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Taxonomic revision of *Microdytes* BALFOUR-BROWNE (Coleoptera: Dytiscidae)

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Abstract

The dytiscid genus *Microdytes* BALFOUR-BROWNE is revised taxonomically. Twenty-one new species are described: *M. akitai* sp.n. [Laos], *M. balkei* sp.n. [Thailand], *M. bistroemi* sp.n. [China], *M. boukali* sp.n. [India], *M. dimorphus* sp.n. [Thailand], *M. gabrielae* sp.n. [Thailand], *M. hainanensis* sp.n. [China], *M. hendrichi* sp.n. [Peninsular Malaysia], *M. jaechi* sp.n. [Java], *M. mariannae* sp.n. [Thailand], *M. menopausis* sp.n. [Thailand], *M. nilssoni* [China], *M. sarawakensis* sp.n. [Borneo], *M. satoi* sp.n. [China], *M. schoedli* sp.n. [Thailand], *M. schoenmanni* sp.n. [Thailand, India, Nepal], *M. schuhi* sp.n. [Java], *M. schwendingeri* sp.n. [Thailand], *M. sinensis* sp.n. [China], *M. shepardi* sp.n. [Thailand], *M. zetteli* sp.n. [Thailand]. *Microdytes taiwanus* SATO is transferred to *Allopachria*. A lectotype is designated for *M. maculatus* (MOTSCHULSKY). A key to the 30 species of the genus *Microdytes* known until now is given.

Key words: Coleoptera, Dytiscidae, Hyphdrini, *Microdytes*, new species, revision, taxonomy

Introduction

Over the last decade several hydro-entomological expeditions (including the China Water Beetle Survey - CWBS) of the Natural History Museum, Vienna were carried out in Southeast Asia (by Dr. Manfred A. Jäch, Prof. Lanzhu Ji, Harald Schillhammer, Dr. Stefan Schödl, Dr. Heinrich Schönmann, Miao Wang and Dr. Herbert Zettel). These expeditions yielded a large number of specimens of the genus *Microdytes* BALFOUR-BROWNE. Several other entomologists (e.g. Katsumi Akita, Hisai City; Michael Balke, Berlin; D.S. Boukal, Ceské Budejovice; Lars Hendrich, Berlin; Paolo Mazzoldi, Brescia; Prof. Dr. Masataka Satô, Nagoya; Rudi Schuh, Katzelsdorf; Dr. Peter Schwendinger, Innsbruck; Prof. Dr. William D. Shepard, Sacramento) collected additional material in South India and Southeast Asia. The large number of species which is now available for study has necessitated a taxonomic revision of the genus.

Material

The study material which consists of about 650 specimens is deposited in the following institutions and private collections:

BML	The Natural History Museum, London, England
CASS	Chinese Academy of Sciences, Institute of Applied Ecology, Shenyang, China
CAH	Coll. Akita, Hisai City, Japan
CBB	Coll. Balke, Berlin, Germany
CCS	Coll. Challet, Santa Ana, California, USA
CHB	Coll. Hendrich, Berlin, Germany
CMB	Coll. Mazzoldi, Brescia, Italy
CNU	Coll. Nilsson, Umeå, Sweden
CSN	Coll. M. Satô, Nagoya, Japan
CWW	Coll. Wewalka, Wien, Austria
FMH	Finnish Museum of Natural History, Helsingfors, Finland

- MHNG Muséum d'Histoire naturelle, Genève, Switzerland
 MHNP Muséum national d'Histoire naturelle, Paris, France
 MLB Museum of Natural History, University of the Philippines Los Baños
 NMB Naturhistorisches Museum, Basel, Switzerland
 NMW Naturhistorisches Museum, Wien, Austria
 NSMT National Science Museum, Tokyo, Japan
 NTUT National Taiwan University, Taipei, Taiwan
 TMB Természettudomány Múzeum, Budapest, Hungary
 ZMB Museum für Naturkunde, Humboldt-Universität, Berlin, Germany
 ZRCS Zoological Reference Collection, Singapore
 ZSIC Zoological Survey of India, Calcutta, India

Microdytes BALFOUR-BROWNE

Microdytes BALFOUR-BROWNE 1946: 106; GUIGNOT 1954: 196; VAZIRANI 1968: 103; VAZIRANI 1969: 301; SATO 1972: 49; VAZIRANI 1977: 24; SATO 1981: 67; NAKANE 1988: 31; SATO 1990: 101; SATO 1995: 313; HENDRICH & BALKE 1995: 42; BISTRÖM & al., in print.

TYPE SPECIES: *Microdytes belli* BALFOUR-BROWNE, 1946, by original designation.

SYNONYMICAL NOTE: GUIGNOT (1954) introduced *Nipponhydrus* as a subgenus of *Microdytes* and associated *Hyphydrus flavomaculatus* KAMIYA to it. SATO (1981) regarded *Nipponhydrus* as an independent genus. However, *Nipponhydrus* was recently found to be a junior synonym of *Allopachria* ZIMMERMANN (see NILSSON & WEWALKA 1994).

MORPHOLOGY: Habitus: body regularly oval to oblong-oval, in some species sides slightly dilated behind the shoulder and slightly rhomboid, sometimes attenuated posteriorly; moderately to strongly convex.

Length of body: 1.3 - 2.3 mm, width: 0.8 - 1.6 mm.

Head: rufo-testaceous, ferrugineous, dark brown or black; in some species very broad in comparison to body; moderately strongly to finely punctured; microreticulation variable, but always present; clypeus not or only very finely (in *M. pasiricus* and *M. schwendingeri*) bordered, normally evenly rounded; antennae variable.

Pronotum: rufo-testaceous, ferrugineous, dark brown or black, sometimes with markings; posterior corners distinct but not extended posteriorly; lateral margin distinctly to very finely bordered, in *M. schwendingeri* not bordered; punctures variable; without microreticulation.

Elytra: colouration in most species ferrugineous with variable rufo-testaceous markings or black with minor markings; elytral surface smooth, not keeled; few species (*M. jaechi*, *M. dimorphus* and *M. menopausis*) with elytra shortly and indistinctly carinate at the shoulder; border between elytra and epipleura located on ventral side; punctures variable; without microreticulation.

Ventral side: epipleural cavity totally delimited; epipleuron narrows quite abruptly approximately at the level of first abdominal segment; prosternal process finely dentate (fig. 100); apex of prosternal process somewhat enlarged; mesocoxae moderately separated from each other; metasternal wing medially quite narrow; metacoxal process not fused with base of abdomen.

Legs: base of metatrochanters not totally exposed (fig. 101); minute part of base of metatrochanter covered by the metacoxal process; metafemur does not touch metacoxal process; lateral surface of metatibia is provided with a quite dense row of punctures (in some species this row consists of very fine, hardly visible punctures); apical metatibial spine-row complete, separate spines variable in length; metatibial spurs not modified, straight and medium long; metatarsal claws unequal, shorter claw between 1/2 to 1/3 shorter than longer claw.

Genitalia: penis and parameres symmetric; parameres generally lacking long and slender extensions, sometimes fused. The parameres of *H. zetteli* are deviating, consisting of two pieces. Sclerotized spermatheca not found in most species, large sclerotized spermatheca only found in *M. championi*.

Secondary sexual dimorphism: Male clypeus modified (produced and straightened in the middle) in a few species (*M. dimorphus*, *M. hendrichi*, *M. menopausis* and *M. schuhi*). Male antennae modified in some species (*M. dimorphus*, *M. hendrichi*, *M. pasiricus* and *M. schuhi*).

BIOLOGY: The species of *Microdytes* are aquatic and occur mainly in springs and spring-fed puddles or rock pools; some species prefer small streams with clear water. Many species are restricted to areas with primary rain forest.

DISTRIBUTION: From South India to Nepal, southern China and southern Japan to Borneo and Lombok. The centre of distribution is Thailand with 12 recorded species.

Check list of the species of *Microdytes*

Ten species of *Microdytes* have been recorded until today (see HENDRICH & al. 1995, SATO 1981, 1990, 1995, VAZIRANI 1977). However, *Hydrovatus laccophiloides* REGIMBART, which was transferred to *Microdytes* by VAZIRANI 1977, belongs in fact to a new genus (BISTRÖM & al., in print), and *Microdytes taiwanus* SATO is herewith adjoined to *Allopachria*. On the other hand, *Hydrovatus pasiricus* CSIKI was transferred to *Microdytes* by BISTRÖM & al. (in print). Twenty-one new species are described in this paper.

1. <i>akitai</i> sp.n.	Laos
2. <i>balkei</i> sp.n.	Thailand
3. <i>belli</i> BALFOUR-BROWNE	India
4. <i>bistroemi</i> sp.n.	China
5. <i>boukali</i> sp.n.	India
6. <i>championi</i> BALFOUR-BROWNE	India, Nepal
7. <i>dimorphus</i> sp.n.	Thailand
8. <i>elgae</i> HENDRICH, BALKE & WEWALKA	Indonesia, Singapore, Malaysia, Bhutan
9. <i>gabrielae</i> sp.n.	Thailand
10. <i>hainanensis</i> sp.n.	China
11. <i>hendrichi</i> sp.n.	Malaysia
12. <i>jaechi</i> sp.n.	Java
13. <i>maculatus</i> (MOTSCHULSKY)	"Ind. or.", Thailand
14. <i>mariannae</i> sp.n.	Thailand
15. <i>menopausis</i> sp.n.	Thailand
16. <i>nilssoni</i> sp.n.	China
17. <i>pasiricus</i> (CSIKI)	Indonesia, Singapore, Philippines, Thailand
18. <i>sabitae</i> VAZIRANI	India
19. <i>sarawakensis</i> sp.n.	Borneo
20. <i>satoi</i> sp.n.	China
21. <i>schoedli</i> sp.n.	Thailand
22. <i>schoenmanni</i> sp.n.	Thailand, India, Nepal
23. <i>schuhi</i> sp.n.	Java
24. <i>schwendingeri</i> sp.n.	Thailand
25. <i>shepardi</i> sp.n.	Thailand
26. <i>shunichii</i> SATO	Vietnam
27. <i>sinensis</i> sp.n.	China
28. <i>tomokunii</i> SATO	Nepal
29. <i>uenoi</i> SATO	Japan, Taiwan, China
30. <i>zetteli</i> sp.n.	Thailand

Key to the species of *Microdytes*

1	Elytral punctures very coarse and dense and distinctly of two different kinds (fig. 12c); head dark brown to black	29
-	Elytral punctures very fine to moderately coarse, very sparse to moderately sparse, if of two kinds difference in size less obvious; head testaceous to ferrugineous	2
2	Pronotum and elytra almost entirely dark brown to black without distinct elytral markings	28
-	Pronotum and elytra testaceous, ferrugineous or reddish-brown often with distinct elytral markings	3
3	Punctures on metacoxae moderately coarse to very coarse	4
-	Punctures on metacoxae missing or very fine	17
4	Pronotum predominantly ferrugineous	5
-	Pronotum predominantly testaceous	6
5	Elytra predominantly ferrugineous with distinct testaceous markings including a post-median spot near the suture, size: 1.7 - 1.9 mm.....	<i>belli</i>
-	Elytra predominantly ferrugineous with indistinct testaceous markings without a post-median spot near the suture, size: 1.6 - 1.8 mm.....	<i>satoi</i>
6	Elytra predominantly ferrugineous with more or less distinct testaceous markings including a post-median spot near the suture.....	7
-	Elytra predominantly ferrugineous or rufo-testaceous with testaceous markings without a post-median spot near the suture.....	12
7	Elytral punctures of two kinds (fig. 8c)	8
-	Elytral punctures of one kind (fig. 13b).....	10
8	Body oblong-oval, size: 1.9 - 2.0 mm.....	<i>schoedli</i>
-	Body regularly oval, size: 1.6 - 2.1 mm	9
9	Larger species, size: 2.1 mm.....	<i>mariannae</i>
-	Smaller species, size: 1.6 - 1.9 mm.....	<i>elgae</i>
10	Larger species, size: 1.9 - 2.3 mm	<i>championi</i>
-	Smaller species, size: 1.6 - 1.9 mm.....	11
11	Elytral markings as in fig. 13a, size: 1.6 - 1.9 mm.....	<i>maculatus</i>
-	Elytral markings as in fig. 18, size: 1.9 mm	<i>sabitae</i>
12	Body regularly oval	13
-	Body oblong-oval, slightly rhomboid, dilated at the shoulders	15
13	Larger species, size: 1.7 - 2.0 mm.....	<i>shepardi</i>
-	Smaller species, size: 1.3 - 1.6 mm.....	14
14	Clypeus bordered, size: 1.3 - 1.4 mm	<i>schwendingeri</i>
-	Clypeus not bordered, size: 1.3 - 1.6 mm	<i>hainanensis</i>
15	Apical three sternites distinctly punctured, size: 1.8 mm.....	<i>dimorphus</i>
-	Apical three sternites almost without punctures	16
16	Elytral punctures of two kinds, size: 1.4 - 1.7 mm	<i>menopausis</i>
-	Elytral punctures of one kind, size: 1.4 - 1.6 mm.....	<i>pasiricus</i>
17	Pronotum predominantly rufo-testaceous	18
-	Pronotum predominantly ferrugineous to dark brown.....	22

- 18 Larger species, head rufo-ferrugineous, size: 1.6 - 1.8 mm..... 20
 - Smaller species, head rufo-testaceous, size: 1.4 - 1.5 mm..... 19
 19 Body regularly oval, elytral markings distinct, size: 1.4 - 1.5 mm *schoenmanni*
 - Body oblong-oval, elytral markings indistinct, size: 1.5 mm *gabrielae*
 20 Body oblong-oval, elytral markings distinct, size: 1.7 - 1.8 mm..... *balkei*
 - Body regularly oval, elytral markings less distinct, size: 1.6 - 1.8 mm..... 21
 21 Punctures on pronotal disc very fine and very sparse, size: 1.7 - 1.8 mm..... *shunichii*
 - Punctures on pronotal disc moderately fine and not so sparse, size: 1.6 - 1.7 mm *akitai*
 22 Head rufo-ferrugineous to dark brown 23
 - Head rufo-testaceous 27
 23 Pronotum ferrugineous to dark brown, broadly testaceous along lateral margins; small species, size: 1.30 - 1.45 mm..... *boukali*
 - Pronotum entirely ferrugineous to dark brown; larger species, size: 1.4 - 1.7 mm..... 24
 24 Elytra dark brown, markings very indistinctly reddish-brown, size: 1.4 - 1.6 mm..... *tomokunii*
 - Elytra flavo-testaceous with ferrugineous markings or dark brown with distinct testaceous markings 25
 25 Reticulation on head limited to anterior half, size: 1.6 - 1.7 mm..... *zetteli*
 - Head entirely reticulated 26
 26 Elytra predominantly flavo-testaceous often with extensive ferrugineous markings leaving open a testaceous post-median spot near the suture, size: 1.4 - 1.7 mm *uenoi*
 - Elytra predominantly dark brown with testaceous markings without a post-median spot near the suture, size: 1.5 - 1.6 mm *bistroemi*
 27 Elytra flavo-testaceous with indistinct ferrugineous markings, size: 1.5 - 1.7 mm *sinensis*
 - Elytra dark brown with distinct testaceous markings, size: 1.6 - 1.8 mm *nilssoni*
 28 Elytra entirely dark brown to black; third to eighth antennal segments dilated in male (fig. 93), size: 1.8 - 1.9 mm *hendrichi*
 - Elytra with indistinct rufo-testaceous spots; second antennal segment dilated and third one flexed in male (fig. 97), size: 1.7 - 1.9 mm..... *schuhi*
 29 Pronotum predominantly testaceous, size: 2.1 - 2.2 mm..... *jaechi*
 - Pronotum entirely black, size: 1.9 - 2.0 mm *sarawakensis*

Description of species (in alphabetic order)

Microdytes akitai sp.n.

Type locality: Laos, Thupakhom Distr., Mt. Phukhaokhova.

Holotype ♂ (NSMT): "Mt. Phukhaokhova (alt. 700 m), Laos Thu Pakhom Distr. 3-V-1995 K. Akita leg.".

Paratypes: 180 specimens with same data as the holotype (CAH, CSN, CWW, NMW).

DIAGNOSIS: *Microdytes akitai* very much resembles *M. shunichii* in the habitus and the colouration but can be distinguished by the stronger elytral punctures and the male genitalia. *Microdytes akitai* is also closely related to *M. zetteli* but this species has the pronotum ferrugineous and the punctures on the elytra finer.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 1).

Length of body: 1.6 - 1.7 mm, width: 1.1 - 1.2 mm.

Head: ferrugineous to dark rufo-testaceous; clypeus not bordered; punctures on the anterior half sparse and moderately fine, on the posterior half slightly coarser; anterior half finely microreticulate. Antennae testaceous, moderately long and slender (fig. 88).

Pronotum: rufo-testaceous, indistinctly ferrugineous at the anterior margin and more distinctly ferrugineous at the posterior margin; lateral margin finely bordered, lateral margins slightly but regularly rounded; punctures very sparse and irregular on the disc, moderately fine and sparse at the lateral margins and the anterior margin and very coarse along the posterior margin; without microreticulation.

Elytra: ferrugineous, at the base with a more or less distinct testaceous transverse band not reaching the suture, dilated at the shoulder and continuing along the margin almost to the apex, forming a triangular spot, with a post-median transverse testaceous band and a small round post-median testaceous spot near the suture (fig. 1); punctures moderately sparse and fine, slightly irregular in size near the suture, more fine and sparse towards the sides; two longitudinal rows of punctures rudimentary; highly polished and shining; without microreticulation.

Ventral side: epipleura, head, prothorax and abdomen testaceous, the rest of the ventral side rufo-testaceous to ferrugineous; punctures on metasternum and metacoxae very fine and sparse, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 31); parameres (fig. 60); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Katsumi Akita, Hisai City (near Nagoya).

BIOLOGY: The specimens were taken in a small pit hole at a dried up mountain stream.

DISTRIBUTION: Laos.

Microdytes balkei sp.n.

Type locality: Thailand, Prov. Rayong, Khao Chamao NP.

Holotype ♂ (NMW): "Thailand 1990 (14) Prov. Rayong Khao Chamao NP leg. Jäch 12./13.12.". **Paratypes:** 14 exs., with same data as holotype (NMW, CWW, CBB, CCS, FMH); 1 ♂, 2 ♀♀, Thailand, Khao Yai NP, 16.XI.1988, (loc.no. 8), leg. Jäch (NMW).

DIAGNOSIS: The elytral markings and the habitus of *M. balkei* are similar to those of *M. maculatus* but the colouration of the head is darker and the punctures of the metacoxae much finer.

DESCRIPTION: Habitus: body oblong-oval, moderately convex (fig. 2).

Length of body: 1.7 - 1.8 mm, width: 1.1 - 1.2 mm.

Head: rufo-ferrugineous, often testaceous on the clypeus; clypeus not bordered; finely, sparsely and relatively regularly punctured, more sparsely near the eyes; anterior third finely microreticulate. Antennae testaceous, moderately long and slender (similar to fig. 88).

Pronotum: rufo-testaceous, along the anterior margin relatively narrowly and in the middle of the posterior margin more widely ferrugineous; lateral margin finely bordered, regularly rounded; punctures quite regular and sparse and moderately strong, some coarser punctures along the posterior margin; without microreticulation.

Elytra: ferrugineous, on the base with a distinct testaceous transverse band, dilated at the shoulder and continuing along the margin almost to the apex, forming a triangular spot, very often with a short post-median and a small oval post-median testaceous spot near the suture (fig. 2); punctures fine and regular, moderately dense; two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, prothorax and abdomen testaceous, rest of the ventral side ferrugineous; metacoxae finely and sparsely, metasternum very finely punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 32); parameres fused (fig. 61); without secondary sexual characters.

Female: sclerotized spermatheca small.

ETYMOLOGY: This species is dedicated to Michael Balke, Berlin.

BIOLOGY: This species was collected in rock pools at the margin of a river, ca. 5 - 10 m wide (type locality), and in a smaller stream (ca. 1 - 2 m wide).

DISTRIBUTION: Thailand.

Microdytes belli BALFOUR-BROWNE

Microdytes belli BALFOUR-BROWNE 1946: 106; VAZIRANI 1968: 103; VAZIRANI 1969: 302; VAZIRANI 1977: 24; SATO 1981: 68.

Holotype ♀ (BML): "India: Bombay Pres., Khandesh (T.R. Bell coll., ex. coll. H.L. Andrewes)" (BALFOUR-BROWNE 1946).

Material studied: holotype; 1 ♀, paratype from the type locality (BML); 2 ♀♂, from the type locality (BML, MHNP); 1 ♂, "India or. H.E. Andrewes, Kanara, T.R.D. Bell, *Microdytes Belli* Reg. n.sp." (MHNP).

DIAGNOSIS: the colouration of *M. belli* with the predominantly ferrugineous pronotum, the testaceous head and elytra with testaceous markings is similar to that of *M. satoi*, *M. nilssoni* and *M. bistroemi*. *Microdytes belli* is distinguishable from these species by the more dense and coarser punctures on the elytra and by the male genitalia.

DESCRIPTION: Habitus: body regularly oval, the sides dilated just behind the shoulder, strongly convex (fig. 3).

Length of body: 1.7 - 1.9 mm, width: 1.3 - 1.4 mm.

Head: rufo-testaceous; clypeus not bordered; very finely and slightly irregularly punctured; a trace of microreticulation along the edge of the clypeus. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: ferrugineous, anterior and lateral margins narrowly paler; lateral margin finely bordered, regularly rounded; punctures regular, fairly strong, coarser along the posterior margin; without microreticulation.

Elytra: ferrugineous, on the base with a narrow distinct testaceous transverse band posteriorly waved and dilated at the shoulder and continuing moderately widely along the margin almost to the apex, a small round post-median testaceous spot near the suture (fig. 3); punctures fairly strong and regular as on the pronotum, moderately dense, progressively more fine and sparse towards the sides; two longitudinal rows of punctures of the same size as the basic punctures fairly distinct; highly polished and shining; without microreticulation.

Ventral side: head and prothorax testaceous, metasternum medially rufo-testaceous, epipleura and rest of ventral side ferrugineous; metacoxae coarsely and regularly, metasternum strongly and irregularly punctured, abdomen very finely and sparsely punctured; without microreticulation.

Legs testaceous.

Male: penis (fig. 33); parameres (fig. 62).

Female: sclerotized spermatheca not found.

DISTRIBUTION: India (Maharashtra, Karnataka).

***Microdytes bistroemi* sp.n.**

Type locality: China, Jiangxi, W Jinggang Shan.

Holotype ♂ (NMW): "China Jiangxi W Jinggang Shan Ciping env. 2.-14. VI. 1994". **Paratypes**: 5 ♂♂, 4 ♀♀, with same data as the holotype (NMW, CWW, FMH).

DIAGNOSIS: *M. bistroemi* is very similar to *M. uenoi* but is distinguishable from the latter by minor differences in the elytral markings and the male genitalia. It also resembles *M. zetteli* but can be separated by the colouration of the elytra, by the entirely reticulated head, and by the male genitalia.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 4).

Length of body: 1.5 - 1.6 mm, width: 1.00 - 1.15 mm.

Head: rufo-ferrugineous to dark brown, paler on the clypeus; clypeus not bordered; finely and very sparsely punctured, some coarser punctures on the vertex and a row of coarser punctures alongside the eyes; entirely and distinctly microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: dark brown to almost black; lateral margin finely bordered, regularly rounded; punctures moderately dense, irregular in size and distribution, some coarser punctures along the posterior margin; without microreticulation.

Elytra: dark brown, a distinct testaceous subbasal transverse band not reaching the suture, dilated at the shoulder, an indistinct ferrugineous post-median lateral and a preapical band (fig. 4); punctures very fine, moderately regular and moderately dense, additionally with some coarser punctures, two longitudinal rows of coarser punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura testaceous anteriorly and ferrugineous posteriorly; head and prothorax testaceous, metasternum and metacoxae medially and abdomen entirely ferrugineous, rest of the ventral side dark brown; metacoxae and metasternum very sparsely and very finely punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 34); parameres (fig. 63); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Dr. Olof Biström, Helsingfors.

DISTRIBUTION: China (Jiangxi).

***Microdytes boukali* sp.n.**

Type locality: South India, Kerala, Cardamom Hills.

Holotype ♂ (NMW): "S-India, Kerala Cardamom Hills 15 km SW Munnar 76°58'E 10°02'N Kallar Valley 6.-18.12.1993 1000 m (7) leg. Boukal & Kejval". **Paratypes**: 49 specimens with same data as the holotype (NMW, CWW, CCS, FMH); 1 ex., S India, Kerala, Cardamom Hills, 50 km NW Pathanamthitta, nr. Pambaiyar river, 300

m, 77°49'E 09°25'N, 27.-29.XII.1993, (loc.no. 12), in small river, leg. Kejval & Boukal (NMW); 1 ♂, S India, Kerala, 5 km S Rani, 76°47'E 09°21'N, 1.I.1994, (loc.no. 14), leg. Boukal & Kejval (NMW).

DIAGNOSIS: *M. boukali* is the smallest species of the genus. In habitus and elytral markings it resembles *M. gabrielae* but differs from it in the dark brown head and pronotum and in the male genitalia.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 5).

Length of body: 1.30 - 1.45 mm, width: 0.80 - 0.95 mm.

Head: ferrugineous to dark brown, anteriorly slightly paler; clypeus not bordered; very finely and very sparsely punctured, even more sparsely near the eyes; microreticulation between the eyes very fine, only visible in high magnification. Antennae flavo-testaceous, rather short and plump (fig. 89).

Pronotum: ferrugineous to dark brown, broadly testaceous laterally; lateral margin finely bordered, more rounded anteriorly; almost unpunctured, some coarser punctures along the anterior margin; without microreticulation.

Elytra: testaceous to light-brown, yellowish markings near the base and near the apex, dark brown along the base and the suture, some indistinct brown markings on the disc, paler along the sides; (fig. 5); almost unpunctured only with few punctures along the suture and two longitudinal rows of punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: prothorax testaceous, epipleura and the rest of the ventral side ferrugineous to dark brown; almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 35); parameres fused (fig. 64); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to David S. Boukal, České Budejovice.

BIOLOGY: Rock pools in large boulders in a stream, ca. 5 m wide, shaded, flowing through degraded primary forest with cinnamom plantations.

DISTRIBUTION: South India (Kerala).

Microdytes championi BALFOUR-BROWNE

Microdytes championi BALFOUR-BROWNE 1946: 107; VAZIRANI 1969: 303; VAZIRANI 1977: 24; SATO 1981: 68.

Holotype ♂ (BML): "India: United Provinces, Kumaon, Haldwani Distr. H.G. Champion coll" (BALFOUR-BROWNE 1946).

Material studied: holotype; 26 paratypes with same data as holotype (BML, CWW); 1 ♀, India, Uttar Pradesh, Sattal, 1400 m, 21.V.1981, leg. Brancucci (NMB); 3 exs., Nepal, Dahran, 12.V.1981, (loc.no. N10) leg. Jäch (NMW); 7 exs., Chatra - Dahran, 14.II.1981, (loc.no. N14), leg. Jäch (NMW, CWW); 1 ex., Nepal, Hetauda, 19.II.1991, (loc.no. N23) leg. Jäch (NMW); 15 exs., Nepal, 20 km NW Pokara, Lumle, 1600 m, 2.V.1981, leg. Wewalka (CWW, CCS, FMW).

DIAGNOSIS: *M. championi* resembles *M. schoedli* and *M. mariannae* in size, in habitus and colouration but it can be distinguished from both by the finer and more regular punctures on the elytra and by the male genitalia.

DESCRIPTION: Habitus: Body regularly oval to oblong-oval, moderately convex (fig. 6).

Length of body: 1.9 - 2.3 mm, width: 1.3 - 1.5 mm.

Head: testaceous, ferrugineous along the eyes and on the vertex; clypeus not bordered; finely and

slightly irregularly punctured, punctures somewhat larger on the vertex; anterior half finely microreticulate. Antennae flavo-testaceous, rather long and slender (fig. 90).

Pronotum: testaceous, on the anterior margin narrowly and in the middle of the posterior margin more widely ferrugineous; lateral margin finely bordered, almost straight; disc and lateral margin with irregular, fairly fine, punctures, anterior narrowly and posterior margin more extensively covered with coarser punctures; without microreticulation.

Elytra: ferrugineous to pale brown; anterior margin, suture and apex dark brown, at the base with a more or less distinct testaceous transverse band, which is posteriorly waved, dilated at the shoulder and continuing along the margin almost to the apex, with a testaceous post-median transverse band and a round post-median spot near the suture often indistinct (fig. 6); punctures fairly fine and regular, moderately dense, progressively more fine and sparse towards the sides; two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: head and prothorax testaceous, epipleura and the rest of the ventral side ferrugineous; metacoxae moderately strongly and sparsely, metasternum finely, sparsely and irregularly punctured, abdomen very finely and sparsely punctured; without microreticulation.

Legs testaceous.

Male: penis (fig. 36); parameres fused (fig. 65). The dense tuft of long hairs on the lobes of the labial mentum of the male mentioned in the original description has not been seen.

Female: sclerotized spermatheca large (fig. 99).

BIOLOGY: This species was collected in a variety of habitats: 1) ground water pools at the shore of a large river, 2) small forest stream, 3) spring-fed pit hole.

DISTRIBUTION: India (Uttar Pradesh); Nepal.

Microdytes dimorphus sp.n.

Type locality: Thailand, Khao Yai.

Holotype ♂ (NMW): "Thailand 14.11. Khao Yai NP leg. Jäch 88 (3)".

DIAGNOSIS: *M. dimorphus* is closest related to *M. menopausis* from which it can be distinguished by the coarser punctures on the elytra similar in size, by the punctured abdomen and by the produced clypeus and by the shape of the male antennae.

DESCRIPTION: Habitus: body oblong-oval, slightly rhomboid, shoulders slightly produced, strongly convex (fig. 7).

Length of body: 1.8 mm, width: 1.3 mm.

Head: rufo-testaceous; clypeus in male strongly produced and straightened in the middle (fig. 7b), with flat tubercles behind the insertion of the antennae; moderately strongly, moderately densely and regularly punctured; traces of microreticulation along the anterior margin. Antennae flavo-testaceous, rather short and plump, the second segment extremely enlarged in male (fig. 91).

Pronotum: rufo-testaceous; lateral margin finely bordered, regularly rounded; punctures irregular in size and distribution, more sparse on the disc, coarser along the posterior margin; without microreticulation.

Elytra: ferrugineous to dark brown, narrowly dark brown along the base, indistinctly testaceous at the shoulder and along the sides, distinctly testaceous near the apex (fig. 7); shortly carinate at the shoulder; punctures relatively coarse, of two kinds, the finer ones of about two thirds in

diameter than the coarser ones, fairly evenly distributed; two longitudinal rows of punctures indistinct; highly polished and shining; without microreticulation.

Ventral side: head, prothorax, epipleura and the abdomen testaceous, the rest of the ventral side predominately rufo-ferrugineous; metacoxae, metasternum and first sternite regularly, rather sparsely and coarsely punctured, rest of the abdomen finely but distinctly punctured; without microreticulation.

Legs testaceous.

Male: penis and parameres not distinguishable from those of *M. menopausis* (figs. 44, 73); clypeus strongly produced and straightened; second segments of antennae extremely enlarged.

Female: unknown.

BIOLOGY: This species was taken in a small stream (ca. 1 - 2 m wide), flowing through dense primary forest, sandy bottom.

DISTRIBUTION: Thailand.

Microdytes elgae HENDRICH, BALKE & WEWALKA

Microdytes elgae HENDRICH, BALKE & WEWALKA, in: HENDRICH & BALKE 1995: 42.

Holotype ♂ (ZMB): "Indonesia, Bali, BA 8, 3 km NE Candi Kuning, Waldbach, 1320 m, 11.7.1991, Balke & Hendrich leg." (HENDRICH & BALKE 1995).

Material studied: 1 ♂, paratype with same data as holotype (CWW); 3 paratypes, Indonesia, Bali, 5 km N Bedugul, 1300 m, 12.X.1990, (loc.no. BA8) leg. Balke & Hendrich (CWW); 1 ♂, Indonesia, Lombok, Mataram, Pemenang, 10.II.1988, leg. Jäch, (loc.no. 25) (NMW); 7 exs., Indonesia, Lombok, Tetebatu, 7.II.1988, leg. Jäch, (loc.no. 22) (NMW, CWW, FMH); 13 exs., Singapore, Bukit Timah, 27.VIII.1993, leg. Yang & Balke, (loc.no. #1841) (CWW, ZRCS); 10 exs., Malaysia, Pahang, Taman Negara NP, Nusa Camp, 100 m, 18.-24.VI.1994, (loc.no. MA 5), leg. Hendrich (CHB, CWW, ZRCS); 15 exs., Malaysia, Kedah, Gunung Jerai, N Sungai Petani, 700 m, 2.II.1992, leg. Jäch, (loc.no. 18) (NMW, CWW); 1 ♀, Malaysia, Kedah, SW Langkawi, Telaga Tujuh, 29.I.1992, leg. Jäch, (loc.no. 12) (NMW); 1 ♀, Malaysia, Selangor, Templer Park, N Kuala Lumpur, 21.I.1992, leg. Jäch, (loc.no. 1) (NMW); approx. 50 exs., Indonesia, Borneo, E Kalimantan, Aput stream near Juhan Asa, XII.1995, leg. Mazzoldi (CMB, CWW); 11 exs., Malaysia, Borneo, Sarawak, Kelabit Highland, 5 km E Bario, Pa Ukat, ca. 1000 m, 1.III.1993, leg. Jäch, (loc.no. 17) (NMW, CWW, CCS, FMH); 7 exs., Malaysia, Borneo, Sarawak, Kubah NP, Gunung Serapi, 20 km W Kuching, 6./7.III.1993, leg. Jäch, (loc.no. 23) (NMW, CWW, FMH); 1 ♀, Malaysia, Borneo, Sarawak, ca. 40 km SE Kapit, Rumah Ugap, III.1994, leg. Kodada (NMW); 4 ♂♂, 7 ♀♀, Bhutan, Sargham, 1000 m, VIII.1982, leg. Rai (NMB, CWW); 1 ♀, Bhutan, Sarbhang, 300 m, 31.VIII.1981, leg. Bhakta, (NMB); 1 ♀, Bhutan, Phuntsholing, 2-400 m, VIII.1982, leg. Rai (NMB).

DIAGNOSIS: *M. elgae* resembles *M. maculatus* and *M. sabitae* in colouration and size but it is distinguishable by the elytral punctures of two kinds and the male genitalia. *Microdytes elgae* is also closely related to *M. mariannae* which has similar male genitalia but it can be distinguished by the less coarse punctures on the elytra and by the smaller size.

Specimens of *M. elgae* show some regional variations; specimens from Bali and Lombok in the average are larger (1.8 - 1.9 mm) and have less distinct elytral markings while most specimens from other localities have distinct elytral markings and are somewhat smaller.

DESCRIPTION: Habitus: body regularly oval, the sides slightly dilated just behind the shoulder, moderately convex (fig. 8).

Length of body: 1.6 - 1.9 mm, width: 1.2 - 1.3 mm.

Head: rufo-testaceous, very narrowly ferrugineous alongside the eyes; very finely and sparsely, slightly irregularly punctured; anterior half finely microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: rufo-testaceous, posterior margin narrowly ferrugineous, sometimes also darker on the

disc; lateral margin very finely bordered, regularly rounded; punctures irregular, fine to moderately strong and very sparse on the disc, fairly strong along lateral margins, very coarse along the posterior margin; without microreticulation.

Elytra: ferrugineous to pale brown, on the base with a more or less distinct testaceous transverse band, posteriorly waved, dilated at the shoulder and continuing along the margin almost to the apex with a post-median transverse band and a small round post-median testaceous spot near the suture (fig. 8); punctures sparse, of two kinds, coarser punctures about as frequent as fine ones (fig. 8c), progressively more fine and sparse towards the sides; two longitudinal rows of stronger punctures rudimentary; highly polished and shining; without microreticulation.

Ventral side: epipleura and the whole ventral side testaceous; metacoxae quite strongly, sparsely and regularly punctured, metasternum moderately strongly and irregularly punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 37); parameres (fig. 66); without secondary sexual characters.

Female: sclerotized spermatheca not found.

BIOLOGY: This species lives in springs and small pools in primary forest.

DISTRIBUTION: Bali, Lombok, Borneo, Singapore, Peninsular Malaysia, Bhutan.

Microdytes gabrielae sp.n.

Type locality: Thailand, Phetchabun Prov., Huai Nam Phang.

Holotype ♂ (NMW): "THAILAND: Petchabun 36 km SE Sila, 2.3. Huai Nam Phang, 1994 leg. W. Shepard WDS A 1024".

DIAGNOSIS: *M. gabrielae* resembles *M. uenoi* in size, elytral markings and the male genitalia but its body is less convex and the colour of head and pronotum is lighter. Size and colouration of *M. gabrielae* is also similar to that of *M. schoenmanni* but it is distinguishable from the latter by the more oblong-oval form and the male genitalia.

DESCRIPTION: Habitus: body regularly oblong-oval, moderately convex (fig. 9).

Length of body: 1.5 mm, width: 1.0 mm.

Head: rufo-testaceous; clypeus not bordered; very finely and sparsely punctured; entirely and finely microreticulate. Antennae flavo-testaceous, rather short and plump (similar to fig. 89).

Pronotum: rufo-testaceous, along the anterior and posterior margin narrowly ferrugineous; lateral margin finely bordered, lateral margins almost straight in the posterior half; punctures rather sparse, moderately fine, coarser punctures near the middle of the posterior margin; without microreticulation.

Elytra: rufo-testaceous to ferrugineous with indistinct testaceous markings near the base at the sides, near the apex and often post-median near the suture (fig. 9); punctures very fine and sparse, additionally with moderately strong punctures near the suture; a longitudinal row of coarser punctures indistinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, head, prothorax and partly abdomen testaceous, rest of the ventral side ferrugineous; metasternum, metacoxae, epipleura and abdomen almost without punctures; without microreticulation.

Legs rufo-testaceous.

Male: penis (fig. 38); parameres (fig. 67); without secondary sexual characters.

Female: unknown.

ETYMOLOGY: This species is dedicated to Mrs. Gabi Seiler a good friend of my family.

BIOLOGY: The holotype was collected in a very small streamlet in a shaded ravine, current very slow, with muddy bottom.

DISTRIBUTION: Thailand.

***Microdytes hainanensis* sp.n.**

Type locality: China, Hainan, Jianfeng Mts.; CWBS loc.no. 210.

Holotype ♂ (CASS): "CHINA: Hainan (210) Jianfeng Mts., 800 m Tian Chi Bot. Gard. 23.1.1996, leg. Jäch".

Paratypes: 15 exs., with same locality data as the holotype (NMW, CWW, CCS); 2 ♀♀, CHINA: Hainan (CWBS loc.no. 194), 30 km E Maoyang, Wuzhi Shan Resort, 700 - 800 m, 18.1.1996, leg. Jäch (NMW).

DIAGNOSIS: The male genitalia of *M. hainanensis* are similar to those of *M. schwendingeri* and *M. bistroemi*. From *M. schwendingeri* it can be distinguished by the form of the body more oblong-oval and the clypeus not bordered. From *M. bistroemi* it can be separated by the colour of the pronotum being rufo-testaceous and not ferrugineous.

DESCRIPTION: Habitus: body regularly oval to oblong-oval, strongly convex (fig. 10).

Length of body: 1.3 - 1.6 mm, width: 1.0 - 1.1 mm.

Head: testaceous; clypeus not bordered; very finely and sparsely punctured; almost entirely and distinctly microreticulate only alongside the eyes without microreticulation. Antennae flavo-testaceous, rather short and plump, the second segment enlarged (fig. 92).

Pronotum: rufo-testaceous, along the posterior margin relatively narrow ferrugineous; lateral margin finely bordered, regularly rounded; punctures rather sparse, moderately fine, coarser punctures along the lateral margin and along the posterior margin; without microreticulation.

Elytra: ferrugineous, with indistinct testaceous markings near the base, at the sides and near the apex (fig. 10); punctures very fine and sparse at the sides, with additional moderately strong punctures near the suture; a longitudinal row of stronger punctures relatively distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, prothorax and abdomen partly testaceous, rest of the ventral side ferrugineous; metacoxae and metasternum moderately strongly and sparsely punctured, epipleura and abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 39); parameres (fig. 68); without secondary sexual characters.

Female: sclerotized spermatheca not found.

BIOLOGY: This species was collected in a small springfed pool with sandy bottom (type locality); and in a small pool at the margin of a small river (ca. 5 m wide), flowing in a deep, shaded gorge.

DISTRIBUTION: China (Hainan).

***Microdytes hendrichi* sp.n.**

Type locality: Malaysia, Prov. Pahang, Cameron Highlands.

Holotype ♂ (NMW): "Prov. PAHANG (6) Cam. HL 25./26.1. Sg. Jasar 1400 m MALAYSIA 1992 leg. Schillhammer". **Paratypes:** 3 ♂♂, 1 ♀, with same data as holotype (NMW, CWW, FMH); 2 ♂♂, Malaysia, Prov.

Pahang, Cameron Highlands, Jasar River, 1500 m, 24./25.I.1992, (loc.no. 5b), leg. Schillhammer (NMW, CWW); 1 ♀, Malaysia, Prov. Pahang, Cameron Highlands, 20.VIII.1988, (loc.no. 5), leg. Schödl (NMW); 15 exs., Malaysia, Prov. Pahang, Cameron Highlands, Tanah Rata, track 4, 1420 m, small stream, 16.VI.1994, leg. Hendrich (CHB, CWW, CCS, ZRCS); 19 exs., Malaysia, Prov. Pahang, Cameron Highlands, Road Tanah Rata - Brinchang, Sungai Ruil, 28.XII.1995, leg. Mazzoldi (CMB, CWW, CHB); 5 exs., Malaysia, Prov. Pahang, Cameron Highlands, Tanah Rata, Sungai Ruil, near Orang Asli settlement, 15.XII.1996, leg. Hendrich (CHB).

DIAGNOSIS: *M. hendrichi* is very closely related to *M. schuhi*. It can be distinguished by the finer punctures of the elytra, the colour of the elytra entirely dark brown to black and the shape of the antennae in male. From other species of the genus *M. hendrichi* differs by the strongly convex form attenuated to the apex.

DESCRIPTION: Habitus: body regularly oval, slightly attenuated to apex, strongly convex (fig. 11).

Length of body: 1.8 - 1.9 mm, width: 1.3 - 1.4 mm.

Head: rufo-testaceous; clypeus in male distinctly and in female slightly produced and straightened in the middle, not bordered; moderately strongly, moderately densely and regularly punctured, a row of coarser punctures alongside the eyes; almost entirely and moderately strongly microreticulate. Antennae flavo-testaceous, rather short and plump (in female, similar to fig. 92), modified in male (fig. 93).

Pronotum: dark brown to black; lateral margin finely bordered, regularly rounded anteriorly, almost straight in the posterior half; moderately strongly, moderately densely, relatively irregularly punctured, a band of coarser punctures along the posterior margin; without microreticulation.

Elytra: dark brown to black; very finely, relatively sparsely and regularly punctured; two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: head testaceous, epipleura and rest of ventral side dark brown; metasternum, metacoxae and first sternite finely, regularly and rather sparsely punctured, rest of the abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 40); parameres (fig. 69), third to eighth antennal segments dilated.

Female: antenna simple; sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Lars Hendrich, Berlin.

BIOLOGY: This species was collected in small and shallow shaded forest streamlets with clear water, current slow, with muddy ground; at the bank of a partly shaded rivulet between roots.

DISTRIBUTION: Peninsular Malaysia.

Microdytes jaechi sp.n.

Type locality: Indonesia, W-Java, Cibodas, Telaga Biru, 1500 m.

Holotype ♂ (NMW): "W-Jawa 16.1.1987 Cibodas, leg. Jäch T.Biru 1500 m J8". **Paratypes:** 24 ex., with same data as the holotype (NMW, CWW, CBH, CCS, FMH).

DIAGNOSIS: Together with *M. sarawakensis*, *M. jaechi* forms a subgroup within the genus *Microdytes* distinguishable from other species by the coarse punctures on the elytra. *Microdytes jaechi* differs from *M. sarawakensis* in the pronotum being predominantly testaceous.

DESCRIPTION: Habitus: regularly oval, strongly convex, shoulders slightly produced (fig. 12).

Length of body: 2.1 - 2.2 mm, width: 1.5 - 1.6 mm.

Head: dark brown, paler anteriorly; clypeus not bordered; sparsely, irregularly, moderately finely punctured, coarser posteriorly, a row of coarser punctures near the clypeal dimples and alongside the eyes; strongly microreticulate on the anterior fourth. Antennae flavo-testaceous, rather long and slender (similar to fig. 90).

Pronotum: testaceous, dark brown to black along the anterior and posterior margin and medially; lateral margin distinctly bordered, scarcely rounded; very sparsely and irregularly punctured on both sides of the middle, moderately strongly and densely punctured along the anterior margin and a broad band of coarser punctures along the posterior margin; without microreticulation.

Elytra: dark brown to black, distinct subbasal, post-median and preapical markings testaceous (fig. 10); indistinctly carinate at the shoulder; a longitudinal impression with coarse punctures along the side; punctures relatively dense, of two kinds, coarser punctures about as frequent as finer ones, diameter of coarser punctures about three times as long as diameter of finer ones (fig. 12c); two longitudinal rows of stronger punctures on the disc, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: head and pronotum testaceous, epipleura and rest of ventral side dark brown; epipleura superficially punctured; metasternum and metacoxae very coarsely but sparsely punctured, first sternite finely and rather sparsely punctured, rest of the abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 41); parameres (fig. 70), without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Dr. Manfred A. Jäch, Vienna, who collected 13 of the 30 species treated in this paper.

BIOLOGY: This species was collected at the margin of a small lake in primary forest.

DISTRIBUTION: Java.

Microdytes maculatus (MOTSCHULSKY)

Hydrovatus maculatus MOTSCHULSKY 1859: 42; SHARP 1882: 814, 973; REGIMBART 1899: 231; ZAITZEV 1915: 293; ZIMMERMANN 1920: 34.

Desmopachria maculata, GSCHWENDTNER 1935: 367; BALFOUR-BROWNE 1946: 106;

Microdytes maculatus, VAZIRANI 1969: 301; VAZIRANI 1977: 24; SATO 1981: 68.

Lectotype ♀, by present designation (MHNP): "Dohen (?) Ind. or. Dr. Regimbart vidit 1898 maculatus Motsch. coll. Oberthür".

Additional material studied: 39 exs. Thailand, Chiang Mai, Zoo, 18°49'N 98°57'E, at light, 10.-17.IV.1989, leg. Chantaramogkol & Malicky (NMW, CWW, CCS), 1 ♂, Thailand, Mae Ping, at light, 24.-26.VI.1991, leg. Malicky; 2 ♀♀, Thailand, Khao Yai NP, 14.XI.1988, leg. Jäch, (loc.no. 3) (NMW); 16 exs. Thailand, Khao Yai NP, 14.11.1988, leg. Jäch, (loc.no. 8) (NMW, CWW, FMH); 1 ♀, W Thailand, Tham Tharn Lot NP, N Kanchanaburi, 28./29.XI.1990, leg. Jäch, (loc.no. 3) (NMW); 1 ♂, Thailand, Tam Pha Dang, Mae Hong Son, 6.XI.1989, leg. Sató (CSN).

DIAGNOSIS: *M. maculatus* resembles *M. elgae* and *M. sabitae* in size and colouration. From *M. elgae* it differs by the regular punctures on the elytra and by the male genitalia.

The lectotype is somewhat larger than the specimens from Thailand and the reticulation on the head is more extended. As the lectotype is a female no proof is given that the specimens from Thailand belong to *M. maculatus*.

DESCRIPTION: Habitus: body oblong-oval, dilated at the shoulders, slightly rhomboid, moderately convex (fig. 13).

Length of body: 1.6 - 1.9 mm, width: 1.1 - 1.3 mm.

Head: rufo-testaceous; clypeus not bordered; finely, sparsely and relatively regularly punctured; anterior half to two-thirds finely microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: rufo-testaceous, along the anterior margin relatively narrowly and in the middle of the posterior margin more widely ferrugineous; lateral margin finely bordered, regularly rounded; punctures quite regular and sparse and moderately strong on disc, progressively more fine and sparse towards the sides, coarser punctures along the posterior margin; without microreticulation.

Elytra: ferrugineous, on the base with a distinct testaceous transverse band, posteriorly waved, dilated at the shoulder and continuing along the margin almost to the apex with a post-median band, a triangular apical spot and a small round post-median testaceous spot near the suture (fig. 13); punctures fairly fine and regular, moderately dense, progressively more fine and sparse towards the lateral margins; with two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, prothorax, metacoxae medially and abdomen testaceous, rest of the ventral side ferrugineous; metacoxae fairly finely and sparsely, metasternum moderately strongly and irregularly punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 42); parameres (fig. 71); without secondary sexual characters.

Female: sclerotized spermatheca not found.

BIOLOGY: This species has been collected in small streams and spring-fed pools in forest; some specimens have been collected at light.

DISTRIBUTION: "Ind. or."; Thailand.

Microdytes mariannae sp.n.

Type locality: Thailand, Phetchabun Prov., Nam Nao.

Holotype ♂ (NMW): "THAILAND: Petchabun Nam Nao NP, 14.3. Huai Ya Krua, 1994 leg. W. Shepard WDS A 1039".

DIAGNOSIS: *M. mariannae* is closely related to *M. elgae*, is similar in the habitus and the colouration but can be distinguished by the coarser punctures on the elytra and by the larger size.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 14).

Length of body: 2.1 mm, width: 1.5 mm.

Head: rufo-testaceous to ferrugineous; clypeus not bordered; finely and sparsely, slightly irregularly punctured; only the anterior fourth finely microreticulate. Antennae rufo-testaceous, rather long and slender (similar to fig. 90).

Pronotum: rufo-testaceous, posterior margin narrowly ferrugineous; lateral margin very finely bordered, regularly rounded; punctures irregular and fairly strong, very coarse along the posterior margin; without microreticulation.

Elytra: ferrugineous, at the base with a more or less distinct rufo-testaceous transverse band not reaching the suture, posteriorly waved, dilated at the shoulder and continuing along the margin almost to the apex, with an indistinct post-median transverse band and a more distinct triangular spot near the apex and also with an indistinct rufo-testaceous longitudinal post-median spot near the suture (fig. 14); punctures moderately dense, of two kinds, coarser punctures about as frequent as fine ones, progressively more fine and sparse towards the sides; two longitudinal rows

of punctures rudimentary; highly polished and shining; without microreticulation.

Ventral side: epipleura and abdomen partly, head and prothorax entirely testaceous, the rest of the ventral side ferrugineous; metacoxae quite strongly, sparsely and regularly, metasternum moderately strongly and irregularly punctured, abdomen almost without punctures; without microreticulation.

Legs rufo-testaceous.

Male: penis (fig. 43); parameres (fig. 72); without secondary sexual characters.

Female: unknown.

ETYMOLOGY: This species is dedicated to my wife who supported this work.

BIOLOGY: The holotype was taken in a stream with clear water and slow flow; substrate mud, sand and gravel; leaf litter detritus and riparian plant roots.

DISTRIBUTION: Thailand.

Microdytes menopausis sp.n.

Type locality: Thailand, Khao Yai.

Holotype ♂ (NMW): "Thailand 14.11. Khao Yai NP leg. Jäch 88 (3)". **Paratypes**: 2 ♀♀, with same data as the holotype (NMW, CWW); 1 ♂, E Thailand, Ko Chang, White Sands Beach, 10.XII.1990, leg. Jäch, (loc.no. 12) (CWW); 1 ♀, E Thailand, Ko Chang, Klong Prao, Tümpel, 11.XII.1990, leg. Jäch, (loc.no. 13,1) (NMW).

DIAGNOSIS: *M. menopausis* is closest related to *M. dimorphus* from which it can be distinguished by the less coarse punctures of the elytra distinctly of two kinds, the lack of punctures on the abdomen as well as the less produced clypeus and the unmodified antennae in male.

DESCRIPTION: Habitus: body oblong-oval, slightly rhomboid, shoulders slightly produced, strongly convex (fig. 15).

Length of body: 1.4 - 1.7 mm, width: 1.1 - 1.2 mm.

Head: rufo-testaceous; clypeus in male slightly produced and straightened in the middle; moderately strongly, moderately densely and regularly punctured; almost entirely microreticulate, very finely in male, more strongly in female. Antennae flavo-testaceous, rather short, second segment slightly curved in male (fig. 94).

Pronotum: rufo-testaceous, posterior margin narrowly dark brown; lateral margin finely bordered, regularly rounded; punctures sparse, irregular in size and distribution, with a band of coarser punctures along the posterior margin; without microreticulation.

Elytra: ferrugineous to dark brown, narrowly dark brown along the base, near the base with a relatively distinct testaceous transverse band not reaching the suture, dilated at the shoulder and with a post-median and an apical transverse testaceous band (fig. 15); shortly carinate at the shoulder; punctures relatively sparse, of two kinds, the coarser of about twice the diameter than the smaller ones, fairly evenly distributed; two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura and ventral side predominantly testaceous, partly ferrugineous at sutures; metacoxae, metasternum and first sternite regularly, rather sparsely and coarsely punctured, rest of the abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 44); parameres (fig. 73); clypeus slightly produced and straightened; head finely microreticulate; antennae unmodified.

Female: clypeus equally rounded; head strongly reticulated; sclerotized spermatheca not found.

BIOLOGY: This species was taken in small streams (ca. 1 - 2 m wide) with sandy bottom.

DISTRIBUTION: Thailand.

Microdytes nilssoni sp.n.

Type locality: China, NW Hunan, Wulingyuan, N Dayong, Suoxiyu; CWBS loc.no 25.

Holotype ♂ (CASS): "CHINA, NW-Hunan 1993 Wulingyuan, N Dayong Suoxiyu, 31.10. 450 m leg. Schönmann (6)". **Paratypes**: 4 ♂♂, 2 ♀♀, same data as the holotype (NMW, CWW); 1 ♂, China, Guangxi, Miao'er Shan above Liangshui, 1700 m, 25.-27.V.1996, leg. Satô (CSN).

DIAGNOSIS: *M. nilssoni* is similar to *M. sinensis*, *M. tomokunii* and *M. bistroemi* in habitus and size but it is distinguishable by the colouration and the male genitalia.

DESCRIPTION: Habitus: body regularly oval, slightly attenuated to apex, moderately convex (fig. 16).

Length of body: 1.6 - 1.8 mm, width: 1.1 - 1.2 mm.

Head: rufo-testaceous, sometimes brownish near the eyes; clypeus not bordered; finely and very sparsely punctured, a row of coarser punctures alongside the eyes; entirely and distinctly microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: dark brown to black, somewhat lighter at the anterior margin; lateral margin finely bordered, regularly rounded anteriorly, almost straight in the posterior half; punctures moderately dense, moderately regularly distributed but irregular in size, coarser punctures along the anterior and the posterior margin; without microreticulation.

Elytra: dark brown, with rather distinct testaceous markings consisting of a subbasal transverse band not reaching the suture, two post-median and a preapical spot (fig. 16); punctures fairly fine, moderately regular and moderately dense; two longitudinal rows of coarser punctures indistinct; highly polished and shining; without microreticulation.

Ventral side: epipleura dark brown; head and pronotum dark-ferrugineous, rest of ventral side dark brown; metacoxae, metasternum and abdomen almost impunctate; without microreticulation.

Legs testaceous.

Male: penis (fig. 45); parameres (fig. 74); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to the entomologist Dr. Anders Nilsson, Umeå.

BIOLOGY: This species was collected in pools of small streams.

DISTRIBUTION: China (Hunan, Guangxi).

Microdytes pasiricus (CSIKI)

Hydrovatus pasiricus CSIKI 1937: 126 (incl. var. *simplicior* and var. *unicolor*).

Microdytes pasiricus, BISTRÖM & al., in print.

Material studied: Paratype ♂, Central Java, Sarangan, 3.XII.1928, spring, near Lake Pasir, 1300 m, "German Limnol. Exp." (MHNP); 2 ♀♀, Singapore, Bukit Timah, 27.VIII.1993, leg. Yang & Balke (CBB, ZRCS); 1 ♂, 1 ♀, Singapore, Bukit Timah, 18.IV.1997, leg. Balke & Hendrich (CHB); 1 ♂, 5 ♀♀, Philippines, Palawan, Mantalingajan, Pinigisan, 600 m, 14.IX.1961, "Noona Dan Exp. 61-62" (ZMC, CWW); 2 ♀♀, Philippines, Palawan, 7 km N Narra, Estrella Falls, 5.IV.1994, (loc.no. 59), leg. Zettel (NMW, MLB); 1 ♀, Philippines, Luzon, 30 km E Lucena City, Quezon NP, 23.XI.1992, (loc.no. 11), leg. Jäch (NMW); 1 ♂, Thailand, Phetchabun, Nam Nao NP, Huai Ya Krua, 14.III.1994, (loc.no. WDS A 1039) leg. Shepard (NMW).

DIAGNOSIS: *M. pasiricus* resembles *M. dimorphus* and *M. menopaensis* in the habitus, the colouration and the size. From *M. dimorphus* it is distinguishable by the abdomen not punctured as well as in the male by the unmodified clypeus, the antennae and the genitalia. From *M. menopaensis* it differs by the elytral punctures, which are relatively strong and of one kind, and by the male genitalia.

DESCRIPTION: Habitus: body oblong-oval, slightly rhomboid, dilated at the shoulders, strongly convex (fig. 17).

Length of body: 1.4 - 1.6 mm, width: 1.0 - 1.2 mm.

Head: rufo-testaceous; clypeus finely bordered; finely, moderately sparsely and regularly punctured; traces of microreticulation along the anterior margin. Antennae flavo-testaceous, rather short and plump (fig. 95).

Pronotum: rufo-testaceous, lateral margin finely bordered, regularly rounded; punctures sparse, irregular in size and distribution, some coarser punctures along the posterior margin; without microreticulation.

Elytra: ferrugineous, narrowly dark brown along the base, near the base with an indistinct testaceous transverse band, not reaching the suture, dilated at the shoulder and continuing along the margin almost to the apex, with a post-median and an apical extension, sometimes with reduced testaceous markings (fig. 17); punctures regular, moderately strong and moderately dense; two longitudinal rows of stronger punctures, particularly the inner one quite distinct and impressed at the base; highly polished and shining; without microreticulation.

Ventral side: epipleura, prothorax, metasternum and metacoxae medially and abdomen testaceous, rest of the ventral side ferrugineous; metacoxae and metasternum regularly and coarsely punctured, first two sternites sparsely punctured, rest of the abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (figs. 46, 47); parameres (fig. 75); without secondary sexual characters.

Female: sclerotized spermatheca present.

BIOLOGY: This species was collected in small, slowly flowing streams.

DISTRIBUTION: Indonesia (Java), Singapore, Philippines (Palawan, Luzon), Thailand.

Microdytes sabitae VAZIRANI

Microdytes sabitae VAZIRANI 1968: 103; VAZIRANI 1969: 304.

Holotype ♂ (ZSIC): "India: Maharashtra: Panchgani, Satara Distr., 17.XI.1965. Coll. T.G. Vazirani" (VAZIRANI 1968).

Material studied: attempts to study type specimens (holotype and 3 paratypes with same data as holotype, ZSIC) failed.

DIAGNOSIS (according to VAZIRANI 1968): "This species is close to *M. belli* Balfour-Browne in having the 'systematic' series of punctures on elytra almost or quite obsolete and sixth abdominal sternite being impunctate but differs from it in (i) its irregular punctuation on pronotum (ii), the anterior, posterior and the sides of pronotum being darker than the disc as against anterior and posterior sides paler and (iii) denser punctuation on head".

DESCRIPTION (according to VAZIRANI 1968):

"Length: 1.9 mm. Breadth: 1.4 mm. Form oval, a little attenuated posteriorly" (see fig. 18).

"Head rufo-testaceous; finely, irregularly but distinctly punctured, punctures separated by 2-3 times their own diameter; surface shiny, anteriorly with faint transverse lines of reticulation,

otherwise without any reticulation. Antenna with the second segment wider than others and about equal to the third and fourth together, third segment longer than fourth, fourth segment shortest" (fig. 96).

"*Pronotum* rufo-castaneous to nigro-castaneous, the anterior, posterior and lateral margins darker; the sides finely but distinctly margined; surface strongly shiny, reticulation indistinct; punctation stronger than on head, rather irregular, sparse on the disc, denser along the anterior, posterior and lateral margins.

Elytra regularly ovate, the sides a little dilated in the humeral region, apices not all acuminate; fusco- or nigro-castaneous with irregular and indistinct flavous fascia; surface highly polished; punctation as strong as on pronotum but more or less regular, on the disc separated by 1-2 times their own diameter, systematic serial punctures almost or quite obsolete.

Ventral side black, legs testaceous, coxal processes with a reddish tinge; punctation on metasternum moderately large, irregular, more dense antero-laterally, rather sparse on the portion, first and second abdominal sternites with a few punctures along the antero-basal margin on the inner side; first and third abdominal sternites fused together; fourth abdominal sternite with a median elongate seta."

Primary or secondary sexual characters were not described by VAZIRANI (1968, 1969).

BIOLOGY: unknown.

DISTRIBUTION: India (Maharashtra).

Microdytes sarawakensis sp.n.

Type locality: Malaysia, Sarawak, Kelabit Highlands, 1000 m.

Holotype ♂ (NMW): "MAL. Sarawak 1993 Kelabit HL. 5 km E Bario Pa Ukat, 1.3., ca. 1000 m leg. M. Jäch (17)". **Paratypes**: 11 exs. with same data as the holotype (NMW, CWW, FMH).

DIAGNOSIS: Together with *M. jaechi*, *M. sarawakensis* forms a subgroup within the genus *Microdytes* distinguishable from other species by the coarse punctures of the elytra. *Microdytes sarawakensis* differs from *M. jaechi* in the entirely black pronotum.

DESCRIPTION: Habitus: body regularly oval, strongly convex, shoulders slightly produced (fig. 19).

Length of body: 1.9 - 2.0 mm, width: 1.3 mm.

Head: dark brown; clypeus not bordered; sparsely, irregularly and finely punctured, coarser punctures alongside the eyes; strongly microreticulate on the anterior fourth. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: dark brown to black; lateral margin distinctly bordered, regularly rounded; punctures of two kinds, fine punctures very sparse and irregular, the coarse punctures sparse on the anterior half and more dense on the posterior half; without microreticulation.

Elytra: dark brown to black, indistinct post-median markings rufo-testaceous (fig. 19); a longitudinal impression with coarse punctures along the side; punctures dense, of two kinds, coarser punctures about as frequent as finer ones, diameter of coarser punctures about three times as long as diameter of finer ones; without distinct longitudinal rows of stronger punctures on the disc; without microreticulation.

Ventral side: head and pronotum rufo-testaceous, epipleura and rest of ventral side dark brown to black; epipleura distinctly punctured; metasternum and metacoxae very coarsely and densely punctured, first sternite coarsely and rather sparsely punctured, rest of the abdomen very finely and sparsely punctured; without microreticulation.

Legs testaceous.

Male: penis (fig. 48); parameres (fig. 76); without secondary sexual characters.

Female: sclerotized spermatheca not found.

BIOLOGY: This species was collected in spring-fed pools in dense primary forest.

DISTRIBUTION: Borneo (Sarawak).

Microdytes satoi sp.n.

Type locality: China, Guangxi Prov., Miao'er Shan (50 km N Guilin).

Holotype ♂ (NSMT): "Tieshan Ping, 2000m Mt. Miao'er Shan Guangxi, China 22-27.V.1996, M. Satô".

Paratypes: 2 ♂♂, 5 ♀♀, with same data as the holotype (CSN, CWW).

DIAGNOSIS: *M. satoi* resembles *M. nilssoni* in size, habitus, colouration of head and pronotum and puncturation of dorsal side but differs from it by the coarser punctures on the metasternum, the less distinct elytral markings and the male genitalia. A testaceous head and a dark brown pronotum is also present in *M. belli* but this species differs from *M. satoi* in the broader habitus, stronger punctures on dorsal side, elytral markings and the male genitalia.

DESCRIPTION: **Habitus**: body regularly oval, moderately convex (fig. 20).

Length of body: 1.6 - 1.8 mm, width: 1.0 - 1.1 mm.

Head: testaceous; clypeus not bordered; very finely and sparsely and relatively regularly punctured; entirely and distinctly microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: dark brown to ferrugineous, along the lateral margins and the posterior margin rufo-testaceous; lateral margin finely bordered, regularly rounded; punctures quite regular and moderately strong, coarser punctures along the posterior margin; without microreticulation.

Elytra: ferrugineous, testaceous markings forming an indistinct transverse band at the base not reaching the suture, dilated at the shoulder and continuing along the margin to an indistinct triangular testaceous spot near the apex (fig. 20); punctures fairly fine, and sparse, quite regular, punctures progressively more fine and sparse towards the sides; with two longitudinal rows of stronger punctures, particularly near the base fairly distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura partly, head and prothorax entirely testaceous, rest of the ventral side ferrugineous; punctures on metasternum dense and moderately coarse, metacoxae very sparsely and moderately strongly punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 49); parameres (fig. 77); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to the Prof. Dr. Masataka Satô, Nagoya.

BIOLOGY: The specimens were found in a small spring-fed ditch.

DISTRIBUTION: China (Guangxi).

Microdytes schoedli sp.n.

Type locality: Thailand, Phetchabun Prov., Nam Nao.

Holotype ♂ (NMW): "Thailand, Phetchabun Prov. Nam Nao NP, Heo Sai 25.11.95, leg. Zettel (24)". **Paratypes**: 1 ♀, with same data as the holotype (NMW); 1 ♂, 1 ♀, Thailand, Chiang Mai Prov., W Mae Rim, Mae Sa NP, 30.-31.X.95, leg. Zettel, (loc.no. 2) (NMW, CWW); 1 ♀, Thailand, Chiang Mai Prov., Doi Inthanon NP, Mae Klang Falls, 4.XI.95, leg. Zettel, (loc.no. 6) (CWW); 1 ♂, Thailand, Chiang Mai, Zoo, 18°49'N 98°57'E, at light, 10.-17.IV.1989, leg. Chantaramogkol & Malicky (NMW).

DIAGNOSIS: *M. schoedli* resembles *M. championi* in size, habitus, colouration and puncturation but differs from it in the distinct elytral markings, the coarser punctures on the metacoxae and in the male genitalia. The elytral markings of *M. schoedli* are similar to that of *M. maculatus* but the latter species is smaller.

DESCRIPTION: Habitus: body regularly oblong-oval, moderately convex (fig. 21).

Length of body: 1.9 - 2.0 mm, width: 1.3 - 1.4 mm.

Head: rufo-testaceous; clypeus not bordered; moderately finely and sparsely and relatively regularly punctured; anterior half finely and distinctly microreticulate. Antennae flavo-testaceous, rather long and slender (similar to fig. 90).

Pronotum: rufo-testaceous, along the anterior margin relatively narrowly and along the posterior margin more widely ferrugineous; lateral margin finely bordered, regularly rounded; punctures quite regular and moderately strong, coarser punctures along the posterior margin, without microreticulation.

Elytra: ferrugineous, testaceous markings forming a distinct transverse band at the base not reaching the suture, dilated at the shoulder and continuing along the margin to a post-median transverse band, also forming a triangular testaceous spot near the apex and a small round post-median testaceous spot near the suture (fig. 21); punctures fairly fine and sparse, of two kinds, the coarser punctures as strong as on the pronotum, finer punctures about as frequent as the coarser ones, punctures progressively more fine and sparse towards the sides; two longitudinal rows of stronger punctures, particularly near the base quite distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, head, prothorax, metacoxae medially and abdomen testaceous, rest of the ventral side ferrugineous; punctures on metasternum sparse and very coarse, metacoxae sparsely, strongly and irregularly punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 50); parameres (fig. 78); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Dr. Stefan Schödl, Vienna.

BIOLOGY: This species was collected in rest water pools in a dried up stream (type locality).

DISTRIBUTION: Thailand.

Microdytes schoenmanni sp.n.

Type locality: Thailand, Ko Chang, Klong Prao.

Holotype ♂ (NMW): "O-Thailand 1990 Ko Chang, Klong Prao Wasserfallbach (13,2) leg. Jäch 11.12.". **Paratypes**: 1 ♀, with same data as the holotype (NMW); 7 exs., E Thailand, Ko Chang, Klong Prao, Tümpel, 11.XII.1990, (loc.no. 13,1), leg. Jäch (NMW, CWW); 12 exs., E Thailand, Ko Chang, White Sands Beach, 10.XI.1990, (loc.no. 12), leg. Jäch (NMW, CWW, CCS); 1 ♂, E Thailand, Ko Chang, Than Mayom, 8.XII.1990, (loc.no. 10), leg. Jäch (NMW); 1 ♂, 2 ♀♀, Thailand, Khao Yai NP, 14.XI.1988, (loc.no. 3), leg. Jäch (CWW, FMH); 1 ♂, Nepal, Dahrn Umg., 12.II.1981, (loc.no. N10), leg. Jäch (NMW); 1 ♂, India, Darjeeling, Gorubathan, 186 m, VI.1982, leg. Rai (NMB).

DIAGNOSIS: *M. schoenmanni* resembles *M. gabrielae* in size and colouration but is

distinguishable from the latter by the more rounded habitus and the male genitalia.

DESCRIPTION: Habitus: body regularly oval to oblong-oval, moderately convex (fig. 22).

Length of body: 1.4 - 1.5 mm, width: 1.05 - 1.1 mm.

Head: testaceous; clypeus not bordered; finely and very sparsely punctured, a row of coarser punctures alongside the eyes; entirely and distinctly microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: rufo-testaceous, along the posterior margin relatively narrowly ferrugineous; lateral margins finely bordered, strongly rounded in the anterior third and almost straight in the posterior part; punctures sparse, moderately irregular in size and distribution, a band of coarser punctures along the posterior margin; without microreticulation.

Elytra: ferrugineous, near the base with a distinct testaceous transverse band, dilated at the shoulder and continuing along the margin almost to the apex, with a post-median and an apical extension, a small oval post-median testaceous spot near the suture (fig. 22); punctures moderately strong and moderately regular, moderately dense; two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, prothorax and abdomen partly testaceous, rest of the ventral side ferrugineous; metacoxae and metasternum very sparsely punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 51); parameres (fig. 79); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Dr. Heinrich Schönmann, Vienna.

BIOLOGY: This species was collected in rock pools and ground water pools at the margin of large rivers (ca. 10 m wide), and in small streams.

DISTRIBUTION: Thailand, India (Darjeeling), Nepal.

Microdytes schuhi sp.n.

Type locality: Indonesia, W Java, "Ranca Upas" recreation park, S Ciwidey.

Holotype ♂ (NMW): "Indonesia: W Java 'Ranca Upas' ca. 1000 m 10 km S Ciwidey lg. Schuh 9.8.1994".

Paratypes: 2 ♀♀, with same data as the holotype (NMW, CWW); 1 ♀, Indonesia, Java, S Bogor, Cizarua, 28.I.1989, leg. Jäch, (loc.no. 22) (NMW).

DIAGNOSIS: *M. schuhi* is very closely related to *Microdytes hendrichi* but it can be distinguished by the coarser punctures of the elytra, by the two rufo-testaceous spots on the elytra and by the shape of the male antennae. From other species of the genus *M. schuhi* differs by the strongly convex form attenuated to the apex.

DESCRIPTION: Habitus: body regularly oval, slightly attenuated to the apex, strongly convex (fig. 23).

Length of body: 1.7 - 1.9 mm, width: 1.2 - 1.4 mm.

Head: rufo-testaceous; clypeus in male distinctly and in female slightly produced and straightened in the middle, not bordered; moderately strongly, moderately densely and regularly punctured, a row of coarser punctures alongside the eyes; almost entirely and moderately strongly microreticulate. Antennae flavo-testaceous, rather short and moderately slender, second segment dilated, third one flexed in male (fig. 97).

Pronotum: dark brown to black; lateral margin finely bordered, regularly rounded anteriorly, almost straight in the posterior half; moderately strongly, moderately densely, relatively irregularly punctured, a band of coarser punctures along the posterior margin; without microreticulation.

Elytra: dark brown to black, a lateral post-median and a subapical indistinct spot rufo-testaceous; moderately coarsely, moderately strongly and regularly punctured; two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: head testaceous, epipleura and rest of ventral side dark brown; metasternum, metacoxae and first sternite finely, regularly and rather sparsely punctured, rest of abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 52); parameres (fig. 80); antennae modified in male.

Female: antenna simple; sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Rudi Schuh, Vienna.

BIOLOGY: This species was collected in a small stream, ca. 1 m wide, a few cm deep, flowing through primary forest.

DISTRIBUTION: Java.

Microdytes schwendingeri sp.n.

Type locality: Thailand, Sakhon Nakhon Prov., Phu Pan.

Holotype ♂ (NMW): "Thailand: Sakhon Nakhon Pr. Phu Pan NP, 480-520 m 7.-8.12.1995 leg. P. Schwendinger".

Paratype: 1 ♀, with same data as the holotype (NMW).

DIAGNOSIS: The male genitalia of *M. schwendingeri* are similar to those of *M. hainanensis* and *M. bistroemi*. From *M. hainanensis* it can be distinguished by the more broadly-oval body and by the bordered clypeus. From *M. bistroemi* it can be separated by the colour of pronotum being rufo-testaceous and not ferrugineous.

DESCRIPTION: **Habitus:** body regularly to broadly oval, strongly convex (fig. 24).

Length of body: 1.3 - 1.4 mm, width: 1.0 - 1.1 mm.

Head: testaceous; clypeus finely bordered; very finely and sparsely punctured; entirely and distinctly microreticulate. Antennae flavo-testaceous, rather short and plump (similar to fig. 89).

Pronotum: rufo-testaceous, along the posterior margin relatively narrowly ferrugineous; lateral margin not bordered, distinctly rounded at the anterior half; punctures fine and sparse on the disc, additionally with coarser punctures at the lateral margins and along the posterior and anterior margin; without microreticulation.

Elytra: ferrugineous, testaceous markings forming a distinct transverse band near the base not reaching the suture, dilated at the shoulder and continuing along the margin to a post-median transverse band and a triangular spot near the apex (fig. 24); punctures very fine and sparse at the sides, moderately strong near the suture; longitudinal rows of stronger punctures not distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, prothorax and abdomen predominantly testaceous, rest of the ventral side ferrugineous; metacoxae and metasternum finely and sparsely punctured, epipleura and abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 53); parameres (fig. 81); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Dr. Peter Schwendinger, Innsbruck.

BIOLOGY: This species was collected in a small stream (less than a meter wide), flowing through deciduous forest.

DISTRIBUTION: Thailand.

Microdytes shepardi sp.n.

Type locality: Thailand, Phetchabun Prov., Nam Nao.

Holotype ♂ (NMW): "THAILAND: Petchabun Nam Nao NP, 14.3. Huai Ya Krua, 1994 leg. W. Shepard WDS A 1039". **Paratypes**: 1 ♂, 4 ♀♀, with same data as the holotype (NMW, CWW); 2 ♀♀, Thailand, Phetchabun Prov., Nam Nao NP, Huai Phrom Laeng, 24.XI.1995, leg. Zettel, (loc.no. 22) (NMW, CWW); 1 ♂, 2 ♀♀, Thailand, Chiang Mai Prov., Ban Yang Thung Pong, Chiang Dao, ca. 500 m, 8.XI.1995, leg. Zettel, (loc.no. 10) (NMW, CWW).

DIAGNOSIS: *M. shepardi* resembles *M. mariannae* in size, in habitus and colouration but can be distinguished from the latter by the punctures of the elytra and the microreticulation of the head.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 25).

Length of body: 1.7 - 2.0 mm, width: 1.1 - 1.4 mm.

Head: rufo-testaceous; clypeus not bordered; moderately strongly and moderately densely punctured; entirely but finely microreticulate. Antennae testaceous, rather long and slender (fig. 98).

Pronotum: rufo-testaceous, posterior margin narrowly ferrugineous, darker also on both sides of the middle; lateral margin very finely bordered, regularly rounded; punctures irregular and fairly strong, very coarse along the posterior margin; without microreticulation.

Elytra: ferrugineous, at the base with a more or less distinct rufo-testaceous transverse band not reaching the suture, posteriorly waved, sometimes reduced to humeral markings, with an indistinct rufo-testaceous post-median transverse band and a more distinct triangular spot near the apex (fig. 25); punctures moderately sparse and fine, slightly irregular in size near the suture, more fine and sparse towards the sides; two longitudinal rows of punctures moderately distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura and abdomen partly, head and prothorax entirely testaceous, the rest of the ventral side ferrugineous; metasternum and metacoxae quite strongly, sparsely and regularly punctured, abdomen almost without punctures; without microreticulation.

Legs rufo-testaceous.

Male: penis (fig. 54); parameres (fig. 82); without secondary sexual characters.

Female: sclerotized spermatheca not found.

ETYMOLOGY: This species is dedicated to Prof. Dr. William D. Shepard, Sacramento, California.

BIOLOGY: This species was collected in a stream with clear water, slow flow; substrate: mud, sand and gravel.

DISTRIBUTION: Thailand.

Microdytes shunichii SATO

Microdytes shunichii SATO 1995: 313.

Holotype ♂ (NSMT): "Mt. Tam Dao, 960-980 m, N. Vietnam 22-IX-1994 M. Satô leg." (SATO 1995).

Material studied: 1 ♂, 2 ♀♀ (paratypes): Vietnam, Prov. Vinh Yen, Tam Dao, 22.9.1994, leg. Satô (CWW); 1 ♂, 2 ♀♀, Vietnam, Prov. Vinh Yen, Tam Dao, 900 m, 21°26'N, 105°38'E, 14.X.1986, leg. Mészáros-Oláh-Vásárhelyi (TMB, CWW).

DIAGNOSIS: *M. shunichii* resembles *M. zetteli* in the habitus, the elytral markings and the punctures but can be distinguished by the rufo-testaceous pronotum and the male genitalia. *Microdytes shunichii* is also closely related to *M. akitai* but this species has stronger elytral punctures.

DESCRIPTION: Habitus: body regularly oval, strongly convex (fig. 26).

Length of body: 1.7 - 1.8 mm, width: 1.2 - 1.3 mm.

Head: rufo-ferrugineous, paler on the clypeus; clypeus not bordered; finely, sparsely and relatively regularly punctured, a row of coarser punctures alongside the eyes; anterior half finely microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: rufo-testaceous, along the anterior margin narrowly and along the posterior margin more widely ferrugineous; lateral margin finely bordered, regularly rounded; punctures moderately fine, quite regular and sparse, a band of coarser punctures along the posterior margin; without microreticulation.

Elytra: testaceous to light-brown, dark brown along the base and the suture, some indistinct brown markings on the disc, paler along the sides (fig. 26); punctures moderately strong and regular, moderately dense; two longitudinal rows of punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: prothorax, metacoxae medially and abdomen testaceous, epipleura and rest of the ventral side ferrugineous; metacoxae, metasternum and abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 55); parameres (fig. 83); without secondary sexual characters.

Female: sclerotized spermatheca not found.

BIOLOGY: This species was found in small torrents.

DISTRIBUTION: Vietnam.

Microdytes sinensis sp.n.

Type locality: China, Jiangxi, Jinggang Shan, Ciping.

Holotype ♂ (NMW): "CHINA Jiangxi W JINGGANG SHAN Ciping env. 2.-4.VI.1994". **Paratypes:** 2 ♂♂, 1 ♀, with same data as the holotype (NMW, CWW).

DIAGNOSIS: *M. sinensis* resembles *M. tomokunii*, *M. uenoi*, *M. nilssoni* and *M. bistroemi* in habitus and size but it differs from them by the lighter colouration and the male genitalia.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 27).

Length of body: 1.5 - 1.7 mm, width: 1.0 - 1.1 mm.

Head: rufo-testaceous; clypeus not bordered; finely and sparsely punctured, more strongly on the vertex, a row of coarser punctures alongside the eyes; entirely and distinctly microreticulate.

Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: ferrugineous to dark brown, somewhat paler laterally; lateral margin finely bordered, regularly rounded; punctures moderately strong, regular in size and distribution, some coarser punctures along the anterior and posterior margin; without microreticulation.

Elytra: flavo-testaceous, ferrugineous along the base and the suture, on the disk often with a broad more or less distinct ferrugineous transverse band (fig. 27); punctures moderately fine, less strong than on pronotum, moderately regular and moderately dense; two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, head, pronotum and abdomen flavo-testaceous, rest of the ventral side ferrugineous to brown; metacoxae and metasternum very sparsely and very finely punctured, abdomen without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 56); parameres (fig. 84); without secondary sexual characters.

Female: sclerotized spermatheca not found.

DISTRIBUTION: China (Jiangxi).

Microdytes tomokunii SATO

Microdytes tomokunii SATO 1981: 68.

Holotype ♂ (CSN): "Gorthali, alt. 1,600 m Sindhu District, Bagmati Zone, Nepal, Nov. 11.1979, M.Satō leg." (SATO 1981).

Material studied: 1 paratype with same data as the holotype (CSN); 1 paratype: Nepal, Bagmati Zone, Sindhu Distr., Shivino Khola, 1920 m, 14.XI.1979, leg. Satō (CSN); 1 ex., Nepal, Sagarmatha Zone, Solukhumbu Distr., Chutok La, 2945 m, 6.X.1979, leg. Satō (CWW); 5 ex., Nepal, Tibetan Border, Tatopani, 3.III.1981, leg. Jäch, (loc.no. N38) (NMW, CWW); 2 ex., E Nepal, Kosi, Mangsingma, 2200 m, 11.IV.1984, leg. Löbl & Smetana (MHNG).

DIAGNOSIS: *M. tomokunii* resembles *M. uenoi* and *M. bistroemi* in habitus and size but it is distinguishable from both species by the much darker elytra and the male genitalia.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 28).

Length of body: 1.4 - 1.6 mm, width: 0.9 - 1.1 mm.

Head: dark reddish brown; clypeus not bordered; finely and very sparsely punctured, some coarser punctures on the vertex and a row of coarser punctures alongside the eyes; entirely and distinctly microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: dark reddish-brown; lateral margin finely bordered, regularly rounded; punctures rather sparse, moderately regular in size and distribution, coarser punctures along the posterior margin; without microreticulation.

Elytra: dark brown, markings very indistinctly reddish-brown (fig. 28); punctures relatively coarse, of two kinds, the finer ones of about two thirds in diameter than the coarser ones, fairly irregularly distributed; two longitudinal rows of coarser punctures indistinct; highly polished and shining; without microreticulation.

Ventral side: epipleura, head and pronotum dark-ferrugineous, metasternum and metacoxae medially and abdomen partly ferrugineous, rest of the ventral side dark brown; metacoxae and metasternum very sparsely and finely punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 57); parameres (fig. 85); without secondary sexual characters.

Female: sclerotized spermatheca not found.

BIOLOGY: This species was collected by M.A. Jäch in a small spring on a more or less deforested steep mountain slope.

DISTRIBUTION: Nepal.

Microdytes uenoi SATO

Microdytes uenoi SATO 1972: 49; SATO 1981: 68; NAKANE 1988: 31.

Holotype ♂ (NSMT): "Shirahama, Iriomote-jima Is., Oct. 10.1963, S.I. Uéno leg." (SATO 1972).

Material studied: Paratype ♀, with same data as the holotype (CWW); 10 exs., Japan, Ryukyu Islands, Iriomote-jima, Nishifunatsuki-gawa, 23.VIII.1994, 24.III.1995, leg. Satō (CSN, CWW, CCS); 4 exs., Taiwan, Taipei, Hermei, 6.XII.1991, leg. Lee (CWW, CNU, NTUT); 3 exs., Taiwan, Taipei, Gongliao, 12.IX.1992, leg. Wang (CWW, NTUT); 8 exs., Taiwan, Ilan, Nan-ao, Jinyang, 13.VIII.1992 and 20.VII.1993, leg. Wang (NTUT, CNU, CSN, FMH); 3 exs., China, SW Hunan, NE Huitong, Jinlong Shan, 600 - 650 m, 6.XI.1993 (CWBS loc.no. 32), leg. Schillhammer (NMW, CWW); 2 exs., China, NW Hunan, Wulingyuan, N Dayong, Sioxiyu, 450 m, 31.X.1993 (CWBS loc.no. 25), leg. H. Schönmann (NMW); 1 ♂, China, Fujian, Chong'an, Wuyi Shan, 3 km SW Wuyi Gong, 250 m, 16.I.1997 (CWBS loc.no. 243), leg. Ji & Wang (CASS).

DIAGNOSIS: *M. uenoi* resembles *M. gabrielae* in size, elytral markings and the male genitalia but its body is more convex and the colour of head and pronotum is darker. *Microdytes uenoi* is very similar to *M. bistroemi* but is distinguishable from the latter by minor differences in the elytral markings and the male genitalia.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 29).

Length of body: 1.4 - 1.7 mm, width: 1.0 - 1.1 mm.

Head: rufo-ferrugineous, paler on the clypeus, clypeus not bordered; finely and very sparsely punctured, more strongly on the vertex, a row of coarser punctures alongside the eyes; entirely and distinctly microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: ferrugineous, somewhat paler laterally; lateral margin finely bordered, regularly rounded; punctures sparse, irregular in size and distribution, some coarser punctures along the posterior margin; without microreticulation.

Elytra: flavo-testaceous, dark brown along the base and the suture, on the disk often with a broad more or less distinct ferrugineous transverse band with extensions posteriorly (fig. 29); punctures very fine, moderately regular and moderately dense; two longitudinal rows of stronger punctures, particularly the inner one quite distinct; highly polished and shining; without microreticulation.

Ventral side: epipleura and prothorax testaceous, rest of the ventral side ferrugineous; metacoxae and metasternum very finely and sparsely punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 58); parameres (fig. 86); without secondary sexual characters.

Female: sclerotized spermatheca not found.

BIOLOGY: This species was collected in small spring-fed ditches.

DISTRIBUTION: Japan (Ryukyu Islands); Taiwan; China (Hunan, Fujian).

***Microdytes zetteli* sp.n.**

Type locality: Thailand, Chiang Mai Prov., Doi Suthep, Montatharn Falls.

Holotype ♂ (NMW): "THAILAND: 2.11.1995 Chiang Mai Prov. Doi Suthep, 750-800 m leg. Zettel (4)".

Paratype: 1 ♀, with same data as the holotype (CWW).

DIAGNOSIS: *M. zetteli* resembles *M. shunichii* in the habitus, the elytral markings and the punctures but can be distinguished by the ferrugineous pronotum and the male genitalia. *Microdytes zetteli* is also closely related to *M. akitai* but this species has the pronotum testaceous and the punctures on the elytra less fine.

DESCRIPTION: Habitus: body regularly oval, moderately convex (fig. 30).

Length of body: 1.6 - 1.7 mm, width: 1.1 - 1.2 mm.

Head: ferrugineous; clypeus not bordered; moderately finely and sparsely, slightly irregularly punctured; anterior half finely microreticulate. Antennae flavo-testaceous, moderately long and slender (similar to fig. 88).

Pronotum: ferrugineous, indistinctly rufo-testaceous at the anterior and the lateral margins; lateral margins very finely bordered, regularly rounded; punctures moderately irregular, moderately fine and sparse, very coarse along the posterior margin; without microreticulation.

Elytra: ferrugineous, at the base with a more or less distinct testaceous transverse band not reaching the suture, dilated at the shoulder and continuing along the margin almost to the apex, forming a triangular spot, with a post-median transverse testaceous band and a small round post-median testaceous spot near the suture (fig. 30); punctures very sparse and fine, progressively more fine and sparse towards the sides; two longitudinal rows of punctures rudimentary; highly polished and shining; without microreticulation.

Ventral side: head, prothorax and abdomen predominantly testaceous, epipleura and the rest of the ventral side ferrugineous; punctures on metasternum moderately strong but sparse and irregular, metacoxae very finely, sparsely and irregularly punctured, abdomen almost without punctures; without microreticulation.

Legs testaceous.

Male: penis (fig. 59); parameres symmetric, consisting of two pieces (fig. 87); without secondary sexual characters.

Female: sclerotized spermatheca not found.

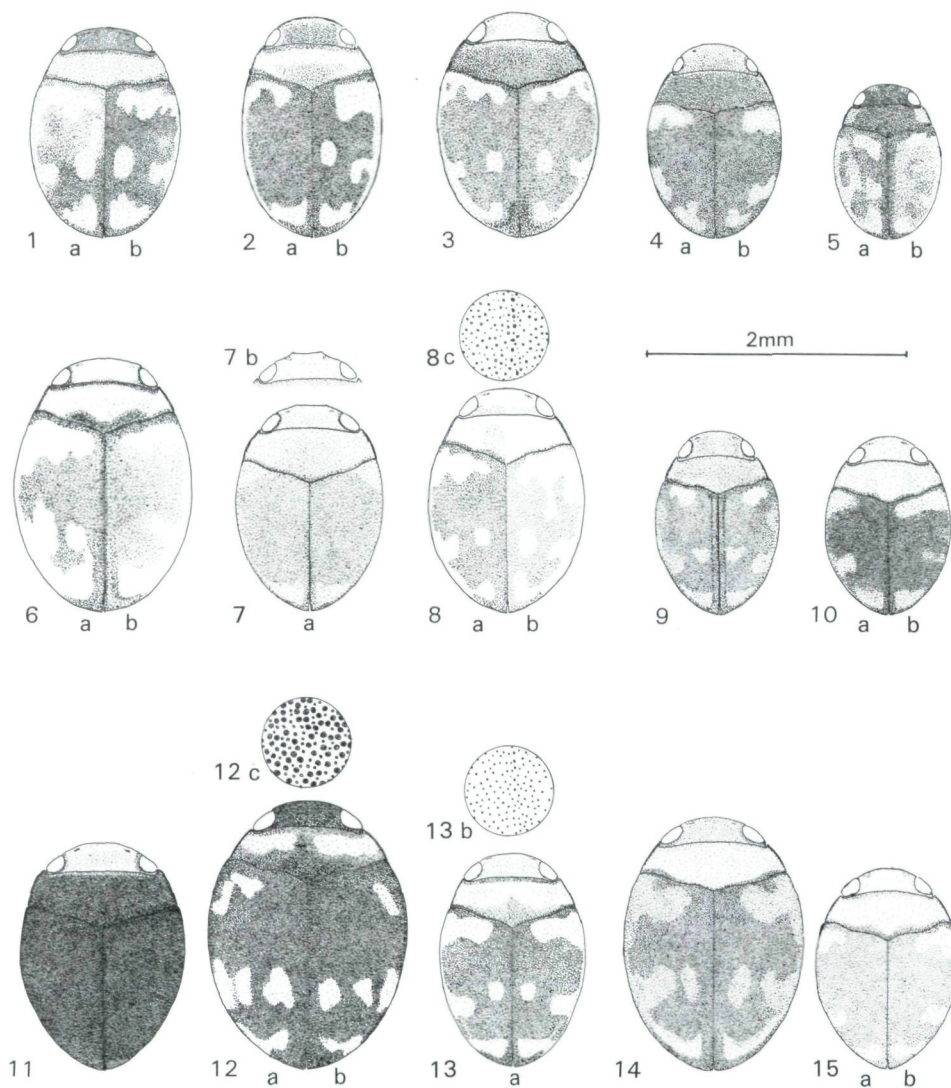
ETYMOLOGY: This species is dedicated to Dr. Herbert Zettel, Vienna.

BIOLOGY: This species was collected in a stream, ca. 4 - 6 m wide, flowing through forest.

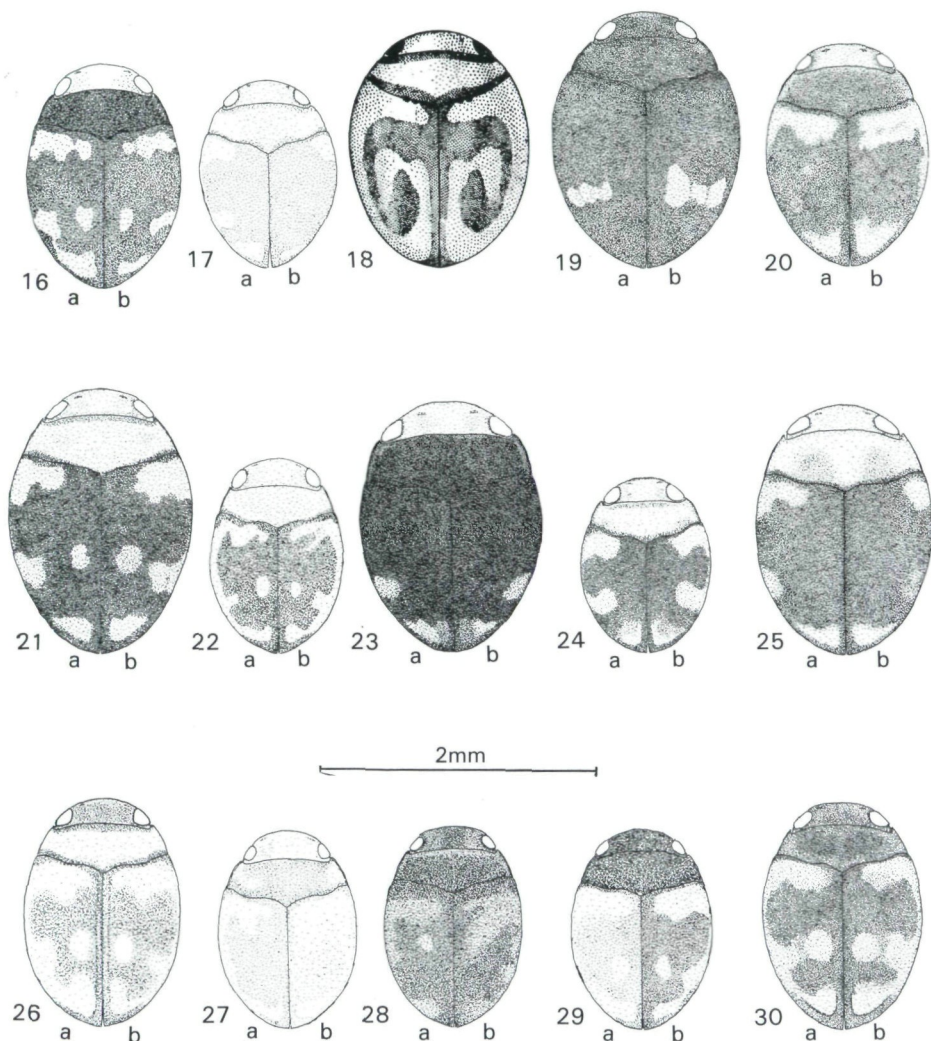
DISTRIBUTION: Thailand.

Zusammenfassung

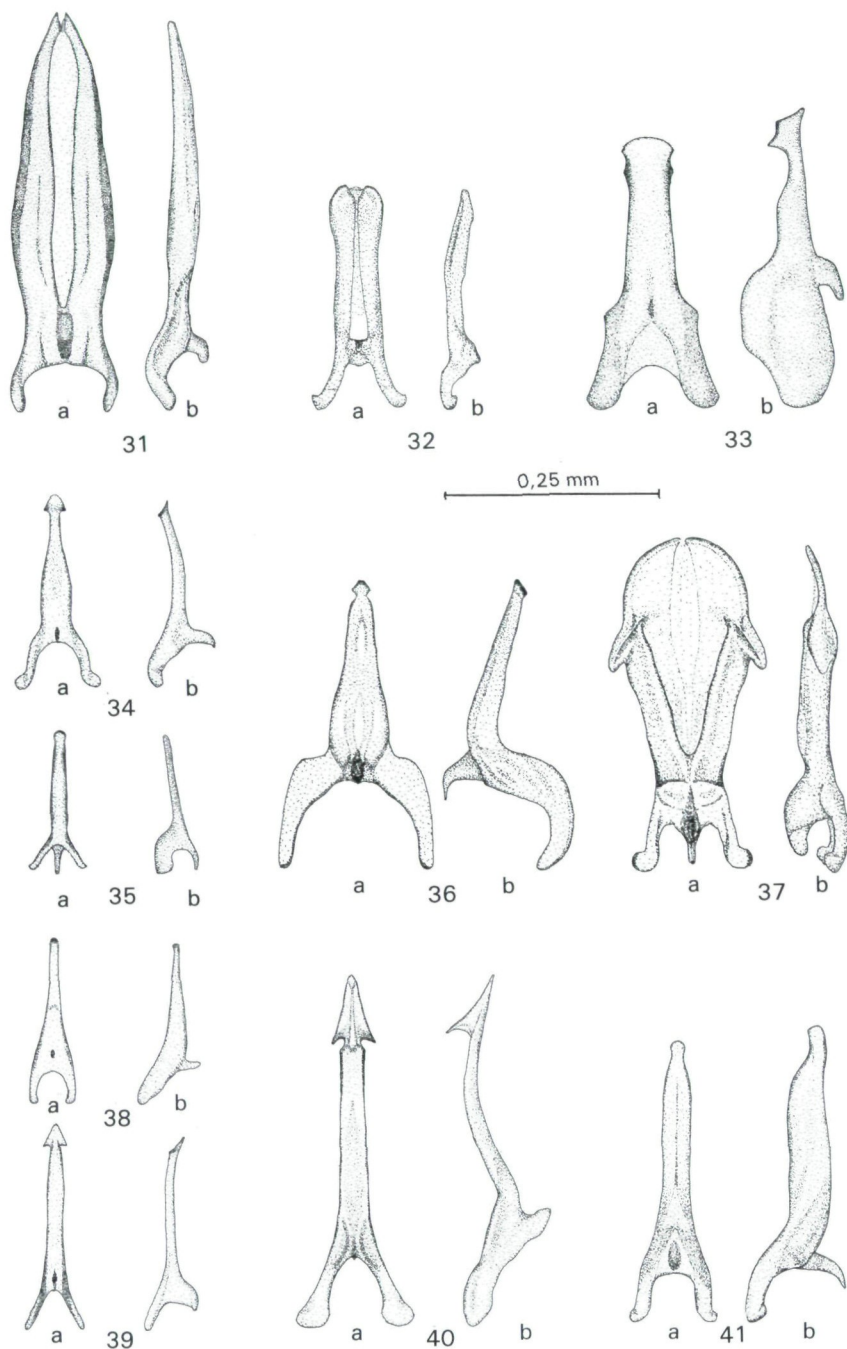
Die Dytisciden-Gattung *Microdytes* BALFOUR-BROWNE wird taxonomisch revidiert. Einundzwanzig neue Arten werden beschrieben: *M. akitai* sp.n. [Laos], *M. balkei* sp.n. [Thailand], *M. bistroemi* sp.n. [China], *M. boukali* sp.n. [Indien], *M. dimorphus* sp.n. [Thailand], *M. gabrielae* sp.n. [Thailand], *M. hainanensis* sp.n. [China], *M. hendrichi* sp.n. [Halbinsel Malaysia], *M. jaechi* sp.n. [Java], *M. mariannae* sp.n. [Thailand], *M. menopausis* sp.n. [Thailand], *M. nilssoni* [China], *M. sarawakensis* sp.n. [Borneo], *M. satoi* sp.n. [China], *M. schoedli* sp.n. [Thailand], *M. schoenmanni* sp.n. [Thailand, Indien, Nepal], *M. schuhi* sp.n. [Java], *M. schwendingeri* sp.n. [Thailand], *M. sinensis* sp.n. [China], *M. shepardi* sp.n. [Thailand], *M. zetteli* sp.n. [Thailand]. *Microdytes taiwanus* SATO wird zu *Allopachria* transferiert. Für *M. maculatus* (MOTSCHULSKY) wird ein Lectotypus festgelegt.



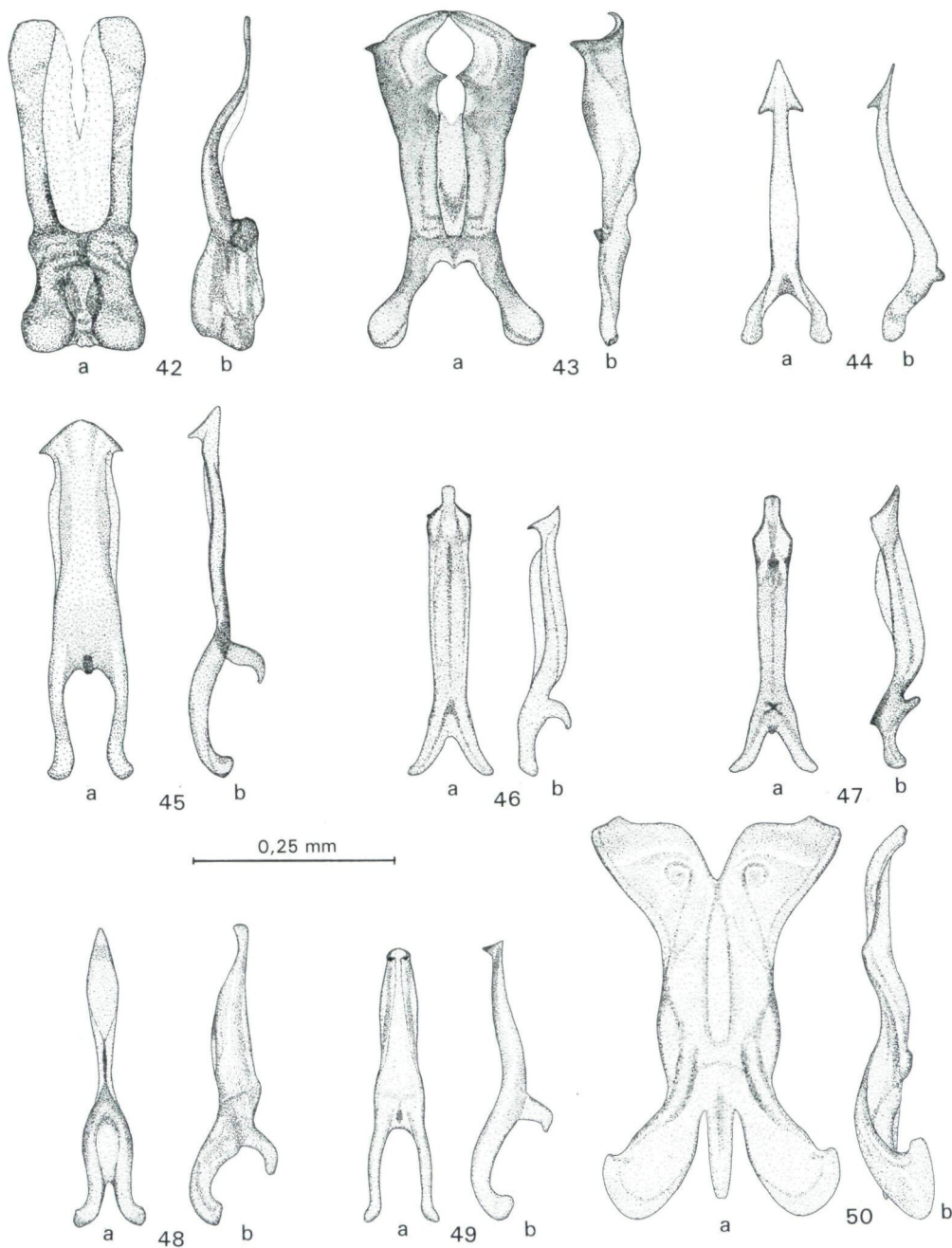
Figs. 1 - 15: body outlines and colour patterns: 1) *M. akitai*, (a) paratype, (b) holotype; 2) *M. balkei*, (a) holotype, (b) paratype; 3) *M. belli*, holotype; 4) *M. bistroemi*, (a) holotype, (b) paratype; 5) *M. boukali*, (a, b) paratypes; 6) *M. championi*, (a) paratype, (b) specimen from Nepal, Lumle; 7) *M. dimorphus*, (a) holotype, (b) shape of head, holotype, ♂; 8) *M. elgae*, (a) specimen from Bhutan, Sargham, (b) paratype, (c) elytral punctures; 9) *M. gabrielae*, holotype; 10) *M. hainanensis*, (a) holotype, (b) paratype; 11) *M. hendrichi*, holotype; 12) *M. jaechi*, (a) holotype, (b) paratype, (c) elytral punctures; 13) *M. maculatus*, (a) lectotype, (b) elytral punctures; 14) *M. mariannae*, holotype; 15) *M. menopausis*, (a) paratype, (b) holotype.



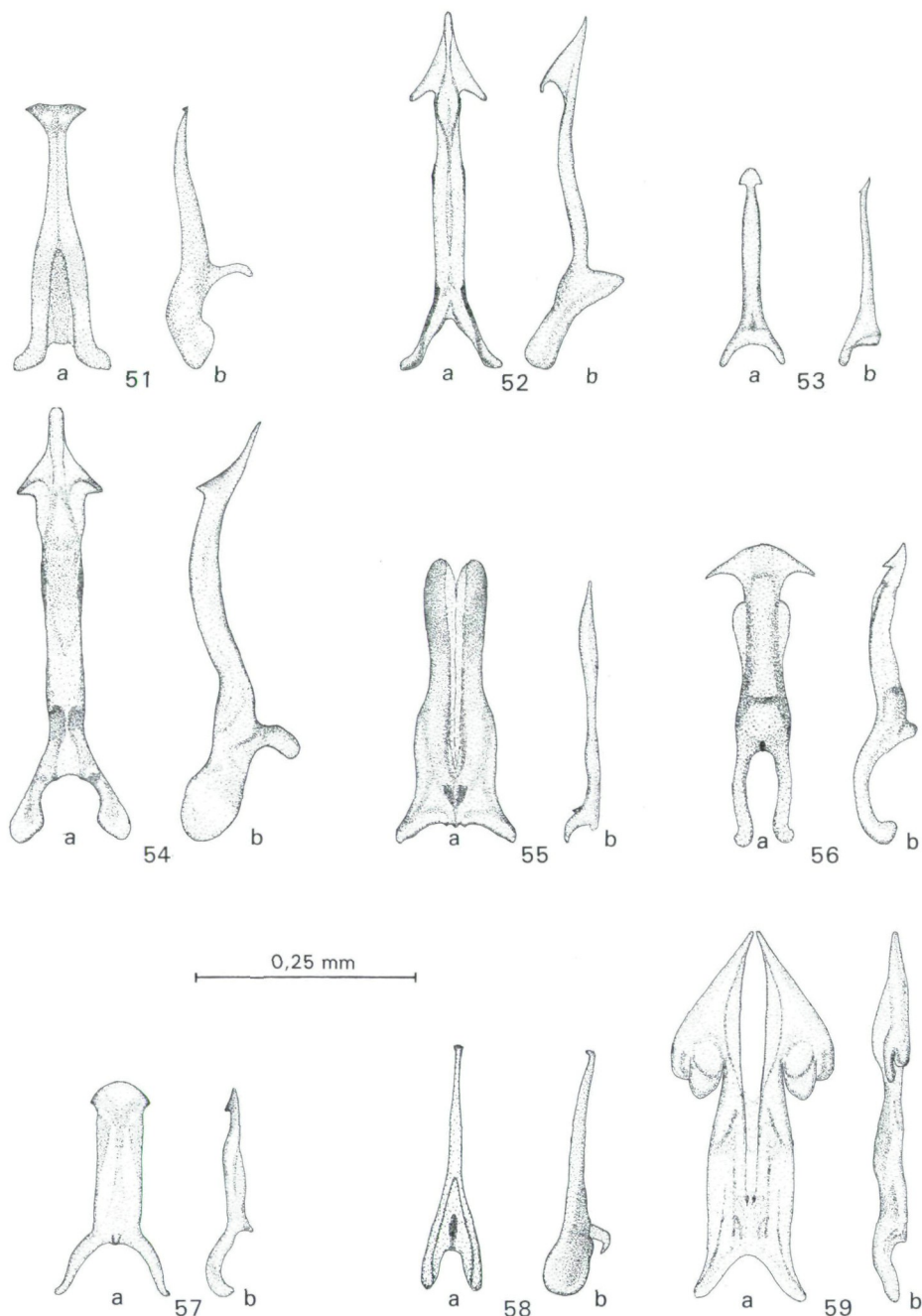
Figs. 16 - 30: body outlines and colour patterns: 16) *M. nilssoni*, (a) holotype, (b) paratype; 17) *M. pasiricus*, (a) specimen from Philippines, Palawan, (b) paratype; 18) *M. sabitae*, holotype, according to VAZIRANI 1968; 19) *M. sarawakensis*, (a) paratype, (b) holotype; 20) *M. satoi*, (a) paratype, (b) holotype; 21) *M. schoedli*, (a) paratype, (b) holotype; 22) *M. schoenmanni*, (a) holotype, (b) paratype; 23) *M. schuhi*, (a) holotype, (b) paratype; 24) *M. schwendingeri*, (a) holotype, (b) paratype; 25) *M. shepardi*, (a) holotype, (b) paratype; 26) *M. shunichii*, (a, b) paratypes; 27) *M. sinensis*, (a) holotype, (b) paratype; 28) *M. tomokunii*, (a, b) specimens from Nepal; 29) *M. uenoi*, (a) paratype, (b) specimen from Taiwan; 30) *M. zetteli*, (a) paratype, (b) holotype.



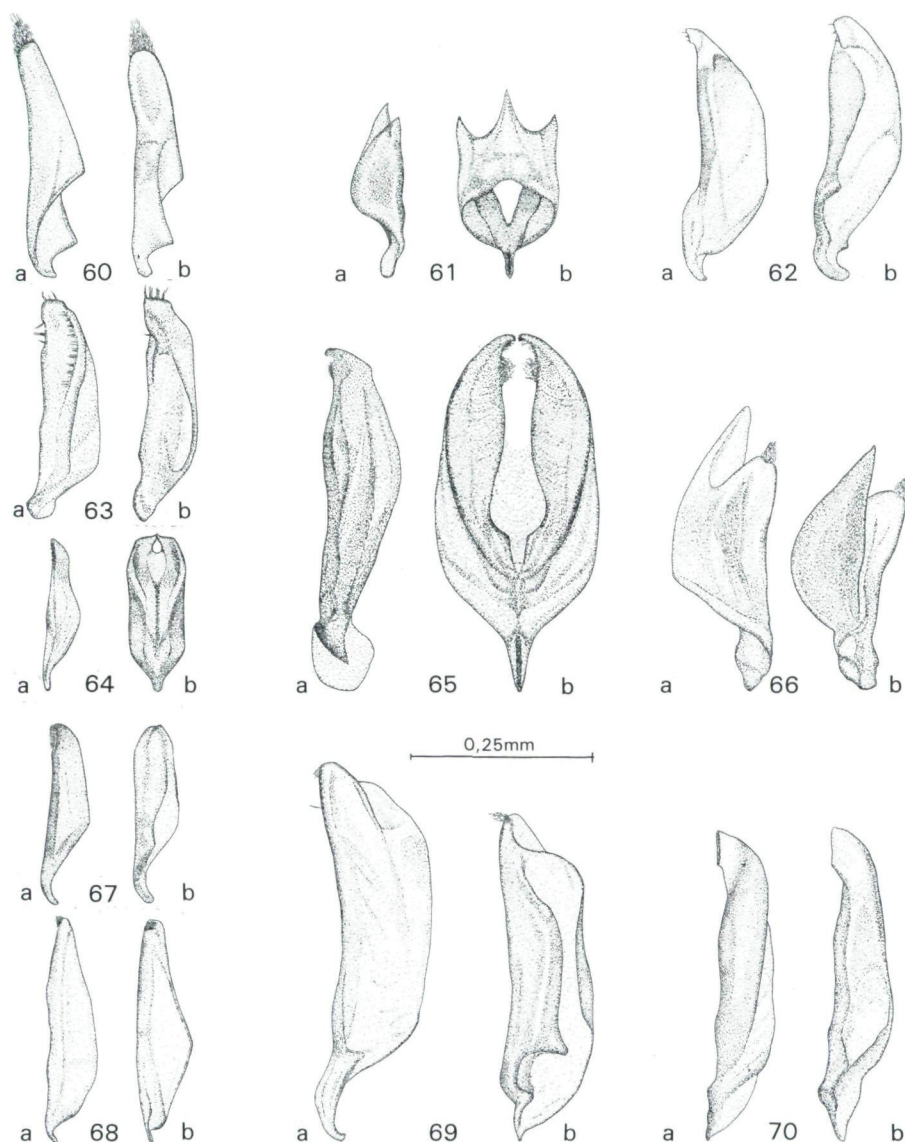
Figs. 31 - 41: penis, (a) dorsal view, (b) lateral view: 31) *M. akitai*, holotype; 32) *M. balkei*, holotype; 33) *M. belli*, specimen from Kanara; 34) *M. bistroemi*, holotype; 35) *M. boukali*, holotype; 36) *M. championi*, specimen from Nepal, Lumle; 37) *M. elgae*, specimen from Bhutan, Sargham; 38) *M. gabrielae*, holotype; 39) *M. hainanensis*, holotype; 40) *M. hendrichi*, holotype; 41) *M. jaechi*, holotype.



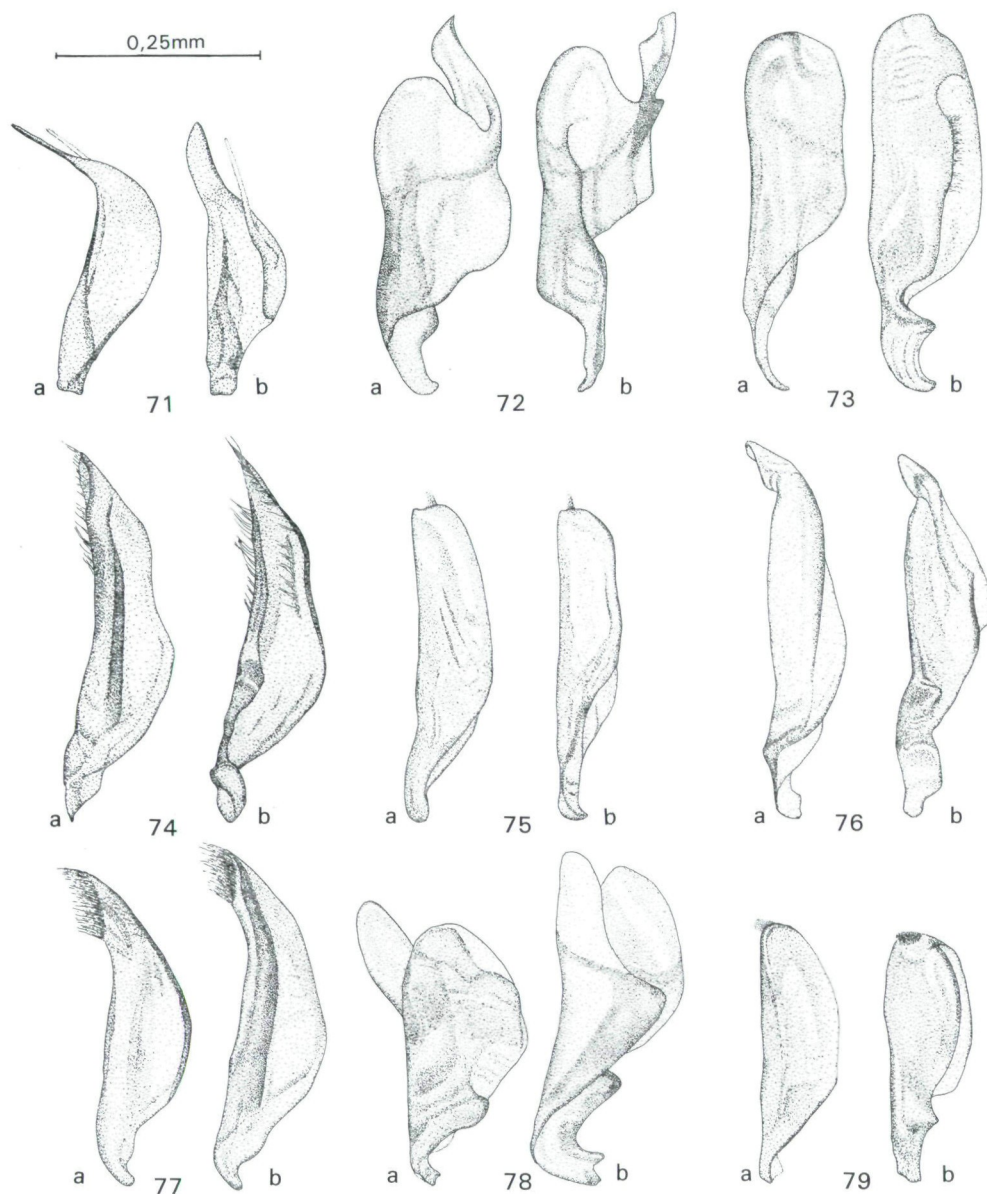
Figs. 42 - 50: penis, (a) dorsal view, (b) lateral view: 42) *M. maculatus*, specimen from Thailand, Chiang Mai; 43) *M. mariannae*, holotype; 44) *M. menopausis*, holotype; 45) *M. nilssoni*, holotype; 46) *M. pasiricus*, paratype; 47) *M. pasiricus*, specimen from Thailand, Nam Nao NP; 48) *M. sarawakensis*, holotype; 49) *M. satoi*, holotype; 50) *M. schoedli*, holotype.



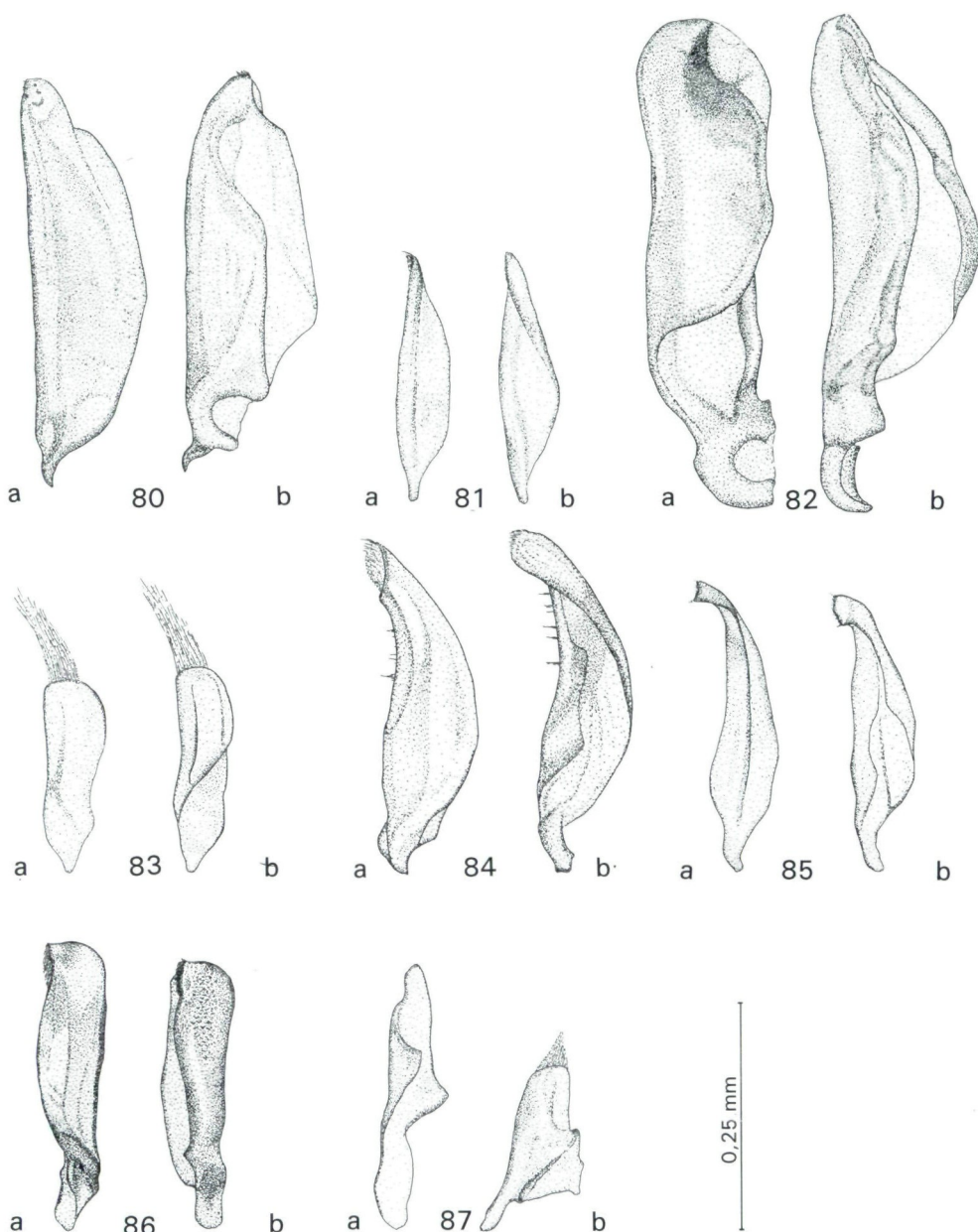
Figs. 51 - 59: penis, (a) dorsal view, (b) lateral view: 51) *M. schoenmanni*, holotype; 52) *M. schuhi*, holotype; 53) *M. schwendingeri*, holotype; 54) *M. shepardi*, holotype; 55) *M. shunichii*, paratype; 56) *M. sinensis*, holotype; 57) *M. tomokunii*, specimen from Nepal; 58) *M. uenoi*, specimen from Taiwan; 59) *M. zetteli*, holotype.



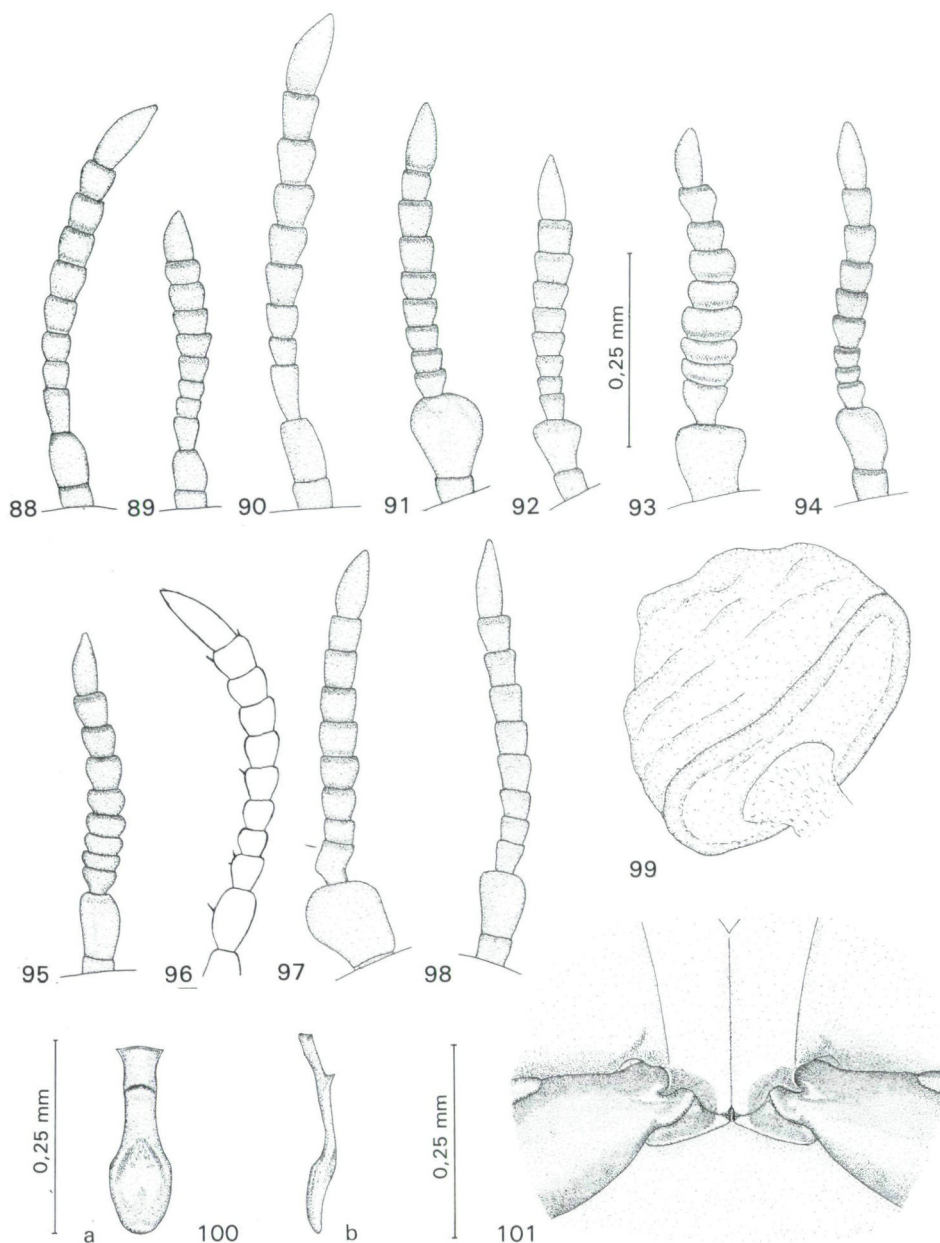
Figs. 60 - 70: parameres (l.p. = left paramere, r.p. = right paramere, d.v. = dorsal view, l.v. = lateral view, m.v. = medial view): 60) *M. akitai*, holotype, (a) l.p., l.v., (b) r.p., m.v.; 61) *M. balkei*, holotype, (a) r.p., l.v., (b) d.v.; 62) *M. belli*, specimen from Kanara, (a) l.p., l.v., (b) r.p., m.v.; 63) *M. bistroemi*, holotype, (a) l.p., l.v., (b) r.p., m.v.; 64) *M. boukali*, holotype, (a) l.v., (b) d.v.; 65) *M. championi*, specimen from Nepal, Lumle, (a) l.v., (b) d.v.; 66) *M. elgae*, specimen from Bhutan, Sargham, (a) r.p., l.v., (b) l.p., m.v.; 67) *M. gabrielae*, holotype, (a) l.p., l.v., (b) r.p., m.v.; 68) *M. hainanensis*, holotype, (a) l.p., l.v., (b) r.p., m.v.; 69) *M. hendrichi*, holotype (a) l.p., l.v., (b) r.p., m.v.; 70) *M. jaechi*, holotype, (a) l.p., l.v., (b) r.p., m.v.



Figs. 71 - 79: parameres: 71) *M. maculatus*, specimen from Thailand, Chiang Mai, left paramere, lateral view, (b) right paramere, medial view; 72) *M. mariannae*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 73) *M. menopausis*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 74) *M. nilssoni*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 75) *M. pasiricus*, paratype (a) left paramere, lateral view, (b) right paramere, medial view; 76) *M. sarawakensis*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 77) *M. satoi*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 78) *M. schoedli*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 79) *M. schoenmanni*, holotype (a) left paramere, lateral view, (b) right paramere, medial view.



Figs. 80 - 87: parameres: 80) *M. schuhi*, holotype (a) left paramere, lateral view, (b) right paramere, medial view; 81) *M. schwendingeri*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 82) *M. shepardi*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 83) *M. shunichii*, paratype, (a) left paramere, lateral view, (b) right paramere, medial view; 84) *M. sinensis*, holotype, (a) left paramere, lateral view, (b) right paramere, medial view; 85) *M. tomokunii*, specimen from Nepal, (a) left paramere, lateral view, (b) right paramere, medial view; 86) *M. uenoi*, specimen from Taiwan (a) left paramere, lateral view, (b) right paramere, medial view; 87) *M. zetteli*, holotype, left paramere, (a) basal part, (b) distal part.



Figs. 88 - 98: antennae of: 88) *M. akitai*; 89) *M. boukali*; 90) *M. championi*; 91) *M. dimorphus*, ♂; 92) *M. hainanensis*; 93) *M. hendrichi*, ♂; 94) *M. menopausis*; 95) *M. pasiricus*, ♂; 96) *M. sabitae*, after VAZIRANI (1968); 97) *M. schuhi*, ♂; 98) *M. shepardi*.

Figs. 99 - 101: *M. championi*; 99) spermatheca; 100) prosternal process, a) ventral view, b) lateral view; 101) metasternal process and metatrochanters.

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