. Mouth with three indistinct lips. No buccal cavity. Excretory pore post-esophagus.

Male : Body cylindrical, 1.10-1.20 long by 0.09-0.12 wide. Esophagus with big posterior bulb, 0.09-0.15 long by 0.02-0.05 wide. Tail narrow, 0.11-0.13 long, abruptly constricted at level of cloaca. Spicule single, 0.18-0.19 long by 0.03-0.04 wide.

Female : Body 4.20-4.58 long by 0.32-0.35 wide. Esophagus 0.22-0.25 long by 0.10-0.14 wide. Tail 0.68-0.70 long by 0.02-0.05 wide, abruptly constricted behind anus to form terminal spike. Uterus branches narrow. Oviparous, egg 0.14 long by 0.04 wide.

Host : House lizards, *Cosymbotus platyurus*, *Hemidactylus frenatus*

Habitat : Large intestine

Locality : Maung Chiang Mai, Thailand

Deposition : Author's collection

Cystacant Type I

Description (Figs 9-11) : Cyst oval, 1.17-1.20 long by 0.65-0.67 wide. Proboscis 0.85-0.87 long by 0.17 - 0.20 wide (8 specimens).

Female : Body 4.75 long by 0.70 wide, spine absent; lemnisci, ovarian ball, shell acanthor not discerned. Proboscis 0.65 long by 0.40 wide; receptacle 0.70 long by 0.40 wide. Hook on proboscis 0.02-0.05 long by 0.02-0.05 wide.

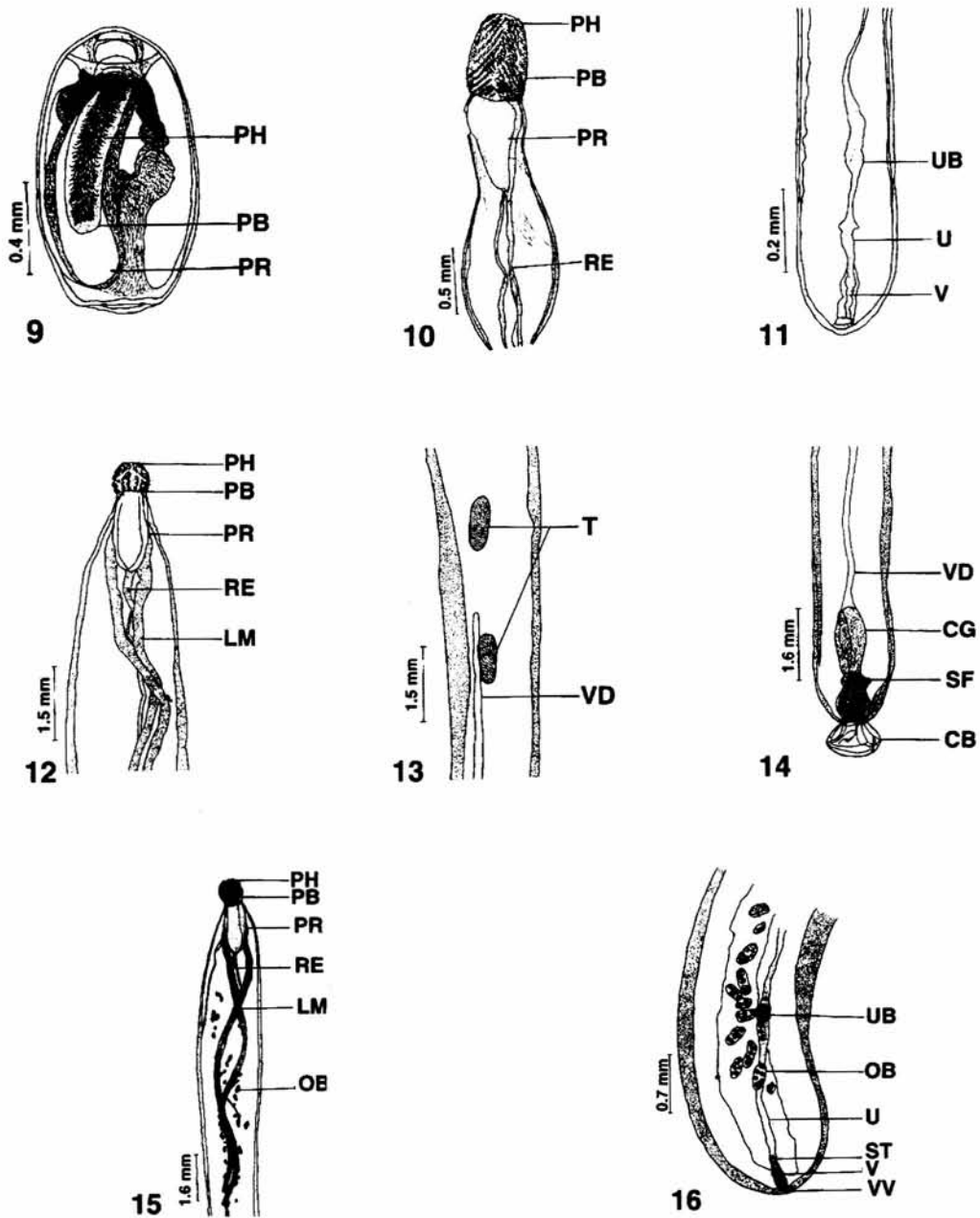


Plate II - Drawing (Camera lucida) of cystacanth found in house lizards.

Fig 9 - Acanthocephala; encysted of cystacanth Type I, Fig 10 - Excysted cystacanth Type I anterior part of female, Fig 11 - Excysted cystacanth Type I posterior part of female, Fig 12. - Excysted cystacanth Type II anterior part of male, Fig 13 - Excysted cystacanth Type II middle part of male, Fig 14 - Excysted cystacanth Type II posterior part of male, Fig 15 - Excysted cystacanth Type II anterior part of female, Fig 16 - Excysted cystacanth Type II posterior part of female

CB = Copulatory bursa, CG = Cement gland, LM = Lemnisci, OB = Ovarian ball, PB = Proboscis, PH = Proboscis hook, PR, = Proboscis receptacle, RE = Retractor muscle, SF = Saefftigen's pouch, ST = Sphincter muscle, T = Testes, U= Uterus, UB = Uterine bell, V = Vagina, VD = Vas deferent, VV = Vulva

Table 1

Prevalence and intensity of worms recovered from house lizards, 90 *Cosymbotus platyurus* and 30 *Hemidactylus frenatus* collected in Chiang Mai Province.

Parasites	Habitat*	<i>C. platyurus</i>		<i>H. frenatus</i>	
		No. positive (%)	Median (range) worms / host	No. positive (%)	Median (range) worms / host
Digenea					
<i>Postorchigenes</i> sp	SI	15 (16.66)	1.91 (1 - 25)	8 (26.66)	2.23 (1 - 27)
<i>Paradistomoides gregarium</i>	G	37 (41.11)	1.80 (1 - 22)	11 (36.66)	1.20 (1 - 7)
Cestode					
<i>Oochoristica</i> sp	SI	3 (3.33)	0.06 (1 - 3)	6 (20.00)	0.23 (1 - 2)
Acanthocephala					
<i>cystacanth</i> (Type I)	LV	4 (4.44)	0.05 (1 - 2)	8 (26.66)	0.70 (1 - 6)
<i>cystacanth</i> (Type II)	M	3 (3.33)	0.08 (1 - 5)	0 - -	-
Nematode					
<i>Pharyngodon</i> sp	LI	75 (83.33)	4.56 (1 - 42)	28 (93.33)	6.66 (1 - 27)

* SI = Small intestine, G = Gall bladder, LV = Liver, M = Muscle, LI = Large intestine

Male : Not found.

Host : House lizards, *Hemidactylus frenatus* *Cosymbotus platyurus*.

Habitat : Liver

Locality : Maung Chiang Mai, Thailand

Deposition : Author's collection

Cystacant Type II

Description (Figs 12-16):

Male : Body 23.0 long by 2.4 wide, spine absent. Proboscis 0.59-0.62 long by 0.65-0.67 wide; receptacle 1.54-1.57 long by 0.72-0.75 wide. Anterior hook larger than posterior, 0.13-0.16 long by 0.05-0.08 wide. Lemnisci 9.25 long by 0.25 wide. Testes elongate 0.97-1.00 long by 0.32-0.35 wide, at midbody. Cement gland separate.

Female : Body 27.30-28.00 long by 2.12-2.17 wide, spine absent. Proboscis 0.62-0.65 long by 0.77-0.80 wide, receptacle 1.90-1.95 long by 0.75-0.87 wide. Anterior hooks larger than posterior, 0.17-0.18 long by 0.05-0.08 wide. Lemnisci 10.30 long by 0.27-0.30 wide. Ovarian ball 0.40-0.52 long by 0.17-0.25 wide. Shell acanthor not discerned.

Host : House lizard, *Cosymbotus platyurus*

Habitat : Muscle

Locality : Maung Chiang Mai, Thailand

Deposition : Author's collection

DISCUSSION

The prevalence of helminthic infections in both lizards was very high (94.4%, 100%) with slight difference in the number of species (6 and 5 species), though the number of *H. frenatus* examined was only one third of *C. platyurus*. The prevalences of *Postorchigenes* sp in both hosts were equal (22.5%) in a previous study by Kennedy *et al* (1987) but they differed in this study, 26.6% in *H. frenatus* and 16.6% in *C. platyurus*.

Oochoristica sp was the only cestode found in lizard. Bundy *et al* (1987) reported that the prevalences were more or less similar in anole lizards, *Anolis valencienni* 14% and *A. opalinus*, 17%. In this study, the prevalence of this cestode were 3.3% in *C. platyurus* and 20% in *H. frenatus* respectively. *Oochoristica* have been reported from wide range hosts, *ie* desert rodents (Millemann, 1955), rattlesnake (Widmer and Olsen, 1967), anole lizard (Conn, 1985) and Iragi lizard (Kugi and Mohammad, 1988).

There were only few reports on acanthocephalans (Flynn, 1973; Yamaguti, 1963). It was unable to

identified both types of cystacants found in this study. *H. frenatus* seemed to be more susceptible to Type I cystacant as the infection rate was higher (26.7%) than in *C. platyurus* (4.4%). Further more type II has not found in *H. frenatus*, while both types of cystacant were recovered in *C. platyurus* with nearly equal infection rates, 4.4% to 3.3%.

About 33 species of *Pharyngodon* were described by Yamaguti (1961), 5% of *P. cnemidophori* was found in *Cnemidophorus burti sticgrammus* and 36% of *Pharyngodon* sp in *Coleony variegatus*. However species identification could not be made in the present study.

Although high prevalence of helminthic infections in the two types of house lizards was found and despite a close association with human beings, the evidence of these helminths in man has not been reported.

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