



Title	STUDIES ON THE PARASITE FAUNA OF THAILAND I TWO NEW METASTRONGYLID NEMATODES, ANGIOSTRONGYLUS SIAMENSIS SP. N. AND THAISTRONGYLUS HARINASUTAI GEN. ET SP. N. (METASTRONGYLOIDEA ; ANGIOSTRONGYLIDAE) FROM WILD RATS
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STUDIES ON THE PARASITE FAUNA OF THAILAND  
I TWO NEW METASTRONGYLID NEMATODES,  
*ANGIOSTRONGYLUS SIAMENSIS* SP. N.  
AND *THAISTRONGYLUS HARINASUTAI*  
GEN. ET SP. N. (METASTRONGYLOIDEA ;  
ANGIOSTRONGYLIDAE)  
FROM WILD RATS\*<sup>1</sup>

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Two new metastrongylid nematodes from Thailand were described. *Angiostrongylus siamensis* sp. n. was found in the mesenteric arteries of *Rattus sabanus*. This species is related to *A. costaricensis*, but is differentiated by a more reduced bursa in the male and a longer tapered tail in the female. *Thaistrongylus harinasutai* gen. et sp. n. was found in the lungs of *Rattus berdmorei*. In the male the bursa very reduced; the dorsal rays subventral showing a pair of papillae; other rays short and stout; the spicules short and arcuate; and a gubernaculum present. The female ovoviviparous, and the tail short and rounded.

INTRODUCTION

In Thailand micromammal fauna is plentiful because of the zoogeographical situation. Among various mammals those of the family Muridae are believed to have originated in the oriental region, and the genus *Rattus* in Thailand comprises more than 20 species.

The authors studied the parasites mainly of the genus *Rattus*. Our hypothesis was that many angiostrongylid and nippostrongylid nematode species can be obtained from various rats. In this paper two new nematodes belonging to Metastrongyloidea are described.

MATERIALS AND METHODS

During the period from July 18 to August 7, 1978, various micromammals were collected at Bangkok, Sai Yok, Nakorn Nayok, Mae Hongson and Mae Sariang. Among

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the 144 specimens collected 72 belonged to the genus *Rattus*, viz., 26 to *R. exulans*; 10 to *R. surifer*; 3 to *R. bukit*; 4 to *R. sabanus*; 12 to *R. norvegicus*; 15 to *R. rattus* and 2 to *R. berdmorei*, and the remaining 72 comprised the genera *Mus*, *Hylopetes*, *Crocidura*, *Tupaia*, *Hipposideros*, *Myotis*, etc. Among these, metastrongylid nematodes were found in both *R. sabanus* and *R. berdmorei*.

The nematodes were collected using the dissection microscope and then preserved in 5% formalin solution. The specimens were treated with lacto-phenol solution for microscopy. All of the specimens are deposited in the helminthological collection of the Department of Parasitology, Faculty of Veterinary Medicine, Hokkaido University, Japan.

## RESULTS

### 1) *Angiostrongylus siamensis* sp. n.

One of 4 specimens of the noisy rat, *Rattus sabanus*, captured at Nakorn Nayok, 100 km northeast to Bangkok, was positive for granulomatous thickening of the upper colon. A small number of complete and fragmented nematodes from the regional mesenteric arteries were collected. A histological examination revealed granulomatous reactions against the larval nematodes. One male and 5 females were used for the description.

Host: *Rattus sabanus* (THOMAS)

Habitat: Mesenteric arteries

Locality: Nakorn Nayok, Thailand

Date collected: July 23, 1978

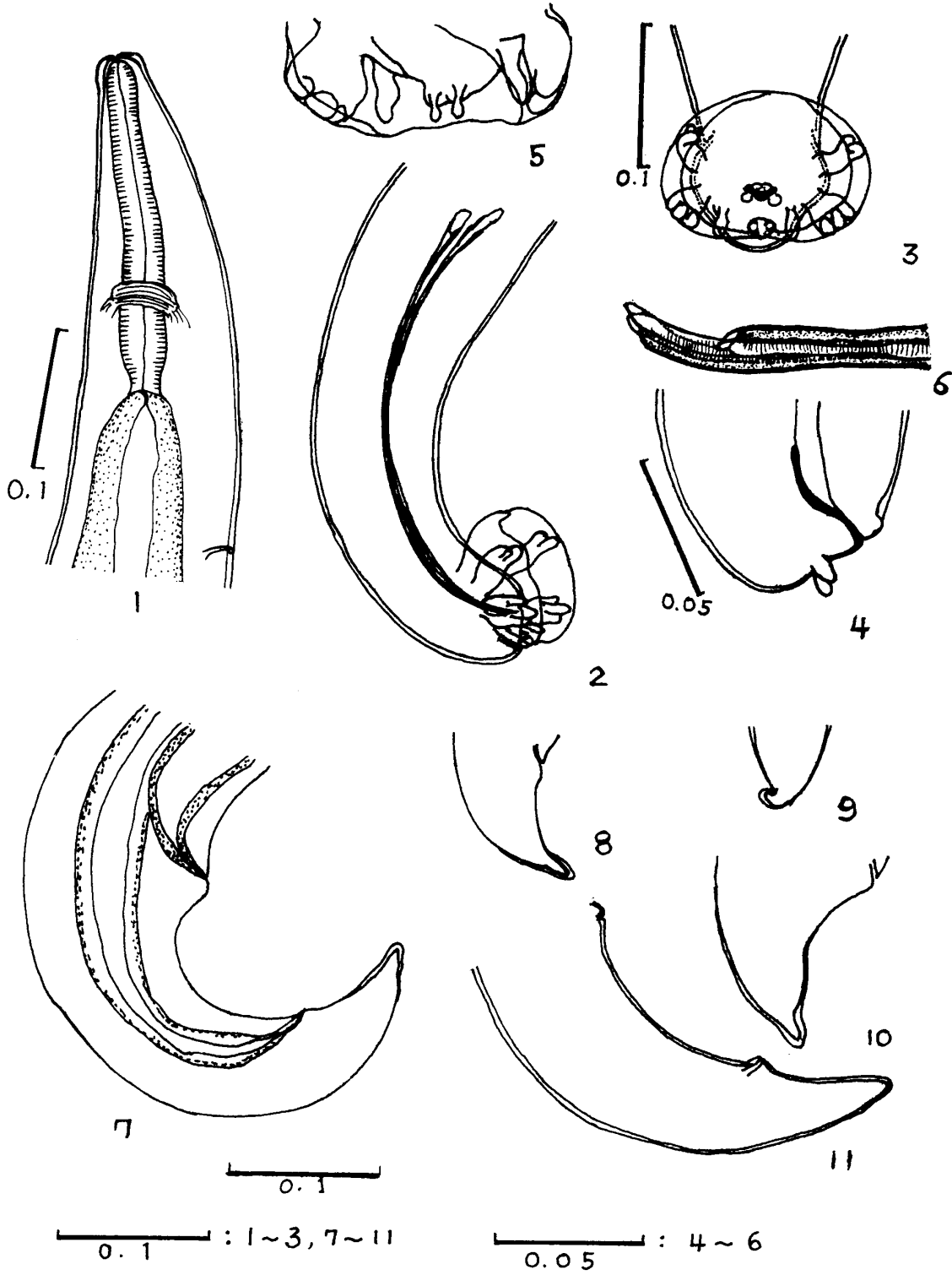
Description: Filiform nematode. Cuticle smooth. Cephalic end slightly inflated. Wall of mouth cavity not chitinized.

One male, 10 mm in length. Caudal end bent ventrally. Esophagus 0.23 mm in length. Excretory pore 0.32 mm from cephalic end. Bursa pouched and reduced. Bursal rays short. Ventral rays rise separately from laterals, fused except for distal one fourth; ventro-ventral shorter than latero-ventral. Laterals with common trunk, shorter than ventrals; medio-lateral longest. Externo-dorsal shorter than laterals. Dorsal mound-like with a pair of short digitiform projections. Spicules filiform and short, 0.339 mm in length; each with two alae, stem with rounded distal end. Gubernaculum weakly chitinized and undulated, 0.040 mm in length.

Five females, body length 11~13 mm. Caudal end coiled ventrally. Esophagus 0.23~0.27 mm in length. Excretory pore 0.32~0.36 mm from cephalic end. Vulva 0.30~0.38 mm from caudal end. Tail 0.07~0.10 mm in length, tapering distally, end bluntly pointed without projection.

Discussion: This species is the first recorded of the mesenteric angiostrongyle in Eurasia. Among various *Angiostrongylus*-species,<sup>1,3-13)</sup> the only comparable species is

FIGURE 1 *Angiostrongylus siamensis* sp. n.



1 Anterior end of female, 2 Posterior end of male, 3 Bursa, ventral view, 4 Gubernaculum, 5 Bursa, lateroventral view, 6 Distal end of spicules, 7~11 Posterior end of female.

*A. costaricensis* MORERA et CESPEDES, 1971, to which *A. siamensis* shows similarities in morphology and habitat. However, in the strain of *A. costaricensis* of the authors' laboratory, the spicules are shorter than those of *A. siamensis*. The end of the spicule stem has a minute projection, the ventral rays are much longer than the laterals, the length of the externo-dorsal ray is the same as the postero-lateral, and the dorsal ray is composed of a thick trunk with two short branches. In the female the tail of *A. costaricensis* is shorter, and the caudal end is rounded and shows a minute projection.

The authors have succeeded in the laboratory rearing of *A. siamensis* using *Biomphalaria* and laboratory animals; the detailed results will be published separately.

2) *Thaistrongylus harinasutai* gen. et sp. n.

One of 2 specimens of the lesser white-toothed rat, *Rattus berdmorei*, captured at Mae Sariang, 150 km southwest to Chiang Mai, harbored lungworms in the lungs and showed circumscribed convex foci. A conglomeration of worms was observed in the focus. No complete specimens of the worms were collected, and the description was based on fragmented worms.

Host: *Rattus berdmorei* BLYTH

Habitat: Lungs

Locality: Mae Sariang, Thailand

Date collected: August 7, 1978

Description: Filiform nematode. Caudal end tapered. Cuticle smooth. Mouth with four lips.

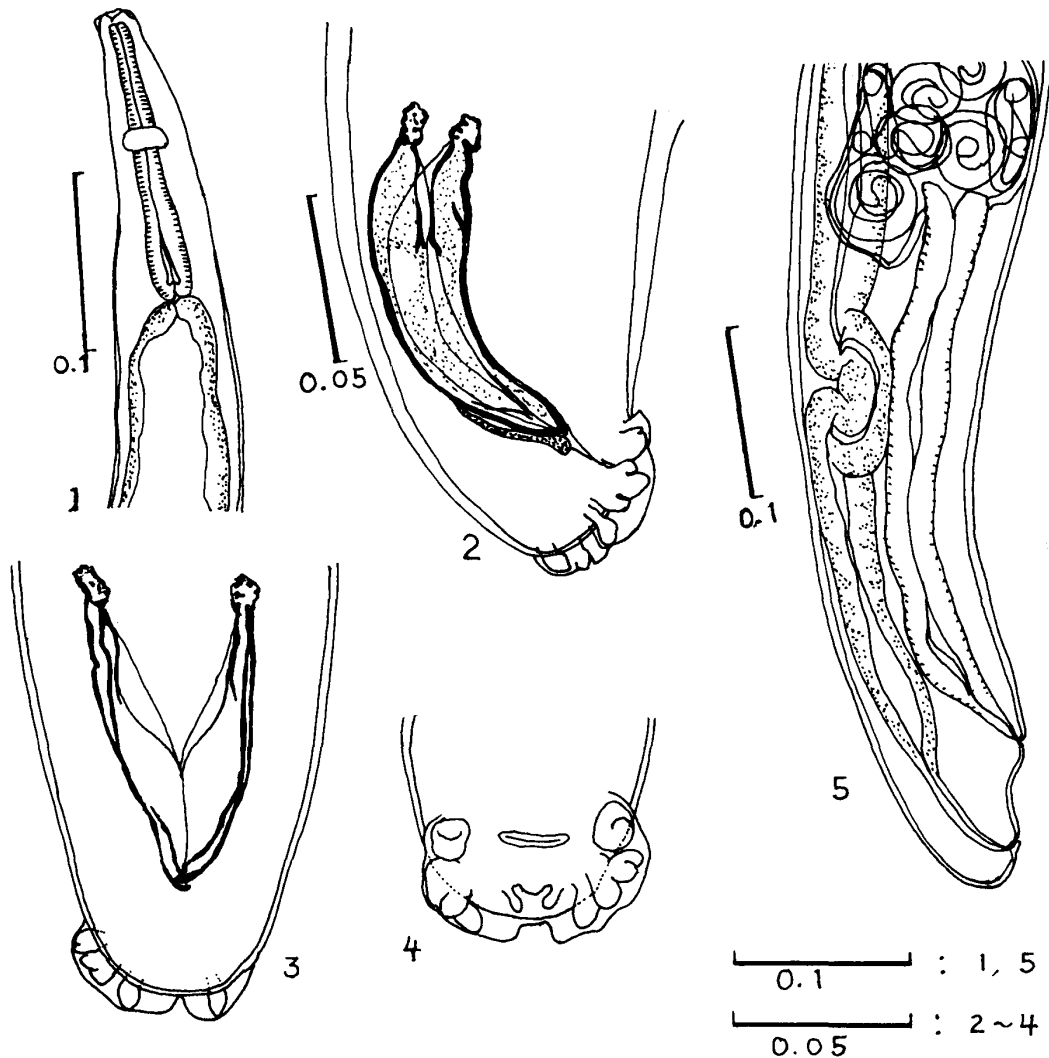
One male, maximal width 0.18 mm. Esophagus 0.167 mm in length. Nerve ring and excretory pore 0.083 mm from cephalic end. Spicules equal, short and arcuate, 0.106 mm in length. Gubernaculum 0.030 mm in length, distal end thickened. Bursa bilobed, strongly reduced, about 0.065 mm in diameter. Bursal rays, with exception of dorsal ray, short and stout; ventrals and laterals with thick common trunk, each ray differentiable by shallow incisions. Dorsal ray exists subventrally as a pair of minute papillae.

One female, ovoviviparous, maximal width 0.24 mm. Esophagus 0.216 mm in length. Nerve ring and excretory pore 0.125 mm from cephalic end. Vulva and anus 0.080 and 0.020 mm from caudal end. Tail rounded.

Generic diagnosis: Metastrongyloidea, Angiostrongylidae. Male, bursa bilobed, strongly reduced. Dorsal ray a pair of papillae, subventral. Other rays short and stout. Spicules short and arcuate. Gubernaculum present. Female, ovoviviparous, caudal end rounded.

Type species: *Thaistrongylus harinasutai* sp. n.

Discussion: *Thaistrongylus* is characterized by strongly reduced bursa, papilla-like dorsal ray and short arcuate spicules. Morphology of the bursa is related to that of *Marsupostrongylus* MACKERRAS et SANDARS, 1953, and *Andersonstrongylus* WEBSTER,

FIGURE 2 *Thaistrongylus harinasutai* gen. et. sp. n.

1 Anterior end of male, 2 Posterior end of male, lateral view, 3 Posterior end of male, dorsal view, 4 Bursa, ventral view, 5 Posterior end of female

1978. In *Marsupostrongylus*, bursal rays are well-developed, although the dorsal ray is papilla-like. On the other hand, in *Andersonstrongylus*, the bursa is strongly reduced, and the externo-dorsal and dorsal rays manifest a minute papilliform structure. Consequently, in the grade of reduction of bursa, *Thaistrongylus* is in between these two genera, although the host ranges are quite different.

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