

# The millipedes of Thailand (Diplopoda)

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One hundred and five (105) species of millipedes are recorded from Thailand, based on a scrutiny of literature and a study of hitherto unpublished material. Detailed locality records, published and new, are given for all species. *Rhopalomeris carnifex* (Pocock, 1889), *Tonkinbolus dollfusi* (Pocock, 1893), *Anurostreptus barthelemyae* Demange, 1961, *Cornugonus floweri* Demange, 1961, *Cornugonus implicatus* Demange, 1961, *Thyropygus aterrimus* (Pocock, 1889) and *Orthomorpha intercedens* Attems, 1937 are recorded as new to the Thai fauna. Although several undescribed species are known from existing collections, they are not described here. The name *Metopidithrix anderssoni* Shear, 2002, is emended to *Metopidithrix anderseni* Shear, 2002. *Paradesmus flavocarيناتus* Daday, 1889, is synonymized with *Asiomorpha coarctata* (De Saussure, 1860). Four Thai species, viz., *Platyhacrus bouvieri* Brölemann, 1896, *Antheromorpha festiva* (Brölemann, 1896), *Orthomorpha paviei* Brölemann, 1896, and *Orthomorpha variegata* Brölemann, 1896, were erroneously included in the list of Vietnamese millipedes recently published by Enghoff et al. (*Arthropoda Selecta* 13: 29–43, 2004) and should be deleted from the Vietnamese fauna. Remarks on the biogeographical affinities of Thai millipedes are provided.

Keywords: millipedes, Diplopoda, Thailand, Vietnam

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## INTRODUCTION

The kingdom of Thailand, formerly known as Siam, has never been a European colony. This historical fact, in connection with classical taxonomy's well-known strong centre of gravity in Europe, explains why the Thai fauna, especially the millipedes, have only recently become more than fragmentarily known. Whereas the majority of millipedes described and recorded from Myanmar (= Burma, former British colony) were described in the last decades of the 19<sup>th</sup> century (see, e.g. Jeekel 1968 for Paradoxosomatidae), and more than half of those from Vietnam (former French colony) in the 1930's and 1950's (see Enghoff et al. 2004), description and recording of millipedes from Thailand did not gain momentum until the 1960's. Out of 105 millipedes species listed from Thailand in the present paper, 78 were described in 1961 or later and 64 species (more than half of the total) were described in the 1980's and 1990's.

Flower (1901) gave an account of millipedes

from Thailand, with biological notes on several species, and with the information that millipedes are called "King keu" in Siamese (Thai). Many of Flower's identifications are tentative; however, much of his material (in the Natural History Museum, London) was restudied by Hirst (1907) and Demange (1961). Except for the widespread *Asiomorpha coarctata*, Flower's unrevised records at species level have not been included in the list, pending confirmation of his identifications.

The Natural History Museum of Denmark (Zoological Museum), where more than half of the primary types of Thai millipedes are housed, still has numerous samples of unidentified specimens. These include species (probably to a large degree undescribed) of four orders which have so far not been recorded from Thailand: Polyxenida, Glomeridesmida, Polyzoniida, Siphonophorida, as well as additional species (probably also to a large degree undescribed) of four other orders: Sphaerotheriida, Spirobolida, Spirostreptida (Harpagophoridae) and Polydes-

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mida (Platyrrhacidae, Paradoxosomatidae, Cryptodesmidae, Opisetretidae, Fuhrmannodesmidae, Haplodesmidae, Pyrgodesmidae).

## MATERIAL AND METHODS

The new records are based on material from the collections of the California Academy of Sciences (CAS), the Department of Biology, Faculty of Science, Chiang Mai University (CMU), the Museum für Naturkunde, Humboldt-Universität, Berlin (ZMB), and the Natural History Museum of Denmark (Zoological Museum), University of Copenhagen (ZMUC).

Locality names as given in original publications and on labels have sometimes been modified. In particular, three national parks in northern Thailand (all in Chiang Mai Province = Chiang Mai Province), from where many records derive, have been indicated quite differently by different authors and collectors, but are here spelled in a standardized way. Thus:

Doi Chiang Dao National Park (NP) = "Doi Chiang Dao" = "Chiang Dao"

Doi Inthanon NP = "Doi Inthanon"

Doi Suthep Pui NP = "Doi Sutep" = "Doi Suthep"

The classification used is that by Hoffman (1980), including the updating by Shelley (2003). Genera within families, and species within genera, are listed alphabetically.

The information on each species is arranged as follows:

1. Valid name, followed by "(E)" for species known only from Thailand and thus for the time being regarded as Thai endemics, and by "(ZMUC)" for species, the holotype of which is deposited in ZMUC.
2. Synonyms relevant for the literature dealing with the species' occurrence in Thailand.
3. Records from Thailand, compiled from the literature.
4. New material, if any. Unless otherwise specified, the specimens are kept in ZMUC, and the identifications are by the author. F = female, M = male, juv. = juvenile, spm(s) = specimen(s).
5. Remarks, including distribution for non-endemic species.

References have been included if they provide

original records for Thailand and/or affect the taxonomy of the species as relevant for Thailand. In some cases other references giving important geographical and/or biological information about the species have also been included.

## SYSTEMATIC PART

### Order **Glomerida**

#### Family **Glomeridae**

##### ***Hyleoglomeris* Verhoeff, 1910**

Golovatch (1983) provided a key to the Indo-Chinese, including Thai, species of *Hyleoglomeris*.

##### **1. *Hyleoglomeris albicollis* Golovatch, 1983 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Inthanon NP, Mae Chaem, 1700 m (Golovatch 1983).

##### **2. *Hyleoglomeris cremea* Golovatch, 1983 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP, 1800 m (Golovatch 1983).

##### **3. *Hyleoglomeris montana* Golovatch, 1983 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Inthanon NP, summit, 2500 m (Golovatch 1983).

New material: 1M topotype, by radar station (98°21' E, 18°35' N), 9.iii.1989.

##### **4. *Hyleoglomeris siamensis* Silvestri, 1917 (E)**

*Apiomeris* (*Hyleoglomeris*) *siamensis* Silvestri, 1917.

*Hyleoglomeris siamensis*. – Golovatch 1983.

Records from Thailand: Meetaw, Raheng, 2000 ft (Silvestri 1917).

##### ***Rhopalomeris* Verhoeff, 1906**

##### **5. *Rhopalomeris carnifex* (Pocock, 1889)**

*Glomeris carnifex* Pocock, 1889.

New material: 4 spms, Phuket Island, lowland forest, in old logs, 5.ii.1989, M. Andersen & A.R. Rasmussen leg. – 1 spm, Phuket Island, forest in

Katu district, 14.ii.1989, M. Andersen & A.R. Rasmussen leg. – 1 spm, Phuket Island, Thalang forest, in old log, 4.ii.1989, M. Andersen & A.R. Rasmussen leg. – 1 M, Nai Chong Krabi (peninsular Thailand), 18.i.1966, B. Hansen.

New to the Thai fauna. Also known from Myanmar (Pocock 1889).

#### Order Sphaerotheriida

##### Family Zephroniidae

##### *Zephronia* Gray, 1832

##### 6. *Zephronia siamensis* Hirst, 1907 (E)

*Zephronia* [sp.] – Flower 1901.

Records from Thailand: Kosichang. – Chantaboon (Hirst 1907).

#### Order Platydesmida

##### Family Andrognathidae

##### *Pseudodesmus* Pocock, 1887

##### *Pseudodesmus* sp.

Flower (1901) reported a *Pseudodesmus* sp. from the jungle near Hinlap, 700 feet elevation, and Muok Tek, 900 feet, in the Dong Phya Phai.

#### Order Julida

##### Family Julidae

##### *Nepalmatoiulus* Mauriès, 1983

This large genus was revised by Enghoff (1987).

##### 7. *Nepalmatoiulus birmanicus* (Pocock, 1893)

*Julus birmanicus* Pocock, 1893.

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 500–1600 m. – Chiang Mai Province, Doi Inthanon NP, 300–1400 m. – Lam Pang Province, 13 mi SE Lee. – Saraburi Province, 10 mi N Saraburi. – Nakhon Nayok Province, Khao Yai NP, ca. 700 m. – Loei Province, Phu Luang Wildlife Sanctuary, 1400–1500 m, in elephant dung. – Loei Province, Ban Si Than. – Trat Province, Koh Chang, Salakpet Forest nr. Klong. – Patthalung Province, Khao Chong NP. – Phuket Province, Phuket Marine Biology Cen-

ter. – Phuket Province, Phuket Isl., Tonsai Waterfall. – Nakhon Ratchasima Province, Muok Lek. – Chiang Mai (Enghoff 1987).

New material: 1 juv. M, Koh Chang, Khlong Phraa, 31.viii.1990, A.R. Rasmussen leg. – 1 juv., Taplan Reserve 150 km NE Bangkok, under bark, 30.i.1989, T.G. Nielsen leg.

Also known from Myanmar and India (Assam) (Enghoff 1987).

##### 8. *Nepalmatoiulus brevipes* Enghoff, 1987 (E) (ZMUC)

Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 2500 m (Enghoff 1987).

##### 9. *Nepalmatoiulus crassiseta* Enghoff, 1987 (E) (ZMUC)

Records from Thailand: Chiang Mai Province, Pa Pae, 900 m (Enghoff 1987).

##### 10. *Nepalmatoiulus degerboelae* Enghoff, 1987 (E) (ZMUC)

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1000 m (Enghoff 1987).

##### 11. *Nepalmatoiulus koh* Enghoff, 1987 (E) (ZMUC)

Records from Thailand: Trat Province, Koh Chang (Enghoff 1987).

##### 12. *Nepalmatoiulus longipes* Enghoff, 1987 (E) (ZMUC)

Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 2500 m (Enghoff 1987).

##### 13. *Nepalmatoiulus major* Enghoff, 1987 (E)

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP, 1200 m (Enghoff 1987).

##### 14. *Nepalmatoiulus maximus* Enghoff, 1987 (E) (ZMUC)

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP, 1200–1800 m (Enghoff 1987).

##### 15. *Nepalmatoiulus minimus* Enghoff, 1987 (E)

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP, 1200 m (Enghoff 1987).

**16. *Nepalmatoiulus minor* Enghoff, 1987 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP, 1100–1800 m (Enghoff 1987).

**17. *Nepalmatoiulus pygmaeus* Enghoff, 1987 (E)**

Records from Thailand: Chiang Mai Province, Doi Inthanon NP, ca. 2000 m (Enghoff 1987).

New material: 2 M, 4 F, Doi Inthanon NP, 2500 m, 24.xi.1996, S. Sonthichai leg. (CMU, ZMUC).

**18. *Nepalmatoiulus velodentatus* Enghoff, 1987 (E)**

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP, ca. 2000 m (Enghoff 1987).

**Order Spirobolida**

Flower (1901) reported three Thai species of Spirobolida: “the red-legged *Trigoniulus*” from Bangkok and “the blue-green and red *Trigoniulus*” from the jungle south of Tahkamen, and “*Spirobolellus* sp.”, “the white-legged millipede” from Pachim and Bangkok. The identity of these species has still not been established.

**Family Pseudospirobolellidae*****Benoitulus* Mauriès, 1980****19. *Benoitulus birgatae* (Hoffman, 1981) (E) (ZMUC)**

*Solaenobolellus birgatae* Hoffman, 1981.

*Benoitulus birgatae*. – Golovatch & Korsós 1992.

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP (19°23' N, 98°50' E), 1200–1800 m; Chiang Mai Province, Doi Suthep Pui NP (18°46' N, 98°48' E); Chiang Mai Province, “west of Chiang Mai” (Hoffman 1981).

New material: 1 M, Chiang Mai Province, Doi Chiang Dao NP, 1100–1700 m, 18.vii.1958, B. Degerbøl leg.

**20. *Benoitulus siamensis* (Attems, 1936) (E)**

*Cyclothyrophorus siamensis* Attems, 1936.

*Benoitulus siamensis*. – Jeekel 2001.

Records from Thailand: Koh Samesan Island (Attems 1936).

***Pseudospirobolellus* Carl, 1912****21. *Pseudospirobolellus avernus* (Butler, 1876)**

*Spirostreptus avernus* Butler, 1876.

Records from Thailand: Phuket Island (Enghoff 2001).

New material: 1 M, Phuket Isl., resort Rawai, 8–10.i.1987, N. Møller Andersen leg. (this is the specimen referred to by Enghoff 2001).

A widespread tropical ‘tramp’ species, especially known from numerous islands (Enghoff 2001).

**Family Pachybolidae*****Litostrophus* Chamberlin, 1921****22. *Litostrophus segregatus* Chamberlin, 1921 (E)**

Records from Thailand: “Gulf of Siam” (Chamberlin 1921)

New material: Several spms, Koh Kut, 6.iv.1958, B. Degerbøl leg., R.L. Hoffman det. – Several spms, Koh Chiang, rain forest, 4.iv.1959, B. Degerbøl leg., R.L. Hoffman det.

***Tonkinbolus* Verhoeff, 1938****23. *Tonkinbolus caudulanus* (Karsch, 1881)**

*Spirobolus caudulanus* Karsch, 1881.

*Tonkinbolus caudulanus*. – Hoffman 1962.

Records from Thailand: “Siam” (Karsch 1881) (“probably from the vicinity of Bangkok”, Hoffman 1962).

Also recorded from Myanmar (Pocock 1893), but the conspecificity of these records with *caudulanus* was doubted by Hoffman (1962)

**24. *Tonkinbolus dollfusi* (Pocock, 1893)**

*Spirobolus dollfusi* Pocock, 1893.

*Tonkinbolus dollfusi*. – Hoffman 1962.

New material: 1 M, Koh Kut, 6.iv.1958, B. Degerbøl leg., R.L. Hoffman det.

New for the Thai fauna. Also known from the south of Vietnam (Pocock 1893).

**Family Trigoniulidae*****Trigoniulus* Pocock, 1894****25. *Trigoniulus corallinus* (Gervais, 1847)**

*Iulus corallinus* Gervais, 1847.

*Spirobolus phranus* Karsch, 1881.

*Trigoniulus lumbricinus* Gerstaecker, 1893, auct.

*Trigoniulus corallinus*. – Hoffman 1994.

Records from Thailand: Bangkok (Karsch 1881). – Chiang Mai (Golovatch & Korsos 1990). – Chiang Mai Province (Shelley & Lehtinen 1999).

New material: Numerous spms, Phuket Isl, Phuket Marine Biological Center (7°48' N, 98°25' E), 1985–2000, M. Andersen, N. Møller Andersen, D. Eibye-Jacobsen, O. Martin, C. Nielsen, M. Pereira & N. Scharff leg. – 3 spms, Phuket Isl., lowland forest, in old logs, 5.ii.1989, M. Andersen & A.R. Rasmussen leg. – Several spms, Similan Island (Andaman Sea) ca. 100 km N of Phuket Isl., 28.ii.-2.iii.1989, A.R. Rasmussen leg. – 7 spms, Trang Province, Hat Chao Mai NP (7°19' N, 99°27' E), coastal shrubs mangrove, <20 m, 26.x.1991, M. Andersen, O. Martin & N. Scharff leg. – 4 spms (same locality and collectors, but 7°26' N, 99°21' E), mangrove, <20 m, 27.x.1991. – 1 M, Chiang Mai (at light), 28–30.xi.1978, M. Holmen leg. – 1 M, Ko Surin NP, Surin Isl., N Andaman coast, 18–20.i.1999, S. Andersen leg. – 1 M, N of Trang, moist road verge, paddy fields, 24.ii.1988, M. Andersen leg. – 2 spms, Bangkok, Royal Forest Dept., 15.v.1959, T. Smitinand leg.

A synanthropic species also known from numerous tropical islands throughout the world, as well as from several coastal continental sites and fewer inland ones. Most likely originated from SE Asia (Shelley & Lehtinen 1999). See Shelley & Lehtinen (1999) and Jeekel (2002) for the extensive synonymy.

## Order Spirostreptida

### Family Cambalopsidae

#### *Trachyiulus* Peters, 1864

##### 26. *Trachyiulus nordquisti* (Attems, 1908)

*Cambalopsis nordquisti* Attems, 1908.

*Trachyiulus nordquisti ambiguus* Mauriès, 1983.

Records from Thailand: Kanchanaburi (150 km W of Bangkok), Daowdaeng Cave (Mauriès 1983, ssp. *ambiguus*).

New material (nominat ssp.): Numerous spms Phuket Isl, Phuket Marine Biological Center (7°48' N, 98°25' E), 1985–1997, M. Andersen, D. Eibye-Jacobsen, O. Martin, C.

Nielsen & N. Scharff leg. – 2 M River Kwai Lodge, S of Sai Yok, 10.viii.1979, B. Petersen leg.

*T. nordquisti* is a widespread, synanthropic species, known from peninsular Malaysia, Sulawesi, Amboina, New Britain, Brazil and Guyana (Jeekel 1963). The nominate subspecies is new to the Thai fauna. The subspecies *ambiguus* is a Thai endemic.

### Family Glyphiulidae

#### *Glyphiulus* Gervais, 1847

##### 27. *Glyphiulus siamensis* Mauriès, 1983 (E) (ZMUC)

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP (Mauriès 1983).

New material: 1 M, topotype, with ants, Ross & Cavagnaro leg. (CAS). – 1 F, Chiang Mai Province, Doi Suthep Pui NP, Kontathan, 16–28.x.1984, ca. 600 m, O. Karsholt, O. Lomholdt & E. Nielsen leg.

#### *Hypocambala* Silvestri, 1897

##### 28. *Hypocambala helleri* Silvestri, 1897

Records from Thailand. Chiang Mai Province, Doi Inthanon NP, 1900 m (Mauriès 1983).

New material: Several spms, Chiang Mai Province, Doi Inthanon NP, 22–24.x.1984, ca. 1600m, O. Karsholt, O. Lomholdt & E. Nielsen leg. – 4 F, 6 juv., Doi Inthanon NP, 1700 m, 23–25.xi.1996, S. Sonthichai leg. (CMU). – Several juv., Trang Province, Ton Tee waterfall (7°24' N, 99°52' E), lowland rain forest, 28.x.1991, <400m, M. Andersen, O. Martin & N. Scharff leg. (identification of the latter sample tentative).

A rather widespread synanthropic species, also known from Sulawesi, Fiji, the Aru islands, and Guyana (Jeekel 1963, Mauriès 1983).

### Family Harpagophoridae

The largest Thai millipedes belong to this family, sometimes reaching more than 20 cm in length and more than 15 mm in diameter. In spite of this, the taxonomy of the family is unsettled, not the least due to considerable intraspecific variability. Perhaps because of their large size, only one or a

few specimens have usually been collected at a time, making it difficult to distinguish between local and regional variation. Many subspecies have been recognised by previous authors; these are, however, listed as synonyms here. The newly identified material underlines the problems, as several of the specimens differ slightly from descriptions. For the purpose of this paper, I have adopted a broad morphospecies-concept, awaiting a more comprehensive analysis of the patterns of variation. Also the genus-level taxonomy cannot be regarded as anywhere near definitive. For instance, some species currently referred to *Cornugonus* may be more closely related to certain *Thyropygus* species (Hoffman 1975, 1982; Demange 1989), and two species currently referred to *Anurostreptus* (*A. longispinus* and *A. sculptus*) occupy an intermediate position between this genus and *Rhynchoprocetus*, and may deserve a genus of their own (Demange 1983).

#### *Anurostreptus* Attems, 1914

##### **29. *Anurostreptus barthelemyae* Demange, 1961**

New material: 3 M, 7 F, Satun Province, Thale Ban NP (6°42' N, 100°10' E), rain forest, <400m, 20.x.1991, M. Andersen, O. Martin & N. Scharff leg. – 1 M, 1 F, same loc., 8.xi.1990, M. Andersen & A.R. Rasmussen leg. – 4 M, same loc., 15–18.x.2003, ATOL Expedition 2003 leg. – 2 M, Satun Province, Thale Ban NP (6°45' N, 100°10' E), forest at Varoi waterfall, <400m, 16.x.1991, M. Andersen, O. Martin & N. Scharff leg. – 1 M, Khao Mala, Naratiwat, 19.xi.1962, B. Nimanong leg. – 1 M, Songkhla Province, Ton Nga Chang waterfall near Hat Yai (7°01' N, 100°13' E), v 500m, 22.x.1991, M. Andersen, O. Martin & N. Scharff leg. – 4 M, 1 F, 1 juv., Yala Province, Bang Lang NP (6°04' N, 101°11' E), lowland rain forest, <400m, 20.x.1991, M. Andersen, O. Martin & N. Scharff leg.

New to the Thai fauna. Identifications in part tentative. Also known from peninsular Malaysia (Demange 1961).

##### **30. *Anurostreptus longispinus* Demange, 1961**

Records from Thailand: Massié (Demange 1961).

Also known from Laos (Demange 1961).

##### **31. *Anurostreptus sculptus* Demange, 1961 (E)**

*Spirostreptus vittatus* Newport “or an allied species”. – Flower 1901.

Records from Thailand: Dong Phya Fai, 900' (Demange 1961).

New material: 1 M, Hinlap, Fruhstorfer leg. (ZMB).

#### *Cornugonus* Demange, 1961

##### **32. *Cornugonus floweri* Demange, 1961**

New material: 1 M, Yala Province, Bang Lang NP (6°04' N, 101°11' E), lowland rain forest, <400m, 20.x.1981, M. Andersen, O. Martin & N. Scharff leg.

New to the Thai fauna. Also known from peninsular Malaysia (Demange 1961).

##### **33. *Cornugonus implicatus* Demange, 1961**

New material: 8 M, 3 F, 1 juv., Satun Province, Thale Ban NP (6°42' N, 100°10' E), lowland rain forest, <400 m, 20.x.1991, M. Andersen, O. Martin & N. Scharff leg. – 2 M, 2 F, same loc., 15–18.x.2003, ATOL Expedition 2003 leg.

New to the Thai fauna. Also known from peninsular Malaysia (Demange 1961).

##### **34. *Cornugonus inflexus* Demange, 1989 (E)**

Records from Thailand: Changwat Kanchanaburi (Demange 1989).

#### *Gonoplectus* Chamberlin, 1921

##### **35. *Gonoplectus ingenuus* Hoffman & Burkhalter, 1978 (E)**

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP ca. 10 mi NW Chiang Mai (Hoffman & Burkhalter 1978). – Same loc., 800–1000 m; Chiang Mai Province, Doi Inthanon NP, 1500 m; Pukradang, Koh Chang; Mahami (Demange 1983, males only from Doi Suthep Pui NP).

#### *Humbertostreptus* Demange, 1969

##### **36. *Humbertostreptus armatus* Demange, 1983 (E) (ZMUC)**

Records from Thailand: Doi Nya Chang near Khun Thai (Demange 1983).

***Thaiogonus* Demange, 1986****37. *Thaiogonus robustus* Demange, 1986 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Huai Nam Dang, 1500–1700 m (Demange 1986).

***Thyropygus* Pocock, 1894****38. *Thyropygus allevatus* (Karsch, 1881)**

*Spirostreptus allevatus* Karsch, 1881.  
*Spirostreptus bowringii* Pocock, 1892.  
*Thyropygus bowringii*. – Flower 1901.  
*Thyropygus induratus* Attems, 1936.  
*Thyropygus quietus* Attems, 1938.  
*Thyropygus resimus* Attems, 1938.  
*Thyropisthus polyodontus* Attems, 1942.  
*Thyropisthus induratus*. – Attems 1942.  
*Thyropisthus resimus*. – Attems 1942. – Demange 1961.  
*Thyropisthus bowringii*. – Demange 1961.  
*Thyropisthus induratus uncinatus* Demange, 1961.  
*Thyropisthus allevatus*. – Demange 1967, 1983.  
*Thyropisthus quietus*. – Attems 1942. – Demange 1961.  
*Thyropygus allevatus allevatus*. – Hoffman 1975.  
*Thyropygus allevatus uncinatus*. – Hoffman 1975.  
*Thyropygus allevatus quietus*. – Hoffman 1975.  
*Thyropygus allevatus resimus*. – Hoffman 1975.

Records from Thailand: “Siam” (Karsch 1881). – “East Siam” (Attems 1936). – “Siam” (Pocock 1892). – “Xieng Sang am Mekong” (Attems 1942, uncertain whether this is really in Thailand). – Bangkok (Flower 1901, Demange 1961) – Kongsichang (Flower 1901, Demange 1961, ssp. *uncinatus*). – Kao Seming (Demange 1961, ssp. *quietus*, the locality interpreted as being = Khao Saming 50 m km NE Trat) (Hoffman 1975). – Angkor Vat (Demange 1961, ssp. *resimus*, see remark below). – Ko Sichang (Hoffman 1975, ssp. *uncinatus*). – Chiang Mai (Hoffman 1975, ssp. *resimus*). – Bangkok (in part: orchid museum); Koh Chang (Demange 1983).

New material: 1 M, Bangkok, Banglamphue, at river, 22.vi.1990, B. Helwigh leg. – 1 M, Bangkok, x.1940, A.M. Hemmingsen leg. – 1 M, Chiang Mai Province, Fang Horticultural Exp. Station, 550–600m, 21.x.1981, Zool. Museum Copenhagen leg. – Several spms, Bangkok, J.C. Aagaard leg. (ZMB).

Hoffman (1975) recognized six subspecies of this common species. Until a comprehensive analysis, based on more material, has been carried out, I think it premature to recognize subspe-

cies. For the purpose of the present paper, *T. allevatus* is treated as one taxon, recognized at the species level and – like several other harpagophorids – showing gonopodal variation. *T. allevatus* is also known from Vietnam and Laos (Hoffman 1975), Malaysia (Attems 1942: “Siam. Penang”, but Penang is in peninsular Malaysia), and Cambodia (Demange 1961: “Siam. Angkor Vat”, but Angkor Vat is in Cambodia). The record from Honolulu by Attems (1942, as *Thyropisthus polyodontus*) is obviously erroneous or due to an accidentally introduced specimen.

**39. *Thyropygus aterrimus* (Pocock, 1889)**

*Spirostreptus aterrimus* Pocock, 1889.  
*Thyropygus aterrimus*. – Attems 1936. – Hoffman 1975 (with 1892 as the year of publication of *aterrimus*).  
*Thyropisthus aterrimus*. – Attems 1942. – Demange 1961.

New material: 2 M, Yala Province, Bang Lang NP (6°11'47.5" N, 101°09'50.9" E), 270m, 15.x.2003, ATOL Expedition 2003 leg. – 1 M, Naratiwat Province, Waeng Distr., Hala Bala WS Research Station (°47'44.8" N, 101°50'4.2" E), 190–200m, 14.x.2003, ATOL Expedition 2003 leg.

New to the Thai fauna. Also known from Myanmar, Mergui Isl. (Pocock 1889).

**40. *Thyropygus bifurcus* (Demange, 1986) comb. nov. (E) (ZMUC)**

*Thyropisthus bifurcus* Demange, 1986.  
Records from Thailand: Khao Luang (Demange 1986).

New material: 10 spms, Trang Province, Hat Chao Mai NP (7°19' N, 99°27' E), gallery forest, near coast, <20 m, 26.x.1991, M. Andersen, O. Martin & N. Scharff leg.

Demange (1981, 1986) did not accept Hoffman's (1975) synonymisation of *Thyropisthus* Attems, 1942, under *Thyropygus* Pocock, 1894. Hoffman's concept of *Thyropygus* is followed here, hence the new combination. The new material is referred to this species with reservation.

**41. *Thyropygus carli* Attems, 1938**

*Thyropygus cuisinieri carli* Attems, 1938.  
*Thyropisthus cuisinieri carli*. – Attems 1942. – Demange 1961, 1983.

*Thyropygus carli*. – Hoffman 1975.  
Records from Thailand: Bachien (Demange 1961).

The record from Cauda near N'Hatrang by

Demange (1983) was erroneously referred to Thailand; the locality is in Vietnam from where the species is well known (Enghoff et al. 2004).

**42. *Thyropygus confusus* Attems, 1938**

*Thyropisthus confusus*. – Demange 1961.

*Thyropisthus confusus tenuispinus* Demange, 1961. – Demange 1983.

Records from Thailand: Bangkok, orchid museum; Silang (Demange 1983, ssp. *tenuispinus*).

Also known from Vietnam (Enghoff et al. 2004).

**43. *Thyropygus cuisinieri* Carl, 1917**

*Thyropygus cuisinieri* Carl, 1917. – Attems 1938. – Hoffman 1975.

*Thyropisthus cuisinieri*. – Attems 1942. – Demange 1961.

*Thyropisthus cuisinieri foliaceus* Demange, 1961.

Records from Thailand: Ugon (Demange 1961, ssp. *foliaceus*). – Koh Kut (erroneously said to be in northern Thailand, due to false information from the present author) (Demange, 1983).

*T. carli* (see above) was originally described as a subspecies of *T. cuisinieri*, which has therefore been referred to as *T. cuisinieri cuisinieri* by some authors. Also known from Vietnam (Enghoff et al. 2004).

**44. *Thyropygus enghoffi* (Demange, 1989) comb. nov. (E)**

*Thyropisthus enghoffi* Demange, 1989.

Records from Thailand: Phangnha Province, forest, close to the ruin of Tham Pong Chang (Demange 1989).

Cf. remark on new combination under *T. bifurcus*.

**45. *Thyropygus globulus* (Demange, 1989) comb. nov. (E)**

*Thyropisthus globulus* Demange, 1989.

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP, at the temple (Demange 1989).

Cf. remark on new combination under *T. bifurcus*.

**46. *Thyropygus hoffmani* (Demange, 1961) (E)**

*Thyropisthus hoffmani* Demange, 1961.

*Thyropygus hoffmani*. – Hoffman 1975.

Records from Thailand: Kanbudi? or Ranbudi (Demange 1961, interpreted as being = Kanburi

on the Mekong River ca. 60 km NW by N of Ratchaburi (Hoffman 1975). – Chiang Mai Province, Doi Inthanon NP; Chiang Mai Province, Doi Suthep Pui NP (Demange 1983).

**47. *Thyropygus ligulus* (Demange, 1961) (E)**

*T. bowringii* “or an allied form”. – Flower 1901.

*Thyropisthus ligulus* Demange, 1961. – Demange 1986.

*Thyropygus ligulus*. – Hoffman 1975.

Records from Thailand: Dong Phya Fai; Ubon (Demange 1961). – Nakhon Nayok Province, Khao Yai NP, ca. 700 m.

New material: 1 M, 1 F, Nakhon Nayok Province, Khao Yai NP, ca. 700m, 29.ix.-6.x.1984, Karsholt, Lomholdt & Nielsen leg. – 1 M, Hinlap, Fruhstorfer leg. (ZMB).

**48. *Thyropygus peninsularis* Hoffman, 1982 (E)**

Records from Thailand: NW peninsula, Kapa (presumably = Kapoe, 9°35' N, 98°38' E) (Hoffman 1982a).

**49. *Thyropygus siamensis* Verhoeff, 1938 (E)**

*Thyropisthus siamensis*. – Attems 1942. – Demange 1961.

Records from Thailand: Ninlap (Verhoeff 1938).

Order **Chordeumatida**

Family **Heterochordeumatidae**

***Infulathrix* Shear, 2000**

**50. *Infulathrix siam* Shear, 2000 (E) (ZMUC)**

Records from Thailand: Phuket Is., E of Ton Sai Waterfall (Shear 2000).

Family **Megalotylidae**

***Nepalella* Shear, 1979**

**51. *Nepalella taiensis* Mauriès, 1988 (E) (ZMUC)**

*Nepalella taiensis inthanonae* Mauriès, 1988.

Records from Thailand: Chiang Mai Province, Doi Pha Hom Pok, NW of Fang, 1550–1750 m (n nominate form); Chiang Mai Province, Doi Inthanon NP, 2000–2540 m (ssp. *inthanonae*) (Mauriès 1988).

Family **Metopidiotrichidae**

***Metopidothrix* Attems, 1907**

This large genus was revised by Shear (2002).

**52. *Metopidothrix anderseni* Shear, 2002, nom. emend. (E) (ZMUC)**

*Metopidothrix anderseni* Shear, 2002.

Records from Thailand: Satun Province, Thale Ban NP, at Yarold waterfall, 400 m, lowland rain forest (Shear 2002).

Shear noted that the species is named after one of the collectors, indicated as “N. Andersson”. The collector’s correct name is, however, M. Andersen, and the name is emended accordingly.

Order **Polydesmida**Family **Platyrhacidae*****Platyrhachus* C. L. Koch, 1847****53. *Platyrhachus bouvieri* Brölemann, 1896 (E)**

Records from Thailand: Nakhon Nayok (Brölemann 1904).

In the original description (Brölemann 1896) no locality was given, but the title of the paper indicated “Indo-Chine”. On this basis the species was included in a recent list of Vietnamese millipedes (Enghoff et al. 2004). However, in his redescription of the species Brölemann (1904) gave the locality as “Siam, à Nakon-Nayok”, the species should thus be removed from the Vietnamese list. A dubious species, according to Attems (1936).

Family **Paradoxosomatidae*****Anoplodesmus* Pocock, 1895****54. *Anoplodesmus malayanus* (Golovatch, 1993) (E) (ZMUC)**

*Paranedyopus malayanus* Golovatch, 1993.

*Anoplodesmus malayanus*. – Golovatch 2000.

Records from Thailand: Yala Province, Bang Lang NP (6°04' N, 101°11' E), <400m (Golovatch 1993).

**55. *Anoplodesmus perplexus* (Golovatch, 1993) (E) (ZMUC)**

*Paranedyopus perplexus* Golovatch, 1993.

*Anoplodesmus perplexus*. – Golovatch 2000.

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1000–1100 m (Golovatch 1993).

***Antheromorpha* Jeekel, 1968****56. *Antheromorpha festiva* (Brölemann, 1896) (E)**

*Orthomorpha festiva* Brölemann, 1896.

*Antheromorpha festiva*. – Jeekel 1968.

Records from Thailand: “Siam” (Brölemann 1904).

In the original description (Brölemann 1896) no locality was given, but the title of the paper indicated “Indo-Chine”. On this basis the species was included in a recent list of Vietnamese millipedes (Enghoff et al. 2004). However, in his redescription of the species Brölemann (1904) gave the locality as “Siam”; the species should thus be removed from the Vietnamese list.

**57. *Antheromorpha uncinata* (Attems, 1931) (E)**

*Orthomorpha uncinata* Attems, 1931.

*Antheromorpha uncinata*. – Jeekel 1968.

Records from Thailand: Muok Lek (Attems 1931).

New material: Numerous MM, FF, Kamphaeng Phet, 19.i.1959, B. Degerbøl leg. & det. – 6 spms, Sitang (NE Thailand), evergreen forest, 22.xi.-3.xii.1958, B. Degerbøl leg. & det. – 3 spms, Phu Kradung, 26–30.xi.1958, B. Degerbøl leg. & det. – 1 F, Chayaphum Province, grassfield on way to communist camp, Phu Kugio, (101°34' E, 16°22' N), 22.i.1989, M. Andersen & H. Read leg.

The new material was compared with the type series (Nat. Hist. Mus. Vienna).

***Asiomorpha* Verhoeff, 1939**

This genus is often referred to as the *coarctata* group of *Orthomorpha* Bollman, 1893 (cf. Golovatch, 1997).

**58. *Asiomorpha coarctata* (De Saussure, 1860)**

*Polydesmus coarctata* De Saussure, 1860.

*Paradesmus flavocarinatus* Daday, 1889. (syn. nov.)

*Orthomorpha flavocarinata*. – Attems 1936, 1937.

*Asiomorpha coarctata*. – Verhoeff 1939.

*Orthomorpha coarctata*. – Golovatch 1997.

Records from Thailand: Bangkok (Daday 1889, Flower 1901). – Phuket Province, Phuket Marine Biological Center (7°48'N, 98°25'E). – Phuket Province, Phuket, Nai Harn beach (7°47'N, 98°18'E). – Trang Province, Hat Chao Mai NP (7°26'N, 99°21'E) (Golovatch 1997)

New material: 2 spms, Phuket Isl, NW Phuket Marine Biological Centre, coastal forest, in old treestumps, 12.xi.1987, M. Andersen leg. – Numerous spms, Phuket isl., Phuket Marine Biological Centre (98°25' E, 7°48' N), 10.x.1991, M. Andersen, O. Martin & N. Scharff leg. – 2 spms, same loc., 10.ix.2000, D. Eibye-Jacobsen leg. – 4 spms, Phuket Isl., resort Rawa, 8–10.i.1987, N. Møller Andersen leg. – 1 M, Chiang Mai (at light) 28–30.xi.1978, M. Holmen leg. – Several spms, Chiang Mai, 300 m, 2.x.1981, Zool. Museum Copenhagen leg. – 3 spms, Chiang Mai University Campus, 300 m, 4.xi.1979, Zool. Museum Copenhagen leg. – 1 F, Bangkok, 20.x.1984, M. Bévort leg. – 1 spm, River Kwai Lodge S of Sai Yok, 10.viii.1979, B. Petersen leg. – 1 M, Chiang Mai Province, Fang Horticult. Exp. Station, 550–600 m, 20.x.1981, Zool. Museum Copenhagen leg. – 1 spm, Pattaya, 18.x.1979, N. Møller Andersen leg. – 1 spm, Krabi Province, road between Krabi and Phuket (98°50' E, 8°09' N), 13.x.1991, M. Andersen, O. Martin & N. Scharff leg.

*Paradesmus flavocarinatus* Daday, 1889, has remained a dubious species since its description. Dr. Z. Korsós has informed me that there are several syntypes of *P. flavocarinatus* in the Hungarian Museum of Natural History, Budapest. Dr. Korsós has examined these syntypes and has found them to be *A. coarctata*. *Paradesmus flavocarinatus* can thus be added to the synonyms of this species.

Probably of East Asian origin, *A. coarctata* has become very widespread in tropical and subtropical areas throughout the world (Jeekel 1963, Shelley & Lehtinen 1998).

#### ***Carinorthomorpha* Golovatch, 2000**

##### **59. *Carinorthomorpha minuta* Golovatch, 2000 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 2500 m (Golovatch 2000).

#### ***Desmoxytes* Chamberlin, 1923**

This genus was reviewed by Golovatch & Enghoff (1994)

##### **60. *Desmoxytes acantherpestes* Golovatch & Enghoff, 1994 (E) (ZMUC)**

Records from Thailand: western coast of Gulf of Thailand, Hua Hin (Golovatch & Enghoff 1994).

##### **61. *Desmoxytes delfae* (Jeekel, 1964) (E)**

*Pratinus delfae* Jeekel, 1964.

*Desmoxytes delfae*. – Jeekel 1980.

Records from Thailand: Jeekel 1964.

##### **62. *Desmoxytes gigas* Golovatch & Enghoff, 1994 (E) (ZMUC)**

Records from Thailand: Krabi Province, road between Krabi and Phuket, 10 km S of Krabi (8°09'N, 98°50'E), lowland rainforest (Golovatch & Enghoff 1994).

##### **63. *Desmoxytes jeekeli* Golovatch & Enghoff, 1994 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1000–1500 m. – Chiang Mai Province, Doi Chiang Dao NP (only 1 juv.) (Golovatch & Enghoff 1994).

##### **64. *Desmoxytes planata* (Pocock, 1895)**

*Prionopeltis planatus* Pocock, 1895.

*Desmoxytes planata*. – Jeekel 1980.

Records from Thailand: Chiang Mai Province, Chiang Mai, in garden, 300 m. – Chiang Mai Province, Doi Inthanon NP, 1200–1300 m. – Chiang Mai Province, Fang Horticultural Station, 550–600 m (Golovatch & Enghoff 1994).

A synanthropic species also known from the Andaman Islands, Java, Sri Lanka, Fiji Islands, Great Coco Island (Myanmar), Seychelles Islands and S China (Golovatch & Enghoff 1994, Jeekel 1980, Shelley & Lehtinen 1998).

##### **65. *Desmoxytes pterygota* Golovatch & Enghoff, 1994 (E) (ZMUC)**

Records from Thailand: western coast, in forest at big waterfalls south of Kapoe (Golovatch & Enghoff 1994).

##### **66. *Desmoxytes rubra* Golovatch & Enghoff, 1994 (E) (ZMUC)**

Records from Thailand: Satun Province, Thale

Ban NP (6°42' N, 100°10' E). – Yala Province, Bang Lang NP (6°04' N, 101°11' E) (Golovatch & Enghoff 1994).

**67. *Desmoxytes terae* (Jeekel, 1964)**

*Pratinus terae* Jeekel, 1964.

*Desmoxytes terae*. – Golovatch & Enghoff, 1994.

Records from Thailand: Satun Province, Thale Ban NP (6°42' N, 100°10' E) (Golovatch & Enghoff 1994).

Also known from peninsular Malaysia (Jeekel 1964).

***Haplogonomorpha* Mršić, 1996**

**68. *Haplogonomorpha gogolai* Mršić, 1996**

Records from Thailand: Yala Province, Bang Lang NP (6°04' N, 101°11' E), <400m (Golovatch 1997).

Also known from peninsular Malaysia (Mršić 1996).

***Kronopolites* Attems, 1914**

**69. *Kronopolites fuscocingulatus* Jeekel, 1983 (E)**

Records from Thailand: Hakka village, 50 km N of Chiang Rai, 800–900 m. – Chiang Mai Province, Doi Suthep Pui NP, 400–500 m. – Mae Chan (Chiang Rai) (Jeekel 1983).

New material (tentative identifications, only FF and juv.): 1 F, Chiang Mai Province, Doi Pha Hom Pok, NW of Fang, 1550–1660 m, 21.x.1981, Zool. Museum Copenhagen leg. – 2 juv., Doi Suthep Pui NP, Kontathan waterfall area, 600–700 m, 20–27.x.1979 and 30.ix.1981, Zool. Museum Copenhagen leg. – 2 juv., Chiang Mai Prov, Doi Chiang Dao NP, limestone area, 1300 m, 18.x.1981, Zool. Museum Copenhagen leg.

Only one adult male is known, from Hakka village; the other localities given by Jeekel (1983) are therefore tentative, like those of the new material.

***Orthomorpha* Bollman, 1893**

**70. *Orthomorpha banglangensis* Golovatch, 1997 (E) (ZMUC)**

Records from Thailand: Yala Province, Bang Lang NP (6°04' N, 101°11' E) (Golovatch 1997).

**71. *Orthomorpha horologiformis* Golovatch, 1997 (E) (ZMUC)**

Records from Thailand: Trang Province, Hat Chao Mai NP (7°19' N, 99°27' E) (Golovatch 1997).

New material: 1 M, Trang Province, Hat Chao Mai NP, Ko Kradan, no date, no collector (probably B. Degerbøl). – 1M, 2F, Phuket Island, NW Phuket Marine Biology Center, coastal forest, in old tree stumps, 12.xi.1987, M. Andersen leg.

The specimens from Phuket Island are somewhat larger than the type specimens and the one from Ko Kradan.

**72. *Orthomorpha intercedens* Attems, 1937**

*Orthomorpha karschii intercedens* Attems, 1937.

*Orthomorpha intercedens*. – Jeekel 1963b, 1964b, 1968.

New material: 1 M, Chiang Mai Province, Doi Inthanon NP, ca. 1500 m, 9.v.1958, B. Degerbøl leg. – 1 M, several FF and juv., Chiang Mai Province, Doi Chiang Dao NP, 500–800 m, 18.ix. & 29.ix.1981, Zool. Museum Copenhagen leg. – 1 F, Chiang Mai Prov Doi Suthep Pui NP, ca. 1000 m, 5.xi.1958, B. Degerbøl leg.

New to the Thai fauna. This taxon was recorded by Attems (1937) from two localities in Myanmar and also from the mountains between Myanmar and Thailand. The above specimens thus constitute the first definitive records from Thailand. The species is not included in the keys of Jeekel (1964b) and Golovatch (1997). In the latter the Thai specimens key out to *O. insularis* Pocock, 1895 from Myanmar (see map in Hoffman 1977). They perfectly fit the description of *insularis* (Pocock 1895, see also Jeekel 1964b), except that their paratergites are more pointed posteriorly, which is exactly how Attems (1937) differentiated *intercedens* from *insularis* (which he also regarded as a subspecies of *O. karschii* (Pocock, 1889)).

**73. *Orthomorpha lauta* Golovatch, 1997 (E) (ZMUC)**

Records from Thailand: Krabi Province, road between Krabi and Phuket, 10 km N of Krabi (8°09' N, 98°50' E) (Golovatch 1997).

**74. *Orthomorpha paviei* Brölemann, 1896 (E)**

Records from Thailand: “Siam” (Brölemann 1904).

In the original description (Brölemann 1896) no locality was given, but the title of the paper indicated “Indo-Chine”. On this basis the species was included in a recent list of Vietnamese millipedes (Enghoff et al. 2004). However, in his redescription of the species Brölemann (1904) gave the locality as “Siam”; the species should thus be removed from the Vietnamese list.

**75. *Orthomorpha pterygota* Golovatch, 1997 (E) (ZMUC)**

Records from Thailand: Krabi Province, road between Krabi and Phuket, 10 km N of Krabi (8°09' N, 98°50' E). – Phuket Province, Phuket Marine Biological Center (7°48' N, 98°25' E) (Golovatch 1997).

**76. *Orthomorpha sericata* Jeekel, 1964 (E) (ZMUC)**

Records from Thailand: Wat Sum, Bandon, “Kravl I tusindins I Sandet I en tor Flodseng” (Danish = crawling in thousands in the sand in a dry riverbed; spelling very poorly recorded by Jeekel) (Jeekel 1964b).

**77. *Orthomorpha subkarschi* Golovatch, 1997 (E) (ZMUC)**

Records from Thailand: Phuket Province, Phuket, Ton Sai Waterfalls (8°01' N, 98°25' E) (Golovatch 1997).

**78. *Orthomorpha subsericata* Golovatch, 1997 (E) (ZMUC)**

Records from Thailand: Hua Hin, W coast of Gulf of Thailand (Golovatch 1997).

**79. *Orthomorpha thalebanica* Golovatch, 1997 (E) (ZMUC)**

Records from Thailand: Satun Province, Thale Ban NP (6°42' N, 100°10' E), <400m. – Satun Province Thale Ban NP, Yaroi Waterfalls (6°45' N, 100°10' E) (Golovatch 1997).

**80. *Orthomorpha variegata* Brölemann, 1896 (E)**

Records from Thailand: “Siam” (Brölemann 1904).

In the original description (Brölemann 1896) no locality was given, but the title of the paper indicated “Indo-Chine”. On this basis the species

was included in a recent list of Vietnamese millipedes (Enghoff et al. 2004). However, in his redescription of the species Brölemann (1904) gave the locality as “Siam”; the species should thus be removed from the Vietnamese list. A dubious species, male characters unknown (Jeekel 1968).

***Streptogonopus* Attems, 1914**

**81. *Streptogonopus degerboelae* Golovatch, 2000 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP (Golovatch 2000).

***Substrongylosoma* Golovatch, 1984**

**82. *Substrongylosoma moniliforme* Golovatch, 1993 (E) (ZMUC)**

Records from Thailand: Yala Province, 20 km S of Than To (5°50' N, 101°10' E), 200 m. – Yala Province, Bang Lang NP (6°04' N, 101°11' E), 400 m (Golovatch 1993).

***Tylopus* Jeekel, 1968**

This genus was reviewed by Golovatch & Enghoff (1994).

**83. *Tylopus affinis* Golovatch & Enghoff, 1993 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1650 m. – Chiang Mai Province, Doi Inthanon NP, 1700 m (Golovatch & Enghoff 1993).

New material: 1M, 1F, Doi Inthanon NP, 1700 m, 23.xi.1996, S. Sonthichai leg. (CMU).

**84. *Tylopus allorugosus* Golovatch & Enghoff, 1993 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 1300–2500 m. – Chiang Mai Province, Doi Suthep Pui NP, 1650 m (Golovatch & Enghoff 1993).

**85. *Tylopus amicus* Golovatch & Enghoff, 1993 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Pha Hom Pok, NW of Fang, 1550–1750 m (Golovatch & Enghoff 1993).

- 86. *Tylopus asper* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 1500 m (Golovatch & Enghoff 1993).
- 87. *Tylopus baenzigeri* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1100–1500 m (Golovatch & Enghoff 1993).
- 88. *Tylopus coriaceus* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chaiyaphum Province, Phu Kheio (101°34' E, 6°22' N) (Golovatch & Enghoff 1993).
- 89. *Tylopus degerboelae* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1000–1500 m. – Chiang Mai Province, Doi Inthanon NP, 1600 m. – Chiang Mai Province, Doi Chiang Dao NP (Golovatch & Enghoff 1993).
- 90. *Tylopus doriae* (Pocock, 1895)**  
*Orthomorpha doriae* Pocock, 1895.  
*Tylopus doriae*. – Jeekel 1968.  
Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP (Golovatch & Enghoff 1993).  
Also known from Myanmar (Pocock 1895).
- 91. *Tylopus haplorugosus* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 1900 m (Golovatch & Enghoff 1993).
- 92. *Tylopus hoffmani* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1600 m (Golovatch & Enghoff 1993).
- 93. *Tylopus jeekeli* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 1200–1300 m (Golovatch & Enghoff 1993).
- 94. *Tylopus pallidus* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Pha Hom Pok, NW of Fang, 1550–1750 m (Golovatch & Enghoff 1993).
- 95. *Tylopus perarmatus* Hoffman, 1973 (E)**  
Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, east slope, 1100–1275 m (Hoffman 1973). – Chiang Mai Province, Doi Inthanon NP, 750–1400 m. – Chiang Mai Province, Doi Chiang Dao NP, 500 m. – Lampang Province, ca. 8 km E Ban Huai Kaeo, 900 m (Golovatch & Enghoff 1993).
- 96. *Tylopus perplexus* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Pha Hom Pok, NW of Fang, 1550–1750 m (Golovatch & Enghoff 1993).
- 97. *Tylopus poolpermorum* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Pha Hom Pok, NW of Fang, 1550–1750 m (Golovatch & Enghoff 1993).
- 98. *Tylopus prosperus* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 2200–2500 m (Golovatch & Enghoff 1993).
- 99. *Tylopus pulvinipes* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chaiyaphum Province, Phu Kheio (101°34' E, 6°22' N) (Golovatch & Enghoff 1993).
- 100. *Tylopus rugosus* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Chiang Mai Province, Doi Chiang Dao NP, 1800 m (Golovatch & Enghoff 1993).
- 101. *Tylopus semirugosus* Golovatch & Enghoff, 1993 (E) (ZMUC)**  
Records from Thailand: Tak Province, Ban Musoe (Golovatch & Enghoff 1993).

**102. *Tylopus similirugosus* Golovatch & Eng-hoff, 1993 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1000–1500 m (Golovatch & Enghoff 1993).

**103. *Tylopus subcoriaceus* Golovatch & Eng-hoff, 1993 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Suthep Pui NP, 1100 m (Golovatch & Enghoff 1993).

Family **Doratodesmidae**

***Dyomerothrix* Hoffman, 1982****104. *Dyomerothrix gremialis* Hoffman, 1982 (E)**

Records from Thailand: cave at Chi Doi Chiang

Dao NP (19°23' N, 98°59' E) (Hoffman 1982b).

Family **Polydesmidae**

***Pacidesmus* Golovatch, 1991****105. *Pacidesmus shelleyi* Golovatch, 1991 (E) (ZMUC)**

Records from Thailand: Chiang Mai Province, Doi Inthanon NP, 1900–2500 m (Golovatch 1991).

**Species dubiously reported from Thailand**

Flower (1901) reported on “*Orthomorpha gracilis*” from Ayuthia, but whether this is really *Oxidus gracilis* (Koch, 1847), otherwise not known from Thailand, remains in question.

Table 1. Distribution of non-endemic Thai millipedes

	Myanmar (Burma)	peninsular Malaysia	Vietnam	Laos	other
<i>Rhopalomeris carnifex</i>	+				
<i>Nepalmatoiulus birmanicus</i>	+				India (Assam)
<i>Pseudospirobolellus avernus</i>					widespread, tropical “tramp”
<i>Tonkinbolus caudulanus</i>	+				
<i>Tonkinbolus dollfusi</i>			+		
<i>Trigoniulus corallinus</i>					widespread, tropical “tramp”
<i>Trachyiulus nordquisti</i>					widespread, tropical “tramp”
<i>Hypocambala helleri</i>					widespread, tropical “tramp”
<i>Anurostreptus barthelemyae</i>		+			
<i>Anurostreptus longispinus</i>				+	
<i>Cornugonus floweri</i>		+			
<i>Cornugonus implicatus</i>		+			
<i>Thyropygus allevatus</i>		+	+	+	Cambodia
<i>Thyropygus aterrimus</i>	+				
<i>Thyropygus carli</i>			+		
<i>Thyropygus confusus</i>			+		
<i>Thyropygus cuisinieri</i>			+		
<i>Asiomorpha coarctata</i>					widespread, tropical “tramp”
<i>Desmoxytes planata</i>					Andaman Islands, Java, Sri Lanka, Seychelles Islands, S China
<i>Desmoxytes terae</i>		+			
<i>Haplogonomorpha gogolai</i>		+			
<i>Orthomorpha intercedens</i>	+				
<i>Tylopus doriae</i>	+				
<b>Total</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>2</b>	<b>8</b>

## CORRECTIONS TO THE LIST OF VIETNAMESE MILLIPEDES BY ENGHOFF ET AL. (2004)

Four species were erroneously included as Vietnamese by Enghoff et al. (2004), viz., *Platyrhacus bouvieri* Brölemann, 1896, *Antheromorpha festiva* (Brölemann, 1896), *Orthomorpha paviei* Brölemann, 1896, *O. variegata* Brölemann, 1896. They were all described briefly, without any specification of type localities, by Brölemann (1896). Later, Brölemann (1904) re-described the species and gave their type localities as being in “Siam”, but this paper was overlooked by Enghoff et al. (2004). The listing of these four species as Vietnamese is thus erroneous and – poorly known as they are – they now belong on the Thai species list.

## ENDEMISM AND BIOGEOGRAPHICAL AFFINITIES

Only five out of the 35 genera represented in Thailand (*Litostrophus*, *Thaiogonus*, *Infulathrix*, *Carinorthomorpha* and *Dyomerothrix*, all monotypic) are endemic, all other genera being more widespread in SE Asia or beyond. However, the vast majority of the known species (80 out of 105) are known only from Thailand and should for the time being be regarded as endemic. Some of these (e.g., the four species described by Brölemann in 1896 and discussed above) are poorly known and may later prove to be synonymous with other species, but most of the 80 are probably truly endemic. Among the remaining 25 species (Table 1) eight are more or less widespread, mostly as a result of anthropochory. Thus only 18 species remain to indicate “affinities” of the Thai millipede fauna at the species level.

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These affinities are almost equally strong to Myanmar (Burma), peninsular Malaysia and Vietnam. An assessment of affinities at a higher level requires phylogenetic analyses among the species, like that of *Desmoxytes* by Golovatch & Enghoff (1994). In their cladogram, Thai species occurred as sister-groups of species from Myanmar, China, and Vietnam (and of the widespread *D. planata*). Golovatch & Enghoff (1993) attempted a phylogenetic analysis of *Tylopus*, but their results were inconclusive. For *Nepalmatoulus*, Enghoff (1987) presented a cladogram for one species-group, but the only Thai species in that group is the widespread *N. birmanicus*. At present, very little can be concluded about Thai millipede biogeography; this situation will improve with increased knowledge of the species and their relationships.

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