DIVERSITY, DISTRIBUTION AND OCCURRENCE OF SPIDERS IN DOI INTHANON NATIONAL PARK, CHIANG MAI PROVINCE

PAKAWIN DANKITTIPAKUL

MASTER OF SCIENCE
IN BIOLOGY

GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
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A THESIS SUBMITTED TO THE GRADUATE SCHOOL
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THIS THESIS HAS BEEN APPROVED
TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE
IN BIOLOGY

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14 March 2002

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Dedicated to Anthony, whom I wouldn't be arrogant enough to call a mate, but who, along with Oscar and Albert, made me feel so welcome in Auckland.

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M.S.	Biology
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ABSTRACT

From August 1999 to July 2000, a total of 3964 spiders was collected in Doi Inthanon National Park, representing 44 families, 148 genera, and 211 species. All of which are diagnosed and illustrated. Ninety of these species were identified and many of them are here reported from Thailand for the first time. For the remaining, presumably undescribed species, open nomenclature is used. Members of the Linyphiidae, Zodariidae, and Sparassidae comprise almost half (45%) of all spiders collected. These three families can be classified as the dominant group of families (more than 10% of individuals) on Doi Inthanon. The rest belongs to influence families (1-10%) and accessory families (below 1%). Only a few species were collected in high densities and comprise more than 1% of the total catch. Many species were found in low numbers, among them 66 species (31% of the total) represented by only a single specimen each. The observed frequency distribution pattern for spider species on Doi Inthanon conforms to an expected hollow logarithmic series model.

The two prominent altitudinal patterns of species richness revealed by the data are a broad peak in overall species richness in middle elevation and a marked downhill decline between 1500 and 2000 m. The general altitudinal variation in the abundance of spiders parallels the altitudinal variation in species richness. The number of individuals peaks at mid-elevation and undergoes a dramatic drop above 1500 m. Faunal turnover and similarity index indicate the presence of three separated zones with different spider communities in the national park. The high altitude zone (2000-2500 m) contains a high percentage of faunal elements otherwise prevailing in temperate latitudes, i.e. Linyphiidae, Agelenidae, Amaurobiidae, etc.

Monthly fluctuations in overall activity are mainly influenced by the activity of immature spiders. The cold season peak of mature spiders is dominated by females, whereas the

hot season peak is formed both by male and female individuals. The decline in activity of both adults and immatures in December probably is the result of variation in physical factors, especially temperature. Individual phonologies of most abundant species are given. Two types of phenologies are present. Eurychronous species are the species with a continuous presence of mature specimens over the entire year. Stenochronous species are sexually active only during a fairly short period of the year.

ชื่อเรื่องวิทยานิพนธ์	ความหลากหลาย การกระจาย และการปรากฏของแมงมุม ในอุทยานแห่งชาติดอยอินทนนท์ จังหวัดเชียงใหม่
ชื่อผู้เขียน	นายภควิน ด่านกิตติภากูล
วิทยาศาสตรมหาบัณฑิต	สาขาวิชาชีววิทยา
คณะกรรมการสอบวิทยานิพนธ์	รศ. เสาวภา สนธิไชย ประธานกรรมการ ดร. ปีเตอร์ ชเว็นดิงเกอร์ กรรมการ นางวิภาดา วังศิลาบัตร กรรมการ

บทคัดย่อ

การสำรวจแมงมุมในอุทยานแห่งชาติดอยอินทนนท์ระหว่างเดือนสิงหาคม 2542 ถึงเดือนกรกฎาคม 2543 พบแมงมุมทั้งสิ้น 3964 ตัว ประกอบด้วยแมงมุม 44 วงศ์ 148 สกุล 211 ชนิด แมงมุมที่สำรวจพบสามารถจัดแบ่งได้เป็นสามกลุ่มคือ กลุ่มที่มีอิทธิพลสูงได้แก่แมงมุมวงศ์ Linyphiidae Zodariidae และ Sparassidae ซึ่งพบรวมกันเป็นจำนวนมากหรือเกือบครึ่งของแมงมุมที่สำรวจ (ร้อยละ 45) และพบจำนวนมากกว่าร้อยละ 10 ของแมงมุมทั้งหมด แมงมุมกลุ่มที่มีความสำคัญเป็นแมงมุมวงศ์อื่นๆ ที่พบจำนวนระหว่างร้อยละ 1 ถึง 10 และแมงมุมกลุ่มประกอบพบจำนวนน้อยกว่าร้อยละ 1 มีแมงมุมเพียงบางชนิดเท่านั้นที่พบได้จำนวนมากในขณะที่แมงมุมส่วนมากพบชนิดละไม่กี่ตัว โดยมีแมงมุม 66 ชนิด (ร้อยละ 31) ที่พบได้เพียงหนึ่งตัวเท่านั้น การกระจายของแมงมุมในอุทยานแห่งชาติดอยอินทนนท์อยู่ในรูปแบบของ logarithmic series mode

จำนวนชนิดของแมงมุมพบมากที่สุดที่ระดับความสูงปานกลางโดยจำนวนชนิดจะลดลงเมื่อความสูงเพิ่มมากขึ้น จำนวนตัวของแมงมุมที่สำรวจพบให้ผลเช่นเดียวกันกับจำนวนชนิด ทั้งนี้ค่า faunal turnover และ similarity index บ่งชี้ว่าสามารถแบ่งกลุ่มของแมงมุมตามระดับความสูงได้ออกเป็นสามกลุ่ม

การเปลี่ยนแปลงของแมงมุมในแต่ละเดือนขึ้นอยู่กับการปรากฏของตัวอ่อน ตัวเต็มวัยที่เพิ่มมากขึ้นในฤดูหนาวสืบเนื่องมาจากการปรากฏของตัวเมีย ขณะที่จำนวนตัวเต็มวัยที่มากขึ้นในฤดูร้อนเกิดจากทั้งเพศผู้และเพศเมียรวมกัน การลดจำนวนลงของทั้งตัวเต็มวัยและตัวอ่อนในเดือธันวาคมเป็นผลมาจากปัจจัยทางกายภาพโดยเฉพาะอย่างยิ่งการเปลี่ยนแปลงของอุณหภูมิ จากการศึกษาพบว่ามีวงชีวิต 2 แบบ คือ วงชีวิตแบบ eurychronous โดยพบตัวเต็มวัยตลอดทั้งปี และวงชีวิตแบบ stenochronous ที่พบตัวเต็มวัยเพียงช่วงระยะเวลาที่จำกัดเวลาใดเวลาหนึ่งเท่านั้น

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INTRODUCTION

Over the past several decades, the general public has become aware of increasing problems of erosion of biological resources. The ongoing habitat destruction may result in the loss of substantial portions of Earth's biological diversity. Now, more than ever, understanding biological diversity has an undeniable urgency. A focus on individual species has not been an adequate response to the problem. A more comprehensive approach is required, to involve a far larger set of related interests.

It is important to realize that actions for biodiversity conservation must operate on both a short- and long-term information basis. We clearly cannot wait for more complete information on the world's flora and fauna before selecting and deciding objects for preservation of natural ecosystems. On a short-term basis, available information has to be used, supplemented with urgently needed new information, largely through recent monitoring.

Thailand, by virtue of its geography, was and in some parts still is graced by a rich and diverse fauna of both vertebrates and invertebrates. So far Arachnida and other invertebrates have hardly been considered for conservation in Thailand, neither for biodiversity assessment nor for ecological research. The reasons for this are of twofold: Thailand's conservation program is based on large vertebrates of high aesthetic value (Kinze, 1996; Somchevita, 1996); the other reason is the unmanageable number of species involved and the unavailability of sufficient taxonomical information. The absence of faunistic information also hampers attempts to interpret the faunal composition of Thailand, as well as understanding biogeographic patterns. The available information is very heterogeneous and for some species very limited (single records or less than ten records) and/or outdated, without any knowledge of whether the species still exist in the area. About 37,000 species of spiders have been named so far, representing what is believed to be about one-fourth the total (Levi & Levi, 1990). However, the spider fauna of Thailand is poorly known. Although a considerable amount of information on the spider fauna of Thailand has been brought together by various authors. So far, our knowledge of this fauna is far from complete.

This study was carried out to increase basic knowledge on tropical fauna, since the spiders are one of the most diverse arthropod groups and an important component in terrestrial ecosystems. Spiders are valuable indicators of endemism, and for early

warning of ecological changes. They are capable of responding more rapidly to changes in the environment than long-living vertebrates and plants. Indeed many spiders of Thailand could be used as key species in the complex process of deciding which habitat deserve conservation priority. This and ongoing rapid habitat destruction make the survey of Thailand's spider fauna most important. This study provides a good opportunity to receive additional information on measuring and monitoring spider diversity in Thailand in an effective way.

LITERATURE REVIEW

The early work of spiders in Thailand was carried out by Europeans. During the period 1850 to 1900, public interest in natural history was at a peak and museums were being established throughout Europe to hold specimens collected from distant lands. There were many keen and remarkable arachnologists during this time, including O. Pickard-Cambridge, F. Karsch, G. Keyserling, C. L. Koch, T. Thorell, R. I. Pocock and E. Simon. Almost all emphasized in systematics which is the result of classifications. The most widely used classification at that time was that of Eugène Simon's "Histoire Naturelle des Araignées" (1892-1903). Simon was a classical morphologist and his key taxa were defined by the absence of characters and hence are mostly not monophyletic. He published the first ever record of spider form Thailand "Arachnides recuellis par M. A. Pavie (sous-chef du service des postes au Cambodge) dans le royaume de Siam, au Cambodge et en Cochinchine" and described several species and even genera in 1886. Following on from the time of Simon, several authors when describing new species from the tropics tended to attach new species to existing genera and families. However, these descriptions lacked drawings and contained no habitat information. There is little or no recent records on these species.

Another significant contribution to spiders of Thailand is "The Fauna of British India, including Ceylon and Burma", published by Pocock (1900) that included a few species occurring in our country. After the 1900s, there was a dull in the study of Thailand spiders for almost a century until the 1970s.

The 1970s and 1980s marked the era of renewed interest in spiders in many parts of the world, not only their taxonomy but also their biology, ecology, evolution, and physiology. The knowledge on the spider fauna of Thailand has been significantly increased by a number of other arachnologists. Foremost are the works of C. L. Deeleman-Reinhold, P. Lehtinen, A. F. Millidge, C. Okuma, P. J. Schwendinger and W. Vungsilabutr.

The list of Thai spider fauna below is intended to give all the species recorded from the country as far as possible. The listings include all descriptions of new species while mentions of taxa in purely faunistic works are omitted.

LIPHISTIIDAE Thorell, 1869

Liphistius albipes Schwendinger, 1995	Schwendinger, 1995
Liphistius bicoloripes Ono, 1988	Ono, 1988b; Schwendinger, 1995
Liphistius bristowei Platnick & Sedgwick, 1984	Platnick & Sedgwick, 1984; Ono, 1988a; Schwendinger, 1990a
Liphistius castaneus Schwendinger, 1995	Schwendinger, 1995
Liphistius dangrek Schwendinger, 1996	Schwendinger, 1996
Liphistius erawan Schwendinger, 1996	Schwendinger, 1996
Liphistius fuscus Schwendinger, 1995	Schwendinger, 1995
Liphistius isan Schwendinger, 1998	Schwendinger, 1998
Liphistius jarujini Ono, 1988	Ono, 1988a
Liphistius lahu Schwendinger, 1998	Schwendinger, 1998
Liphistius lannaianus Schwendinger, 1990	Schwendinger, 1990a
Liphistius marginatus Schwendinger, 1990	Schwendinger, 1990a
Liphistius nesioticus Schwendinger, 1996	Schwendinger, 1996
Liphistius niphanae Ono, 1988	Ono, 1988b; Schwendinger, 1990a
Liphistius ochraceus Ono & Schwendinger, 1990	Ono & Schwendinger, 1990, 1996
Liphistius onoi Schwendinger, 1996	Schwendinger, 1996
Liphistius ornatus Ono & Schwendinger, 1990	Ono & Schwendinger, 1990
Liphistius owadai Ono & Schwendinger, 1990	Ono & Schwendinger, 1990
Liphistius phileion Schwendinger, 1998	Schwendinger, 1998
Liphistius phuketensis Schwendinger, 1998	Schwendinger, 1998
Liphistius pusohm Schwendinger, 1996	Schwendinger, 1996
Liphistius rufipes Schwendinger, 1995	Schwendinger, 1995
Liphistius sayam Schwendinger, 1998	Schwendinger, 1998
Liphistius schwendingeri Ono, 1988	Ono, 1988b; Schwendinger, 1995
Liphistius suwat Schwendinger, 1996	Schwendinger, 1996
Liphistius tenuis Schwendinger, 1996	Schwendinger, 1996
Liphistius thaleban Schwendinger, 1990	Schwendinger, 1990a, 1995, 1998
Liphistius thoranie Schwendinger, 1996	Schwendinger, 1996
Liphistius trang Platnick & Sedgwick, 1984	Platnick & Sedgwick, 1984; Schwendinger, 1987, 1990a, 1995
Liphistius yamasakii Ono, 1988	Ono, 1988a; Schwendinger, 1990a

ATYPIDAE Thorell, 1870

Atypus dorsualis Thorell, 1897	Schwendinger, 1989a, 1990b
Atypus lannaianus Schwendinger, 1989	Schwendinger, 1989a, 1990b
Atypus suthepicus Schwendinger, 1989	Schwendinger, 1989a, 1990b
Calommata obesa Simon, 1886	Simon, 1886

DIPLURIDAE Simon, 1889

Leptothele bencha Raven & Schwendinger, 1995	Raven & Schwendinger, 1995
Phyxioschema suthepium Raven & Schwendinger, 1989	Raven & Schwendinger, 1989, 1995

CYRTAUCHENIIDAE Simon, 1892

Angka hexops Raven & Schwendinger, 1995	Raven & Schwendinger, 1995

CTENIZIDAE Thorell, 1887

Cyclocosmia ricketti (Pocock, 1901)	Gertsch & Platnick, 1975; Song, Zhu & Chen, 1999

IDIOPIDAE Simon, 1892

Idiops pylorus Schwendinger, 1991	Schwendinger, 1991
Prothemenops siamensis Schwendinger, 1991	Schwendinger, 1991

NEMESIIDAE Simon, 1892

Sinopesa maculata Raven & Schwendinger, 1995	Raven & Schwendinger, 1995

THERAPHOSIDAE Thorell, 1870

Aphonopelna violacepedis	Vungsilabutr, 1998
Chilobrachys huahini Schmidt & Huber, 1996	Schmidt & Huber, 1996
Chilobrachys paviei (Simon, 1886)	Simon, 1886, 1904
Haplopelma albostriatum (Simon, 1886)	Pocock, 1895; Simon, 1903, 1904; Smith, 1987, 1996; Vungsilabutr, 1998
Haplopelma costale Schmidt, 1998	Schmidt, 1998
Haplopelma minax (Thorell, 1897)	Smith, 1996; Vungsilabutr 1998

SCYTODIDAE Blackwall, 1864

Stedocys uenorum Ono, 1995	Ono, 1995a

OCHYROCERATIDAE Fage, 1912

Althepus leucosternus Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Althepus pum Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Althepus stonei Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Althepus tibiatus Deeleman-Reinhold, 1985	Deeleman-Reinhold, 1985, 1995
Leclercera khaoyai Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Leclercera longiventris Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Merizocera mus Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Merizocera pygmaea Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Psiloderces albostictus Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Psiloderces fredstonei Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Psiloderces howarthi Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Psiloderces penaeorum Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Psiloderces septentrionalis Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Psiloderces suthepensis Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Psiloderces vulgaris Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Speocera capra Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Speocera deharvengi Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Speocera leclerci Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Speocera naumachiae Brignoli, 1980	Brignoli, 1980
Speocera phangngaensis Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Speocera ranongensis Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Speocera suratthaniensis Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995
Speocera troglobia Deeleman-Reinhold, 1995	Deeleman-Reinhold, 1995

PHOLCIDAE C. L. Koch, 1851

Spermophora senoculata (Dugès, 1836)	Vungsilabutr, 2001
Spermophora sp.	Vungsilabutr, 1993

TETRABLEMMIDAE O. Pikard-Cambridge, 187

Ablemma ruohomaekii Lehtinen, 1981	Lehtinen, 1981
Bacillemma leclerci Deeleman-Reinhold, 1993	Deeleman-Reinhold, 1993b
Chavia monticola Lehtinen, 1981	Lehtinen, 1981
Perania nasicornis Schwendinger, 1994	Schwendinger, 1994
Perania nasuta Schwendinger, 1989	Schwendinger, 1989b
Perania robusta Schwendinger, 1989	Schwendinger, 1989b
Perania siamensis Schwendinger, 1994	Schwendinger, 1994

OONOPIDAE Simon, 1890

Opopaea mortenseni Brignoli, 1980	Brignoli, 1980

STENOCHILIDAE Thorell, 1873

Colopea laeta (Thorell, 1895)	Platnick & Shadab, 1974; Lehtinen, 1982
Colopea malayana Lehtinen, 1982	Platnick & Shadab, 1974; Lehtinen, 1982
Colopea virgata Lehtinen, 1982	Lehtinen, 1982

ERESIDAE C. L. Koch, 1851

Stegodyphus tibialis (O. Pickard-Cambridge, 1869)	Ono, 1995b

OECOBIIDAE Blackwall, 1862

Oecobius sp.	Vungsilabutr, 2001a

HERSILIIDAE Thorell, 1870

Hersilia asiatica Song & Zheng, 1982	Baehr & Baehr, 1993; Song, Zhu & Chen, 1999
Hersilia clypealis Baehr & Baehr, 1993	Baehr & Baehr, 1993:
Hersilia siamensis Simon, 1886a	Simon, 1886a; Baehr & Baehr, 1993
Hersilia striata Wang & Yin, 1985	Baehr & Baehr, 1993; Song, Zhu & Chen, 1999
Hersilia vicina Baehr & Baehr, 1993	Baehr & Baehr, 1993

ULOBORIDAE Thorell, 1869

Miagrammopes rimosus Simon, 1886	Simon, 1886a, 1892a; Lehtinen, 1967
Philoponella sp.	Vungsilabutr, 2001a
Ponella sp.	Vungsilabutr, 2001a
Uloborus sp.	Okuma, 1968, Vungsilabutr, 2001a

NESTICIDAE Simon, 1894

Nesticella inthanoni (Lehtinen & Saaristo, 1980)	Lehtinen & Saaristo, 1980 Wunderlich, 1986

THERIDIIDAE Sundevall, 1833

Achaearanea angulithorax (Bösenberg & Strand, 1906)	Vungsilabutr, 2001a
Argyrodes argentatus O. Pickard-Cambridge, 1880	Okuma, 1973; Vungsilabutr, 1997
Argyrodes fissifrons O. Pickard-Cambridge, 1869	Okuma, 1968
Argyrodes flavescens (O. Pickard-Cambridge, 1880)	Vungsilabutr, 2001a
Argyrodes miniaceus (Doleschall, 1857)	Okuma, 1968
Argyrodes sundaicus (Doleschall, 1859)	Simon, 1894; Kulczyn'ski, 1905
Carniella orites Knoflach, 1996	Knoflach, 1996
Carniella schwendingeri Knoflach, 1996	Knoflach, 1996
Carniella siam Knoflach, 1996	Knoflach, 1996
Chrysso lingchuanensis Zhu & Zhang, 1992	Vungsilabutr, 2001a
Chrysso nigra (O. Pickard-Cambridge, 1880)	Vungsilabutr, 2001a
Coleosoma blandum O. Pickard-Cambridge, 1882	Okuma, 1973; Vungsilabutr, 1997, 2001a
Theridion chikunii Yaginuma, 1960	Vungsilabutr, 2001a
Chrysso sp.	Vungsilabutr, 1997
Theridion sp.	Okuma, 1968, 1973; Vungsilabutr, 1993, 1997

LINYPHIIDAE Blackwall, 1859

Atypena thailandica Barrion & Litsinger, 1995	Barrion & Litsinger, 1995
Callitrichia formosana Oi, 1977	Vungsilabutr, 1997
Chiangmaia rufula Millidge, 1995	Millidge, 1995
Chiangmaia sawetamali Millidge, 1995	Millidge, 1995
Cyphonetria thaia Millidge, 1995	Millidge, 1995
Erigone rutila Millidge, 1995	Millidge, 1995
Hylyphantes graminicola (Sundevall, 1830)	Vungsilabutr, 2001a, b
Kenocymbium simile Millidge & Russell-Smith, 1992	Millidge & Russell-Smith, 1992
Laetesia asiatica Millidge, 1995	Millidge, 1995
Millplophrys pallida (Millidge, 1995)	Millidge, 1995; Platnick, 1998
Nentwigia diffusa Millidge, 1995	Millidge, 1995
Neriene macella (Thorell, 1898)	Locket, 1982; Song, Zhu & Chen, 1999
Pronasoona aurata Millidge, 1995	Millidge, 1995
Prosoponoides similis Millidge & Russell-Smith, 1992	Millidge & Russell-Smith, 1992
Thainetes tristis Millidge, 1995	Millidge, 1995
Thaiphantes milneri Millidge, 1995	Millidge, 1995

Bathyphantes sp.	Okuma, 1973; Patarakulpong, 1977
Callitrichia sp.	Okuma, 1973; Patarakulpong, 1977
Erigone sp.	Okuma, 1973
Hylyphantes sp.	Okuma, 1973
Linyphia sp.	Okuma, 1968
Micryphantidae gen. sp.	Okuma, 1968
TETRAGNATHIDAE Menge, 1866	
Dyschiriognatha dentata Zhu & Wen, 1978	Vungsilabutr, 1997, 2001a
Dyschiriognatha sp.	Okuma, 1973; Patarakulpong, 1977
Leucauge decorata (Blackwall, 1864)	Okuma, 1968; Vungsilabutr, 1997
Leucauge celebesiana (Walckenaer, 1842)	Vungsilabutr, 2001a
Nephila antipodiana (Walckenaer, 1842)	Vungsilabutr, 2001
Nephilengys malabarensis (Walckenaer, 1842)	Okuma, 1968
Tetragnatha ceylonica O. Pickard-Cambridge, 1869	Okuma, 1968; Patarakulpong, 1977
Tetragnatha geniculata Karsch, 1891	Okuma, 1988b
Tetragnatha javana (Thorell, 1890)	Okuma, 1968, 1973; Patarakulpong, 1997; Vungsilabutr, 1993; 1988, 1997, 2001a
Tetragnatha mandibulata Walckenaer, 1842	Okuma, 1968, 1973, 1983; Patarakulpong, 1997; Vungsilabutr, 1988, 1997, 2001a
Tetragnatha maxillosa Thorell, 1895.	Okuma, 1968, 1973, 1983; Patarakulpong, 1977; Vungsilabutr, 1993, 1988, 1997, 2001a
Tetragnatha nitens (Audouin, 1826)	Okuma, 1968, 1973, 1983; Vungsilabutr, 1988, 1997, 2001a
Tetragnatha serra Doleschall, 1857	Okuma, 1988b; Song, Zhu & Chen, 1999
Tetragnatha vermiformis Emerton, 1884	Okuma, 1968, 1973, 1983; Patarakulpong, 1977; Vungsilabutr, 1988, 1997, 2001a
Tetragnatha virescens Okuma, 1979	Okuma, 1988b, 1979; Vungsilabutr, 1988, 1997, 2001a
Tylorida striata (Thorell, 1877)	Okuma, 1968, 1973; Vungsilabutr, 1997
Meta sp.	Vungsilabutr, 2001a
ARANEIDAE Simon, 1895	
Araneus inustus (L. Koch, 1871)	Okuma, 1968, 1973; Patarakulpong, 1977; Vungsilabutr, 1997, 2001
Araneus mitificus (Simon, 1886)	Okuma, 1968; Barrion & Litsinger, 1995; Vungsilabutr, 2001
Argiope aemula (Walckenaer, 1842)	Vungsilabutr, 1997
Argiope catenulata (Doleschall, 1859)	Okuma, 1968, 1973; Patarakulpong, 1977; Barrion & Litsinger, 1995; Vungsilabutr, 1997, 2001a
Argiope thai Levi, 1983	Levi, 1983
Cyclosa confusa Bösenberg & Strand, 1906	Vungsilabutr, 2001a
Cyclosa cucurbitoria (Yin et al., 1990)	Vungsilabutr, 2001a
Cyclosa insulana (Costa, 1834)	Okuma, 1973
Cyclosa mulmeinensis (Thorell, 1887)	Okuma, 1968
Cyrtophora citricola (Forskål, 1775)	Okuma, 1968; Vungsilabutr, 1997
Cyrtophora unicolor (Doleschall, 1857)	Vungsilabutr, 2001a
Cyrtarachne melanoleuca Ono, 1995	Ono, 1995b
Eriovixia laglaizei (Simon, 1877)	Vungsilabutr, 2001
Gasteracantha clavigera Giebel, 1863	Giebel, 1863; Simon, 1877b; Simon, 1895; Dahl, 1914
Gasteracantha diardi (Lucas, 1835)	Lucas, 1835a; Dahl, 1914;
Gasteracantha frontata Blackwall, 1864	Blackwall, 1864; O. Pickard.-Cambridge, 1879; Dahl, 1914
Gasteracantha hasselti C. L. Koch, 1837	Vungsilabutr, 2001
Gasteracantha irradiata (Walckenaer, 1842)	Dahl, 1914
Gasreracantha kuhli C. L. Koch, 1837	Vungsilabutr, 2001

Hypsosinga pygmaea (Sundevall, 1831)	Vungsilabutr, 1997
Larinioides cornutus (Clerck, 1757)	Vungsilabutr, 1993
Lipocrea tabida (L. Koch, 1872)	Vungsilabutr, 1997
Neoscona jinghongensis Yin et al., 1990	Vungsilabutr, 2001
Neoscona nautica (L. Koch, 1875)	Okuma, 1968
Neoscona theisi (Walckenaer, 1842)	Okuma, 1968, 1973; Patarakulpong, 1977; Vungsilabutr, 1997
Zygiella nadleri Heimer, 1984	Vungsilabutr, 2001
Anepsion sp.	Vungsilabutr, 2001
Chorizopes sp.	Vungsilabutr, 1997, 2001
Larinia sp.	Okuma, 1968, 1973; Patarakulpong, 1977; Vungsilabutr, 1997, 2001
Mecynogea sp.	Vungsilabutr, 2001
Singa sp.	Okuma, 1973; Patarakulpong, 1977; Vungsilabutr, 1997
LYCOSIDAE Sundevall, 1833	
Hippasa agelenoides (Simon, 1884)	Okuma, 1968; Patarakulpong, 1977
Hogna inominata (Simon, 1886)	Simon, 1886a; Roewer, 1955
Lycosa nigrotibialis Simon, 1884	Vungsilabutr, 1997
Lycosa tista Tikader, 1970	Vungsilabutr, 1997
Pardosa irretita Simon, 1886	Simon, 1886
Pardosa pseudoannulata (Bösenberg & Strand, 1906)	Okuma, 1968, 1973; Patarakulpong, 1977; Vungsilabutr, 1993, 1997, 2001a; Barrion & Litsinger, 1995
Pardosa siamensis (Giebel, 1863)	Giebel, 1863; Roewer, 1955
Zoica bambusicola Lehtinen & Hippa, 1979	Lehtinen & Hippa, 1979
Zoica parvula (Thorell, 1895)	Thorell, 1895; Simon, 1898; Lehtinen, 1967; Lehtinen & Hippa, 1979
Pardosa sp.	Okuma, 1973; Vungsilabutr, 1993
PISAURIDAE Simon, 1890	
Perenethis venusta L. Koch, 1878	L. Koch, 1878; Thorell, 1881; Dahl, 1908; Chrysanthus, 1967; Sierwald, 1997
Polyboea vulpina Thorell, 1895	Thorell, 1895; Workman, 1896; Sierwald, 1997
Dolomedes sp.	Okuma, 1968; Patarakulpong, 1977; Vungsilabutr, 1997, 2001a
Hygropoda sp.	Okuma, 1973
OXYOPIDAE Thorell, 1870	
Hamataliwa sanmenensis Song & Zheng, 1992	Vungsilabutr, 2001a
Oxyopes javanus Thorell, 1887	Okuma, 1968, 1973; Patarakulpong, 1977; Vungsilabutr, 1993, 1997, 2001a; Barrion & Litsinger, 1995
Oxyopes lineatipes (C. L. Koch, 1847)	Okuma, 1968, 1973; Patarakulpong, 1977; Vungsilabutr, 1993, 1997, 2001a; Barrion & Litsinger, 1995
Peucetia sp.	Vungsilabutr, 1997, 2001a
PSECHRIDAE Simon, 1890	
Psechrus ghecuanus Thorell, 1897	Lehtinen, 1967; Levi, 1982; Song, Zhu & Chen, 1999
MITURGIDAE Simon, 1885	
Calamopus phyllicola Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Cheiracanthium turiae Strand, 1917	Strand, 1917; Deeleman-Reinhold, 2001
Cheiracanthium adjacensoides Song, Chen & Hou, 1990	Vungsilabutr, 2001
Cheiracanthium sp.	Okuma, 1968, 1973; Patarakulpong, 1977; Vungsilabutr, 1993, 1997

LIOCRANIDAE Simon, 1897

Jacaena mihun Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Otacilia onoi Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Otacilia sinifera Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Otacilia zebra Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Sesieutes erawan Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Sesieutes schwendingeri Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Sphingius gothicus Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Sphingius octomaculatus Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Sphingius penicillus Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Sphingius punctatus Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Sphingius songi Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Teutamus politus Thorell, 1890	Deeleman-Reinhold, 2001

CLUBIONIDAE Wagner, 1887

Clubiona japonicola Bösenberg & Strand, 1906	Okuma, 1968, 1973; Patarakulpong, 1977; Vungsilabutr, 1997, 2001
Clubiona pahilistapyasea Barrion & Litsinger, 1995	Barrion & Litsinger, 1995; Deeleman-Reinhold, 2001
Clubiona parconcinna Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Clubiona pteronetoides Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Clubionidae vigil Karsch, 1879	Vungsilabutr, 2001
Clubiona viridula Ono, 1989	Deeleman-Reinhold, 2001
Matidia mas Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Nusatidia camouflata Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001

CORINNIDAE Karsch, 1880

Apochinomma nitidum (Thorell, 1895)	Deeleman-Reinhold, 2001
Corinnomma javanum Simon, 1905	Deeleman-Reinhold, 2001
Echinax panache Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Oedignatha barbata Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Oedignatha jocquei Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Oedignatha sima Simon, 1886	Simon, 1886; Simon, 1897
Pranburia mahannopi Deeleman-Reinhold, 1993	Deeleman-Reinhold, 1993b, 2001
Serendib suthepica Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Serendib volans Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Utivarachna bucculenta Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Utivarachna phyllicola Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Castianeira sp.	Vungsilabutr, 2001

ZODARIIDAE Thorell, 1881

Storenomorpha reinholdae Jocqué & Bosmans, 1989	Jocqué & Bosmans, 1989; Jocqué, 1991
Asceua sp.	Vungsilabutr, 2001a
Mallinella sp.	Vungsilabutr, 2001a

PRODIDOMIDAE Simon, 1884

Prodida wunderlichi Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001

GNAPHOSIDAE Pocock, 1898

Drassodes lesserti Schenkel, 1936	Vungsilabutr, 2001
Hitobia unifascigera (Bösenberg & Strand, 1906)	Vungsilabutr, 2001a
Hitobia yaginumai Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Laronius erewan Platnick & Deeleman-Reinhold, 2001	Platnick & Deeleman-Reinhold, in Deeleman-Reinhold, 2001
Micythus anopsis Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Odontodrassus muralis Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Synaphosus raveni Deeleman-Reinhold, 2001	Deeleman-Reinhold, 2001
Gnaphosa sp.	Vungsilabutr, 1993, 1997

SPARASSIDAE Bertkau, 1872

Olios fasciculatus Simon, 1880	Vungsilabutr, 1993, 1997
Pseudopoda dao Jäger, 2001	Jäger, 2001
Pseudopoda hirsuta Jäger, 2001	Jäger, 2001
Pseudopoda marsupia (Wang, 1991)	Jäger, 2001
Pseudopoda parvipunctata Jäger, 2001	Jäger, 2001
Pseudopoda rufosulphurea Jäger, 2001	Jäger, 2001
Pseudopoda schwendingeri Jäger, 2001	Jäger, 2001
Olios sp.	Vungsilabutr, 2001a

PHILODROMIDAE Thorell, 1870

Thanatus parangvulgaris Barrion & Litsinger, 1995	Barrion & Litsinger, 1995
Philodromus sp.	Okuma, 1973; Patarakulpong, 1977; Vungsilabutr, 1997
Tibellus sp.	Vungsilabutr, 1997, 2001a

THOMISIDAE Sundevall, 1833

Amyciaea lineatipes O. Pickard-Cambridge, 1901	Vungsilabutr, 2001a
Epicadus flavus (Giebel, 1863)	Giebel, 1863; Roewer, 1955
Oxytate parallela (Simon, 1880)	Vungsilabutr, 2001a
Runcinia acuminata (Thorell, 1881)	Vungsilabutr, 2001a
Runcinia albostriata Bösenberg & Strand, 1906	Vungsilabutr, 2001a
Thomisus labefactus Karsch, 1881	Vungsilabutr, 1997
Thomisus okinawensis Strand, 1907	Barrion & Litsinger, 1995; Song, Zhu & Chen, 1999
Thomisus stoliczkai (Thorell, 1887)	Vungsilabutr, 2001a
Cymbacha sp.	Vungsilabutr, 2001a
Dieta sp.	Patarakulpong, 1977
Pistius sp.	Okuma, 1968
Runcinia spp.	Okuma, 1968, 1973; Patarakulpong, 1977
Thomisus spp.	Okuma, 1968, 1973; Patarakulpong, 1977
Tibellus sp.	Patarakulpong, 1977
Xysticus sp.	Vungsilabutr, 1997

SALTICIDAE Blackwall, 1841

Asemonea tenuipes (O. Pickard-Cambridge, 1869)	Prószyn'ski, 1984
Cosmophasis micans (L. Koch, 1880)	Vungsilabutr, 2001a
Epeus flavobilineatus (Doleschall, 1859)	Vungsilabutr, 2001a
Evarcha flavocincta (C. L. Koch, 1846)	Vungsilabutr, 2001
Evarcha petrae Prószyn'ski, 1992	Prószyn'ski, 1992a
Maevia metallica (Giebel, 1863)	Giebel, 1863; Roewer, 1955
Maevia nuda (Giebel, 1863)	Giebel, 1863; Roewer, 1955
Myrmarachne paviei (Simon, 1886)	Simon, 1886; Simon, 1904
Myrmarachne plataleoides (O. Pickard-Cambridge, 1869)	Vungsilabutr, 1993, 2001a
Myrmarachne volatilis (Peckham & Peckham, 1892)	Vungsilabutr, 2001a
Phintella versicolor (C. L. Koch, 1846)	Vungsilabutr, 2001a
Phintella vittata (C. L. Koch, 1846)	Vungsilabutr, 2001a
Salticus melanopus (Giebel, 1863)	Giebel, 1863; Roewer, 1955c
Spartaeus thailandicus Wanless, 1984	Wanless, 1984a; Wanless, 1987
Telamonia dimidiata (Simon, 1899)	Vungsilabutr, 2001a
Eris sp.	Vungsilabutr, 2001a
Euophrys sp.	Vungsilabutr, 1997
Evarcha sp.	Vungsilabutr, 1993
Marpissa sp.	Vungsilabutr, 1997
Myrmarcchene sp.	Vungsilabutr, 1997
Plexippus sp.	Vungsilabutr, 1997
Thianitara sp.	Prószyn'ski, 1992a
Zeuxippus sp.	Vungsilabutr, 1997

STUDY AREA

Study area and altitudinal gradient

Northern Thailand is essentially a series of mountain ridges folded between two mighty offshoots of the Himalayan Range: the Dawna-Tenasserim and the Annamitic Chain. This huge region makes up approximately 20 per cent of the country's land area. It includes Doi Inthanon, the country's highest mountain, located some 55 kilometers southwest of Chiang Mai City.

Doi Inthanon was established as a national park to protect the flora and fauna of Thailand's highest mountain. The towering centerpiece of this 482-square-kilometer park is an eponymous granite massif of 2,565 meters. This mountain harbours many high-altitude plant and animal species. At higher altitudes hill evergreen forest dominates while lower down deciduous forest takes over.

The altitudinal transect examined consists of nine sample sites from 510 m to 2430 m, situated approximately 250 m apart in elevation. All sampling sites were located in seemingly undisturbed forest, at least 300 m from the forest edge. However, only five major sites were considered for the altitudinal analysis (Table 1). Sites I and II are here called low altitudinal zones; site III is the middle or mid-altitudinal zone; sites IV and IV are the high altitudinal zones.

Table 1. Description of five major sampling sites on Doi Inthanon.

Site	Altitude	Coordinates	Forest type
I	510 m	18° 31′ N, 98° 38′ E	Dry dipterocarp forest
II	1000 m	18° 32′ N, 98° 34′ E	Dipterocarp with pine forest
III	1510 m	18° 31′ N, 98° 29′ E	Hill evergreen forest
IV	2090 m	18° 33′ N, 98° 28′ E	Hill evergreen forest
V	2430 m	18° 34′ N, 98° 28′ E	Moist hill evergreen forest

Climate

Minimum temperatures during the study period were 12°C at 500 m and 3°C at 2500 m in December 1999; the corresponding maxima were 32°C and 18°C in July 2000, respectively. Mean temperatures along the altitudinal transect have been estimated to be 25°C in the lowlands and 12°C at the summit. Annual temperature and relative humidity (% RH) of Doi Inthanon National Park is given in Fig. 1.

The annual rainfall is over 2100 mm on the upper slopes, most of which is between June to September. The highest rainfall is in August.

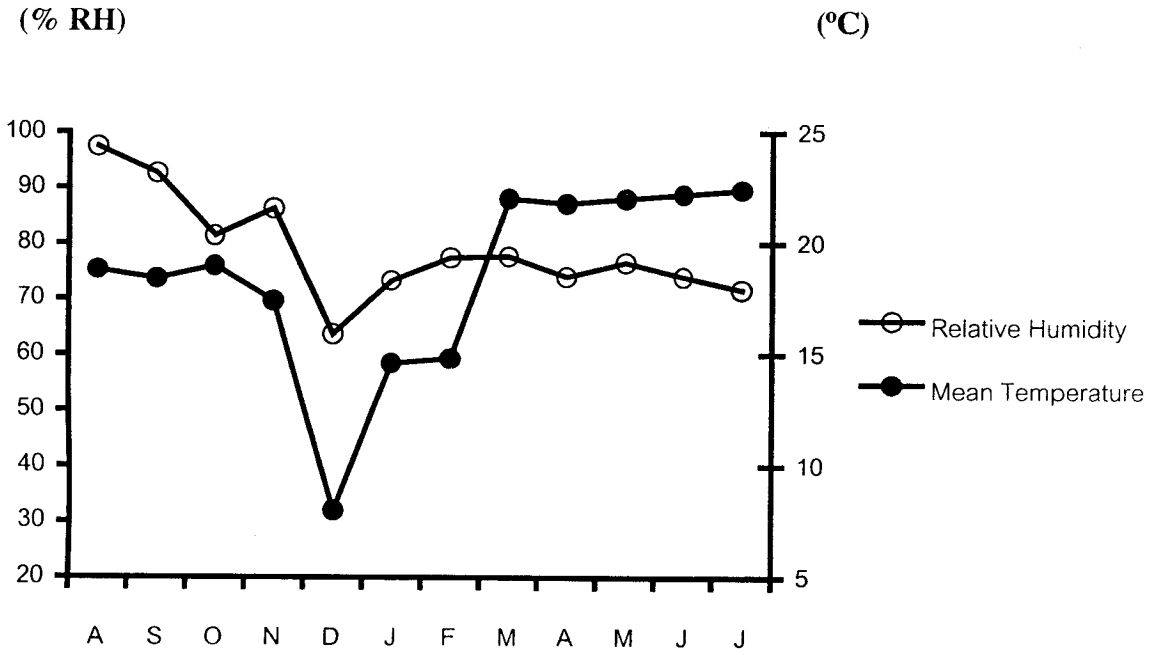


Fig. 1. Mean annual temperature and mean relative humidity in Doi Inthanon National Park during the study period from August 1999 to July 2000.

METHODOLOGY

Faunal survey

The spider fauna was sampled monthly from August 1999 to July 2000 along an altitudinal transect, using five different methods: pitfall trapping, litter sampling, sweeping, beating and visual searches.

(a) Pitfall trapping

A line transect of 10 pitfall traps, at intervals of 100 meters, was used at each site. The traps were P.V.C. containers, 120 mm in diameter and 120 mm in depth. Each trap was buried vertically at ground level and filled with 150 ml of 4% formalin and isopropanol in ratio 2:1 to kill and preserve specimens. A 10×10 cm aluminum shade cover was positioned approximately 5 cm above the cup to protect its contents from filling up with rain and leaf litter and to reduce evaporation from exposure to the sun. The traps were inspected and emptied monthly.

(b) Litter sampling

A series of ten random litter sample (each 1.0 m^2) were taken along each transect site. The samples were sorted by hand for an hour and left undisturbed in the collecting sacs for 72 hrs under sheltered.

(c) Sweeping

Spiders were collected by sweeping vegetation with an insect net. Four series of 50 sweeps randomly selected were taken at each elevation. All the specimens were taken out and put in plastic vials. After all the spiders were paralyzed by ethyl acetate, they were transferred to a large bottle containing alcohol.

(d) Beating

Bushes or spiny plants were beaten with a stick to force the spiders to drop on a calico tray underneath. The spiders were then picked off the tray and preserved in 70% ethanol.

(e) Visual searches

Since variation in habitat complexity creates substrate surface areas, time-based searches are unsuitable if comparisons are to be made. Therefore all visual searches conducted during the study were made on a per unit area basis.

Preservation of specimens

For the permanent preservation of spiders in a collection, specimens were removed from ethanol after a week or so and placed in 70% ethanol with glycerol and acetic acid. Labeled specimens were kept in a separate vial and stored with others in a large wide-mouth jar of alcohol.

Preparation for illustrations

Morphological examinations were carried out on specimens preserved in alcohol. They were illustrated with the aid of a stereoscopic microscope and a drawing tube. In order to facilitate examination at different angles, the whole spider was stretched out on white beach sand submerged in the medium. Whenever possible the left palp was drawn, showing the ventral and lateral views. The epigynes were drawn in the natural and in the cleared states. They were carefully removed from the abdomen by lifting the central portion of the epigastric furrow using a small insect pin. The epigynes were cleared in Petri dishes by using cold solution of KOH or NaOH. A less sclerotized epigynum requires 24 hrs with five pellets of KOH in 10 ml of water. Harder ones take 48-72 hrs with the same ratio as above. Each dish was provided with data from the vial. Male palpi were bloated for 3-5 hrs in a 1:1 cold mixture of KOH or NaOH pellets and water.

Identification

Representative specimens of several doubtful species were then sent to specialists at the Muséum d'Historie naturelle, Genève for verification.

Abbreviations

The following abbreviations are used: ALE, anterior lateral eyes; AME, anterior median eyes; PLE, posterior lateral eyes; PME, posterior median eyes; MOQ, median ocular quadrangle; ALS, anterior lateral spinnerets; PMS, posterior median spinnerets;

PLS, posterior lateral spinnerets; VS, visual search; SS, soil sampling; PT, pitfall trapping, SW, sweeping; TA, tegular apophysis; MA, median apophysis; PM, penultimate male; j, juvenile.

Data analysis

Diversity. Species abundance models are strongly advocated by many authors including May (1975, 1981) and Southwood (1978) as providing the only sound basis for the examination of species diversity. Magurran (1988) also confirmed that a species abundance distribution utilizes all the information gathered in a community and is the most complete mathematical description of the data.

Following this method, diversity is usually examined in relation to four main models. These are: 1) the log normal distribution, 2) the geometric series, 3) the logarithmic series and 4) MacArthur's broken stick model (Magurran, 1988). The log series model was applied in this study.

Altitudinal gradient. Altitudinal distribution was calculated from samples from five major sites. If a species was collected at two non-consecutive sites, it was assumed that it also occurs at the site in between them.

Faunal turnover was computed as the ratio between the number of identical species occurring at two different sites and the number of species in one of the sites. This procedure provides a relative assessment of how rapidly the species composition of a given elevation changes with altitude in either direction (Olson, 1994).

Comparisons between communities in time and space can also be made on the basis of the relative similarity of their species composition. In this study Sørensen's index of similarity (Southwood, 1966) was used in preference to other indices because Huhta (1979) points out that this index is more suitable for detecting successional trends. The index is given by:

$$QS = \frac{2c}{a + b}$$

where a and b are the number of species in sample A and sample B, and c is the number of species in common.

Phenology. In the past decades, several authors attempted to classify spider life cycles (Bonnet, 1930; Tretzel, 1954; Schaefer, 1976; Toft, 1976; Aitchison, 1984). The most comprehensive studies have been performed in the temperate zone by Schaefer (1976a, 1977) who differentiated between five types of annual cycles, following and modifying the classification of Tretzel (1954). Later, Schaefer himself (1987) proposed to use the new term "eurychronism", "diplochronism" and "stenochronism" only in preference to the reproductive phase (i.e. mating and egg laying), instead of the seasonal occurrence of adults. Nonetheless, this method is barely practical to apply in field study. I follow Tretzel (1954) and Aitchison (1984) in recognizing seasonal occurrence of males and females with little modification. However, there never is "autumn", "spring" or even real "winter" in Thailand, and therefore, two main annual cycles are applied here. *Eurychronous* species are present during the whole year, whereas *stenochronous* species are those which reproduce (or reach maturity) at a definite period. Species with two activity periods of adults during the year, called *diplochronous* species by Tretzel (1954), are here included in stenochronous following Aitchison (1984).

SPIDER FAUNA OF DOI INTHANON NATIONAL PARK

A total of 3964 spiders was collected during the twelve months of study, representing 44 families, 148 genera, and 211 species (details for each species see Taxonomy section).

Members of the Linyphiidae (21.95%), Zodariidae (12.17%), and Sparassidae (11.59%) comprised almost half of all spiders collected. These three families can be classified as the dominant group of families (more than 10% of individuals). The rest belong to influence (1-10%) and accessory families (below 1%) (Fig. 2).

A complete list of species collected is given in Table 2. Only a few species were collected in high densities and comprised more than 1% of the total catch. These are *Bathyphantes* sp. (n = 56), ? *Batueta* sp. (n = 157), *Neriene* sp. A (n = 411), *Neriene* sp. B (n = 41), *Oedothorax cf. hulongensis* (n = 144), Tetragnathidae gen. sp. (n = 44), *Coelotes cf. aspinatus* (n = 40), *Otacilia zebra* (n = 163), *Asceua* sp. (n = 421), *Pseudopoda cf. parvipunctata* (n = 60), *Pseudopoda exigua* (n = 367) and *Misumenops cf. tricuspidatus* (n = 69).

Many species were found in low numbers, among them 66 species (31% of the total) with only a single specimen. Several species were represented by few individuals and few species by many individuals, the most abundant being 411. The observed frequency distribution pattern for spider species on Doi Inthanon conforms to an expected hollow logarithmic series model (Fig. 3).

Table 2. List of spider species found in Doi Inthanon National Park during the study.

LIPHISTIIDAE Thorell, 1869
Liphistius yamasakii Ono, 1988

HEXATHELIDAE Simon, 1892
Macrothele sp.

CYRTAUCHENIIDAE Simon, 1892
Angka hexops Raven & Schwendinger, 1995

CTENIZIDAE Thorell, 1887
Conothele sp.

NEMESIIDAE Simon, 1892
Damarchus sp.
Sinopesa maculata Raven & Schwendinger, 1995

THERAPHOSIDAE Thorell, 1870
Phlogiellus sp.

FILISTATIDAE Ausserer, 1867
Tricalamus cf. papilionaceus Wang 1987

SCYTODIDAE Blackwall, 1864
Scytodes sp.
Stedocys sp.

OCHYROCERATIDAE Fage, 1912
Althepus stonei Deeleman-Reinhold, 1995
Psiloderces septentrionalis Deeleman-Reinhold, 1995

PHOLCIDAE C. L. Koch, 1851
Pholcus sp.
? *Pholcus* sp.
? *Psilochorus* sp.
Spermophora sp.

TETRABLEMMIDAE O. Pickard-Cambridge, 1873
Chavia monticola Lehtinen, 1981
Perania nasuta Schwendinger, 1989

OONOPIDAE Simon, 1890
Gamasomorpha sp. A
Gamasomorpha sp. B
Ischnothyreus sp.
Opopaea sp. A
Opopaea sp. B
Orchestina sp.

STENOCHILIDAE Thorell, 1873
Colopea virgata Lehtinen, 1982

PALPIMANIDAE Thorell, 1870
Boagrius sp.

MIMETIDAE Simon, 1881
Mimetus sp.

HERSILIIDAE Thorell, 1870
Hersilia sp.
Hersiliidae gen. sp.

ULOBORIDAE Thorell, 1869
Miagrammopes sp.
Uloborus walckenaerius Latreille, 1806
Uloboridae gen. sp.

NESTICIDAE Simon, 1894
Nesticella sp. A
Nesticella sp. B

THERIDIIDAE Sundevall, 1833
Achaearanea celsadomina Zhu, 1998
Argyrodes flavescens O. Pickard–Cambridge, 1880
Argyrodes cf. labiatus Zhu & Song, 1991
Coleosoma sp.
Coscinida sp.
Carniella siam Knoflach, 1996
Chrysso scintillans Thorell, 1895
Chrysso sp.
Dipoena turriceps Schenkel, 1936
Dipoena cf. mustelina (Simon, 1889)
Episinus sp.
Molione cf. triacantha Thorell, 1892
Moneta mirabilis Bösenberg & Strand, 1906
Moneta sp. A
Moneta sp. B
Moneta sp. C
Theridion sp. A
Theridion sp. B
Theridion sp. C
Theridiidae gen. sp. A
Theridiidae gen. sp. B
Theridiidae gen. sp. C

THERIDIOSOMATIDAE Simon, 1881
? *Ogulnius* sp.

ANAPIDAE Simon, 1895
Metanapis sp.

MYSMENIDAE Petrunkevitch, 1928
Mysmena sp.
Mysmenidae gen. sp.

Table 2 (continued).

LINYPHIIDAE Blackwall, 1859
Bathyphantes sp.
? *Batueta* sp.
Linyphia sp.
Neriene sp. A
Neriene sp. B
? *Neriene* sp.
Oedothorax cf. hulongensis Zhu & Wen, 1980
Pronasoona aurata Millidge, 1995

TETRAGNATHIDAE Menge, 1866
Leucauge celebesiana Walckenaer, 1842
Leucauge decorata Blackwall, 1864
Leucauge termisticta Song & Zhu, 1992
Leucauge sp.
Nephila clavata L. Koch, 1878
Nephila pilipes (Fabricius, 1793)
Tetragnatha maxillosa Thorell, 1895
Tetragnatha nitens Audouin, 1827
Tylorida striata (Thorell, 1877)
Metinae gen. sp.
Phonognathinae, g. sp.
Tetragnathidae gen. sp.

ARANEIDAE Simon, 1895
Anepsion maritatum O. Pickard –Cambridge, 1877
Araneus auriculatus Song and Zhu, 1992
Araneus himalayaensis Tikader, 1975
Araneus sp. A
Araneus sp. B
Araneus sp. C
Araneus sp. D
Argiope pulchella Thorell, 1881
Chorizopes bengalensis Tikader, 1975
Chorizopes shimenensis Yin and Peng, 1994
Cyclosa bifida Doleschall, 1859
Cyclosa omonaga Tanikawa, 1992
Cyclosa cf. informis Yin, Zhu & Wang, 1995
Cyclosa sp.
Eriovixia yunnanensis Yin et al., 1990
Gasteracantha geminata Thorell, 1887
Gasteracantha hasseltii C. L. Koch, 1938
Gasteracantha kuhlii C. L. Koch, 1838
Gea spinipes C. L. Koch, 1843
Larinia sp.
Neoscona theisi Walckenaer, 1841
? *Pronoides* sp.
Singa sp.
Zygiella calyptrata Workman, 1984

LYCOSIDAE Sundevall, 1833
Hippasa holmerae Thorell, 1895
Pardosa songosa Tikader & Malhotra, 1976
Trochosa bannaensis Yin & Chen, 1995

PISAURIDAE Simon, 1890
Hygropoda sp.

OXYOPIDAE Thorell, 1870
Oxyopes javanus Thorell, 1887
Oxyopes macilentus L. Koh, 1878
Oxyopes sikkimensis Tikader, 1970
Oxyopes sp.
Peucetia sp.
Oxyopidae gen. sp.

PSECHRIDAE Simon, 1890
Fecenia sp.
Psechrus gehcuanus Thorell, 1897

CTENIDAE Keyserling, 1877
Ctenus sp. A
Ctenus sp. B
Ctenus sp. C

AGELENIDAE C. L. Koch, 1837
Tegenaria sp.

HAHNIIDAE Bertkau, 1878
Hahnia cf. liangdangensis Tang, Yang & Kim, 1996
Hahnia cf. xinjiangensis Wang & Liang, 1989

DICTYNIDAE O. Pickard-Cambridge, 1871
? *Cicurina* sp.
Dictyna sp. A
Dictyna sp. B
? *Lathys* sp.

AMAUROBIIDAE Thorell, 1870
Coelotes cf. aspinatus Wang et al., 1990
Coelotes cf. uncinatus Wang et al., 1990
Coelotes wudangensis Chen and Zhao, 1984
Coelotes sp.

MITURGIDAE Simon, 1885
Calamopus sp.
Cheiracanthium sp.

LIOCRANIDAE Simon, 1897
Otacilia zebra Deeleman-Reinhold, 2001
Sphingius gothicus Deeleman-Reinhold, 2001
Sphingius vivax Thorell, 1897
Jacaena distincta Thorell, 1897
Sesieutes cf. schwendingeri Deeleman-Reinhold, 2001

CLUBIONIDAE Wagner, 1887
Clubiona cf. bonicula Ono, 1994
Clubiona cf. pteronetoides Deeleman-Reinhold, 2001
Clubiona cf. zhangmuensis Hu & Li, 1987
Clubiona sp. A
Clubiona sp. B
Xantharia sp.

Table 2 (continued).

CORINNIDAE Karsch, 1880
Apochinomma nitidum Thorell (1895)
Castianeira sp.
Corinnomma severum Thorell, 1877
Oedignatha barbata Deeleman-Reinhold, 2001
Utivarachna cf. kinabaluensis Deeleman-Reinhold, 2001

ZODARIIDAE Thorell, 1881
Asceua sp. A
Asceua sp. B
Asceua sp. C
Cydrela sp.
Mallinella labialis Song and Kim, 1997
Mallinella sp.
Storenomorpha sp.
Zodariidae gen. sp.

GNAPHOSIDAE Pocock, 1898
Hitobia sp.
? *Micythus* sp.
Odontodrassus sp.
Trachyzelotes fuscipes (L. Koch, 1866)
Zelotes sp. A
Zelotes sp. B
Gnaphosidae gen. sp.

SPARASSIDAE, Bertkau 1872
Heteropoda sp.
Pseudopoda exigua (Fox, 1938)
Pseudopoda cf. parvipunctata Jäger, 2001
Pseudopoda schwendingeri Jäger, 2001
Sparianthinae gen. sp.

PHILODROMIDAE Thorell, 1870
Philodromus cf. assamensis Tikader, 1962
Philodromus sp. A
Philodromus sp. B
Philodromidae gen. sp.

THOMISIDAE Sundevall, 1833
Amyciaea lineatipes O. Pickard-Cambridge, 1901
Camaricus cf. khandalaensis Tikader, 1980
Diaea sp.
Lysiteles cf. kunmingensis Song & Zhao, 1994
Lysiteles cf. mandali (Tikader, 1966)
Misumenops cf. tricuspidatus
Misumenops sp.
Sanmenia sp.
Strigoplus sp.
Tmarus sp.
Xysticus sp.

SALTICIDAE Blackwall, 1841
Belippo sp.
Chalcoscirtus sp.
Cheliceroides sp.
Cyrbra ocellata Kroneberg, 1875
Epeus alboguttatus Thorell, 1887
Epeus sp. A
Epeus sp. B
Erasinus sp.
Euophrys sp.
Eupoa sp.
Evarcha crassipes Karsch, 1881
Evarcha orientalis Song & Chai, 1992
Harmochirus brachiatus Thorell, 1877
Irura sp.
Myrmarachne cf. elongata Szombathy, 1915
Phintella versicolor C. L. Koch, 1846
Phintella vittata C. L. Koch, 1846
? *Phintella* sp.
Plexippus petersi (Karsch, 1878)
Ptocasius cf. strupifer Simon, 1901
Ptocasius sp.
? *Saitis* sp.
Spartaeus sp.
Synagelides sp.
Telamonia cf. caprina (Simon, 1903)
Yaginumaella sp. A
Yaginumaella sp. B

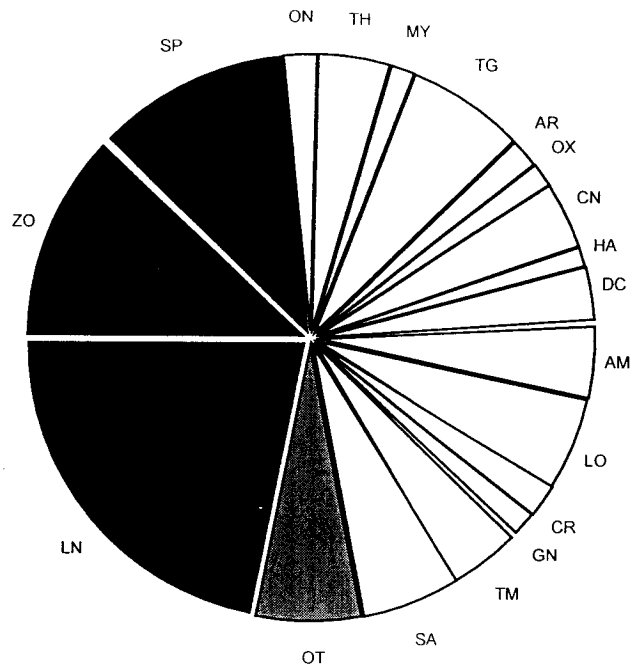


Fig. 2. Family composition of the spider community of Doi Inthanon National Park during the study period. Dominant families (> 10% of the total spiders collected), black; influence families (between 1-10%), white; accessory families (less than 1%), gray. LN = Linyphiidae (21.9), ZO = Zodariidae (12.1), SP = Sparassidae (11.5), ON = Oonopidae (1.7), TH = Theridiidae (3.9), MY = Mysmenidae (1.6), TG = Tetragnathidae (6.8), AR = Araneidae (1.5), OX = Oxyopidae (1.4), CN = Ctenidae (3.8), HA = Hahniidae (1.1), DC = Dictynidae (3.3), AM = Amaurobiidae (4.3), LO = Liocranidae (5.5), CR = Corinnidae (1.7), GN = Gnaphosidae (1.6), TM = Thomisidae (4.0), SA = Salticidae (5.5), OT (5.9) = Liphistiidae, Hexathelidae, Cyrtauchenidae, Ctenizidae, Nemesiidae, Theraphosidae, Filistatidae, Scytodidae, Ochyroceratidae, Pholcidae, Tetrablemmidae, Stenochilidae, Palpimanidae, Mimetidae, Hersiliidae, Uloboridae, Nesticidae, Theridiosomatidae, Anapidae, Lycosidae, Pisauridae, Psechridae, Agelenidae, Miturgidae, Clubionidae and Philodromidae.

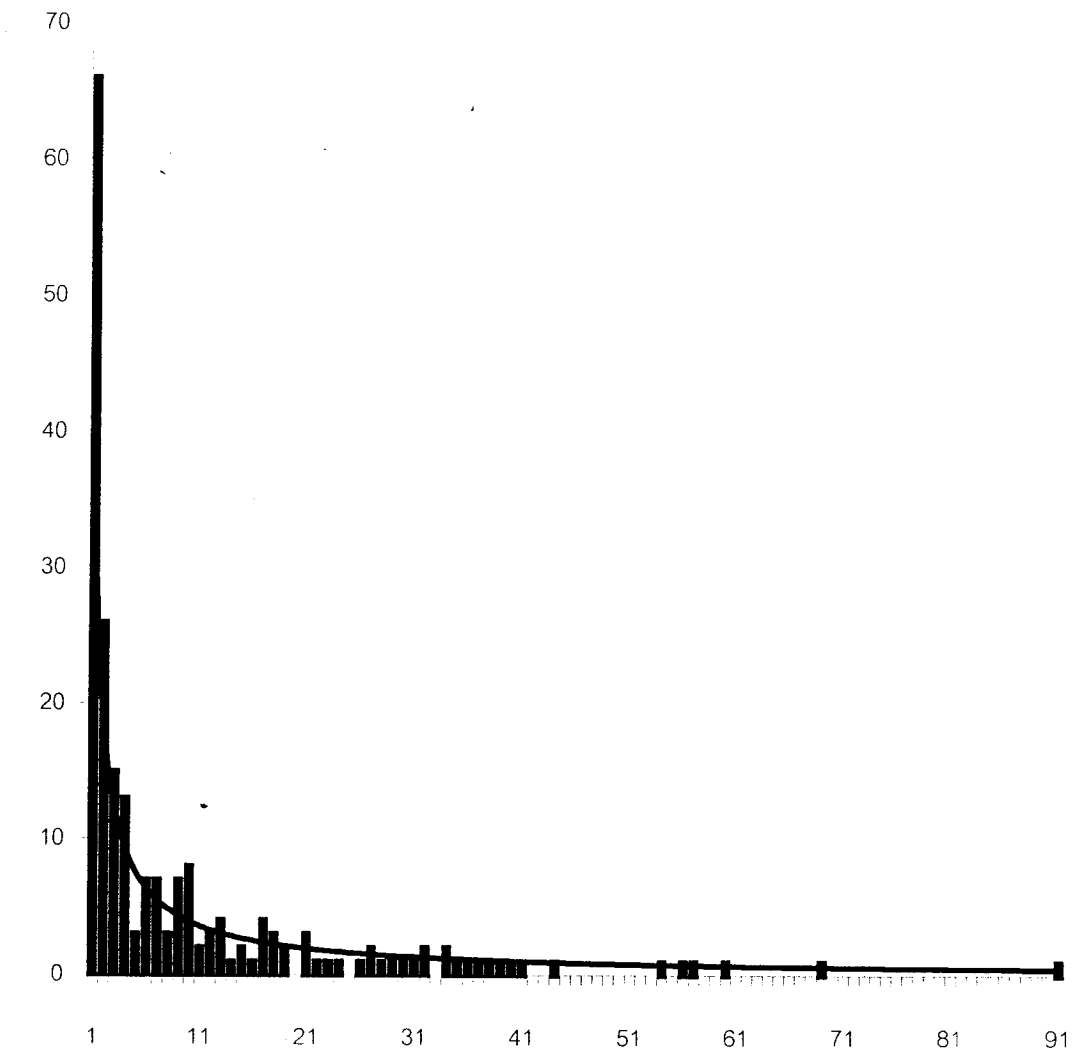


Fig. 3. Spider diversity of Doi Inthanon National Park collected between August 1999 and July 2000. Log series distributions are indicated by red line. Five dominant species with individuals of 128 (? *Layths* sp.) 144 (*Oedothorax cf. hulongensis*), 157 (? *Batueta* sp.), 367 (*Pseudopoda exigua*) and 441 (*Neriene* sp. A) are not included in this graph.

DISTRIBUTION OF SPIDERS ALONG AN ALTITUDINAL GRADIENT

Species richness

The two prominent altitudinal patterns of species richness revealed by the data are a broad peak in overall species richness in middle elevation and a marked downhill decline for most taxa between 1500 and 2000 m (Fig. 4). There is a mid-elevation peak in overall species richness at 1000 m (108 species) followed by a modest downhill decline between 1000 m (108 species) and 1500 m (90 species) and a steep decrease of species richness between 1500 m and 2000 m (from 90 to 41 species). However, some families do not correspond to this general pattern (Figs. 6- 7).

Number of individuals

The general altitudinal variation in the abundance of spiders parallels the altitudinal variation in species richness (Fig. 5). The number of individuals peaks at mid-elevation and undergoes a dramatic drop above 1500 m. Variation in numbers of specimens collected for different taxa is presented in Fig. 8-11.

Faunal turnover and β diversity

Faunal turnover and similarity index revealed in Table 3 and 4 indicate three separated zones of spider communities in the national park.

Altitudinal range

The spiders are divided into four groups according to their altitudinal occurrences (Fig. 12). The first group contains spiders inhabiting both the lowlands and high altitudes. Spiders which are abundant in the lowlands and rare or absent in the mountains are placed in the second group. Spiders which are rare or absent in the lowlands and abundant in the mountains are considered the third group. The fourth group incorporates the spiders inhabiting only the high-altitude zone.

Only a few species occurred in all altitudes, namely *Gamasomorpha* sp. A, *Dipoena* sp., *Batueta* sp., *Pronasoona aurata*, *Pardosa songa*, *Coelotes cf. uncinatus*, and *Pseudopoda exigua*.

Liphistius yamasakii appears to be restricted to its type locality (Doi Inthanon, 1500-1700 m) and could not be found elsewhere. Mygalomorph spiders occur in three

different altitudinal zones. *Angka hexops*, *Conothele* sp. and *Sinopesa maculata* are high altitude species, whereas *Damarchus* sp. and *Phlogiellus* sp. have a wide distributional range, extending from 1000 m to the summit. *Macrothele* sp. was found at the lower elevations of the mountain.

Pritha cf. papilionaceus (Filistatidae) and *Boagrius* (Palpimanidae) are limited to mixed deciduous dipterocarp forest of low elevation.

Scytodidae clearly divides into low-altitude (*Scytodes*) and high-altitude (*Stedocys*) species.

Althepus stonei, *Psiloderces septentrionalis* (Ochyroceratidae), *Chavia monticola* and *Perania nasuta* (Tetrablemmidae) are restricted to hill evergreen forest at about 1500 m.

Pholcidae and Oonopidae can be found at all elevation. However, there is altitudinal separation within the families. *Gamasomorpha* spp. occur along the whole altitudinal transect, whereas a single *Orchestina* specimen was found only at 1500 m. Most oonopids, as well as, *Pholcus* spp. and *Psilochorus* are common on the forest floor up to 1500 m. Only *Spermophora* inhabits the high-altitude zone.

Members of the Hersiliidae and Uloboridae occur at lower altitudes (500-1000 m) of the national park, whereas *Colopea virgata* (Stenochilidae) prefers intermediate elevations.

Each *Nesticella* (Nesticidae) species, represented by only a single specimen, inhabits damp places of dipterocarp with pine forest and hill evergreen forests.

Dipoena spp. and *Moneta* spp. are distributed from the lowlands to the summit, while several other theridiid species inhabit only the lowlands (*Archaearanea* sp., *Argyrodes* spp., *Coscinida* sp., *Chrysso* spp., Theridiidae, gen. sp. A and Theridiidae gen. sp. C) or the high altitude zone area (*Carniella siam*). *Moneta* spp. and *Colesoma* sp. occur in the intermediate zone between the lowlands and the summit.

Ogulnius sp. (Theridiosomatidae) is a high-altitude species occurring in hill evergreen forest from 1500 m elevation to the summit.

Metanapis (Anapidae) is presented only in hill evergreen forest at 1500 m.

Two species of Mysmenidae were found along the entire altitudinal transect.

Neriene sp. B occurs at lower elevation, whilst *Linyphia* sp., *Neriene* sp. A and *Neriene* sp. C inhabit higher parts of the mountain. *Batueta* sp. and *Pronasoona aurata* entirely distribute along the altitudinal transect while *Bathyphantes* sp. and *Oedothorax*

cf. hulongensis are dominant at high altitudes with a few specimens occurring further down in dipterocarp with pine forest.

The majority of *Leucauge* spp. and *Tylorida striata* are common at low elevations up to 1500 m, whereas *Pachygnatha* sp. inhabits only the summit area. *Tetragnatha maxillosa* occurs from 500 m up to hill evergreen forest at 2000 m, while *T. nitens* is restricted to dipterocarp with pine forest at 1000 m.

Most araneids occur in more than one altitudinal zone with the exception of *Chorizopes bengalensis* being limited to the high-altitude zone. Altitudinal separation is also found in members of *Gasteracantha* and *Nephila*. *N. clavata* inhabits higher elevations, while *N. pilipes* is common in the lowlands. *G. geminata* occurs in the forest of higher altitudes whereas *G. hasselti* and *G. kuhli* are dominant in mixed deciduous forest further down.

Despite low numbers of individuals, Lycosidae can be found at all elevations, while *Hygropoda* (Pisauridae) is limited to the low elevations as are all species of Oxyopidae.

Ctenus spp. (Ctenidae) are common ground hunters that peak at the middle elevations, whereas *Coelotes* spp. (Amaurobiidae) are typically found in high-altitude zones.

Hahniidae and Agelenidae seem to prefer higher elevations, while Miturgidae and Dictynidae are restricted to lower slopes of the mountain.

Most members of Liocranidae and Corinnidae inhabit the lowlands, with two exceptions: *Otacilia zebra* and *Utivarachna cf. kinabaluensis* are common at high altitudes.

Asceua sp. A and *Asceua* sp. B are predominant species mostly found above 1500 m, while *Asceua* sp. C is common on the lower slope of the mountain. *Mallinella* spp., *Storenomorpha* sp. and Zodariidae gen. sp. inhabit the forest floor of intermediate zones. Large *Cydrela* species are distributed in the high-altitude zones.

Most Gnaphosidae are abundant in the lowlands, with a single species, *Hitobia* sp., occurring in hill evergreen forest.

Heteropoda sp., *Pseudopoda schwendingeri* and Sparianthinae gen. sp. inhabit the forest floor of the lowlands up to 1500 m. Only *Pseudopoda cf. parvipunctata* occurs along the whole altitudinal gradient.

The majority of Thomisidae are restricted to the lowlands, except *Lysiteles cf. kunmingensis* which is common in hill evergreen forest.

Members of Salticidae commonly occupy mixed deciduous and dipterocarp with pine forest, with a few species inhabiting hill evergreen forest.

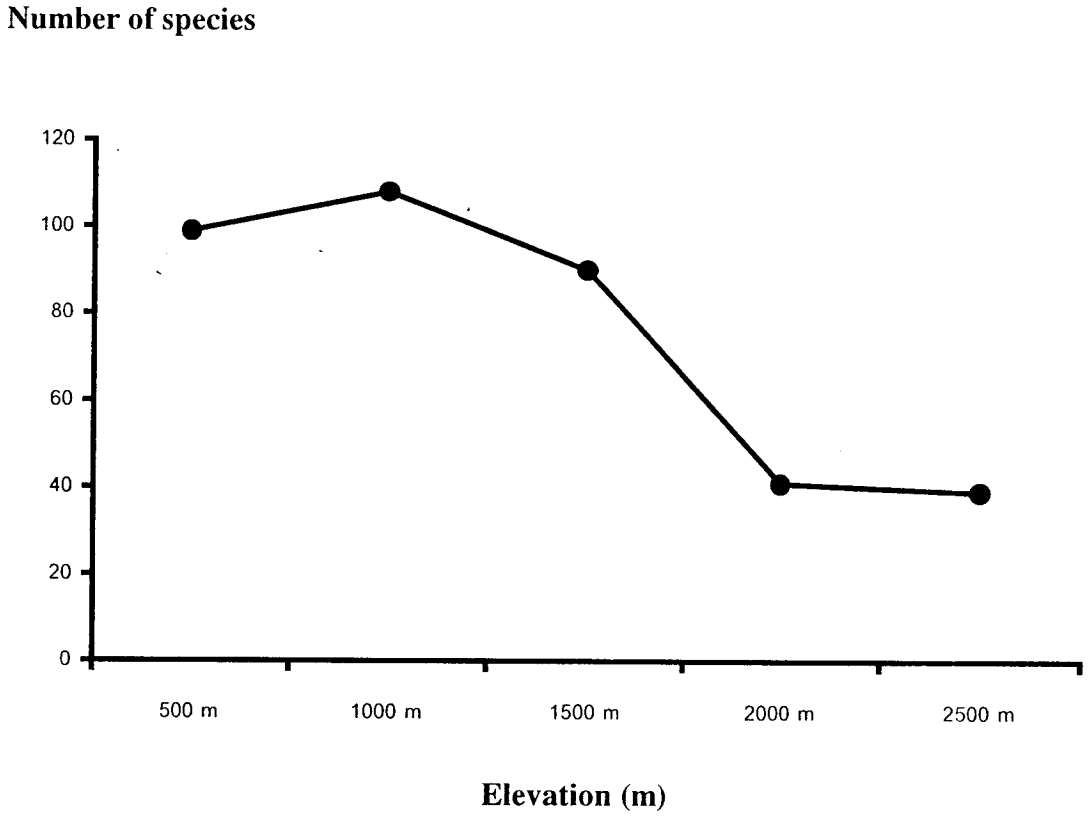


Fig. 4. The total number of spider species collected at each elevation.

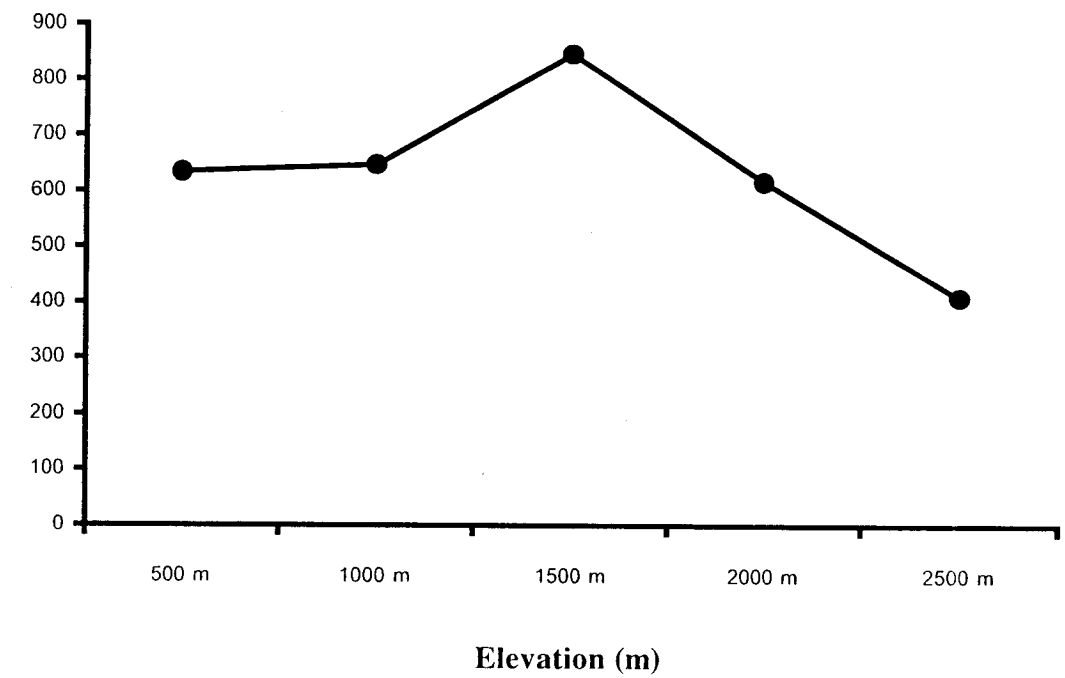


Fig. 5. The total number of spider individuals collected at each elevation.

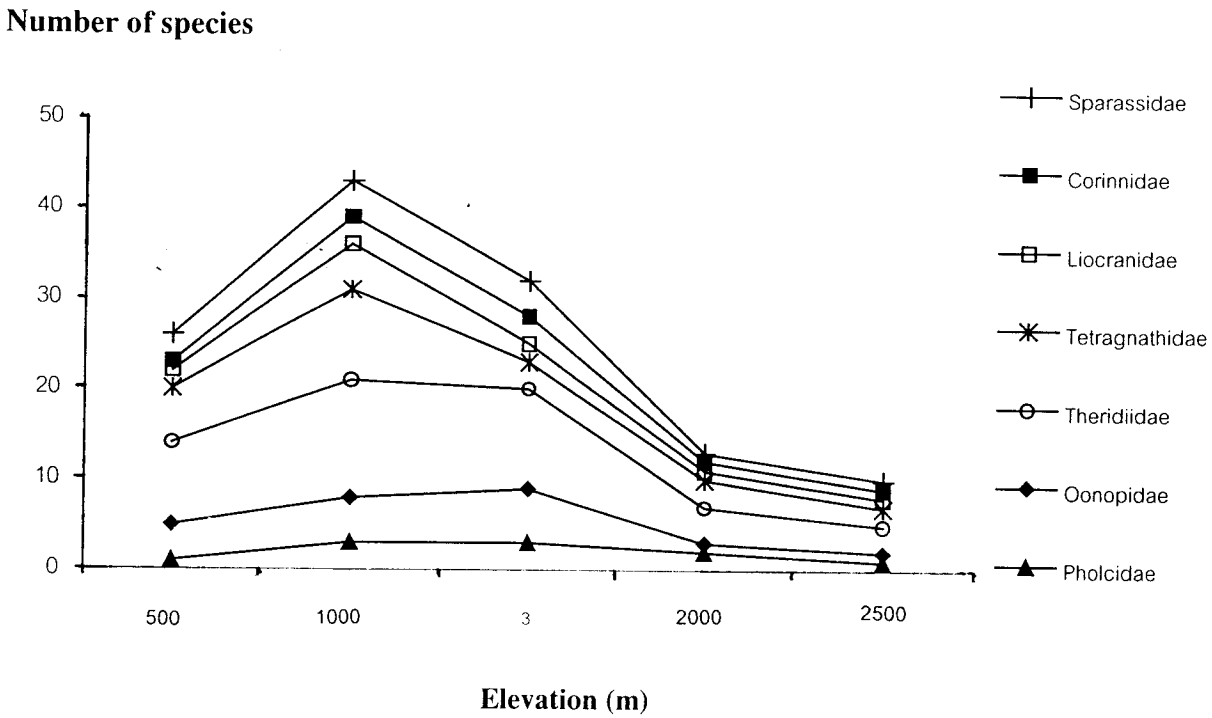


Fig. 6. The number of species of Pholcidae, Oonopidae, Theridiidae, Tetragnathidae, Liocranidae, Corinnidae and Sparassidae sampled at each elevation.

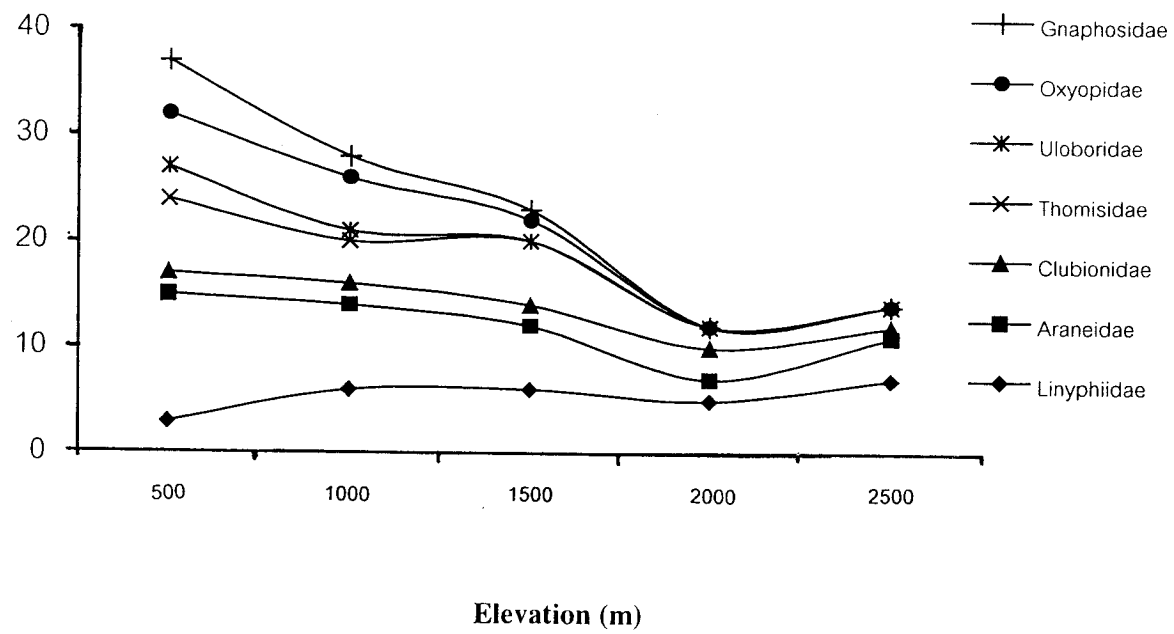


Fig. 7. The number of species of Linyphiidae, Araneidae, Clubionidae, Thomisidae, Uloboridae, Oxyopidae and Gnaphosidae at each elevation.

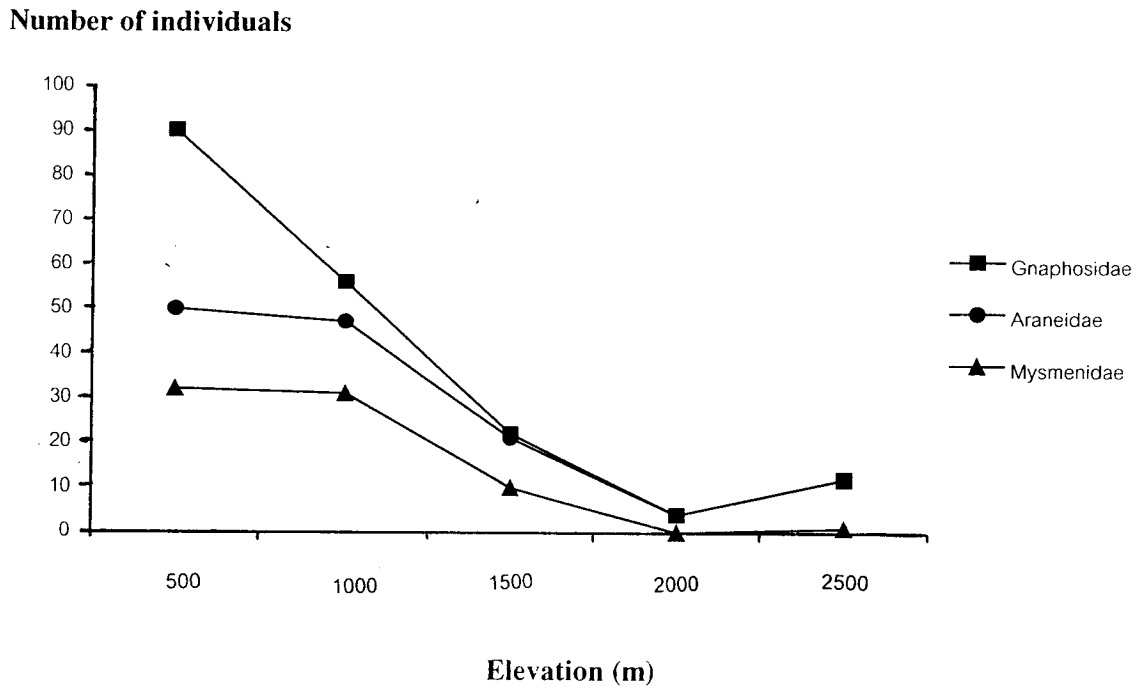


Fig. 8. The number of individuals of Mysmenidae, Araneidae and Gnaphosidae sampled at each elevation.

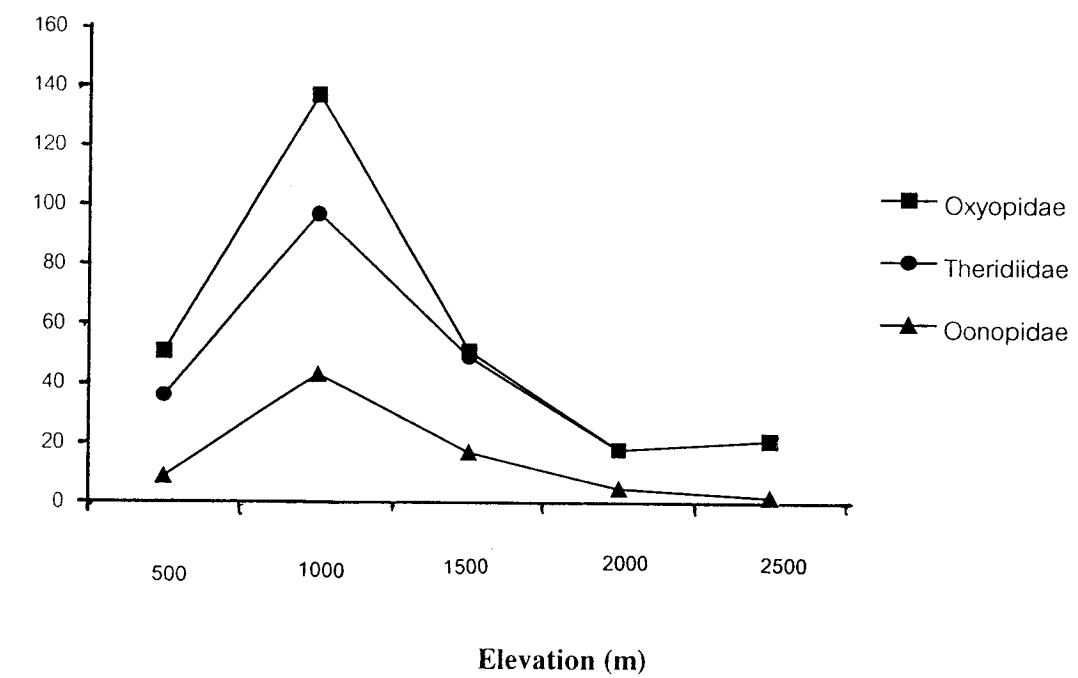


Fig. 9. The number of individuals of Oonopidae, Theridiidae and Oxyopidae sampled at each elevation.

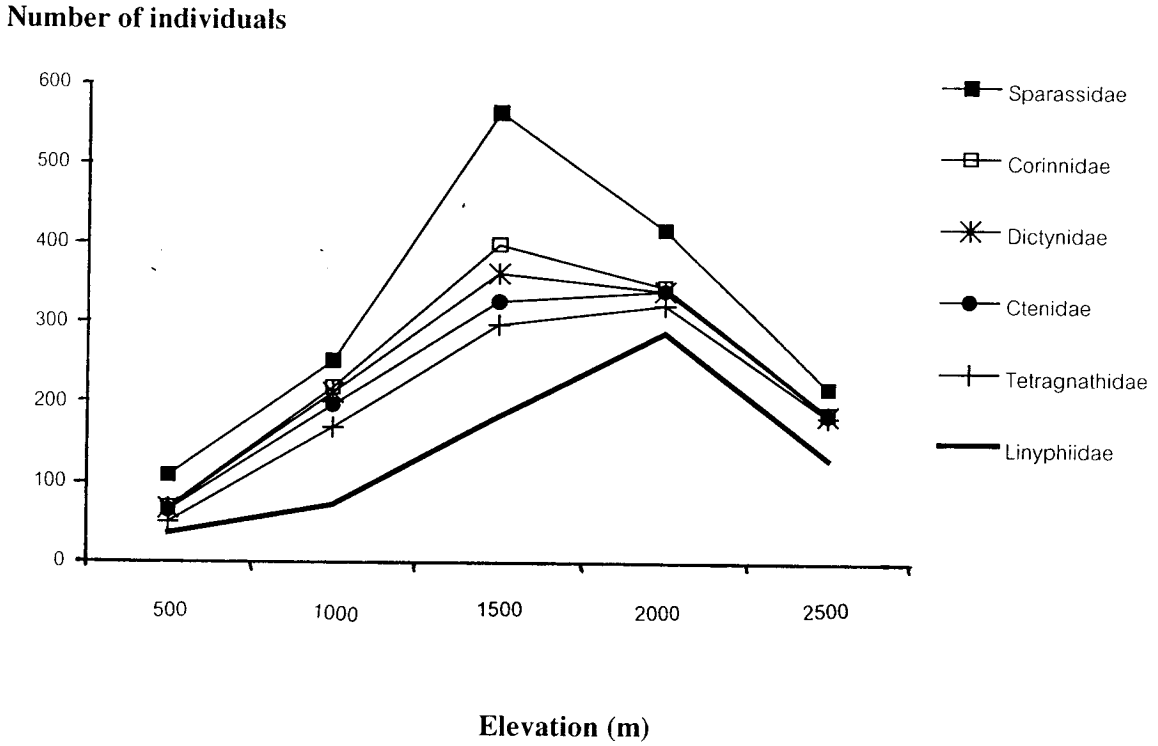


Fig. 10. The number of individuals of Linyphiidae, Tetragnathidae, Ctenidae, Dictynidae, Corinnidae and Sparassidae sampled at each elevation.

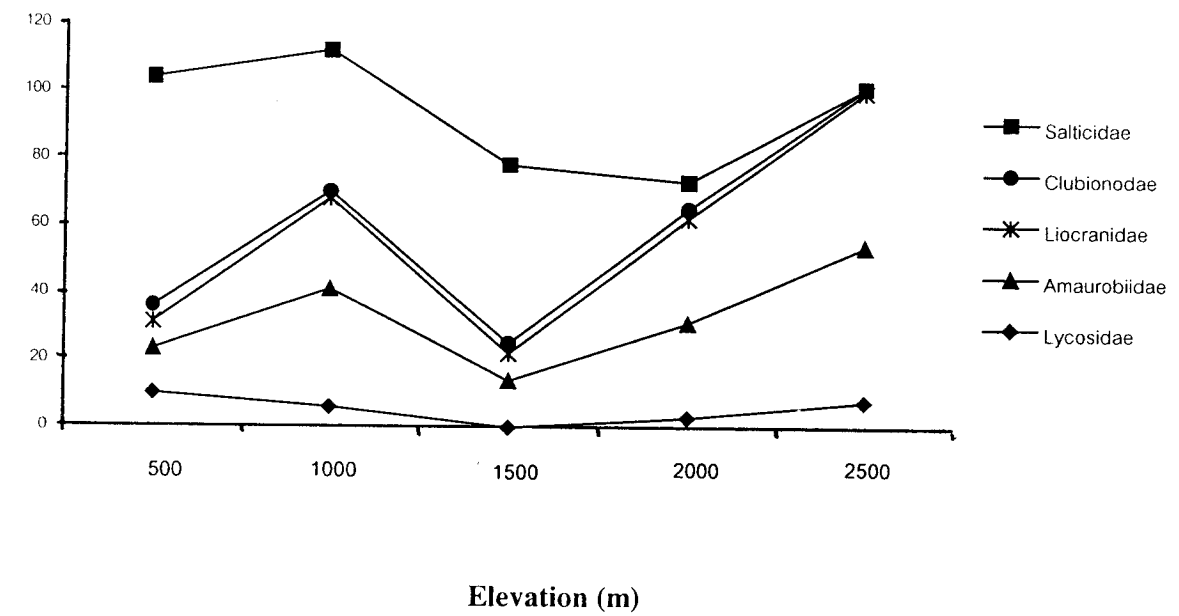


Fig. 11. The number of individuals of Lycosidae, Amaurobiidae, Liocranidae, Clubionidae and Salticidae sampled at each elevation.

Fig. 12. Altitudinal distribution of spider families at each elevation.

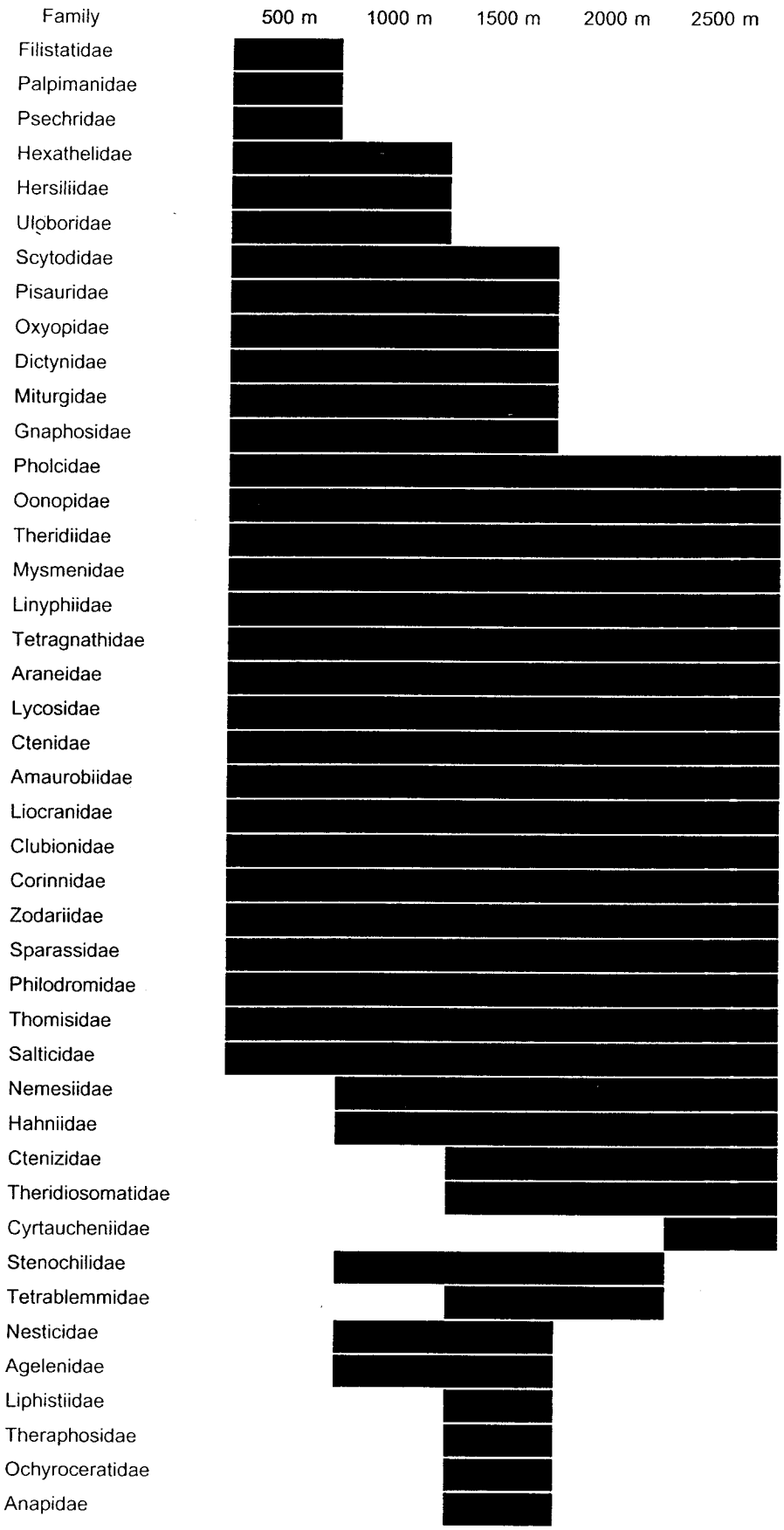


Table 3. Faunal turnover of a given sample shared with each of the other samples along the altitudinal gradient. The table reads top to bottom: e.g., the community at 2500 m has 25% of spider species in common with the community at 500 m, but only 39% of the community at 500 m are identical with the community at 2500 m.

Comparison sample	**Reference sample**				
	500	**1000**	**1500**	**2000**	**2500**
500	-	0.56	0.37	0.41	0.25
1000	0.61	-	0.38	0.73	0.43
1500	0.34	0.32	-	0.78	0.71
2000	0.41	0.27	0.35	-	0.76
2500	0.39	0.15	0.31	0.73	-

Table 4. Sørensen's coefficients of similarity for spider species. Values in italics represent comparisons of altitudinally adjacent samples.

Altitude	**500**	**1000**	**1500**	**2000**	**2500**
500	-	***0.294***	0.171	0.129	0.125
1000	-	-	***0.176***	0.201	0.111
1500	-	-	-	***0.244***	0.217
2000	-	-	-	-	***0.375***

SEASONAL ACTIVITY

The annual spider activity in Doi Inthanon National Park is illustrated in Fig. 13. Two clear maxima of spiders collected can be seen from October to March. The number of individuals declined from the second peak in January continually until the middle of the dry season in June. The beginning of the rainy season is characterized by an increase in the number of spiders collected. Maximum and minimum (with respect to abundance) are separated by approximately 6 months and differ from each other in 500 individuals collected.

Monthly fluctuations in activity are mainly influenced by the activity of immature spiders. Two peaks of adults are present in cold season (October and November) and in the dry season (March to May). The cold season peak of mature spiders is dominated mainly by female activity, whereas the hot season peak is formed both by male and female individuals. A sex ratio of 1:1.04 was found during the whole period study.

With regard to the seasonal activity on a family level, Linyphiidae are predominant, being represented by a large number of individuals and occurring each month (Fig. 14). While numbers of individual of most families decrease in December, the Linyphiidae barely show a significant reduction. Sparassidae, Zodariidae and Tetragnathidae comprise the second largest group of spiders and also occur all year round. However, they are apparently winter-active, each with a similar pattern of activity of increasing species abundance during October to February. Ctenidae follow the seasonal pattern of Sparassidae and Zodariidae, through smaller numbers of individuals were observed. Theridiidae and Salticidae seem to have constant numbers of individual and were active almost all the time. Although a continuous presence of Liocranidae is demonstrated, they are really active only during the hot period of the year.

There is somewhat different in the faunal composition each month (Fig. 15). Linyphiidae are one of the major spider groups which occurs in each month and comprises up to 37% of all spiders in July. The family compositions of each month in the very humid part of August to October are closely related to each other, Zodariidae are predominant, followed by Linyphiidae. Salticidae, Thomisidae, Araneidae and Theridiidae show slight variations but all continually decline towards the cold season.

The major differences in the spider compositions of November and December are increasing presences of Linyphiidae, Tetragnathidae and Liocranidae, together with falling numbers of Sparassidae, Zodariidae, Salticidae and Thomisidae. January and February show almost the same faunal compositions. Increasing numbers of Zodariidae and Liocranidae in association with decreasing numbers of Sparassidae occur during the dry season (March to May). June and July are separated by differences in the abundance of Liocranidae, Ctenidae and Linyphiidae.

Capture dates of mature spiders are illustrated in Fig. 16. Two types of life cycles are present. Phenology of selected species is shown in Fig. 17-26.

Eurychronous species. *Neriene* sp. A is the only species with a continuous presence of mature specimens over the entire year. In *Neriene* sp. B, *Pronasoona aurata*, *Pseudopoda exigua*, *Oedothorax cf. hulongensis*, *Amyciaea forcipes*, *Lysiteles cf. kunmingensis* and *Asceua* spp. mature specimens were collected in all but one or two months.

Stenochronous species. Several spider species are active for only a limited period of the year. These spiders mainly occur in the dry season (spring and summer stenochronous in the sense of Schäfer). Most of them show small peaks of abundance due to the low number of specimens collected. Stenochronous (active at the beginning of the dry season) species are *Gamasomorpha* spp., *Ischnothyreus* sp., *Bathyphantes* sp., *Jacaena distincta*, *Sesieutes cf. schwendingeri*, *Mallinella labialis*, *Zelotes* spp., *Misumenops cf. tricuspidatus*, and almost all species of Salticidae.

Stenochronous (active in the cold season) species. Theridiidae and Araneidae constitute the majority of the spider fauna in winter. Filistatidae (*Pritha* sp.), Stenochilidae (*Colopea virgata*), Palpimanidae (*Boagrius* sp.), Hersiliidae, Theridiosomatidae (*Ogulnius* sp.) and Anapidae (*Metanapis* sp.) reproduce in the cold period and are active during this season. Mysmenidae were found in October and continue to occur until April. Few species can be found in the cold season and are still present in early hot season: *Lathys* sp. (Dictynidae), *Coelotes* spp. (Amaurobiidae), *Sphingius vivax* (Liocranidae), *Cydrela* sp. (Zodariidae) and *Belippo* sp. (Salticidae).

As mygalomorph spiders are long-lived, and females occur all over the year, a seasonal distribution can be only given for mature males.

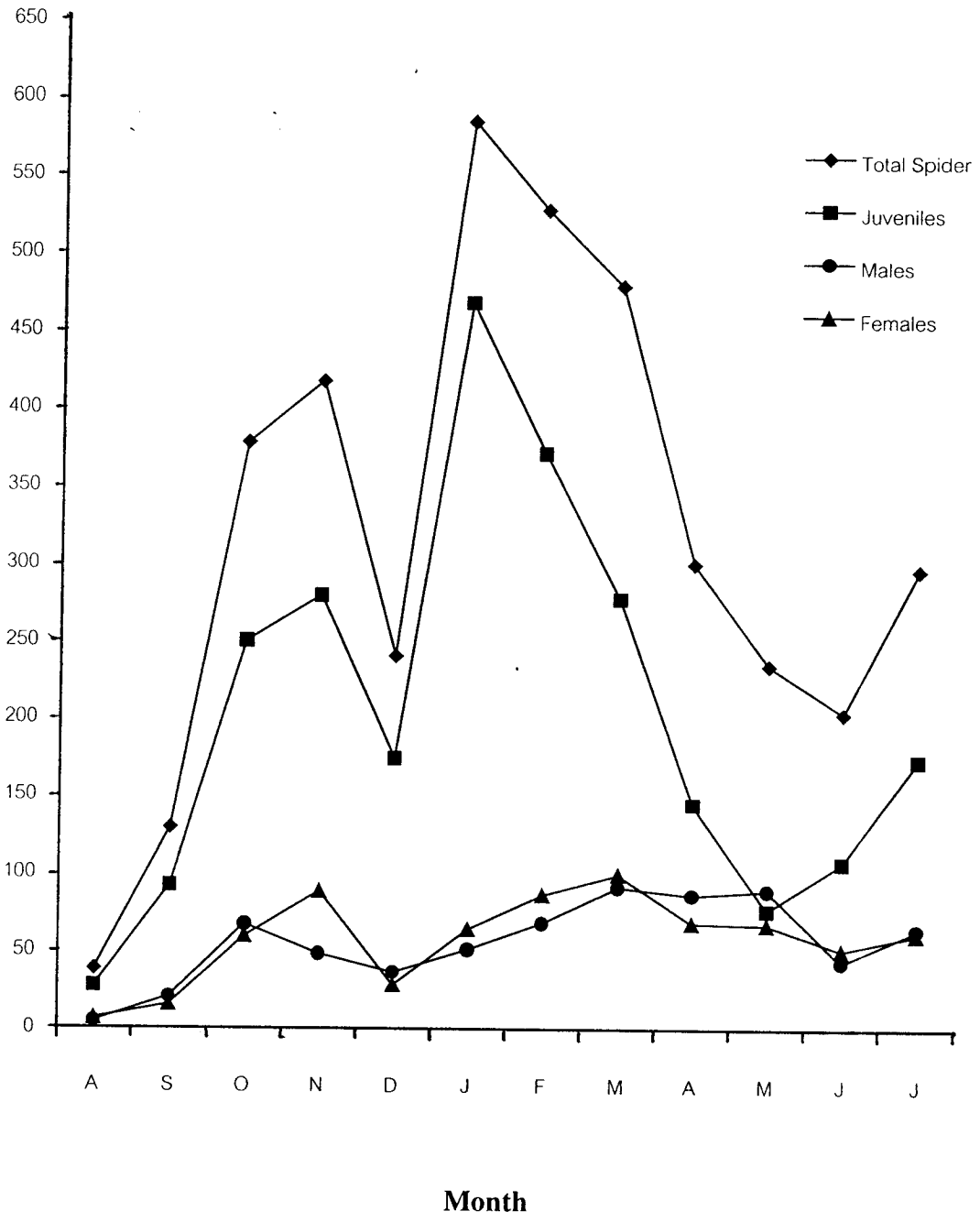


Fig. 13. Total spider phenology in Doi Inthanon National Park from August 1999 to July 2000.

Fig. 14. Seasonal distribution of the 10 most abundant spider families in Doi Inthanon National Park.

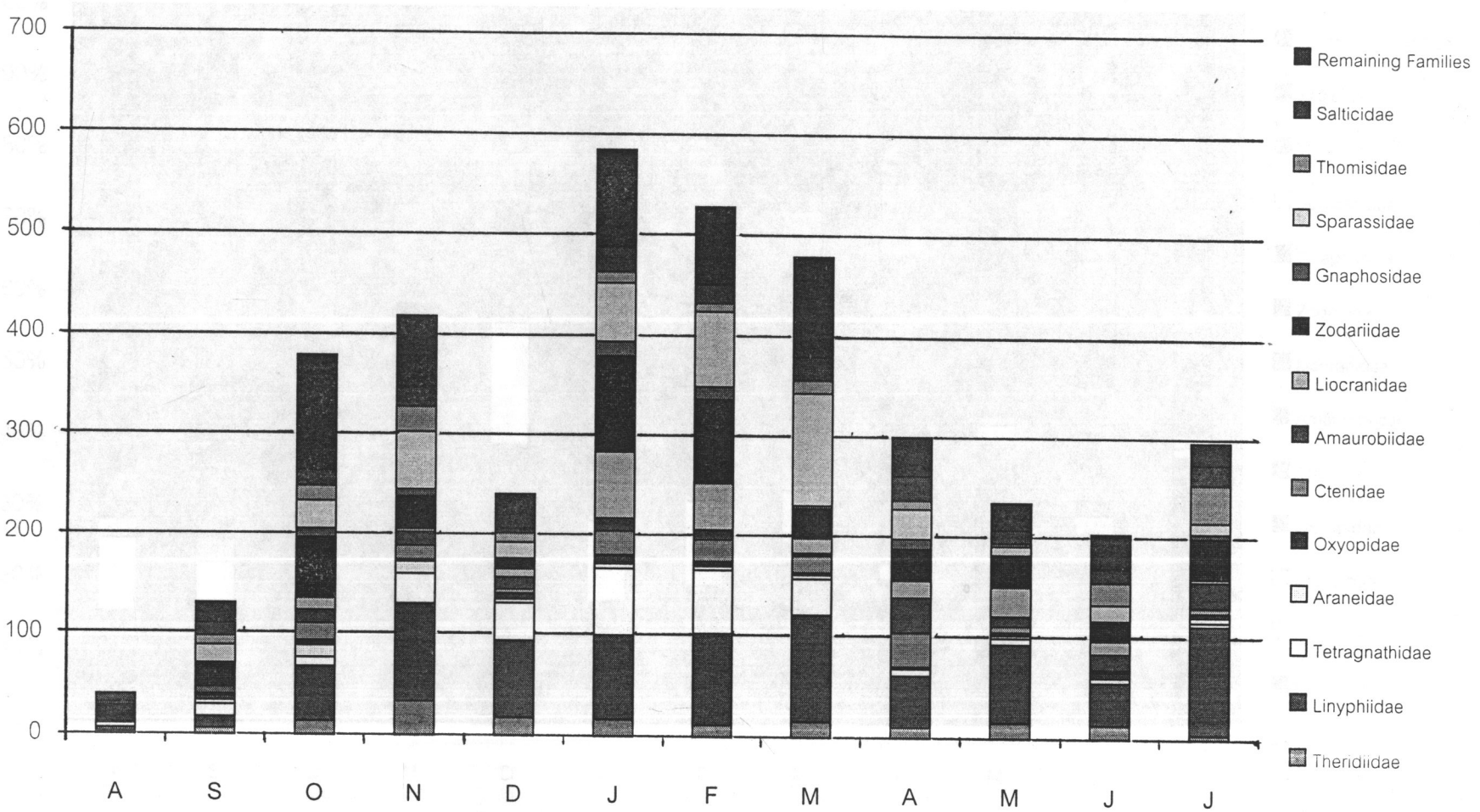


Fig. 15. Percentage representation of the 10 most abundant spider families in Doi Inthanon National Park.

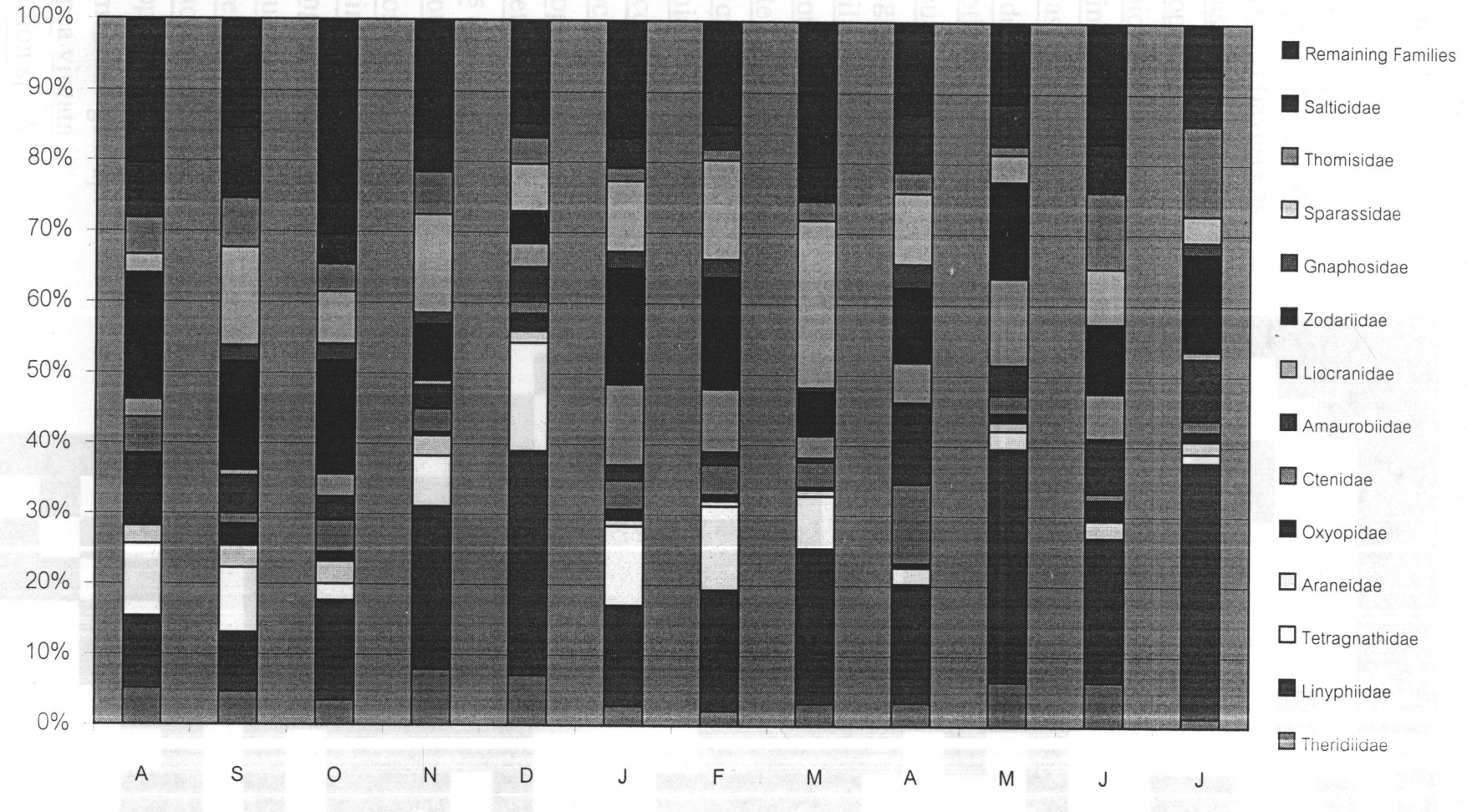
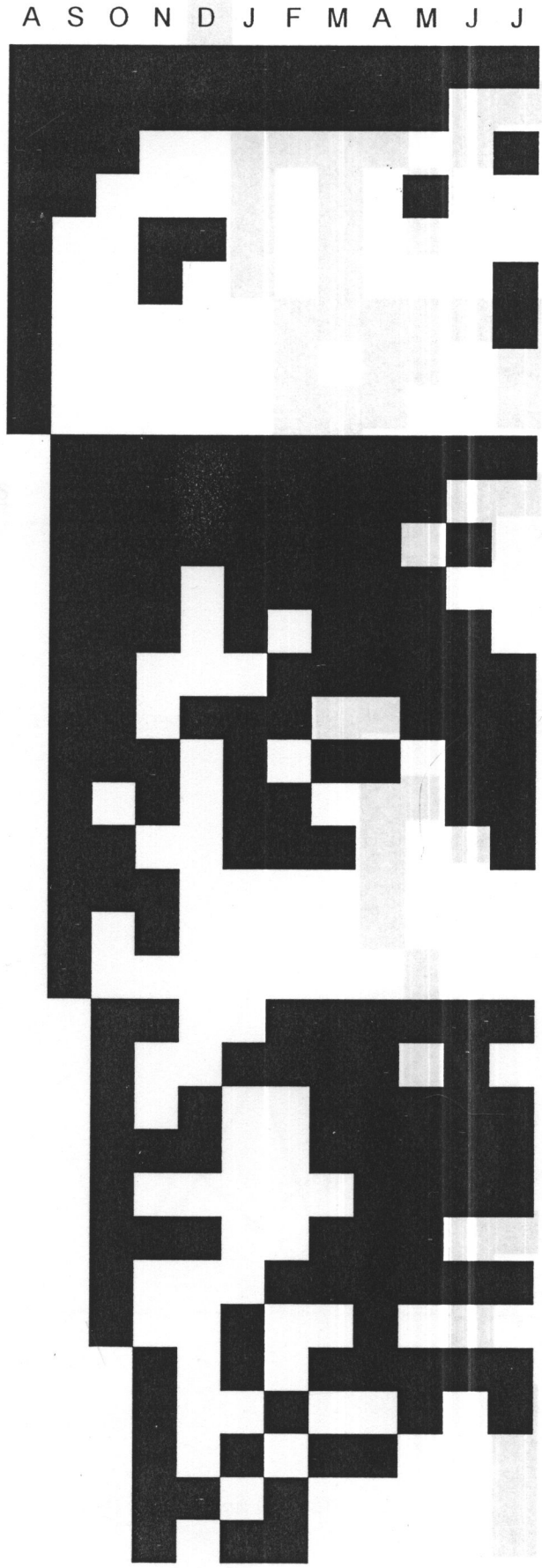
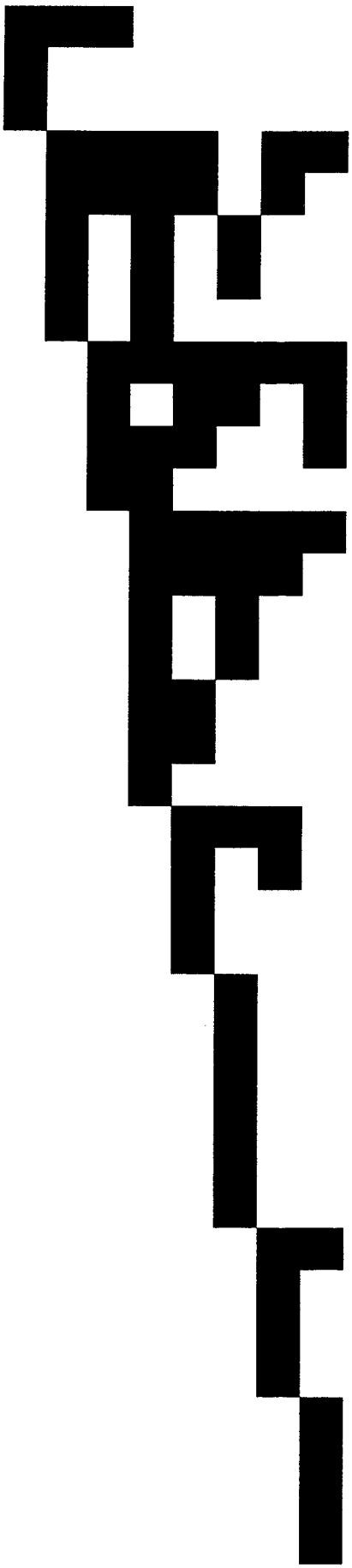


Fig. 16. Seasonal occurrence of mature specimens collected in Doi Inthanon National Park.



Neriene sp. A
Neriene sp. B
Tylorida striata
Leucauge termisticta
Argyrodes flavescens
Ptocasius sp.
Oxyopes sikkimensis
Clubiona cf. pteronetoides
Episinus sp.
Pronasoona aurata
Pseudopoda exigua
Oedothorax cf. hulongensis
Asceua sp. B
Oedignatha barbata
Otacilia zebra
Coelotes cf. aspinatus
Lysiteles cf. kunmingensis
Amyciaea forticeps
Hahnia cf. liangdangensis
Pholcus sp. A
Psilochorus sp.
Argiope pulchella
Batueta sp.
Saitis sp.
Coelotes cf. uncinatus
Coleosoma sp.
Coscinida sp.
Sphingius vivax
Asceua sp. C
Cydrela sp.
Ischnothyreus sp.
Belippo sp.
Mysmenidae gen. sp.
Colopea virgata
Theridion sp. A

Coelotes sp.
Dictyna sp. A
Cyclosa bifida
Bathyphantes sp.
Chalcoscirtus sp.
Jacaena distincta
Sesieutes cf. schwendingeri
Boagrius sp.
Gamasomorpha sp. A
Ctenus sp. A
Zelotes sp. B
Theridion sp. C
Misumenops cf. tricuspidatus
Ctenus sp. B
Nephila pilipes
Tetragnatha maxillosa
Zelotes sp. A
Gamasomorpha sp. B
Mallinella sp.
Mallinella labialis
Scytodes sp.
Angka hexops
Conothele sp.
Chorizopes shimenensis
Zygiella calyptrate
Epeus sp. A
Phintella vittata
Oxyopidae, g. sp.
Althepus stonei
Telamonia cf. caprina
Oxyopes macilentus
Oxyopes sp.
Hygropoda sp.
Psiloderces septentrionalis
? Phintella sp.
Ptocasius cf. strupifer
Yaginumaella sp. A



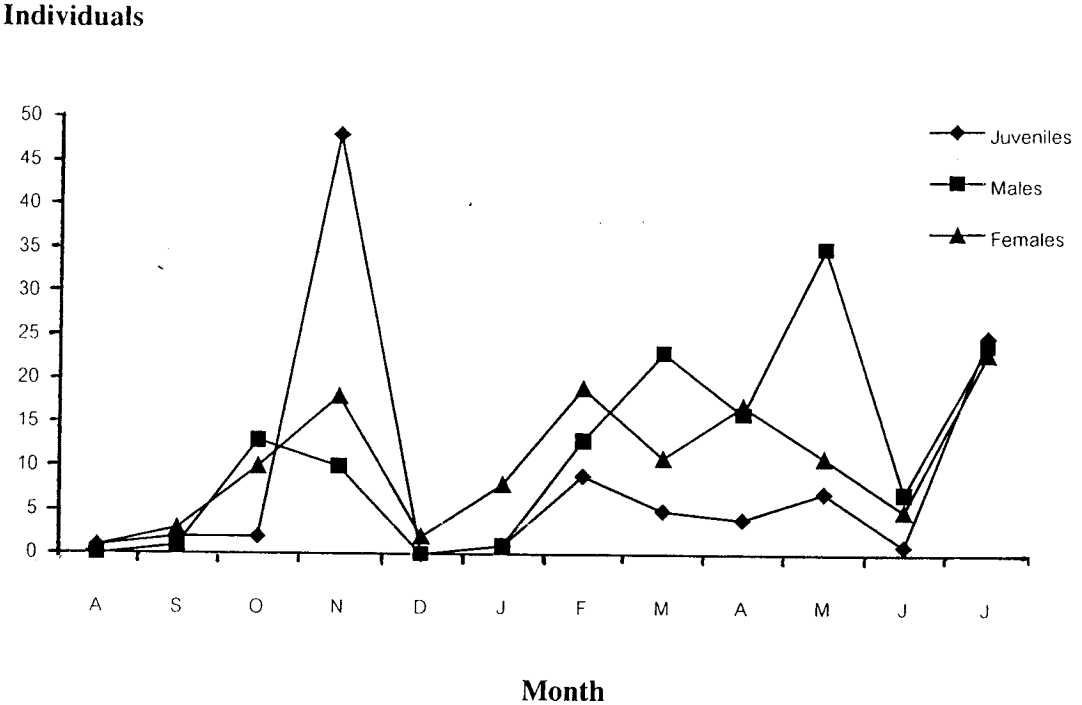


Fig. 17. Phenology of *Neriene* sp. A (n = 441 ind) sampled on Doi Inthanon from August 1999 to July 2000.

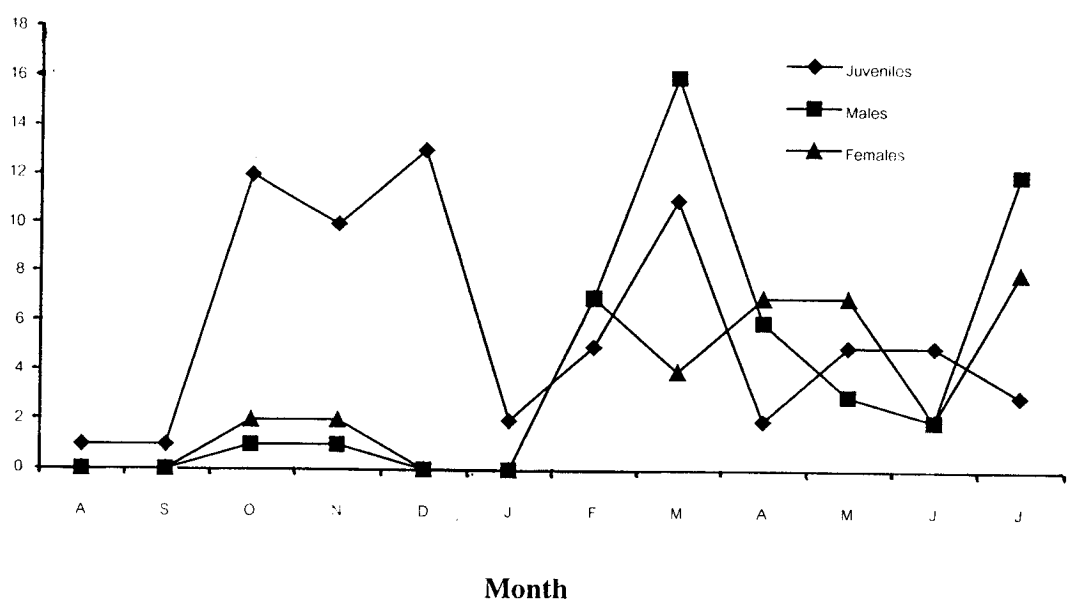


Fig. 18. Phenology of *Batueta* sp. (n = 157 ind) sampled on Doi Inthanon from August 1999 to July 2000.

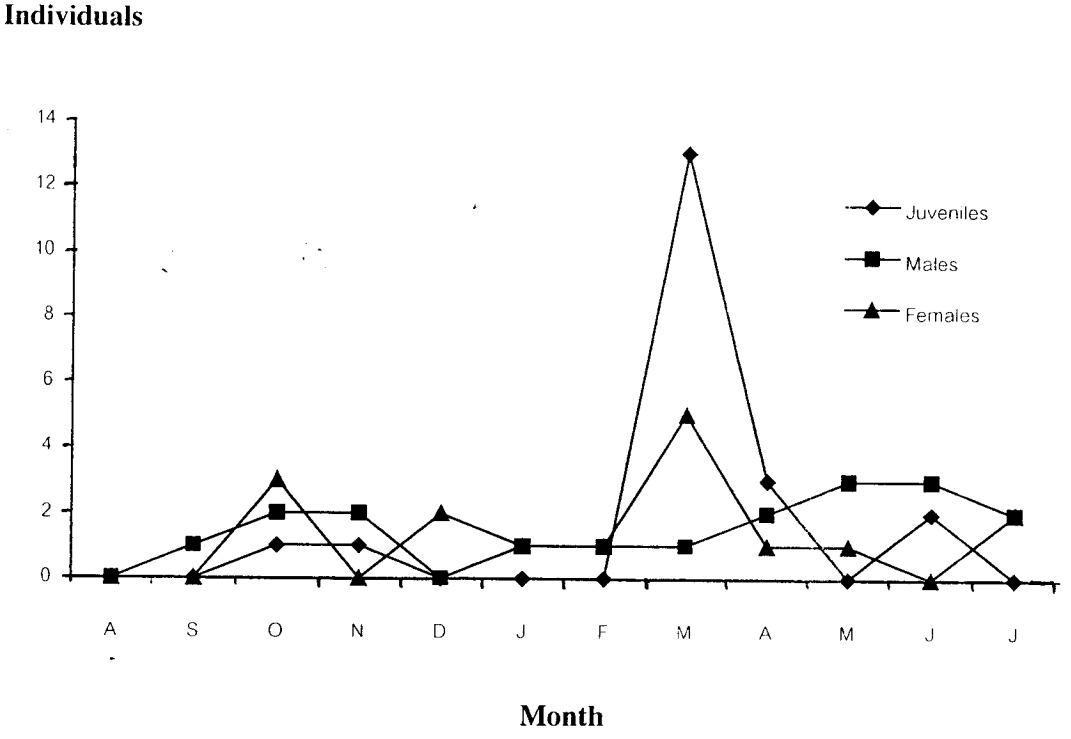


Fig. 19. Phenology of *Pronasoona aurata* (n = 54 ind) sampled on Doi Inthanon from August 1999 to July 2000.

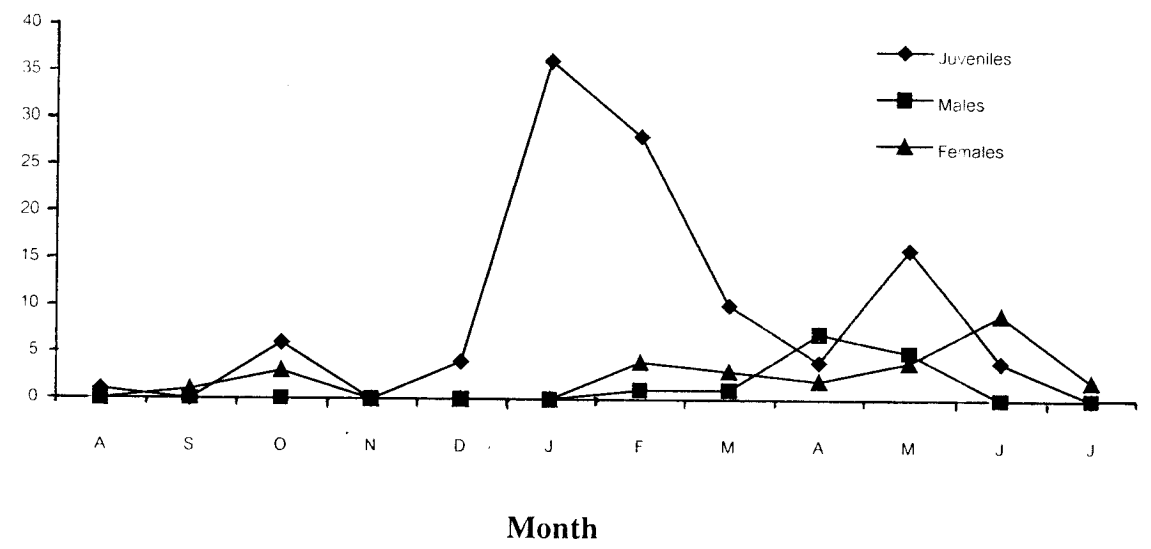


Fig. 20. Phenology of *Otacilia zebra* (n = 163 ind) sampled on Doi Inthanon from August 1999 to July 2000.

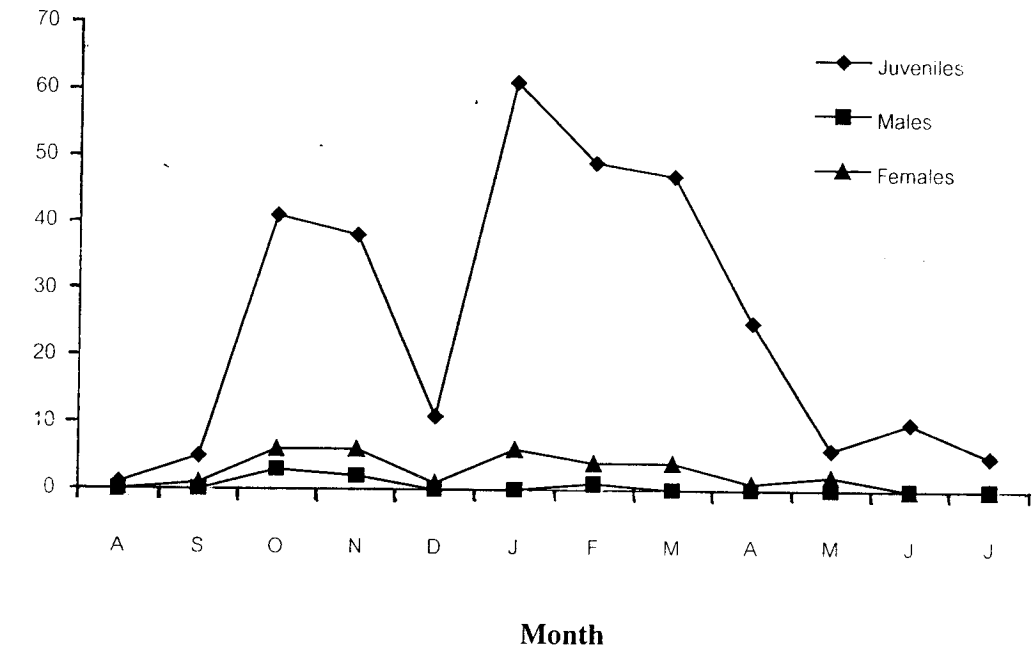


Fig. 21. Phenology of *Pseudopoda exigua* (n = 367 ind) sampled on Doi Inthanon from August 1999 to July 2000.

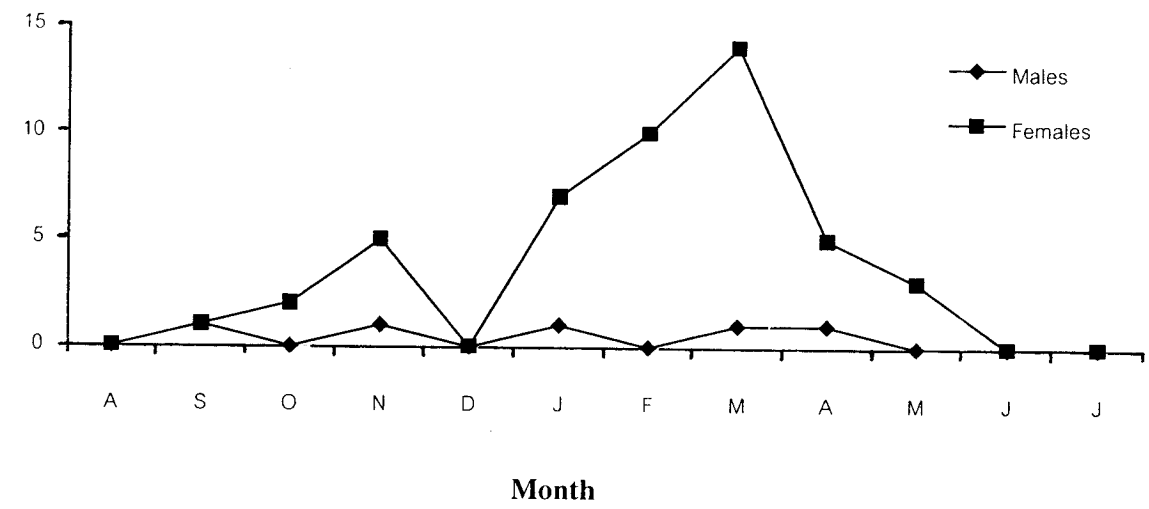


Fig. 22. Phenology *Asceua* sp. B of (n = 57 ind) sampled on Doi Inthanon from August 1999 to July 2000.

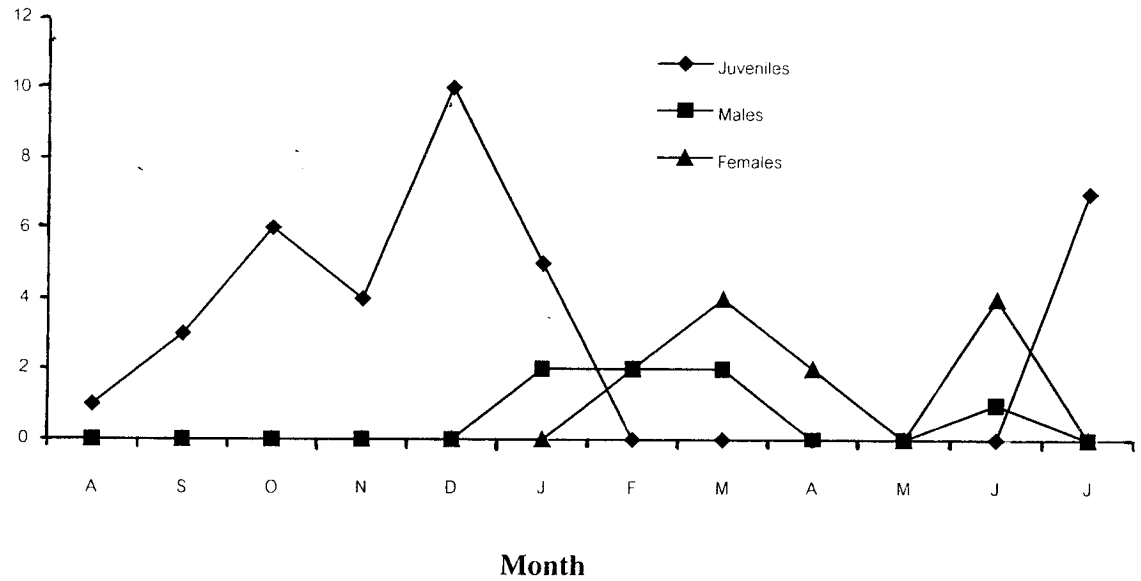


Fig. 23. Phenology of *Bathyphantes* sp. (n = 56 ind) sampled on Doi Inthanon from August 1999 to July 2000.

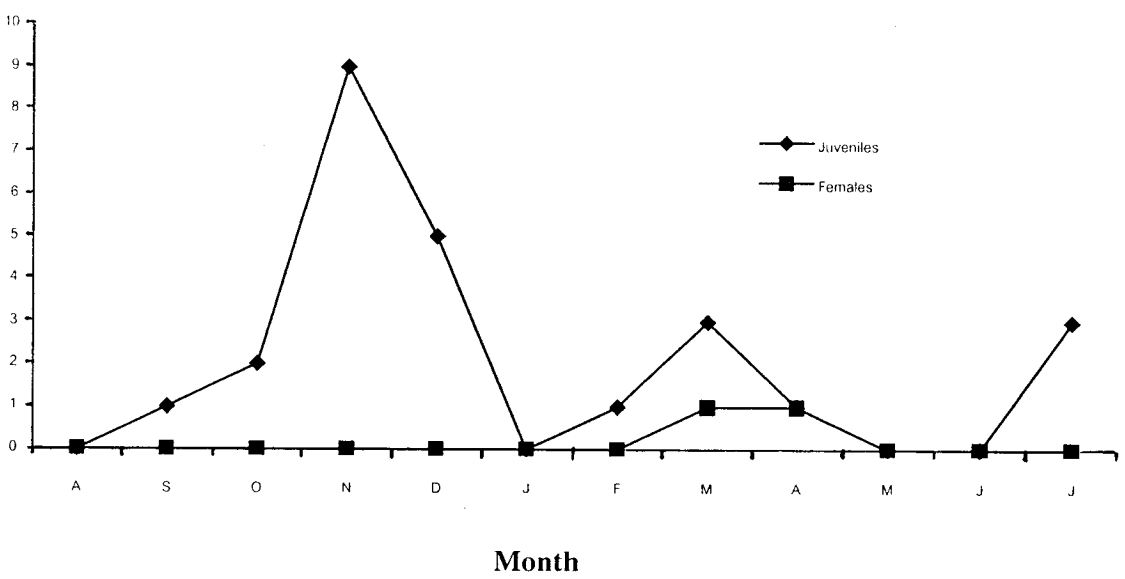


Fig. 24. Phenology of *Utivarachna cf. kinabaluensis* (n = 27 ind) sampled on Doi Inthanon from August 1999 to July 2000.

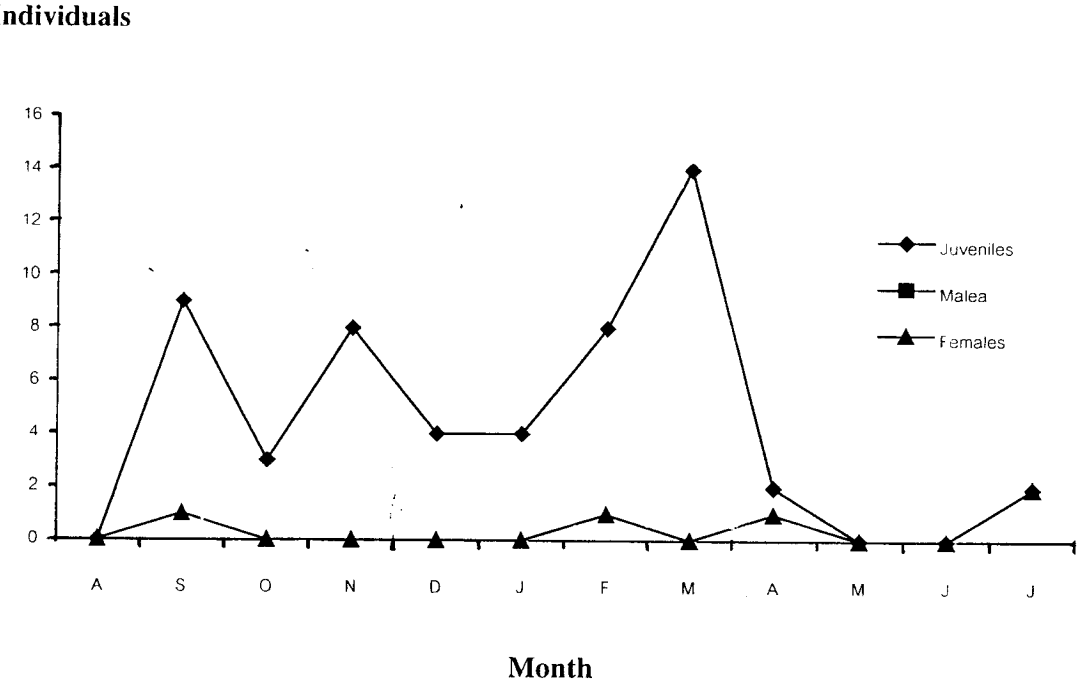


Fig. 25. Phenology of *Pseudopoda cf. parvipunctata* (n = 60 ind) sampled on Doi Inthanon from August 1999 to July 2000.

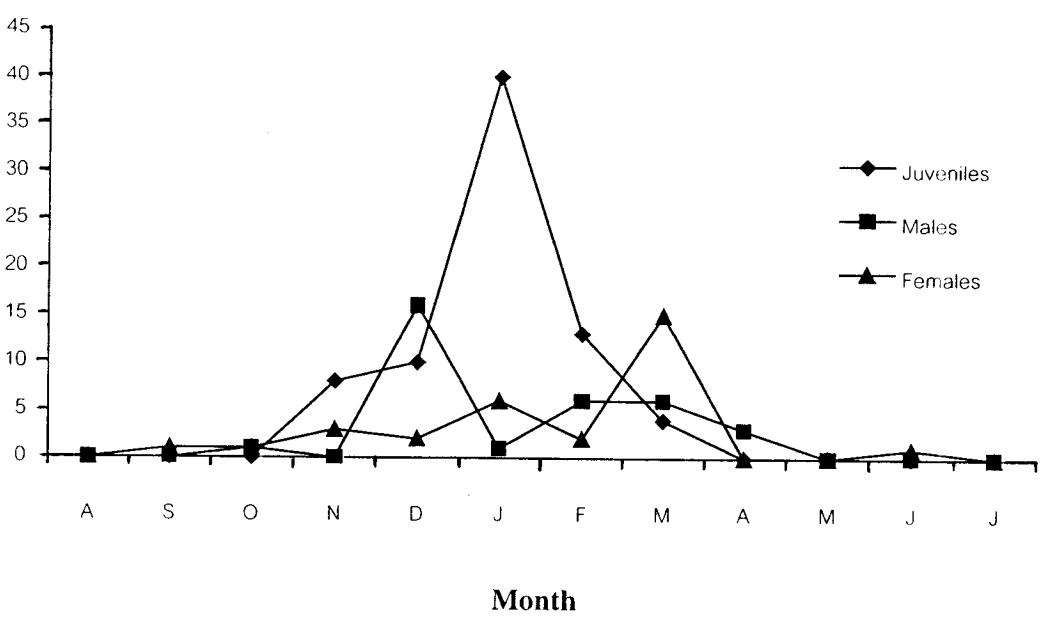


Fig. 26. Phenology of *Oedothorax cf. hulongensis* (n = 144 ind) sampled on Doi Inthanon from August 1999 to July 2000.

DISCUSSION

Spider fauna

Which measures are widely used in determining spider diversity? Generally, species richness (S) is the most widely adopted of the available diversity indices. However, the trend for using measures incorporating species abundances has led to the widespread use of the Shannon index. The work of Taylor and his colleagues (Taylor *et al.*, 1976) has encouraged the usage of log series α and it is now the most popular of the parametric indices (Magurran, 1988). Coddington *et al.* (1996) followed Magurran (1988) in fitting the log normal model to spider data. Spider diversity of the Doi Inthanon National Park is described well by the log series model, indicating that there are a few species which are very common and that there is always one which is exceedingly common and whose numbers predominate.

The average number of spiders per species in the Doi Inthanon National Park is moderately low with 18.8 individuals per species, in comparison with 42.6 in European spider communities and 3.9 in Panama (Nentwig, 1993). A general structure of the spider community with high species numbers and low individual numbers per species is clearly described and is characteristic for tropical communities (Nentwig, 1993). In temperate spider communities, on the other hand, the numbers of individual per species is generally much higher. It is desirable to compare spider communities in the tropical Southeast Asia with those of temperate areas in Asia in the future.

In overall view, wandering, ground-living spiders dominate on the mountain, constituting about half (47%) of the total spider fauna with regards to individuals collected. Three dominant families are Linyphiidae (2.19%), Zodariidae (12.1%) and Sparassidae (11.5%). Members of Linyphiidae are mainly collected from leaf litter samples and pitfall traps (506 individuals out of 803). Amaurobiidae (4.0%) and Ctenidae (3.7%) belong to a less abundant, influent group, together with the Lycosidae which were collected in remarkably low numbers (0.6%). Lycosidae are believed to be less abundant in montane forests. Only 0.4% of the total numbers of spiders collected in South Africa during a yearlong survey were lycosids (Van der Merwe, 1994). Russell-Smith *et al.* (1987) reported even lower lycosid numbers from Kenya. On the other hand, Linyphiidae, a characteristic spider group of cold and temperate climates, is the commonest family in the national park. Zodariidae form an important component of the

ground-dwelling spider assemblage on Doi Inthanon. Most zodariid species occur in arid or semiarid regions, with few genera (e.g. *Asceua* and *Mallinella*) being adapted to life in rainforests (Dippennaar-Schoeman & Jocqué, 1997; Jocqué, 1991). Sparassidae are supposed to be one of the most common soil-dwelling spiders in tropical and subtropical regions.

The most important family of web-building spider on Doi Inthanon is the Linyphiidae (*Oedothorax* sp. and *Linyphia* sp.) with 7.4% of total spiders collected, followed by Tetragnathidae (6.8%), Theridiidae (3.9%) and Araneidae (1.5%).

Salticidae (5.5%) and Thomisidae (3.9%) comprise more than 70% of the ambushing spider.

In terms of species numbers, the ten most common families according to guild are: web builders (66 species of Araneidae, Theridiidae, Tetragnathidae and Linyphiidae) > ambushers (38 species of Salticidae and Thomisidae) > hunters (33 species of Zodariidae, Gnaphosidae, Oonopidae and Oxyopidae).

Probably the single most important factor affecting the richness of web building spiders is the availability of suitable sites for attachment of webs. Riechert (1974) observed a regular spacing of webs in population of spiders in an area of desert in southern USA. Both richness and abundance of Araneidae and Theridiidae in my study peak at two lower collecting sites (500 m and 1000 m). The lower slopes of the Doi Inthanon National Park experience higher temperatures and receive less rainfall than the higher slopes. Tree density is low and canopy cover is sparse. Light intensity at ground level is therefore high and this allows a dense growth of grasses and shrubs. This kind of environment provide plenty of attachment sites for the suspension of the web (Uetz *et al.*, 1978).

A noticeable feature of the distribution of Salticidae was their preference for more open vegetated sites, with only five individuals being recorded from moist hill evergreen forest. Similar trends can be found among Oxyopidae and Thomisidae. Such spiders use the low vegetation in a manner which depends on the density of this vegetation. Salticidae, Thomisidae and Oxyopidae are more abundant in open sites, while web builders are present in more densely vegetated sites. Rising species richness and abundance of Thomisidae in hill evergreen forest at 1500 m is due to the occurrence of *Lysiteles cf. kunmingensis*. Gnaphosidae, a relatively common family in Europe,

shows the same pattern. However, on Doi Inthanon their abundance is suppressed by Zodariidae and ground living Linyphiidae.

It is interesting to note that although several families are represented by low species numbers, their numbers of individuals collected is rather high. These families include Linyphiidae, Ctenidae, Dictynidae, Amaurobiidae and Sparassidae. They are present in several instars at any time, indicating that they live for more than one year. Hence these species are more competitive and better adapted to local conditions than other which occur lower numbers.

Altitudinal gradient

Species richness and abundance of the spider fauna of Doi Inthanon drop markedly in the transition area between lower hill evergreen forests to moist hill evergreen forests located somewhere between 1500 m and 2000 m. A similar decline in invertebrate species richness and abundance at high elevations in the tropics has been documented elsewhere. There is evidence that tropical bird and snake species richness is also significantly lower in cloud forest habitats (Scott, 1976; Terborgh, 1977).

A uniform decline in species diversity with increasing elevation indicates that physical factors which vary continuously with altitude are important determinants of local diversity. In general, tropical mountains experience a lapse rate of mean temperature of 0.5-0.6 °C per 100 m (Grubb & Whitmore, 1966).

Olson (1994) suggested that many invertebrates may be excluded from cloud forests because cooler temperatures, reduced solar radiation and continuously wet substrates from rain and fog drip limit the frequency of conditions adequate for foraging for food and other resources. Temperature decrease (Fig. 1) is responsible for the formation of the daily cloud cover above 2000 m in the national park. Radiation is reduced by these clouds. Relative humidity of the air reaches 100 % and the soil becomes saturated with water. The thickness of the leaf litter layer increase. The consequential availability of nutrients and minerals, and the low soil and litter pH that are often associated with cool, soaked litter may further limit the quality and diversity of resources available for spider populations.

It is long known that the effects of temperature and humidity are interrelated. It is generally difficult to distinguish between the effects of these two variables in the field. Temperature, humidity and their seasonality can directly affect the quality,

quantity, and spatial and temporal distribution of predator and prey (Landres & MacMahon, 1983). Both insects and arachnids have been shown to possess water relations that are associated with the humidity of their environments and with their activity times (Williams, 1962; Warburg & Ben-Horin, 1978). The constant low temperatures at higher altitudes throughout the year and the high humidity may cause problems for spiders to forage by critically shorter foraging time. The increasing humidity of both litter and air might also reduce the capture rate of web-building spiders by attachment of small droplets of mist to their sticky webs. Furthermore, the metabolic processes of eggs and juveniles are interrupted at low temperatures (Schäfer, 1976). All these factors are likely to affect the altitudinal distribution of spiders and are responsible for the limits of spider occurrence in tropical rainforests.

Spiders of Doi Inthanon National Park appear to be most species-rich in dipterocarp with pine forest while species abundances show broad peaks at mid-elevation.

Mid-elevation peaks in species richness have been found in birds (Terborgh, 1977), butterflies (Hawkins & DeVeries, 1996; Holloway et al., 1990) and arthropods, including ants and spiders, of the lower vegetation (Brühl *et al.,* 1998; Janzen, 1973; Janzen *et al.*, 1976). In the leaf litter along a transect in Panama, a mid-elevational peak was also indicated for all arthropod groups with a broad peak of spider species richness between 750 m and 1250 m (Olson, 1994). However, soil and leaf litter samples along altitudinal transects in Costa Rica, Sarawak and Sabah did not reveal any overall trend for mid-elevation maxima of species richness and biomass of forest floor invertebrates (Atkin & Proctor, 1988; Collins, 1980; Leakey & Proctor, 1987). Wolda (1987), who could not locate any richness peak at mid-elevation in his work, suggested a general low sampling effort being responsible for the mid-elevation peaks found in other studies (Atkin & Proctor, 1988, 2.5 m^2; Collins, 1980, 7.85 m^2; Leakey & Proctor, 1987, 2 m^2). In my study, a total of 10 m^2 forest area was sampled at each elevation. Therefore, 120 m^2 of leaf litter samples calculated for the one-year study were obtained and should be "adequate" for a species richness analysis.

If the pattern is not an artifact of sampling communities with different scales of species patchiness, several factors could contribute to the presence of a peak in community richness at mid-elevations. Several authors suggested species assemblages to be most diverse at intermediate elevations because primary production is highest in

mid elevation due to (1) a favorable relation between rates of photosynthesis and respiration (Janzen, 1973); (2) higher numbers of predator and parasitoid species that are supported by an increased abundance of prey or hosts (Janzen *et al.*, 1976; Olson, 1994); and (3) a positive correlation between annual precipitation and plant richness that leads to richness of other taxa, including invertebrates, to follow this trend (Gentry, 1982, 1988).

The ecosystem of Doi Suthep, about 50 km away from Doi Inthanon, was thoroughly described by Elliott *et. al.* (1989) and may explain similar conditions in the Doi Inthanon National Park. Warm air, blowing gently upslope, picks up water vapour and is forced to rise when it reaches the mountains. As the air rises, it cools; and eventually reaches the dew point. So, as hot air eases and cool, water vapour condenses out as rain which falls on the upper slopes of the mountain. Primary productivity is high all year round and organic matter can accumulate in the soil. The soil therefore has a high water holding capacity and can supply the trees with enough water for transpiration through the dry season. Trees do not have to drop their leaves and can remain green all year round. So this habitat has very high conservation value in acting as a refuge for a very large number of wildlife species during the dry season.

Species composition of spider communities of the Doi Inthanon National Park changes rapidly along the altitudinal transect. Turnover is high, as expected for tropical fauna (Janzen, 1967). Spider communities at 500 and 1000 m have more than 50% of in common, and can be separated from communities at other high-altitude zones by sharing low similarity values (0.15-0.41). Low turnover values (0.31-0.38) of samples at 1500 m indicate a small subset of spiders in this zone. High-altitude samples at 2000 and 2500 m share more than 70% of spider species in both communities. Since the composition of the spider communities in the two lowest sites shows a high level of similarity, they could be grouped into one group. A similar grouping can be done with the spider communities in hill evergreen forests at higher elevations.

Faunal similarity values based on Sørensen indices are lowest between the 1000 m and 1500 m sites (0.17). The highest value (0.37) occurs between the sites at 2000 and 2500 m. The low similarity value between adjacent samples at 1000 m and 1500 m, and the high value between 2000 m and 2500 m suggest the presence of a characteristic lowland habitat, a distinct intermediate hill evergreen habitat and a characteristic upper

hill evergreen habitat, corresponding to the three groups distinguished by faunal turnover values.

Seasonal activity

The annual cycle of spider species of the Doi Inthanon National Park indicates of two generations per year (Fig. 17). The two-peak activity pattern may be explained by the following hypothesis. Copulation takes place in the rainy season (indicated by the peak of males in October), whereas egg development is postponed until the beginning of winter, as indicated by the peak of females in November, followed by a peak of immatures few months afterwards (January). Tretzel (1954) suggested that maxima of males indicate the period of copulation. The higher peak of female activity in February-March is connected with prey capture during the period of egg development (Vollrath, 1987). The immatures rapidly increase in number in the subsequent month. Immatures are more abundant during the wet season (September to November) and late of the cold season (January to March), suggesting that the main reproductive period of most of the spiders is in late of the hot season (for the second generation species). Therefore, the first spider generation represented by peaked activity of males and females at the beginning of the cold season, followed by the second-generation spiders occurring during summer, may be comparable to diplochronous life cycles in temperate climates as classified by Schaefer (1987).

Two or more generations of spiders per year can be found in tropical and subtropical climates (Nentwig, 1985). Also in temperate regions some species may have at least two generations per year, e.g., *Bathyphantes gracilis* (Linyphiidae) or *Pardosa pseudoannulata* (Lycosidae) (Schaefer, 1976). Wise (1984) documented that *Neriene radiata* completes a generation within 3 month! A similar trend is observed for high altitude species. Albert (1970) found that at higher altitudes annual species change into biennial ones, e.g. some linyphiids. As the duration of development depends upon environmental conditions, especially upon temperature, life cycles of individual species vary geographically, as many studies have demonstrated (Schäfer, 1987).

Another possible hypothesis to explain the seasonal activity of spiders inhabiting Doi Inthanon National Park is that there is only one year-long adult period. The decline in activity of both adults and immatures in December probably is the result of variation in physical factors, especially temperature. As in most of other organisms, the body

temperature of spiders is largely determined by the temperature of their surroundings. The rates of their physiological processes vary directly with temperature. However, to a limited extent, spiders can adjust their behavior to keep their body temperature at higher or lower levels than those of the environment. To survive such unfavorable conditions as cold, dampness and lack of food in winter, most spiders remain motionless, with their legs drawn close to the body so that the exposed surface is kept at a minimum (Foelix, 1996). However, juveniles of many families may be active during winter in Europe, i.e. Lycosidae, Clubionidae, Thomisidae, Tetragnathidae, Linyphiidae (Schaefer, 1987).

Most of the dominant spider species collected can be classified as eurychronous life cycle. All of them were clearly affected by the declined temperature in December (Figs. 17-18, 21-22). Only a stenochronous (active during winter) species, *Oedothorax cf. hulongensis*, was active during the cold season (Fig. 26). Other stenochronous species had a small peak of activities after December (Fig. 23-24). It is reasonable to assume that if more specimens were sampled a broader peak of adult activity may occur, indicating eurychronous life cycle.

TAXONOMY

"... ... ... Spider systematics has suffered too much from narrow regionalism to encourage strictly faunistic approaches... ... ..." (Platnick, 2002).

The knowledge of Thai spider fauna is still in a neonate stage and many new genera and species await discovery. While this is true, various different taxonomic publications had been used to identify the materials.

The sequence of families used is that of Platnick (2002), otherwise indicated. The generic and specific names are arranged alphabetically. Publications used for identification are included in Literature consulted section under the taxa treated. For each species, collection localities are listed.

LIPHISTIIDAE Thorell, 1869

The spider suborder Mesothelae comprises a single family, the Liphistiidae, with 79 species of 2 genera: *Liphistius* Schiödte 1849, distributed from eastern Burma through the Malay Peninsula to Sumatra, and *Heptathela* Kishida 1923, occurring from Japan to southern China and northern Vietnam. Ono (2000) has recently added three new genera into *Hepthalela.* These are: *Abcathela*, *Songthela* and *Vinathela*, based only on female genitalic characters without cladistic analysis. The generic changes are not accepted by Platnick (2002) because some of these species groupings seem likely to be paraphyletic with respect to others. Therefore, Ono's undocumented change is not followed here.

The revision of the genus *Liphistius* by Platnick & Sedgwick (1984) lists only 14 species. Two species were recorded from Thailand: *L. bristowei* Platnick & Sedgwick and *L. trang* Platnick & Sedgwick. Thereafter, additional taxa were discovered and described by Ono (1988a, b), Ono & Schwendinger (1990), Sedgwick & Schwendinger (1990), and Schwendinger (1990b, 1995, 1996a, 1998). At present, 31 out of a total of 48 described *Liphistius* species are known from Thailand.

Diagnostic characters

Medium to large-sized (10-26 mm) spiders with segmented opisthosoma; spinnerets located in the middle of the venter (mostly 8 spinnerets apart from some *Heptathela* species with only 7 spinnerets); two pairs of book lungs present.

Gen. *Liphistius* Schiödte, 1849

Literature consulted: Haupt (1983); Platnick & Sedgwick (1984) Schwendinger (1990a).

Liphistius yamasakii Ono, 1988

Material examined: 1j, 1510m, 23. X.1999, VS.

Description:

Coloration and pattern: Large spider. Flatten prosoma nearly as long as wide; carapace brownish black in color, without marking, lighter in the center. Eight eyes arranged on slightly raised tubercle; ocular area black; AME smallest. Opisthosoma globular, slightly longer than wide; dorsal sclerites black; ventral sclerites and spinnerets blackish brown; two pairs of book lungs; eight spinnerets situated near the middle of the venter.

Remarks: Although only an immature specimen was obtained, it is assumed to be *L. yamasakii* because the collecting site is the type locality and the spiders have a small distribution range due

to their high transpiration rates that make them liable to rapid desiccation outside their burrows (Schwendinger, 1990; 1993; 1996).

Natural history: The specimen was collected from its borrow along the roadside cut through a hill evergreen forest. The general biology of *L. yamasakii* was described by Schwendinger (1990). The spider constructs a burrow covered by a hinged lid and signal threads are added to the entrance of the burrow. Egg sacs are found in mid-January. The spiderlings hatch by early June. Reproductive females are seen newly molted in mid-July. Males mature in August and search for females at night. At night the trapdoor is slightly lifted, the spider stretches out the tips of its front legs and merely moves until a prey sets up vibrations. A large female *Hemipepsis* sp. (Hymenoptera, Pompiliidae) was caught roaming on the ground close to *L. yamasakii* burrows. Puparia and an imago of *Milichia* sp. (Diptera, Milichiidae) were taken from a spider egg sac (Schwendinger, 1990).

Distribution: Liphistiid spiders have small distributed areas according to their limited powers of dispersal (Schwendinger, 1990). *L. yamasakii* is known only from the type locality, Doi Inthanon National Park, and gives the highest altitudinal record in the suborder Mesothelae. *L. bristowei* is found at about 1100-1650 m in hill evergreen forest of Doi Suthep-Pui and at about 1600-1700 m on Doi Inthanon. Two species, *L. yamasakii* and *L. bristowei*, occur on Doi Inthanon, both separated by altitude.

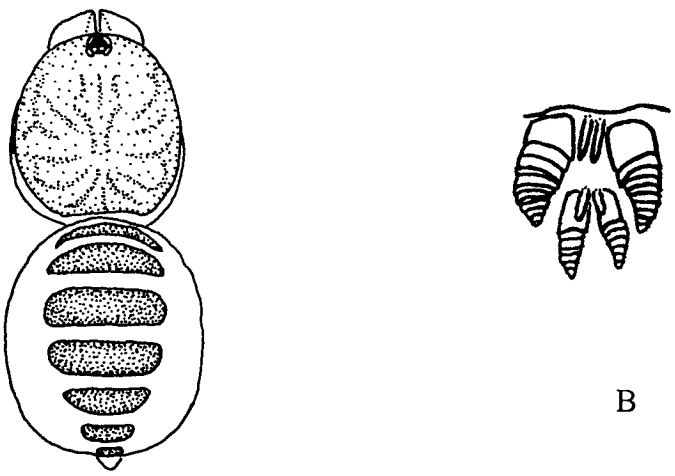


Fig. 27. *Liphistius yamasakii*. A, habitus of juvenile, dorsal view. B, spinnerets, ventral view.

ATYPIDAE Thorell, 1870

Not collected in the course of this study but 2 species, *Atypus suthepicus* Schwendinger and *A. dorsualis* Thorell, were reported from Doi Inthanon National Park; the first from about 1700 m, the second from about 1000 m (Schwendinger, 1989a).

HEXATHELIDAE Simon, 1892

The Hexathelidae was given family status by Raven (1985) in the presence of numerous cuspules on the labium of these spiders. The family is represented by 11 genera and 81 species. Nearly all members of the Hexathelidae are known from Australia and New Zealand. Only a single genus, *Macrothele*, is known from the Oriental and Palearctic Region.

Diagnostic characters

Medium to large-sized (14-28 mm) mygalomorph spiders with three tarsal claws; numerous labial and maxillary cuspules present; PLS long and slender, apical segment digitiform or longer; caput arched.

Gen. *Macrothele* Ausserer, 1871

Literature consulted: Pocock (1900); Raven (1995); Schwendinger (1996b).

***Macrothele* sp.**

Material examined: 1♀, 1000m, 26.II.2000, VS; 1j, 510m, 23.X.1999, SS.

Description:

Female: Prosoma as long as wide; caput arched low. Eight eyes grouped on small tubercle. Fovea pit-like. Chelicerae with teeth on both furrows; rastellum absent; numerous cuspules present on labium and maxillae. Sternum heart-shaped with six sigilla. Four spinnerets; PLS elongate, apical segment digitform.

Genital region: Elevated genital region covered with irregularly arranged hairs.

Remarks: Four spinnerets with long PLS and presence of spines on tarsi IV are the characteristics of this genus. Several species of *Macrothele* have been recorded from Southeast Asia, as well as in Africa and Mediterranean countries. *M. maculata* (Thorell) is distributes from Burma southwards to Indonesia; *M. decemnotata* Simon, *M. maculata, M. annamensis* Shimojana & Haupt and *M. proserpina* Simon occur in Vietnam, and *M. segmentata* Simon is found in Malaysia. Schwendinger (1996) mentioned that there are two distinct species of *Macrothele* in Thailand; probably the undescribed species occurs in the north, and *M. maculata* can be found in almost all parts of the country.

Natural history: A female *Macrothele* was found in a small crevice of pine tree in a dipterocarp with pine forest on Doi Inthanon. The spider constructed a silk-lined tube with dense threads. A large number of termite wings were seen at the entrance.

Distribution: Unknown.

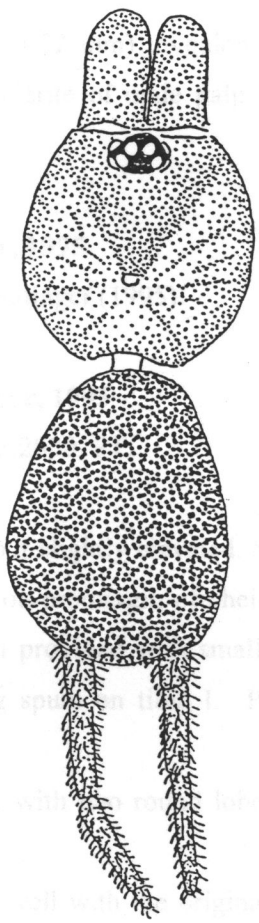


Fig. 28. *Macrothele* sp. Habitus of female, dorsal view.

CYRTAUCHENIIDAE Simon, 1892

The Cyrtaucheniidae was given family status and relimited by Raven (1985) in his publication on higher classification of the spider infraorder Mygalomorphae. The family is worldwide in distribution. The first cyrtauchenid species from Asia was described by Raven & Schwendinger.(1995).

Diagnostic characters

Medium to very large-sized (9-32 mm) mygalomorph spiders, usually with rastellum; anterior tarsi with scopulae; distal sclerite of male palp being a complete cone with a small median haematodocha.

Gen. *Angka* Raven & Schwendinger, 1995

Literature consulted: Raven & Schwendinger (1995).

Angka hexops Raven & Schwendinger, 1995

Material examined: 1♂, 2430m, 29.IV.2000, PT.

Description:

Male: Prosoma moderately wide, caput slightly elevated. Six eyes; PME absent. Fovea slightly procurved. One row of teeth present on promargin of chelicerae; rastellum absent. Cuspules on probasal corner of maxillae. Sternum provided with small sigilla. Legs long and slender, with strong ventral spines. No copulating spurs on tibia I. PMS tiny; PLS long, apical segment digitiform.

Male palp: Palpal cymbium spinose, with two round lobes. Bulb pyriform; embolus long and slender, with corkscrew-shaped tip.

Remarks: My specimen corresponds well with the original description of the species given by Raven & Schwendinger (1995). This new genus was erected for a Thai cyrtaucheniid possessing only six eyes.

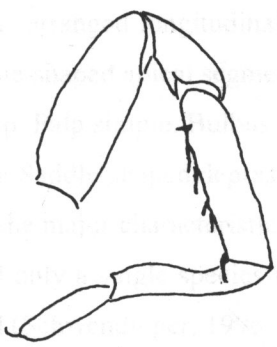
Natural history: *Angka hexops* can be found only in moist hill evergreen forest near the summit of Doi Inthanon. Females and juveniles were collected from under rotten logs on the forest floor; males were trapped only in pitfall traps; the spiders inhabit temporary retreats and forage on the ground (Raven and Schwendinger, 1995). A mature female was collected in October 2000.

Distribution: Known only from type locality, the summit area of Doi Inthanon.

A

B

E



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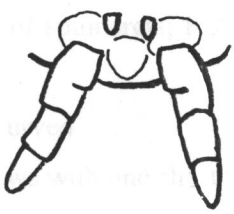


D

Figs. 29. *Angka hexops*, male. A, carapace, lateral view. B, eye group. C, first leg. D, spinnerets. E, male palp, ventral view.

CTENIZIDAE Thorell, 1887

There are 111 species of Ctenizidae placed in 9 genera. Most species inhabit the tropical and subtropical regions. *Cyclocosmia* occurs in the southeastern United States, China and Thailand. Two other genera occur in Thailand as well: *Cyclocosmia*, *Conothele* and *Lactouchia.*

Diagnostic characters

Medium to very large-sized (15-43 mm) mygalomorph spiders with short legs and three tarsal claws; chelicerae with rastellum; fovea strongly procurved.

Gen. *Conothele* Thorell, 1878

Literature consulted: Pocock (1900); Raven (1985); Schwendinger (1996)

***Conothele* sp.**

Material examined: 1♂, 2430m, 29.IV.2000, PT; 1j, 1510m, 25.IX.1999, SS; 1j, 2250m, 15.III.2000, SS.

Description:

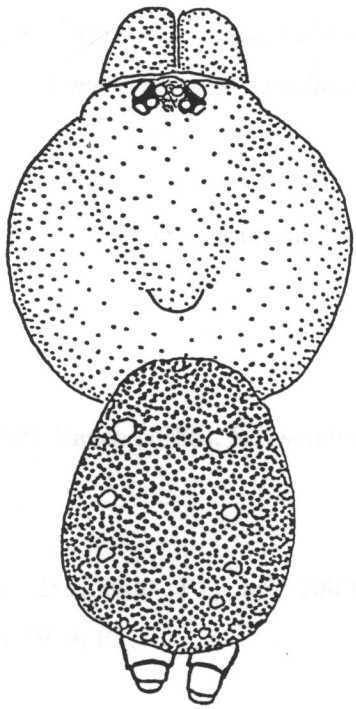
Male: Prosoma rounded, almost as long as wide. Carapace blackish brown, tegument rugose. Eight eyes situated near anterior border of carapace; ME small; ALE largest. Fovea deep, U-shaped. Rastellum distinct on chelicerae. Legs stout and short, with numerous short lateral spines on anterior legs, tibia of leg III saddle-shaped. Opisthosoma covered with short setae; six pairs of pale spots arranged longitudinally on the dorsum. Two pairs of spinnerets; PLS short and stout with dome-shaped apical segment.

Male palp: Palp simple. Bulbus pyriform. Embolus long and curved.

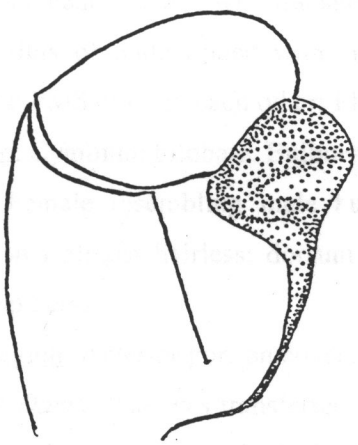
Remarks: Saddle-shaped depression on tarsi III and paired claws with one short tooth on anterior legs are the major characteristics of *Conothele*. There are twelve species distributed in Southeast Asia and only a single species in Australia. Several undescribed species occur in many parts of Thailand (Schwendinger, 1996).

Natural history: *Conothele* construct a silk-lined burrow in the ground and in dead wood, using its rake on the chelicerae for excavating. The entrance is covered with a hinged silk lid, camouflaged outside and held shut by the spider itself. *Conothele* occurs in Southeast Asia and Australia.

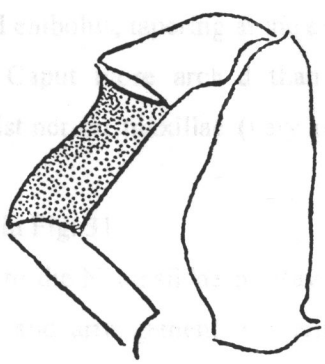
Distribution: Unknown.



A



B



C

Figs. 30. *Conothele* sp. A, habitus of male, dorsal view. B, palp. C, third leg with saddle-shaped depression on tibia.

NEMESIIDAE Simon, 1892

Nemesiidae are distributed worldwide, represented by 327 species in 38 genera. Three genera occur in Thailand; these are *Damarchus, Atmetochilus* and *Sinopesa.*

Diagnostic characters

Medium to large-sized (13-30 mm) mygalomorph spiders; broad paired claw carrying two rows of teeth.

Gen. *Damarchus* Thorell, 1891

Literature consulted: Pocock (1900); Raven (1985); Schwendinger (1996)

***Damarchus* sp.**

Material examined: 1♂, 2090m, 26.II.2000, PT; 1♂, 1000m, 26.II.2000, PT; 1♀, 1000m, 24.VI.2000, PT; 1j, 1000m, 25.IX.1999, PT.

Description:

Male: Prosoma longer than wide. Carapace lined with setae on marginal areas; caput with three rows of median hairs. Fovea U-shaped. Opisthosoma oval, clothed with fine setae; dorsum dark purple, ornamented above with transverse rows of pale spots. Copulating spur present on tibia I. Anterior tibia of male tipped with single short spur armed with a long curved spine. Four spinnerets; PMS close to each other; PLS apical segment digitiform.

Male palp: Cymbium bilobate. Bulbus pyriform with curved embolus, tapering at the end.

Female: Female resembling male but lighter in color. Caput more arched than in male. Opisthosoma almost hairless; dorsum purple. Cuspules distinct on maxillae (very obvious in juvenile spiders).

Genital region: Anterior portion covered with erect hairs as in Fig. 31.

Remarks: *Damarchus* was transferred from the Ctenizidae to the Nemesiidae by Raven (1985). *Damarchus* is close to *Atmetochilus* but differs in shape and arrangement of sternal sigilla. *Damarchus* spp. are distributed from India to Burma and southwards to Singapore and Indonesia. Several undescribed *Damarchus* species occur in many parts of Thailand (Schwendinger, 1996). The nearest species occurring in Burma, *D. oatesi* Thorell, is possibly present in northern Thailand as well.

Natural history: All specimens were collected by pitfall trapping in hill evergreen forest of 1000 m to 2090 m.

Distribution: Unknown.

Gen. *Sinopesa* Raven & Schwendinger, 1995

Literature consulted: Raven & Schwendinger (1995), Schwendinger (1996).

***Sinopesa maculata* Raven & Schwendinger, 1995**

Material examined: 1♂, 2090m, 23.X.1999, PT; 1♂, 2430m, 29.VII.2000, PT; 1j, 2090m, 25.III.2000, SS; 1j, 2430m, 23.X.1999, SS; 1j, 2430m, 25.IX.1999, SS; 1j, 2250m, 15.IV.2000, SS; 1j, 2090m, 25.IX.1999, SS; 1j, 2430m, 27.XI.1999, SS; 2j, 2090m, 24.VI.2000, SS; 2j, 2090m, 29.I.2000, SS; 1j, 2090m, 27.V.2000, SS.

Description:

Male: Prosoma elongate oval. Carapace smooth with marginal setae; caput slightly arched. Eight eyes situated on small mound. Fovea deep, transverse. Cuspules present on maxillae. Legs long and armed with spines. Copulating spur present on tibiae I. Opisthosoma hairy, with purple pattern. Only one pair of spinnerets; PMS absent; PLS relatively long, apical segment digitform.

Male palp: Spines present on palpal tarsi and tibiae. Cymbium bilobed, armed with strong spines. Bulbus pyriform with long, corkscrew-shaped embolus (Fig. 32).

Remarks: The palps of the males examined correspond with the description and illustrations of *Sinopesa maculata* provided by Raven & Schwendinger (1995). The genus is close to *Entypesa* but differs in lacking posterior median spinnerets and a serrula. Another species of *Sinopesa*, *S. guangxi* Raven & Schwendinger, was reported from southern China.

Natural history: Ground spider found on the forest floor. No web or burrow construction was observed (Raven & Schwendinger, 1995). The spiders were found near the summit of Doi Inthanon (site V, 2430 m), extending the known distribution of this species to higher elevations than previously recorded.

Distribution: Known only from the type locality.

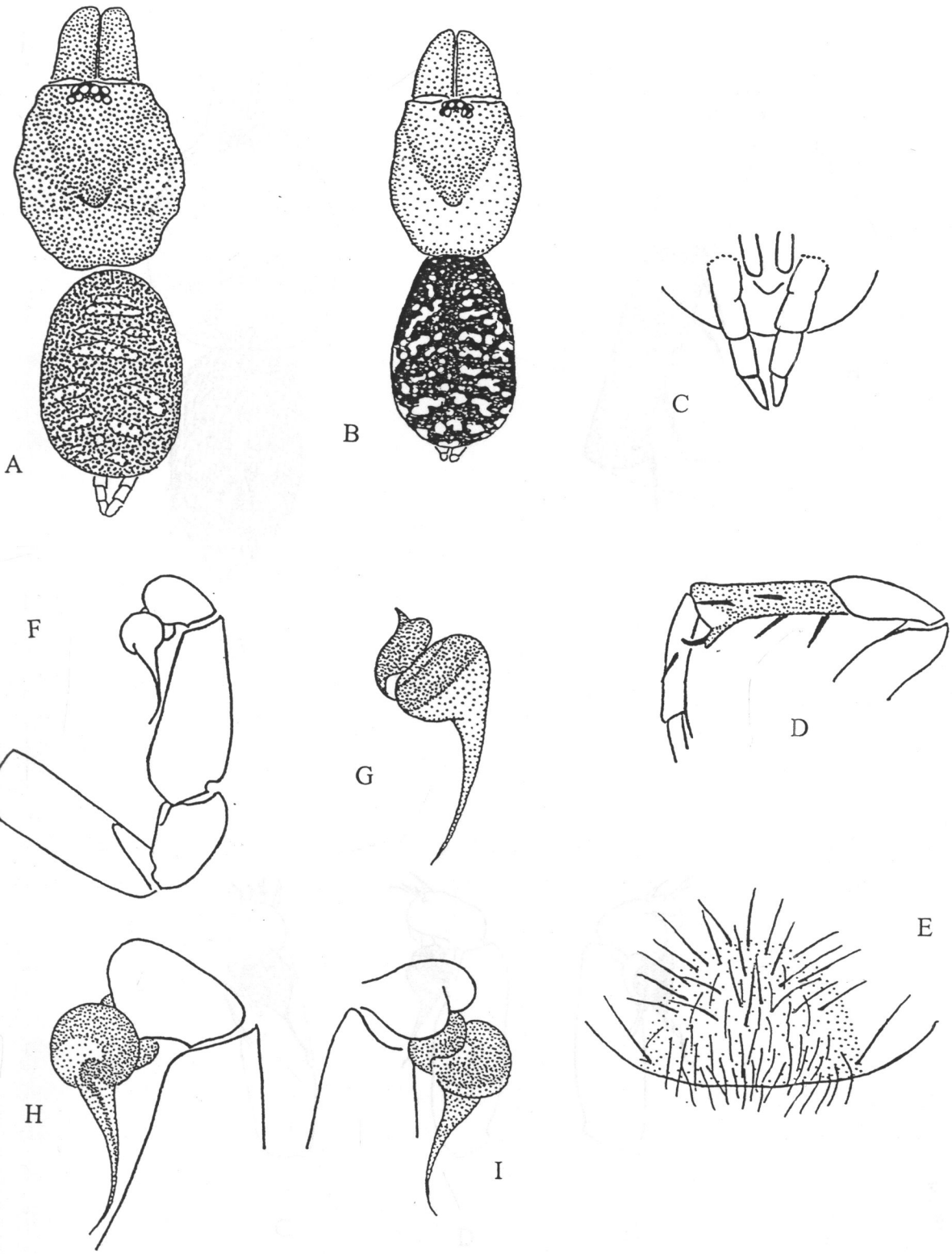


Fig. 31. *Damarchus* sp. A, habitus of male. B, habitus of female, dorsal view. C, spinnerets, ventral view. D, leg I of male showing copulatory spur, lateral view. E, female genital region with irregular hairs. F, male palp. G-I, bulb of male palp, different views.

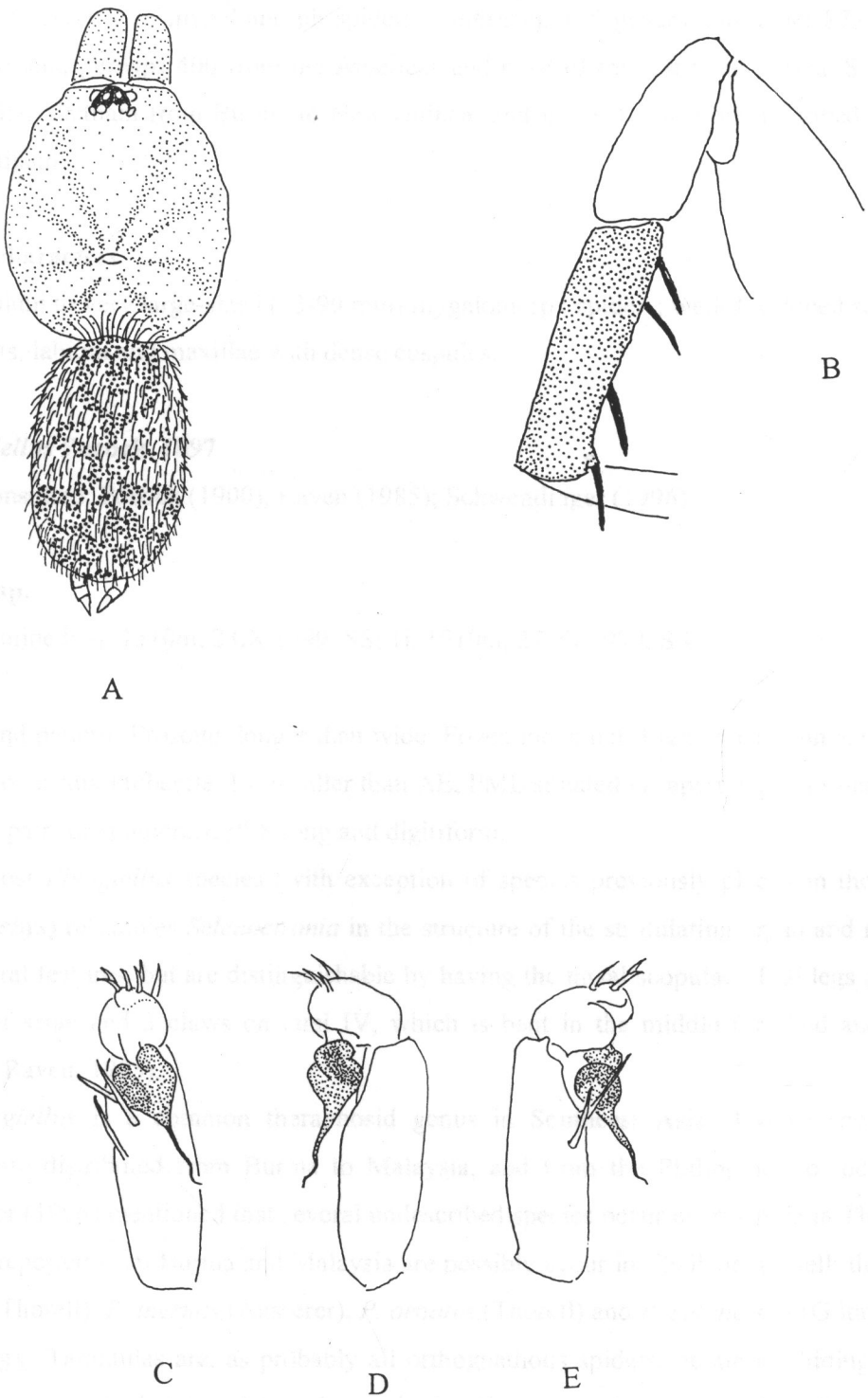


Fig. 32. *Sinopesa maculata*, male. A, habitus. B, leg I. C-E, palp, different views.

THERAPHOSIDAE Thorell, 1870

A large family of mygalomorph spiders comprising 105 genera and about 873 known species at present, perhaps 400 from the Americas and most of the rest from Africa. Some are found in India, Vietnam from Burma to New Guinea, and in Australia. Five described species occur in Thailand.

Diagnostic characters

Medium to very large-sized (13-90 mm) mygalomorph spiders; well-developed scopulae and claw tufts; labium and maxillae with dense cuspules.

Gen. *Phlogiellus* Pocock, 1897

Literature consulted: Pocock (1900); Raven (1985); Schwendinger (1996)

***Phlogiellus* sp.**

Material examined: 1j, 1510m, 23.X.1999, SS; 1j, 1510m, 27.XI.1999, SS.

Description:

Coloration and pattern: Prosoma longer than wide. Fovea indistinct. Eight eyes arranged in two rows, raised on a small tubercle; LE smaller than AE; PME situated far apart. Opisthosoma oval, hirsute. Two pairs of spinnerets; PLS long and digitiform.

Remarks: Most *Phlogiellus* species (with exception of species previously placed in the genus *Neochilobrachys*) resembles *Selenocosmia* in the structure of the stridulating organ and in most other structural features, but are distinguishable by having the tarsal scopulae of all legs divided by a band of setae and 3 claws on tarsi IV, which is bent in the middle (cracked and bent, according to Raven, 1985).

Phlogiellus is a common theraphosid genus in Southeast Asia. Twelve species of *Phlogiellus* are distributed from Burma to Malaysia, and from the Philippines to Indonesia. Schwendinger (1996) mentioned that several undescribed species occur everywhere in Thailand. The species reported from Burma and Malaysia are possibly occur in Thailand as well; these are *P. brevipes* (Thorell), *P. inermis* (Ausserer), *P. ornatus* (Thorell) and *P. subinermis* (Giltay).

Natural history: Tarantulas are, as probably all orthognathous spiders, nocturnal, hiding inside burrows in the ground, abandoned tunnels, or similar places, which they densely line with silk.

Distribution: Unknown.

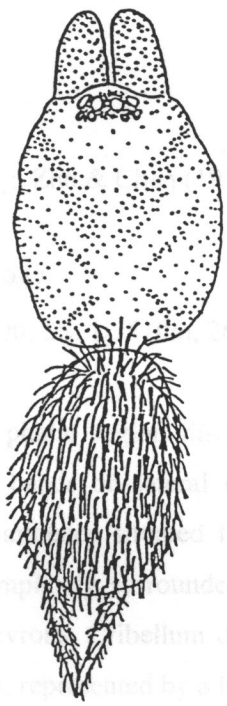


Fig. 33. *Phlogiellus* sp. Habitus of juvenile, dorsal view.

FILISTATIDAE Ausserer, 1867

Filistatidae are cribellate haplogyne spiders possessing an intriguing mixture of primitive and specialised characters. The family comprises a relatively small group of 16 genera and 107 species distributed worldwide in the tropics and subtropics, most species belong to the genus *Filistata*.

Diagnostic characters

Small to medium-sized (3-15 mm), three clawed, cribellate, haplogyne, eight-eyed spiders; carapace somewhat pentagonal in shape; labium fused to sternum; base of chelicerae fused; cribellum divided.

Gen. *Tricalamus* Wang, 1987

Literature consulted: Gray (1995); Song, Zhu & Chen (1999)

Tricalamus cf. papilionaceus Wang 1987

Material examined: 1♂, 510m, 29.I.2000, SS; 1j, 510m, 26.II.2000, PT.

Description:

Male: Prosoma flat and elongate, cephalic region distinctly narrower than thoracic region. Carapace pale yellow with irregular bands on lateral margins. Fovea absent. Eight closely grouped eyes arranged on raised prominence situated far from anterior margin of carapace. Labium fused with oval sternum, completely surrounded by maxillae. Opisthosoma elongate oval; dorsum with oblique purple chevrons. Cribellum divided. Legs very long; covered with fine white hairs; calamistrum indistinct, represented by a few setae.

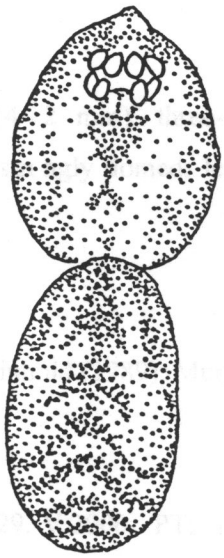
Male palp: Cymbium short, horseshoe-shaped, covered with long hairs. Simple bulb with pointed tip, directed downwards. Orange-brown sperm duct clearly visible.

Remarks: The male genitalia of my specimen correspond well with *T. papilionaceus* from China. *Tricalamus* from Southern China, as described by Wang (1987), is identical to *Pritha* species described from the same region, except for its supposedly unique possession of a triseriate calamistrum. However, the possession of a triseriate calamistrum is characteristic of many species within both *Pritha* and other filistatid genera and cannot be used as a primary definer of generic status (Gray, 1995). In his publication about relationships within filistatid spiders, Gray (1995) excluded the *Tricalamus* species because of their uncertain taxonomic status. Therefore, I placed this filistatid spider under *Pritha* (Prithinae) due to the absence of a fovea, legs with few spines, short palpal cymbium and replacement of calamistrum by setae (see Gray, 1995).

Pritha is a predominantly Oriental genus with a wide distribution. Several species occur in our region.

Natural history: Two specimens were obtained from mixed deciduous forest.

Distribution: Previously recorded from southern China, this is the first record from Thailand.



A

B

C

Figs. 34. *Pritha cf. papilionaceus*. A, habitus of male. B-C, male palp, different views.

SCYTODIDAE Blackwall, 1864

Scytodidae is a small family represented by 5 genera that include 146 species. Only one species was reported from Thailand. *Scytodes* is found under rocks in warm places and in corners and cracks. After lightly touching the prey with the long first legs, they spurt glue from the chelicerae over the prey to fasten it down. The prey is then bitten, tied down with loose threads, and sucked out.

Diagnostic characters

Small to medium-sized (4-12 mm), three-clawed, ecribellate, haplogyne, six-eyed spiders; thoracic part of carapace strongly domed; legs long and slender; body decorated with symmetrical dark pattern.

Gen. *Scytodes* Latreille, 1804

Literature consulted: Deeleman-Reinhold (1989); Murphy & Murphy (2000)

***Scytodes* sp.**

Material examined: 1♀, 510m, 29.IV.2000, PT; 1♀, 510m, 29.VII.2000, SW; 1j, 510m, 26.II.2000, PT; 2j, 510m, 23.X.1999, SW; 5j, 510m, 24.VI.2000, SS; 1j, 510m, 27.V.2000, SS; 1j, 510m, 26.II.2000, PT; 2j, 510m, 29.VII.2000, SS; 1j, 750m, 15.II.2000, SS; 1j, 510m, 29.VII.2000, PT; 1j, 510m, 27.V.2000, PT;

Female: Prosoma high and domed in thoracic region, sloping downwards to cephalic region. Carapace with dark brown pattern, middle portion lined with numerous erect setae. Six small eyes arranged in three groups of well-separated dyads, each pair contiguous; AME situated anterior to the others. Chelicerae small. Sternum oval, fused with labium. Legs very long and slender, ventrally with two dark band; patella brown; dorsal side of tibia and metatarsi dark. Opisthosoma globular, dorsum decorated with black oblique and a series of transverse bands.

Genital region and vulva: Genital region represent by a pair of crescent sclerotized openings posterior to epigastric furrow. Vulva with one pair of finger-like spermathecae.

Remarks: Several *Scytodes* species have been described from tropical Asia. However, female genitalia of most of them have not been studied (Deeleman-Reinhold, 1989). My specimen differs greatly from the widespread *S. thoracica* (Latreille) and *S. fusca* Walckenaer by its larger size, different color pattern and genital structures. The spermathecae are comparable to *S. pallida* Doleschall which has been recorded from India, Yunnan, the Philippines and New Guinea (Platnick, 2002). However, illustration and picture of *S. pallida* given by Murphy & Murphy (2000) do not correspond with my specimens. The color pattern of carapace and

opisthosoma seems to fit well with the pantropical *Scytodes lugubris* (Thorell). The scytodids examined probably belongs to a yet undescribed species.

Natural history: The spiders are abundant in mixed deciduous forest of low altitude up to 750 m.

Distribution: Uncertain.

Gen. *Stedocys* Ono, 1995

Literature consulted: Ono (1995a)

***Stedocys* sp.**

Material examined: 1♀, 1510m, 23.XI.1998, VS; leg. P. J. Schwendinger.

Description:

Female: Prosoma longer than wide, highest at the middle. Carapace yellowish brown with purple pattern. Six eyes arranged into three groups. Opisthosoma elongate oval; dorsum mottled with purple pigments. Legs very long and thin, spines indistinct.

Genital region and vulva: Genital area represent by slightly elevated mound. Paired vulva provided with four spermathecae and scattered glands, no bursa copulatrix.

Remarks: Ono (1995a) erected the genus *Stedocys* for two long-legged scytodid from Thailand and Malaysia. *Stedocys* is distinguished from other genera by male palpal structures. The female genitalia, described for the first time here, resemble those of Filistatidae rather than Scytodidae in having multiple spermathecae and scattered glands. *Stedocys* collected from northern Thailand will be described as *Stedocys schwendingeri* (Lehtinen, pers. comm.).

Natural history: Ono (1995a) collected specimens of *S. uonae* Ono under stones near the entrance of a cave in Tung Salang Luang National Park and claimed that *Stedocys* is a scotophilous rather than subterranean species due to coloration and other morphological characters. A specimen from Doi Inthanon and seven more individuals from Doi Suthep collected by Dr Schwendinger and myself build a silken retreats connected to loose sheet web along the roadside of hill evergreen forest. The spiders hang upside down in their web.

Distribution: The spiders were found in hill evergreen forest (1500-1700 m) of Doi Inthanon and Doi Suthep National Park.

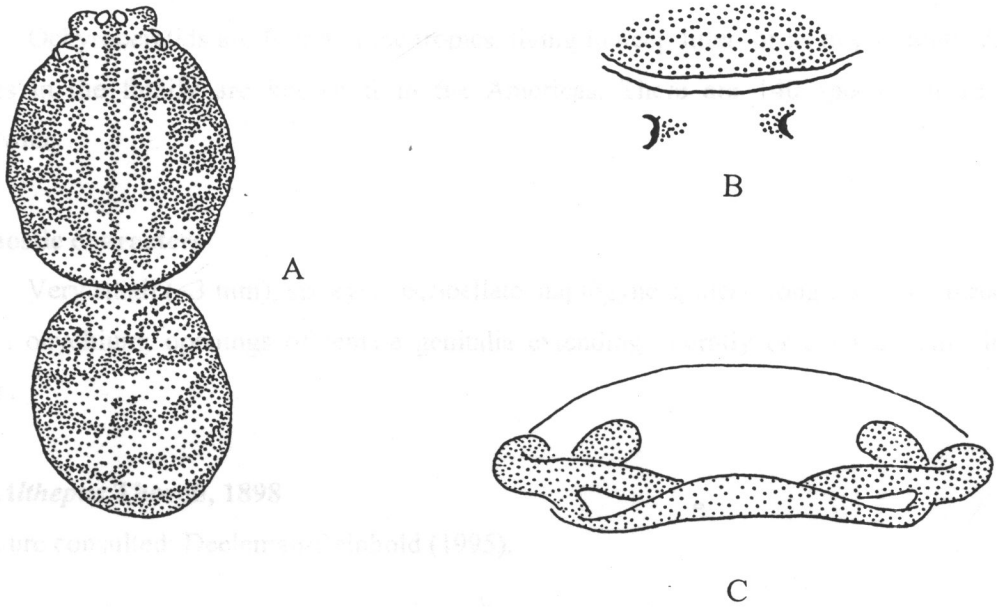


Fig. 35. *Scytodes* sp. A, habitus of female. B, genital region. C, vulva.

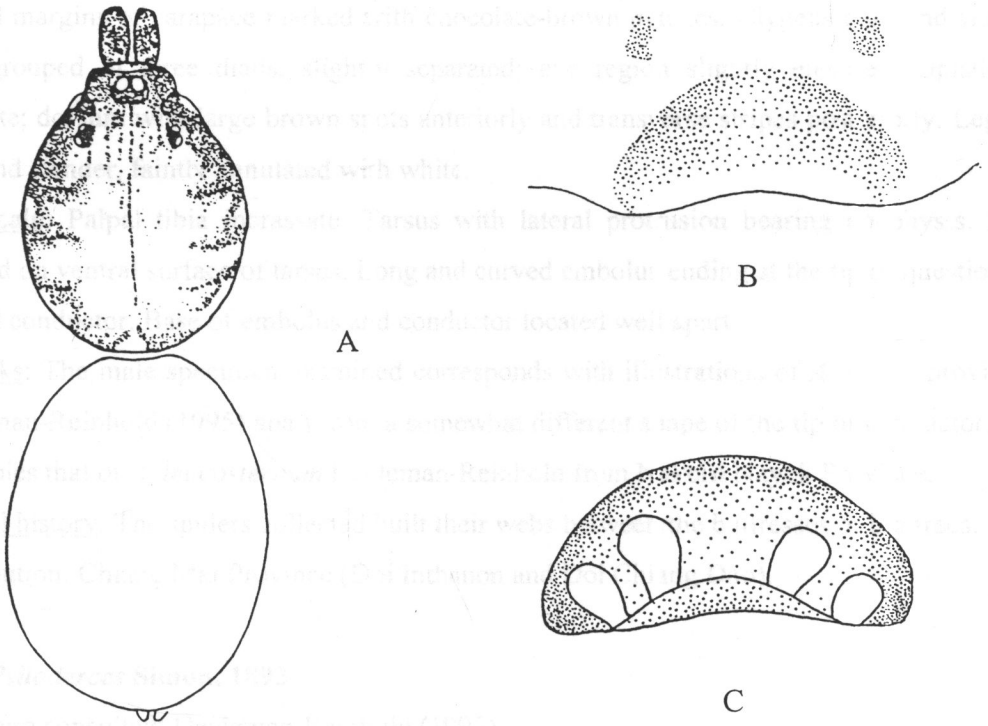


Fig. 36. *Stedocys* sp. A, habitus of female. B, genital region. C, vulva.

OCHYROCERATIDAE Fage, 1912

Ochyroceratids are found in the tropics, living in deep litter, or as troglobionts. A dozen species in the family are known from the Americas. There are 140 species in 13 genera worldwide.

Diagnostic characters

Very small (<3 mm), six-eyed, ecribellate, haplogyne spiders; long legs with three claws and an onychium; openings of female genitalia extending laterally or even dorsally in some genera.

Gen. *Althepus* Thorell, 1898

Literature consulted: Deeleman-Reinhold (1995).

Althepus stonei Deeleman-Reinhold, 1995

Material examined: 1♂, 1510m, 28.VIII.1999, VS; 2j, 1510m, 28.VIII.1999, VS.

Description:

Male: Prosoma posteriorly truncated, thoracic region divided by a deep longitudinal furrow. Lateral margins of carapace marked with chocolate-brown patches. Clypeus dark and slant. Six eyes grouped in three diads, slightly separated; eye region slightly elevated. Opisthosoma elongate; dorsum with large brown spots anteriorly and transverse stripes posteriorly. Legs very long and slender, faintly annulated with white.

Male palp: Palpal tibia incrassate. Tarsus with lateral protrusion bearing apophysis. Bulbus situated on ventral surface of tarsus. Long and curved embolus ending at the tip of question mark shaped conductor. Base of embolus and conductor located well apart.

Remarks: The male specimen examined corresponds with illustrations of *A. stonei* provided by Deeleman-Reinhold (1995) apart from a somewhat different shape of the tip of conductor, which resembles that of *A. leucosternum* Deeleman-Reinhold from Nakorn Nayok Province.

Natural history: The spiders collected built their webs between the buttresses of big trees.

Distribution: Chiang Mai Province (Doi Inthanon and Doi Chiang Dao).

Gen. *Psiloderces* Simon, 1892

Literature consulted: Deeleman-Reinhold (1995)

Psiloderces septentrionalis Deeleman-Reinhold, 1995

Material examined: 1♂, 1510m, 25.XII.1999, PT; 1, 1510m, 27.XI.1999, PT.

Description:

Male: Carapace round with protruding clypeus; lateral margins provided with purple pattern. Six round eyes arranged in a slightly recurved row; eyes white, surrounded by black rings. Opisthosoma longer than wide; hairless; dorsum with a series of lighter transverse bars posteriorly situated on purple background. Legs brown, long and slender.

Male palp: Tibia as thick as bulbus. Embolus elongate, flexed at base and bent upwards. Distal part of the bulbus drawn out.

Remarks: The shape of the embolic tip distinguishes *P. septentrionalis* from other members of the genus. Deeleman-Reinhold (1995) noted that a specimen from Doi Inthanon differed from the male holotype (from Chiang Rai Province) in possessing an incrassate palpal tibia that is narrower than the bulbus. My specimen is provided with a narrower tibia, which is within the variation of this species.

Natural history: The spiders were found in damp and humid place of hill evergreen forest.

Distribution: Thailand (Chiang Rai and Chiang Mai Provinces).

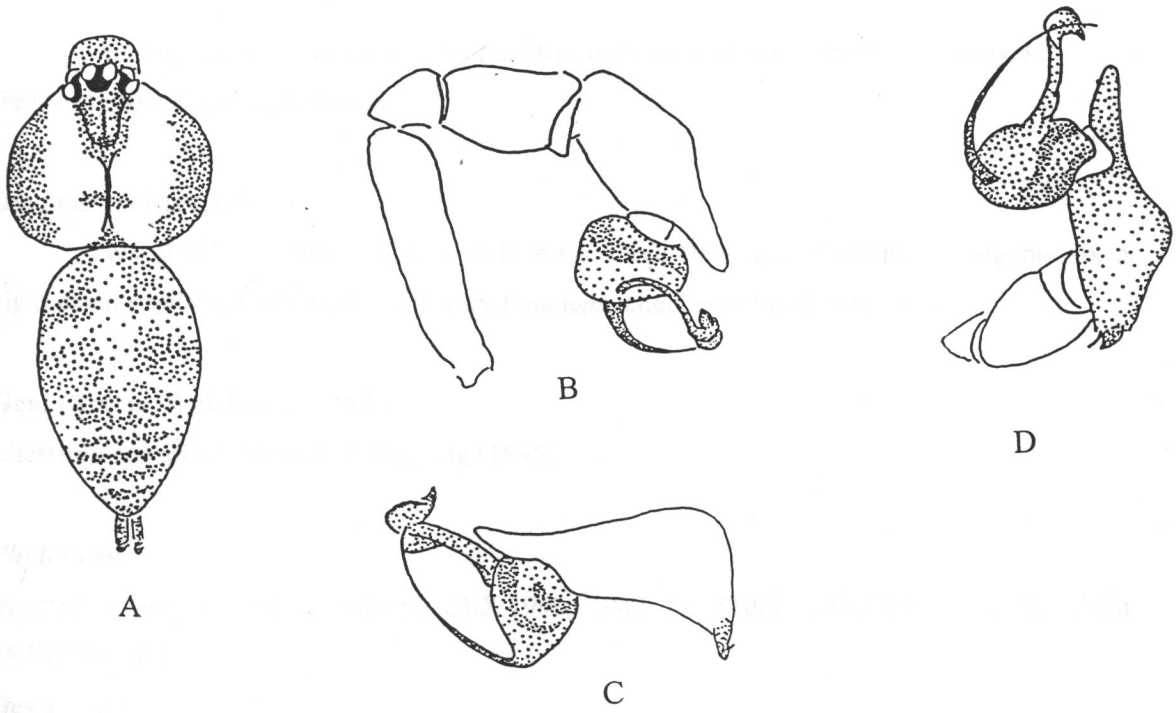


Fig. 37. *Althepus stonei.* A, habitus of male. B, male palp. C, D, male bulb, different views.

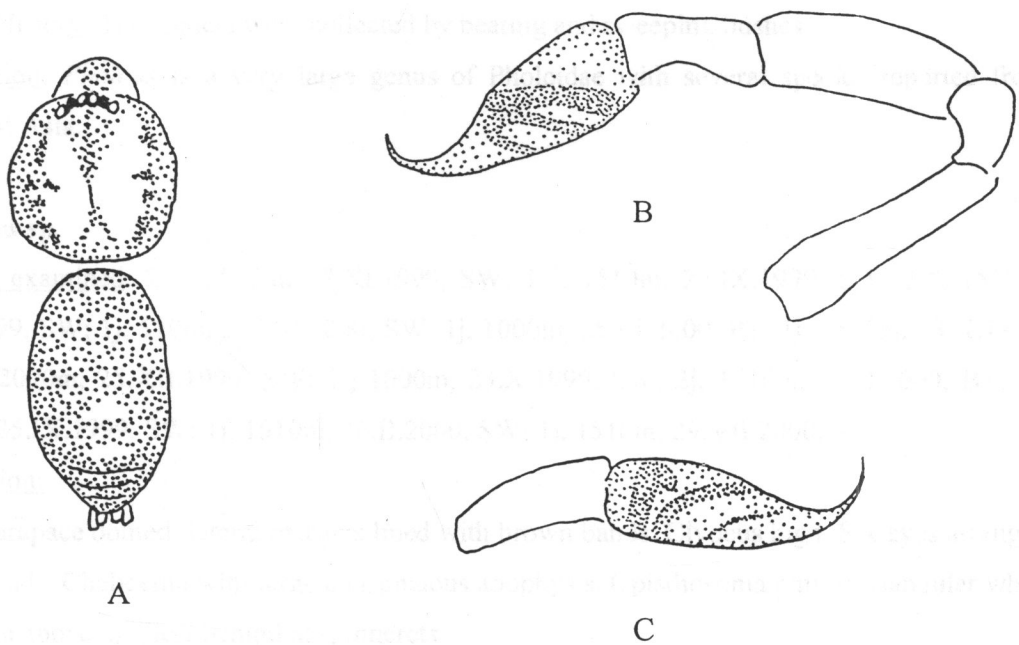


Fig. 38. *Psiloderces septentrionalis.* A, habitus of male. B, male palp. C, male bulb, contralateral view.

PHOLCIDAE C. L. Koch, 1851

The Pholcidae is a large family of spiders with a worldwide distribution. They are frequently found in dark habitats.

Diagnostic characters

Very small to medium-sized (<2-15 mm), three-clawed, ecribellate, entelegyne, six or eight-eyed, small-bodied spiders with very long legs; chelicerae fused, with lamina.

Gen. *Pholcus* Walckenaer, 1805

Literature consulted: Heimer & Nentwig (1995).

Pholcus sp.

Material examined: 1PM, 1000m, 23.X.1999, SW; 1j, 510m, 29.I.2000, BT; 1j, 510m, 25.III.2000, BT.

Description:

Coloration and pattern: Carapace round and domed; pale purple; cervical groove absent. Clypeus high. Eight eyes; AME small, close together; ALE and PE forming two triads. Opisthosoma very long; dorsum pale, without pattern. Legs very long and slender; tarsi pseudosegmented.

Remarks: Eye arrangement and very long opisthosoma confirm generic placement.

Natural History: The spiders were collected by beating and sweeping bushes.

Distribution: *Pholcus* is a very large genus of Pholcidae with several species reported from Southeast Asia.

? *Pholcus* sp.

Material examined: 2♂, 1510m, 27.XI.1999, SW; 1♂, 1510m, 25.IX.1999, SW; 3♂, 1510m, 23.X.1999, SW; 1j, 510m, 29.VII.2000, SW; 1j, 1000m, 25.III.2000, PT; 1j, 1510m, 23.X.1999, BT; 1j, 2090m, 25.XII.1999, SW; 1j, 1000m, 23.X.1999, SW; 2j, 1510m, 26.II.2000, BT; 2j, 1510m, 25.IX.1999, SW; 1j, 1510m, 26.II.2000, SW; 1j, 1510m, 29.VII.2000, SW.

Description:

Male: Carapace domed, lateral margins lined with brown bands. Clypeus high. Six eyes arranged in two triads. Chelicerae with large conspicuous apophysis. Opisthosoma almost triangular when seen from above, highest behind at spinnerets.

Male Palp: Paracymbium (procursus) simple, swollen at base, bearing 4 setae.

Remarks: The male palpal organ resembles that of *Pholcus* species i.e. *P. phalangiodes* (Fuesslin) and *P. qinghaiensis* Song & Zhu but differs in possessing only six eyes and a high opisthosoma. The shape of opisthosoma is similar to that of *Physocyclus* spp.

Natural history: The spiders were collected by sweeping and beating bushes.

Distribution: Uncertain.

Gen. *Psilochorus* Simon, 1893

Literature consulted: Heimer & Nentwig (1995)

? *Psilochorus* sp.

Material examined: 1♂, 1510m, 27.XI.1999, BT; 1♂, 1000m, 25.IX.1999, SW.

Description:

Male: Carapace domed. Six eyes arranged into two triads. Opisthosoma globular with dark pattern.

Male palp: Procursus simple, straight, apically provided with long sclerotized spine. Embolus and conductor lightly sclerotized, indistinguishable from surrounding background.

Remarks: The male palpal organ resembles that of *Psilochorus* illustrated by Heimer & Nentwig (1995). The majority of *Psilochorus* species were described from the New World and only few from Europe and Australia. Due to insufficient knowledge of Southeast Asian Pholcidae, a correct placement is very difficult.

Natural history: Two males were collected by beating and sweeping bushes.

Distribution: Unknown.

Gen. *Spermophora* Hentz, 1841

Literature consulted: Heimer & Nentwig (1995).

***Spermophora* sp.**

Material examined: 1j, 2250m, 15.II.2000, SS; 1j, 1510m, 28.VIII.1999, VS; 1j, 1510m, 27.XI.1999, BT; 1j, 1510m, 29.VII.2000, PT; 1j, 1510m, 29.I.2000, PT; 1j, 2090m, 26.II.2000, SS; 1j, 1510m, 25.IX.1999, PT; 2j, 2430m, 25.III.2000, BT; 1j, 2090m, 24.VI.2000, PT; 1j, 2430m, 29.I.2000, SS; 1j, 1510m, 27.V.2000, PT.

Description:

Coloration and pattern: Carapace almost round, both lateral margins with brown pattern. Six eyes arranged in two triads, not situated on tubercle. Opisthosoma globular when seen from above. Legs not as long as in other species.

Remarks: The spiders are placed under *Spermophora* due to the presence of six eyes and due to their opisthosoma shape.

Natural history: Most specimens were obtained by litter samples and pitfall trapping. This is probably a ground dwelling pholcid.

Distribution: *Spermophora* is mainly reported from the New World, with several species occurring in tropical and subtropical regions of the Old World.

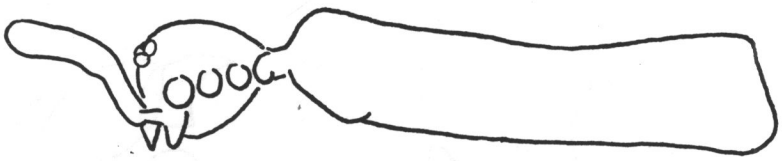


Fig. 39. *Pholcus* sp. Habitus of juvenile, lateral view.

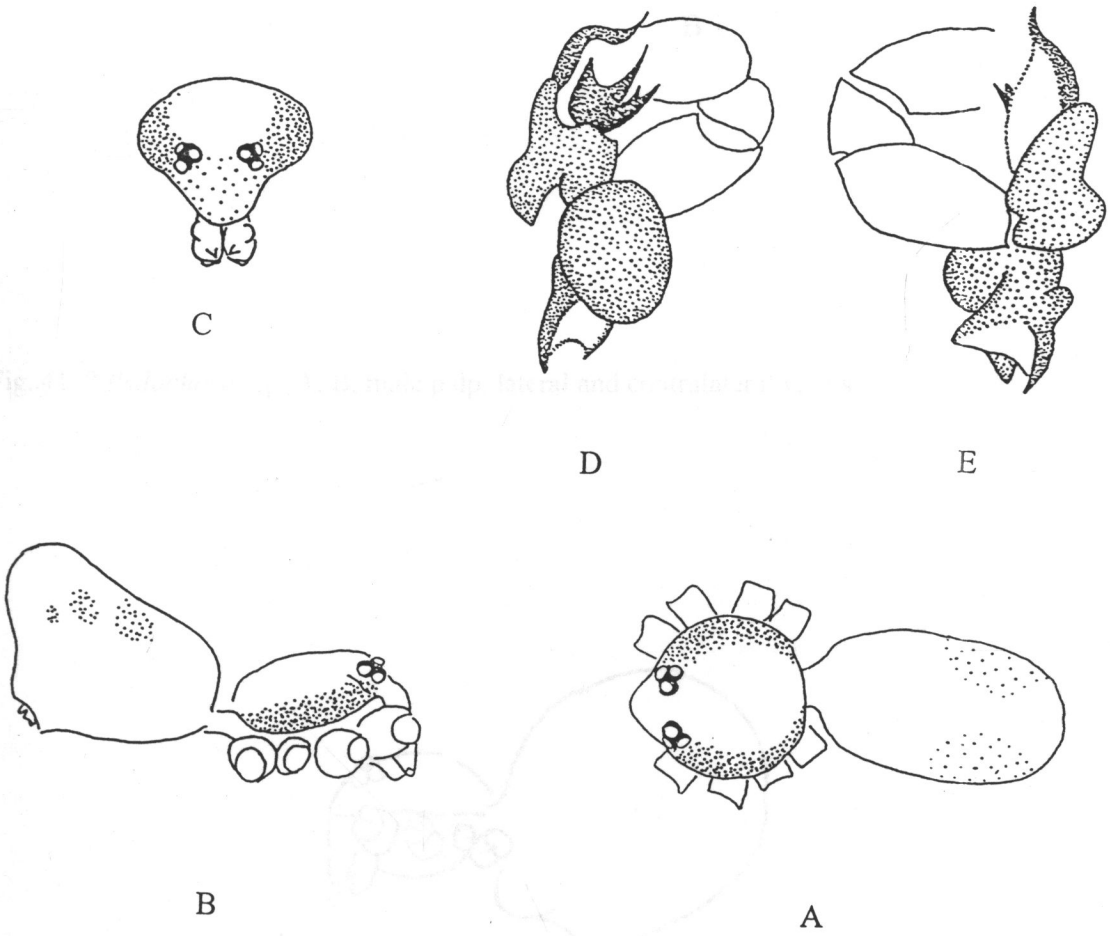
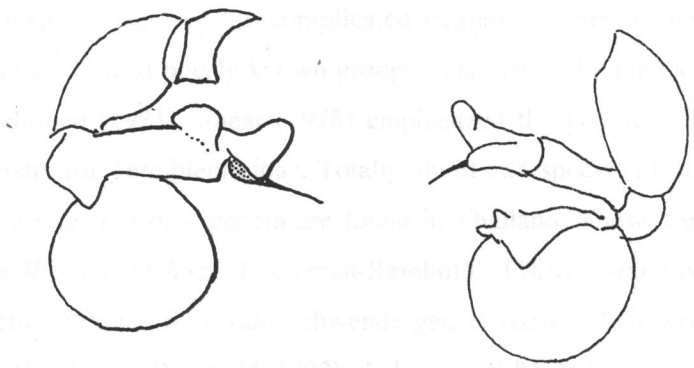


Fig 40. ? *Pholcus* sp., male. A, habitus, dorsal view. B, lateral view. C, male carapace, frontal view showing chelicerae. D, E, palp, different views.



A B

Fig. 41. ? *Psilochorus* sp. A, B, male palp, lateral and contralateral views.

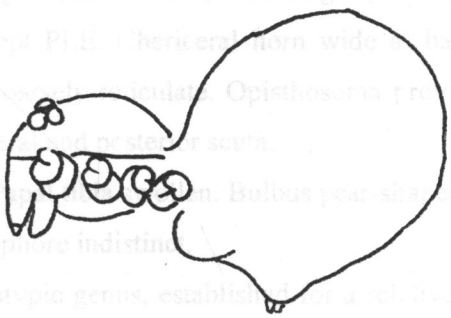


Fig. 42. *Spermophora* sp. Female, lateral view.

TETRABLEMMIDAE O. Pickard-Cambridge, 1873

Tetrablemmidae, in which the former Pacullidae were placed as a subfamily, are known as armored spiders because of the complicated patterns of their abdominal scuta. They have long been among the most poorly known groups of spiders. The family was reviewed by Shear (1978) and Lehtinen (1981). Shear (1978) emphasized the position of Southeast Asia as the center of diversity for Tetrablemmidae. Totally about 124 species of 30 genera were described so far. Seven species out of 4 genera are found in Thailand. These are *Ablemma ruohomaekii* Lehtinen, *Bacillemma leclerci* Deeleman-Reinhold, *Chavia monticola* Lehtinen, *Perania narsicornis* Schwendinger, *P. nasuta* Schwendinger, *P. robusta* Schwendinger and *P. siamensis* Schwendinger (Deeleman-Reinhold, 1993b; Lehtinen, 1981; Schwendinger 1989b, 1994).

Diagnostic characters

Very small to medium-sized (2-18 mm), ecribellate, haplogyne spiders with 0 to 6 eyes and three claws with onychium; chelicerae with lamina; opisthosoma provided with dorsal and ventral scuta separated by several sclerotized plates.

Gen. *Chavia* Lehtinen, 1981

Literature consulted: Lehtinen (1981)

***Chavia monticola* Lehtinen, 1981**

Material examined: 1♂, 2090m, 26.II.2000, SS; 1j, 1510m, 28.VIII.1999, SS.

Description:

Male: Very small spider. Profile of carapace rounded, margin of cephalic area lined with hairs. Six eyes arranged into a single recurved row; ALE largest, others subequal in size; surrounded by black pigmentation except PLE. Chericeral horn wide at base, the tip pointing upwards. Sternum strongly convex, coarsely reticulate. Opisthosoma provided with dorsal scutum, four ventral and three narrow lateral and posterior scuta.

Male palp: Femur slender. Papal tibia swollen. Bulbus pear-shaped; embolus terminally located, projecting forwards. spermophore indistinct.

Remarks: *Chavia* is a monotypic genus, established for a relatively large tetrablemmine spider from northern Thailand (Lehtinen, 1981). The genus differs from all other tetrablemmids by a strongly convex sternum, closely spaced eyes and round profile of carapace. The male palp of this species, described here for the first time, is distinguished from that of *Afroblemma* in its swollen tibia; from that of *Albemma* in its slender bulbus tip and from that of *Tetrablemma* in its pyriform bulbus.

Natural history: Ground-dwelling spider, collected from leaf litter samples.

Distribution: Found only in northern Thailand (Chiang Mai and Lampang Provinces). The female holotype was described from Doi Inthanon National Park.

Gen. *Perania* Thorell, 1890

Literature consulted: Lehtinen (1981), Schwendinger (1989, 1994)

***Perania nasuta* Schwendinger, 1989**

Material examined: 1♂, 1510m, 23.X.1999, VS; 1♂, 1510m, 24.VI.2000, PT; 1♂, 1510m, 27.XI.1999, PT.

Description:

Male: Large tetrablemmid spider. Prosoma relatively long, cephalic area raised, clypeus with long projection. Carapace blackish brown, covered with small tubercles bearing setae. Six eyes arranged in two rows, situated far from the front margin of the carapace; AME oval; PLE and AME almost touching; PME absent. Legs long and slender; metatarsi I proventrally armed with a row of strong setae; paired tarsal claws pectinate, unpaired claw with one tooth. Opisthosoma with subquadrangular dorsal scutum.

Male palp: Palpal tarsus pointed. Basal of bulbus small and globular; embolus long and bent, distally laminar.

Remarks: The male genitalia of the specimens examined fit very well with the original description and illustrations of *P. nasuta* provided by Schwendinger (1989).

Natural history: The spiders were collected by searching on the forest floor. When the spider was caught by hand, it pretended to be dead for a while and then ran away quickly.

Distribution: Limited distribution, *P. nasuta* is known only from type locality. However, 1 juvenile was collected from Doi Suthep.

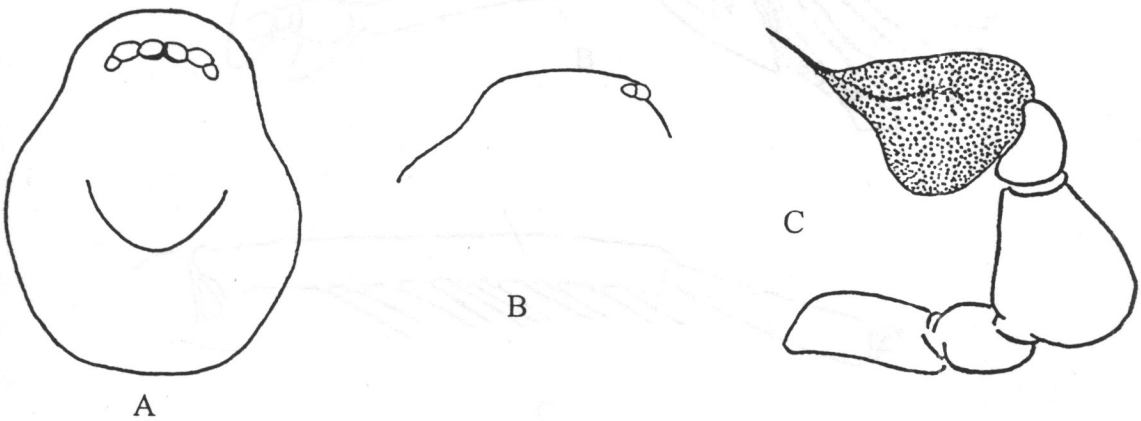


Fig. 43. ***Chavia monticola.*** A, carapace of male, dorsal view showing six eyes arranged in a single row. B, male carapace, lateral view. C, male palp.

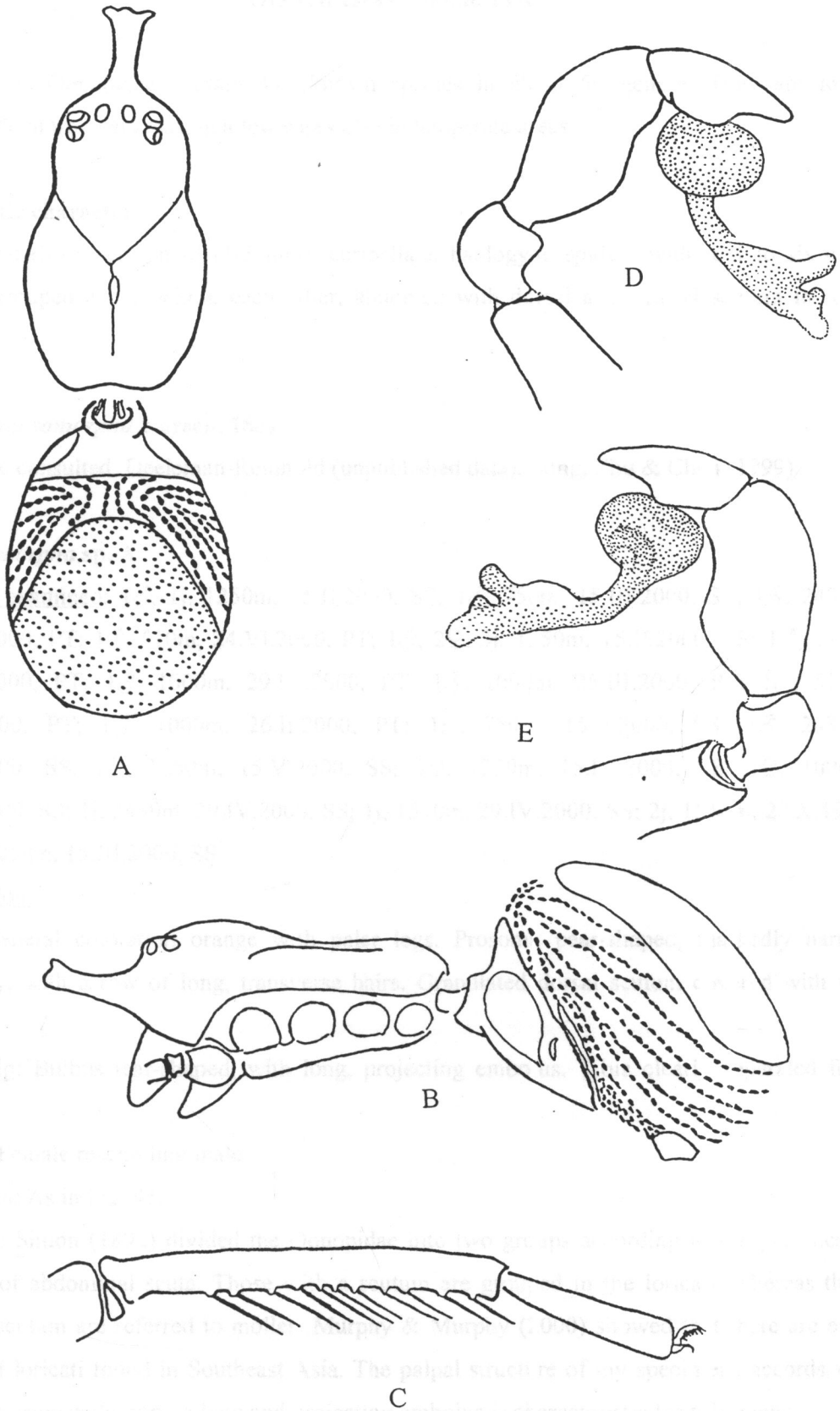


Fig. 44. *Penaria nasuta*. A, habitus of male, dorsal view. B, the same, lateral view. C, leg I showing a row of strong setae on metatarsi. D, E, male palp, different views.

OONOPIDAE Simon, 1890

The Oonopidae contain 441 known species in about 56 genera. They are found worldwide in tropical areas, in a few cases also in temperate areas.

Diagnostic characters

Small or very small (1-3 mm), ecribellate, haplogyne spiders with four to six eyes, closely grouped and touching each other; abdomen with dorsal and ventral scutum in some genera.

Gen. *Gamasomorpha* Karsch, 1881

Literature consulted: Deeleman-Reinhold (unpublished data); Song, Zhu & Chen (1999)

***Gamasomorpha* sp. A**

Material examined: 1♂, 1j, 1250m, 15.II.2000, SS; 1♂, 750m, 15.III.2000, SS; 1♂, 2430m, 29.VII.2000, PT; 1♂, 510m, 24.VI.2000, PT; 1♂, 2♀, 3j, 1250m, 15.II.2000, SS; 1♂, 510m, 29.VII.2000, PT; 1♂, 1000m, 29.IV.2000, PT; 1♂, 1000m, 25.III.2000, PT; 1♂, 510m, 25.III.2000, PT; 1♂, 1000m, 26.II.2000, PT; 1♂, 750m, 15.II.2000, SS; 1♂, 2430m, 25.III.2000, SS; 1♀, 1250m, 15.V.2000, SS; 1♀, 1250m, 15.IV.2000, SS; 1♀, 1000m, 29.IV.2000, SS; 1j, 2430m, 29.IV.2000, SS; 1j, 1510m, 29.IV.2000, SS; 2j, 1510m, 23.X.1999, SS; 2j, 1250m, 15.III.2000, SS.

Description:

Male: General coloration orange with paler legs. Prosoma pear-shaped, markedly narrow anteriorly, with a row of long, transverse hairs. Granulated dorsal scutum covered with fine hairs.

Male palp: Bulbus tear-shaped, with long, projecting embolus. Tibia clearly separated from bulbus.

Female: Female resembling male.

Epigynum: As in Fig. 45.

Remarks: Simon (1892) divided the Oonopidae into two groups according to the presence or absence of abdominal scuta. Those with a scutum are grouped in the loricati, whereas those without scutum are referred to molles. Murphy & Murphy (2000) showed that there are eight genera of loricati found in Southeast Asia. The palpal structure of my specimens accords well with *Gamasomorpha* spp.; a long and projecting embolus is characteristic for this genus.

Natural history: Members of Oonopidae are considered to live in the leaf litter. They are nocturnal, ground-dwelling hunters and occur in a variety of habitats.

Distribution: Unknown.

***Gamasomorpha* sp. B**

Material examined: 1♂, 1j, 1250m, 15.II.2000, SS; 1♂, 2250m, 15.III.2000, SS; 1j, 510m, 26.II.2000, PT; 2j, 2090m, 25.III.2000, SS; 1j, 2090m, 26.II.2000, PT; 1j, 2090m, 23.X.1999, SS; 1j, 510m, 27.XI.1999, PT; 1j, 510m, 27.XI.1999, SS.

Description:

Male: General coloration orange-brown, with very long legs. Leg femora strongly elongated. Prosoma highest at the center, with small tubercles near posterior end. Sternum strongly granulated. Granulated dorsal scutum covered with fine hairs.

Male palp: Bulbus pear-shaped with extending structures. Tarsus clearly separated from bulbus.

Remarks: The specimens have very long legs which is unusual for the Oonopidae. The shape of the bulbus and the strange embolus seem to correspond with *Epectris* spp as well.

Gen. *Ischnothyreus* Simon, 1892

Literature consulted: Deeleman-Reinhold (unpublished data).

***Ischnothyreus* sp.**

Material examined: 3♂, 1510m, 27.V.2000, PT; 1♀, 750m, 15.I.2000, SS; 1♀, 4; 1j, 25.III.2000, 1000m, SS; 1♀, 750m, 15.V.2000, SS; 1♀, 1510m, 29.I.2000, PT; 1♀, 1000m, 24.VI.2000, SS; 1♀, 1510m, 29.IV.2000, PT; 1♀, 510m, 25.III.2000, PT; 2♀, 1510m, 29.VII.2000, PT.

Description:

Male: Prosoma pear-shaped, narrow in front. Carapace gray. Six eyes in two rows, AME absent. Opisthosoma pale, soft and hairy, with small yellowish dorsal scutum on anterior portion. Yellow legs with two pairs of long femoral spines and four shorter pairs on tibia.

Male palp: Male palpus black with red bulbus. All palpal segments clearly separated from each others.

Female: Prosoma yellow, opisthosoma pale, covered by a small, yellowish dorsal scutum. Legs yellow, long spines present on femur and tibia.

Epigynum: Sclerotized epigastric area with coiled duct visible underneath.

Remarks: Small dorsal scutum on anterior portion of the opisthosoma, legs with a series of long spines and black male palp are the characters of *Ischnothyreus*.

Natural history: *Ischnothyreus* sp. is also a ground-dwelling oonopid.

Distribution: Twenty species of *Ischnothyreus* are distributed throughout the tropics and subtropics.

Gen. *Opopaea* Simon, 1891

Literature consulted: Song, Zhu & Chen (1999).

***Opopaea* sp. A**

Material examined: 1♂, 2j, 1000m, 23.X.1999, SS; 1♂, 1510m, 23.X.1999, SS; 3♂, 1000m, 29.I.2000, SS.

Description:

Male: General coloration brownish yellow. Prosoma pear-shaped, with six eyes arranged in two rows. Eye formula 2-4; ALE largest. Opisthosoma elongate oval, covered with smooth sclerotized plates both dorsally and ventrally. Legs pale yellow. Spinnerets projecting beyond the opisthosoma.

Male palp: Palp swollen. Pear-shaped femur connected to elongate oval patella. Tibia small; tarsus elongate and fused to bulbus.

Remarks: Swollen patella and fused tarsus with bulbus are characteristics of *Opopaea*. *Opopaea* is distinguished from it's closest relative, *Gamasomorpha*, by the fused tarsus and bulbus. Thirty-five species of *Opopaea* occur worldwide.

Natural history: Ground-dwelling spider found in higher altitudes (from 1000m up to 1500m) of Doi Inthanon.

Distribution: Unknown.

***Opopaea* sp. B**

Material examined: 3♂, 5j, 1000m, 23.X.1999, SS; 1j, 1000m, 29.VII.2000, SS; 1j, 2430m, 25.III.2000, SS; 1j, 1000m, 29.IV.2000, PT; 3j, 1000m, 29.I.2000, SS; 2j, 2430m, 26.II.2000, SS; 1j, 1000m, 23.X.1999, SS; 1j, 510m, 29.I.2000, SS; 1j, 510m, 27.V.2000, SS.

Description:

Male: General coloration brown. Rectangular prosoma with two projecting horns in thoracic area, lateral sides provided with transverse folds. Six eyes in two rows; eye margins black. Opisthosoma with granulated dorsal and ventral shields that covered with fine hairs. Orange brown legs paler than body.

Male palp: Femur attached to thick and stout patella; tarsus swollen, fused with small, flat bulbus.

Remarks: Swollen patella and fused tarsus with bulbus confirm generic placement. The male palp looks similar to that of *O. cornuta* from Yunnan and Hunan described by Yin and Wang (1984). However, the steep thoracic part of the carapace with two pointing horns is also found in members of genus *Xyphinnus*.

Natural history: Mostly found in higher altitudes of the national park, although two specimens came from deciduous forest at lower elevations.

Gen. *Orchestina* Simon, 1882

Literature consulted: Song, Zhu & Chen (1999)

***Orchestina* sp.**

Material Examined: 1♂, 1510m, 27.XI.1999, BT.

Description:

Male: Very small spider. Prosoma arched. Carapace round, smooth. Fovea absent. Six eyes in two rows; LE touching; eye margins red. Opisthosoma round, with pale grayish blue pattern.

Male palp: Tibia enlarged. Tarsi dark with long hairs. Bulbus pear-shaped; spermophore coiled, clearly visible; embolus curved, spine-like.

Remarks: Several *Orchestina* species occur in Vietnam, China, Sri Lanka and the Philippines. My specimen differs from *O. sinensis* Xu and *O. thoracica* Xu in possessing a longer embolus and a smaller number of loops of the spermophore.

Natural history: Only a single specimen was obtained by beating the vegetation in hill evergreen forest.

Distribution: Known only from 1510m altitude in the Doi Inthanon National Park.

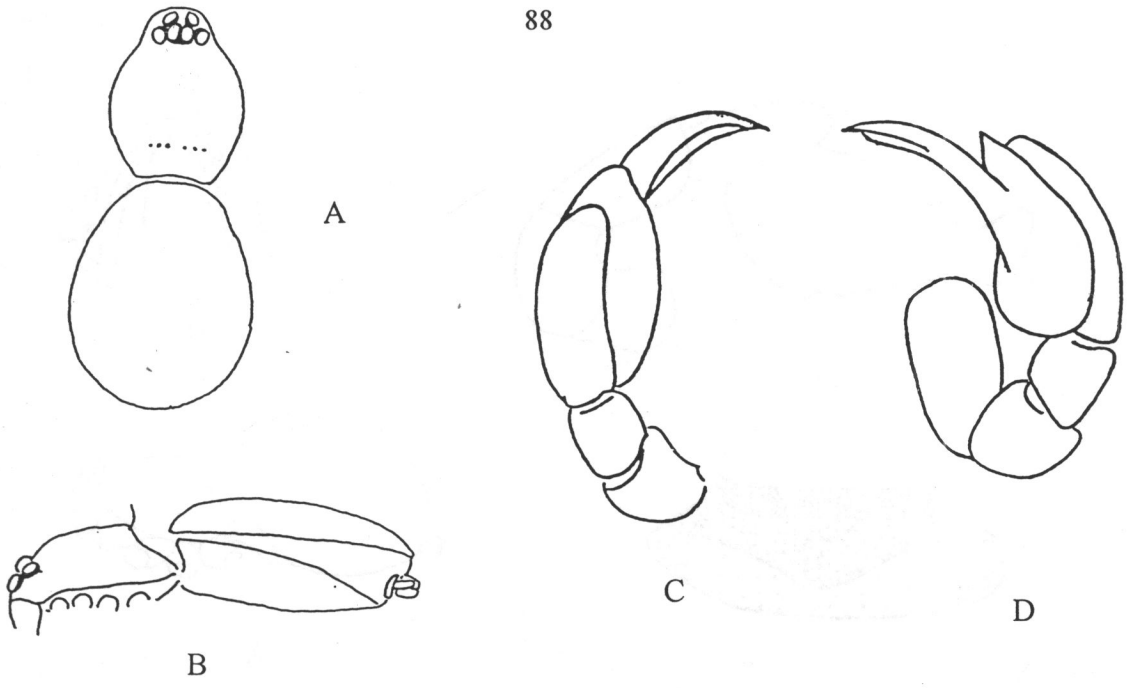


Fig. 45. *Gamasomorpha* sp. A. A, habitus of male, dorsal view. B, the same, lateral view. C, D, male palp, different views.

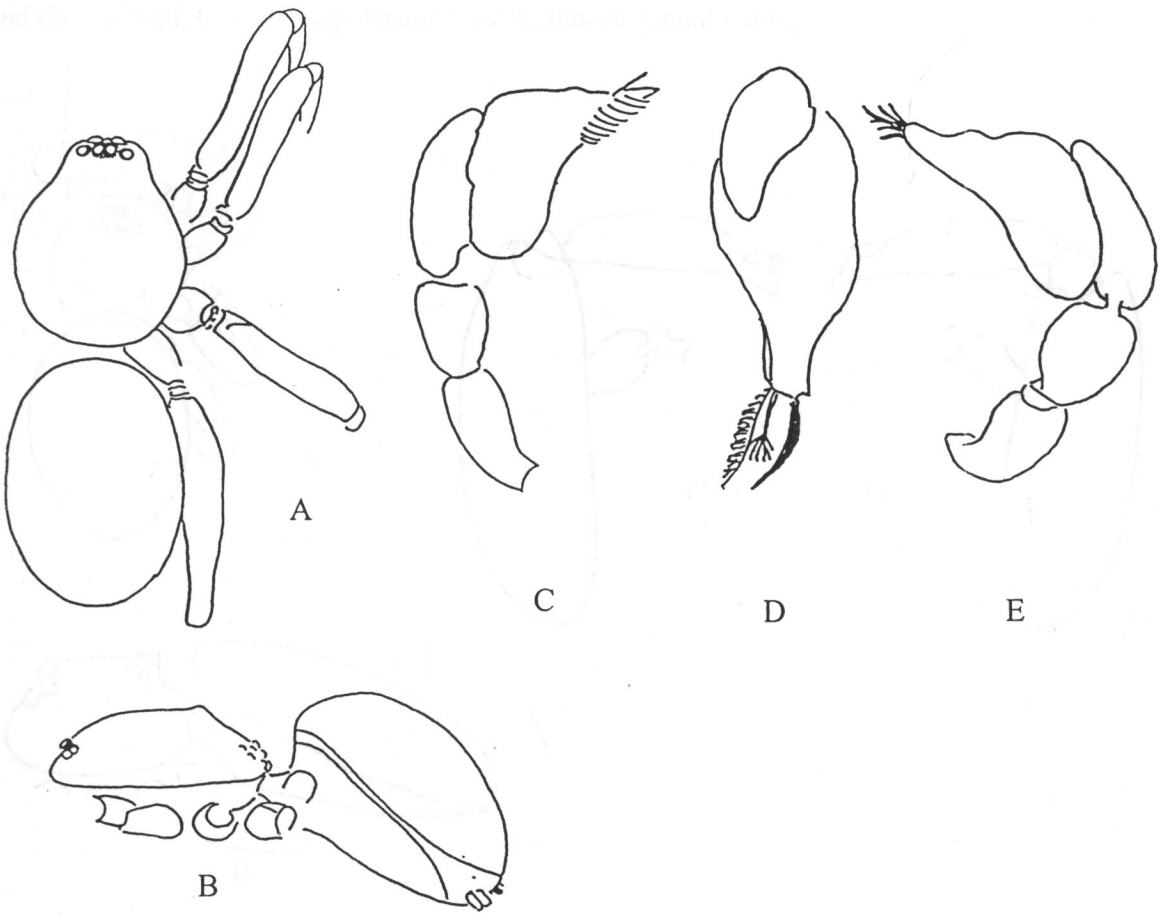


Fig. 46. *Gamasomorpha* sp. B. A, habitus of male, dorsal view. B, the same, lateral view. C-E, male palp, different views.

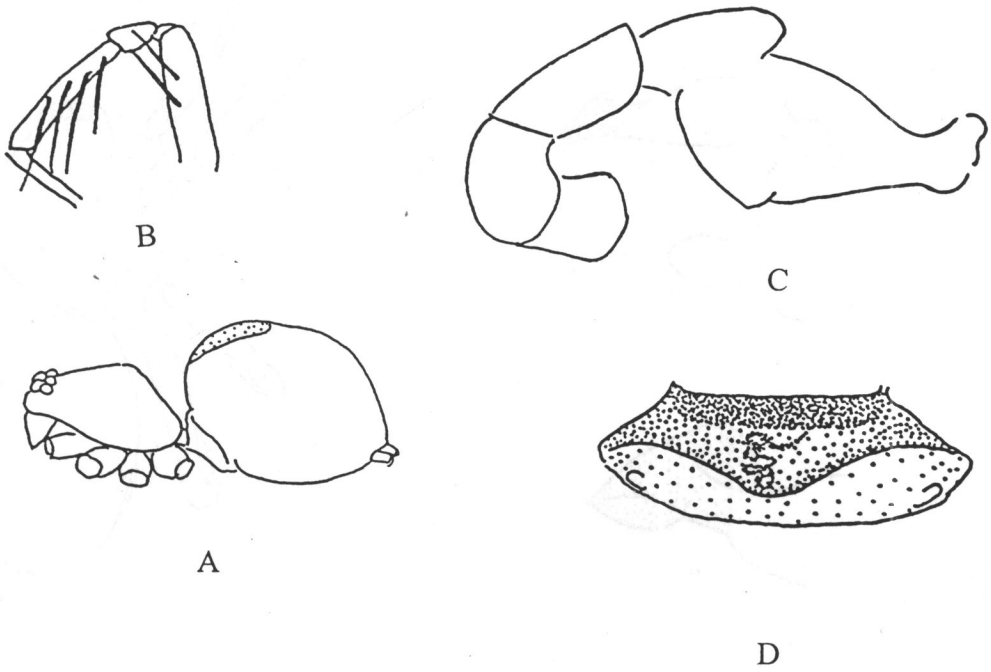


Fig. 47. *Ischnothyreus* sp. A, habitus of female, lateral view. B, long spines on anterior femur and tibia of leg I. C, male palp, lateral view. E, female genital region.

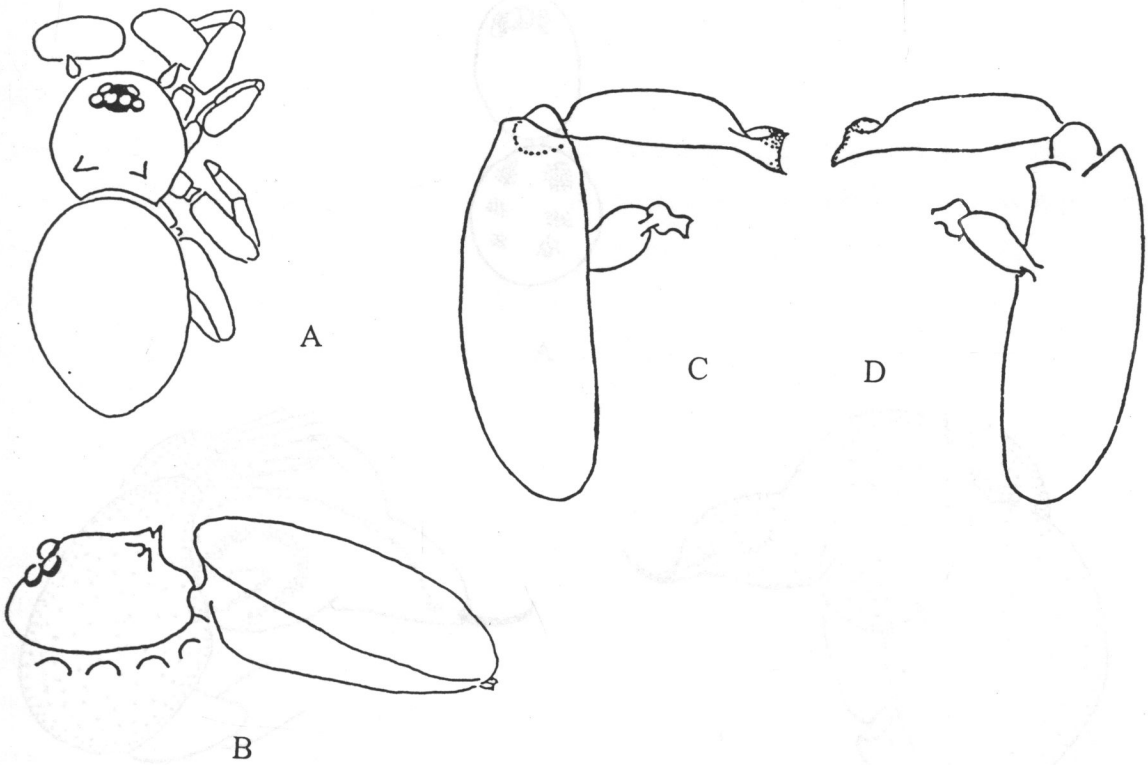


Fig. 48. *Opopaea* sp. A. A, habitus of male, dorsal and B lateral view. C, D, male palp, different views.

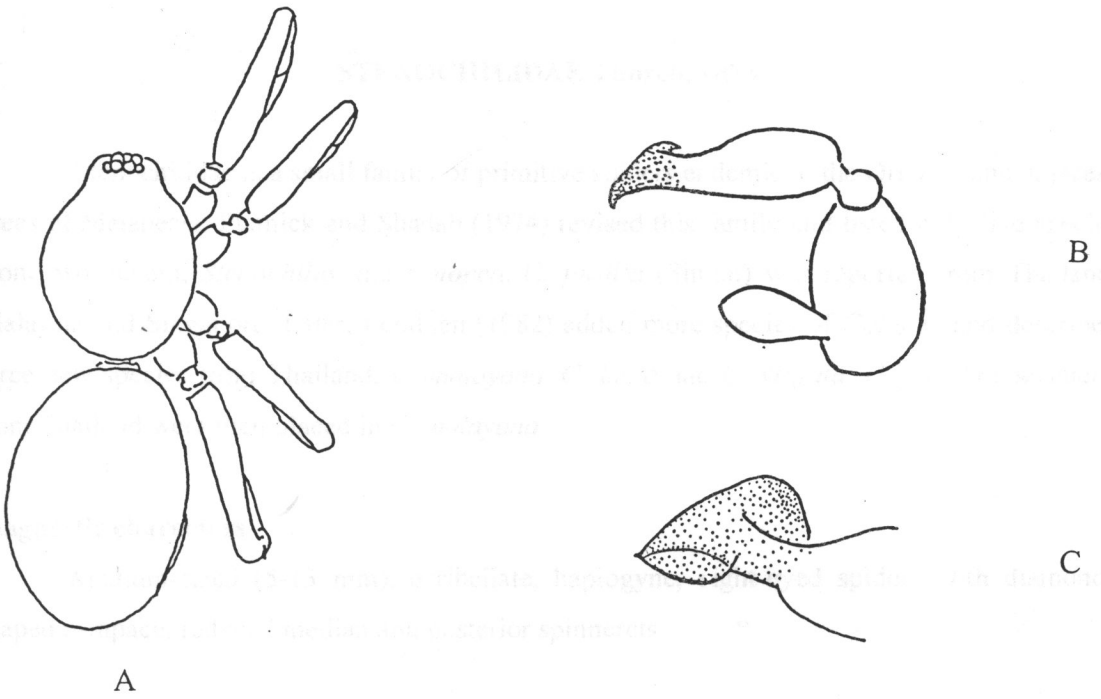


Fig. 49. *Opopaea* sp. B. A, habitus of male. B, male palp. C, tip of bulbus.

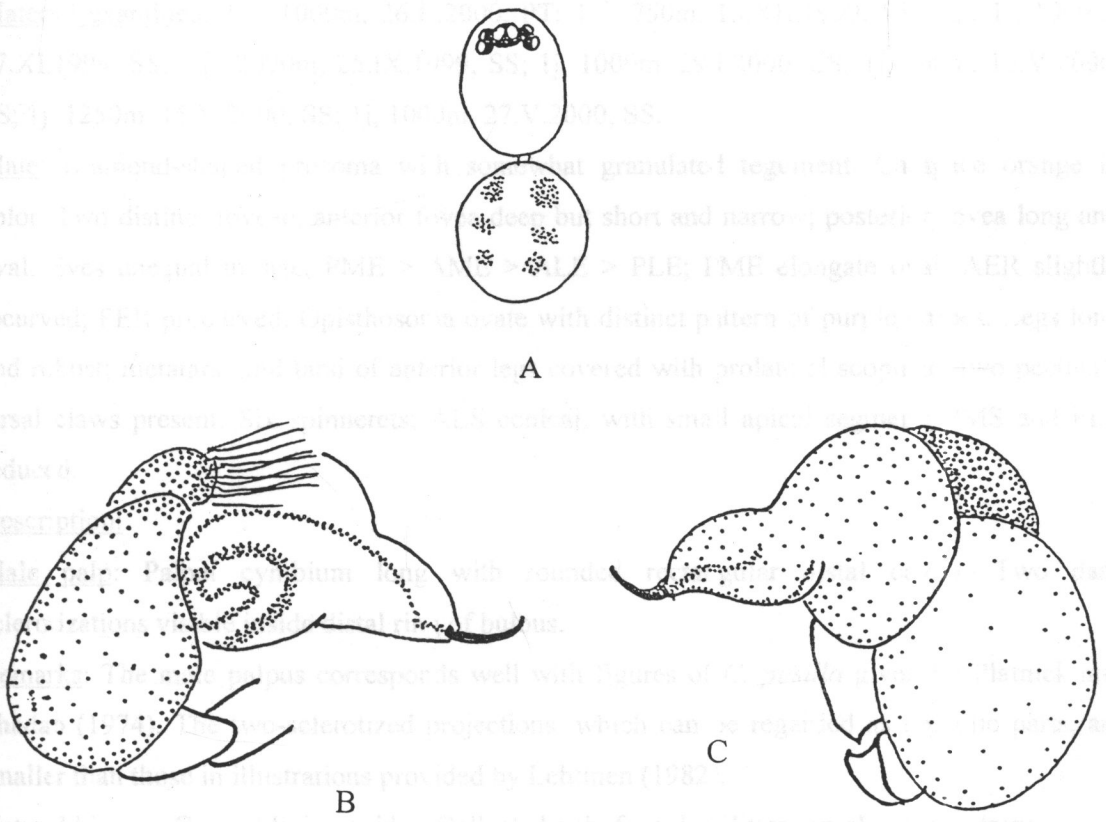


Fig. 50. *Orchestina* sp. A, habitus of male, dorsal view. B, C, male palp, different views.

STENOCHILIDAE Thorell, 1873

Stenochilidae is a small family of primitive spiders endemic to the Oriental and adjacent areas of Melanesia. Platnick and Shadab (1974) revised this family and listed only five species from two genera, *Stenochilus* and *Colopea*. *C. pusilla* (Simon) was reported from Thailand, Malaysia and Singapore. Later, Lehtinen (1982) added more species of *Colopea* and described three new species from Thailand, *C. malayana*, *C. laeta* and *C. virgata*. *C. pusilla* specimens from Thailand were then placed in *C. malayana*.

Diagnostic characters

Medium-sized (5-13 mm), ecribellate, haplogyne, eight-eyed spiders with diamond-shaped carapace; reduced median and posterior spinnerets.

Gen. *Colopea* Simon, 1893

Literature consulted: Lehtinen (1982); Platnick and Shadab (1974)

***Colopea virgata* Lehtinen, 1982**

Material examined: 1♂, 1000m, 26.II.2000, PT; 1♂, 750m, 15.XII.1999, SS; 1♀, 1j, 1000m, 27.XI.1999, SS; 1♀, 2090m, 25.IX.1999, SS; 1j, 1000m, 29.I.2000, SS; 1j, 750m, 15.V.2000, SS; 1j, 1250m, 15.V.2000, SS; 1j, 1000m, 27.V.2000, SS.

Male: Diamond-shaped prosoma with somewhat granulated tegument. Carapace orange in color. Two distinct foveae; anterior fovea deep but short and narrow; posterior fovea long and oval. Eyes unequal in size, PME > AME > ALE > PLE; PME elongate oval; AER slightly recurved; PER procurved. Opisthosoma ovate with distinct pattern of purple stripes. Legs long and robust; metatarsi and tarsi of anterior legs covered with prolateral scopulae; two pectinate tarsal claws present. Six spinnerets; ALS conical, with small apical segment; PMS and PLS reduced.

Description:

Male palp: Palpal cymbium long with rounded rectangular distal cavity. Two dark sclerotizations visible inside distal ring of bulbus.

Remarks: The male palpus corresponds well with figures of *C. pusilla* given by Platnick and Shadab (1974). The two-sclerotized projections, which can be regarded as embolic parts, are smaller than those in illustrations provided by Lehtinen (1982).

Natural history: Ground living spider. Collected only from leaf litter samples and in traps.

Distribution: *C. virgata* was presently reported from two localities in Thailand and Vietnam. The specimens from Thailand were obtained only from the Nam Nao National Park, Phetchabun

Province. The spiders from the Doi Inthanon National Park indicated that *C. virgata* is possibly widely distributed in northern Thailand. Stenochilidae can be found in three different parts of the country: *C. malayana* is distributed from southern Thailand to Malaysia, *C. laeta* from western Thailand to Burma, and *C. virgata* from northern Thailand to Vietnam.

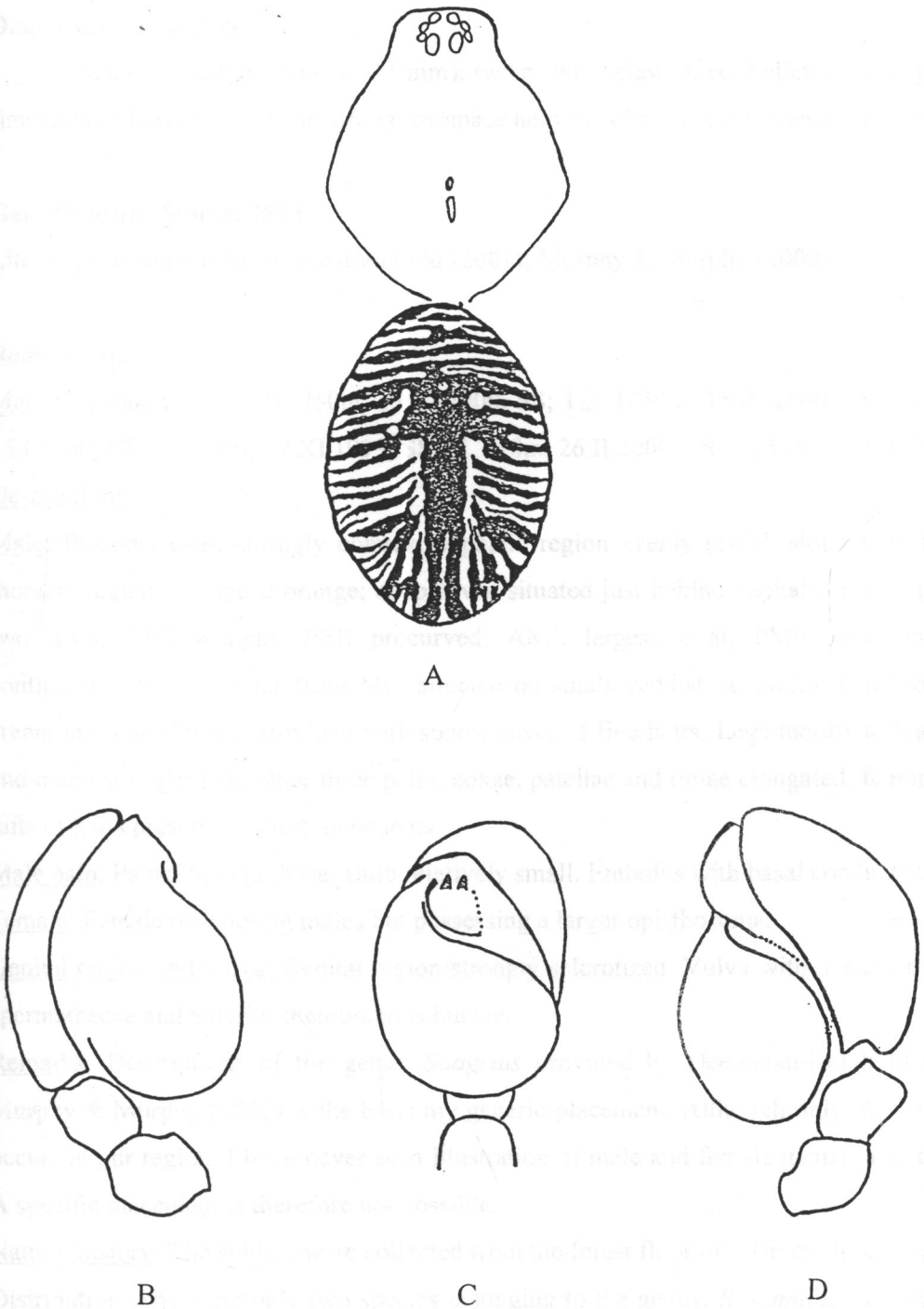


Fig. 51. *Colopea virgata*. A, of male, dorsal view. B-D, male palp, different views.

PALPIMANIDAE Thorell, 1870

The family is represented by 15 genera and 122 species. They are found in the subtropics and tropics of America, Eurasia and Africa.

Diagnostic characters

Small to medium-sized (3-11 mm); two or three-clawed, ecribellate, entelegyne spiders; first pairs of legs enlarged and strong; carapace heavily sclerotized; spinnerets reduced.

Gen. *Boagrius* Simon, 1893

Literature consulted: Deeleman-Reinhold (2001); Murphy & Murphy (2000)

***Boagrius* sp.**

Material examined: 1♂, 1j, 750m, 15.III.2000, SS; 1♀, 1250m, 15.III.2000, SS; 2♀, 2j, 750m, 15.I.2000, SS; 1j, 510m, 27.XI.1999, SS; 1j, 510m, 26.II.2000, SS; 2j, 510m, 29.IV.2000, SS.

Description:

Male: Prosoma oval, strongly convex; cephalic region evenly round, sloping gently towards thoracic region. Carapace orange; deep fovea situated just behind cephalic area. Eight eyes in two rows; AER straight; PER procurved; AME largest, oval; PME very small, round; contiguous LE located far from ME, situated on small, reddish tubercles. Opisthosoma oval, cream in color; dorsum provided with sparse cover of fine hairs. Legs modified; leg I enlarged and much stronger than other three pairs; coxae, patellae and tibiae elongated; femora enlarged; tufts of hairs present on short metatarsus.

Male palp: Palpal tibia globose. Bulb relatively small. Embolus with basal conductor.

Female: Female resembling males but possessing a larger opisthosoma.

Genital region and vulva: Genital region strongly sclerotized. Vulva with posterior tear-shaped spermathecae and anterior membranous bursae.

Remarks: Descriptions of the genus *Boagrius* provided by Deeleman-Reinhold (2001) and Murphy & Murphy (2000) is the basis my generic placement. Although only *B. pumilus* Simon occurs in our region, I have never seen illustration of male and female genitalia of this species. A specific placement is therefore not possible.

Natural history: The spiders were collected from the forest floor of different forest types.

Distribution: There are only two species belonging to the genus: *B. pumilus* was reported from Malaysia and Sumatra, whereas *B. incisus* Tullgren occurs in Tanzania.

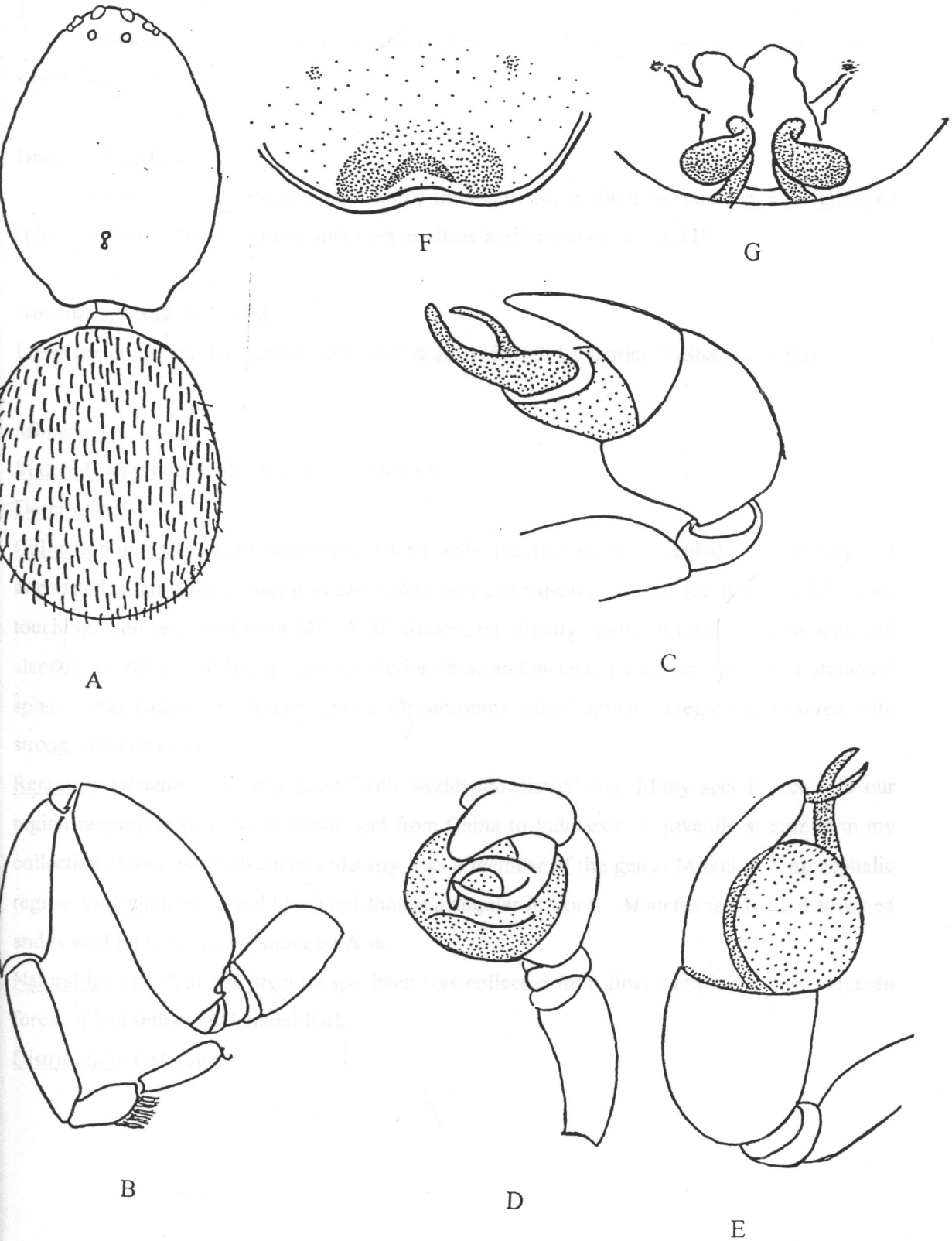


Fig. 52. *Boagrius* sp. A, habitus of male, dorsal view. B, leg I. C-E, male palp, different views. F, female genital region. G, female vulva.

MIMETIDAE Simon, 1881

Mimetidae is a small family represented by 12 genera and 154 species. Its distribution is worldwide.

Diagnostic characters

Small to medium-sized (3-7 mm), three-clawed, ecribellate, entelegyne, eight-eyed spiders with modified prolateral spination on tibiae and/or metatarsi I and II.

Gen. *Mimetus* Hentz, 1832

Literature consulted: Dippenaar-Schoeman & Jocqué (1997); Platnick & Shadab (1993)

***Mimetus* sp.**

Material examined: 1j, 1750m, 15.III.2000, SS.

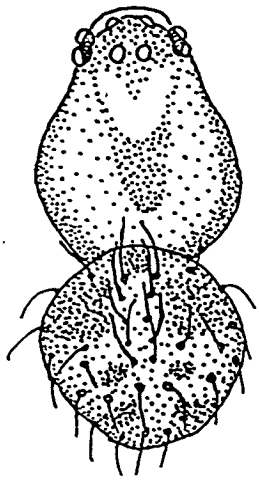
Description:

Coloration and pattern: Prosoma longer than wide, tapering in front; cephalic region long and attenuated. Eight eyes arranged in two rows; each eye surrounded with red pigment; LE large, touching, well separated from ME; AME situated on slightly elevated tubercle. Legs long and slender, provided with strong spines; anterior tibiae and metatarsi with series of short prolateral spines, interspaced with longer spines. Opisthosoma subtriangular; integument covered with strong, isolated setae.

Remarks: *Mimetus* is a large genus with worldwide distribution. Many species occur in our region ranging from India to Japan, and from China to Indonesia. A juvenile specimen in my collection shows many characters identify it as a member of the genus Mimetus: long cephalic region, long chelicerae, and broad opisthosoma angular in front. *Mimetus* is widely distributed and is well represented in Southeast Asia.

Natural history: A single juvenile specimen was collected from litter samples in hill evergreen forest of Doi Inthanon National Park.

Distribution: Unknown.



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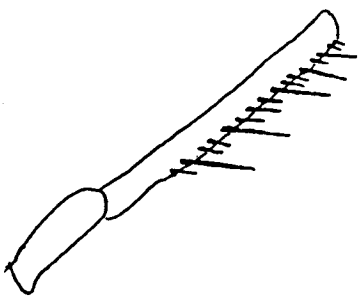


B

Fig. 53. *Mimetus* sp. A, habitus of juvenile, dorsal view. B, patella and tibia of leg I showing short and long prolateral spines.

HERSILIIDAE Thorell, 1870

Hersiliidae is a small family with worldwide distribution; the family comprises only 7 genera and 148 species.

Diagnostic characters

Medium-sized (5-10 mm), three-clawed, ecribellate, entelegyne spiders; posterior spinnerets long and slender with tapering apical segment; ovoid carapace usually flatten; all eyes situated on a common tubercle; leg III distinctly shorter than others.

Gen. *Hersilia* Audouin, 1826

Literature consulted: Baehr & Baehr (1993)

***Hersilia* sp.**

Material examined: 3j, 510m, 25.III.2000, BT; 1j, 1000m, 25.III.2000, BT.

Description:

Coloration and pattern: Flattened prosoma as long as wide. Carapace green in color, lateral margins provided with small greenish black bands. Raised cephalic region accommodating eight round eyes. Clypeus projecting forwards. Opisthosoma elongate oval; dorsum with four pairs of muscular pits, the second pair largest; lateral borders barely defined, lancet-shaped stripes present along both sides. Legs I, II and IV very long; its metatarsi of leg I, II and IV biarticulate. Six spinnerets; apical segment of PMS carrying spigots; ALS conical, separated for more than their diameter; PLS very long, along the inside provided with a row of small spigots.

Remarks: Although only juveniles were obtained, the illustrations and description of *H. savignyi* Lucas provided by Baehr & Baehr (1993) clearly indicate that these spiders are members of the widely distributed genus *Hersilia*. The specimens probably belong to *H. simplicipalpis* Baehr & Baehr recorded from Doi Suthep and Khao Yai National Park since this species is grouped in the "savignyi" tribe as well.

Natural history: The spiders were collected by beating bushes near a riverbank in mixed deciduous forest.

Distribution: Unknown.

Hersiliidae gen. sp.

Material examined: 1♂, 510m, 25.XII.1999, BT; 1♂, 510m, 27.XI.1999, BT.

Description:

Male: Dark and hairy hersiliid. Flattened prosoma broader than long, narrowing in front. Carapace covered with fine hairs and short blunt setae; thoracic area depressed; lateral margins lined with long setae. Eight eyes arranged in three rows; eye formula 2-4-2; ALE small, pearly white; all eyes except ALE encircled by a reddish ring; ocular area low. Clypeus moderately high. Legs long. Opisthosoma rectangular, clothed with black hairs; paired dorsal sigillae presented. Six spinnerets; ALS separate; PMS with long spigots; PLS short.

Male palp: As in Fig. 55.

Remarks: The spiders have unusual PLS, which are short and conical. The most noticeable feature of hersiliids is the extremely long PLS. These are often longer than the opisthosoma and sometimes approaching the total body length (longer in *Hersilia*, 1.5 times in *Maurrica* and 2 times in *Neotama*). Only one genus, *Tamopsis,* erected for Australian species, possesses PLS that are shorter than the opisthosoma. The male palpal structure also differs from other members of the family. This species may belong to a yet undescribed genus.

Natural history: Two males were colleted by beating bushes in mixed deciduous forest.

Distribution: Unknown.

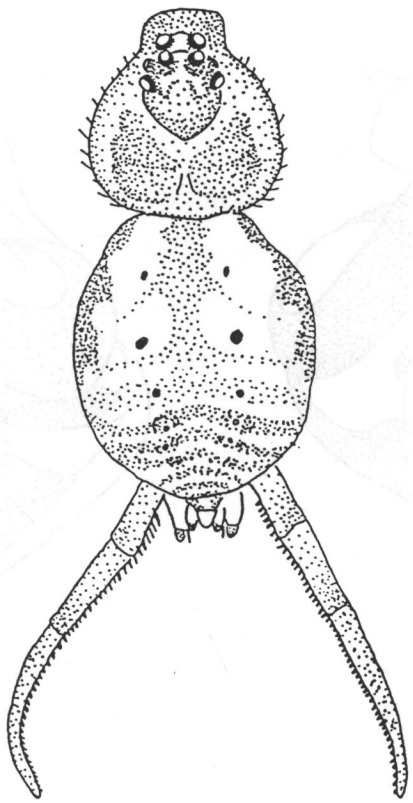
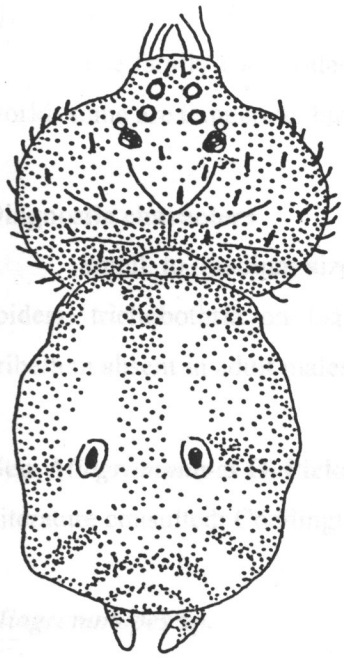


Fig. 54. *Hersilia* sp. Habitus of juvenile, dorsal view.



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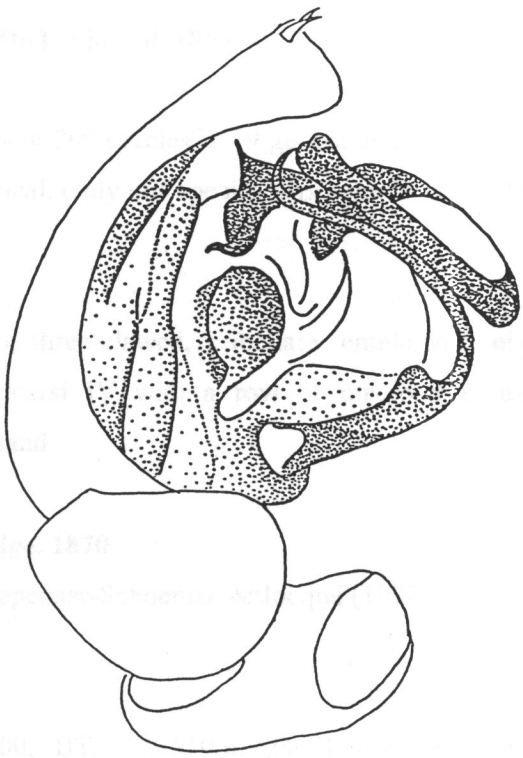

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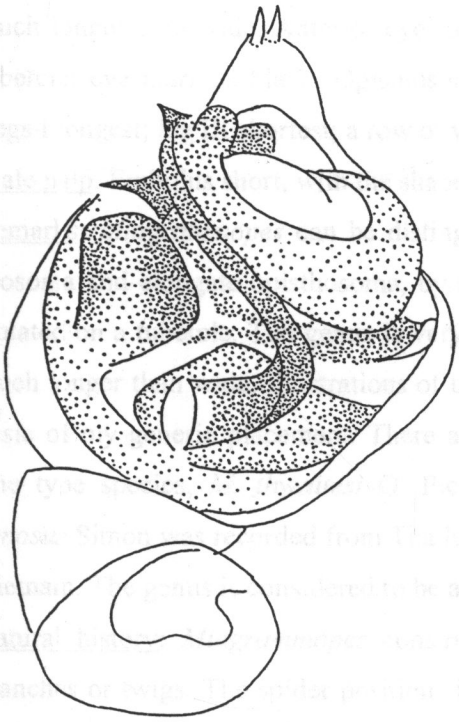

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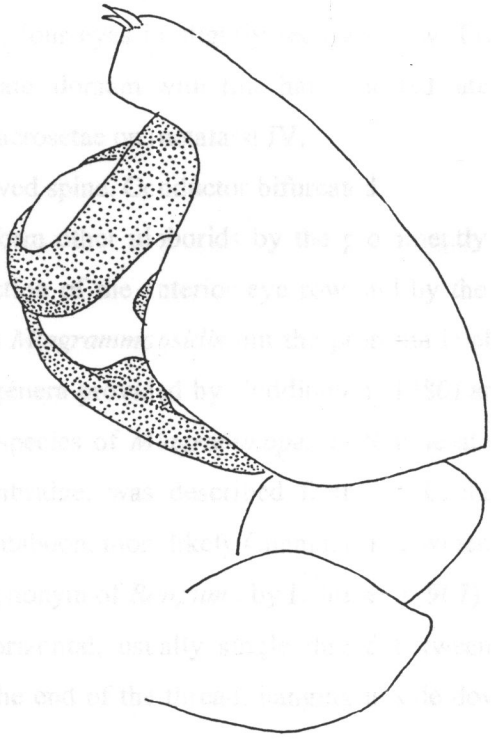


D

Fig. 55. Hersiliidae gen. sp. Habitus of male, dorsal view. B-D, palp, different views.

ULOBORIDAE Thorell, 1869

The family Uloboridae comprises about 200 species in 19 genera and occur all over the world; some are temperate, but most are tropical. Only one species was recorded from Thailand.

Diagnostic characters

Small to medium-sized (1-10 mm), three-clawed, cribellate, entelegyne, eight-eyed spiders; trichobothria on leg femora; metatarsi IV with a row of macrosetae; undivided cribellum absent in adult males; no venom gland.

Gen. *Miagrammopes* O. Pickard -Cambridge, 1870

Literature consulted: Coddington (1990); Dippenaar-Schoeman & Jocqué (1997)

***Miagrammopes* sp.**

Material examined: 1♂, 510m, 29.IV.2000, BT; 1j, 510m, 24.VI.2000, PT; 1j, 510m, 24.VI.2000, SW; 1j, 510m, 29.VII.2000, SW.

Description:

Male: Living spiders green in color with white pattern on opisthosoma. Prosoma rectangular, much longer than wide. Anterior eye row absent; four eyes in slightly recurved row; PLE on tubercle; eye margins black. Opisthosoma elongate, dorsum with fine hairs located laterally. Legs I longest; leg III shortest; a row of ventral macrosetae on metatarsi IV.

Male palp: Embolus short, with the shape of a curved spine. Conductor bifurcated.

Remarks: *Miagrammopes* can be distinguished form other uloborids by the prominently long prosoma and elongate opisthosoma, by the reduction of the anterior eye row and by the PLE situated on a tubercle. The genus is very close to *Miagrammopsidis* but the prosoma is clearly much longer than wide. Illustrations of ulobolid genera provided by Coddington (1986) are the basic of my generic placement. There are eight species of *Miagrammopes* in Southeast Asia. The type species, *M. thwaitesi* O. Pickard-Cambridge, was described from Sri Lanka. *M. rimosus* Simon was recorded from Thailand (Chantaboon, most likely Chantaburi Province) and Vietnam. The genus is considered to be a senior synonym of *Ranguma* by Lehtinen (1967).

Natural history: *Miagrammopes* constructs a horizontal, usually single thread between two branches or twigs. The spider positions itself at the end of the thread, hanging upside down or placing its front legs on a branch nearby.

Distribution: *Miagrammopes* is distributed worldwide in the tropics, with few exception recorded from China, Japan and Korea.

Genus *Uloborus* Latreille, 1806

Literature consulted: Davies (1988); Song, Zhu & Chen (1999)

***Uloborus walckenaerius* Latreille, 1806**

Material examined: 1♂, 510m, 27.XI.1999, BT; 1j, 1000m, 29.I.2000, BT.

Description:

Male: Brown, pear-shaped prosoma covered with numerous white fine hairs. Eight eyes arranged in two rows; posterior eye row strongly recurved; AME large. Opisthosoma heart-shaped, with a pair of tubercles at its highest point. Leg armed with strong spines; leg I and IV longer than others; bush of hairs presented on tibia I.

Male palp: Bulbus large, short, cylindrical; embolus thin and circular, encircling the bulbus area.

Remarks: The description of the genus given by Davies (1988) is the basis of my generic placement. The figure of the male palp of *U. walckenaerius* Latreille provided by Song, Zhu & Chen (1999) corresponds with my specimen.

Natural history: *Uloborus* spins a horizontal orbweb that contains cribellate silk. The spider usually sits in a string of old insect bodies on a band of silk across the web's hub.

Distribution: Palearctic.

Uloboridae gen. sp.

Material examined: 1♂, 510m, 29.VII.2000, BT.

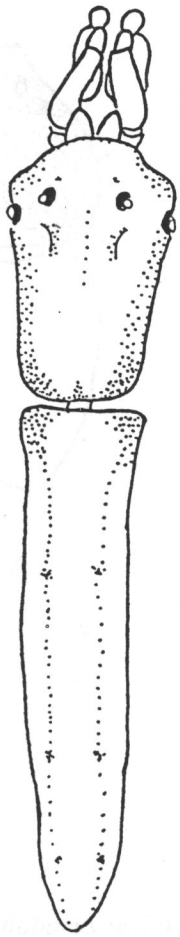
Description:

Male: Prosoma pear-shaped, cephalic area with a strong projection. Fovea cross-shaped, shallow. Carapace brown, clothed with numerous short white hairs. Eight eyes; ME on protruding tubercles, AME just beneath tubercle; LE very small, close together. Opisthosoma triangular; dorsum brown, with dark pattern and long curved setae. Anterior legs longer than posterior ones; femora of leg I with long spines in apical portion; tibiae with bands of short strong spines. Cribellum and calamistrum indistinct.

Male palp: Cymbium with hook-like paracymbium, pointing downwards. Large tegular apophysis provided with short tip. Median apophysis with sharp, pointed spurs. Median haematodocha cone-shaped.

Remarks: This spider is distinguished from *Uloborus* by the absence of hairs on tibia I; from *Philoponella* in the shapes of conductor and embolus. It is possibly a member of *Zosis* but differs in tegular and median apophyses structures.

Natural history: Only a single specimen was collected by beating bushes in a dry dipterocarp forest.



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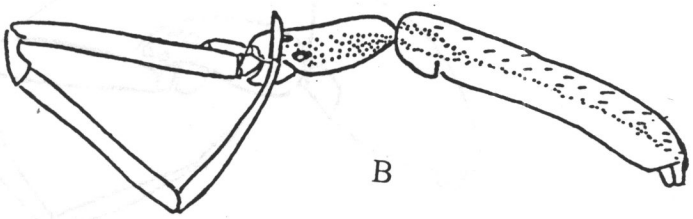

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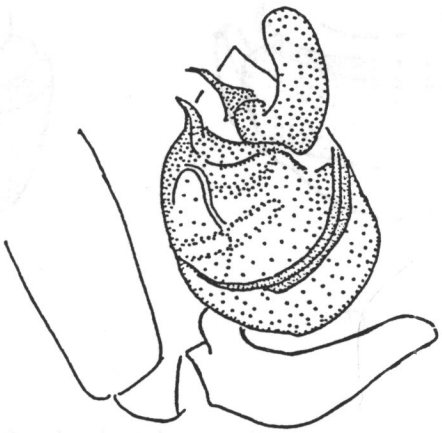

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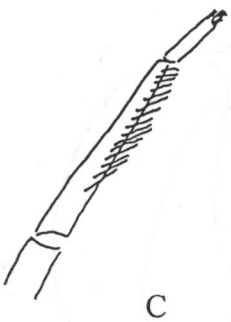

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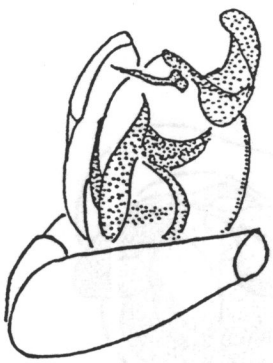


E

Fig. 56. *Miagrammopes* sp. A, habitus of male, dorsal view. B, the same, lateral view, showing elongated leg. C, metatarsus IV, showing a row of macrosetae. D, E, male palp, different views.

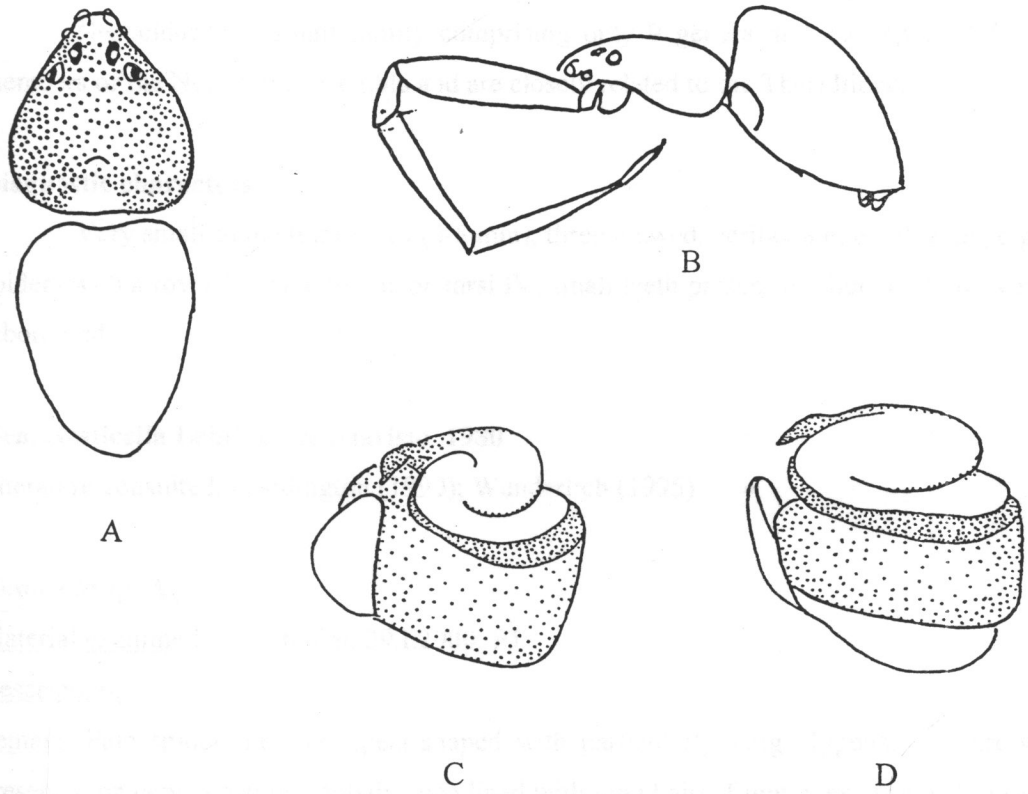
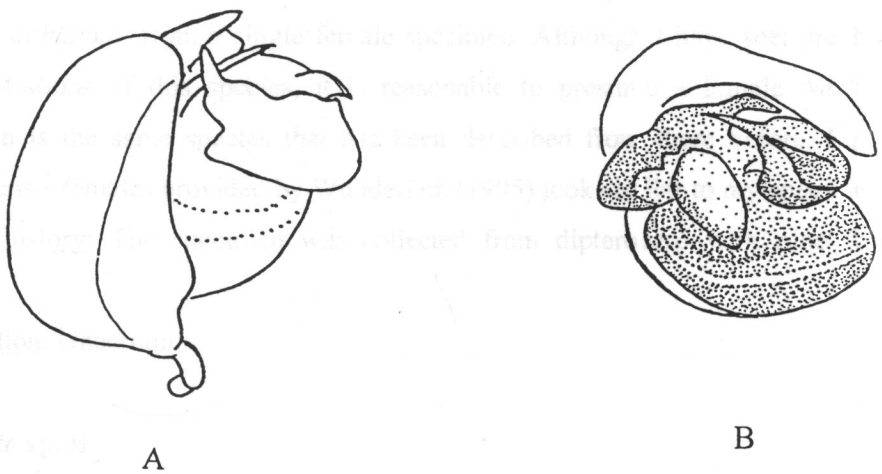


Fig. 57. *Uloborus walckenaerius*. A, habitus of male, dorsal view. B, the same, lateral view. C, D, male palp, different views.



Figs. 58. Uloboridae gen. sp. Male palp, different views.

NESTICIDAE Simon, 1894

Nesticidae is a small family comprising only 9 genera and 194 species. In general, members of the Nesticidae resemble and are closely related to the Theridiidae.

Diagnostic characters

Very small to medium-sized (2-6 mm), three-clawed, ecribellate, entelegyne, eight-eyed spiders with a row of serrate bristle on tarsi IV; small teeth present of cheliceral groove; labium rebordered.

Gen. Nesticella Lehtinen & Saaristo, 1980

Literature consulted: Coddington (1990); Wunderlich (1995)

***Nesticella* sp. A**

Material examined: 1♀, 1000m, 29.I.2000, PT.

Description:

Female: Pale spider. Prosoma pear-shaped with particularly long clypeus; two brown spots presented on cephalic area; cephalic area lined with long hairs. Eight eyes arranged in two rows; PER straight; ALE>PLE>PME>AME; eye margins red; PME separated by slightly more than their diameter; LE touching. Legs long, without strong spines; covered with numerous hairs. Opisthosoma oval; dorsum pale gray.

Epigynum and vulva: Epigynal plate slightly sclerotized, protruding. Ducts invisible. Vulva with two receptacles, clearly discernible through integument.

Remarks: Lehtinen & Saaristo (1980) described a new species from Doi Inthanon National Park, *N. inthanoni*, from a single female specimen. Although I have seen neither descriptions nor illustrations of this species, it is reasonable to presume a female *Nesticella* from my collection is the same species that has been described from there before. Figures of the N. chillagoensis females provided by Wunderlich (1995) look similar to my specimen.

Natural history: The specimen was collected from dipterocarp with pine forest by pitfall trapping.

Distribution: Uncertain.

***Nesticella* sp. B**

Material examined: 1♂, 1510m, 23.X.1999, SS.

Description:

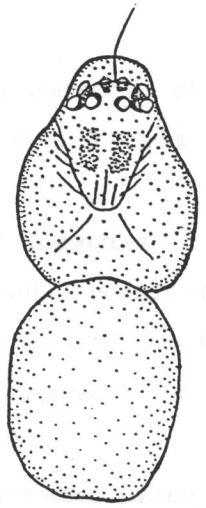
Male: Prosoma pear-shaped, without cervical groove. Carapace pale yellow, a longitudinal row of hairs running from PME to the center. Eight eyes arranged in two slightly recurved rows; PME far apart; eye margins red. Legs very long and slender, provided with hairs and small spines. Opisthosoma pale with black pattern.

Male palp: Tibial apophysis absent. Cymbium cup-shaped. Basal paracymbium long and pointed. Bulbus round, provided with centrally located median and tegular apophyses. Embolus long and slender, embolic base pear-shaped.

Remarks: Shape of paracymbium and distinct median apophysis distinguish my specimen from *N. brevipes* (Yaginuma) and *N. mogera* (Yaginuma). This male probably belongs to N. inthanoni, described from Doi Inthanon by Lehtinen & Saaristo (1980). The *Nesticella* sp. A female described above does not resemble this male. It probably belongs to another species.

Natural history: Collected from leaf litter samples in damp hill evergreen forest.

Distribution: Uncertain.



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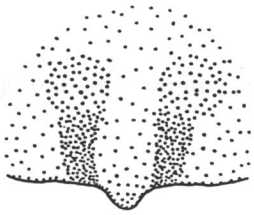

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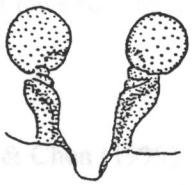
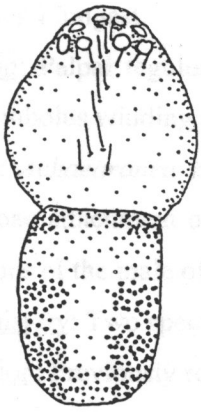
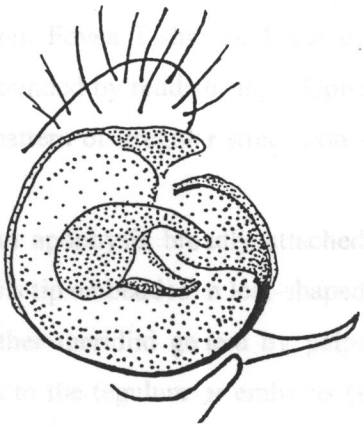


C

Figs. 59. *Nesticella* sp. A. A, habitus of female, dorsal view. B, epigyne. C, vulva.



A



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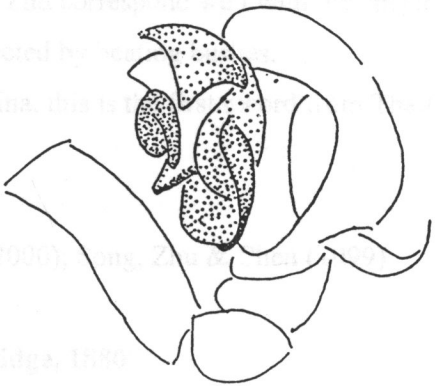


B

Fig. 60. *Nesticella* sp. B. A, habitus of male, dorsal view. B, male palp. C, bulb.

THERIDIIDAE Sundevall, 1833

The cobweb or comb-footed spiders belong to a large family represented worldwide by 2,209 species in 73 genera.

Diagnostic characters

Small to medium-sized (1-15 mm), three-clawed, ecribellate, eight-eyed spiders with a row of serrated bristles on tarsi IV; labium not rebordered; legs posses few if any macrosetae; hooked distal paracymbium or on the lateral edge, but never of the base.

Gen. *Achaearanea* Strand, 1929

Literature consulted: Levi & Levi (1962); Song, Zhu & Chen (1999).

Achaearanea celsadomina Zhu, 1998

Material examined: 1♂, 510m, 23.X.1999, SW; 1j, 1000m, 25.III.2000, BT.

Description:

Male: Prosoma round, rather high. Carapace greenish brown with well projecting ocular area; cephalic region narrower than thoracic region. Fovea T-shaped. Eight eyes arranged in two rows; AER recurved; PER straight; eyes surrounded by reddish rings. Opisthosoma higher than long, globular; dorsum with a characteristic pattern of irregular streaks on sides. Legs long and slender; leg I longest.

Male palp: Palpal tegulum spherical. Median apophysis broadly attached to tegulum. Radix absent. Embolus winding anticlockwise with its tip embedded in leaf-shaped conductor.

Remarks: *Achaearanea* is separated from other theridiid genera by palpal structure, lack of radix, broad attachment of median apophysis to the tegulum or embolus (Levi & Levi, 1962). Illustrations of the male of *A. celsadomina* Zhu correspond well with my specimen.

Natural history: Two specimens were collected by beating bushes.

Distribution: Previously recorded from China, this is the first record from Thailand.

Gen. *Argyrodes* Simon, 1864

Literature consulted: Murphy & Murphy (2000); Song, Zhu & Chen (1999)

Argyrodes flavescens O. Pickard–Cambridge, 1880

Material examined: 1♂, 1000m, 28.VIII.1999, SW; 1♂, 1j, 1000m, 25.XII.1999, SW; 1♂, 1000m, 27.XI.1999, BT; 1PM, 1000m, 25.IX.1999, SW; 1j, 1000m, 27.XI.1999, PT; 1j, 1510m, 25.XII.1999, PT; 1j, 1000m, 25.XII.1999, SW.

Description:

Male: Prosoma longer than wide, cephalic area strongly raised. Carapace yellow. Eight eyes in three groups; ME situated on tubercle; LE small, closed together. Middle portion of clypeus with projecting tubercle covered with hairs. Legs long and slender; brown except for yellow patches on femora. Opisthosoma oblong, truncated anteriorly and pointed posteriorly; dorsum with posterior end black and dotted with silvery spots.

Male palp: Median apophysis triangular. Radix large, covering embolus.

Remarks: The shape of eye region of males and the unusual shape of the opisthosoma distinguish *Argyrodes* from others theridiid genera possessing a colulus. Illustrations of the male of *A. flavescens* given by Song, Zhu & Chen (1999) accords very well with my specimens. The habitus of this species described by Murphy & Murphy (2000) also agrees with my specimens.

Natural history: Spiders were obtained by sweeping and beating vegetation in dipterocarp with pine forest.

Distribution: Sri Lanka to China, Japan, New Guinea.

***Argyrodes cf. labiatus* Zhu & Song, 1991**

Material examined: 1♂, 1000m, 26.II.2000, BT; 1j, 510m, 25.XII.1999, BT; 1j, 510m, 24.VI.2000, BT; 1j, 1510m, 23.X.1999, SW.

Description:

Male: Prosoma flat with high eye tubercle. Carapace pale with two lateral brown bands. Eight eyes on round tubercle; LE white without pigmented margins; ME with reddish eye margins. Clypeus high, sloping. Legs long and slender. Opisthosoma long and tapered to a point posteriorly, decorated with silvery spots and longitudinal pale brown bands.

Male palp: Cymbium elongate. Median apophysis of bulb not clearly separated from tegulum, radix long and flat. Embolus long and slightly curved upwards.

Remarks: Male palpal organ similar to that of *A. labiatus* as illustrated by Song, Zhu & Chen (1999).

Natural history: The spiders were collected by sweeping and beating bushes in dry dipterocarp and dipterocarp with pine forests at low altitudes (510-1000 m) of the national park.

Distribution: *A. labiatus* was previously recorded from China, this is the first record from Thailand.

Gen. *Coleosoma* O. Pickard-Cambridge, 1882

Literature consulted: Levi & Levi (1962)

***Coleosoma* sp.**

Material examined: 2♂, 2090m, 29.IV.2000, PT; 1♂, 1000m, 29.IV.2000, PT; 2j, 750m, 15.V.2000, SS; 1♀, 1000m, 29.I.2000, PT; 8♂, 1♀, 1000m, 27.V.2000, PT; 1♂, 1000m, 29.VII.2000, PT; 1♀, 1510m, 29.IV.2000, PT; 1♀, 1000m, 24.VI.2000, SS; 1♂, 2j, 1000m, 25.III.2000, PT; 1♂, 2♀, 2j, 1000m, 27.XI.1999, SS; 2♂, 1000m, 25.XII.1999, PT; 1♀, 1000m, 23.X.1999, SS; 2♂, 1000m, 25.IX.1999, PT; 1j, 1510m, 23.X.1999, PT.

Description:

Male: Prosoma longer than wide, narrowing in front. Cephalic area slightly higher than thoracic area. Fovea indistinct. Eight large eyes arranged in two rows; AER recurved; PER straight; eye margins dark brown. Opisthosoma longer than wide, slightly constricted in middle; dorsum yellow with two pairs of oval black patches both anteriorly and posteriorly; sclerotization on pedicel extending to anterior half of venter. Legs very long; leg I longest.

Male palp: Paracymbium spike-like, projecting prolaterally. Embolus thin and curved.

Female: Carapace with a dark longitudinal triangular band (presented in some males only, others with a pale greenish band as in females). Opisthosoma globular; yellow dorsum provided with black spots and irregular white patches grouped together.

Epigynum and vulva: As in Fig. 64.

Remarks: *Coleosoma octomacculatum* (Bösenberg & Strand) occurs in China, Korea, Taiwan and Japan. It is believed to be restricted to warmer region of Asia. The male palpus of my specimens corresponds well with illustration of this species given by Song, Zhu & Chen (1999) but the pointed paracymbium originating from anterior part of cymbium found in some species is not shown their illustrations.

Natural history: Ground-dwelling theridiid, obtained from litter samples and pitfall traps only.

Distribution: Unknown.

Gen. *Coscinida* Simon, 1895

Literature consulted: Levi & Levi (1962).

***Coscinida* sp.**

Material examined: 1♂, 1000m, 27.V.2000, PT; 2♂, 1♀, 1000m, 29.IV.2000, PT; 1♀, 510m, 24.VI.2000, SS; 1♀, 1000m, 23.X.1999, PT; 1♀, 1000m, 24.VI.2000, SS; 2♂, 510m, 29.VII.2000, PT; 1♀, 510m, 27.V.2000, SS; 2♂, 1♀, 1j, 510m, 24.VI.2000, PT; 1j, 510m, 29.IV.2000, SS.

Description:

Male: Prosoma pear-shaped, slightly longer than wide. Carapace dark green; cephalic area moderately high, sloping to thoracic area. Clypeus long. Eight eyes on slightly elevated ocular area; ocular area black. Opisthosoma longer than wide; dorsum dark green except for two rows

of pale spots located mid-dorsally. Legs I and IV longer than legs II and III, spineless; legs I-III yellow, leg IV dark green.

Male palp: Bulb with all sclerlites present. Embolus on ventral side with thin and curved embolic tip pointing clockwise.

Female: Female resembling male but opisthosoma larger, tear-shaped, almost wider than long.

Epigynum and vulva: As in Fig. 65.

Remarks: The carapace pattern of *Coscinida* is similar to that of *Theridion* but it is distinguished from *Theridion* and other genera by very large eyes; PME separated by their diameter, closer to LE than to each other; leg thick; opisthosoma long and flat. Illustrations and description of the genus provided by Levi & Levi (1962) are the basis of my generic placement. The female genital organ corresponds with that of females *C. tibialis* Simon. Fourteen species of *Coscinida* occur worldwide with few species recorded from Southeast Asia: *C. gentiles* Simon and *C. novemnotata* Simon (Sri Lanka), *C. proboscidea* Simon (Sumatra), and *C. triangulifera* Simon from Sri Lanka and Java.

Natural history: Ground-dwelling spiders.

Distribution: Unknown.

Gen. *Carniella* Thaler & Steinberger, 1988

Literature consulted: Knoflach (1996).

***Carniella siam* Knoflach, 1996**

Material examined: 1♂, 1♀, 1j, 2250m, 15.I.2000, SS; 2♂, 1j, 2430m, 27.XI.1999, PT; 1♂, 2250m, 15.XII.1999, SS; 1♂, 2j, 25.XII.1999, PT.

Description:

Male: Carapace yellowish brown with a clypeal projection covered by short hairs. Eight pearly white eyes arranged in two rows; LE contiguous. Opisthosoma with slightly sclerotized area around pedicel; dorsum gray with numerous fine hairs.

Male palp: Cymbium slender, with hook-like paracymbium. Tegulum with round tegular apophysis. Distal part of embolus slender and curved, embolic base flat and thin.

Female: Female resembling male but carapace lacking clypeal projection.

Epigynum and vulva: Triangular genital openings with wide membranous ducts leading to posterior receptacles.

Remarks: Illustrations of *C. siam* in the original description given by Knoflach (1996) are the basis of my specific placement.

Natural history: Specimens of *C. siam* were collected from mountainous areas of Chiang Mai Province. They were found in moderate altitudes (1150-1780 m); the spiders in my collection mark the highest record of this species.

Gen. *Chrysso* O. Pickard-Cambridge, 1882

Literature consulted: Levi & Levi (1962).

***Chrysso scintillans* Thorell, 1895**

Material examined: 1♀, 1000m, 23.X.1999, VS.

Description:

Female: Living spider with yellow opisthosoma. Prosoma pale with slightly raised ocular area, fovea shallow. Eight eyes in two recurved rows, PER slightly recurved; eye surroundings red; PME separated by more than their diameter. Opisthosoma longer than wide, lateral projections; dorsum with large silvery spots and black pattern. Legs long; femur I very long, longer than body length; apical portion of femora, tibiae and metatarsi with greenish patches and armed with groups of spines. Colulus absent.

Epigynum and vulva: Epigyne lightly sclerotized, rectangular-shaped with indistinct openings. Connecting ducts joining openings and receptacles clearly visible.

Remarks: Illustrations of *Physcoa scintillans* females from Burma given by Levi & Levi (1962), who transferred this species from *Physcoa* to *Chrysso*, correspond very well with my specimen. It is possible that *C. venusta* Yaginuma (1957) belongs to this species as well.

Natural history: The spider was hanging upside down under a large leaf.

Distribution: Burma and northern Thailand.

***Chrysso* sp.**

Material examined: 1♀, 1000m, 27.XI.1999, BT.

Description:

Female: Prosoma pear shaped. Carapace green, slightly higher in thoracic area with mid-longitudinal red band running from behind PER to thoracic area. Eight eyes in two rows; AER recurved: PER slightly procurved; eye margins red; all situated on small tubercles; PME far apart; LE touching. Opisthosoma with irregular white patches, a transverse black band located anteriorly followed by two long and two short red bands; few flattened spines also present. Legs very long and slender, femur of leg I longer than body; patellae and tibiae of all legs armed with strong spines.

Epigynum and vulva: Epigyne with indistinct openings. Spherical spermathecae with long insemination ducts. Fertilization ducts short.

Remarks: Levi & Levi (1962) suggested that *Chrysso* is very close to *Theridion* but can be distinguished from the latter by the opisthosoma having a dorsal tubercle overhanging the posterior spinnerets. His illustrations of *C. nigriceps* Keyserling females are the basis of my generic placement.

Natural history: A single female was collected by beating bushes from dipterocarp with pine forest.

Distribution: Unknown.

Unidentified juveniles of *Chrysso* spp.

Material Examined: 1j, 15; 2j, 20; 2j, 1510m, 25.IX.1999, SW; 2j, 18; 2j, 1000m, 29.I.2000, SW; 2j, 1510m, 26.II.2000, SW; 1j, 21; 3j, 1510m, 27.XI.1999, SW.

Genus *Dipoena* Thorell, 1869

Literature consulted: Levi & Levi (1962); Song, Zhu & Chen (1999)

***Dipoena turriceps* Schenkel, 1936**

Material examined: 1♂, 1PM, 510m, 25.III.2000, BT.

Description:

Male: Prosoma strongly raised with steep lateral margin, highest point just behind the eyes; dorsal depression present. Ocular region projecting above clypeus. Eyes subequal in size. Rounded opisthosoma slightly pointed near spinnerets. Dorsum with pairs of pale spots and strong, elongated hairs. Legs rather long, with few spines.

Male palp: Cymbium modified. Embolus curved. Median apophysis long, connected with round radix. Conductor fused with tegulum. Spermophore winding in the tegulum.

Remarks: The illustrations of *Paoningia turriceps* (later transferred to *Dipoena*) provided by Levi & Levi (1962) and *D. turriceps* by Song, Zhu & Chen (1999) correspond well with my specimen.

Natural history: Unknown.

Distribution: *D. turriceps* was recorded only from China. This is the first time that this species is reported form another area.

***Dipoena cf. mustelina* Simon**

Material examined: 1♂, 1000m, 25.III.2000, PT; 1♀, 510m, 27.XI.1999, BT.

Description:

Male: Male resembling that of *D. turriceps* but carapace marked with dark median band, opisthosoma with dark green pattern.

Male palp: Median apophysis oval, separated from tegulum. Radix absent. Spermophore long and looping through median apophysis.

Female: Female resembling male but with less steep carapace only modified by being high in cephalic area. Opisthosoma with darker pattern.

Epigynum and vulva: Four unequal seminal receptacles, anterior pairs smaller than posterior ones.

Remarks: The male palpal organ slightly differs from that of *D. mustelina* in the shape of its embolus and in lacking a conductor.

Natural history: Unknown.

Distribution: *D. mustelina* is known from Russia, China, Korea, Japan, and Krakatau Island.

Immature specimens of *Dipoena* spp.

Material examined: 1PM, 1510m, 23.X.1999, SW; 1j, 2090m, 23.X.1999, SW; 3PM, 1j, 2090m, 29.I.2000, SW; 1j, 2090m, 23.X.1999, SW; 1PM, 1250m, 15.IV.2000, SS; 2j, 750m, 15.V.2000, SS; 2j, 510m, 26.II.2000, PT; 2PM, 2430m, 29.I.2000, BT; 1j, 2250m, 15.III.2000, SS; 1PM, 1510m, 29.I.2000, PT; 1j, 2090m, 29.IV.2000, SW; 2PM, 5j, 2430m, 27.XI.1999, BT; 1j, 2430m, 25.IX.1999, SS; 2j, 2430m, 25.XII.1999, SW; 1j, 2090m, 27.XI.1999, SW; 1j, 1000m, 24.VI.2000, SS; 1j, 1510m, 26.II.2000, PT; 1j, 510m, 23.X.1999, SW.

Gen. *Episinus* Walckenaer, in Latreille, 1809

Literature consulted: Levi & Levi (1962).

***Episinus* sp.**

Material examined: 1♀, 1000m, 28.VIII.1999, SW; 1j, 1000m, 27.XI.1999, BT.

Description:

Female: Strongly elevated cephalic region much narrower than low thoracic region, almost triangular. Carapace red, anterior margin with two symmetrical teeth projecting forwards. Eight eyes, all pearly white, situated on slightly raised tubercles; AME round, located under two projecting tubercles in ocular area; PER slightly procurved; LE contiguous. Opisthosoma very large, much wider than long, dorsum tuberculate, outermost lateral tubercles provided with strong setae. Legs long and spineless; leg I longest; distal portion of femur IV with red circular band. Opisthosoma of juvenile specimen having only three tubercles, all with strong setae. Colulus replaced by two short setae.

Epigynum and vulva: Sclerotized epigynal area provided with transverse ridge posteriorly. Spermathecae elongate oval. Insemination ducts connected to genital openings in the middle of epigyne.

Remarks: Modifications of the opisthosoma distinguish *Episinus* from other theridiid genera in which the colulu is replaced by two setae; tubercles in the ocular region and color of the opisthosoma distinguish this genus from *Spintharus*. Illustrations of *E. affinis* Bösenberg & Strand and *E. variacorneus* Chen, Peng & Zhao provided by Song, Zhu & Chen (1999) are the basis of my generic placement. *Episinus* has a wide distribution area. Few species were reported from our region: *E. bifrons* (Thorell), *E. luteolimbatus* (Thorell), *E. modestus* (Thorell) and *E. marginatus* (Thorell) occur in Burma, *E. longabdomenus* Zhu is present in China.

Natural history: The spiders were collected from the low vegetation of dipterocarp with pine forest.

Distribution: Unknown.

Gen. *Molione* Thorell, 1892

Literature consulted: Levi & Levi (1962).

***Molione cf. triacantha* Thorell**

Material examined: 1♀, 510m, 29.VII.2000, BT.

Description:

Female: Prosoma slightly longer than wide. Carapace brown. Fovea indistinct. Eight eyes in two rows; eyes large; AER recurved; PER straight or slightly procurved; without pigmented eye margins. Opisthosoma higher than long, with three large dorsal, lightly sclerotized spines and a sclerotized ring around spinnerets.

Epigynum and vulva: Epigyne sclerotized with openings indistinct. Two round spermathecae strongly sclerotized. Ducts coiled, located posteriorly.

Remarks: The prosoma of *Molione* is similar to that of *Theridion* but the former genus can be distinguished from the latter by spines on the opisthosoma and the sclerotized ring around the spinnerets. The epigyne of my specimen resembles that of *M. triacantha* illustrated by Levi & Levi (1962) but the spermathecae in my specimen are spherical instead of tear-shaped. *Molione* is an genus which was described long time ago and comprises only three species from Sri Lanka, Taiwan, Singapore, Malaysia and Sumatra.

Natural history: A single female specimen was collected by beating bushes in dry dipterocarp forest at low altitude of the national park.

Distribution: Uncertain.

Gen. *Moneta* O. Pickard-Cambridge, 1870

Literature consulted: Levi & Levi (1962); Song, Zhu & Chen (1999).

***Moneta mirabilis* Bösenberg & Strand, 1906**

Material examined: 1♂, 1000m, 25.III.2000, PT.

Description:

Male: Prosoma pear-shaped, longer than wide. Center of carapace with depression, cephalic and thoracic regions slightly elevated. Eight eyes in two rows; AER recurved; PER straight; LE on small tubercles; ME closer to each other than to laterals; eye margins red. Clypeus projecting. Flatten opisthosoma longer than wide; almost triangular, posterior end provided with long caudal tubercle.

Male palp: Cymbium with long lateral paracymbium. All sclerlites of bulb clearly separated. Median apophysis dark brown, strongly sclerotized.

Remarks: Illustrations of *M. mirabilis* male provided by Song, Zhu & Chen (1999) corresponds well with my specimen.

Natural history: A single male was collected by pitfall trapping in dipterocarp with pine forest.

Distribution: Previously recorded from China, Korea, Taiwan and Japan. This is a new record for Thailand.

***Moneta* sp. A**

Material examined: 1♀, 1000m, 24.VI.2000, BT.

Description:

Female: Carapace of female with dark green patches on both lateral margins. Eight eyes arranged into two rows; eye margins red. Clypeus projecting. Opisthosoma flat, widest behind middle, posterior end provided with blunt caudal projection.

Epigynum and vulva: As in Fig. 74.

Remarks: The female genital organ of *Moneta* can be distinguished from those of other theridiids with a colulus replaced by setae, in having a strongly sclerotized epigyne with four closely packed receptacles. Illustrations of *M. spinigera* O. Pickard-Cambridge given by Levi & Levi (1962) are the basis of my generic placement. My specimen is very close to *M. subspiniger* Zhu but differs in possessing smaller anterior spermathecae.

Natural history: A female was obtained by beating low vegetation in dipterocarp with pine forest.

Distribution: Unknown.

***Moneta* sp. B**

Material examined: 1♂, 1510m, 23.X.1999, SW.

Description:

Male: Prosoma slightly longer than wide, pear-shaped. Carapace yellow with greenish bands on both margins; center with Y-shaped fovea; thoracic region slightly less elevated than cephalic region. Opisthosoma longer than wide, widest behind middle; posterior end provided with a small caudal tubercle; dorsum with a tiny projection located medially.

Male palp: Median apophysis separated from radix. Embolus long and curved, embolic tip flattened.

Remarks: This species is distinguished from previously described *Moneta* spp. in very small size and paler coloration. The male palp is comparable to that of *M. spiniger* but its embolus is somewhat larger with a flat instead of pointed tip, shape of the radix also differs.

Natural history: Collected by sweeping low vegetation in hill evergreen forest.

Distribution: Uncertain.

***Moneta* sp. C**

Material examined: 1♀, 1510m, 27.XI.1999, SW.

Description:

Female: Prosoma longer than wide, pear-shaped; center with depression. Black mid-longitudinal line running from PER to posterior end; lateral margins with pale greenish pigments. Eight eyes arranged in two rows; AER recurved; PER straight; LE on small tubercles; PE larger than AE; eye margins red. Opisthosoma longer than wide, pentagonal with long caudal tubercle; dorsum provided with two rows of shiny spots and dark pattern.

Epigynum and vulva: Openings separated by small median septum.

Remarks: The female epigyne of this species is very similar to that of *M. caudifer* (Dönitz & Strand) but differs clearly in details of ducts and spermathecae.

Natural history: The spider was collected by sweeping vegetation in hill evergreen forest.

Distribution: Unknown.

Unidentified juveniles of *Moneta* spp.

Material Examined: 1j, 1510m, 29.I.2000, SW; 1j, 1510m, 23.X.1999, SW; 1j, 2090m, 25.III.2000, BT; 1j, 1000m, 29.I.2000, SW; 1j, 510m, 29.I.2000, SW; 1j, 1000m, 25.IX.1999, BT; 1j, 510m, 24.VI.2000, BT; 2j, 1510m, 26.II.2000, SW.

Gen. *Theridion* Walckenaer, 1805

Literature consulted: Levi & Levi (1962).

***Theridion* sp. A**

Material examined: 1♀, 1j, 1510m, 29.I.2000, BT; 1♀, 1510m, SW; 26.II.2000, 1♀, 2090m, 27.XI.1999, SW; 1j, 2090m, 25.IX.1999, SW.

Description:

Female: Living spider pale green. Prosoma almost as wide as long, cephalic region distinctly narrower than thoracic region. Carapace without markings. Ocular area slightly elevated; eight eyes in two rows; AER recurved; PER straight; eyes encircled by reddish rings. Legs long and slender, without distinct spines; femora, tibiae and metatarsi very long; black ring located at apical portion of all tibiae. Opisthosoma globular; dorsum with pairs of black spots.

Epigynum and vulva: Elongate oval spermathecae with coiled insemination ducts.

Remarks: Females of several species of *Theridion* have oval spermathecae and coiled ducts. My specimen is closely related to *T. lushanense* Zhu but can be separated from the latter by its arrangement of vulval ducts.

Natural history: Spider living on trees. All specimens were obtained by sweeping and beating bushes in hill evergreen forest.

Distribution: Unknown.

***Theridion* sp. B**

Material examined: 1♀, 1510m, 26.II.2000, SW.

Description:

Female: Carapace pale; slightly longer than wide; fovea indistinct. Eight eyes in two rows; AER recurved; PER straight; all eyes surrounded with reddish rings; PME far apart; LE touching, situated on slightly raised tubercles. Legs long, without conspicuous spines; tarsi IV carrying a very distinct row of serrate bristles. Opisthosoma globular; dorsum pale with two rows of irregular white patches arranged mid-longitudinally.

Epigynum and vulva: Epigyne lightly sclerotized, containing an indistinct depression. Spermathecae tear-shaped.

Remarks: This female differs from species of *Chrysso*, *Coleosoma*, *Tidarren* and *Achaearanea* by having a suboval opisthosoma. The opisthosomal pattern of all *Theridion* species treated by Murphy & Murphy (2000) are the basis of my generic placement.

Natural history: Collected by sweeping low vegetation from hill evergreen forest.

Distribution: Unknown.

***Theridion* sp. C**

Material examined: 1♂, 1510m, 23.X.1999, SW; 2♂, 2♀, 1510m, 27.XI.1999, SW; 1♂, 1000m, 26.II.2000, BT; 1j, 1510m, 29.IV.2000, BT.

Description:

Male: Preserved specimens white, whereas living spider reddish with dark brown legs. Carapace without pattern,. elevated in cephalic region. Eight eyes in two rows; eye margins red. Opisthosoma globular, overlapping carapace; dorsum without pattern. Legs long and slender; brown in color.

Male palp: Palpus elongate oval, bulbus with all sclerlites present. Embolus thin and curved, pointed, winding clockwise.

Female: Female resembling male.

Epigynum and vulva: Epigyne with distinct opening located posteriorly. Two spherical spermathecae and posteriorly coiled ducts visible through the integument. Vulvae delicate and destroyed during treatment with KOH.

Remarks: The male palpus differs from that of *T. albioculum* Zhu in subtegulum and tegulum shapes. Epigyne with the same shape as in *T. huanrenense* Zhu & Gao.

Natural history: Spiders were collected by beating and sweeping bush along the roadside of hill evergreen forest only.

Distribution: Unknown.

Theridiidae gen. sp. A

Material examined: 1♀, 510m, 27.XI.1999, SW.

Description:

Female: Prosoma longer than wide, constricted behind somewhat elevated ocular area, highest point of the thoracic area provided with circular fovea. Carapace greenish brown with three pairs of circular pits in anterior groove. Eight eyes arranged in two rows; AER recurved; PER straight; eyes surrounded with red; PME separated for more than their diameter. Opisthosoma very long, almost 5 times longer than wide, smooth; dorsum pale with greenish brown longitudinal line and a series of oblique bands. Legs long and slender; without indistinct spines.

Epigynum and vulva: Triangular epigyne lightly sclerotized. Spherical spermathecae with posteriorly coiled ducts running backward to indistinct copulatory openings.

Remarks: Modifications of the carapace in Theridiidae is generally presented by outgrowths of clypeal (*Carniella*, *Craspedisia*) or ocular areas (*Phoroncida*, *Argyrodes*). To my knowledge, *Dipoena* is the only genus provided with a carapace depression behind the ocular area. However, the *Dipoena* vulva has four receptacles instead of two as in my specimen. With only a single female of this species available, the generic placement is very difficult.

Natural history: Collected by sweeping bushes and grass in dry dipterocarp forest.

Theridiidae gen. sp. B

Material examined: 1♀, 1510m, 27.XI.1999, BT.

Description:

Female: Pale carapace with slightly raised cephalic area. Fovea indistinct. Eight eyes in two rows; AER recurved; PER slightly procurved; eyes black; ME well separate from each other; LE touching. Opisthosoma longer than wide; pale dorsum provided with five pairs of black spots running dorsolaterally. Legs long and slender; patellae with one long spine; tibiae with two dorsal spines.

Epigynum and vulva: Epigyne with median openings. Two spherical spermathecae and posteriorly coiled ducts shining through the integument. Vulva destroyed during removal process.

Remarks: Due to the shape of the female genital organ this spider should be placed in *Theridion*. However, a long carapace with different eye arrangement and almost rectangular opisthosoma make this spider a mystery.

Natural history: Collected by beating bushes in hill evergreen forest.

Theridiidae gen. sp. C

Material examined: 2♂, 4♀, 510m, 25.III.2000, BT.

Description:

Male: Prosoma longer than wide; cephalic area yellow, slightly higher than brown thoracic area. Eight eyes in two rows; AER recurved; PER straight; eyes pearly white, without markings except AME surrounded with black rings. Opisthosoma longer than wide, pointed posteriorly; dorsum decorated with irregularly shaped white patches and two pairs of black spots.

Male palp: Palps were destroyed in KOH.

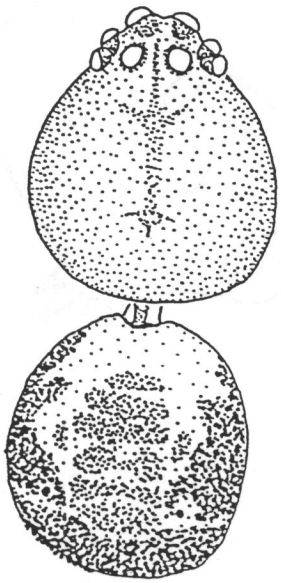
Female: Carapace with dark brown thoracic area; cephalic area slightly higher than in male.

Epigynum and vulva: Epigynum rectangular, strongly sclerotized. Copulatory orifices opening posteriorly near epigastric ridge. Vulva with two round anteriorly located spermathecae and posteriorly coiled ducts.

Remarks: The female genital organ of this spider corresponds with those of *Dipoenura* Simon in possessing a strongly sclerotized epigynal plate and having only two receptacles. However, the male palpal organ does not correspond with any genera of Theridiidae.

Natural history: All specimens were collected at the same time by beating a small bush near a riverbank in dry dipterocarp forest. No web was seen.

Distribution: Uncertain.



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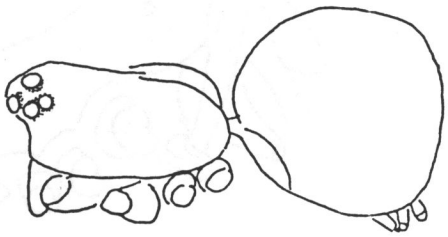

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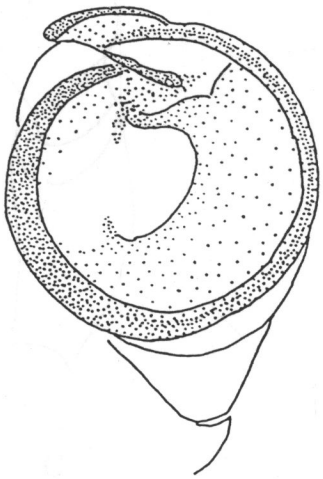

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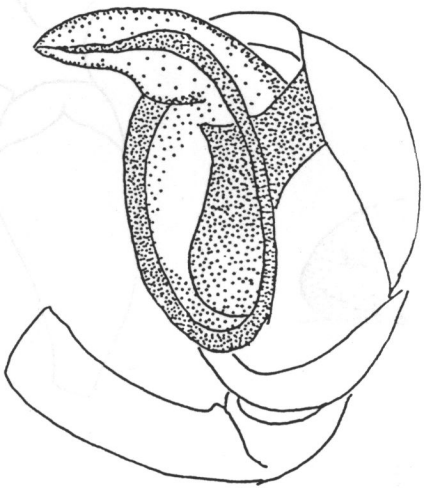
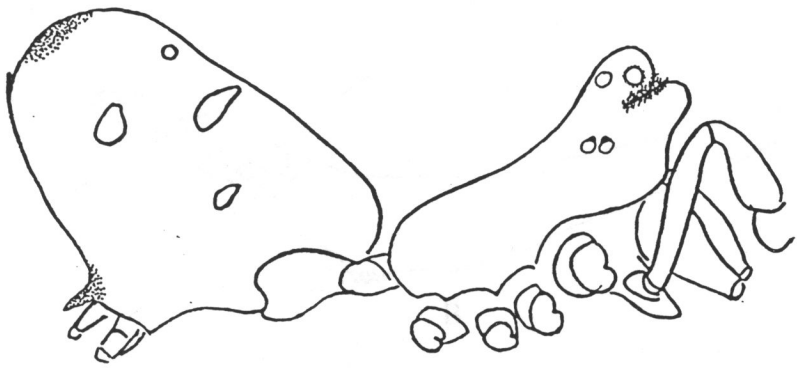
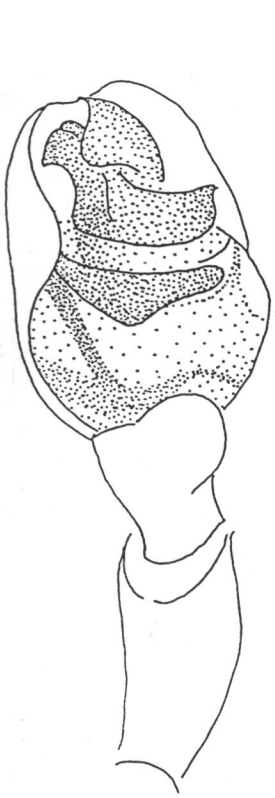


D

Fig. 61. *Achaearanea celsadomina*. A, habitus of male, dorsal view. B, the same, lateral view. C, D, male palp, different views.



A



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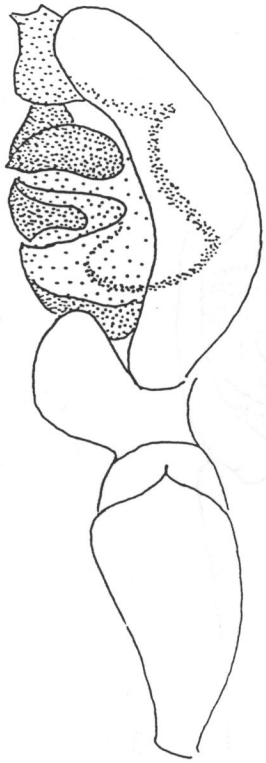
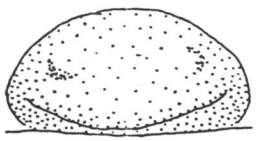


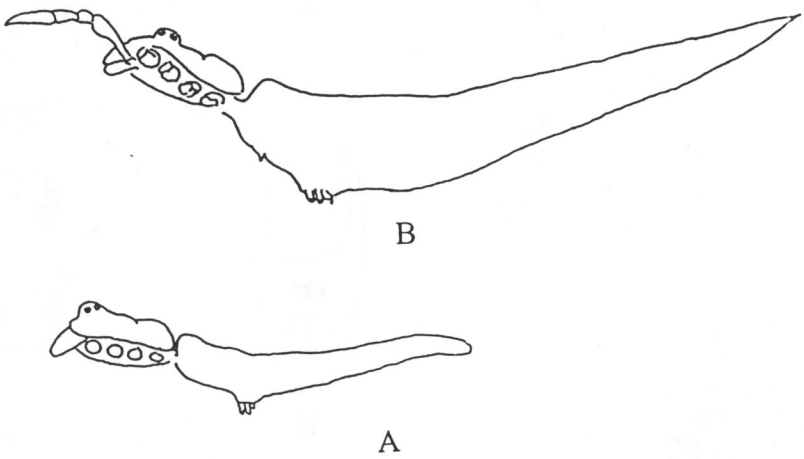
D

B



E

Fig. 62. *Argyrodes flavescens*. A, habitus of male, lateral view. B, male carapace, dorsal view. C, D, male palp, different views. E, epigyne.



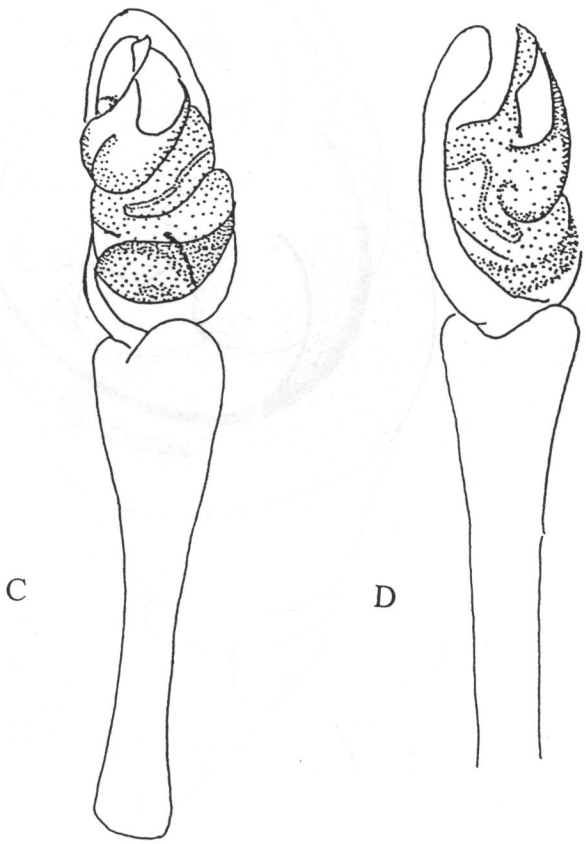


Fig. 63. *Argyrodes cf. labiatus*. A, habitus of male, lateral view. B, habitus of female, lateral view. C, D, male palp, different views.

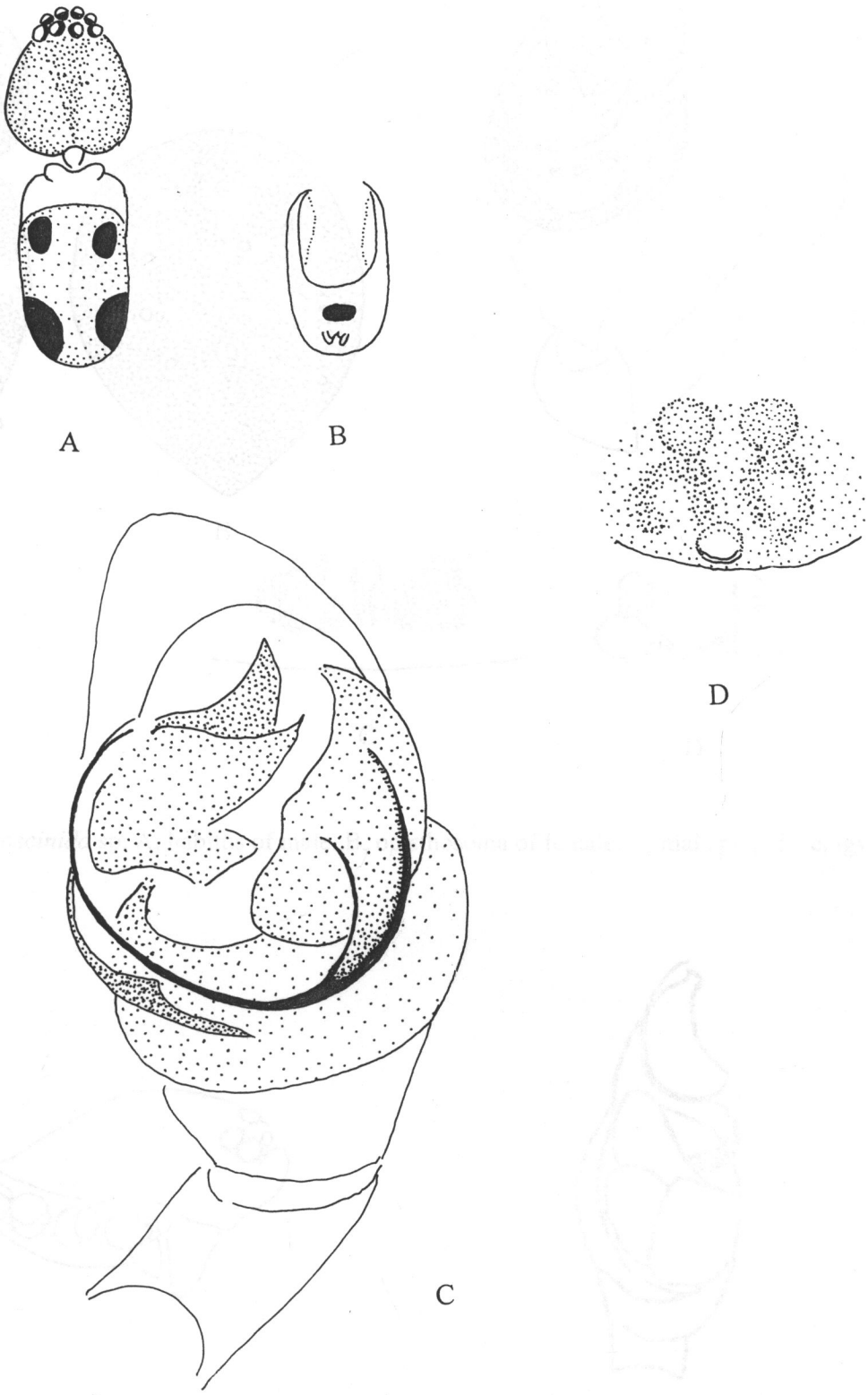


Fig. 64. *Coleosoma*. sp. A, habitus of male, dorsal view. B, the same, ventral view. C, male palp. D, epigyne.

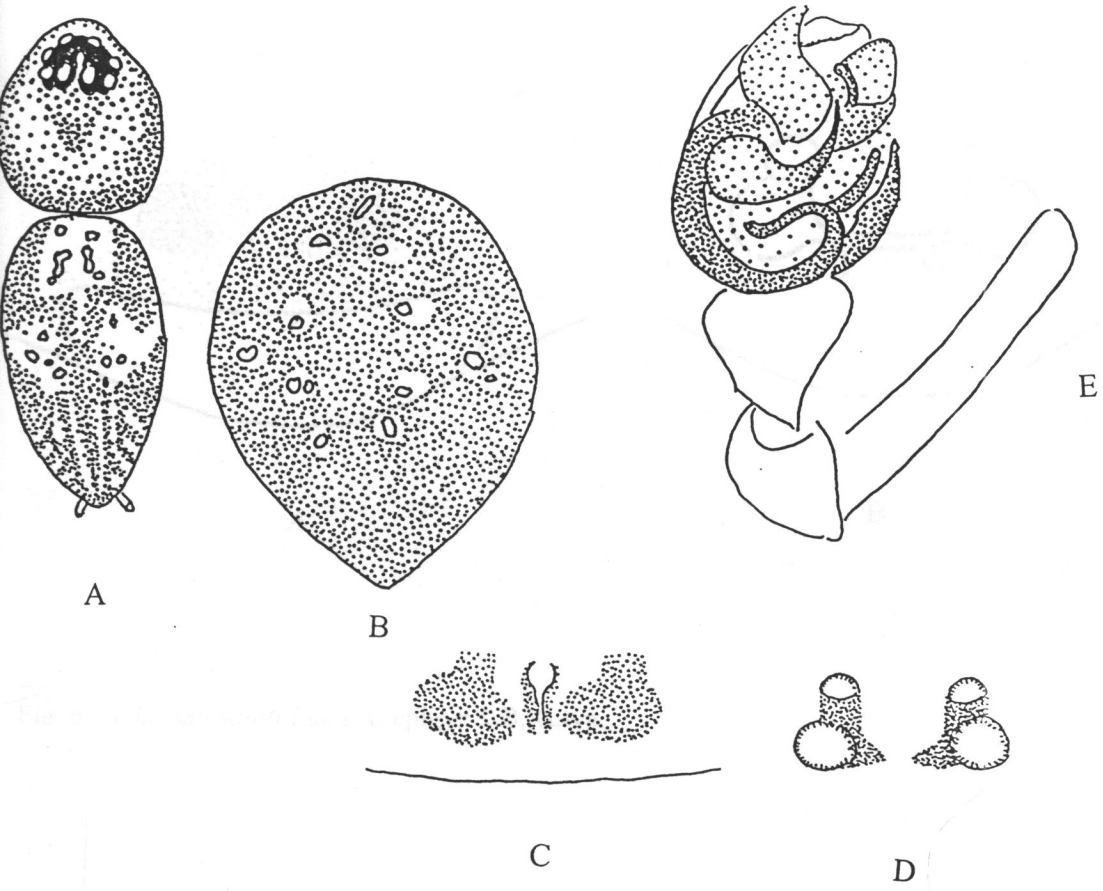


Fig. 65. *Coscinida* sp. A, habitus of male. B, opisthosoma of female. C, male palp. D, epigyne. E, vulva.

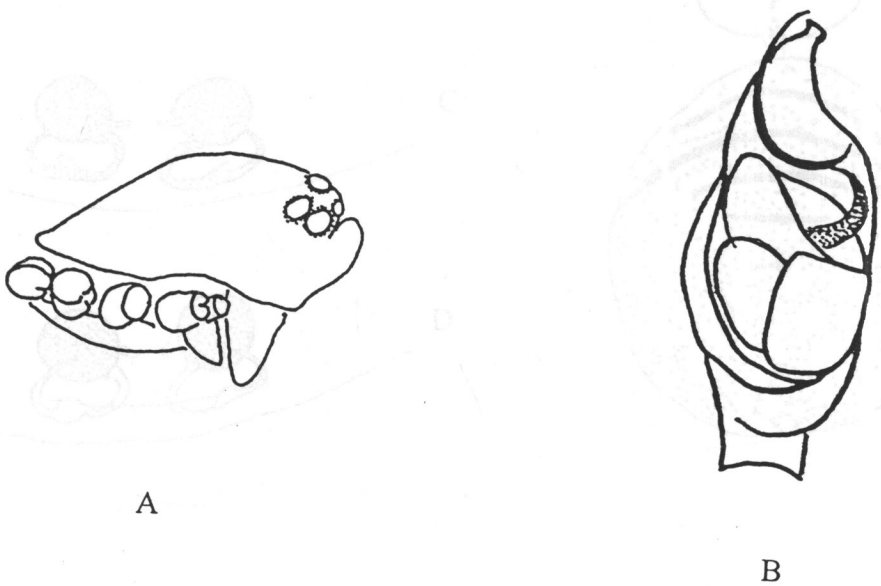


Fig. 66. *Carniella siam*. A, carapace of male, showing clypeal projection. B, male palp.

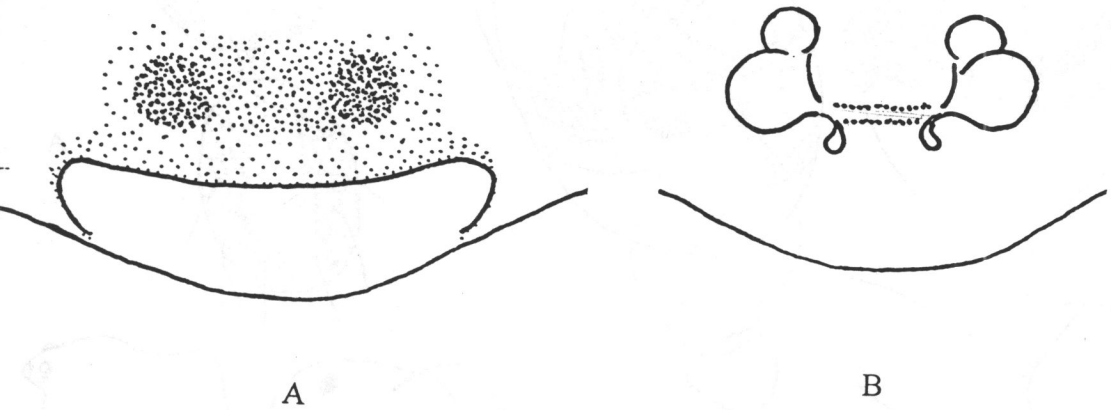


Fig. 67. *Chrysso scintillans*. A, epigyne. B, vulva.

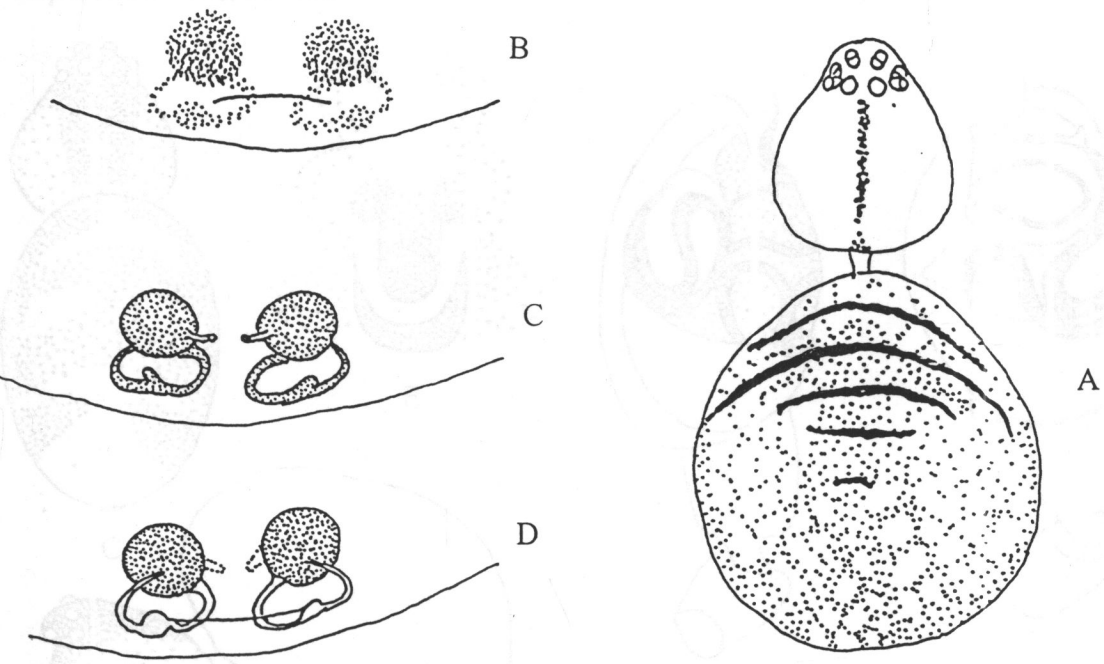


Fig. 68. *Chrysso* sp. A, habitus of female. B, epigyne. C, vulva, dorsal view. D, the same, ventral view.

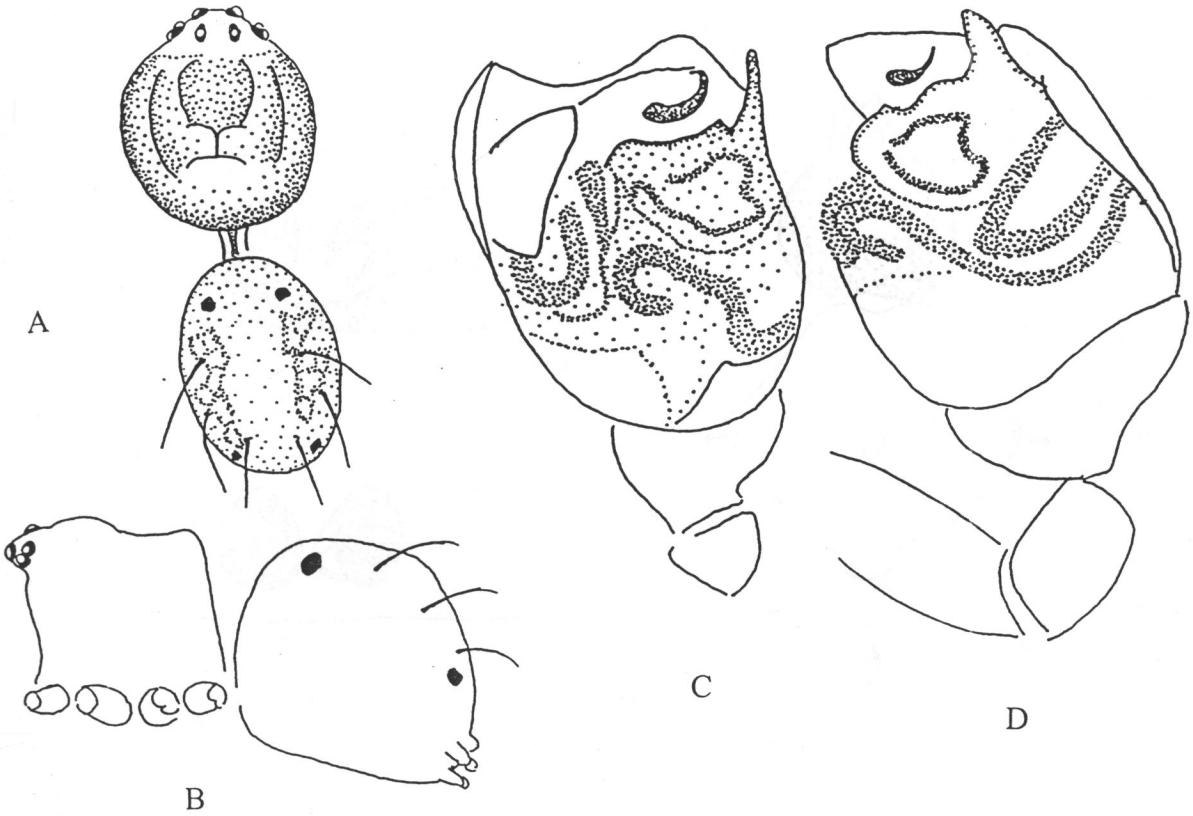


Fig. 69. *Dipoena turriceps*. A, habitus of male, dorsal view. B, the same, lateral view. C, D, palpal organ, different view.

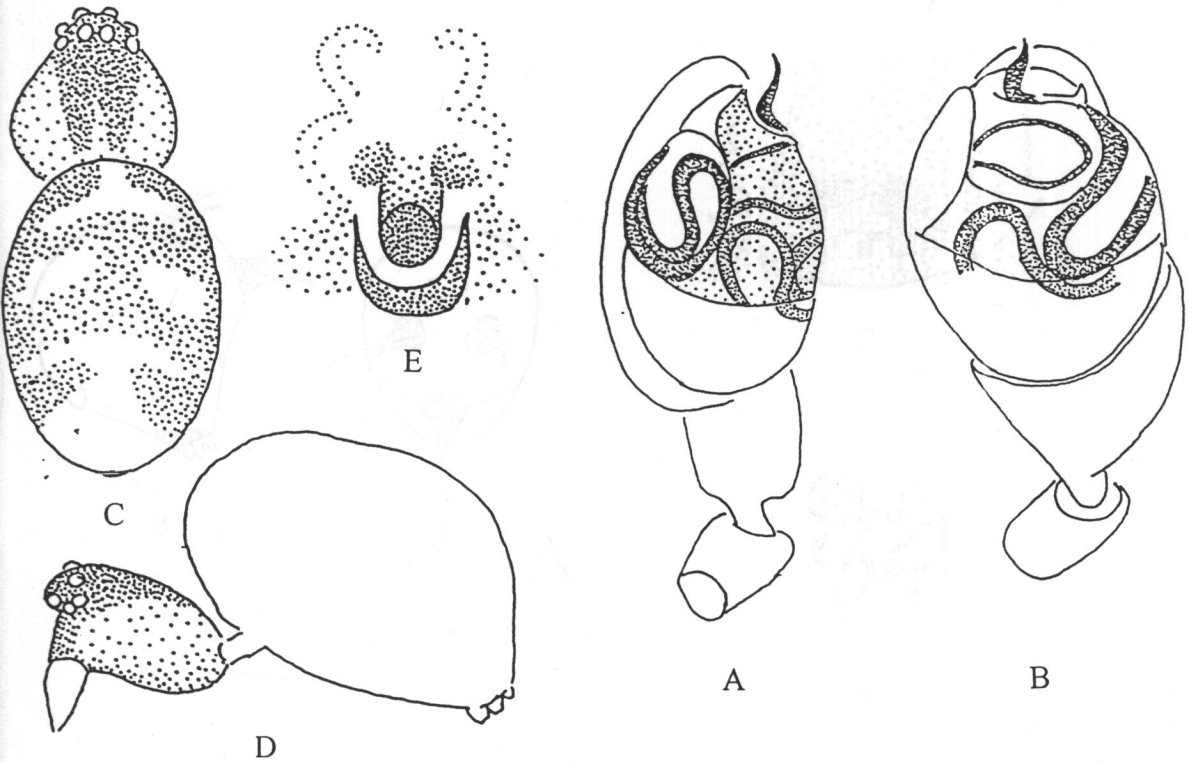


Fig. 70. *Dipoena cf. mustelina.* A, B, male palp, different views. C, habitus of female, dorsal view. D, the same, lateral view. E, epigyne.

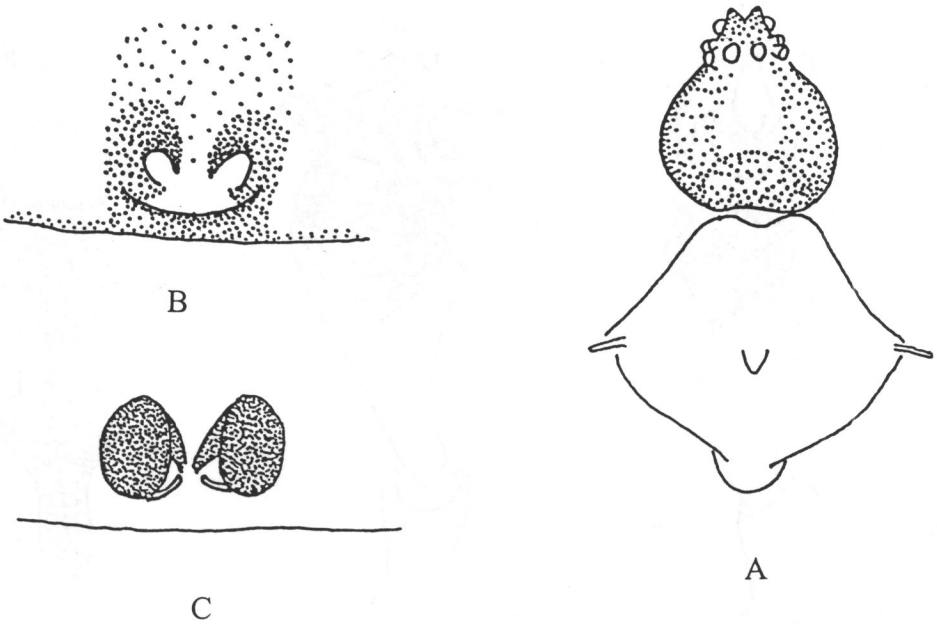


Fig. 71. *Episinus* sp. A, habitus of juvenile. B, epigyne. C, vulva.

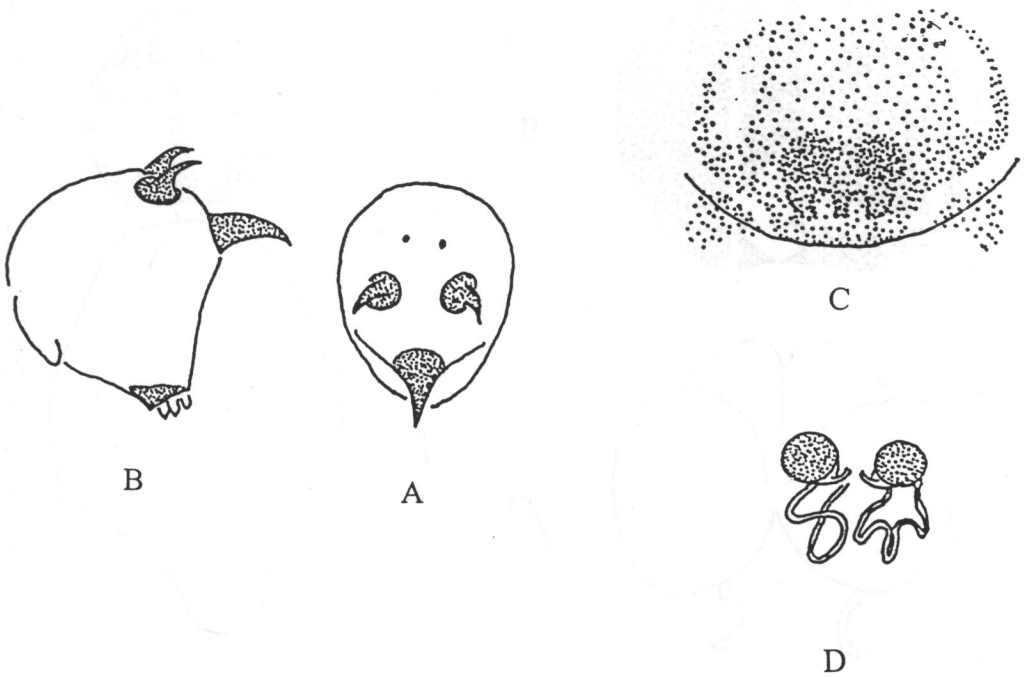


Fig. 72. *Molione* sp. A, opisthosoma of female, dorsal view. B, the same, lateral views. C, epigyne. D, vulva.

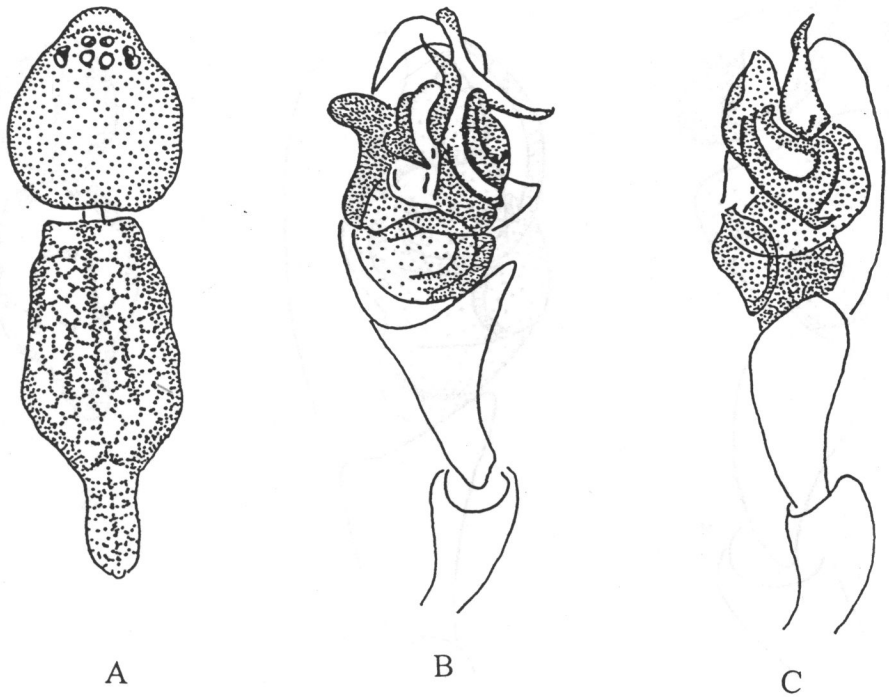


Fig. 73. *Moneta mirabilis*. A, habitus of male. B, C, male palp, different views.

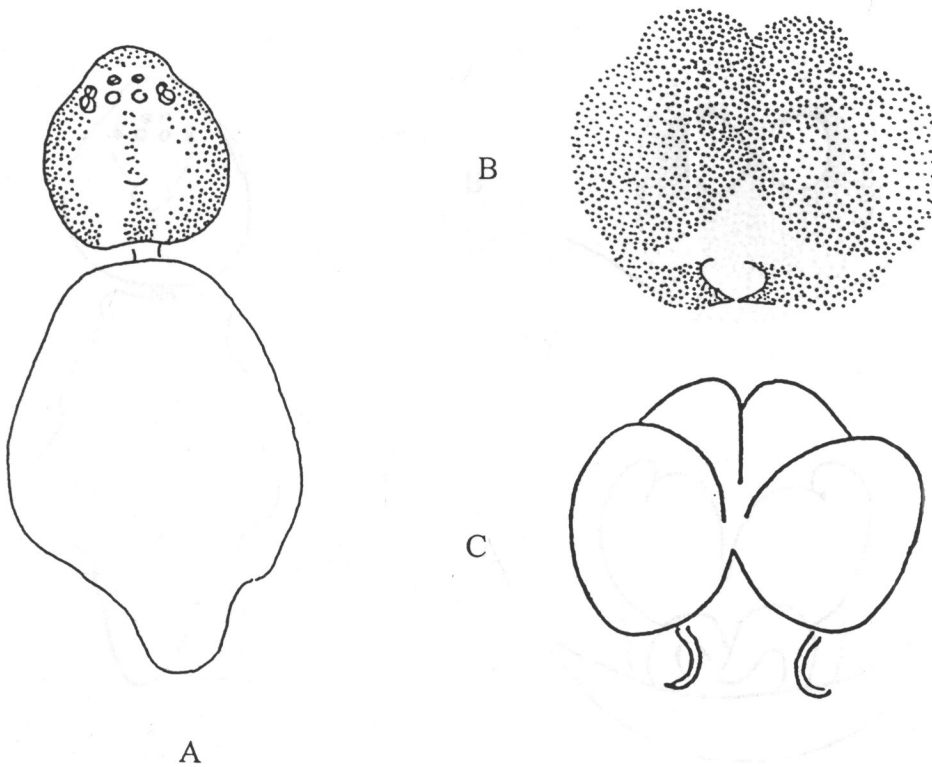


Fig. 74. *Moneta* sp. A. A, habitus of female, dorsal view. B, epigyne. C, vulva.

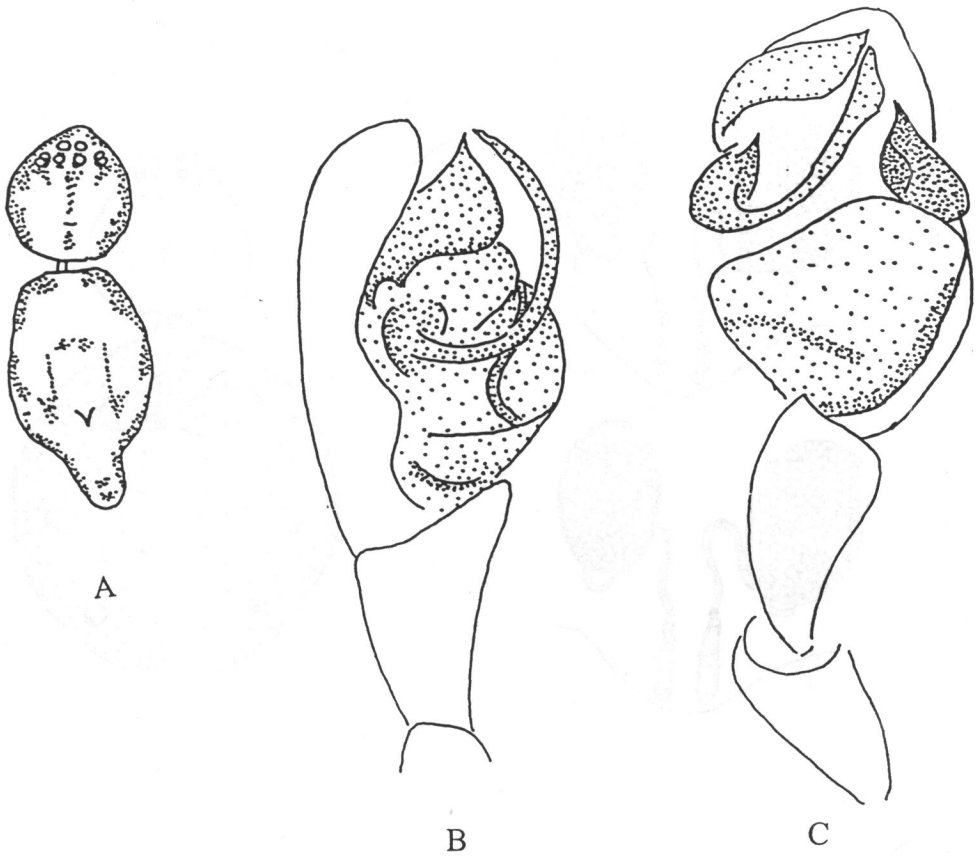


Fig. 75. *Moneta* sp. B. A, habitus of male. B, C, right palp, different view.

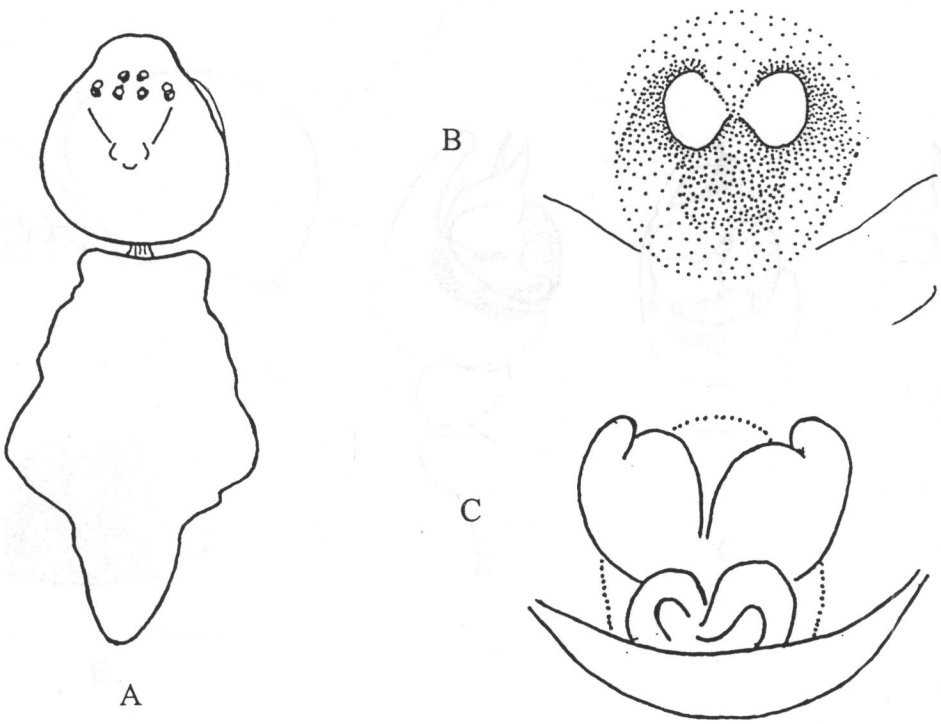


Fig. 76. *Moneta* sp. C. A, habitus of female. B, epigyne. C, vulva.

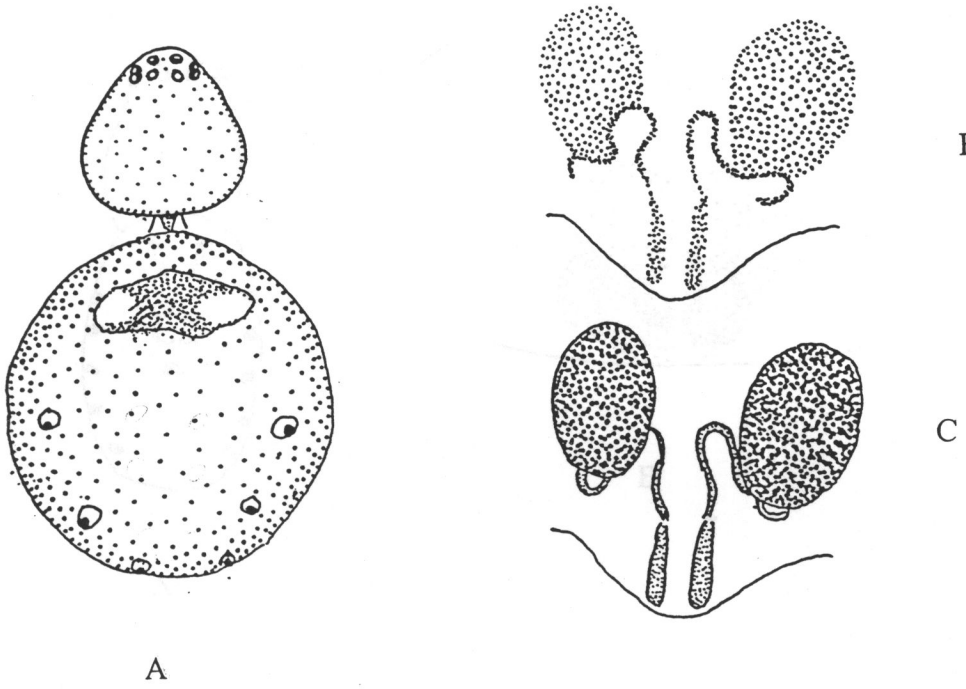


Fig. 77. *Theridion* sp. A. A, habitus of female. B, epigyne. C, vulva.

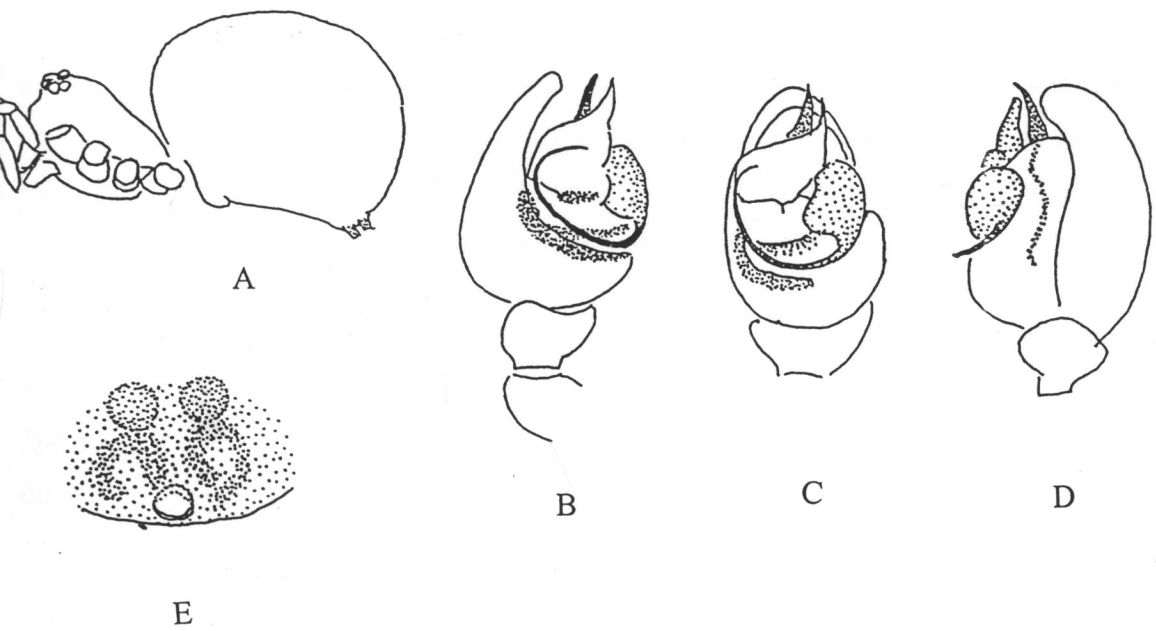
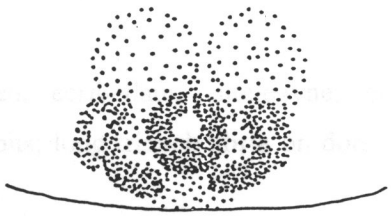


Fig. 78. *Theridion* sp. C. A, female, lateral view. B-D, male palp, different views. E, epigyne.

A



B

Fig. 79. Theridiidae gen. sp. B. A, habitus of female, dorsal view. B, epigyne.

THERIDIOSOMATIDAE Simon, 1881

Fewer than 71 species have been described in about 12 genera; most are tropical and many more remain undescribed.

Diagnostic characters

Very small (<3 mm), three-clawed, ecribellate, entelegyne, eight-eyed spiders; prolateral margin of sternum provided with pits; long trichobothria on dorsal side of posterior tibiae.

Gen. *Ogulnius* O. Pickard-Cambridge, 1882

Literature consulted: Coddington (1986).

? *Ogulnius* sp.

Material examined: 1♂, 1510m, 29.I.2000, PT; 1j, 1510m, 23.X.1999, SS; 1j, 2430m, 29.VII.2000, PT; 1j, 1510m, 24.VI.2000, PT; 1j, 1750m, 15.XI.1999, SS; 1j, 1750m, 15.I.2000, SS; 1j, 1510m, 27.V.2000, PT;

Description:

Male: Prosoma with high cephalic area. Carapace with green patch in cephalic area. Eight eyes in two rows, both rows touching; PME separation by ½ diameter; eye margins black. Opisthosoma green with transverse white band.

Male palp: Embolus very long and slender, twisting around bulbus.

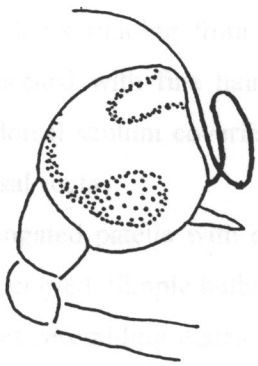
Remarks: Judging from Coddington (1986) the theridiosomatid found in Doi Inthanon National Park may belong to a yet undescribed genus. The species differs from other theridiosomatids as follow: first and second legs without prolateral row of macrosetae (clearly present in all members of *Chthonos*); leg I longer than leg IV (shorter in *Ogulnius*); legs long and slender (short and thick in *Naatlo* and *Eperiotypus*); PME separation by less than ½ diameter (PME separation 1 diameter or more in *Wendilgarda* and *Plato*); embolic division without bristle-like projections (present in all *Theridiosoma*); median apophysis without dorsal spur (present in *Epilineutes*); embolus long and slender (stout, with acute tip in *Eperiotypus*, complex embolic tip in *Naatlo*). Apart from differences in length of leg I and IV which may be subequal in males, the male palp structure of the genus *Ogulnius* seems to correspond with my specimen better than with other genera in having a very long embolus. Coddington also stated that the distribution of *Ogulnius* is circumtropical, with one species, *O. pullus* Bösenberg & Strand, extending to northern temperate Asia. Two species of *Andasta* were reported from Sri Lanka and Malaysia (both were transferred from *Theridiosoma*). *Ogulnius* spp. occur in Japan and the

Philippines. Several species of *Theridiosoma* are distributed from Sri Lanka to Sumatra. *Wendilgarda* spp. were recorded from China, India and the Philippines.

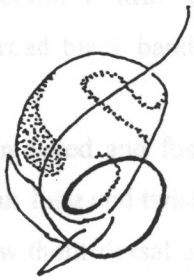
Natural history: Ground dwelling spider which can be found only in hill evergreen forest.

Distribution: Unknown.

A



B



C

Fig. 80. ? *Ogulnius* sp. A, habitus of male, lateral view. B, C, right palp, different views.

ANAPIDAE Simon, 1895

Anapidae comprises 144 species in 34 genera, distributed worldwide but more common in tropical and southern temperate forest.

Diagnostic characters

Minute (1-3 mm), three-clawed, ecribellate, entelegyne spiders with six or eight eyes, PME usually touching; median anterior spur present on papal patellae; chelicerae with labial spur; book lungs replaced by tracheae.

Gen. *Metanapis* Brignoli, 1981

Literature consulted: Brignoli (1981); Davies (1988)

? *Metanapis* sp.

Material examined: 1♂, 1510m, 23.X.1999, SS; 1♂, 1510m, 23.X.1999, PT; 1♂, 1♀, 1j, 1510m, 23.X.1999, SS; 1♀, 27.XI.1999, 1510m, PT; 1♀, 1510m, 25.XII.1999, PT.

Description:

Male: Prosoma strongly sclerotized, orange-brown in color. Cephalic region strongly raised; six eyes situated on elevated mound; LE closed to each other; PME pale without markings. A row of longitudinal hairs running from PME to thoracic area. Legs long without strong spines. Opisthosoma clothed with fine hairs and covered by a scutum; ventral scutum surrounding pedicel, large dorsal scutum covering posterior end. Two broad black bands running between ventral and dorsal scuta.

Male palp: Elongated patella with dorsal apophysis. Tibia reduced and fused with cymbium. Cymbium oval, curved. Simple bulbus elongated; free embolus long and twisted.

Female: Females resembling males but paler, opisthosoma without dorsal scutum. Abdominal pattern different. Palp reduced.

Epigynum and vulva: Two copulatory openings located on sclerotized epigyne. Kidney-shaped spermathecae with short ducts.

Remarks: My specimens correspond with illustrations of *Chasmocephalon* given by Davies (1988). Brignoli (1981) believed that the status of this genus was doubtful because several species had been transferred to at least three other genera (*Risdonius*, *Pseudoanapis* and *Anapogonia*). Simon (1895) distinguished *Chasmocephalon* from *Anapis* only by the presence of eight eyes, instead of six. Specimens studied by Davies (1988) and other collected by myself show that some *Chasmocephalon* species possess 6 eyes. The very long embolus distinguishes my specimens from *Pseudoanapis*. Judging from Brignoli (1981) my specimen should be placed

in *Metanapis*. The Mediterranean and African (or Afro-Asiatic) genera *Zangherella*, *Crozetulus* and *Metanapis* also have in common a relatively simple bulbus with a strongly developed embolus, and an unspecialized male palpus with a more or less lengthened patella. Insufficient knowledge on the morphology of anapids makes it difficult to understand if these three genera are truly related with *Chasmocephalon* and *Risdonius*, which are morphologically quite similar. Five species of *Metanapis* were reported from Africa and Asia. *M. montisemodi* Brignoli and *M. tectimundi* Brignoli occur in Nepal.

Natural history: Ground dwelling spider. Collected by pitfall trapping and from litter samples.

Distribution: Unknown.

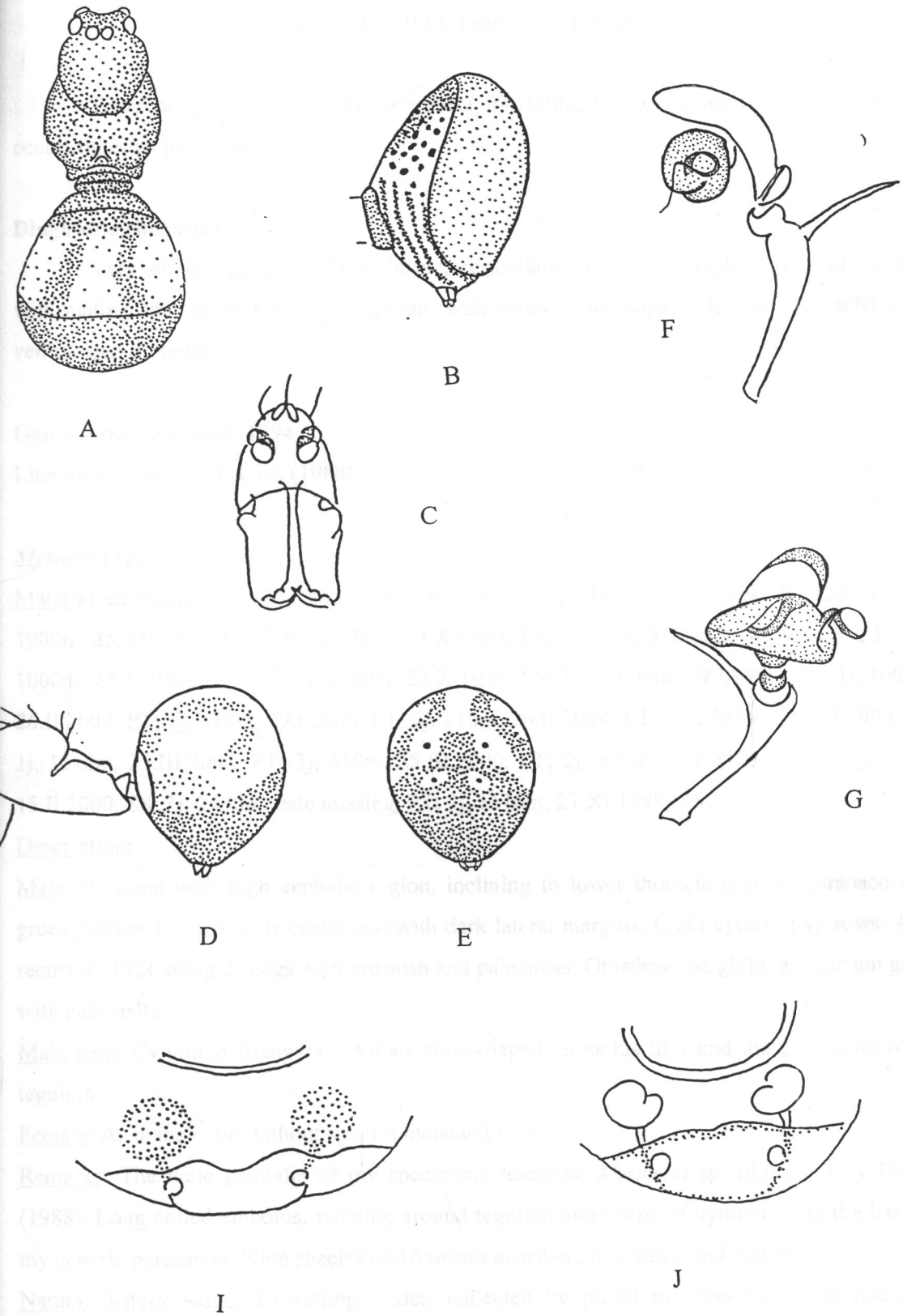


Fig. 81. ? *Metanapis* sp. A, habitus of male, dorsal view. B, the same, lateral view. C, male carapace, front view. D, habitus of female, lateral view. E, the same, dorsal view. F-H, male palp, different views. I, epigyne. J, vulva.

MYSMENIDAE Petrunkevitch, 1928

There are 96 species from 24 genera inhabiting temperate and tropical areas, and occurring in all part of the world.

Diagnostic characters

Very small (< 3 mm), three-clawed, ecribellate, entelegyne, eight-eyed spiders; male with mating spur on metatarsi I; cymbium with lobes or apophyses; female with sclerotized ventral spot on femur.

Gen. *Mysmena* Simon, 1894

Literature consulted: Davies (1988)

***Mysmena* sp.**

Material examined: 2♂, 1510m, 25.XII.1999, PT; 1♂, 510m, 27.XI.1999, SS; 2♂, 1♀, 3j, 1000m, 25.XII.1999, PT; 2♂, 1j, 510m, 23.X.1999, PT; 3♂, 10j, 510m, 25.X.1999, PT; 1♂, 2j, 1000m, 23.X.1999, PT; 1♂, 3j, 1510m, 23.X.1999, SS; 1♂, 1000m, 29.I.2000, PT; 1j, 1000m, 26.II.2000, PT; 2j, 510m, 29.I.2000, PT; 2j, 510m, 26.II.2000, PT; 1j, 2250m, 15.XII.1999, SS; 1j, 1510m, 25.III.2000, PT; 3j, 510m, 25.III.2000, PT; 2j, 1000m, 27.XI.1999, PT; 1j, 750m, 15.II.2000, SS; 1j, 2430m, date missing, PT; 2j, 1510m, 27.XI.1999, SS;

Description:

Male: Prosoma with high cephalic region, inclining to lower thoracic region. Carapace with green patches located in its center and with dark lateral margins. Eight eyes in two rows; AER recurved; PER straight. Legs with greenish and pale areas. Opisthosoma globular; dorsum green with pale spots.

Male palp: Cymbium triangular. Bulbus cone-shaped; embolus thin and long, winding round tegulum.

Female: As in male but without spur on metatarsi I.

Remarks: The male genitalia of my specimens resemble *Mysmena* sp. illustrated by Davies (1988). Long coiled embolus, winding around tegulum and shape of cymbium are the basis of my generic placement. Nine species of *Mysmena* distribute in Europe and Australia.

Natural history: Ground dwelling spider, collected by pitfall trapping and from leaf litter samples.

Distribution: Unknown.

Mysmenidae gen. sp.

Material examined: 1♂, 510m, 25.III.2000, PT; 1♂, 1000m, 29.IV.2000, PT; 1♀, 1000m, 27.XI.1999, SS; 1♀, 1j, 1000m, 25.I.2000, PT; 1j, 1250m, 15.XII.1999, SS; 1j, 2090m, 25.XII. 1999, PT; 1j, 510m, 23.X.1999, PT; 3j, PT; 1000m, 23.X.1999, PT; 1j, 1000m, 27.XI.1999, PT; 2j, 1000m, 23.X.1999, PT; 1j, 1PM, 1000m, 27.V.2000, PT; 2j, 1000m, 26.II.2000, PT; 1j, 510m, 25.III.2000, PT; 5j, 1000m, 24.VI.2000, PT; 4j, 510m, 24.VI.2000, PT; 1j, 1510m, 24.VI.2000, PT.

Description:

Male: Prosoma round; cephalic area strongly raised. Carapace green with Ψ-shaped dark pattern. Eight eyes arranged into two rows; AER recurved; PER straight; ocular area projecting forwards. Opisthosoma globular; dorsum green with numerous pale spots.

Male palp: Cymbium with small lobe. Bulbus globular with visible spermophore; embolus quite short.

Female: Females resembling males.

Remarks: The presence of a clasping spur on metatarsus I confirms my placement of this species in the family. Due to incomplete knowledge of Asian Mysmenidae, a correct placement is difficult.

Natural history: The spiders were collected mainly at low altitudes (510-1000 m) of the national park.

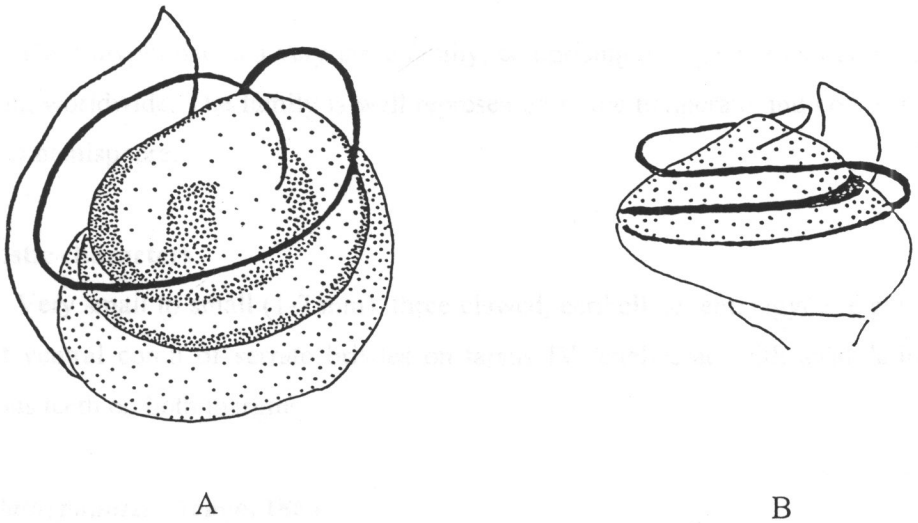


Fig. 82. *Mysmena* sp. A, B, male palp, different view.

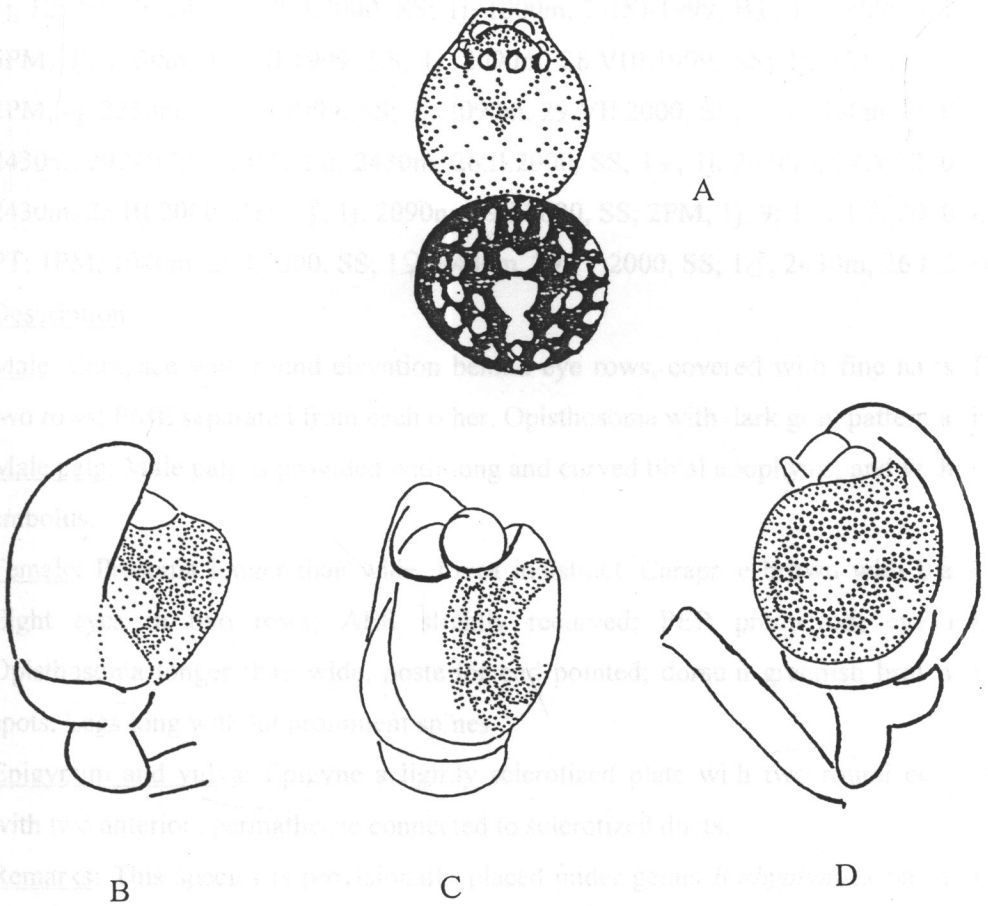


Fig. 83. Mysmenidae gen. sp. A, habitus of male, dorsal view. B-D, male palp, different views.

LINYPHIIDAE Blackwall, 1859

The Linyphiidae is a very large family, comprising 555 genera and about 4171 species occurring worldwide. The family is well represented in the temperate and cooler regions of the Northern hemisphere.

Diagnostic characters

Very small to small (1-7 mm), three-clawed, ecribellate, entelegyne, eight-eyed spiders without ventral comb of serrate bristles on tarsus IV; chelicerae with stridulating ridge and numerous teeth on both margins.

Gen. *Bathyphantes* Menge, 1866

Literature consulted: Song, Zhu & Chen (1999)

***Bathyphantes* sp.**

Material examined: 1♂, 3♀, 2090m, 24.VI.2000, PT; 1♂, 1PM, 1510m, 26.II.2000, SS; 2PM, 1j, 12; 1♂, 3j, 2430m, 29.I.2000, SS; 1j, 1000m, 27.XI.1999, BT; 1♀, 2090m, 25.III.2000, SS; 5PM, 5j, 1750m, 15.XII.1999, SS; 1j, 2090m, 28.VIII.1999, SS; 1j, 1510m, 29.VII.2000, SS; 2PM, 4j, 2250m, 15.XII.1999, SS; 2j, 2090m, 29.VII.2000, SS; 1♀, 2430m, 29.IV.2000, PT; 4j, 2430m, 29.VII.2000, PT; 1♀, 2430m, 26.II.2000, SS; 1♀, 1j, 2430m, 24.VI.2000, SS; 1♂, 2♀, 2430m, 25.III.2000, PT; 1♂, 1j, 2090m, 29.I.2000, SS; 2PM, 1j, 9; 1♂, 1♀, 2090m, 25.III.2000, PT; 1PM, 1000m, 29.I.2000, SS; 1♀, 2430m, 29.IV.2000, SS; 1♂, 2430m, 26.II.2000, SS.

Description:

Male: Carapace with round elevation behind eye rows, covered with fine hairs. Eight eyes in two rows; PME separated from each other. Opisthosoma with dark gray pattern as in Fig.85.

Male palp: Male palpus provided with long and curved tibial apophysis, and with dagger-shaped embolus.

Female: Prosoma longer than wide, fovea indistinct. Carapace brown with black ocular area. Eight eyes in two rows; AER slightly recurved; PER procurved; eye margins black. Opisthosoma longer than wide, posterior end pointed; dorsum greenish brown with two pale spots. Legs long without prominent spines.

Epigynum and vulva: Epigyne a lightly sclerotized plate with two round depressions. Vulva with two anterior spermathecae connected to sclerotized ducts.

Remarks: This species is provisionally placed under genus *Bathyphantes* on the basis of male and female genital structures.

Natural history: Ground living spider.

Distribution: Unknown.

Gen. *Batueta* Locket, 1982

Literature consulted: Song, Zhu & Chen (1999)

? *Batueta* sp.

Material examined: 1♂, 1♀, 1PM, 1000m, 29.VII.2000, SS; 1♀, 1510m, 23.X.1999, SS; 5♂, 5♀, 1510m, 29.IV.2000, PT; 1♀, 2090m, 24.VI.2000, SS; 1♂, 2090m, 27.XI.1999, PT; 1♂, 1♀, 2090m, 25.III.2000, PT; 13♂, 3j, 1510m, 25.III.2000, PT; 1♀, 13; 1♂, 2♀, 2j, 1510m, 27.V.2000, PT; 1j, 2430m, 28.VIII.1999, SS; 1♂, 3j, 2090m, 24.VI.2000, PT; 2♂, 4♀, 2430m, 27.V.2000, PT; 2♂, 3♀, 1j, 1510m, 25.III.2000, SS; 1♂, 510m, 24.VI.2000, PT; 4PM, 5j, 13; 1♀, 12; 1j, 1510m, 27.XI.1999, PT; 5j, 1510m, 23.X.1999, SS; 1♂, 2090m, 23.X.1999, PT; 4♂, 1♀, 1j, 1510m, 26.II.2000, SS; 1♀, 1j, 2090m, 26.II.2000, PT; 2♀, 1j, 2090m, 29.IV.2000, PT; 10♂, 6♀, 1PM, 1j, 1510m, 29.VII.2000, PT; 3PM, 4j, 2250m, 15.III.2000, SS; 1♀, 2j, 1510m, 23.X.1999, PT; 1j, 1510m, 29.I.2000, PT; 1j, 1510m, 26.II.2000, PT; 1♀, 2j, 2090m, 29.II.2000, SS; 1j, 1510m, 25.IX.1999, SS; 3♂, 4♀, 2090m, 26.II.2000, SS; 1♂, 1♀, 2090m, 29.VII.2000, PT; 5PM, 2430m, 23.X.1999, SS; 1j, 1510m, 29.IV.2000, SS; 1♀, 1PM, 2j, 1750m, 15.V.2000, SS; 1j, 6; 11j, 7; 1♂, 2250m, 15.IV.2000, SS; 2j, 2430m, 25.XII.1999, PT; 1♀, 2j, 2090m, 24.VI.2000, SS.

Description:

Male: Carapace with raised tubercle behind eye rows, both sides with a group of strong hairs; lateral margin lined with black bands. Eight eyes in two rows; ME clearly separated from LE; eye margins black. Opisthosoma with three pairs of black spots followed by two transverse black bands; spinnerets encircled with black ring.

Male palp: Cymbium narrow. Embolus long and twisting.

Female: Female resembling male but carapace less convex, without strong setae. Opisthosoma somewhat larger, with gray pattern.

Epigynum and vulva: As in Fig. 86.

Remarks: *Batueta* is a small genus, established in 1982 for *B. voluta* Locket from Malaysia. Another species, *B. similis* Wunderlich & Song was described from Yunnan. The specimens in my collection are placed under *Batueta* due to male palp possessing a very long and curved embolus, embolic base fused with elongate conductor, and cymbium narrowed. The male palpal organ of my specimens differ from that of *B. similis* in a complicated embolic tip and a slender conductor. Since no illustration of the female epigyne has available, generic placement is uncertain.

Natural history: Ground living spider; most of the specimens were found at high elevations.

Gen. *Linyphia* Latreille, 1804

Literature consulted: Dippenaar-Schoeman & Jocqué (1997)

***Linyphia* sp.**

Material examined: 1♀, 2430m, 25.III.2000, BT.

Description:

Female: Prosoma longer than wide, pear-shaped. Carapace yellow with pale greenish median band running from PER to the center. Fovea absent. Eight eyes arranged in two rows; AER recurved; PER straight; ALE far apart from AME, grouped with PLE on black tubercles. Opisthosoma oval, pointed at the end; dorsum covered with numerous irregular small white patches, posterior end with three pairs of black spots in longitudinal row.

Epigynum: As in Fig. 84.

Remarks: The spider collected is considered to be a member of *Linyphia* due to a small median scapus on female epigyne.

Natural history: Collected by beating bushes in cloud hill evergreen forest near the summit.

Distribution: Uncertain.

Gen. *Neriene* Blackwall, 1833

Literature consulted: Song, Zhu &Chen (1999)

***Neriene* sp. A**

Material examined: 1♂, 2090m, 24.VI.2000, PT; 6♂, 3♀, 1j, 2090m, 24.VI.2000, PT; 2♀, 1PM, 4j, 2090m, 29.VII.2000, SS; 2♂, 4♀, 1j, 12; 11♂, 10♀, 2PM, 2j, 2430m, 29.VII.2000, PT; 2♀, 2430m, 29.I.2000, SS; 1♀, 2090m, 25.XII.1999, PT; 3♂, 1j, 2250m, 15.III.2000, SS; 2♀, 1j, 2090m, 29.I.2000, PT; 1♀, 3j, 2430m, 26.II.2000, SS; 1♀, 2430m, 23.X.1999, SS; 1♀, 1510m, 25.IX.1999, SS; 2j, 2090m, 25.IX.1999, PT; 1♀, 2430m, 26.II.2000, SS; 10♂, 7♀, 3j, 3PM, 2090m, 29.VII.2000, PT; 3♂, 4♀, 3PM, 7j, 1510m, 29.VII.2000, PT; 1♀, 2430m, 24.VI.2000, SS; 9♂, 10♀, 3PM, 7j, 2090m, 27.XI.1999, PT; 1♂, 1510m, 25.IX.1999, SS; 1♀, 2090m, 24.VI.2000, SS; 1♂, 15.I.2000, SS; 1♀, 2250m, 15.V.2000, SS; 1♀, 2250m, 15.IV.2000, SS; 1j, 2; 1♂, 1♀, 10; 9♂, 11♀, 1PM, 1j, 2090m, 26.II.2000, PT; 1♂, 8♀, 1PM, 37j, 2090m, 27.XI.1999, SS; 1j, 8; 4♂, 4♀, 2090m, 29.IV.2000, PT; 1♂, 1510m, 29.IV.2000, PT; 3♂, 2♀, 2090m, 25.III.2000, SS; 1♀, 1510m, 29.I.2000, PT; 2♀, 2430m, 29.I.2000, PT; 2♀, 1510m, 25.III.2000, PT; 21♂, 7♀, 6j, 2090m, 27.V.2000, PT; 1♀, 2430m, 26.II.2000, SS; 12♂, 4♀, 4j, 2090m, 25.III.2000, PT; 1♀, 2090m, 29.IX.1999, PT; 2♂, 1j, 1510m, 29.IV.2000, PT; 1♀, 2430m, 28.VIII.1999, SS; 5♂, 2♀, 2; 1♀, 2430m, 25.III.2000, PT; 1♀, 1j, 1510m, 29.IX.1999, PT; 1♀, 2250m, 15.XII.1999, SS; 1♂, 2430m, 29.IV.2000, PT; 3♂, 3♀, 2j, 2430m, 26.II.2000,

PT; 14♂, 3♀, 1j, 2430m, 27.V.2000, PT; 3♂, 3♀, 1PM, 2430m, 23.X.1999, SS; 1♂, 1510m, 23.X.1999, PT; 1♂, 2♀, 1PM, 1510m, 26.II.2000, PT; 2♀, 13; 9♂, 6♀, 1j, 2090m, 23.X.1999, PT; 1♀, 1510m, 29.I.2000, SS; 8♂, 12♀, 2j, 2250m, 15.IV.2000, SS.

Description:

Male: Prosoma longer than wide, slightly narrowed in front. Carapace yellow with triangular black band running from PER to longitudinal fovea. Eight eyes in two rows; AER recurved; PER straight; ocular area black. Opisthosoma yellow with two pairs of black spots located anteriorly and with transverse stripes posteriorly.

Male palp: As in Fig. 87.

Female: Female resembles male but some specimens show darker opisthosoma, dorsum grayish back with black patterns.

Epigynum and vulva: As in Fig. 87.

Remarks: Male and female genital structures of *N. jinjooensis* Paik seem to correspond with the species examined.

Natural history: Specimens collected by soil sampling and pitfall trapping of hill evergreen forest at high altitudes (1510-2430 m).

***Neriene* sp. B**

Material examined: 1♂, 1♀, 1000m, 29.I.2000, PT; 1♂, 1000m, 26.II.2000, PT; 1♂, 2090m, 28.VIII.1999, SS; 1♀, 2j, 1510m, 23.X.1999, SW; 1♀, 1000m, 29.IV.2000, PT; 1♂, 1000m, 25.III.2000, SS; 1♀, 3PM, 5j, 1000m, 29.I.2000, SS; 1♂, 1000m, 26.II.2000, PT; 1♂, 1510m, 25.III.2000, SS; 1♀, 1PM, 1j, 510m, 29.I.2000, SS; 1♀, 1j, 1000m, 25.IX.1999, PT; 1♂, 1♀, 11; 1♀, 5; 1♀, 3PM, 750m, 15.II.2000, SS; 2♂, 3j, 1000m, 27.V.2000, PT; 2♀, 1000m, 23.X.1999, PT; 1♀, 4; 1♂, 1000m, 23.X.1999, PT.

Description:

Male: Prosoma longer than wide, cephalic area slightly raised. Carapace yellowish with dark brown patches along the lateral sides. Eight large eyes arranged in two rows; AER recurved; PER straight; eyes oval with black surrounding; AME smallest. Shallow fovea located in thoracic region. Opisthosoma gray with faded black spots (absent in some specimens) and black band at posterior end; venter black.

Male palp: As in Fig. 88.

Female: Carapace uniform, cephalic area almost indistinguishable from thoracic area in dorsal view; cephalic area moderately raised anteriorly and sloping toward thoracic region. Fovea indistinct. Opisthosoma larger, with prominent black spots and band; venter dark.

Epigynum: Epigyne dome-shaped as in Fig. 88.

Remarks: Judging from very different types of genitalia illustrated for *Neriene* spp. in the literature, specific placement is not possible and even generic placement is doubtful.

Natural history: Most of specimens were collected from the forest floor of dipterocarp with pine forest.

Distribution: Uncertain.

? ***Neriene* sp.**

Material examined: 1♂, 2430m, 29.I.2000, BT.

Description:

Male: Carapace orange-brown with elevated cephalic area. Fovea indistinct. Clypeus high. Eight eyes in two rows; AER recurved, close together; PER straight; eye margins black; LE touching and situated on slightly elevated tubercles. Opisthosoma longer than wide, pointed posteriorly; dorsum pale yellow with two lateral lines of irregularly shaped white spots and with four pairs of black spots. Colulus represented by two setae.

Male palp: Cymbium with threat-like paracymbium raising from base. Large median apophysis separated from radix. Tegulum with small mound (tegular apophysis?). Embolus situated on flange-like conductor.

Remarks: The male palpal structure indicates that this species is closely related to *N. zhui* Chen & Li from China.

Natural history: Collected from cloud hill evergreen forest by beating bushes.

Gen. *Oedothorax* Bertkau, in Förster & Bertkau, 1883

Literature consulted: Song, Zhu & Chen (1999).

***Oedothorax cf. hulongensis* Zhu & Wen**

Material examined: 2♂, 2430m, 29.I.2000, SS; 7♀, 2250m, 15.III.2000, SS; 1♀, 1510m, 25.IX.1999, SW; 16♂, 2♀, 7j, 11; 2♀, 3j, 6PM, 1510m, 29.I.2000, SW; 1♂, 1PM, 4j, 6; 2♀, 1PM, 2090m, 27.XI.1999, BT; 1♀, 1510m, 27.XI.1999, SW; 1j, 1510m, 26.II.2000, PT; 1♀, 2090m, 24.VI.2000, BT; 6♂, 2♀, 3PM, 4j, 1510m, 26.II.2000, BT; 1PM, 2j, 1000m, 26.II.2000, PT; 1♀, 2090m, 23.X.1999, SW; 2PM, 1000m, 26.II.2000, PT; 2PM, 1j, 22; 1♀, 3PM, 6j, 1000m, 29.I.2000, SS; 3PM, 5j, 2430m, 29.I.2000, SW; 1j, 1510m, 25.III.2000, PT; 2♂, 5♀, 1j, 2430m, 25.III.2000, BT; 2j, 1510m, 27.XI.1999, BT; 4j, 2430m, 29.I.2000, BT; 1♂, 1000m, 23.X.1999, SW; 3♀, 3PM, 1j, 2090m, 29.I.2000, SW; 1j, 2090m, 27.XI.1999, SW; 2PM, 2j, 2430m, 27.XI.1999, BT; 2PM, 3j, 18; 1♂, 1510m, 29.IV.2000, SW; 2♂, 2090m, 29.IV.2000, SW; 2♂, 2090m, 25.III.2000, BT; 2♂, 3♀, 1j, 1510m, 25.III.2000, SW.

Description:

Male: Prosoma with strongly raised cephalic area. Carapace black with pale margins. Eight eyes; PME situated on raised portion of carapace; other arranged close to each other in front. Opisthosoma black with paired pale spots and a series of transversal stripes.

Male palp: Tibia with dorsal and retrolateral apophyses. More details in Fig. 90.

Female: Carapace orange with large black band on both lateral margins. Eight eyes in two rows; AER recurved; PER straight; ocular area black. Opisthosoma with three pairs of black spots followed by two transverse black stripes, spinnerets encircled by black ring.

Epigynum and vulva: Epigyne a broad plate. Cone-shaped spermathecae located anteriorly with short fertilization ducts.

Remarks: Female genitalia differ from those of *O. hulongensis* in having longer spermathecae. However, the male palp resembles those of *Nasoona* species illustrated by Millidge (1995). *N. prominula* Millidge was recorded from Nan Province. I placed this species in *Oedothorax* instead of *Nasoona*, due a large and massive elevation on the carapace rather than a small conical one found in members of *Nasoona*.

Natural history: Most of the specimens were collected by sweeping and beating bushes in hill evergreen forest.

Distribution: China, Thailand?

Gen. *Pronasoona* Millidge, 1995

Literature consulted: Millidge (1995)

***Pronasoona aurata* Millidge, 1995**

Material xamined: 1♂, 2430m, 29.I.2000, SS; 1♂, 1♀, 3PM, 1j, 510m, 24.VI.2000, PT; 1PM, 1j, 510m, 25.III.2000, PT; 1♂, 1j, 510m, 27.XI.1999, PT; 1♂, 1♀, 510m, 29.VII.2000, PT; 2♂, 1j, 510m, 29.IV.2000, PT; 1♂, 1♀, 510m, 26.II.2000, SS; 2♀, 3; 1♀, 510m, 23.X.1999, PT; 1♂, 3♀, 11PM, 1000m, 25.III.2000, SS; 1♀, 1000m, 23.X.1999, PT; 1♀, 1000m, 19.I.2000, SS; 1♂, 1PM, 1000m, 24.VI.2000, SS; 3♀, 510m, 25.III.2000, SS; 1♂, 1510m, 29.IV.2000, PT; 3♂, 1♀, 510m, 27.V.2000, PT; 1♂, 1000m, 27.XI.1999, PT; 1♂, 1♀, 1PM, 1000m, 23.X.1999, PT; 1♂, 510m, 25.IX.1999, PT; 1♂, 510m, 23.X.1999, SS.

Description:

Male: Prosoma longer than wide. Carapace with black ocular area and longitudinal fovea. Eight eyes in two rows; AER recurved; PER straight; PME separated by their diameter. Opisthosoma elongated; dorsum pale with three pairs of gray spots and with posterior end encircled by black ring.

Male palp: Paracymbium hook-like, well develop. Palpal organ with lightly sclerotized radical part, from there arising a broad pointed anterior apophysis anteriorly and a long slender curved embolus.

Female: Female resembling male.

Epigynum and vulva: Epigyne with weakly projecting lip. Genital openings lying at the anterior end of two dark lines. Vulva with two round spermathecae.

Remarks: Millidge (1995) established *Pronasoona* for two new linyphiids from Thailand and Borneo. *P. aurata* was described from Doi Inthanon National Park. Illustrations in the original description are the basis of my placement. The epigyne resembles that of *P. sylvatica* Millidge but somewhat differs in having a protruding lip.

Natural history: Ground living spider. Collected by soil sampling and pitfall trapping in mostly deciduous dipterocarp and dipterocarp with pine forest, few individuals also from hill evergreen forest.

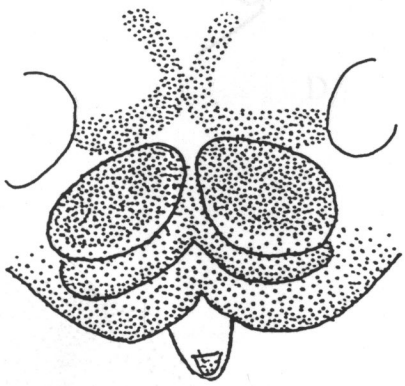


Fig. 84. *Linyphia* sp. Epigyne.

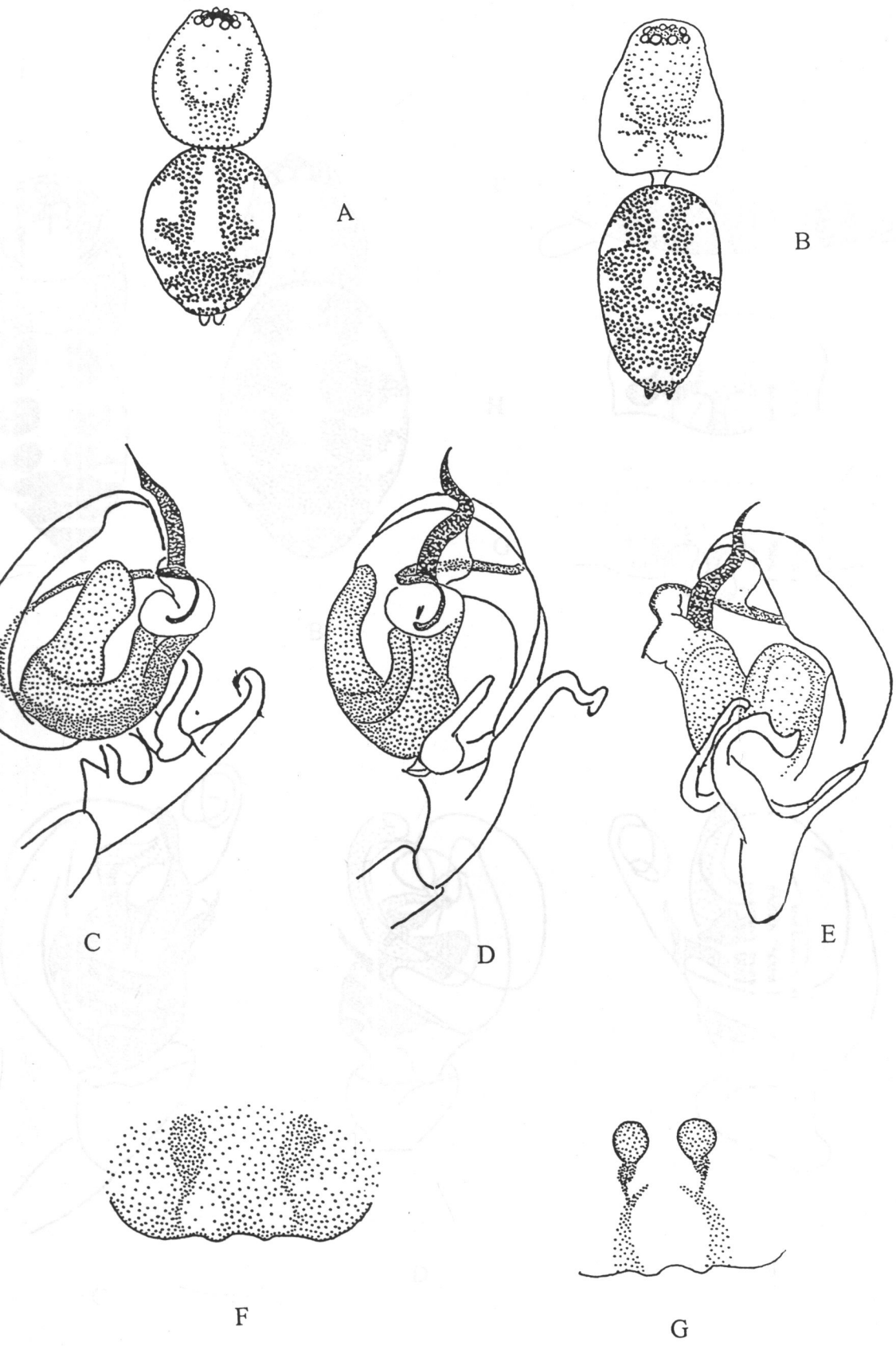


Fig. 85. *Bathyphantes* sp. A, habitus of male. B, habitus of female. C-E, male palp, different views. F, epigyne. G, vulva.

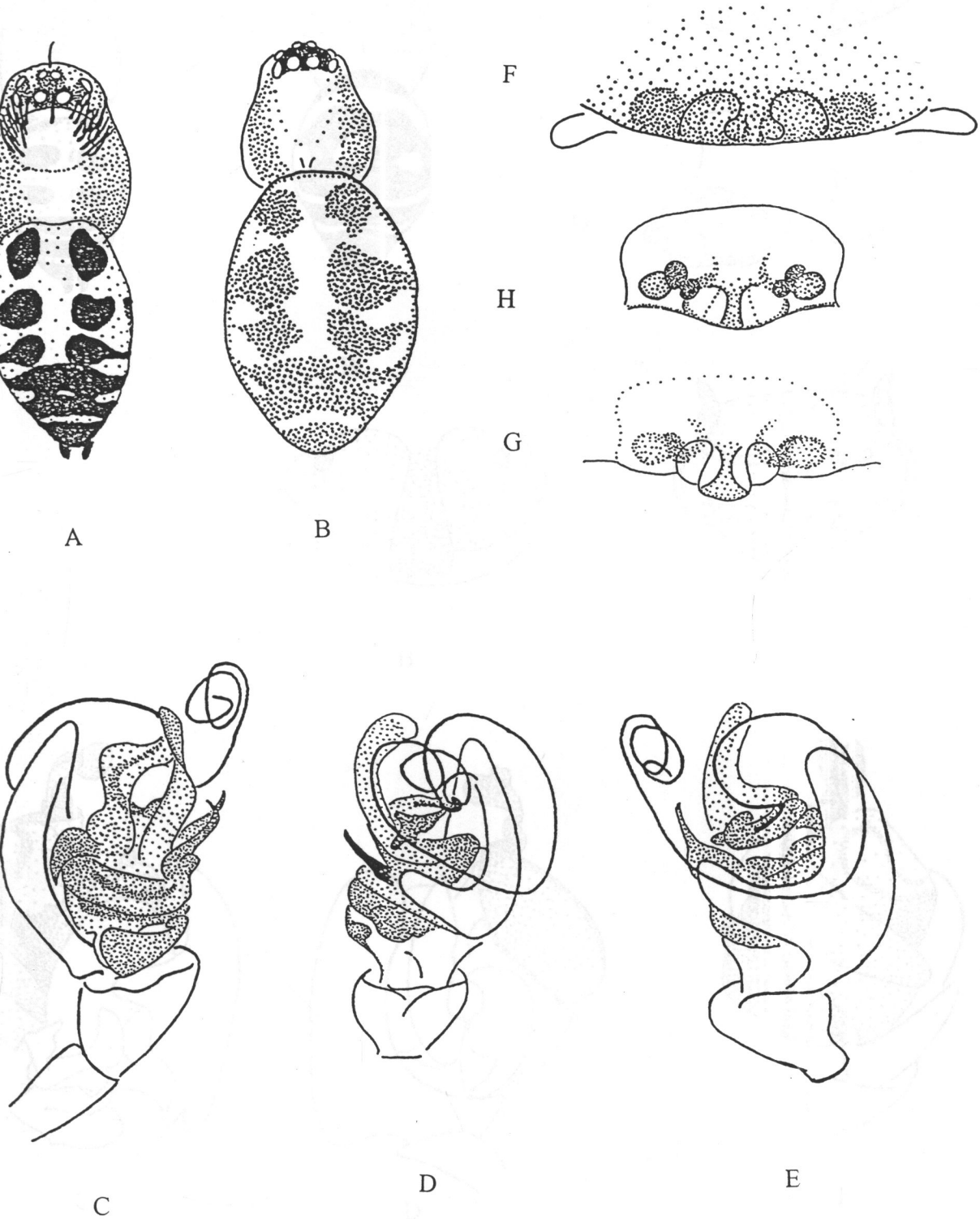


Fig. 86.? *Batueta* sp. A, habitus of male. B, habitus of female. C-E, male palp, different views. F, epigyne, normal. G, epigyne, clear. H, vulva.

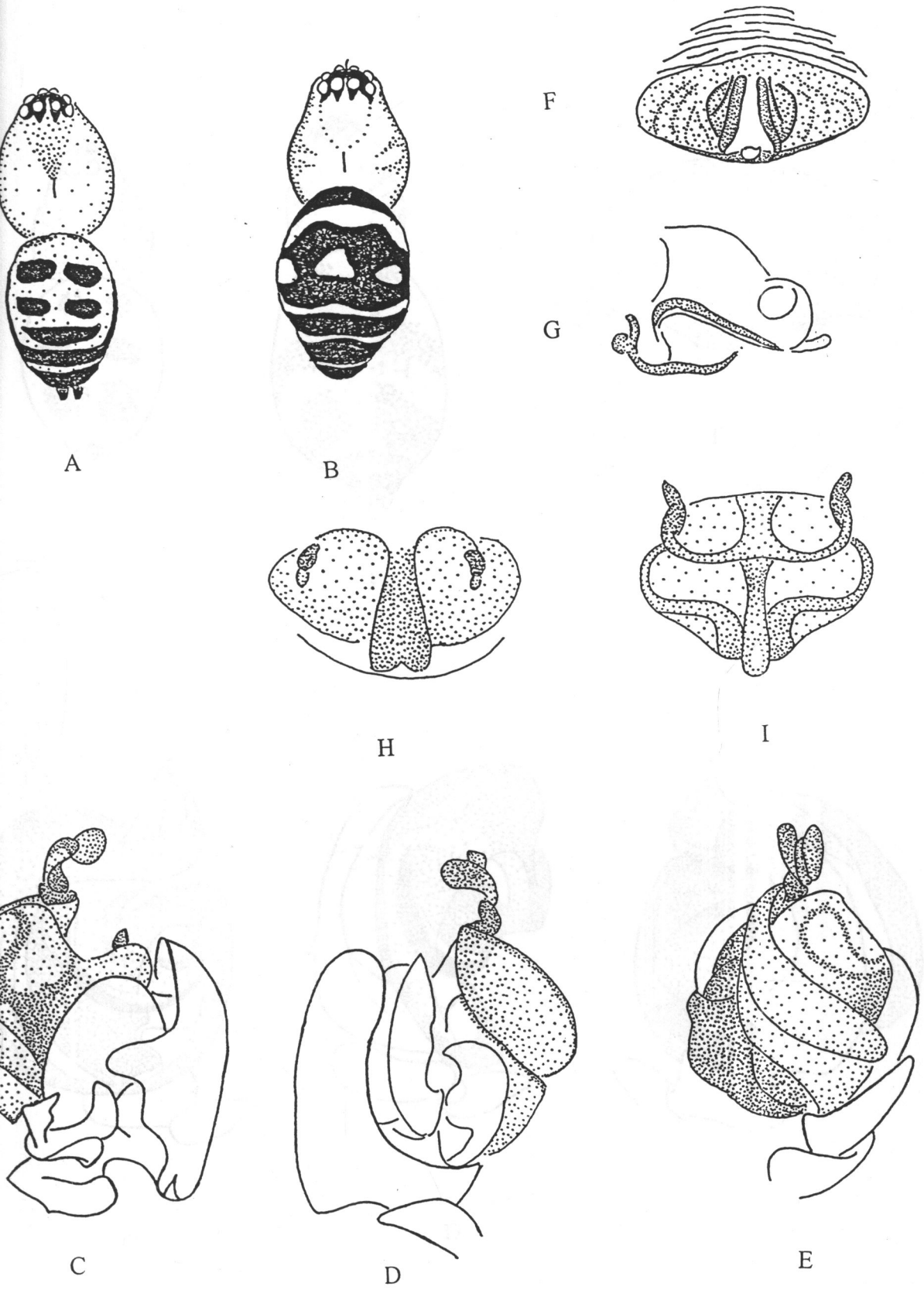
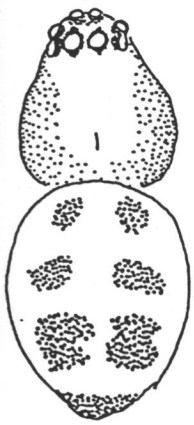
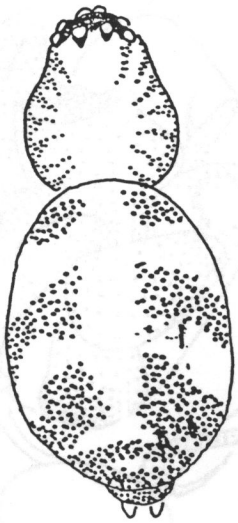


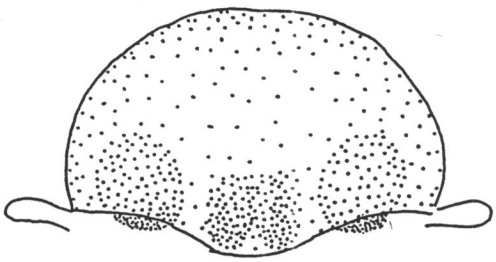
Fig. 87. *Neriene* sp. A. A, habitus of male. B, habitus of female. C-E, male palp, different views. F, epigyne, ventral view. G. epigyne, lateral view. H, vulva, posteroventral view. I, vulva, dorsal view.



A

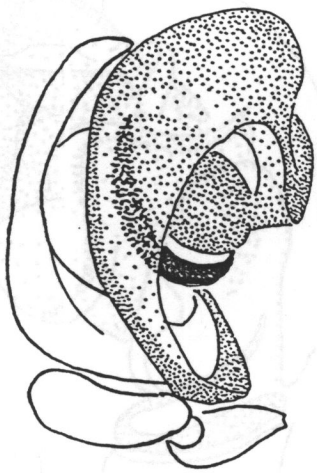


B

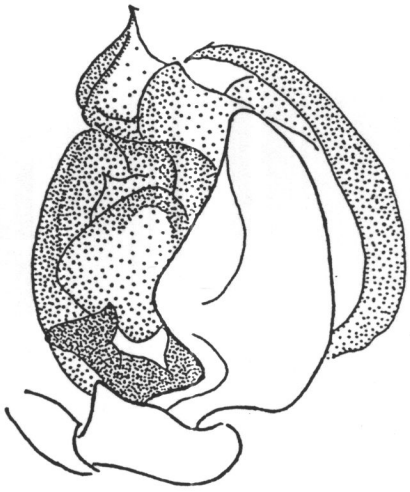


F

C

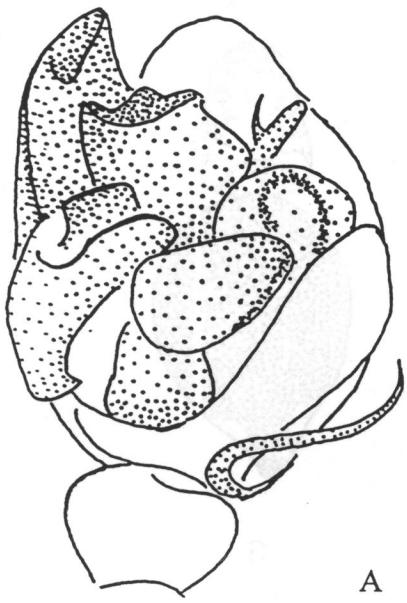


D

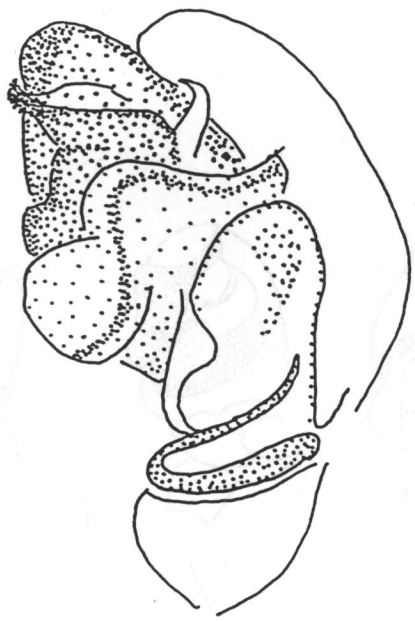


E

Fig. 88. *Neriene* sp. B. A, habitus of male. B, habitus of female. C-E, male palp, different views. F, epigyne.



A



B

Fig. 89. ? *Neriene* sp. Male palpal organ.

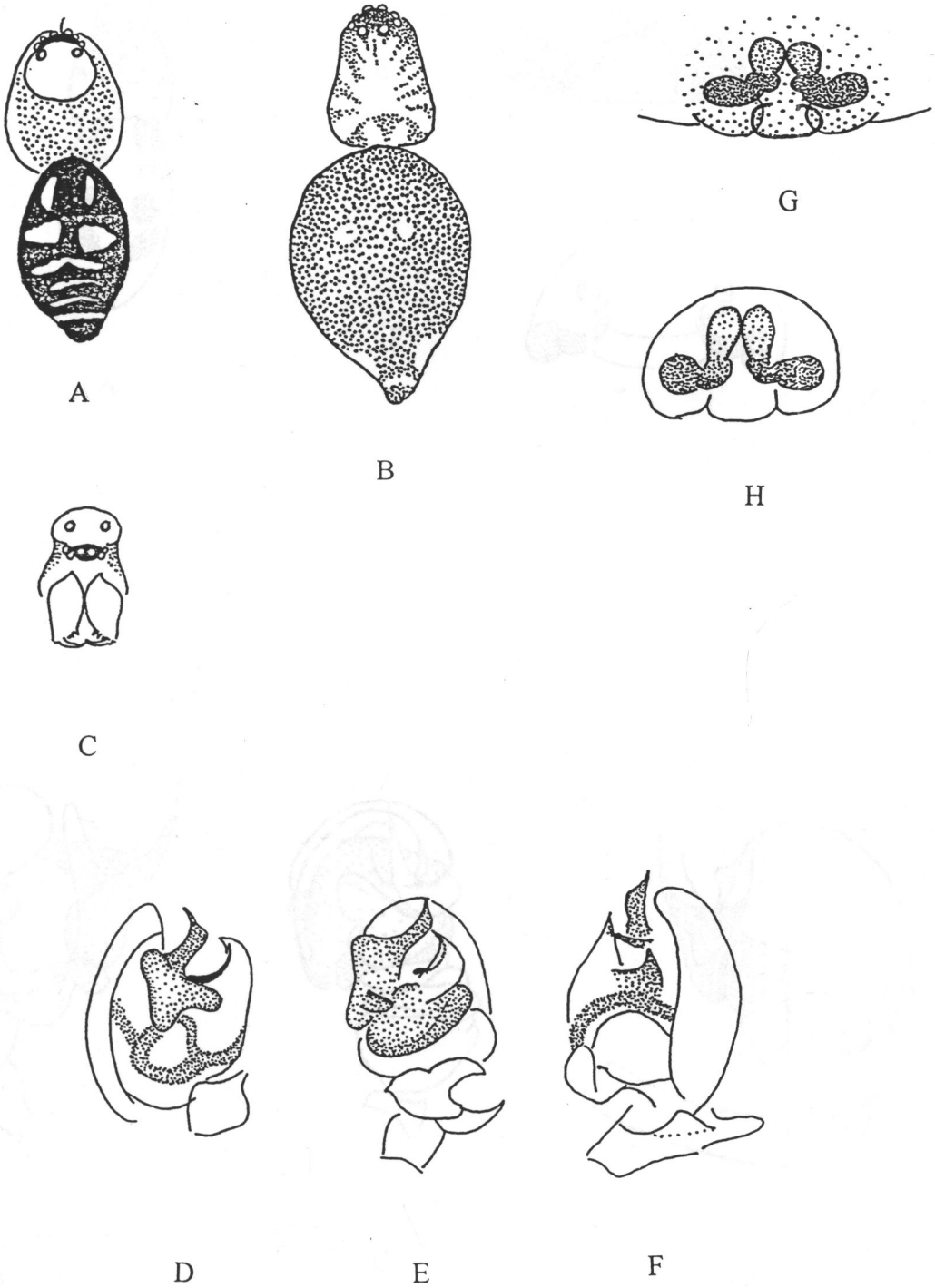
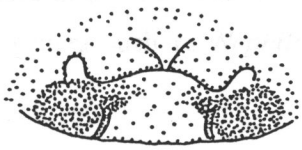
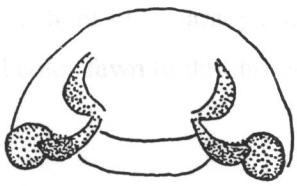


Fig. 90. *Oedothorax cf. hulongensis*. A, habitus of male. B, habitus of female. C, carapace of male, front view. D-F, male palp, different views. G, epigyne. H, vulva.

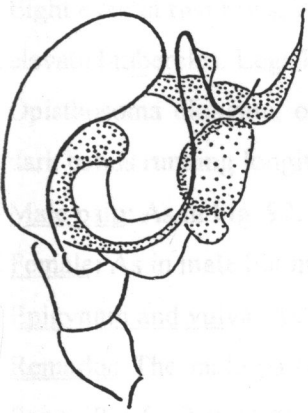
A



E

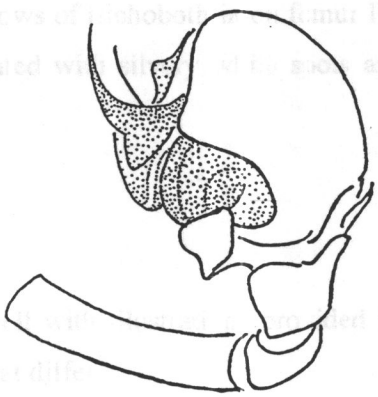


F



B

C



D

Fig. 91. *Pronasoona aurata*. A, male habitus. B-D, male palp. E, epigyne. F, vulva.

TETRAGNATHIDAE Menge, 1866

The Tetragnathidae is represented by 58 genera in several subfamilies. They include some of the most common and well-studied spider genera such as *Nephila*, *Leucauge* and *Tetragnatha*.

Diagnostic characters

Small to very large (2-40 mm), three-clawed, ecribellate, eight-eyed spiders; enlarged and projecting chelicerae with many teeth; male palp with hook-like paracymbium at base of cymbium; embolus and conductor coiled apically; general color fawn to dull brown or grey with silvery marking.

Gen. *Leucauge* White, 1841

Literature consulted: Song, Zhu & Chen (1999)

Leucauge celebesiana Walckenaer, 1842

Material examined: 2♂, 5j, 1000m, 25.III.2000, BT; 1♀, 1000m, 27.XI.1999, SW; 1♀, 1510m, 23.X.1999, SW; 1♀, 1510m, 27.XI.1999, SW; 1♀, 1510m, 23.X.1999, SW.

Description:

Male: Prosoma longer than wide with deep fovea. Carapace brownish yellow, without marking. Eight eyes in two rows; AER recurved; PER straight; eye margins black; LE situated on slightly elevated tubercles. Legs long and slender; leg I longest; two rows of trichobothria on femur IV. Opisthosoma elongate, overlapping carapace; dorsum decorated with silvery white spots and dark bands running longitudinally.

Male palp: As in Fig. 92.

Female: As in male but much bigger in size.

Epigynum and vulva: As in Fig. 92.

Remarks: The male palpal organs of my specimens agree well with illustrations provided by Song, Zhu & Chen (1999) whereas the female vulvae somewhat differ.

Natural history: Collected from dipterocarp with pine and hill evergreen forest.

Distribution: Japan, China to New Guinea.

Leucauge decorata Blackwall, 1864

Material examined: 1j, 1000m, 25.III.2000, SW; 1j, 510m, 29.VII.2000, SW.

Description:

Coloration and pattern: Prosoma longer than wide, moderately elevated in cephalic area, with deep trifid transverse fovea. Eight eyes in two rows; AE recurved, PE straight; AE shorter than PE. Chelicerae stout; three teeth on promargin and four on retromargin. Sternum cordate, anterior margin concave at base of labium. Labium wider than long. Legs long; leg formula 1243; femur IV with two rows of trichobothria, one prolateral and one dorsal. Opisthosoma elongate, rounded at both end. Prosoma yellow, without markings. Dorsum of opisthosoma with four longitudinal bands of numerous silvery white spots. Four black spots around spinnerets, posteriors most sometimes forming a transverse band.

Remarks: *L. decorata* can be easily distinguished from other *Leucauge* species in the field by their opisthosomal shape that is tapering towards the posterior end. In larger specimen two anterior humps may be present.

Distribution: Cosmotropical.

***Leucauge termisticta* Song & Zhu, 1992**

Material examined: 1♂, 1000m, 28.VIII.1999, SW; 2♀, 510m, 27.V.2000, SW; 1♀, 1000m, 28.VIII.1999, SW; 2♀, 1000m, 25.IX.1999, SW; 1♀, 11000m, 28.VIII.1999, SW; 1PM, 1000m, 25.XII.1999, SW; 1j, 1000m, 25.III.2000, SW.

Description:

Male: Prosoma longer than wide, widest between coxae III and IV, cephalic region slightly elevated above flat thoracic region. Fovea deep. Eight eyes in two rows; AE recurved, PE slightly recurved; eyes subequal in size. Chelicerae large and strong. Sternum heart-shaped. Legs very long and slender with prominent spines; femur IV with a double fringe of curved trichobothria on prolateral surface of proximal half. Opisthosoma elongate, rather round. Prosoma pale yellow, no markings. Opisthosoma pale brown, with silvery spots dorsally and one pair of black spots and transverse band posteriorly.

Male palp: Cymbium curved upwards, with an obliquely membranous tip. Bulbus with a long curved embolus as in Fig 94.

Female: Prosoma longer than wide; cephalic region narrower but higher than thoracic region. Thoracic region with arrow-shaped fovea and hairs on both sides. Eight eyes in two rows; AE more strongly recurved than PE; eyes equal in size. Chelicerae strong and stout; 3 teeth on promargin and 4 teeth on retromargin. Sternum heart-shaped and pointed behind. Labium and maxillae longer than wide. Legs long and slender. Leg formula 1243. femora and tibia of leg I and II with prominent spines. Two rows of trichobothria on femur IV; Distal part of tibiae IV with numerous black hairs grouped together. Opisthosoma elongate. Carapace pale yellow, with greenish spots in cephalic region. Posterior sides of thoracic region with green spots and fine hairs; eye margins black. Chelicerae yellow with more pigmentation around base of fang.

Sternum yellow. Labium yellow. Maxillae yellow with pale inner sides. Opisthosoma decorated with silvery white, black and greenish patches as in Fig 94.

Epigynum and vulva: As in Fig. 94.

Remarks: Illustrations of *L. termisticta* given by Song, Zhu & Chen (1999) resemble my specimens.

Natural history: Collected by sweeping vegetation in dipterocarp with pine forest.

Distribution: China and Thailand.

***Leucauge* sp.**

Material xamined: 1♀, 1000m, 26.II.2000, SW.

Description:

Female: Prosoma longer than wide, fovea deep. Carapace pale yellow. Eight eyes in two rows; AER recurved; PER straight; ME clearly separated from LE; eye margins black. Chelicerae robust. Legs long and slender; covered with fine black hairs; promargin of femur I with row of strong short spines; femur IV with two rows of long, curved and filiform trichobothria, not branching; tibia IV with patch of long hairs. Opisthosoma longer than wide, posterior end provided with small hump, decorated with fine silvery spots and black bands.

Epigynum and vulva: Lightly sclerotized, with broad median septum.

Remarks: This spider differs from *Mesida* in having no featherlike trichobothria, and from *Tylorida* by two rows of trichobothria. It also does not fit in *Leucauge*, as it possesses large chelicerae and a row of short spines on femur I, but the general habitus and trichobothria pattern seem to accord with my generic placement.

Natural history: Collected by sweeping low vegetation in dipterocarp with pine forest.

Distribution: Unknown.

Unidentified juveniles of *Leucauge* spp.

Material examined: 1j, 1000m, 29.I.2000, SW; 4j, 2090m, 25.III.2000m, BT; 2j, 750m, 15.II.2000, SS; 1j, 2090m, 26.II.2000, SW; 12j, 1510m, 27.XI.1999, SW; 1j, 1510m, 29.I.2000, SS; 11j, 2090m, 27.XI.1999, SW; 1j, 1000m, 29.I.2000, SW; 23j, 1510m, 25.XII.1999, SW; 1j, 1000m, 29.VII.2000, SW; 1j, 1510m, 29.IV.2000, BT; 2j, 1510m, 29.IV.2000, SW; 1j, 1510m, 29.IV.2000, PT; 1j, 1510m, 26.II.2000, PT; 4j, 1510m, 25.III.2000, SW; 5j, 1510m, 25.III.2000, BT; 3j, 750m, 15.II.2000, SS; 1j, 2090m, 29.IV.2000, SW; 1j, 1510m, 26.II.2000, SS; 7j, 2430m, 29.I.2000, SW; 2j, 2090m, 29.I.2000, SW; 9j, 1510m, 26.II.2000, BT; 36j, 1510m, 26.II.2000, SW; 13j, 2090m, 29.I.2000, SW; 1j, 1510m, 27.XI.1999, SW; 12j, 1510m, 29.I.2000, BT.

Gen. *Nephila* Leach, 1815

Literature consulted: Hormiga, Eberhard & Coddington (1995); Song, Zhu & Chen (1999).

***Nephila clavata* L. Koch, 1878**

Material examined: 1♂, 1000m, 23.X.1999, SW; 3♀, 1000m, 27.XI.1999, SW; 3♀, 1250m, 15.XII.1999, SW; 1♀, 1000m, 27.XI.1999, BT.

Description:

Male: Prosoma longer than wide, slightly narrowed in front. Carapace flat with yellow cephalic region and dark thoracic region. Eight eyes arranged in two rows; AER recurved; PER straight; eyes on black tubercles. Legs very long. Opisthosoma elongate; dorsum with two longitudinal bands of irregular white patches on yellowish black background.

Male palp: Patella with two long dorsal spines. Cymbium cup-shaped. Paracymbium pointed. Tegulum dark. Embolus long. Conductor with broad base, folding around embolus.

Female: Prosoma longer than wide, slightly narrow in front; densely clothed with fine hairs. Carapace with yellow V-shaped patch in cephalic area. Shallow fovea located on dark brown thoracic area. Eight eyes in slightly recurved rows; LE slightly separated. Legs very long, clothed with hairs and spines. Opisthosoma elongate, overlapping carapace; dorsum yellowish with pink pattern.

Epigynum and vulva: Rectangular spermathecae with heavily sclerotized ducts.

Remarks: Illustrations of both male and female genitalia of *N. clavata* provided by Song, Zhu & Chen (1999) correspond well with my specimens.

Natural history: This species was collected only from dipterocarp with pine forest at 1000 m elevation.

Distribution: India to Japan.

***Nephila pilipes* (Fabricius, 1793)**

Material examined: 1♂, 1000m, 29.VII.2000, SW; 1♂, 510m, 25.IX.1999, SW; 1♂, 1000m, 29.VII.2000, SW; 1♂, 1000m, 24.VI.2000, PT; 1j, 1000m, 28.VIII.1999, SW; 1j, 27.V.2000, PT; 1j, 1000m, 24.VI.2000, SW; 1j, 1000m, 27.XI.1999, SW; 2j, 1000m, 25.IX.1999, SW; 1PM, 1000m, 24.VI.2000, PT.

Description:

Male: Prosoma brown, longer than wide. Eight eyes in two rows; eye margins black; AER more strongly recurved than PER; PME separated. Legs long; armed with strong spines. Opisthosoma longer than wide, yellowish with submedian pale band and two rows of silvery spots running longitudinally, posterior end with transverse blackish bands.

Male palp: Cymbium cup-shaped. Embolus long, thin and slightly curved.

Remarks: The long and slightly curved embolus distinguishes males of this species from those of remaining *Nephila*.

Natural history: Males are usually found sitting in the web of females.

Distribution: China, the Philippines to Australia.

Gen. *Tetragnatha* Latreille, 1804

Literature consulted: Okuma (1988a, 1988b); Vungsilabutr (1988).

***Tetragnatha maxillosa* Thorell, 1895**

Material examined: 2♂, 25.III.2000; 1000m, BT; 2♀, 510m, 27.V.2000; BT; 2j, 1000m, 29.I.2000; SW; 1j, 1000m, 29.I.2000; BT; 2j, 2100m, 29.I.2000; SW; 1j, 1000m, 25.III.2000. BT; 1j, 1000m, 26.II.2000; BT; 1j, 1000m, 26.II.2000; SW.

Description:

Male: General color yellowish brown; carapace with black eye margins; and opisthosoma with spots on brown background. PER slightly larger than AER. Chelicerae as in Fig. 98.

Male palp: Paracymbium paddle-shape, slightly sigmoid, middle half provided with small apophysis. Distal portion of conductor and embolus sickle-shaped.

Female: As in male, except for opisthosoma broader near base and tapering towards posterior end.

Genital area: Genital fold longer than broad, distal portion swollen.

Remarks: Cheliceral and genital patterns of the specimens agree well with description and illustrations provided by Okuma (1988b), enabling specific placement.

Natural history: The spiders were obtained from low vegetation near the riverbank of mixed deciduous dipterocarp forest.

Distribution: Widespread in Asia and Africa.

***Tetragnatha nitens* Audouin, 1827**

Material examined: 1♂, 510m, 25.IX.1999; SW; 1PM, 510m, 26.II.2000; BT; 1PM, 510m, 25.IX.1999; SW; 1j, 510m, 29.I.2000; BT; 1j, 1000m, 25.III.2000; BT; 1j, 510m, 29.VII.2000; BT.

Description:

Male: Prosoma yellow-brown with black eye margins, narrowing towards cephalic region and broadest in thoracic region. Fovea represented by two recurved pits. Eyes on two rows; AE shorter than PE. Chelicerae very strong, with numerous teeth projecting forward, spur and two contiguous teeth present. Legs very long and slender. Opisthosoma longer than wide, dull

brown-yellow to grey with dark branching stripe running longitudinally; silvery spots present on both sides.

Male palp: Paracymbium broadest at the middle. Distal portion of embolus and conductor curved downwards.

Remarks: The male palpal organ corresponds well with illustrations and description of the species provided by Okuma (1988b).

Natural history: Spiders were collected by sweeping and beating low bushes near a riverbank in mixed deciduous dipterocarp forest.

Distribution: Pantropical.

Gen. *Tylorida* Simon, 1894

Literature consulted: Davies (1988); Song, Zhu & Chen (1999).

***Tylorida striata* (Thorell, 1877)**

Material examined: 1♂, 1♀, 1000m, 25.IX.1999, SW; 1♀, 510m, 23.X.1999, PT; 1♀, 1000m, 28.VIII.1999, SW; 1♀, 2j, 1000m, 23.X.1999, SW; 1♀, 1510m, 29.VII.2000, SW; 1j, 510m, 29.IV.2000, BT; 1j, 1750m, 15.III.2000, SW.

Description:

Male: Prosoma relatively slender in front. Cephalic region elevated. Thoracic region provided with deep posteriorly trifid fovea. Eight eyes in two rows; AER recurved, PER straight. AME largest, ALE and PE subequal in size. LE close to each other. Chelicerae well developed, no spur on front face. Labium wider than long. Maxillae longer than wide. Legs fairly long, with prominently long spines on leg III. Leg formula 1243. Trichobothria short; found on femora, tibiae, metatarsi and tarsi. Prosoma pale yellow, V-shaped diffuse black band extending from PME to pedicel, darkest around fovea. Opisthosoma yellow, decorated with silvery spots. Legs pale yellow with black markings.

Male palp: Tibia cuplike. Palp yellow, with light brown cymbium. Cymbium with transparent basal hook. Paracymbium short, hooked. Brown, multicoiled spermophore in yellow, globular tegulum. Large subtegulum. Fan-like conductor with twisted tip.

Female: As in male but with larger opisthosoma. Silvery spots on opisthosoma more pronounced.

Epigynum and vulva: As in Fig. 100.

Remarks: The male palp of *Tylorida striata* is very similar to *T. ventralis* (Thorell) in general appearance but can be distinguished by the shape of its spermophore. My female specimens correspond well with illustrations provided by Davies (1988) but differ from those of Song, Zhu & Chen (1999).

Natural history: Collected only by sweeping bushes.

Distribution: China to Australia.

Subfamily Metinae

Literature consulted: Davies (1988)

Metinae gen. sp.

Material examined: 1♂, 2090m, 29.IV.2000, BT.

Description:

Male: Prosoma flattened. Carapace slightly elevated in cephalic area, sloping towards thoracic area; black triangular band located in middle portion. Eight eyes arranged in two rows; PME normal in size; AME reduced. Opisthosoma longer than wide; dorsum brown, with two rows of broken black spots running longitudinally, lateral sides decorated with silvery spots. Legs very long; femur IV without trichobothria.

Male palp: Paracymbium broadly jointed to cymbium, branching into anterior triangular and posterior hook-like projections. Oval tegulum provided with long embolus lying free on triangular conductor at anterior end.

Remarks: Davies (1988) provided a good illustrated family key for Australian orb-weaving spiders, which is also practical for identification of Thai spiders. Several species of Metinae occur in Southeast Asia and Australia.

Natural history: Collected by sweeping vegetation from moist hill evergreen forest.

Distribution: Unknown.

Phonognathinae, g. sp.

Material examined: 2♂, 1000m, 23.X.1999, SW.

Description:

Male: Flattened prosoma with deep fovea. Yellow carapace with slightly elevated cephalic region, two black bands located on lateral margin. Opisthosoma longer than wide, overlapping carapace; dorsum gray with black markings. Legs long and slender, no trichobothria presented on femur IV.

Male palp: Cymbium reduced, forming small leaf-like plate. Paracymbium indistinct. Bulbus complicated.

Remarks: The male palp of this species has an indistinct paracymbium that is broadly attached to the cymbium in the form of a narrow lateral flange of the cymbium. Therefore this species can be placed in the subfamily Phonognathinae.

Natural history: Collected by sweeping in dipterocarp with pine forest.

Distribution: Unknown.

Tetragnathidae gen. sp.

Material examined: 1♀, 2j, 3PM, 2430m, 25.III.2000, PT; 9PM, 8j, 2430m, 29.I.2000, SW; 4j, 2430m, 25.IX.1999, SW; 1j, 2430m, 23.X.1999, SW; 2PM, 1j, 2430m, 259.I.2000, BT; 2j, 2430m, 25.IX.1999, SW; 10j, 2430m, 25.XII.1999, SW; 5j, 2430m, 26.II.2000, SW.

Description:

Female: Carapace yellow with black band running mid-longitudinally and on lateral margins. Eight eyes in two rows; AER slightly recurved; PER straight; eye margins black. Opisthosoma oval; dorsum yellow with numerous silvery spots and brown pattern as in Fig. 103. Legs long, without trichobothria on femora.

Epigynum and vulva: Lightly sclerotized epigyne with large median septum.

Remarks: This spider resembles that of the Australia genus *Neometa* established for rainforest spiders from Queensland.

Natural history: Many specimens were collected by sweeping vegetation in cloud hill evergreen forest.

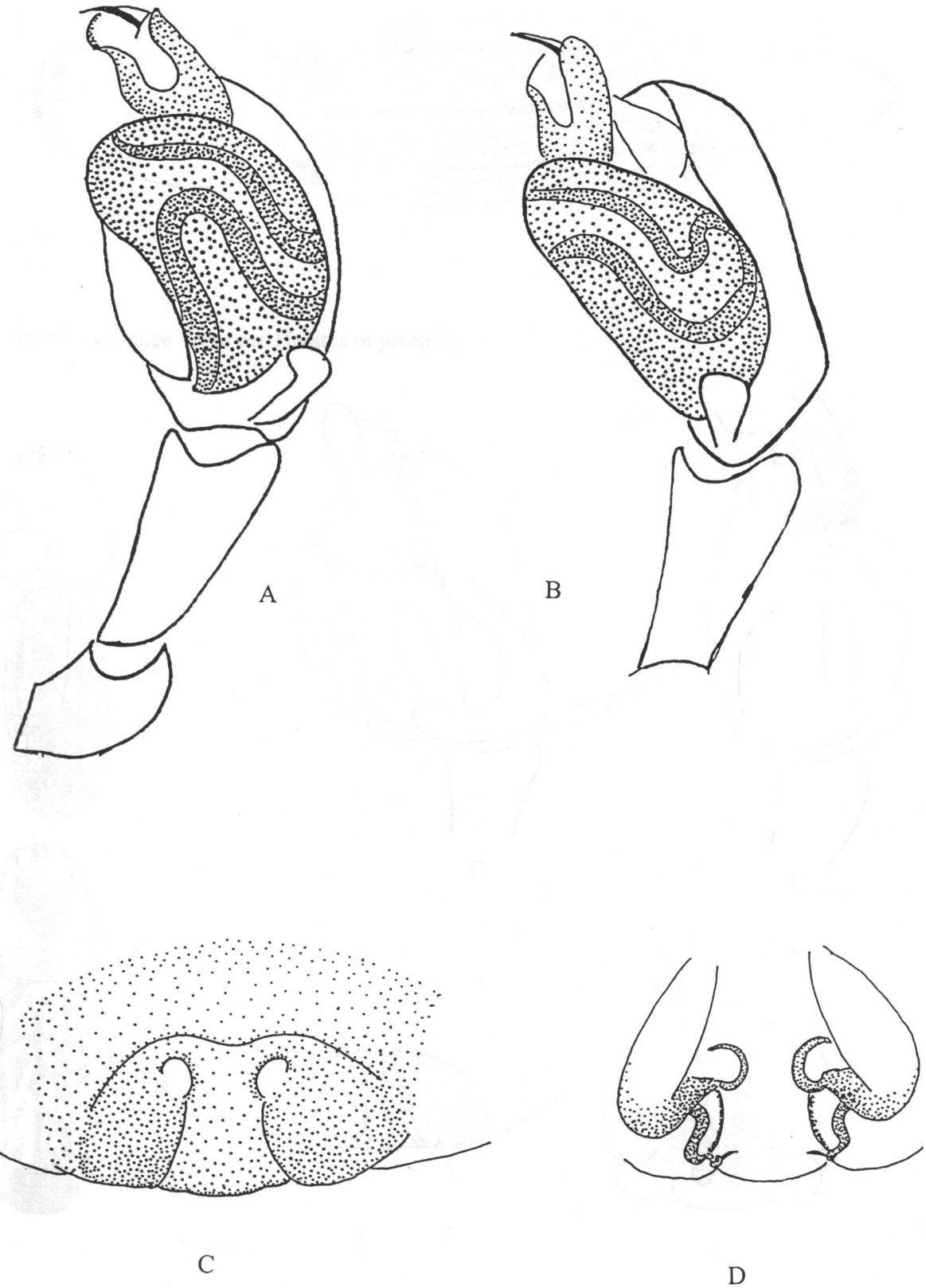


Fig. 92. *Leucauge celebesiana*. A, B, male palp, different views. C, epigyne. D, vulva.

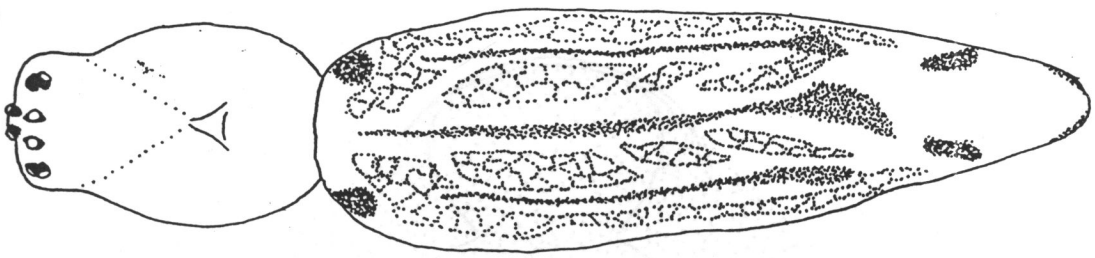


Fig. 93. *Leucauge decorata*. Habitus of juvenile.

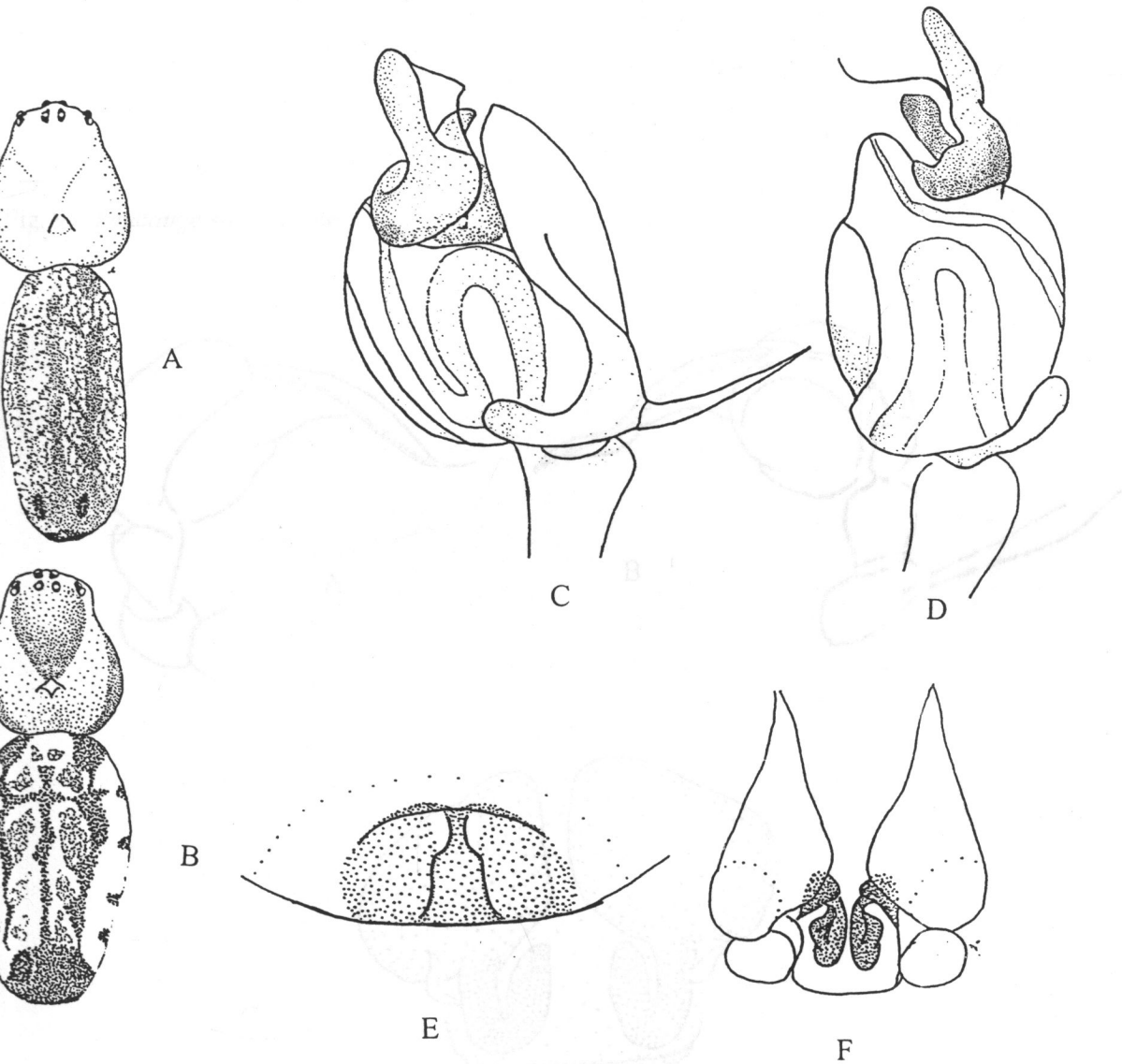


Fig. 94. *Leucauge termisticta*. A, habitus of male. B, habitus of female. C, D, male palp, different views. E, epigyne. F, vulva.

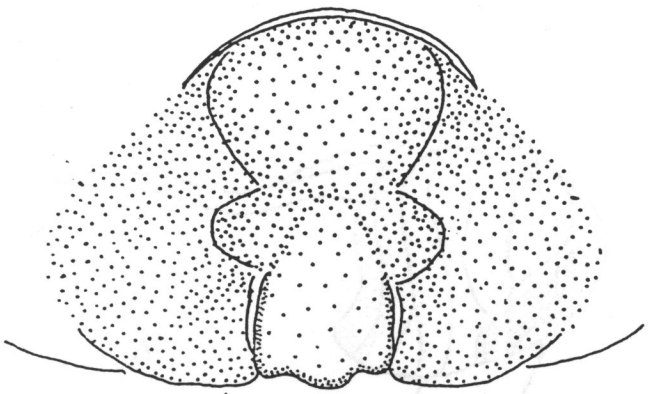


Fig. 95. *Leucauge* sp. Epigyne.

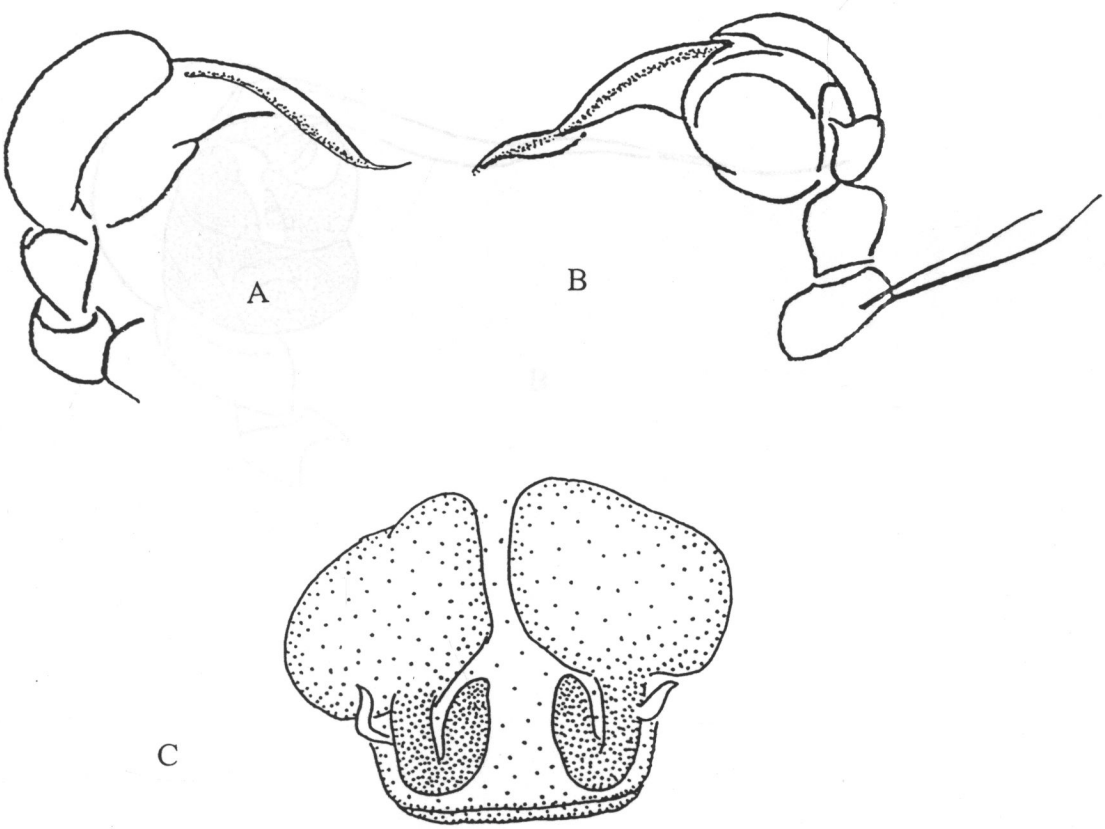


Fig. 96. *Nephila clavata*. A, B, male palp, different views. C, vulva.

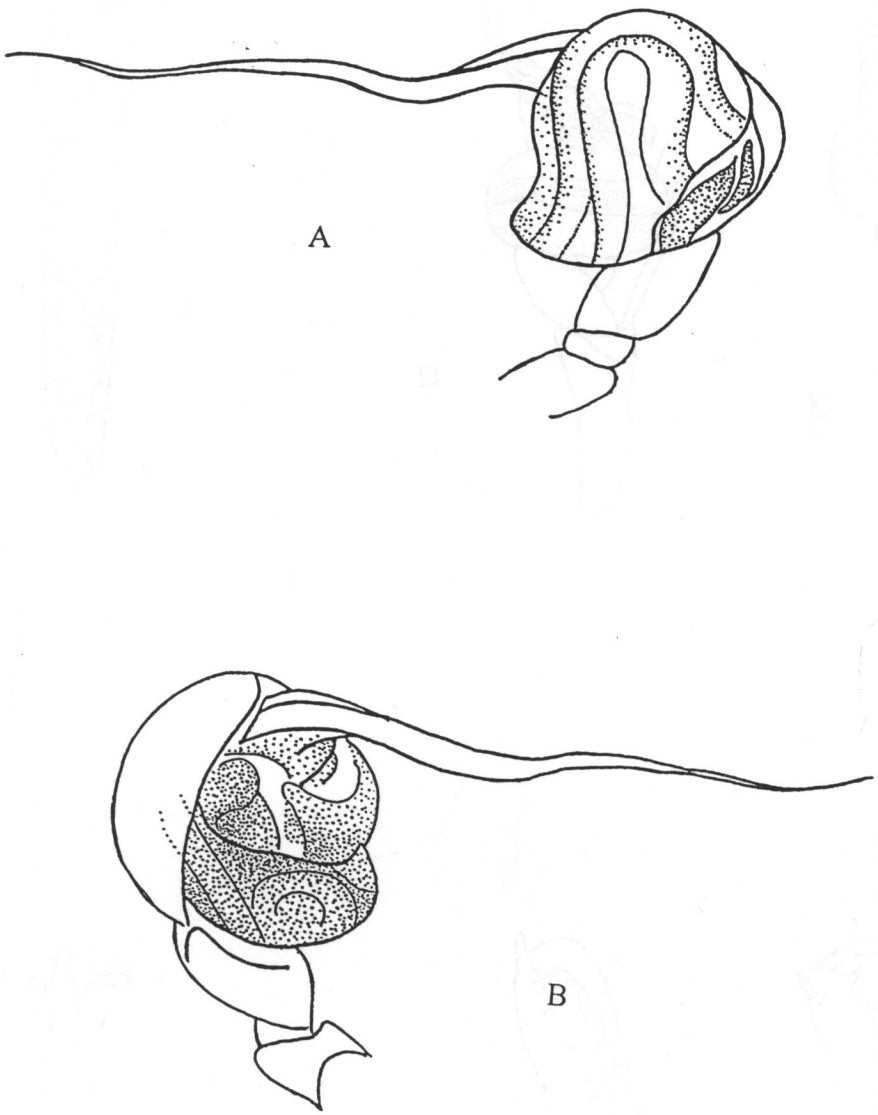


Fig. 97. *Nephila pilipes*. A, B, male palp, different view.

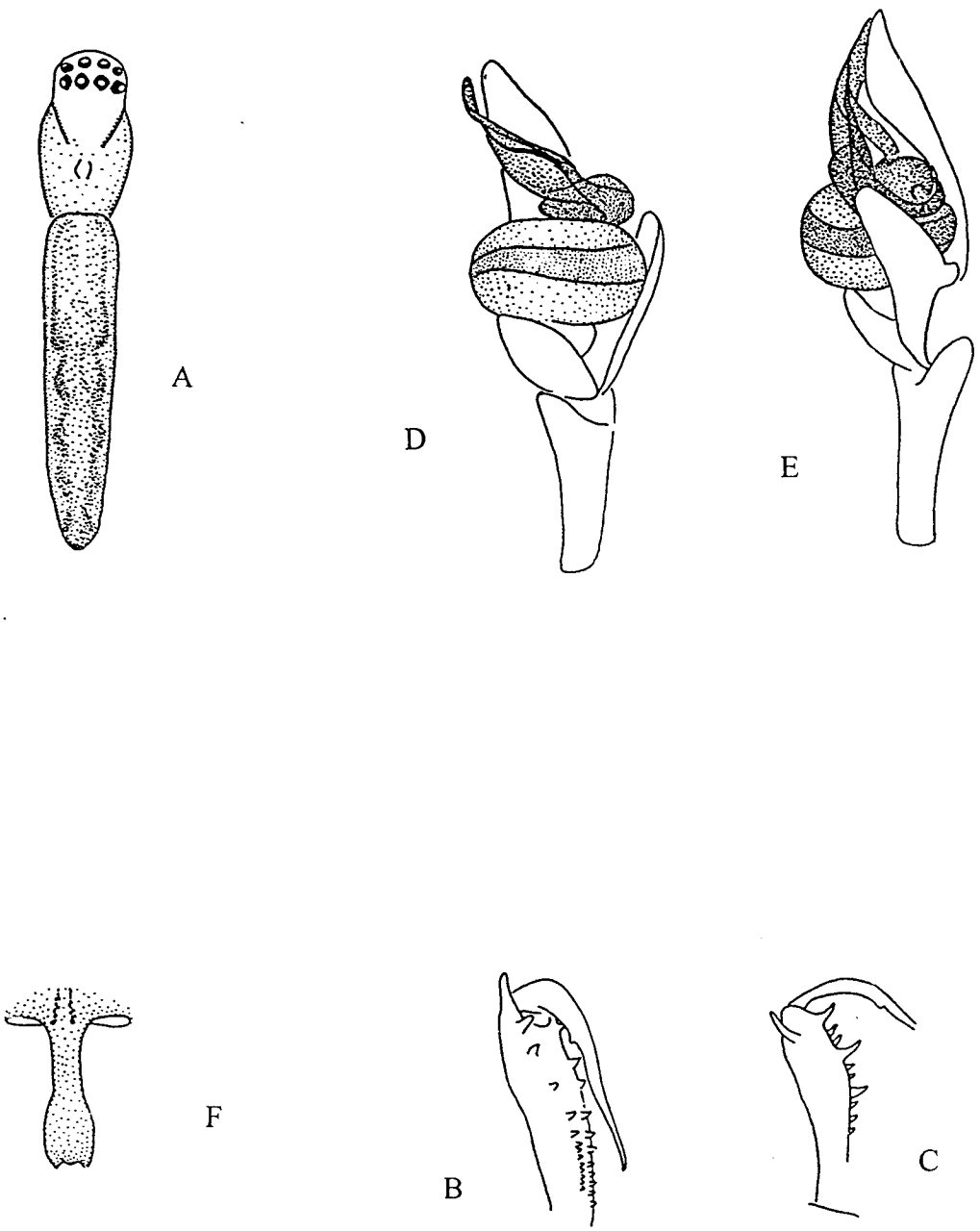


Fig. 98. *Tetragnatha maxillosa*. A, habitus of male. B, C, chelicerae, different views. D, E, male palp, different views. F, genital area of female.

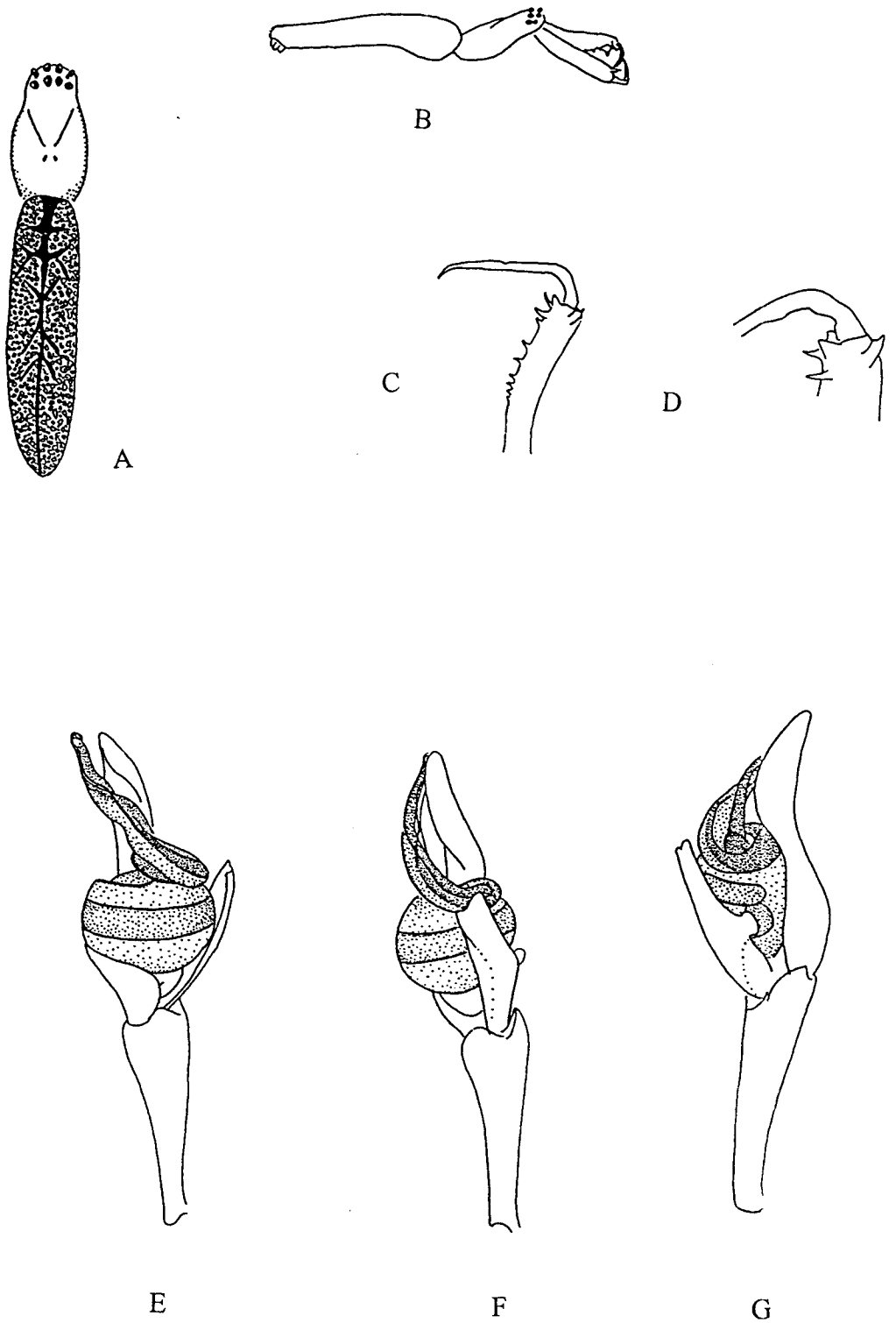


Fig. 99. *Tetragnatha nitens*. A, habitus of male, dorsal view. B, the same, lateral view. C, D, chelicerae, different views. E-G, male palp, different views.

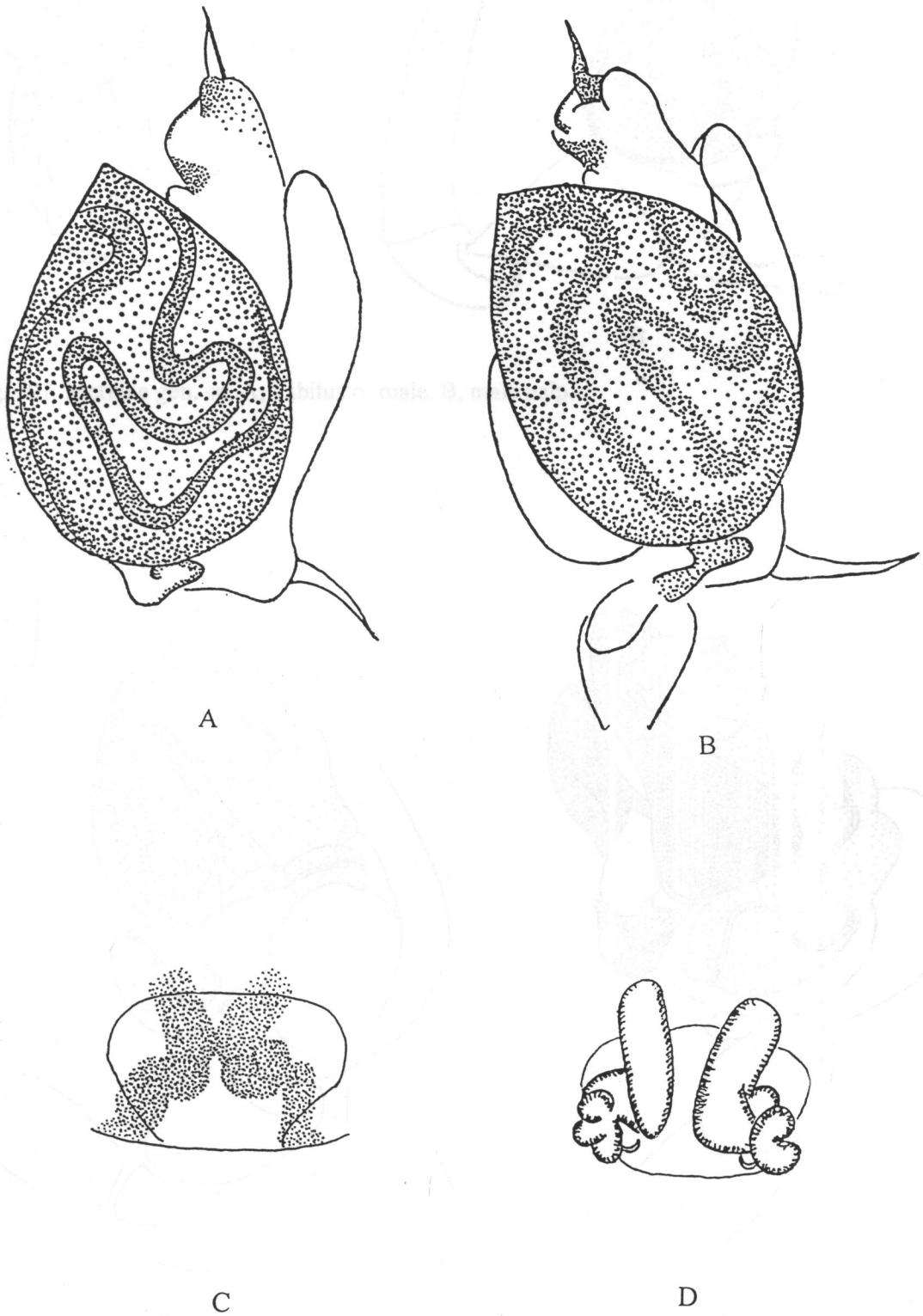


Fig. 100. *Tylorida striata*. A, B, male palp, different views. C, epigyne. D, vulva.

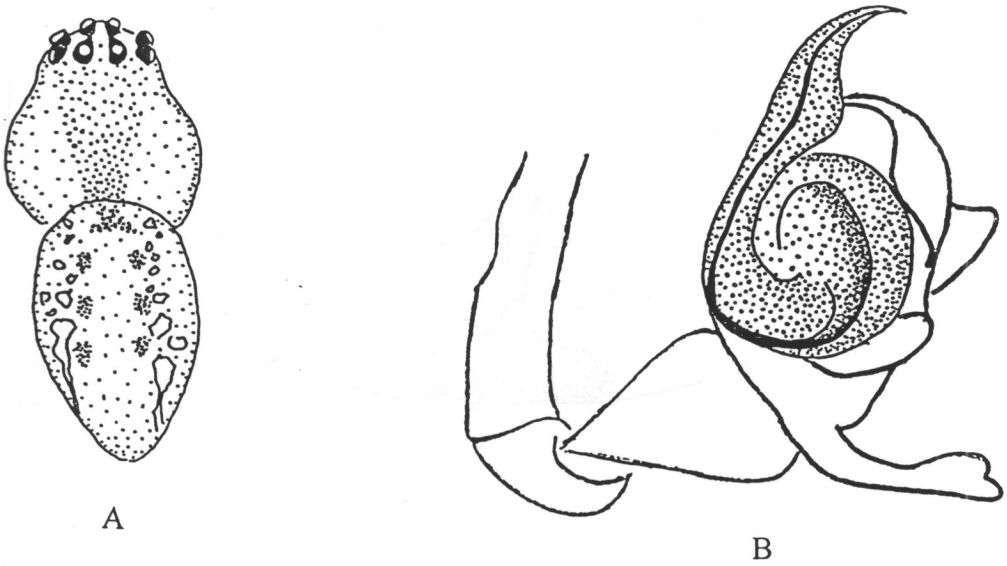


Fig. 101. Metinae gen. sp. A, habitus of male. B, male palp.

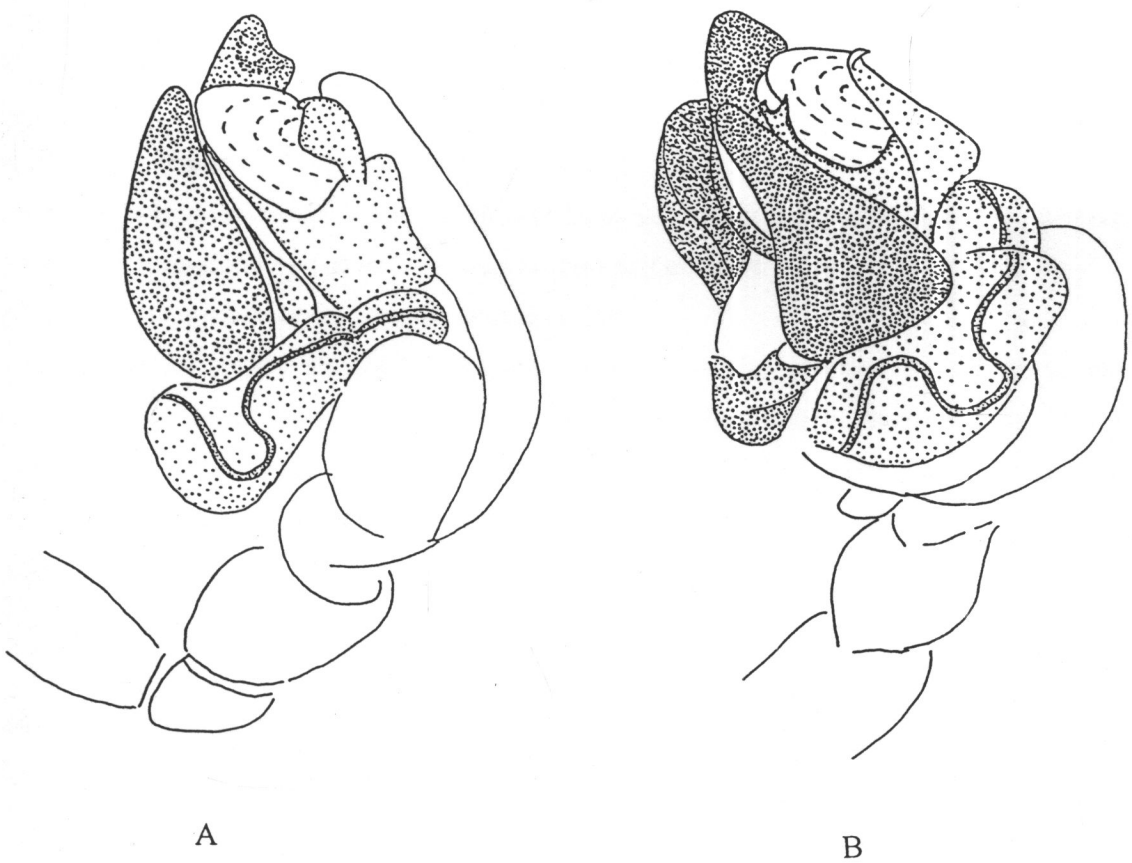


Fig. 102. Phonognathinae gen. sp. Male palp.

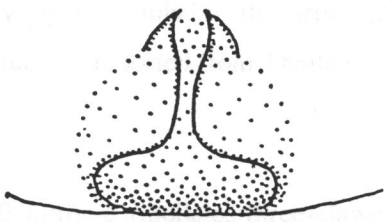


Fig. 103. Tetragnathidae gen. sp. Epigyne.

ARANEIDAE Simon, 1895

The Araneidae is a large family comprising 2801 described species in 167 genera occurring worldwide. Many species inhabit the tropics. Three subfamilies, Argiopenae, Araneinae and Gasteracanthinae are reported from Thailand.

Diagnostic characters

Small to large (2-30 mm), ecribellate, three-clawed, entelegyne spiders; LE widely separated from ME; labium rebordered; bulbus with MA; lateral paracymbium attached to base of cymbium; epigyne often having scapus.

Gen. *Anepsion* Strand, 1929

Literature consulted: Davies (1988); Song, Zhu & Chen (1999).

Anepsion maritatum O. Pickard –Cambridge, 1877

Material examined: 1♀, 510m, 29.VII.2000, PT.

Description:

Female: Prosoma longer than wide, constricted behind eye region. Yellow carapace with elevated cephalic area. Fovea indistinct. Eight eyes in two rows; ME larger than LE; eye margins black. Opisthosoma subglobular; chalk white dorsum decorated with black longitudinal bands anteriorly, black spots in the middle and black patches on both sides. Legs yellow with brown patches on distal part of femora and proximal part of tibiae.

Epigynum and vulva: Epigyne with thin and long scape.

Remarks: Davies (1988) provided illustrated key to Australian orb-weavers, which is also practical for identification of Thai spiders. Figures of female genitalia given by Song, Zhu & Chen (1999) are the basis of my generic placement. Seventeen species of *Anepsion* are distributed in Southeast Asia, Japan and Australia

Natural history: Unknown.

Distribution: Unknown.

Gen. *Araneus* Clerck, 1757

Literature consulted: Davies (1988); Song, Zhu & Chen (1999); Tikader (1982a).

Araneus auriculatus Song and Zhu, 1992

Material examined: 1♂, 1510m, 23.X.1999, SW; 1♂, 1510m, 23.X.1999, SW.

Description:

Male: Prosoma pear-shaped. Carapace yellow, cephalic area darker than thoracic area and covered with black hairs. Fovea longitudinal. Eight eyes in two slightly recurved rows; all eyes on tubercles. Opisthosoma ovate; dorsum gray with five pairs of spherical black and white spots arranged in two longitudinal rows; five pairs of orange sigilla. Legs long and armed with spines.
Male palp: Patella with two long spines. Paracymbium small and curved. MA cone-shaped, provided with saw-shaped basal part. Tegular apophysis large, dark brown. Embolus large, curved. Conductor blunt.
Remarks: The male palpal organ of my specimens corresponds well with figures provided by Song, Zhu & Chen (1999).
Natural history: The spiders were found only in hill evergreen forest.
Distribution: China and Thailand.

***Araneus himalayaensis* Tikader, 1975**

Material examined: 2♀, 1510m, 23.X.1999, SW; 1♀, 2250m, 15.V.2000, SS; 1j, 1510m, 24.VI.2000, SW.
Description:
Female: Prosoma longer than wide, narrowing in front, clothed with hairs. Transverse fovea in thoracic region. Eight eyes in two rows; AER strongly recurved; eye margins black; PME large. Legs long and strong, spines and hairs present. Opisthosoma elongate with round posterior end; dorsum with a brown folium, somewhat darker than the side, edges of folium broken.
Epigynum and vulva: Epigyne pear-shaped; scape long, wrinkled and narrow; bending at the middle.
Remarks: Illustrations of *A. himalayaensis* females given by Tikader (1982a) and Song, Zhu & Chen (1999) correspond well with my specimens.
Natural history: Collected by sweeping bushes in hill evergreen forest.
Distribution: India, China and Thailand.

***Araneus* sp. A**

Material examined: 1♀, 2090m, 27.XI.1999, SW.
Description:
Female: Prosoma longer than wide, narrowing in front. Cephalic area of carapace provided with white hairs and darker in color than thoracic region. Fovea absent. Eight eyes in two rows; AER recurved; PER straight; eye margins reddish brown; PME close together; LE touching each other, clearly separated from ME. Opisthosoma large, subtriangular, slightly longer than wide; dorsum provided with chalk white patches and brown pattern.

Epigynum and vulva: *Scape long and winkled, with cup-shaped tip. Copulatory openings* situated in a pair of grooves at the base of the epigyne. Two disc-like structures present on epigyne.

Remarks: A cup-shaped tip of the scapus is presented in many species of genus *Araneus*. However, none of them possess disc-like structures on the epigyne. Illustrations of *A. pseudosturmii* Schenkel epigyne are similar to those of my specimens.

Natural history: Collected by sweeping vegetation in hill evergreen forest.

Distribution: Unknown.

***Araneus* sp. B**

Material examined: 1♂, 2430m, 23.X.1999, SW.

Description:

Male: Male of this species resembling that of *A. auriculatus* Song & Zhu.

Male palp: Patella with two long spines. Paracymbium pointed, directed upwards. MA with curved dark spine. Spiral embolus strongly sclerotized.

Remarks: This male has more or less the same general appearance as in *Araneus*. However, Davies (1988) separated *Neoscona* from *Araneus* by having 2 spines on the patella.

Natural history: Collected by sweeping bushes in cloud hill evergreen forest.

Distribution: Unknown.

***Araneus* sp. C**

Material examined: 1♀, 1510m, 27.XI.1999, BT.

Description:

Female: Habitus very similar to *A. auriculatus*.

Epigynum and vulva: Epigyne strongly sclerotized; large wrinkled scapus with cup-shaped tip. Two sclerotized horns projecting from base of the epigyne.

Remarks: The epigyne of this species is provided with two lateral horns. Only few species of the genus possess this structure i.e. *A. viperifer* Schenkel and *A. wulongensis* Song & Zhu.

Natural history: Collected by seeping vegetation in hill evergreen forest.

Distribution: Unknown.

***Araneus* sp. D**

Material examined: 1PM, 1510m, 26.II.SW; 1j, 510m, 29.VII.2000, SW; 1j, 1000m, 29.IV.2000, BT.

Description:

Coloration and pattern: Prosoma longer than wide. Carapace yellow. Eight eyes in two slightly transverse rows; eye margins brown. Opisthosoma chalk white with five pairs of distinct spots branching line mid-longitudinally on the dorsum.

Remarks: According to general habitus and other somatic characters, the spiders are placed in *Araneus*.

Natural history: Collected by sweeping and beating bushes.

Distribution: Unknown.

Gen. *Argiope* Audouin, 1826

Literature consulted: Levi (1983).

***Argiope pulchella* Thorell, 1881**

Material examined: 1♀, 1000m, 25.IX.1999, SW; 1j, 1000m, 26.II.2000, BT; 1j, 510m, 25.XII.1999, SW.

Description:

Female: Prosoma slightly longer than wide, narrowing in front. Carapace brown, clothed with thick layer of silky white pubescence; cephalic area slightly elevated than thoracic area. Eight eyes in two rows: PER strongly procurved; PME encircled by black rings; LE close to each other, situated on tubercles. Legs long and strong, covered by prominent spines and hairs. Opisthosoma pentagonal, broadest posteriorly beyond the middle; prosoma overlapping when seen from above; dorsum white with transverse black bands, decorated with patches of irregularly scattered ovate to oblong yellow and red spots posteriorly; three pairs of sigilla present.

Epigynum and vulva: Epigynum with prominent anterior bulge and, slightly broad septum. Spermathecae a pair of parallel oblong structures with moderately constriction in the middle.

Remarks: *A. pulchella* has an opisthosomal shape and coloration similar to *A. versicolor* (Doleschall) but usually a larger body size. In posterior view the epigynum is not as wide as that of *A. versicolor*; the spermathecae are longer and narrower.

Natural history: Collected by sweeping and beating bushes.

Distribution: India to China and Java. Both male and females were collected from Doi Inthanon and Doi Suthep, Fang and Chumphon (Levi, 1983).

Gen. *Chorizopes* O. Pickard -Cambridge, 1870

Literature consulted: Song, Zhu and Chen (1999), Tikader (1982).

***Chorizopes bengalensis* Tikader, 1975**

Material examined: 1♀, 1j, 2090m, 27.XI.1999, SW; 1♀, 2430m, 23.X.1999, SW; 1j, 2090m, 25.IX.1999, SW; 2PM, 2430m, 27.XI.1999, BT; 1j, 2430m, 28.VIII.1999, SW; 2j, 2430m, 25.IX.1999, BT; 1j, 2430m, 25.XII.1999, BT.

Description:

Female: Prosoma longer than wide, truncate anteriorly, clothed with hairs. Dark brown cephalic region round, highly convex and more elevated than thoracic region. Eight eyes in two recurved rows; PME encircled by black rings; LE contiguous. Legs strong and hairy. Opisthosoma longer than wide, lateral sides provided with blunt tubercles, posterior end with small blunt projection; dorsum provided with mid-longitudinal chalk white patches; seven sigilla present.

Epigynum and vulva: Sclerotized epigyne with a thin and narrow scape.

Remarks: Illustration of female epigyne illustrated by Tikader (1982a) correspond well with my specimens. Specimens collected during this study show smaller lateral tubercles than in the original description, the dorsum is also decorated with a larger white dagger-shaped patch.

Natural history: The spiders were found only at high altitudes (above 2000 m) of Doi Inthanon National Park.

Distribution: India, China and Thailand.

***Chorizopes shimenensis* Yin and Peng, 1994**

Material examined: 1♂, 1♀, 510m, 27.V.2000, SW; 1j, 510m, 29.I.2000, SW; 1j, 510m, 25.XII.1999, BT.

Description:

Male: Carapace longer than wide, round and broadest anteriorly, clothed with white pubescence. Cephalic region highly convex and much more elevated than thoracic region. Median ocular area nearly as long as wide; AME slightly larger than PME; LE subequal in size and close together. Chelicerae very strong, stout, with one row of strong promaginal teeth. Legs with brownish patches. Opisthosoma slightly longer than wide, clothed with hairs. Opisthosoma provided with one pair of lateral tubercles and posterior end having two vertically arranged blunt caudal processes. Dorsum with 7 pairs of sigilla, decorated with black patches and a pair of chalk-white dots.

Male palp: As in Fig. 113.

Female: Much larger than males. Legs with brownish black patches. Opisthosoma having 5 pairs of sigilla. Mid-longitudinal chalk-white patch and two slightly curved chalk-white bands also present.

Epigynum and vulva: Epigyne strongly sclerotized, slightly convex. Round spermathecae with short and thick ducts.

Remarks: The female genitalia of my specimens correspond well with illustrations of *C. shimenensis* provided by Song, Zhu & Chen (1999). The male of this species is here reported for the first time.

Natural history: Known only from lower elevations (510m) of the national park.

Distribution: China and Thailand.

Gen. *Cyclosa* Menge, 1866

Literature consulted: Pocock (1900); Tikader (1982a); Song, Zhu & Chen (1999); Workman (1896).

***Cyclosa bifida* Doleschall, 1859**

Material examined: 1♀, 510m, 25.XII.1999, BT.

Description:

Female: Prosoma dark brown, longer than wide, narrowing in front, cephalic region clearly separated from thoracic region by deep thoracic groove. Eight eyes; PME very close; LE subequal in size, close to each other and situated on tubercles. Opisthosoma broad in anterior half, narrowed posteriorly with posterior end bluntly rounded; dorsum decorated with silvery spots and two greenish black patches on lateral sides, with two transverse bands posteriorly.

Epigynum and vulva: Scape long, curved at middle, tip narrowed and bending upwards.

Remarks: Female habitus and epigyne agree well with description and illustrations given by Tikader (1982a) and Workman (1896).

Natural history: Unknown.

Distribution: India to the Philippines, New Guinea.

***Cyclosa omonaga* Tanikawa, 1992**

Material examined: 1♂, 1510m, 23.X.1999, SS; 1♂, 510m, 27.XI.1999, BT; 1♂, 510m, 24.VI.2000, SW; 1♂, 1510m, 26.II.2000, SW.

Description:

Male: Prosoma longer than wide. Cephalic region protruded forward, smooth, brown. Yellow patches located on lateral sides of cephalic region and in central to posterior part of thoracic area. Fovea deep, longitudinally arranged. Eight eyes in two rows; AER recurved; AME on tubercles; PER straight; PME contiguous; LE touching each other, clearly separated from ME. Legs with alternating brown and yellow bands on femora, patellae and tibiae of legs I-IV. Opisthosoma elongate; dorsum silvery white with V-shaped black band and a pair of black spots; three pairs of sigilla located in middle line; posterior end covered with hairs.

Male palp: Paracymbium hook-like. Embolus and terminal apophysis long; tip of embolus ending at membranous sheet of conductor. Median apophysis large.

Remarks: The shapes of conductor and terminal apophysis of *C. omonaga* as illustrated by Song, Zhu & Chen (1999) correspond with my specimens.

Natural history: Spider living mainly on vegetation.

Distribution: Korea, Taiwan, Japan, China and Thailand.

***Cyclosa cf. informis* Yin, Zhu & Wang, 1995**

Material examined: 1♀, 1000m, 25.III.2000, BT.

Description:

Female: Specimen was destroyed.

Epigynum and vulva: Base of epigynum round. Scape large and flat, curved at the middle, covered with hairs; tip very slender.

Remarks: The epigyne of this species resembles that of *C. informis* from southern China. It is possible that *Cyclosa omonaga* described above is the male of this species.

Natural history: Unknown.

Distribution: China and Thailand.

***Cyclosa* sp.**

Material examined: 1♀, 1510m, 23.X.1999, SW; 1PM, 510m, 29.I.2000, SW; 1j, 1510m, 29.I.2000, SW.

Description:

Female: Prosoma longer than wide. Carapace with brown cephalic area and yellow thoracic area; pale brown band running mid-longitudinally to the end of carapace. Y-shaped fovea shallow. Eight eyes in two recurved rows; AME situated on somewhat protruding tubercles; LE contiguous. Opisthosoma long, with two lateral tubercles posteriorly; dorsum silvery with median brown band.

Epigynum and vulva: Epigynum with broad and wrinkled scape, its tip finger-like.

Remarks: Shape of epigyne and scapus are the basis of my generic placement.

Natural history: Unknown.

Distribution: Unknown.

Gen. *Eriovixia* Archer, 1951

Literature consulted: Tikader (1982a)

***Eriovixia yunnanensis* Yin et al., 1990**

Material examined: 1♀, 1000m, 23.X.1999, SW.

Description:

Female: Prosoma slightly longer than wide, narrowing in front. Carapace with hairs and brown color in cephalic region. Eight eyes in two recurved rows; LE close to each other and situated on small tubercles. Opisthosoma subtriangular, posterior portion elongate; dorsum with chalk-white patches and brown pattern, three pairs of sigilla running along the midline.

Epigynum and vulva: Epigyne with broad and stout scape; scape tip recurved bending slightly upwards.

Remarks: Females of this genus resemble *Neoscona* apart from a slightly flattened epigyne. Berman and Levi (1971) treated the genus as a synonym of *Neoscona*. However, Grasshoff (1986) established *Eriovixia* as a separated genus. My specimen accords with illustrations of *E. yunnanensis* with slight differences in the shape of the insemination ducts, which are not curved as in figures provided by Song, Zhu & Chen (1999). Figures of *Neoscona holmi* Schenkel, a species distributed over China, correspond with my specimen as well.

Natural history: Unknown.

Distribution: Southern China and Thailand.

Gen. *Gasteracantha* Sundevall, 1833

Literature consulted: Pocock (1900); Tikader (1982a); Song, Zhu & Chen (1999).

***Gasteracantha geminata* Thorell, 1887**

Material examined: 1♀, 1000m, 24.VI.2000, BT; 1♀, 1000m, 27.XI.1999, SW; 1♀, 1000m, 27.XI.1999, VS.

Description:

Female: Prosoma dark brown, cephalic region elevated, sloping posteriorly. Carapace covered with fine white hairs. Legs brown. Opisthosoma much wider than long; dorsum provided with three transverse white bands; three rows of large sigilla; anterior lateral spines small; median spines long, heavily sclerotized; posterior spines pointed.

Epigynum and vulva: Epigynum provided with very short and blunt scape as in Fig. 119. Spermathecae spherical, heavily sclerotized. Insemination ducts short.

Remarks: The female epigyne corresponds well with figures provided by Tikader (1982a).

Natural history: Found only in dipterocarp with pine forest (1000 m).

Distribution: India, Sri Lanka and Thailand.

***Gasteracantha hasseltii* C. L. Koch, 1938**

Material Examined: 2♀, 1000m, 27.XI.1999, SW; 1♀, 1000m, 25.XII.1999, SW; 1♀, 510m, 23.X.1999, SW; 1♀, 1000m, 27.XI.1999, SW; 1j, 1000m, 26.II.2000, SW; 1j, 1000m, 24.VI.2000, SW.

Description:

Female: Prosoma slightly longer than wide; covered with pubescence; cephalic region raised, sloping towards thoracic region. Groove-like depression present in cephalic area. Opisthosoma with strong spines; median spines largest; anterior row of sigilla recurved; posterior row slightly procurved; median longitudinal row consisting of four sigilla; dorsum chalk-white with blackish brown margins.

Epigynum and vulva: As in Fig 120. Round spermathecae with J-shaped ducts.

Remarks: My specimens correspond well with illustrations of *G. hasseltii* given by Song, Zhu & Chen (1999).

Natural history: Distributed from lower elevations up to 1000 m.

Distribution: India, China to Moluccas.

***Gasteracantha kuhlii* C. L. Koch, 1838**

Material examined: 1♀, 1000m, 25.XII.1999, BT.

Female: Prosoma subquadrangular, dark brown except for pale yellow thorax; clothed with fine white hairs. Cephalic area very high and subrectangular. Fovea Y-shaped, shallow. Eight eyes in two recurved rows; ME situated far apart from LE. Legs brown, interrupted with yellow patches. Opisthosoma transversely oblong, slightly concave; dorsum provided with numerous pale yellow patches as background; conspicuous sigilla forming anterior margin row, posterior marginal row and median longitudinal row; anterior lateral spines small, reddish brown; median spines pale brown; posterior spines largest.

Epigynum and vulva: Epigynum strongly sclerotized. Short, pointed, triangular scape present. Rounded spermathecae large, with thick wall ducts.

Remarks: My specimen corresponds well with illustrations given by Song, Zhu & Chen (1999).

Natural history: Unknown.

Distribution: India to Japan, and the Philippines.

Gen. *Gea* C. L. Koch, 1843

Literature consulted: Levi (1983).

***Gea spinipes* C. L. Koch, 1843**

Material examined: 1♀, 510m, 29.I.2000, SW.

Description:

Female: Prosoma longer than wide, narrowing in front, with moderately convex cephalic region. Carapace chestnut brown with two oblique yellow bands. Eight eyes in two rows; AER strongly recurved and shorter than procurved PER; MOQ wider behind than in front, forming a trapezium; PME larger than AME; ALE smallest and not visible from above. Sternum blackish brown with a broad longitudinal white median band. Chelicerae small, weak and possessing a small boss. Legs yellow with brownish patches, metatarsi and tarsi together longer than patellae and tibiae together. Opisthosoma roughly pentagonal, with one pair of small humps anteriorly, brown in color with scattered white dots and broad black band posteriorly.

Epigynum: Epigyne provided with thin median septum; posterior plate wider than long, both sides depressed and undulating.

Remarks: The epigynes of *G. spinipes* are strongly variable. Levi (1983) illustrated at least three different forms of the epigyne. My specimen corresponds well with females from Sumatra.

Natural history: Unknown.

Distribution: *Gea spinipes* occurs in Burma, Vietnam, Malaysia and Indonesia. This is the first record from Thailand.

Gen. *Larinia* Simon, 1874

Literature consulted: Dippenaar-Schoeman & Jocqué (1997)

***Larinia* sp.**

Material examined: 1j, 510m, 29.VII.2000, SW; 1j, 510m, 23.X.1999, SW.

Description:

Coloration and pattern: Carapace longer than wide, narrowing in front. Cephalic region not clearly distinct from thoracic region. Ocular area about twice as wide in front as behind. AME larger than PME; LE subequal, close to each other and situated on tubercles. Legs long and slender, clothed with hairs and spines. Opisthosoma elongate, with median blunt point in front, overlapping carapace. Dorsum yellowish white, provided with some lines.

Remarks: Many species of *Larinia* occur in China and India. *L. phthisica* (L. Koch) which occurs in Japan, mainland Asia to the Philippines and Australia is most likely to be found in Thailand as well.

Natural history: Unknown.

Distribution: Unknown.

Gen. *Neoscona* Simon, 1864

Literature consulted: Song, Zhu & Chen (1999)

***Neoscona theisi* Walckenaer, 1841**

Material examined: 1♀, 2430m, 29.I.2000, SW.

Description:

Female: Prosoma with narrower cephalic region, slightly protruding forwards. Carapace clothed with fine white hairs; yellow cephalic area higher than brown thoracic area. Fovea indistinct. Eight eyes arranged in two rows; PME largest; eyes with black margins. Opisthosoma large, triangular; dorsum provided with numerous white patches, center with brown branching band, posterior lateral with two dark brown patches. Legs strong, without conspicuous spines; all segments yellow except apical portion of femora dark brown.

Epigynum and Vulva: Scape tongue-shaped, directed backwards. Spermathecae round. Two copulatory openings clearly seen from above. Insemination ducts visible.

Remarks: Female genitalia of *N. theisi* illustrated by Song, Zhu & Chen (1999) slightly differ from description and illustrations provided by Davies (1988) and Tikader (1982a). The latter show rather elongate and slender epigyna. The variation of epigyne and abdominal pattern may be the reason why *N. theisi* is divided into five subspecies.

Natural history: Unknown.

Distribution: India, China to Pacific Islands.

Gen. *Pronoides* Schenkel, 1936

Literature consulted: Tikader (1982a).

? *Pronoides* sp.

Material examined: 1♀, 2430m, 25.III.2000, BT; 1j, 2430m, 23.X.1999, SW.

Description:

Female: Prosoma longer than wide. Cephalic area of carapace brown, covered with white hairs, the remaining portion yellow and hairless. Fovea indistinct. Eight eyes in two rows; PME on small mound, clearly separated from each other. Opisthosoma subtriangular; anterior portion brown, provided with two humps; posterior end chalk-white with pairs of sigilla. Legs yellow.

Epigynum and vulva: Epigynum with broad medium septum, slightly sclerotized.

Remarks: The specimen possess a uniquely shaped prosoma which allows to distinguish this species from other Araneidae. The opisthosoma is provided with two distinctly large humps, especially in juvenile spiders. The genus is limited to China only.

Natural history: Unknown.

Distribution: Unknown.

***Singa* C. L. Koch, 1836**

Literature consulted: Barrion & Litsinger (1995); Workman (1896).

***Singa* sp.**

Material examined: 1j, 510m, 25.III.2000, BT; 1j, 510m, 25.III.2000, SW; 1j, 1000m, 24.VI.2000, BT.

Description:

Coloration and pattern: Prosoma longer than wide. Carapace brown; raised cephalic area clearly separated from thoracic area by deep thoracic groove. Eight eyes in two rows; AER recurved; PER slightly recurved; AME situated on low projection. Opisthosoma oval; dorsum black with four pairs of irregular white spots laterally, two spots arranged in mid-longitudinal line.

Remarks: The description of the genus provided by Barrion & Litsinger (1995) corresponds with my specimens. The general habitus of these spiders is comparable to illustration of *S. perpolita* (Thorell) given by Workman (1896). *Singa* comprises 30 species distributed in the Palearctic, Oriental, Nearctic and Ethiopian regions of the world. Five species occur in Southeast Asia: *S. leucoplagiata* (Simon) and *S. theodori* (Thorell) were recorded from Indonesia, *S. hilira* Barrion & Litsinger from Philippines, *S. myrrhea* (Simon) from India and *S. perpolita* from Singapore.

Natural history: The spiders were collected by sweeping and beating bushes.

Distribution: Unknown.

Gen. *Zygiella* F. O. Pickard-Cambridge, 1902

Literature consulted: Tikader (1982a).

***Zygiella calyptrata* Workman, 1984**

Material examined: 1♀, 510m, 27.V.2000, BT.

Description:

Female: Prosoma narrowed in front; cephalic area raised; fovea V-shaped. Carapace with dark brown cephalic area, clothed with white hairs; thoracic area yellow. Eight eyes in two rows; AME situated on projecting tubercle; PME almost touching each other, far apart from contiguous LE. Opisthosoma oval; dorsum covered with irregular white patches and black pattern. Legs yellow; clothed with hairs and spines.

Epigynum and vulva: Epigynal plate slightly sclerotized. Round spermathecae connected with smaller posterior receptacle.

Remarks: Twenty-three species of *Zygiella* are distributed worldwide. My specimen corresponds with *Z. calyptrata* (Workman & Workman) illustrated by Song, Zhu & Chen

(1999). However, its habitus is similar to that of *Guizygiella quadrata* (Tetragnathidae) from China. The female of *Hyposinga pygmaea* Sundevall illustrated by Barrion & Litsinger (1995) probably belongs to *Zygiella*.

Natural history: Unknown.

Distribution: China to Malaysia.

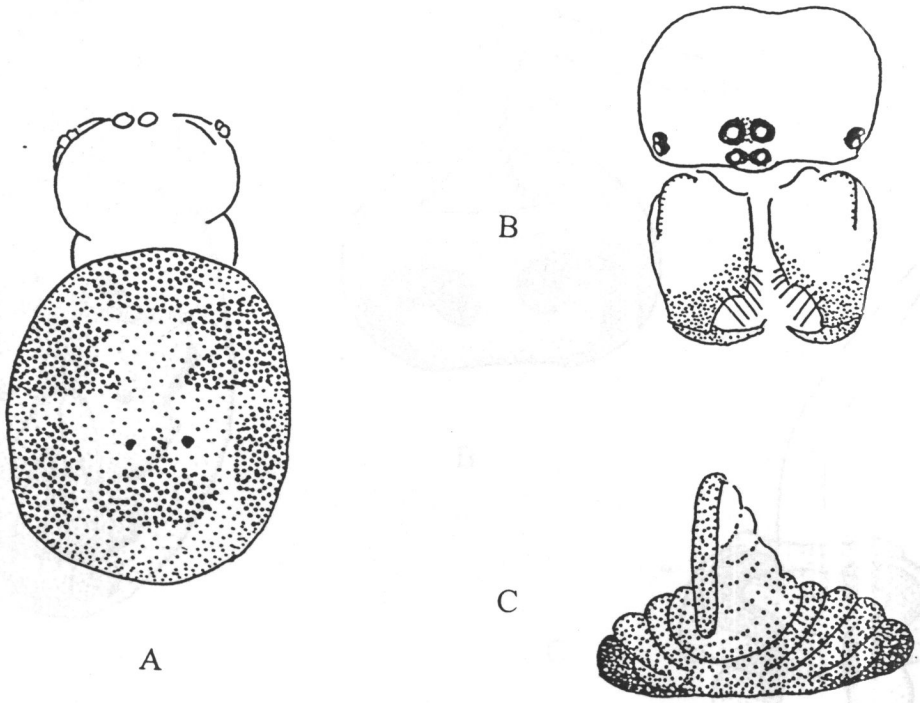


Fig. 104. *Anepsion maritatum*. A, habitus of female, dorsal view. B, prosoma, front view. C, epigyne.

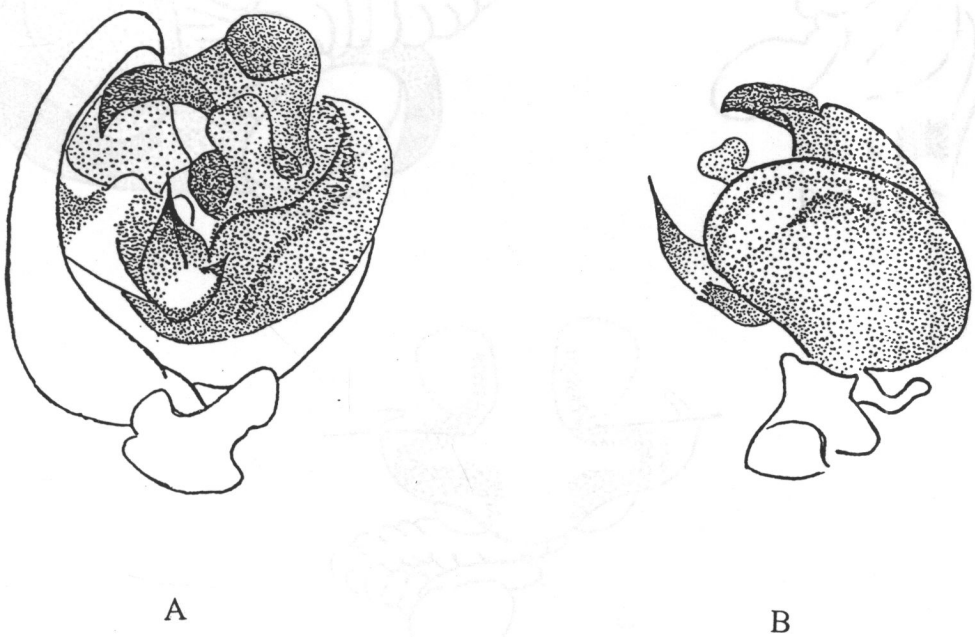


Fig. 105. *Araneus auriculatus*. A, B, male palp, different views.

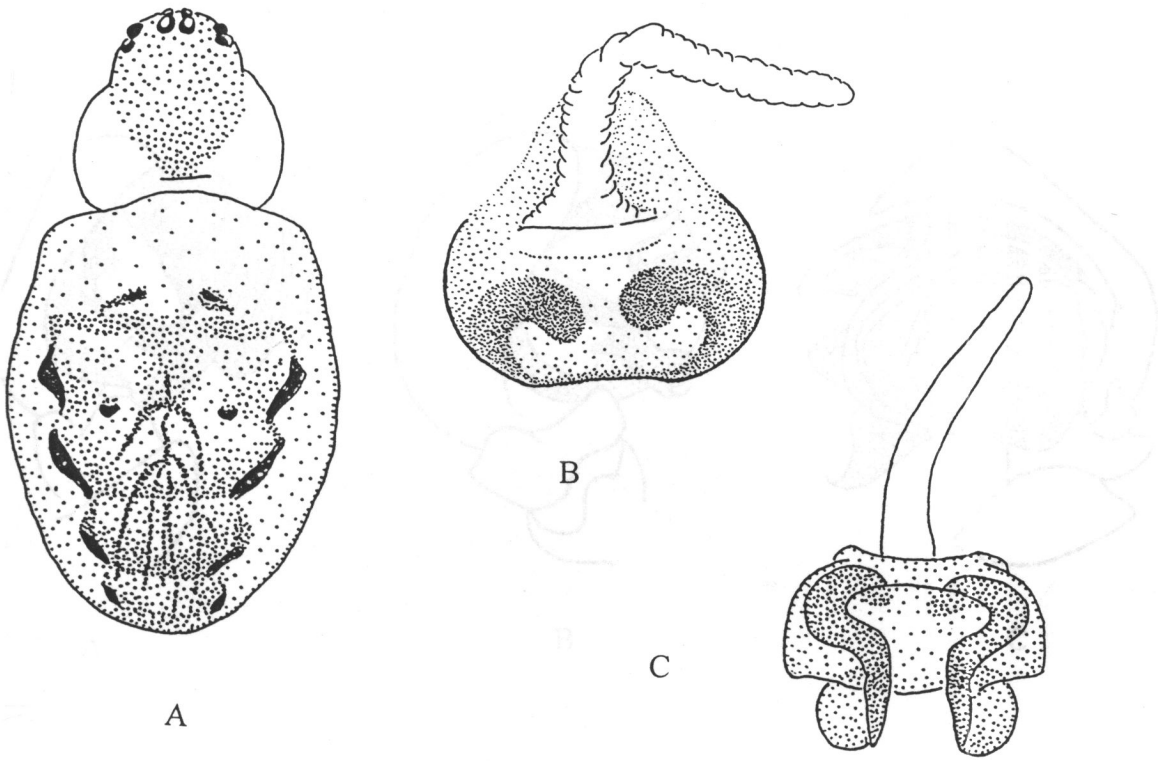


Fig. 106. *Araneus himalayaensis*. A, habitus of female. B, epigyne. C, vulva.

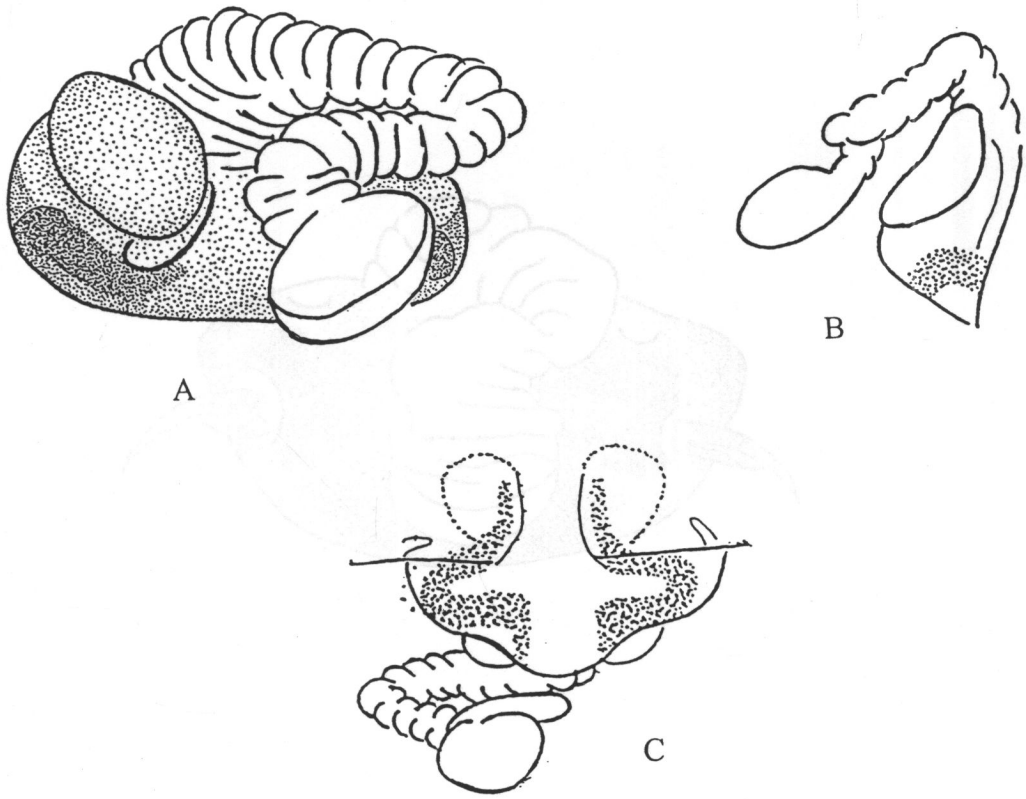


Fig. 107. *Araneus* sp. A. A-C, epigyne, different views.

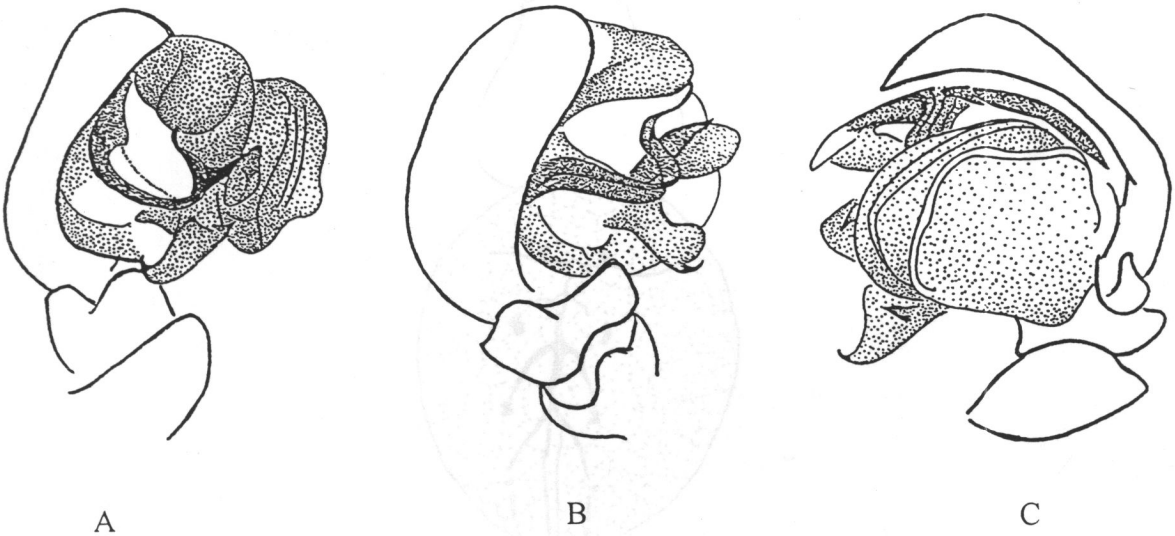


Fig. 108. *Araneus* sp. B. A-C, male palp, different views.

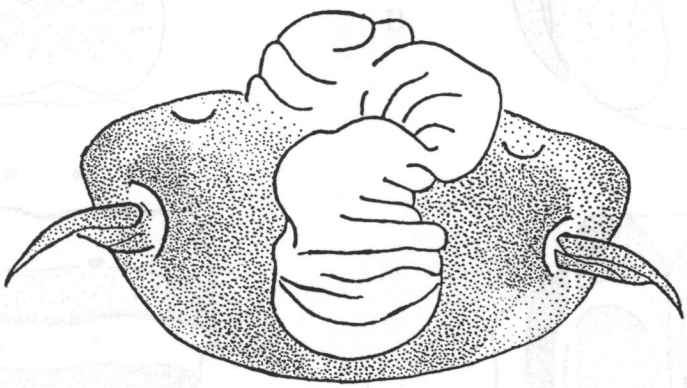


Fig. 109. *Araneus* sp. C. Epigyne.

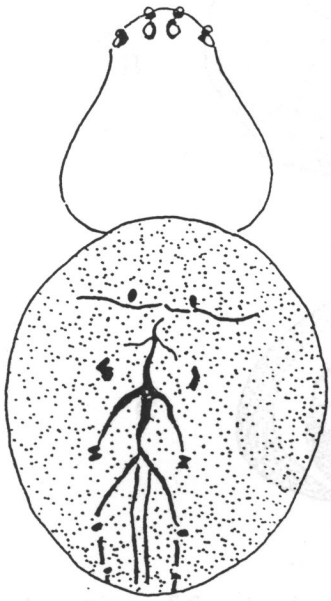
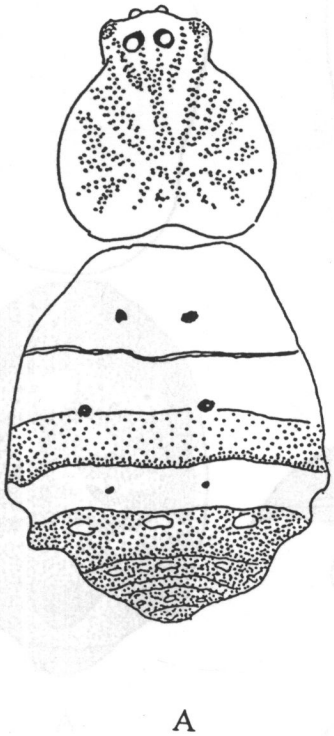
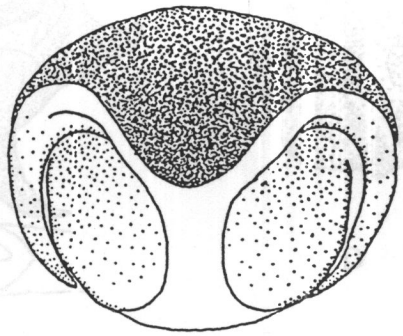


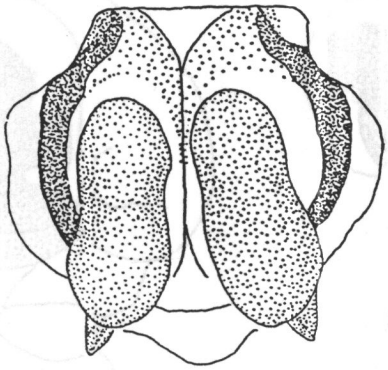
Fig. 110. *Araneus* sp. D. Habitus of juvenile.



A



B



C

Fig. 111. *Argiope pulchella*. A, habitus of female. B, epigyne. C, vulva.

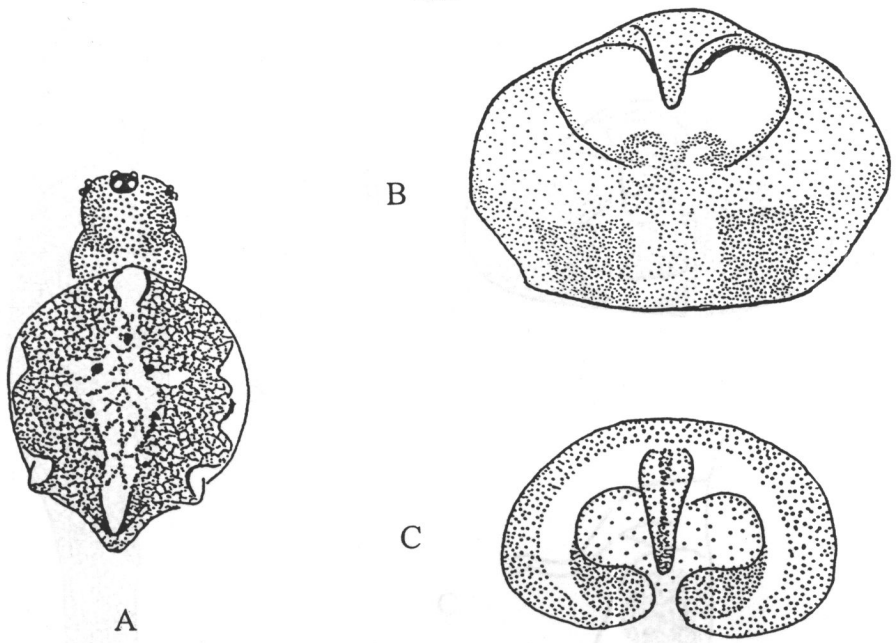


Fig. 112. *Chorizopes bengalensis*. A, habitus of female, dorsal view B, C, epigyne, different views.

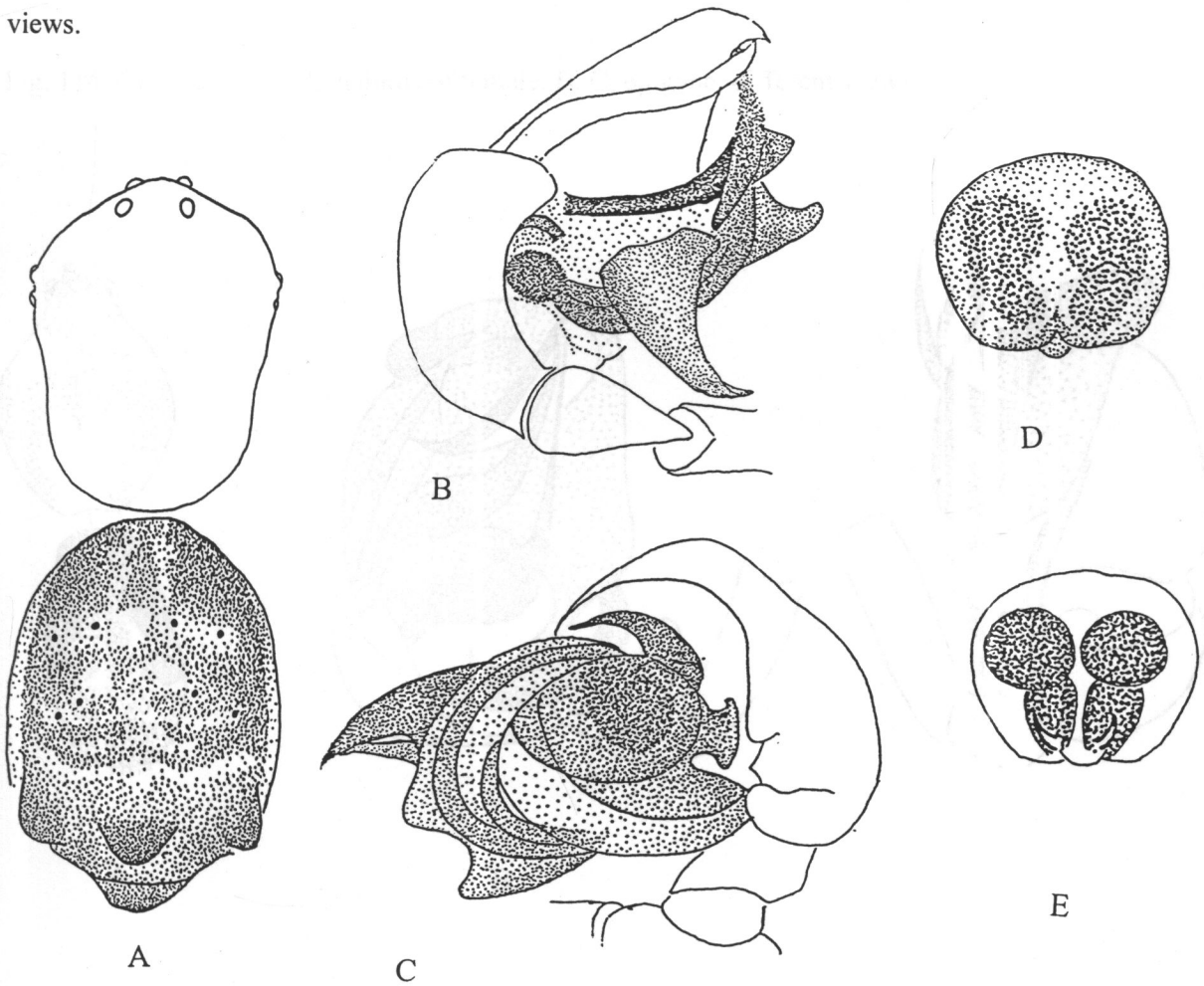


Fig. 113. *Chorizopes shimenensis*. A, habitus of male. B, C, male palp, different views. D, epigyne. E, vulva.

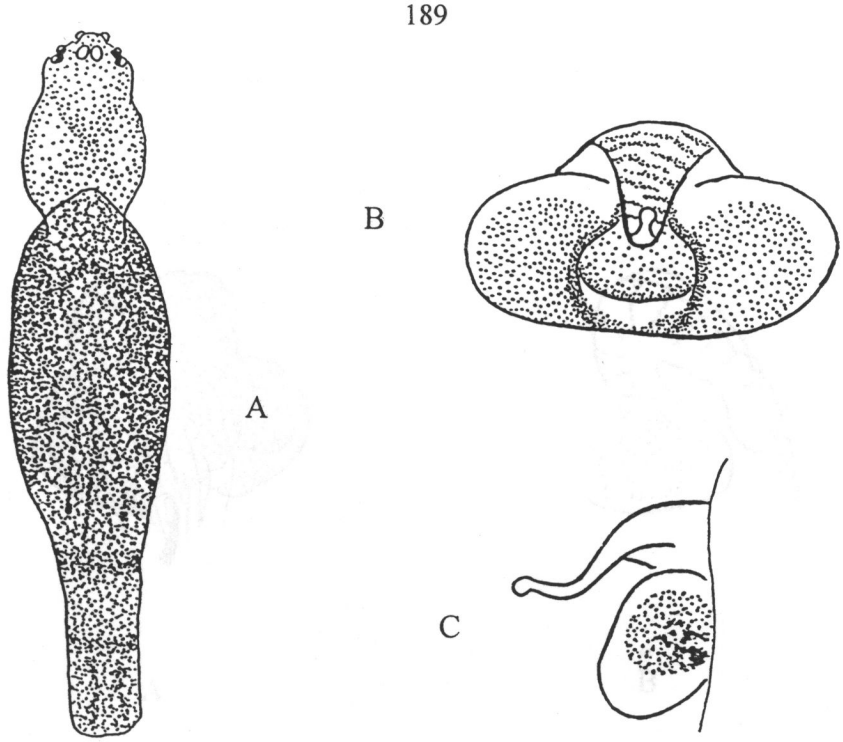


Fig. 114. *Cyclosa bifida*. A, habitus of female. B, C, epigyne, different views.

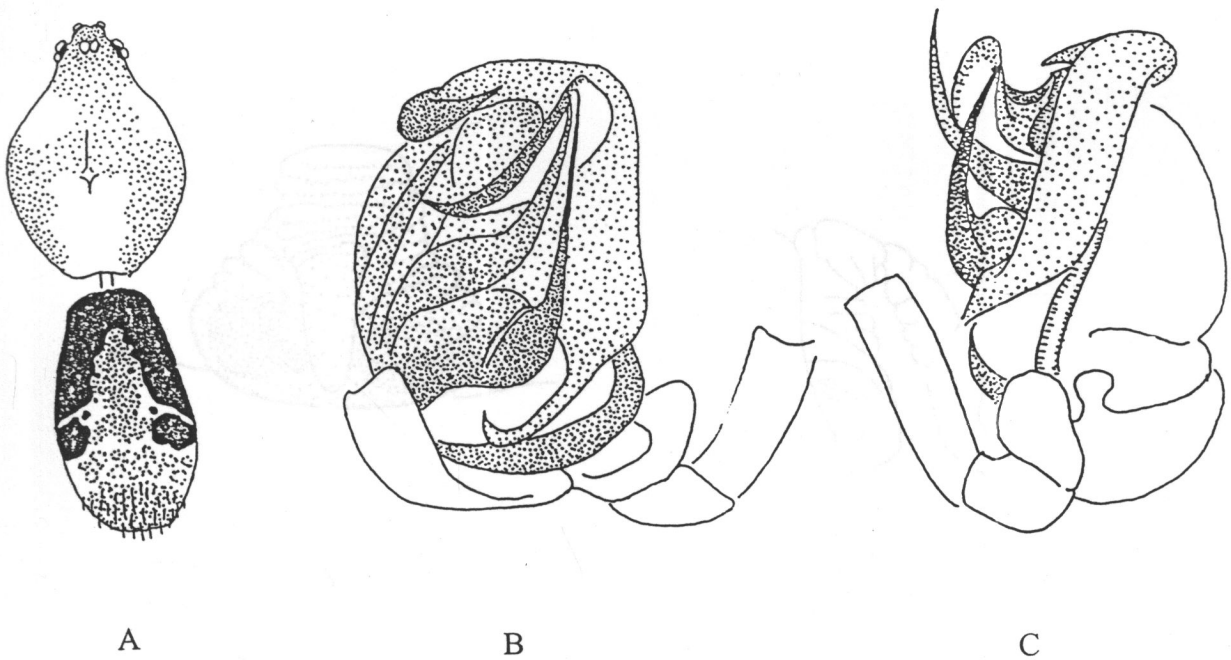


Fig. 115. *Cyclosa omonaga*. A, habitus of male, dorsal view. B, C, male palp, different views.

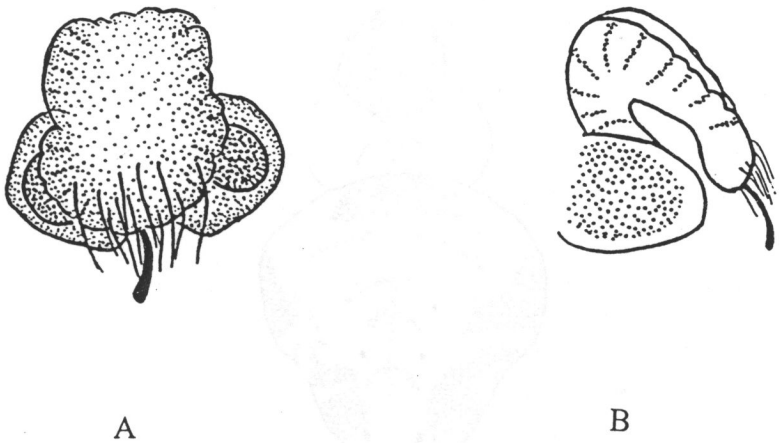


Fig. 116. *Cyclosa cf. informis*. A, B, epigyne, different views.

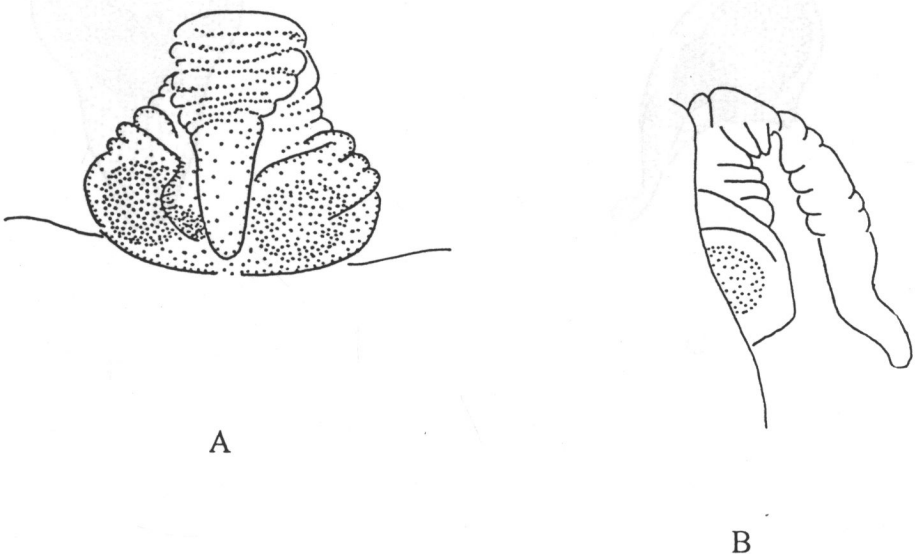
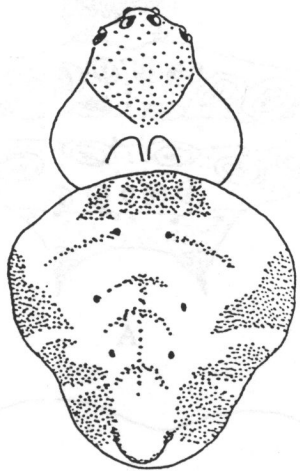
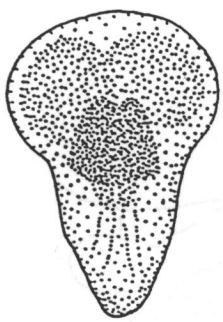


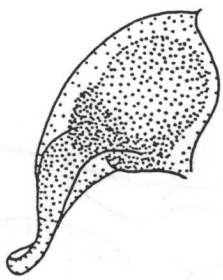
Fig. 117. *Cyclosa* sp. A, B, epigyne, different views.



A

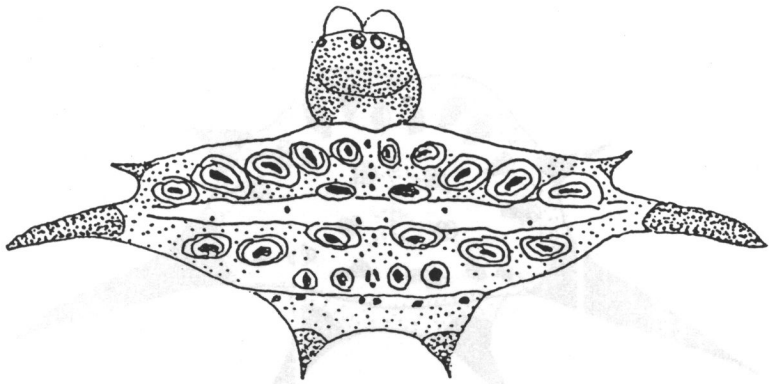


B

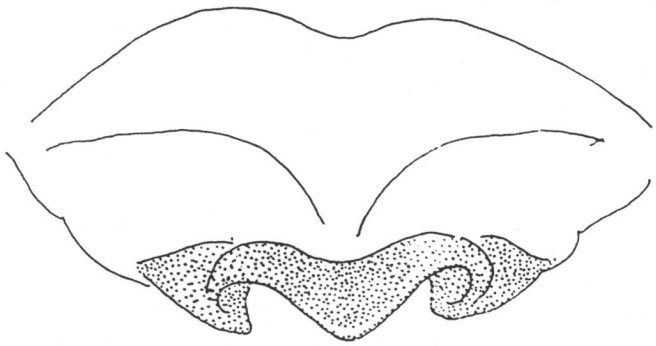


C

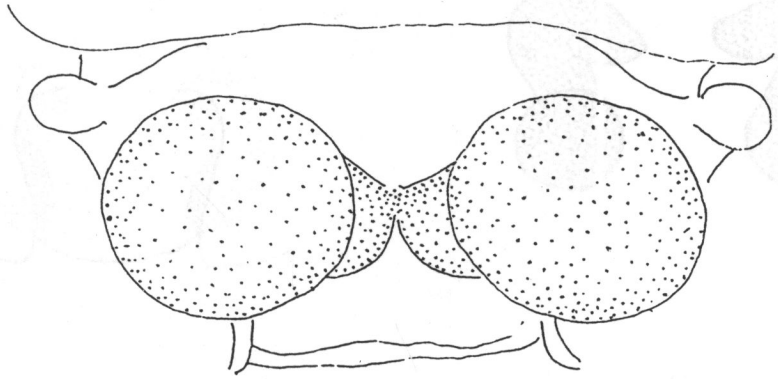
Fig. 118. *Eriovixia yunnanensis*. A, habitus of female, dorsal view. B, C, epigyne, different views.



A

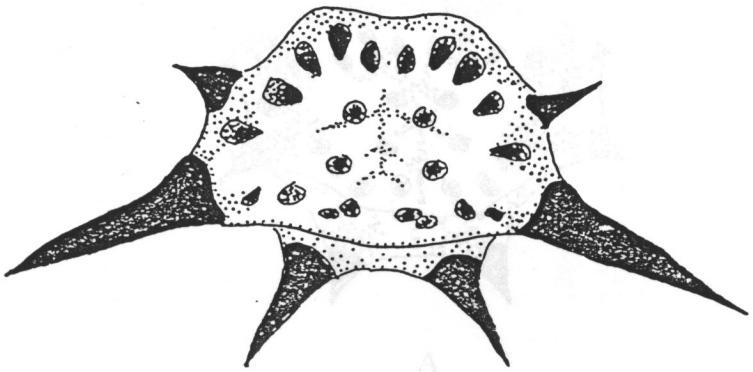


B

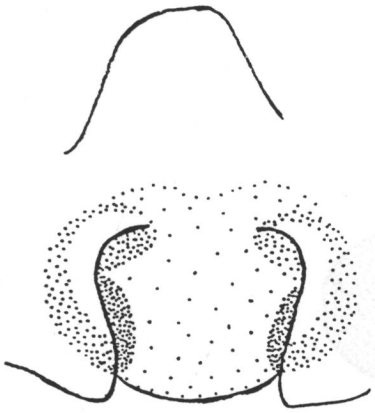


C

Fig. 119. *Gasteracantha geminata*. A, habitus of female. B, epigyne. C, vulva.



A



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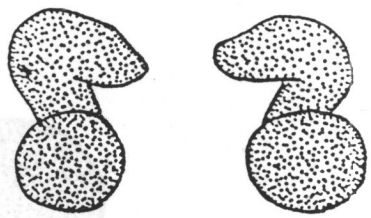
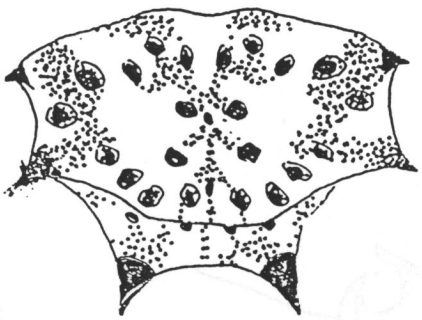
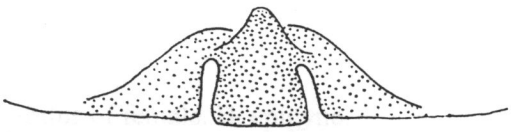


C

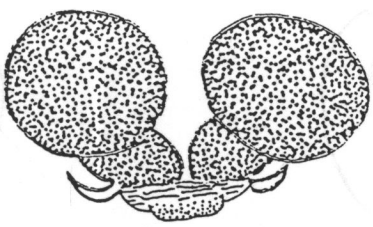
Fig. 120. *Gasteracantha hasselti.* A, *opisthosoma of* female. B, epigyne. C, vulva.



A



B



C

Fig. 121. *Gasteracantha kuhli.* A, *opisthosoma of* female. B, epigyne. C, vulva.

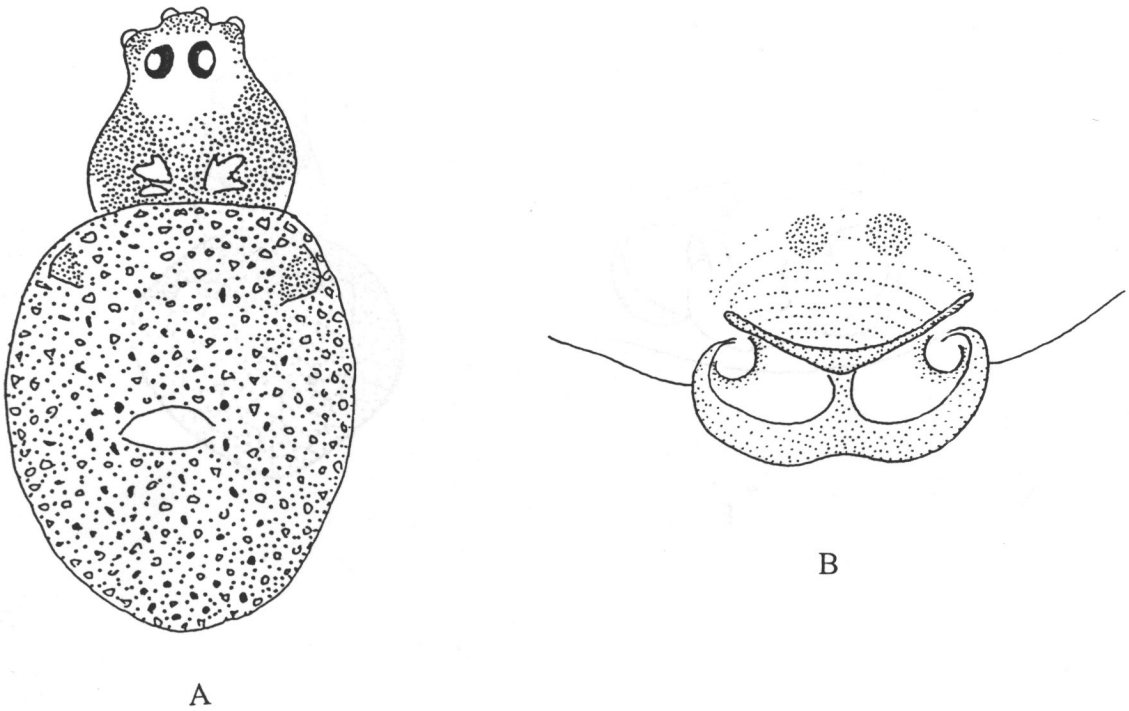


Fig. 122. *Gea spinipes.* A, habitus of female. B, epigyne.

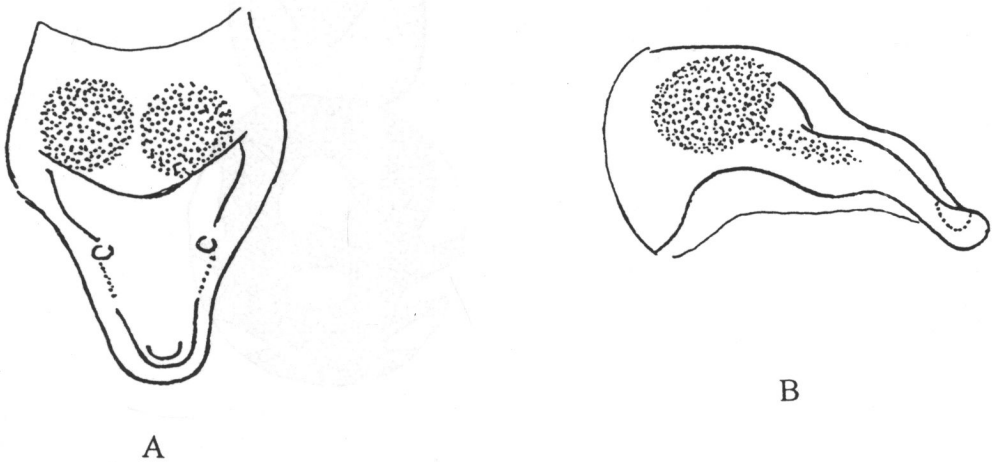
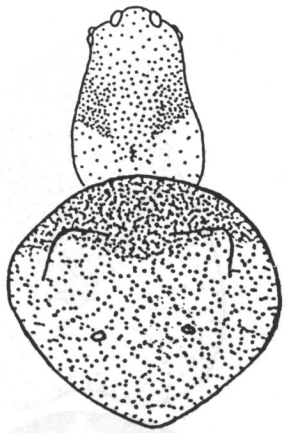
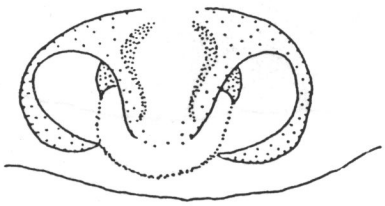


Fig. 123. *Neoscona theisi.* A, B, epigyne, different views.



A



B

Fig. 124.? *Pronoides* sp. A, habitus of female. B, epigyne.

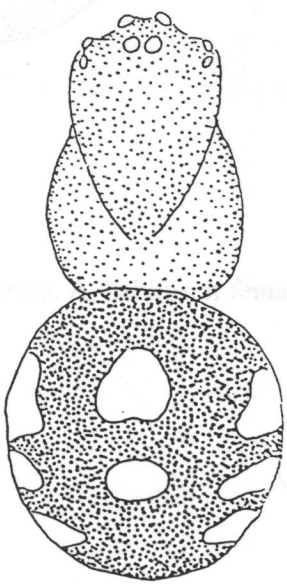
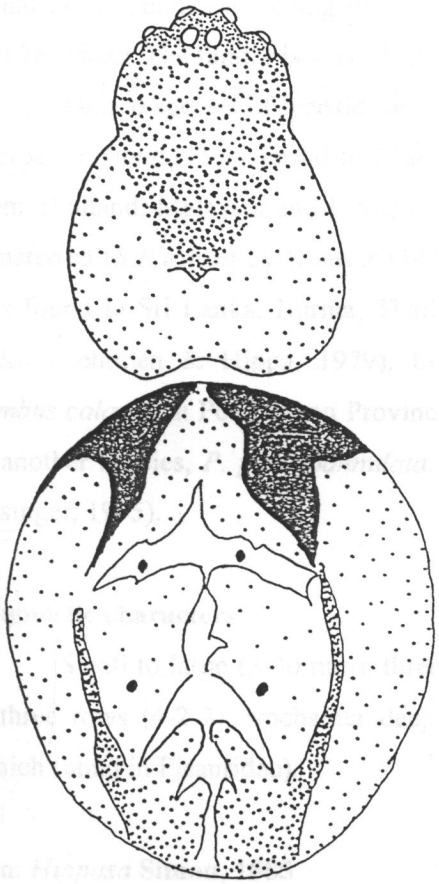
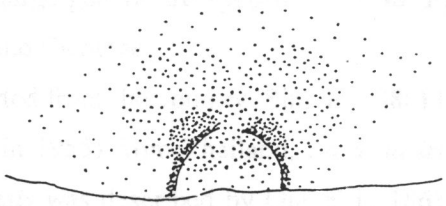


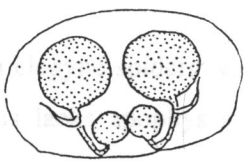
Fig. 125. *Singa* sp. Habitus of juvenile.



A



B



C

Fig. 126. *Zygiella calyptrate*. A, habitus of female, dorsal view. B, epigyne. C, vulva.

LYCOSIDAE Sundevall, 1833

There are 2253 species of wolf spiders in over 100 genera distributed worldwide and found in all habitats including the Arctic. Common large genera are *Lycosa*, *Pardosa*, *Pirata* and *Trochosa*. The family is very close to Pisauridae and Ctenidae.

Only 6 species of lycosids are officially reported from the country. Simon (1886) listed *Lycosa inominata* (transferred to *Hogna* by Roewer in 1955) from Thailand, *Pardosa irretita* from Thailand, Malaysia and Borneo. *Lycosa siamensis* was described by Giebel in 1863 and transferred to *Pardosa* by Roewer (1955) as well. Thorell described *Zobia parvula* in 1895. It was found in Sri Lanka, Burma, Thailand and Malaysia, later this species was transferred to *Zoica* (Lehtinen & Hippa, 1979). Lehtinen and Hippa also described a new species, *Z. bambusicola*, from Petchaboon Province. In 1989, Barrion collected 15 adults and 11 juveniles of another species, *P. pseudoannulata*, from paddy fields in Prachinburi Province (Barrion & Litsinger, 1995).

Diagnostic characters

Small to large (3-30 mm), three clawed, ecribellate, entelegyne spiders with eight eyes in three rows (4-2-2); trochanter deeply notched; male palpus lacks apophyses on the tibia (which found in Pisauridae).

Gen. *Hippasa* Simon, 1885

Literature consulted: Pocock (1900); Thorell (1895)

Hippasa holmerae Thorell, 1895

Material examined: 1j, 510m, 23.X.1999, SW;

Description:

Coloration and pattern: Pale colored lycosid. Prosoma longer than wide; covered with pubescence; cephalic area distinctly narrowed in front. Eight eyes arranged in three rows; PER strongly recurved, PE bigger than AE. Yellow sternum with a longitudinal black band. Opisthosoma longer than wide, covered with hairs; dorsum bearing a gray-brown tree-like pattern with brown cardiac area anteriorly and five transverse yellow brown bands posteriorly. Legs long and slender; brown in color without distinct transverse patches. Posterior spinnerets long and hairy, clearly seen from above.

Remarks: The members of *Hippasa* have posterior spinnerets considerably longer than the anterior and the posterior eyes widely separated (Pocock, 1900). In most species, a black band is running longitudinally over the sternum.

Natural history: *Hippasa* spp. spin a silken threads which extend into a sheet-like snare, like in members of the Agelenidae, hence the name *Hippasa agelenoides* (Simon) given by Simon to the type species of the genus. The noticeably long spinnerets probably play an important role in this habit of all species of the genus. Most of the specimens were collected directly from their burrows on the ground near riverbanks. *Hippasa* distribute from India to the Philippines.
Distribution: India to the Philippines.

Genus *Pardosa* C. L. Koch, 1847

Literature consulted: Tikader & Malhotra (1980); Yin *et al.* (1997).

***Pardosa songosa* Tikader & Malhotra, 1976**

Material examined: 1♀, 1j, 1000m, 25.III.2000, SS; 1j, 510m, 25.IX.1999, SS; 2j, 510, 27.XI.1999, PT; 1j, 510m, 23.X.1999, PT; 1j, 2430m, 29.IV.2000, PT; 1j, 2090m, 29.I.2000, SS; 1j, 2090m, 25.IX.1999, SW; 1j, 1000m, 27.XI.1999, BT; 1j, 510m, 29.VII.2000, PT; 1j, 1000m, 27.V.2000, SW; 1j, 1000m, 29.I.2000, PT; 1j, 510m, 23.X.1999, PT; 1j, 2090m, 25.IX.1999, SW; 6j, 2430m, 23.X.1999, SW.

Description:

Female: Prosoma longer than wide, clothed with fine hairs. Carapace yellowish brown, with deep fovea surrounded by pale markings; lateral sides with black patches and small gap of pale patches. Clypeus nearly vertical. Eight eyes in three rows; eye formula 4-2-2; AER slightly recurved; small AE and large PME directed forward. Promargin of chelicerae with two teeth and a small denticle; retromargin with three teeth. Opisthosoma oval, slightly pointed behind. Anterior half provided with two longitudinal pale areas followed by black and pale patches and black spots. Legs long and slender; with hairs and spines; conspicuous dark transverse patches present; leg IV longest.

Epigynum and vulva: Epigynal plate round, heavily sclerotized. Epigynum bearong a median septum, narrowest at the middle. Hood-like structure present, not fused. Spermathecae small and globular, with tubular structure.

Remarks: There is much similarity between *Pardosa* and *Lycosa*. Several species of *Pardosa* were previously placed in the genus *Lycosa*. *Pardosa* differs from *Lycosa* in having the labium wider than long, the frontal side of the carapace vertical or almost so. Illustrations of the vulvae of *P. songosa* Tikader & Malhotra and *P. shyamae* (Tikader) provided by Tikader & Malhotra (1980) show no differences. More illustrations of female *P. shyamae* from southern China by Yin *et al.* (1997) give a clearly distinction between the two species. My illustration of the female vulva corresponds well with *P. songosa*.

Natural history: Ground dwellers and hunters.

Distribution: India, China and Thailand.

Genus *Trochosa* C. L. Koch, 1847

Literature consulted: Tikader & Malhotra (1980); Yin et al. (1997).

***Trochosa bannaensis* Yin & Chen, 1995**

Material examined: 1♀, 510m, 29.IV.2000, SS; 1j, 510m, 29.I.2000, BT; 1j, 5; 1PM, 13; 1j, 1000m, 28.VIII.1999, SW.

Description:

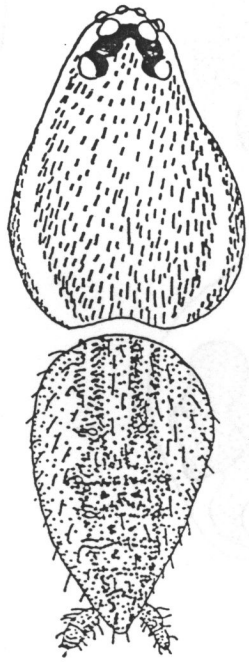
Female: General color brown, body and legs hairy. Prosoma longer than wide, clothed with fine black hairs; cephalic area narrow and almost parallel-sided; conspicuous fovea from which a few darker bands radiated to the margins of carapace. Clypeus slanting. Eyes in two rows; eyes of the second row larger than the other. Opisthosoma oval; grayish brown in color, mottled with white dots, a tree-like band in cardiac area and five or more disconnected transverse bands; clothed with numerous hairs.

Epigynum and vulva: Anterior epigynal margin high; epigynum with hourglass-shaped median septum (usually T-shaped in most *Trochosa,* with few exceptions in some species with swollen anterior part, i.e. *T. menglaensis* Yin, Bao & Wang, *T. aquatica* Tanaka, *T. terricola* Thorell). Hood-like structure present.

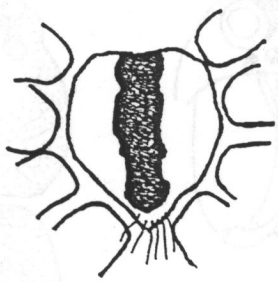
Remarks: The marginal line between copulatory openings and an inverted T-shaped median septum of the epigyne are the basis of my generic placement. Illustrations of epigynum provided by Yin *et al.* (1997) look very similar to my illustrations.

Natural history: Juveniles were collected by sweeping and beating bushes, whereas the mature female was obtained from litter samples.

Distribution: Southern China (Yunnan, Hainan), Hong Kong and Thailand.



A



B

C

Fig. 127. *Hippasa holmerae*. A, habitus of juvenile. B, sternum. C, spinnerets.

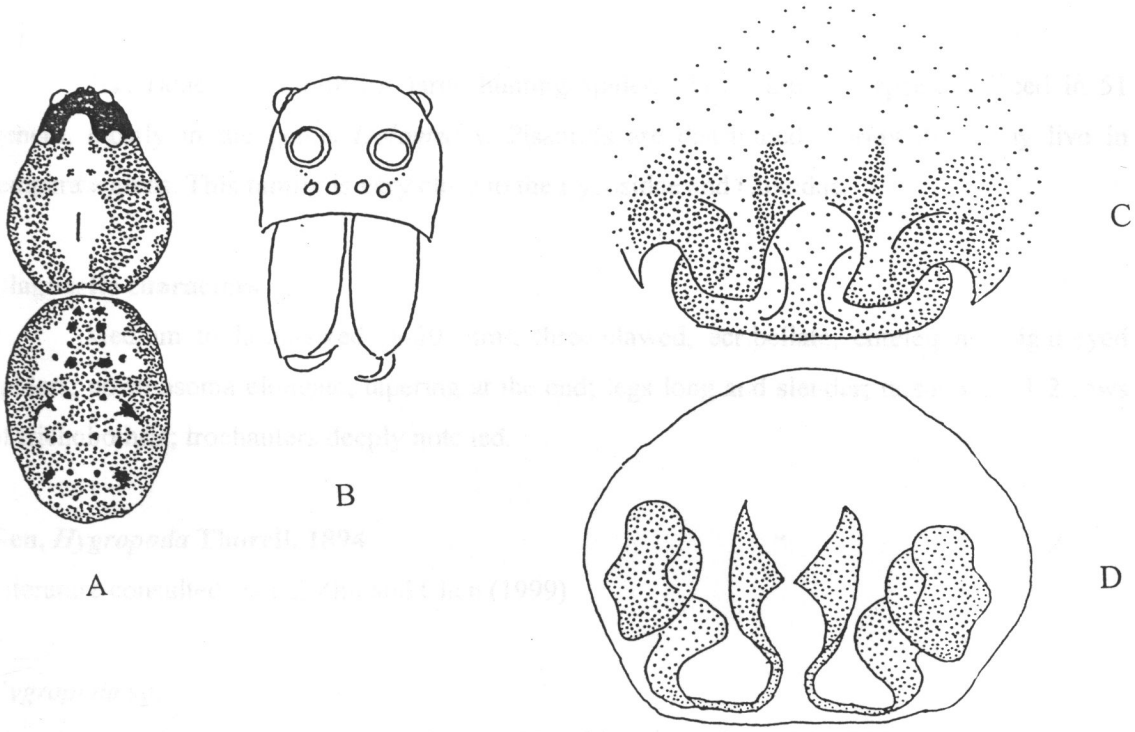


Fig. 128. *Pardosa songosa*. A, habitus of female, dorsal view. B, face and chelicerae. C, epigyne. D, vulva.

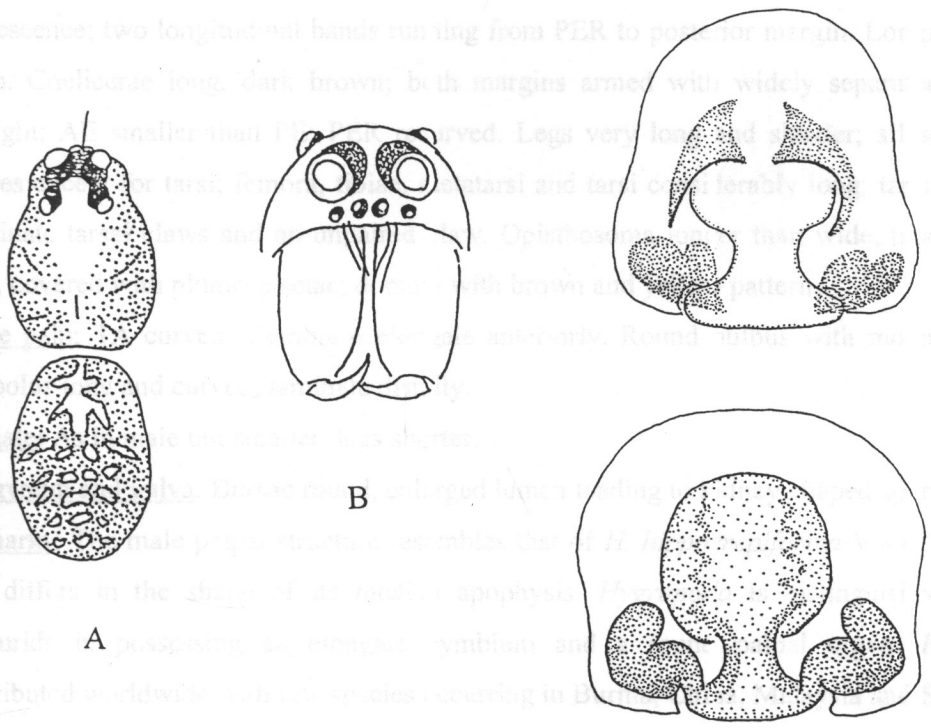


Fig. 129. *Trochosa bannaensis*. A, female habitus. B, face and chelicerae. C epigyne and vulva.

PISAURIDAE Simon, 1890

Pisauridae is a family of large hunting spiders. There are 331 species placed in 51 genera, mostly in the genus *Dolomedes*. Pisaurids are distributed worldwide; many live in temperate areas. This family is very close to the Lycosidae and Ctenidae.

Diagnostic characters

Medium to large-sized (8-30 mm), three-clawed, ecribellate, entelegyne, eight-eyed spiders; opisthosoma elongate, tapering at the end; legs long and slender; tarsus with 1-2 rows of trichobothria; trochanters deeply notched.

Gen. *Hygropoda* Thorell, 1894

Literature consulted: Song, Zhu and Chen (1999)

***Hygropoda* sp.**

Material examined: 1♂, 1♀, 510m, 24.VI.2000, BT; 1♀, 1000m, 24.VI.2000, SW; 3j, 19; 1j, 510m, 27.XI.1999, BT; 1j, 510m, 25.IX.1999, SW; 3j, 510m, 29.I.2000, BT; 4j, 510m, 23.X.1999, SW; 4j, 17; 2j, 510m, 29.IV.2000, BT.

Description:

Male: Prosoma longer than wide; wider behind than in front. Carapace low; clothed with pubescence; two longitudinal bands running from PER to posterior margin. Longitudinal fovea deep. Chelicerae long, dark brown; both margins armed with widely separated teeth. AER straight; AE smaller than PE; PER recurved. Legs very long and slender; all segments with spines except for tarsi; femora, tibiae, metatarsi and tarsi considerably long; tarsi curved. Two pectinate tarsal claws and an unpaired claw. Opisthosoma longer than wide, tapering towards rear, covered with plumose setae; dorsum with brown and yellow pattern.

Male palp: TA curved. Cymbium elongate anteriorly. Round bulbus with median apophysis. Embolus long and curved, laminate distally.

Female: As in male but smaller, legs shorter.

Epigynum and vulva: Bursae round, enlarged lumen leading to kidney-shaped spermathecae.

Remarks: The male palpal structure resembles that of *H. hippocrepiforma* Wang from Yunnan but differs in the shape of its median apophysis. *Hygropoda* is distinguished from other pisaurids in possessing an elongate cymbium and a round palpal organ. *Hygropoda* is distributed worldwide with few species occurring in Burma, China, Malaysia and Singapore.

Natural history: The specimens were collected by beating and sweeping bushes near a river bank in mixed deciduous dipterocarp forest.

Distribution: Unknown.

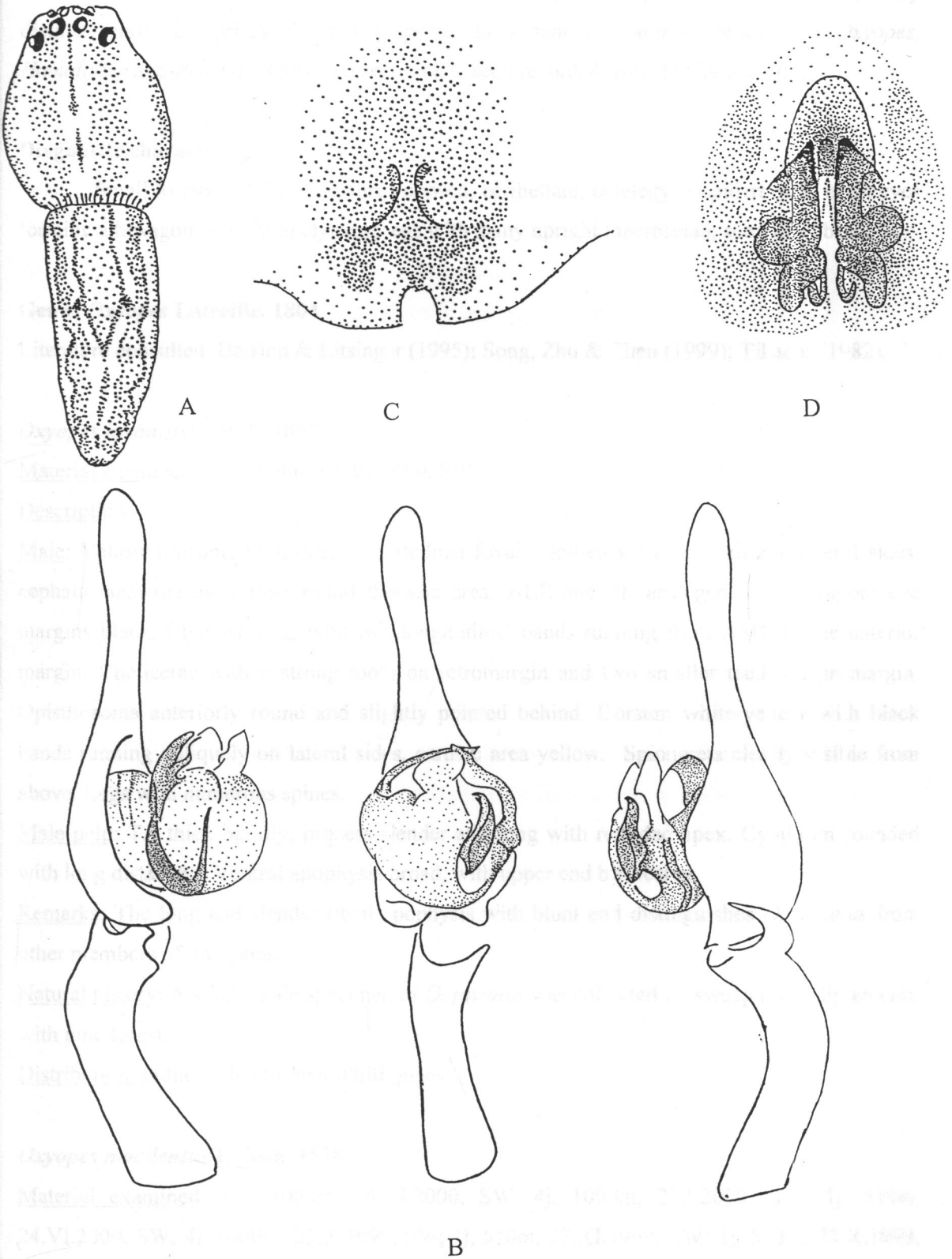


Fig. 130. *Hygropoda* sp.. A, habitus of male. B, male palp. C, epigyne. D, vulva.

OXYOPIDAE Thorell, 1870

Lynx spiders occur all over the world, many species in tropical countries. The very distinct family comprises about 424 species in 9 genera. Common genera are: *Oxyopes*, *Hamataliva* and *Peucetia*. Only two species has been recorded from Thailand so far.

Diagnostic characters

Small to large (4-23 mm), three clawed, ecribellate, entelegyne spiders with eight eyes forming a hexagon; very high clypeus; legs with many upright macrosetae; scopulae absent.

Genus *Oxyopes* Latreille, 1804

Literature consulted: Barrion & Litsinger (1995); Song, Zhu & Chen (1999); Tikader (1982).

Oxyopes javanus Thorell, 1887

Material examined: 1♂, 1000m, 25.III.2000, SW.

Description:

Male: Yellow prosoma with deep, longitudinal fovea, clothed with fine hairs on lateral sides; cephalic area narrower than round thoracic area. ALE and PE arranged in a hexagon; eye margins black. Clypeus long, with two longitudinal bands running from AME to the anterior margin. Chelicerae with a strong tooth on retromargin and two smaller teeth on promargin. Opisthosoma anteriorly round and slightly pointed behind. Dorsum white-yellow with black bands running obliquely on lateral sides, cardiac area yellow. Spinnerets clearly visible from above. Legs with numerous spines.

Male palp: TA thick basally, process slender and long with rounded apex. Cymbium rounded with long distal end. Ventral apophysis broad, with upper end bifurcated.

Remarks: The long and slender tibial apophysis with blunt end distinguishes *O. javanus* from other members of the genus.

Natural history: A single male specimen of *O. javanus* was collected by sweeping in dipterocarp with pine forest. .

Distribution: India, China to Java, Philippines.

Oxyopes macilentus L. Koh, 1878

Material examined: 1♀, 1000m, 24.VI.2000, SW; 4j, 1000m, 29.I.2000, SW; 1j, 510m, 24.VI.2000, SW; 4j, 1000m, 23.X.1999, SW; 1j, 510m, 27.XI.1999, SW; 1j, 510m, 23.X.1999, SW; 1j, 1000m, 25.IX.1999, SW; 1j, 1000m, 28.VIII.1999, SW; 2j, 1000m, 25.IX.1999, SW; 1j, 510m, 25.IX.1999, SW; 4j, 20; 1j, 17.

Description:

Female: Prosoma longer than wide; narrow cephalic region and rounded thoracic region. Carapace with reddish brown dorsomedian and dorsolateral longitudinal bands of small hairs. Eye formula 2-4-2 with black eye margins. Chelicerae with two and one teeth on promargin and retromargin, respectively. Opisthosoma elongate with black lateral sides. Dorsum with chalk-white longitudinal bands at the margins.

Epigynum and vulva: Broad epigynum with medially constricted septum. Apices of spermathecae curved outwards, widely separated. Spermathecal sacs apically globular.

Remarks: Epigynum and vulva of *O. matiensis* Barrion & Litsinger, 1995 look very similar to those of *O. macilentus* L. Koh, 1878. It is possible that they belong to the same species. *O. macilentus* has a wide distribution. It can be found from China to Australia.

Natural history: The spider lives on the vegetation.

Distribution: From China to Australia.

***Oxyopes sikkimensis* Tikader, 1970**

Material examined: 1♂, 1000m, 28.VIII.1999, SW; 1♂, 1000m, 29.VII.2000, SW; 1j, 1000m, 27.V.2000, SW; 1j, 1000m, 27.V.2000, BT; 1j, 510m, 26.II.2000, BT; 1PM, 2j, 1000m, 24.VI.2000, SW; 1j, 1000m, 28.VIII.1999, SW; 1j, 18; 1j, 19.

Description:

Male: Prosoma yellow, longer than wide, covered with black pubescence. Eight eyes in two rows; eyes margins elevated; PER strongly recurved; AME largest. Retromargin of chelicerae with a small tooth, promargin with two teeth. Opisthosoma brown, broad anteriorly, slightly tapering posteriorly. Dorsum with two longitudinal, disconnected, white bands. Legs long and spiny.

Male palp: As in Fig. 133.

Remarks: The male palpal organ corresponds well with illustration provided by Song, Zhu & Chen (1999)

Natural history: Plant dwelling spider, mostly found in dipterocarp with pine forest.

Distribution: India, China (Yunnan, Hunan, Guizhou) and Thailand.

***Oxyopes* sp.**

Material examined: 1♀, 1000m, 24.VI.2000, SW; 7j, 1000m, 29.I.2000, SW; 3j, 510m, 26.II.2000, SW; 1j, 1510m, 25.XII.1999, BT; 1j, 1000m, 27.XI.1999, SW; 1j, 1000m, 28.VIII.1999, SW; 1j, 1000m, 27.XI.1999, SW; 1j, 750m, 15.II.2000, SW; 1j, 510m, 29.VII.2000, SW.

Description:

Female: Prosoma slightly longer than wide. Carapace orange-brown, with deep longitudinal fovea. PE almost equidistant. Opisthosoma pointed posteriorly; dorsum black, with median pale band bordered by two rows of white spots along its anterior margins. Legs long; tibiae and metatarsi armed with long spines.

Epigynum and vulva: Epigyne strongly sclerotized, triangular. Vulva as in Fig. 134.

Remarks: These spiders are placed under *Oxyopes* due to their somatic characters. Female genitalia differ greatly from other members of the genus.

Natural history: Found mainly at low altitudes (510-1000 m) of the national park.

Distribution: Unknown.

Genus *Peucetia* Thorell, 1869

Literature consulted: Pocock (1900).

***Peucetia* sp.**

Material examined: 1j, 1000m, 25.III.2000, BT; 1j, 510m, 29.I.2000, SS; 1j, 510m, 29.VII.2000, SW; 1j, 1000m, 29.IV.2000, PT; 1j, 20.

Description:

Coloration and pattern: General appearance resembling lycosids when viewed from above. Green prosoma with narrow cephalic region; carapace marked with black spots and lines; eight eyes arranged in a hexagon, ALE largest. Opisthosoma tapering with green and white pattern. Legs very long and spiny, decorated with black spots and dark bands.

Remarks: *Peucetia* has a slightly procurved PER that clearly differs from a strongly curved PER in *Oxyopes*. Retromargin of chelicerae without teeth. The body is green and usually furnished with black spots and lines on carapace and legs. Predominant in Ethiopian and Neotropical areas with several species reported from the Oriental, Palearctic and Australian regions.

Natural history: This genus is abundant in grassland at lower elevations of the national park.

Distribution: Unknown.

Oxyopidae gen. sp.

Material examined: 1♂, 510m, 27.V.2000, SW.

Description:

Male: Carapace covered with white pubescence. PME closer to each other than to PLE. Legs long and armed with strong spines. Opisthosoma rounded anteriorly, pointed posteriorly; dorsum pale with irregular brown patches, covered with black hairs.

Male palp: As in Fig. 135.

Remarks: Judging from somatic characters, the spider should be place in *Oxyopes*. However, its male palpal structure differs greatly from other members of the genus.

Natural history: Unknown.

Distribution: Unknown.

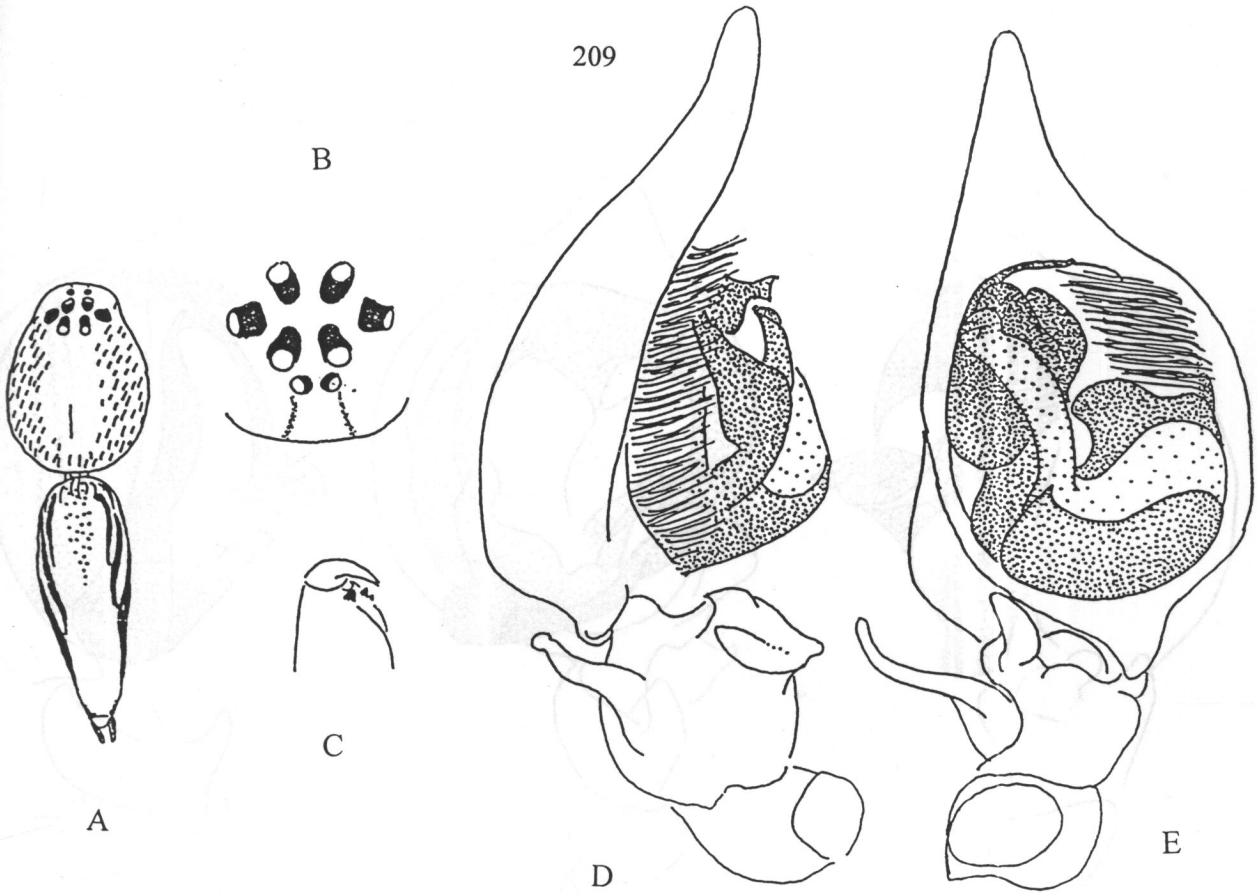


Fig. 131. *Oxyopes javanus*. A, habitus of male. B, eye arrangement. C, chelicera. D, E, male palp, different views.

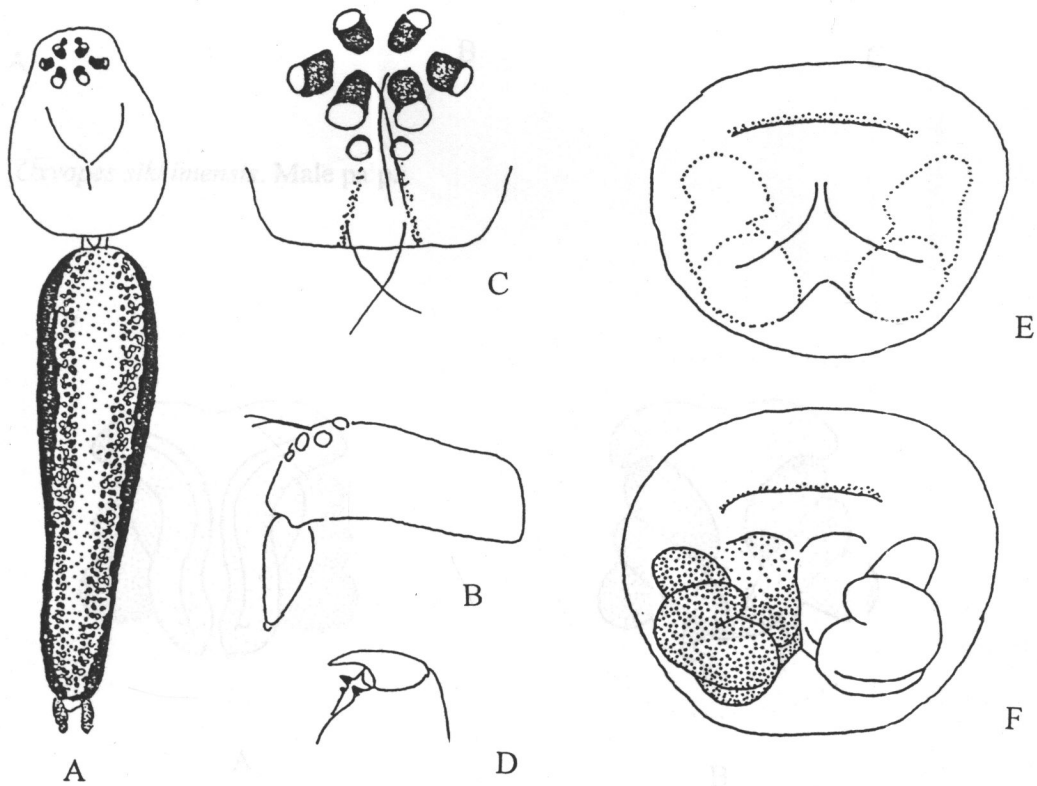


Fig. 132. *Oxyopes macilentus*. A, habitus of female. B, carapace, lateral view. C, eye arrangement. D, chelicera. E, epigynum . F, vulva.

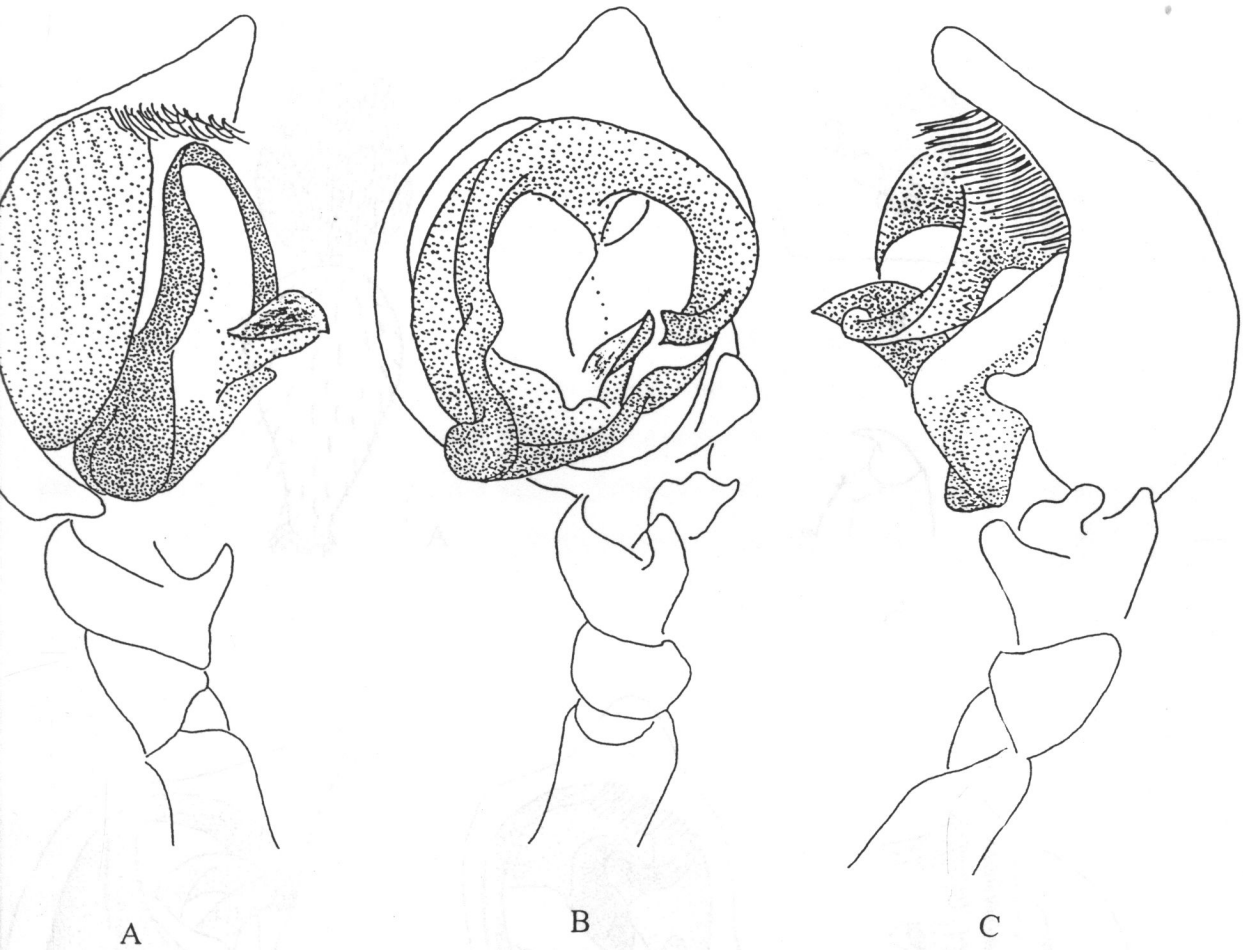


Fig. 133. *Oxyopes sikkimensis*. Male palp.

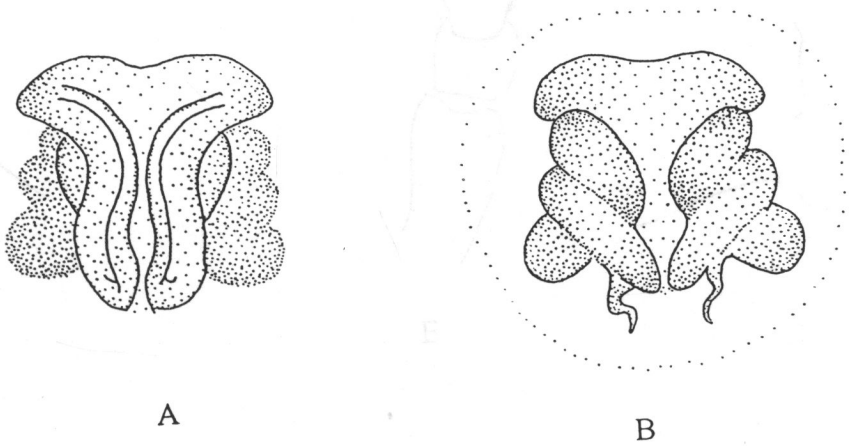


Fig. 134. *Oxyopes* sp. A, epigyne. B, vulva.

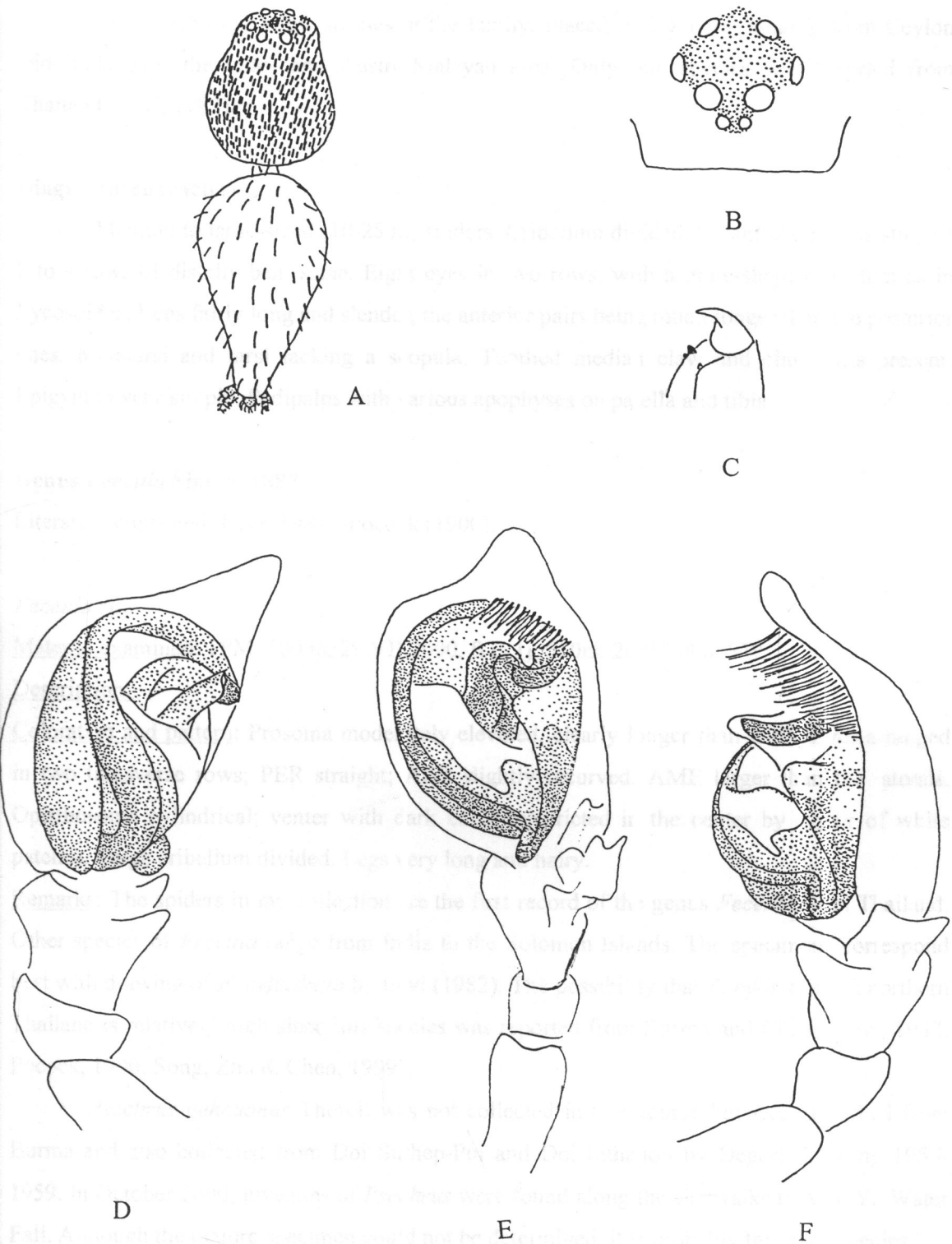


Fig. 135. Oxyopidae gen. sp. A, habitus of male. B, eye arrangement. C, chelicera. D-F, male palp, different views.

PSECHRIDAE Simon, 1890

There are only a few species in the family, placed in 4 genera, ranging from Ceylon and India over the Indo- and Austro-Malayan area. Only one species was reported from Thailand (Levi, 1982).

Diagnostic characters

Medium to large-sized (10-25 m) spiders. Cribellum divided. Calamistrum consisting of 2 to 4 rows of distally bent setae. Eight eyes in two rows, with a grate-shaped tapetum as in Lycosoidea. Legs fairly long and slender, the anterior pairs being much longer than the posterior ones. Metatarsi and tarsi lacking a scopula. Toothed median claw and claw tufts present. Epigynum very simple. Pedipalps with various apophyses on patella and tibia.

Genus *Fecenia* Simon, 1887

Literature consulted: Levi (1982); Pocock (1900).

***Fecenia* sp.**

Material examined: 1PM, 500 m, 29.VII.2000, BT; 1j, 510m, 26.II.2000, SW.

Description:

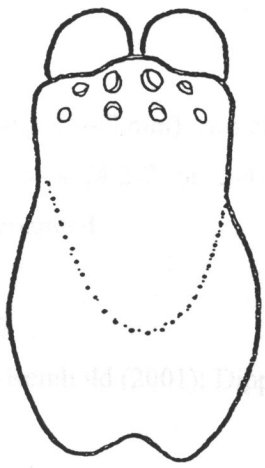
Coloration and pattern: Prosoma moderately elevated, clearly longer than wide. Eyes arranged in two transverse rows; PER straight; AER slightly recurved; AME larger than the laterals. Opisthosoma cylindrical; venter with dark band constricted in the center by a pair of white patches. Large cribellum divided. Legs very long and hairy.

Remarks: The spiders in my collection are the first record of the genus *Fecenia* from Thailand. Other species of *Fecenia* range from India to the Solomon Islands. The specimens correspond best with drawing of *F. cylindrata* by Levi (1982). The possibility that *F. cylindrata* in northern Thailand is relatively high since this species was reported from Burma and China (Levi, 1982; Pocock, 1900; Song, Zhu & Chen, 1999).

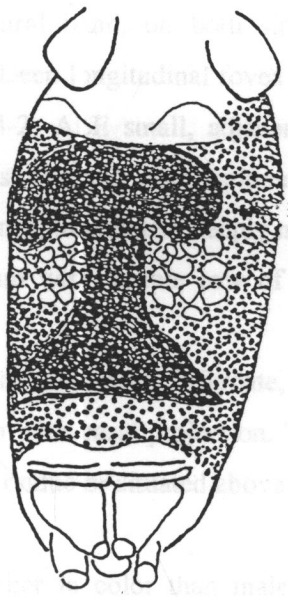
Psechrus gehcuanus Thorell was not collected in this course but was described from Burma and also collected from Doi Suthep-Pui and Doi Inthanon by Degerbøl during 1958-1959. In October 2000, juveniles of *Psechrus* were found along the sidewalks to Mae Ya Water Fall. Although the mature specimen could not be determined, it is probably the same species.

Natural history: Collected by sweeping low vegetation near a riverbank in mixed deciduous dipterocarp forest. Two female *Fecenia* collected from Doi Suthep-Pui (450 m) were hiding in curled dead leaves placed in irregular shaped webs.

Distribution: Collected only from the locality mentioned above. Possibly widespread at low altitudes.



A



B

Fig. 136. *Fecenia* sp. A, carapace and eye arrangement of female. B, opisthosoma of female, ventral view.

CTENIDAE Keyserling, 1877

The Ctenidae contains 417 species in about 38 genera; most members inhabit tropical and subtropical areas.

Diagnostic characters

Medium-sized to very large (5-40 mm), two clawed, ecribellate, entelegyne spiders with eight eyes arranged in three rows (4-2-2 or 2-4-2); trochanter deeply notched; anterior spinnerets conical, not widely separated.

Gen. *Ctenus* Walckenaer, 1805

Literature consulted: Deeleman-Reinhold (2001); Dippenaar-Schoeman & Jocqué (1997).

***Ctenus* sp. A**

Materialexamined: 1♂, 1510m, 26.II.2000, SS; 1♂, 1250m, 15.IV.2000, SS; 2♀, 1000m, 29.VII.2000, PT; 1♀, 1750m, 15.IV.2000, SS; 1♀, 2090m, 29.IV.2000, PT.

Description:

Male: Prosoma ovoid, highest in thoracic region; clothed with black and white hairs. Carapace orange-brown with lighter central band, on both sides bordered with black wavy bands extending backwards from LE. Deep longitudinal fovea in thoracic region. Eight eyes arranged in three rows; eye formula 2-4-2; ALE small, adjacent to PME. Retromargin of chelicerae provided with four teeth. Legs strong and stout, spinous; ventral side of anterior tibiae armed with five pairs of black long spines; trochanters deeply notched. Opisthosoma longer than wide; covered with setae; gray dorsum with double row of irregular-shaped black spots and two anterior black bands.

Male palp: Black tibial apophysis very large, bifurcate, basal portion stout, outer portion long and bending upwards. Cymbium with basal projection. Tegulum strongly sclerotized. Embolus large and curved. Membranous conductor situated above tip of embolus. Median apophysis cup-shaped, dorsally concave.

Female: Larger in size and darker in color than male. Carapace less convex. Opisthosoma brown.

Epigynum and vulva: Epigynum strongly sclerotized, with broad median septum and lateral horns.

Remarks: *Ctenus* is a very large genus, widespread throughout most of the tropics of the world. At present, about 230 species are described; several species occur in our region including

Burma, Vietnam, India and Sri Lanka. More research on these geographically separated populations, including comparison of genitalia, might reveal a complex of cryptic species.

I placed this and the following two species under *Ctenus* due to their epigyne, which is provided with lateral hooks. Unfortunately no male spiders were obtained.

Natural history: Ground dwelling spider. Collected by pitfall trapping and from litter samples in hill evergreen forest.

***Ctenus* sp. B**

Material examined: 1♂, 2090m, 27.V.2000, PT; 1♂, 2090m, 24.VI.2000, PT; 4♂, 2430m, 29.IV.2000, PT; 1♂, 1510m, 29.IV.2000, SS; 5♂, 2090m, 29.IV.2000, PT; 1♀, 1510m, 25.III.2000, SS; 2♀, 1000m, 29.IV.2000, SS.

Description:

Male: Spiders with more or less the same general appearance as in *Ctenus* sp. A, but smaller in size. Carapace orange with black and narrow submarginal stripe on each side, median band pale orange. Opisthosoma brown; dorsum covered with thick setae. Legs orange, decorated with pale greenish patches.

Male palp: Tibial apophysis short and stout, not branching. Cymbium with small basal projection. Embolus tip slender. Median apophysis presented.

Female: Female carapace greenish brown; less convex than in male.

Epigynum and vulva: Epigyne with median septum and lateral horns.

Remarks: Epigyne smaller than that of *Ctenus* sp. A. The male palpus is smaller as well.

Natural history: Collected in hill evergreen forest of the national park.

Distribution: Unknown.

***Ctenus* sp. C**

Material examined: 2♀, 1510m, 27.XI.1999, SS.

Description:

Female: Prosoma brown with lighter median band. Carapace covered with fine black hairs. Opisthosoma longer than wide, covered with black setae, cardiac area white, the remaining dorsum gray with scattered small black spots.

Epigynum and vulva: Epigynum round, heavily sclerotized. Lateral horns very small.

Remarks: These females differ from those of previous species in possessing a round epigyne with very small lateral horns.

Natural history: Collected from litter samples in hill evergreen forest.

Immature specimens of Ctenidae

Material examined: 3j, 1510m, 26.II.2000, SS; 1j, 750m, 15.XII.1999, SS; 1j, 2090m, 27.XI.1999, SS; 1j, 1000m, 27.XI.1999, PT; 3j, 1750m, 15.I.2000, SS; 1j, 1510m, 29.IV.2000, PT; 2j, 1750m, 15.V.2000, SS; 1j, 750m, 15.III.2000, SS; 4j, 1250m, 15.II.2000, SS; 2j, 750m, 15.XII.1999, SS; 2j, 1510m, 23.X.1999, PT; 1j, 1250m, 15.IV.2000, SS; 1j, 510m, 24.VI.2000, SS; 7j, 1000m, 23.X.1999, SS; 3j, 510m, 27.XI.1999, SS; 1j, 1000m, 25.IX.1999, PT; 4j, 1750m, 15.IV.2000, SS; 3j, 750m, 15.I.2000, SS; 1j, 1510m, 25.III.2000, SS; 1j, 510m, 27.XI.1999, SS; 1j, 510m, 25.III.2000, PT; 1j, 510m, 29.VII.2000, PT; 1j, 1000m, 25.III.2000, PT; 3j, 1000m, 26.II.2000, SS; 3j, 510m, 29.IV.2000, SS; 1j, 1000m, 25.IX.1999, SS; 1j, 510m, 29.I.2000, PT; 1j, 2250m, 15.XII.1999, SS; 8j, 1750m, 15.I.2000m, SS; 1j, 1750m, 15.III.2000, SS; 7j, 750m, 15.II.2000, SS; 1j, 1000m, 23.X.1999, PT; 1j, 1000m, 27.V.2000, PT; 1j, 2250m, 15.IV.2000, SS; 1j, 1000m, 27.XI.1999, SS; 1j, 2250m, 15.II.2000, SS; 1j, 2090m, 26.II.2000, SS; 5j, 2250m, 15.III.2000, SS; 1j, 1000m, 23.X.1999, SS; 2j, 1510m, 23.X.1999, SS; 4j, 1000m, 29.I.2000, SS; 1j, 510m, 23.X.1999, SS; 1j, 2090m, 23.X.1999, SS; 4j, 2250m, 15.IV.2000, SS; 1j, 2090m, 26.II.2000, SS; 1j, 2090m, 23.X.1999, PT; 1j, 1510m, 28.VIII.1999, SS; 1j, 1510m, 27.XI.1999, PT; 2j, 2430m, 25.III.2000, SS; 1PM, 1000m, 29.IV.2000, PT; 1j, 1250m, 15.III.2000, SS; 1PM, 5j, 1510m, 29.I.2000, SS; 2j, 1510m, 29.VII.2000, SS; 1PM, 2090m, 23.X.1999, PT; 1j, 2090m, 29.IV.2000, PT; 3j, 510m, 25.III.2000, SS; 1j, 2430m, 26.II.2000, SS; 1PM, 2430m, 28.VIII.1999, SS; 1j, 1250m, 15.XII.1999, SS; 1PM, 3j, 1510m, 27.XI.1999, SS; 2j, 1000m, 29.IV.2000, SS; 3j, 1510m, 29.IV.2000, SS; 1j, 2090m, 27.V.2000, PT.

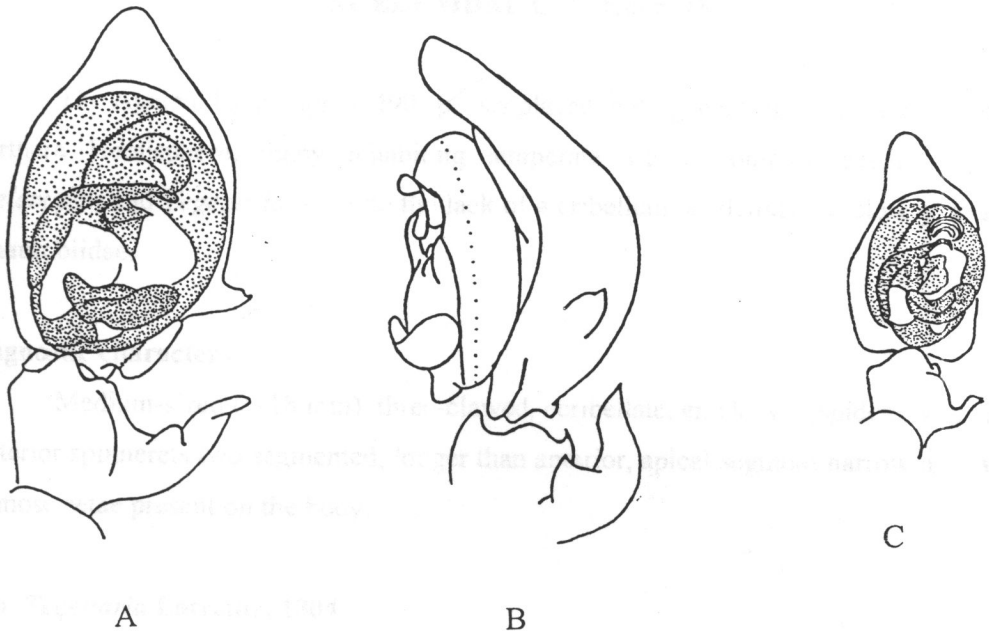


Fig. 137. *Ctenus* spp: male palp of *Ctenus* sp. A (A, B) and Ctenus sp. B (C).

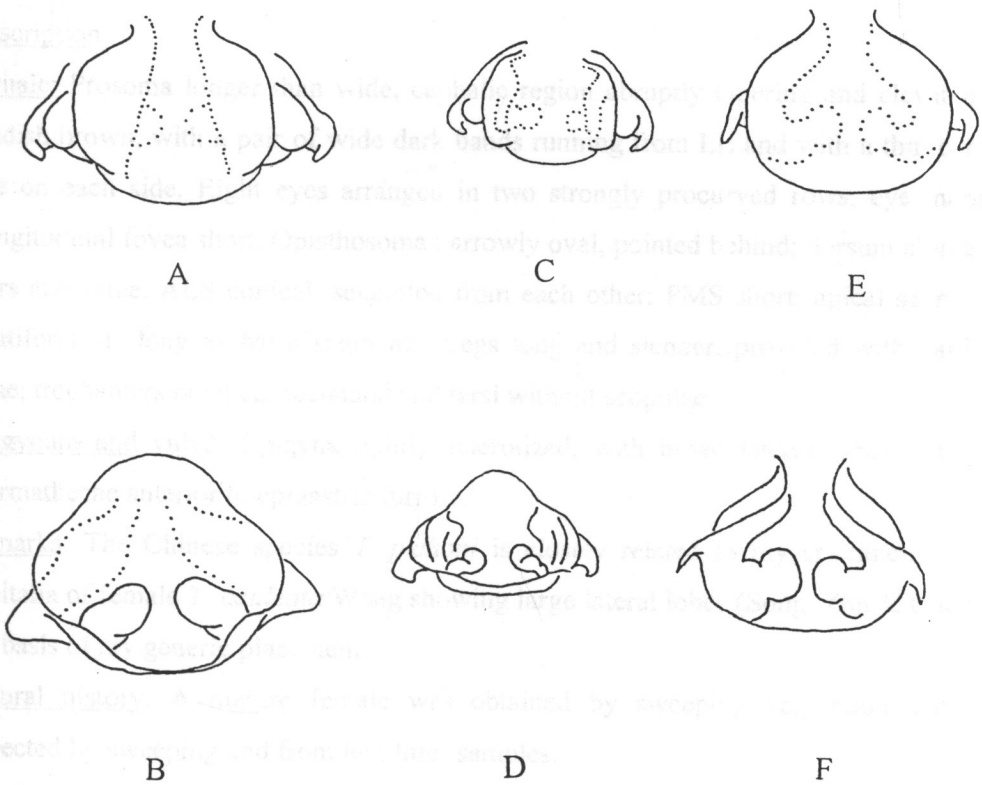


Fig. 138. Epigyne and vulva of *Ctenus* sp. A (A, B), *Ctenus* sp. B (C, D) *Ctenus* sp. C (E, F).

AGELENIDAE C. L. Koch, 1837

The Agelenidae comprise 490 species placed in 42 genera; they are found mostly in the Northern Hemisphere, many inhabiting temperate areas. Common genera are *Agelena*, *Agelenopsis* and *Tegenaria*. Despite the lack of a cribellum, agelenids are closely related to the Amaurobiidae.

Diagnostic characters

Medium-sized (5-18 mm), three-clawed, ecribellate, entelegyne spiders with eight eyes; posterior spinnerets two segmented, longer than anterior, apical segment narrowing towards tip; plumose setae present on the body.

Gen. *Tegenaria* Latreille, 1804

Literature consulted: Hillyard (1997); Song, Zhu & Chen (1999).

***Tegenaria* sp.**

Material examined: 1♀, 1000m, 27.XI.1999, SW; 3j, 1750m, 15.V.2000, SS; 1j, 2430m, 29.IV.2000, SS; 1j, 1000m, 23.X.1999, SW.

Description:

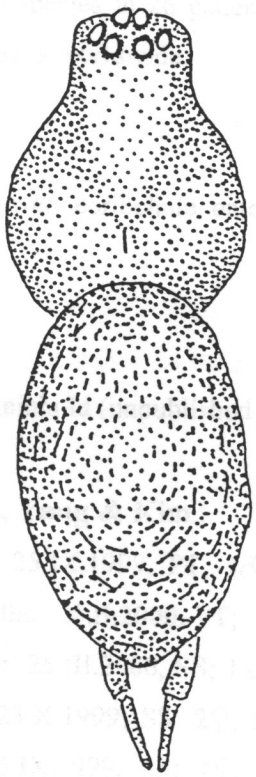
Female: Prosoma longer than wide, cephalic region abruptly tapering and elevated. Carapace reddish brown, with a pair of wide dark bands running from LE and with a thin dark marginal line on each side. Eight eyes arranged in two strongly procurved rows; eye margins black. Longitudinal fovea short. Opisthosoma narrowly oval, pointed behind; dorsum clothed with fine hairs and setae. ALS conical, separated from each other; PMS short; apical segments of PLS digitiform, as long as basal segments. Legs long and slender, provided with hairs and short setae; trochanters notched; metatarsi and tarsi without scopulae.

Epigynum and vulva: Epigyne lightly sclerotized, with broad lateral lobes. Small spherical spermathecae anterior to epigastric furrow.

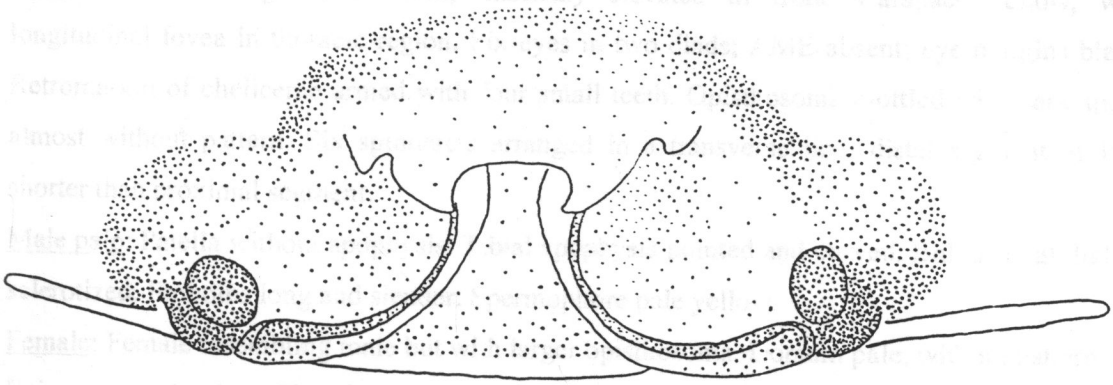
Remarks: The Chinese species *T. pichoni* is closely related to my specimens. The female genitalia of female *T. aculeata* Wang showing large lateral lobes (Song, Zhu & Chen, 1999) are *the basis of my generic placement.*

Natural history: A mature female was obtained by sweeping vegetation. Juveniles were collected by sweeping and from leaf litter samples.

Distribution: *Tegenaria* is a Holarctic genus with few species reported from southern China. Most of the described species are European, fewer are native to North America.



A



B

Fig. 139. *Tegenaria* sp. A, habitus of female. B, epigyne.

HAHNIIDAE Bertkau, 1878

The family contains 215 species in 26 genera; common genera are: *Hahnia*, *Antistea* and *Neoantistea*. Their distribution is worldwide.

Diagnostic characters

Small (3-6 mm), three-clawed, ecribellate, entelegyne, eight-eyed spiders; all spinnerets arranged in a transverse row.

Gen. *Hahnia* C. L. Koch, 1841

Literature consulted: Deeleman-Reinhold (unpublished data); Song, Zhu & Chen (1999)

Hahnia cf. liangdangensis Tang, Yang & Kim

Material examined: 2♂, 2090m, 25.IX.1999, PT; 1♂, 1510m, 26.II.2000, PT; 2090m, 1♂, 2090m, 25.IX.1999, PT; 1♂, 1510m, 26.II.2000, PT; 1♂, 1j, 2090m, 25.IX.1999, PT; 1♀, 1j, 2250m, 15.I.2000, SS; 1♀, 2430m, 25.III.2000, SS; 1♀, 2090m, 29.VII.2000, PT; 2♀, 2250m, 15.II.2000, SS; 1♀, 1j, 2430m, 23.X.1999, SS; 2♀, 3j, 2430m, 29.I.2000, SS; 1♂, 2090m, 25.IX.1999, PT; 1♀, 2430m, 25.IX.1999, SS; 4♀, 2430m, 25.III.2000, SS; 2♀, 2430m, 23.X.1999, SS; 1♀, 2430m, 25.IX.1999, SS; 1♀, 2250m, 15.I.2000, SS; 2♀, 2430m, 29.I.2000, SS; 3j, 2250m, 15.II.2000, SS.

Description:

Male: Prosoma longer than wide, markedly elevated in front. Carapace yellow, with longitudinal fovea in thoracic region. Six eyes in two diads; AME absent; eye margins black. Retromargin of chelicerae armed with four small teeth. Opisthosoma mottled with dark spots; almost without pattern. Six spinnerets arranged in a transverse line; distal segment of PLS shorter than proximal segment.

Male palp: Patella without apophysis. Tibial apophysis pointed and curved. Bulbus oval, lightly sclerotized. Embolus long and slender. Spermophore pale yellow.

Female: Female resembling male but with larger opisthosoma. Dorsum pale, without pattern.

Epigynum and vulva: Globular spermathecae with convoluted ducts situated anteriorly. Apical portion of ducts enlarged, forming round receptacles.

Remarks: The male palpus of *H. liangdangensis* possesses a patella that carries a pointed apophysis, which is absent in my specimens. The proximal portion of the insemination ducts is not apparent in comparison with figures given by Song, Zhu & Chen (1999).

Natural history: The small pale hahniid was found only in hill evergreen forest of Doi Inthanon National Park.

Distribution: China, Thailand?

***Hahnia cf. xinjiangensis* Wang & Liang**

Material examined: 2♀, 2430m, 29.VII.2000, PT; 1j, 2430m, 25.I.2000, SS; 1j, 1000m, 27.V.2000, PT; 1j, 2430m, 24.VI.2000, PT; 2j, 2250m, 15.I.2000, SS; 2j, 2250m, 15.I.2000, SS; 1j, 2430m, 23.X.1999, SS.

Description:

Female: Prosoma longer than wide. Carapace with elevated cephalic region; yellow with greenish black pattern. Eight eyes in two procurved rows; AME small; PME closed to PLE; eye margins black. Retromargin of chelicerae with three small teeth. Opisthosoma oval; dorsum pale with a series of black W-shaped bands. Distal segment of PLS spinnerets shorter than proximal ones.

Epigynum and vulva: Epigyne covered with hairs. Vulva voluminous, consisting of a pair of spermathecae. Ducts originating from apex of oval spermathecae.

Remarks: The female genitalia of *H. xinjiangensis*, illustrated by Song, Zhu & Chen (1999), slightly differ from my specimen in shape and arrangement of insemination ducts.

Natural history: The spiders were collected by pitfall trapping and from leaf litter samples.

Distribution: China, Thailand?

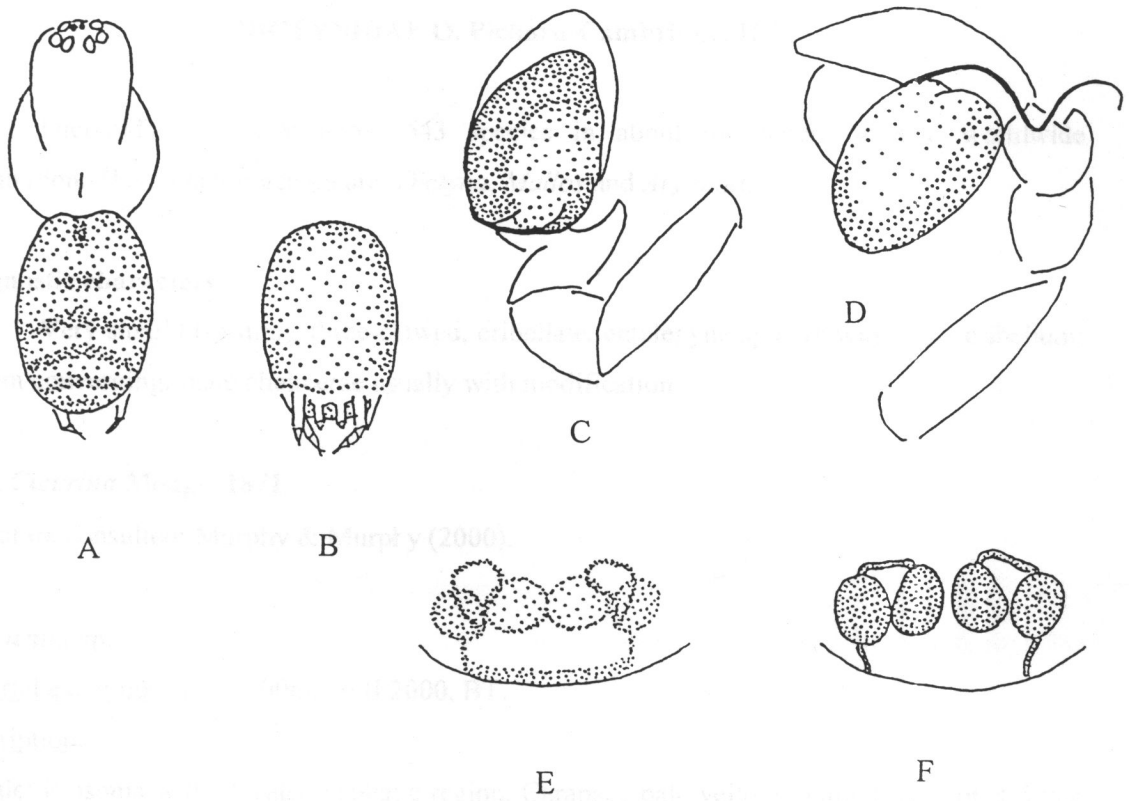


Fig. 140. *Hahnia cf. liangdangensis*. A, habitus of male, dorsal view. B, venter of opisthosoma showing spinnerets. C, male palp. D, the same, expanded. E, epigyne. F, vulva.

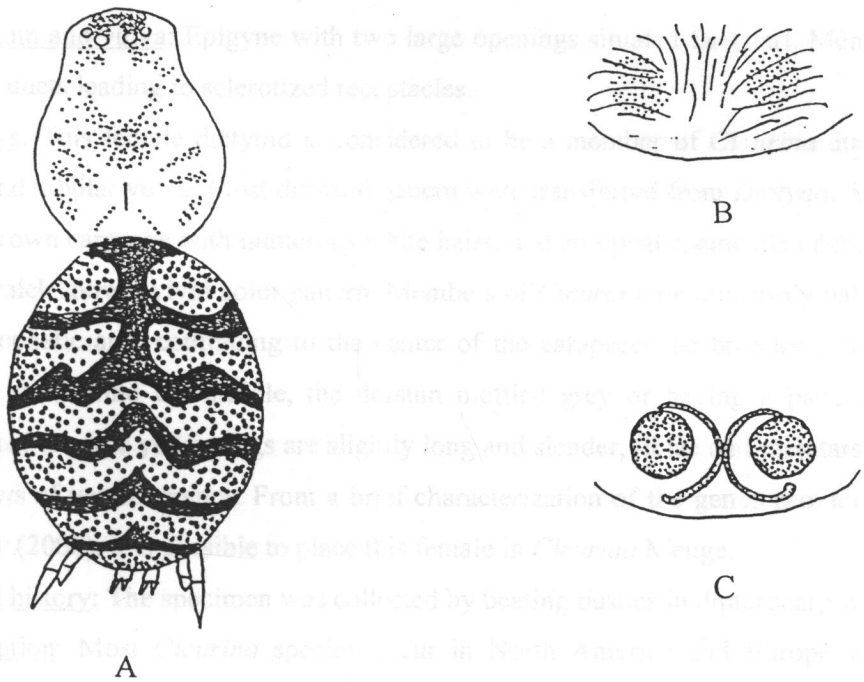


Fig. 141. *Hahnia cf. xinjiangensis*. A, habitus of female. B, epigyne. C, vulva.

DICTYNIDAE O. Pickard-Cambridge, 1871

Dictynidae comprise about 543 species in about 48 genera with a worldwide distribution. The common genera are: *Dictyna*, *Mallos* and *Argenna*.

Diagnostic characters

Very small (1-5 mm), three-clawed, cribellate, entelegyne spiders with wide cribellum; labium converging; male chelicerae usually with modification.

Gen. *Cicurina* Menge, 1871

Literature consulted: Murphy & Murphy (2000).

? *Cicurina* sp.

Material examined: 1♀, 1000m, 26.II.2000, BT.

Description:

Female: Prosoma with elevated cephalic region. Carapace pale yellow, without indistinct fovea and cervical groove. Chelicerae long, with small projection near clypeal margin. Eight eyes arranged in two rows; AER situated on steep margin; all eyes pearly white; AME smaller than the others; PME large. Legs yellow, long; calamistrum occupying 2/3 of metatarsus IV. Large cribellum entire. Opisthosoma oval, tapering at the end; dorsum decorated with small irregular white patches, brown arrow-shaped band located in the middle half.

Epigynum and vulva: Epigyne with two large openings situated far apart. Membranous funnel-shaped ducts leading to sclerotized receptacles.

Remarks: This female dictynid is considered to be a member of *Cicurina* due to a somewhat thick and tubular vulva. Most dictynid genera were transferred from *Dictyna*. A typical dictynid has a brown carapace with numerous white hairs, and an opisthosoma also densely clothed with hairs which show a vivid color pattern. Members of *Cicurina* are uniformly pale colored, with a thick cephalic area continuing to the center of the carapace; the broadly oval opisthosoma is widest just behind the middle, the dorsum mottled grey or having a pattern of vague dark chevrons; the pale yellow legs are slightly long and slender, tibiae and metatarsi are armed with two rows of ventral spines. From a brief characterization of the genus provided by Murphy & Murphy (2000), it is possible to place this female in *Cicurina* Menge.

Natural history: The specimen was collected by beating bushes in dipterocarp with pine forest.

Distribution: Most *Cicurina* species occur in North America and Europe with few species reported from China and Japan.

Gen. *Dictyna* Sundevall, 1833

Literature consulted: Coddington (1990); Murphy & Murphy (2000).

***Dictyna* sp. A**

Material examined: 1♂, 1510m, 25.XII.1999, SW.

Description:

Male: Prosoma with elevated cephalic area. Carapace yellow, without fovea. Eight small eyes arranged in two straight rows; eyes separated from each other for more than their diameter. Opisthosoma longer than wide; dorsum gray with two dark patches located on lateral sides. Legs long and slender, without distinct spines.

Male palp: Tibia with pointed dorsal apophysis. Embolus long and slender. Conductor modified, directed downwards. Median apophysis absent.

Remarks: Illustrations of the palpal organ of *D. xinjiangensis* Song, Wang & Yang correspond with that of my specimen. However, its male palpus is similar to that of *Paradictyna rufoflava* Chamberlain from New Zealand as well. The spider collected is placed under *Dictyna* in accordance with the distributional range of the genus.

Natural history: The spider was obtained by sweeping low vegetations in damp hill evergreen forest of the national park.

Distribution: Unknown.

***Dictyna* sp. B**

Material examined: 1♀, 510m, 29.IV.2000, SW.

Description:

Female: Hairy spider. Prosoma longer than wide with cephalic region higher than thoracic region. Carapace dark brown, covered with white hairs. Eight eyes in two rows; AER recurved; PER straight; eye pearly white except black AME. Opisthosoma oval, clothed with black and white hairs. Legs long, dark brown, with white hairs on femora and patellae; tibiae, metatarsi and tarsi with black hairs. Cribellum large, entire. Calamistrum occupying the entire of metatarsi IV.

Epigynum and vulva: Epigyne covered with hairs. Vulva as in Fig. 144.

Remarks: Judging from chocolate-brown color and numerous white hairs on integument, this female dictynid can be placed in *Dictyna*.

Natural history: Collected by sweeping vegetation and grassland in dry dipterocarp forest.

Gen. *Lathys* Simon, 1884

Literature consulted: Murphy & Murphy (2000).

? *Lathys* sp.

Material examined: 4♂, 1510m, 27.XI.1999, PT; 1♂, 1♀, 1510m, 27.XI.1999, SS; 1♂, 1j, 1510m, 23.X.1999, PT; 2♂, 2♀, 1510m, 23.X.1999, SS; 1♂, 1510m, 27.XI.1999, PT; 1♀, 1j, 1510m, 29.VII.2000, SS; 5♀, 14j, 1750m, 15.IV.2000, SS; 4♀, 2250m, 15.XII.1999, SS; 2♀, 1j, 1510m, 25.III.2000, SS; 2♀, 1510m, 23.X.1999, SS; 2♀, 8j, 29.I.2000, 1510m, SS; 1♀, 1j, 1510m, 29.IV.2000, SS; 1♀, 1510m, 27.XI.1999, SS; 1j, 1510m, 25.IX.1999, PT; 1♂, 750, 15.I.2000, SS; 6♂, 1250, 15.I.2000, SS; 10♂, 750m, 15.II.2000, SS; 2♂, 510m, 27.XI.1999, SS; 9♂, 1j, 750m, 15.I.2000, SS; 2♂, 2♀, 1000m, 29.I.2000, SS; 1♀, 1510m, 27.XI.1999, PT; 9♀, 750m, 15.III.2000, SS; 2♀, 1250m, 15.I.2000, SS; 2♀, 1250m, 15.II.2000, SS; 19♀, 1750m, 15.II.2000, SS; 2♀, 6j, 1000m, 27.XI.1999, SS; 1j, 1000m, 23.X.1999, SS; 1j, 1000m, 26.II.2000, SS.

Description:

Male: Prosoma longer than wide, with shallow longitudinal fovea. Carapace yellow; cephalic region higher than thoracic region, sloping backwards. Six eyes arranged in two triads; AME absent; eye margins black. Opisthosoma oval; dorsum pale without markings, covered with hairs. Cribellum large, entire. Posterior metatarsi armed with spines.

Male palp: As in Fig. 145.

Female: Female resembling male but with a less strongly sclerotized in carapace.

Epigynum and vulva: As in Fig. 145.

Remarks: *Lathys* differs from other dictynid genera in having very small (or absent altogether) AME, a low clypeus and a pale body. Two Palearctic species, *L. stigmatisata* Menge and *L. humilis* Blackwall, were recorded from China.

Natural history: Most specimens were obtained by leaf litter sampling and pitfall trapping in hill evergreen forest.

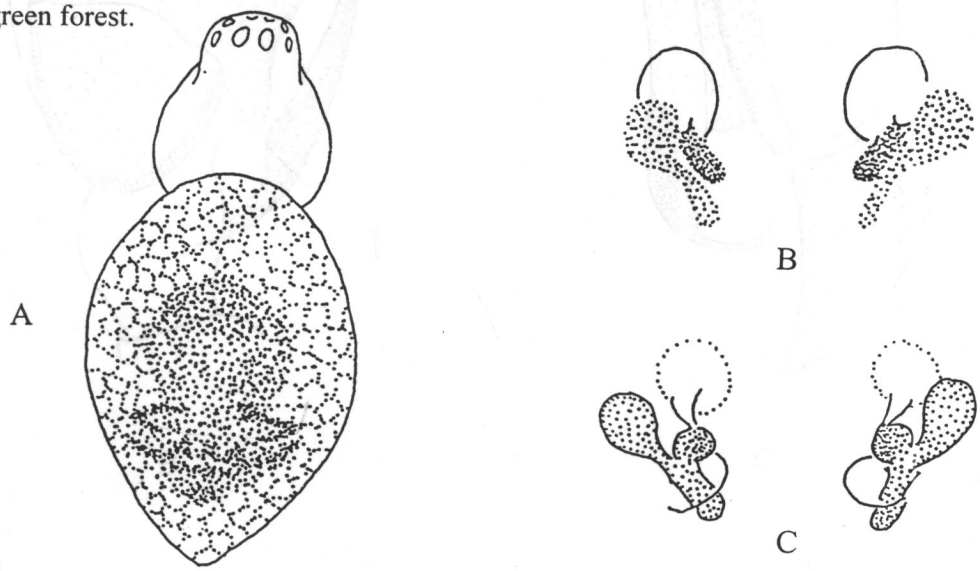
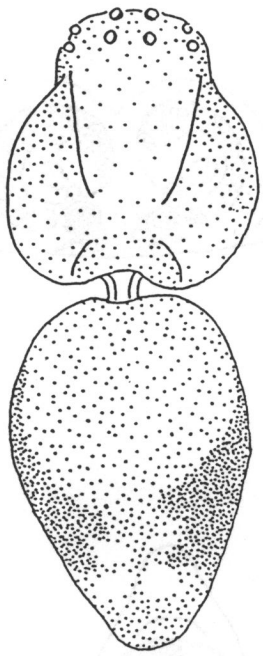
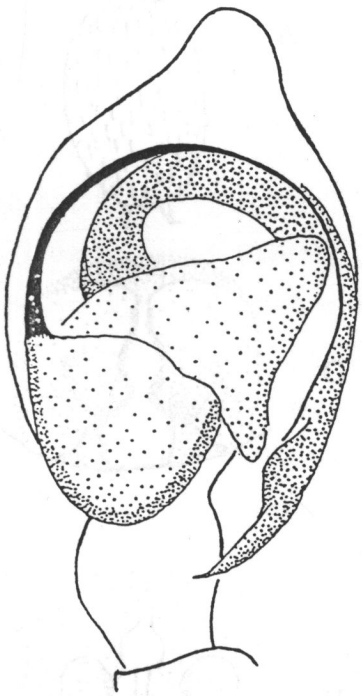


Fig. 142. ? *Cicurina* sp. A, habitus of female, dorsal view. B, epigyne. C, vulva.



A



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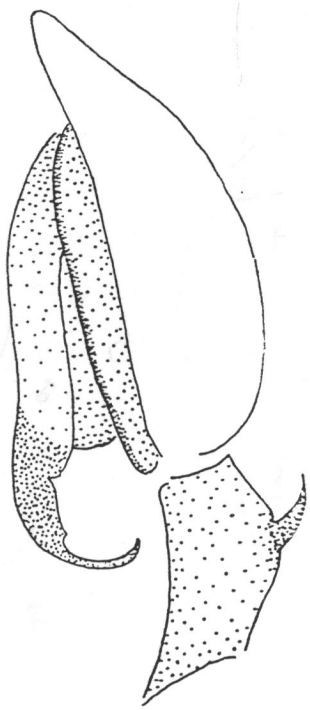


C

Fig. 143. *Dictyna* sp. A. A, habitus of male. B, C, male palp, different views.

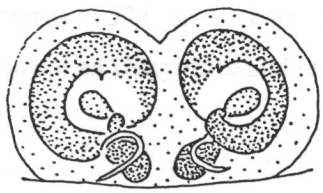


Fig. 144. *Dictyna* sp. B. Vulva.

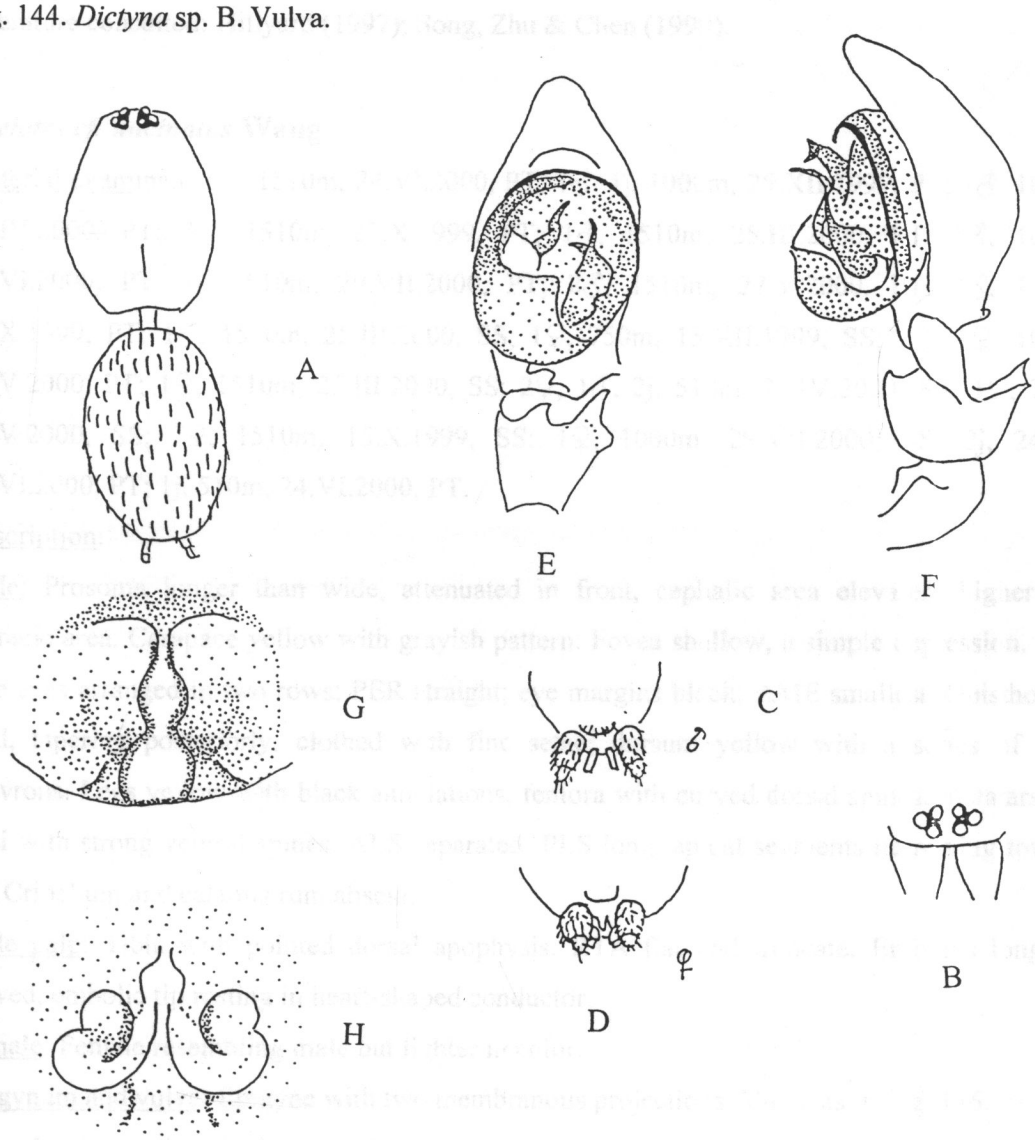


Fig. 145. ? *Lathys* sp. A, habitus of male, dorsa view. B, eye pattern. C, D, cribellum and spinnerets. E, F, male palp. G, epigyne. H, vulva.

AMAUROBIIDAE Thorell, 1870

The Amaurobiidae comprises 574 species in 58 genera, distributed worldwide. Amaurobiids are much larger in size than Dictynidae and resembling Agelenidae.

Diagnostic characters

Small to medium-sized (3-16 mm), three-clawed, cribellate or cribellate, entelegyne spiders; male palp usually with retrolateral and dorsal tibial apophyses.

Gen. *Coelotes* Blackwall, 1841

Literature consulted: Hillyard (1997); Song, Zhu & Chen (1999).

Coelotes cf. uncinatus Wang

Material examined: 1♂, 1510m, 24.VI.2000, PT; 1♂, 1j, 1000m, 25.XII.1999, PT; 1♂, 1000m, 29.IV.2000, PT; 3♂, 1510m, 23.X.1999, PT; 1♂, 1510m, 25.III.2000, PT; 1♂, 1000m, 24.VI.2000, PT; 1♂, 510m, 29.VII.2000, PT; 2♂, 1510m, 27.V.2000, PT; 3♂, 1510m, 23.X.1999, PT; 1♂, 1510m, 25.III.2000, SS; 1♀, 750m, 15.XII.1999, SS; 2♂, 1♀, 1000m, 27.V.2000, PT; 1♀, 1510m, 25.III.2000, SS; 2♀, 1♂, 2j, 510m, 29.IV.2000, SS; 1♀, 750m, 15.V.2000, SS; 1♀, 1510m, 15.X.1999, SS; 1♀, 1000m, 29.VII.2000, SS; 2j, 2430m, 24.VI.2000, PT; 1j, 510m, 24.VI.2000, PT.

Description:

Male: Prosoma longer than wide, attenuated in front, cephalic area elevated, higher than thoracic area. Carapace yellow with grayish pattern. Fovea shallow, a simple depression. Eight pale eyes arranged in two rows; PER straight; eye margins black; AME smallest. Opisthosoma oval, tapering posteriorly, clothed with fine setae; dorsum yellow with a series of black chevrons. Legs yellow with black annulations; femora with curved dorsal spines; metatarsi and tarsi with strong ventral spines. ALS separated; PLS long, apical segments narrowing towards tip. Cribellum and calamistrum absent.

Male palp: Tibia with pointed dorsal apophysis. RTA flat and truncate. Embolus long and curved, embolic tip resting in heart-shaped conductor.

Female: Female resembling male but lighter in color.

Epigynum and vulva: Epigyne with two membranous projections. Vulva as in Fig. 146.

Remarks: The male palpal organ of my specimen slightly differs from that of *C. uncinatus* in the shape of conductor.

Natural history: Ground dwelling spider, mostly found in dark places of damp hill evergreen forest (1000-1510 m).

Distribution: C. uncinatus was previously recorded only from China.

***Coelotes cf. aspinatus* Wang**

Material examined: 1♂, 1750m, 15.I.2000, SS; 3♂, 1000m, 29.I.2000, PT; 7♂, 2430m, 29.VII.2000, PT; 3♂, 2090m, 29.VII.2000, PT; 2♂, 1000m, 26.II.2000, PT; 1♂, 2j, 2430m, 24.VI.2000, PT; 2♂, 1j, 2090m, 24.VI.2000, PT; 1♂, 2090m, 25.IX.1999, PT; 3♂, 2090m, 25.IX.1999, PT; 1♀, 2j, 2430m, 23.X.1999, SS; 2♀, 2090m, 25.IX.1999, PT; 1♀, 1j, 2430m, 29.I.2000, PT; 1♀, 1j, 2250m, 15.I.2000, SS; 1♀, 750m, 15.V.2000, SS; 1♀, 1000m, 25.XII.1999, PT; 1♀, 1750m, 15.XII.1999, SS; 2♀, 2430m, 24.VI.2000, PT.

Description:

Male: Large spider. Prosoma rather long, clothed with hairs and black pattern in some specimens. Carapace higher in cephalic region, yellowish to dark brown, darkest near clypeal margin. Eight oval eyes arranged in two rows; AER recurved; PER straight; eye margins black. Chelicerae robust, dark brown in color. Fovea deep, longitudinal. Opisthosoma dark grey with a vague pattern of chevrons; cardiac area pale, anterior margin covered with dense setae.

Male palp: Tibia with pointed dorsal apophysis. Apex of cymbium elongated, armed with few strong spines. Embolus very long and slender, winding around tegulum. Median apophysis hook-like.

Female: Carapace dark brown, with elevated cephalic area. Opisthosoma elongate oval; dorsum grayish black, covered with black setae.

Epigynum and vulva: Slightly sclerotized epigyne with posterior median window. Vulva with two round spermathecae located posteriorly.

Remarks: The male palpal organ differs from that of *C. aspinatus* in the shape of its embolic tip, which forming S-shaped whip-like structure.

Natural history: The spider is common at high elevation of the national park.

Distribution: China and Thailand?

***Coelotes wudangensis* Chen and Zhao, 1984**

Material examined: 1♀, 1000m, 25.XII.1999, PT.

Description:

Female: Body damaged by diluted preservative.

Epigynum and vulva: Epigyne with posteriorly located median window. Two triangular sclerotized projections extending to the window. Vulva composed of strongly coiled sclerotized tubes.

Remarks: The female genitalia correspond with illustrations of *C. wudangensis* given by Chen & Zhao (1984).

Natural History: Unknown.

Distribution: C. wundangensis was described from China. This is the first record from Thailand.

***Coelotes* sp.**

Material examined: 1♂, 510m, 26.II.2000, PT; 1♂, 1000m, 24.VI.2000, PT; 2♂, 510m, 29.I.2000, PT; 3♀. 750m, 15.XII.1999, SS; 1♀, 1000m, 25.XII.1999, PT.

Description:

Male: Prosoma longer than wide, much higher in cephalic region. Carapace pale yellow. Eight eyes arranged in two rows; eye margins black. Chelicerae brown and robust. Fovea deep. Opisthosoma pale with gray pattern. Apical segment of PLS clearly visible from above.

Male palp: Tibia with apophysis. Tegulum round, dark brown in color. Membranous tip of median apophysis flat. Embolus long and thin.

Female: Carapace with brown cephalic region; thoracic region in some females clothed with fine black hairs. Opisthosoma grayish black, provided with series of curved slanting bands.

Epigynum and vulva: Hood-like epigyne with posterior median window. Vulva with strongly sclerotized globular structures.

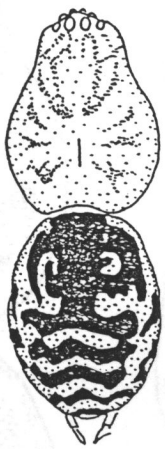
Remarks: The male palpal organ differs greatly from previous species in the shape of its conductor which is not forming a heart-shaped sheath but is represented only by a membranous ridge.

Natural history: Ground dwelling funnel web spider.

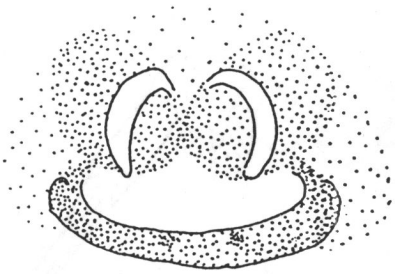
Distribution: Unknown.

Unidentified juveniles of Amaurobiidae.

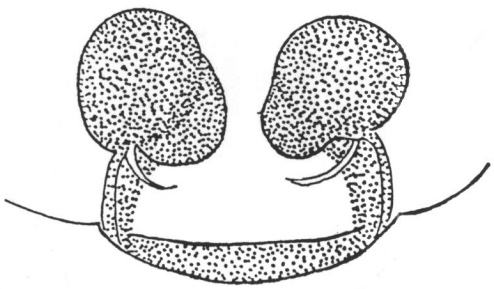
Material examined: 6j, 2090m, 27.XI.1999, SS; 2j, 2250m, 15.III.2000, SS; 3j, 1510m, 27.XI.1999, SS; 1j, 510m, 24.VI.2000, PT; 1j, 2430m, 25.IX.1999, PT; 1j, 750m, 15.I.2000, SS; 1j, 1250m, 15.V.2000, SS; 2j, 2430m, 26.II.2000, SS; 1j, 510m, 25.XII.1999, PT; 1j, 510m, 23.X.1999, SS; 2j, 2430m, 27.V.2000, PT; 3j, 2430m, 25.IX.1999, SS; 1j, 1000m, 25.III.2000, SS; 3j, 2090m, 29.I.2000, PT; 1j, 2090m, 26.II.2000, PT; 1j, 1750m, 15.IV.2000, SS; 2j, 2090m, 24.VI.2000, SS; 1j, 2090m, 23.X.1999, SS; 2j, 2430m, 27.XI.1999, SS; 1j, 2430m, 25.VII.2000, PT; 7j, 2430m, 25.III.2000, SS; 1j, 2090m, 25.XII.1999, PT; 1j, 12250m, 15.IV.2000, SS; 12j, 2430m, 29.IV.2000, PT; 10j, 2250m, 15.IV.2000, SS; 1j, 2430m, 25.III.2000, PT; 4j, 2430m, 29.IV.2000, SS; 1j, 1000m, 29.IV.2000, SS; 14j, 1000m, 29.VII.2000, PT; 1j, 2090m, 26.II.2000, SS; 1j, 2430m, 25.XII.1999, PT; 1j, 2090m, 23.X.1999, SS; 1j, 2430m, 26.II.2000, PT.



A

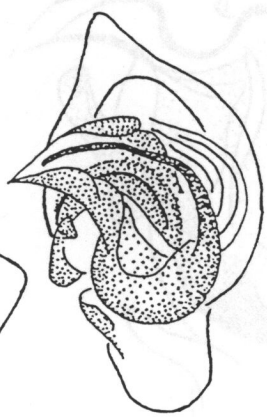


E

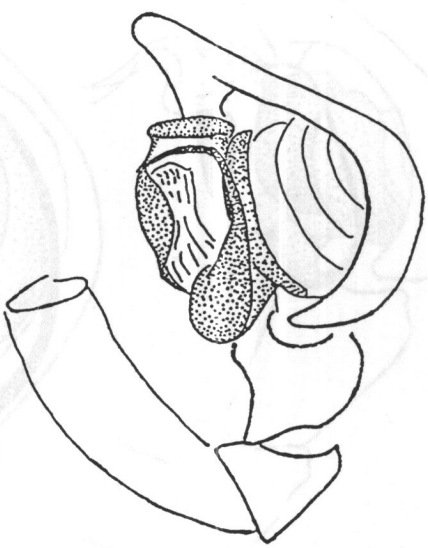


F

B



C



D

Fig. 146. *Coelotes cf. uncinatus*. A, habitus of male, dorsal view. B-D, male palp, different views. E, epigyne. F, vulva.

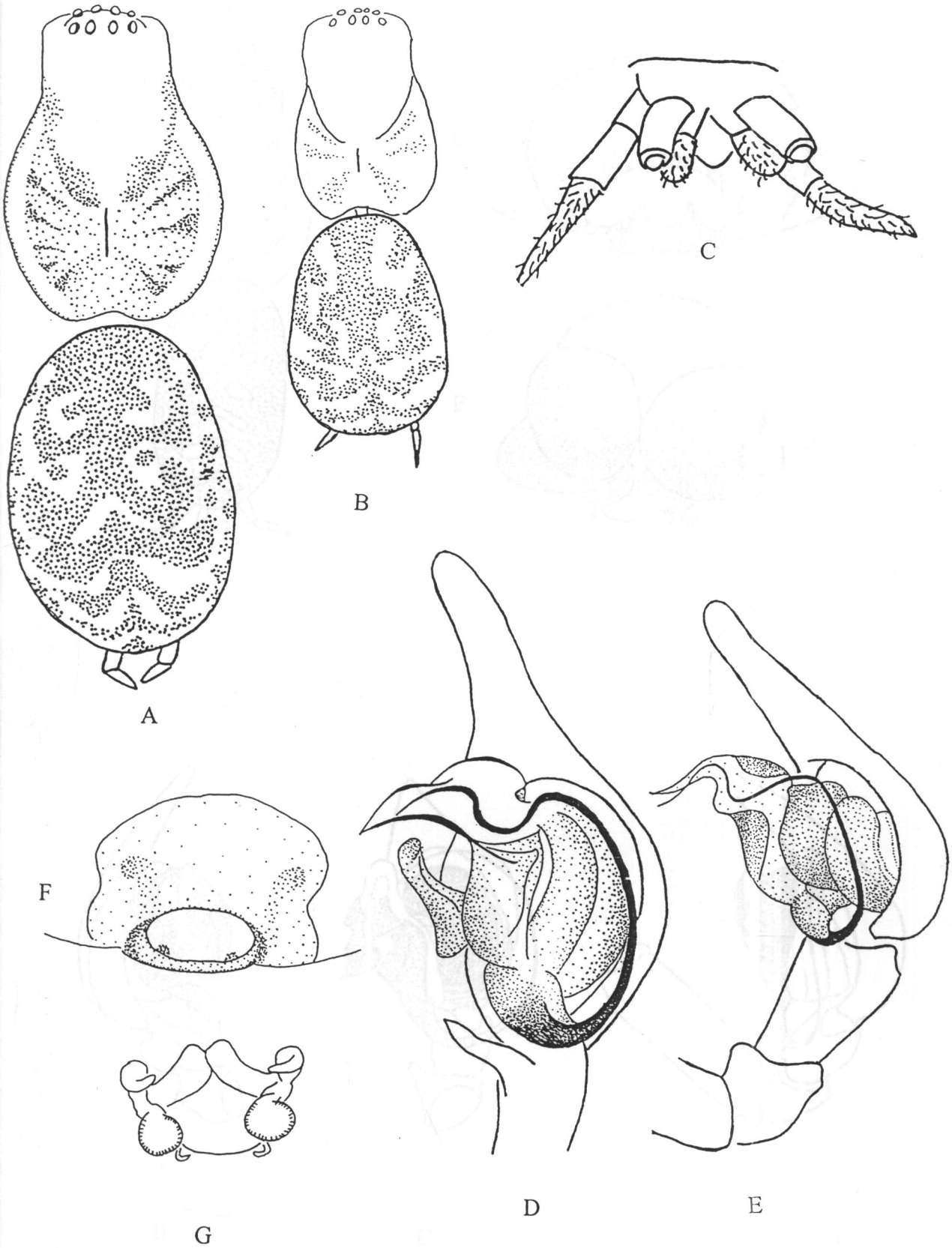
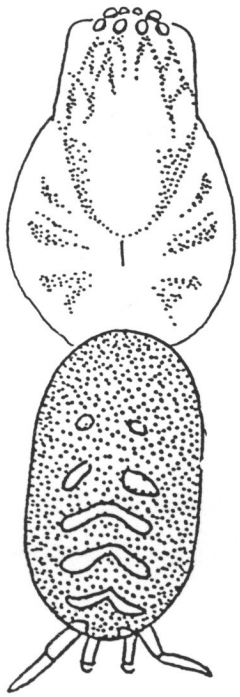
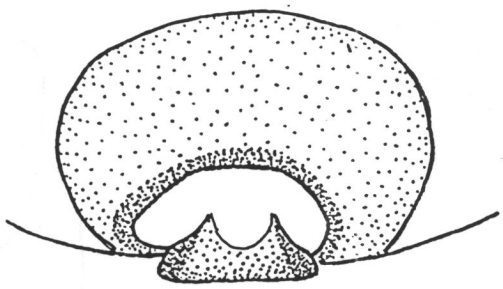


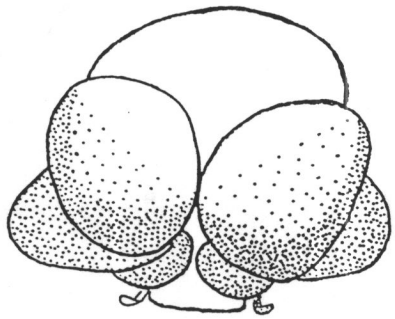
Fig. 147. *Coelotes cf. aspinatus*. A, habitus of male. B, habitus of female. C, spinnerets. D, E, male palp, different views. F, epigyne. G, vulva.



A

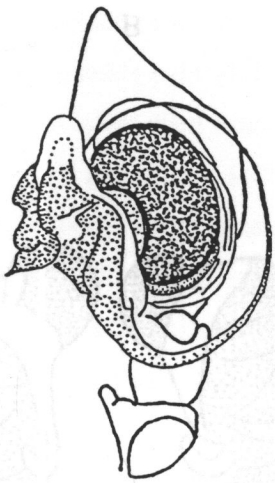


E

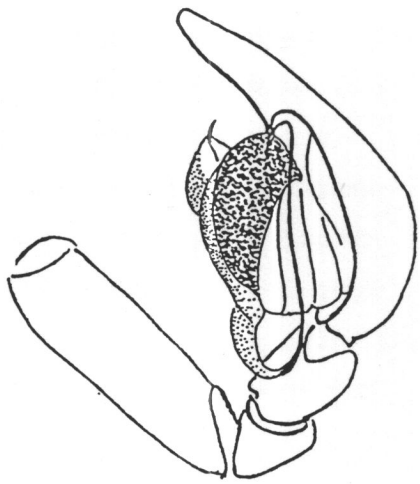


F

B

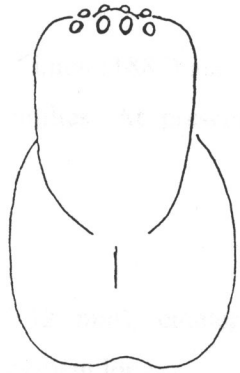


C

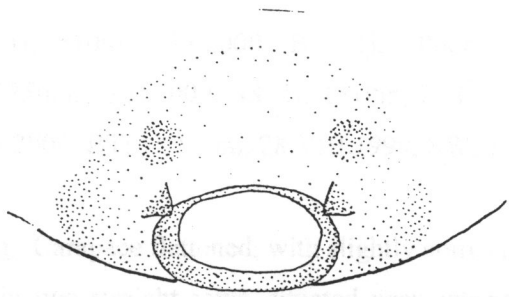


D

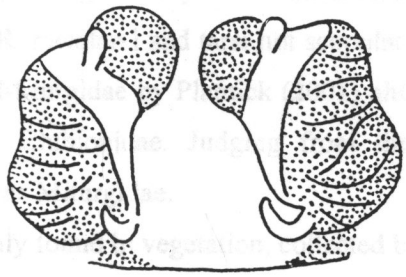
Fig. 148. *Coelotes* sp. A, habitus of male. B-D, male palp, different views. E, epigyne. F, vulva.



A



B



C

Fig. 149. *Coelotes wudangensis*. A, carapace of female. B, epigyne. C, vulva.

MITURGIDAE Simon, 1885

Miturgidae was established by Simon (1885) and later modified by Lehtinen (1967) by uniting genera from several other families. At present, 369 species from 28 genera are recognized.

Diagnostic characters

Small to very large-sized (5-12 mm), entelegyne, eight-eyed spiders with two-segmented posterior spinnerets, distal segment long.

Gen. *Calamopus* Deeleman-Reinhold, 2001

Literature consulted: Deeleman-Reinhold (2001, unpublished data).

***Calamopus* sp.**

Material examined: 1j, 510m, 29.I.2000, BT; 1j, 1000m, 25.IX.1999, SW; 1j, 1510m, 27.XI.1999, BT; 1j, 1250m, 15.II.2000, SS; 1j, 1510m, 29.I.2000, BT; 1j, 1000m, 25.III.2000, SW; 1j, 1000m, 25.III.2000, BT; 1j, 510m, 28.VIII.1999, SW; 1j, 1000m, 24.VI.2000, SS.

Description:

Coloration and pattern:. Carapace flattened, with slightly convex cephalic area. Fovea indistinct. Eight eyes arranged in two straight rows, situated near anterior margin of the carapace; eye margins reddish brown; eyes separated more than their diameter except closely grouped LE. Opisthosoma oval, tapering at the end; dorsum pale with pattern of irregular white patches. PLS with long apical segment. Legs long, spineless apart from few dark spines on anterior femur.

Remarks: I place the spiders under this new genus following somatic characters (Deeleman-Reinhold, unpublished data): elongate body with flatten carapace, leg I longer than the other, PER barely longer than AER, metatarsi and tarsi not scopulated, trochanter notched. The genus is considered a member of Miturgidae by Platnick (2001) although Deeleman-Reinhold (2001) originally placed it under Clubionidae. Judging from the length and structure of PLS, *Calamonopus* is recognized as Miturgidae.

Natural history: Spider mainly found in vegetation, collected by beating and sweeping bushes.

Distribution: Only *C. phyllicola* Deeleman-Reinhold was recorded from Thailand; another species *C. tenebrarum* Deeleman-Reinhold, occurs in Indonesia.

Gen. *Cheiracanthium* C. L. Koch, 1839

Literature consulted: Deeleman-Reinhold (2001); Song, Zhu &, Chen (1999).

***Cheiracanthium* sp.**

Material examined: 1♀, 510m, 23.X.1999, SW.

Description:

Female: Prosoma slightly convex. Carapace yellow, without distinct fovea; cervical groove absent. Chelicerae very long, dark brown in color. Eight small eyes arranged in two rows of equal length; ME clearly separated from LE. Legs long and slender, armed with thin triangular setae; claw tufts present. Opisthosoma elongate oval; dorsum pale cream, with two longitudinal rows of small white patches. Apical segment of PLS long, conical.

Epigynum and vulva: Epigyne with median window, funnel-shaped openings leading to dark insemination ducts winding around elongated spermathecae.

Remarks: the vulva of this species differs from that of *C. turiae* Strand, *C. virescens* (Sundevall) and *C. japonicum* Bösenberg & Strand in the shape of its insemination ducts. Deeleman-Reinhold (2001) removed Cheiracanthium from the Miturgidae and placed it in the Clubionidae. I follow Platnick (2002) in considering this genus as a member of the Miturgidae. *Cheiracanthium* is a very large genus of Miturgidae comprising more than 50 species distributed worldwide. Several species were reported from Southeast Asia with only two species, *C. insulanum* (Thorell) and *C. turiae*, occur in Thailand.

Natural history: A single female was collected by sweeping vegetation in mixed deciduous dipterocarp forest.

Distribution: Unknown.

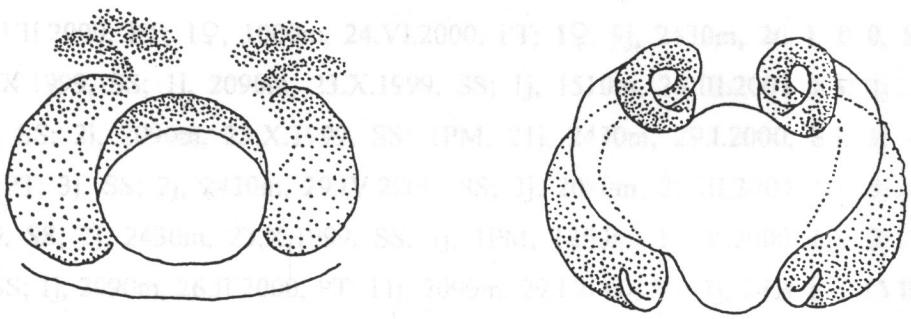


Fig. 150. *Cheiracanthium* sp. A, epigyne. B, vulva.

LIOCRANIDAE Simon, 1897

Although Liocranidae was given family status by Lehtinen since 1967, there is no good synapomorphic character that can define and unite all liocranids. The classification based on Southeast Asian spider fauna provided by Deeleman-Reinhold (2001) mentions that in all liocranids the leg IV is longer than the other legs, PMS in females laterally compress and PLS with distal conical segment.

Diagnostic characters

Small to medium-sized (3-15 mm), two clawed, ecribellate, entelegyne spiders with eight eyes; PMS with cylindrical gland spigots; anterior tibiae and metatarsi with modified ventral bristles; male palp with median apophysis.

Gen. *Otacilia* Thorell, 1897

Literature consulted: Deeleman-Reinhold (2001)

***Otacilia zebra* Deeleman-Reinhold, 2001**

Material examined: 3♂, 2♀, 750m, 15.V.2000, SS; 1♀, 2090m, 25.IX.1999, PT; 1♀, 1250m, 15.II.2000, SS; 1♂, 1250m, 15.V.2000, SS; 2♀, 1250m, 15.II.2000, SS; 1♂, 3j, 1750m, 15.III.2000, SS; 1♀, 1j, 2250m, 15.III.2000, SS; 1♂, 2250m, 15.II.2000, SS; 7♀, 2j, 1000m, 24.VI.2000, SS; 1♀, 1510m, 23.X.1999, SS; 2♀, 2j, 2430m, 25.III.2000, SS; 1♀, 2250m, 15.IV.2000, SS; 7♂, 1♀, 2090m, 29.IV.2000, PT; 1♀, 1000m, 29.VII.2000, SS; 1♂, 1♀, 2090m, 27.V.2000, PT; 2♀, 2430m, 24.VI.2000, PT; 1♀, 16j, 1750m, 15.V.2000, SS; 1♀, 2430m, 29.VII.2000, PT; 1♀, 1000m, 24.VI.2000, PT; 1♀, 9j, 2430m, 26.II.2000, SS; 2♀, 1510m, 23.X.1999, SS; 1j, 2090m, 23.X.1999, SS; 1j, 1510m, 25.III.2000, SS; 1j, 2090m, 24.VI.2000, SS; 2j, 2090m, 23.X.1999, SS; 1PM, 21j, 2430m, 29.I.2000, SS; 1j, 2430m, 26.II.2000, PT; 3j, SS; 2j, 2430m, 29.IV.2000, SS; 3j, 2090m, 25.III.2000, SS; 3j, 1750m, 15.XII.1999, SS; 2j, 2430m, 23.X.1999, SS; 1j, 1PM, 1250m, 15.IV.2000, SS; 2j, 1510m, 29.I.2000, SS; 1j, 2090m, 26.II.2000, PT; 11j, 2090m, 29.I.2000, SS; 1j, 2430m, 28.VIII.1999, SS; 1j, 1750m, 15.I.2000, SS; 17j, 2250m, 15.II.2000, SS; 1j, 2430m, 24.VI.2000, SS; 10j, 2250m, 15.I.2000, SS; 1j, 2090m, 25.XII.1999, PT; 1j, 1000m, 23.X.1999, SS.

Description:

Male: Prosoma flat, narrow in cephalic part, wide and rounded behind. Carapace yellow, with pattern as in Fig. 151. Eight eyes in two recurved rows; PER slightly wider than AER; PME reduced, close to PLE. Chelicerae clearly armed with two frontal spines. Opisthosoma with partly sclerotized dorsal scutum. Legs I and IV longer than the others. Six spines apically

located on femur I, two spines on femur II; anterior tibiae provided with 6 pairs of ventral spines; 4 pairs of ventral spines on anterior metatarsi; posterior legs spineless.

Male palp: Femur with ventral ridge. Tibia with a large apophysis consisting of long dorsal branch and short retrolateral branch. Embolus spine-shaped, located apically. Apical tegular apophysis present.

Female: Females resembling males but lack a dorsal scutum. Opisthosoma with series of transverse greenish back bands.

Epigynum and vulva: Copulatory openings surrounded by sclerotized structure. Rounded spermathecae and large anterior bursae present.

Remarks: Illustrations of O. zebra males and females provided by Deeleman-Reinhold (2001) correspond well with my specimens. Two observations should be mentioned: the male dorsal scutum of my specimens is somewhat larger; the tegular apophysis is clearly visible.

Natural history: Major ground stratum liocranid of the national park with a large number of individuals collected from leaf litter samples and pitfall traps.

Distribution: Known only from at high altitudes of Doi Inthanon (the type locality).

Gen. *Sphingius* Thorell, 1890

Literature consulted: Deeleman-Reinhold (2001)

***Sphingius gothicus* Deeleman-Reinhold, 2001**

Material examined: 1♀, 510m, 27.V.2000, SS; 1♀, 510m, 29.IV.2000, SS; 1♀, 1000m, 29.IV.2000, SS; 1♀, 1250m, 15.XII.1999, SS;

Description:

Female: Carapace low and flat, dark brown in color, with jagged cuticula. Eight eyes in two rows; LE larger than ME; AME on low tubercle. Legs long and spineless. Opisthosoma elongate, almost hairless. Sternum fused with pedicel.

Epigynum and vulva: Epigyne consisting of large anterior depression, curved as a Gothic arch, pointed in the middle. Copulatory openings located in the corner of the depression. Rounded spermathecae with small, thin-walled bursae anteriorly. Insemination duct indistinct.

Remarks: A gothic arch-shaped depression of the epigyne is the relevant character to distinguish females of this species from others.

Natural history: Females were collected from leaf litter in deciduous forest of Doi Inthanon National Park.

Distribution: Widely distributed from the north through western mountain range to the southeast and Central Thailand.

***Sphingius vivax* Thorell, 1897**

Material examined: 1♂, 1000m, 23.X.1999, PT; 1♂, 510m, 27.XI.1999, SS; 1♂, 1000m, 25.XII.1999, PT; 1♂, 1000m, 25.III.2000, PT; 1♂, 1000m, 29.IV.2000, PT; 1♂, 510m, 26.II.2000, PT;

Description:

Male: Prosoma flat. Carapace dark with rogose surface, small granulations radiating from its center. Eight eyes arranged in two rows; PER straight; PME angular, close together. Opisthosoma covered with dorsal and ventral scuta.

Male palp: Tibial apophysis short and pointed. Cymbium cone-shaped. Embolus straight and thin. Median apophysis present.

Remarks: The median apophysis of the males examined somewhat differ from illustrations given by Deeleman-Reinhold (2001).

Natural history: Ground dwelling spider found at low altitudes of the national park (510-1000 m).

Distribution: Burma to the Philippines.

Immature specimens of *Sphingius* spp.

Material examined: 2j, 1000m, 27.XI.1999, PT; 1j, 510m, 25.XII.1999, PT; 2j, 510m, 293.I.2000, PT; 1j, 510m, 23.X.1999, SS; 1j, 1000m, 25.XII.1999, PT;

Gen. *Jacaena* Thorell, 1897

Literature consulted: Deeleman-Reinhold (2001)

***Jacaena distincta* Thorell, 1897**

Material examined: 1♂, 1750m, 29.I.2000, SS; 1♂, 1510m, 25.III.2000, PT; 1♀, 1000m, 25.III.2000, PT; 1♀, 1250m, 27.V.2000, SS; 1PM, 1000m, 25.III.2000, SS; 1PM, 1000m, 29.IV.2000, SS.

Description:

Male: Prosoma round, strongly sclerotized; carapace pale brown, densely granulated. Fovea small, pit-like. Eight eyes in two rows; AER recurved; PER straight; PME separated. Opisthosoma brown, covered with a strongly sclerotized dorsal scutum, followed by two pairs of spots and three transverse rows of pale stripes.

Male palp: Enlarged tegulum kidney-shaped, sperm duct indistinct; embolus broad and curved, enclosed by conductor.

Female: Prosoma longer than wide; carapace brown, slightly punctured. Eight eyes in two rows. Opisthosoma black with two pale patches. Legs greenish brown; leg I longest; tibia and metatarsi of leg I and II with pairs of spines.

Epigynum and vulva: Laterally located copulatory openings connected to long coiled tubes. Spermathecae and bursae indistinct.

Remarks: There are only two species of Jacaena occurring in Thailand and Burma. The embolus of *J. distincta*, described for the first time here, is longer than that of *J. mihun* Deeleman-Reinhold. PME of males clearly separated. The illustrations of the female holotype are identical to my specimens.

Natural history: Ground living spider.

Distribution: Thailand and Burma.

Genus *Sesieutes* Simon, 1897

Literature consulted: Deeleman-Reinhold (2001)

***Sesieutes cf. schwendingeri* Deeleman-Reinhold**

Material examined: 1♀, 1000m, 25.III.2000, SS; 1♀, 750m, 27.V.2000, SS; 1♀, 1000m, 29.I.2000, PT; 6j, 750m, 29.I.2000, SS; 7j, 1250m, 26.II.2000, SS; 4j, 1000m, 29.I.2000, SS; 8j, 1250m, 29.I.2000, SS; 1j, 1000m, 23.X.1999, SS; 4j, 750m, 26.II.2000, SS; 1PM, 1250m, 15.V.2000, SS.

Description:

Female: Carapace reddish brown, entirely covered with dense granulation. Eight eyes in two rows, PME smaller than the others. Opisthosoma elongate oval, smooth, sparsely covered with hairs; no dorsal scutum; two pairs of spots and three transverse pale stripes; area around anal tubercle pale.

Epigynum and vulva: Epigyne with very large copulatory openings and widely arched entrance tube. Heavily sclerotized insemination ducts leading to swollen spermathecae.

Remarks: The epigyne looks very similar to that of *S. schwendingeri*, which occurs on Doi Chiang Dao and Doi Suthep. However, the vulval structure is completely different.

Natural history: Ground dwelling spider found in leaf litter from forests at altitudes between 750-1250m.

Distribution: Only known from Doi Inthanon National Park.

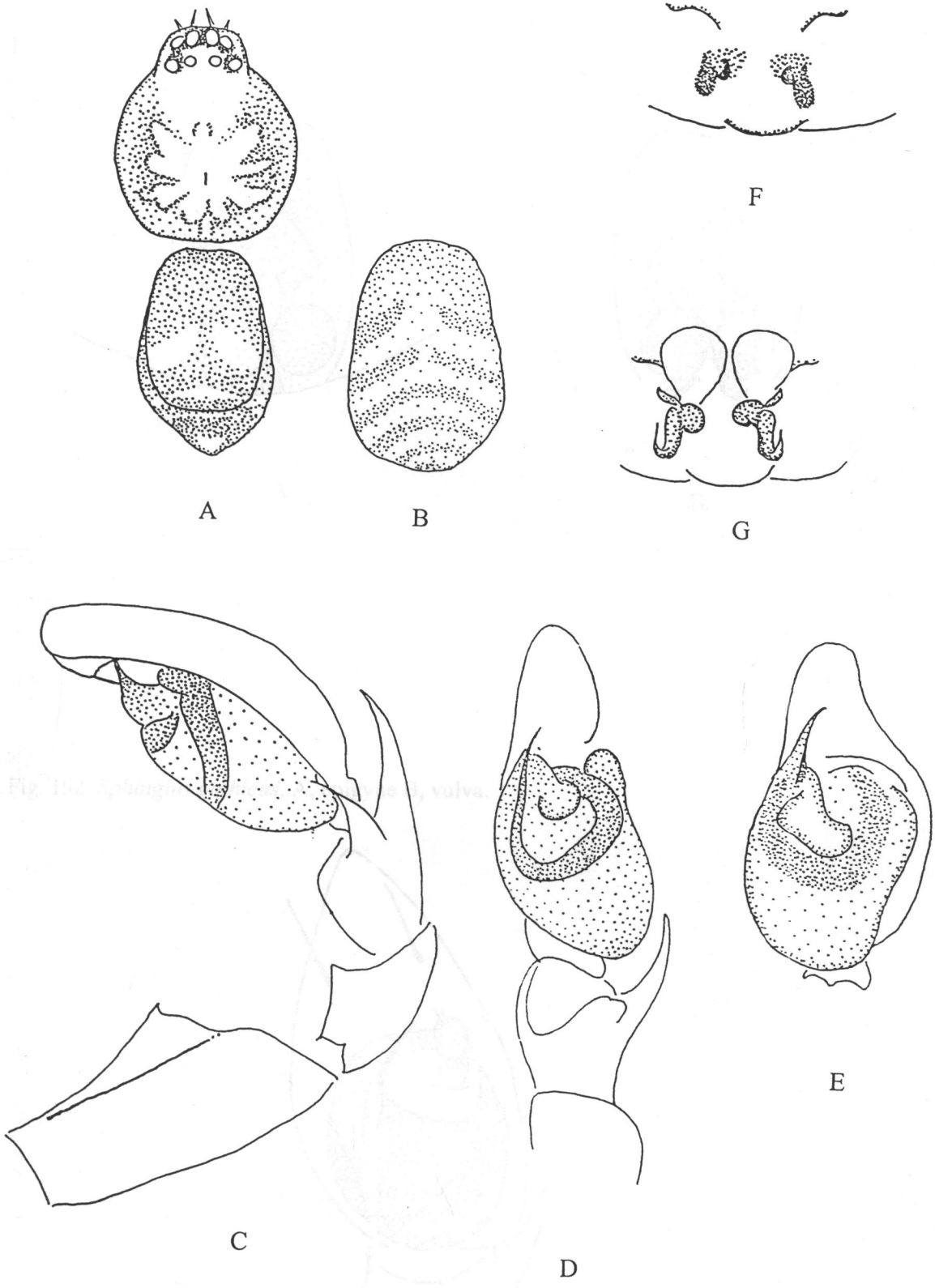


Fig. 151. *Otacilia zebra*. A, habitus of male. B, opisthosoma of female. C-E, male palp, different views. F, epigyne. G, vulva.

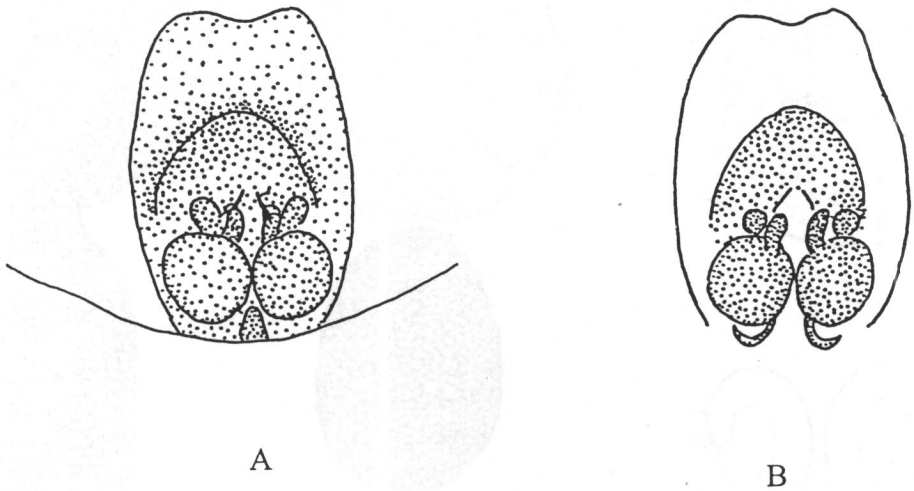


Fig. 152. *Sphingius gothicus*. A, epigyne B, vulva.

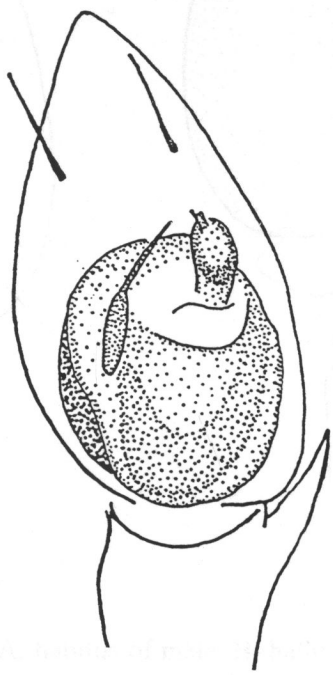


Fig. 153. *Sphingius vivax*. Male palp.

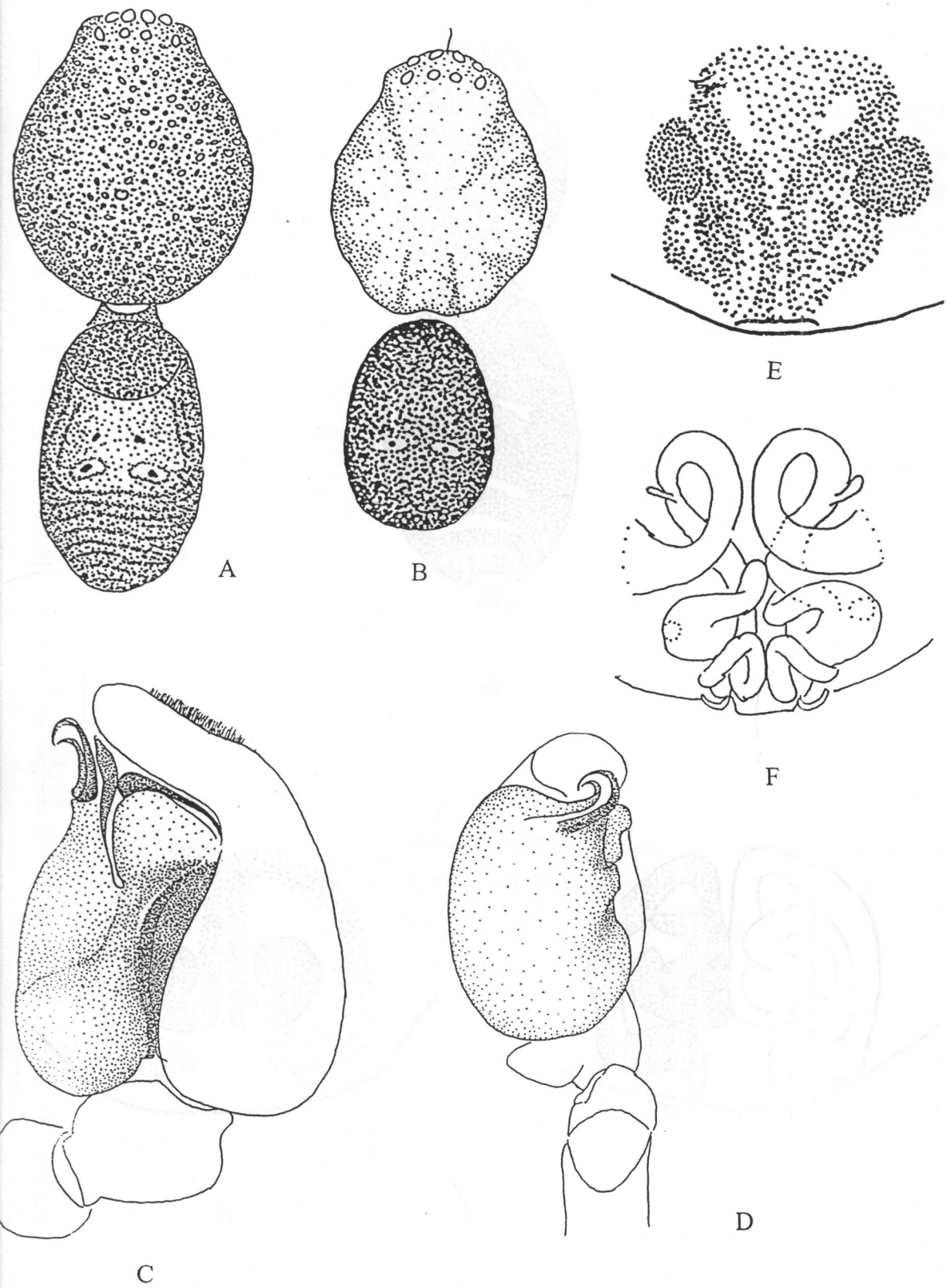
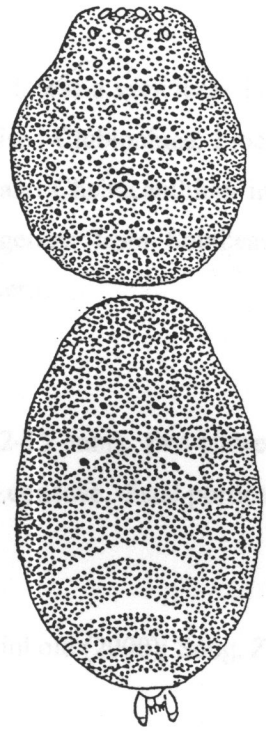
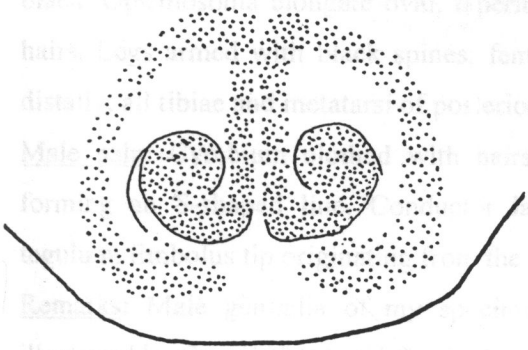


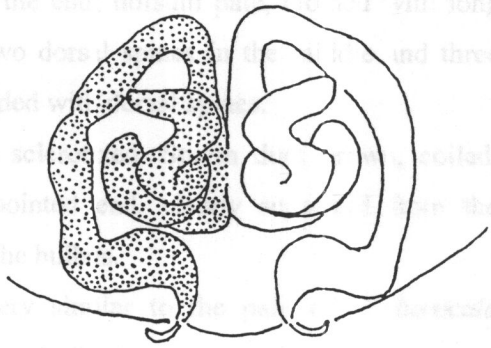
Fig. 154. *Jacaena distincta*. A, habitus of male. B, habitus of female. C, D, male palp, different views. E, epigyne. F, vulva.



A



B



C

Fig. 155. *Sesieutes cf. schwendingeri*. A, habitus of female. B, epigyne. C, vulva.

CLUBIONIDAE Wagner, 1887

The former Clubionidae s. l. was a very large family. Lehtinen (1967) found the limits of that family to be unclear and raised Clubioninae, Liocraninae and Corinninae to independent families, retaining only Clubiona and Cheiracanthium in the Clubionidae. Deeleman-Reinhold (2001) established several new genera from Southeast Asia. At present, the Clubionidae comprises 526 species from 16 genera.

Diagnostic characters

Small to medium-sized (2-15 mm), two-clawed, ecribellate, entelegyne, eight-eyed spiders; elongate maxillae laterally concave, distal portion widened; tarsi with thick claw tufts.

Genus *Clubiona* Latreille, 1804

Literature consulted: Deeleman-Reinhold (2000); Song, Zhu & Chen (1999)

Clubiona cf. bonicula Ono, 1994

Material examined: 1♂, 1510m, 27.XI.1999, BT.

Description:

Male: Prosoma domed; carapace clothed with fine black hairs. Longitudinal fovea with red pigment. Eight eyes arranged in two parallel rows; PER slightly longer than AER; eye margins black. Opisthosoma elongate oval, tapering towards the end; dorsum pale, clothed with long hairs. Legs armed with black spines; femora with two dorsal spines in the middle and three distally; all tibiae and metatarsi of posterior legs provided with dorsal spines.

Male palp: Cymbium clothed with hairs. Tegulum sclerotized. Sperm duct brown, coiled, forming an S-shaped line. Conductor large with pointed end, clearly separated from the tegulum. Embolus tip originating from the top end of the bulbus.

Remarks: Male genitalia of my specimens look very similar to the palp of *C. bonicula* illustrated by Ono (1994) but differ in the shape of the embolic tip.

Natural history: Only a single specimen was obtained from hill evergreen forest by beating of the lower vegetation.

Distribution: Taiwan, Doi Inthanon National Park.

Clubiona cf. pteronetoides Deeleman-Reinhold

Material examined: 1♀, 1000m, 28.VIII.1999, SW.

Description:

Female: Medium-sized spider. Carapace smooth, slightly convex, yellow in color. Eight eyes arranged in two rows near clypeal margin. Opisthosoma longer than wide, tapering posteriorly. Legs armed with black spines.

Epigynum and vulva: As in Fig. 157.

Remarks: Female epigyne provided with two copulatory openings close to each other and shape of spermathecae separate this female from those of *C. pteronetoides*.

Natural history: A female was collected by sweeping bushes in dipterocarp with pine forest.

Distribution: Unknown.

***Clubiona cf. zhangmuensis* Hu & Li, 1987**

Material examined: 1♀, 2090m, 27.XI.1999, BT.

Description:

Female: Carapace yellow, with fine hairs and some erect spines on cephalic region. Eight eyes arranged in two rows. Opisthosoma pale, with distinctly long and curved hairs situated anteriorly; cardiac area somewhat sclerotized. Femora dorsally armed with spines; anterior tibiae with four pairs of ventral spines; proximal part of metatarsi I and II with a pair of very long spines, 2/3 length of the segment; tibiae and metatarsi of posterior legs with irregularly arranged spines.

Epigynum and vulva: Thick-walled duct leading to large elongate spermathecae. Bursae absent.

Remarks: The female genitalia of *C. zhangmuensis* resemble those of my specimen with only a small difference in fertilization duct structure. The habitus is very similar to that of the male of *Clubiona* sp. B.

Natural history: A single female was obtained by beating of lower vegetation.

Distribution: China and Doi Inthanon National Park (2090m).

***Clubiona* sp. A**

Material examined: 2j, 510m, 26.II.2000, BT; 1j, 510m, 29.I.2000, BT.

Description:

Coloration and pattern: Prosoma longer than wide. Carapace pale, smooth and domed. Eight eyes arranged in two rows; AER slightly recurved; PER straight; eye margins black. Pale purple marking running longitudinally behind PME to fovea. Opisthosoma oval, pointed at the rear, clothed with short fine hairs and long curved hairs anteriorly; dorsum with purple-back markings. Legs armed with long spines. Spinnerets reddish brown.

Remarks: According to Deeleman-Reinhold (2001), the spider should be placed in the " japonica" group due to the appearance of dark markings on carapace, opisthosoma and/or legs. My specimens correspond with illustrations of the male of *C. scandens* Deeleman-Reinhold.

Natural history: Spider living in the foliage stratum, collected by beating bushes.
Distribution: Unknown.

***Clubiona* sp. B**

Material examined: 2♂, 1j, 1750m, 25.III.2000, SS; 1♂, 2250m, 25.III.2000, SS; 1♂, 1000m, 25.III.2000, SS; 1♂, 2090m, 25.III.2000, BT; 1♂, 2090m, 26.II.2000, PT.
Description:

Male: In general pale spider. Prosoma longer than wide, tapering in front. Carapace yellowish brown. Eight eyes in two rows, eye margins black. Opisthosoma elongate oval, covered with short fine hairs and long curved hairs anteriorly; cardiac area slightly sclerotized, two pairs of muscle pits just behind cardiac area. Femora provided with dorsal spines; anterior tibiae with 2 pairs of spines ventrally; anterior metatarsi armed with one pair of ventral spines; posterior tibiae and metatarsi with dorsal spines; preening brush present on distal part of posterior metatarsi.

Male palp: Bulbus oval; tegulum slightly sclerotized, with distinct sperm duct. Conductor slender, slightly curved. Embolus with large base, embolic tip twisted.

Remarks: The male palpal structure of this species is very close to that of the previously described species in having a pointed conductor that is clearly separated from the tegulum and an embolus medially originating from the apex of the bulbus.

Natural history: Most of the specimens were collected by pitfall traps in March.
Distribution: Unknown.

Gen. *Xantharia* Deeleman-Reinhold, 2001

Literature consulted: Deeleman-Reinhold (2001)

***Xantharia* sp.**

Material examined: 1♂, 750m, 15.III.2000, SS.
Description:

Male: Small spider. Prosoma rather round, as long as wide. Yellow carapace smooth, without any markings. Eight black eyes close together. Legs without conspicuous spines. Opisthosoma oval, tapering at the end.

Male palp: Tibia with bifurcate retrolateral apophysis, dorsal projection pointed. Embolus curved, situated on cylindrical embolic base. Conductor and median apophysis clearly visible.

Remarks: The male examined differs from that of *X. floreni* Deeleman-Reinhold in the shape of its tibial apophysis. Platnick (2002) transferred *Xantharia* to Miturgidae but I prefer to place this

genus under Clubionidae due to its short posterior lateral spinnerets and other somatic characters. *Xantharia* is a new genus recorded from Borneo and Sumatra.

Natural history: Collected from soil samples at low elevations on Doi Inthanon.

Distribution: Unknown.

Unidentified juveniles of the Clubionidae

Material Examined: 1j, 6; 1j, 2090m, 29.I.2000, SW; 1j, 510m, 29.I.2000, SW; 1j, 510m, 29.VII.2000, PT; 1j, 2430m, 29.I.2000, SW; 1j, 1510m, 25.III.2000, BT; 1j, 2090m, 29.VII.2000, PT.

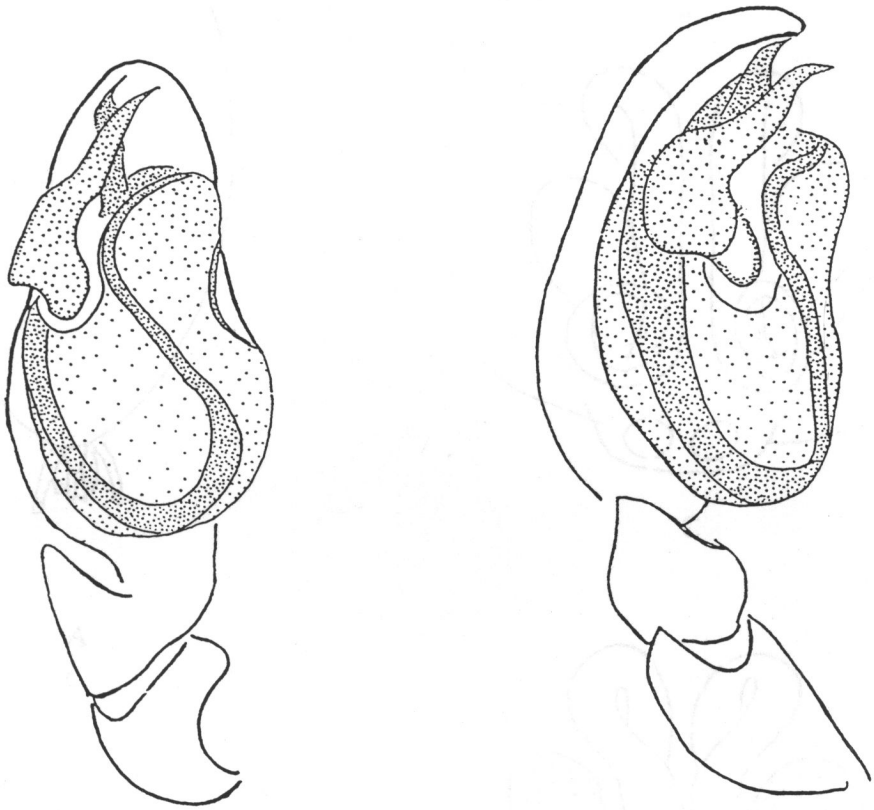
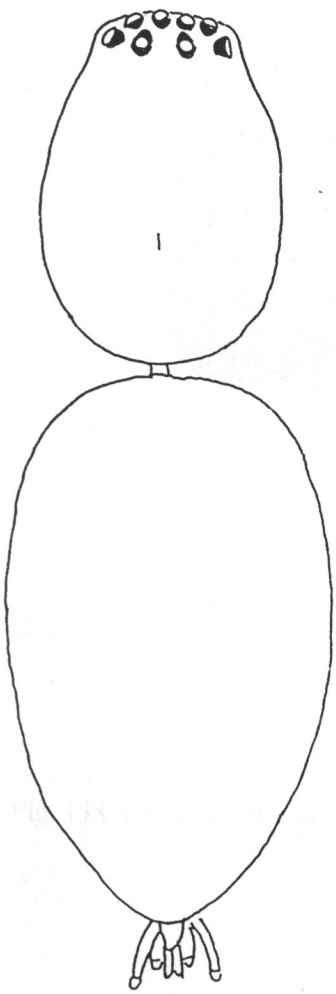
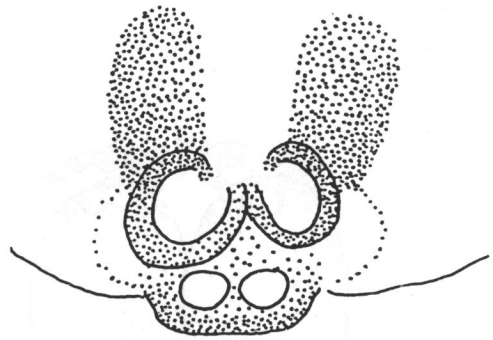


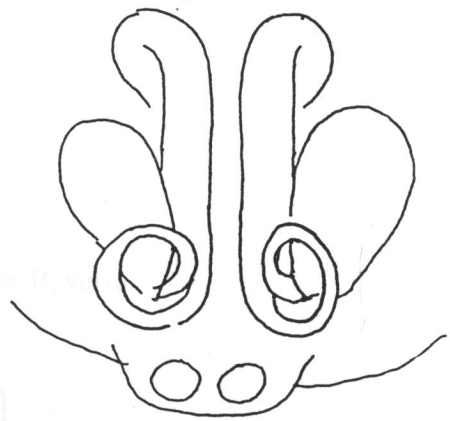
Fig. 156. *Clubiona cf. bonicula*. A, B, male palp, different views.



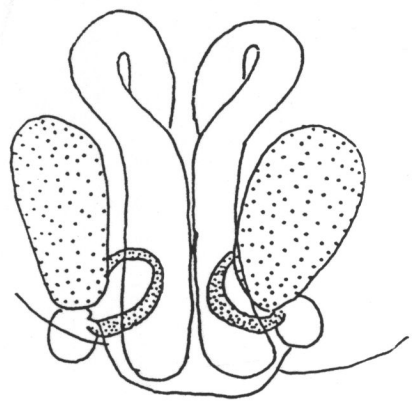
A



B



C



D

Fig. 157. *Clubiona cf. pteronetoides*. A, habitus of female. B, epigyne. C, vulva, dorsal view. D, the same, ventral view.

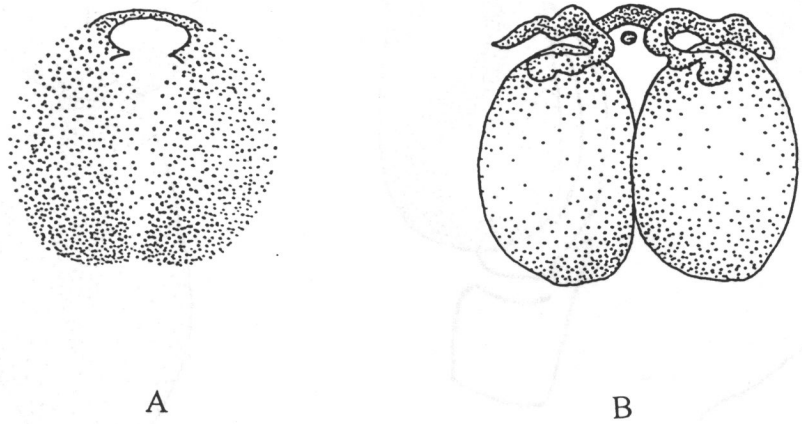


Fig. 158. *Clubiona cf. zhangmuensis*. A, epigyne. B, vulva.

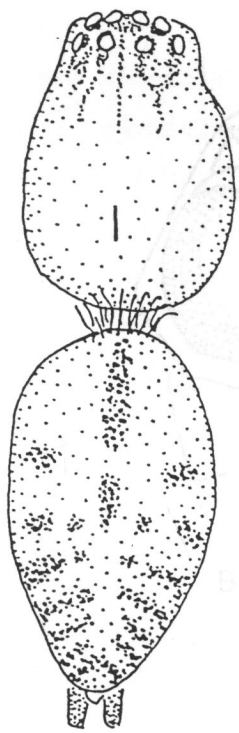


Fig. 159. *Clubiona* sp. A. Habitus of juvenile.

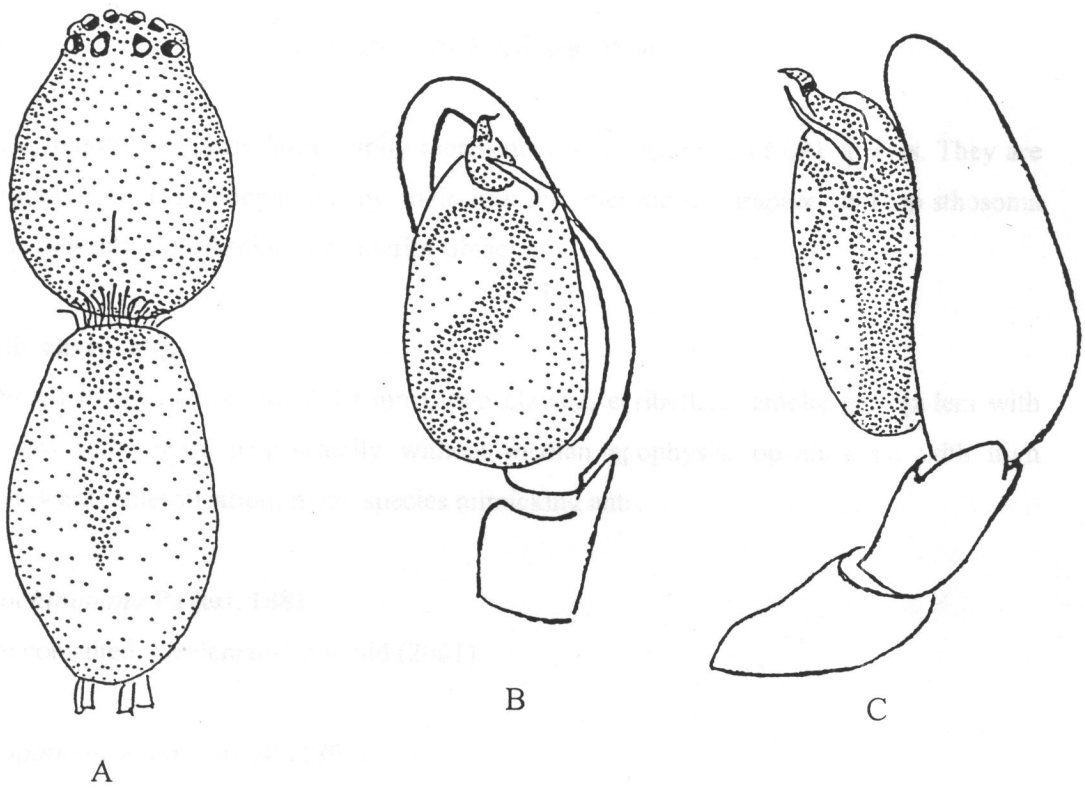


Fig. 160. *Clubiona* sp. B. A, habitus of male. B, C, male palp, different views.

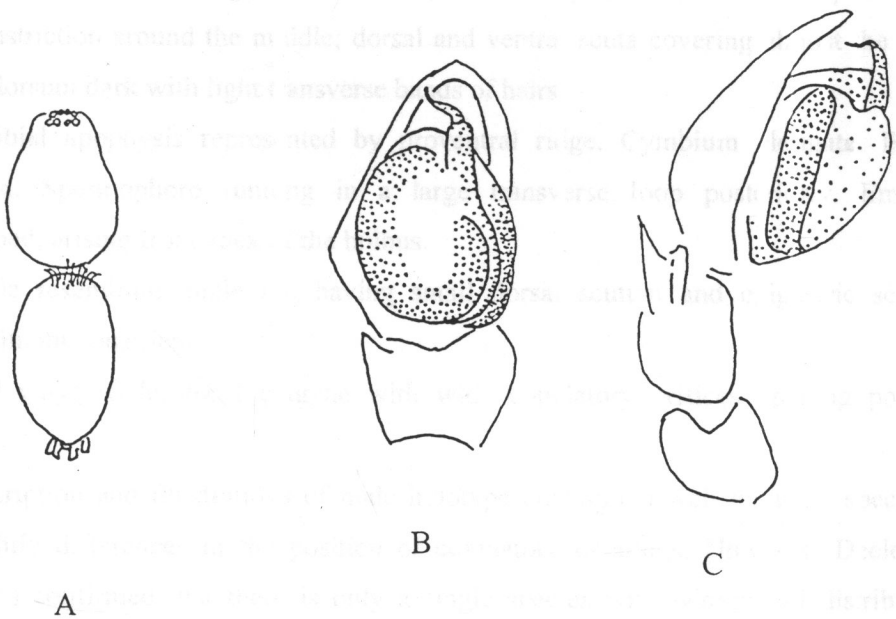


Fig. 161. *Xantharia* sp.. A, habitus of male. B, C, male palp, different views.

CORINNIDAE Karsch, 1880

Corinnidae is a fairly large family represented by 65 genera and 691 species. They are distinguished from the Liocranidae by their heavily sclerotized carapace and opisthosoma together with weak ventral spines on anterior tibiae.

Diagnostic characters

Small to medium-sized (3-10 mm), two clawed, ecribellate, entelegyne spiders with distinct claw tufts; male palp usually without median apophysis; opisthosoma with high tendency towards sclerotization; many species mimicking ants.

Gen. *Apochinomma* Pavesi, 1881

Literature consulted: Deeleman-Reinhold (2001)

Apochinomma nitidum Thorell (1895)

Material examined: 1♂, 1000m, 23.X.1999, SS; 1♀, 1000m, 27.XI.1999, PT; 1j, 510m, 29.I.2000, SS.

Description:

Male: Ant mimicking spider, dark brown in color. Prosoma longer than wide. Carapace chestnut-brown. Eight eyes arranged in two rows; AER straight; PER recurved. Opisthosoma with slight constriction around the middle; dorsal and ventral scuta covering almost the entire opisthosoma; dorsum dark with light transverse bands of hairs.

Male palp: Tibial apophysis represented by proventral ridge. Cymbium elongate. Bulbus teardrop-shaped. Spermophore running in a large transverse loop posteriorly. Embolus corkscrew-shaped, arising from apex of the bulbus.

Female: Female resembling male but having small dorsal scutum and epigastric scutum, opisthosoma without constriction.

Epigynum and vulva: Sclerotized epigyne with wide copulatory orifices opening postero-laterally.

Remarks: Description and illustrations of male holotype correspond well with my specimen. There are slightly differences in the position of copulatory openings. However, Deeleman-Reinhold (2001) confirmed that there is only a single species with widespread distribution, probably occurring on other continents as well.

Natural history: Ground dwelling spider, usually found running on the forest floor.

Distribution: Southeast Asia.

Gen. *Castianeira* Keyserling, 1879

Literature consulted: Deeleman-Reinhold (2001).

***Castianeira* sp.**

Material examined: 1♀, 1000m, 24.VI.2000, PT.

Female: General coloration brown. Prosoma longer than wide, cephalic region protruding; carapace weakly sinuate. Eight eyes in two rows; PER procurved. Opisthosoma large, truncate, widest distally; small dorsal scutum present, followed by two pairs of sclerotized pits; posterior end clothed with fine white hairs. Legs strong and stout.

Epigynum and vulva: Strongly sclerotized epigastric scutum present. Copulatory openings small, rounded and sclerotized, laterally located in posterior half. Insemination ducts joining the transition zone between large, spherical anterior spermathecae and extending posterior parts.

Remarks: The Southeast Asian Castianeira species are closely related to those placed in Corinnomma. In Corinnomma, males have the proximal retrolateral apophysis on cymbium and females have the vulva provided with anterior, dorsally replicate spermathecae. Castianeira have been recorded in the subtropical and tropical regions of America, Africa and Asia. Only five species are described from India, Sri Lanka, Indonesia and the Philippines.

Natural history: These spider can be found in the ground stratum and the foliage stratum.

Distribution: Unknown.

Gen. *Corinnomma* Karsch, 1880

Literature consulted: Deeleman-Reinhold (2001)

Corinnomma severum Thorell, 1877

Material examined: 1♂, 1510m, 25.III.2000, SS.

Description:

Male: Prosoma longer than wide, slightly constricted behind ocular area. Carapace dark brown, clothed with hairs. Eight eyes arranged in two rows; AER slightly recurved; PER straight; AME larger than LE. PER slightly procurved. Opisthosoma longer than wide, truncate and widest distally; dorsal scutum present.

Male palp: Tegulum dark brown, with loop of spermophore. Embolus S-shaped; apical portion very short, retrolaterally directed.

Remarks: The embolic tip of my specimen is slightly smaller with a darker coloration than that illustrated by Deeleman-Reinhold (2001).

Natural history: Unknown.

Distribution: Tropical East Asia. In Thailand the species was recorded from Chiang Mai, Kanchanaburi and Prachuap Khiri Khan.

Gen. *Oedignatha* Thorell, 1881

Literature consulted: Deeleman-Reinhold (2001).

***Oedignatha barbata* Deeleman-Reinhold, 2001**

Material examined: 1♀, 1j, 1750m, 15.I.2000, SS; 1♂, 1♀, 1510m, 25.IX.1999, PT; 1♀, 2090m, 27.V.2000, SS; 1♀, 1000m, 24.VI.2000, SS; 1♂, 1PM, 1510m, 23.X.1999, PT; 1♀, 1j, 1750m, 15.I.2000, SS; 1♂, 1♀, 1510m, 27.XI.1999, PT; 1♀, 1510m, 25.III.2000, PT; 4♀♀, 1510m, 29.IV.2000, SS; 2♀♀, 1250m, 15.V.2000, SS; 1j, 1000m, 29.IV.2000, SS; 1j, 1205m, 15.XII.1999, SS; 2j, 1510m, 29.I.2000, SS; 1j, 1510m, 23.X.1999, SS; 4j, 2250m, 15.XII.1999, SS; 1j, 1250m, 15.XII.1999, SS; 2j, 1510m, 25.III.2000, SS; 1j, 1750m, 15.V.2000, SS; 1j, 1000m, 23.X.1999, SS; 1j, 1000m, 25.III.2000, SS; 1j, 1510m, 29.IV.2000, PT; 1j, 1250m, 15.I.2000, SS;

Description:

Male: Prosoma long and oval. Margins of carapace undulating appearance, carapace surface granulate. Chelicerae very massive and bulging, carrying long thin curved hairs on anterior surface. Legs long and thin; brown with white pigments on apical portion of tibiae. Opisthosoma with dorsal and ventral scuta. Color varied from reddish brown to dark brown.

Male palp: Tibia with two small apophyses. Cymbium cone-shaped. Bulbus round. Embolus relatively short. Conductor twisting.

Female: Female resembling male with less bulging chelicerae.

Epigynum and vulva: Epigyne with two longitudinal bands. Round spermathecae with anterior bursae.

Remarks: The original description and illustrations of *O. barbata* provided by Deeleman-Reinhold (2001) correspond well with my specimens.

Natural history: Ground dwelling spider occurring at high altitudes forests of the national park.

Distribution: Thailand (Chiang Mai Province).

Gen. *Utivarachna* Kishida, 1940

Literature consulted: Deeleman-Reinhold, 2001

***Utivarachna cf. kinabaluensis* Deeleman-Reinhold**

Material examined: 1♀, 1510m, 29.IV.2000, PT; 1♀, 1510m, 25.III.2000, SS; 1j, 2250m, 15.XII.1999, SS; 1j, 2430m, 27.XI.1999, BT; 2j, 2090m, 25.XII.1999, SW; 1j, 1510m,

27.XI.1999, BT; 1j, 2090m, 25.XII.1999, SW; 2j, 1510m, 23.X.1999, SW; 6j, 1510m, 27.XI.1999, BT; 3j, 1510m, 29.VII.2000, SW; 1j, 2430m, 25.XII.1999, SW; 1j, 1510m, 27.XI.1999, SS; 1j, 1510m, 25.IX.1999, SW; 1j, 1510m, 26.II.2000, SW; 1j, 2090m, 25.III.2000, SS; 1j, 2090m, 25.III.2000, SW; 1j, 1510m, 25.III.2000, BT; 1j, 1750m, 15.III.2000, SS.

Female: Prosoma domed, with fine granulation, lightly invaginated behind the eyes, posteriorly round; carapace chestnut-brown, covered with numerous fine hairs. Eight eyes in two rows; PER recurved; eyes small, margin unpigmented. Legs orange, spineless; anterior metatarsi and tarsi with scopulae. Opisthosoma globular, grey in color, clothed with hairs.

Epigynum and vulva: Epigyne with rebordered window. Thick-walled spermathecae located posteriorly, connected to anterior bursae by thin ducts.

Remarks: The habitus and epigyne of U. kinabaluensis correspond well with my specimens but there are two major differences. Spermathecae of U. kinabaluensis are long and widely separated. whereas in my specimens they are round with a median constriction. The ducts that connect them with the copulatory openings, which spiral in most Utivarachna, are not discernible.

Natural history: Deeleman-Reinhold (2001) believes that different color patterns are very important in different ecological circumstances. The dark brown species are found on the ground, while the species with a lighter carapace are collected in the foliage. However, only juveniles (greenish colored specimen) were obtained by sweeping and beating bushes. A mature female (dark brown colored specimen) was trapped in a pitfall and another female was obtained from a litter sample.

Distribution: Hill evergreen forest of Doi Inthanon National Park (between 1510-2430m).

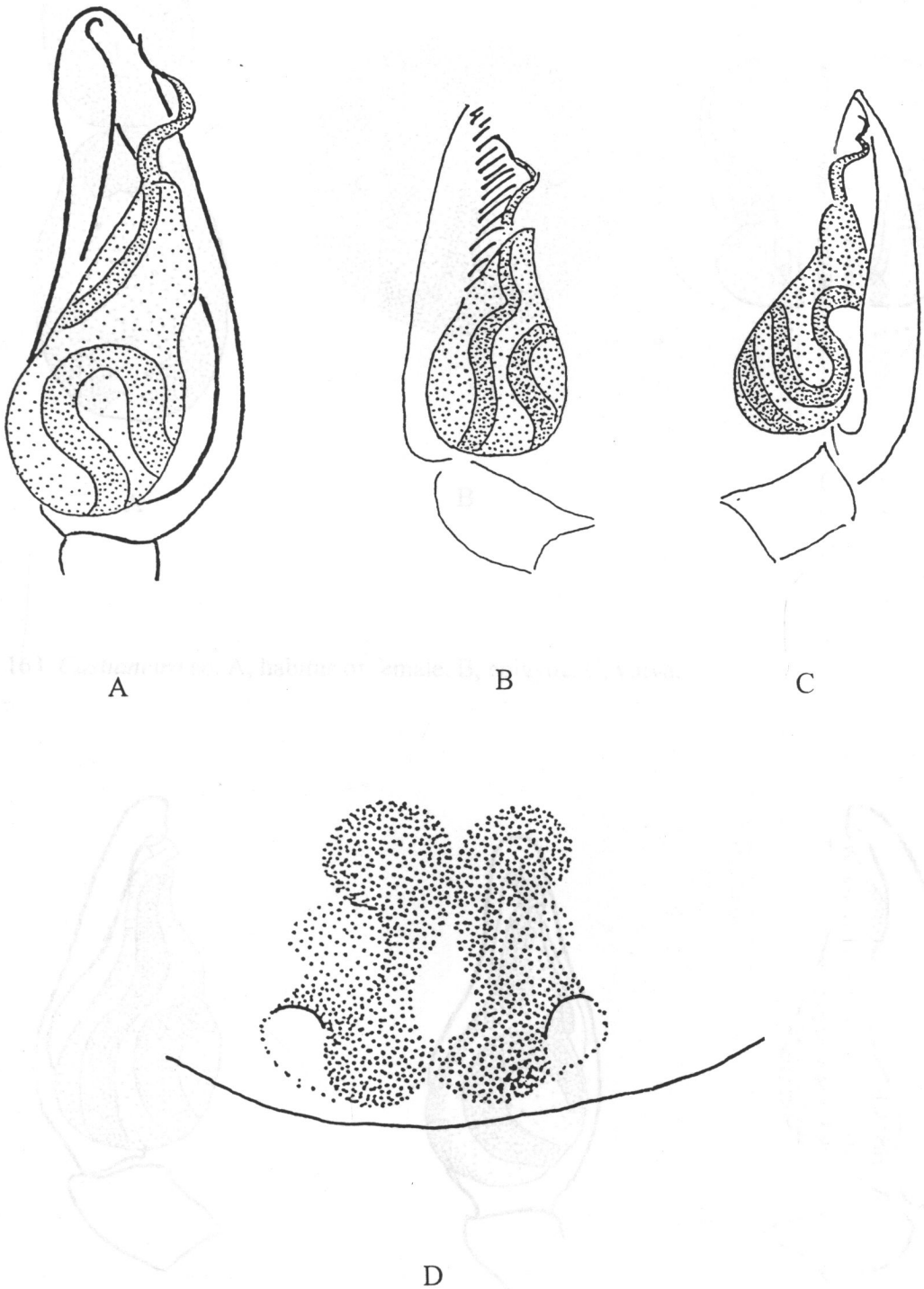


Fig. 162. *Apochinomma nitidum*. A-C, male palp, different views. D, epigyne.

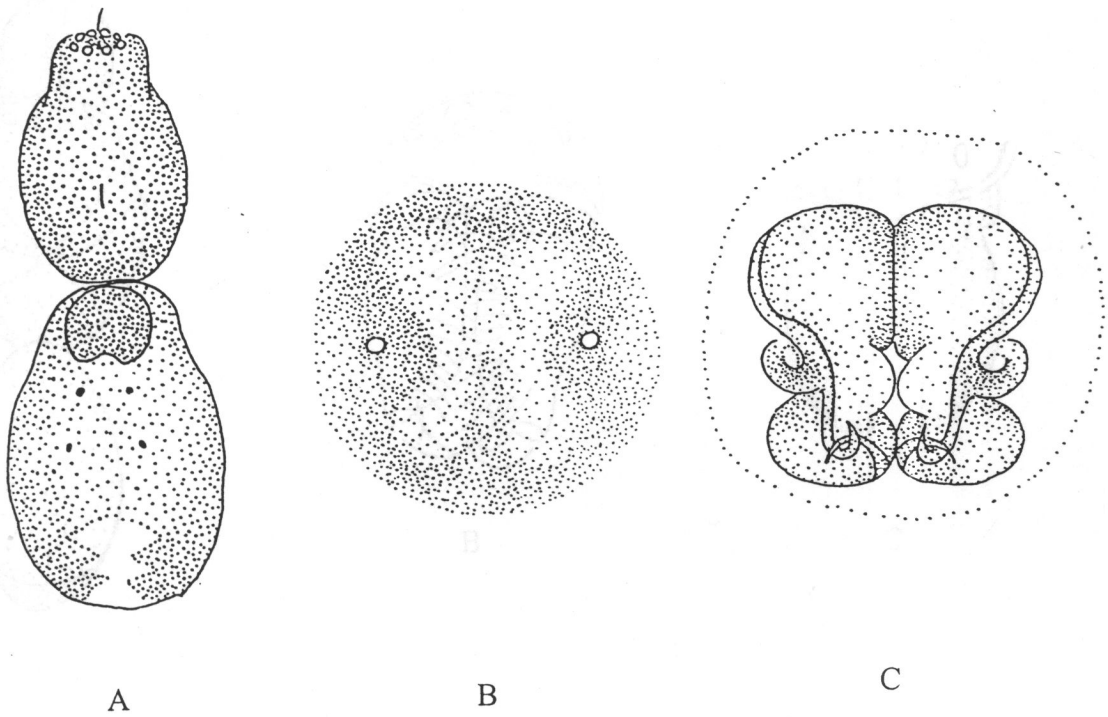


Fig. 163. *Castianeira* sp. A, habitus of female. B, epigyne. C, vulva.

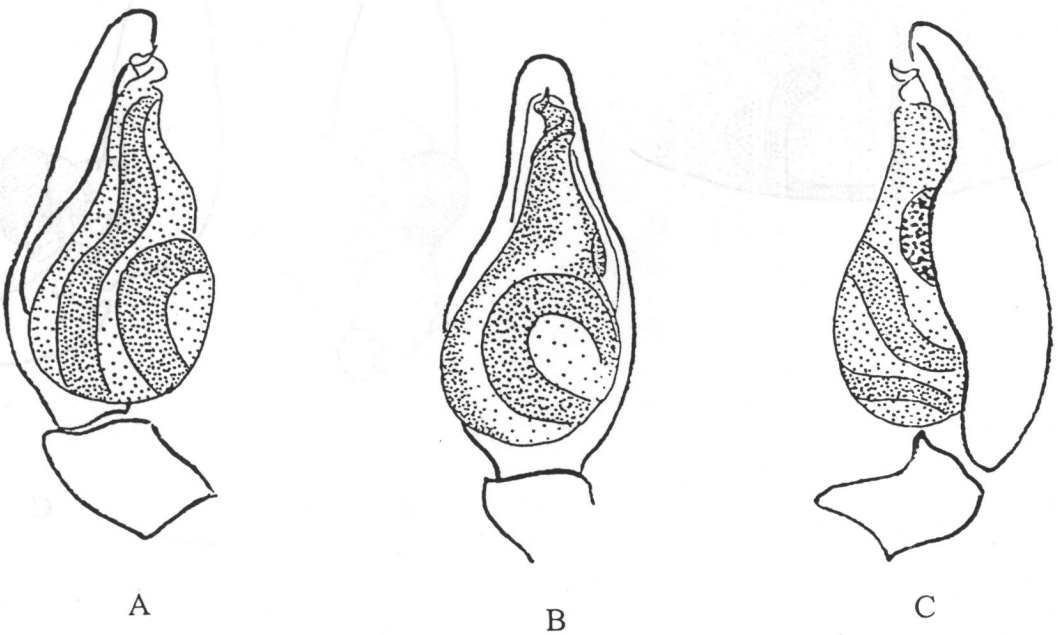
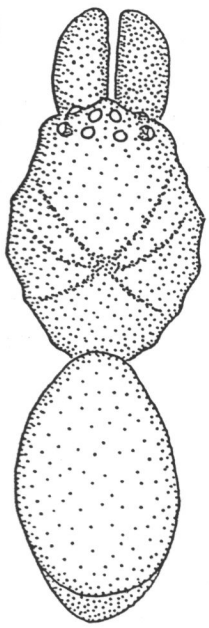
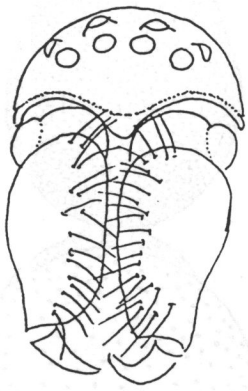


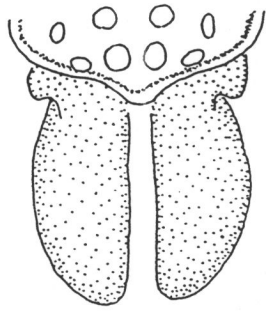
Fig. 164. *Corinnomma severum*. Male palp, different views.



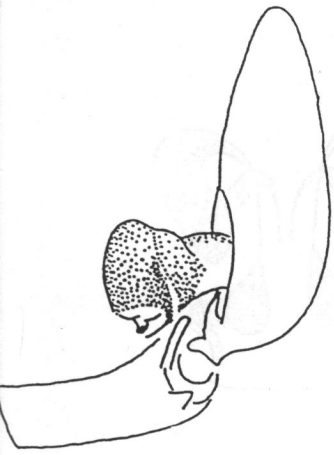
A



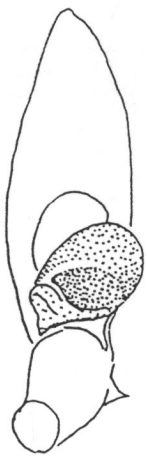
B



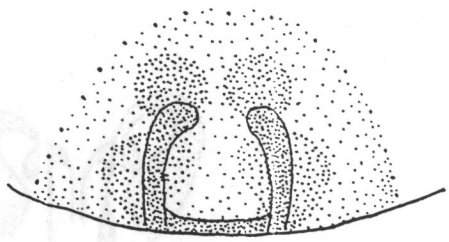
C



D

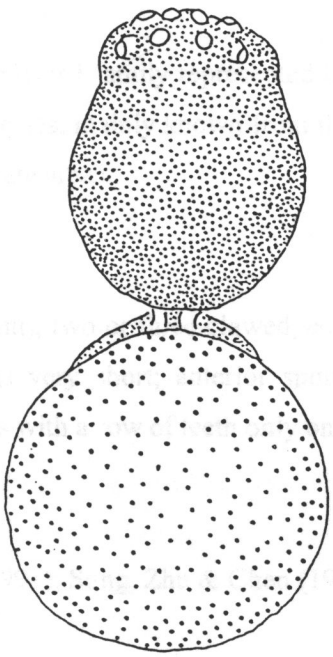


E

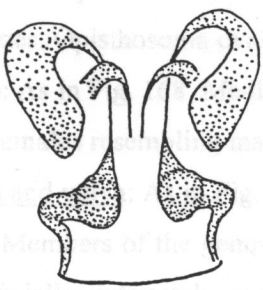


F

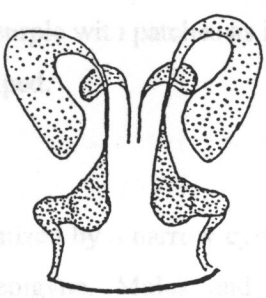
Fig. 165. *Oedignatha barbata*. A, habitus of male. B, face and chelicerae of male. C, eye arrangement and chelicerae. D, E, male palp, different views. F, epigyne.



A



B



C

Fig. 166. *Utivarachna cf. kinabaluensis*. A, habitus of female. B, epigyne. C, vulva.

ZODARIIDAE Thorell, 1881

Zodariidae is a medium-sized family represented by 59 genera in five subfamilies. The family comprises about 604 species, mainly known from the tropical and subtropical regions of the Old World, a few in temperate areas.

Diagnostic characters

Small to large (2-21 mm), two or three-clawed, ecribellate, entelegyne spiders with six or eight eyes; cheliceral fangs very short; anterior spinnerets long situated on a common, membranous base; paired claws with a row of teeth only on outer margin.

Gen. *Asceua* Thorell, 1887

Literature consulted: Jocqué (1991); Song, Zhu & Chen (1999).

Asceua sp. A

Material examined: 1♂, 2430m, 29.I.2000, SS; 1♂, 2250m, 15.IV.2000, SS; 2♂, 2090m, 29.I.2000. PT; 1♂, 2430m, 26.IX.1999, PT; 5♀, 1750m, 15.V.2000, SS; 1♀, 2090m, 24.VI.2000, SS; 1♀, 2250m, 15.V.2000, SS; 1♀, 1510m, 25.IX.1999, PT; 1♀, 1510m, 29.VII.2000, SS;

Description:

Male: Prosoma oval, relatively high; without cervical groove. Carapace brown. Eight eyes arranged in two procurved rows; eye margins black. Legs long and slender, pale yellow, without strong spines. Opisthosoma oval to globular; dorsum purple with patches as in Fig. 167.

Male palp: As in Fig. 168. Median apophysis cone shaped.

Female: Females resembling males.

Epigynum and vulva: As in Fig. 168.

Remarks: Members of the genus *Asceua* can be recognized by a narrow cymbium in males and by superficially intricately wound ducts of the epigyne. Males and females examined correspond with the description of the genus provided by Jocqué (1991).

Natural history: Unknown.

Distribution: Unknown.

Asceua sp. B

Material examined: 3♀, 2090m, 25.III.2000, SS; 1♀, 2430m, 23.X.1999, SS; 1♀, 2090m, 26.II.2000, PT; 4♀, 1♂, 2090m, 27.XI.1999, SS; 3♀, 2430m, 26.II.2000, SS; 1♀, 1510m, 27.XI.1999, PT; 4♀, 2090m, 29.IV.2000, PT; 1♀, 1♂, 2430m, 29.IV.2000, PT; 2♀, 2090m,

29.I.2000, SS; 1♀, 1510m, 26.II.2000, SS; 1♂, 1♀, 2430m, 25.IX.1999, SS; 1♀, 2250m, 15.III.2000, SS; 3♀, 2090m, 27.V.2000, PT; 5♀, 2250m, 15.II.2000, SS; 4♀, 1750m, 15.I.2000, SS; 6♀, 1♂, 1750m, 15.III.2000, SS; 3♀, 2090m, 26.II.2000, SS; 1♀, 2090m, 25.III.2000, PT; 1♂, 1♀, 2090m, 25.I.2000, PT; 1♀, 2430m, 23.X.1999, SS.

Description:

Male: Larger than that of *Asceua* sp. A. Carapace oval, chestnut brown, without cervical groove; a pair of dark brown patches presented. Eight eyes in two procurved rows; eye margins black. Legs pale and spineless. Opisthosoma oval; dorsum dark purple, with two pairs of pale spots anteriorly and a series of stripes posteriorly.

Male palp: As in Fig. 169.

Female: As in male. Some specimens show an elongated opisthosoma.

Epigynum and vulva: As in Fig. 169. Median apophysis finger-like.

Remarks: The female vulva is very similar to *A. kunming* Song & Kim from southern China, but the epigyne has a different duct course. Illustrations of the male palp of *A. kunming* are very poor; The specific placement is therefore impossible.

Natural history: Unknown.

Distribution: Unknown.

***Asceua* sp. C**

Material examined: 1♂, 510m, 29.IV.2000, PT; 10♂, 510m, 27.V.2000, PT; 2♂, 1♀, 1000m, 29.IV.2000, SS; 1♂, 1250m, 15.III.2000, SS; 1♀, 1250m, 15.IV.2000, SS; 1♀, 1510m, 23.X.1999, SS; 2♀, 1000m, 26.IV.2000, SS; 4♀, 510m, 29.IV.2000, SS; 2♀, 1000m, 29.VII.2000, PT; 2♀, 1000m, 25.III.2000, SS; 2♀, 1000m, 24.VI.2000, SS.

Description:

Male: Prosoma oval, ocular area slightly protruding. Carapace dark brown, without cervical groove. Fovea deep. Eight eyes in two procurved rows; eye margins black. Legs brown. Opisthosoma oval; dorsum dark purple, with pale spots and stripes; ventral scutum present.

Male palp: As in Fig. 170. Median apophysis bifurcate, with thin upper process and stout base.

Female: As in male.

Epigynum and vulva: As in Fig. 170.

Remarks: The female vulva is very similar to that of *A. menglum* Song & Kim from Southern China, but its epigyne has a different duct course. Illustrations of the male palp of A. menglum are very poor; the specific placement is therefore impossible.

Natural history: Unknown.

Distribution: Unknown.

Immature specimens of *Asceua* spp.

Material examined: 2j, 2090m, 25.III.2000, SS; 1j, 2430m, 23.X.1999, SS; 1j, 2090m, 26.II.2000, PT; 3j, 2250m, 15.IV.2000, SS; 2j, 2090m, 25.IX.1999, PT; 5j, 2090m, 27.XI.1999, SS; 3j, 1510m, 27.XI.1999, PT; 5j, 2090m, 29.I.2000, SS; 5j, 2250m, 15.III.2000, SS; 1j, 2090m, 27.V.2000, PT; 7j, 2250m, 15.II.2000, SS; 9j, 1750m, 15.III.2000, SS; 17j, 2090m, 26.II.2000, SS; 1j, 2430m, 23.X.1999, SS; 2j, 1500m, 15.XI.1999, SS; 3j, 750m, 15.II.2000, SS; 9j, 1000m, 23.X.1999, PT; 2j, 510m, 23.X.1999, SS; 2j, 510m, 29.I.2000, PT; 8j, 510m, 27.XI.1999, SS; 18j, 1000m, 29.I.2000, SS; 10j, 510m, 29.I.2000, PT; 1j, 1000m, 28.VIII.1999, SS; 1j, 2430m, 23.X.1999, SS; 1j, 1000m, 27.XI.1999, SS; 9j, 510m, 26.II.2000, SS; 9j, 1510m, 26.II.2000, SS; 1j, 1510m, 28.VIII.1999, SS; 6j, 1750m, 15.XII.1999, SS; 4j, 1510m, 23.X.1999, SS; 1j, 2430m, 27.XI.1999, SS; 6j, 510m, 23.X.1999, SS; 1j, 1750m, 15.IV.2000, SS; 2j, 1510m, 27.V.2000, SS; 1j, 2090m, 29.VII.2000, PT; 6j, 510m, 25.III.2000, SS; 3j, 510m, 26.II.2000, PT; 11j, 2090m, 29.VII.2000, SS; 1j, 2090m, 23.X.1999, SS; 1j, 1250m, 15.V.2000, SS; 11j, 1250m, 15.I.2000, SS; 5j, 750m, 15.I.2000, SS; 1j, 1750m, 15.XII.1999, SS; 12j, 1250m, 15.II.2000, SS; 6j, 1510m, 29.I.2000, DD; 2j, 1510m, 23.X.1999, SS; 3j, 1000m, 25.IX.1999, SS; 2j, 1000m, 25.IX.1999, PT; 1j, 1000m, 25.IX.1999, PT; 1j, 1510m, 25.IX.1999, SS; 1j, 510m, 29.VII.2000, PT; 1j, 2430m, 25.IX.1999, PT; 1j, 1510m, 28.VIII.1999, SS; 2j, 510m, 25.IX.1999, PT; 7j, 510m, 27.XI.1999, SS; 19j, 510m, 29.I.2000, SS; 15j, 1000m, 26.II.2000, SS; 15j, 1000m, 23.X.1999, SS; 5j, 1000m, 29.I.2000, PT; 1j, 1000m, 28.VIII.1999, SS; 22j, 510m, 29.VII.2000, SS; 6j, 510m, 24.VI.2000, SS; 1j, 1000m, 29.VII.2000, SS.

Gen. *Cydrela* Thorell, 1873

Literature consulted: Jocqué (1991).

***Cydrela* sp.**

Material examined: 4♂, 2090m, 29.IV.2000, PT; 1♀, 2430m, 29.I.2000, PT; 1♀, 2430m, 23.X.1999, SS; 2j, 2430m, 29.0IV.2000, PT; 1PM, 4j, 2090m, 23.X.1999, SS; 1j, 2090m, 26.II.2000, PT; 1j, 2090m, 29.I.2000, SS; 1j, 1750m, 15.III.2000, SS; 1j, 2250m, 15.II.2000, SS; 1j, 1510m, 28.VIII.1999, SS; 1j, 2250m, 15.I.2000, SS; 2j, 2430m, 25.IX.1999, SS; 2j, 1510m, 25.IX.1999, SS; 1j, 2430m, 24.VI.2000, SS; 1j, 1510m, 29.VII.2000, PT; 1j, 1750m, 15.II.2000, SS; 1j, 1000m, 23.X.1999, PT.

Description:

Male: Carapace long and oval, narrowed in front, with raised cephalic area; brown tegument covered with long white hairs. Longitudinal fovea deep. Eight eyes in two rows; AER strongly procurved; PER recurved; AME surrounded by black area. Clypeus high. Chilum absent. Legs

strong; posterior tibiae and metatarsi armed with strong spines. Opisthosoma oval; dorsum black, with longitudinal white bands anteriorly and a series of chevrons posteriorly. ALS elongate, cylinder-shaped.

Male palp: Apex of cymbium armed with few strong spines. RTA strong, blunt. Tegulum elongate oval, with anterior membranous area, posterior part sclerotized. Embolus long and slender, winding around the tegulum.

Female: Cephalic area of carapace less elevated, not protruding forward. A row of black hairs running behind ocular area to fovea. Chilum slightly sclerotized, divided. Opisthosoma round, covered with black hairs; dorsum gray with the same pattern as in male.

Epigynum and vulva: Epigyne strongly sclerotized. Anterior hood present. Two dark spermathecae visible through the epigynal plate.

Remarks: Male specimens resemble those of *Cydrela* Thorell, but their emboli long instead of short. The female genital organ corresponds well with the description of the genus provided by Jocqué (1991) in having a very simple epigyne with two large, strongly sclerotized spermathecae, and short copulatory ducts.

Natural history: The spiders are ground-dwelling, found on the damp, humid floor of hill evergreen forest. Living spiders reared in plastic boxes made a burrow but no web was produced.

Distribution: Unknown.

Gen. *Mallinella* Strand, 1906

Literature consulted: Jocqué (1991); Song, Zhu & Chen (1999)

***Mallinella labialis* Song and Kim, 1997**

Material examined: 2♂, 2090m, 27.V.2000, PT; 1♂, 2♀, 510m, 27.V.2000, PT; 1♂, 2250m, 15.IV.2000, SS; 1♂, 2090m, 24.VI.2000, PT; 3♂, 1000m, 24.VI.2000, PT; 1j, 510m, 27.XI.1999, PT; 1PM, 510m, 25.III.2000, BT; 1j, 1250m, 15.II.2000, SS; 2j, 510m, 25.XII.1999, PT; 1j, 510m, 25.III.2000, PT.

Description:

Female: Carapace oval, yellowish orange with dark margin, cephalic area brown. Deep longitudinal fovea red in color. Eight eyes arranged in two procurved rows; AME largest; eye margins black. Clypeus high, covered with some short spines. Chilum present, triangular. Sternum with triangular lateral extensions fitting in coxal concavities. Legs yellow; femora, tibiae and metatarsi armed with spines; spines on posterior legs longer than on anterior ones. Opisthosoma oval; dorsum dark purple, with two round pale spots anteriorly and series of

stripes posteriorly. Spinnerets very short, barely visible. A row of short blunt spines in front of tracheal spiracle.

Epigynum and vulva: Epigynal plate M-shaped. Spermathecae elongate.

Male: Carapace oval, dark brown. Eye formula 4-2-2. Legs yellowish brown with greenish shade. Spines on legs less strong than in female. Opisthosoma with an anteriorly located small, elongate dorsal scutum.

Male palp: RTA bifurcate, short and curved. Cymbium with small lateral fold. Tegulum divided into three parts, a strongly sclerotized distal conductor, a well-developed median tegular apophysis and an embolic base. Embolus long and slender, tip divided into two parts.

Remarks: The female genital organ of my specimens agrees well with illustrations of *M. labialis* given by Song, Zhu & Chen (1999).

Natural history: Unknown.

Distribution: China, Thailand.

***Mallinella* sp.**

Material examined: 1♀, 1510m, 25.III.2000, SS; 1♀, 1510m, 23.X.1999, SS; 1PM, 1j, 1750m, 15.V.2000, SS; 1j, 1250m, 15.XII.1999, SS; 2j, 1000m, 29.IV.2000, SS; 1j, 1000m, 28.VIII.1999, SS.

Description:

Female: Prosoma longer than wide, cephalic area high. Carapace hairless, dark brown. Fovea short, longitudinal. Clypeus high. Triangular chilum present. Eight eyes in two rows, both procurved; eye formula 4-2-2. Legs orange-brown, coxa bright yellow; spines present on posterior tibiae and metatarsi. Opisthosoma elongate oval, pointed posteriorly; dorsum dark purple, small round spots located in the middle, followed by a series of small bands. ALS cylindrical, two segmented. A row of short spines in front of tracheal spiracle.

Epigynum: As in Fig. 173.

Remarks: This species is very close to *M. labialis* but its carapace is chestnut-brown instead of yellow. The epigyne also differs. The presence of a row of short spines in front of the spinnerets is the basis of my generic placement.

Natural history: The spiders were found only in hill evergreen forest of the national park.

Distribution: Unknown.

Gen. *Storenomorpha* Simon, 1884

Literature consulted: Jocqué (1991); Jocqué & Bosmans (1989).

***Storenomorpha* sp.**

Material examined: 1j, 1000m, 28.VIII.1999, SW.

Description:

Coloration and pattern: Prosoma longer than wide. Carapace brown, with slightly elevated cephalic part, covered with black hairs. Eight eyes in two rows; AER strongly procurved; PER recurved. Opisthosoma elòngate oval, covered with dense hairs; dorsum black with three white longitudinal bands arranged paramedially and laterally. Legs yellow, clothed with hairs; tarsi swollen, with thick claw tufts.

Remarks: The spider corresponds well with the description of the genus provided by Jocqué (1991) and Jocqué & Bosmans (1989). Five species of *Storenomorpha* occur in India, Burma and Thailand. The male of *S. reinholdae* was described from Kao Yai National Park.

Natural history: *Storenomorpha* Jocqué & Bosmans s a genus of zodariids living on vegetation while most other members of the family tend to live on the ground. A single specimen was collected by sweeping low vegetations in dipterocarp with pine forest. An immature spider of the same genus was also collected by sweeping grassland from dipterocarp forest of Doi Suthep-Pui National Park.

Distribution: Unknown.

Zodariidae gen. sp.

Material examined: 4♂, 1510m, 23.X.1999, PT; 2j, 1000m, 23.X.1999, SS; 1♀, 1000m, 29.IV.2000, PT.

Description:

Male: Medium-size spiders with strongly raised cephalic area, cervical groove absent. Carapace almost hairless, apart from a few long hairs in eye region; widest between coxae II and III, narrowed in front, highest point in profile between PME and fovea. Tegument strongly granulated with faintly marked median groove between PME and fovea. Carapace and chelicerae medium to dark purple-brown, sternum reddish brown; leg orange-brown with slightly darker femora. Dorsum of opisthosoma from dark purple to grayish black with white pattern of well-defined white spots and stripes, males with brown scutum in anterior half; sides dark with two or three oblique white patches; venter mottled with dark on pale background. Eyes far apart, arranged in two strongly procurved rows. All eyes subequal, circular and pale; AME larger than others; AME less than their diameter apart, about 1.5 times diameter their from ALE; PME about 0.7 times their diameter apart and 3 times that distance from PLE; MOQ slightly wider in front than behind and about 1.1 times longer than wide. Clypeus rather high, 3 times the diameter of ALE, bulging, with some hairs dispersed along inferior margin. Chilum single, drawn out into a point, pointing forward. Chelicerae tapering, less strongly so in female;

hairs on anterior surface increasing in length distally; condyle well developed; no marginal teeth; fang short and thick. Endites with anteromesal scopula. Labium triangular, with narrowed base, sparsely hirsute. Sternum raised, longer than wide, roughly triangular with straight anterior margin; small triangular extensions fitting in coxal concavities; posteriorly protruding between coxae IV and indented. Pleurites present. Leg formula 4123. Spination variable; spines usually few and short on dorsal side, more numerous and longer on ventral side; more spines on legs III and IV. Femora at base inflated near proximal dorsal spine. Metatarsal ventral hair tufts present in males. Paired tarsal claws with 8 teeth. Third tarsal claw on small onychium. Trichobothria in two rows on tibiae, in one row on metatarsi and tarsi; no scopulae or claw tufts. Opisthosoma oval, sparsely covered with hairs, with strongly developed prolateral sigilla. Abdominal sclerotization surrounding pedicel. Males with dorsal scutum. Six spinnerets; ALS long, conical, biarticulate; PLS and PMS small. Colulus presented by two groups of hairs. Epiandrum present in males.

Male palp: Tibia with single ♂ lateral apophysis; cymbial fold situated dorsally on cymbium; long prolateral backwards-protruding extension. Embolus originating from posterior mediolateral extremity of tegulum, ending at slender tegular apophysis. MA simple, hook-like.

Female: As in males but possessing a larger opisthosoma. Color variable from pale to dark purple.

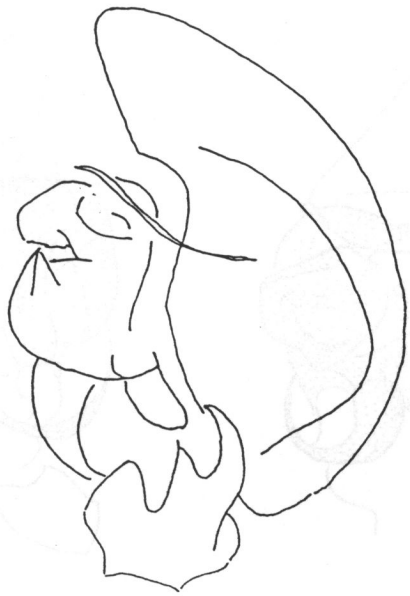
Epigynum and vulva: Strongly sclerotized, with central plate in posterior half and two copulatory openings in anterior part.

Remarks: The spiders are distinguished from other genera by shape of carapace and eye arrangement. They belong to a yet undescribed genus (R. Jocqué, pers. comm.).

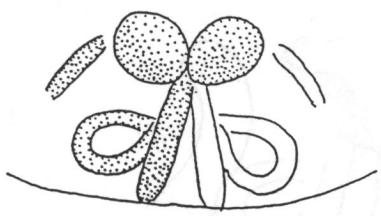
Natural history: Unknown.

A B C

Fig. 167. Opisthosomal pattern of *Asceua* spp.: species A (A); species B (B); species C (C).



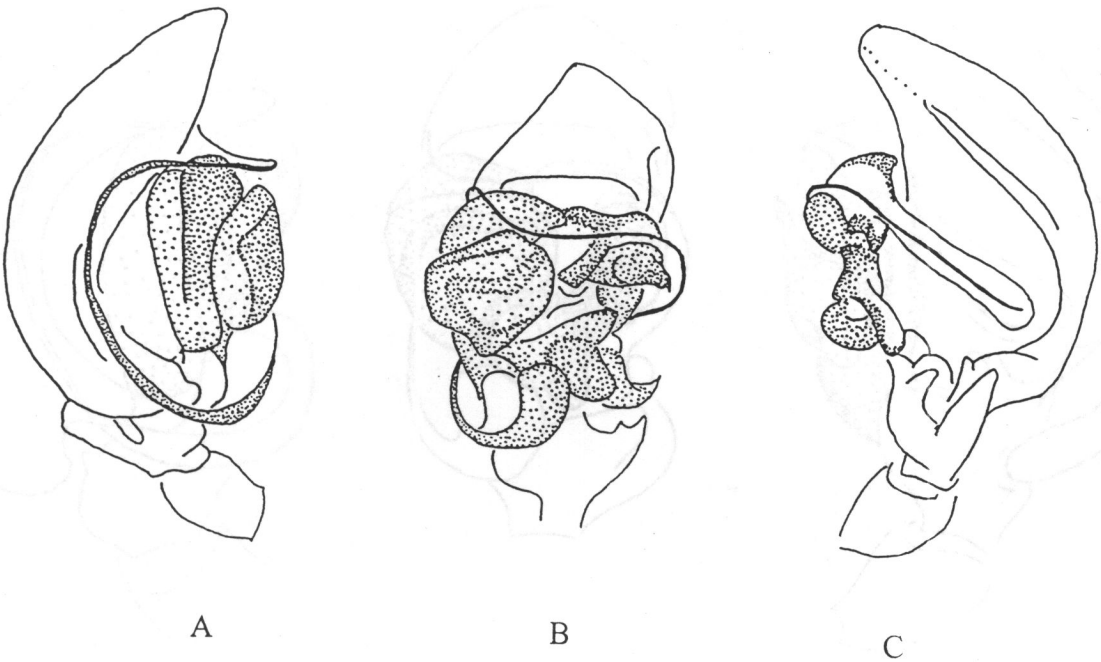
A



B

C

Fig. 168. *Asceua* sp. A. A, male palp. B, epigyne. C, vulva.



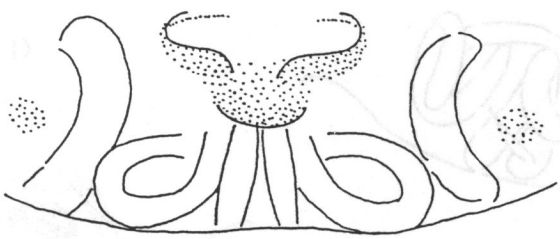


Fig. 169. *Asceua* sp. B. A-C, male palp, different views. D, epigyne.

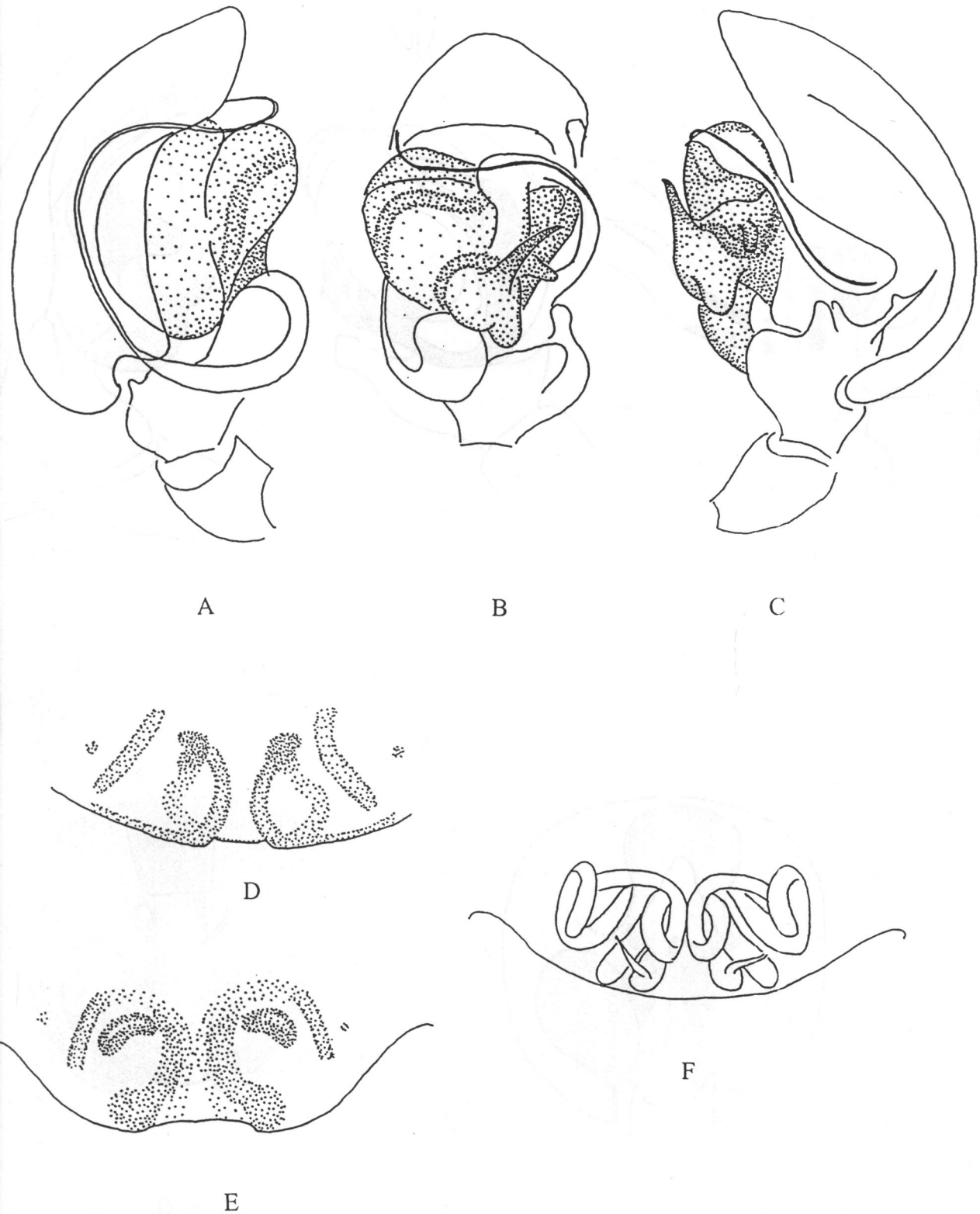


Fig. 170. *Asceua* sp. C. A-C, male palp, different views. D, E, epigyne, different views. F, vulva.

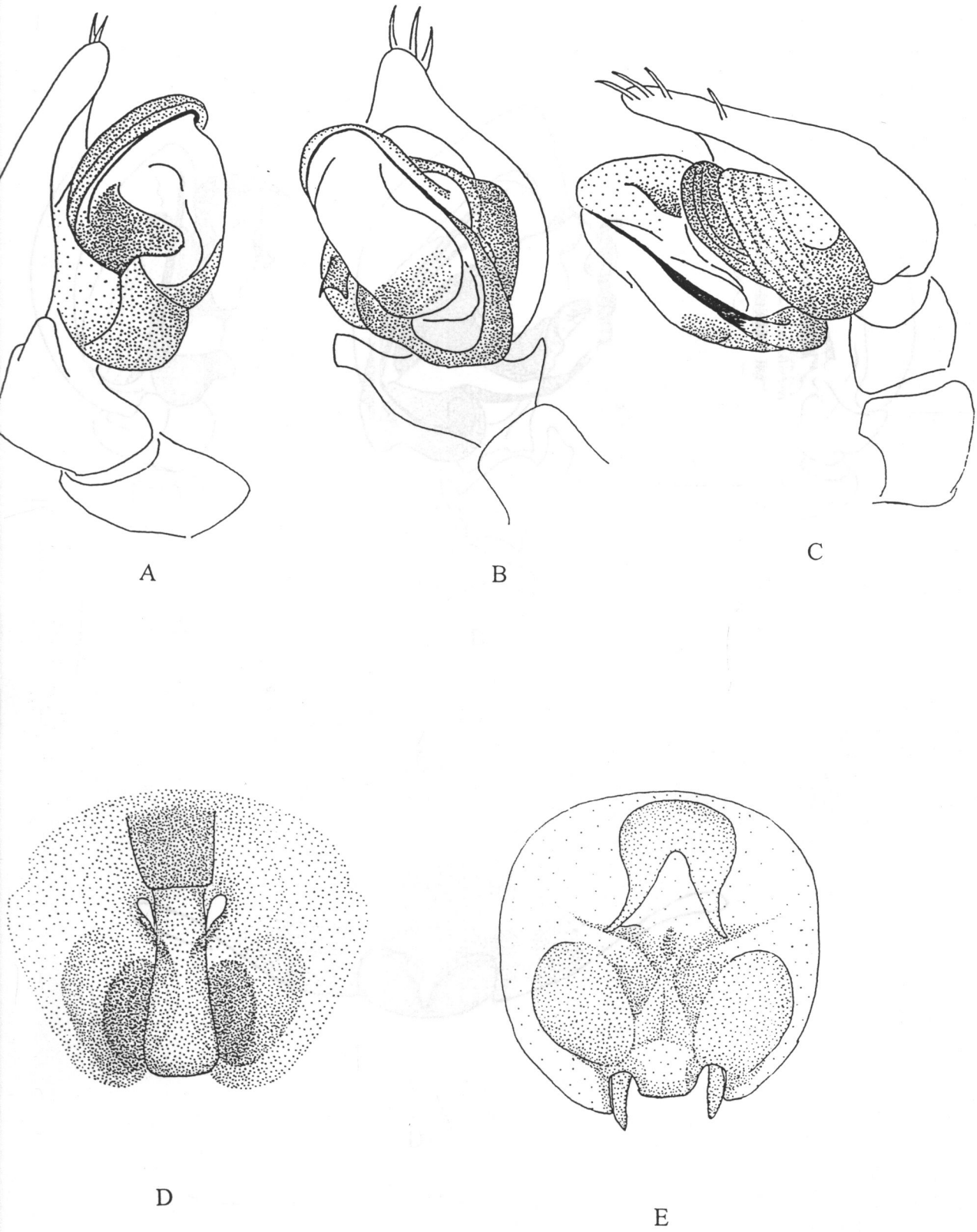


Fig. 171. *Cydrela* sp. A-C, male palp, different views. D, epigyne. E, vulva.

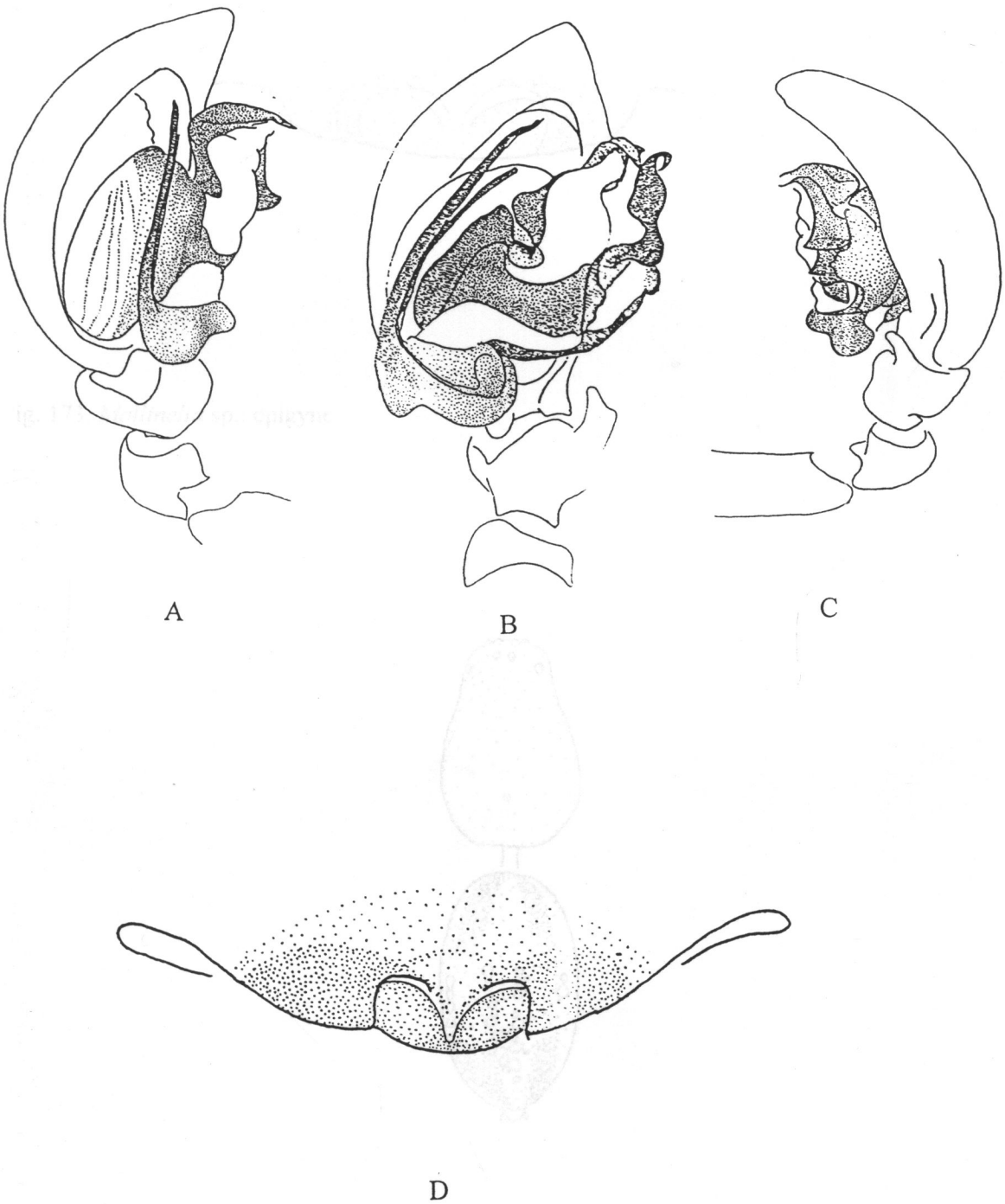


Fig. 172. *Mallinella labialis*. A-C, male palp, different views. D, epigyne.

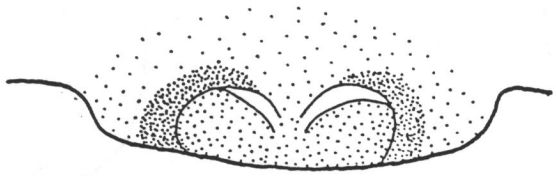


Fig. 173. *Mallinella* sp.: epigyne.

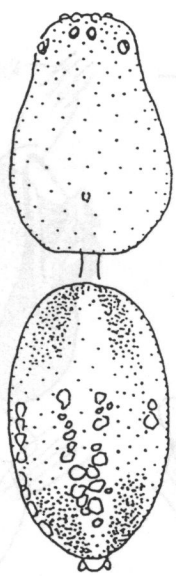
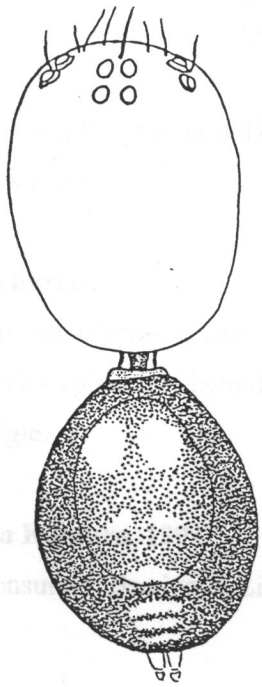
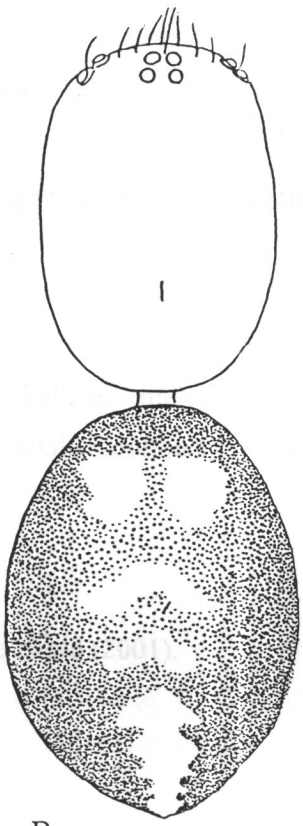


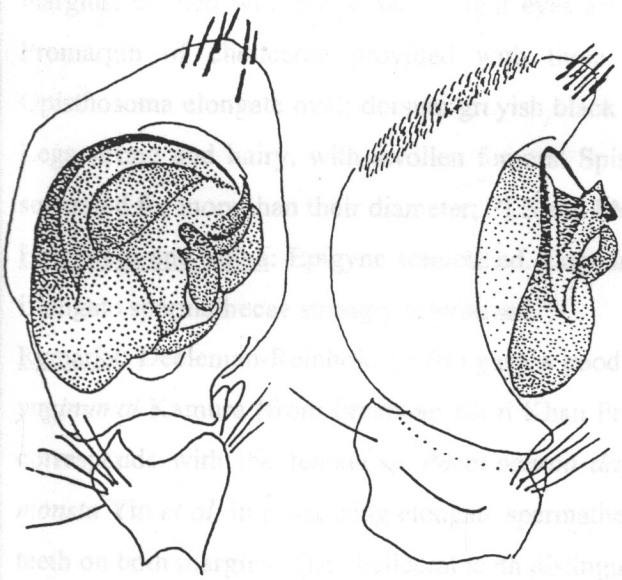
Fig. 174. *Storenomorpha* sp.: habitus of juvenile.



A

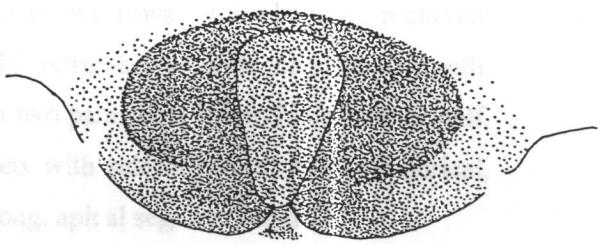


B

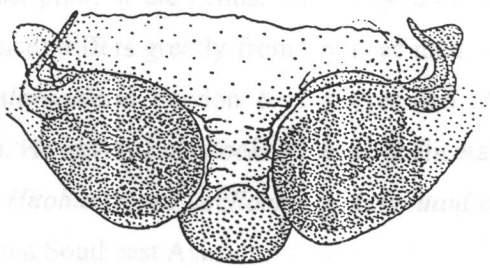


C

D



E



F

Fig. 175. Zodariidae gen. sp. A, habitus of male. B, habitus of female. C, D, male palp, different views. E, epigyne. F, vulva.

GNAPHOSIDAE Pocock, 1898

The Gnaphosidae is a large family comprising 115 genera and 1942 species in six subfamilies worldwide.

Diagnostic characters

Small to medium-sized (3-17 mm), two-clawed, ecribellate, entelegyne, eight-eyed spiders; anterior spinnerets cylindrical and widely separated; maxillae obliquely depress; PME oval at an angle.

Gen. *Hitobia* Kamura, 1992

Literature consulted: Barrion & Litsinger (1995); Deeleman-Reinhold (2001).

***Hitobia* sp.**

Material examined: 1♀, 1510m, 29.I.2000, SS.

Description:

Female: Hairy spider. Flattened prosoma pear-shaped. Carapace brown, with dark brown margins, clothed with black hairs. Eight eyes arranged in two rows; both eye rows recurved. Promargin of chelicerae provided with three teeth; retromargin with one small tooth. Opisthosoma elongate oval; dorsum grayish black with two pale spots located in posterior half. Legs strong and hairy, with swollen femora. Spinnerets with sclerotization; ALS cylindrical, separated for more than their diameter; PLS and PMS long, apical segments small.

Epigynum and vulva: Epigyne sclerotized. Copulatory openings plugged with white secretion. Elongate spermathecae strongly sclerotized.

Remarks: Deeleman-Reinhold (2001) gave a good description of the genus. The epigyne of *H. yaginumai* Kamura (from Prachuap Khiri Khan Province) differs greatly from my specimen. It corresponds with the female of *Poecilochroa dayamibrookiana* Barrion & Litsinger and *H. monsta* Yin *et al.* in possessing elongate spermathecae. However, *Poecilochroa* lacks cheliceral teeth on both margins. The cheliceral teeth distinguish *Hitobia* from *Poecilochroa*, *Aphantaulax* and *Sernokorba*. Members of *Hitobia* were recorded from Southeast Asia.

Natural history: A single female was obtained from litter samples.

Distribution: Unknown.

Gen. *Micythus* Thorell, 1897

Literature consulted: Deeleman-Reinhold (2001).

? *Micythus* sp.

Material examined: 1♂, 510m, 29.I.2000, SS; 2j, 510m, 27.XI.1999, SS; 2j, 510m, 23.X.1999, SS; 1j, 510m, 25.IX.1999, SS.

Description:

Male: Pale spider. Prosoma low; carapace yellow, narrowing anteriorly. Eyes in compact group; PME large, almost round; LE touching. Opisthosoma elongated, pointed at the end; dorsum with black pattern. Legs without strong spines; no preening comb on posterior metatarsi. Spinnerets fairy short; ALS cylindrical, separated for more than their diameter.

Male palp: Tibia with long and pointed dorsal apophysis. spermophore U-shaped; embolus and conductor short.

Remarks: The male palp of my specimens differs from that of *M. pictus* Thorell in having a long pointed dorsal apophysis and longer embolus with curved conductor. However, the specimens examined lack some characters which are otherwise found in all members of *Micythus,* i.e. no scopulae of spatulate hairs on anterior metatarsi and tarsi; indistinct cylindrical grand spigots on PMS. They are placed under *Micythus* due to their genital characters.

Natural history: The spiders were found only in dipterocarp with pine forest at low altitudes of the national park.

Distribution: Unknown.

Gen. *Odontodrassus* Jézéquel, 1965

Literature consulted: Deeleman-Reinhold (2001).

***Odontodrassus* sp.**

Material examined: 1♀, 510m, 26.II.2000, SS.

Description:

Female: Medium-sized spider. Prosoma long, narrowed in front. Eight eyes arranged in two rows; PER procurved; LE clearly separate; PME quite large. Metatarsi and tarsi of leg III and IV with preening brush, no comb; tarsal claws pectinate; claw tufts present. Opisthosoma long, with dense hair cover anteriorly; dorsum with two pairs of sclerotized spots.

Epigynum and vulva: Epigyne and vulva complex. Epigyne with broad hood and median ridge. Crescent-shaped slits joining funnel-shaped insemination duct connected to bean-shaped spermathecae. *Odontodrassus aphanes* was reported from Nakhon Ratchasima and Burma. Other species occur in Ivory Coast, Japan and Indonesia.

Remarks: Deeleman-Reinhold (2001) gave a good description of the genus which corresponds well with my specimen. My specimen differs from *O. aphanes* (Thorell) in the shape of its spermathecae.

Natural history: Unknown.

Distribution: Unknown.

Gen. *Trachyzelotes* Lohmander, 1944

Literature consulteds: Song, Zhu & Chen (1999)

***Trachyzelotes fuscipes* (L. Koch)**

Material examined: 1♂, 1PM, 510m, 29.I.2000, SS; 1♂, 510m, 29.I.2000, PT; 1j, 1000m, 25.IX.1999, PT; 1j, 510m, 29.VII.2000, SS; 2j, 1000m, 23.X.1999, SS; 1j, 750m, 15.II.2000, SS; 1j, 510m, 27.XI.1999, BT; 1j, 510m, 25.IX.1999, SS; 1PM, 3j, 510m, 23.X.1999, SS; 5j, 510m, 29.IV.2000, SS; 1j, 510m, 26.II.2000, SS;

Description:

Male: Prosoma low; carapace brown, narrowed in front; longitudinal fovea at the center of the carapace. Eight eyes arranged in two rows; PER slightly procurved; PME large, situated less than their diameter apart. Opisthosoma oval, brownish in color; anterior end clothed with long hairs. Spinnerets long; ALS long, apical segment crowned with five spigots.

Male palp: Tibia with long, curved retrolateral tibial apophysis. Conductor covering distal part of tegulum, terminating in conspicuous slightly curved projection. Embolus long and slender, winding around bulbus clockwise (on left palp).

Remarks: Male palpal structures of *T. fuscipes* given by Song, Zhu & Chen (1999) correspond with my specimen.

Natural history: Unknown.

Distribution: Mediterranean, China and Thailand.

Gen. *Zelotes* Gristle, 1848

Literature consulted: Deeleman-Reinhold (2001); Dippenaar-Schoeman & Jocqué (1997); Hillyard (1997); Song, Zhu & Chen (1999); Tikader (1982).

***Zelotes* sp. A**

Material examined: 3♀, 1000m, 29.IV.2000, PT; 1♀, 1750m, 15.IV.2000, SS; 1♀, 1j, 750m, 15.III. 2000, SS; 6PM, 2j, 750m, 15.II.2000, SS; 1j, 1000m, 23.X.1999, SS; 1j, 1000m, 25.XII.1999, PT; 1PM, 1000m, 29.I.2000, PT; 1j, 1000m, 26.II.2000, SS.

Description:

Female: Elongate spider. Prosoma oval, narrowed in front; carapace yellow, smooth; a few females with a dark pattern, absent in other specimens. Eight eyes in two rows; eye margins unpigmented or red; AER recurved; PER straight; LE larger than ME; PME small, not larger

than the others and separated by their diameter. Preening comb located ventroapically on posterior metatarsi. Opisthosoma roughly oval, longer than wide; dorsum with pale blackish oblique stripes. ALS cylindrical, separated by more than their diameter; PMS bilobed, with large spigots; small PLS close together.

Epigynum and vulva: Epigyne with longitudinal anterior window and hood. Large, kidney-shaped spermathecae situated near epigastric furrow; insemination ducts sclerotized; no bursae.

Remarks: The characters of female genitalia and eye position together with spinnerets arrangement, are the basis of my generic placement.

Natural history: Unknown.

Distribution: Unknown.

***Zelotes* sp. B**

Material examined: 1♀, 510m, 25.III.2000, SS; 1♀, 510m, 26.II.2000, SS; 1♀, 510m, 29.IV.2000, SS; 1♀, 3j, 510m, 29.Vii.2000, SS; 2j, 750m, 15.I.2000, SS; 1j, 510m, 27.XI.1999, PT; 1j, 510m, 25.XII.1999, PT; 1j, 510m, 23.X.1999, SS; 1j, 510m, 23.X.1999, PT; 1j, 510m, 27.XI.1999, SS; 1j, 27.XI.1999, SS; 4j, 510m, 29.I.2000, SS.

Description:

Female: Small and elongate spider. Carapace yellow, rebordered with black pigmentation; narrow in front. PER straight; PME not larger than the remaining eyes. Legs with preening combs ventro-laterally on metatarsi III and IV. Opisthosoma longer than wide, anterior end almost straight; dorsum with some black patches as in Fig. 181; cardiac area dark.

Epigynum and vulva: Epigyne with V-shaped window; hood invisible; covered with hairs. Vulva with round spermathecae.

Remarks: Female genitalia and spinneret arrangement, together with eye position, are the basis of my generic placement.

Natural history: The spiders were found mainly in dry forests at low elevations of the national park.

Gnaphosidae gen. sp.

Material examined: 1♀, 510m, 29.I.2000, SS; 1♀, 510m, 29.I.2000, PT.

Description:

Female: Prosoma longer than wide, relatively broad in front; pattern of radiating streaks diverging from fovea to the margins. Eight eyes, pearly white except for AME; LE larger than ME, touching; PME not so small, less than their diameter apart. Opisthosoma wide behind; clothed with hairs anteriorly.

Epigynum and vulva: Copulatory openings located in the center of the epigynal plate. Cone-shaped hood present. Spermathecae round, strongly sclerotized, located posteriorly. Insemination ducts coiled, with large bursae.

Remarks: The female genitalia are provided with special structures. A generic placement is not possible.

Natural history: Two specimens were collected from a mixed deciduous dipterocarp forest.

Distribution: Unknown.

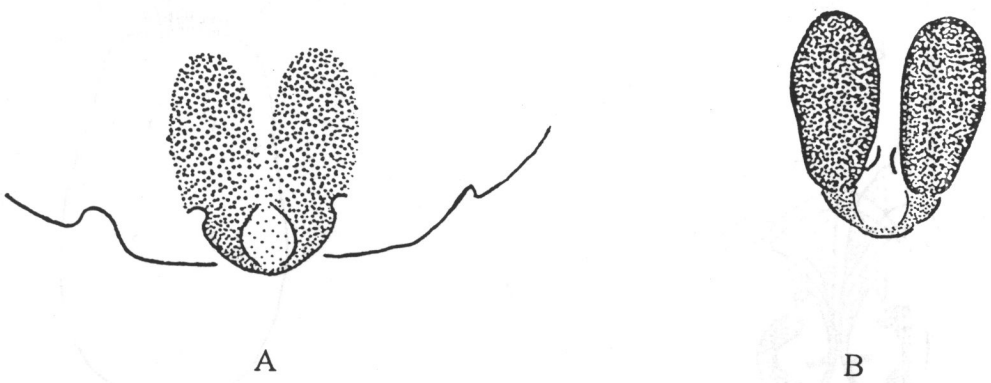


Fig. 176. *Hitobia* sp. A, epigyne. B, vulva.

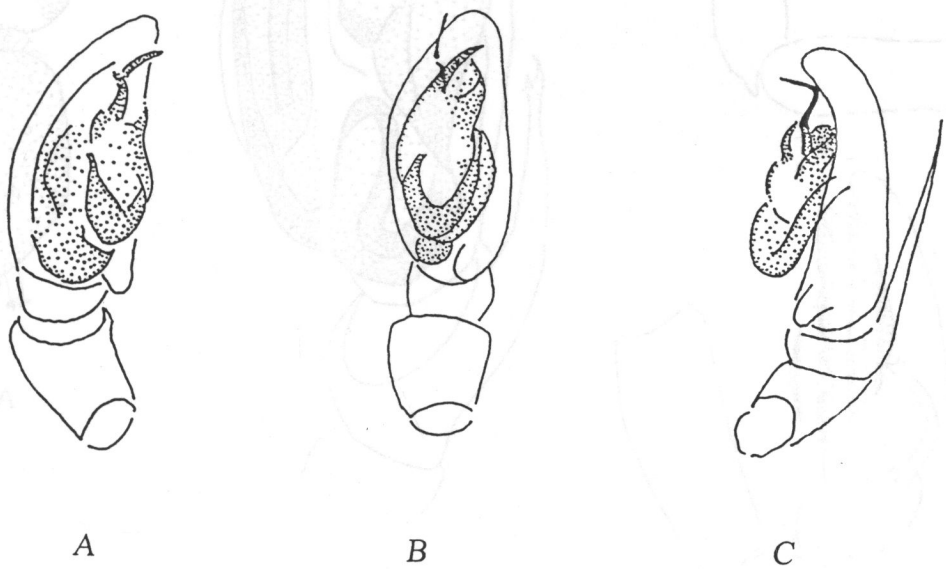


Fig. 177. ? *Micythus* sp. A-C, male palp, different views.

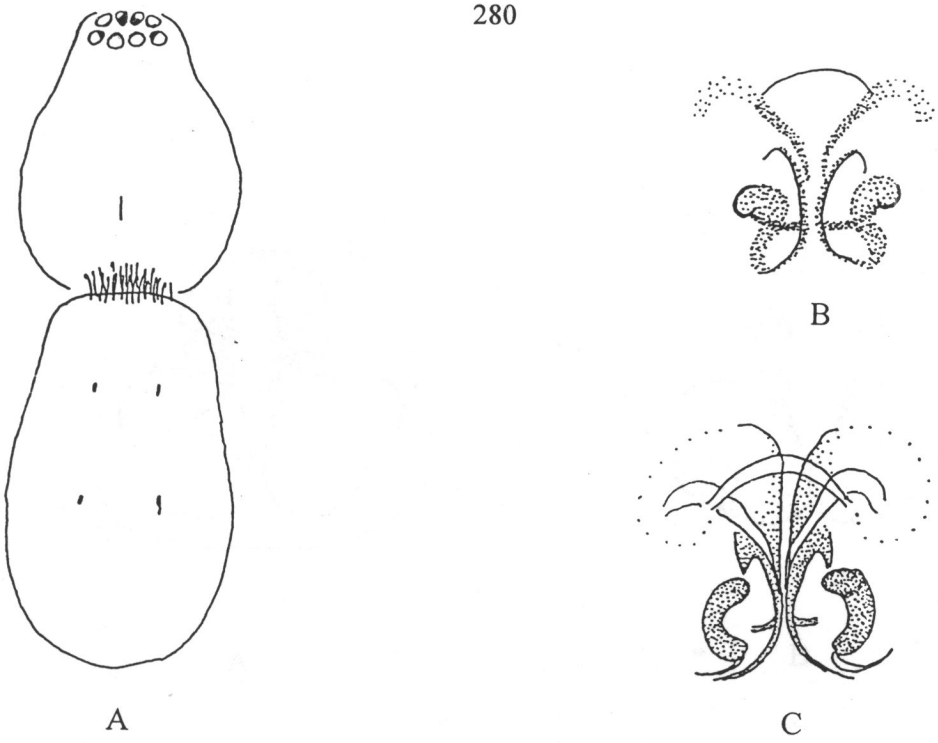


Fig. 178. *Odontodrassus* sp. A, habitus of female. B, epigyne. C, vulva.

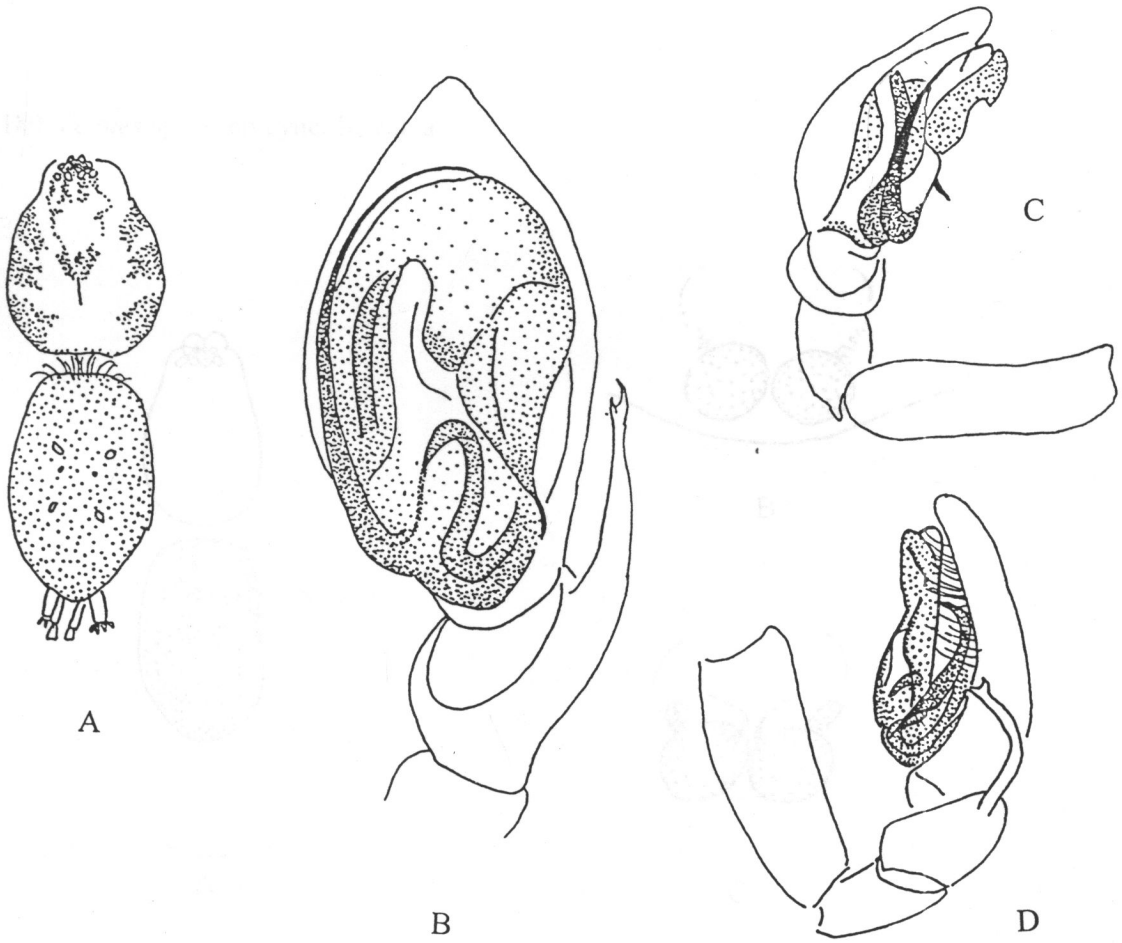


Fig. 179. *Trachyzelotes fuscipes*. A, habitus of male. B-D, male palp, different views.

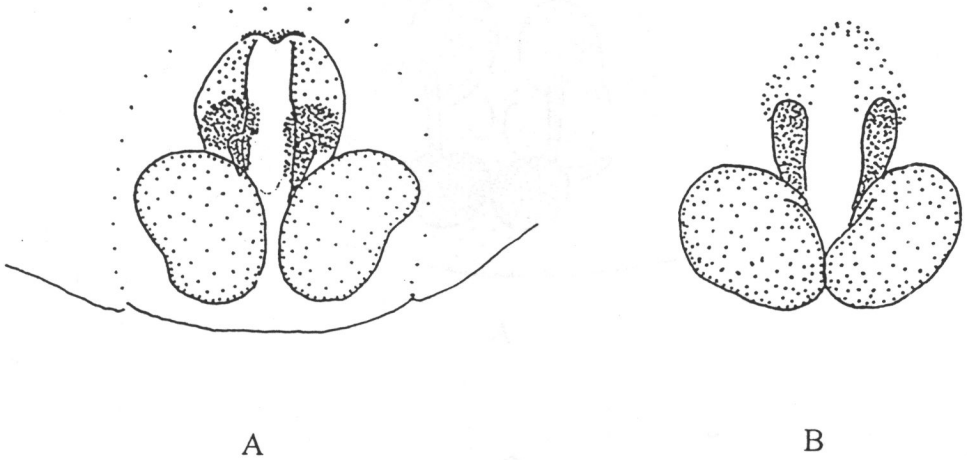


Fig. 180. *Zelotes* sp. A, epigyne. B, vulva.

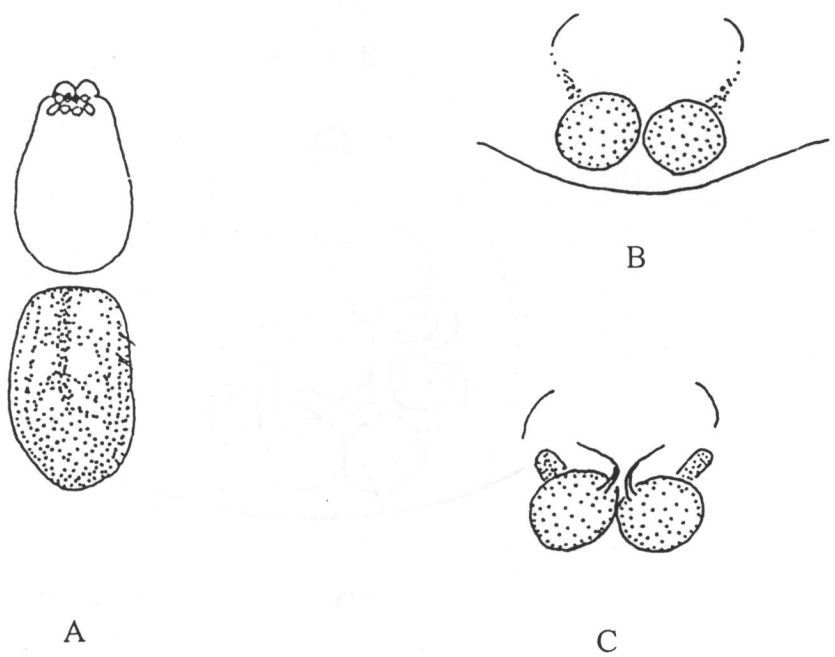
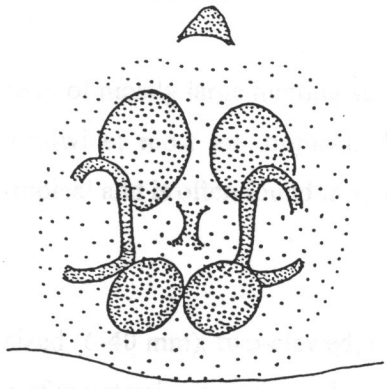
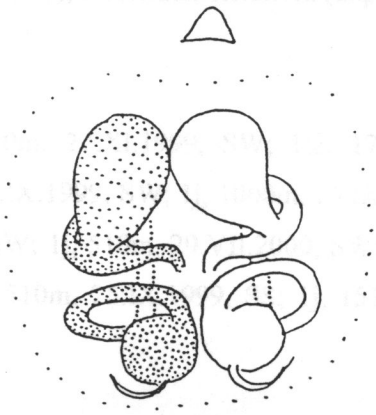


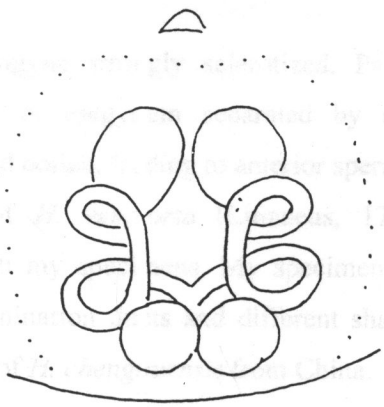
Fig. 181. *Zelotes* sp. B. A, habitus of female. B, epigyne. C, vulva.



A



B



C

Fig. 182. Gnaphosidae gen. sp. A, epigyne. B, vulva, ventral view. C, the same, dorsal view.

SPARASSIDAE, Bertkau 1872

The Sparassidae comprises of mostly large hunting spiders. There are 922 species in 89 genera. The distribution is worldwide; most are tropical. A common species, Heteropoda venatoria (Linnaeus), is cosmotropical and is often found in synanthropic habitats.

Diagnostic characters

Medium to very large-sized (6-40 mm), two-clawed, ecribellate, entelegyne, eight-eyed spiders with laterigrade legs; tip of metatarsi possessing a dorsal trilobrate membrane.

Gen. *Heteropoda* Latreille, 1804

Literature consulted: Davies (1994); Deeleman-Reinhold (unpublished data).

***Heteropoda* sp.**

Material examined: 1♀, 1510m, 27.XI.1999, SW; 1♀, 1750m, 27.V.2000, SS; 1j, 510m, 29.IV.2000, BT; 1j, 510m, 25.IX.1999, SW; 1j, 1000m, 25.IX.1999, SW; 1j, 1510m, 29.I.2000, BT; 2j, 1510m, 27.XI.1999, SW; 1j, 510m, 29.VII.2000, SW; 1j, 1510m, 29.VII.2000, SW; 1j, 1000m, 24.VI.2000, SW; 1j, 510m, 25.IX.1999, SS; 1j, 1510m, 23.X.1999, SW; 4j, 1000m, 23.X.1999, SW.

Description:

Female: Carapace round, yellow in color; cephalic area light brown with two oblique paler patches, a transverse black band located in thoracic area; opisthosoma yellow, mottled with black spots.

Epigynum and vulva: Epigyne strongly sclerotized. Paired copulartory openings situated posteriorly. Lateral lobes of epigynum separated by at least a small gap. Sclerotized insemination ducts wide and coiled, leading to anterior spermathecae.

Remarks: The epigyne of *H. venatoria* (Linnaeus, 1767) illustrated by Davies (1994) corresponds very well with my specimens. My specimens can also be placed in a different species due to broad insemination ducts and different shape of posterior spermathecae. This female also resembles that of *H. chengbuensis* from China.

Heteropoda is a genus, which is distributed in Asia and Australia exclusively, except for the cosmopolitan *H. venatoria* (Linnaeus, 1767). At least 200 *Heteropoda* species are known. It needs a large revision to identify the specimens.

Natural history: Most of the specimens were collected by sweeping low vegetation, few specimens were collected from the forest floor.

Distribution: The spider shows a limited distribution between 500 m and 1750 m.

Gen. *Pseudopoda* Jäger, 2000

Literature consulted: Jäger (1999, 2000, 2001).

***Pseudopoda exigua* (Fox, 1938)**

Material examined: 1♂, 1510m, 23.X.1999, PT; 2♂, 4♀, 2090m, 27.XI.1999, SS; 2♂, 1♀, 1j, 2090m, 23.X.1999, SS; 1♂, 8j, 1510m, 26.II.2000, SS; 1♀, 2090m, 29.IV.2000, PT; 1♀, 2430m, 23.X.1999, SS; 1♀, 1510m, 25.XII.1999, PT; 2♀, 2430m, 27.XI.1999, SS; 1♀, 1510m, 23.X.1999, SS; 1♀, 1510m, 23.X.1999, SW; 1♀, 1510m, 25.IX.1999, SS; 1♀, 2090m, 23.X.1999, SS; 1♀, 14j, 53h, 1510m, 25.III.2000, SS; 2♀, 1j, 1510m, 25.III.2000, PT; 3♀♀, 12j, 2090m, 29.I.2000, SS; 1♀, 2430m, 27.V.2000, PT; 1♀, 1j, 1750m, 27.V.2000, SS; 1♀, 2090m, 29.I.2000, PT; 1♀, 1j, 1510m, 29.I.2000, SW; 1♀, 11j, 2250m, 15.III.2000, SS; 4♀, 12j, 2250m, 15.II.2000, SS; 5j, 2250m, 15.I.2000, SS; 1♀, 7j, 1750m, 15.I.2000, SS; 1j, 750m, 15.XII.1999, SS; 5j, 1750m, 15.XII.1999, SS; 9j, 1750m, 15.III.2000, SS; 5j, 1750m, 15.I.2000, SS; 5j, 2250m, 15.IV.2000, SS; 3j, 1510m, 29.VII.2000, PT; 2j, 1510m, 29.IV.2000, SS; 2j, 1000m, 29.I.2000, SS; 4j, 1250m, 15.XII.1999, SS; 1j, 1510m, 29.IV.2000, SS; 3j, 1510m, 27.V.2000, PT; 1j, 2250m, 15.V.2000, SS; 10j, 1750m, 15.IV.2000, SS; 1j, 1510m, 26.II.2000, Bt; 1j, 1510m, 29.VII.2000, BT; 11j, 2430m, 26.II.2000, SS; 3j, 2430m, 24.VI.2000, PT; 1j, 2090m, 24.VI.2000, SS; 1j, 1510m, 23.X.1999, PT; 2j, 2090m, 23.X.1999, SS; 1j, 2090m, 27.XI.1999, BT; 1j, 2430m, 25.XII.1999, PT; 5j, 2250m, 15.IV.2000, SS; 3j, 2090m, 24.VI.2000, SS; 1j, 2090m, 24.VI.2000. PT; 5j, 2430m, 29.I.2000, SS; 11j, 2090m, 26.II.2000, SS; 7j, 2430m, 25.III.2000, SS; 1j, 2090m, 29.VII.2000, PT; 6j, 2090m, 25.III.2000, SS; 1j, 1510m, 29.I.2000, BT; 1j, 2090m, 27.V.2000, PT; 10j, 2430m, 23.X.1999, SS; 5j, 2430m, 27.XI.1999, SS; 1j, 1510m, 29.IV.2000, PT; 14j, 1510m, 23.X.1999, SS; 16j, 2090m, 27.XI.1999, SS; 11j, 1510m, 29.I.2000, SS; 16j, 1510m, 27.XI.1999, SS; 5j, 2250m, 15.II.1999, SS; 7j, 1510m, 23.X.1999, SS; 2j, 1510m, 25.IX.1999, SS; 1j, 1510m, 28.VIII.1999, VS; 1j, 1510m, 27.XI.1999, SW; 1j, 1250m, 15.IV.2000, SS; 1j, 1000m, 29.IV.2000, SS; 6j, 510m, 23.X.1999, PT; 1j, 1000m, 25.IX.1999, PT; 1j, 2090m, 25.IX.1999, PT; 1j, 1250m, 15.II.2000, SS.

Description:

Male: Prosoma broadly oval, narrower in eye region. Fovea deep, longitudinal. Carapace with slightly higher thoracic area, covered with fine setae. Eight eyes arranged in two rows; AER recurved; PER straight; AME smallest; PLE>ALE>PME>AME. Chelicerae with scopula and teeth; one large and two small teeth on promargin; four large teeth on retromargin with small denticles in between. Opisthosoma elongate oval; densely clothed with fine hairs; dorsum with purple pattern. Legs long, extending sideways; trochanter deeply notched; femora, tibiae and

metatarsi armed with long spines; tip of metatarsi with a trilobate membrane; scopulae on metatarsi and tarsi; two pectinate tarsal claws; claw tufts present.

Male palp: Tibial apophysis large and blunt. Cymbium elongated. Embolus long, arising prolaterally on proximal tegulum and tapering to a point; proximal portion twisted, inner edge becoming outer edge. Thick membranous conductor arising from distal part of tegulum. Tip pf embolus embedded in conductor. Embolic apophysis present.

Female: Smaller than male. Color pattern on carapace and opisthosoma more distinct.

Epigynum and vulva: Epigyne represented by large sclerotized plate. Lateral lobes fused, together forming large median plate.

Remarks: Males in my collection belong to *P. exigua* (Fox). *Pseudopoda exigua* was described from border between Yunnan and Sichuan. There is another species, P. marsupia (Wang), which have a wider distribution range (found in Yunnan and Kao Yai National Park). Female specimens are probably not cospecific. They have unusual genitalia. Pseudopoda females have in all cases two lateral lobes which are clearly separated but are absented in these specimens.

Natural history: The spiders were predominantly found on forest floor, a few juveniles were obtained by sweeping the vegetation.

Distribution: Unknown.

***Pseudopoda cf. parvipunctata* Jäger, 2001**

Material examined: 1♀, 1250m, 15.II.2000, SS; 2♀ + egg cocoon, 510m, 29.VII.2000, PT; 1♀, 1000m, 24.VI.2000, BT; 1♀, 1000m, 25.IX.1999, SW; 3j, 510m, 29.I.2000, SS; 1j, 510m, 25.IX.1999, PT; 1j, 510m, 23.X.1999, SW; 4j, 1000m, 27.XI.1999, SS; 1j, 510m, 27.XI.1999, PT; 1j, 510m, 29.VII.2000, SS; 1j, 510m, 29.VII.2000, PT; 2j, 750m, 15.II.2000, SS; 3j, 1250m, 15.XII.1999, SS; 1j, 1000m, 25.IX.1999, SS; 1j, 510m, 25.IX.1999, SS; 1PM, 4j, 1000m, 25.III.2000, SS; 1PM, 2j, 1000m, 26.II.2000, SS; 1j, 510m, 29.IV.2000, PT; 1j, 1000m, 29.IV.2000, PT; 1j, 1000m, 23.X.1999, SS; 1j, 1000m, 26.II.2000, SW; 1j, 510m, 27.XI.1999, SS; 1j, 510m, 26.II.2000, SS; 2j, 1000m, 27.XI.1999; 1j, 1000m, 25.IX.1999, PT; 1j, 510m, 26.II.2000, PT; 1j, 510m, 23.X.1999, SS; 5j, 510m, 25.IX.1999, PT; 1j, 510m, 25.XII.1999, PT; 1j, 1510m, 25.III.2000, BT; 1j, 1000m, 29.I.2000, SS; 5j, 510m, 25.III.2000, SS; 1PM, 2j, 510m, 25.III.2000, SS.

Description:

Female: Carapace and legs mottled with small black spots. Opisthosoma yellowish brown, with dark cardiac area, two pairs of distinct muscle points present.

Epigynum and vulva: Epigyne tear-drop-shaped, sclerotized; coiled ducts visible through integument. Vulva with ½ coil insemination ducts.

Remarks: The spiders are near P. parvipunctata Jäger, but have one more coil in the copulartory ducts. Spider in my collection is probably a new species.

Natural history: Unknown.

Distribution: Unknown.

***Pseudopoda schwendingeri* Jäger, 2001**

Material examined: 3♂, 4♀, 1520m, 15.II.2000, SS; 1♂, 1♀, 1250m, 15.III.2000, SS.

Description

Male: Carapace round with purple pattern. AER strongly recurved. Opisthosoma dark purple with three pairs of pale spots and stripes.

Male palp: Tibial apophysis flat and curved. Embolus flattened and broad. Apex of tegulum with thin membranous conductor, curving downward.

Female: As in male but legs shorter. Opisthosoma round; dorsum purple with two pairs of anterior pale spots and posterior stripes.

Epigynum and vulva: Epigynum with two tear-shaped plates touching each other in median line. Round spermathecae visible.

Remarks: My specimens correspond well with the description and figures illustrated by Jäger (2001)

Natural history: Collected from litter samples in hill evergreen forest.

Distribution: Thailand

Subfamily Sparianthinae

Literature consulted: Deeleman-Reinhold (2001).

Sparianthinae gen. sp.

Material examined: 1j, 1250m, 15.II.2000, SS; 1j, 1750m, 15.II.2000, SS; 1j, 1000m, 25.III.2000, SS; 1j, 1000m, 23.X.1999, SS.

Description:

Coloration and pattern: Prosoma slightly longer than wide, narrowed in front. Carapace yellow, clothed with black hairs; longitudinal dark brown bands running along lateral margins from chelicerae to posterior end of opisthosoma. Eight eyes arranged in two rows; AER straight; PER procurved; eye margins black. Legs long but stout; femur I with three small spines; anterior tibiae dark with four pairs of strong ventral spines; metatarsi I and II with a pair of long spines.

Remarks: An illustration of Seramba sp. from Thailand, illustrated by Deeleman-Reinhold (2001), differs from my specimens in the pattern of dark bands on carapace.

Natural history: All specimens were obtained from leaf litter samples.

Distribution: Unknown.

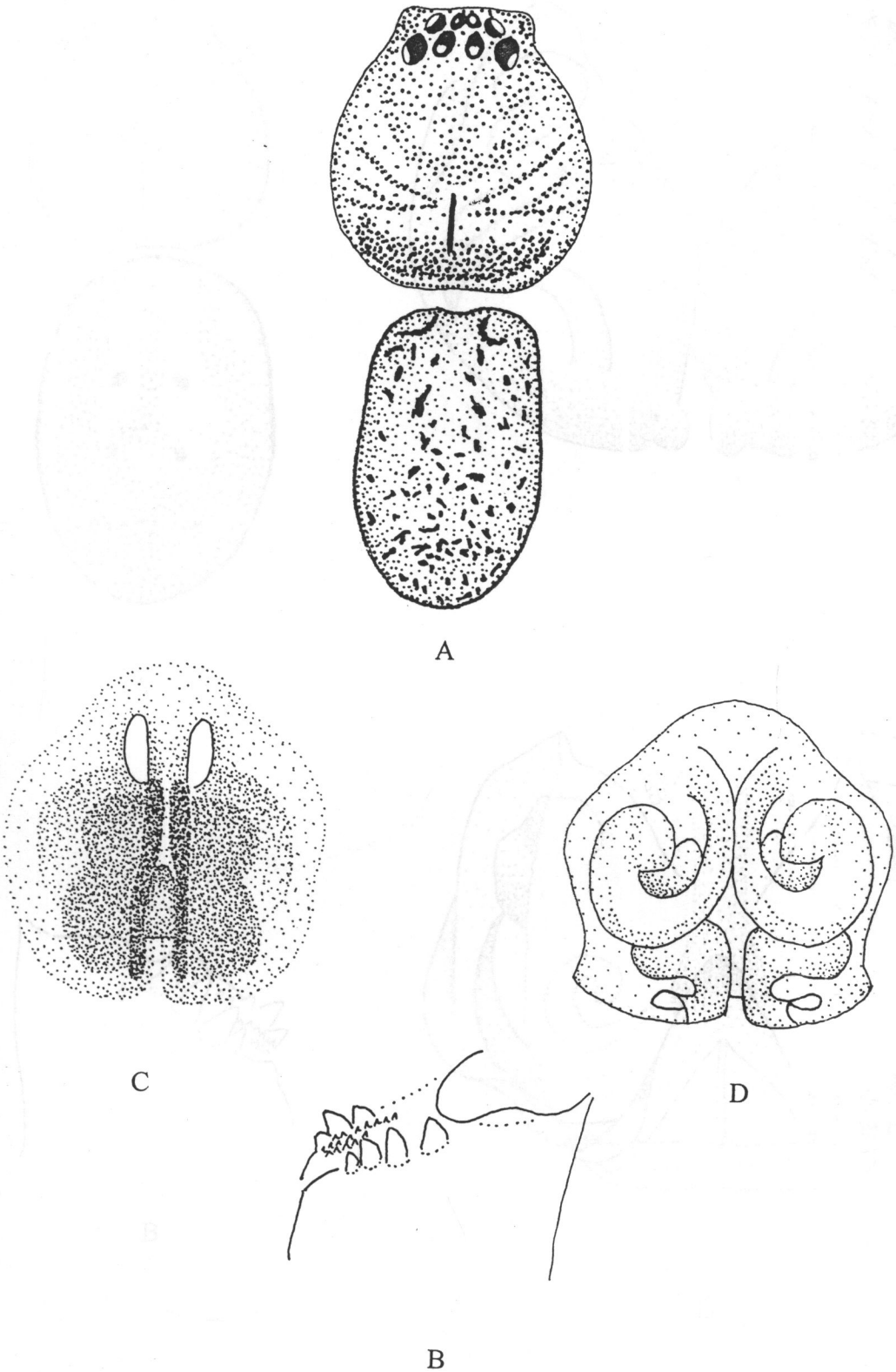
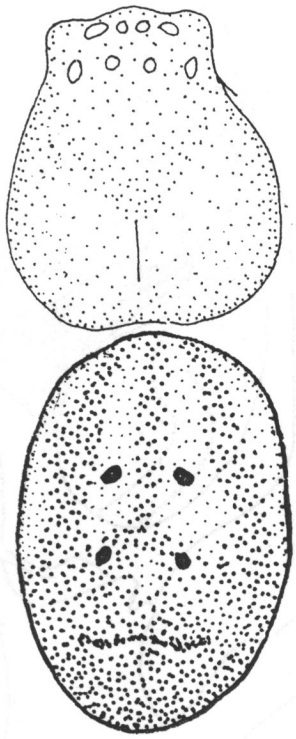
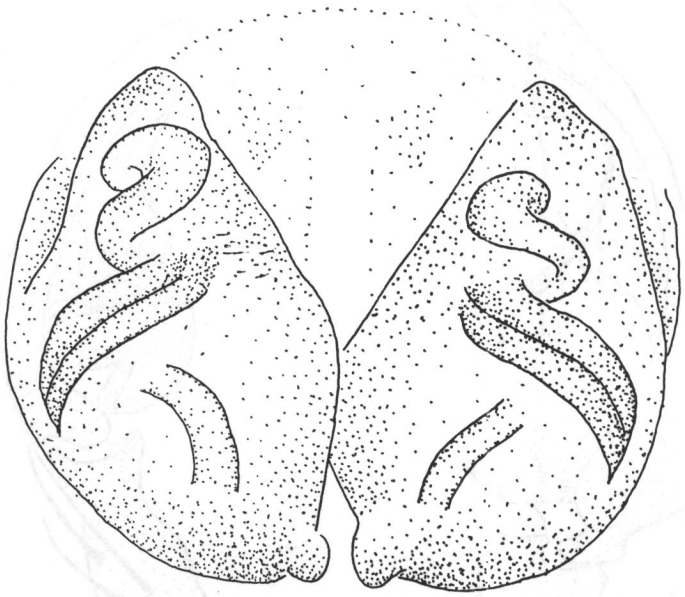


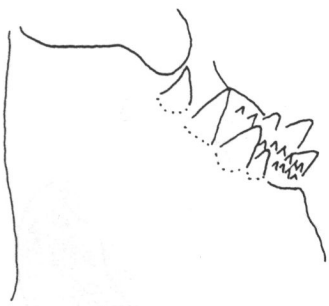
Fig. 183. *Heteropoda* sp. A, habitus of female. B, cheliceral furrow. C, epigyne. D, vulva.



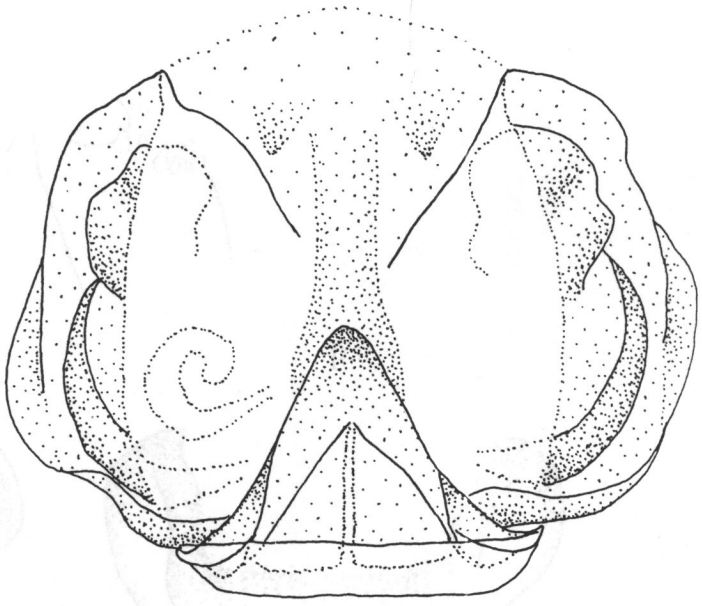
A



C



B



D

Fig. 184. *Pseudopoda cf. parvipunctata*: A, habitus of female. B, cheliceral furrow. C, epigyne. D, vulva.

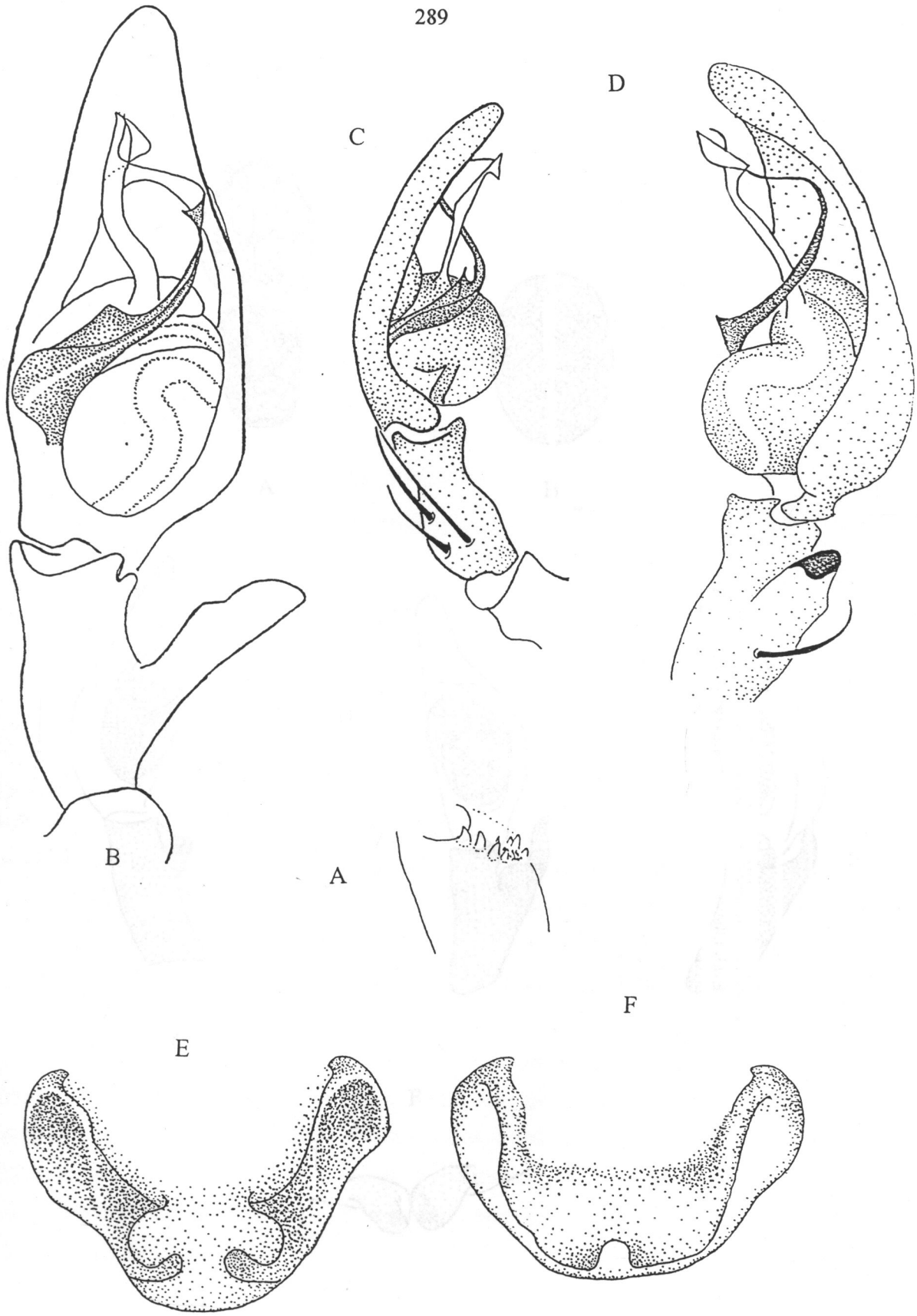
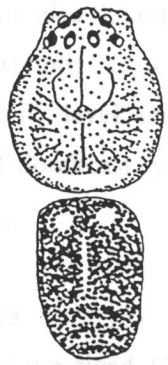
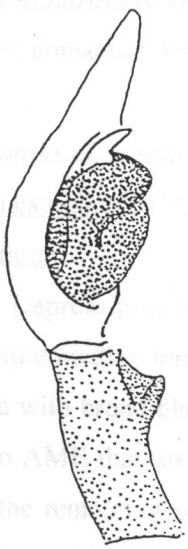


Fig. 185. *Pseudopoda exigua*. A, cheliceral furrow of female. B-D, male palp, different views. E, epigyne. F, vulva.



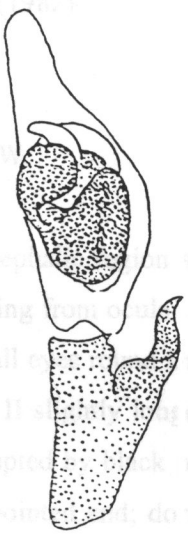
A

B

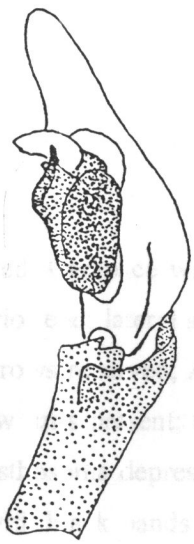


C

D



E



F

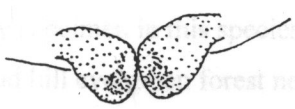


Fig. 186. *Pseudopoda schwendingeri*. A, habitus of male. B, female opisthosoma. C-E, male palp different views. F, female epigyne.

PHILODROMIDAE Thorell, 1870

The Philodromidae is represented by 29 genera and 512 species. Simon (1895a) regarded the philodromids as a subfamily of Thomisidae. Homann (1975) elevated the Philodrominae to family level and considered it as the sister taxon of the Thomisidae. The philodromid fauna of Southeast Asia is not well known. Several species have been studied in India.

Diagnostic characters

Small to medium-sized (3-16 mm), two-clawed, ecribellate, entelegyne, eight-eyed spiders with claw tufts and scopulae; legs laterigrade and slender; chelicerae lack teeth.

Genus *Philodromus* Walckenaer 1825

Literature consulted: Pocock (1900); Tikader (1982)

Philodromus cf. assamensis Tikader

Material examined: 1♀, 2430m, 23.X.1999, SW.

Description:

Female: Depress prosoma as long as wide, cephalic region slightly elevated. Carapace with a broad white median longitudinal band extending from ocular area to posterior end; lateral sides provided with broad black patches. Eight small eyes round and black; eye rows recurved; ALE nearer to AME than to PME. Legs long; leg II slightly longer than I; claw tufts present; tarsi brown, the remaining segments white, interrupted by black patches. Opisthosoma depressed, longer than wide, posterior half broad with pointed end; dorsum white, with black bands and spots.

Epigynum and vulva: Epigynum heart-shaped. Spermathecae with long ducts.

Remarks: The habitus of Philodromus assamensis corresponds well with my specimen. The epigynes slightly differ in the shape of the spermathecae. Poor illustrations provided by Tikader (1982) make it difficult to place my specimen in this species.

Natural history: Found only in cloud hill evergreen forest near the summit of the mountain.

Distribution: Unknown.

Philodromus sp. A

Material examined: 1j, 1510m, 29.IV.2000, BT.

Coloration and pattern: Prosoma flat, slightly wider than long; narrow in front. Carapace yellow, lateral margin painted with purple-black pigmentation. Clypeus narrow, small spines

lined along lateral margins. Eight small eyes with black surroundings; AER strongly recurved; PER slightly recurved; ALE nearer to AME than to PME. Legs with purple markings; relatively long; leg II longest, but only slightly longer than leg I; spines and hairs presented on dorsal side of femora, patellae, tibiae, metatarsi and tarsi of all legs; ventral portion of anterior tibiae and metatarsi provided with conspicuous spines. Opisthosoma broadest in posterior half; clothed with setae; dorsum with pattern.

Remarks: The habitus of my specimen agrees well with illustrations of *P. betrabatai* Tikader provided by Tikader (1982). More material is required for specific placement.

Natural history: Collected by sweeping lower vegetation in hill evergreen forest.

Distribution: Unknown.

***Philodromus* sp. B**

Material examined: 1j, 510m, 25.III.2000, BT; 1j, 510m, 25.III.2000, SS; 1j, 1000m, 29.I.2000, BT.

Description:

Coloration and pattern: Flat spiders. Living specimen light green. Prosoma depressed, slightly wider than long. Carapace pale with white patch on lateral margins. Clypeus very narrow. Eyes black, situated on gray tubercles; both eye rows recurved, short AER slightly recurved, PER strongly recurved. Legs long, leg II longer than leg I; claw tufts present. Opisthosoma white and elongate, narrower than prosoma; subtruncate apex with fine short hairs, tapering at the posterior end; dorsum with small red dots.

Remarks: Description and illustrations of *P. bhagirathai* Tikader given by Tikader (1982) agree well with my specimen.

Natural history: Specimens were obtained by beating low vegetation.

Distribution: Unknown.

Philodromidae gen. sp.

Material examined: 2j, 1510m, 24.VI.2000, BT.

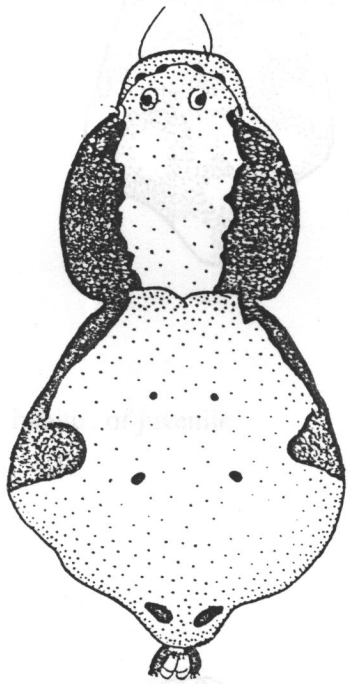
Description:

Coloration and pattern: Prosoma slightly domed, with longitudinal fovea in thoracic region. Carapace yellow, lateral margin lined with dark purple bands. Eight eyes arranged in two rows; AER recurved; PER straight; eye margins black. Legs very long; armed with long spines on tibiae and metatarsi; apical and distal portions of metatarsi with brown bands; two pectinate tarsal claws and claw tufts. Opisthosoma oval; dorsum with two disconnected longitudinal purple bands; lateral sides with small white patches.

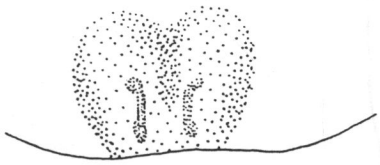
Remarks: The specimens look very similar to members of the Sparassidae but I decided to place them under the Philodromidae because they lack a trilobite membrane and have no scopulae on metatarsi and tarsi.

Natural history: Unknown.

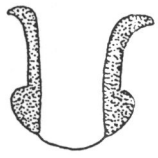
Distribution: Unknown.



A



B



C

Fig. 187. *Philodromus cf. assamensis*. A, habitus of female. B, epigyne. C, vulva

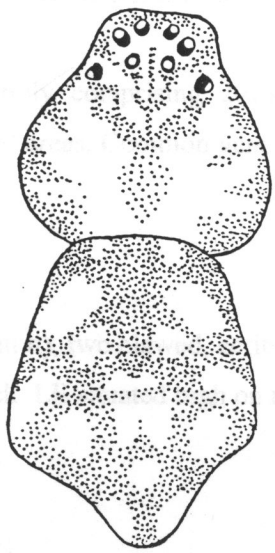


Fig. 188. *Philodromus* sp. A: habitus of juvenile.

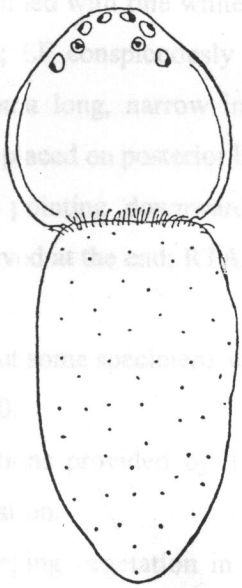


Fig. 189. *Philodromus* sp. B: habitus of juvenile.

THOMISIDAE Sundevall, 1833

Thomisidae is a large family comprising 2015 species in 165 genera, distributed worldwide in temperate and tropical areas. Common genera are: *Thomisus*, *Misumena*, *Xysticus* and *Synema*.

Diagnostic characters

Small to large-sized (3-32 mm), two clawed, ecribellate, entelegyne, eight-eyed spiders; legs I and II usually long; eyes black; LE situated high on tubercles.

Gen. *Amyciaea* Simon, 1885

Literature consulted: Tikader (1982)

Amyciaea lineatipes O. Pickard-Cambridge, 1901

Material examined: 1♂, 510m, 25.IX.1999, SW; 1♂, 1000m, 26.II.2000, SW; 1♀, 510m, 27.XI.1999, BT; 1♀, 510m, 24.VI.2000, SW; 1♂, 1♀, 510m, 24.VI.2000, SW; 1♂, 1000m, 26.II.2000, SW; 1♂, 1♀, 3j, 510m, 29.VII.2000, SW; 1j, 510m, 25.XII.1999, SW.

Description:

Male: Ant mimic spider. Prosoma with high cephalic region sloping backwards to thoracic region. Carapace orange-brown, clothed with fine white hairs. Eight round eyes; AER recurved; PER strongly recurved; ME small; LE conspicuously large, situated on tubercles. Fovea and cervical groove absent. Opisthosoma long, narrow in front; dorsum with white and brown pattern; a pair of black round spots placed on posterior lateral sides.

Male palp: Cymbium with spur pointing downwards. Ventral and retrolateral apophyses present; VTA long and slender, curved at the end; RTA thin and short. Bulbus simple. Embolus filiform, winding around tegulum.

Female: Female resembling male but some specimens with less decorated opisthosoma.

Epigynum and vulva: As in Fig. 190.

Remarks: Description and illustrations provided by Tikader (1982) and Song, Zhu & Chen (1999) are the basis of my identification.

Natural history: Collected by sweeping vegetation in mixed deciduous and dipterocarp with pine forest.

Distribution: India, China to Malaysia.

Gen. *Camaricus* Thorell, 1887

Literature consulted: Tikader (1982).

***Camaricus cf. khandalaensis* Tikader**

Material examined: 1j, 1000m, 26.II.2000, SW.

Description:

Coloration and pattern: Prosoma as wide as long; cephalic region raised, sloping posteriorly. Carapace brown, with long setae in thoracic area. Eight eyes in two rows; both rows recurved, situated on blackish tubercles. Clypeus high, margin provided with hairs. Opisthosoma globular, tapering posteriorly; dorsum black, decorated with white oblong bands on each lateral side; median dorsal portion provided with four strongly sclerotized, spherical spots. Legs short; all segments chocolate-brown, except pale green femora of posterior legs.

Remarks: Females of *Camaricus cf. khandalaensis* were collected from Doi Suthep-Pui National Park. The general habitus of those specimens corresponds with that of the juvenile spider collected from Doi Inthanon.

Natural history: A single specimen was collected by sweeping vegetations in dipterocarp with pine forest.

Distribution: India, Thailand.

Gen. *Diaea* Thorell, 1869

Literature consulted: Benjamin (1999); Tikader (1982).

***Diaea* sp.**

Material examined: 1j, 510m, 24.VI.2000, SW.

Coloration and pattern: Prosoma broadly oval, armed with a numbers of long spines. Carapace yellow, without pattern; narrowed in front. Eight black eyes arranged in two recurved rows; AER shorter than PER. Legs spinous. Round opisthosoma clothed with setae; dorsum pale yellow, irregular white pattern present.

Remarks: *Diaea* can be distinguished from other members of the Thomisidae by carapace and opisthosoma being armed with numerous long setae. This genus has been recorded from all parts of the world.

Natural history: Collected by sweeping low vegetation in dry deciduous forest.

Distribution: Unknown.

Gen. *Lysiteles* Simon, 1895

Literature consulted: Benjamin (1999); Song, Zhu & Chen (1999); Tikader (1982).

***Lysiteles cf. kunmingensis* Song & Zhao**

Material examined: 1♀, 1510m, 27.XI.1999, BT; 1j, 2010m, 29.VII.2000, SW; 1♀, 1510m, 27.XI.1999, BT; 1j, 2430m, 27.XI.1999, SW; 3j, 1510m, 26.II.2000, SW; 1♂, 1510m, 25.IX.1999, SW; 1♀, 2j, 1510m, 29.I.2000, SW; 1♀, 1510m, 27.XI.1999, BT; 1j, 1510m,23.X.1999, SW; 3♂, 1510m, 29.IV.2000, SW; 1j, 2090m, 25.XII.1999, SW; 1♀, 2j, 1510m, 27.XI.1999, SW; 1♀, 2j, 1510m, 23.X.1999, SW; 1♀, 1510m, 27.XI.1999, BT; 1♂, 1j, 1510m, 25.III.2000, SW; 1♂, 1510m, 25.IX.1999, SW; 1j, 2090m, 29.I.2000, SW; 1♂, 2090m, 25.III.2000, SW; 1♂, 1♀, 1510m, 24.VI.2000, SW; 2♂, 1♀, 1510m, 29.VII.2000, SW.

Description:

Male: Living specimen greenish in color. Convex prosoma nearly as long as wide, broad in front, clothed with long setae. Carapace orange-brown, with lateral greenish brown bands extending from PLE to the base of carapace. Eight black eyes; both eye rows recurved; ALE and PLE larger than ME, situated on high tubercles; PER wider behind than AER. Clypeus high, with four spines directed forward a median one in between them directed upwards. Opisthosoma nearly oval, widest behind the middle; clothed with setae; dorsum provided with pairs of black patches. Legs long, with few spines.

Male palp: RTA well developed. VTA small. ITA absent. Bulbus ovoid. TA at the base of spermophore, triangular, heavily sclerotized. Embolus short, apical end diverging from tegulum.

Female: Female resembling male but smaller in size. Legs shorter. Opisthosoma provided with more white spots.

Epigynum: Copulatory openings overlaid with transverse hood.

Remarks: The male palp of this species corresponds with *L. kunmingensis* from Yunnan but differs in shapes of embolic tip and tibial apophysis. The epigyne of *Lysiteles* is provided with s transverse ridge, the vulva with two slightly separated spermathecae.

Natural history: The spiders were collected by sweeping and beating bushes in forest at high elevationa.

Distribution: China, Thailand.

***Lysiteles cf. mandali* Tikader**

Material examined: 1j, 1000m, 26.II.2000, SS; 1j, 1750m, 15.III.2000, SS; 2j, 1510m, 27.XI.1999, SW.

Description:

Coloration and pattern: Prosoma nearly as long as wide. Carapace provided with two longitudinal brown bands extending from the base of PLE to thoracic region. Eyes round, with black ring; LE situated on low tubercles. Legs long, anteriors armed with spines. Opisthosoma

oval, covered with hairs and spines, broadest just behind the middle; dorsum decorated with longitudinal brownish black bands running to posterior end .

Remarks: The habitus of this species resembles that of *Xysticus mandali* Tikader from India, which was transferred to *Lysiteles* by Ono in 1979. It should be noted that several species originally described under *Xysticus* were transferred to other genera. My specimens agree well with the description provided by Tikader (1982).

Natural history: Most of the specimens were collected from leaf litter samples.

Distribution: India, China and Thailand.

Gen. *Misumenops* F. O. Pickard-Cambridge, 1900

Literature consulted: Benjamin (1999)

Misumenops cf. tricuspidatus

Material examined: 1♂, 510m, 25.III.2000, PT; 1♀, 2430m, 29.I.2000, SS; 8j, 1PM; 510m, 23.X.1999, SS; 28j, 510m, 29.VII.200, SS; 1♀, 510m, 29.VII.2000, SS; 5♀, 11j, 510m, 24.VI.2000, SS; 1PM, 1j, 510m, 26.II.2000, PT; 2j, 510m, 25.IX.1999, SS; 1PM, 4j, 510m, 26.II.2000, SS; 1♀, 510m, 27.V.2000, SS; 1♀, 510m, 29.IV.2000, SS; 1PM, 3j, 510m, 25.III.2000, SS.

Description:

Male: Spider with brown pattern. Prosoma flat, as long as wide. Carapace brown, armed with short setae on cephalic region. Eight eyes with strongly recurved PER; PME almost on the same level as AER; LE on tubercles. Anterior legs large. Opisthosoma elongate and spinous; dorsum brown with scattered pale spots.

Male palp: VTA well developed, RTA large, with pointed apical tooth. Bulbus ovoid. Embolus thin, winding around the tegulum.

Female: Female resembling male but larger in size. Setae on carapace more obvious. Legs strong and stout; ventral sides of anterior tibiae and metatarsi with four and three pairs of strong spines, respectively. Opisthosoma with different pattern than in male, decorated with black and dark brown patches.

Epigynum and vulva: As in Fig. 195.

Remarks: The male palpal organ is very close to that of *M. tricuspidatus,* a species distributed through out the Palearctic. However, there is some difference in the shape of the tibial apophysis.

Natural history: All specimens were obtained by leaf litter sifting and pitfall trapping, which indicates that they are ground living spiders. Their brown color and dorsoventally flattened body provide camouflage.

Distribution: Palearctic, Thailand.

***Misumenops* sp.**

Material examined: 11j, 510m, 27.XI.1999, BT; 3j, 510m, 25.IX.1999, VS; 2j, 510m, 28.VIII.1999, VS; 2j, 510m, 23.X.1999, VS; 5j, 510m, 25.XII.1999, VS.

Description:

Coloration and pattern: Prosoma flat, as long as wide. Carapace brown, clothed with few short, blunt setae on cephalic area. Eight eyes in two rows; AER slightly recurved; PER strongly recurved; LE touching, situated on low tubercles. Opisthosoma round, without setae; dorsum with pale spots and bands on greenish brown background. Legs I and II strong, much longer than legs III and IV, deep brown in color; rows of strong spines ventrally located on femora, tibiae and metatarsi of anterior legs; posterior legs pale yellow, without conspicuous spines.

Remarks: These spiders are placed under *Misumenops* due to large prominent spines on anterior femur and tibia, carapace and opisthosoma provided with numerous setae.

Natural history: Spiders live inside bamboo leave sheets in mixed deciduous dipterocarp forest.

Distribution: Unknown.

Genus *Sanmenia* Song & Kim, 1992

Literature consulted: Ono (1995).

***Sanmenia* sp.**

Material examined: 1♂, 510m, 29.IV.2000, SW; 1♂, 510m, 27.V.2000, PT; 1♀, 510m, 27.V.2000, SS; 6j, 510m, 29.I.2000, SS; 3j, 510m, 26.II.2000, SS.

Description:

Male: Prosoma slightly wider than long. Carapace yellow, with a row of setae only on clypeal margin. Eight eyes arranged in two rows; both rows recurved; AME small; LE on tubercles. Legs long and armed with strong spines; leg II longest, slightly longer than leg I; two pectinate tarsal claw and claw tufts present. Opisthosoma longer than wide, covered with setae; overlapping posterior region of prosoma.

Male palp: Tibia with long digitiform ventral apophysis. RTA absent, replaced by thick spine. Bulbus longer than wide. Conductor large,. Embolus long, spiniform.

Female: As in male but bigger in size.

Epigynum and vulva: Copulatory openings situated in anterior portion. Internal apparatus through the integument. Spermathecae round.

Remarks: The male genital organ is similar to that of *S. kohi* Ono from Singapore but differs by a missing TA. The spermathecae shape also differs from that of *S. kohi* and of *S. zhengi* Ono &

Song from China. *Sanmenia* is represented by two species described from China and Singapore. It is possible that there are several species in our region awaiting for description.

Natural history: Ground-dwelling spider. Most specimens were obtained from leaf litter samples. Males were collected by sweeping lower vegetation and pitfall trapping.

Distribution: Unknown.

Gen. *Strigoplus* Simon, 1885

Literature consulted: Tikader (1982).

***Strigoplus* sp.**

Material examined: 1j, 510m, 27.XI.1999, SW.

Description:

Coloration and pattern: Prosoma slightly wider than long; clothed with setae. Clypeus broad and projecting; middle of the front margin concave, provided with a row of short and small spines. Eyes round, AER strongly recurved; PER slightly recurved; LE on conspicuous tubercles; middle of MOQ also provided with small setae; very long setae situated near PME. Legs with conspicuous dull-white patches. Opisthosoma broadest behind the middle, covered with long setae; dorsum brown, decorated with three transverse white bands and dark brown pattern.

Remarks: The wide projecting clypeus provided with a procurved row of short strong spines distinguishes *Strigoplus* from other genera of Thomisidae. The genus was recorded from Africa, Central Asia to Southeast Asia.

Natural history: Unknown. Only single specimen was collected from dry dipterocarp forest.

Distribution: Unknown.

Gen. *Tmarus* Simon, 1875

Literature consulted: Barrion & Litsinger (1995); Benjamin (1999); Tikader (1982).

***Tmarus* sp.**

Material examined: 1j, 1510m, 25.XII.1999, BT; 1j, 510m, 25.XII.1999, SW; 1j, 510m, 25.III.2000, BT.

Description:

Coloration and pattern: Prosoma longer than wide. Carapace reddish brown, slightly convex, covered with long setae. Clypeus strongly sloping; margin with row of spines directed forward but the middle one directed upward. Eyes on tubercles; both rows recurved; LE larger than ME; PER longer than AER. Legs I and II much longer than III and IV, clothed with hairs and spines. Opisthosoma elongate; mottled with yellow, white and red spots.

Remarks: This coloration of the spiders examined are very similar to that of *Monaeses* but they differ from the latter by a convex carapace with projecting clypeus, opisthosoma truncate and high, sloping upward toward the posterior end. *Tmarus* is a tropical genus of Thomisidae occurring mainly in South America, with few species in Australia and particularly small numbers from Southeast Asia.

Natural history: The specimens were obtained by beating and sweeping bushes.

Distribution: Unknown.

Gen. *Xysticus* C. L. Koch, 1835

Literature consulted: Tikader (1982)

***Xysticus* sp.**

Material examined: 1♀, 1510m, 27.XI.1999, BT; 1j, 1510m, 25.III.2000, BT.

Description:

Female: Prosoma nearly as long as wide. Carapace covered with long setae, provided with longitudinal brown bands running behind PLE to thoracic area. Clypeus high; margin lined with four outward projecting setae and a middle upward projecting one. Eight eyes on tubercles; eye rows recurved. Opisthosoma ovate, longer than wide, narrowing posteriorly; dorsum with two longitudinal black markings, followed by one incomplete transverse band. Legs slender and spinous.

Epigynum and vulva: Epigynum sclerotized. Two copulatory openings situated anteriorly. Strongly sclerotized ducts ending with globular spermathecae.

Remarks: Murphy & Murphy (2000) believed that *Xysticus* is restricted to haloarctic region with few species described from mountainous areas of Southeast Asia. The habitus of my specimen resembles those of other members of the genus. Unfortunately, only a single female was obtained; more male specimens may possibly confirm my generic placement. *Xysticus* is a large genus of Thomisidae, occurring in North America, Eurasia and North Africa.

Natural history: Collected only by beating bushes.

Distribution: Unknown.

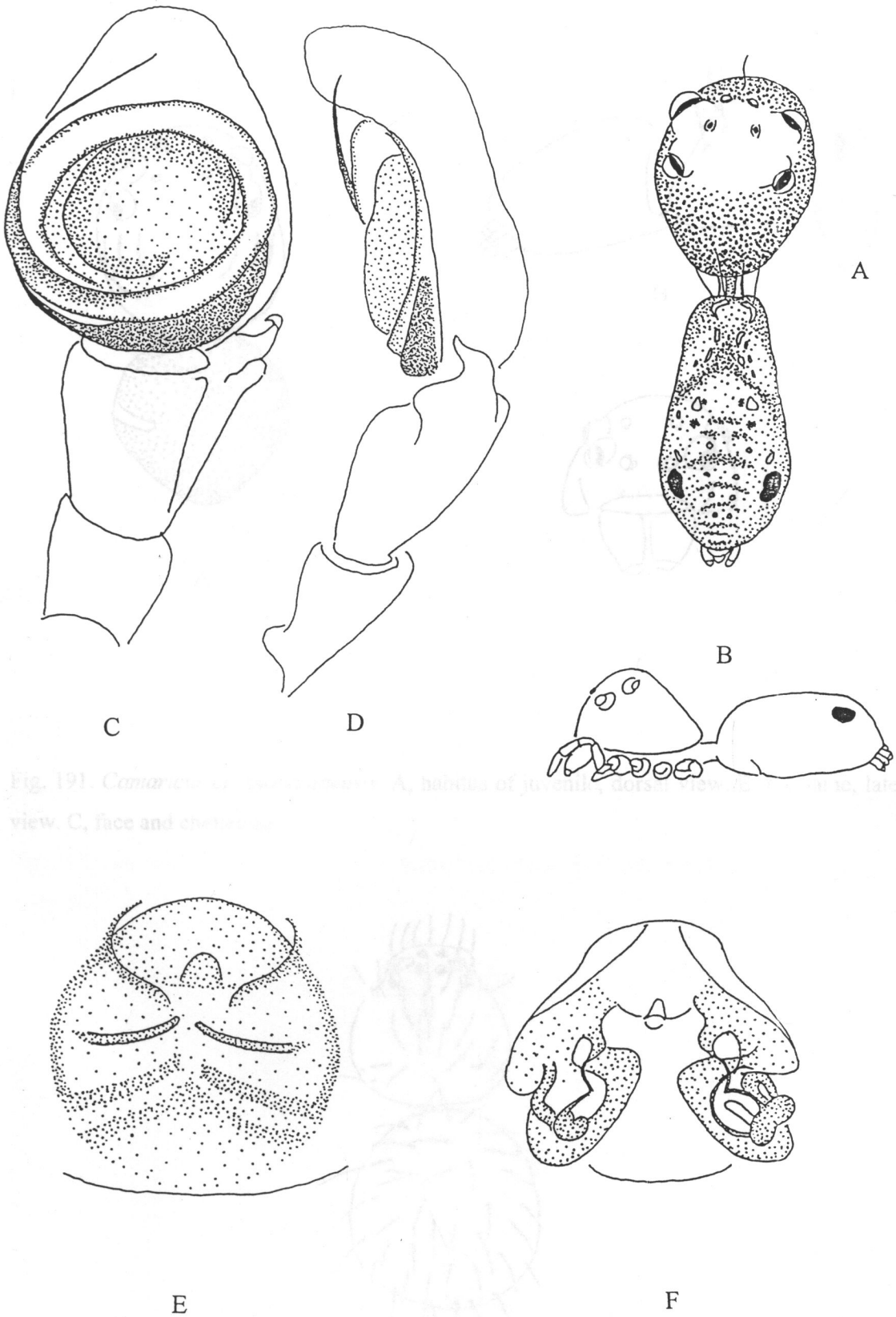


Fig. 190. *Amyciaea lineatipes*. A, habitus of male, dorsal view. B, the same, lateral view. C, D, male palp, different views. E, epigyne. F, vulva.

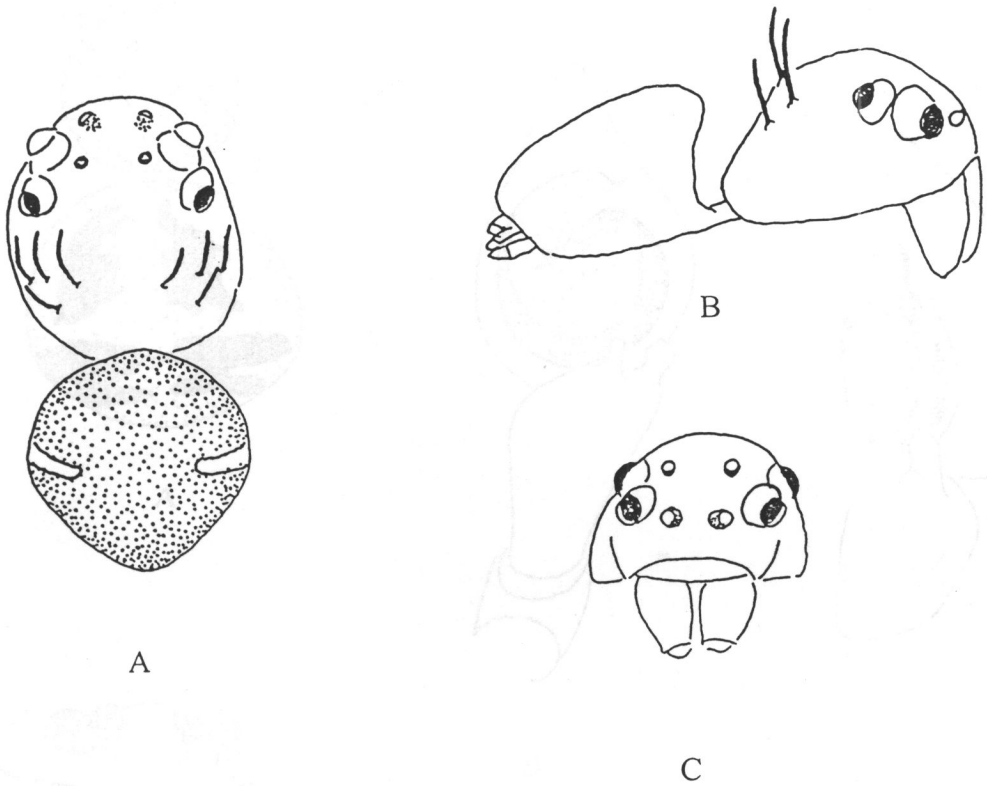


Fig. 191. *Camaricus cf. khandalaensis*. A, habitus of juvenile, dorsal view. B, the same, lateral view. C, face and chelicerae.

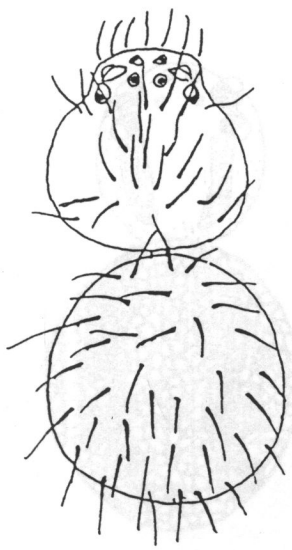


Fig. 192. *Diaea* sp.: habitus of juvenile.

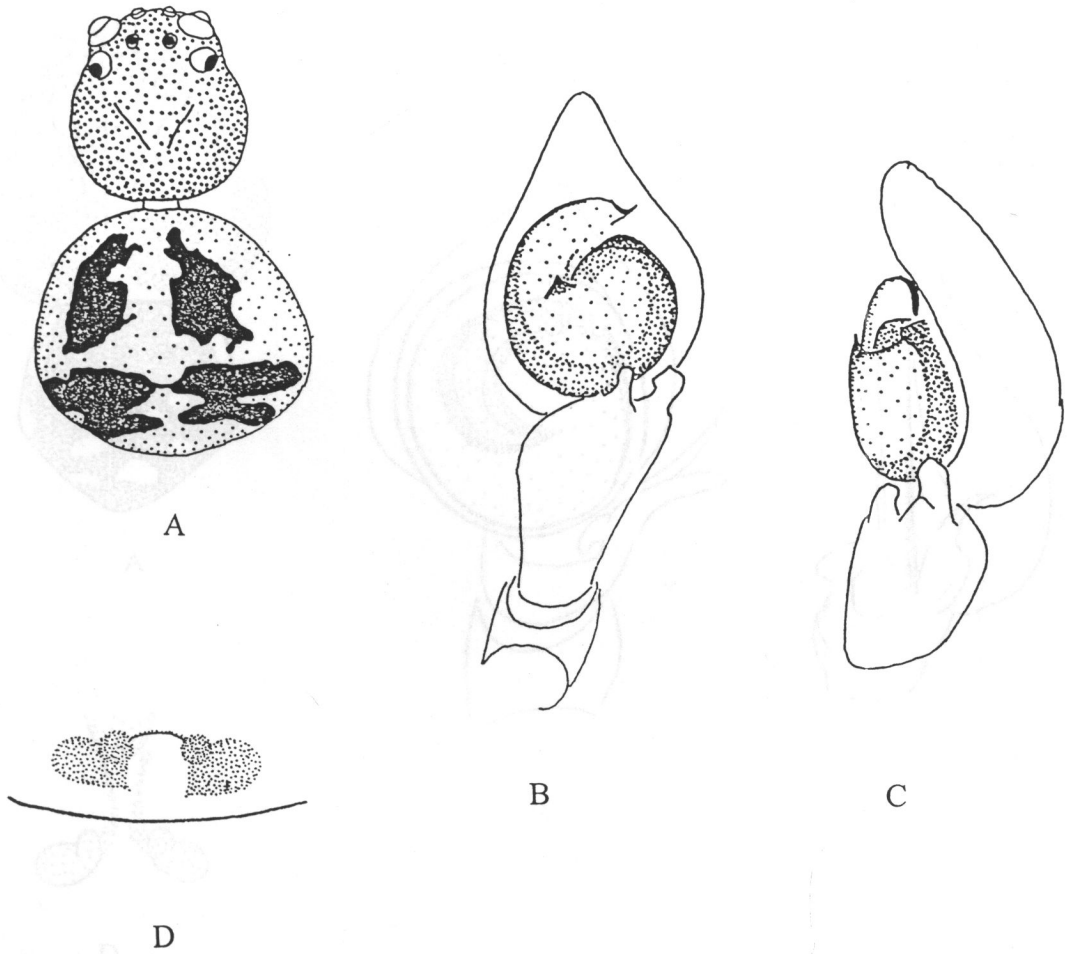


Fig. 193. *Lysiteles cf. kunmingensis*. A, habitus of male. B, C, male palp, different views. D, epigyne.

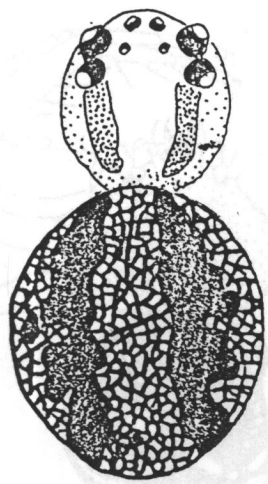


Fig. 194. *Lysiteles cf. mandali*: habitus of juvenile.

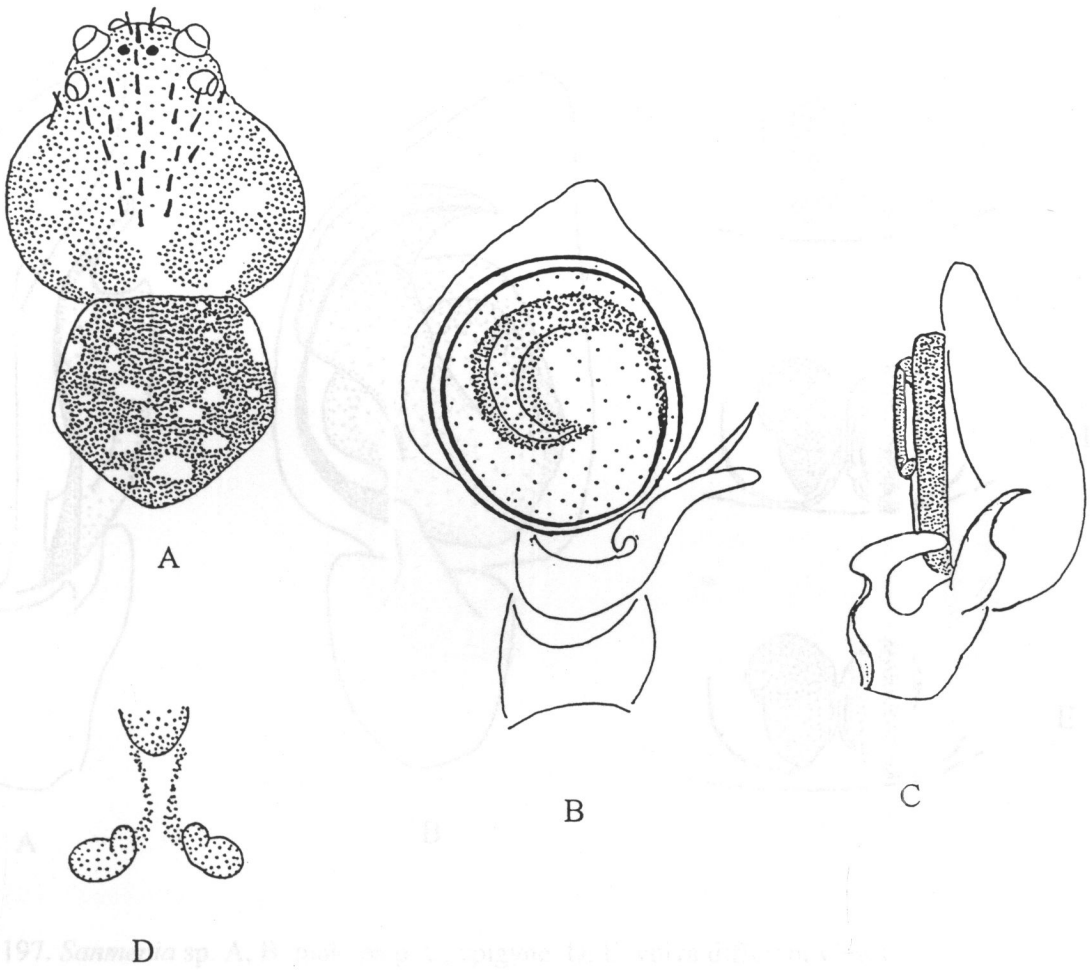


Fig. 195. *Misumenops cf. tricuspidatus*. A, habitus of male. B, C, male palp different views. D, epigyne.

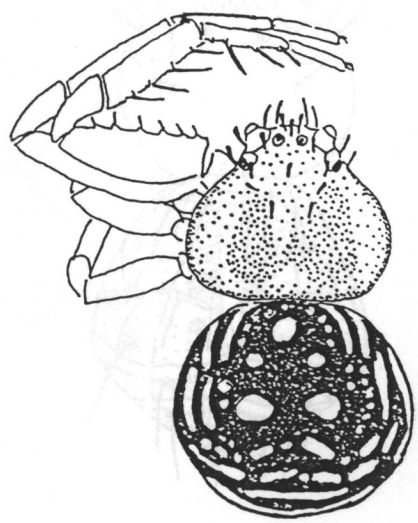


Fig. 196. *Misumenops* sp.: habitus of juvenile.

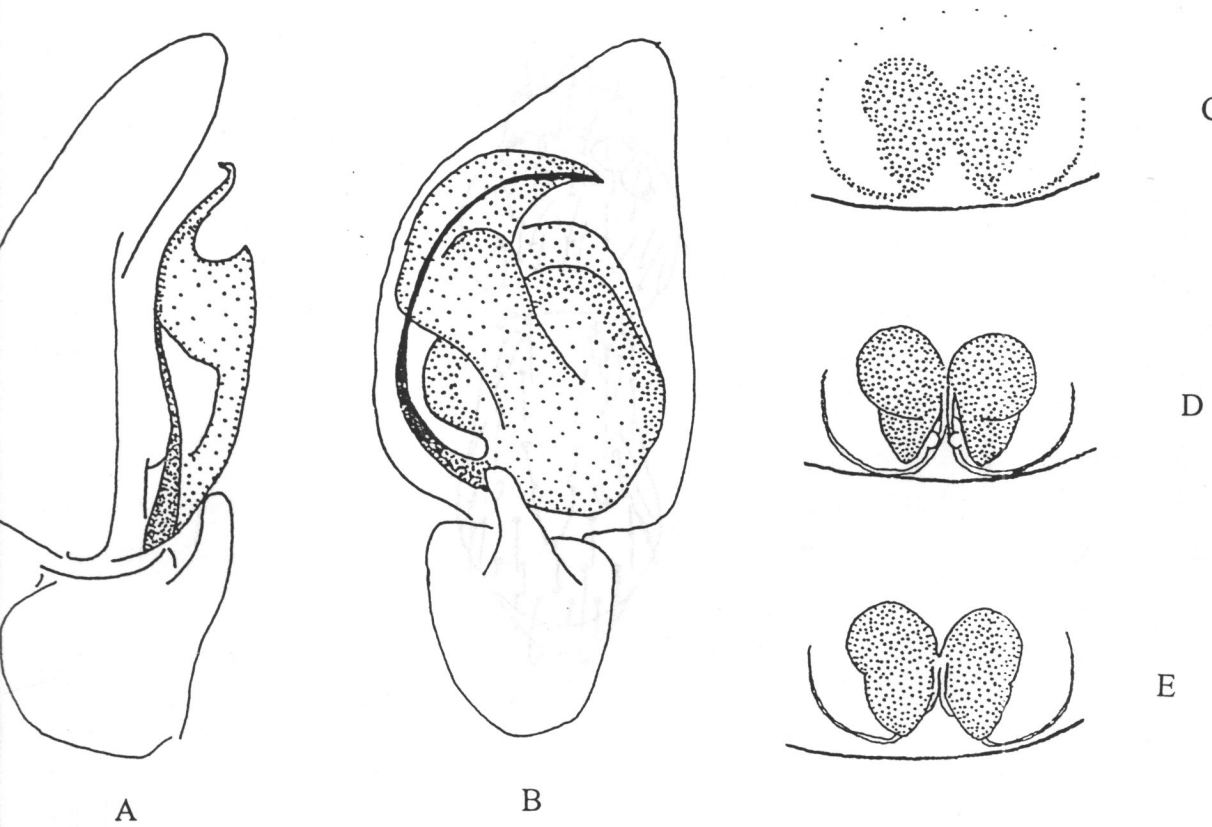


Fig. 197. *Sanmenia* sp. A, B, male palp. C, epigyne. D, E, vulva different views.

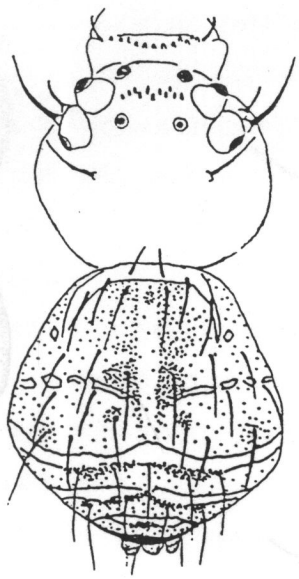
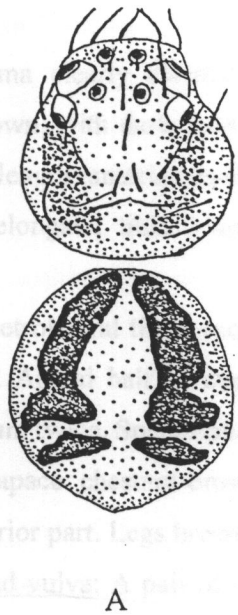
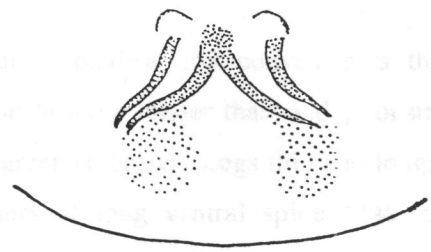


Fig. 198. *Strigoplus* sp.: habitus of juvenile.

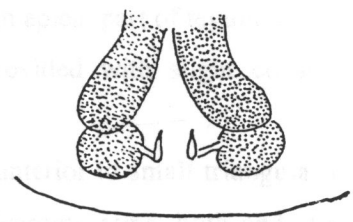
Fig. 199. *Tmarus* sp.: habitus of juvenile.



A



B



C

Fig. 200. *Xysticus* sp. A, habitus of female. B, epigyne. C, vulva.

SALTICIDAE Blackwall, 1841

A large number of spiders (4834 species in 531 genera) belongs to a single family, the Salticidae. Common in almost every type of habitat, they are most abundant in the tropics and become scarce towards the Poles. Although jumping spiders are familiar to people, they are poorly known and many taxa are yet to be described.

Diagnostic characters

Very small to medium-sized (2-17 mm), two-clawed, ecribellate, eight-eyed spiders distinguished by square-fronted carapace with eight eyes in three rows (4-2-2); AME enlarged, ALE on the same level with AME; PME smallest, located behind ALE; PLE forming a third row further back.

Gen. *Belippo* Simon, 1910

Literature consulted: Prószynski (2001); Wanless (1978a).

***Belippo* sp.**

Material examined: 1♂, 4; 1♀, 750m, 15.V.2000, SS; 1♀, 1000m, 26.II.2000, PT; 1♀, 1000m, 29.VII.2000, PT; 1♀, 510m, 29.VII.2000, SW; 1j, 510m, 24.VI.2000, BT; 1j, 1000m, 23.X.1999, SW; 1j, 510m, 28.VIII.1999, SW; 2j, 1000m, 25.IX.1999, SW.

Description:

Male: Prosoma clearly divided into flattened, pars cephalica and convex pars thoracica. Carapace brown, with dark brown eye margins. Opisthosoma longer than wide, constricted at about 2/3 of length; anterior portion rising; dorsum greenish brown. Legs thin and long; patella and tibia I elongate; tibia I armed with eight pairs of long ventral spines, two pairs on metatarsus.

Male palp: Retrolateral tibial apophysis forming a spiral directed upwards (bent and hooked in dorsal view). Apical half of cymbium obliquely truncate. Embolus long and spiral, looping around tegulum twice. Spermophore circular, visible in apical part of tegulum.

Female: Carapace chestnut-brown. Opisthosoma provided with slight constriction, without elevated anterior part. Legs brown in color.

Epigynum and vulva: A pair of white circular rings anterior to small triangular opening above epigastric furrow. Internal structures simple, with diverging arms; both ends forming swollen spermathecae; anterior pairs larger, with transverse accessory glands.

Remarks: Four of seven *Belippo* species were transferred from *Myrmarachne*. Wanless (1978a) gives excellent separation between *Belippo* and *Myrmarachne* from the Ethiopian region.

Although all members of *Belippo* were described from Africa, one undescribed species was collected from Bali by Deeleman-Reinhold (Prószynski, 2001). The male palpal structure of this species agrees well with my specimen. The female genital organ can be distinguished from that of *Myrmarachne* in having spherical spermathecae instead of spiral ones. However, the female genitalia of *M. jajpurensis* Prószyn'ski and of several species of *Myrmarachne* from South America are very close to my specimens in having spermathecae without coiled ducts. It is possible that several species described under *Myrmarachne* actually belong to *Belippo*.

Natural history: The spiders were collected from mixed deciduous dipterocarp and dipterocarp with pine forests (510-1000 m).

Distribution: Unknown.

Gen. *Chalcoscirtus* Bertkau, 1880

Literature consulted: Prószynski (2001).

***Chalcoscirtus* sp.**

Material examined: 1♂, 2090m, 24.VI.2000, PT; 1♂, 2090m, 29.IV.2000, PT; 1♂, 2090m, 25.III.2000, SW; 1♀, 2250m, 15.I.2000, SS; 1♀, 3j, 1510m, 26.II.2000, SS; 1j, 1510m, 25.III.2000, BT; 1♂, 1510m, 25.III.2000, BT.

Description:

Male: Prosoma dark brown, with yellow median band running longitudinally from cephalic area to thoracic area. Opisthosoma with brown pattern. Anterior legs longer and darker than posterior ones.

Male palp: As in Fig.202.

Female: Female resembling male but less colorful, uniformly light brown.

Epigynum and vulva: As in Fig.202.

Remarks: I considered these spiders as members of *Chalcotropis* due to large contiguous spermathecae and short vuval ducts in the female and a short and somewhat truncate retrolateral tibial apophysis in the male. Nine species of *Chalcoscirtus* occur in the Philippines and on Java. *C. pennata* was reported from mainland India. For more Remarks of *Chalcotropis* see *Euophrys*.

Natural history: Most specimens were collected from hill evergreen forest at high elevations.

Distribution: Unknown.

Gen. *Heliceroides* Zabka, 1985

Literature consulted: Song, Zhu and Chen (1999), Zabka (1985).

***Cheliceroides* sp.**

Material examined: 1♂, 2250m, 15.III.2000, SS; 1j, 1510m, 29.I.2000, SW; 1j, 2090m, 25.III.2000, SW; 1j, 2090m, 23.X.1999, SW; 1j, 1510m, 27.XI.1999, SW.

Description:

Male: Prosoma brown, slightly longer than wide; posterior end steep, with two patches of fine white hairs. Eye field chestnut-brown. Opisthosoma elongate oval, rounded in front; dorsum pale with black pattern. Legs spiny, with leg I longer and more robust than others; leg I brown, remaining legs yellow with brown band.

Male palp: Cymbium pale yellow, covered with fine hairs. Tegulum yellow-brown, with a small tubercle. Spermophore brown, S-shaped. Embolus very long, looping around tegulum then turning distad. TA long and slender, with pointed end.

Remarks: *Cheliceroides* was estrablished by Zabka (1985) for a single male from Vietnam. Later, *C. longipalpis* Zabka was reported from southern China. The very long embolus and S-shaped spermophore are the basis of my generic placement. As the generic name implies, the chelicerae are long and have an odd outgrowth. However, a single male specimen in my collection shows normal chelicerae without modifications. The illustrations of the holotype palpus given by Zabka (1985) are comparable to my specimen, with differences only in a somewhat higher tegular surface. In this genus only single species, *C. longipalpis*, was reported from China and Vietnam.

Natural history: The male was collected from a soil sample at the elevation of 2250m above sea level.

Distribution: Unknown.

Gen. *Cyrbra* Simon, 1876

Literature consulted: Davies & Zabka (1989); Wanless (1984).

***Cyrbra ocellata* Kroneberg, 1875**

Material examined: 1♀, 510m, 29.I.2000, SS; 1♀, 1000m, 24.VI.2000, BT.

Description:

Female: Prosoma longer than wide; pars cephalica rising gradually. Thoracic fovea long. Opisthosoma elongate oval; dorsum mottled with dark spots. Legs long and slender, with strong spines; tibiae with patch of long gray hairs.

Epigynum and vulva: Epigyne with notched posterior margin. Vulva with two large spherical spermathecae posteriorly. Anterior insemination ducts thick and curving downwards.

Remarks: My specimens correspond with drawings provided by Wesolowska (1996). Two different opisthosomal patterns were shown by Wanless (1984) and Davies & Zabka (1989).

Surprisingly both patterns fit with my specimens; the smaller female is similar to the Australian species, whereas the bigger one resembles the drawing of a specimen from Sri Lanka (Wanless, 1984). Illustrations and description in Wanless (1984) are the basis of my specific placement.
Natural history: Two female were collected from deciduous and dipterocarp with pine forests.
Distribution: *C. ocellata* has a wide distribution range, running from Somalia through Central Asia and down to Australia.

Gen. *Epeus* Peckham & Peckham, 1886

Literature consulted: Prószynski (2001); Zabka (1985)

***Epeus alboguttatus* Thorell, 1887**

Material examined: 1♂, 1000m, 25.III.2000, SS.

Description:

Male: Round prosoma covered with white hairs on steep lateral sides. Carapace brown, with crescent band of yellow in-between cephalic and thoracic areas. Eye surroundings black. Opisthosoma oval, small when comparing to prosoma; dorsum provided with sparse setae and black pattern. Legs rather long but thick; anterior legs robust; leg I strongest with ventral tufts of black hairs on swollen femur.

Male palp: Tibial apophysis cone-shaped. Tegulum provided with proximal projection. Spermophore large, indistinct. Embolus very thin and long.

Remarks: Illustrations of the male palp given by Zabka (1985) correspond well with my specimen. The male palpal organ of *Epeus* is very similar to that of *Viciria* but distinguished by the posterior lobe of tegulum; the latter genus is recognizable by an elongate opisthosoma. The absence of long hairs on carapace and the short opisthosoma makes my placement, even generic level, uncertain. This male also corresponds with those of *Yaginumaella*, but the male palpal organ of *Yaginumaella* is provided with a strong embolic base, which is small and thin in my specimen. Therefore this spider could possibly belong to *Yaginumaella*. *Epeus* is a small Oriental genus of Salticidae containing only 10 species.

Natural history: Collected from leaf litter samples from dipterocarp with pine forest.

Distribution: *E. alboguttatus* has previously been reported from China, Burma and Vietnam.

***Epeus* sp. A**

Material examined: 1♀, 510m, 24.VI.2000, BT.

Description;

Female: Living spider green in color, whereas preserved specimen white with light greenish yellow residual. Prosoma broad and flat, slightly longer than wide. Pars cephalica covered with

fine hairs, arched pars thoracica sloping steadily. Black eye surroundings. Long and tubular opisthosoma with two fragmented, longitudinal white bands. Legs long and slender; metatarsi and tarsi of front legs armed with long ventral spines.

Epigynum: Epigyne with long translucent canals and series of loops as in Fig. 206.

Remarks: the female genital organ of *E. albus* from India resembles that of my specimen. More specimens of this species need to be studied for a clear specific placement. *Epeus* is represented by ten species occurring from India to Vietnam. Few species are recorded from pacific Islands.

Natural history: Collected by beating bushes in dry dipterocarp forest.

Distribution: Unknown.

***Epeus* sp. B**

Material examined: 1♀, 1000m, 24.VI.2000, SW; 1♀, 1000m, 27.V.2000, SW.

Female: General habitus very similar to that of *Epeus* sp. A.

Epigynum: Epigyne provided with transverse ridge, coiled ducts visible through the integument.

Remarks: The epigyne of my specimens resembles that of *Epeus* sp. from Sumatra given by Pró szynski (2001).

Natural history: Collected by sweeping vegetation of dipterocarp with pine forest.

Distribution: Unknown.

Immature specimens of *Epeus* spp.

Material examine: 3j, 1000m, 25.IX.2000, SW; 1j, 510m, 23.X.2000, SW; 1j, 1000m, 23.X.2000, SW; 1j, 510m, 26.II.2000, SW; 1j, 1000m, 27.XI.2000, 1999; 2j, 18; 1j, 1510m, 23.X.1999, SW; 1j, 1510m, 27.XI.1999, BT; 1j, 510m, 29.VII.2000, SW; 1j, 1510m, 27.XI.1999, SW; 1j, 19; 1j, 510m, 29.I.2000, SW; 1j, 1000m, 27.V.2000, SW; 5j, 510m, 27.V.2000, SW.

Gen. *Erasinus* Simon, 1899

Literature consulted: Prószynski (2001).

***Erasinus* sp.**

Material examined: 1♂, 1510m, 25.III.2000, BT; 1♂, 510m, 29.IV.2000, SW.

Male: Prosoma moderately high, with slightly convex pars cephalica and gradually sloping pars thoracica. Opisthosoma long and thin; orange-brown dorsum provided with broken longitudinal pale bands situated on both lateral sides. Ventral side of anterior legs covered with thick hairs; all tibiae armed with conspicuous spines.

Male palp: Tibial apophysis long and pointed. Cymbium provided with thin black proximal spur curving downwards. Membranous apophysis (tegular apophysis?) presented on irregular-shaped tegulum. Embolus very long and thin.

Remarks: *Erasinus* is represented by three species; all are monotypic, with only single male of *E. gracilis* recorded from Borneo. My specimens somewhat differ from *E. gracilis* in a longer tegular apophysis and a strong cymbial spur. Little or no recent information on *Erasinus* is available. Peckham & Peckham described the latest species, *E. gracilis*, in 1907.

Natural history: Collected by beating bushes in hill evergreen forest.

Distribution: Unknown.

Gen. *Euophrys* C. L. Koch, 1834

Literature consulted: Murphy & Murphy (2000); Prószynski (2001); Zabka (1985).

***Euophrys* sp.**

Material examined: 2♂, 1000m, 29.IV.2000, SS; 1♂, 2♀, 750m, 15.V.2000, SS; 2j, 1000m, 25.III.2000, SS; 1♂, 1♀, 1j, 1750m, 29.IV.2000, SS; 2♀, 4j, 1000m, 29.VII.2000, SS; 1♀, 2PM, 4j, 1000m, 23.X.1999, SS; 7j, 750m, 29.I.2000, SS.

Description:

Male: Small salticid. Cephalic area black with brown thoracic area. Opisthosoma oval; dorsum with dark pattern.

Male palp: As in Fig. 209.

Female: Female resembling male but opisthosoma with darker pattern, almost black in color.

Epigynum and vulva: As in Fig. 209.

Remarks: The male palp of *Chalcoscirtus* species obviously differs from that of *Euophrys* in having a larger embolic base with a somewhat blunt and shorter retrolateral tibial apophysis. *Chalcoscirtus* species occur in the Holarctic regions of Europe and America, with three species reported from Central Asia. Only *C. vietnamensis* Zabka was recorded from Vietnam (Zabka, 1985). Illustrations of the male palp provided by Zabka in the original description clearly show the distinction between these two genera. Although several species of *Euophrys* have been reported from India, China, Burma and Vietnam, I agree with Murphy & Murphy (2000) that the placement of *Euophrys* species from Vietnam id doubtful. *E. cooki* Zabka possesses large spermathecae with short ducts, this seems to correspond with female genitalia in *Chalcoscirtus*. The male palp of *E. poloi* is provided with a somewhat truncate retrolateral apophysis and an embolus shape which resembles that of *C. martensi* Zabka. *Euophrys* is a wide spread genus with few species recorded form our region.

Natural history: Collected from litter samples in hill evergreen forest.

Distribution: Unknown.

Gen. *Eupoa* Zabka, 1985

Literature consulted: Platnick (2001); Prószynski (2001); Song, Zhu & Chen (1999).

***Eupoa* sp.**

Material examined: 1♂, 510m, 29.IV.2000, PT; 1♀, 1j, 510m, 25.III.2000, PT; 6j, 5; 1j, 4; 2j, 510m, 25.III.2000, SS; 3j, 510m, 29.VII.2000, SS; 2j, 14; 1j, 1750m, 15.III.2000, SS.

Description:

Male: Very small spider with large prosoma. Eye surroundings black. Opisthosoma black, with two pale spots anteriorly and two transverse stripes posteriorly.

Male palp: Round palpal organ with long and slender embolus. Tibia provided with large claw-like apophysis.

Female: Female resembling male.

Epigynum and vulva: Female genitalia as in Fig. 210. When the epigyne was removed four large eggs were found inside the female abdomen, which occupied almost the entire abdominal cavity.

Remarks: The male of *Eupoa* is recognized by its large and long tibial apophysis, and by its very small size. The palpal and somatic characters of *E. yunnanensis* correspond well with my specimens, enabling generic placement.

Natural history: The spiders were collected from dry deciduous forest at low altitudes of the national park.

Distribution: *Eupoa* has only one nominal species, *E. prima* Zabka, described from Vietnam. Three more species from China (*E. hainanensis*, *E. maculata*, and *E. yunnanensis*) were attributed to Peng & Kim by Song, Zhu & Chen (1999) but are apparently still undescribed (Platnick, 2002) and therefore these names are not available.

Gen. *Evarcha* Simon, 1902

Literature consulted: Zabka (1997)

***Evarcha crassipes* Karsch, 1881**

Material examined: 1♂, 510m, 29.IV.2000, BT.

Description:

Male: Large dull spider. Prosoma round, cephalic area high and gradually sloping towards thoracic area. Carapace orange-brown, with dark area around ocular region; lateral sides provided with white hairs. Opisthosoma elongate, pointed near spinnerets; dorsum provided

with two blackish brown patches laterally and with a large pale median band. Legs strong and stout, covered with spines and numerous white long hairs; anterior legs obviously longer and more stout.

Male palp: Cymbium flat. TA large and strong. Tegulum spherical, orange in color. Spermophore large, brownish. Embolus large, pointed, with membranous extension.

Remarks: *E. crassipes* was first described under *Plexippus* and then transferred to *Evarcha* by Prószynski & Starega (1971). The somatic and palpal characters given by various authors (Peng, Xie & Xiao, 1993; Song & Li, 1997; Zabka, 1985) correspond well with my specimen. Zabka gives excellent illustrations of habitus and palpus. They match my illustrations well. My specimen resembles this widespread Palearctic species, which was the only species known so far from Thailand.

Natural history: Collected by beating bushes along a riverbank in dipterocarp forest.

Distribution: *E. crassipes* is widely distributed throughout the Palearctic.

***Evarcha orientalis* Song & Chai, 1992**

Material examined: 1♂, 510m, 23.X.1999, SS.

Male: Convex prosoma oval-shaped, highest point at the center. Carapace with black pars cephalica and chestnut-brown pars thoracica. Lateral sides covered with white hairs. Opisthosoma oval; pale dorsum provided with small anterior chitinous area, cardiac area pale with two dark patches located on both sides. Legs armed with spines and hairs; anterior legs somewhat stronger.

Male palp: Cymbium covered with thick white hairs. Tibial apophysis stout, bifurcate. Tegulum strongly sclerotized, posterior lobe prominent. Embolus beak-shaped. Conductor situated distally on tegulum.

Remarks: Illustrations of palpal structures given by Song, Zhu & Chen (1999) correspond with my specimen, enabling specific placement.

Natural history: Collected by soil sampling from dry deciduous forest.

Distribution: Several species of *Evarcha* occur in our area. *E. orientalis* was previously recorded only from China.

Gen. *Harmochirus* Simon, 1885

Literature consulted: Davies & Zabka (1989); Zabka (1985).

***Harmochirus brachiatus* Thorell, 1877**

Material examined: 2♀, 1000m, 23.X.1999, SS.

Description:

Female: Prosoma sloping down abruptly behind PLE. Dark brown carapace clothed with fine white hairs. PLE on the edge of the cephalic area; eye field wider behind than in front. Opisthosoma oval; dorsum black, with a band of white hairs posteriorly; two pairs of muscle attachment points present. Femur, patella and tibia of leg I swollen; bush of flat hairs present on patella and tibia I; two pairs of long ventral spines located on metatarsus I.

Epigynum and vulva: Epigyne with median hood posterior to fused fossa.

Remarks: Illustrations of female genital organ and habitus provided by Davies & Zabka (1989) and Zabka (1985) are the basis of my specific placement. The carapace profile agrees well with illustrations given in the original description by Simon. *Harmochirus* appears to be closely related to the unident genus *Bianor*; they have a similar body shape, and a similar male palpal and female epigynal structure, but *Bianor* lacks the swelling and strong fringe on tibia I (Davies & Zabka, 1989).

Natural history: Two females were collected from leaf litter samples in dipterocarp with pine forest.

Distribution: *Harmochirus* is recorded from Thailand for the first time. *H. brachiatus* occurs in the Oriental region and in to Australia.

Gen. *Irura* Peckham & Peckham, 1901

Literature consulted: Prószynski (2001); Zabka (1985).

***Irura* sp.**

Material examined: 1j, 1510m, 29.I.2000, SW.

Description:

Coloration and pattern: Prosoma broad and flat, slightly narrowing anteriorly, widest behind PLE. Carapace orange with black eye surroundings. Opisthosoma ovoid, tapering towards the end; dorsum pale cream, with three pairs of orange-colored sigilla. Legs stout, with large ventral spines on tibiae and metatarsi; leg I strongest, orange-brown, remaining legs paler.

Remarks: The broad and flattened carapace, together with swollen front legs is characteristic of the genus *Irura*. Illustrations of *I. Hamatapophysis* Peng & Yin and *I. yunnanensis* Peng & Yin correspond well with my specimen in having large sclerotized posterior sigilla and two pairs of small anterior ones. Type species: *Irura pulchra* Peckham & Peckham, Sri Lanka. Additional species were described from Vietnam, China, and Malaysia; a widespread *I. mandarina* occur through out Southeast Asia.

Natural history: The spider was obtained by sweeping vegetations in hill evergreen forest.

Distribution: Unknown.

Gen. *Myrmarachne* MacLeay, 1839

Literature consulted: Prószynski (2001).

***Myrmarachne cf. elongata* Szombathy, 1915**

Material examined: 3j, 1000m, 26.II.2000, BT.

Coloration and pattern: Prosoma divided into flat pars cephalica and convex pars thoracica. Eyes situated on carapace margin. Opisthosoma modified, longer than wide, with anterior constriction; pedicel much elongate. Legs long and thin.

Remarks: This species is easy to distinguish from other *Myrmarachne* in having a dark and slender body with an elongate pedicel. The specimens resemble *M. eumenes* (Simon) as well. Since no mature spider was collected, a clear specific placement is not possible.

Natural history: Collected by sweeping vegetation in dipterocarp with pine forest.

Distribution: Unknown.

Gen. *Phintella* Stand, 1906

Literature consulted: Prószynski (2001); Zabka (1985).

***Phintella versicolor* C. L. Koch, 1846**

Material examined: 1♂, 510m, 29.IV.2000, BT.

Description:

Male: Prosoma high, with flat pars cephalica and sloping pars thoracica. Opisthosoma elongate, tapering at the end; dorsum pale, with broad longitudinal brown band. Legs long and spiny; front legs longer and stronger than the others.

Male palp: As in Fig. 216.

Remarks: *P. versicolor* was described under *Plexippus* by C. L. Koch in 1846, and later transferred to several other genera. Recently, the male and female of this species were moved from *Chrysilla* by Prószynski in 1983. The palpus of my specimen corresponds well with figures of *Chrysilla* by Zabka (1985) and of *P. versicolor* by Prószynski (1983). Its opisthosoma corresponds with the illustrations given for spiders of this species from Malaysia (Workman, 1896) and Vietnam (Zabka, 1985) as well.

Natural history: Collected by beating bushes in dipterocarp forest.

Distribution: Until now *P. versicolor* is known from China, Korea, Taiwan, Japan, Sumatra and Hawaii.

***Phintella vittata* C. L. Koch, 1846**

Material examined: 1♂, 510m, 27.V.2000, SW; 1j, 510m, 29.I.2000, SW; 1j, 26.II.2000, BT; 1j, 15.

Description:

Male: Small spider with pale gray-brown body color. Prosoma with large diamond-shaped area just beneath fovea. Opisthosoma provided with transverse light and dark streaks. Metallic lustre in the cuticle present.

Male palp: Tegulum with posterior lobe; embolus short, spiniform; tibial apophysis large, bifurcate. Conductor flat and triangular.

Remarks: Zabka transferred *P. vittata* from *Chrysilla* in 1985. The figures of a male *P. vittata* from India given by Prószynski (1992b) correspond well with my specimen.

Natural history: The spider was found jumping between leaves of low vegetation.

Distribution: P. vittata is widespread from India to the Philippines.

? *Phintella* sp.

Material examined: 1♂, 510m, 29.VII.2000, SS.

Description:

Male: Very small salticid. Prosoma rather flat. Carapace with dark brown cephalic area and brown thoracic area. Opisthosoma almost globular, 4/5 the length of prosoma; dorsum with irregular black lines.

Male palp: As in Fig.218.

Remarks: This male specimen is placed in *Phintella* due to its palpal structure.

Natural history: Collected in dipterocarp forest by soil sampling.

Distribution: Unknown.

Gen. *Plexippus* C. L. Koch, 1846

Literature consulted: Chrysanthus, 1968; Prochniewicz, 1989.

***Plexippus petersi* (Karsch, 1878)**

Material examined: 1♀, 2250m, 15.IV.2000, SS.

Female: Prosoma longer than wide, truncate posteriorly; two wide submarginal bands on sloping thoracic area. Eye field black. Opisthosoma elongate oval; dark brown dorsum with white median band.

Epigynum and vulva: Strongly sclerotized as in Fig. 219.

Remarks: Somatic and epigynal characters given by Prochniewicz (1989) and Chrysanthus (1968) correspond well with my specimen.

Natural history: Collected in hill evergreen forest of the national park. This is the highest altitude ever recorded for *P. petersi.*

Distribution: *P. petersi* is distributed from Africa to Japan including the Pacific Islands.

Gen. *Ptocasius* Simon, 1885

Literature consulted: Prószynski (2001); Zabka (1985).

***Ptocasius cf. strupifer* Simon, 1901**

Material examined: 1♀, 510m, 29.VII.2000, SW.

Description:

Female: As in *Ptocasius* sp. but opisthosoma different.

Epigynum and vulva: As in Fig. 220.

Remarks: The epigyne of my specimen corresponds with illustrations of *P. strupifer* by Zabka (1985). Epigynal and somatic characters of this species enable generic placement.

Natural history: Collected by sweeping bushes in dipterocarp forest.

Distribution: *Ptocasius* is found in China and Southeast Asia.

***Ptocasius* sp.**

Material examined: 1♀, 1000m, 29.VII.2000, SW; 1♀, 1000m, 27.XI.1999, SW; 1♀, 1000m, 28.VIII.2000, SW.

Description:

Female: Prosoma high, dark brown in color, with truncate posterior margin. Opisthosoma oval, truncate anteriorly and slightly pointed near spinnerets; dorsum with blackish transverse bands. Legs with few spines, fairy short and slender.

Epigynum and vulva: As in Fig. 221.

Remarks: My specimens correspond with the female of an undescribed *Ptocasius* sp. from Thailand illustrated by Prószynski (2001). It is possible that they belong to the same species. *Ptocasius* is found in China and Southeast Asia.

Natural history: Collected by sweeping bushes in dipterocarp with pine forest.

Distribution: Unknown.

Immature specimens of *Ptocasius* spp.: 1j, 510m, 28.VIII.1999, SW; 3j, 510m, 25.IX.1999, SW; 2j, 1000m, 23.X.1999, SW; 1j, 510m, 29.I.2000, SW; 1j, 1000m, 29.I.2000, SW; 1j, 510m, 26.II.2000, SS; 3j, 1PM, 510m, 26.II.2000, SW; 1j, 510m, 26.II.2000, BT; 1j, 510m, 25.III.2000, SS; 1j, 510m, 27.V.2000, SW; 3j, 1PM, 510m, 24.VI.2000, SW; 8j, 1PM, 510m, 29.VII.2000, SW.

Gen. *Saitis* Simon, 1876

Literature consulted: Prószynski (2001).

? *Saitis* sp.

Material examined: 1♀, 1510m, 25.III.2000, SS; 1♂, 1510m, 26.II.2000, SS; 2♀, 2090m, 24.VI.2000, SS; 4♂, 1j, 1510m, 26.II.2000, SS; 1♀, 1510m, 29.IV.2000, SS; 1♂, 1PM, 3j, 1510m, 29.I.2000, SS; 2♀, 1000m, 29.IV.2000, SS; 5♀, 1510m, 25.III.2000, SS; 2j, 1510m, 27.XI.1999, SS; 2j, 1750m, 15.I.2000, SS; 1♀, 4♂, 1j, 1750m, 25.III.2000, SS; 1♀, 6j, 1510m, 23.X.1999, SS.

Description:

Male: Medium-sized salticid. Prosoma with dark cephalic area and brown thoracic area, both parts separated by a yellow band. Opisthosoma oval; dorsum pale with pale brown pattern.

Male palp: As in Fig. 222.

Female: Female resembling male but smaller, color pattern on anterior portion of opisthosoma fade to absent in some females.

Epigynum and vulva: As in Fig. 222.

Remarks: This species is placed under *Saitis* due to a thin and curved embolus in males and due to the presence of two anterior fossa in epigyne. The male palpal organ corresponds with that of *S. cyanipes* Simon but differs in the absence of a posterior tegular projection. *S. charperi* Simon was reported from India and Sri Lanka; few species were described from Australia. Male and female genital organs resemble those members of *Euophrys* as well.

Natural history: Collected by pitfall trapping and soil sampling in hill evergreen forest of the national park.

Distribution: Unknown.

Gen. *Spartaeus* Thorell, 1891

Literature consulted: Barrion & Litsinger (1995); Prószynski (2001).

***Spartaeus* sp.**

Material examined: 1♀, 510m, 29.IV.2000, SS; 1j, 750m, 15.II.2000, SS; 1j, 510m, 25.III.2000, PT; 1j, 750m, 15.I.2000, SS.

Description:

Female: Large salticid with moderately high prosoma. Brown carapace with flat pars cephalica sloping towards pars thoracica. Eyes on tubercles. Opisthosoma almost rectangular; dorsum provided with dark brown pattern on both lateral margins. Legs long and slender; tibia and metatarsus I with long ventral spines; tarsal claws pectinate.

Epigynum: As in Fig. 223.

Remarks: *Spartaeus thailandica* Wanless is recorded from Thailand and China but the female genital organ differs greatly from my specimen. The specimens are considered to belong to *Spartaeus* due to somatic characters. This female probably belongs to a yet undescribed species. Seven species of *Spartaeus* are restricted to the Oriental region. *S. thailandica* was described from Thailand; I have collected two females of this species in dipterocarp forest of the Doi Suthep-Pui National Park.

Natural history: Ground stratum spider. All specimens were collected on forest floor.

Distribution: Unknown.

Gen. *Synagelides* Strand, 1906

Literature consulted: Prószynski (2001).

***Synagelides* sp.**

Material examined: 1♂, 1♀, 1000m, 29.IV.2000, SS; 1j, 15; 1j, 1750m, 15.II.2000, SS; 2j, 1000m, 27.XI.1999, PT; 1j, 510m, 26.II.2000, SS; 3j, 7; 1j, 2250m, 15.II.2000, SS; 1PM, 1510m, 26.II.2000, SS; 1j, 1750m, 15.III.2000, SS; 2j, 1250m, 15.II.2000, SS; 5j, 1510m, 26.II.2000, SW; 1j, 1510m, 27.XI.1999, SW; 3j, 6.

Description:

Male: Flattened prosoma longer than wide, parallel sided and round at the rear end. Carapace orange in color, with brown cephalic area and black eye surroundings. Fovea circular. PLE situated far apart from AER. Opisthosoma smooth, almost hairless; dorsum grayish black, with two pale spots and a series of transverse stripes. Legs long and thin; metatarsi and tarsi armed with strong ventral spines; front legs blackish brown, remaining legs orange-brown.

Male palp: As in Fig. 224.

Female: Female resembling male but paler in color, opisthosoma pale gray to grayish black.

Epigynum: As in Fig. 224.

Remarks: The male palpus is comparable to that of *S. gambosa* Xie & Yin (1990) in its broad, curved embolus and unique shape of the conductor. However, the habitus of both male and female is similar to that of *S. lushanensis* Xie & Yin. The pear-shaped spermathecae of my female correspond well with those of *S. lushanensis*, which is round and spherical in *S. gambosa*. The illustrations provided by Bohdanowicz (1987) are of little use.

Natural history: Most of the specimens were collected at higher altitudes of the Doi Inthanon National Park.

Distribution: Spiders of this genus are mainly found in temperate zones of Nepal, Bhutan, Russia and China, with two species in Vietnam and Burma.

Gen. *Telamonia* Thorell, 1887

Literature consulted: Prószynski (2001); Zabka (1985).

***Telamonia cf. caprina* (Simon, 1903)**

Material examined: 1♂, 510m, 29.VII.2000, SW; 1♂, 1000m, 24.VI.2000, SW.

Description:

Male: Prosoma rather round, widest behind PLE. Carapace chestnut brown, with slightly convex pars cephalica connected to steep thoracic area by median longitudinal band of white hairs. Opisthosoma elongate, tapering towards rear end; dorsum dull brown, with a series of pale transverse bands running mid-longitudinally. Anterior legs strong, longer than posterior ones, with dark brown color; posterior legs brown; all legs with ventral brush of long hairs.

Male palp: Tibial apophysis large and pointed. Cymbium flat, triangular. Tegulum round, with elevated area. Embolus thin and long, winding around tegulum.

Remarks: My specimens differ from those of *T. caprina* in having a small elevation on the tegulum, the embolus is originating from more proximal. Several *Telamonia* species occur in Southeast Asia; few recorded from Africa.

Natural history: Foliage stratum spider, collected by sweeping vegetation.

Distribution: Unknown.

Gen. *Yaginumaella* Prószyn'ski, 1979

Literature consulted: Prószynski (2001).

***Yaginumaella* sp. A**

Material examined: 1♀, 2090m, 29.VII.2000, BT.

Description:

Female: Prosoma with two longitudinal bands continuing from cephalic area to posterior edge of carapace. Opisthosoma oval, truncated anteriorly and slightly pointed near spinnerets; dorsum provided with pale cross-shaped band.

Epigynum and vulva: As in Fig. 226.

Remarks: Several species of *Yaginumaella* occur in our region. The epigynum of my specimen corresponds well with figures of female *Y. nanyuensis* Xie & Peng, enabling generic placement.

Natural history: Collected by beating bushes in hill evergreen forest.

Distribution: Unknown.

***Yaginumaella* sp. B**

Material examined: 1♀, 1250m, 15.IV.2000, SS.

Description:

Female: Prosoma round, slightly sloping towards thoracic area. Carapace orange, with black eye surroundings. Opisthosoma oval; clothed with black setae.

Epigynum and vulva: As in Fig. 227.

Remarks: The genitalia of this female correspond with those of *Y. montana* Zabka, enabling generic placement. Recent data show that several species of *Yaginumaella* are recorded from China and Bhutan. *Y. originalis* Zabka was described from Burma.

Natural history: Collected from soil samples of pine forest.

Distribution: Unknown.

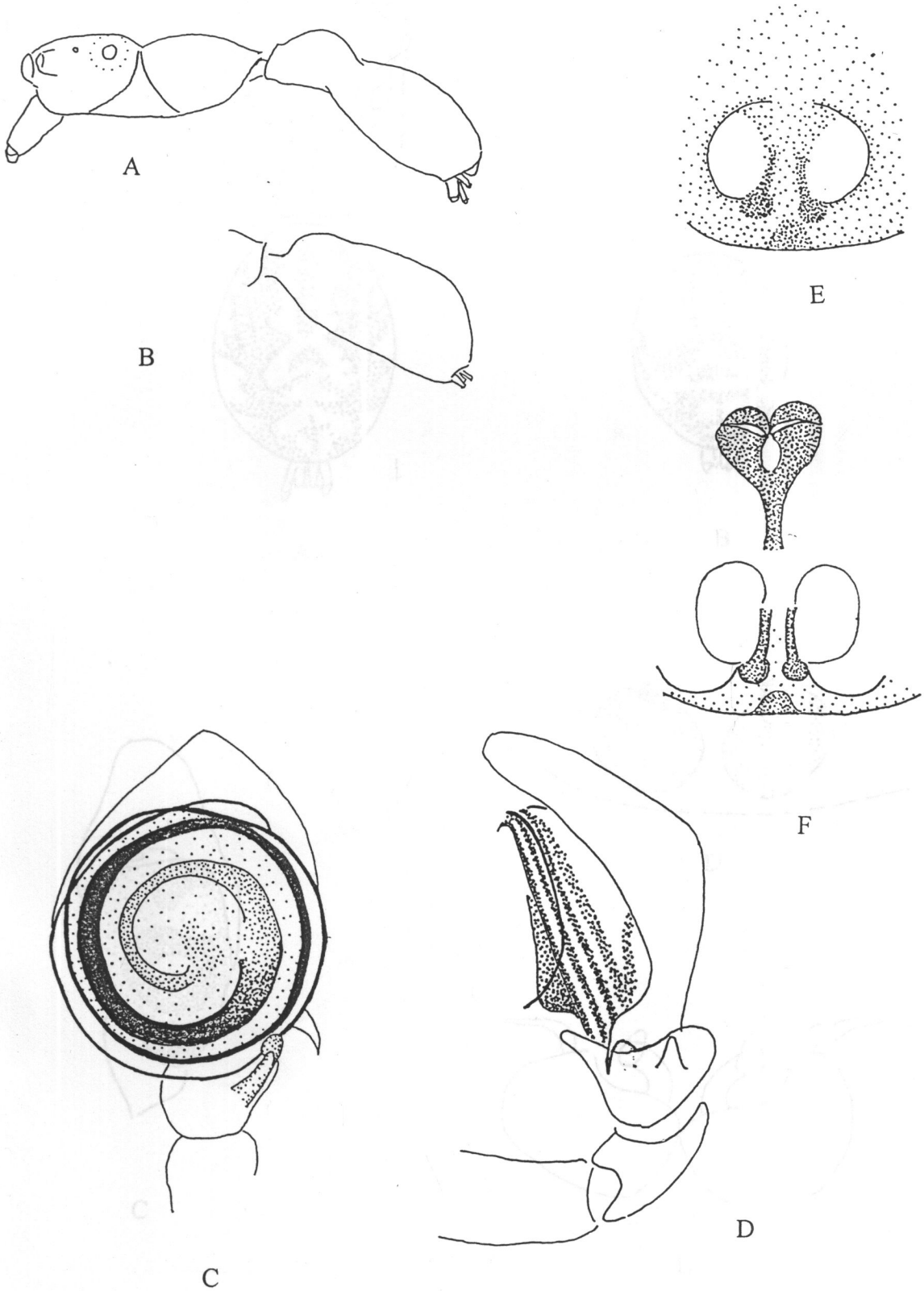
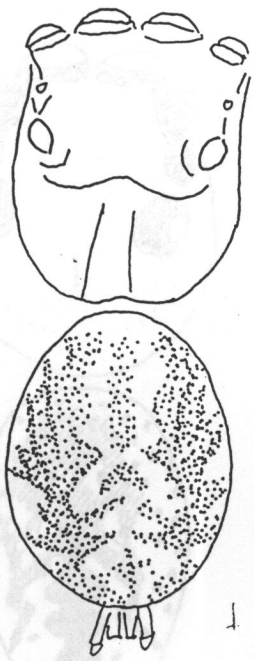
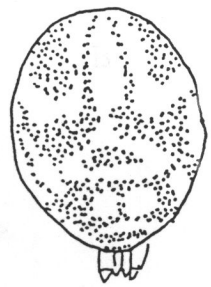


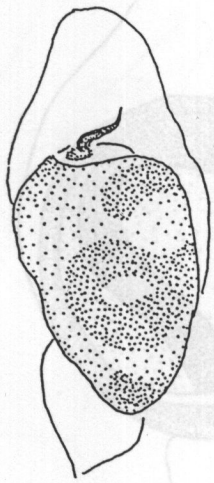
Fig. 201. *Belippo* sp. A, habitus of female, lateral view. B, opisthosoma of male, lateral view. C, D, male palp, different views. E, epigyne. F, vulva.



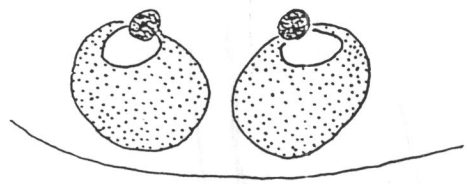
A



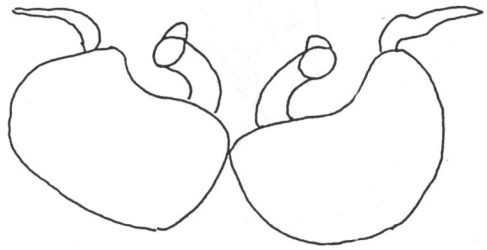
B



C

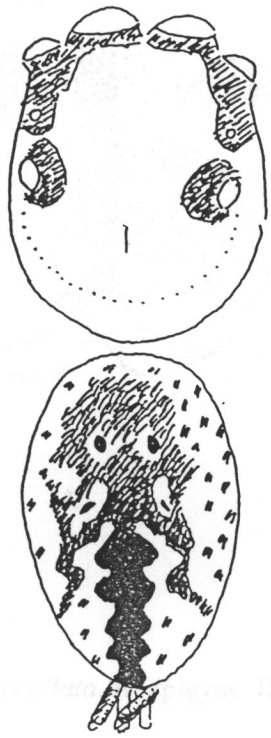


D

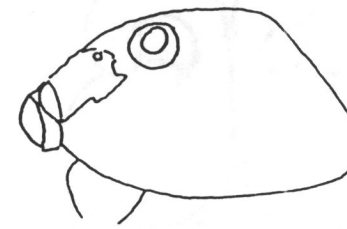


E

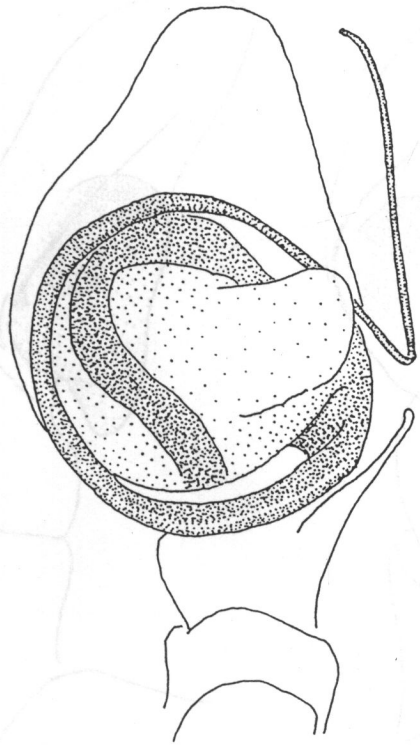
Fig. 202. *Chalcoscirtus* sp. A, habitus of female. B, opisthosoma of male. C, male palp. D, epigyne. E, vulva.



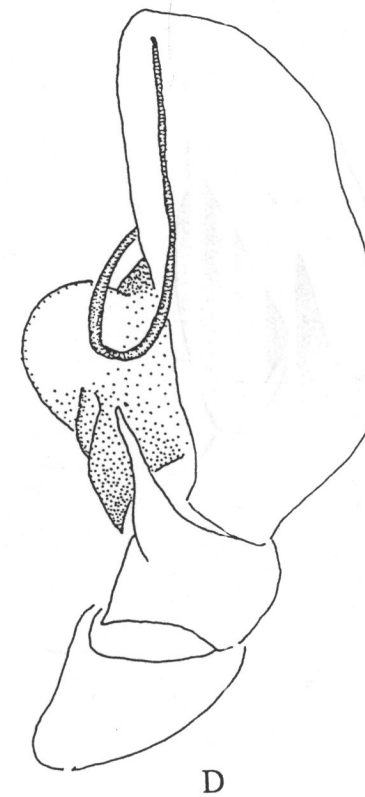
A



B



C



D

Fig. 203. *Cheliceroides* sp. A, habitus of male, dorsal view. B, carapace, lateral view. C, D, male palp, different views.

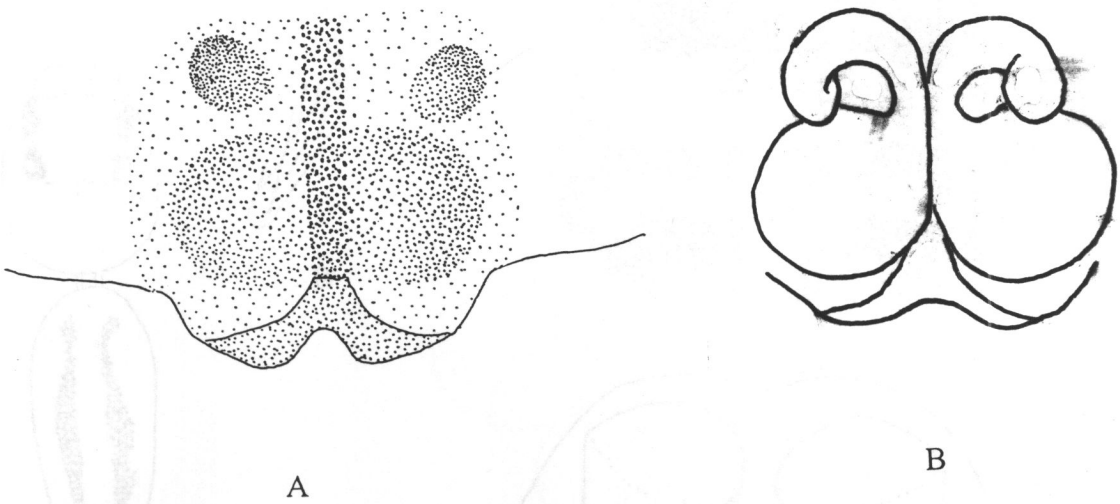


Fig. 204. *Cybra ocellata*. A, epigyne. B, vulva.

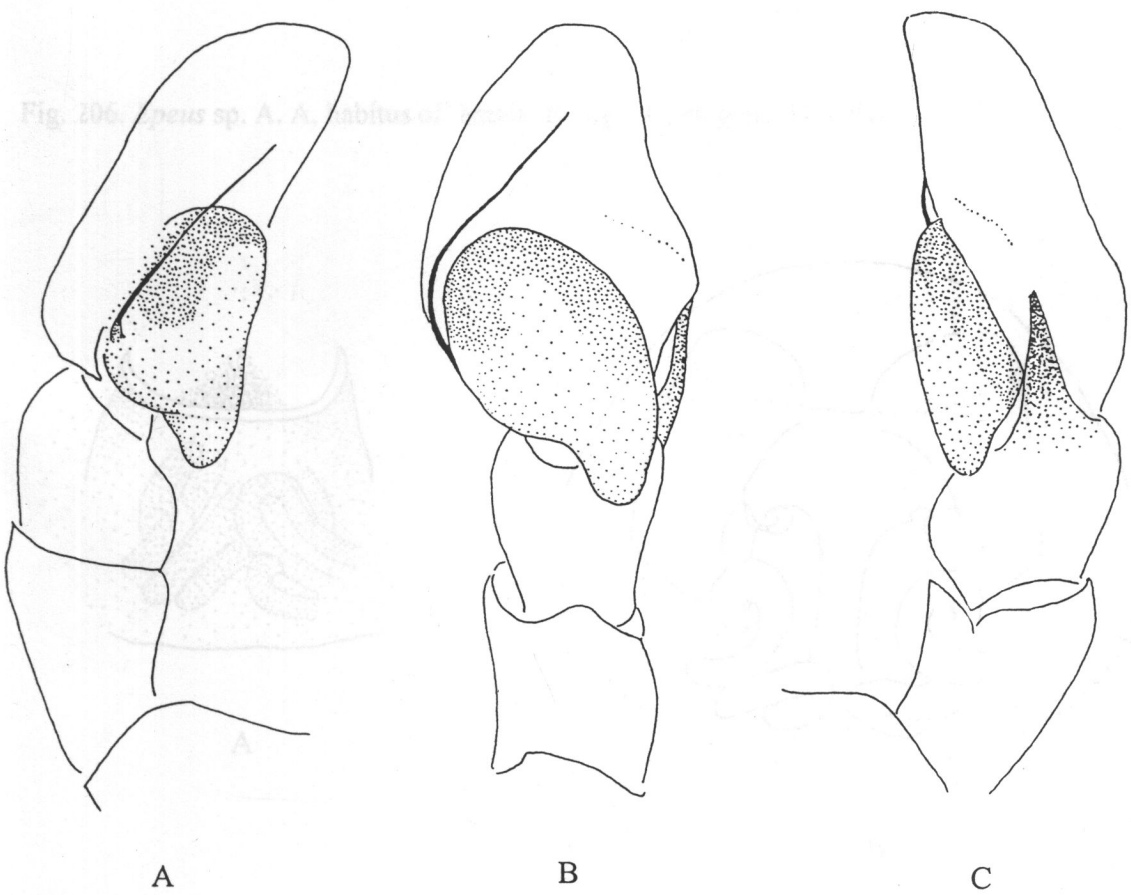


Fig. 205. *Epeus alboguttatus*. A-C, male palp, different views.

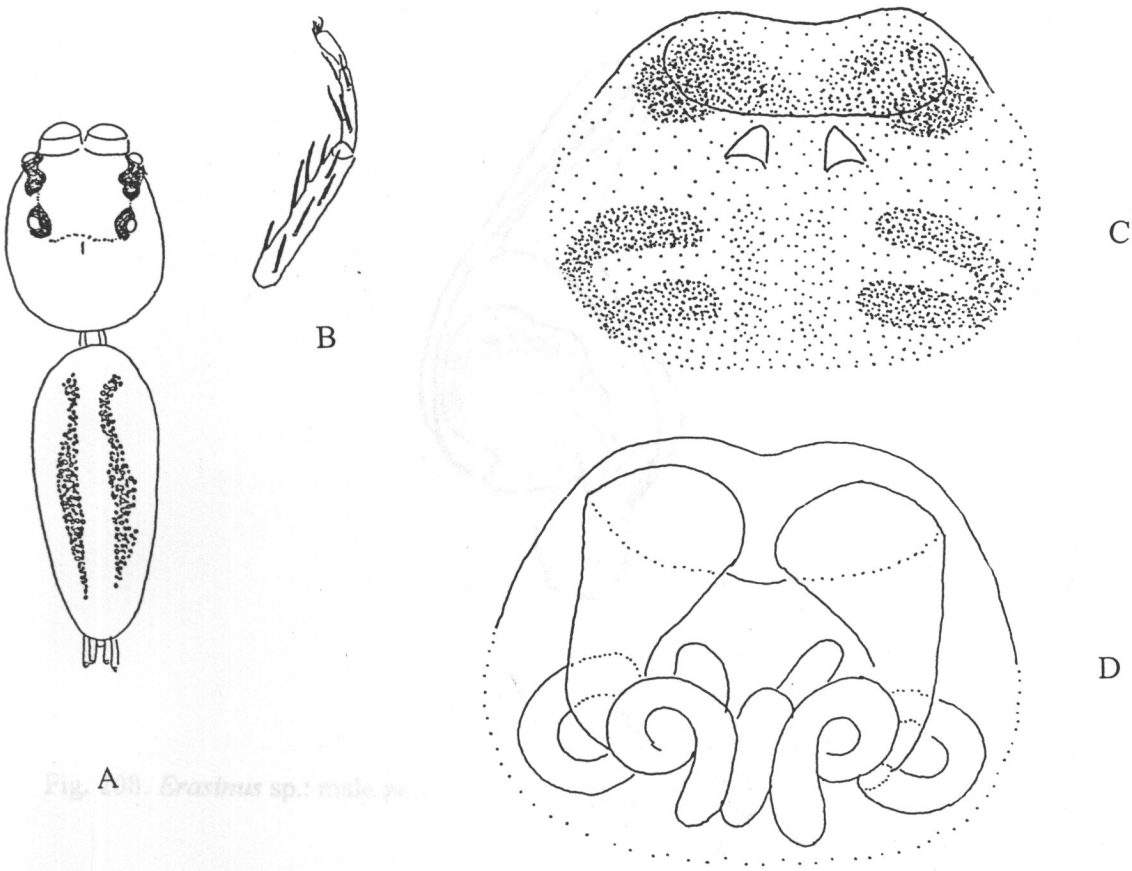


Fig. 206. *Epeus* sp. A. A, habitus of female. B, leg I. C, epigyne. D, vulva.

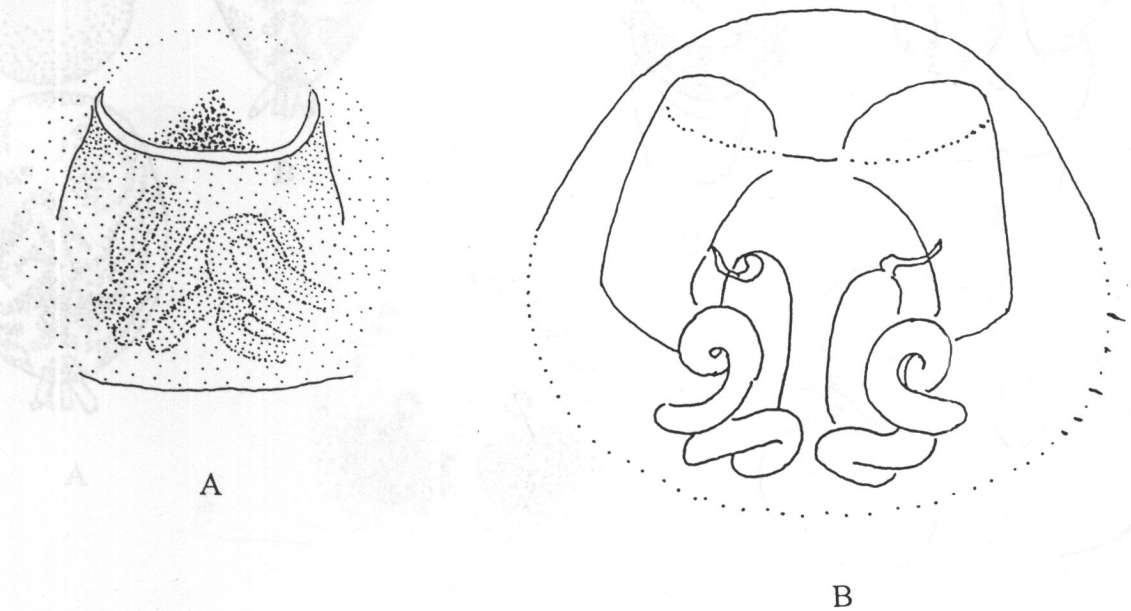


Fig. 207. *Epeus* sp. B. A, epigyne. B, vulva.

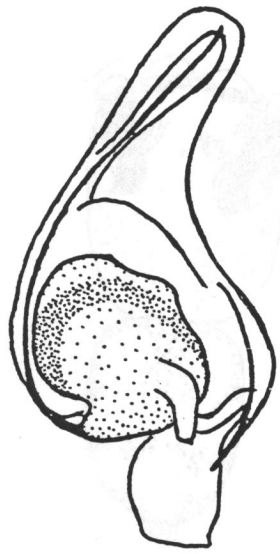


Fig. 208. *Erasinus* sp.: male palp.

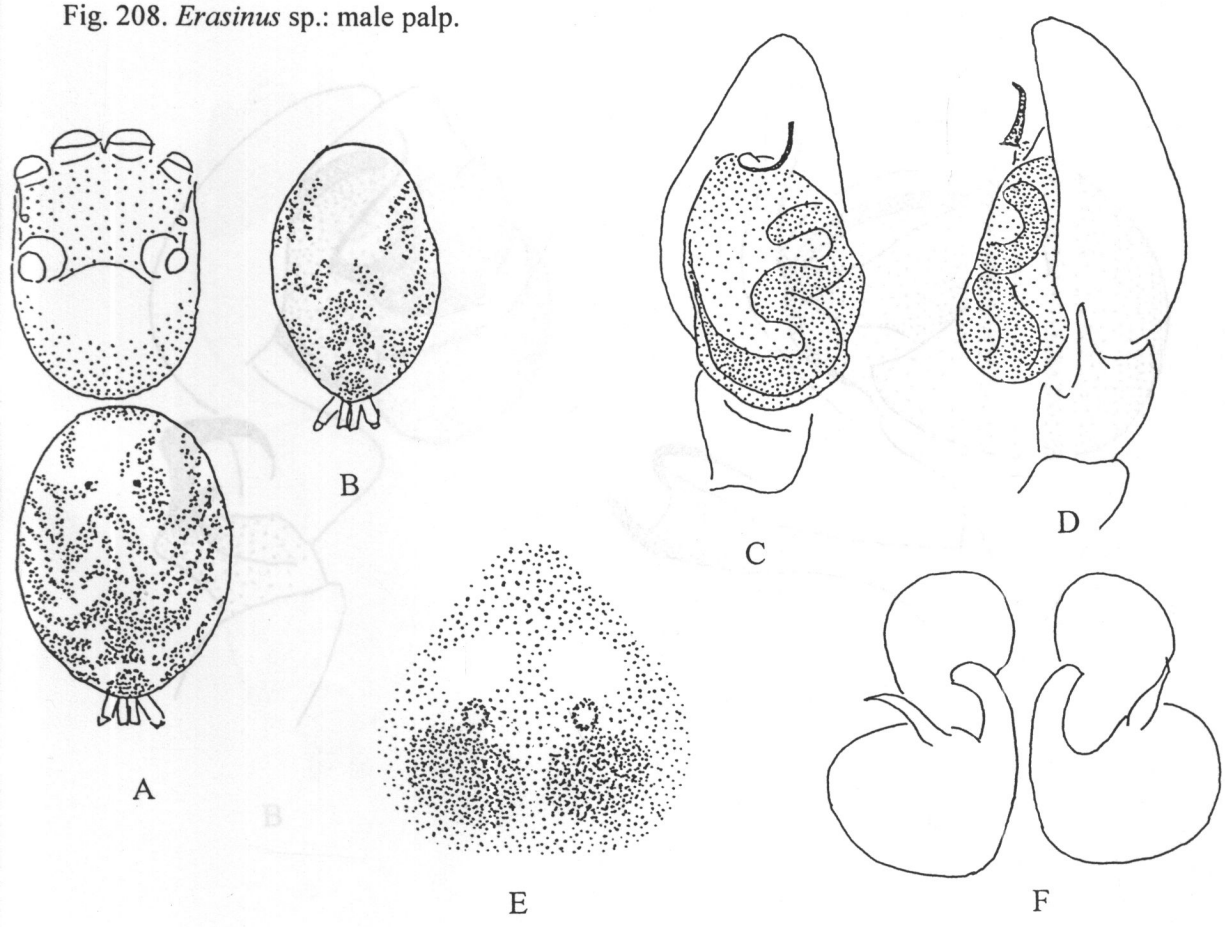
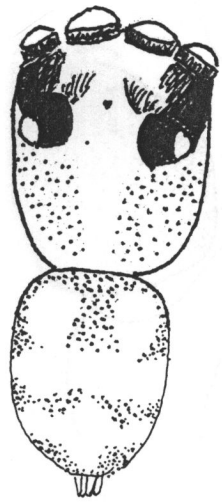
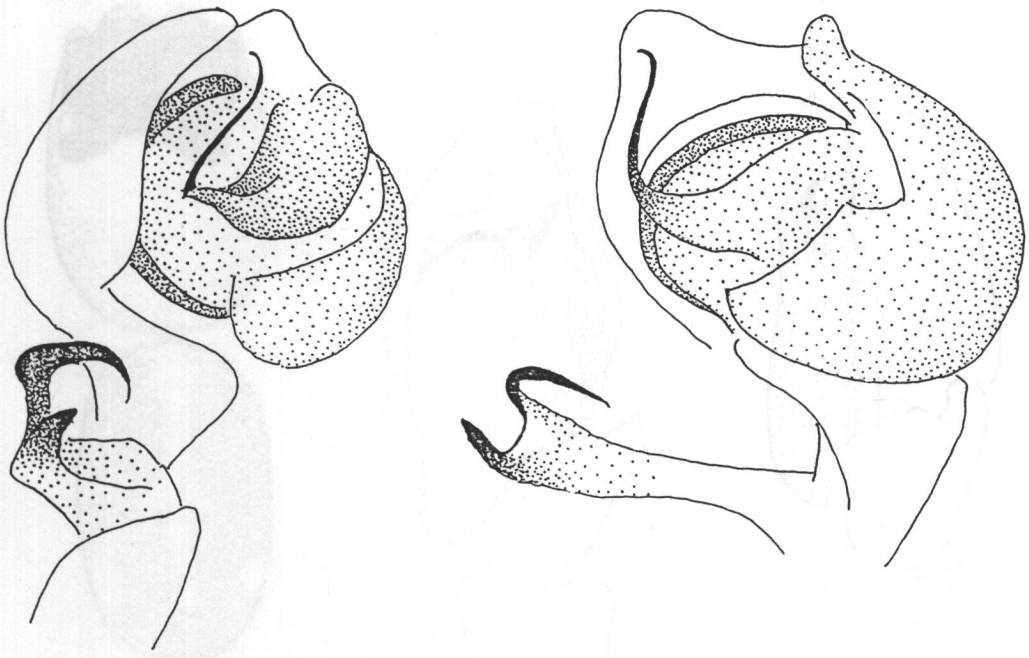


Fig. 209. *Euophrys* sp. A, habitus of female, dorsal view. B, opisthosoma of male. C, D, male palp, different views. E, epigyne. F, vulva.



A



B C

Fig. 210. *Eupoa* sp. A, habitus of male, dorsal view. B, C, male palp, different views.

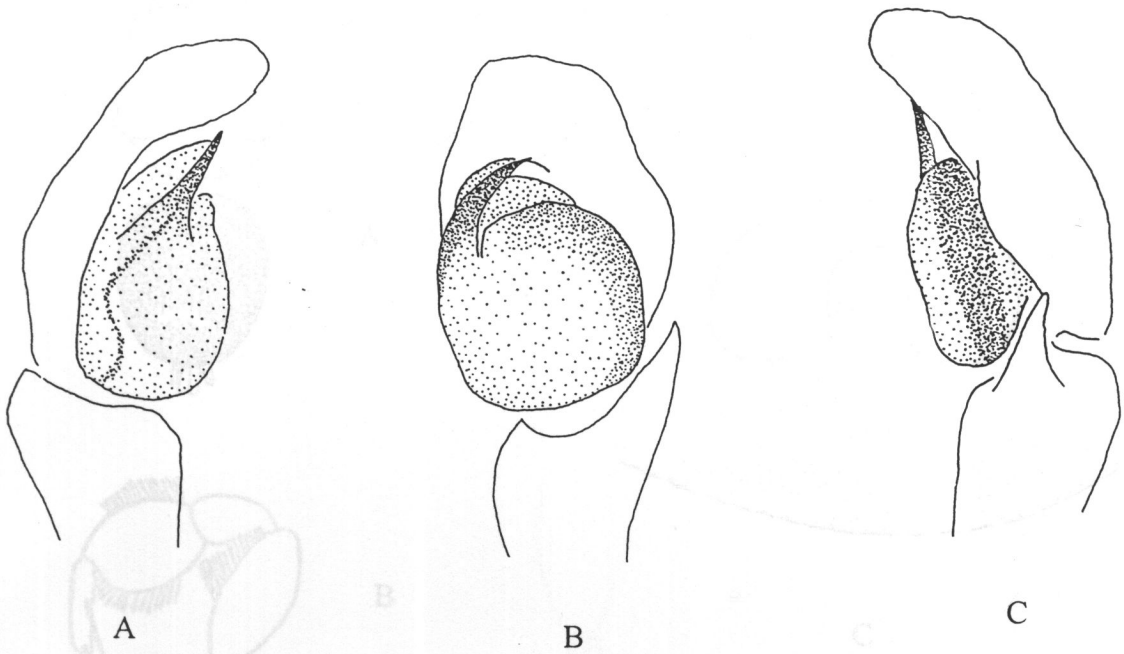


Fig. 211. *Evarcha crassipes*. A-C, male palp, different views.

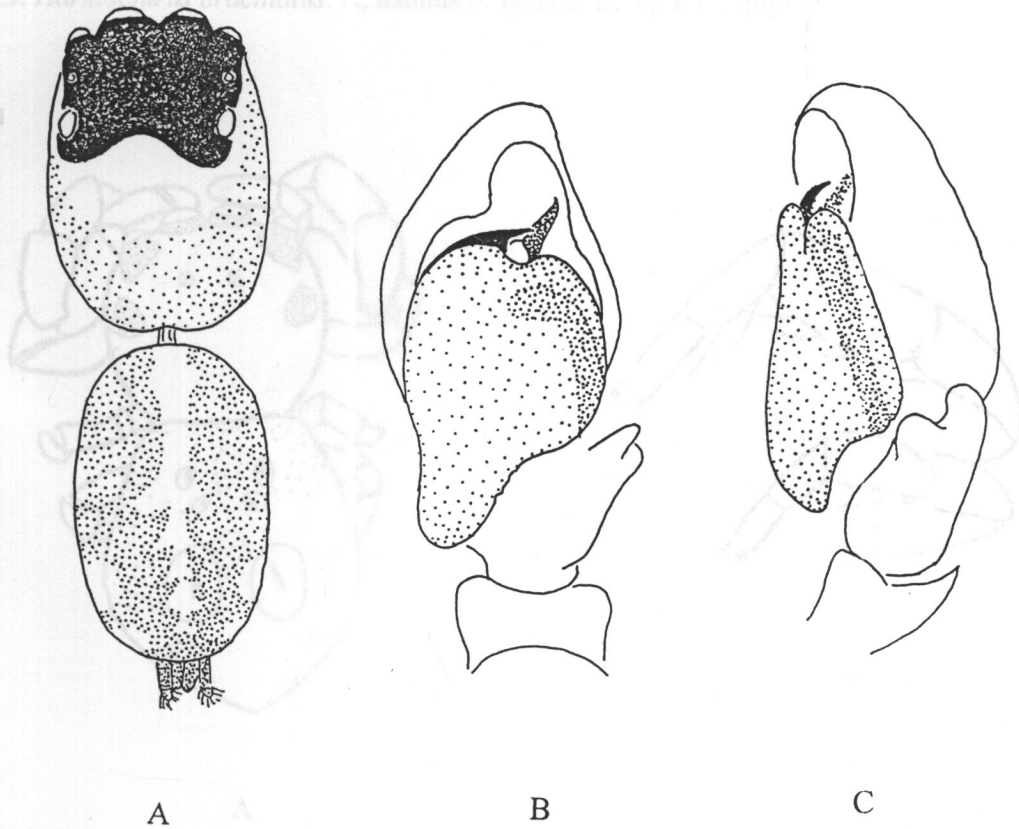


Fig. 212. *Evarcha orentalis*. A, habitus of male. B, C, male palp, different views.

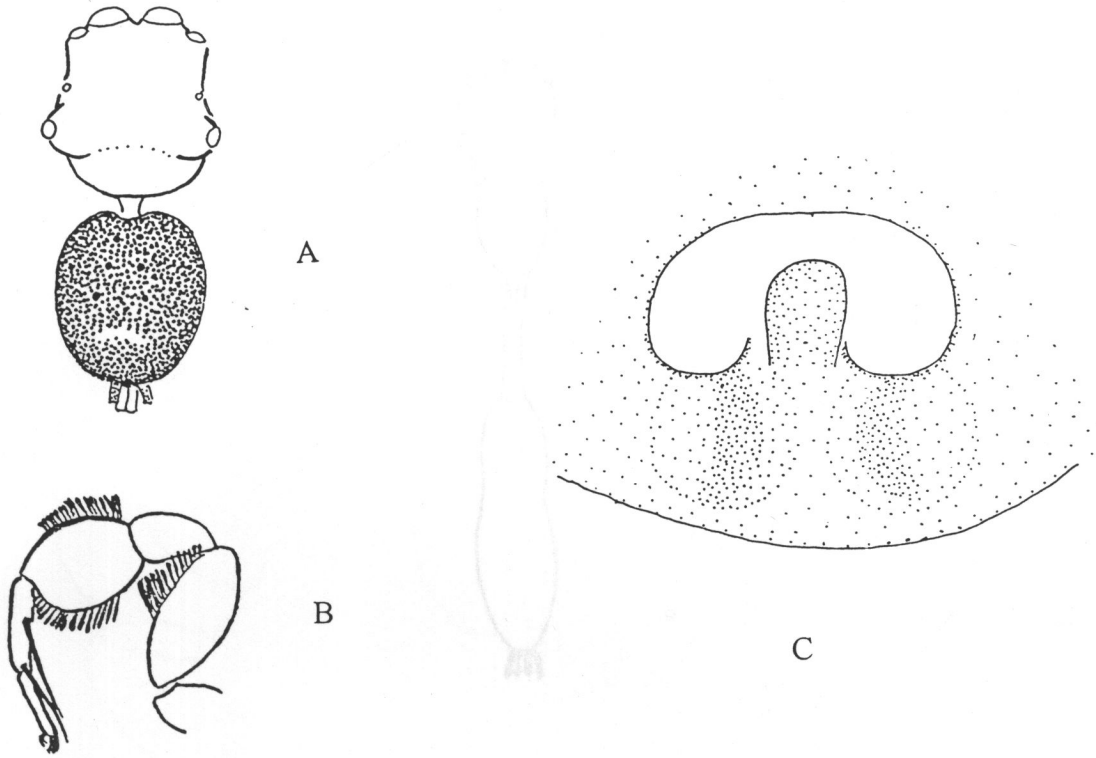


Fig. 213. *Harmochirus brachiatus*. A, habitus of female. B, leg I. C, epigyne.

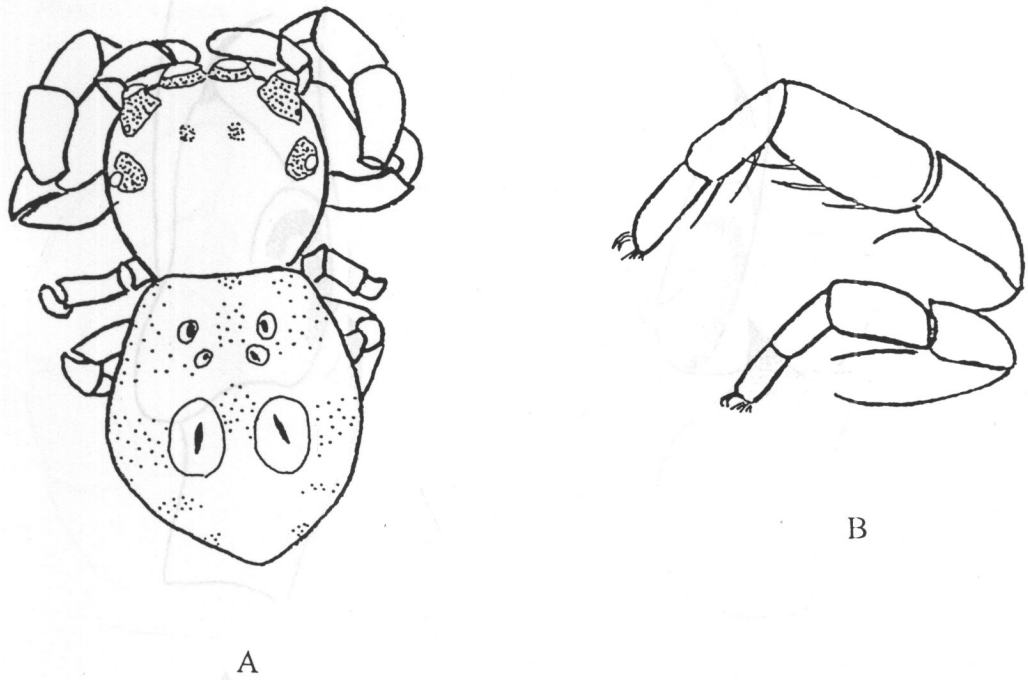


Fig. 214. *Irura* sp. A, habitus of juvenile. B, anterior legs.

Fig. 215. *Myrmarachne cf. elongata*: habitus of juvenile.

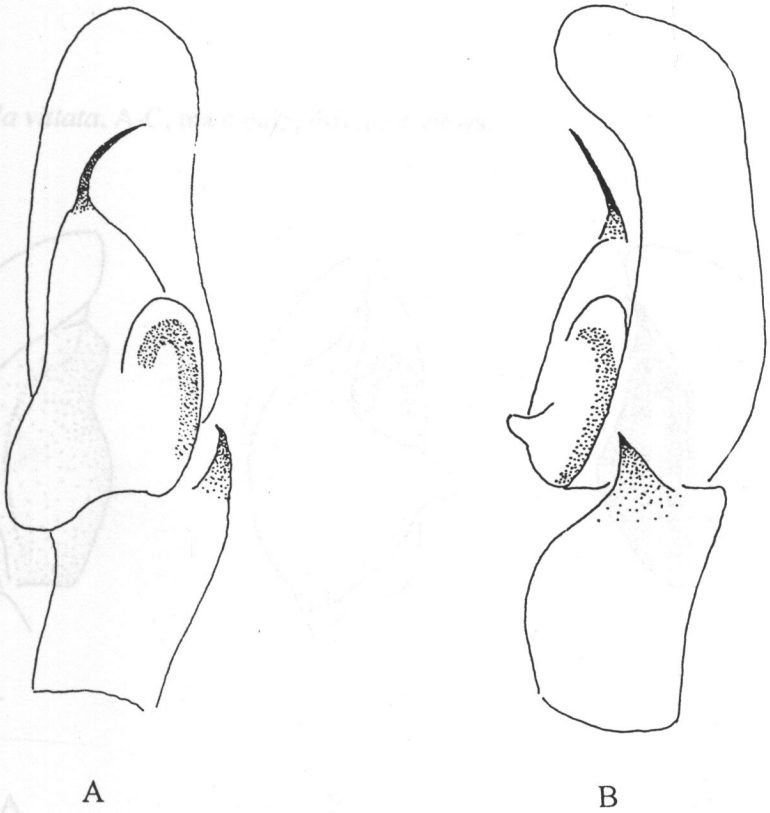


Fig. 216. *Phintella versicolor*. A, B, male palp, different views.

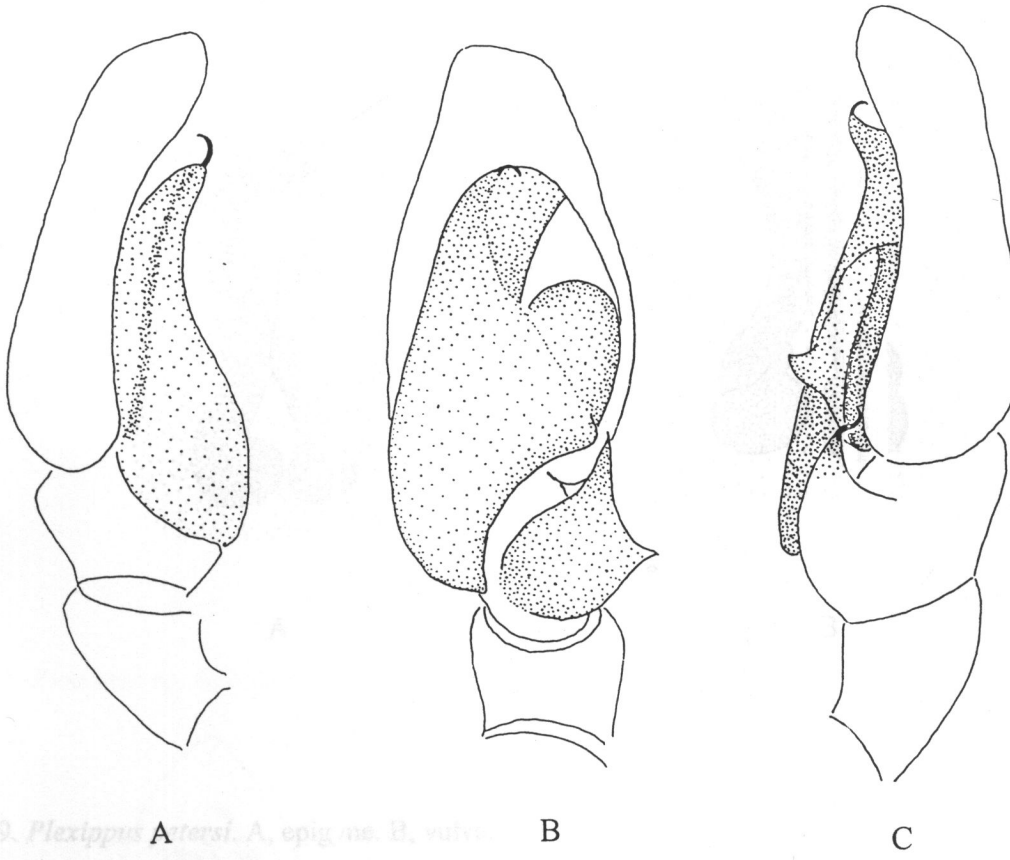


Fig. 217. *Phintella vittata*. A-C, male palp, different views.

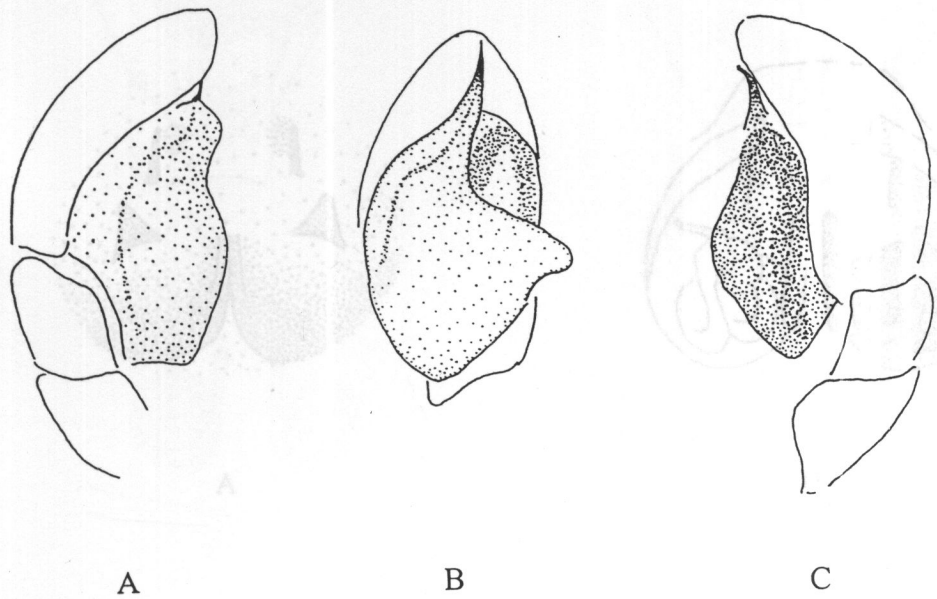
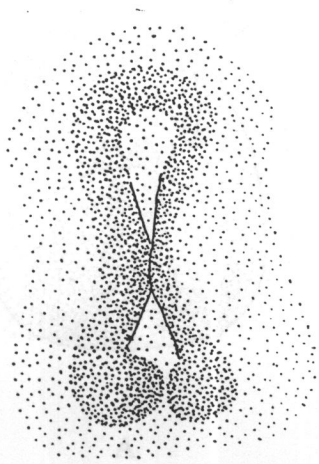
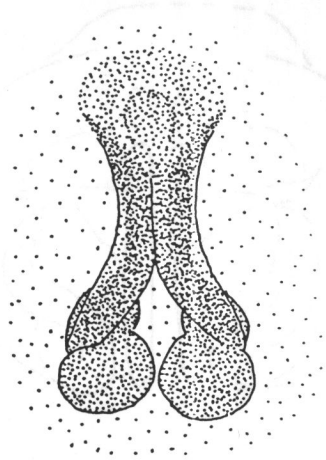


Fig. 218. ? *Phintella*. A-C, male palp, different views.

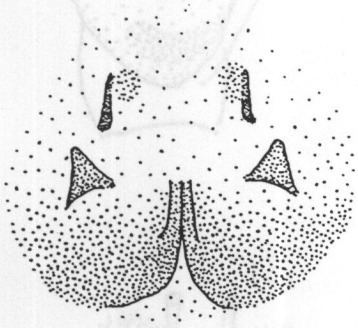


A

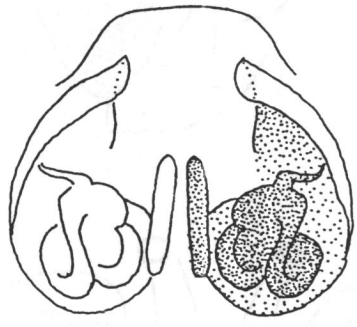


B

Fig. 219. *Plexippus petersi*. A, epigyne. B, vulva.



A

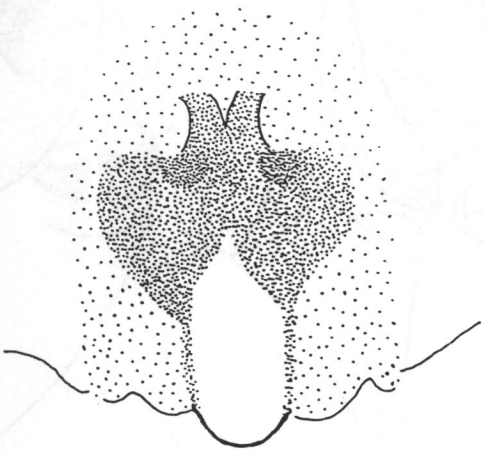


B

Fig. 220. *Ptocasius cf. strupifer*. A, epigyne. B, vulva.

A

B



C

Fig. 223. *Sparteus* sp. A, habitus of female. B, legs I and II. C, epigyne.

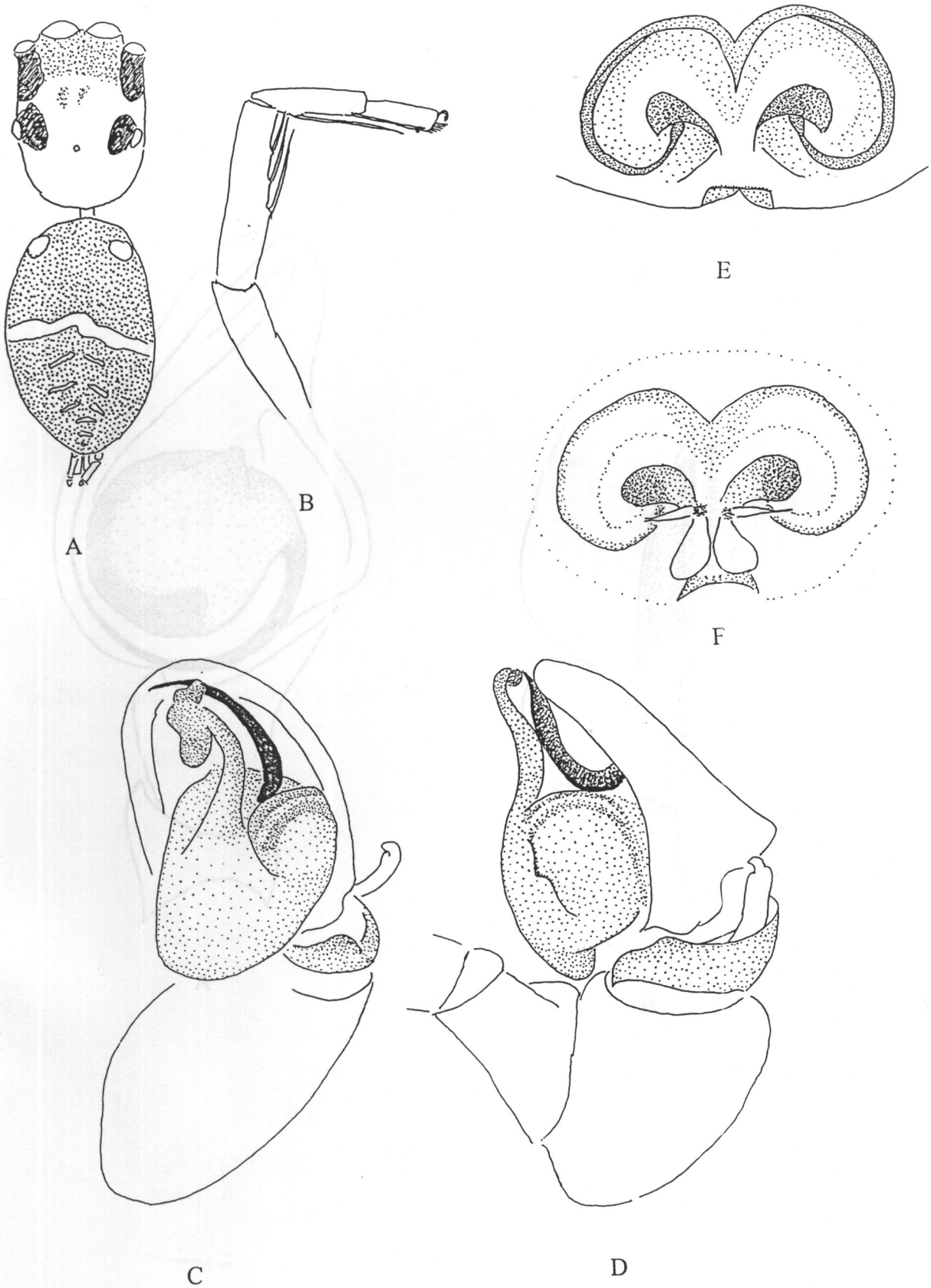


Fig. 224. *Synagelides* sp. A, habitus of female. B, leg I. C, D, male palp, different views. E, epigyne. F, vulva.

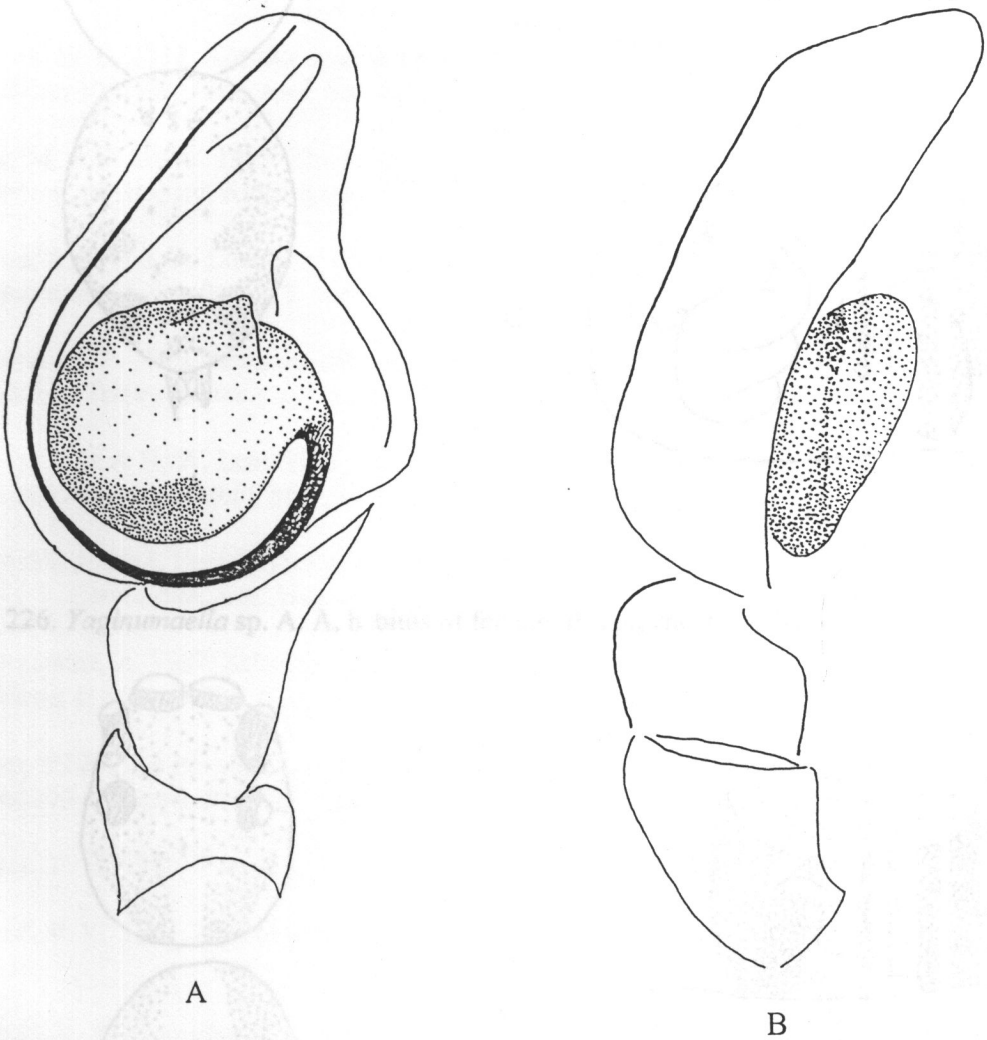


Fig. 225. *Telamonia cf. caprina*. A, B, male palp, different views.

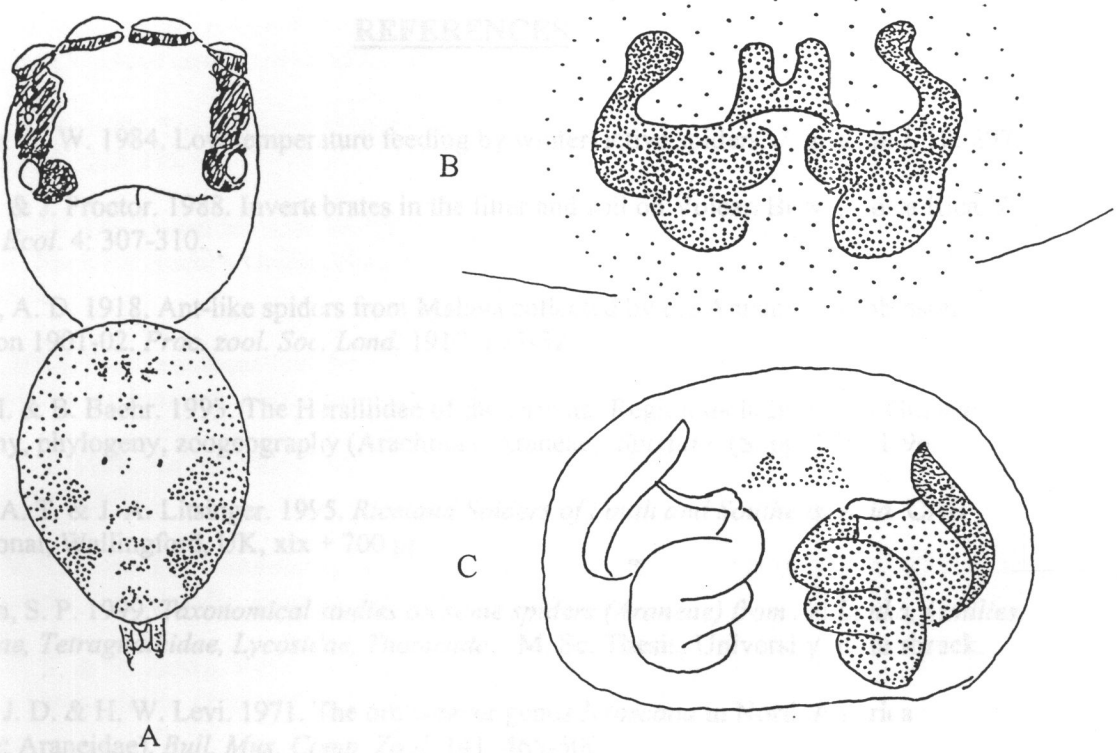


Fig. 226. *Yaginumaella* sp. A. A, habitus of female. B, epigyne. C, vulva.

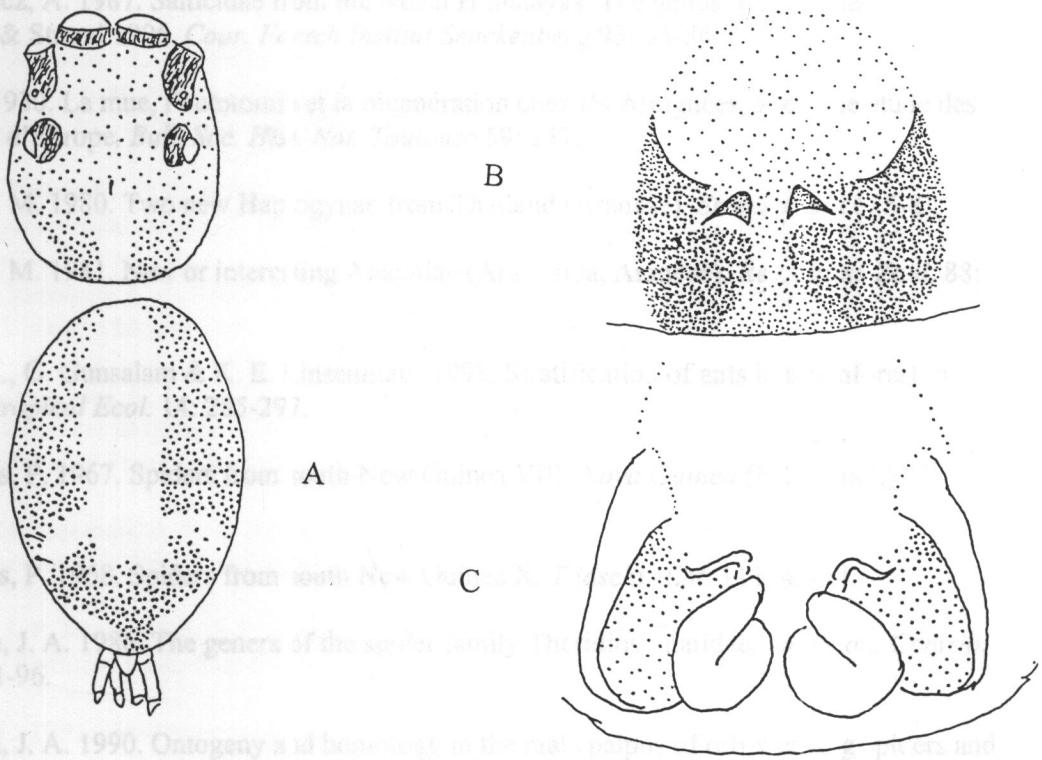


Fig. 227. *Yaginumaella* sp. B. A, habitus of female. B, epigyne. C, vulva.

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