

Two New Species of Land Leeches from Thailand (Hirudiniformes: Haemadipsidae)

THONGCHAI NGAMPRASERTWONG, KUMTHORN THIRAKHUPT*
AND SOMSAK PANHA*

Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok 10330, THAILAND

ABSTRACT.— Two new species of haemadipsid land leeches from Thailand are described. The first, named *Haemadipsa trimaculosa* Ngamprasertwong, n. sp., is a ground leech and is distributed in Northeastern and Southern Thailand at low altitude (100-900 m). The second species, named *H. crenata* Ngamprasertwong, n. sp., is a bush leech and is distributed in Northern and Northeastern Thailand at high altitude (1000-1800 m).

KEY WORDS: Haemadipsidae; *Haemadipsa*; *trimaculosa*; *crenata*; Thailand

INTRODUCTION

Land leeches (Family Haemadipsidae) are truly terrestrial haematophagous leeches with a high biodiversity in tropical regions, especially South Asia, South East Asia and Australia. Trignathous haemadipsids, mainly *Haemadipsa*, are commonly found in South East Asia. However, there are only a few studies regarding the biodiversity and biology of land leeches in Thailand. Despite their high abundance and widespread distribution throughout the country, until recently only two species, *H. sylvestris* Blanchard, 1894 and *H. zeylanica* (Moquin-Tandon, 1826) had been recorded (Moore, 1935; Keegan et al., 1968). This was recently expanded slightly with the inclusion of three more taxa identified to species level, *H. picta* Moore, 1929,

Tritetrabdella scandens Moore, 1938 and *T. taiwana* (Oka, 1910), and some additional unidentified species (Ngamprasertwong, 2001; Ngamprasertwong et al., 2005), suggesting a much greater biodiversity within Thailand and revealing the need for further systematic studies. In this vein here we describe two of these former unidentified taxa (Fig. 1) as new species and give their distribution ranges in Thailand.

MATERIALS AND METHODS

Samples from various localities in Thailand (Fig. 2) were anaesthetized by placing leeches in 2.5% (v/v) alcohol and slowly increasing the concentration of alcohol to 10% (v/v) for 1-2 hours or until the leeches fully relaxed. Mucus was then removed and the specimens were straightend before fixation in either 10% (v/v) formalin or 95% (v/v) alcohol, and subsequent preservation in either 4% (v/v)

* Corresponding authors:

Tel: (662)-218-5259, 218-5273

Fax: (662)-218-5260, 218-5273

E-mail: kumthorn.t@chula.ac.th
somsakp@sc.chula.ac.th

formalin or 70% (v/v) alcohol. Using stereoscopic light microscopy and scanning electron microscopy (SEM), preserved and fresh specimens were checked using the identification keys and species descriptions in Moore (1927; 1929; 1935; 1938) and Sawyer (1986), and compared to type specimens of other related species.

SYSTEMATICS

Key to the species of Thai land leeches family Haemadipsidae

- 1a. Four annuli per mid-body segment; gonopores separated by 3-4 annuli.....*Tritetrabdella* spp.
- 1b. Five annuli per mid-body segment; gonopores separated by 4½-5 annuli*Haemadipsa* spp..... 2
- 2a. Climbing species; tri-lobed auricle well-developed with the relatively large middle lobe, at least half the size of the flanking lobes; brilliant color 3
- 2b. Ground species; tri-lobed auricle with the relatively small middle lobe, less than half the size of the flanking lobe.... 4
- 3a. Large and muscular caudal sucker with 80-85 sucker rays..... *H. picta*
- 3b. Muscular caudal sucker but small-sized with 70-74 sucker rays.....*H. crenata* Ngamprasertwong, n. sp.
- 4a. Gonopores separated by 5 annuli 5
- 4b. Gonopores separated by 4½ annuli*H. trimaculosa* Ngamprasertwong, n. sp.
- 5a. Furrow pits obscure; dorsal sensillae large and prominent *H. zeylanica*
- 5b. Conspicuous furrow pits; dorsal sensillae slightly prominent or inconspicuous..... *H. sylvestris*



FIGURE 1. Living specimen of: (A) *Haemadipsa trimaculosa* Ngamprasertwong, n. sp. from Khao Yai National Park, Nakhon Nayok Province; (B) *H. crenata* Ngamprasertwong, n. sp. from Phu Luang Wildlife Sanctuary, Loei Province.

Genus *Haemadipsa*

Haemadipsa trimaculosa Ngamprasertwong, n. sp.

Type material.- Holotype [CUB MZ (H) 2001.16-1], leg. T. Ngamprasertwong was deposited in Chulalongkorn University Zoological Museum, together with 25 paratype specimens [CUB MZ (H) 2001.16-2, 3].

Type locality.- Khao Yai National Park, Nakhon Nayok Province, Thailand; 101°22'21" E, 14°26'1" N, 730 m altitude.

Diagnosis.- Sanguivorous. Terrestrial. Ground species. Quinquannulate. Five pairs of eyes, on II, III, IV, V a2 and VI

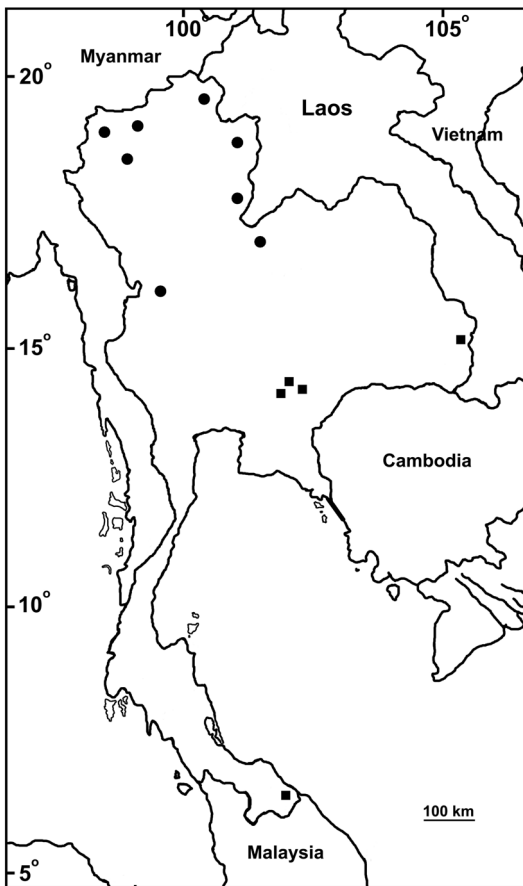


FIGURE 2. Distributions of *Haemadipsa trimaculosa* Ngamprasertwong, n. sp. (square) and *H. crenata* Ngamprasertwong, n. sp. (circle) in Thailand.

a2. Trignathous with monostichodont jaws. Pharynx sessile. Male and female gonopores separated by $4\frac{1}{2}$ annuli representing the unique characteristic for this species (Fig. 3A). Conspicuous furrow pits on IX to XI, indicated by pale spots. Middle auricle relatively small, less than half the size of the flanking lobes (Fig. 3B). Caudal sucker with prehensile papilla partially developed. Sucker rays between 69-74. Small size, usually less than 30 mm. Three pairs of distinct black spots at the posterior dorsum.

Description of Holotype.– Total length 25.6 mm, maximum width 4.3 mm, maximum width at anterior sucker 2.3 mm, caudal sucker 4.9 mm x 4.6 mm. Eyes 3 and 4 separated by partial annulus on one side. Five annuli per segment at IX to XXIII. Furrow pits obscure at IX b2/a2, X b2/a2 and XI b2/a2. Male gonopore at XI b5/b6. Female gonopore at XII b5. Dorsal sensillae small and slightly prominent. A pair of tri-lobed auricle with the middle lobe relatively small, less than half the size of the flanking lobes. Prehensile papilla partially developed. 72 radiating rays on ventral part of caudal sucker.

Etymology.– Latin, *tri-* (three) and *macula* (spot), referring to the three pairs of prominent spots on the posterior dorsum.

Living color.– Three dorsal black or dark brown stripes, the median sometime narrower or broken at the posterior part. Reddish-brown median fields with three pairs of distinct black spots at the posterior. Brown intermediated fields with constant dark-blotched pattern, bordered with pale yellow marginal stripes. Ventral part is reddish-brown with few finely or coarsely black spots in some individuals. Furrow pits appear as whitish or colorless spots. Auricles nearly colorless. Grey-brown caudal sucker.

Geographic distribution and habitat.– This ground species is commonly found at low elevation (100-900 m) in evergreen forests and sometimes in mixed deciduous forests of Northeastern Thailand; i.e. Nakhon Nayok Province, Nakhon Ratchasima Province, Prachin Buri Province and Ubon Ratchathani Province, and Southern Thailand, i.e. Narathiwat Province (Fig. 2).

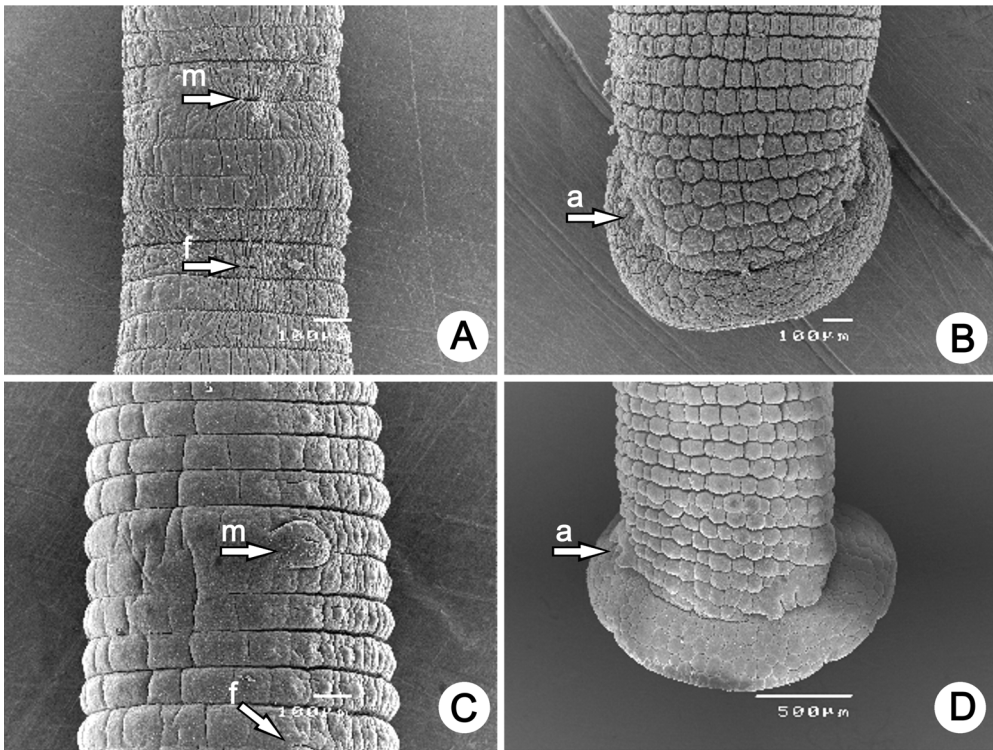


FIGURE 3. *Haemadipsa trimaculosa* Ngamprasertwong, n. sp., paratype, CUB MZ (H) 2001.16-3: (A) gonopores, ventral view; (B) caudal sucker, dorsal view. *Haemadipsa crenata* Ngamprasertwong, n. sp., paratype, CUB MZ (H) 2001.68-5: (C) gonopores, ventral view; (D) caudal sucker, dorsal view (m: male gonopore; f: female gonopore; a: auricle).

Haemadipsa crenata
Ngamprasertwong, n. sp.

Type material.- Holotype [CUB MZ (H) 2001.68-4], leg. T. Ngamprasertwong was deposited in Chulalongkorn University Zoological Museum, together with 18 paratype specimens [CUB MZ (H) 2001.68-1, 2, 3, 5].

Type locality.- Doi Mae Ya, Huai Nam Dang National Park, Chiang Mai Province, Thailand. 98°35'20" E, 19°14'12" N, 1100 m altitude.

Diagnosis.- Sanguivorous. Terrestrial. Climbing species, on bushes and other vegetation. Quinquannulate. Five pairs of eyes, on II, III, IV, V a2 and VI a2. Trignathous with monostichodont jaws. Pharynx sessile. Male and female

gonopores separated by 5 annuli (Fig. 3C). Different from other bush leeches, furrow pits and dorsal sensillae in this species are inconspicuous. Middle auricle relatively large, at least half the size of the flanking lobes (Fig. 3D). Caudal sucker with prehensile papilla slightly developed. Sucker rays between 70-74. Sucker relatively thicker than other ground species. Medium size, usually less than 40 mm. Colorful, with yellowish-green paramedian stripes.

Description of Holotype.- Total length 38.0 mm, maximum width 3.3 mm, maximum width at anterior sucker 2.5 mm, caudal sucker 5.5 mm x 5.2 mm. Eyes 3 and 4 on contiguous annuli. Five annuli per segment at IX to XXIII. Furrow pits not well developed and inconspicuous. Male

gonopore at XI b5/b6. Female gonopore at XII b5/b6. Dorsal sensillae small and unobtrusive. A pair of tri-lobed auricle with the middle lobe relatively large, about half the size of the flanking lobes. Prehensile papilla slightly developed. 71 radiating rays on ventral part of caudal sucker.

Etymology.- Latin, *crena* (small notch), referring to the scalloped edge of median field with the rounded-tooth paramedian stripes.

Living color.- No dorsal median line. Brownish-black dorsal median field with irregular, black spot densely distributed throughout the entire area. Margin of this median field is crenate, bordered by two yellowish-green rounded-tooth paramedian stripes, each with black outlining stripes. Intermediated fields and ventral part are reddish-brown, separated by lime green marginal stripes. Lower edge of marginal stripe is lined with dashed black stripe which becomes faint and disappears at the anterior end. Lime green auricles, distinguished from grey-brown sucker. Ventral face of caudal sucker is yellowish-brown.

Geographic distribution and habitat.- This bush species is commonly found in hill evergreen forests at high elevation (1000-1800 m) in Northern Thailand; i.e. Mae Hong Son Province, Chiang Mai Province, Chiang Rai Province, Nan Province, Uttaradit Province and Kamphaeng Phet Province, and Northeastern Thailand, i.e. Loei Province (Fig. 2).

ACKNOWLEDGEMENTS

We would like to thank Emma Sherlock, the British Museum of Natural History, and Dr William E. Moser, the

Smithsonian Institution, for the privilege of studying the type specimens. Thanks to Rujiporn Prateepasen and Chirasak Sutcharit for help with the Scanning Electron Microscopy. This research was supported by a grant from the Biodiversity Research and Training Program in Thailand (BRT 542039).

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Received: 1 June 2007

Accepted: 14 September 2007