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REVISION OF *MORANA* SHARP AND ALLIED GENERA (COLEOPTERA: STAPHYLINIDAE: PSELAPHINAE)

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Abstract.— An informal *Morana* group is defined to accommodate several genera placed previously in Iniocyphini and Proterini, with five new genera and 76 new species here described. Members of the *Morana* group share the presence of temporal patches, curved, apically thickened metatibiae, and weakly sclerotized aedeagi. Two subgroups are recognized, the *Morana* and the *Nipponobythus* subgroups. A key to genera of the *Morana* group is provided, and members of the *Morana* subgroup are revised, described or redescribed, illustrated, and keyed. Following taxa are described as new: *Armariolus* gen. nov., *A. aeruscator* sp. nov., *A. bombax* sp. nov., *A. brachiatus* sp. nov., *A. glutto* sp. nov., *A. praepilatus* sp. nov., *Cataphractinus* gen. nov., *C. arenarius* sp. nov., *C. clibanarius* sp. nov., *C. crupellarius* sp. nov., *Klarissa* gen. nov., *K. pantagatha* gen. nov., sp. nov., *Maya bracata* sp. nov., *M. churgellae* sp. nov., *M. foveolata* sp. nov., *M. horricomis* sp. nov., *Morana afflictrix* sp. nov., *M. agostii* sp. nov., *M. ampullaria* sp. nov., *M. asema* sp. nov., *M. belajevae* sp. nov., *M. bellicosa* sp. nov., *M. bidentata* sp. nov., *M. brinevi* sp. nov., *M. burckhardti* sp. nov., *M. caudata* sp. nov., *M. clypeata* sp. nov., *M. crustosa* sp. nov., *M. derosa* sp. nov., *M. diatretaria* sp. nov., *M. distensiceps* sp. nov., *M. dorsuosa* sp. nov., *M. epastifrons* sp. nov., *M. eromenion* sp. nov., *M. fastigata* sp. nov., *M. femoralis* sp. nov., *M. galeata* sp. nov., *M. hastulata* sp. nov., *M. histanoceroides* sp. nov., *M. hoplomacha* sp. nov., *M. loquax* sp. nov., *M. lucipeta* sp. nov., *M. lupula* sp. nov., *M. lusciosa* sp. nov., *M. machaerifera* sp. nov., *M. mahadewa* sp. nov., *M. minax* sp. nov., *M. murphyi* sp. nov., *M. nana* sp. nov., *M. obbatifrons* sp. nov., *M. oxymoron* sp. nov., *M. palaung* sp. nov., *M. palpalis* sp. nov., *M. palulifrons* sp. nov., *M. papulifera* sp. nov., *M. pectinicornis* sp. nov., *M. perreaui* sp. nov., *M. persolla* sp. nov., *M. petulca* sp. nov., *M. platypes* sp. nov., *M. rebellis* sp. nov., *M. repandirostra* sp. nov., *M. sagax* sp. nov., *M. scapus* sp. nov., *M. schwendingeri* sp. nov., *M. semifacta* sp. nov., *M. sima* sp. nov., *M. sinciput* sp. nov., *M. smetanai* sp. nov., *M. sycosifrons* sp. nov., *M. tibialis* sp. nov., *M. virago* sp. nov., *M. vultuosa* sp. nov., *Multesimus* gen. nov., *M. cuniculus* sp. nov., *M. gallulus* sp. nov., *M. jaccoudi* sp. nov., *M. talpula* sp. nov., *Nippiliphus* gen. nov., *N. crurifragius* sp. nov. and *N. napolovi* sp. nov. *Bythinophanax* Reitter is transferred from Proterini to Iniocyphina, and *Morana exilis* (Reitter), *M. latebrosa* (Reitter) and *M. punctata* (Raffray) are new combinations from *Bythinophanax*. Lectotypes are designated for *Bythinophanax bicornis* Reitter and *B. punctatus* Raffray. *Maya uzeli* Blattny is considered as a *nomen dubium*.

Key words.— Coleoptera, Staphylinidae, Pselaphinae, Goniaceritae, taxonomy, Asia.

INTRODUCTION

The Goniaceritae is one of the more diverse and inadequately studied groups of pselaphines that currently includes 14 tribes and 260 genera (Newton and Chandler 1989, Chandler 2001). While some tribes of Goniaceritae are defined by robust characters, many tribes and subtribes appear well-defined only when

their study is based on geographically restricted material. The taxonomy of Iniocyphini Park, 1951 illustrates the presently unsatisfying knowledge of the supertribe. This tribe is an assemblage of taxa that appears to have little in common. Until recently it included four subtribes, the Iniocyphina, based on *Iniocyphus jheringi* Raffray from Brazil, the ill-defined Neotropical Dalmodina, the Pantropical Natypleurina, and the Globina from Africa and South America. Chandler (2001) placed Globina in synonymy of Brachyglutina, and Dalmodina in synonymy of Iniocyphina. He also redefined the Natypleurina, primarily based on their palpal and antennal characters, and on their body shape. The newly defined Natypleurina includes five Oriental and Australian genera at present.

Although characters of the Iniocyphina were discussed in Chandler (2001), to date no satisfying definition of the group has been given. The fact that some of the Oriental genera placed in Iniocyphina have the second visible abdominal sternite long, as that in Brachyglutini (Chandler 2001), suggests polyphyly of the group.

The complex history of the tribe began with Jeannel's (1949) description of the Tanypleurini. Jeannel (1949, 1958 and 1959) defined the Tanypleurini by characters that are variable, or absent from many of its members, and he failed to notice the size of the second visible abdominal sternite. His statements about the position of eyes in the anterior half of the head, the short and sexually unmodified antennal scape, the pronotum lacking lateral foveae, the elytra lacking striae and basal foveae, and the short abdomen lacking "rebord marginal" (=paratergites) are misleading. Jeannel (1958, 1959) recognized two subtribes within the Tanypleurini, Tanypleurina and Globina, based on the presence or absence of the mesocoxal process and on the width of the metacoxal process, but many members of his Tanyplerina have the characters he used to define the Globina (the formal description of Globina was published in his 1959 paper, yet he used the subtribal name as available in 1958). Because of homonymy of *Tanypleurus*, the tribal name Tanypleurini was replaced by Natypleurini (Newton and Thayer 1992), resulting in priority of Iniocyphini over Natypleurini.

Jeannel (1958) placed in his Tanypleurini, in addition to *Tanypleurus* Raffray, 1890 (replaced by *Natypleurus* Newton et Thayer, 1992), the following six Asian genera: *Bythonesiotes* Jeannel, 1958 (=*Bythiotes* Newton et Chandler, 1989), *Morana* Sharp, 1874, *Nipponobythus* Jeannel, 1958, *Prosthecarthron* Raffray, 1914, *Takaorites* Jeannel, 1958, and *Triomicrus* Sharp, 1883. *Machulkaia* Löbl, 1964, considered related to *Nipponobythus*, and *Bythiotes* Newton and Chandler, 1989 were recently synonymized (Löbl and Kurbatov 2004), and a new genus, *Brunomanseria* Löbl et Kurbatov, 2004, was added to this complex of taxa. With the exception of *Triomicrus*, all these genera are at present formally placed in Iniocyphina. *Triomicrus* was redefined and revised in Löbl *et al*. (1998), found to be close to the Brachyglutini, and transferred to Brachyglutini by Chandler (2001). *Prosthecarthron* was based on *Prosthecarthron sauteri* Raffray, 1914 from Taiwan. According to its description (Raffray 1914) it has a gular ridge and three basal pronotal foveae. These characters suggest relationships to members of Brachyglutini, where the genus was originally placed. The particular antennal characters of *Prosthecarthron* are not found in the Iniocyphini.

The remaining genera listed by Newton and Chandler (1989) in the Tanypleurina are, together with *Iniocyphus* and *Dalmodes*, currently placed in the Iniocyphina and form a heterogenous assemblage.

Morana, *Nipponobythus*, and several allied genera possess characters that suggest their monophyly and which separate them from other Iniocyphina and from Natypleurina. They form a distinctive group (i.e. the *Morana* group), to which belongs also *Maya* Blattny, 1925 and *Bythinophanax* Reitter, 1884, the latter being currently placed in the Proterini, as well as numerous new taxa.

In the present study, we will define more clearly what we hold as the *Morana* group, and provide a detailed taxonomic revision of all the constitutive taxa of one (i.e. the *Morana* subgroup) of the two subgroups we have recognized within the *Morana* group. The second subgroup (i.e. the *Nipponobythus* subgroup) will be treated similarly elsewhere.

Material and methods

Large collections of members of the *Morana* group were gathered in the past 35 years, primarily by expeditions in various Asian countries. The material comes, with very few exceptions, from sifted samples of forest floor litter or from light traps. One species, *Morana perreaui*, was found in debris along an underground river. The material examined (1917 specimens) in the present study totals 86 species (76 of which are new) distributed in 8 genera (5 of which are new). Eight additional species of Japanese *Morana* have been described by Arai (2003). In the course of our study of this group, we examined paratypes of these species and included them in the identification key, but we did not revise them because their original taxonomic treatment was adequate.

Acronyms of collections used in the present study are:

MHNG – Muséum d'histoire naturelle, Geneva, Switzerland;

MNHN – Muséum National d'Histoire Naturelle, Paris, France;
NHML – The Natural History Museum, London, UK;
NSMT – National Science Museum, Tokyo, Japan;
PCPH – Private collection of P. Hlaváč, Košice, Slovakia;
PCMS – Private collection of M. Schülke, Berlin, Germany;
PCSK – Private collection of S. A. Kurbatov, Moscow, Russia;
PCVB – Private collection of V. Brachat, Geretried, Germany;
ZMUM – Zoological Museum of Moscow State University, Moscow, Russia.

The vertex is termed the dorsal side of the head between and beyond the eyes, up to the neck constriction. The frons is termed the dorsal side of the head anterior to the eyes, up to the anterior ridge. The anterior, inclined and narrowed area of the head is termed the frontoclypeus ("lobe frontal" in Jeannel (1958, 1959), rostrum (when prominent) in Chandler (2001), clypeus in Arai (2003)). The temporal patches are termed the smooth, or finely sculptured areas located bilaterally beyind the eyes, or below, and usually well delimited by a carina, or by a ventral row of setae. The neck characters are given only when exposed. The length of the antennal segments includes their basal stalks. The basal foveiform impressions of the pronotum are termed foveae. The pronotal width is measured at the widest point. The length of the metasternum is that at the mid-line, unless stated differently. The abdominal segments are counted from the first visible tergite (fourth morphological tergite) and sternite (third morphological sternite), their length is measured without the apical membranous rim. The state of the metathoracic wings was not consistently checked. The aedeagi and other body parts illustrated in the present study were mounted in Canada balsam on acetate slides.

For taxa that are represented by a single specimen only the appendages, if considered necessary, the genital abdominal segments, and the aedeagi were slide mounted.

The median lobe of the aedeagus of many members of the group is asymmetrical, extended by one or two apical processes usually bearing setiform sensillae. These processes are termed "parameres" in Arai (2003). We consider such processes as not being homologous to true parameres. Our opinion is supported by the male of *Morana afflictrix* which possesses "normal" parameres, in addition to the apical processes of the median lobe (Figs 300–301). Possibly the presence of parameres in this species is a reversal that indicates the presence of parameres in the ancestors of *Morana*.

The weakly sclerotized aedeagi are often deformed in dried specimens and/or by dissection. The contours of their basal bulbs as observed and illustrated may be artefacts. In addition, the shape of the median lobe may depend on its orientation within the slide, and the structures of the internal sac are seen differently according to the equipment of different compound microscopes. This has led to considerable discrepancies in aedeagal illustrations of the same species as given in Arai (2003) and in the present study. Discrepancies in illustrations of the asymmetrical male antennomeres in these two studies are obviously due to a different orientation of the segments on the slides used for the illustrations.

The basal margin of the male apical sternite often provides reliable species characters. These consist of a single process situated asymmetrically, or of one or two pairs of processes. The shape of the process/es may strongly vary between species of the same genus.

Males of *Morana* possess diagnostic sexually dimorphic heads. Occasionally these can be of an amazing complexity. Their illustrations (Figs 426–485), in which antennae and maxillary palpi have been omitted, should be considered as tentative.

Detailed locality data are given in a standardised form, with the name of collectors in parenthesis ( ), and additional unpublished information in brackets [ ].

In order to keep the text as concise and user-friendly as possible, complete descriptions are given for most species, while the remaining taxa are compared to these. For convenience to the reader, the genera and species are listed alphabetically. However, the organization of the drawings of the *Morana* species reflects an attempt at a phylogenetic grouping.

NATURAL HISTORY AND ECOLOGY

Members of the *Morana* subgroup are found from the Nepalese Himalaya to Japan in the north, and to Bali and Sulawesi in the south. They appear particularly diverse in the Great Sunda Islands (Borneo and Sumatra) and the Malacca Peninsula, where 7 genera (4 endemics) and 52 species (all endemics) occur. This subgroup appears amazingly depauperate in the Himalaya (2 species), and the Philippines (1 species). Each constitutive species of the *Morana* subgroup is apparently restricted to a quite limited geographic area, with the notable exception of two species of *Maya*.

TAXONOMY

The genus *Morana* and its allied taxa are characterized by the presence of temporal patches. This character is a presumed synapomorphy defining the group. In addition, this group shares the following characters:

The dorsal apices of the antennal scape are emarginate. The antennal club consists of one to three segments. The eyes are situated about at the middle of the head, when placed to a large part anterior to the middle of the head (in particular in males), the tempora are distinct. The outer side of the fourth segment of the maxillary palpi has a flat sensillum (Fig. 382), the inner side of the fourth segment is rather convex than subangulate (Fig. 83). The pronotum usually has a pair of lateral foveae, in addition to basal foveiform impressions and/or basal crenulations or punctiform impressions. The lateral foveae may be completely lost and the basal foveiform impressions reduced. The elytra have two basal foveae, a latero-apical cleft, and lack subhumeral foveae. The lateral mesocoxal foveae are absent. The mesofemora bear a row of short sensillae (Figs 393–394, 417). The tibiae have an apical setal brush, and the metatibiae are curved and apically thickened in both sexes. The tarsi have segment 1 small, 2 large and widened, and 3 much shorter and narrower than segment 2 and cylindrical. The claws are asymmetrical. The abdomen has 5 visible tergites and 6 visible sternites. Abdominal tergite 1 is much larger than the following tergites. Abdominal sternite 2 is longer, or at least laterally longer, than the remaining sternites. The aedeagus has the basal bulb very weakly sclerotized, and the dorsal membrane is usually absent.

Comments. The taxa placed in the *Morana* group may be distinguished from other Iniocyphina and from Natypleurina by the presence of temporal patches. The temporal patches are usually visible in lateral view but may be situated ventrally and thus clearly visible occasionally only in ventral view. They extend onto the dorsal side of the head in *Bythinophanax* (Fig. 486).

Some of the characters listed above may be widely distributed within the Pselaphinae, and are rarely used in taxonomy. One of these is the presence of a sensillum on outer side of the fourth palpal segment (Fig. 382), which is observed in many groups, such as Bythinoplectini (Coulon, 1989), Batrisitae (Nomura, 1991), Iniocyphini (Leleup, 1971), Proterini (Leleup, 1986), and in members of *Brachygluta* Thomson, *Bryaxis* Kugelann, *Harmophorus* Motschulsky, *Triomicrus* Sharp, and *Tychus* Leach (unpublished). The row of mesofemoral sensillae (Figs 393–394, 417) is probably associated with a glandular patch, as shown by De Marzo and Vovlas (1989) in Batrisitae. This character is again possibly widely distributed in Batrisitae, but poorly examined in other groups. We observed such sensillae in members of *Brachygluta* Thomson, *Triomicrus* Sharp and *Tychus* Leach. A similar row of sensillae exists also on the profemora (Figs 391–392, 416) in several members of *Morana* group.

A particularly striking, and as far as we are aware an undescribed feature for pselaphines that is found in many members of the *Morana* group, is the sexually dimorphic second visible abdominal sternite (sternite IV). In some species-rich and morphologically very diverse tribes, such as Brachyglutini, the long second sternite is considered as a tribal character (Chandler, 2001). In *Morana* this sternite may be much shorter in males than in females, and its length is indirectly correlated with the length of the metasternum. In females the mid-length of the second abdominal sternite is 3 to 5 times that of the first sternite. In males of most species of *Morana*, and in some other genera, the mid-length of that sternite may be less than that of the first sternite, and it does not exceed 3 times the length of the first sternite.

The absence of lateral mesocoxal foveae in this group, while other meso- and metasternal foveae are generally present (except in *Cataphractinus* which lacks all of them), is notable. According to Chandler (2001), the lateral mesocoxal foveae are among the last to disappear within Pselaphines.

As in many other pselaphines, the males that have large, multifaceted eyes are usually macropterous, while the small-eyed females have reduced metathoracic wings.

The shape of the fourth segment of maxillary palpi and the number of segments in the antennal club is used to distinguish Iniocyphina from Natypleurina, and the size of the antennal scape is one of the characters used to define the Iniocyphini (Chandler 2001). These characters are highly variable in the studied group (and in particular in *Morana*). In addition, some characters used to define higher taxa in Goniaceritae, such as the presence or absence of the pronotal antebasal sulcus and elytral marginal carinae are variable within this group.

The presence of unusually enlarged and deformed profemora is frequent in the *Morana* group. Although occasionally spectacular, this feature exhibits a wide array of intermediate states and likely possesses little phylogenetic significance.

Two subgroups are distinguished within the studied taxa, the *Nipponobythus* and the *Morana* subgroups.

The *Nipponobythus* subgroup may be characterized as follows: The pronotum has an antebasal sulcus usually distinct and joined to the lateral foveae, sometimes the antebasal sulcus is very shallow, or interrupted by minute carinae. The lateral mesosternal foveae are present and symmetrically forked. The aedeagus has the parameres symmetrical, or at least similar in size and shape. The antennal club is 3-segmented rather than 2-segmented, segment 11 is shorter than segments 7 to 9 combined. The pedicel is moderately larger than the third antennomere. This subgroup includes *Nipponobythus* Jeannel, *Takaorites* Jeannel, and *Brunomanseria* Löbl et Kurbatov.

The *Morana* subgroup may be characterized as follows: pronotum lacking antebasal sulcus; lateral

mesosternal foveae (if present) asymmetrically forked, or anterior fork reduced; aedeagus lacking parameres, with basal bulb bearing an apical process and, occasionally, also an apical lobe; antennal club 1- or 2-segmented, with segment 11 about as long as the segments 7 to 10 combined (except in species with sexually modified and enlarged segment/s 9 and/or 10); antennal pedicel notably larger than any of the following 6 antennomeres (except in members of *Maya*). This subgroup includes *Armariolus* gen. nov., *Bythinophanax* Reitter, *Cataphractinus* gen. nov., *Klarissa* gen. nov., *Maya* Blattny, *Morana* Sharp, *Multesimus* gen. nov., and *Nippiliphus* gen. nov.

Within the Morana subgroup, four genera (i.e. *Armariolus*, *Bythinophanax*, *Cataphractinus* and *Morana*) form an apparent cluster. The members of these genera share a similar type of aedeagus, the presence of a paranotal carina (present elsewhere in the subgroup only in one species of *Maya*), the absence of basal crenulations on abdominal tergite 1 (except for 2–3 *Morana* species in which it is obsolete), and sexually dimorphic structures on the male abdominal tergite 5.

The present study provides a key to all genera of the *Morana* group, but treats in detail only members of the *Morana* subgroup.

Key to the genera of the *Morana* group

1. Pronotum with antebasal sulcus joined to lateral foveae (*Nipponobythus* subgroup) **2**
–. Pronotum lacking antebasal sulcus (*Morana* subgroup) **4**
2. Elytra each with discal sulcus . . . . . ***Brunomanseria*** Löbl et Kurbatov
–. Elytra lacking discal sulci **3**
3. Abdominal sternite 2 with pair of laterodiscal carinae . . . . . ***Takaorites*** Jeannel
–. Abdominal sternite 2 lacking laterodiscal carinae . . . . . ***Nipponobythus*** Jeannel
4. Elytra lacking lateral carinae **5**
–. Elytra with lateral carinae **7**
5. Abdominal tergite 1 lacking discal carinae . . . . . ***Multesimus*** gen. nov.
–. Abdominal tergite 1 with discal carinae **6**
6. Pronotum with two admesal sulci and carinate lateral margins . . . . . ***Klarissa*** gen. nov.
–. Pronotum lacking admesal sulci, with lateral margins rounded, not carinate . . . . . ***Nippiliphus*** gen. nov.
7. Elytra each with laterodiscal sulcus exposed in dorsal view. Elytral apices with fringe of robust, flattened setae . . . . . ***Maya*** Blattny
–. Elytra lacking laterodiscal sulci and apical fringe of robust setae **8**
8. Temporal patches rounded, not visible in dorsal view **9**
–. Temporal patches narrow, extending dorsally onto occiput and distinct in dorsal view . . . . . ***Bythinophanax*** Reitter
9. Outer side of femora and tibiae each with one long, erect seta. Temporal patches ventral . . . . . ***Cataphractinus*** gen. nov.
–. Femora and tibiae lacking long, erect setae. Temporal patches lateral or lateroventral **10**
10. Abdominal sternite 2 with median carina. Elytra usually with entire sutural striae, rarely sutural striae shortened or absent. If sutural striae absent, pronotum with median sulcus and frons with two foveiform impressions . . . . . ***Morana*** Sharp
–. Abdominal sternite 2 lacking median carina. Elytra lacking sutural striae. Pronotum not sulcate, frons lacking foveiform impressions . . . . . ***Armariolus*** gen. nov.

Armariolus gen. nov.

Type species. *Armariolus praepilatus* sp. nov.; gender: masculine.

Description. Body with pubescence inconspicuous, very short and recumbent; additional long, erect setae usually present, absent in *A. bombax*. Punctation dense and coarse either on entire dorsal surface of body, or only on head, pronotum, and elytra and abdomen finely punctate. Head subpentagonal. Maximal head width at level of eyes. Frons wide anteriorly, without frontal and postantennal sulci. Vertexal sulci absent. Vertexal pits obscured by coarse punctation. Mediodorsal neck impression shallow. Occipital carina absent. Eyes well-developed, large and convex in males, strongly reduced and depigmented in females. Temporal patches lateral or lateroventral, delimited from above and below by carinae. Tempora narrowed apically or parallel. Antennae shorter than combined length of head and pronotum; scape, pedicel, and in particular segment 11 much larger than segments 3 to 8. Pronotum convex, wider than long, gradually widened anteriorly, about as wide as head with eyes, with pair of lateral foveae, basal pronotal foveae almost touching basal edge, obscured by coarse punctation, or apparently absent. Paranotal carinae present, sometimes not very distinct. Elytra convex, not crenulate laterally, each with two basal foveae and lateral carina, lacking sutural and discal striae. Mesosternum (Fig. 27) with unforked median fovea and pair of forked lateral foveae; anterior forks of lateral mesosternal foveae minute, in *A. bombax* almost completely reduced. Width of mesocoxal process of metasternum one- to two-fifths width of mesocoxal cavity. Metacoxal process of metasternum wider than

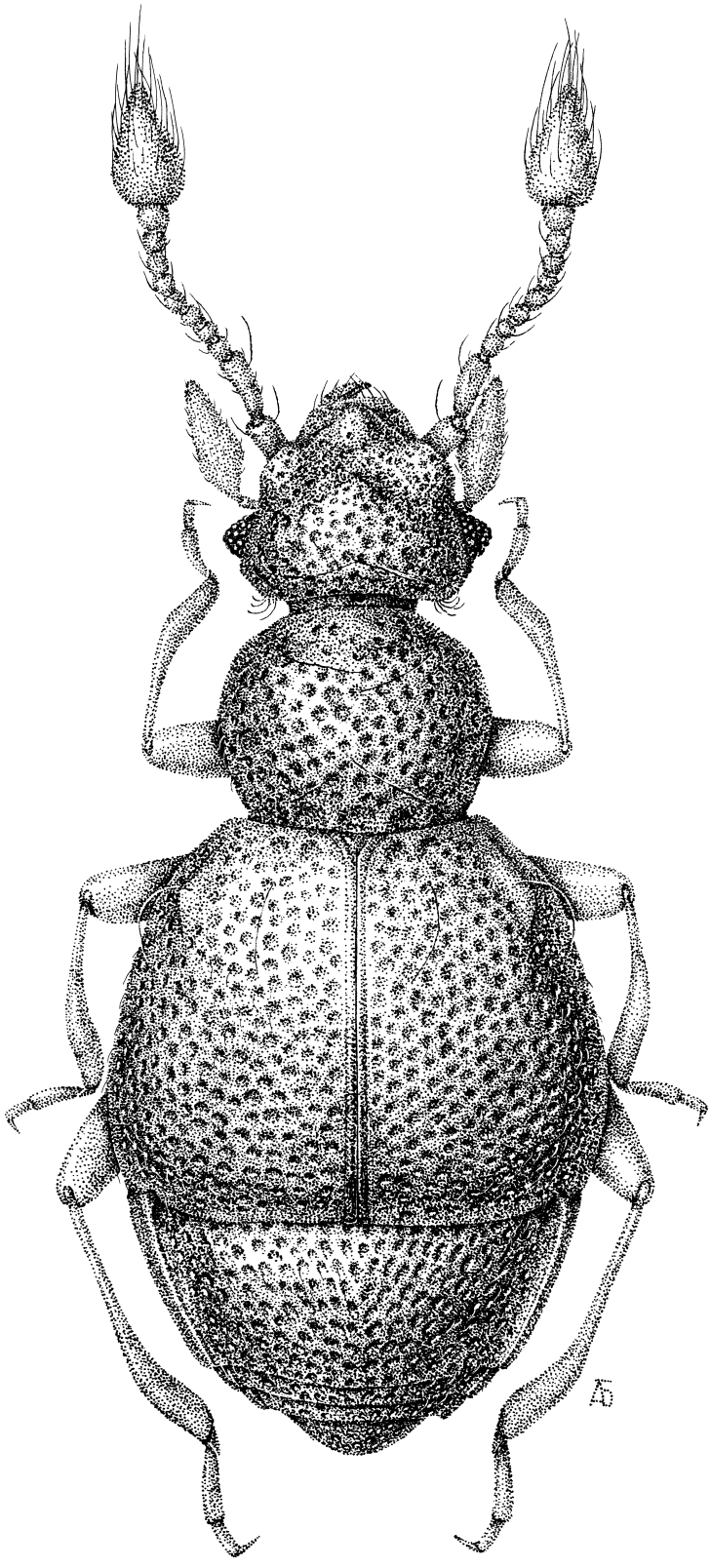

Figure 1. Habitus of *Armariolus praepilatus*.

mesocoxal cavity. Lateral metasternal foveae small or absent. Posterior margin of mesosternal shield and anterior and posterior margins of metasternum bordered by coarse, pit-like punctures. Femora and tibiae lacking long setae. Metatarsi with segment 2 widened apically, about three times as long as segment 3. Abdominal tergite 1 comparatively short, about as long as or shorter than following abdominal segments combined, narrowed apically, with discal carinae, basal foveae at inner side of discal carinae, base impressed, basal crenulation absent; sternite 1 very short but visible through entire width; sternite 2 long, in males shorter than in females, lacking median carina.

Male with sexual characters affecting frons, eyes, pedicel, and abdomen. Aedeagus asymmetrical, median lobe lacking dorsal membrane, with apical process large, bearing setiform sensillae, apical lobe small.

Comments. This genus includes five species from Borneo and Sumatra. It is defined by the elytra lacking sutural striae, the abdominal sternites lacking laterodiscal carinae, and the comparatively short abdominal tergite 1. It may be distinguished from *Morana* by the characters given in the key to genera. It is also characterized by the presence of pit-like punctures bordering the margins of the metasternum and mesosternal shield.

Etymology. The name *Armariolus* is derived from the Latin word 'armarium', and means small cabinet. In langages such as French and Russian, 'cabinet' commonly applies also to particularly strong and robust persons. 'Armarium' is used here in this particular sense to reflect the massive body proportions of these beasts, and the diminutive suffix takes into account their alltogether quite modest body size.

Key to species of *Armariolus*

1. Metasternum and abdomen covered by dense punctation. Pronotum with distinct basal foveae. Frons impressed **2**
–. Metasternum and abdomen to large extent impunctate. Pronotum lacking distinct basal foveae. Frons not impressed **4**
2. Antennal tubercles elevated above level of vertex. Gula impressed laterally to form gular pits. Pronotum with large basal foveae . . . . ***A. glutto*** sp. nov.
–. Antennal tubercles not elevated above level of vertex. Gula not impressed laterally as gular pits. Pronotum with small, not clearly delimited basal foveae. **3**
3. Vertex, pronotum and elytra each with long, erect setae . . . . . ***A. praepilatus*** sp. nov.
–. Head and body lacking long, erect setae . . . . . ***A. bombax*** sp. nov.
4. Antennal tubercles angulate laterally. Male frontoclypeus with median tubercle high and acute . . . . . ***A. aeruscator*** sp. nov.
–. Antennal tubercles rounded laterally. Male frontoclypeus with median tubercle small and blunt . . . . . ***A. brachiatus*** sp. nov.

Armariolus aeruscator sp. nov.
(Figs 24, 26, 30)

Type material. Holotype (male, in MHNG): Indonesia, Sumatra, Aceh, Mt. Leuser National Park, 300–500 m, Ketambe, 23–30.XI.1989 (I. Löbl, D. Agosti & D. Burckhardt) #25a [sifting of vegetational debris in lowland dipterocarp forest].

Description. Length 0.90 mm. Body uniformly brown. Pubescence distinct, fairly long and recumbent; two pairs of long, erect setae on lateral parts of vertex; pronotum with pairs of mediobasal and anteriolateral long, erect setae; elytra each with one macroseta on posterolateral part of humeral area; abdominal tergites 3 and 4 each with one pair of long, erect setae. Head with punctation fairly dense and coarse, becoming gradually finer toward neck, almost absent from posterior margin of vertex. Occiptal area oblique, wide and smooth. Vertex elevated at middle and with short, median sulcus. Vertexal pits barely visible among coarse punctation, situated in line of eye centres; interval between them about one-third of head width (without eyes). Frontal lobe not impressed, inclined and vertical above impressed frontoclypeus, anterior edge arcuate in dorsal view. Antennal tubercles flat, angulate laterally, covered by conspicuous microsculpture. Tempora subangulate in dorsal view. Temporal patches ventral, overlapped by expanded tempora, not clearly delimited, adjoined to large and very deep lateroventral impression. Mediodorsal neck impression about half of neck width. Antennae with scape, including its overlapped basal part, slightly longer than pedicel; pedicel straight, narrower than scape, about 1.5 times as long as wide, slightly longer than antennal segments 3 to 5 combined; antennal segments 3 to 9 equally wide, similar in length, each distinctly wider than long; segment 10 about as long as and much larger than segment 9; segment 11 almost as long as segments 4 to 9 combined. Pronotum slightly wider than head including eyes in male, with discal punctures larger than punctures on frons, very finely punctate on narrowed anterior area; basal foveae absent; lateral foveae inconspicuous. Elytral punctation slightly coarser and denser than on pronotal disc. Mesosternum coarsely punctate. Metasternal punctation very fine, except with coarse punctures along mesocoxal cavities and at margin of mesocoxal process, with row of coarse punctures near apical metasternal

margin. Abdominal tergites and sternites very finely punctate; discal carinae of tergite 1 extending almost up to tergal mid-length, separated by about half of tergal width.

Male. Eyes large and prominent, with about 30 facets. Frontoclypeus with tubercle at centre covered by several ventrally curved setae. Apical abdominal tergite with large modified seta (Fig. 24). Apical sternite (Fig. 26) with two narrow admesal processes and two wide and short outer processes. Aedeagus (Fig. 30) 0.190 mm long.

Female unknown.

Distribution. Sumatra: Aceh.

Comments. This species is characterised by angulate temples, the metasternum not narrowed posteriorly, impunctate metasternum and sternites, and the presence of a conspicuous frontoclypeal tubercle in the male.

Armariolus bombax sp. nov.
(Figs 14–15, 23, 25, 32)

Type material. Holotype (male, in MHNG): East Malaysia, Sarawak, Gunung Matang, 20 km W Kuching, 850 m, 25.V.1994 (I. Löbl & D. Burckhardt), submontane forest, #10a [sifting of vegetational debris].

Paratypes (139): same data as holotype, 41 males & 42 females in MHNG & PCSK; East Malaysia, Sarawak, Santubong 32km N Kuching, 20–100 m, 11–16.V.1994 (I. Löbl & D. Burckhardt) #1a [sifting of vegetational debris and fungi in mixed dipterocarp forest] 3 males & 19 females in MHNG; Sarawak, Mt. Matang 20 km W Kuching, 800 m, 13.V.1994 (I. Löbl & D. Burckhardt) submontane forest, #2a [sifting of vegetational debris near creek] 1 male & 16 females in MHNG; same data, but 200 m, 26.V.1994, dipterocarp forest, #12a [sifting of vegetational debris in mixed dipterocarp forest] 1 male & 4 females in MHNG; Sarawak, Kampung Segu, 20 mi SW Kuching, 4.VI.1968 (R. Taylor) 5 males & 12 females in MHNG.

Description. Length 0.90–0.95 mm. Similar to *A. praepilatus*, from which it differs as follows: Head, pronotum, and elytra lacking long, erect setae; pronotal and elytral pubescence notably longer and distinct; pedicel (Figs 14–15) slightly shorter; apical margin of abdominal tergite 5 in male as in Fig. 23; anterior margin of apical sternite in male with small, asymmetrical process (Fig. 25); aedeagus (Fig. 32) larger, 0.215 mm long.

Distribution. Borneo: Sarawak.

Comments. This species is characterised by the unusually long apical process on its aedeagal median lobe.

Armariolus brachiatus sp. nov.
(Figs 9, 19, 22, 29)

Type material. Holotype (male, in MHNG): Indonesia, West Sumatra, Anai Valley Nat. Res., 10 km W Padangpanjan, 200 m, 17.XI.1989 (I. Löbl, D. Agosti, D. Burckhardt) #19 [sifting of vegetational debris in degraded lowland forest with ratan on steep slope].

Paratypes (8): same data as holotype, 3 males in MHNG & PCSK; Indonesia, West Sumatra, Palopo Nat. Res. N Bukittinggi, 900 m, 18–20.XI.1989 (I. Löbl, D. Agosti, D. Burckhardt) #21 [sifting of vegetational debris in secondary forest on steep slope] 1 male & 3 females in MHNG; West Sumatra, Lake Maninjau, waterfall above Gasang, 720 m, evergreen rain forest, 9.II.2000 (P. Schwendinger) 1 male in MHNG.

Description. Length 0.85–0.90 mm. Body reddish-brown. Erect pubescence fairly short, distinct. One or two pairs of long, erect setae present near posterior margin of vertex. Long, erect setae scattered on pronotum and elytra, absent from abdominal tergite 1, one pair of long, erect setae present on tergites 2 and 3. Head entirely covered by dense and coarse punctation. Vertexal pits barely distinguishable among coarse punctation, situated in same line as posterior eye margins, interval between them one-third of head width (without eyes). Occiput slightly prominent in middle, forming minute tooth. Frontal lobe not impressed. Antennal tubercles rounded. Tempora rounded in dorsal view. Temporal patches lateroventral, margined by fairly long setae. Mediodorsal impression of neck fairly large, wider than one-third of neck width, with apical margin prominent at middle and forming small tooth facing vertexal tooth. Antennae (Fig. 9) with scape cylindrical, as wide as and longer than pedicel; pedicel suboval, about 1.5 times as long as wide and 1.5 times as wide as following segments; segments 3 to 8 equally wide; segment 3 slightly wider than long, segments 4 to 6 shorter than segment 3; segments 7 to 9 slightly longer than segment 6; segment 10 barely longer than wide and 1.5 times as long as segment 9; segment 11 as long as segments 4 to 9 combined. Pronotum slightly wider than head including eyes in males, punctation dense and coarse over disc except narrowed anterior area; basal foveae absent; lateral foveae very small, slightly larger than coarse discal punctures. Elytral punctation similar to that on pronotum, coarser than that in the species described above. Mesosternum with row of coarse punctures margining mesocoxal cavities. Metasternum with rows of very coarse punctures, each margining mesocoxal and metacoxal cavities; metasternal shield glabrous. Abdominal tergites and sternites very finely punctate; tergite 1 with discal carinae reaching up to mid-length of tergite and separated by interval as wide as half of tergal width.

Male. Eyes large, prominent, almost as long as tempora, with about 20 facets. Frontoclypeus vertical, overlapped by frontal lobe, with minute central tubercle bearing short setae curved ventrally. Apical abdominal tergite with two modified setae (Fig. 19); apical sternite (Fig. 22) with two admesal, long, and narrow processes, with two short, wide processes between admesal and lateral processes. Aedeagus (Fig. 29) 0.185 mm long.

Female. Eyes reduced, partly depigmented, with 1 to 3 facets.

Distribution. Sumatra: West Sumatra.

Comments. This species resembles *A. aeruscator*, also from Sumatra, from which it can be distinguished by the temples narrowed posteriorly and the antennal tubercles rounded laterally.

Armariolus glutto sp. nov.
(Figs 11–12, 18, 21, 31)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Poring Hot Springs, Langanan Falls, 900–950 m, 12.V.1987 (D. Burckhardt & I. Löbl) #22a [sifting of vegetational debris near creek in dipterocarp montane forest].

Paratypes (7): same data as holotype, 4 females in MHNG; East Malaysia, Sabah, Poring Hot Springs, 500 m, 7.V.1987 (D. Burckhardt & I.Löbl) #15a [sifting in quite moist dipterocarp forest] 2 males & 1 female in MHNG & PCSK.

Description. Length 1.00–1.05 mm. Body dark brown. Similar to *A. praepilatus*, from which it differs as follows: Body pubescence longer and not as recumbent. Pronotal and elytral long, erect setae numerous and scattered. Mediodorsal impression of neck larger, about as wide as one-third of neck width. Pedicel (Figs 11–12) shorter. Pronotum as wide as head including eyes in males, with three large and distinct basal foveae. Abdominal tergite 1 with discal carinae reaching up to mid-length of tergite. Male apical abdominal tergite as in Fig 18. Apical abdominal sternite (Fig. 21) lacking basal process. Aedeagus (Fig. 31) 0.220 mm long.

Distribution. Borneo: Sabah.

Comments. The species is characterised by antennal tubercles elevated above the level of the vertex and large basal pronotal foveae.

Armariolus praepilatus sp. nov.
(Figs 1, 10, 17, 20, 28)

Type material. Holotype (male, in MHNG): East Malaysia, Sarawak, Gunung Penrissen, 1000 m, 23.V.1994 (I. Löbl & D. Burckhardt) edge of primary montane forest, #9a [sifting of vegetational debris].

Paratypes (71): same data as holotype, 19 males & 52 females in MHNG & PCSK.

Description. Habitus as in Fig. 1. Length 0.90–0.95 mm. Body uniformly brown. Pubescence mostly very short, recumbent and inconspicuous; one pair of long, erect setae inserted at medioposterior part of vertex; pronotum with one pair of mediobasal long, erect setae, and one other near centre of disc; elytra each with two long, erect setae, one on humeral area and the second on other anterior part of disc, near suture. Head covered by very dense and coarse punctation. Vertexal pits barely visible among coarse punctation, situated in line of anterior eye margins; interval between them about one-third of head width (without eyes). Frontal lobe impressed, prominent, subtriangular in dorsal view, with anterior margin vertical. Antennal tubercles weakly elevated, rounded anteriorly, angulate laterally. Tempora subangulate in dorsal view. Temporal patch lateral, delimited by ridge, margined posteriorly by fairly short setae. Mediodorsal neck impression very small. Antennae with scape, including its overlapped basal part, and pedicel (Fig. 10) equally long; pedicel curved, narrower than scape, twice as long as wide, as long as segments 3 to 6 combined; segments 3 to 8 equally wide; segment 3 slightly wider than long, segments 4 to 6 even, wider than long; segments 7 to 9 slightly longer than segment 6, each wider than long; segment 10 distinctly larger than segment 9, wider than long; segment 11 almost as long as segments 4 to 9 combined. Pronotum narrower than head including eyes in male, as wide as head with eyes in female, with discal punctures larger than vertexal punctures, shallow basal foveae, large lateral foveae. Elytral punctation similar to that on pronotal disc. Mesocoxa not margined by row of punctures. Metasternum densely punctate. Abdominal tergites 1 to 3 with coarse and dense punctation, punctures smaller than those on elytra and often slightly elongate, tergite 4 with punctation sparser than that on tergites 1 to 3; sternites densely punctate; discal carinae of tergite 1 parallel to lateral margins, slightly shorter than half of tergal length, separated by interval two-thirds of tergal width.

Male. Eyes large and prominent, with about 24 facets, in lateral view slightly longer than tempora. Apical tergite with three modified marginal setae (Fig. 17). Apical abdominal sternite (Fig. 20) lacking basal process. Aedeagus (Fig. 28) 0.180 mm long.

Female. Eyes reduced but prominent, shorter than tempora, with few facets only.

Distribution. Borneo: Sarawak.

Comments. The species resembles *A. bombax*, from which it can be easily distinguished by the presence of long erect setae on the vertex, pronotum, and elytra.

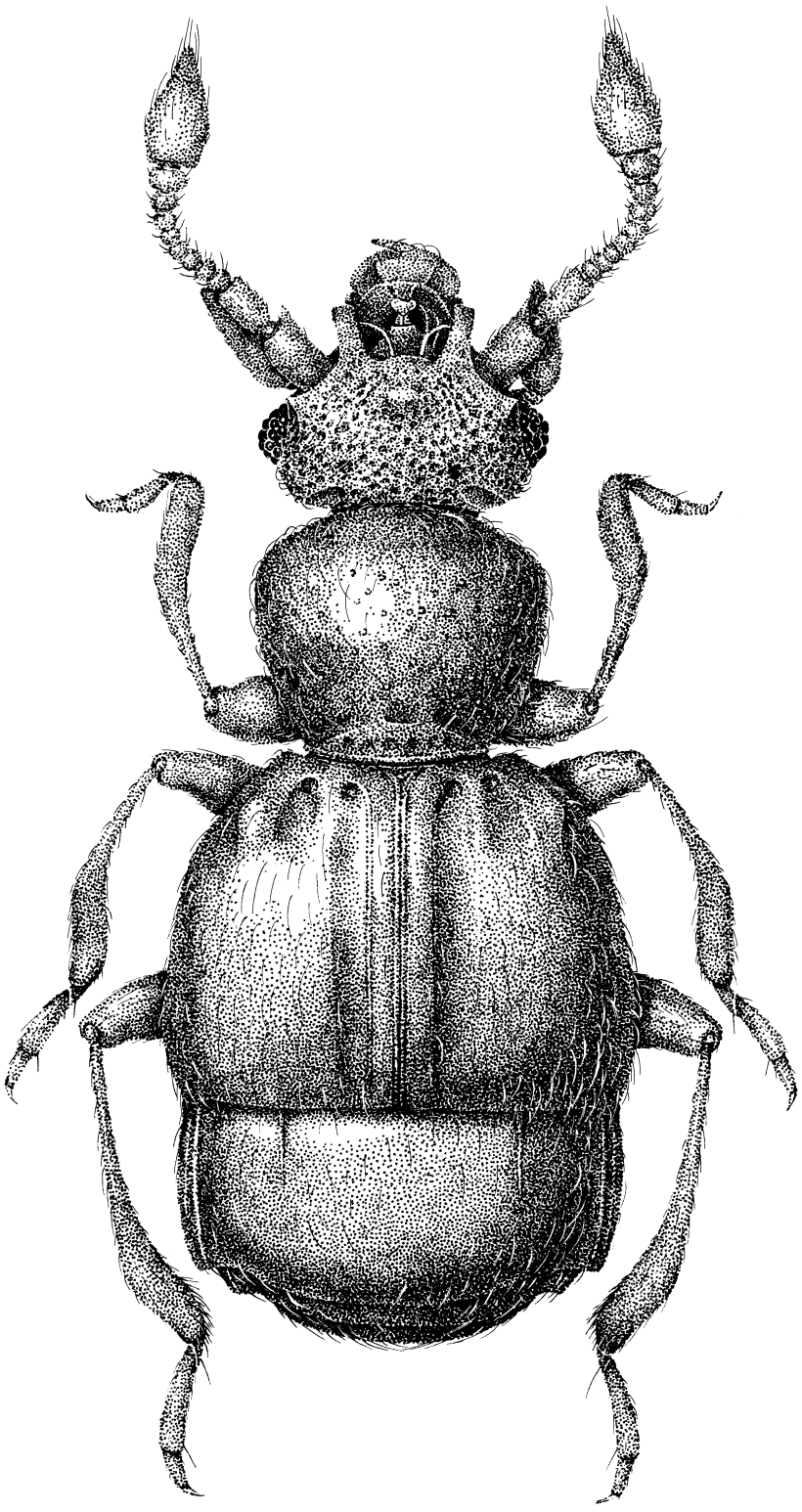

Figure 2. Habitus of *Bythinophanax bicornis*.

Bythinophanax Reitter, 1884

Bythinophanax Reitter, 1884: 405; type species *Bythinophanax bicornis* Reitter, 1884 (des. Lucas, 1920: 153).

Description. Body with dense, short, recumbent pubescence; additional long, erect setae apparently absent. Head dull, with dense and coarse punctation; pronotum and elytra shiny, with sparse, fairly fine punctation; abdomen very finely punctate. Head short, subpentagonal. Maximal head width at level of eyes. Frons wide anteriorly, with denticle at margin of antennal tubercles, lacking postantennal sulci or pits. Frontal and vertexal sulci, and occipital carina absent. Vertexal pits distinct. Mediodorsal neck impression deep. Eyes well developed, large and convex in male. Temporal patches lateral, distinct in dorsal view, extending dorsally onto occiput, delimited anteriorly and posteriorly by carinae (Fig. 486). Tempora very short. Antennae shorter than combined length of head and pronotum; scape, pedicel and segment 11 much larger than segments 3 to 8. Pronotum convex, wider than long, gradually widened anteriorly, wider than head with eyes, with pair of lateral foveae and pair of short basolateral carinae, antebasal carina delimited by impression, wrinkled base, and median basal fovea, lateral basal foveae absent. Paranotal carinae present. Elytra weakly convex, not crenulate laterally, lateral margins evenly convex, each with two basal foveae, entire sutural stria and lateral carina, adsutural area narrow, discal stria absent. Mesocoxal processes of mesosternum and metasternum strongly narrowed, meeting as acute ridges (ventral view), mesocoxae contiguous. Metacoxal process narrower than mesocoxal cavity (index 13/17). Metasternum apparently lacking foveae (dry specimen). Anterior margin of mesosternal shield and margins of mesocoxal cavities bordered by coarse, pit-like punctures, remainder of mesosternum and metasternum very finely and sparsely punctate. Abdominal tergite 1 large, longer than following abdominal segments combined, not narrowed apically, with long discal carinae, base impressed and crenulate; apical margin of sternite 1 and base of sternite 2 finely crenulate, sternite 2 lacking carinae.

Male with sexual characters on frons and frontoclypeus.

Comments. This monotypic genus is endemic to Borneo. It is defined by the short temporal patches extended dorsally, and the very narrow mesocoxal processes of the mesosternum and metasternum.

Bythinophanax differs from *Morana* only by the unique shape of its temporal patches. In our opinion, these two genera are most likely synonyms. However, as there is only one available specimen of *Bythinophanax* (*i.e.* the holotype of *B. bicornis*), we couldn't confirm our opinion because examination of the most crucial characters is possible only from slide preparations of disarticulated specimens for a microscope.

Bythinophanax bicornis Reitter, 1884
(Figs 2, 16, 486)

Bythinophanax bicornis Reitter, 1884: 407.

Type material. Material examined (1): Lectotype male (by present designation), labelled '*Bythinophanax bicornis* m. Telang-Borneo [hand-written original Reitter's label] / TYPE [red]/ *B. bicornis* [handwritten by Raffray] A. Raffray det. / *Bythinophanax bicornis* R [hand-written by Jeannel] / *Bythinophanax bicornis* Reitt. det. S. Kurbatov, 2000', in MNHN.

Description. Habitus as in Fig. 2. Length 1.00 mm. Body reddish-brown. Pubescence fairly long, distinct. Head entirely covered by dense and coarse punctation. Vertexal pits fairly distinct among coarse punctation, their anterior margin situated in line of anterior eye margins; interval between them one-fourth of vertexal width. Frons elevated at centre, obliquely inclined anteriorly. Antennal tubercles flat, with anterior margin oblique, forming prominent, denticular angle. Tempora oblique in dorsal view, very short. Temporal patches latero-apical, narrow, margined beyond by short setae. Eyes prominent, longer than tempora, with about 28 facets. Posterior margin of vertex horizontal. Mediodorsal neck impression small, sulcate. Antennae with scape (Fig. 16) curved, about 1.5 times as long and wide as pedicel, inner apical angle prominent; pedicel subcylindrical, about twice as long as wide and about 1.5 times as wide as following segments; segments 3 to 8 equally wide, wider than long; segment 4 to 8 shorter than segment 3; segment 9 slightly larger than segment 8; segment 11 as long as segments 4 to 10 combined and about twice as wide as segment 10. Pronotum hardly wider than head, with punctation dense and fine; lateral foveae very large; disc with two small, median, basal impressions separated by short median carina; base irregularly ridged, apparently lacking foveae. Elytra with lateral carinae starting beyond basal fourth, extending to apical margins. Metathoracic wings well-developed. Mesosternum and metasternum glabrous. Abdominal tergites and sternites very finely punctate; tergite 1 with discal carinae parallel, reaching up to mid-length of tergite and separated by interval slightly wider than half of tergal width.

Male. Head as in Fig. 486. Anterior margin of frons with two conspicuous, admesal processes directed anteriorly and slightly curved ventrally. Centre of anterior frontal margin elevated to form minute tubercle. Area near eye margin below anterior frontal margin

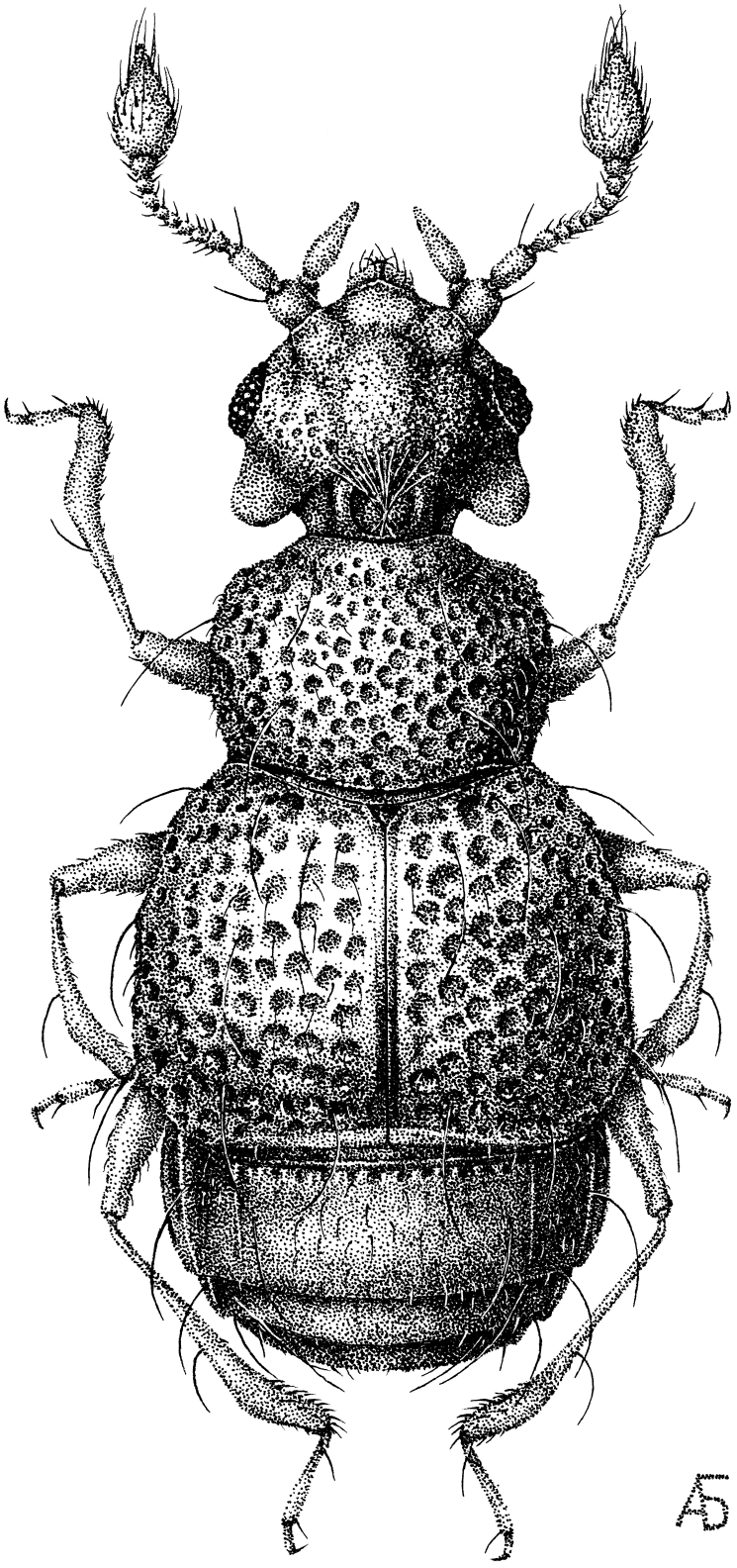

Figure 3. Habitus of *Cataphractinus arenarius*.

deeply impressed and vertical. Genae reduced. Middle of frontoclypeus with fairly large setiferous tubercle, two thick setae oriented anteriorly situated above frontoclypeal tubercle. Clypeus almost vertical, with broad modified setae lateral to inferior edge of frontoclypeal tubercle, and elevated at centre to form short, dorsally rounded ridge.

Female unknown.

Distribution. Borneo: East Kalimantan.

Comments. The single available specimen was dissected prior to our study, and is in poor state. Its aedeagus and apical abdominal segments are missing. The meso- and metasternal foveae were not examined because their observation requires slide-mounting. The size of the eyes and metathoracic wings may be sexually dependent, as for other members of the group.

Cataphractinus gen. nov.

Type material. Type species: *Cataphractinus arenarius* sp. nov.; gender: masculine.

Description. Body with dense, short, recumbent pubescence and scattered, long, erect setae. Head, pronotum, and elytra dull, lateral lobes of head excepted; pronotum and elytra with very dense, coarse punctation; abdomen coarsely or finely punctate. Head short, subpentagonal, not narrowed beyond eyes. Maximal head width beyond level of eyes. Frons with denticle at margins of antennal tubercle, without postantennal sulci or pits. Occipital carina and vertexal sulci absent. Vertexal pits minute or absent. Temporal patches ventral. Mediodorsal neck impression large, deep. Ventral side of head strongly impressed basally. Eyes pigmented and multifaceted in male, depigmented and reduced in female. Pronotum convex, about as wide as or wider than head with eyes, widest about in middle, with lateral margins rounded, with pair of lateral foveae, lacking basal foveal row and lacking sulci. Paranotal carinae present. Elytra lacking sutural and discal striae, with lateral carinae forming uneven, carinate and crenulate margin. Mesosternum and metasternum lacking true foveae (Fig. 39), mesocoxal cavities margined by row of pit-like punctures. Mesocoxal processes of mesosternum and metasternum widened, about one-third width of mesocoxal cavities width. Metacoxal process slightly wider than mesocoxal cavities. Apical half of metasternal shield with coarse punctures usually arranged to form transverse row; mesocoxal cavities bordered by row of large punctures, remainder impunctate. Tibiae each with one macroseta at outer margin. Metatarsi with segment 2 widened apically, almost 2.5 times as long as narrow segment 3. Abdominal tergite 1 comparatively short, shorter than following exposed tergites combined, narrowed apically, with two discal carinae, lacking basal impression and basal foveae; sternite 1 short, exposed throughout; sternite 2 shortened in male, with long lateral carinae, short median carina, and basal crenulation.

Male. Secondary sexual characters on frons, basal segments of antennae, eyes, protibiae, and abdomen. Aedeagus with median lobe strongly asymmetrical, median lobe lacking dorsal membrane, apical process weakly developed, with pair of setiform sensilla, apical lobe comparatively large.

Comments. The genus includes three species, all from Borneo. It is defined by the laterally carinate abdominal sternite 2, and the crenulate lateral margins of the elytra. The absence of elytral sutural striae is shared with *Armariolus* and *Morana papulifera*.

Etymology. The name is derived from Greek and refers to armoured body.

Key to the species of *Cataphractinus*

1. Tempora explanate latero-apically, flattened and impunctate **2**
–. Tempora not explanate, rounded and finely punctate . . . . . ***C. clibanarius*** sp. nov.
2. Tempora rounded, lacking ridge and with even dorsal surface. Male scape not conspicuously swollen, smaller than antennal segment 11 (Figs 35–36) . . . . . ***C. arenarius*** sp. nov.
–. Tempora with apical ridge and small, round, central patch. Male scape conspicuously swollen, much larger than antennal segment 11 (Figs 37–38) . . . . . ***C. crupellarius*** sp. nov.

Cataphractinus arenarius sp. nov.
(Figs 3, 35-36, 40–41, 46)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Sepilok Forest Res. near Sandakan, 8.VI.1968 (R. Taylor).

Paratypes (12): same data as holotype, 2 males in MHNG; same data but 13.VI.1968, 1 female in MHNG; same data but VI.1968, 3 males & 3 females in MHNG & PCSK; East Malaysia, Sabah, Labuk rd. ex-Sandakan, 12.VI.1968 (R. Taylor) 1 male & 1 female in MHNG; Sabah, Sepilok, 23.IV.82 (B. Hauser) #82-5/I [Kabili-Sepilok Forest Reserve, sample of rotting wood in forest near Orang Utan Rehabilitation Station, Berlese extraction] 1 female in MHNG.

Description. Habitus as in Fig. 3. Length 0.95–1.10 mm. Body uniformly brown. Head convex. Punctation on head coarse and very dense, expanded part of tempora excepted, consisting of punctures well delimited, mostly wider than puncture intervals. Middle of vertex elevated and bearing on posterior part several long,

horizontal and apically converging setae. Vertexal pits minute, situated in line of posterior eye margins in male, or beyond line of eyes in female; interval between them about one-third of head width (without eyes). Antennal tubercles with acute denticle pointed dorsally. Tempora each conspicuously explanate latero-apically to form large, flattened, smooth lobe. Margin of temporal lobes oblique laterally, rounded apically, extending apically to line of pronotal margin. Temporal patches covered by temporal lobes, hardly visible in lateral view. Mediodorsal neck impression abrupt, deep, wider than one-third of neck width. Antennae with segment 3 about as long as wide; segments 4 to 8 equal in size, as wide as and distinctly shorter than segment 3; segment 9 slightly longer than segment 8; segment 10 wider than segment 9; segment 11 as long as segments 3 to 9 combined and 3 times as wide as segment 9. Pronotum as long as head, slightly wider than head, almost 1.5 times as wide as long, with distinct lateral foveae. Pronotal punctation coarse and dense except on anteriomedian area, coarse punctures much larger than those on head. Elytral punctation barely coarser than pronotal punctation. Lateral margins of elytra with 2 or 3 denticles near base. Abdomen very finely punctate. Abdominal tergite 1 with discal carinae weakly converging, extended to apical fourth of tergal length, separated at base by interval as wide as 3/5 of tergal width; basal crenulation present.

Male. Median part of frontoclypeus elevated to form parallel-sided ridge. Upper part of frontoclypeal ridge bearing two tufts of curved setae. Frontal lobe not narrowed, similar to that in female. Eyes large, round, almost as long as tempora in lateral view. Scape (Figs 35–36) strongly swollen, about as wide as antennal segment 11. Pedicel asymmetrical, widened dorsoventrally, almost as long as scape and about half as wide as scape, longer than segments 3–5 combined. Apex of apical tergite with row of modified setae, pair of middle setae thicker than remaining setae (Fig. 41). Apical abdominal sternite (Fig. 40) with two small admesal processes. Aedeagus (Fig. 46) 0.140 mm long.

Female. Frontoclypeus rounded. Eyes reduced, with 5 depigmented facets, much shorter than tempora. Scape and pedicel cylindrical, each about 1.5 times longer than wide; scape wider and hardly longer than pedicel, distinctly narrowed than antennal segment 11; pedicel longer than antennal segments 3 to 5 combined. Abdominal sternite 2 at middle about 4 times as long as sternite 1 and 1.5 times as long as metasternum; median carina long, reaching mid-length of sternite.

Distribution. Borneo: Sabah.

Comments. The species is characterised by impunctate tempora which are flattened and explanate lateroapically, and by the pedicel asymetrical and widened dorsoventrally in the male.

Cataphractinus clibanarius sp. nov.
(Figs 33–34, 42, 44)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Mt. Kinabalu Nat. Park, 1500 m, 29.IV.1987 (D. Burckhardt & I. Löbl) #8a [Liwagu trail, sifting of vegetational debris at foot of trees in small ravine].

Paratypes (12): with same data as holotype, but 25.IV.1987, #3a [sifting of moss, fungi and rotting wood between Headquarters and Liwagu River] 3 males & 4 females in MHNG & PCSK; East Malaysia, Sabah, Mt. Kinabalu Nat. Park, HQ, Liwagu Riv. trail, 1550 m, 11.VIII.1988 (A. Smetana) B101, 1 male in MHNG; Sabah, Kimanis-Keningau, 1380 m, 12.V.1982, moss (B. Hauser) #43a [sifting in montane forest near heliport at 16 miles from Keningau, Winkler-Moczarski extraction] 1 female in MHNG; Sabah, Crocker Range, rd. Kota Kinabalu – Tambunan, 1550–1650 m, 16.V.1987 (D. Burckhardt & I. Löbl) #27a [sifting of rotting wood, dead leaves and moss in *Lithocarpus-Castanopsis* forest near pass] 1 male & 2 females in MHNG.

Description. Length 0.90–0.95 mm. Body uniformly brown. Punctation on head dense and fairly coarse, except finely punctate on posterior part of vertex and tempora. Middle of vertex slightly, inconspicuously elevated and bearing on posterior part several long setae oriented mesally. Vertexal pits small, inconspicuous, lying posterior to line between eyes; interval between them less than one-third of head width (without eyes). Antennal tubercles lacking distinct denticle. Temporal patches ventral, visible at lateral view. Tempora convex, not explanate. Mediodorsal neck impression deep, smooth, about as wide as half of neck width. Antennae (Fig. 33) with segment 3 longer than wide; segments 4 to 9 much shorter than segment 3, distinctly wider than long; segment 10 about 1.5 times as wide as and slightly longer than segment 9; segment 11 pyriform, as long as segments 3 to 9 combined, 3 times as wide as segment 9. Pronotum hardly wider than and almost as long as head, with distinct lateral foveae. Pronotal punctation dense and coarse covering most of disc except impunctate medio-anterior part; coarse pronotal punctures larger than coarse vertexal punctures. Elytral punctation dense, slightly coarser than pronotal punctation. Lateral margins of elytra irregular and forming angles, with 1 or 2 denticles near base. Abdomen very finely punctate. Abdominal tergite 1 with discal carinae converging apically, extended almost to apical fourth of tergite and separated at base by interval as wide as three-fifths of basal tergal width; basal crenulation present.

Male. Frontal lobe narrowed, about as narrow as third of maximal head width, expanded anteriorly, partly overlapping frontoclypeus, with angulate

anterior margin. Frontoclypeus with small tubercle bearing modified, robust setae usually diverging dorsally, with thinner setae curved at tip. Eyes well-developed, with about 25 facets, slightly shorter than tempora. Antennae with scape (Figs 33–34) strongly swollen and convex dorsally, angulate ventrally; pedicel thickened toward apex, curved, flattened at outer side, almost 3 times as long as wide, hardly shorter than scape and almost as wide as half of scape, as long as antennal segments 3 to 8 combined. Apical abdominal tergite with row of subequal apical setae (Fig. 42). Sternite 2 shortened mesally, in middle about twice as long as sternite 1 and distinctly shorter than metasternum. Aedeagus (Fig. 44) 0.135 mm long.

Female. Frontal lobe gradually narrowed. Eyes reduced, consisting of 3 or 4 facets. Tempora several times longer than eyes, with slightly concave margin at dorsal view. Scape cylindrical, about 1.5 times as long as wide; pedicel as long as and moderately narrower than scape, as long as antennal segments 3 to 6 combined. Abdominal sternite 2 slightly more than 4 times as long as sternite 1, much longer than metasternum.

Distribution. Borneo: Sabah.

Comments. The species is characterised by the finely punctuate tempora, rounded and not explanate lateroapically, and the male scape angulate laterally with the pedicel curved in lateral view.

Cataphractinus crupellarius sp. nov.
(Figs 37–38, 43, 45)

Type material. Holotype (male, in MHNG): East Malaysia, Sarawak, confluent of Suan Oyan and Mujong rivers, E Kapit, 50 m, 18.V.1994 (I. Löbl & D. Burckhardt) #5a [sifting of vegetational debris in secondary mixed dipterocarp forest near creek].

Description. Similar to *C. arenarius*, from which it differs as follows: Length 0.90 mm. Head very finely punctate. Vertex not elevated to form median tubercle, with long, horizontal, apical setae parallel. Vertexal pits situated posterior to line between eyes; interval between them about one-fourth of head width at same level. Antennal tubercles pointed dorsolaterally. Tempora strongly explanate with lateral margins rounded, dorso-apical margins straight and perpendicular to body axis, ventro-apical margins convex. Tempora explanate, smooth, with small, translucent circle at middle. Pronotum shorter and wider than head. Lateral crenulation of elytra forming 8 to 10 denticles.

Male. Median part of frontoclypeus with robust, glabrous ridge. Frontal lobe narrower than in *C. arenarius*. Eyes shorter than tempora in lateral view. Scape and pedicel as in Figs 37–38; scape strongly swollen; pedicel cylindrical. Apex of apical abdominal tergite (Fig. 43) with two middle setae flat, thicker than those in *C. arenarius*. Abdominal sternite 2 at middle twice as long as sternite 1, about two-thirds length of metasternum. Aedeagus (Fig. 45) 0.115 mm long.

Female unknown.

Distribution. Borneo: Sarawak.

Comments. Males of this species can be recognised by their cylindrical pedicel and the presence of two large setae on tergite 5.

Klarissa gen. nov.

Type species. *Klarissa pantagatha* sp. nov.; gender: feminine.

Description. Body appearing glabrous; pubescence consisting of scattered, very long, erect setae and extremely short microsetae visible only at high magnification. Punctation consisting of few large punctures bearing long, erect setae, and more numerous, very fine punctures; metasternum and abdomen very finely punctate. Head pentagonal. Frons narrowed anteriorly, with narrow frontal lobe, deep interantennal impression joined to vertexal pits by comparatively deep, inverted U-shaped sulcus. Vertexal pits in impressions. Postantennal sulci replaced by oblique carinae. Eyes small. Temporal patches lateral, impressed, delimited by horizontal carinae from above and below, and short vertical carinae anteriorly and at posterior margin. Areas above temporal patches impressed. Anterior carinae touching eye margins. Occipital margin transverse, with deep, transverse impressions. Gular area with deep, oval impression. Antennae short; scape and pedicel comparatively small; pedicel larger than following segments (Fig. 49); segment 10 much wider than segment 9 in female, in male strongly modified; segment 11 several times larger than segment 9. Pronotum subhexagonal, moderately convex, wide and short, widest about at middle, wider than head, with six basal foveae, two basomedian foveae in common impression, two parallel, wide and deep admesal sulci, two pairs of large, round and deep lateral impressions and one pair of large foveae at anterior pronotal angles (lateral view). Lateral margins of pronotum carinate in basal half. Paranotal carinae present. Prosternum as in Fig. 47. Prohypomera with deep anterior and posterior impressions. Elytra comparatively short, moderately convex, lateral margins arcuate, not crenulate, lacking lateral carinae, each with two large basal foveae, sutural stria entire, conspicuously impressed, joined to inner basal fovea; adsutural area conspicuously wide; outer basal fovea extended beyond by short sulcus. Mesosternum and metasternum with foveal pattern as in Fig. 48. Mesocoxal process about as wide as one-third of mesocoxal cavity. Metasternum with submesocoxal ridges, metacoxal process large, wider than mesocoxal cavity.

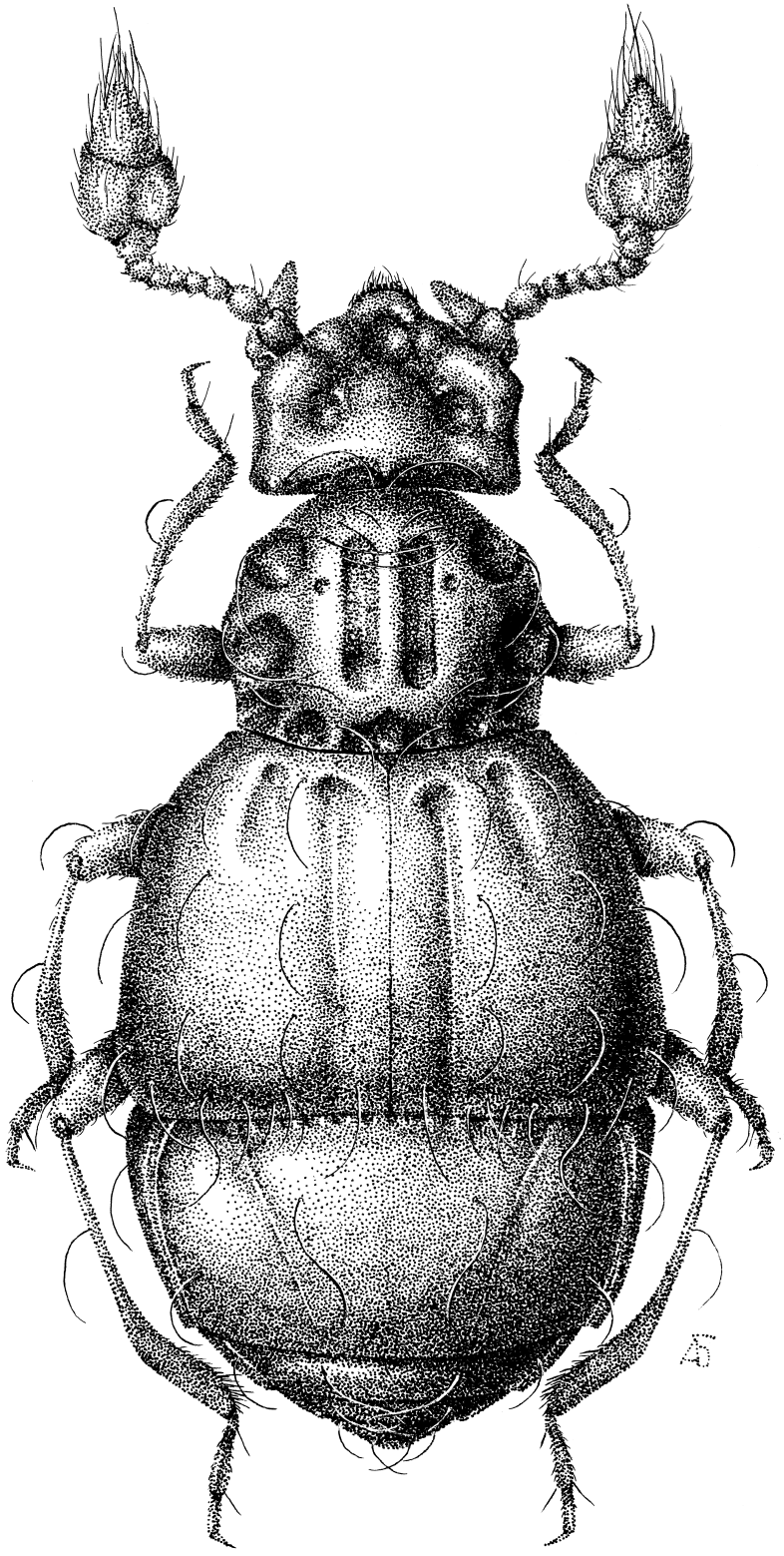

Figure 4. Habitus of *Klarissa pantagatha*.

Outer margins of all femora and tibiae bearing one long seta. Metatarsi with segment 2 moderately thickened apically, about 1.5 times as long as segment 3. Abdominal tergite 1 slightly convex, inclined, longer than remainder of abdomen, with two long discal carinae, basal crenulation overlapped by elytra, formed by short, irregular striae and foveiform impressions. Abdominal sternite 1 very short, hardly visible, sternite 2 not shortened in male, lacking median carinae, with conspicuous basal carinae and pair of large laterodiscal carinae.

Male. Sexual characters affecting antennal club and apical abdominal sternite. Aedeagus asymmetrical, median lobe lacking dorsal membrane, with apical process curved basally and tuberculate, setiform sensillum inserted on tubercle.

Comments. The genus includes a single species from Borneo. It differs conspicuously from other members of the *Morana* group, in particular by the deeply sulcate pronotum.

Etymology. The name is an arbitrary combination of letters.

Klarissa pantagatha sp. nov.
(Figs 4, 47–53)

Type species. Holotype (male, in MHNG): East Malaysia, Sabah, Crocker Range, km 63 rd. Kota Kinabalu – Tambunan, 1200 m, 19.V.1987 (D. Burckhardt & I. Löbl) # 31a [East slope, sifting of vegetational debris in moist ravine in secondary *Lithocarpus-Castanopsis* forest].

Paratypes (34): same data as holotype, 5 males & 1 female in MHNG & PCSK; same data but km 60, 1270 m, 17.V.1987, #29a [East slope, sifting of vegetational debris at foot of old trees and along big fallen trunk near burned area at edge of secondary forest with big *Agathis* trees], 3 males in MHNG; same data but 1350 m, #28a [east slope, sifting of dead leaves and bark in ravine with creek in *Lithocarpus-Castanopsis* forest], 5 males & 1 female in MHNG; East Malaysia, Sabah, Crocker Range N. P., Hwy A3 km 48, ca 1000 m, 5.IX.1988 (A. Smetana) B178, 2 males, 3 females in MHNG; Sabah, Mt. Kinabalu, rte Ranau – Kota Kinabalu, 1150 m, 24.V.1987 (D. Burckhardt & I. Löbl) #40 [West of Mt Kinabalu, sifting of rotting wood with fungi and vegetational debris near plantation and in wooded ravine] 4 males & 8 females in MHNG & PCSK; Sabah, Crocker Range, around km 56 of road Kota Kinabalu – Tambunan, Sun Suron Waterfall env., 1100–1200 m, 8.VI.1996 (P. Hlavác) #5c, 1 male in PCPH; Sabah, Gunung Emas Resort, 52 km Kota Kinabalu – Tambunan, 23–29.V.1996 (P. Hlavác) 1 male in PCPH.

Description. Length 1.00 mm. Body uniformly reddish-brown. Head wider than long. Maximal head width near posterior edge of vertex. Centre of frons and vertex impunctate; punctation very fine and dense near lateral vertexal margins. Lateral margins of vertex concave. One long seta inserted at lateral margins of occipital impression. Ventral carina delimiting temporal patch bearing row of setae oriented laterally. Antennae with scape small, cylindrical; pedicel suboval, slightly longer than wide, about as wide as scape; segment 3 about as long as wide; segments 4 to 6 each distinctly wider than long, almost of same size; segments 7 and 8 larger than segment 6. Pronotum wider than head with eyes and slightly wider than long. Lateral pronotal margins with two small tubercles bearing each one long seta; admesal sulci sharply delimited, wider than interval between them. Pronotal disc with two pairs of long setae inserted onto interval between admesal sulci and lateral impression; basal foveae in deep impressions separated by narrow ridges. Paranotal carinae robust, arcuate anteriorly. Elytra with sutural striae deep, parallel; adsutural areas convex; discal striae deep and short, about as long as one-fourth of elytral length; scattered long setae similar but more numerous than those on pronotum, elytral disc in addition with very short setae and several fairly short setae at apices. Abdominal tergite 1 with discal carinae long, converging, almost reaching apex of tergite, at base separated by interval about as wide as two-fifths of basal tergal width, with two pairs of long, discal setae, paratergites 1 each with single long seta; following tergites with pair of long setae; sternite 2 with laterodiscal carinae extending almost to apex and diverging from lateral margin, basal carinae conspicuous.

Male. Eyes with about 10 facets, much shorter than tempora, one-third width of temporal patches in lateral view. Antennae with segment 8 impressed mesally; antennal club compact; segment 9 strongly asymmetrical, lobed basally (Figs 49–50); segment 10 strongly enlarged, with large, deep impression; segment 11 conical, slightly longer than wide, slightly longer and much narrower than segment 10. Apical abdominal sternite (Fig. 51) setose medio-apically. Aedeagus (Fig. 53) 0.160 mm long.

Female. Eyes slightly smaller than in male, consisting of 6 or 7 facets. Antennal segment 10 strongly transverse, very narrow at outer side, becoming gradually longer toward mesal side, mesal side about as long as fourth of segment 11.

Distribution. Borneo: Sabah.

Maya Blattny, 1925

Maya Blattny, 1925: 209; type species: *Tychus dilatatus* Motschulsky, 1851 (des. Newton and Chandler 1989: 51).

Description. Body appearing glabrous; pubescence consisting of scattered, long, erect setae. Punctation fine, scattered. Head subrectangular. Frons wide,

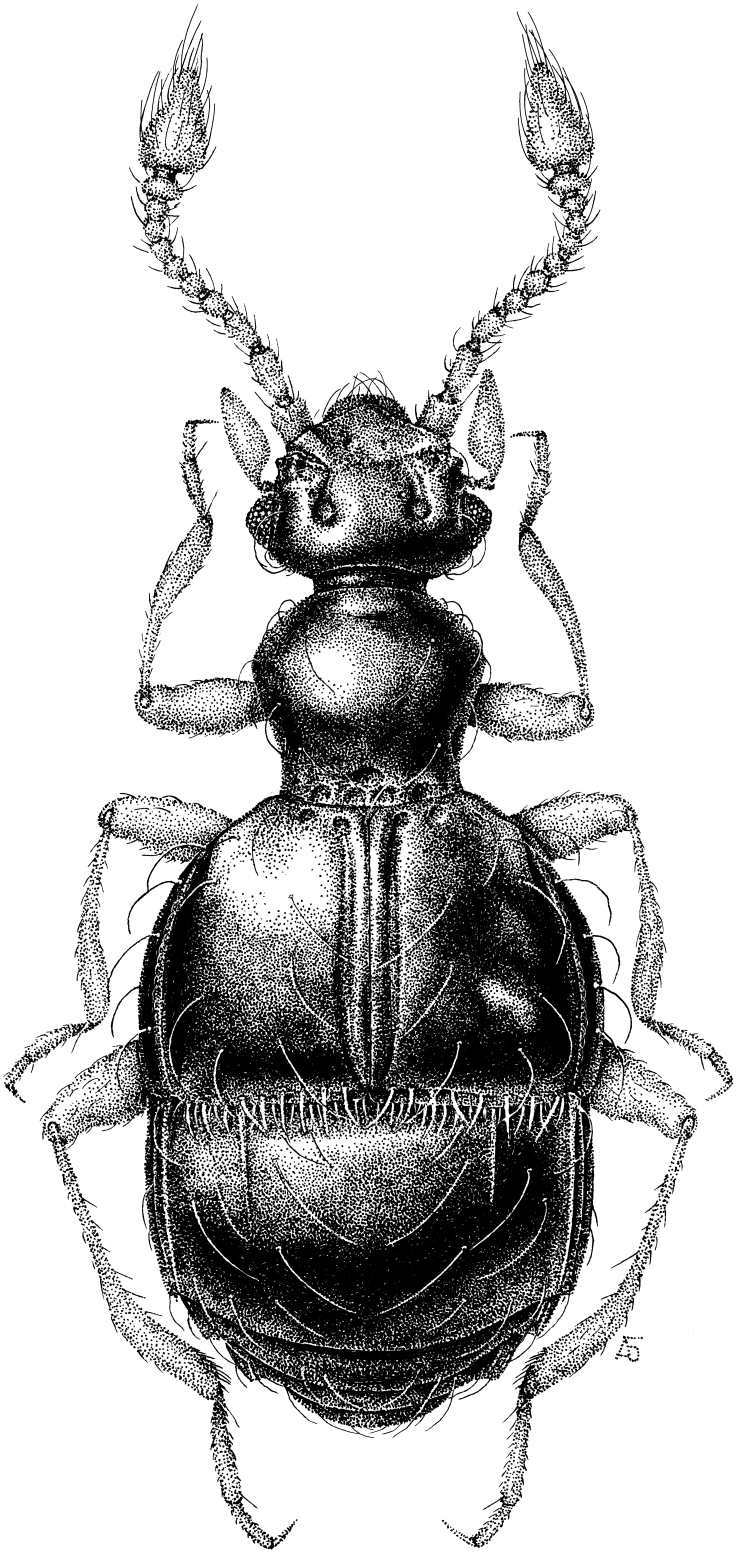

Figure 5. Habitus of *Maya dilatata*.

slightly narrowed anteriorly. Frontal impression large, joined to vertexal pits by sulci. Postantennal sulci present. Lateral margins of frons each with small, sharp denticle situated beyond antennal tubercles. Occipital carina present, sometimes hardly visible. Eyes convex, large in both sexes, usually larger than tempora, multifaceted. Temporal patches lateral, delimited by carinae. Dorsal temporal carinae extending anteriorly above eyes. Neck lacking impression. Gular impression small. Antennae (Fig. 60) short; scape and pedicel not particularly enlarged compared to antennal segments 3 to 9; segments 9 and 10 wider than preceding segments; segment 11 longer than 5 preceding segments combined and about 2.5 times as wide as segment 8. Pronotum cordiform, slightly longer than wide, convex, with mediobasal fovea, two lateral foveae, and row of 4 to 8 basal foveae. Paranotal carina present in *Maya horricomis*, absent in remaining species. Elytra convex, each with two basal foveae, and with entire sutural stria, lateral carina, and laterodiscal sulcus; sutural stria joined to inner basal foveae; adsutural area moderately wide. Laterodiscal sulcus accompanied by dense row of short, recumbent setae, extended below humerus and curved upward to form basal stria. Basal margin elevated, apical margin with horizontal fringe of wide, light setae. Mesosternum (Fig. 58) smooth, with pair of simple, unforked lateral foveae; median fovea absent; mesocoxal process very narrow, narrower than one-tenth width of mesocoxal cavity. Metacoxal process narrow, at base about as wide as two-thirds of mesocoxal cavity, narrowed apically, with concave apical margin. Metasternum with two minute lateral metacoxal foveae (Fig. 58). Legs lacking long, erect setae. Metatarsi with segment 2 long, weakly thickened apically, about twice as long as segment 3. Abdominal tergite 1 large, longer than remainder of abdomen, with two discal carinae; sternite 1 very short, visible only at middle. Sternite 2 large, similar in both sexes, with two basolateral foveae at inner end of basolateral impressions, additional pair of basal foveae near middle, and a row of short basal crenulations; mediobasal carina present or absent.

Male. The genus exhibits no obvious external differences between sexes (even for eye proportions), with the notable exception of *M. bracata*, which possesses enlarged metatibiae in the male. The aedeagus has a single apical process pointed to the left and bearing two setiform sensillae.

Comments. Blattny (1925) based the description of *Maya* on two species, *Tychus dilatatus* Motschulsky and a new species from Sri Lanka, *M. uzeli*. For several reasons, we consider *M. uzeli* as a *Nomen dubium* of uncertain generic assignment within Goniaceritae, and therefore we treated it accordingly at the end of 'Taxonomy'.

Maya is characterized by the elytra bearing an apical setal fringe, and is sulcate laterally on the disc. In addition to *M. dilatata* (from Thailand and Myanmar), four species from Indonesia and Malaysia are described below.

Key to species of *Maya*

(*Maya uzeli* excepted, which is a *nomen dubium*)

1. Neck without distinct, foveiform impressions, pronotum lacking median sulcus or stria **2**
–. Neck with row of foveiform impressions, pronotum with shallow median sulcus ... ***M. foveolata*** sp. nov.
2. Pronotum with fine paranotal ridge. Long setae on pronotum, elytral disc, and abdominal tergites vertical near base, curved in their apical part .... ***M. horricomis*** sp. nov.
–. Pronotum lacking paranotal ridge. Long setae on pronotal, elytral disc, and abdominal tergites oblique or evenly curved **3**
3. Male metatibiae in apical half swollen, about as wide as metafemora and much wider than mesotibiae ..... ***M. bracata*** sp. nov.
–. Male metatibiae not swollen, in both sexes much narrower apically than metafemora and slightly wider than mesotibiae **4**
4. Body dark brown to blackish. Aedeagus with tip of apical process widely rounded (Fig. 54) .... ***M. dilatata*** (Motschulsky)
–. Body light brown. Aedeagus with tip of apical process acute (Fig 61) .... ***M. churgellae*** sp. nov.

Maya bracata sp. nov.
(Figs 56, 59)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Sepilok Forest Res. nr. Sandakan, 8.VI.1968 (R. Taylor).

Paratypes (4, all in MHNG): same data as holotype, 1 male & 2 females; East Malaysia, Sabah, Poring Hot Springs 500 m, 8.V.1987 (D. Burckhardt & I. Löbl) #17a [sifting of bark and dead wood with fungi at forest edge], 1 male.

Description. Length 1.20–1.25 mm. Body dark brown, head sometimes slightly darker than pronotum. Long, erect setae evenly curved on head, pronotum, and abdomen, those on elytra oblique, not or hardly curved. Occipital carina short, extending from neck onto inclined apical part of vertex. Postantennal sulci curved. Neck lacking striae. Antennal segment 3 distinctly longer than wide; segments 4 to 7 subequal, each about as long as wide; segments 8 distinctly shorter than segment 7, wider than long. Pronotum as wide as head with eyes, lacking median stria or

sulcus. Abdominal sternite 2 lacking basomedian carina.

Male. Metatibiae with apical, curved part abruptly enlarged, about as wide as metafemora, not flattened mesally. Apical abdominal sternite (Fig. 59) with one admesal processs. Aedeagus (Fig. 56) 0.285 mm long.

Distribution. Borneo: Sabah.

Comments. The species can be easily recognised by the conspicuously enlarged metatibiae of the male.

Maya churgellae sp. nov.
(Figs 57, 61)

Type material. Holotype (male, in MHNG): Indonesia, Sumatra, Aceh, Mt. Leuser National Park, Ketambe, 300–500 m, 23–30.XI.1989 (D. Agosti, D. Burckhardt & I. Löbl) #25a [sifting of vegetational debris in lowland dipterocarp forest].

Paratypes (75): same data as holotype, 35 males & 4 females in MHNG & PCSK; Indonesia, Sumatra, West Sumatra, Lubuksulasih, 30km E Padang, 1100 m, 8.XI.1989 (D. Agosti, D. Burckhardt & I. Löbl) #7 [sifting of vegetational debris in secondary forest on steep slope], 3 males in MHNG; Sumatra, Jambi, W Mt. Tujuh Lake, 1400 m, 14.XI.1989 (D. Agosti, D. Burckhardt & I. Löbl) #17 [sifting of vegetational debris in montane forest on steep slope] 2 males; Bali, Mt. Batukau, 500–700 m, 28–29.X.1991 (I. Löbl) [sifting in forest near Luhur Temple], 31 males & 2 females in MHNG.

Description. Length 1.05–1.10 mm. Body usually uniformly light brown, rarely dark brown or head slightly darker than pronotum. Head, pronotum, elytra, and abdomen with long, erect setae evenly curved, long, erect setae of abdomen more recumbent that those on remainder of body. Occipital carina short, extending from neck up to upper vertexal surface, ending beyond line of vertexal pits. Postantennal sulci oblique. Neck lacking row of foveae and striae. Antennal segment 3 slightly longer than wide; segments 4 and 5 hardly longer than wide; segment 6 as long as wide or slightly wider than long; segment 7 slightly wider than long; segments 8 and 9 distinctly wider than long; shorter than segment 7. Pronotum slightly narrower than head with eyes, lacking median sulcus or impression. Abdominal sternite 2 with mediobasal carina extended about to middle third of sternal length.

Male. Aedeagus (Figs 57, 61) 0.120–0.150 mm long.

Distribution. Sumatra and Bali.

Comments. This species resembles *M. dilatata*, from which it differs notably by its light brown body colouration and aedeagal characters.

In memory of the desire expressed by late Valery Churgell, Moscow, who generously sponsored several fieldtrips of the senior author, we name this species in honour of Maya Churgell, his wife.

Maya dilatata (Motschulsky, 1851)
(Figs 5, 54, 58, 60)

Tychus dilatatus Motschulsky, 1851: 496.
Maya dilatata, Blattny, 1925: 209.

Material examined. (81): Syntype male, labelled 'Ind. or.' in ZMUM; Thailand, Chanthaburi Prov., Khao Sabap Nat. Park, 130–300 m, 23–24.XI.1985 (D. Burckhardt & I. Löbl) [near Phliu Waterfalls, sifting vegetational debris and moss near stream] 2 specimens in MHNG; Chiang Mai Prov., Doi Suthep, 1050 m, 5.XI. 1985 (D. Burckhardt & I. Löbl) [sifting decayind wood, barks and fungi near creek in very wet ravine on slope North] 1 specimen in MHNG; same data, but 1400 m [sifting dead leaves near creek in very wet ravine on slope North] 10 specimens in MHNG; Chiang Mai Prov., Doi Suthep, III.1987 (G. de Rougement) 1 specimen in MHNG; Chiang Mai Prov., Doi Inthanon, 1650 m, 7.XI.1985 (D. Burckhardt & I. Löbl) [sifting vegetational debris on steep slope in forest] 1 specimen in MHNG; Chiang Mai Prov., Doi Inthanon, 1050 m, 23.XI.1996 (P. Schwendinger) 2 specimens in MHNG; Chiang Mai Prov., Doi Saket Distr., Doi Sanyao, 950 m, 20.X.1990 (P. Schwendinger) 3 specimens in MHNG; Chiang Rai Prov., 10 km W Wiang Pa Pao, Ban Huay Ya Sai, 780 m, 28.I.1988 (P. Schwendinger) 4 specimens in MHNG; Chiang Rai Prov., Nam Tok Ban Du, III.1987 (G. de Rougemont) 7 specimens in MHNG; Chiang Rai, III.1982 (G. de Rougemont) 1 specimen in MHNG; Mae Hong Son Prov., Ban Tham, Tham Pla, 27.VI.1986 (P. Leclerc) 1 specimen in MHNG; Mae Hong Son Prov., Mae Sot Distr., Mts North Umphang, 1250 m, 10.II.93 (P. Schwendinger) 22 specimens in MHNG & PCSK; Mae Hong Son Prov., Pang Distr., 133.2 km rd Pai – Mai Hong Son, 830 m, 13.X.1995 (P. Schwendinger) 1 specimen in MHNG; Phetchaburi Prov., Kaeng Krachan Nat. Park, 300–400 m, 17.XI.85 (D. Burckhardt & I. Löbl) [25–30km from 'Headquarters', sifting vegetational debris at edge of forest] 2 specimens in MHNG; Ranong Prov., Kapoe Distr., Khlong Nakha Wildlife Sanctuary, 30 m, 29.I.1991 (P. Schwendinger) 2 specimens in MHNG; Burma [Myanmar, Mandalay] nr. Maymyo [= Pyin Oo Lwin] 800 m, 12.II.1996 (S. A. Kurbatov) litter [near stream] 20 specimens in MHNG & PCSK.

Description. Habitus as in Fig. 5. Length 1.20–1.25 mm. Body brown to blackish, head sometimes darker than remainder of body. Head, pronotum, elytra, and abdomen with long, erect setae evenly curved. Postantennal sulci curved. Occipital carina short, distinct only on posterior, inclined surface and on neck. Neck lacking striae. Antennal segment 3 distinctly longer than wide; segments 4 and 5 each slightly shorter than segment 3; hardly longer than wide, segments 6 and 7 shorter than segment 5, slightly wider than long. Pronotum slightly narrower than head with eyes,

lacking median stria or sulcus. Abdominal sternite 2 with short basomedian carina.

Male. Aedeagus (Fig. 54) 0.150–0.160 mm long.

Distribution. Thailand, Myanmar.

Comments. The species is characterised by dark brown to blackish body colouration, and evenly curved dorsal long erect setae, in combination with the male metatibiae not swollen.

Maya foveolata sp. nov.

Type material. Holotype (female, in MHNG): East Malaysia, Sabah, Mt. Kinabalu Nat. Park, Poring Hot Springs, 520 m, 9.V.1987 (A. Smetana).

Paratype (female, in MHNG): same data as holotype, but 500 m, 7.V.1987 (D. Burckhardt & I. Löbl) [sifting in quite moist forest with Dipterocarpaceae].

Description. Length 1.15–1.20 mm. Body dark brown, head slightly darker than pronotum. Head, pronotum, elytra, and abdomen with long, erect setae evenly curved, abdominal long, erect setae more recumbent that those on remainder of body. Vertexal carina extending from neck up to line of posterior margin of vertexal pits. Postantennal sulci oblique. Neck with dense row of foveiform impressions separated by short striae. Antennal segment 3 elongate; segments 4 to 6 longer than wide; segment 5 longer than segments 4 and 6; segment 7 about as long as wide; segments 8, 9 and 10 each distinctly wider than long. Pronotum slightly narrower than head with eyes, with very shallow median sulcus extending anteriorly as prolongation of median basal fovea. Abdominal sternite 2 with long basomedian carina.

Male unknown.

Distribution. Borneo: Sabah.

Comments. The presence of a row of foveiform impressions on the neck, and a shallow pronotal median sulcus are unique within the genus.

Maya horricomis sp. nov.
(Fig. 55)

Type material. Holotype (male, in MHNG): West Malaysia, Pahang, Genting Highlands, Awana, 1150 m, 3.IV.1993 (I. Löbl & F. Calame) # 27c [sifting vegetational debris with fungi in ravine].

Paratypes (6, in MHNG): same data as holotype, 2 males & 1 female; Selangor, 4 mls N Ulu Langet, 22.IV.1977, berlese litter along streem (L. E. Watrous) 3 males.

Description. Length 1.10–1.20 mm. Body uniformly dark brown. Head with long, erect setae evenly curved, those on pronotum, elytra, and abdomen straight and almost vertical in basal part, curved apically. Occipital carina reduced, present only on neck. Postantennal sulci oblique. Neck lacking striae. Antennal segment 3 distinctly longer than wide; segments 4 to 8 subequal, each slightly wider than long. Pronotum slightly narrower than head with eyes, lacking median stria or sulcus. Abdominal sternite 2 lacking carina.

Male. Aedeagus (Fig. 55) 0.265 mm long.

Female unknown.

Distribution. West Malaysia.

Comments. The species is well characterised by the pronotum with a pronotal ridge, and by the shape of the long erect dorsal setae.

Morana Sharp, 1874

Morana Sharp, 1874: 117; type species: *Morana discedens* Sharp, 1874 (monotypy).

Description. Pubescence fine; additional long, erect setae usually absent from body (except in *M. perreaui*). Punctation variable, punctures ranging from very fine and hardly visible, to coarse. Head short, subquadrate to pentagonal, not or weakly narrowed beyond eyes. Occiput usually with distinct carina. Vertex occasionally with a pair of foveiform impressions in front of vertexal pits. Vertexal pits sometimes obscured by coarse punctation or apparently absent. Postantennal denticles present or absent. Mediodorsal neck impression absent. Temporal patches lateral. Eyes usually multifaceted and pigmented in male, reduced in female. Pronotum widened anteriorly, widest in anterior third, anterior angles broadly rounded, with pair of lateral foveae, five basal foveae in impressions, and row of basal ridges or carinae; outer basal foveae sometimes hardly visible; middle basal fovea may be partly separated into two foveae by median carina; lateral folds that delimit lateral foveae mesally usually present. Paranotal carinae usually present. Elytra broadly rounded laterally, not crenulate laterally, not carinate basally, with two basal foveae; sutural striae entire, except in *M. papulifera* and *M. palulifrons*, approximate to suture; lateral carinae present, shortened anteriorly; discal striae rarely present; apical setal fringe absent. Mesosternum with one median and pair of lateral foveae; foveae asymmetrically forked, anterior forks much smaller than posterior forks. Mesocoxal processes of mesosternum and metasternum narrow, about one-fifth to one-eighth width of mesocoxal cavities. Metasternum with pair of lateral foveae; apex weakly concave to truncate, about as wide as maximum width of mesocoxal cavity. Legs lacking long, erect setae. Metatarsi with segment 2 widened, about twice to 2.5 times as long as segment 3. Abdominal tergite 1 large, longer than following tergites combined, not narrowed

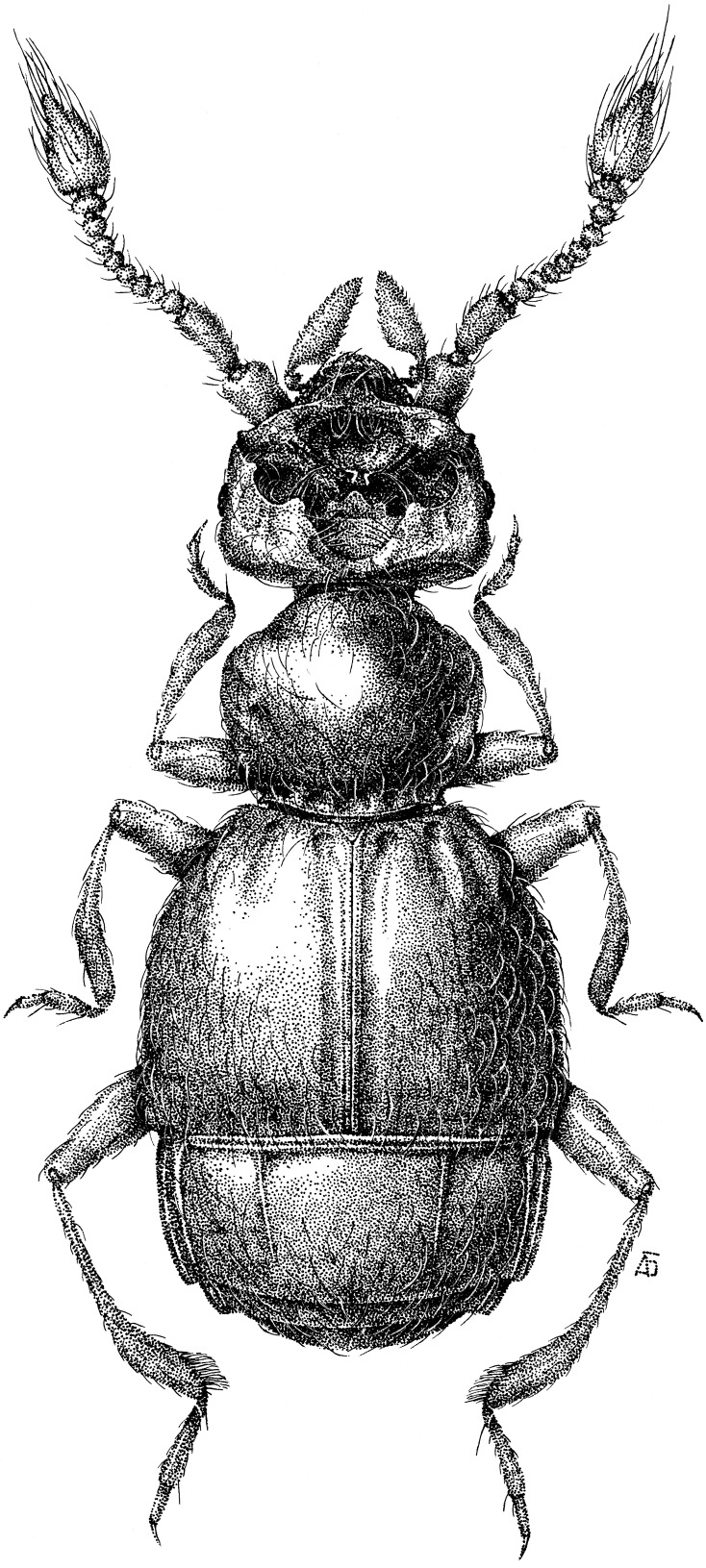

Figure 6. Habitus of *Morana derosa*.

apically, horizontal, with pair of basal foveae, pair of discal carinae, usually weakly impressed at base and usually lacking basal crenulation; sternite 2 pending on species variable in size, in males about 1 to 3 times as long as sternite 1, in females usually 3 to 4 times as long as sternite 1, with two pairs of basal foveae, median carina and row of basal carinae, laterodiscal carinae absent.

Male. Secondary sexual characters affecting generally frons and frontoclypeus, size of eyes, antennal scape and pedicel, protibiae and genital (apical) abdominal segments; for a few species also vertex, antennal club, palpi, pronotum, femora, and tarsi are modified. Aedeagus asymmetrical, median lobe lacking dorsal membrane, with two apical processes, larger process bearing pair of setiform sensillae.

Comments. This genus contains 73 species (including those described below). It is widely distributed in East and Southeast Asia, from the Nepalese Himalaya to Japan in the north, and to Bali and Sulawesi in the south. No obvious synapomorphy linking the included species was found. The presence of one or two very large spatulate sensilla on the male protibiae initially seemed promising to unify and characterise this genus. However, several *Morana* species lack this feature, and some closely related species exhibit different states of this character (*lusciosa* – *distensiceps*, *bellicosa* – *semifacta*, etc.). In addition, these male protibial sensillae are also found in the monotypic genus *Brunomanseria*, from the *Nipponobythus* subgroup.

Many members of the genus exhibit conspicuous sexual variation in the size of the metasternum and second abdominal sternite.

Key to the species of *Morana*

1. Elytra lacking sutural striae . . . . . ***M. papulifera*** sp. nov.
–. Elytra with entire, or strongly shortened (*M. palulifrons* sp. nov.) sutural striae **2**
2. Antennal segments 3 to 7 pectinate (Fig. 322) . . . . . ***M. pectinicornis*** sp. nov.
–. Antennal segments 3 to 7 not pectinate **3**
3. Pronotum with median sulcus **4**
–. Pronotum lacking median sulcus **8**
4. Elytra lacking discal striae **5**
–. Elytra each with distinct discal stria . . . . . ***M. murphyi*** sp. nov.
5. Pronotal sulcus interrupted. Male pedicel strongly thickened apicodorsally, with contour of dorsal side subtriangular (Figs 264–265) . . . ***M. bellicosa*** sp. nov.
–. Pronotal sulcus uninterrupted. Male pedicel not or very weakly thickened apically, with dorsal contours almost straight **6**
6. Male pedicel straight, much longer than scape (Figs 272–273); anterior part of frontoclypeus strongly swollen (Fig. 468) . . . . . ***M. sycosifrons*** sp. nov.
–. Male pedicel straight or slightly curved, slightly longer than scape (Figs 266–267, 304–305); frontoclypeus strongly inclined anteriorly, not swollen **7**
7. Punctation on frons distinctly coarser than that on vertex (Fig. 474) . . . . . ***M. afflictrix*** sp. nov.
–. Punctation evenly fine on frons and vertex (Fig. 470) . . . . . ***M. semifacta*** sp. nov.
8. Abdominal tergite 1 with discal carinae very long, extended onto apical fourth of tergite, sometimes reaching up to or almost up to apical tergal margin **9**
–. Abdominal tergite 1 with discal carinae shorter, sometimes reaching up to but not extended onto apical fourth of tergite **12**
9 Male protibiae strongly widened and flattened subapically, much wider than mesotibiae (Fig 281). Pronotal and elytral punctation conspicuously coarse . . . . . ***M. platypes*** sp. nov.
–. Male tibiae moderately widened and not flattened subapically. Pronotal and elytral punctation usually not conspicuously coarse **10**
10. Male scape much longer than pedicel, flattened dorsally and with anterior apical angle prominent, forming sharp denticle (Fig. 189) . . . . . ***M. virago*** sp. nov.
–. Male scape as long as or much shorter than pedicel, with apical angles not prominent **11**
11. Abdominal tergite 1 with discal carinae parallel, separated at base by less than half of tergal width. Male scape about as long as pedicel (Figs 117–118) . . . . . ***M. obbatifrons*** sp. nov.
–. Abdominal tergite 1 with discal carinae curved, separated at base by more than half of tergal width. Male scape shorter than pedicel (Figs 129–130) . . . . . ***M. diatretaria*** sp. nov.
12. Prohypomera each with arcuate sulcus **13**
–. Prohypomera lacking sulci **16**
13. Abdominal and elytral punctation coarse, consisting of similar punctures . . . . . ***M. crustosa*** sp. nov.
–. Abdominal and elytral punctation very fine, or abdominal punctation much finer than that on elytra **14**
14. Male tergite 5 strongly asymmetrical, with apex concave in middle, tooth-like at right side (Fig. 209). Elytral punctation very fine . . . . . ***M. caudata*** sp. nov.
–. Male tergite 5 appearing symmetrical, with apical margin convex. Elytral punctation coarse **15**
15. Discal carinae of tergite 1 separated at base by more than half of basal tergal width. Male scape widened ventrally and carinate, pedicel suboval (Figs 187–188) . . . . . ***M. loquax*** sp. nov.

–. Discal carinae of tergite 1 separated at base by distinctly less than half of tergal width. Male scape and pedicel subcylindrical (Figs 185–186) . . . . . ***M. eromenion*** sp. nov.

16. Dorsum of body with scattered, long, erect setae, in addition to short pubescence . . . . . ***M. perreaui*** sp. nov.

–. Dorsum of body lacking long, erect setae **17**

17. Prohypomera distinctly punctate **18**

–. Prohypomera impunctate, or with few hardly visible punctures **21**

18. Prohypomera entirely or on large central part distinctly punctate. Abdominal sternite 2 large in both sexes, in middle about 3 times as long as sternite 1 . . . . . **19**

–. Prohypomera with distinct puncture row along basal edge, centre impunctate **20**

19. Occipital carina long, extending onto anterior part of frons. Male eyes hardly visible in dorsal view, with 7 to 8 facets (Fig. 464) . . . ***M. lusciosa*** sp. nov. Occipital carina short, extending slightly anterior line of eyes. Male eyes distinct in dorsal view, with 10 facets (Fig. 464) . . . . ***M. rhynchocephala*** Arai

20. Pronotum, elytra, and abdomen very finely punctate . . . . . ***M. nana*** sp. nov.

–. Pronotum and elytra coarsely punctate, abdomen very finely punctate . . . . . ***M. minax*** sp. nov.

21. Elytra with sutural striae distinct and extending up to apices **22**

–. Elytra with sutural striae visible only near base, barely indicated by weak line in apical two thirds of sutural length . . . . . ***M. palulifrons*** sp. nov.

22. Abdominal tergite 1 with basal crenulation between discal carinae **23**

–. Abdominal tergite 1 lacking basal crenulation . . . **29**

23. Lateral parts of pronotum deeply impressed and very finely punctate, pronotal centre convex, coarsely punctate . . . . . ***M. fastigata*** sp. nov.

–. Pronotum not impressed laterally **24**

24. Punctation on pronotum and elytra equally very fine . . . . . ***M. sima*** sp. nov.

–. Punctation on pronotum, or centre of pronotum, much coarser than that on elytra **25**

25. Pronotal disc entirely covered with coarse punctation. Male scape with inner apical angle strongly prominent (Figs 226–227) . . . ***M. sinciput*** sp. nov.

–. Pronotal disc coarsely punctate on centre, very finely punctate on lateral parts. Male scape with inner apical angle not prominent **26**

26. Male abdominal sternite 2 in middle about 1.5 times to twice as long as sternite 1 . . . . . **27**

–. Male abdominal sternite 2 in middle about as long as sternite 1 . . . . . ***M. exilis*** (Reitter)

27. Abdominal punctation distinct, fairly coarse. Male scape flattened laterally (Figs 316–317) . . . . . ***M. scapus*** sp. nov.

–. Abdominal punctation very fine, indistinct **28**

28. Pronotum with median basal fovea shallow, partly divided in two by low median carina. Discal carinae of abdominal tergite 1 straight, not reaching tergal mid-length . . . . . ***M. rebellis*** sp. nov.

–. Pronotum with median basal fovea large, not divided by median carina. Discal carinae of abdominal tergite 1 slightly curved, extended up to apical fifth of tergite . . . . . ***M. latebrosa*** (Reitter)

29. Pronotal punctation entirely coarse, or comparatively fine but in middle of disc coarser than on sides, and distinctly coarser that elytral punctation **30**

–. Pronotum entirely very finely punctate, pronotal and elytral punctation similar **42**

30. Antennal segment 7 distinctly larger than segment 8 (Fig. 396) . . . . . ***M. oxymoron*** sp. nov.

–. Antennal segment 7 about large as, or distinctly smaller than segment 8 . . . . . **31**

31. Male abdominal sternite 2 large, in middle about 3 times as long as sternite 1 . . . . . **32**

–. Male abdominal sternite 2 shortened mesally, about as long or up to twice as long as sternite 1 . . . . . **34**

32. Male antennal segment 11 modified, asymmetrical (Figs 64–65) . . . . . ***M. oni*** Tanabe et Nakane

–. Male antennal segment 11 not modified, symmetrical **33**

33. Abdominal tergite 1 with discal carinae almost reaching tergal mid-length. Male scape subcylindrical (Figs 274–275) . . . . . ***M. distensiceps*** sp. nov.

–. Abdominal tergite 1 with discal carinae extended beyond tergal mid-length. Male scape asymmetrically widened apically . . . . . ***M. deigo*** Arai

34. Male pedicel strongly swollen, thicker than scape (Figs 399–400) . . . . . ***M. ampullaria*** sp. nov.

–. Male pedicel not swollen, narrower than scape **35**

35. Male pedicel as long as or longer than scape . . . **36**

–. Male pedicel much shorter than scape **37**

36. Occipital carina absent. Coarse vertexal and pronotal punctures larger than puncture intervals. Antennal segments 3 to 9 subequal, distinctly wider than long (Figs 228–229) . . . . . ***M. agostii*** sp. nov.

–. Occipital carina present. Coarse vertexal and pronotal punctures smaller than or as large as puncture intervals. Antennal segment 3 longer than wide, segments 4 to 9 slightly wider than long or about as wide as long (Fig. 280) . . . . . ***M. punctata*** (Raffray)

37. Male frons not impressed anteriorly, deeply emarginate at middle (Figs 459–460, 462) **38**

–. Male frons impressed anteriomesally **40**

38. Male scape impressed on mesal side, outer side with long, subapical seta (Fig. 241) . . . . . ***M. bidentata*** sp. nov.

–. Male scape not impressed, lacking long seta . . . **39**
39. Inner apical angle of male scape broadly rounded, not prominent (Figs 262–263) . . . . ***M. clypeata*** sp. nov.
–. Inner apical angle of male scape acute, prominent (Fig. 242) . . . . . ***M. palaung*** sp. nov.
40. Male scape impressed mesally (Figs 127–128); male maxillary palpi with segment 4 with large flattened area appearing smooth . . . ***M. palpalis*** sp. nov.
–. Male scape not impressed mesally, swollen basoventrally; male palpi maxillary with segment 4 unmodified **41**
41. Inner apical angle of male scape prominent, forming acute process, pedicel elongate (Figs 195–196) . . . . . ***M. smetanai*** sp. nov.
–. Inner apical angle of male scape not prominent, blunt, pedicel slightly longer than wide (Figs 125–126) . . . . . ***M. repandirostra*** sp. nov.
42. Elytra each with long discal stria . . . . . ***M. dorsuosa*** sp. nov.
–. Elytra lacking, or with very short discal stria . . . **43**
43. Mesofemora and metafemora flattened and explanate ventro-apically, metatibiae with basoventral, subtriangular, flat denticle bearing long seta . . . . . ***M. burckhardti*** sp. nov.
–. Mesofemora and metafemora not flattened and not explanate, metatibiae lacking setiferous denticle **44**
44. Inner side of metatibiae widened and angulate near base **45**
–. Metatibiae evenly narrow near base **46**
45. Metafemora strongly swollen and with denticle beyond middle (Fig. 170) . . . ***M. femoralis*** sp. nov.
–. Metafemora not swollen and without denticle . . . . . ***M. tibialis*** sp. nov.
46. Male antennae with each, or any of segments 9 to 11 conspicuously modified **47**
–. Male antennal segments 9, 10 and 11 unmodified, or segments 9 and 11 unmodified and segment 10 slightly modified **52**
47. Occipital carina absent. Inner apical angle of scape prominent and bearing conspicuous, long setae . . . . . ***M. maruyamai*** Arai
–. Occipital carina present **48**
48. All or most of vertex and frons coarsely, very densely punctate, punctation much coarser at middle of vertex than that on pronotum **49**
–. Middle part of vertex very finely punctate, vertexal punctation similar to pronotal punctation **50**
49. Middle of vertex convex. Male pedicel not concave mesally, about as long as segments 3 to 5 combined (Figs 75–76) . . . . . ***M. bara*** Tanabe et Nakane
–. Middle of vertex flat. Male pedicel concave mesally, about as long as segments 3 to 6 or 7 combined (Figs 81–82) . . . . . ***M. epastifrons*** sp. nov.
50. Male antennal segment 9 much shorter than segment 10 (Fig. 63) **51**
–. Male antennal segments 9 and 10 subequal in length (Fig. 66) . . . . ***M. puella*** Tanabe et Nakane
51. Male with scape weakly swollen ventrally, pedicel curved (Figs 73–74); antennal segment 9 asymmetrical and bearing long mesal setae (Fig. 63) . . . . . ***M. elegans*** Tanokuchi
–. Male with scape strongly swollen basoventrally, pedicel straight, antennal segment 9 symmetrical, lacking long mesal setae . . . . . ***M. angustata*** Arai
52. Mesofemora and metafemora each with subapical denticle (Figs 393, 395) . . . . . ***M. galeata*** sp. nov.
–. Femora lacking denticles **53**
53. Male abdominal sternite 2 large, in middle about three times as long as sternite 1 . . . . . **54**
–. Male abdominal sternite 2 shortened mesally, in middle slightly shorter than, or up to 2.5 times as long as sternite 1 . . . . . **62**
54. Eyes small in both sexes, with 6 to 9 facets . . . . . ***M. asema*** sp. nov.
–. Eyes in males much larger than in females, with about 30 to 35 facets **55**
55. Male scape strongly asymmetrical, with sinuate ventral margin (frontal view) **56**
–. Male scape different, if asymmetrical, not impressed laterally, with ventral margin not convex or straight and lacking prominent apical angle . . . **57**
56. Male scape about as long as pedicel, impressed laterally, with apical angle weakly prominent mesally; male pedicel indistinctly curved (Figs 69–70) . . . . . ***M. discedens*** Sharp
-. Male scape shorter than pedicel, not impressed laterally, with apical angle strongly prominent, forming large, flat process; male pedicel distinctly curved . . . . . ***M. lata*** Arai
57. Male with pedicel longer than scape (Figs 77–78). Middle of anterior frontal margin emarginate, frontoclypeus with robust median ridge (Fig 432) . . . . . ***M. hastulata*** sp. nov.
–. Male pedicel as long as or shorter than scape . . . **58**
58. Male pedicel with mesal apical angle prominent and acute . . . . . ***M. kazuyoae*** Arai
–. Male pedicel not prominent and not acute apically **59**
59. Antennal segment 3 distinctly wider than long (Figs 121–122). Male frons not prominent at middle (Fig. 440) . . . . . ***M. schwendingeri*** sp. nov.
–. Antennal segment 3 about as long as wide **60**
60. Male with anterior part of frontoclypeus abruptly elevated to form sharp ridge **61**
–. Male with anterior part of frontoclypeus conspicuously flat and explanate laterally . . . . . ***M. crassicostata*** Arai
61. Male with pedicel hardly thickened apically and much shorter than scape (Fig. 318). Frontoclypeal ridge subtriangular in frontal view (Fig. 382) . . . . . ***M. lucipeta*** sp. nov.

–. Male with pedicel distinctly thickened apically and about as long as scape. Frontoclypeal ridge pentagonal in frontal view ..... ***M. donan*** Arai

62. Male with most of dorsal side of head deeply excavated, head excavation extended to occipital edge (Fig. 6) ..... ***M. derosa*** sp. nov.

–. Male head excavation limited to frons and/or frontoclypeus **63**

63. Male pedicel strongly, asymmetrically explanate dorsally, slightly concave ventrally, wider than scape (Figs 181–182) ... ***M. hoplomacha*** sp. nov.

–. Male pedicel not explanate, narrower than scape **64**

64. Male scape with inner apical angle strongly prominent **65**

–. Male scape with inner apical angle not prominent **66**

65. Male pedicel symmetrical, elongate (Figs 319–320); anterior margin of frontoclypeus not notched (Fig. 479) ..... ***M. histanoceroides*** sp. nov.

–. Male pedicel asymmetrical, wider than long (Figs 224–225). Middle of anterior margin of male frontoclypeus v-shaped (Fig. 456) ... ***M. brinevi*** sp. nov.

66. Male scape subcylindrical and symmetrical in dorsal view **67**

–. Male scape distinctly asymmetrical in dorsal view **69**

67. Paranotal carinae absent. Prosternal process strongly elevated, spine-like in frontal view. Male pedicel weakly curved, as long as segment 3 to 6 combined (Figs 111–112) ..... ***M. sagax*** sp. nov.

–. Paranotal carinae present. Prosternal process low **68**

68. Male frons with anterior angles not prominent, anterior frontal margin almost entirely straight (Fig. 476) ..... ***M. mahadewa*** sp. nov.

–. Male frons with anterior angles prominent, middle of anterior frontal margin truncate (Fig. 454) ..... ***M. persolla*** sp. nov.

69. Male with anterior frontal margin prominent at middle, forming acute median denticle, frontoclypeus lacking median ridge (Figs 433, 447). Male pedicel notably asymmetrical **70**

–. Male with middle of anterior frontal margin truncate or impressed, lacking denticle in middle (Figs 439, 441, 477). Male pedicel symmetrical or slightly asymmetrical **71**

70. Vertex and pronotum very finely punctate (Fig. 433). Male scape swollen (Figs 107–108) ..... ***M. lupula*** sp. nov.

–. Vertexal punctation comparatively coarse, much coarser than pronotal punctation (Fig. 447). Male scape not swollen (Figs 183–184) .... ***M. petulca*** sp. nov.

71. Vertex and pronotum very finely punctate (Fig. 441). Inner apical angle of male scape bearing long setae (Figs 123–124) ..... ***M. belajevae*** sp. nov.

–. Vertex distinctly more coarsely punctate than pronotum. Inner apical angle of male scape lacking conspicuously long setae (Figs 119–120, 314–315) ... **72**

72. Coarse vertexal punctures larger than puncture intervals. Male frontoclypeus convex at middle (Fig. 477) ..... ***M. machaerifera*** sp. nov.

–. Coarse vertexal punctures smaller than puncture intervals. Male frontoclypeus with narrow median carina (Fig. 439) ..... ***M. vultuosa*** sp. nov.

Morana afflictrix sp. nov.
(Figs 300–301, 304–305, 329, 331, 391, 474)

Type material. Holotype (male, in MHNG): West Malaysia, Selangor, 3km below Fraser's Hill, 1200 m, secondary forest, 15.III.1993 (I. Löbl & F. Calame) #6 [sifting vegetational debris and roots].

Paratypes (37): same data as holotype, 1 male in MHNG; West Malaysia, Pahang, Fraser's Hill, Tiong trail, 1300 m, 20.III.93 (I. Löbl & F. Calame) # 13 [sifting dead leaves] 1 female in MHNG; same data but Tyong-Layang trail, 18.III.1993, #11 [sifting dead leaves, branches and bark on steep slope] 2 females in MHNG; same data but 1050 m, Jeriau Waterfalls, 19.III.1993, #12a [on trunk and under bark] 1 male in MHNG; Frasers Hill, Roadside valley, 3000ft. [ca. 1000 m] 17.VIII.1967 (D. H. Murphy) forest litter, #372, 6 males & 6 females in MHNG & PCSK; Fraser's Hill, hill forest, ca 1300 m, 16.VIII.1967 (R. Crozier) 2 males in MHNG; Fraser's Hill, 4200ft., 17.IX.1972 (T. Jaccoud) 2 males & 4 females in MHNG; Fraser's Hill, 800 m, 30.I.1999 (S. Kurbatov) litter, 4 males & 4 females in PCSK; same data but 1000 m, 31.I.1999, 2 males & 2 females in PCSK.

Description. Length 1.10–1.15 mm. Body brown, elytra usually darker than remainder of body. Head with punctation very fine on most of vertex, fairly coarse on frons and along occipital carina; pubescence very short and strongly recumbent, long occipital setae absent. Vertexal pits situated about in line of posterior eye margin; interval between them as large as or slightly larger than that between them and lateral head margins. Occipital carina long, extended slightly anterior to line of vertexal pits. Middle of vertex convex. Frons weakly impressed at middle, with two shallow, hardly visible foveiform impressions. Lateral margins of frons converging anteriorly, not or weakly crenulate; postantennal denticles present. Antennal segment 3 about as long as wide; segments 4 to 9 distinctly wider than long; segments 4 to 6 equally large; segments 7 to 9 slightly longer than 6; segment 10 hardly longer and distinctly wider than segment 9; segment 11 about as long as combined length of segments 6 to 10. Pronotum wider than head with eyes; middle basal fovea large, extended and narrowed anteriorly to form median sulcus;

median sulcus variable in length, in some specimens short, followed posteriorly by foveiform impressions; remaining basal foveae deep, small, well-delimited; lateral pair of mediobasal foveae wider than long; basomedian carina comparatively long and distinct; lateral folds distinct. Pronotal, elytral and abdominal punctation very fine; pubescence short and strongly recumbent. Prosternal carina low. Paranotal ca-rinae present. Prohypomera, metasternum and ab-dominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae parallel or slightly converging apically, reaching apical third of tergal length, separated by about half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 474. Frons not prominent, gradually narrowed and inclined, frontoclypeus vertical, not excavated or impressed, with small tubercle at centre of anterior margin. Frontoclypeal tubercle narrow at base, widened at tip, forming circular, flat surface and bearing two short, wide, diverging setae. Anterior margin of frontoclypeus bisinuate. Genal impressions small, widely separated. Eyes with 20 to 30 facets. Antennal scape and pedicel as in Figs 304–305; scape cylindrical in dorsal view, hardly swollen ventrally; pedicel thickened apically; club not modified. Profemora thickened, with row of marginal setae (Fig. 391). Mesal side of protibiae lacking large, spatulate sensilla. Metasternum impressed medio-apically. Apex of tergite 5 (Fig. 329) weakly emarginate at middle and with two wide sensillae. Abdominal sternite 2 weakly narrowed mesally, at middle about 3 times as long as sternite 1 and distinctly shorter than metasternum, median carina one-third of mesal sternal length; sternite 6 (Fig. 331) with pair of long, flat subapical sensillae. Aedeagus (Figs 300–301) 0.210–0.230 mm long.

Female. Frons gradually inclined anteriorly. Eyes with 7 or 8 facets. Abdominal sternite 2 at middle about 5 times as long as sternite 1 and distinctly longer than metasternum; median carina one-sixth of mesal sternal length.

Distribution. West Malaysia.

Comments. This species is one of the few species having the pronotum medianly sulcate, or with a median row of foveiform impressions. It may be distinguished from the similar *M. semifacta* by the head punctation. The aedeagus of one of the examined males has atavistic symmetric parameres (Fig. 301, see also 'Material and methods'), ovoid median lobe and sclerites of the internal sac shorter than those in other species.

Morana agostii sp. nov.
(Figs 219, 221, 228–229, 239, 458)

Type material. Holotype (male, in MHNG): Indonesia, West Sumatra, Lubuksulasih, 30km E Padang, 1100 m, 8.XI.1989 (D. Agosti, I. Löbl & D. Burckhardt) #7 [sifting vegetational debris in secondary forest on steep slope].

Paratypes (4, in MHNG): same data as holotype, 1 male & 3 females.

Description. Length 1.05 mm. Body brown. Head with vertex and frons coarsely and densely punctate; pubescence short, recumbent, long occipital setae absent. Vertexal pits inconspicuous, slightly larger than surrounding coarse punctures, situated about in line of posterior eye margins in female, almost in line of eye centres in male; interval between them about as large as that between them and lateral head margins. Occipital carina absent. Middle of vertex flattened. Lateral margins of frons not or hardly crenulate; postantennal denticles present. Occipital edge arcuate, vertical. Antennal segment 3 to 9 subequal, distinctly wider than long; segment 10 larger; segment 11 about as long as segment 4 to 10 combined. Pronotum hardly wider than head with eyes, lacking median sulcus; basal foveae obsolete; basomedian carina absent; lateral folds distinct. Most of pronotal punctation similar to that on vertex, or coarser than on vertex; punctation near anterior margin and on lateral parts of pronotal disc very fine; pronotal pubescence short and recumbent, slightly longer than on head. Elytral punctation finer than that on pronotum, very dense, consisting of well-delimited punctures; metasternal and abdominal punctation very fine. Elytral and abdominal pubescence short, recumbent. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum and abdomen lacking puncture rows. Metasternum with few punctures along mesocoxal cavities, sulcate along margin of intermetacoxal process. Abdominal tergite 1 with discal carinae slightly converging apically, extended up to or almost up to apical third of tergal length, interval between them as wide as half of tergal width, basal crenulation absent. Abdominal sternite 1 with few punctures at margin of intercoxal process; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 458. Lateral parts of frons not prominent. Middle part of frons obliquely impressed toward anterior edge, smooth, delimited by vertical anterior ridge. Upper margin of anterior frontal ridge weakly concave and bearing very short setae. Inner side of anterior frontal ridge with two admesal impressions. Outer side of anterior frontal ridge with rim of very short setae, frontoclypeus below deeply excavated. Frontoclypeal excavation narrow, with pair of long, robust, abruptly curved setae raising laterally and pointed obliquely ventrally. Lower side of frontoclypeal excavation with pair of lateral, very short, setal tufts (concealed in dorsal view by frontal ridge). Frontoclypeus below excavation moderately, obliquely prominent, with mesal ridge bearing two rows of fine setae diverging obliquely, at upper margin pair of wide setae

pointed anteriorly, with transverse row of very short setae. Sides of mesal ridge smooth. Anterior margin of frontoclypeus arcuate. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 228–229; scape thickened ventrally, with ventral side subangulate and mesal sulcus carinate below; pedicel hardly curved, subcylindrical; club not modified. Mesal side of protibiae with one large, spatulate sensillum. Apex of abdominal tergite 5 as in Fig. 219, very similar to that in *M. brinevi*. Abdominal sternite 2 strongly shortened mesally, in middle shorter than sternite 1, combined middle length of sternites 1 and 2 about two-thirds length of metasternum; median carina of sternite 2 very short, not exceeding basal carinae; abdominal sternite 6 (Fig. 221) with 7 pairs of long, flat setae. Aedeagus (Fig. 239) 0.220 mm long.

Female. Middle of frons weakly impressed, not separated from frontoclypeus. Eyes with 8 or 9 facets. Abdominal sternite 2 large, in middle almost 2.5 times as long as sternite 1, distinctly longer than metasternum, with median carina very short, hardly exceeding length of basal carinae.

Distribution. Sumatra: West Sumatra.

Comments. *Morana agostii* is characterized by the absence of a vertexal carina, in combination with the sulcate male scape and obsolete basal foveae of the pronotum. It shares with *M. brinevi*, *M. rebellis*, and *M. sinciput* a very similar conformation of the male abdominal tergite 5, sternite 6, and the larger apical process of aedeagus. These four species can be distinguished by the shape of the head and the structure of the aedeagal internal sac.

We name this species in honour of one of its first collectors, Donat Agosti, New York.

Morana ampullaria sp. nov.
(Figs 374–375, 386, 399–400, 463)

Type material. Holotype (male, in MHNG): West Malaysia, Selangor, Sungai Buloh / K.L. [near Kuala Lumpur] 20.VII.1972 (T. Jaccoud) light trap.

Paratypes (3, in MHNG): West Malaysia, Pahang, Cameron Highlands, Tanah Rata, 4300ft. [ca. 1400 m] 7.VIII.1972 (T. Jaccoud) 2 males & 1 female.

Description. Length 1.05 mm. Body dark brown. Head with vertex and frons uniformly coarsely and densely punctate, small medio-anterior area of male frons excepted; pubescence unusually short, recumbent, long occipital setae absent. Vertexal pits situated about in line of posterior eye margins; interval between them about as large as between them and lateral head margins. Occipital carina either absent (but distinct on neck), or present and extended up to line of vertexal pits. Middle part of vertex convex. Frons short, with contours rounded, not crenulate, postantennal denticles present, minute. Occipital edge arcuate, low, oblique. Dorsal side of neck carinate. Antennal segment 3 hardly wider than long; segments 4 to 7 subequal, about as long as wide; segments 8 and 9 smaller than segment 7, wider than long; segment 10 much larger than segment 7, distinctly wider than long; segment 11 about as combined length of segments 7 to 10. Pronotum slightly wider than head with eyes, lacking median sulcus; basal foveae deep, sharply delimited; median basal foveae larger than admesal and lateral basal foveae; lateral folds hardly visible; basomedian carina absent. Pronotal punctation very coarse and dense; pubescence short, slightly longer than that on head, recumbent. Paranotal carinae present. Elytral punctation very fine on inner basal area, fairly coarse on remaining surface, distinctly finer than that on vertex, partly consisting of slightly elongate punctures. Elytral and pronotal pubescence similar. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum and abdominal sternites very finely punctate, lacking puncture rows. Abdominal tergite 1 very finely punctate, remainder of abdomen extremely finely punctate. Discal carinae of tergite 1 parallel or weakly converging, variable in length, extended to apical third or up to apical fifth of tergal length, separated at base about by third of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 463. Frons not prominent laterally, with anterior margin rounded, at middle impunctate, inclined and weakly prominent. Centre of frontoclypeus below frontal margin shortly vertical, bearing row of long, curved setae diverging anteriorly. Lower part of frontoclypeus prominent, with large, sinuate, transverse carina overlapping anterior, rounded frontoclypeal margin. Narrow area above transverse carina impressed, smooth, area between transverse carina and anterior frontoclypeal margin with short, pubescent, mesal carina. Eyes with 25 to 27 facets. Antennal scape and pedicel as Figs 399–400; scape cylindrical in dorsal view, extended ventrally, with flat inner side; pedicel conspicuously swollen, bulbous, except at its narrow base. Mesal side of protibiae with two large, spatulate sensilla. Abdominal tergite 5 (Fig. 374) folded at apex, with long, fine setae and one large, elliptical sensillum. Abdominal sternite 2 strongly shortened mesally, in middle slightly longer than sternite 1, shorter than half of metasternum, median carina extended about to sternal mid-length. Abdominal sternite 6 (Fig. 375) with single long seta and one long basal apophysis. Aedeagus (Fig. 386) 0.220 mm long.

Female. Frons impressed medio-anteriorly and entirely coarsely punctate. Eyes with about 10 facets. Abdominal sternite 2 at middle almost 3 times as long as sternite 1, distinctly longer than metasternum, median carina one-seventh of median sternal length.

Distribution. West Malaysia.

Comments. This species may be separated from its congeners by the comparatively coarse pronotal punctation, in combination with the shape of the male pedicel and the strongly shortened second abdominal sternite.

Morana asema sp. nov.
(Figs 354, 367–368, 378–379, 483)

Type material. Holotype (male, in MHNG): Taiwan, Pintung Hsien, Peitawushan, Kuai-Ku Hut, 2335 m, 21.V.1991 (A. Smetana) T88 [sifting dense vegetation and humus under it along trail in original broadleaved evergreen forest with intermixed conifers here and there].

Paratypes (382): same data as holotype, 28 specimens in MHNG & PCSK; Taiwan, Pintung Hsien, Peitawushan, Kuai-Ku Hut, 2325 m, 22.V.1991 (A. Smetana) T90 [same forest and same habitat as holotype] 2 specimens in MHNG; same data, but 2135 m, 30.IV.1992, T108 [sifting vegetation and fallen leaves and other debris among it on moist spots along trail in same forest as holotype] 262 specimens in MHNG, NSMT & PCSK; same data but 2125 m, 27.IV. 1992, T102 [sifting vegetation mixed with fallen leaves and other debris in same forest as holotype] 45 specimens in MHNG; same data but 2130 m, T101 [sifting fallen leaves and other forest floor debris in shady, rather dark part of same forest as holotype] 40 specimens in MHNG; same data, but Peitawushan trail, 1600 m, 1.V.1992, T110 [sifting vegetation, fallen leaves and other debris among it on moist spots along trail in old broadleaved evergreen, almost subtropical forest] 5 specimens in MHNG.

Description. Length 1.20 mm. Body brown. Head with vertex and frons almost uniformly, densely and coarsely punctate, pubescence short, recumbent, long occipital setae absent. Vertexal pits inconspicuous, in some specimens barely visible, situated in line of posterior eye margins; interval between them close to that between them and lateral head margins. Occipital carina variable in length, reduced and present only on occipital area, or longer and extended well anterior to line of vertexal pits. Middle part of vertex convex. Lateral margins of frons hardly crenulate; postantennal denticles minute. Occipital area low, weakly arcuate, vertical. Neck with minute, shallow dorsal impressions, median carina visible only on anterior part. Antennal segments 3 to 5, 7 and 9 subequal, about as long as wide or hardly longer than wide; segment 6 slightly smaller than segment 5, hardly wider than long; segment 8 as segment 6; segment 10 distinctly larger than segment 9 and wider than long; segment 11 about as long as combined length of segments 5 to 10. Pronotum hardly wider than head with eyes, lacking median sulcus; basal foveae subequal, small, deep, well-delimited; lateral folds absent; basomedian carina present. Pronotal, elytral and abdominal punctation extremely fine; pubescence short, recumbent. Prosternal carina low. Prohypomera, metasternum and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae diverging, variably long, extended to third or up to tergal mid-length, separated at base by about two-fifths of tergal width, basal crenulation absent; sternite 2 with basal crenulation present.

Male. Head as in Fig. 483, weakly modified. Frons gradually narrowed, not impressed, strongly inclined, vertical between genal impressions, not delimited from lower part of frontoclypeus. Frontoclypeus with small transverse carina above truncate anterior margin, narrow area between anterior margin and carina flat, smooth. Eyes reduced, with 6 to 9 facets. Antennal scape, pedicel (Figs 378–379), and club not modified. Mesal side of protibiae lacking large, modified sensilla. Apex of abdominal tergite 5 as in Fig. 367. Abdominal sternite 2 at middle 3 times as long as sternite 1 and as long as metasternum, median carina one-fifth of mesal sternal length; sternite 6 (Fig. 368) with asymmetrical pubescence. Aedeagus (Fig. 354) conspicuously large, 0.320 mm long.

Female. Head as in male but lacking frontoclypeal carina and flat area above anterior margin. Abdominal sternite 2 slightly longer than in male, slightly more than 3 times as long as sternite 1 and slightly longer than metasternum, with median carina longer than in male, about one-third of mesal length of sternite.

Distribution. Taiwan.

Comments. This species shares with its Japanese congener (*M. discedens*, *M. bara*, *M. elegans*, etc.) a large second abdominal sternite in the male. It may be distinguished from them by the eyes that are small in both sexes, and the weakly modified male head and unmodified male antennae.

Morana bara Tanabe et Nakane, 1990
(Figs 67–68, 75–76, 93, 95, 98, 106, 429)

Morana bara Tanabe et Nakane, 1990: 28.

Type material. Material examined (11, gifts from NSMT to MHNG): Japan, Kagoshima-ken, Honmura, Is. Kushino-erabu-jima, 16.XI.1985 (T. Tanabe) 1 female paratype; Miyanoura, Kamiyaku cho, Is. Yakushima, 23.IV.1985 (T. Tanabe) broadleaf litter, 1 female; same data, but 24.IV.1985, broadleaf litter, 1 male; same data, but 25.IV.1985, bamboo litter, 1 female; same data but 18.XI.1985, broadleaf litter, 1 male; Japan, Seibu-Rindo, Yaku-shima Is. (Tul.), Kagoshima Pref., 17.X.2000 (M. Maruyama & Y. Kohyama) 2 males & 4 females.

Description. Length 1.20–1.30 mm. Body light reddish-brown. Frons and middle part of vertex densely and coarsely punctate, lateral parts of vertex very finely punctate; pubescence fairly short, recumbent, long occipital setae present. Vertexal pits situated in same line of eye centres; interval between them larger than that between them and lateral head margins. Occipital carina long, extending from neck onto frons anteriorly to line of vertexal pits. Middle part of vertex convex (female), or elevated and flattened (male). Occipital area narrow, vertical, angulate. Lateral margins of frons not or weakly crenulate; postantennal denticles absent. Antennal segment 3 wider than long; segments 4 to 6 equal, shorter than segment 3, distinctly wider than long; segments 7 to 9 subequal, similar to segment 3; segment 10 distinctly larger than segment 9; segment 11 about as long as combined length of segment 6 to 10. Pronotum about as wide as head with eyes, lacking median sulcus; basal foveae comparatively small, subequal in size, well-delimited; middle basal fovea situated anterior to line of remaining basal foveae; basomedian carina present; lateral folds indistinct. Paranotal carinae present. Prohypomera lacking puncture row. Elytra lacking discal impression or stria. Pronotal, elytral, and abdominal punctation uniformly very fine; pubescence fairly short, semi-erect, pronotum with pair of long lateral setae. Prosternal carina low. Metasternum and abdominal sternite 1 lacking puncture rows, entirely very finely punctate; pubescence on middle part of metasternum longer than on lateral parts of metasternum. Abdominal tergite 1 with discal carinae diverging apically, extending to tergal mid-length, separated at base by less than half of tergal width, basal crenulation absent; sternite 2 with basal crenulation barely visible or distinct.

Male. Head as in Fig. 429. Middle part of vertex elevated and flat, clearly delimited laterally. Middle part of frons abruptly impressed anteriorly, posterior side of impression strongly inclined, finely punctate, bottom of impression almost horizontal, with two small, round tubercles each bearing long, flat seta pointed anteriorly. Lateral parts of frons prominent, each side forming acute process with outer margin concave, inner margin convexly rounded. Tip of frontal processes curved ventrally, obtuse, bearing setae pointed ventrally. Upper part of frontoclypeus with transverse lamina bearing conspicuous, wide, hyaline setae converging vertically, joined and curved at tip. Ventral side of transverse process with short setae. Frontoclypeus below transverse process narrowly excavated. Anterior edge of frontoclypeus strongly elevated toward middle, forming triangular ridge overlapping labrum, in middle extended posteriorly by high, narrow median ridge. Upper margin of triangular ridge bearing several short and few long setae oriented obliquely dorsally, lower margin of triangular ridge with row of short setae oriented ventrally. Eyes with about 35 facets. Antennal scape (Figs 75–76) subcylindrical in dorsal view, curved in lateral view, lacking specific characters; pedicel gradually widened apically, weakly curved, slightly longer than scape in dorsal view; segment 10 strongly widened medially; segment 11 widened basally, with almost triangular contours in lateral view, base of widened area impressed and sharply delimited (Figs 67–68). Mesal side of protibiae with single large, spatulate sensillum (Fig. 98). Apex of tergite 5 with single flat sensillum near centre, lacking robust setae (Fig. 93). Abdominal sternite 2 large, in middle almost as long as metasternum, 3 times as long as sternite 1, median carina extending one-third of mesal sternal length; sternite 6 with pair of large apical setae, basal angles prominent, acute, apophysis absent (Fig. 95). Aedeagus (Fig. 106) 0.240 mm long.

Female. Eyes with 7 or 8 facets. Abdominal sternite 2 in middle about 4 times as long as sternite 1, distinctly longer than metasternum, with median carina almost one-third of mesal sternal length.

Distribution. Japan: islands at southern coast of Kyushu.

Comments. This species may be distinguished from its congeners that share a modified male antennal club by the shape of the male segment 10, the punctate vertex, simple scape, and the pedicel widened apically. The male head is similar to that in *M. discedens* Sharp.

Morana belajevae sp. nov.
(Figs 123–124, 136, 144, 146, 441)

Type material. Holotype (male, in ZMUM): South Vietnam, 55 km NE Ho Chi Minh, Ma Da, 15.IX.1994 (N. V. Belajeva) *Dipterocarpus* forest, soil probes, 0–2 cm.

Description. Length 1.10 mm. Body reddish-brown. Lateral parts of frons very densely, fairly coarsely punctate, middle part of frons with several comparatively coarse punctures, remainder of head very finely punctate; pubescence fairly short, recumbent, long occipital setae present. Vertexal pits situated slightly beyond line of eye centres; interval between them wider than that between them and lateral head margins. Occipital carina long, extended from neck onto frons, about to line of anterior eye margins. Middle part of vertex convex. Occipital area narrow, rounded. Lateral margins of frons crenulate; postantennal denticles present, margins anterior to denticles weakly emarginate. Frons with pair of foveiform impressions situated about in line of eye centres. Antennal segment 3 wider than long; segments 4 to 6 equal, shorter than segment 3, much wider than long; segments 7 to 9 subequal, about as long as segment 3; segment 10 distinctly larger than segment 9; segment 11 about as long as

combined length of segment 6 to 10. Pronotum about as wide as head with eyes, lacking median sulcus; basal foveae subequal, deep but not well-delimited; basomedian carina present: lateral folds indistinct. Elytra lacking discal impression or stria. Pronotal, elytral, metasternal, and abdominal punctation uniformly very fine; pubescence fairly long, recumbent, pronotal pubescence longer than that on elytra and abdomen. Paranotal carinae present. Prosternal carina low. Prohypomera lacking puncture rows and sulci. Metasternum and abdominal sternite 1 lacking puncture rows, entirely very finely punctate. Abdominal tergite 1 with discal carinae parallel apically, extended up to apical fourth of tergum, separated at base by slightly less than half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 441. Middle part of frons impressed, obliquely inclined in upper part, vertical in inferior part. Narrow mesal area of frontal impression smooth, with two conspicuous, deep, oval pits in middle. Areas lateral to pits transversally impressed. Inferior part of frontal impression with transverse ridge bearing setal tuft, tuft consisting of horizontal setae curved dorsally at tip. Lateral parts of frons prominent, obliquely inclined, overlapping genal excavation and parts of frontoclypeus. Frontoclypeus elevated at middle to form tubercle almost touching frontal ridge, triangular in frontal view, bearing short pubescence. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 123–124; scape strongly swollen, flattened mesally, with smooth apicomesal patch, and conspicuous apical setae. Pedicel cylindrical, slightly curved, club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 144) with wide, bifid sensillum, three narrow, central sensilla, one robust seta and row of apical moderately large setae. Abdominal sternite 2 moderately narrowed toward middle, in middle about twice as long as sternite 1, slightly shorter than metasternum, median carina about as long as fourth of mesal sternal length; sternite 6 (Fig. 146) lacking modified setae. Aedeagus (Fig. 136) 0.220 mm long.

Female unknown.

Distribution. South Vietnam.

Comments. This species may be distinguished from its congeners having a similar punctation pattern by the male scape bearing long setae.

We name this species in honour of its first collector, N. V. Belajeva, Moscow.

Morana bellicosa sp. nov.
(Figs 248, 255, 257, 164–265, 469)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Mt. Kinabalu, 1580 m, 27.IV.1987 (D. Burckhardt & I. Löbl) #6 [Liwagu trail, sifting dead leaves and moss near stream].

Description. Length 1.25 mm. Head with vertex and frons finely and densely punctate; pubescence fairly short, long occipital setae absent. Vertexal pits not visible. Occipital carina absent. Middle of vertex sexually modified. Lateral margins of frons not crenulate; postantennal denticles minute. Occipital edge arcuate. Antennal segment 3 slightly longer than wide; segments 4 to 8 similar in size, slightly wider than long; segment 9 slightly larger than segment 8; segment 10 slightly longer and distinctly wider than segment 9; segment 11 about as combined length of segments 7 to 10. Pronotum and elytra similar to those in *M. semifacta*, but pronotal sulcus irregular, with anterior part deeper and interrupted, and pubescence long. Prosternal carina low. Abdominal tergite 1 with discal carinae distinctly converging apically, extended up to apical fourth of tergal length, separated at base by almost half of tergal width.

Male. Head as in Fig. 469. Vertex swollen latero-apically, with medio-apical, transverse area narrow. Swollen areas each with oval, flat, porous patch reaching mesal margin. Centre of vertex with small, deep, foveiform impression delimited anteriorly by semicircular, vertical lamina. Frons and vertex deeply, transversally excavated. Frontal excavation divided by short mesal ridge bearing two setal tufts; setal tufts pointed obliquely apically. Anterior part of frons prominent, shallowly impressed, weakly inclined, rounded anteriorly. Anterior margin of frontoclypeus truncate, overlapped by prominent frons. Narrow area above anterior frontoclypeal margin almost vertical. Genal impression comparatively small. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 264–265; scape cylindrical in dorsal view, with subapical setal row; pedicel long, flattened dorsally, with semicircular setal row and upper outer margin expanded to form subtriangular denticle; club not modified. Mesal side of protibiae with two large, spatulate sensilla. Tarsomere 2 of mesolegs swollen, with conspicuous, long and dense ventral pubescence. Medio-apical part of metasternum slightly oblique, with punctation clearly more distinct than that on remaining metasternal surface; pubescence on middle part of metasternum longer than that on metasternal sides. Abdominal tergite 5 (Fig. 255) with six conspicuous, basal sensilla; sternite 2 strongly shortened mesally, in middle as long as sternite 1, about one-third metasternal length, median carina about as third of median length of sternite; sternite 6 (Fig 257) with long lateral setae and two dense rows of wide setae. Aedeagus (Fig. 248) 0.200 mm long.

Female unknown.

Distribution. Borneo: Sabah.

Comments. This species uniquely shares with *M. semifacta* and *M. sycosifrons* a longitudinal

pronotal suclus and, in males, two porous circular areas laterally on vertex, a dense fringe of setae on the ventral side of the swollen second mesotarsomere, and a similar conformation of abdominal tergite 5 and sternite 6. The aedeagus and the shape of the head are diagnostic for these species. The single available specimen is very light and most likely teneral.

Morana bidentata sp. nov.
(Figs 241, 244, 250, 252, 338, 461)

Type material. Holotype (male, in ZMUM): Burma [Myanmar, East Mandalay] nr. Maymyo [= Pyin Oo Lwin] 800 m, 12.II.1996 (S. A. Kurbatov) litter [near stream].

Paratypes (35): same data as holotype, 6 males & 29 females in MHNG, ZMUM & PCSK.

Description. Length 1.00–1.10 mm. Body ochreous to brown. Head with uniform, coarse and dense punctation covering entire vertex and frons; pubescence short, recumbent. Long occipital setae present. Vertexal pits hardly distinguishable among coarse punctures, situated about in line of posterior eye margins; interval between them larger than that between them and lateral head margins. Occipital carina absent. Middle of vertex convex. Frons with lateral margins not crenulate; postantennal tubercle minute. Occipital edge high, arcuate. Neck with minute dorsomedian tubercle. Antennal segment 3 as long as wide; segments 4 to 9 distinctly wider than long, equally large or segments 7 and 9 slightly larger than segment 8; segment 10 much larger than segment 9; segment 11 about as long as segment 6 to 10 combined. Pronotum slightly wider than, or about as wide as head with eyes, lacking median sulcus; basal foveae subequal, fairly well delimited, very close to basal margin; basomedian carina absent; lateral folds weak. Pronotal punctation coarse and fairly dense, distinctly sparser and slightly finer than, or as coarse as, that on vertex. Pronotal pubescence fairly short and recumbent but several longer setae present near lateral edges. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum and abdomen lacking puncture rows. Elytral, metasternal, and abdominal punctation very fine; dorsal pubescence short and recumbent. Abdominal tergite 1 with discal carinae parallel, almost as long as half of tergal length, separated by about half of basal width of tergite, basal carinae absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 461. Frons separated from vertex by very shallow impression, weakly inclined, prominent at both sides and forming large, triangular processes divided by deep, concave notch. Frontal processes expanded ventrally to form narrow, vertical ridges. Anterior margin of frons bearing fine setae pointed anteriorly, frontoclypeus below deeply impressed and bearing flat setae. Anterior part of frontoclypeus punctate, with median tubercle carinate and bearing two tufts of very short, diverging setae. Middle part of frontoclypeus with two transverse carinae, anterior carina delimiting punctate anterior area, posterior carina delimiting large frontoclypeal excavation formed by joined genal impressions. Surface between transverse carinae narrow and smooth. Anterior frontoclypeal margin weakly rounded. Eyes with about 30 facets. Antennal scape and pedicel as in Fig. 241; scape with most of mesal side deeply impressed, dorsal and ventral margins of impression well delimited, bearing one robust subapical seta; pedicel small, subcylindrical; club not modified. Mesal side of protibiae with two large, spatulate sensillae (Fig. 338). Apex of abdominal tergite 5 (Fig. 250) with process in asymmetrical emargination, three strongly widened and two narrow sensillae, and long setae. Abdominal sternite 2 strongly shortened mesally, in middle slightly longer than sternite 1, slightly shorter than half of metasternum, median carina very short, not exceeding basal carinae; sternite 6 (Fig. 252) deeply impressed, with dense apical row of wide, curved sensillae. Aedeagus (Fig. 244) 0.240–0.250 mm long.

Female. Frons gradually inclined. Eyes with 5 to 6 facets. Abdominal sternite 2 large, at middle almost 3 times as long as sternite 1, about as long as metasternum, with median carina about one-tenth of sternal length.

Distribution. Myanmar.

Comments. This species is characterized by the pronotum bearing long lateral setae, and the male scape having subapical setae (see also comments under *M. palaung*).

Morana brinevi sp. nov.
(Figs 214, 216, 224–225, 238, 456)

Type material. Holotype (male, in MHNG): Indonesia, West Java, Cibodas, 50 km E Bogor, 1400 m, 3–6.XI.1989 (D. Agosti, I. Löbl & D. Burckhardt) #2a [sifing of vegetational debris in montane *Lithocarpus-Castanopsis* forest].

Paratypes (4): West Java, pass between Puncak and Cibodas, lake Telaga Warna, 4.VIII.1984 (J. Robert) 1 male & 2 females in MHNG; West Java, Mt. Gede, 1400 m, litter, 25.V.1997 (S. Kurbatov) 1 male in PCSK.

Description. Length 1.05–1.10 mm. Body brown. Head with vertex very finely punctate, most of frons distinctly, densely punctate; pubescence short, recumbent, long occipital setae absent. Vertexal pits distinct, sharply delimited, situated in line of posterior eye margin; interval between them smaller than (male) or as large as (female) that between them and lateral head

margin. Occipital carina long, extending onto frons, almost reaching line of anterior eye margin. Middle of vertex flattened. Lateral margins of frons smooth; postantennal denticles present in female only. Occipital edge low, transverse. Antennal segments 3 to 9 subequal, distinctly wider than long; segment 10 larger than preceding segments; segment 11 as long as or almost as long as segments 5 to 10 combined. Pronotum as wide as head with eyes, lacking median sulcus; basal foveae deep, well delimited; median basal fovea large, partly separated into two foveae by low median carina; admesal and lateral basal foveae subequal, small; basomedian carina present. Pronotal, elytral, metasternal, and abdominal punctation very fine; pubescence longer than that on head, semi-erect. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum, and abdomen lacking puncture rows. Abdominal tergite 1 with discal carinae parallel or subparallel, reaching tergal mid-length, separated by half of tergal width, basal crenulation absent; sternite 2 with median carina short, basal crenulation distinct.

Male. Head as in Fig. 456, flattened and obliquely inclined toward eyes. Lateral parts of frons slightly elevated, hardly prominent, joined anteriorly by robust, almost Y-shaped, vertical process. Upper margin of frontal process concave in frontal view, with tomentose rim. Dorsal side of frons beyond latter deeply impressed. Anterior side of frontal process bearing two small, very short setal tufts pointed ventrally, area below deeply excavated. Lateral margins of excavation each bearing small, flat, smooth process and wide setae. Anterior margin of excavation delimited by subtriangular, transverse ridge. Anterior part of frontoclypeus prominent, with conspicuously elevated, glabrous, transverse process overlapping labrum. Transverse process extended beyond to form short, mesal ridge touching subtriangular ridge, bearing wide setae diverging dorsally and short, fine setae oriented anteriorly. Anterior margin of transverse ridge bisinuate, with long setae diverging obliquely anterioventrally. Eyes flattened, with about 30 facets. Antennal scape and pedicel as in Figs 224–225; scape flattened mesally, with strongly prominent inner apical angle; pedicel small, asymmetrical, widened mesally and wider than long; club not modified. Mesal side of protibiae lacking large, spatulate sensilla. Apex of abdominal tergite 5 (Fig. 214) weakly asymmetrically prominent, with one very long, sinuate sensillum and two shorter, wide apical sensilla, pubescence long; sternite 2 strongly narrowed mesally, as long as sternite 1; sternites 1 and 2 combined slightly shorter than metasternum; median carina of sternite 2 about as long as third of mesal sternal length; sternite 6 (Fig. 216) asymmetrically emarginate apically, with numerous long, partly flattened setae. Aedeagus (Fig. 238) 0.210 mm long.

Female. Frons weakly impressed at middle, gradually inclined ventrally. Lateral margins of frons with distinct postantennal denticles. Eyes with 7 facets. Abdominal sternite 2 large, at middle about 3 times as long as sternite 1 and 1.5 times as long as metasternum.

Distribution. Java.

Comments. The species resembles *M. histanoceroides* by the strongly prominent inner apical angle of the scape. It is characterized by the mediobasal pronotal fovea partly divided by a carina, and the asymmetrically emarginated male genital sternite (see also comments under *M. agostii*).

We name this species in honour of Alexey Brinev, Moscow.

Morana burckhardti sp. nov.
(Figs 310–311, 352, 355–356, 471)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Poring Hot Springs, 500 m, 7.V.1987 (D. Burckhardt & I. Löbl) #15a [sifting in quite moist forest with Dipterocarpaceae].

Paratypes (7 females, in MHNG): with same data as holotype.

Description. Length 1.15–1.20 mm. Body brown. Head with punctation very fine and very dense on vertex and on narrow median part of frons, slightly coarser and denser on lateral parts of frons; pubescence fairly short, recumbent, long occipital setae absent. Vertexal pits visible only in female, situated in line of eyes centres; interval between them similar to that between them and lateral head margins. Occipital carina absent. Middle of vertex flattened in female, excavated in male. Vertex clearly separated from frons by shallow transverse impression. Lateral margins of frons not or hardly crenulate, angulate; postantennal denticles minute. Antennal segments 3 to 6 almost equally large, much wider than long; segments 7 to 9 longer than segment 6, slightly wider than long; segment 10 wider than long, distinctly larger than segment 9; segment 11 about as long as combined length of segments 5 to 10. Pronotum in male as wide as head with eyes, in female slightly wider than head with eyes, lacking median sulcus; median and admesal basal foveae similar, fairly deep, becoming gradually shallower anteriorly; outer basal foveae small; lateral folds distinct; basomedian carina absent. Pronotal, elytral, and abdominal punctation very fine; pubescence fairly long, recumbent. Prosternal carina low. Prohypomera, metasternum, and abdomen lacking puncture rows. Mesofemora and metafemora flattened and explanate ventro-apically, metatibiae with basoventral, subtriangular, flat denticle bearing long seta. Abdominal tergite 1 with discal carinae parallel, extending up to or

almost up to apical fourth of tergite, separated by about third of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 471. Middle of vertex excavated. Vertexal excavation smooth, deep and wide anteriorly, shallow and narrowed posteriorly. Upper edge of excavation margined by dense, fairly long, oblique setae. Centre of anterior side of excavation prominent, forming angulate tubercle that is carinate dorsally. Frons in middle very weakly impressed, not prominent, gradually narrowed and convexly inclined toward anterior margin of frontoclypeus. Genal impression large, extended to eyes. Anterior margin of frontoclypeus convex, with few long setae at each side. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 310–311; pedicel elongate, straight, gradually thickened apically; scape subcylindrical in dorsal view; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 355) strongly modified. Abdominal sternite 2 strongly shortened mesally, in middle slightly shorter than sternite 1, sternites 1 and 2 combined about as long as metasternum, median carina one-third of mesal sternal length; sternite 6 (Fig. 356) concave apically and with large, spatulate sensilla. Aedeagus (Fig. 352) 0.190 mm long.

Female. Vertex in mesal line shallowly impressed. Middle part of frons distinctly impressed. Anterior margin of frontoclypeus lacking long setae. Eyes with 8 to 9 facets. Abdominal sternite 2 at middle about 3 times as long as sternite 1 and 1.5 times as long as metasternum, with median carina one-tenth of mesal sternal length.

Distribution. Borneo: Sabah.

Comments. This species is unique in having a setiferous metatibial denticle. It is also well-characterized by the shape of the mesofemora and metafemora.

We name this species in honour of one of its first collectors, Daniel Burckhardt, Basel.

Morana caudata sp. nov.
(Figs 193–194, 203, 209, 211, 453)

Type material. Holotype (male, in MHNG): India, Meghalaya, Khasi Hills, above Shillong, 1950 m, 30.X.1978 (C. Besuchet & I. Löbl) #35b [sifting in primary forest on Shillong Peak].

Paratypes (13): same data as holotype, 1 female in MHNG; India, Meghalaya, Khasi Hills, 1200 m, below Cherrapunjee, 26.X.1978 (C. Besuchet & I. Löbl) #28b [sifting in forest at base of rocks] 1 female in MHNG; same data, but 10 km North Cherrapunjee, #29 [sifting in forest in little ravine] 4 males & 4 females in MHNG & PCSK; Khasi Hills, near Balat, 1000 m, 27.X.1978 (C. Besuchet & I. Löbl) #30b [sifting in forest in ravine between Mawsynram and Balat, at 16 km of Mawsynram] 1 male in MHNG; Khasi Hills, below Pynursla, 1100 m, 29.X.1978 (C. Besuchet & I. Löbl) #34 [sifting in forest in little ravine] 2 males in MHNG & PCSK.

Description. Length 1.15–1.20 mm. Body brown. Head with frons and vertex coarsely and very densely punctate; pubescence short, recumbent, long occipital setae present. Vertexal pits barely distinguishable among coarse punctation, situated about in line of posterior eye margins; interval between them slightly larger than that between them and lateral head margins. Occipital carina absent. Middle part of vertex slightly convex. Lateral margins of frons crenulate; postantennal denticles distinct. Occipital edge high, arcuate. Antennal segments 3 to 6, 8 and 9 subequal, slightly wider than long; segment 7 somewhat longer than segment 6; segment 10 longer and much wider than segment 7; segment 11 slightly longer than segment 6 to 10 combined. Pronotum as wide as or slightly wider than head with eyes, lacking median sulcus; basal foveae fairly deep, well-delimited, subequal in size, or admesal foveae smaller than median fovea; lateral folds distinct; basomedian carina absent. Pronotal punctation coarse and dense on large middle part of disc, finer at anterior margin and on lateral parts of disc, punctures larger but less dense on pronotal centre than on vertex. Pronotal pubescence short and recumbent, longer than that on head. Elytral and abdominal punctation very fine; pubescence similar to that on pronotum. Paranotal carinae present. Prohypomera with semi-circular sulcus, lacking puncture rows. Prosternal carina low. Metasternum very finely punctate, with rows of punctures along margins of mesocoxal cavities and margin of intercoxal process. Abdominal tergite 1 with discal carinae parallel or weakly converging apically, extended almost to, or reaching apical third of tergal length, and separated by half of basal width of tergite; basal margin with row of punctiform impressions between discal carinae. Abdominal sternite 1 with row of punctures along margin of intercoxal process; sternite 2 with median carina very short, in length not or weekly exceeding basal crenulation.

Male. Head as in Fig 453. Frons with lateral parts prominent, wide, not swollen and not inclined. Middle part of frons inclined toward deep excavation. Centre of posterior side of impression with minute triangular tubercle. Margin of excavation transverse, carinate, bearing row of 9 to 11 long, horizontal setae (partly broken off in most specimens). Frontoclypeus below frontal notch shortly vertical, bearing long, wide, bifid setae pointed anteriorly. Anterior part of frontoclypeus strongly swollen, smooth except in slightly impressed mid-line, posterior margin of swollen area strongly elevated to form oblique, carinate ridge that is pubescent

anteriorly. Anterior margin of frontoclypeus weakly bilobed. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 193–194; scape strongly expanded ventrally, slightly swollen basodorsally, almost cylindrical in dorsal view, mesal side impressed, with circular area bearing group of short, concentric setae; pedicel subcylindrical, slightly curved; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apical abdominal tergite (Fig. 209) conspicuously expanded and prominent on morphological right side, with pair of small, digitiform sensillae, one large sensillum near left margin, and curved robust pubescence; sternite 2 shortened mesally, slightly longer than sternite 1, about as long as half of metasternum; sternite 6 with one apical angle asymmetrically prominent, minute, basal, digitiform sensilla, and five pairs of flat setae (Fig. 211). Aedeagus (Fig. 203) 0.270 mm long, apical process arcuate, acute at tip, apical lobe triangular, internal sac with bifid basal sclerite and several spine-like structures.

Female. Frons weakly impressed and gradually inclined. Eyes with 7 to 8 facets. Abdominal sternite 2 large, not narrowed mesally, in middle almost 4 times as long as sternite 1 and distinctly longer than metasternum.

Distribution. India: Meghalaya.

Comments. The species is unique in having an asymmetric prominent apex of the male genital tergite. It may be also easily distinguished by the prohypomeral sulcus, and row of basal carinae on the first abdominal tergite.

Morana clypeata sp. nov.
(Figs 245, 249, 254, 256, 262–263, 462)

Type material. Holotype (male, in MHNG): Thailand, Chiang Mai Prov., Doi Suthep, 1550 m, 4.XI.1985 (D. Burckhardt & I. Löbl) [sifting dead leaves in little ravine with creek].

Paratypes (51): with same data as holotype, 7 males & 14 females in MHNG & PCSK; same data but 1400 m, 5.XI.1985 [sifting dead leaves near creek in very wet ravine] 7 males & 12 females in MHNG; Thailand, Mae Hong Son Prov., Pai Distr., Doi Chang, 1930 m, 20 km E Pai, 4.VI.1986 (P. Schwendinger) 2 males & 1 female in MHNG.

Description. Length 1.10–1.15 mm. Body light brown. Head with vertex and frons coarsely and very densely punctate; pubescence short, recumbent, long occipital setae absent. Vertexal pits hardly visible among coarse punctures, situated slightly anterior to line of posterior eye margin, interval between them similar to that between them and lateral head margins. Occipital carina absent. Middle of vertex flattened. Lateral margins of frons not crenulate; postantennal denticles minute or absent. Occipital margin high, oblique, subangulate. Antennal segments 3 to 8 subequal, wider than long, segment 9 slightly wider than segment 8; segment 10 distinctly wider than segment 8; segment 11 as long as segments 6 to 10 combined. Pronotum as wide as or slightly narrower than head with eyes, lacking median sulcus; basal foveae subequal, large, deep and well-delimited; lateral folds distinct; basomedian carina absent. Punctation on pronotal disc almost as dense as and slightly coarser than that on head, punctation of lateral parts of pronotum very fine; pronotal and elytral pubescence similar to that on head. Prosternal carina low. Paranotal carinae present. Prohypomera, metasternum and abdomen lacking puncture rows. Elytra, metasternum and abdomen very finely punctate. Abdominal tergite 1 with discal carinae parallel, about as long as two-thirds of tergal length, separated at base by less than half of basal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 462. Frons flat, gradually narrowed anteriorly, lateral parts of frons extended to form two large triangular processes separated by deep, concave emargination. Upper anterior margin of frons bearing long setae oriented anteriorly. Frontoclypeus below deeply impressed and smooth. Anterior part of frontoclypeus prominent and swollen, in middle highest, forming small, flat, sharply delimited, semicircular area. Semicircular area very densely punctate and with two short, diverging setal tufts arising from its posterior margin. Anterior margin of frontoclypeus weakly convex. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 262–263; scape thickened apically, impressed mesally; pedicel small, subcylindrical; club not modified. Mesal side of protibiae with two large, spatulate sensillae (Fig. 249). Apex of abdominal tergite 5 (Fig. 254) strongly asymmetrical, with pair of lateral digitiform sensillae, several large sensillae at right side, and row of fine setae. Abdominal sternite 2 shortened toward middle, in middle slightly longer than segment 1, about half as long as metasternum, median carina reduced, about as long as one-tenth of sternite; sternite 6 (Fig. 256) strongly asymmetrical, prominent at middle, emarginate at left side of apex, with short row of large, spatulate sensillae and few very short setae. Aedeagus (Fig. 245) 0.280 mm long.

Female. Frons weakly impressed between antennal tubercles. Eyes with 7 or 8 facets. Abdominal sternite 2 large, at middle about 2.5 times as long as sternite 1 and as long as metasternum, with median carina short, about one-twelfth median length of sternite.

Distribution. Thailand.

Comments. This species is characterized by the semicircular frontoclypeal area in the male, in combination with the completely absent occipital carina.

Morana crustosa sp. nov.
(Figs 191–192, 204, 206, 208, 451)

Type material. Holotype (male, in MHNG): India, Meghalaya, Khasi Hills, 700 m, Nongpoh, 5.XI.1978 (C. Besuchet & I. Löbl) #42b [sifting in forest above village on slope North at base of rocks and tall trees].

Paratypes (54): with same data as holotype, 12 males & 31 females in MHNG & PCSK; India, Meghalaya, Khasi Hills, 10 km NE Dawki, 500–800 m, 29.X.1978 (C. Besuchet & I. Löbl) #33b [sifting in very dry forest] 1 male in MHNG; Meghalaya, Garo Hills, Tura Hill, 700–900 m, 1.XI.1978 (C. Besuchet & I. Löbl) #37b [sifting in Tura Peak's forest] 3 males & 7 females in MHNG.

Description. Length 0.95–1.00 mm. Body brown. Head with vertex and frons coarsely, very densely punctate; pubescence very short, recumbent, long occipital setae absent. Vertexal pits in depressions, situated in line with posterior eye margin; interval between them slightly larger than that between them and lateral head margins. Occipital carina absent. Posterior part of vertex impressed. Median part of vertex slightly convex in female, modified in male. Occipital edge obliquely impressed, high. Dorsal side of neck with conspicuous longitudinal carinae. Lateral margins of frons not crenulate; postantennal denticles minute, sometimes barely visible. Antennal segments 3 to 9 about as long as wide; segment 10 slightly longer and distinctly wider than segment 9; segment 11 about as long as segments 5 to 10 combined. Pronotum slightly wider than head with eyes, lacking median sulcus; basal foveae well-delimited, very large; median basal fovea largest; lateral folds inconspicuous; basomedian carina absent. Pronotal and elytral punctation subequal, coarse and dense, punctures larger than those on head; pubescence short and recumbent, longer than that on head. Prosternal carina low. Paranotal carinae present. Prohypomera with secondary, semicircular, punctate sulcus. Metasternum conspicuously short, with puncture rows along anterior margin and intercoxal process. Abdominal tergites with punctation dense, almost as coarse as that on elytra; tergite 1 with discal carinae converging apically, about as long as third of tergal length, or extending up to tergal midlength, separated at base by interval slightly smaller than half of tergal width, basal crenulation absent; sternite 1 punctate along basal margin of intercoxal process; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 451. Vertex elevated between vertexal pits to form large tubercle. Frons at middle shallowly impressed, upper part of frons strongly inclined, separated by angle from lower, smooth and vertical central part of frontoclypeus, lateral margins of frontoclypeus formed by carinate margins of genal impressions. Frontal angle with several long setae. Anterior part of frontoclypeus weakly prominent, bilobed and weakly swollen, very densely punctate, with punctures somewhat smaller than those on vertex. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 191–192; scape parallel-sided in dorsal view, weakly flattened mesally, strongly extended and subtriangular ventrally, bearing setal row; pedicel elongate, weakly curved and weakly thickened apically; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 206) with large, oblique apophysis and row of flat sensillae. Abdominal sternites 1 and 2 very short, subequal in length, combined slightly longer than half of metasternum, sternite 2 with median carina indistinct; sternites very finely punctate; sternite 2 with pair of conspicuously long, curved, admesal setae; sternite 6 (Fig. 208) impressed, with two pairs of long, flat setae. Aedeagus (Fig. 204) 0.220 mm long.

Female. Frons gradually inclined anteriorly, entire frontoclypeus punctate. Eyes with 10 to 12 facets. Abdominal sternites 2 and 3 coarsely punctate; sternite 2 large, at middle about 3 times as long as sternite 1 and 1.5 times as long as metasternum, with median carina about as long as one-tenth of sternite.

Distribution. India: Meghalaya.

Comments. This species may be easily distinguished by the coarse abdominal punctation in combination with the presence of the prohypomeral sulcus, the metasternal puncture rows, and the male scape subtriangular ventrally.

Morana derosa sp. nov.
(Figs 6, 376–377, 380–381, 388)

Type material. Holotype (male, in MHNG): India, West Bengal, Darjeeling Distr., Sevoke, 200 m, 7.X.1978 (C. Besuchet & I. Löbl) #3 [sifting in forest, in ravine].

Paratype (female, in MHNG): same data as holotype.

Description. Habitus as in Fig. 6. Length 1.00 mm. Body yellowish. Head in female with lateral parts of vertex and most of frons coarsely and very densely punctate, middle part of vertex finely punctate. Head in male coarsely and very densely punctate on small admesal parts of vertex, remainder of head strongly modified by large excavation; pubescence short, recumbent. Vertexal pits in male not visible, in female in large impressions, situated about in same line as posterior eyes margins; interval between them as large as that between them and lateral head margins. Occipital carina extended about to line of eye centres, distinct anteriorly, almost evanescent beyond. Middle of vertex flattened in female. Female frons with fairly large and well-delimited transverse impression. Lateral margins of frons rounded, not or slightly crenulate;

postantennal denticles distinct. Occipital area almost transverse, vertical, high in female, modified in male. Antennal segment 3 distinctly wider than long; segments 4 to 6, 8 and 9 subequal, slightly shorter than segment 3; segment 7 slightly larger than segments 6 or 8, slightly wider than long; segment 10 slightly longer and much wider than segment 9, much wider than long; segment 11 about as long as combined length of segments 6 to 10. Pronotum in female as wide as, in male slightly narrower than head with eyes, lacking median sulcus; basal foveae large, deep, well-delimited, separated by narrow ridges, lateral folds present only near base; basomedian carina absent. Pronotal, elytral, and abdominal punctation very fine; pubescence longer than on head, recumbent. Prosternal carina low. Prohypomera, metasternum and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae converging, extending up to apical third of tergal length, separated at base by half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 6. Frons not prominent anteriorly. Most of vertex and entire frons excavated and smooth. Bottom of excavation subdivided by transverse carinae or ridges in three parts. Posterior part narrowed toward neck, separated from neck by narrow occipital ridge bearing at middle two short, horizontal setal tufts. Elevated lateral parts of vertex bearing setae longer than remaining head pubescence and oriented mesally. Upper surface of lateral parts of vertex flattened, each with conspicuous, slightly elevated, asetose, microsculptured vertexal patch that is strongly elongate, droplet-like, narrowed anteriorly. Posterior vertexal excavation with low, transverse, middle carina, and delimited anteriorly by angulate ridge bearing at each side very short setal tuft, elevated at middle to form small, vertical point. Middle part of excavation much deeper than posterior part, gradually narrowed mesally, at middle very narrow, extending laterally to lateral head margins. Anterior part of excavation separated from middle part by V-shaped ridge that is gradually elevated laterally and forming vertical separation. Middle of V-shaped ridge bearing fan-like, vertical setal tuft. Anterior part of excavation about as deep as middle part, with low mesal ridge. Middle of upper, anterior excavation margin bearing fairly long, horizontal setae oriented apically. Upper lateroposterior margin of excavation bilobed, anterior lobe narrow, with short setae oriented mesally, posterior lobe wider, bearing curved setae oriented obliquely anteriorly. Frontoclypeus not modified, with anterior margin arcuate, bearing long setae pointed anteriorly. Genal impressions small. Eyes with about 30 facets. Antennal scape and pedicel as in Fig. 380–381; scape subcylindrical in dorsal view, flattened dorsoventrally (lateral view); pedicel thickened apically; club not modified. Mesal side of protibiae with single large, spatulate sensillum. Apex of abdominal tergite 5 as in Fig. 376. Abdominal sternite 2 strongly shortened mesally, at middle about as long as sternite 1, and as long as one-third of metasternum, with median carina indistinct, about one-fifth of mesal sternal length; sternite 6 (Fig. 377) lacking obvious specific characters. Aedeagus (Fig. 388) 0.250 mm long.

Female. Head as described above. Eyes with 8 facets. Abdominal sternite 2 at middle about 2.5 times as long as sternite 1 and as long as metasternum, with median carina very short, barely visible, about one-tenth of median sternal length.

Distribution. India: West Bengal.

Comments. *Morana derosa* may be easily separated from its congeners by the large excavation of the male head that extends up to the occipital edge.

Morana diatretaria sp. nov.
(Figs 129–130, 160, 162–163, 445)

Type material. Holotype (male, in MHNG): East Malaysia, Sarawak, Gunung Matang 20 km W Kuching, 800 m, 13.V.1994 (I. Löbl & D. Burckhardt) #2a [sifting of vegetational debris near creek in] submontane forest.

Paratypes (15): same data as holotype, 4 males & 11 females in MHNG & PCSK.

Description. Length 0.9 mm. Body brown. Head with punctation dense and fairly coarse on lateral parts of frons, most of frons and vertex with punctation dense and fine or very fine, hardly visible; pubescence fairly long, recumbent, long occipital setae absent. Vertexal pits large, well- delimited, situated about in line of posterior eye margins; interval between them as large as or smaller than that between them and lateral head margins. Occipital carina distinct, extending anterior to line of vertexal pits. Middle of vertex flattened. Frons impressed medio-anteriorly. Lateral edges of frons not elevated, finely crenulate, forming postantennal angles, with or without minute postantennal denticles. Occipital edge high, subangulate. Neck lacking dorsal impressions or carina. Antennal segment 3 about as long as wide; segments 4 to 6 equally large, wider than long; segments 7 to 9 equal, slightly longer than segment 6; segment 10 slightly longer and wider than segment 9; segment 11 almost as long as segments 6 to 10 combined. Pronotum about as wide as head with eyes, lacking median sulcus; three inner basal foveae large and distinct; outer basal foveae rather indistinct; lateral folds indistinct; basomedian carina present. Pronotal, elytral, metasternal, and abdominal punctation very fine; dorsal pubescence long and semi-erect. Prosternal carina low. Paranotal carinae present. Prohypomera, metasternum, and abdomen lacking

puncture rows. Metasternum very short. Abdominal tergite 1 with discal carinae arcuate and converging, reaching tergal apex, separated at base by about two-thirds of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct in oblique view.

Male. Head as in Fig. 445. Anterior part of frons obliquely inclined, shiny. Centre of frontoclypeus elevated to form semi-circular, high and acute ridge bearing flat setae. Area delimited by semi-circular ridge impressed to form small cavity, surface above cavity delimited by line bearing several vertical setae. Latero-anterior parts of frons not elevated, obliquely inclined. Lower part of frontoclypeus with large vertical ridge reaching bottom of semi-circular ridge, and two large, horizontal, almost triangular ridges. Vertical ridge bearing rows of long setae diverging dorsolaterally, horizontal ridges with few setae directed obliquely dorsally. Anterior margin of frontoclypeus overlapped by ridges, appearing truncate in frontal view. Genal impressions small. Eyes with about 20 facets. Antennal scape and pedicel as in Figs 129–130; scape short, thickened ventrally, cylindrical in dorsal view, with mesal side flattened; pedicel longer than scape, straight, narrow in basal half, in apical half swollen; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Apex of abdominal tergite 5 as in Fig. 160, with two narrow and one wide, curved sensillae, and few setae. Abdominal sternite 2 strongly narrowed toward middle, at middle about 1.4 times as long as sternite 1, shorter than half of metasternum, with median carina extended to sternal mid-length; sternite 6 (Fig. 162) with three pairs of long and flat setae. Aedeagus (Fig. 163) 0.210 mm long.

Female. Frontoclypeus with Y-shaped carina. Frons shallowly impressed at middle and with two minute, admesal, foveiform impressions. Eyes with 7 or 8 facets. Abdominal sternite 2 large, at middle about 5 times as long as sternite 1 and slightly longer than metasternum, with median carina almost one-third of sternal length.

Distribution. Borneo: Sarawak.

Comments. This is one of the few species that has the first abdominal tergite with very long discal carinae. It may be distinguished from congeners possessing a similar abdomen by the short scape, the very short metasternum, the presence of horizontal frontoclypeal ridges in the male, and in the female by the Y-shaped frontoclypeal ridge.

Morana discedens Sharp, 1874
(Figs 69–70, 84, 86, 100, 426)

Morana discedens Sharp, 1874: 118.
Morana discedens; Jeannel, 1958: 72; Tanokuchi, 1988: 525.

Material examined (102): Holotype male, labeled 'Type HT (round, red) / Japan, G. Lewis 1910–320 / *Morana discedens* Type. D.S.' according to the description collected in Nagasaki, in NHML; Japan, Honshu, Chiba pref, Fudagô, Kimitsu, Mt. Kiosumi, 180 m, 19.VII. 1991 (A. Smetana) J1, 2 females in MHNG; Ehime pref., Omogo Nat. Park, rd to Ishizuchi, 1350 m, 13.VIII.1980 (I. Löbl) #31b [sifting leaves at foot of old *Fagus* (with bamboo)], 1 male in MHNG; Nagasaki, 19.IV.1881 (G. Lewis) 1 in NHML; Gifu pref., 8 km SE of Osaka, 750 m, 1.VIII. 1980 (I. Löbl) #25b [sifting moss and grass], 11 males & 27 females in MHNG; Kyoto pref., Kyoto, 18–20.VII.1980 (C. Besuchet) #19b [sifting dead leaves and rotting wood in shallow wooded ravine] 7 males & 7 females in MHNG; Kyoto pref., Yaseyuen/Kyoto, 4.VIII. 1980 (C. Besuchet) #9b [sifting dead leaves in ravine] 7 males in MHNG; Kyoto pref., Seryô-Tôge, 13 km N Kyoto, 500–600 m, 6.VIII.1980 (I. Löbl) #26b [sifting dead leaves at base of rocky cliff] 2 females in MHNG; Nara pref., Nara park, 8.VIII.1980 (I. Löbl) 10 females in MHNG; Nara pref., Mt. Kasuga, 8.XI.1952, 1 male in MHNG; same data, but 26.V.1954, 3 females in MHNG; Osaka pref., Takatuky, 13.V.73 (K. Sawada) 1 male & 1 female in MHNG; Ogawa, Sakamoto Mura, Kumamoto P., 4.IV.1985 (T. Tanabe) 1 male in MHNG.

Description. Length 1.20 to 1.30 mm. Body light reddish-brown. Vertex and middle part of frons very finely punctate, lateral parts of frons fairly coarsely and densely punctate, in some specimens punctation on middle of vertex coarser and denser than that on lateral parts of vertex, similar to that on lateral parts of frons; pubescence short, recumbent, long occipital setae present, in some specimens difficult to see. Vertexal pits close to occipital edge, situated in line of posterior eye margins in female, slightly anterior to posterior eyes margins in male; interval between them larger than that between them and lateral head margins. Occipital carina long, extending from neck to anterior line of vertexal pits. Middle part of vertex convex. Occipital area narrow, vertical, angulate. Lateral margins of frons not crenulate; postantennal denticles present. Antennal segment 3 about as long as wide or slightly longer than wide; segments 4 to 6 equal, shorter than segment 3, wider than long; segments 7 and 8 about as segment 3; segment 9 about as long as and slightly wider than segment 8; segment 10 moderately wider and longer than segment 9; segment 11 about as long as combined length of segments 6 to 10. Pronotum almost as wide as head with eyes, lacking median sulcus; basal foveae comparatively small, subequal in size, not well-delimited; middle basal fovea situated anterior to line of remaining basal foveae; basomedian carina present; lateral folds indistinct. Paranotal carinae present, prohypomera lacking puncture row. Elytra lacking discal impression or stria. Pronotal, elytral, and abdominal punctation uniformly very fine; pubes-

cence fairly short, semi-erect. Prosternal carina low. Metasternum and abdominal sternite 1 lacking puncture rows, entirely very finely punctate, uniformly pubescent. Abdominal tergite 1 with discal carinae parallel or weakly diverging apically, extending to tergal mid-length, separated at base by about half of tergal width, basal crenulation absent; sternite 2 with basal crenulation barely visible.

Male. Head as in Fig. 426. Middle part of frons abruptly impressed, posterior side of impression strongly inclined, finely punctate, bottom of impression almost horizontal, with two small, round tubercles each bearing long, flat seta pointed anteriorly. Lateral parts of frons prominent, each forming acute process with outer margin concave, inner margin convexly rounded. Tip of frontal processes curved ventrally, each bearing flat seta. Upper part of frontoclypeus with transverse lamina bearing conspicuous, wide, hyaline setae converging vertically, joined and curved at tip. Narrow area below excavated. Ventral part of frontoclypeus strongly prominent, with high mesal ridge bearing diverging setae. Anterior margin of frontoclypeus subangulate, with few vertical setae. Genal impressions shallow. Eyes with about 30 facets. Antennal scape (Figs 69–70) convex dorsally, weakly thickened apically in dorsal view, with ventral side swollen near base, strongly impressed and smooth beyond swollen basal area, with apical angle prominent ventrally (frontal view); pedicel evenly wide, weakly curved, about as long as scape in dorsal view; club not modified. Mesal side of protibiae with single, large, spatulate sensillum. Apex of tergite 5 with single flat sensillum near centre (Fig. 84) and one robust, lateral seta. Abdominal sternite 2 at middle about 3 times as long as sternite 1, slightly shorter than metasternum, with median carina about one-seventh of median sternal length; sternite 6 with pair of large apical setae, basal angles prominent, acute, mediobasal apophysis absent (Fig. 86). Aedeagus (Fig. 100) 0.200 mm long.

Female. Frons obliquely inclined and impressed at middle. Eyes with 8 to 10 facets. Abdominal sternite 2 at middle about 4 times as long as sternite 1 and distinctly longer than metasternum, with median carina one-seventh of median sternal length.

Distribution. Japan: Honshu, Shikoku and Kyushu.

Comments. This species is characterized by the shape of male scape. It may be also distinguished by the form of the male frontoclypeus in comparison to similar Japanese congeners.

Morana distensiceps sp. nov.
(Figs 274–275, 291, 293, 303, 465)

Type material. Holotype (male, in MHNG): Taiwan, Nantou Hsien, Meifeng, 2130 m, 12.V.1991 (A. Smetana) T78 [sifting moss and humus underneath, on large rotting fallen trees in original evergreen broadleaved forest].

Description. Length 1.30 mm. Body brown. Similar to *M. lusciosa*, from which it differs as follows: Middle part of vertex and frons more elevated, limited by flattened lateral areas. Lateral contours of head not evenly rounded. Vertexal pits barely visible, situated about in line of posterior eye margin. Occipital carina short, reaching to line of vertexal pits. Pair of long occipital setae present. Punctation of frons and vertex slightly finer than that in *M. lusciosa*. Occipital edge evenly arcuate. Pronotum as wide as head, eyes included, with discal punctation distinctly sparser than that on head or in *M. lusciosa*, some of puncture intervals as large as puncture diameters. Lateral parts of pronotum very finely punctate. Elytra with discal sulcus present but short, about as long as fourth of elytral length. Elytral and abdominal pubescence semi-erect. Paranotal carinae present. Prohypomera smooth. Prosternal carina low. Abdominal tergite 1 with discal carinae diverging apically, almost reaching tergal mid-length, separated at base by interval almost one-half of tergal width; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 465. Frons inclined to form almost vertical, flat, and extremely densely punctate surface. Lower margin of vertical surface bearing long setae pointed ventrally, centre extended by short, vertical ridge bearing short, oblique setae. Anterior part of frontoclypeus moderately, gradually elevated toward centre, anterior margin of frontoclypeus slightly rounded. Antennal scape and pedicel as in Figs 274–275; scape lacking impression, subcylindrical in dorsal view; pedicel with straight outer margin, rounded inner margin; club not modified. Eyes small, with 15 facets, visible in dorsal view. Mesal side of protibiae with one large, spatulate sensillum. Apex of abdominal tergite 5 (Fig. 291) with one conspicuously large, blunt sensillum and several smaller, setiform sensillae at middle. Abdominal sternite 2 large, not shortened mesally, at middle about 3 times as long as sternite 1, slightly longer than metasternum, with median carina about one-fifth of mesal length of sternite; sternite 6 (Fig. 293) with small, basal apophysis near middle. Aedeagus (Fig. 303) 0.330 mm long.

Female unknown.

Distribution. Taiwan.

Comments. This species uniquely possesses short but distinct elytral sulci, and abdominal sternite 1 has shorter discal carinae in combination (see also comments under *M. lusciosa*).

Morana dorsuosa sp. nov.
(Figs 321, 333, 335, 340, 344, 480)

Type material. Holotype (male, in MHNG): Thailand, Chiang Mai Prov., Chiang Dao distr., Doi Chiang Dao, 760 m, 16.X.86 (P. Schwendinger).

Paratypes (66): same data as holotype, 1 male & 10 females in MHNG & PCSK; same data but 880 m, 21.II.1986, 5 males & 4 females in MHNG & PCSK; Thailand, Mae Hong Son Distr., Ban Maeo Microcave, 1450 m, 9.X.1990 (P. Schwendinger) 5 males & 3 females in MHNG; same data, but 1250 m, 15.XII.1990, 2 females in MHNG; Chiang Mai Prov., Doi Suthep, 1050 m, 5.XI.1985 (D. Burckhardt & I. Löbl) [sifting rotting wood, bark and fungi in very moist ravine] 12 males & 5 females in MHNG & PCSK; same data but 1150 m, 14.I.1987 (P. Schwendinger) 2 males & 7 females in MHNG & PCSK; same data but 1215m, 15.IX.1986, 2 males & 3 females in MHNG; same data but 1090 m, 2.XII.1985, 3 females in MHNG; Prachvap Khiri Khau Prov., Thap Sakae Distr., Huay Yang Nat. Park, Huay Yang Waterfall, 750 m, 27. I. 1991 (P. Schwendinger) 3 females in MHNG.

Description. Length 0.90–1.00 mm. Body light brown. Head with vertex and middle of frons densely, very finely punctate, punctation much denser and slightly coarser on lateral parts of frons; pubescence short, recumbent, long occipital setae absent. Vertexal pits in fairly large impressions, situated about in line of eye centres in female, slightly beyond eye centres in male; interval between them slightly larger than that between them and lateral head margins. Occiput with conspicuous median sulcus, with carina situated in sulcus, extending anteriorly up to line of anterior margin of foveal impressions. Frons with two admesal, smooth impressions. Lateral margins of frons not or hardly crenulate; postantennal denticles minute. Dorsal side of neck with foveiform impression. Antennal segment 3 about as long as wide; segments 4 to 6 wider than long; segment 7 to 9 slightly longer than segment 6, not or slightly wider than long; segment 10 distinctly wider than long; segment 11 about as long as combined length of segments 7 to 10. Pronotum as wide as or slightly wider than head with eyes, lacking median sulcus or impression; basal foveae deep and small; middle basal fovea situated anterior to line of remaining basal foveae; lateral folds distinct; mediobasal carina present. Pronotal, elytral, metasternal, and abdominal punctation very fine. Pronotal and elytral pubescence recumbent, slightly longer than that on head, except for long setae at elytral apices. Elytra with shallow, distinct discal impression extending from outer basal fovea almost up to discal mid-length. Prosternal carina low. Prohypomera, metasternum and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae converging, extending to mid-length or slightly beyond tergal mid-length, separated at base by half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 480. Frons with mesal, blunt tubercle. Lateral parts of frons not prominent, weakly inclined and with rounded margins, bearing very short, dense setae. Margin below mesal tubercle concave. Mesal part of frontoclypeus vertical, smooth, delimited from venter, and just above anterior frontoclypeal margin by semicircular carina bearing conspicuous, very dense row of short sensillae, and two longer setae at middle. Anterior frontoclypeal margin bearing several long, curved setae that are triangular at middle, truncate and rectangular laterally. Genal impressions fairly large. Eyes with 16 to 20 facets. Antennal scape and pedicel as in Fig. 321; scape cylindrical in dorsal view, not swollen ventrally; pedicel small, cylindrical; club not modified. Mesal side of protibiae (Fig. 340) with two large, spatulate sensillae Apex of abdominal tergite 5 as in Fig. 333. Abdominal sternite 2 moderately narrowed mesally, at middle about 3 times as long as sternite 1, distinctly shorter than metasternum, with median carina about one-tenth of mesal sternal length, sternite 6 (Fig. 335) impressed at middle, with apical, setiferous tubercle and narrow basal apophysis. Aedeagus (Fig. 344) 0.220 mm long.

Female. Anterior margin of frons angulate or very weakly carinate. Anterior part of frontoclypeus bearing long pubescence. Middle of anterior frontoclypeal margin weakly convex. Eyes with 6 to 9 facets. Abdominal sternite at middle 2 to almost 5 times as long as sternite 1 and almost 1.5 times as long as metasternum, with median carina very short, about one-tenth of mesal sternal length.

Distribution. Thailand.

Comments. This species may be distinguished by the presence of a vertexal sulcus. Its aedeagus is similar to that of *M. loquax*.

Morana elegans Tanokuchi, 1988
(Figs 63, 73–74, 85, 87, 101, 427)

Morana elegans Tanokuchi, 1988: 529.

Type material. Material examined (9, gifts from NSMT to MHNG): Japan, Wakayama pref., Hoihoi-Dani, Mt. Ohto, 6.V.1994 (S. Nomura) 3 males & 2 females; Osaka, Usitaki, 10.VI.1971 (K. Sawada) 1 male; Kanagawa pref., Manazuru – misaki (Tul.), Manazuru town, 5.V.2002 (S. Arai) 2 males & 2 females.

Description. Length 1.25 mm. Similar to *M. discedens* from which it differs as follows: vertex very finely punctate, occipital carina in male much longer, extended onto frons, almost up to anterior frontal margin (as in *M. puella*). Antennal segments 7 and 8 subequal, slightly larger than segment 6.

Male. Head as in Fig. 427. Frons similar to that in *M. discedens*. Frontoclypeus with transverse, horizontal carina bearing hyaline, vertical lamina and two wide sensillae joined at middle, and lateral, large, horizontal, curved setae. Inferior part of frontoclypeus deeply excavated, anterior margin strongly prominent,

exposed in dorsal view, arcuate, with small, cariniform tubercle at middle, sides of tubercle bearing setae pointed laterally. Antennal scape and pedicel (Figs 73–74) similar to those in *M. discedens*; impression on ventral side of scape shallower; segments 9 to 11 strongly modified; segment 9 about as long as or slightly longer than segment 8, strongly widened ventrally by process bearing long setae; segment 10 about twice as long as segment 9, with deeply excavated outer side, margins of excavation extended and gradually narrowed outward; segment 11 with basal stalk situated asymmetrically at inner margin, base widely impressed, widest at base, gradually narrowed apically, in lateral view appearing subtriangular, only moderately longer than wide (Fig. 63). Metasternum flattened at middle. Protibiae, abdominal tergite 5, and sternite 6 (Figs 85, 87) similar to those in *M. discedens*. Abdominal sternite 2 at middle about 3 times as long as sternite 1 and as long as metasternum, with median carina about one-sixth of mesal sternal length. Aedeagus (Fig. 101) 0.340 mm long.

Female. Eyes with 8 facets. Abdominal sternite 2 at middle slightly more that 3 times as long as sternite 1, distinctly longer than metasternum, median carina about one-fifth of mesal sternal length.

Distribution. Japan: Honshu.

Comments. This species may be distinguished by the shape of the male antennal characters from its Japanese congeners that have similar punctation.

Morana epastifrons sp. nov.
(Figs 62, 81–82, 89, 91, 104, 431)

Type material. Holotype (male, in MHNG): China, Zhejiang, Tienmushan, 29.IV.1993 (G. de Rougemont).

Description. Length 1.30 mm. Body light brown. Vertex and frons with coarse and very dense punctation, tempora and occipital area very finely punctate; pubescence very short and recumbent, pair of long occipital setae present. Vertexal pits close to posterior head margin; interval between them more than twice that between them and lateral head margin. Occipital carina long, extending anteriorly up to anterior eye margin. Middle part of vertex elevated, flat, sharply delimited by inverted U-shaped impression. Lateral margins of frons not crenulate; postantennal denticles present. Antennal segment 3 about as long as wide; segment 4 to 7 subequal, each wider than long; segments 9 to 11 sexually modified, segment 11 as long as segments 5 to 10 combined. Pronotum slightly narrower than head with eyes, lacking median sulcus; basal foveae distinct, subequal, well-delimited; median fovea more distant from base than remaining basal foveae; basomedian carina present; lateral folds low. Pronotal, elytral and abdominal punctation very fine; pubescence longer than that on head. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Metasternal pubescence in median part of metasternum longer and denser than that on lateral parts of metasternum. Abdominal tergite 1 with discal carinae divergent, extending slightly beyond mid-length of tergite, interval between their bases slightly smaller than half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 431. Lateral parts of frons prominent and each forming flat, triangular process. Frontal processes obtuse at tip, each bearing robust, long seta arising from ventral side of tip. Anterior part of frons deeply and broadly excavated. Upper central part of excavation with small, horizontal lamina bearing long vertical setae raising above frons and curved at tip anteriorly, with two minute, setose tubercles. Bottom of excavation extending anteriorly, with mesal ridge and lateral, arcuate carinae. Centre of upper part of frons with pair of long, robust setae curved in horizontal plane and meeting at tip. Anterior part of frontoclypeus slightly swollen, very finely punctate and pubescent, anterior margin of frontoclypeus truncate, delimited by small lateral denticle, lateral margins of frontoclypeus arcuate. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 81–82; scape thick and short, flattened dorso-anteriorly; pedicel longer than scape, flattened internally, in basal half straight and evenly thick, becoming gradually thicker toward apex; club modified (Fig. 62). Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 89) with one large and one small, robust, apical sensilla. Abdominal sternite 2 not narrowed toward middle, at middle about as long as metasternum, about 3 times as long as sternite 1, with median carina about one-fourth of median sternal length; sternite 6 with two setiform sensillae and an asymmetrical basal process (Fig. 91). Aedeagus (Fig. 104) 0.270 mm long, with apical process strongly curved, bearing two setae; internal sac with complex sclerites.

Female unknown.

Distribution. China: Zhejiang.

Comments. This species is apparently close to *M. discedens*. It shares with it the large second abdominal sternite for both sexes. It may be distinguished by the shape of the male scape and antennal club.

Morana eromenion sp. nov.
(Figs 174–176, 185–186, 197, 449)

Type material. Holotype (male, in MHNG): India, Meghalaya, Khasi Hills, Mawphlang, 1800 m, 28.X.1978 (C. Besuchet & I. Löbl) #32b [sifting in forest].

Paratypes (26): with same data as holotype, 10 males & 13 females in MHNG & PCSK; Meghalaya, Khasi Hills, above Shillong, 1850–1950 m, 25.X.1978 (C. Besuchet & I. Löbl) #27 [sifting in Shillong Peak's primary forest] 1 male & 2 females in MHNG & PCSK.

Description. Length 1.00–1.05 mm. Body brown. Head with vertex and frons entirely covered by coarse, very dense punctation; pubescence short, recumbent. Long occipital setae absent. Vertexal pits barely visible, situated about in line of posterior eye margins; interval between them about that between foveae and lateral eye margins. Occipital carina short, distinct only on inclined occipital area. Middle of vertex convex. Occipital edge high, oblique, weakly arcuate. Neck with shallow admesal impressions. Lateral margins of frons slightly crenulate; postantennal denticles small. Antennal segment 3 about as long as wide; segments 4 to 6 equally large, wider than long; segments 7 to 9 each slightly longer than segment 6; segment 10 slightly longer and distinctly wider than segment 9; segment 11 almost as long as segments 6 to 10 combined. Pronotum slightly wider than head with eyes, lacking median sulcus; basal foveae large, separated by narrow ridges; mediobasal ridge present; lateral folds distinct. Pronotal and elytral punctation coarse and very dense, pronotal punctation denser and coarser than that on elytra; pronotal and elytral pubescence slightly longer than that on head, recumbent. Prosternum swollen at middle. Paranotal carinae present. Prohypomera with additional, semicircular carina, lacking puncture row. Metasternum very finely punctate, impressed and with puncture row along margin of metacoxal process. Abdominal tergite 1 very finely punctate, with discal carinae conspicuously elevated, parallel, extending to posterior third of tergal length, separated by about one-third of basal width of tergite, basal crenulation absent; sternite 1 with mediobasal puncture row; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 449. Lateral parts of frons prominent to form large processes lying in plane of vertex and rounded anteriorly. Frons between posterior parts of processes with two shallow impressions separated at middle by swollen area. Frons between anterior parts of processes deeply impressed. Middle part of frontoclypeus with small, transverse ridge bearing two pairs of large, flat setae oriented anteriorly, one pair at middle and second pair at lateral edge. Anterior margin of frontoclypeus convex in dorsal view. Anterior part of frontoclypeus strongly elevated to form large, almost vertical process flattened anteriorly, extended by tubercle dividing posterior part of genal impressions. Anterior side of frontoclypeal process pubescent. Eyes with 25 to 28 facets. Antennal scape and pedicel as in Figs 185–186; scape almost cylindrical in dorsal view, with flat anterior side; pedicel subcylindrical; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 175) slightly emarginate at middle, with one bifid and two simple, wide sensillae, and row of narrow setae. Abdominal sternite 2 strongly shortened toward middle, at middle barely longer than sternite 1, slightly shorter than half of metasternum, with basal carina reaching sternal mid-length; sternite 6 (Fig. 176) with two pairs of long, flat setae and one pair of long, narrow setae. Aedeagus (Fig. 197) 0.160 mm long.

Female. Frons shallowly impressed between antennal tubercles. Eyes with 6 to 8 facets. Abdominal sternite 2 large, at middle about 2.5 times as long as sternite 1 and slightly longer than metasternum, with median carina about one-sixth of mesal sternal length.

Distribution. India: Meghalaya.

Comments. This species is characterized by sulcate prohypomera, in combination with the moderately distant discal carinae of the first abdominal tergite, subcylindrical male scape and pedicel, and very short male abdominal sternite 2.

Morana exilis (Reitter, 1884) comb. nov.
(Figs 327, 337, 339, 343)

Bythinophanax exilis Reitter, 1884: 406

Type material. Material examined (1, in MNHN): Holotype male, labeled 'Borneo / *Bythinophanax exilis* m. [original Reitter's label]/ Tameanglaiang Borneo / Muséum Paris 1917 Coll. A. Raffray / Type [red] / *B. exilis* A. Raffray det.'.

Description. Length 0.95 mm. Body brown. Head with most of vertex and frons very finely and densely punctate, punctures on medio-apical part of vertex and lateral parts of frons hardly or distinctly coarser, and clearly denser, than those on lateral parts of vertex; pubescence short, recumbent, long occipital setae absent. Vertexal pits situated slightly beyond line of eye centres; interval between them about that between them and lateral head margins. Occipital carina extending between vertexal pits. Middle of vertex convex. Lateral margins of frons not crenulate; postantennal denticles present. Occipital edge weakly arcuate, vertical, low. Neck lacking impression. Antennal segment 3 about as long as wide; segments 4 to 8 subequal, wider than long; segment 9 hardly larger than segment 8; segment 10 much larger than segment 9, wider than long; segment 11 about as long as combined length of segments 6 to 10. Pronotum as wide as head with eyes, lacking median sulcus; basal foveae shallow, not clearly delimited, subequal in size; basomedian carina absent; lateral folds weakly developed. Pronotal punctation dense and coarse on large median part of disc, very fine on lateral parts of disc; pubescence recumbent, slightly longer than on head. Elytral punctation

dense, comparatively coarse, finer than on middle part of pronotal disc; pubescence as on pronotum. Prosternal carina low. Paranotal carinae present. Prohypomera lacking puncture rows. Metasternum very finely punctate, with distinct puncture row along mesocoxal cavities. Abdominal punctation very fine. Abdominal tergite 1 with discal carinae parallel, extending up to apical third of tergite, separated at base by interval almost as large as half of tergal width, basal crenulation present, inconspicuous; sternite 1 lacking basal puncture row; sternite 2 with distinct basal crenulation.

Male. Frons not prominent laterally, impressed at middle. Lateral frontal margins weakly notched at postantennal tubercles, obliquely converging anteriorly. Middle part of frons impressed. Middle of anterior frontal margin appearing transverse in dorsal view. Frontoclypeus below lateral frontal edges narrowly excavated and smooth, excavation divided by narrow vertical middle area; lower margin of middle area bearing two vertical setal tufts; area below narrowly excavated. Anterior part of frontoclypeus elevated to form almost vertical ridge with upper margin sinuate in frontal view, bearing at middle two short, robust setae curved ventrally. Lateral portions of frontoclypeal excavation almost horizontal. Anterior side of frontoclypeal ridge pubescent. Anterior margin of frontoclypeus transverse. Eyes with about 35 facets. Antennal scape and pedicel as in Fig. 337; scape cylindrical; pedicel slightly curved, weakly thickened apically; club not modified. Protibiae (Fig. 339) with two large, spatulate sensillae. Apex of abdominal tergite 5 as in Fig. 327. Abdominal sternite 2 strongly shortened mesally, in middle about as long as sternite 1, slightly shorter than half of metasternum, with median carina almost reaching apical margin. Aedeagus (Fig. 343) 0.140 mm long.

Female unknown.

Distribution. Borneo: Central Kalimantan.

Comments. This species may be easily distinguished from most of its congeners by the coarsely punctate pronotal center and presence of a puncture row along the mesocoxal cavities. It differs from species that share these characters by the male abdominal sternite 2 at the middle being as long as sternite 1.

The type locality, the present Tamianglayang, is in Kalimantan, close to the borders of the provinces of South Kalimantan and Central Kalimantan, on the main road from Martapura to Amuntai and Muara Teweh.

Morana fastigata sp. nov.
(Figs 312–313, 345, 347, 357–358, 467)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Crocker Range, 1200 m, km 63 rte Kota-Kinabalu – Tambunan, 19.V.1987 (D. Burckhardt & I. Löbl) #31a [sifting vegetational debris in moist ravine at edge of moist forest with *Lithocarpus*, *Castanopsis* and arboreal ferns].

Paratype (male in MHNG): East Malaysia, Sabah, Mt. Kinabalu Nat. Pk., 1500 m, Headquarters at Liwagu River, 1500 m, 25.IV.1987 (A. Smetana).

Description. Length 1.00 mm. Body brown. Head with sexually unmodified parts of vertex and frons densely and coarsely punctate, punctation on lateral parts of frons particularly dense; pubescence short, semi-erect, long occipital setae absent. Vertexal pits and occipital carina absent. Middle part of vertex slightly rounded and inclined anteriorly. Lateral margins of frons not crenulate; postantennal denticles absent. Neck with mediodorsal carina. Antennal segment 3 wider than long; segments 4 to 6 equally large, shorter than segment 3; segments 7 to 9 subequally large, about as long as segment 3; segment 10 distinctly longer and wider than segment 9, wider than long; segment 11 about as long as combined length of segments 6 to 10. Pronotum strongly modified sexually (see below), slightly wider than head with eyes, lacking median sulcus; median and admesal basal foveae subequal, well-delimited; outer basal foveae small; lateral folds absent; basomedian carina absent. Pronotal punctation coarse and fairly dense, coarser and sparser than that on vertex; pubescence fairly long, semi-erect to erect. Elytral punctation dense and fine; pubescence long, semi-erect. Prosternal carina low. Paranotal carinae present. Prohypomera lacking puncture rows. Mesosternum and metasternum punctate along mesocoxal cavities. Abdominal punctation very fine; pubescence long, recumbent. Abdominal tergite 1 with discal carinae converging, extending about to apical fifth of tergite, separated at base by interval as large as or slightly larger than half of tergal width, basal crenulation present; sternite 1 lacking puncture rows; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 467. Middle part of vertex narrowed and gradually elevated beyond, forming large, high process abruptly delimited by crenulate margin. Apicolateral parts of vertex strongly impressed, impunctate, forming smooth, almost vertical areas at each side of vertexal process. Posterior side high and smooth, at middle vertical and carinate, areas facing pronotum reaching laterally temporal patches. Frons not prominent, narrowed anteriorly. Anterior frontal angles slightly prominent to form small, blunt tubercles. Admesal part of anterior margin with two additional tubercles bearing setal tufts pointed anteriorly. Tubercles of frontal margin separated by three equal notches. Centre of anterior part of frontoclypeus elevated to form semicircular, almost vertical, anteriorly smooth process. Tip of frontoclypeal process close to anterior frontal margin; posterior side of frontoclypeal process bearing short, flat, horizontal setae. Anterior

of frontoclypeal margin truncate, bearing few long, curved setae. Genal impression large and deep. Eyes with about 30 facets. Antennal scape and pedicel (Fig. 312–313) cylindrical in dorsal view, not swollen ventrally; club not modified. Most of lateral surface of pronotum smooth and shiny, only lateroposterior parts of pronotum convex and punctate. Smooth pronotal surfaces facing smooth vertexal surfaces. Protibiae lacking large, spatulate sensillae. Mesotibiae (Fig. 345) swollen on apical third. Metasternal punctation much denser on median area than on lateral parts, becoming coarser medio-apically; pubescence becoming much longer toward intercoxal process. Abdominal tergite 5 (Fig. 357) with two pairs of long, flat, apical sensillae; combined length of sternites 1 and 2 about one-half of metasternal length; sternite 2 strongly shortened mesally, at middle about 1.5 times as long as sternite 1, with median carina short, about one-fifth of mesal sternal length, with two admesal tubercles at apical margin; sternite 6 (Fig. 358) with two large, subcontiguous sensillae. Aedeagus (Fig. 347) 0.250 mm long.

Female unknown.

Distribution. Borneo: Sabah.

Comments. This species differs drastically from its congeners by the laterally impressed pronotum, the impressed vertex and the presence of tubercles on abdominal sternite 2. These characters are, in the absence of a female, presumed to be secondary sexual characters of the male.

Morana femoralis sp. nov.
(Figs 152, 154, 166, 170, 446)

Type material. Holotype (male, in MHNG): Thailand, Surat Thani Prov., Ko Samui, Nam Tok Na Muang Forest Park, 30 m, 5.I.1992 (P. Schwendinger).

Description. Length 0.90 mm. Body light brown. Head with punctation dense and very fine; pubescence short and recumbent, long occipital setae absent. Anterior margin of vertexal pits situated in line of eye centres; interval between vertexal pits as large as that between them and lateral head margins. Anterior part of frons with two foveiform impressions. Occipital carina absent. Middle part of vertex almost flat. Lateral margins of frons not crenulate, oblique, moderately inclined; postantennal denticles distinct. Median part of frons impressed. Anterior margin of frons concavely notched. Occipital edge fairly high, subangulate in middle. Neck with two admesal, foveiform impressions. Antennal segment 3 about as wide as long; segments 4 to 6, 8 and 9 subequal, wider than long; segment 7 slightly longer, about as long as segment 3; segment 10 larger than segment 9; segment 11 slightly longer than segments 7 to 10 combined. Pronotum narrower than head with eyes, lacking median sulcus; basal pronotal foveae well-delimited, fairly deep; middle fovea large, extended and narrowed basally to form short, basomedian sulcus; basomedian carina absent; lateral folds inconspicuous. Pronotal, elytral, metasternal, and abdominal punctation very fine, dense; pronotal and elytral pubescence longer than that on head, recumbent. Prosternal carina low. Paranotal carinae present. Prohypomera, metasternum, and abdomen lacking puncture rows. Abdominal tergite 1 with discal carinae slightly diverging apically and extending up to apical fourth, separated at base by almost half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 446. Frons impressed at middle. Frontoclypeus below frontal impression with small tubercle and with flat setae oriented anteriorly and sinuate near tip. Anterior margin of frontoclypeus truncate, not swollen, with minute tubercle at middle. Anterior margin transverse ventrally. Genal impressions comparatively small. Eyes with 32 to 34 facets. Antennal scape, pedicel, and club not modified; scape cylindrical, about twice as long as wide; pedicel almost as long as scape, becoming gradually thicker toward apical fourth, about as wide as scape near apex, 2.5 times as wide as segment 3. Mesal side of protibiae with two large, spatulate sensillae. Metafemora narrow in basal half, strongly swollen and with denticle beyond middle (Fig. 170). Metatibiae angulate near base. Apex of abdominal tergite 5 truncate at middle, with two short, wide sensillae (Fig. 152) near apical margin (as in *M. punctata*). Abdominal sternite 2 impressed at middle, strongly shortened mesally, at middle about as long as sternite 1 and distinctly shorter than half of metasternum, with median carina very short, about one-fifth of metasternal length; sternite 6 lacking modified setae, with small basal apophysis (Fig. 154). Aedeagus (Fig. 166) 0.150 mm long.

Female unknown.

Distribution. Thailand.

Comments. This species is characterized by abdominal sternites 1 and 2 about equally long at the middle, the vertexal carina absent, the shape of the middle basal fovea of pronotum, and the shape of the male metalegs.

Morana galeata sp. nov.
(Figs 369–371, 385, 392–393, 395, 401–402, 485)

Type material. Holotype (male, in MHNG): Thailand, Nakhon Ratchasima Prov., Pak Chong Distr., Khao Yai Nat. Park (NE Bangkok), Khao Khieo, 1150 m, 28.XI.1985 [below 'Air Force Check Point", slope N, sifting vegetational debris in rather dry forest] (D. Burckhardt & I. Löbl).

Paratypes (139): with same data as holotype, 19 males & 66 females in MHNG & PCSK; Khao Yai Nat. Park, [Hills] E heo Suwat Waterfalls, 800–900 m, 1.XII.1985 [sifting vegetational debris] (D. Burckhardt & I. Löbl) 3 males & 5 females in MHNG; Khao Yai Nat. Park, near Headquarters, 750–850 m, 26.XI.–3.XII. 1985, #28b [sifting vegetational debris] (D. Burckhardt & I. Löbl) 13 males & 23 females in MHNG; Nakhon Ratchasima Prov., Khao Yai Nat. Park, Khao Khieo 1020 m, 24.XII.1992 (P. Schwendinger) 3 males & 6 females in MHNG; Phetchaburi Prov., Kaeng Krachan Nat. Park, 300–400 m, 17.XI.1985 [25–30 km from Headquarters, sifting at foot of big trees] (D. Burckhardt & I. Löbl) 1 female in MHNG

Description. Length 1.10–1.15 mm. Body light brown. Head with vertex very finely punctate, modified surface in male excepted, and with frons very finely punctate at middle, fairly coarsely punctate laterally, lacking marginal crenulation; pubescence short, recumbent, with long occipital setae. Vertexal pits absent in male, distinct and situated in line of posterior eye margins, with interval between them as large as that between them and lateral head margins in female. Occipital carina extended about to line of eye mid-length, in some specimens barely visible. Middle of vertex convex in female, modified in male; postantennal tubercles present, in some specimens barely visible. Occipital edge arcuate, fairly high, almost vertical. Dorsal side of neck with median ridge and two admesal foveiform impressions. Antennal segment 3 as long as wide; segments 4 to 6, 8 and 9 subequal, slightly wider than long; segment 7 slightly larger than segment 6, slightly wider than long; segment 10 longer than segment 9 and much wider than long; segment 11 almost as long as combined length of segment 6 to 10. Pronotum slightly wider than head with eyes, in some females about as wide as head with eyes, lacking median sulcus; basal foveae well-delimited, fairly deep, subequal; basomedian carina very short, inconspicuous; lateral folds absent, replaced by small tubercles. Pronotal, elytral, and abdominal punctation extremely fine; pubescence fairly long, recumbent. Prosternal carina low. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Profemora thickened apically, with small, subapical impression and carinate outer margin near apex on mesal side. Mesal side of mesofemora and metafemora with subapical, acute denticle (Figs 392–393, 395). Abdominal tergite 1 with discal carinae parallel or slightly diverging apically, extending about to tergal mid-length, separated at base by about half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 485. Vertex and frons with large, smooth, admesal impressions separated by high mesal ridge. Posterior part of impressions with swollen, round patch. Anterior, frontal part of mesal ridge very narrow, arcuate in lateral view, bearing short pubescence and separated from posterior, vertexal part of mesal ridge by minute notch. Pubescence on vertexal part of mesal ridge oriented anteriorly, pubescence on anterior part of mesal ridge oriented posteriorly. Vertexal part of mesal ridge gradually widened posteriorly, horizontal in lateral view. Frons not prominent, separated from frontoclypeus by carina that is interrupted at middle. Frontoclypeus not modified, punctate, with convex anterior margin. Genal impressions shallow. Eyes with 30 to 35 facets. Antennal scape and pedicel as Figs 401–402; scape slightly widened apically in dorsal view; pedicel subcylindrical, weakly curved; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of tergite 5 (Fig. 369) simple. Abdominal sternite 2 shortened mesally, at middle about twice as long as sternite 1, about as long as two- thirds of metasternum, with median carina almost one-third of mesal sternal length; sternite 6 with long, bifid apophysis and one basal apophysis (Figs 370–371). Aedeagus (Fig. 385) 0.200 mm long.

Female. Frontal impression shallow. Eyes with 6 to 8 facets. Abdominal sternite 2 at middle about 4 times as long as sternite 1 and as long as metasternum, with median carina about one-twelfth of mesal sternal length.

Distribution. Thailand.

Comments. This species differs from its congeners by the denticulate mesofemora and metafemora.

Morana hastulata sp. nov.
(Figs 77–78, 92, 94, 99, 103, 432)

Type material. Holotype (male, in ZMUM): China, Sichuan, Mt. Emei, 1200 m, 26.IX.1994, litter (S. A. Kurbatov).

Paratypes (13): with same data 2 males & 7 females in MHNG, PCSK & ZMUM; same data but 700 m, 21.IX.1994, 2 females in PCSK; same data but 1400 m, 28.IX.1994, 1 male in PCSK; same data but 1600 m, 28.IX.1994, 2 males in PCSK; Sichuan, Qingcheng Shan (30°53'56''N; 103°33'01''E) 650–700 m, 18.V.1997 (M. Schülke) 1 male in PCMS; C. Sichuan, Wenjiang distr., Dujiangyan Co., 56 km NW Changdu, Qingcheng Shan, field ridge (30°54'N; 103°33'E) 975 m, 18.VI.1999 (D. W. Wrase) 1 female in PCMS.

Description. Length 1.10 mm. Body uniformly yellowish. Head shiny, with punctation very fine except on lateral parts of frons, and in female also on medio-anterior parts of frons, lateral parts of frons densely and finely punctate; pubescence short, recumbent, long occipital setae absent. Vertexal pits situated slightly beyond posterior eye margin; interval between them about 1.5 times as wide as that between them and

lateral head margins. Occipital carina long, fairly inconspicuous, extending to anterior line of vertexal pits. Middle of vertex convex. Occipital edge narrow, rounded. Lateral margins of frons not crenulate, angulate posteriorly; postantennal denticles absent or minute. Neck lacking dorsal carina. Antennal segment 3 longer than wide; segments 4 to 6, 8 and 9 subequal, slightly wider than long; segment 7 slightly longer than preceding segments; segment 10 much wider than segment 9, wider than long; segment 11 as long as segments 6 to 10 combined. Pronotum about as wide as head with eyes, lacking median sulcus; basal foveae subequal, small, well-delimited; basomedian carina present but inconspicuous; lateral folds barely distinct. Pronotum, elytra, metasternum, and abdomen very finely and sparsely punctate; pronotal and elytral pubescence recumbent, longer than on head. Prosternal carina low. Paranotal carinae present. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae slightly diverging, reaching up to or almost up to tergal mid-length, separated by interval slightly smaller than half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 432. Frons prominent and partly overlapping frontoclypeus, with anterior margin deeply notched to form subtriangular, lateral processes. Lateral frontal processes short, obtuse, rounded internally, with oblique outer margins. Ventral surface deeply excavate, shiny. Bottom of excavation expanded to form prominent anterior part of frontoclypeus, elevated at mesal part to form large, robust ridge. Anterior margin of frontoclypeus triangular and setose. Two minute tubercles situated beyond median ridge, each bearing one wide seta curved at tip. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 77–78; scape short and robust, strongly swollen ventrally, with conspicuously flat, large inner side; pedicel longer than scape, straight, gradually, weakly thickened toward apex (dorsal view), flattened ventrally; club not modified. Mesal side of protibiae with single large, spatulate sensillum (Fig. 99). Apex of abdominal tergite 5 (Fig. 92) with one large, trifid, central sensillum and one small, admesal sensillum. Abdominal sternite 2 large, slightly narrowed toward middle, at middle about as long as metasternum, 3 times as long as sternite 1, with median carina about as long as third of median sternal length; sternite 6 (Fig. 94) with pair of large setae. Aedeagus (Fig. 103) 0.270 to 0.280 mm long.

Female. Anterior part of frons coarsely punctate, inclined and not delimited from frontoclypeus. Eyes with 6 to 8 facets. Abdominal sternite 2 at middle about 4 times as long as sternite 1 and slightly longer than metasternum.

Distribution. China: Sichuan.

Comments. This species may be distinguished from its congeners by the form of the male frontoclypeus, in combination with the scape impressed mesally and strongly widened ventrally, and the long pedicel.

Morana histanoceroides sp. nov.
(Figs 319–320, 346, 359–360, 479)

Type material. Holotype (male, in ZMUM): [Indonesia] South Sulawesi, nr. Bantimurung, 700 m, litter, 9.V.1997 (S. A. Kurbatov).

Description. Length 1.15 mm. Body reddish-brown. Head with punctation fine but clearly visible, very dense on vertex and frons; pubescence long, recumbent, particularly long occipital setae absent. Vertexal pits situated about in line of posterior eyes margins, interval between them distinctly larger than that between them and lateral head margins. Occipital carina extended to line of anterior margin of vertexal pits. Middle parts of vertex very weakly convex. Frons at middle impressed, with two distinct, foveiform impressions. Lateral margins of frons not crenulate, angulate; postantennal denticles absent. Occipital edge low, rounded, transverse. Neck lacking carina. Antennal segment 3 longer than wide; segments 4 to 6 subequal, slightly wider than long; segment 7 to 9 slightly longer than segment 6, about as long as wide; segment 10 much larger than segment 9, wider than long; segment 11 about as long as combined length of segments 5 to 10. Pronotum slightly wider than head with eyes, lacking median sulcus; basal foveae large, deep, well-delimited; lateral folds distinct; basomedian carina present. Pronotal, elytral, and abdominal punctation very fine; pubescence fairly long, recumbent. Prosternal carina low. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae arcuate, two-thirds of tergite length, separated at base by half of tergal width, basal crenulation absent; sternite 2 with basal crenulation not seen.

Male. Head as in Fig. 479. Frons prominent, gradually narrowed and inclined, with lateral margins oblique, middle part widely impressed. Anterior frontal margin with prominent, acute angles and prominent middle process, forming small, acute triangle (dorsal view). Frontoclypeus ventrally deeply excavated, smooth, with posterior side vertical and carinate at middle, frontoclypeal carina joined to point of middle process of anterior frontal margin. Anterior part of frontoclypeus strongly elevated to form large process that is convex and carinate at tip, bearing very short pubescence on anterior side, smooth, posterior side of frontoclypeus process with minute central tubercle bearing small, fan-shaped, flat structure. Anterior margin of frontoclypeus overlapped by frontoclypeal

process. Genal impressions large, comparatively shallow. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 319–320; scape thickened toward insertion of pedicel, with anterior side very strongly extended and flattened apically to insertion of pedicel; pedicel inserted at basal half of scape, straight, comparatively small, gradually thickened apically; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 as in Fig. 359. Abdominal sternite 6 (Fig. 360) with three pairs of long, flat sensillae. Aedeagus (Fig. 346) 0.230 mm long.

Female unknown.

Distribution. Sulawesi.

Comments. This species possesses the male scape particularly expanded apically. It may be easily distinguished by that character from all congeners, *M. brinevi* excepted. *Morana brinevi* and *M. histanoceroides* differ drastically by the shape of their male pedicels and frons.

Morana hoplomacha sp. nov.
(Figs 167, 171–172, 181–182, 448)

Type material. Holotype (male, in ZMUM): Vietnam, 120 km NNE Ho Chi Minh, env. Cat Tien, UV-light, 14.VII.1995 (A. Napolov).

Description. Length 1.20 mm. Body reddish-brown. Head coarsely and densely punctate on vertex, finely and extremely densely punctate on lateral parts of frons, central portion and sexually modified part of frons impunctate; pubescence short, recumbent, occiput with pair of long setae pointed apicomesally. Vertexal pits inconspicuous, situated anterior to?? line of posterior eye margins, near occipital margin; interval between them larger than that between them and lateral head margins. Occipital carina very short, reaching line of vertexal pits. Middle of vertex slightly convex. Occipital edge fairly low, arcuate. Lateral margins of frons very finely crenulate; postantennal denticles present. Antennal segments 3 to 5 similar, wider than long; segment 6 barely longer than segment 5; segments 7 to 9 slightly longer than segment 6, slightly wider than long; segment 10 as long as and distinctly wider than segment 9; segment 11 as long as segments 5 to 10 combined. Pronotum slightly narrower than head with eyes, lacking median sulcus; basal foveae well-delimited, deep; admesal foveae larger than median and lateral foveae; basomedian carina present; lateral folds distinct. Pronotal, elytral, metasternal, and abdominal punctation very fine; pronotal pubescence fairly long, oblique, that on elytra and abdomen recumbent. Prosternal carina low. Paranotal carinae present. Prohypomera, metasternum, and abdomen lacking puncture rows. Abdominal tergite 1 with discal carinae parallel, extending about to posterior third of tergal length, separated by interval slightly smaller than half of basal width of tergite, basal crenulation absent; sternite 2 with basal crenulation barely visible.

Male. Head as in Fig. 448. Lateral parts of frons prominent to form subtriangular processes (dorsal view), carinate ventrally. Ventral carina of frontal process bearing large setal tuft oriented anteriomesally. Middle of vertex deeply impressed. Upper side of frontoclypeus with two compact, flat setal tufts oriented anteriorly and at tip curved ventrally. Middle of frontoclypeus with transverse ridge bearing row of vertical and oblique setae. Anterior part of frontoclypeus strongly prominent, forming parallel-sided, swollen process. Anterior angles of frontoclypeal process rounded, anterior margin between angles truncate. Upper margin of frontoclypeal process carinate, bearing wide, curved setae. Middle of frontoclypeal process elevated to form low ridge, partly dividing deep genal impressions. Several additional short setae situated at inner part of genal impressions. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 181–182; scape enlarged, widened apically, shallowly impressed mesally; pedicel conspicuously large, strongly widened apically, almost triangular in lateral view, strongly impressed and flattened mesally; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 171) asymmetrically emarginate, with one wide, apically expanded, straight sensillum and two curved, narrowed sensillae at middle. Abdominal sternite 2 shortened toward middle, at middle almost twice as long as sternite 1 and about half as long as metasternum, with median carina about as long as one-third of sternal length; sternite 6 with 3 pairs of long, flat setae (Fig. 172). Aedeagus (Fig. 167) 0.190 mm long.

Female unknown.

Distribution. South Vietnam.

Comments. This species is unique in having strongly explanate male pedicels. It is also well-characterized by the shape of its frontoclypeal process.

Morana latebrosa (Reitter, 1884) comb. nov.
(Figs 323, 325, 336, 342)

Bythinophanax latebrosus Reitter, 1884: 406.

Type material. Material examined (1): Holotype male, labeled: Borneo / *Bythinophanax latebrosus* m. Telang – Borneo [original Reitter's label]/ Muséum Paris 1917 Coll. A. Raffray / Type [red] / *B. latebrosus* A. Raffray det.', in MNHN.

Description. Length 1.00 mm. Body brown. Head with vertex and frons very densely, fairly coarsely punctate; pubescence very short, recumbent, long

occipital setae present. Vertexal pits situated about in line of eye centres; interval between them larger than that between them and lateral head margins. Occipital carina extending anterior to line of vertexal pits, up to margin of frontal impression. Middle of vertex convex. Lateral margins of frons not crenulate; postantennal denticles present. Occipital edge arcuate, vertical, high. Neck lacking impressions. Antennal segment 3 slightly wider than long, segments 4 to 9 subequal, distinctly wider than long; segment 10 distinctly wider and longer than segment 9, wider than long. Pronotum as wide as head with eyes, lacking median sulcus; basal foveae not well-delimited; median fovea large, fairly deep; remaining basal foveae small, very shallow; lateral folds distinct; basomedian carina absent. Pronotal punctation very fine on anterior and lateral parts of disc, dense and fairly coarse on central part of disc, consisting of poorly delimited punctures; pubescence longer than that on head, recumbent. Elytral punctation very fine near base, on remaining surface fairly coarse and dense and similar to that on central part of pronotum. Prosternal carina low. Paranotal carinae present. Prohypomera lacking puncture rows. Metasternum very finely punctate, flattened at middle, with puncture row along margin of intercoxal process, with two short medio-apical carinae. Abdomen very finely punctate; tergite 1 with discal carinae slightly curved, almost extended to apical fifth of tergum, separated at base by almost half of tergal width, basal crenulation present; sternite 1 punctate along basal margin of intercoxal process; sternite 2 with basal crenulation distinct.

Male. Frons similar to that in *M. exilis*. Middle of inferior margin of vertical central area transverse in dorsal view, slightly impressed, bearing flat setae pointed anteriorly and fine setae pointed latero-anteriorly. Eyes with about 30 facets. Antennal scape and pedicel as in Fig. 336; scape subcylindrical in dorsal view; club not modified. Mesal side of protibiae with two long, spatulate sensillae. Apex of tergite 5 as in Fig. 323. Abdominal sternite 2 narrowed mesally, at middle about 1.5 times as long as sternite 1, slightly longer than half of metasternum, median carina slightly longer than half of sternite; sternite 6 (Fig. 325) with two pairs of long and flat apical sensillae, with small basal apophysis. Aedeagus (Fig. 342) 0.140 mm long.

Female unknown.

Distribution. Borneo: East Kalimantan.

Comments. This species is very similar to *M. exilis*, from which it differs clearly by the entire anterior part of the pronotum being very finely punctuate, and by the length of the male second abdominal sternite. The relative length of the 11th antennal segment is not given because this segment is lacking on one antenna, and is damaged on the other.

Morana loquax sp. nov.
(Figs 187–188, 200, 205, 207, 450

Type material. Holotype (male, in MHNG): India, West Bengal, Darjeeling Distr., Mahanadi near Kurseong, 1200 m, 19.X.1978 (C. Besuchet & I. Löbl) #20 [sifting in forest on slope S].

Paratypes (47): with same data as holotype, 7 males & 12 females in MHNG & PCSK; same data but 6.X.1978, #1 [sifting in forest on slope S] 14 males & 14 females in MHNG & PCSK.

Description. Length 0.95–1.00 mm. Body brown. Head with frons and vertex almost uniformly densely and coarsely punctate, antennal tubercles very finely punctate; pubescence short, semi-erect, pair of long occipital setae present. Vertexal pits situated anterior to line (male) or about in (female) line of posterior eye margin; interval between them slightly larger than that between them and lateral head margins. Occipital carina absent. Median part of vertex and frons flattened, not or slightly elevated. Lateral margins of frons irregular, finely crenulate, postantennal denticles distinct. Occipital edge hardly arcuate. Antennal segment 3 about as long as wide; segments 4 to 6 distinctly wider than long; segments 7 to 9 each slightly larger than segment 6, wider than long; segment 10 much wider than segment 9; segment 11 as long as segment 6 to 10 combined. Pronotum wider than (male) or as wide as (female) head with eyes, lacking median sulcus; basal foveae deep, well-delimited; median fovea larger than remaining basal foveae; lateral folds inconspicuous; basomedian carina absent or minute. Punctation on large middle part of pronotal disc and on elytra subequal, coarse and dense, slightly sparser than that on vertex; punctation on lateral sides of pronotum very fine. Pronotal and elytral pubescence longer than that on head, recumbent. Prosternal carina low. Paranotal carinae present. Prohypomera with secondary, arcuate sulcus, lacking puncture rows. Metasternum very finely punctate, with fine puncture rows along medio-anterior margin and margin of intercoxal process. Abdomen very finely punctate; tergite 1 with discal carinae parallel or very weakly converging apically, extending about to tergal mid-length, separated at base by interval slightly larger than half of tergal width, basal crenulation absent; sternite 1 with puncture row along margin of intercoxal process; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 450. Frons rounded at middle, with two shallow admesal impressions, strongly inclined anteriorly. Upper side of frons not delimited from lower part forming frontoclypeus. Pubescence on frontoclypeus oriented medioventrally. Frontoclypeus not prominent, with anterior margin almost truncate, narrow vertical area above anterior margin delimited from above by arcuate carina, surface beyond arcuate

carina impressed and with small, median carina bearing short setae. Eyes with 20 to 25 facets. Antennal scape and pedicel as in Figs 187–188; scape flattened dorsally, weakly widened apically, with conspicuous mesal carina; pedicel small; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 205) deeply notched, margin at both sides of notch prominent, with one very large and three smaller sensillae, pubescence not grouped to form rows. Abdominal sternite 2 shortened toward middle, at middle about as long as sternite 1, slightly shorter than half of metasternum, with median carina very short, inconspicuous, about one-eighth of mesal sternal length; sternite 6 with minute basal tubercle, pair of minute mediobasal, digitiform sensillae, one large, flat apical sensillum and five long, robust setae; remaining pubescence short (Fig. 207). Aedeagus (Fig. 200) 0.230 mm long.

Female. Frontoclypeus with punctation similar to that on vertex. Eyes with 6 to 8 facets. Abdominal sternite 2 large, at middle about 3 times as long as sternite 1 and 1.3 times as long as metasternum, with median carina very short, not exceeding basal carinae.

Distribution. India: West Bengal.

Comments. This species may be easily distinguished by the carinate male scape, in combination with the coarsely punctuate elytra, the sulcate prohypomera, and the presence of puncture rows on the metasternum and first abdominal sternite.

Morana lucipeta sp. nov.
(Figs 318, 353, 361, 362, 482)

Type material. Holotype (male, in ZMUM): South Vietnam, 120 km NNE Ho Chi Minh, Cat Tien, UV-light, 14.VII.1995 (A. Napolov).

Paratypes (12): with same data as holotype, 5 males in MHNG & PCSK; same data but 12.VII.1995, 4 males in MHNG and PCSK; South Vietnam, 55 km NE Ho Chi Minh, Ma Da, 17.IX.1994, *Dipterocarpus* forest, soil samples, 0–2 cm and 15–20 cm (N. V. Beljaeva) 2 males in MHNG & ZMUM; same data but IV.1995, soil sample 15–20 cm, 1 male in ZMUM.

Description. Length 1.00 mm. Body reddish-brown. Head with punctation fine and dense on lateral and median parts of frons, very fine on vertex and medioposterior part of frons; pubescence short, recumbent, long occipital setae absent. Vertexal pits situated in line of eye centres; interval between them slightly larger than that between them and lateral head margins. Occipital carina long, extending slightly anterior to line of vertexal pits. Middle of vertex slightly convex. Frons narrowed anteriorly, with lateral margins not crenulate; postantennal denticles minute. Occipital edge low, subangulate. Neck with median carina, lacking impressions. Antennal segment 3 about as long as wide; segments 4 to 8 wider than long, about equally large or becoming gradually, slightly smaller; segment 9 about as large as or slightly larger than segment 8; segment 10 wider than long, distinctly larger than segment 9; segment 11 about as long as combined length of segments 6 to 10. Pronotum as wide as head with eyes, lacking median sulcus; median basal foveae fairly large, well-delimited; admesal and lateral basal foveae small, well-delimited; lateral folds absent; basomedian carina very short. Pronotal, elytral, and abdominal punctation very fine; pubescence longer than that on head. Elytra shortly impressed beyond outer basal foveae. Prosternal carina low. Paranotal carinae reduced, forming very fine line. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae curved, diverging apically, extending up to or slightly beyond tergal mid-length, separated at base by interval almost as large as half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 482. Frons at middle prominent, forming small, rounded lobe bearing setae pointed ventro-anteriorly. Lateral parts of frons not prominent. Frontoclypeus deeply, narrowly excavated ventrally. Anterior part of frontoclypeus elevated to form fairly high, vertical ridge. Anterior side of frontoclypeal ridge subtriangular (frontal view), shiny, with few setae. Upper and posterior sides of frontoclypeal ridge setose. Eyes with about 30 facets. Antennal scape and pedicel as in Fig. 318; scape subcylindrical in dorsal view; pedicel cylindrical, slightly thickened apically, much shorter than scape, at apex almost as wide as scape; club not modified. Mesal side of protibiae with single large, spatulate sensillum. Apex of abdominal tergite 5 as in Fig. 361. Abdominal sternite 2 weakly narrowed mesally, at middle almost 3 times as long as sternite 1, distinctly shorter than metasternum, with median carina as long as third of mesal sternal length; sternite 6 (Fig. 362) lacking flat sensilla. Aedeagus (Fig. 353) 0.180–0.190 mm.

Female unknown.

Distribution. South Vietnam.

Comments. This species resembles *M. discedens* and *M. hastulata*. It may be distinguished by antennal segment 3 being as long as wide, the male pedicel much shorter than the scape, and the shape of the male scape and head.

Morana lupula sp. nov.
(Figs 107–108, 131, 139, 141, 433)

Type material. Holotype (male, in MHNG): W. Malaysia, Pahang, Genting Highlands, Awana, 1150 m,

3.IV.1993 (I. Löbl & F. Calame) #27c [sifting vegetational debris and fungi in ravine].

Paratype (male, in MHNG): with same data as holotype.

Description. Length 1.00 mm. Body brown, elytra darker than head, pronotum, and abdomen. Head with punctation very sparse and extremely fine, except antennal tubercles densely, distinctly punctate; pubescence short, recumbent, long occipital setae absent. Vertex convex at middle. Vertexal pits situated in line of posterior eye margins; interval between them slightly larger than interval between them and lateral head margins. Occipital carina long, extending anterior to line of anterior eye margins. Occipital edge comparatively high, subangulate. Lateral margin of frons crenulate and denticulate; postantennal denticles present. Neck lacking dorsal carina. Antennal segment 3 about as long as wide; segments 4 to 6 equally large, as wide as and shorter than segment 3; segments 7 to 9 subequal to segment 3; segment 10 wider than segment 9; segment 11 barely as long as segments 6 to 10 combined. Pronotum as wide as head with eyes, lacking median sulcus; basal foveae distinct, well-delimited, equally large; basomedian carina present; lateral folds inconspicuous. Pronotal, elytral, metasternal, and abdominal punctation sparse and very fine; pubescence longer than that on head, recumbent. Prosternal carina low. Paranotal carinae present. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae weakly converging, extending slightly beyond tergal mid-length, separated at base by about half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig 433. Middle of anterior frontal margin prominent, forming acute, tooth-like protuberance. Lateral surfaces and area anterior to middle impressed, sharply delimited by inclined, crenulate frontal margins. Area below frontal margin excavated. Lateral frontal processes short, acute. Anterior margin of frontoclypeus arcuate, setose, in dorsal view partly overlapped by modified, robust setae arising from lateral margins and oriented mesally. Two setal tufts pointed anteriorly and curved at tip mesally lying close to marginal setae. Inferior surface of frontoclypeus with small, medio-anterior tubercle. Pair of long setae pointed obliquely apicolaterally and curved at tip abruptly anteriomesally in front of medio-anterior tubercle. Additional setae present around discoid tubercle and strongly widened. Recumbent seta present at each side of discoid tubercle. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 107–108; scape strongly swollen ventrally, with mesal side conspicuously impressed; pedicel longer than scape, straight, gradually thickened apically, with oblique apical margin; antennal club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 139) emarginate in middle, with three flat sensillae and thick apical setae. Abdominal sternite 2 strongly narrowed mesally, at middle twice as long as sternite 1, slightly longer than half of metasternum, with median carina extending to sternal mid-length; sternite 6 (Fig. 141) with two pairs of large setae. Aedeagus (Fig. 131) 0.280 mm long.

Female unknown.

Distribution. West Malaysia.

Comments. This species is distinguished by its male sexual characters, in particular by the acute centre of the anterior pronotal margin and absence of the median frontoclypeal ridge. The aedeagus strongly resembles that of *M. nana*.

Morana lusciosa sp. nov.
(Figs 276–277, 292, 294, 296, 464)

Type material. Holotype (male, in MHNG): Taiwan, Kaohsiung Hsien, Tengchih, 1610 m, 24.IV.1990 (A. Smetana) T20.

Description. Length 1.15 mm. Body light brown. Head entirely covered by coarse, very dense punctation; pubescence very short, recumbent, long occipital setae absent. Vertexal pits barely distinguishable among coarse punctation, situated posteriorly line of posterior eye margins; interval between them much larger than interval between them and lateral head margins. Occipital carina low, extending onto anterior part of frons. Vertex and frons convexly rounded, including lateral margins. Lateral margins of frons not crenulate, lacking denticles. Occipital edge weakly arcuate. Dorsal side of neck with punctiform impressions. Antennal segment 3 about as long as wide; segments 4 to 9 almost even, distinctly wider than long; segment 10 larger than segment 9, wider than long; segment 11 almost as long as segments 6 to 10 combined. Pronotum slightly wider than head, lacking median sulcus; basal foveae large, subequal, fairly well-delimited; lateral folds almost indistinct; basomedian carina present. Punctation on most of pronotum coarse and dense, similar to that on head; pubescence slightly longer than on head, recumbent. Lateral parts of pronotum finely punctate. Elytra each with short discal sulcus extending from outer basal fovea to elytral mid-length. Elytral, metasternal, and abdominal punctation very fine. Prosternal carina low. Paranotal carinae present. Large central part of prohypomera coarsely punctate. Metasternum and abdomen lacking puncture rows. Abdominal tergite 1 with discal carinae parallel, short, extending about to middle third of tergal length, separated by interval slightly larger than half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 464. Sides of frons not prominent, gradually inclined. Middle of frons impressed toward small, rounded process. Upper side of frontal process with short setae oriented anteriorly, ventral side of frontal process with short, wide setae pointed centrally. Anterior part of frontoclypeus elevated to form cariniform ridge bearing vertical setae, anterior margin of frontoclypeus truncate. Genal impression moderately deep, not separated by median ridge. Eyes small, flat, barely visible in dorsal view, with 7 or 8 facets. Antennal scape and pedicel as in Figs 276–277, with almost straight outer sides, slightly convex mesal sides; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 292) with one large curved sensillum, two smaller sensillae at middle, and row of variably thick setae. Abdominal sternite 2 large, not narrowed toward middle, at middle almost 3 times as long as sternite 1 and distinctly longer than metasternum, with median carina almost as long as third of sternite; sternite 6 not modified (Fig. 294). Aedeagus (Fig. 296) 0.250 mm long.

Female unknown.

Distribution. Taiwan.

Comments. This species may be distinguished by the elytra with short discal sulci and coarsely punctate prohypomera. It shares many features with *M. distensiceps*, notably the lack of postantennal denticles, the pronotal punctation, the basal crenulation on abdominal sternite 2 reduced to at most 10–12 carenules (instead of the 17–19 usually present in the other members of the genus) and, in the male, the very convex, densely punctate head and unmodified apex of abdominal sternite 6. Males of *M. lusciosa* differ from *M. distensiceps* by the absence of a long spatulate sensillum on the protibia, the shape of the frons, and details of the aedeagus.

Morana machaerifera sp. nov.
(Figs 314–315, 349, 365–366, 477)

Type material. Holotype (male in MHNG): China, Guangdong, Qi Mu Zhang, 5.IV.1997, leaf litter (J. Fallones).

Paratypes (4, in MHNG): with same data as holotype, 1 male & 3 females.

Description. Length 1.10 mm. Body light brown. Head with vertex and frons fairly coarsely and densely punctate; pubescence short, recumbent, two long occipital setae present. Vertexal pits inconspicuous, situated about in line of posterior eye margins; interval between them about as large as that between them and lateral head margins. Occipital carina extending between vertexal pits, or onto frons, in some specimens barely visible. Lateral margins of frons angulate, very weakly crenulate; postantennal denticles absent or slightly developed. Occipital edge low, angulate. Dorsal side of neck with median carina and shallow admesal impressions. Antennal segment 3 about as long as wide; segments 4 to 6 equally large, wider than long; segments 7 to 9 subequal, about as long as segment 3; segment 10 larger than segment 9, wider than long; segment 11 about as long as combined length of segments 6 to 10. Pronotum about as wide as head with eyes, lacking median sulcus; basal foveae subequal, well-delimited, fairly deep; lateral folds obsolete; basomedian carina absent. Pronotal, elytral, and abdominal punctation extremely fine; pubescence longer than that on head, recumbent. Prosternal carina low. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae parallel or weakly diverging apically, separated by slightly less than half of basal tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 477. Frons prominent, deeply emarginate at middle, margin of emargination concave, latero-anterior margins of frons oblique, small tubercle bearing few long, erect setae at each side of emargination near anterior frontal angles. Frontoclypeus prominent, excavated below frons, with transverse carina slightly elevated at middle and bearing fairly long, flat, horizontal setae. Anterior part of frontoclypeus strongly swollen, rounded and smooth, middle of swollen part extending posteriorly to form robust process bearing sensillae. Anterior margin of frontoclypeus convex. Genal impressions large and deep. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 314–315; scape widened ventrally, in dorsal view widest at middle, mesal side impressed in basal half, obliquely flattened in apical half, outer side impressed; pedicel cylindrical; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 as in Fig. 365. Abdominal sternite 2 slightly shortened mesally, at middle about 2.5 times as long as sternite 1, slightly shorter than metasternum, with median carina conspicuously long, reaching apical third of sternite; sternite 6 (Fig. 366) lacking obvious modifications. Aedeagus (Fig. 349) 0.280 mm long.

Female. Frons weakly impressed at middle. Punctation similar on frons to that on frontoclypeus. Eyes with 8 or 9 facets. Abdominal sternite 2 almost 5 times as long as sternite 1, about as long as metasternum, with median carina extending to sternal midlength.

Distribution. China: Guangdong.

Comments. This species may be distinguished by the long median carina of the male abdominal sternite 2, in combination with the shape of the scape.

Morana mahadewa sp. nov.
(Figs 278–279, 287, 289, 299, 476)

Type material. Holotype (male, in MHNG): Indonesia, Bali, Mt. Batukau, 500–700 m, 28–29.X.1991 (I. Löbl) [sifting in forest near Luhur Temple].

Paratypes (6): with same data as holotype, 5 females in MHNG & PCSK; same data but 18.VI.1984 (G. de Rougemont) 1 female in MHNG.

Description. Length 1.15 mm. Body reddish-brown. Head with vertex and middle of frons very finely but distinctly and densely punctate, lateral parts of frons finely and very densely punctate, pubescence short, recumbent. Vertexal pits about in line with eye centres, separated by interval slightly larger than that between them and lateral head margins. Occipital carina reaching line of vertexal pits. Middle of vertex very weakly convex. Frons with pair of small, slightly transverse, foveiform impressions. Lateral margins of frons not or slightly crenulate, postantennal denticles minute. Occipital edge transverse, low. Antennal segment 3 about as long as wide, segments 4 to 9 slightly wider than long, segments 4 to 6 subequal, segments 7 to 9 slightly larger than segment 6, segment 10 distinctly larger than segment 9, wider than long, segment 11 as long as combined length of segments 7 to 10. Pronotum barely wider than head with eyes, lacking median sulcus, basal foveae deep, fairly well-delimited, subequal in size, median basal foveae lying anterior to line of remaining basal foveae, basomedian carina present, lateral folds distinct. Pronotal, elytral, and abdominal punctuation very fine, similar to that on vertex, dorsal pubescence longer than on vertex. Pubescence semierect on pronotum and elytra, recumbent on abdomen. Prosternal carina low. Paranotal carinae present. Prohypomera and metasternum lacking puncture rows. Abdominal tergite 1 with discal carinae parallel, extending to or almost to apical third of tergite, separated by about half of tergal width, basal crenulation absent. Abdominal sternite 1 lacking puncture row; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 476. Frons not prominent, angulate posteriorly, slightly impressed at middle, with few fine setae pointed anteriorly and pair of short, flat sensillae inserted ventrally at middle of anterior margin. Anterior frontal margin very weakly concave in dorsal view, latero-anterior frontal margins oblique. Frontoclypeus shallowly excavated and smooth, with pair of long, curved setae inserted admesally onto upper part of excavation. Small, transverse, flat ridge situated about at centre of frontoclypeal excavation and bearing at each side one very short, robust sensillum. Inferior part of frontoclypeus with mesal, subtriangular, narrow ridge bearing long, vertical setae curved at tip. Anterior surface at each side of mesal ridge impressed, forming glabrous areas delimited by carinate margins. Minute area bearing conspicuously long, curved setae at both sides of anterior margin of frontoclypeus close to impression. Anterior frontoclypeal margin truncate. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 278–279, scape ventrally swollen, with convex ventral side, pedicel gradually thickened apically, club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 287) asymmetrically angulate, one apical angle prominent, blunt, with pair of large, flat sensillae near lateral angles, with group of robust setae in addition to thin pubescence. Abdominal sternite 2 strongly shortened mesally, at middle almost as long as sternite 1, about as long as half of metasternal length, with median carina very short, about one-fourth of mesal sternal length; sternite 6 (Fig. 289) with short, robust, basal apophysis. Aedeagus as in Fig. 299 (deformed).

Female. Eyes with 6 to 8 facets. Frons at middle gradually inclined. Abdominal sternite 2 large, at middle about 3 times as long as sternite 1 and 1.5 times as long as metasternum, median carina about one-seventh of median sternal length.

Distribution. Bali.

Comments. This species may be distinguished from its congeners that have similar fine body punctation and a large male abdominal sternite 2 by the male frons and frontoclypeus The aedeagus of the single available male is badly damaged. The shape and location of its parts as seen are obviously artefacts. The sclerite of the internal sac is similar to that of *M. punctata*.

Morana minax sp. nov.
(Figs 270–271, 284, 286, 297, 472)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Crocker Range, 1600 m, 18.V.1987 (D. Burckhardt & I. Löbl) #30a [km 51–52 road Kota Kinabalu – Tambunan, sifting vegetational debris on slope E in moist ravine at edge of moist forest with *Lithocarpu*s, *Castanopsi*s and arboreal ferns].

Description. Length 1.20 mm. Body brown. Head with vertex and frons coarsely and very densely punctate; pubescence short, recumbent, long occipital setae absent. Vertexal pits and occipital carina absent. Middle of vertex convex. Lateral margins of frons not crenulate; postantennal denticles absent. Occipital edge high, transverse. Neck with large, foveiform, dorsomedian impression. Antennal segment 3 slightly wider than long, with two setae; segments 4 to 7 subequal, distinctly wider than long; segments 8 and 9 slightly longer than segment 7; segment 10 distinctly larger than segment 9; segment 11 about as long as combined length of segments 6 to 10. Pronotum

slightly wider than head with eyes, lacking median sulcus; basal foveae subequal, fairly large, deep and well-delimited; basomedian carina absent; lateral folds indistinct. Pronotal punctation coarse and moderately dense on large middle part of disc, with punctures sharply delimited, larger and less dense than vertexal punctation, mostly larger than puncture intervals; punctation very fine near anterior margin and on lateral parts of pronotum; pubescence long, recumbent. Elytral punctation poorly delimited, slightly smaller than and about as dense as those on middle part of pronotum; pubescence about as long as on pronotum. Prosternal carina low. Paranotal carinae present. Prohypomera punctate along basal margin. Metasternum conspicuously short, with rather fine puncture row along mesocoxal cavities, coarsely punctate along margin of intermetacoxal process, very finely punctate at middle and on sides. Abdominal punctation very fine; tergite 1 with discal carinae slightly converging and curved apically, reaching to apical fourth of tergal length, separated at base by slightly more than one-third of tergal width, basal crenulation absent; sternite 1 finely punctate along margin of intercoxal process; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 472. Vertex and frons gradually widened anteriorly. Frons expanded latero-anteriorly to form two large lobes, abruptly flattened on dorsal side. Middle part of frons very deeply, obliquely impressed toward inferior, short transverse carina. Anterior margin of frons bearing setae pointed anteriorly. Frontoclypeus transversally excavated near apex. Anterior part of frontoclypeus strongly elevated to form high ridge overlapping labrum. Frontoclypeal ridge convex anteriorly, bearing very short pubescence. Posterior side of frontoclypeal ridge smooth, with small, subtriangular process pointed dorsally. Genal impression small. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 270–271; scape cylindrical in dorsal view; pedicel small, subcylindrical; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 284) with large hook-like sensillae at apical angles and several oblique, admesal sensillae. Abdominal sternite 2 narrowed mesally, at middle twice as long as sternite 1, as long as metasternum, with median carina about one-fourth of mesal sternal length; sternite 6 (Fig. 286) with row of short setae along middle part of apical margin, with long, thick setae laterally. Aedeagus (Fig. 297) 0.270 mm long.

Female unknown.

Distribution. Borneo: Sabah.

Comments. This species may be distinguished by the puncture row along the basal margins of the prohypomera and metasternal process, the strongly widened frons, and the setose antennal segment 3.

Morana murphyi sp. nov.
(Figs 109–110, 135, 140, 142, 435)

Type material. Holotype (male, in MHNG): West Malaysia, Cameron Highlands, Tanah Rata, 14.VIII. 1967 (D. H. Murphy) #364.

Paratypes (3, in MHNG): with same data as holotype, 1 male & 2 females.

Description. Length 0.95–1.00 mm. Body reddish-brown or brown. Head with frons and vertex entirely covered by coarse and very dense punctation; pubescence short and recumbent, long occipital setae absent. Vertexal pits inconspicuous, situated in line of posterior eye margins (female) or slightly anterior to that line (male). Occipital carina reduced, visible only near neck. Middle of vertex flattened. Lateral margins of frons crenulate; postantennal denticles minute or absent. Occipital margin comparatively high, rounded. Dorsal side of neck punctate. Antennal segment 3 as long as wide; segments 4 to 9 almost equally large, much wider than long; segment 10 slightly longer and much wider than segment 9; segment 11 slightly shorter than segments 6 to 10 combined. Pronotum slightly wider than head with eyes, with median sulcus widened basally and joined to middle basal fovea; basal foveae small, deep, well-delimited, subequal in size; basomedian carina present; lateral folds distinct. Elytra with discal sulcus extending from outer basal fovea to apical fourth of elytral disc. Pronotal, elytral and abdominal punctation very fine and fairly dense; pubescence recumbent, longer than that on head. Prosternal process low. Paranotal carinae present. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Metasternum comparatively short, with pubescence denser at middle than on lateral parts. Abdominal tergite 1 with discal carinae converging, reaching almost to apical margin of tergite, separated at base by about half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 435. Frons extended to form two large, obtuse processes. Centre of frons impressed, vertical and smooth. Upper margin of frontal impression bearing several setae pointed anteriorly. Lower part of frontal impression with two tubercles bearing setae curved obliquely mesally, with central transverse ridge bearing wide setae oriented laterally, at middle with fine setae oriented anteriorly. Frontoclypeus ventral to frontal processes deeply impressed and smooth. Anterior margin of frontoclypeus elevated, punctate and rounded. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 109–110; scape strongly swollen ventrally, flattened mesally; pedicel small, shorter than scape, with outer margin straight, inner side weakly arcuate; club not modified. Protibia lacking large, spatulate sensillae. Apex of abdominal tergite 5

(Fig. 140) emarginate at centre, with one wide and two narrow sensillae and robust setae. Abdominal sternite 2 strongly shortened mesally, at middle slightly longer than sternite 1, slightly shorter than half of metasternum, with median carina about one-third of sternal length; sternite 6 (Fig. 142) with three pairs of wide setae and pair of digitiform sensillae. Aedeagus (Fig. 135) 0.240 mm long.

Female. Frons with two shallow, round impressions between antennal tubercles just anterior to vertexal pits. Anterior part of frons gradually inclined and convex. Eyes with 6 to 8 facets. Abdominal sternite 2 large, at middle about 4 times as long as sternite 1, distinctly longer than metasternum, with median carina one-sixth of mesal sternal length.

Distribution. West Malaysia.

Comments. This species is easily recognized by the sulcate pronotum and elytral disc.

We name this species in honour of its collector, D. H. Murphy, Singapore.

Morana nana sp. nov.
(Figs 115–116, 132, 148, 150, 434)

Type material. Holotype (male, in MHNG): West Malaysia, Johore, Kahang, pool bank in swamp forest 17 mi Kluang Road, mosses & *Lycopodium*, 14.VIII.1962, forest litter, Berlese extract (D. H. Murphy) # 4.

Paratype (1 male, in MHNG): Singapore, 11.5 mi S. of Mandai Road, 22.XII.1962 (D.H. Murphy) litter in open forest, #25.

Description. Length 0.85–0.90 mm. Body uniformly reddish-brown. Frons and anterior part of vertex with dense and fairly coarse punctation, most of vertex very finely and sparsely punctate; pubescence short and recumbent, long occipital setae absent. Vertexal pits situated about in line of eye centres; interval between them about as large as interval between them and lateral head margins. Middle of vertex convex. Occipital carina long, extending anterior to line of vertexal pits. Lateral margin of frons crenulate; postantennal denticles distinct, area anterior to denticles slightly notched. Occipital edge fairly high, evenly rounded. Dorsal side of neck with foveiform impressions. Antennal segment 3 about as long as wide; segments 4 to 6 equally large, wider than long; segments 7 to 9 longer than segment 6, slightly wider than long; segment 10 about as long as and much wider than segment 9; segment 11 as long as segments 6 to 10 combined. Pronotum as wide as head with eyes, lacking median sulcus; basal foveae not well-delimited, comparatively large; middle fovea wider than remaining basal foveae; basomedian carina inconspicuous; lateral folds distinct. Pronotal, elytral, metasternal, and abdominal punctation sparse and very fine, similar to vertexal punctation; pubescence similar to that on head. Prosternal carina low. Paranotal carinae present. Prohypomera impressed and punctate along basal margin. Metasternum and abdominal sternites lacking distinct puncture rows. Abdominal tergite 1 with discal carinae slightly converging, almost reaching posterior third of tergal length, separated at base by half of tergal width, with 5 or 6 robust basal crenulations between discal carinae; sternite 2 with basal crenulation distinct.

Male. Head as Fig. 434. Anterior margin of frons rounded, narrow area ventrally impressed and smooth. Lateral parts of frons not prominent. Frontoclypeus with strong median carina reaching small, transverse, setose carina. Transverse carina touching tip of inverted V-shaped carina. Surface between inverted Y-shaped carina and anterior margin strongly impressed, with ridge at centre. Anterior margin of frontoclypeus weakly bilobed and elevated, covered by dense, short pubescence. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 115–116; scape cylindrical in dorsal view, with impressed mesal side; pedicel short, subcylindrical; antennal club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 148) with four large, sensillae at middle. Abdominal sternite 2 shortened toward middle, at middle twice as long as sternite 1, about as long as two-thirds of metasternum, with median carina almost reaching sternal mid-length; sternite 6 (Fig. 150) with two pairs of flat and long setae. Aedeagus (Fig. 132) 0.170 mm long, similar to that in *M. lupula*.

Female unknown.

Distribution. West Malaysia, Singapore.

Comments. This species may be distinguished by the presence of robust basal carinae on tergite 1, and by the punctate prohypomera, in combination with the finely punctate dorsum of the body.

Morana obbatifrons sp. nov.
Figs 117–118, 137, 155, 157, 169, 438.

Type material. Holotype (male, in MHNG): West Malaysia, Johor, Kota Tinggi, 23.VI.1969 (R. Pilet).

Description. Length 0.90 mm. Body light brown. Head with lateral parts of frons densely and coarsely punctate, remainder of head very finely punctate; pubescence short, semi-erect, long occipital setae absent. Vertexal pits situated beyond line of eye centres; interval between them almost twice as large as that between them and lateral head margins. Occipital carina extending anteriorly up to line of anterior eye margins. Middle part of vertex convex. Lateral margins of frons oblique and barely crenulate anteriorly, emarginate posteriorly, each emargination delimited by

minute postantennal denticles. Occipital edge fairly high, truncate at middle, rounded laterally. Neck with mediodorsal carina. Antennal segment 3 wider than long; segments 4 to 6 equally large, shorter than segment 3; segments 7 and 8 equal, about as long as segment 3; segment 9 slightly narrower than segment 8; segment 10 about as long as and much wider than segment 9, much wider than long; segment 11 about as long as combined length of segments 6 to 10. Pronotum slightly wider than head with eyes, lacking median sulcus; basal foveae subequal, well-delimited; lateral folds absent; basomedian carina present. Pronotal, elytral, metasternal, and abdominal punctation very fine and fairly dense; pubescence short, recumbent. Prosternal carina low. Paranotal carinae present. Prohypomera lacking puncture rows. Mesosternum impunctate along mesocoxal cavities. Abdominal tergite 1 with discal carinae parallel, reaching almost to apical fifth of tergite, separated by interval slightly smaller than half of tergal width, basal crenulation absent; sternite 1 lacking puncture rows; sternite 2 with robust basal crenulation.

Male. Head as in Fig. 438. Middle part of frons deeply impressed anteriorly, upper anterior frontal surface with two minute admesal tubercles, each bearing setae pointed anteriorly. Lateral parts of frons prominent, overlapping deep impressions, inner margins notched, apices with fairly long ventro-apical setae. Anterior part of frontal impression bearing setal row. Frontoclypeus not prominent, elevated at middle, with low median carina overlapped by frontal pubescence. Anterior part of frontoclypeus pubescent, anterior margin of frontoclypeus crenulate, slightly rounded. Eyes with about 33 facets. Antennal scape and pedicel as in Figs 117–118; scape swollen ventrally and mesally, almost cylindrical in dorsal view; pedicel gradually thickened apically; club not modified. Protibiae (Fig. 169) lacking large, spatulate sensillae. Segment 2 of protarsi swollen, with flat apical sensillum, segment 3 of protarsi curved. Apex of abdominal tergite 5 (Fig. 155) with two sensillae and row of robust setae. Abdominal sternite 2 shortened toward middle, at middle twice as long as sternite 1, almost as long as half of metasternum, with median carina reaching sternal mid-length; sternite 6 (Fig. 157) lacking modified setae. Aedeagus (Fig. 137) 0.120 mm long.

Female unknown.

Distribution. West Malaysia.

Comments. The species is unique in having segment 2 of the protarsi swollen.

Morana oni Tanabe et Nakane, 1990
(Figs 64–65, 71–72, 96–97, 102, 428)

Morana oni Tanabe & Nakane, 1990: 27.

Type material. Type material examined (4 paratypes, gifts from NSMT to MHNG): Ichifusa-Yoma Kumamoto Pref. 27.X.1985 (T. Tanabe) 1 male; Miyazaki Pref., Miike, Kirishima, 17.VII.1985 (T. Tanabe) 3 females.

Description. Length 1.30–1.40 mm. Body reddish-brown. Frons and vertex very densely and fairly coarsely punctate; pubescence fairly short, recumbent, long occipital setae present. Vertexal pits situated in line of posterior eye margins (male), or posteriorly to eyes (female); interval between them larger than that between them and lateral head margins. Occipital carina long, extending from neck onto frons, well anterior to line of vertexal pits. Middle part of vertex slightly convex (female) or slightly elevated and flattened (male). Occipital area narrow, vertical, occipital margin arcuate. Lateral margins of frons not crenulate; postantennal denticles enlarged to form angle. Antennal segment 3 about as long as wide or slightly longer than wide; segments 4 to 6 subequal, shorter than segment 3, distinctly wider than long; segments 7 and 8 slightly larger than segment 6; segments 9 to 11 modified in male, in female segment 9 slightly larger than segment 8; segment 10 distinctly larger than segment 9; segment 11 about as long as segments 6 to 10 combined. Pronotum about as wide as head with eyes, lacking median sulcus; basal foveae shallow, subequal in size, not clearly delimited; middle basal fovea situated anterior to line of remaining basal foveae; basomedian carina present; lateral folds indistinct. Pronotal punctation coarse and very dense on large middle part of pronotum, similar to that on vertex, very fine and sparse on lateral parts of pronotum. Paranotal carinae present, prohypomera lacking puncture row. Elytra lacking discal impression or stria. Elytral and abdominal punctation uniformly very fine; pubescence similar to that on head and pronotum, fairly short, recumbent. Prosternal carina low. Metasternum and abdominal sternite 1 lacking puncture rows, entirely very finely punctate; pubescence uniformly short. Abdominal tergite 1 with discal carinae diverging apically, almost reaching apical third of tergite, separated at base by one-third of tergal width, basal crenulation absent; sternite 2 with basal crenulation reduced, barely visible.

Male. Head as in Fig. 428. Middle part of vertex slightly elevated and flat, fairly well-delimited laterally. Middle part of frons abruptly impressed anteriorly, posterior side of impression almost vertical, finely punctate, bottom of frontal impression almost horizontal, in middle with two long, flat setae pointed anteriorly. Narrow area below impressed, delimited ventrally by horizontal, hyaline frontoclypeal lamina. Frontoclypeal lamina at each side bearing wide, long, sinuate setae pointed anteriorly, at middle and on ventral side bearing shorter, narrow setae pointed ventrally and

anteriorly. Lateral parts of frons prominent, each forming robust, subtriangular process (dorsal view) bearing short setae, rounded anteriorly, at tip acute (lateral view). Anterior margin of frontoclypeus strongly prominant, not elevated, transverse at middle, sides rounded with long, horizontal setae. Middle of frontoclypeal ventral portion with two short median carinae converging and joined anteriorly, bearing short, curved setae at anterior end. Eyes with about 35 facets. Antennal scape thick (Figs 71–72) subcylindrical in dorsal view, swollen ventrally, with arcuate ventral contours (lateral view); pedicel much longer than scape, curved, evenly thin in basal half, gradually thickened about from middle toward apex; segment 9 wider than segment 8; segment 10 distinctly enlarged; segment 11 with subtriangular contours, widened ventrally, with deeply impressed base (Figs 64–65). Mesal side of protibiae with single large, spatulate sensillum. Apex of tergite 5 with single flat sensillum near centre, apparently lacking robust setae (Fig. 96). Abdominal sternite 2 large, at middle as long as mid-length of metasternum, slightly more than 3 times as long as sternite 1, with median carina about as long as one-seventh of median length of sternite; sternite 6 with pair of long subapical setae, basal angles weakly prominent, acute, mediobasal apophysis absent (Fig. 97). Aedeagus (Fig. 102) 0.300 mm long.

Female. Eyes with 8 facets. Abdominal sternite 2 about 3 times as long as sternite 1, distinctly longer than metasternum, median carina about one-fourth of mesal sternal length; sternite 2 about 3 times as long as sternite 1, distinctly longer than metasternum, with median carina about one-fourth of mesal sternal length.

Distribution. Japan: Kyushu.

Comments. This species is most similar to *M. discedens* and other Japanese congeners. It may be distinguished by the pronotal punctation and the shape of the male antennal segment 11.

Morana oxymoron sp. nov.
(Figs 372–373, 389–390, 396–398, 484)

Type material. Holotype (male, in MHNG): Thailand, Chiang Mai Prov., Chomthong Distr., Doi Inthanon, 2450 m, 9.XI.1985 (D. Burckhardt & I. Löbl) #19 [sifting dead leaves at forest's edge on steep slope].

Paratypes (31): with same data as holotype, 2 females in MHNG; same data but 1650 m, 7.XI.1985 [sifting vegetational debris on steep slope] 2 males & 7 females in MHNG; Chiang Mai Prov., Doi Inthanon, 1760 m, 3.III.1987 (P. Schwendinger) 9 males & 11 females in MHNG & PCSK.

Description. Length 1.15–1.20 mm. Body light brown. Head with vertex and frons uniformly, densely and coarsely punctate, impunctate central frontal impression excepted; pubescence short, recumbent, long occipital setae absent. Vertexal pits and occipital carina absent. Middle of vertex slightly convex. Frons with fairly shallow impression at middle, lateral frontal margins rounded, not crenulate; postantennal denticles present. Antennal segments 3 to 9 sexually modified (see below under sexual characters). Occipital edge arcuate, vertical, low. Neck with coarse dorsal punctures. Pronotum in male as wide as head with eyes, in female slightly wider than head with eyes, lacking median sulcus; basal foveae well-delimited, deep, subequal; lateral folds weak; basomedian carina absent. Pronotal, elytral, and abdominal punctation very fine, that on pronotum in some specimens coarser than on elytra and abdomen; pubescence longer than on head, strongly recumbent. Prosternal carina low. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae slightly arcuate, extending up to or almost up to apical fourth of tergite, separated at base by interval slightly larger than one-third of basal width, basal crenulation absent; sternite 2 with basal carinae distinct.

Male. Head as in Fig. 484. Head with frons prominent, almost in same plan as vertex, with arcuate contours in dorsal view, emarginate at middle in frontal view. Frontal impression clearly delimited anteriorly by elevated margin. Pubescence at anterior frontal margin very short. Frontoclypeus vertical and punctate at middle of upper part, impunctate ventrally, overlapped by frons in dorsal view. Lower part of frontoclypeus with transverse, narrow carina. Inferior frontoclypeal transverse carina low at middle, high laterally. Additional short, low, central carina tuberculate at middle, situated above centre of transverse carina. Central carina bearing at each side setal tuft elevated obliquely and abruptly curved to meet middle of carina. Additional short, lateral setal tuft pointed anteriorly. Frontoclypeus below transverse ridge weakly prominent, punctate, with long setae. Anterior frontoclypeal margin arcuate. Eyes with 30 to 35 facets. Antennae as Fig. 396, scape and pedicel as Figs 397–398; scape strongly widened ventrally and almost circular in lateral view, comparatively narrow in dorsal view, with mesal side impressed; pedicel small, gradually thickened, symmetrical; segments 3 to 6 relatively large, subequal, about as long as wide, bearing sparse microtubercles; segment 7 distinctly larger than preceding segments, longer than wide, densely microtuberculate; segments 8 and 9 small, much smaller than segment 6, wider than long; segment 10 about as long as and wider than segment 9; segment 11 about as long as combined length of segment 7 to 10. Mesal side of protibiae with

two large, spatulate sensillae. Metasternum with long medio-apical setae. Apex of abdominal tergite 5 as in Fig. 372. Abdominal sternite 2 strongly shortened mesally, at middle distinctly shorter than sternite 1, about as long as one-eighth of metasternum, with median carina reaching about sternal mid-length; sternite 6 (Fig. 373) shallowly impressed at middle. Aedeagus (Figs 389–390) 0.300 mm long.

Female. Frons with impression open anteriorly, partly coarsely punctate, anterior frontal margin angulate, Frontoclypeus entirely fairly coarsely punctate. Antennal segments 3 and 7 subequal, about as long as wide; segments 4 to 6 equal, slightly wider than long; segments 8 and 9 slightly shorter than segment 6; segment 11 about as long as combined length of segments 7 to 10. Eyes with 4 to 6 depigmented facets. Abdominal sternite 2 at middle about 3 times as long as sternite 1 and as long as metasternum, with median carina about one-sixth of mesal sternal length.

Distribution. Thailand.

Comments. This species is characterized by the absence of vertexal foveae and an occipital carina, antennal segment 8 distinctly smaller than segment 7, the shape of the male scape, and the particularly short male sternite 2.

Morana palaung sp. nov.
(Figs 242–243, 251, 253, 460)

Type material. Holotype (male, in ZMUM): Myanmar, Shan Prov., Namhsan, 1600 m, litter [at edge of a small swamp], 20.II.1996 (S. A. Kurbatov).

Paratypes (25): with same data as holotype, 8 males & 13 females in MHNG, PCSK & ZMUM; same data but 18.II.1996, 4 females in PCSK.

Description. Length 1.05–1.10 mm. Similar to *M. bidentata*, from which it differs as follows: Antennal segment 3 distinctly wider than long, as short as following segments. Pronotal punctation as dense and coarse as that on head; long occipital and pronotal setae absent, median basal foveae of pronotum distinct, larger than almost obsolete admesal foveae, and sexual characters distinctive. Elytral punctation variable, as fine as or distinctly coarser than that on abdomen. Abdominal sternite 2 with distinct basal crenulation.

Male. Head as in Fig. 460. Frons prominent, forming two short and wide lateral lobes, middle of anterior frontal margin extended by small denticle bearing two setal tufts curved abruptly laterally. Ventral side of frontal lobes each extended by acute, curved, tooth-like process. Frontoclypeus below anterior margin of frons very deeply excavated, middle of excavation with small lamina. Anterior part of frontoclypeus swollen, swollen area defined posteriorly by sinuate ridge, middle of posterior side with two setal tufts oriented obliquely into excavation, and with two deep admesal impressions delimited by carina. Anterior margin of frontoclypeus weakly rounded, surface above anterior margin pubescent. Eyes with about 30 facets. Antennal scape and pedicel as in Fig. 242; scape swollen ventrally, flattened mesally, with strongly extended inner apical angle, contours of mesal side sinuate in dorsal view; pedicel small, without basal stalk slightly longer than wide; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Metasternum with shallow medio-apical impression. Apex of abdominal tergite 5 emarginate, with large apophysis bearing five strongly modified sensillae and long setae (Fig. 251). Abdominal sternites 1, 2 and 6 deeply impressed at middle; sternites 1 and 2 at middle equally short, together slightly shorter than metasternum; sternite 2 with median carina inconspicuous, not exceeding basal carinae; sternite 6 (Figs 253) concave at middle, with strongly widened, short, curved sensillae and row of short setae. Aedeagus (Fig. 243) 0.280–0.290 mm long.

Female. Abdominal sternite 2 at middle twice as long as segment 1, slightly longer than metasternum, with median carina almost one-sixth of mesal sternal length.

Distribution. Myanmar.

Comments. This species is similar to *M. bidentata*, and their similar male sexual characters indicate a close relationship between these two species. It differs by abdominal sternites 1, 2 and 6 being deeply impressed.

Morana palpalis sp. nov.
(Figs 127–128, 164, 179–180, 443)

Type material. Holotype (male, in MHNG): Thailand, Chiang Mai Prov., Doi Suthep, 1400 m, 5.XI.1985 (D. Burckhardt & I. Löbl) [sifting dead leaves near creek in very moist ravine on slope N].

Paratypes (10): with same data as holotype, 4 males & 4 females in MHNG & PCSK; same data, but 1550 m, 4.XI.1985 [sifting dead leaves near creek in shallow ravine on slope N] 1 female in MHNG; same data, but 1320 m, 27.XII.1986 (P. Schwendinger) 1 male in MHNG.

Description. Length 1.05 mm. Body light brown. Head with uniformly coarse and very dense punctation; pubescence short, recumbent, long occipital setae absent. Vertexal pits inconspicuous, very small, situated slightly anterior to line of posterior eye margins in male, posteriorly to eyes in female; interval between them shorter than that between them and lateral head margins. Occipital carina fine, low, in some specimens reduced, usually extending far anterior to line of vertexal pits. Middle of vertex very weakly convex. Lateral margin of frons crenulate and with minute

postantennal denticles. Occipital edge weakly sinuate. Neck lacking dorsal impressions and carina. Antennal segment 3 slightly wider than long; segments 4 to 6 equally large, distinctly wider than long; segments 7 and 8 larger than segment 6; segment 9 about as large as segment 6; segment 10 larger than segment 8, wider than long; segment 11 almost as long as segments 6 to 10 combined. Pronotum as wide as or slightly wider than head with eyes, lacking median sulcus; median basal fovea deep, large; inner lateral foveae smaller, deep; outer lateral foveae almost indistinct; basomedian carina present; lateral folds indistinct. Pronotal punctation coarse and very dense, much coarser than that on head; pubescence recumbent, longer than on head. Prosternal carina low. Paranotal carinae present. Prohypomera impunctate or with few indistinct punctures along basal margin. Elytra, metasternum, and abdomen very finely punctate, metasternum and abdomen lacking puncture rows; elytral pubescence similar to that on pronotum. Abdominal tergite 1 with discal carinae parallel, barely reaching apical third of tergite, separated by one-third of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 443. Frons obliquely inclined anteriorly, lacking medio-anterior tubercle, shallowly impressed near latero-anterior lobes. Latter lobes of frons obliquely elevated, appearing small in dorsal view, large in lateral view. Upper part of frontoclypeus smooth, with pair of fine, horizontal setae. Frontoclypeus with transverse ridge in middle, bearing row of short, flat setae and pair of long, fine setae curved mesally. Anterior edge of frontoclypeus strongly elevated to form high ridge overlapping labrum, extended mesally to separate deep genal impressions. Upper side of anterior ridge bearing widened, long, diverging setae, posteriodorsal side of mesal ridge with two short, widened setae oriented dorsally, anterior side of frontoclypeal ridge pubescent. Eyes with about 35 facets. Apical segment of maxillary palpi with large flattened area appearing smooth. Antennal scape and pedicel as in Figs 127–128; scape narrowed apically and with mesal side widened and impressed; pedicel small, subcylindrical; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 179) slightly emarginate, with four long sensillae at middle. Abdominal sternite 2 moderately shortened toward middle, at middle about as long as two-thirds metasternal length and about twice as long as sternite 1, with median carina about one-third of sternal length; sternite 6 (Fig. 180) with apical margin truncate, bearing two pairs of long, flat setae. Aedeagus (Fig. 164) 0.120–0.130 mm long.

Female. Lateral edges of frons gradually inclined. Eyes with 6 to 8 facets. Abdominal sternite 2 at middle about 3 times as long as sternite 1 and distinctly longer than metasternum, with median carina about one-fifth of sternal length.

Distribution. Thailand.

Comments. This species is unique by the shape of the male apical segment of the maxillary palpi. It is also well-characterized by the shape of the male frons.

Morana palulifrons sp. nov.
(Figs 232–236, 455)

Type material. Holotype (male, in MHNG): East Malaysia, Sarawak, Gunung Penrissen, 1000 m, 23.V.1994 (I. Löbl & D. Burckhardt) #9a [sifting vegetational debris at] edge of primary montane forest.

Paratypes (6): with same data as holotype, 4 males & 2 females in MHNG & PCSK.

Description. Length 0.90–0.95 mm. Body brown, elytra usually somewhat darker than remainder of body. Head with vertex and frons coarsely and very densely punctate, frons anteriorly more finely punctate than posteriror part of vertex; pubescence very short, recumbent, long occipital setae absent. Vertexal pits situated in line of eye centres (male) or about in line of posterior eye margins (female); interval between them as large as that between them and lateral head margins. Occipital carina absent. Middle of vertex convex. Vertexal edge transverse, moderately high. Lateral margins of frons not crenulate; postantennal denticles absent. Frons with two foveiform impressions about in line with anterior eye margins. Dorsal side of neck with foveiform impression at middle. Antennae with segment 3 slightly wider than long; segments 4 to 6 shorter, much wider than long; segments 7 to 9 slightly longer than segment 6, slightly wider than long; segment 10 only slightly larger than segment 9; segment 11 about as long as combined length of segments 5 to 10. Pronotum as wide as head with eyes, lacking median sulcus; middle and admesal basal foveae deep, distinct, subequal in size; outer basal foveae shallow and not clearly visible in dorsal view; lateral folds indistinct; mediobasal carina absent. Pronotal punctation coarse and dense except near lateral margins, consisting of punctures distinctly larger and sparser than those on vertex; pubescence very short and appressed, slightly longer than that on head. Elytra with sutural striae barely visible near base, obsolete and indicated by weakly impressed line beyond basal third; punctation mostly dense and coarse, denser than that on pronotum, consisting of punctures mostly about as large as those on vertex, in some specimens slightly elongate, becoming sparser and finer toward basal margin; pubescence longer than that on pronotum, recumbent. Paranotal carinae present. Prohypomera impunctate. Metasternum coarsely and fairly densely punctate. Abdominal punctation dense and comparatively

coarse, slightly finer than that on vertex, punctures slightly elongate. Discal carinae of tergite 1 slightly converging apically, extending about to tergal mid-length, separated by about tergal mid-width, basal crenulation absent. Abdominal sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 455. Lateral margins of frons almost transverse, meeting at angle with upper genal margin. Middle part of frons strongly prominent, forming large, trapezoidal, weakly inflexed, dorsally slightly convex process. Anterior margin of frontal process densely pubescent. Area ventrally not excavated and not impressed, with small but conspicuous tubercle. Tip of tubercle pointed anteriorly, almost flat and oval, bearing two small setae. Frontoclypeus not prominent, vertical and with carina between tubercle and anterior margin, latter truncate and bearing long, horizontal setae. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 234–235; scape strongly swollen ventrally; pedicel almost cylindrical in dorsal view, weakly widened apically in lateral view; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Apical margin of abdominal tergite 5 (Fig. 232) with single large, wide sensillum and row of long setae. Abdominal sternite 2 strongly shortened mesally, at middle about 1.5 times as long as sternite 1, as long as half of mesal metasternal length; median carina of sternite 2 about one-fourth of sternal length; sternite 6 (Fig. 233) with three pairs of long, robust setae. Aedeagus (Fig. 236) 0.170–0.180 mm long.

Female. Lateral margins of frons oblique, middle of frons slightly impressed, mesal part of frontoclypeus convex, almost vertical. Eyes with 7 or 8 facets. Abdominal sternite 2 about 3 times as long as sternite 1, distinctly longer than metasternum, with median carina of sternite 2 about one-fifth of mesal sternal length.

Distribution. Borneo: Sarawak.

Comments. This species may be easily distinguished from its congeners by the shortened sutural striae of the elytra. It is also characterized by the less prominent and unexcavated male frontoclypeus.

Morana papulifera sp. nov.
(Figs 302, 306–307, 324, 326, 475)

Type material. Holotype (male, in MHNG): West Malaysia, Pahang, Cameron Highlands, trails 4 & 13, 1500 m, 23.III.1993 (I. Löbl & F. Calame) #15 [sifting dead leaves and roots near trunk].

Paratypes (2 males, in MHNG): West Malaysia, Pahang, Cameron Highlands, Ringlet, 1250 m, ravine, 26.III.1993 (I. Löbl & F. Calame) #20 [sifting decaying leaves and wood in ravine at edge of degraded forest]; Pahang, Cameron Highlands, Ringlet, 3200 fts [ca. 750 m], 7.VIII.1972 (T. Jaccoud).

Description. Length 1.05 mm. Body brown. Head with vertex and frons uniformly, very densely and coarsely punctate; pubescence short and strongly recumbent, pair of long occipital setae present. Vertexal pits situated about in line of posterior eye margins; interval between them as large as that between them and lateral head margins. Occipital carina low, extending up to line of anterior margin of vertexal pits. Centre of vertex convex. Frons at middle widely impressed, with pair of inconspicuous, minute, foveiform impressions, lateral margins weakly crenulate, distinctly notched; postantennal denticles distinct. Occipital edge high, at middle shallowly impressed. Dorsal side of neck with wide impression at middle. Antennal segment 3 about as long as wide; segments 4 to 6 subequal, slightly wider than long; segment 7 larger than segment 6, about as long as wide; segments 8 and 9 equally large, slightly wider than long; segment 10 much wider than segment 9; segment 11 almost as long as combined length of segments 6 to 10. Pronotum barely wider than head with eyes, median basal fovea elongate, extending anteriorly to form shallow median sulcus; median sulcus gradually narrowed anteriorly and reaching mid-length or anterior third of pronotal disc; remaining basal foveae small, not clearly visible; lateral folds inconspicuous; basomedian carina distinct. Pronotal punctation coarse and very dense, coarser than that on head, fine punctation along anterior margin excepted; pubescence similar to that on head, with 5 or 6 pairs of conspicuous long, semi-erect setae. Elytra lacking sutural striae. Elytral punctation about as coarse and dense as that on head but not well-delimited, almost absent from narrow basal area; pubescence recumbent, slightly longer than that on pronotum, with 9 pairs of long, semi-erect setae. Prosternal carina low. Paranotal carinae shortened basally. Prohypomera lacking puncture row. Metasternal punctation coarse and fairly dense, becoming very dense medio-apically. Abdominal pubescence uniformly short and strongly recumbent; tergite 1 with punctation slightly finer than head, dense, partly slightly elongate, discal carinae converging, extending almost to apical third of tergite, separated at base by interval slightly larger than half of tergal basal width, basal crenulation absent; following tergites very finely punctate; punctation on abdominal sternites 1 and 2 distinctly finer, and on median part of sternite 2 denser than that on metasternal centre; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 475. Frons weakly narrowed, not prominent, with anterior margin angulate. Frontoclypeus vertical, punctate, with median ridge and short, central tubercle bearing two setae. Central tubercle narrow at base, thickened at tip. Genal impressions fairly large, smooth. Anterior margin of frontoclypeus convex in dorsal view. Eyes with about 25 facets. Antennal scape and pedicel as in Fig.

306–307; scape cylindrical in dorsal view, not swollen ventrally; pedicel straight, gradually thickened apically. Mesal side of protibiae lacking large, spatulate sensillae. Metasternum flattened at middle. Apex of abdominal tergite 5 (Fig. 324) emarginate at middle, with three wide sensillae grouped and one isolated, narrower sensillum. Abdominal sternite 2 shortened mesally, at middle about twice as long as sternite 1, with median carina about one-third of mesal sternal length; sternites 1 and 2 together about as long as metasternum; sternite 6 (Fig. 326) with two pairs of long and flat sensillae. Aedeagus (Fig. 302) 0.260 mm long.

Female unknown.

Distribution. West Malaysia.

Comments. This species may be readily distinguished by the pronotum with an elongate basomedian fovea and elytra with long, semi-erect setae.

Morana pectinicornis sp. nov.
(Figs 322, 332, 334, 341, 351, 478)

Type material. Holotype (male, in MHNG): West Malaysia, Bukit Fraser's Hill, 4200 ft. [ca. 1400 m] 17.IX.1972 (T. Jaccoud).

Description. Length 1.00 mm. Body brown. Most of vertex and frons finely and densely punctate, lateral parts of vertex very finely punctate. Pubescence short and recumbent, long occipital setae absent. Vertexal pits situated slightly posteriorly to line of eye centres; interval between them as large as that between them and lateral head margins. Occipital carina extending slightly anterior to line of vertexal pits. Middle of vertex weakly convex. Occipital edge angulate, weakly arcuate, low. Dorsal side of neck with punctiform impression at middle and finely punctate. Lateral margins of frons not crenulate; postantennal denticles large. Inner side of antennal segments 3 to 7 widened by short processes and pectinate (Fig. 322); segments 8 and 9 subequal, slightly wider than long; segment 10 larger than segment 9, about as long as wide, conspicuously narrowed apically; segment 11 almost as long as combined lengths of segments 6 to 10. Pronotum slightly wider than head with eyes, lacking median sulcus; basal foveae small, even, barely visible; distinct basal puncture row; lateral foveae minute, barely visible; lateral folds and basomedian carina absent. Pronotal punctation coarse and dense on large median part, very fine on sides and along anterior margin; pubescence recumbent, longer than on head. Elytral, metasternal, and abdominal punctation very fine; pubescence short, recumbent. Prosternal carina low. Prohypomera very finely punctate. Outer margin of tibiae, in addition to normal pubescence, bearing one long seta. Abdominal tergite 1 with discal carinae parallel, extending about to apical third of tergite, separated by half of tergal width, base impressed, basal crenulation present; sternite 1 impunctate.

Male. Head as in Fig. 478. Frons with median ridge fairly wide, blunt, delimited by glabrous admesal impressions. Lateral parts of frons slightly prominent, lateral margins of frons rounded, inclined, anterior margin weakly concave and bearing two short setal tufts. Ventral side of anteriolateral frontal angles prominent, forming fairly large, pubescent processes oriented obliquely medioventrally, each bearing at tip one very long seta pointed obliquely mesally. Frontoclypeus deeply excavated below frons, forming large, flat surface that is prominent anteriorly, with truncate anterior margin and low, short, T-shaped ridge close to anterior margin. Antennal scape cylindrical in dorsal view, swollen ventrally; pedicel straight, narrow at base, gradually thickened apically. Eyes with about 25 facets. Protibiae (Fig. 341) with two large, spatulate sensillae on mesal side. Apex of abdominal tergite 5 as in Fig. 332. Abdominal sternite 2 shortened mesally, at middle about twice as long as sternite 1, distinctly shorter than metasternum, with median carina extending almost to apical third of sternite, basal carinae distinct; sternite 6 (Fig. 334) with two apical setiferous tubercles and pair of basal, triangular apophyses. Aedeagus (Fig. 351) 0.210 mm long.

Female unknown.

Distribution. West Malaysia.

Comments. This species may be easily distinguished from its congeners, and from other members of the *Morana* group, by the shape of the pectinate antennal segments 3 to 7. Although this may be a male sexual character, in the absence of the female it is used as a non-sexual character.

Morana perreaui sp. nov.
(Figs 383–384, 387)

Type material. Holotype (male, in MHNG): Indonesia, Kalimantan [Timur, district Kutai Timur, karst of Mangkalihat, Mts Marang, 1.5 km from entrance of] Gua Sepedan, 01°07'N, 117°20'E, 8.VI.2002 (M. Perreau) fossil subterranean network [sandy banks Marang river, in layer of leaf litter deposit].

Paratypes (4 in MHNG): with same data as holotype, 1 male & 3 females.

Description. Length 1.1 mm. Body yellowish or reddish-brown, abdomen darkened in some specimens. Head with vertex and frons almost uniformly very finely and fairly densely punctate, small latero-anterior area of frons more densely and slightly more coarsely punctate than remainder of frons, pubescence short, recumbent, long occipital setae present. Vertexal pits about in same line as posterior eye margins, separated

by interval distinctly smaller than that between them and lateral head margins. Occipital carina present on posterior part of vertex and occipital edge, not extending up to line of vertexal pits and absent from neck. Vertex convex. Frons short, with contours angulate, oblique anteriorly, not crenulate, postantennal denticles absent. Occipital edge transverse, fairly high, rounded. Dorsal side of neck smooth. Antennal segment 3 hardly longer than wide, segments 4 to 6 equally large, slightly wider than long, segments 7 to 9 slightly larger than segment 6, wider than long, segment 10 much larger than segment 9, only slightly wider than long, segment 11 about as long as combined lengths of segments 7 to 10. Pronotum wider than head with eyes, lacking median sulcus, basal foveae subequal, shallow, not well-delimited, lateral folds hardly visible, basomedian carina absent. Pronotal punctation very fine and fairly dense, similar to that on vertex, pubescence short, recumbent, in addition two pairs of erect, long setae present. Paranotal carinae present. Elytral punctation similar to pronotal punctation, pubescence slightly longer than that on pronotum, additional three pairs of long, erect setae at lateral margins. Prosternal carina low. Prohypomera, metasternum, and abdomen very finely punctate, lacking puncture rows. Abdominal tergite 1 with discal carinae subparallel, weakly curved, reaching apical third of tergal length, separated at base by slightly more than half of tergal width, basal crenulation distinct; paratergites 1 each with one long, erect seta; middle part of tergites 2 to 4 each with one pair of long, erect setae; sternite 2 with basal crenulation distinct.

Male. Anterior parts of frons strongly inclined and triangular. Frontoclypeus almost vertical, rounded at mid-line, lacking excavation, with anterior margin arcuate, not prominent. Eyes with about 30 facets. Protibiae lacking large, spatulate sensillae. Abdominal tergite 5 as in Fig. 383; sternite 2 weakly shortened mesally, at middle almost 3 times as long as sternite 1, about as long as two-thirds of metasternum, median carina almost one-third of mesal sternal length: sternite 6 as in Fig. 384. Aedeagus (Fig. 387) 0.270 mm long.

Female. Frons not clearly separated from frontoclypeus. Eyes with 8 to 10 partly depigmented facets. Abdominal sternite 2 at middle about 3 times as long as sternite 1, distinctly longer than metasternum, median carina extending almost up to sternal mid-length.

Distribution. Borneo: East Kalimantan.

Comments. This species may be easily distinguished by the long, erect or semi-erect setae on the pronotum, elytra, and abdomen. In addition, it has abdominal tergite 1 carinate basally and the male head is only slightly sexually modified.

We name this species in honour of its collector, Michel Perreau, Paris.

Morana persolla sp. nov.
(Figs 190, 202, 230–231, 454)

Type material. Holotype (male, in ZMUM): West Malaysia, Perak, East Taiping, Maxwell Hill, 1200 m, litter, 8.II.1999 (S. A. Kurbatov).

Paratypes (7): with same data as holotype, 1 male in PCSK; Maxwell Hill, 1150 m, 25.XI.1999 (G. Cuccodoro & I. Löbl) #15b [sifting leaf litter in evergreen broadleaf montane forest] 3 males in MHNG; same data, but 24.XI.1999, # 14a [sifting decaying grass cutting along trail in evergreen broadleaf montane forest] 2 males in MHNG; same data but 1100 m, 21.XI.1999, #11b [sifting leaf litter and vegetational debris along road in evergreen broadleaf montane forest] 1 male in MHNG.

Description. Length 1.05 mm. Body reddish-brown. Head with vertex and lateral parts of frons rather densely and fairly finely punctate, in some specimens middle of vertex sparsely punctate; middle part of frons very finely punctate; pubescence short, recumbent, long occipital setae absent. Vertexal pits distinct, situated slightly anterior to line of posterior eye margins; interval between them slightly larger than interval between them and lateral head margins. Occipital carina long, extending well anterior to vertexal pits, almost up to inclined anterior part of frons. Middle part of vertex weakly swollen. Lateral margins of frons not crenulate; postantennal denticles distinct, margins notched beyond denticles. Dorsal side of neck lacking impressions. Occipital margin arcuate. Antennal segment 3 about as long as wide; segments 4 to 9 wider than long, equal to or segment 7 slightly longer than segments 6 and 8; segment 10 about as long as and much wider than segment 9; segment 11 about as long as segments 6 to 10 combined. Pronotum slightly wider than head with eyes, lacking median sulcus; middle basal fovea large, well-delimited laterally and basally, becoming gradually shallower anteriorly; remaining basal foveae small, sharply delimited; lateral folds distinct; basomedian carina present. Pronotal, elytral, metasternal, and abdominal punctation very fine; dorsal pubescence fairly long, much longer than that on vertex. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum, and abdomen lacking puncture rows. Abdominal tergite 1 with discal carinae parallel, extending up to apical third of tergal length, separated by about half of tergal width, basal crenulation absent; sternite 2 with median carina very short, barely exceeding basal crenulation, the latter distinct.

Male. Head as in Fig. 454. Lateral parts of frons prominent, forming fairly large processes that are not swollen dorsally, bearing short setae at anterior margin. Middle part of frons smooth and moderately inclined toward anterior margin. Anterior margin truncate, with six long, horizontal setae. Surface below

deeply excavated, with long, horizontal setae grouped laterally to form tufts, bottom of excavation with two longitudinal carinae. Anterior part of frontoclypeus weakly prominent, strongly elevated, forming subpentagonal, almost vertical, laterally carinate surface bearing short pubescence. Anterior margin of frontoclypeus transverse. Eyes with about 30 facets. Antennal scape and pedicel as in Fig. 190; scape swollen ventrally, subcylindrical in dorsal view; pedicel elongate, cylindrical; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 230) forming acute point, with four large sensillae and row of long setae. Abdominal sternite 2 narrowed toward middle, at middle about 1.5 times as long as sternite 1, only slightly longer than half of metasternum; sternite 6 (Fig. 231) impressed at middle, with U-shaped row of long, flat setae, and robust basal apophysis at right side of basal gland opening. Aedeagus (Fig. 202) 0.230 mm long.

Female unknown.

Distribution. West Malaysia.

Comments. Males of this species may be distinguished by the shape of the frons and frontoclypeus, and the impressed genital sternite.

Morana petulca sp. nov.
(Figs 177–178, 183–184, 199, 447)

Type material. Holotype (male, in MHNG): Indonesia, West Sumatra, Anai Valley Nat. Res., 10 km W Padangpanjan, 250 m, 17.XI.1989 (I. Löbl, D. Agosti & D. Burckhardt) #18 [sifting vegetational debris in degraded lowland forest].

Description. Length 1.00 mm. Body light brown. Head with punctation extremely dense and fine on lateral parts of frons, coarse and dense on frontal centre and vertex. Pubescence short, recumbent. Long occipital setae absent. Vertexal pits situated slightly anterior to line of posterior eye margins; interval between them distinctly larger than intervals between them and lateral head margins. Occipital carina distinct, long, extending onto frons anterior to line of vertexal pits. Middle of vertex slightly convex. Occipital edge low, transversely truncate. Lateral margins of frons very finely crenulate, each with minute postantennal tubercle. Antennal segment 3 barely wider than long; segments 4 to 6 equally large, distinctly wider than long; segments 7 to 9 equally large, longer than segment 6; segment 10 slightly wider and notably longer than segment 9, slightly wider than long; segment 11 almost as long as segments 6 to 10 combined. Pronotum almost as wide as head with eyes, lacking median sulcus; outer pair of basal foveae shallow, not clearly delimited; inner three basal foveae deep and sharply delimited; middle fovea enlarged; basomedian carina present; lateral folds distinct. Pronotal, elytral, metasternal, and abdominal punctation very fine; dorsal pubescence longer than that on head, recumbent. Prosternal carina low. Paranotal carinae present. Prohypomera, metasternum, and abdomen lacking puncture rows. Abdominal tergite 1 with discal carinae parallel, extending to posterior third of tergite, separated by half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 447. Lateral parts of frons prominent, each forming large process that is gradually narrowed and slightly inclined, with subangulate outer margin. Apical part of inner margins of frontal processes bearing several fine, horizontal setae pointing to mesal axis. Middle part of frons impressed, with upper margin narrowed to form acute point. Upper lateral parts of frontoclypeus with minute carina bearing setal tuft. Anterior part of frontoclypeus prominent, rounded, pubescent, slightly elevated, with robust median ridge dividing large genal impressions, transverse ridge bearing dense row of flat setae situated above median ridge. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 183–183; inner side of scape with impression delimited by carina; pedicel longer than scape, gradually thickened apically, with apical margin oblique; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 177) asymmetrically angulate, with four wide sensillae and row of thin setae. Abdominal sternite 2 shortened toward middle, at middle about two-thirds of metasternal length and twice as long as sternite 1, median carina as long as one-third of sternal length; sternite 6 (Fig. 178) lacking flat setae, with long, oblique basal apophysis. Aedeagus (Fig. 199) 0.220 mm long.

Female unknown.

Distribution. Sumatra: West Sumatra.

Comments. This species is similar to *M. machaerifera*, but may be recognised easily by its strongly asymmetrical antennal scape.

Morana platypes sp. nov.
(Figs 268–269, 281, 283, 285, 298, 473)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Crocker Range, 1200 m, km 63 rte Kota-Kinabalu to Tambunan, 19.V.1987 (D. Burckhardt & I. Löbl) #31a [sifting vegetational debris in moist ravine at edge of moist forest with *Lithocarpus*, *Castanopsis* and arboreal ferns].

Description. Length 1.05 mm. Body brown. Head with vertex and frons coarsely and very densely punctate, pubescence short, recumbent. Vertexal pits and occipital carina absent. Middle of vertex slightly convex. Lateral margins of frons not crenulate;

postantennal denticle absent. Occipital edge rounded, low, barely arcuate. Neck with small, foveiform, dorsomedian impression. Antennal segment 3 about as long as wide; segments 4 to 9 subequal, wider than long; segment 10 moderately larger than segment 9, gradually narrowed apically; segment 11 about as long as combined length of segments 6 to 10. Pronotum slightly wider than head with eyes, median sulcus absent; median and admesal basal foveae large and deep, subequal in size; lateral basal foveae smaller, inconspicuous; basomedian carina absent; lateral folds almost indistinct. Pronotal punctation coarse and dense, distinctly coarser and sparser than vertexal punctation; pubescence long, semi-erect. Elytral punctation slightly finer and about as dense as pronotal punctation; pubescence long, semi-erect. Prosternal carina low. Paranotal carinae present. Prohypomera with row of basal punctures. Metasternum short, with row of punctures along mesocoxal cavities and along margin of intermetacoxal process. Middle and lateral parts of metasternum very finely punctate. Abdomen finely punctate; pubescence long, erect; tergite 1 with discal carinae arcuate, converging apically, extending to apical fifth of tergum, separated at base by about two-fifths of basal length, basal crenulation present but almost indistinct; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 473. Frons narrowed, with concave lateral margins above antennal insertions, lateral parts of frons distinctly impressed and flattened, middle of frons strongly impressed and smooth. Middle of frontal impression with low, circular tubercle bearing two digitiform sensillae; sensilla robust, erect, slightly diverging. Small tubercle bearing setae pointed anteriorly at each side of circular tubercle. Lateroanterior frontal margin narrow, bearing short, horizontal setae. Anterior margin of frontal impression elevated to form sharp, weakly sinuate ridge bearing curved setal tufts. Frontoclypeus prominent inferiorly and deeply excavated. Anterior part of frontoclypeus strongly elevated to form high ridge. Anterior side of latter flattened, almost vertical, pubescent, with microsculpture consisting of transverse striae. Posterior side of frontoclypeal ridge with small, flat protuberance at middle, near upper edge, short, wide setae, and two setal tufts pointed posteriorly. Lower edge of frontoclypeal ridge rounded, overlapping labrum. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 268–269; scape short, with large, flattened area on mesal side delimited by dorsal carina; pedicel thickened mesally; club not modified. Protibiae (Fig. 281) strongly widened from base toward apical fourth, in apical fourth abruptly narrowed. Mesal side of protibiae conspicuously flattened, with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 283) with pair of large, hook-like sensillae at lateral angles, subapical, wide T-shaped sensillum near middle, row of narrow apical sensillae slightly widened at tip; sternite 2 moderately narrowed mesally, at middle about twice as long as sternite 1, slightly shorter than metasternum, median carina not quite half as long as sternite; sternite 6 (Fig. 285) with long, robust setae. Aedeagus (Fig. 298) 0.210 mm long.

Female unknown.

Distribution. Borneo: Sabah.

Comments. This species may be easily distinguished by the shape of its protibiae. In addition, it differs drastically from most congeners by the punctate prohypomera and the coarse metasternal puncture rows.

Morana puella Tanabe et Nakane, 1990
(Figs 66, 79–80, 88, 90, 105, 430)

Morana puella Tanabe et Nakane, 1990: 26.

Type material. Material examined (5 paratypes, gifts from NSMT to MHNG): Harumeki, Sajamoto-mura, Yatsushiro-gun, Kumamoto-ken, 2.IV.1985 (T. Tanabe) 3 males; Sawamuta, Izumi-mura, Kumamoto-P., 8.IV.1985 (T. Tanabe) 2 females.

Description. Length 1.2–1.3 mm. Similar to *M. discedens*, from which it differs as follows: Vertex very finely punctate. Occipital carina in male much longer, extending onto frons, almost up to anterior frontal margin. Abdominal pubescence shorter than that on elytra and pronotum.

Male. Head as in Fig. 430. Vertex and frons similar as in *M. discedens*, but frons at middle prominent and not impressed, lateral frontal processes larger, frontoclypeal lamina much larger, almost completely covering inferior part of frontoclypeus, frontoclypeus lacking median ridge, with anterior margin weakly arcuate at middle. Scape weakly curved in dorsal view, flattened dorsally, lacking ventral impression; pedicel gradually thickened toward apex, weakly curved in lateral view (Fig. 66); antennal segments 9 and 10 conspicuously expanded ventrally; segment 9 longer than segment 10; segment 11 with large, impunctate basal impression, carinate ventral margin, widest at base (Figs 79–80). Abdominal tergite 5 angulate at middle, with two central sensillae (Fig. 88); sternite 2 at middle about 3 times as long as sternite 1 and distinctly shorter than metasternum, median carina about one-fourth of mesal sternal length; sternite 6 with irregularly expanded left side of basal margin (Fig. 90). Aedeagus (Fig. 105) 0.220 mm long, with robust apical process, internal sac with large sclerotized plate and several large tooth-like rods.

Female. Middle of frons flattened anteriorly. Occipital carina extending slightly anterior to line of vertexal

pits. Eyes with 9 or 10 facets. Abdominal sternite 2 about 3 times as long as sternite 1 and distinctly longer than metasternum, with median carina one-sixth of mesal sternal length.

Distribution. Japan: Kyushu.

Comments. This species is distinctive by the male frons and antennae. The occipital carina illustrated in Tanabe & Nakane (1990) is short, and the discal carinae of abdominal tergite 2 are long. All the specimens examined have the discal carinae of tergite 2 extending about half of the tergal length, and the males possess a long occipital carina. The two females examined have short a occipital carina.

Morana punctata (Raffray, 1897) comb. nov.
(Figs 280, 288, 290, 295)

Bythinophanax punctatus Raffray, 1897: 266.

Type material. Material examined: lectotype male (by present designation) labeled 'Sumatra / Sumatra Grouvelle [handwritten, red] / Muséum Paris 1917 Coll. A. Raffray / TYPE [red] / *B. punctatus* A. Raffray det.', in MNHN.

Redescription. Length 1.05 mm. Body brown. Head with vertex and frons densely, fairly coarsely punctate, with punctures smaller or about as large as puncture intervals; pubescence short, recumbent (to large extent rubbed off). Vertexal pits situated about in line of eye centres; interval between them slightly larger than that between them and lateral head margins. Occipital carina obtuse, extended slightly anterior to line of vertexal pits. Median part of vertex convex. Lateral margins of frons lacking crenulations, angulate but lacking postantennal denticles. Frons with pair of shallow, foveiform impressions. Vertexal edge fairly high, rounded, weakly concave in dorsal view. Dorsal side of neck very shallowly impressed at both sides of median carina. Antennal segment 3 barely longer than wide; segments 4 to 6 subequal, about as long as wide; segments 7 and 8 somewhat larger than segment 6, slightly wider than long; segment 9 slightly larger than segment 8, barely wider than long; segment 10 distinctly wider than long and larger than segment 9; segment 11 about as long as combined length of segments 6 to 10. Pronotum about as wide as head with eyes, lacking median sulcus; median basal fovea large, well-delimited basally, extending more anteriorly than admesal basal foveae; admesal and lateral basal foveae fairly well-delimited; mediobasal carina present; lateral folds distinct, each with minute, acute tubercle. Punctation on most of pronotal disc similar to that on frons, punctation on lateral parts of pronotum extremely fine; pronotal pubescence longer than that on head, recumbent. Paranotal carinae present. Elytral punctation dense and fine, much finer than that on pronotum; elytral pubescence similar to that on pronotum. Prosternal carina low. Prohypomera impunctate, lacking sulci. Metasternum very finely punctate, lacking puncture row. Abdominal punctation very fine, sternite 1 lacking puncture row; tergite 1 with discal carinae weakly converging apically, slightly curved, almost reaching up to apical third of tergite, separated at base by interval slightly larger than half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Anterior margin of frons weakly, widely concave. Anterior side of frons vertical, with small tubercle at middle of inferior margin. Frontoclypeus impressed inferiorly, with two horizontal, mesally curved setal tufts just below frontal tubercle. Area below frontal tubercle excavated, delimited anteriorly by two flat, lateral ridges. Excavation narrow. Middle of lower part of frontoclypeus with median tubercle bearing translucent setae pointing dorsally. Dorsal margins of frontoclypeal ridges rounded, each bearing two long setae; outer almost straight and pointed anteriorly, inner curved mesally. Anterior frontoclypeal margin weakly rounded, moderately prominent. Eyes with about 30 facets. Antennal scape and pedicel as in Fig. 280; scape swollen ventrally, flattened mesally, subcylindrical in dorsal view; pedicel gradually thickened apically, about as long as scape, weakly curved in dorsal view, straight in lateral view; club not modified. Mesal side of protibiae with two large, spatulate sensillae and subapical tuft of long setae. Apex of abdominal tergite 5 with two admesal, very large, digitiform sensillae and two lateral, minute digitiform sensillae (Fig. 288). Abdominal sternite 2 strongly shortened mesally, at middle shorter than sternite 1, with median carina reduced; combined middle length of sternites 1 and 2 shorter that metasternal length; sternite 6 (Fig. 290) with one long, mediobasal apophysis. Aedeagus (Fig. 295) about 0.200 mm long.

Female unknown.

Distribution. Sumatra.

Comments. This species may be distinguished by the tuberculate lateral folds of the pronotum. The pubescence and the aedeagus of the holotype are in poor condition, in particular the basal bulb of the aedeagus is strongly deformed. Unfortunately, no other specimens of this species are available for study.

Morana rebellis sp. nov.
(Figs 218, 220, 222–223, 240, 459)

Type material. Holotype (male, in MHNG): Indonesia, Sumatra, Aceh, Selatan Babahrot, 100 m, 7.VIII.83 (J. Klapperich).

Paratypes (3 males in MHNG in PCSK): with same data as holotype.

Description. Length 1.05 mm. Body light brown. Head with vertex and frons almost uniformly, very densely and fairly coarsely punctate; pubescence short, recumbent, long occipital setae absent. Vertexal pits almost indistinct, situated in line with posterior eye margins; interval between them as large as that between them and lateral head margins. Occipital carina short, extending anterior to line of vertexal pits, up to or almost up to frontal impression. Middle part of vertex flat. Lateral margins of frons weakly crenulate; postantennal denticles minute, blunt. Occipital edge arcuate, obliquely inclined. Antennal segment 3 about as long as wide; segments 4 to 9 equally large, wider than long; segment 10 larger than segment 9, much wider than long; segment 11 about as long as combined length of segments 5 to 10. Pronotum as wide as head with eyes, lacking median sulcus; basal foveae deep but not clearly delimited; middle basal fovea divided in two by elongate, flat median carina; basomedian carina absent. Pronotal punctation variable, very fine and sparse laterally, in middle fairly fine, notably coarser and denser than on lateral parts, much sparser and finer than on vertex; pubescence longer than that on head, recumbent. Elytral punctation very fine near base, over most of surface similar to or coarser than that on pronotal centre, consisting of clearly delimited punctures; pubescence similar to that on pronotum. Prosternal carina low. Paranotal carinae present. Prohypomera lacking puncture row. Metasternum punctate along margins of mesocoxal cavities, impunctate along margin of intermetacoxal process. Abdomen very finely punctate, except for puncture row at base of intercoxal process of sternite 1; tergite 1 with discal carinae weakly converging apically, extending up to or almost up to tergal mid-length, separated by interval slightly wider than half of basal width of tergite, basal crenulation present; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 459. Frons impressed at middle, with anterior margin truncate and bearing pair of central, long, diverging setae, with rim of very short, flat setae. Lateral parts of frons slightly prominent, slightly extending anterior to line of truncate anterior margin. Frontoclypeus excavated in apical portion. Centre of excavation with prominent, narrow, transverse, triangular ridge joined to three short vertical carinae. Triangular process bearing wide setae situated at both sides of central ridge. Bottom of excavation transversally carinate. Genae deeply impressed, pubescent near eyes. Anterior part of frontoclypeus prominent, strongly elevated and carinate. Middle of elevated anterior part of frontoclypeus flattened, extremely densely and finely punctate and bearing short pubescence pointed anteriorly, lower part with long pubescence, upper admesal parts impressed and smooth. Anterior margin of frontoclypeus very weakly bisinuate. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 222–223; scape subcylindrical in dorsal view, curved and strongly thickened ventrally in lateral view, with long apical seta; pedicel elongate, gradually thickened apically; club not modified. Mesal side of protibiae with one large, spatulate sensillum. Apex of abdominal tergite 5 (Fig. 218) emarginate at middle, with four large, curved sensillae and long pubescence; sternite 2 moderately narrowed mesally, at middle almost twice as long as sternite 1 and about as long as two-thirds length of metasternum, with median carina about as long as one-sixth of mesal sternal length; sternite 6 (Fig. 220) with short basal apophysis situated morphologically right of basal gland opening, with three pairs of flat setae and three pairs of narrow setae. Aedeagus (Fig. 240) 0.200 mm long.

Female unknown.

Distribution. Sumatra: Aceh.

Comments. This species is characterized by the mesal portion of the male frontoclypeal process being very densely punctate, the first abdominal tergite carinate basally, and the male second sternite being twice as long as the first sternite (see also comments under *M. agostii*).

Morana repandirostra sp. nov.
(Figs 125–126, 159, 162, 198, 442)

Type material. Holotype (male, in MHNG): Thailand, Chiang Mai Prov., Doi Suthep, 1050 m, 5.XI.1985 (D. Burckhardt & I. Löbl) [sifting of rotted wood, bark and fungi in very moist ravine on slope N].

Paratype (male, in MHNG): with same data as holotype.

Description. Length 0.95 mm. Body light brown. Head with uniform, very dense and fairly fine punctation; pubescence conspicuously short, recumbent, long occipital setae absent. Vertexal pits obsolete. Occipital carina very fine, extending about to line of anterior eye margin. Middle of vertex slightly convex. Lateral margins of frons rounded, crenulate, lacking postantennal denticles. Occipital edge weakly arcuate, high. Antennal segments 3 to 9 wider than long; segments 7 to 9 slightly narrower than segments 3 to 6; segment 10 distinctly wider than segment 3; segment 11 as long as segment 5 to 10 combined. Pronotum as wide as head with eyes, lacking median sulcus; basal foveae not well-delimited; median fovea larger than lateral foveae; basomedian carina very short; lateral folds indistinct. Pronotal punctation dense and coarse, much coarser and sparser than punctation on head; pubescence fairly long, several times longer than on head, recumbent. Paranotal carinae present. Elytral and abdominal punctation very fine; pubescence similar to that on pronotum. Prosternal carina low. Prohypomera,

metasternum, and abdomen lacking puncture rows. Metasternal pubescence very short. Abdominal tergite 1 with discal carinae parallel, reaching up to apical third of tergite, separated by about one-third of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 442, with subpentagonal contours. Frons with two admesal impressions becoming deeper anteriorly and separated by small, flattened process. Lateral edges of mesal frontal process bearing pair of thick, horizontal setae. Lateral parts of frons slightly elevated and convex, strongly prominent anteriorly and forming large, almost horizontal lobes. Upper part of frontoclypeus almost vertical up to middle, with transverse ridge bearing conspicuous flat, horizontal setae in middle. Centre of inferior part of frontoclypeus with large, pubescent tubercle narrowed dorsally and forming ridge. Genae lateral to frontoclypeal tubercle strongly impressed, smooth. Anterior margin of frontoclypeus rounded. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 125–126; scape swollen ventrally, with upper part of mesal side impressed; pedicel short; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 159) with four sensillae. Abdominal sternite 2 moderately narrowed mesally, at middle about twice as long as sternite 1, about two-thirds of metasternal length, with median carina about one-fourth of median sternal length; sternite 6 (Fig. 161) with basal margin strongly asymmetrical, apical margin truncate, three pairs of long robust setae and transverse row of fine setae. Aedeagus (Fig. 198) 0.150 mm long.

Female unknown.

Distribution. Thailand.

Comments. This species has unusually short pubescence on the dorsal side of the head. In addition it may be distinguished from its congeners by the obsolete vertexal pits, in combination with the male sexual characters affecting the frons and antennae.

Morana sagax sp. nov.
(Figs 111–112, 134, 143, 145, 436)

Type material. Holotype (male, in MHNG): Singapore, Nee Soon Swamp, forest, litter, 16.II.1962 (D. H. Murphy) #185.

Description. Length 0.85 mm. Body brown. Head with dense and fairly fine punctures along vertexal carina and on medioposterior area of vertex, lateral parts of frons rugose, remainder of frons and vertex very finely and sparsely punctate; pubescence short, recumbent, long occipital setae absent. Vertexal pits situated slightly anterior to line of posterior eye margins; interval between them shorter than that between them and lateral head margins. Occipital carina long, extending onto frons, almost up to line of anterior eye margins. Middle of vertex convex. Occipital edge fairly high, arcuate. Lateral margins of frons crenulate, each with one distinct postantennal denticle. Antennal segment 3 slightly wider than long; segments 4 to 6 equally large, distinctly wider than long; segments 7 to 9 longer than segment 6, each about as long as wide; segment 10 slightly larger than segment 9; segment 11 as long as segments 6 to 10 combined. Pronotum barely wider than head with eyes, lacking median sulcus; middle basal fovea large, deep and well-delimited; remaining basal foveae small, not clearly delimited; basomedian carina present; lateral folds indistinct. Pronotal, elytral, metasternal, and abdominal punctation sparse and very fine; pubescence similar to that on head. Prosternal carina high, elevated between procoxae to reach procoxal mid-length. Paranotal carinae absent. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae robust, almost parallel, reaching apical third of tergite, separated by interval almost as large as half of basal tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 436. Frons gradually narrowed and inclined anteriorly, with narrow anterior notch, lateral frontal margins elevated to form ridges. Middle of frontal anterior edge with pair of flat setae diverging and curved ventrally. Frontoclypeal excavation narrow. Middle part of frontoclypeus with small, transverse ridge and setae pointed anteriorly. Anterior part of frontoclypeus swollen and elevated at middle to form ridge bearing curved, fairly long setae. Anterior margin of frontoclypeus arcuate. Genae deeply impressed and smooth. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 111–112; scape convex dorsally and ventrally, flat mesally; pedicel in dorsal view about as long as scape, weakly curved, gradually thickened apically; club not modified. Protibiae lacking spatulate sensillae. Abdominal tergite 5 (Fig. 143) with tubercle bearing two long setae and row of marginal setae; sternite 2 strongly narrowed toward middle, at middle about as long as half of metasternum, slightly longer than sternite 1, median carina extending onto apical half; sternite 6 (Fig. 145) with large dextral denticle and several long, flat setae. Aedeagus (Fig. 134) 0.180 mm long.

Female unknown.

Distribution. Singapore.

Comments. This species is unique in having a convex prosternum, and a large intercoxal process that extends up to the middle of the procoxae. It is also characterized by abdominal sternite 2 being strongly shortened mesally, the paranotal carinae lacking, and the male protibiae lacking spatulate sensillae.

The aedeagus of the holotype is slightly deformed.

Morana scapus sp. nov.
(Figs 316–317, 328, 330, 348, 466)

Type material. Holotype (male, in MHNG): Sumatra, Aceh, Mt. Leuser Nat. Park, 300–500 m, Ketambe, 23–30.X.1989 (I. Löbl, D. Agosti & D. Burckhardt) #25a [sifting of vegetational debris in lowland dipterocarp forest].

Paratype (male, in MHNG): with same data as holotype.

Description. Length 0.95 mm. Body light brown. Head with vertex and frons uniformly coarsely and densely punctate; pubescence fairly short, recumbent, long occipital setae absent. Vertexal pits obsolete. Occipital carina short, present only on inclined, occipital side of head. Middle of vertex and frons slightly convex. Frons with two shallow, foveiform impressions about in same line as anterior eye margins. Lateral margins of frons short, parallel, not crenulate; postantennal denticles absent. Antennal segment 3 longer than wide; segments 4 to 9 subequal, about as long as wide; segment 10 larger than segment 9, slightly wider than long; segment 11 about as long as combined length of segments 7 to 10. Pronotum about as wide as head with eyes, lacking median sulcus; middle basal fovea large, deep, well-delimited; admesal basal foveae shallower, not clearly delimited; lateral basal foveae small; lateral folds barely distinct; basomedian carina absent. Pronotal and elytral punctation subequal, almost as coarse as that on vertex; pubescence longer than on head, recumbent. Prosternal carina low. Prohypomera lacking puncture rows. Metasternum entirely coarsely and densely punctate. Abdominal tergite 1 finely but distinctly punctate, with discal carinae parallel, extending about to tergal mid-length, separated at base by interval as large as half of tergal width, basal crenulation absent; sternites 1 and 2 covered by punctation only slightly finer and denser than that on metasternum; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 466. Frons subquadrate, not prominent, with very narrow anterior area strongly inclined. Anterior margin of frons with tuft of short setae pointed anteriorly, and with few fine, slightly longer setae pointed obliquely mesally. Frontoclypeus not excavated, with prominent, trapezoidal lamina below frontal setal tuft. Angles of lamina produced and acute, middle of lamina longitudinally carinate, sides bearing short setal tufts. Anterior part of frontoclypeus prominent, with robust, vertical, tooth-like process at middle. Tip of process bearing two very short setae. Anterior margin of frontoclypeus weakly rounded, bearing long, erect setae. Genal impression moderately large, shallow. Eyes with about 25 facets. Antennal scape and pedicel as in Figs 316–317; scape short, subcylindrical in dorsal view, with slightly prominent outer apical angle, ventrally strongly explanate and flattened, impressed mesally; pedicel curved and gradually thickened apically; club not modified. Profemora widened apically, inner side impressed near apex. Protibiae comparatively strongly swollen apically, with two long, spatulate sensillae on mesal side. Apex of abdominal tergite 5 as in Fig. 328; sternite 2 hardly narrowed mesally, at middle about 3 times as long as sternite 1, slightly shorter than metasternum, with median carina one-fifth of mesal sternal length; sternite 6 as in Fig. 330. Aedeagus (Fig. 348) 0.090 mm long.

Female unknown.

Distribution. Sumatra: Aceh.

Comments. This species may be distinguished by the coarse elytral, pronotal, and metasternal punctation, in combination with the large male second abdominal sternite and the shape of the male scape.

Morana schwendingeri sp. nov.
(Figs 121–122, 156, 158, 165, 440)

Type material. Holotype (male, in MHNG): Thailand, Surat Thani Prov., Phanon Distr., Khao Sok Nat. Park, 70 m, 6.XII.1991 (P. Schwendinger).

Paratypes (4, in MHNG): with same data as holotype, 2 males & 2 females.

Description. Length 0.90–0.95 mm. Body reddish-brown. Head with punctation dense and fairly coarse on lateral parts of frons, dense and very fine on remaining surface; pubescence fairly long, recumbent, long occipital setae absent. Vertexal pits situated about in line with centres of eyes (male) or with posterior margins of eyes (female); interval between them as long as that between them and lateral head margins. Occipital carina long, distinct, extended anterior line of anterior eye margins. Middle of vertex slightly convex. Frons with shallow admesal impressions joined anteriorly; lateral margins irregularly rounded, crenulate, inclined anteriorly; postantennal denticles distinct. Occipital edge evenly arcuate, high. Neck lacking foveae. Antennal segment 3 slightly wider than long; segments 4 to 6 equally large, slightly shorter than segment 3; segments 7 to 9 about as long as segment 3; segment 10 slightly longer and distinctly wider than segment 9; segment 11 slightly longer than combined length of segments 6 to 10. Pronotum wider than head with eyes, lacking median sulcus; basal foveae well-delimited, deep, subequal in size; basomedian carina distinct; lateral folds indistinct. Pronotal, elytral, metasternal, and abdominal punctation fairly sparse and very fine. Pronotal pubescence long, elytral pubescence shorter. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae parallel or slightly converging apically,

reaching posterior third of tergite, separated by interval as large as half of basal tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 440. Middle of upper anterior part of frons slightly prominent and triangular, delimited by fairly deep impression, bottom of impression almost horizontal, with row of curved marginal setae. Inferior parts of lateral margins of frons bearing dense pubescence. Frontoclypeus swollen and elevated at middle to form large, finely punctate and pubescent tubercle. Tip of tubercle bearing short, flat setae oriented obliquely dorsally. Eyes with 35 facets. Antennal scape and pedicel as in Figs 121–122; scape swollen ventrally, flattened mesally; pedicel short, straight, gradually widened apically; club not modified. Mesal side of protibiae with two large spatulate sensillae. Metatibiae evenly narrow in basal half. Apex of abdominal tergite 5 (Fig. 156) with four flat sensillae. Abdominal sternite 2 at middle about 3 times as long as sternite 1, distinctly shorter than metasternum, median carina one-third of mesal sternal length; sternite 6 (Fig. 158) with two pairs of long, robust setae. Aedeagus (Fig. 165) 0.170 mm long.

Female. Middle of frons with shallow, smooth impression; lateral margins gradually inclined; frontoclypeus entirely punctate. Eyes with 6 to 7 facets. Abdominal sternite 2 large, at middle about 4 times as long as sternite 1, distinctly longer than metasternum, with median carina about one-fourth of median tergal length.

Distribution. Thailand.

Comments. This is one of the few species of *Morana* possessing a large abdominal sternite 2 in both sexes. It may be distinguished from its congeners that share this character by the short antennomere 3 and the shape of the male head.

We name this species in honour of its collector, Peter Schwendinger, Geneva.

Morana semifacta sp. nov.
(Figs 246, 258, 260, 266–267, 470)

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Mt. Kinabalu Nat. Park, above Poring Hot Springs, 520 m, 22.VIII.1988 (A. Smetana) B 139.

Paratypes (32): East Malaysia, Sabah, Poring Hot Springs, 600 m, litter, 10.VII.2002 (S. Kurbatov & S. Zimina) 8 males & 1 female in MHNG & PCSK; same data, but 11.VII.2002, 1 male & 2 females in MHNG & PCSK; same data, but 14.VII.02, 8 males and 12 females in MHNG & PCSK.

Description. Length 1.10 mm. Body brown. Head with punctation dense and very fine on frons and lateral parts of vertex; pubescence short, recumbent, long occipital setae absent. Vertexal pits situated about in line with posterior eye margin, interval between them about twice as wide as that between them and lateral head margins. Occipital carina absent. Middle of vertex slightly convex, impunctate. Lateral margins of frons angulate, not crenulate; postantennal denticles absent. Antennal segment 3 about as long as wide; segments 4 to 6 and 8 equal, wider than long; segments 7 and 9 slightly larger than segment 8; segment 10 slightly longer, distinctly wider than segment 9; segment 11 about as long as combined length of segments 7 to 10. Pronotum, elytra, metasternum, and abdomen similar to that in *M. sycosifrons*, but lateral folds of pronotum long, and median and admesal basal pronotal foveae subequal in size.

Male. Head as in Fig. 470. Vertex with two porous, circular areas delimited by stria touching vertexal fovea and extending laterally almost to temple. Vertex separated from frons by transverse smooth impression and transverse stria, situated in line with eye centres, area anterior to stria impressed, with pair of small foveae in line with antennal insertions. Frons gradually inclined anteriorly and narrowed, between genal impressions about as wide as one-third of head, near anterior margin abruptly vertical. Lateral margins of frons oblique. Anterior margin of frontoclypeus truncate. Genae moderately impressed. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 266–267; scape subcylindrical in dorsal view, with dorsosubapical setal tuft; pedicel long, weakly curved and weakly thickened apically; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Metasternal pubescence uniformly long, middle of metasternum not flattened. Abdominal tergite 5 (Fig. 258) with six conspicuous, wide, subbasal sensillae; sternite 2 strongly shortened mesally, at middle distinctly longer than sternite 1, slightly longer than half of metasternum, median carina short, about as long as one-sixth of median sternal length; sternite 6 (Fig. 260) with long setae laterally, with transverse row of 14 flat, curved setae. Aedeagus (Fig. 246) 0.190 mm long.

Female unknown.

Distribution. Borneo: Sabah.

Comments. This is one of the few species of *Morana* possessing a median pronotal sulcus (see comments under *M. bellicosa*). It may be distinguished easily from its congeners sharing that feature by the finely punctate head, the absence of an occipital carina, and the shape of the male scape and pedicel.

Morana sima sp. nov.
(Figs 308–309, 350, 363–364, 481)

Type material. Holotype (male, in MHNG): West Malaysia, Malata, forest litter, 27.XII.1968, #381 (D. H. Murphy).

Paratypes (25): with same data as holotype 2 males & 9 females in MHNG; West Malaysia, Selangor, Upper Gombak Valley, 21st mi, stream side, 9.II.1967, #329 (D. H. Murphy) 1 female in MHNG; Pahang, 2 mi West Maram, 24.III.1967, wet leaves from edge of forest pool (D. H. Murphy) #343, 1 female in MHNG; Singapore, Bukit Timah Nat. Res., berlese of litter/soil degraded coastal hill forest on granite, 31.X.1968 (D. H. Murphy) 3 males & 6 females in MHNG & PCSK; same data but 18.II.1967, 1 male in MHNG; same data but 20.XII.1965, 2 females in MHNG.

Description. Length 1.00–1.05 mm. Body light brown, elytra slightly darker than remainder of body. Head with vertex and middle of frons very finely punctate, lateral parts of frons finely but very densely punctate; pubescence short, recumbent, long occipital setae present. Vertexal pits situated in line with posterior eye margins, interval between them as large as that between them and lateral head margins. Occipital carina long, extending onto frons, well anterior to line of vertexal pits. Middle of vertex convex. Lateral margins of frons weakly crenulate; postantennal denticles present. Antennal segment 3 about as long as wide; segments 4 to 6 equally large, shorter than segment 3, much wider than long; segments 7 to 9 slightly longer than segment 6, distinctly wider than long; segment 10 wider than segment 9, wider than long; segment 11 slightly longer than combined length of segments 6 to 10. Pronotum as wide as head with eyes, lacking median sulcus; median and admesal basal foveae shallow, small, not well-delimited; outer basal foveae very small; lateral folds absent; basomedian carina present. Pronotal, elytral, metasternal, and abdominal punctation very fine, dorsal pubescence short, recumbent. Prosternal carina low. Prohypomera, metasternum, and abdominal sternite 1 lacking puncture rows. Abdominal tergite 1 with discal carinae parallel or subparallel, reaching to or extending slightly beyond tergal mid-length, separated by half of tergal width, basal crenulation present; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 481. Frons narrowed anteriorly, slightly impressed at middle, with anterior margin deeply notched, V-shaped and bearing fringe of fairly long setae. Lateral parts of frons not prominent. Anterior frontal angles each bearing ventral setal tuft oriented obliquely mesally. Anterior part of frontoclypeus strongly elevated dorsally, not prominent anteriorly, forming high process narrowly separated from vertical frontoclypeal surface. Posterior side of frontoclypeal process carinate, anterior side pubescent and slightly rounded. Eyes with 30 to 35 facets. Antennal scape and pedicel as in Fig. 308–309; scape with mesal side impressed; club not modified. Mesal side of protibiae with two large, spatulate sensillae. Metasternum flattened at middle. Apex of abdominal tergite 5 as in Fig. 363; sternites 1 and 2 with combined length similar to metasternal length, both sternites with long, erect setae at middle; sternite 2 moderately narrowed toward middle, at middle almost twice as long as sternite 1, median carina slightly longer than one-third of sternite, sternite 6 (Fig. 364) with three pairs of long and flat sensillae, with very narrow basal apophysis. Aedeagus (Fig. 350) 0.270 mm long.

Female. Middle of frons with shallow impression. Eyes with 6 to 8 facets. Abdominal sternite 2 at middle about 3.5 times as long as sternite 1, distinctly longer than metasternum; median carina about one-sixth of mesal sternal length.

Distribution. West Malaysia, Singapore.

Comments. This species is characterized by the first abdominal tergite being carinate basally, the long occipital carina, the pronotum with the outer basal foveae very small and lacking lateral folds, and the very fine pronotal and elytral punctuation.

Morana sinciput sp. nov.
(Figs 215, 217, 226–227, 237, 457)

Type material. Holotype (male, in MHNG): Indonesia, Sumatra, Jambi, km 8 Sungaipenuh to Tapan, 1200 m, 9.XI.1989 (D. Agosti, I. Löbl & D. Burckhardt) #8 [sifting of vegetational debris in secondary forest on steep slope].

Description. Length 1.05 mm. Head with punctation very dense and coarse on vertex and frons, fine on areas above antennal insertions; pubescence short and recumbent, long occipital setae absent. Vertexal pits almost indistinct because of surrounding coarse punctation, situated about in line with center of eyes; interval between them about 1.5 times as long as that between them and lateral head margins. Occipital carina absent. Middle of vertex almost flat. Lateral margins of frons lacking crenulation and postantennal denticles, expanded anterior eyes to form subtriangular processes. Occipital edge arcuate, low. Antennal segment 3 slightly wider than long; segments 4 to 9 subequal, distinctly wider than long; segment 10 larger than segment 9, much wider than long; segment 11 as long as combined length of segments 5 to 10. Pronotum barely wider than head with eyes, lacking median sulcus; middle basal fovea small, shallow, almost indistinct, remaining basal foveae reduced; lateral folds weak; basomedian carina absent. Pronotum with punctation very dense and coarse, coarser than that on vertex over large central area, about as coarse as that on vertex on lateral parts of disc; pubescence as on eyltra, longer than that on head, recumbent. Elytral punctation dense, almost as coarse as that on vertex. Paranotal carinae present. Prosternal carina low. Prohypomera and abdomen lacking puncture rows. Metasternum

very finely punctate, with row of coarse punctures along margins of mesocoxal cavities, with three very shallow impressions at edge of intermetacoxal process. Abdomen very finely punctate; tergite 1 with discal carinae converging apically, extending to apical fifth, separated at base by half of basal width of tergite, with irregular, very fine and short basal crenulation; sternite 2 with basal crenulation barely visible.

Male. Head as in Fig. 457. Frons with middle part prominent, inclined obliquely and punctate, abruptly horizontal at anterior margin, forming narrow flat area; anterior margin concave, bearing very short tomentose rim, setae forming rim curving posteriorly. Area below deeply excavated. Inferior part of upper frontal margin with two long, diverging setae. Frontoclypeus prominent, elevated obliquely at anterior margin to form short, transverse, pubescent ridge delimited dorsally by bisinuate carina. Anterior margin of frontoclypeus weakly sinuate. Mesal part of frontoclypeus elevated to form ridge extending to transverse anterior ridge, bearing fine setae and, at upper tip, two wide, modified setae. Genae impressed, smooth, at mesal ridge impressed, separated from excavation by carina extended at lower end to form flat plate bearing setal tuft; anterior part of genae horizontal. Eyes with about 35 facets. Antennal scape and pedicel as in Figs 226–227; scape cylindrical at base, strongly swollen apically, with inner apical angle prominent and bearing long seta; pedicel subcylindrical, slightly asymmetrical; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 215) with acute process at middle, two large, flat sensillae, and row of long setae; sternite 2 shortened mesally, at middle slightly shorter than sternite 1, about as long as half of metasternum, with median carina as long as one-fourth of median tergal length; sternite 6 (Fig. 217) with 2 pairs of flat setae and 4 pairs of thin setae. Aedeagus (Fig. 237) 0.170 mm.

Female unknown.

Distribution. Sumatra: Jambi.

Comments. This species is characterized by the pronotum being entirely coarsely punctate, the shape of the male scape, and the male frons being prominent laterally to form subtriangular processes anterior to the eyes (see also comments under *M. agostii*).

Morana smetanai sp. nov.
(Figs 195–196, 201, 210, 212–213, 452)

Type material. Holotype (male, in MHNG): Nepal, Kosi, Arun Valley below Num, 1050 m, 22.IV.1984 (I. Löbl & A. Smetana) #35 [sifting rotted wood and leaf litter in hygrophilous palm tree forest].

Paratypes (65): with same data as holotype, 10 males & 15 females in MHNG & PCSK; same data but 20.IV.1984, #32 [sifting in dry degraded forest] 1 male & 3 females in MHNG; same data but 1100 m, 21.IV.1984, #33 [sifting fern, rotted wood and wet leaf litter on steep slope near river in forest] 1 male & 17 females in MHNG & PCSK; Kosi, Arun river at Num, 1500–1600 m, 10.IV.1980 (A. & Z. Smetana) 4 males & 5 females in MHNG; Nepal, Bagmati, Gokana Forest nr. Kathmandu, 1400 m, 31.III.1981 (I. Löbl & A. Smetana) #1b [sifting in forest] 1 male & 1 female in MHNG; same data, but 1.IV.1981, #2b [sifting moss and rotted wood in well-timbered ravine] 1 male in MHNG; same data, but 1450 m, 13.X.1977 (L. Deharveng) 4 males & 2 females in MHNG.

Description. Length 0.85–0.90 mm. Body light brown. Head with frons and vertex densely and fairly coarsely punctate; pubescence very short, recumbent, long occipital setae absent. Vertexal pits situated beyond line of posterior eye margins; interval between them about as long as that between them and lateral head margins. Occipital carina short, extending slightly anterior to line of vertexal pits. Middle part of vertex slightly convex. Lateral margins of frons not crenulate; postantennal denticles distinct. Occipital edge high, subangulate. Antennal segment 3 about as long as wide; segments 4 to 6 subequal; segments 7 to 9 slightly longer than segment 6; segment 10 larger than segment 9, distinctly wider than long; segment 11 about as long as segments 6 to 10 combined. Pronotum as wide as, or slightly wider than head with eyes, lacking median sulcus; basal foveae deep, sharply delimited, subequal in size; lateral folds distinct; basomedian carina present. Punctation dense and fairly coarse on wide median part of pronotum and on elytra, almost as coarse as that on vertex, at middle of pronotal disc sparser than that on vertex, on elytra almost as dense as that on vertex; lateral parts of pronotum very finely punctate. Pronotal and elytral pubescence fairly long, recumbent. Paranotal carinae present. Prosternal carina low. Prohypomera lacking puncture row. Metasternum very finely punctate, with row of punctures along margin of mesocoxal cavities; intercoxal process with or without puncture row. Abdomen very finely punctate; tergite 1 with discal carinae parallel, extending about to tergal mid-length, separated at base by half of tergal width, basal crenulation absent; sternite 1 with row of punctures along margin of intercoxal process; sternite 2 with median carina short, basal crenulation distinct.

Male. Head as in Fig. 452. Frons impressed and inclined at middle, frontoclypeus impressed. Lower edge of frons bearing two diverging tufts of fairly long setae. Frontoclypeus moderately prominent, with anterior edge strongly elevated to form almost vertical ridge. Anterior side of frontoclypeal ridge with three fine, longitudinal carinae. Anterior margin of frontoclypeus truncate. Impressed part of frontoclypeus

punctate, with fine, transverse carina, and bearing conspicuous pubescence posteriorly anterior ridge. Eyes with 25 to 30 facets. Antennal scape and pedicel as in Figs 195–196; scape widened apically and with very strongly extended inner apical angle; club simple. Mesal side of protibiae with two large, spatulate sensillae (Fig. 213). Apex of abdominal tergite 5 (Fig. 210) notched at middle, with oblique sensillae and setal row. Abdominal sternite 2 narrowed toward middle, at middle as long as sternite 1 and almost half as long as metasternum; sternite 6 (Fig. 212) with one apical angle asymmetrically prominent, with two oblique, admesal rows of long, flat setae. Aedeagus (Fig. 201) 0.210–0.220 mm long.

Female. Frons gradually inflexed, entire frontoclypeus coarsely punctate. Eyes with 8 or 9 facets. Abdominal sternite 2 about 3 times as long as sternite 1 and about 1.5 times as long as metasternum.

Distribution. Nepal: Central and East.

Comments. *Morana smetanai* is a readily identifiable species. It may be easily distinguished by its strongly expanded apical angle of the male scape, in combination with the coarse pronotal and elytral punctation.

We name this species in honour of its collector, Ales Smetana, Ottawa.

Morana sycosifrons sp. nov.
Figs 247, 259, 261, 272–273, 282, 468.

Type material. Holotype (male, in MHNG): East Malaysia, Sabah, Crocker Range, km 63 rte Kota-Kinabalu – Tambunan, 1200 m, 19.V.1987 (D. Burckhardt & I. Löbl) #31a [sifting vegetational debris in moist ravine at edge of moist forest with *Lithocarpus*, *Castanopsis* and arboreal ferns].

Description. Length 1.15 mm. Body brown. Head with vertex and frons very finely punctate; pubescence short, recumbent, long occipital setae present. Vertexal pits situated about in line of posterior eye margins; interval between them larger than that between them and lateral head margins. Occipital carina short, distinct on neck and occipital margin of head, almos indistinct anterior to occipital margin, exending to line of vertexal pits. Vertex weakly convex in middle; occipital edge very weakly angulate, high. Lateral margins of frons not crenulate; postantennal denticles present. Antennal segments 3 to 9 subequal, each about as long as wide; segment 10 larger than segment 9; segment 11 about as long as combined length of segments 7 to 10. Pronotum slightly narrower than head with eyes, with clearly delimited narrow and deep median sulcus; median basal foveae deep and well-delimited, admesal and lateral basal foveae not clearly delimited, shallower and nearer to base than mediobasal fovea; basomedian carina present; lateral folds short. Punctation on pronotum, elytra, metasternum, and abdomen very fine; dorsal pubescence fairly short, recumbent. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum, and abdomen lacking rows of punctures. Abdominal tergite 1 with discal carinae slightly converging apically, extending to apical third of tergite and separated at base by about half of tergal width; lacking basal crenulation; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 468, explanate and flattened laterally, forming at each side conspicuous porous, circular area sharply bordered externally, delimited by narrow sulcus mesally. Lateral margins of frons oblique, angulate and inclined. Middle of frons impressed, glabrous. Anterior edge of frontal impression elevated to form pubescent, semicircular ridge delimited anteriorly by transverse, narrow and smooth impression. Frontal impression delimited anteriorly by transverse ridge. Frontoclypeus strongly swollen at middle, forming, large, subglobular tubercle overlapping labrum and covered by very short pubescence. Upper side of frontoclypeal tubercle narrowing posteriorly and reaching middle of transverse ridge. Areas anterior to transverse ridge obliquely inclined, glabrous. Genal impression shallow, delimited dorsally by carina. Eyes with about 35 facets, largely overlapped by explanate dorsal side of head. Antennal scape and pedicel as in Figs 272–273; scape short, subcylindrical in dorsal view; pedicel very long, slightly curved, gradually thickened apically; club not modified. Mesal side of protibiae (Fig. 282) with two large, spatulate sensillae. Middle part of metasternum flattened, with pubescence longer than that on lateral parts of metasternum. Abdominal tergite 5 (Fig. 259) with two pairs of conspicuous, wide, basal sensillae; sternite 2 shortened mesally, at middle slightly longer than sternite 1, slightly shorter than half of metasternum, median carina about as long as third of mesal length of sternite; sternite 6 as in Fig. 261. Aedeagus 0.210 mm long (Fig. 247).

Female unknown.

Distribution. Borneo: Sabah.

Comments. This species may be distinguished by the presence of a pronotal sulcus, in combination with the explanate head and the globular frontoclypeal tubercle of the male (see also comments under *M. bellicosa*).

Morana tibialis sp. nov.
(Figs 113–114, 133, 147, 149, 437)

Type material. Holotype (male, in MHNG): Malaysia, Terengganu, Kampong Ayer Puteh, 27.IV.1977 (L. E. Watrous) berlese cattle dung.

Description. Length 0.85 mm. Body brown. Head with all of frons and vertex coarsely and very densely punctate; pubescence short and recumbent, long occipital setae present. Vertexal pits situated slightly anterior to line of posterior eye margins, interval between them about as large as that between them and eye margins. Frons anterior to vertexal pits shallowly impressed, with minute foveiform impression. Occipital carina low, distinct only on posterior area, extending about to line of vertexal pits. Middle of vertex somewhat convex. Occipital edge high, evenly arcuate. Neck with foveal row. Lateral margin of frons oblique, very finely crenulate, with distinct postantennal denticle and minute additional denticle. Antennal segment 3 wider than long; segments 4 to 6 slightly shorter than segment 3; segments 7 to 9 about as long as segment 3; segment 10 distinctly longer and wider than segment 9; segment 11 as long as segments 6 to 9 combined. Pronotum as wide as head with eyes, lacking median sulcus; basal foveae shallow, fairly well-delimited, middle fovea larger than lateral foveae; basomedian carina present, but obscured by row of comparatively large, elongate, basal punctures; lateral folds distinct. Pronotum, elytra, metasternum, and abdomen densely and finely punctate, with pubescence longer than that on head. Elytra with outer basal fovea extended by short impression. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum, and abdominal sternite 1 lacking rows of punctures. Metasternal pubescence denser on middle part than laterally. Abdominal tergite 1 with discal carinae parallel, extending to posterior third of tergite, separated by almost half of basal width of tergite, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 437. Lateral margins of frons converging and inclined anteriorly, forming convex, slightly prominent ridge at middle. Middle of upper anterior part of frons forming small prominent pro-cess separated from lateral margins by small emarginations. Anterior side of upper process bearing two horizontal, diverging setae. Upper process ex-tended ventrally by short, vertical carina reaching middle of frontal margin. Frontal margin bearing row of short, wide setae. Genae deeply impressed and smooth, separated by mesal frontoclypeal ridge. Anterior margin of frontoclypeus rounded, bearing long setae. Eyes with about 40 facets. Antennal scape and pedicel as in Figs 113–114; scape swollen ventrally, abruptly flattened mesally; pedicel subcylindrical, comparatively small; club not modified. Protibiae with two large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 147) with three flat, medial sensillae; sternite 2 strongly narrowed toward middle, at middle about as long as two-thirds of metasternum, median carina as long as one-third of mesal length of sternite. Sternite 6 (Fig. 149) with three pairs of long setae. Aedeagus (Fig. 133) 0.220 mm long.

Female unknown.

Distribution. West Malaysia.

Comments. This species may be distinguished by the shape of the subbasally angulate metatibiae, in combination with the shape of the male protibiae.

Morana virago sp. nov.
(Figs 168, 173–174, 189, 444)

Type material. Holotype (male, in MHNG): East Malaysia, Sarawak, Kampong Segu 20 mi SW Kuching, 4.VI.1968 (R. Taylor).

Paratypes (24): with same data as holotype, 9 males & 15 females in MHNG & PCSK.

Description. Length 0.95–1.00 mm. Body dark brown. Head very finely punctate, except lateral parts of frons fairly coarsely and densely punctate; pubescence fairly long, recumbent, long occipital setae absent. Vertexal pits large, well-delimited, situated about in line with posterior margin of eyes; interval between them as long as, or slightly larger than that between them and lateral head margins. Occipital carina distinct, extending anterior to line of vertexal pits. Middle of vertex flat. Lateral margins of frons crenulate, with distinct postantennal denticles. Middle of frons impressed, posterior part of frontal impression with pair of minute foveiform impressions. Occipital edge transverse. Antennal segment 3 about as wide as long; segments 4 to 6 equally large, much wider than long; segments 7 and 8 equal, slightly wider than long; segment 9 slightly longer than segment 8; segment 10 barely longer and distinctly wider than segment 9; segment 11 about as long as segments 5 to 10 combined. Pronotum wider than head with eyes, lacking median sulcus; three inner basal foveae large and well-delimited, outer basal foveae smaller; lateral folds indistinct; basomedian carina present. Pronotum, elytra, metasternum, and abdomen very finely punctate; dorsal pubescence longer than that on head, recumbent to semi-erect. Paranotal carinae present. Prosternal carina low. Prohypomera, metasternum, and abdomen lacking rows of punctures. Abdominal tergite 1 with discal carinae curved, extending to tergal apex, separated at base by interval about as wide as half of tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head (Fig. 444) similar to that in *M. diatretaria*. Lateral margins of frons slightly more prominent and irregular. Centre of semicircular frontoclypeal ridge bearing small tubercle. Horizontal processes of frontoclypeus bearing long dorsal setae curved mesally. Eyes with about 30 facets. Antennal scape and pedicel as in Fig. 189; scape with mesal side concave, sharply delimited, inner apical angle prominent; pedicel cylindrical; club not modified. Mesal side

of protibiae lacking large, spatulate sensillae. Apex of abdominal tergite 5 (Fig. 173) with large, trifid sensillae; sternite 2 shortened toward mid-line, at middle about 1.5 times as long as sternite 1, slightly longer than half of metasternum, median carina one-third of mesal length of sternite; sternite 6 (Fig. 174) with two pairs of conspicuously large, flat setae. Aedeagus (Fig. 168) 0.190–0.210 mm long.

Female. Frons coarsely punctate near lateral margins, on impressed central portion, and on frontoclypeus. Eyes with 6 to 8 facets. Abdominal sternite 2 large, at middle about 3 times as long as sternite 1 and slightly longer than metasternum, median carina about one-sixth of mesal sternal length.

Distribution. Borneo: Sarawak.

Comments. This species may be easily distinguished by the presence of a pronotal sulcus, in combination with the prominent inner apical angle of the male scape, and the first abdominal tergite with discal carinae extending up to the tergal apex.

Morana vultuosa sp. nov.
(Figs 119–120, 138, 151, 153, 439)

Type material. Holotype (male, in MHNG): West Malaysia, Penang Is., Georgetown, Botanic Gardens (waterfall) rainforest, berlesate no. 867, 12.IX.1982 (R. W. Taylor & R. A. Barrett).

Description. Length 0.95 mm. Body yellowish. Entire frons and vertex with fairly coarse and very dense punctation. Pubescence on head short and recumbent, long occipital setae absent. Vertexal pits inconspicuous, situated slightly anterior to line of posterior eye margins; interval between them almost as long as that between them and posterior eye margins. Occipital carina low, distinct, extending about to line of anterior eye margins. Middle of vertex flat. Occipital edge low, evenly arcuate. Lateral margins of frons oblique, finely crenulate, with distinct postantennal denticles, shallowly emarginate anterior to denticles. Antennal segment 3 about as wide as long; segments 4 to 6 equal, slightly shorter than segment 3; segments 7 to 9 equally large, each slightly longer than segment 6; segment 10 larger than segment 9 and wider than long; segment 11 almost as long as segments 6 to 10 combined. Pronotum slightly wider than head with eyes, lacking median sulcus; basal foveae deep, well-delimited, middle foveae larger and more distant from base than remaining foveae; basomedian carina present; lateral folds indistinct. Pronotum, elytra, metasternum, and abdomen densely and very finely punctate; pubescence longer than that on head. Paranotal carinae present. Prosternal carina low. Prohypomera lacking sulcus. Metasternum and abdominal sternite 1 lacking rows of punctures. Metasternal pubescence denser on middle part of disc than laterally. Abdominal tergite 1 with discal carinae parallel, extending about to tergal mid-length, separated by about half of basal tergal width, basal crenulation absent; sternite 2 with basal crenulation distinct.

Male. Head as in Fig. 439. Middle part of frons deeply impressed. Upper side of impression delimited by minute tubercles. Lower side of impression delimited by bifid, V-shaped lamina bearing robust setae oriented anteriomesally. Lateral parts of frons prominent, obliquely inclined, each forming large lobe partly overlapping frontoclypeus. Frontoclypeus slightly prominent, elevated at middle and forming high median carina, impressed beside median carina, lateral margins of impressions bearing fairly long, oblique setae pointed mesally. Eyes with about 30 facets. Antennal scape and pedicel as in Figs 119–120; scape slightly swollen dorsally, strongly swollen ventrally, impressed mesally; pedicel straight, barely widened apically, subcylindrical; club not modified. Mesal side of protibiae lacking large, spatulate sensillae. Apex of abdominal tergite 5 with short apophysis, four modified sensillae and row of robust setae (Fig. 151); sternite 2 shortened toward middle, at middle about 1.5 times as long as sternite 1, about as long as two-thirds of metasternum, with median carina as long as one-third of sternal mid-length; sternite 6 (Fig. 153) with small apophysis near middle of basal margin, three pairs of robust setae, apical setae widened. Aedeagus (Fig. 138) 0.200 mm long.

Female unknown.

Distribution. West Malaysia.

Comments. This species shares most characters with *M. machaerifera*. It may be easily distinguished by the different head punctation and the form of the male frontoclypeus.

Multesimus gen. nov.

Type species: *Multesimus gallulus* sp. nov.; gender: masculine.

Description. Body with very short, dense and recumbent pubescence; additional long setae on pronotum, elytra, and abdomen, sometimes also on head (as in females of *M. gallulus*). Punctation variable on head and pronotum; elytra, metasternum, and abdomen very finely punctate, usually shiny. Head widest at temporal angles (eyes not included), lacking vertexal pits and sulci (Figs 403–404). Interantennal impression absent. Occipital margin oblique, impressed. Temporal patches lateral, delimited by carinae at outer and basal margins, outer margins bearing row of widened, curved setae. Neck with deep and wide dorsal impression. Gula shallowly impressed toward base, with pair of foveae. Eyes in male comparatively small, multifaceted, in female reduced, consisting of

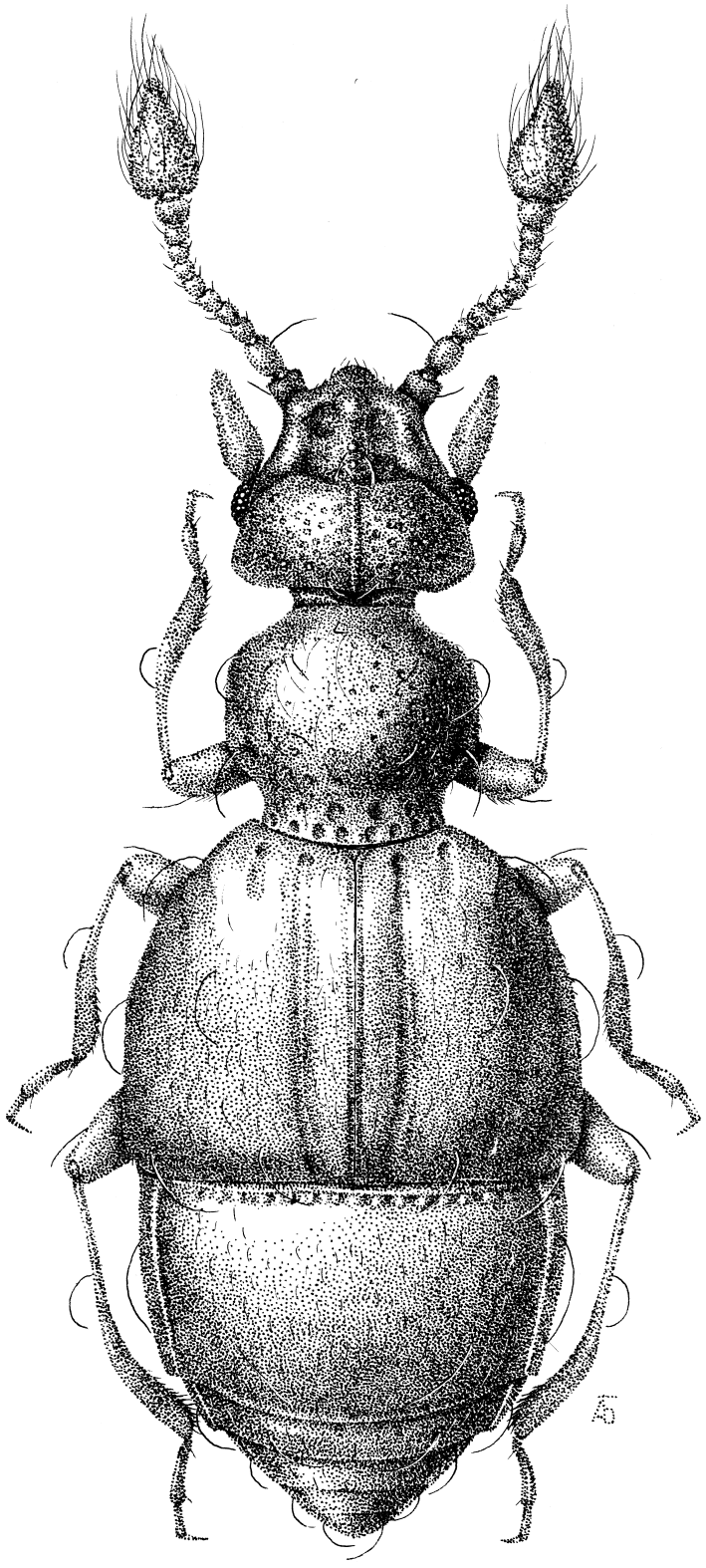

Figure 7. Habitus of *Multesimus gallulus*.

few facets. Antennae short, with club two-segmented (Fig. 418); scape slightly larger than pedicel; scape, pedicel, and segment 11 much longer and wider than segments 3 to 9; segment 10 slightly asymmetrical; segment 11 about 3 times as wide as segment 9. Pronotum cordiform, gradually narrowed toward base, with 4 to 8 small, punctiform, basal foveae, 4 larger, shallow antebasal foveae, and two lateral foveae; pair of outer antebasal foveae small, sometimes barely indicated; pair of inner basal foveae sometimes contiguous. Paranotal carina absent. Elytra with lateral edge arcuate, not crenulate; outer basal fovea slightly elongate; sutural stria entire, joined to inner basal fovea; adsutural area wide and elevated; discal and lateral striae and carinae absent. Mesosternum with median fovea; lateral foveae asymmetrically forked, mesocoxal process narrow, about as wide as one-fifth of mesocoxal cavity (Fig. 405). Metasternum with small mesocoxal foveae; metacoxal process about as narrow as mesosternal process, about as wide as mesocoxal cavity; metacoxae fairly widely separated. Femora and tibiae each with one long seta at outer margin. Profemora with row of modified setae at upper margin, mesofemora swollen (Figs 416–417). Metatarsi with segment 2 apically gradually thickened, about 1.5 to 1.7 times as long as segment 3. Abdominal tergite 1 large, longer than following tergites combined, lacking discal carinae, with basal crenulation, basal foveae absent; sternite 1 exposed at middle and laterally, with setal fringe limited to short, outer part of margin; sternite 2 with pair of laterodiscal sulci and basolateral foveae, conspicuous basal crenulation, lacking median carina.

Male. Sexual characters affecting head and tibiae. Mesotibiae with long, curved mesal setae. Aedeagus with distinct dorsal membrane, irregular apical edge, two apical processes, larger process curved basally and tuberculate, pair of setiform sensillae on tubercle.

Comments. This genus includes four Malaysian species. It is characterized by the frons not being impressed between the antennal insertions, the pronotum lacking sulci, the elytra with entire sutural striae and lacking lateral carinae, abdominal tergite 1 with basal crenulation, the absence of discal carinae and basal foveae, the presence of laterodiscal sulci on sternite 2, and the tibiae bearing long, erect setae.

Etymology. Derived from the Latin word for minute, and referring to the small body size.

Key to species of *Multesimus*

1. Pronotal punctation scattered, puncture intervals much larger than puncture diameters **2**
–. Pronotal punctation entirely dense, or dense on large part of disc, with at least some puncture intervals smaller than, or as large as puncture diameters . . **3**
2. Posterior margin of neck impression deeply notched. Male head modified, vertex elevated toward mid-line, frons deeply impressed (Fig. 7) . . . . . ***M. gallulus*** sp. nov.
–. Posterior margin of neck impression not notched. Male head not modified . . . . ***M. cuniculus*** sp. nov.
3. Male vertex flat, with excavation along posterior edge of vertex . . . . . ***M. jaccoudi*** sp. nov.
–. Vertex weakly convex in both sexes, lacking obvious sexual characters in male . . . . . ***M. talpula*** sp. nov.

Multesimus cuniculus sp. nov.
(Figs 408, 414)

Type material. Holotype (male, in MHNG): West Malaysia, Perak, Maxwell Hills, 8.IX.72 (T. Jaccoud).

Paratypes (32): West Malaysia, Perak, Maxwell Hill, 1150 m, 24.XI.1999 (G. Cuccodoro & I. Löbl) #15a [sifting vegetational debris along road in evergreen broadleaf montane rain forest] 3 males & 10 females in MHNG & PCSK; same data but #15b [sifting leaf litter in evergreen broadleaf montane rain forest] 19 females in MHNG.

Description. Length 0.85–0.95 mm. Body uniformly rufous; appendages lighter than body. Head weakly convex dorsally, with tempora rounded. Vertex and frons distinctly punctate; most punctures, or at least some punctures, larger than puncture intervals; punctation sometimes reduced on posterior part of vertex. Posterior edge of neck impression lacking particular features. Antennal segment 3 about as long as wide; segments 4 to 9 equally large, each wider than long; segment 10 wide: segment 11 as long as segments 3 to 7 combined. Pronotum as long as wide or slightly wider than long; inner basal punctiform impression deep and comparatively large; discal punctures scattered, as large as or distinctly larger than those on frons.

Male. Frons and vertex lacking obvious sexual characters. Eyes prominent, pigmented, as long as tempora, with about 30 facets. Mesotibiae as in Fig. 414. Aedeagus (Fig. 408) 0.130 mm long.

Female. Eyes reduced, about as long as half of tempora, depigmented, with 5 or 6 facets.

Distribution. West Malaysia.

Comments. This species is charaterised by the scattered pronotal punctation in combination with the unmodified head in males.

Multesimus gallulus sp. nov.
(Figs 406, 410, 415)

Type material. Holotype (male, in MHNG): West Malaysia, Malata, nr. 322 (D. H. Murphy).

Paratypes (51): same data as holotype but nr. 321, 1 male & 4 females in MHNG; West Malaysia, Upper

Gombak valley nr. Kuala Lumpur, ca 1500 ft [ca. 500 m] 13.VII.68 (R. W. Taylor) rainforest, 4 females in MHNG; same data but 11–14.VII. ca 800ft [ca. 300 m] 5 males & 3 females in MHNG & PCSK; Selangor, Ulu Gombak For. Res., Field Study Centre, 260 m, 3.VIII.67 (R. Crozier) 2 females in MHNG; Ulu Gombak, 26.IX.1991 (D. Agosti) leaf litter, 4 females in MHNG; Gombak, nr. 377 (D. H. Murphy) 1 female in MHNG; Pahang, 19 mi NE Kuala Lumpur, 28.IV.1977 (L. E. Watrous) berlese rotten figs, 1 male & 16 female in FMNH, MHNG & PCSK; Pahang, 30 mi NE Kuala Lumpur, 29.IV.1977 (L. E.Watrous) berlese forest litter, 2 males & 4 females in FMNH & MHNG; same data but 15 mi N Kuala Lumpur, litter along stream, 1 male & 3 females in FMNH & MHNG.

Description. Length 0.85–0.95 mm. Body uniformly rufous, appendages lighter than body. Head weakly (female) or strongly (male) convex dorsally, with tempora subangulate. Most of female head and middle part of vertex in male distinctly punctate; lateral parts of vertex very finely punctate in both sexes. Posterior edge of neck impression deeply notched at middle (Fig. 404). Antennal segment 3 slightly elongate; segments 4 to 9 equally large, wider than long; segment 10 short, wide; segment 11 slightly longer than wide, about as long as segments 3 to 7 combined (Fig. 418). Pronotum distinctly wider than long (ratio 5/4); basal punctiform impressions very shallow; discal punctation fine and scattered; discal punctures about as large as those on medioposterior part of vertex and on elytra.

Male. Vertex gradually elevated toward mid-line, forming indistinct median ridge abruptly impressed anteriorly, with anteriomedian denticle and two admesal thick setae pointed anteriorly. Middle of frons elevated to form ridge and vertical denticle. Anterior part of frons swollen and gradually deflexed. Eyes convex, pigmented, longer than tempora in dorsal view, with about 25 to 30 facets. Obvious sexual characters absent from metasternum and legs; mesotibiae as in Fig. 411. Aedeagus (Fig. 407) 0.150–0.160 mm long.

Female. Frons and vertex slightly convex. Eyes small, depigmented, shorter than tempora, with 6 to 8 facets. Mesotibia as in Fig. 412.

Distribution. West Malaysia.

Comments. This species can be easily distinguished by the deeply notched posterior edge of the neck impression, and the vertex forming an elevated median ridge in males.

Multesimus jaccoudi sp. nov.
(Figs 406, 410, 415)

Type material. Holotype (male, in MHNG): West Malaysia, Selangor, Fraser's Hill, 4200ft [ca. 1400 m] 17.IX.72 (T. Jaccoud).

Paratype (female, in MHNG: with same data as holotype.

Description. Length 0.90–0.95 mm. Body and appendages almost uniformly, fairly dark reddish-brown. Punctation on vertex and frons coarse and very dense; punctures mostly distinctly larger than puncture intervals. Occipital area sexually modified. Posterior side of neck impression with two minute admesal impressions. Antennal segment 3 about as long as wide; segments 4 to 9 subequal, wider than long; segment 10 wide; segment 11 almost as long as segments 3 to 8 combined. Pronotum slightly wider than long (ratio 27/23); basal punctiform impressions fairly deep; discal punctation coarse and dense, becoming finer anteriorly, punctures partly larger than punctures intervals, punctures beyond middle as large as or larger than vertexal punctures.

Male. Vertex and frons flat, occipital area deeply excavated, excavation partly divided in two by median ridge. Anterior edge of excavation with two short, flat denticles and horizontal setae pointed apically. Centre of posterior edge of excavation bearing modified setae curved anteriorly, with two oblique tubercles. Laterally tuberculated areas obliquely inclined toward angulate tempora. Eyes slightly prominent, about as long as tempora. Abdominal sternite 6 as in Fig. 406. Mesotibiae as in Fig. 415. Aedeagus (Fig. 410) 0.160 mm long.

Female. Head weakly convex dorsally, tempora rounded. Eyes about as long as half of tempora, pigmented, with 6 facets.

Distribution. West Malaysia.

Comments. This species is characterised by the occipital area being strongly modified in males.

We name this species in honour of its collector, Thierry Jaccoud, Geneva.

Multesimus talpula sp. nov.
(Figs 403, 409, 413)

Type material. Holotype (male, MHNG): West Malaysia, Selangor, Gap, 900 m, 14.III.93 (I. Löbl & F. Calame) #4 [sifting vegetational debris (mainly bamboo) in degraded] secondary forest near road.

Paratypes (9): same data as holotype, 2 males & 7 females in MHNG & PCSK.

Description. Length 0.85–0.90 mm. Body uniformly rufous, appendages lighter than body. Head with tempora obtuse, gradually inclined toward neck. Frons and vertex with comparatively coarse and dense punctation, most punctures as large as or larger than puncture intervals; impunctate at temporal angles. Posterior margin of vertex with pair of long setae. Posterior margin of neck impression sinuate (Fig. 403). Antennae with segment 3 slightly longer than wide; segments 4 to 7 equally large, wider than long; segments 8 and 9

usually slightly longer than segment 7 and about as long as wide; club as in *M. gallulus*. Pronotum slightly wider than long; inner basal punctiform impressions distinct, comparatively deep; punctation sparser than on head, coarser than on head on median part of disc, finer than on head on lateral parts of disc.

Male. Frons and vertex lacking obvious sexual characters. Eyes convex, pigmented, with about 25 facets. Mesotibiae slightly narrowed in apical fourth (Fig. 413). Aedeagus (Fig. 409) 0.150–0.160 mm long.

Female. Eyes pigmented, shorter than tempora, with 5 or 6 facets.

Distribution. West Malaysia.

Comments. This species is characterised by the neck impression being sinuate on the posterior margin, in combination with the absence of obvious sexual characters on the head of the males.

Nippiliphus gen. nov.
(Figs 420, 421, 422)

Type species: *Nippiliphus crurifragius* sp. nov.; gender: masculine.

Description. Body fairly glabrous; dorsal pubescence consisting of scattered, long, erect setae and numerous short, recumbent setae. Head widest (without eyes) at posterior eye margins, with tempora obliquely narrowed from eye margins toward neck. Frons wide, with interantennal, sulciform impression; frontal lobe slightly narrowed anteriorly. Vertexal pits not joined to frontal impression; median occipital carina absent. Temporal patches lateral; dorsal temporal carina extending anteriorly above eyes. Gular impression shallow. Eyes multifaceted, large and convex in male, reduced in female. Antennae (Fig. 421) with scape slightly larger than pedicel; scape and pedicel moderately enlarged compared to antennal segments 3 to 9; club indistinctly two-segmented; segment 11 about as long as segments 3 to 6 or 7 combined, about twice as wide as segment 9. Pronotum convex, gradually narrowed toward base. Lateral pronotal margins arcuate anteriorly, oblique in basal half. Pronotal disc with pair of large lateral foveae, and row of basal punctiform foveae. Paranotal carinae absent. Elytra convex, evenly arcuate laterally, strongly narrowed anteriorly, not crenulate, each with two basal foveae, entire sutural stria joined to inner basal foveae, outer basal fovea touching elongate discal sulcus; lateral carinae absent. Mesosternum (Fig. 420) with central setose fovea and pair of lateral foveae asymmetrically forked. Metasternum with small mesocoxal foveae; mesocoxal process about as wide as one-fourth of mesocoxal cavity; metacoxae widely separated; metacoxal process wider than mesocoxal cavity. Femora and tibiae each bearing one long seta. Metatarsi with segment 2 moderately widened, segment 3 elongate, longer than half of segment 2 (Fig. 422). Abdominal tergite 1 large, longer than remainder of abdomen, with pair of discal carinae and row of basal crenulations; sternite 1 short, visible at middle and laterally; sternite 2 large in both sexes, not narrowed mesally, with row of large basal crenulations, lacking discal carinae.

Male secondary sexual characters may affect frons, tibiae, and apical abdominal sternite. Aedeagus asymmetrical, with apical process and lobe; apical process curved and extended laterally, with basal tubercle bearing two setiform sensillae.

Comments. This genus includes two species from the Philippines and Vietnam. It appears closely related to *Multesimus*, with which it shares most of the diagnostic head, pronotal, and elytral features. It differs notably from *Multesimus* by the presence of discal carinae on abdominal tergite 1, and the lack of discal carinae on abdominal sternite 2.

Etymology. Arbitrary recombination of letters from the word “Philippines”.

Key to species of *Nippiliphus*

1. Head and pronotum with coarse punctures; pronotal disc with pair of elongate antebasal impressions (Fig. 8). Male metatibiae notched (Fig. 423) . . . . . ***N. crurifragius*** sp. nov.
–. Head and pronotum entirely very finely punctate; pronotal disc without antebasal impressions. Male metatibiae not notched. . . . . ***N. napolovi*** sp. nov.

Nippiliphus crurifragius sp. nov.
(Figs 420–421, 423, 425)

Type material. Holotype (male, in MHNG): Philippines, Luzon, Lagunas Prov., Mt. Makiling, 4 km SE Los Banos, 9.IV.1977 (L. Watrous).

Paratypes (8): same data as holotype, 2 males in MHNG & PCSK; same data but 7.IV.77, 1 male & 1 female, MHNG & PCSK; same data but 11.IV.77, 1 female in MHNG; same data but 12.IV.77, 1 female in MHNG; Mt. Makiling above Mad Springs, 400–700 m, 19–22.XI. 1995 (J. Kodada) 1 female in MHNG; Lagunas Prov., Mt. Banahaw, above Kinabuhayan, 600–700 m, 24.XI.1995 (I. Löbl) degraded rainforest, floor litter, 1 male in MHNG.

Description. Length 1.15–1.20 mm. Body uniformly brown, appendages lighter than body. Head impunctate, smooth on large median part and entire occipital area, coarsely punctate on lateral parts of frons and vertex. Frons shallowly impressed at middle, with pair of long setae pointed anteriorly, inserted near vertexal pits. Vertex flat, with two pairs of long setae oriented

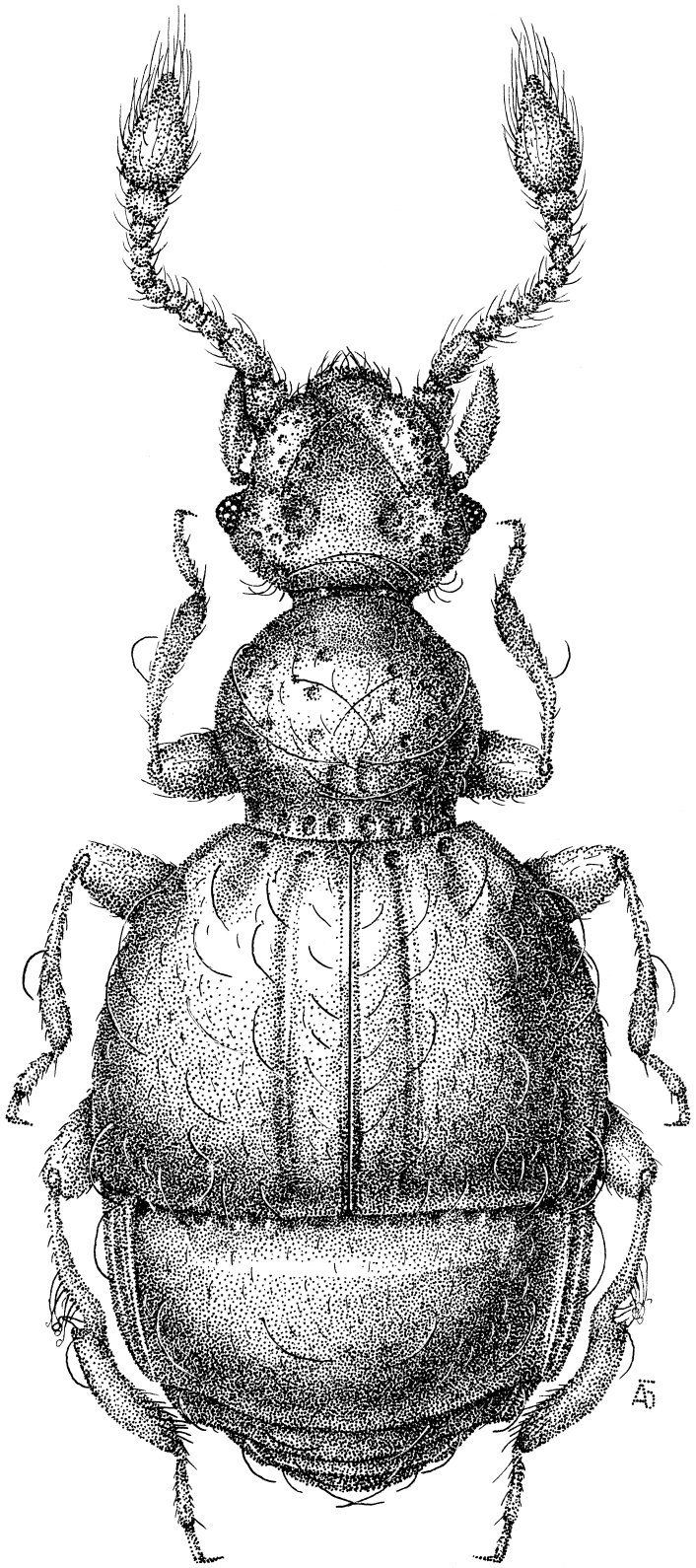

Figure 8. Habitus of *Nippiliphus crurifragius*.

mesally, inserted near posterior edge. Setae at margins of temporal patches comparatively long. Neck with foveiform, dorsomedian impression. Antennal segment 3 slightly longer than wide; segments 4 to 8 equal, each slightly wider than long; segment 9 distinctly larger than segment 8; segment 10 distinctly wider than long. Pronotum slightly wider than long (ratio 27/24), about as wide as head without eyes, with pair of elongate antebasal impressions; two pairs of discal and two pairs of lateral long setae curved mesally. Coarse pronotal punctures irregularly scattered, smaller than puncture intervals, distinctly larger than coarse vertexal punctures. Elytra with sutural striae subparallel at middle, converging toward base and apex. Metasternum very finely punctate. Abdominal tergite 1 with discal carinae strongly converging, about as long as one-third of tergite, separated at base by about three-fourths of basal tergal width, base with fine punctiform impressions; tergites 1 and 2 with two pairs of long setae, paratergites each with one similar long seta; tergites 3 and 4 with one pair of long setae; basal crenulation of sternite 2 conspicuously long.

Male. Eyes prominent, pigmented, about as long as tempora in dorsal view. Metatibiae narrow and slightly curved in basal third, with outer side shallowly emarginate before middle (emargination covered by long setae with apical portion in spiral), curved and thickened beyond emargination, in apical half almost evenly thick, at apex slightly narrowed (Fig. 423). Abdominal tergite 5 arcuate apically, with basal margin weakly sclerotized, truncate; sternite 6 with narrow process touching basal gland, bearing short pubescence and four long setae, lacking modified sensillae. Aedeagus (Fig. 425) 0.130–0.140 mm long; internal sac lacking sclerotized structures.

Female. Eyes about one-third of temporal length, with 4 or 5 light facets.

Distribution. Philippines: Luzon.

Comments. This species is characterised by the coarsely punctate head and pronotum, and the emarginate male metatibiae.

Nippiliphus napolovi sp. nov.
(Figs 419, 422, 424)

Type material. Holotype (male, in ZMUM): N Vietnam, 55 km NNW Hanoi, env. Tam Dao, 800 m, UV-light, 15–23.IX.1997 (A. Napolov).

Description. Length 1.05 mm. Body light reddish-brown, appendages lighter than body. Head very finely and sparsely punctate; punctation barely visible on vertex, denser and more clearly visible on frons. Pubescence short and recumbent; one pair of long, curved setae directed mesally on occipital area of vertex; one pair of conspicuously long setae inserted near anterior margin of vertexal pits and directed proximally. Vertexal pits large, not clearly delimited, situated in line of eye centres, with diameters about half of interval between them, distinctly smaller than interval between foveae and lateral head margins. Vertex convex at middle. Frons slightly convex transversely, lying clearly below plane of vertex, delimited by shallow, transverse impression, with subpentagonal margins. Tempora rounded and short in dorsal view. Antennae with scape cylindrical, slightly wider than pedicel; pedicel longer than wide; segment 3 slightly larger than segment 4 and longer than wide; segments 4 to 9 each about as long as wide, almost as wide as half of pedicel width; segment 9 cylindrical; segment 10 about as long as and distinctly wider than segment 9, cylindrical; segment 11 large, almost as long as segments 7 to 10 combined, 3 times as wide as funicular segments. Pronotum about as wide as long, slightly wider than head without eyes, very finely and sparsely punctate. Lateral and basal foveae small, pit-like and well-delimited; antebasal impressions absent. Pronotal pubescence longer than that on head, pronotum bearing lateral, basal, and discal long, curved setae. Elytra with lateral and apical long, semi-erect setae. Discal sulci oblique, deep, diverging posteriorly, reaching elytral mid-length. Profemora and mesofemora swollen, profemora with row of short setae at distal part of dorsal margin. Abdominal tergite 1 with discal carinae obliquely converging, almost reaching tergal mid-length; interval between base of discal carinae about two-thirds of tergal width.

Male. Eyes prominent, pigmented, multifaceted, longer than tempora in dorsal view. Metatibiae lacking obvious sexual characters. Abdominal tergite 5 similar to that of *N. crurifragius*; sternite 6 (Fig. 419) with 3 basal processes, with transverse patch of short, hook-like sensillae, four long setae and fine pubescence near apex. Aedeagus (Fig. 424) 0.210 mm long.

Female unknown.

Distribution. North Vietnam.

Comments. This species differs from *N. crurifragius* by the absence of antebasal pronotal impressions and sexually modified metatibiae.

We name this species in honour of our colleague and friend Alexandre Napolov, Riga.

Goniaceritae *Nomen dubium*

Maya uzeli Blattny, 1925

Maya uzeli, Blattny, 1925: 210.

***Type material*:** (1 male & 1 female, not examined, apparently lost): 'Ceylon [Sri Lanka], Peradenyia, Uzel leg., 1902'.

Comments. No specimens of this species could be located in the Museum of Prague, which holds Blattny's material, nor in any other collection checked by us. According to its original description, *M. uzeli* should possess elongate antennal segments 10, a feature found nowhere else in the *Morana* group. The other characters mentionned are not informative enough to allow former assignment within Goniaceritae.

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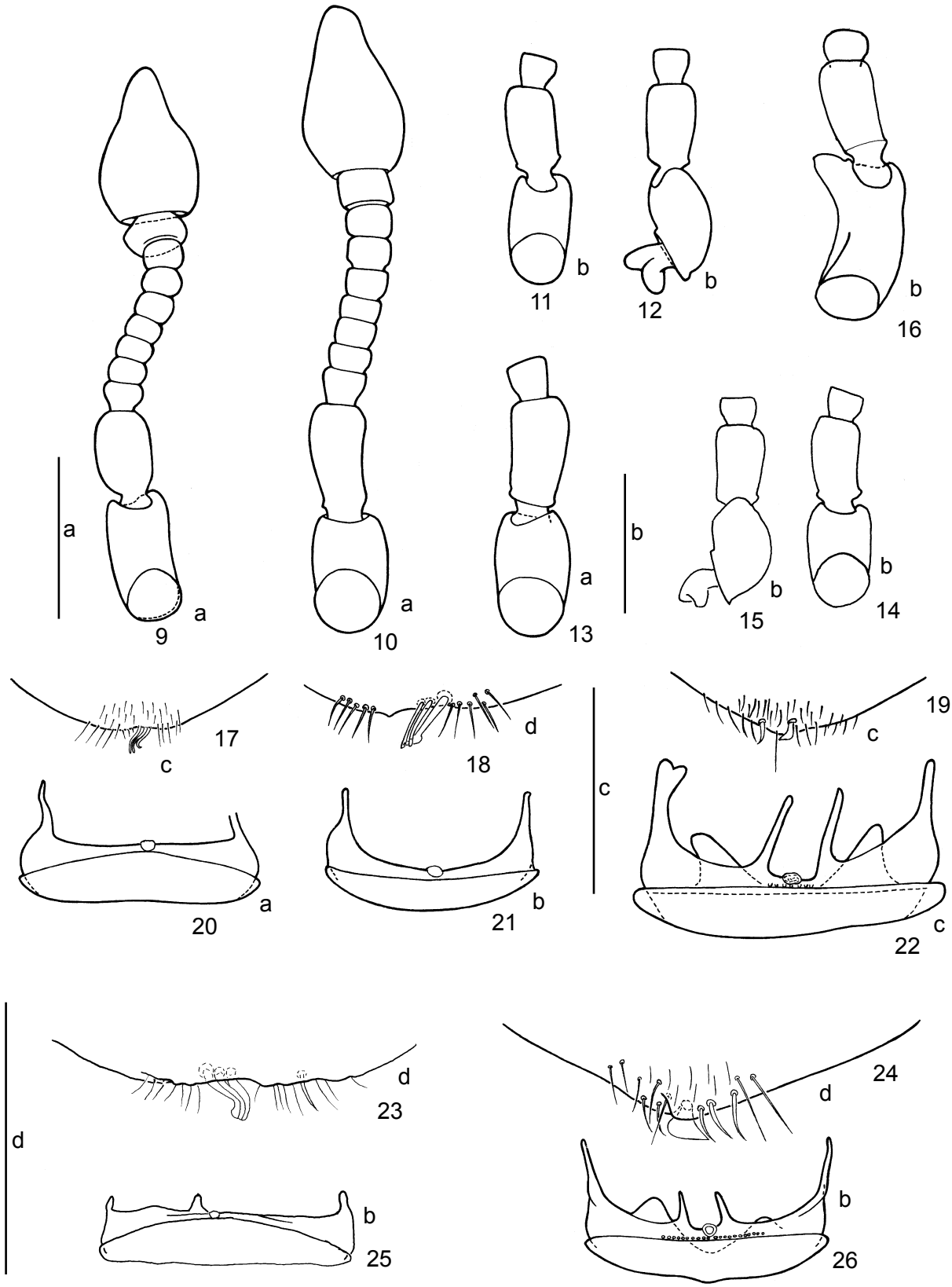
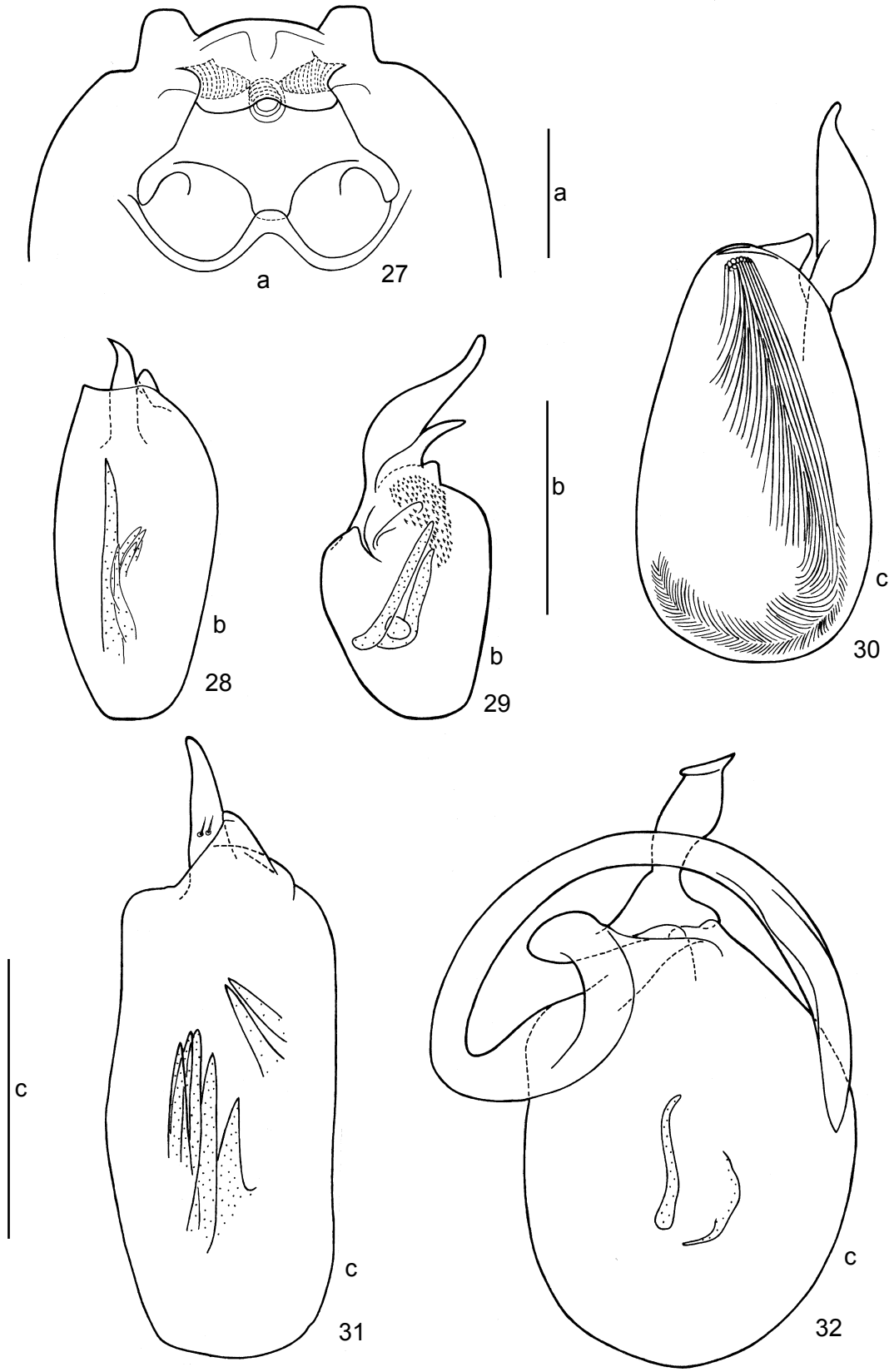
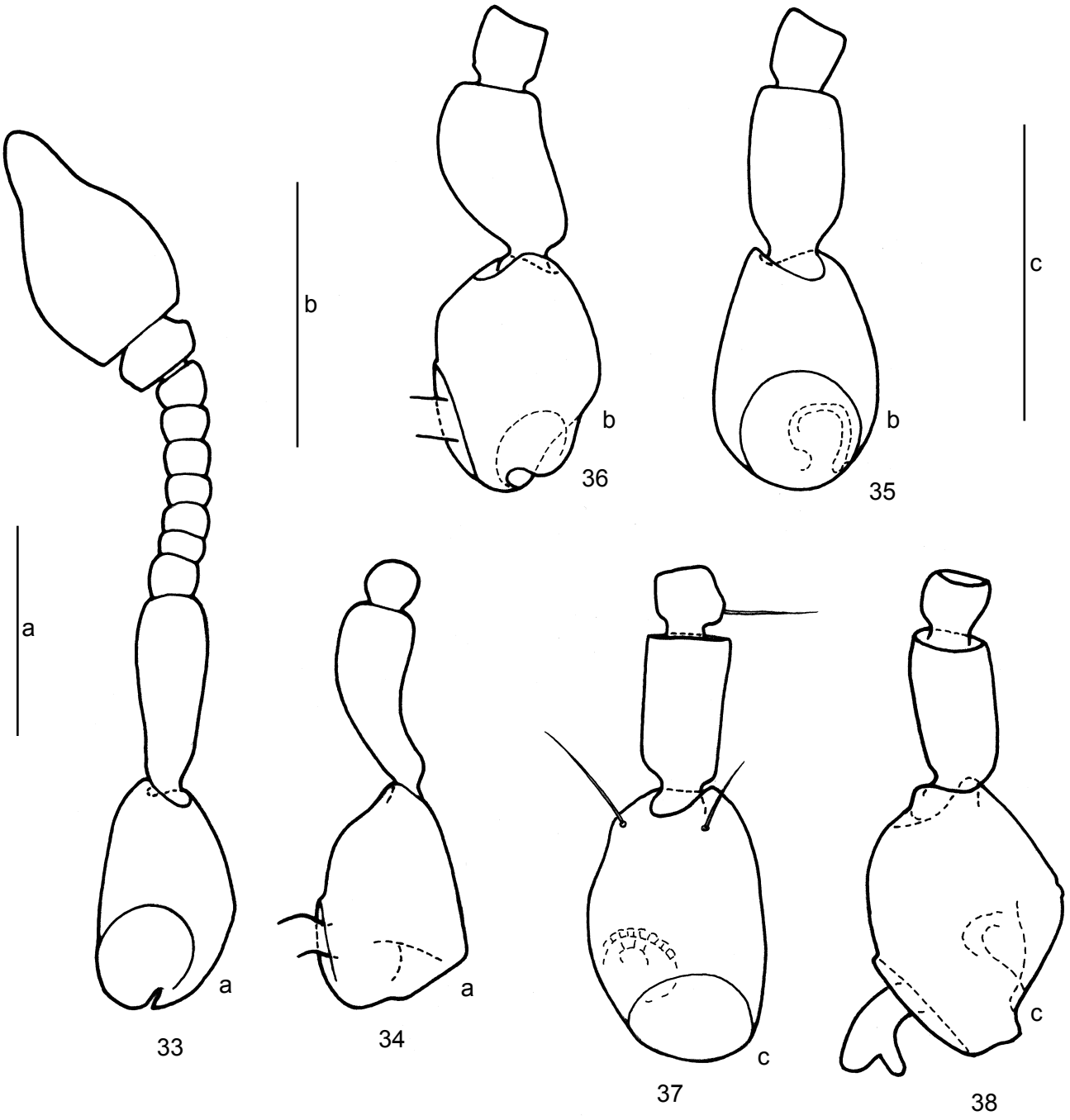


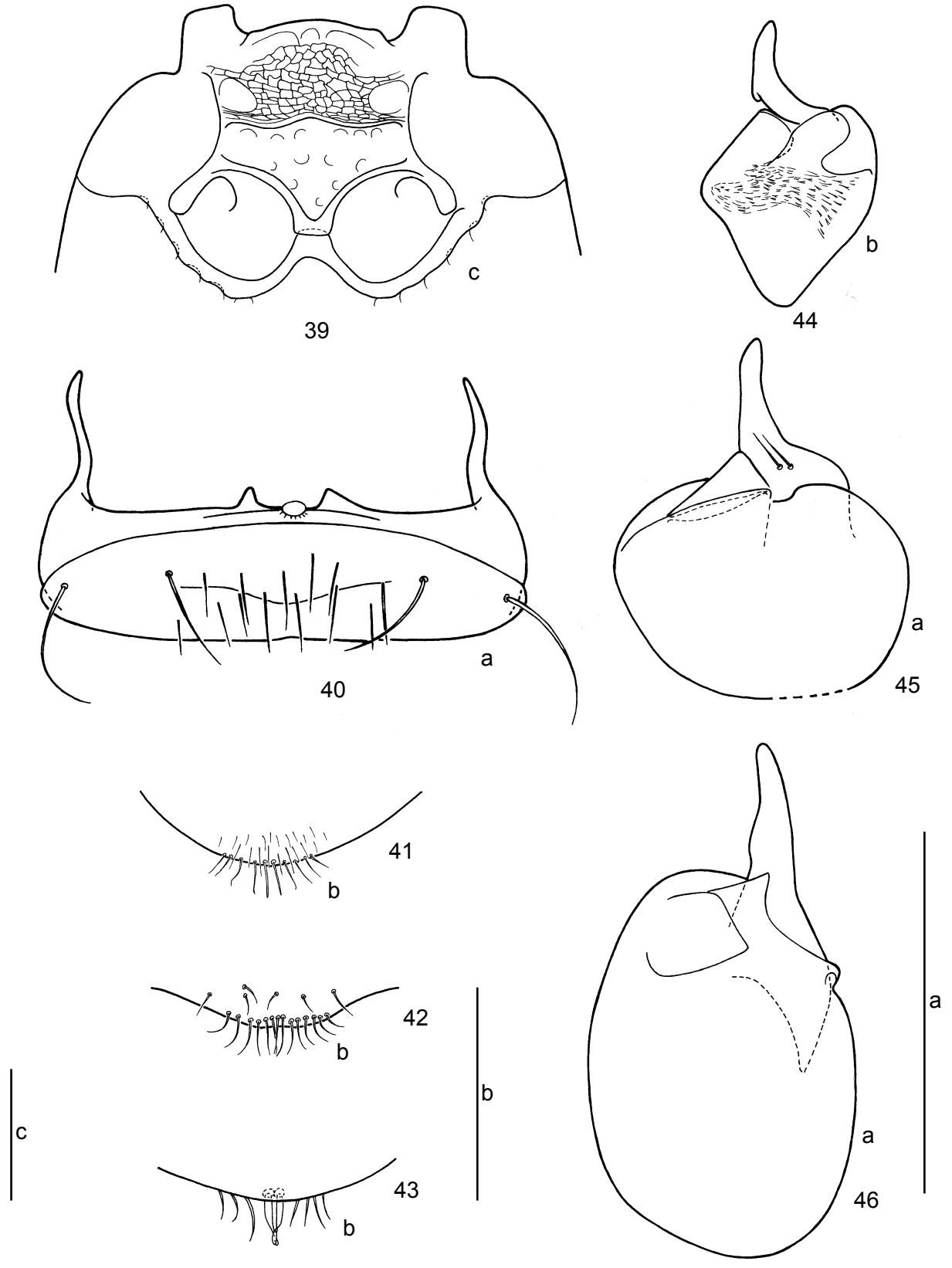
Figures 9–26. 24, 26. *Armariolus aeruscator*; 14, 15, 23, 25. *A. bombax*; 9, 19, 22. *A. brachiatus*; 10, 13, 17, 20. *A. praepilatus*; 16. *Bythinophanax bicornis*. (9 –10) Antenna (9 – male, 10 – female); (11–16) base of antenna (11, 13, 14, 16 – dorsal; 12, 15 – lateral); (17–19, 23–24) apex of last tergite, male; (20–22, 25–26) last sternite, male. Scale bars = 0.1 mm.



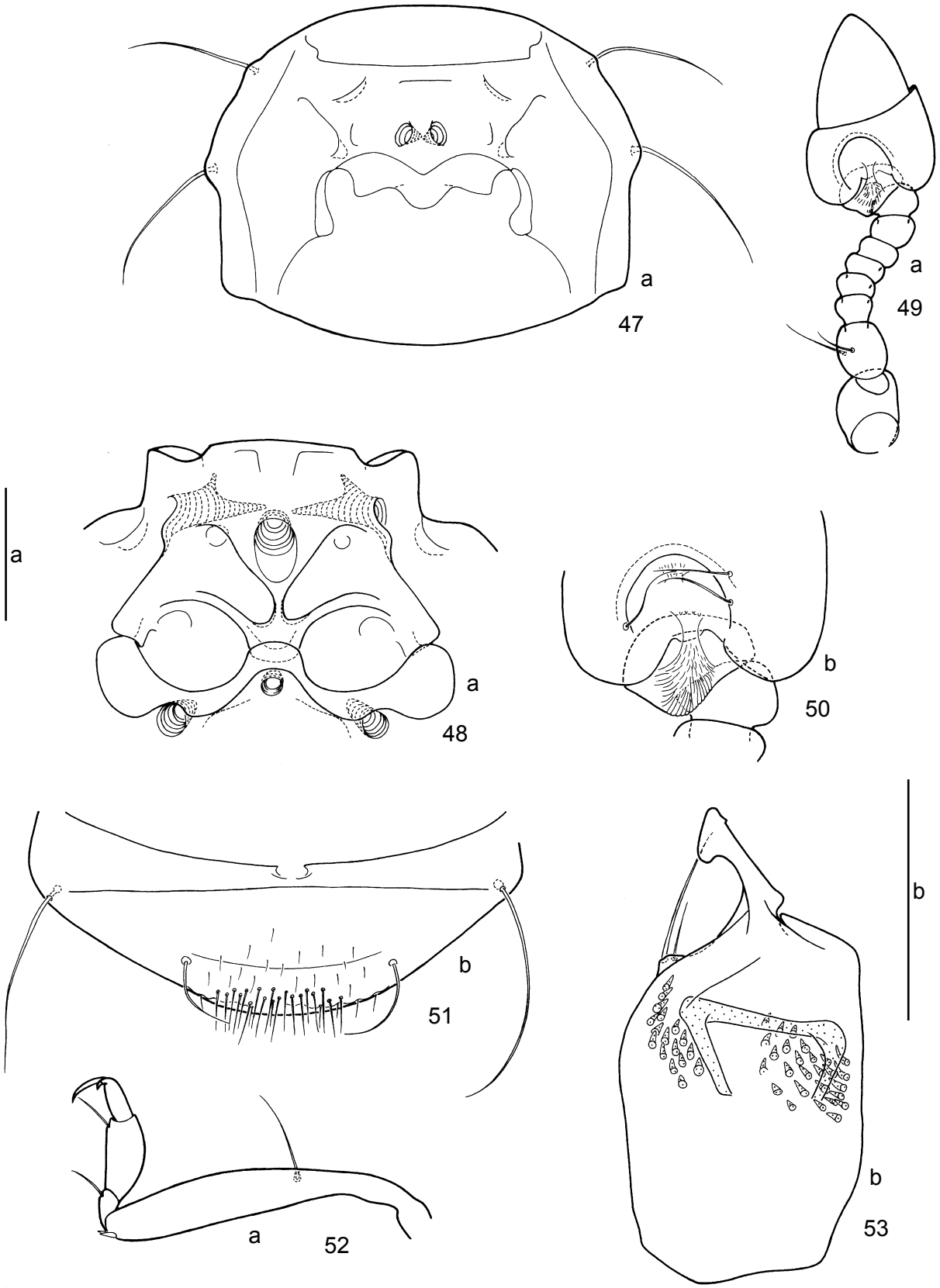
Figures 27–32. 30. *Armariolus aeruscator*; 32. *A. bombax*; 29. *A. brachiatus*; 27–28. *A. praepilatus*. (27) Meso- and metasternum; (28–32) aedeagus, dorsal. Scale bars = 0.1 mm.



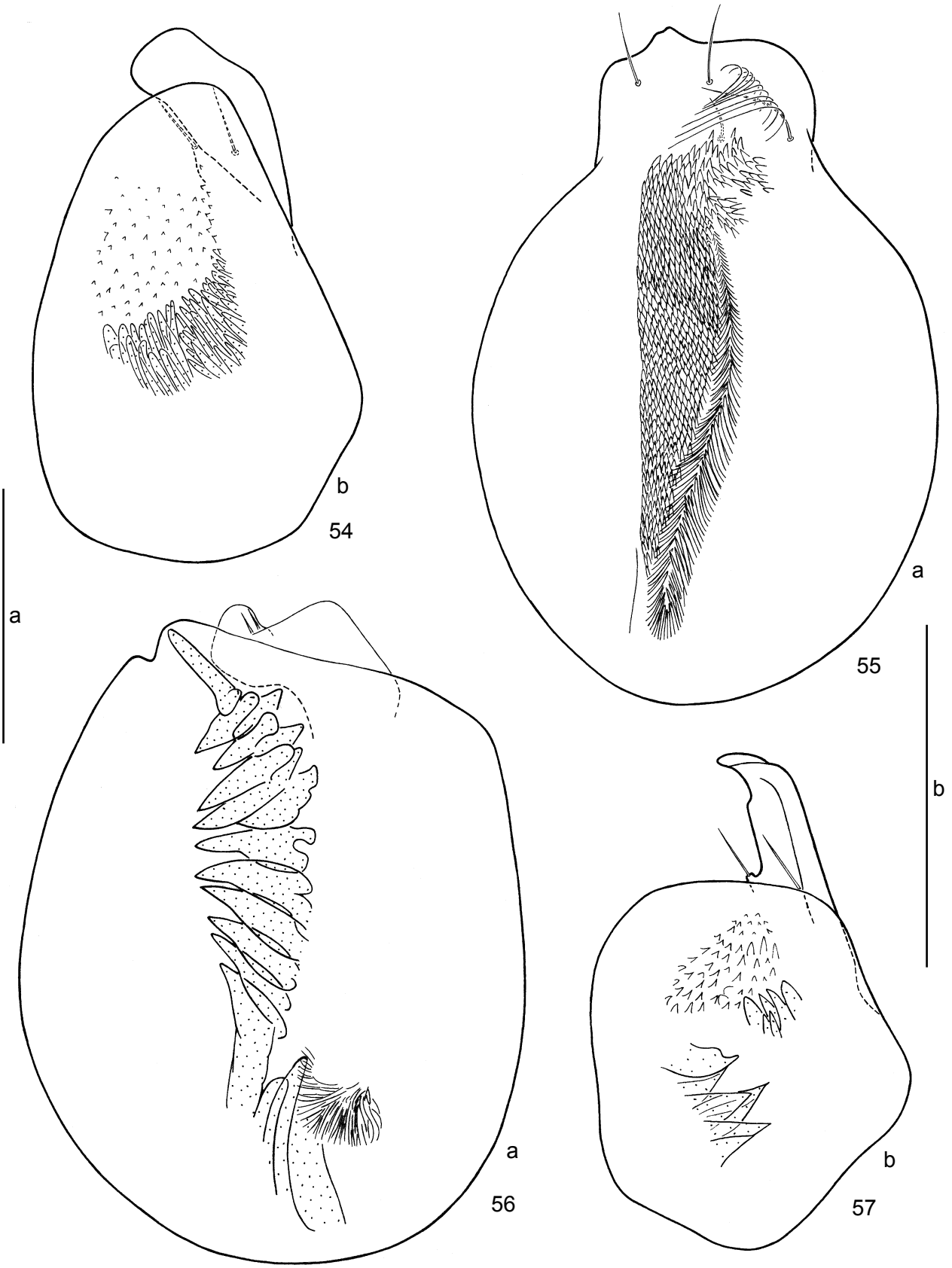
Figures 33–38. 35–36. *Cataphractinus arenarius*; 33–34. *C. clibanarius*; 37–38. *C. crupellarius*. (33) Antenna; (34–38) base of antenna (33, 35, 37 – dorsal; 34, 36, 38 – lateral). Scale bars = 0.1 mm.



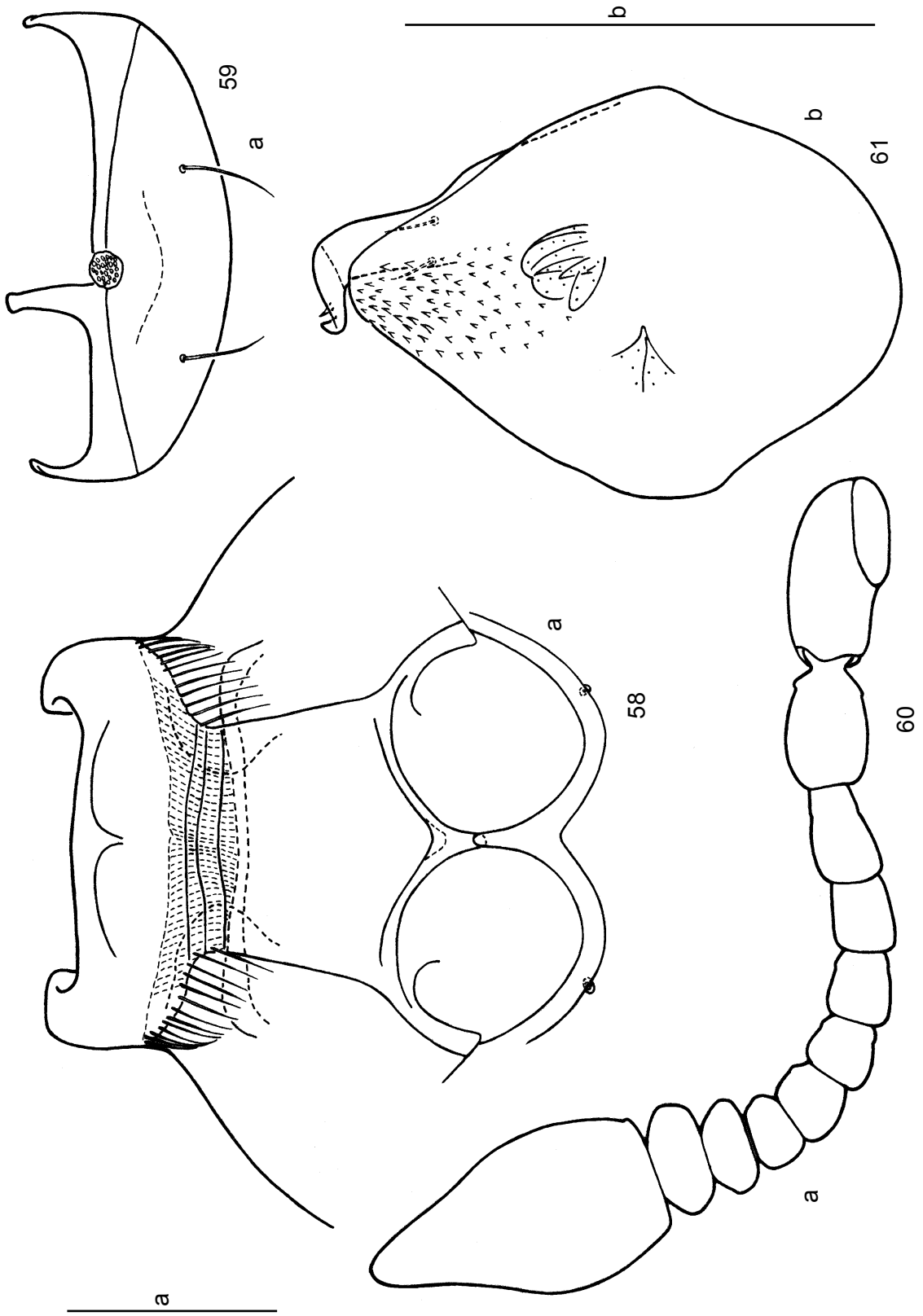
Figures 39–46. 40–41, 46. *Cataphractinus arenarius*; 39, 42, 44. *C. clibanarius*; 43, 45. *C. crupellarius*. (39) Meso- and metasternum; (41–43) apex of last tergite, male; (40) last sternite, male; (44–46) aedeagus, dorsal. Scale bars = 0.1 mm.



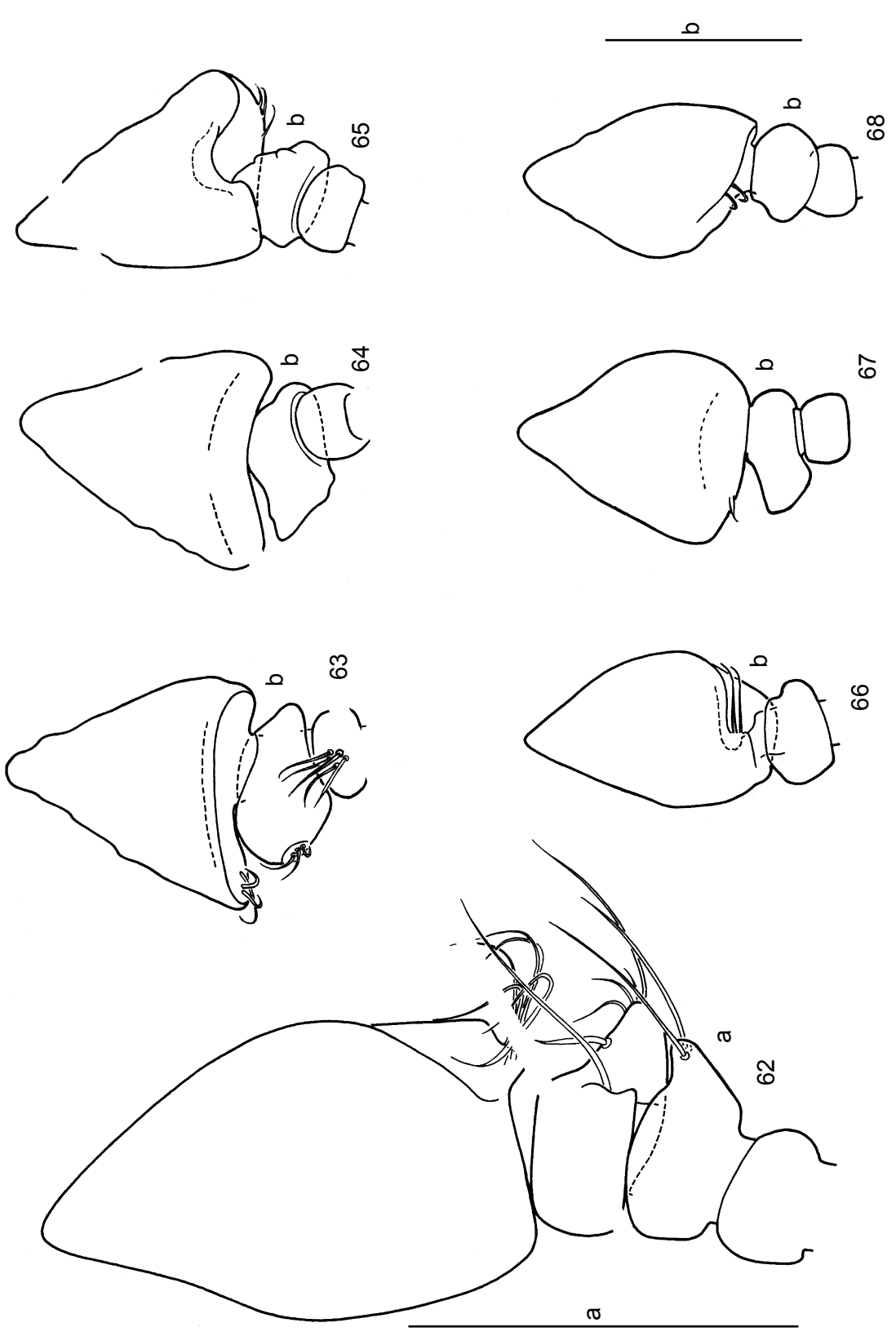
Figures 47–53. *Klarissa pantagatha*. (47) Prosternum; (48) central part of meso- and metasternum; (49) antenna, male; (50) articles 9–10 of antenna, male; (51) last sternite, male; (52) protibia; (53) aedeagus, dorsal. Scale bars = 0.1 mm.



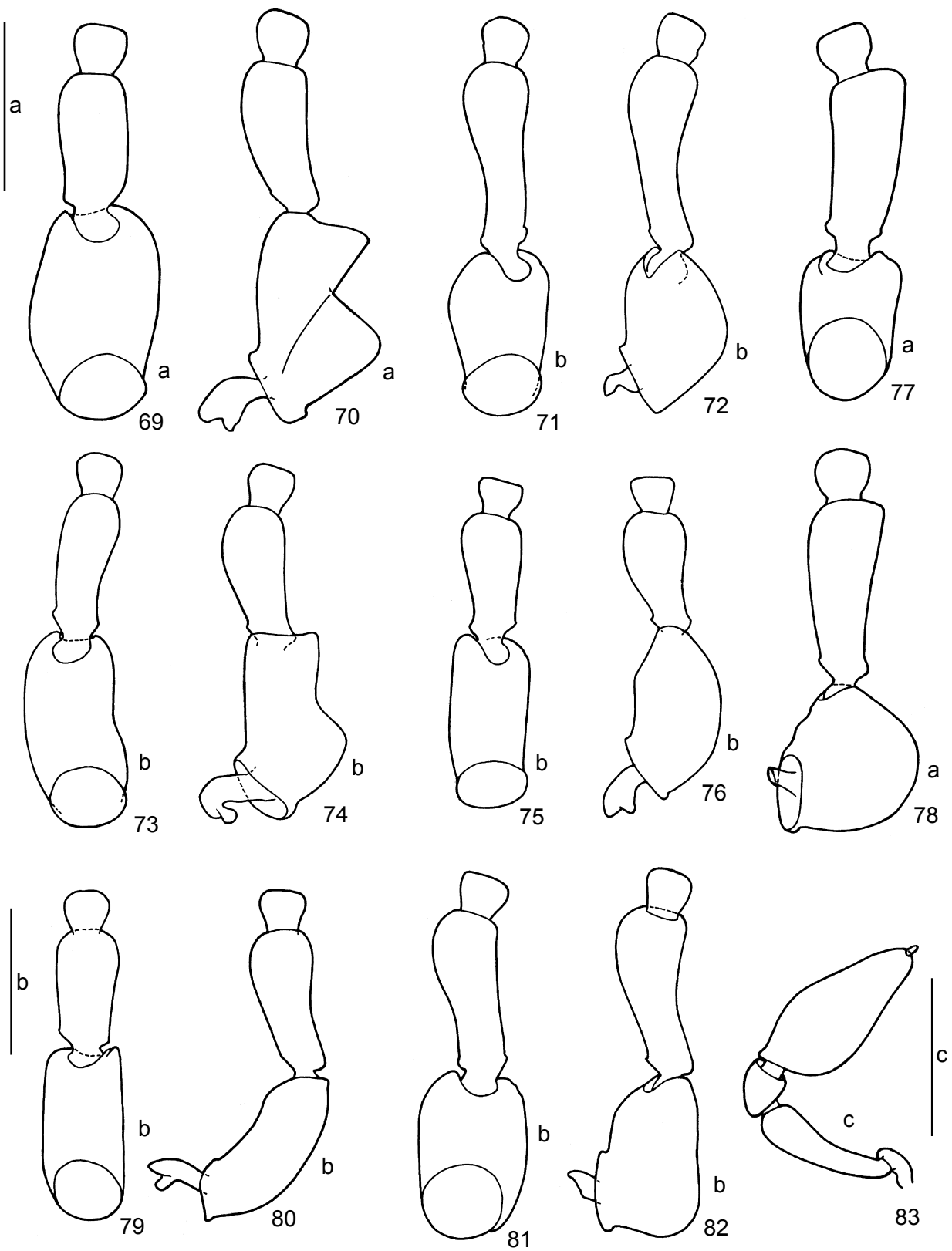
Figures 54–57. 56. *Maya bracata*; 57. *M. churgellae*; 54. *M. dilatata*; 55. *M. horricomis*. (54–57) Aedeagus, dorsal. Scale bars = 0.1 mm.



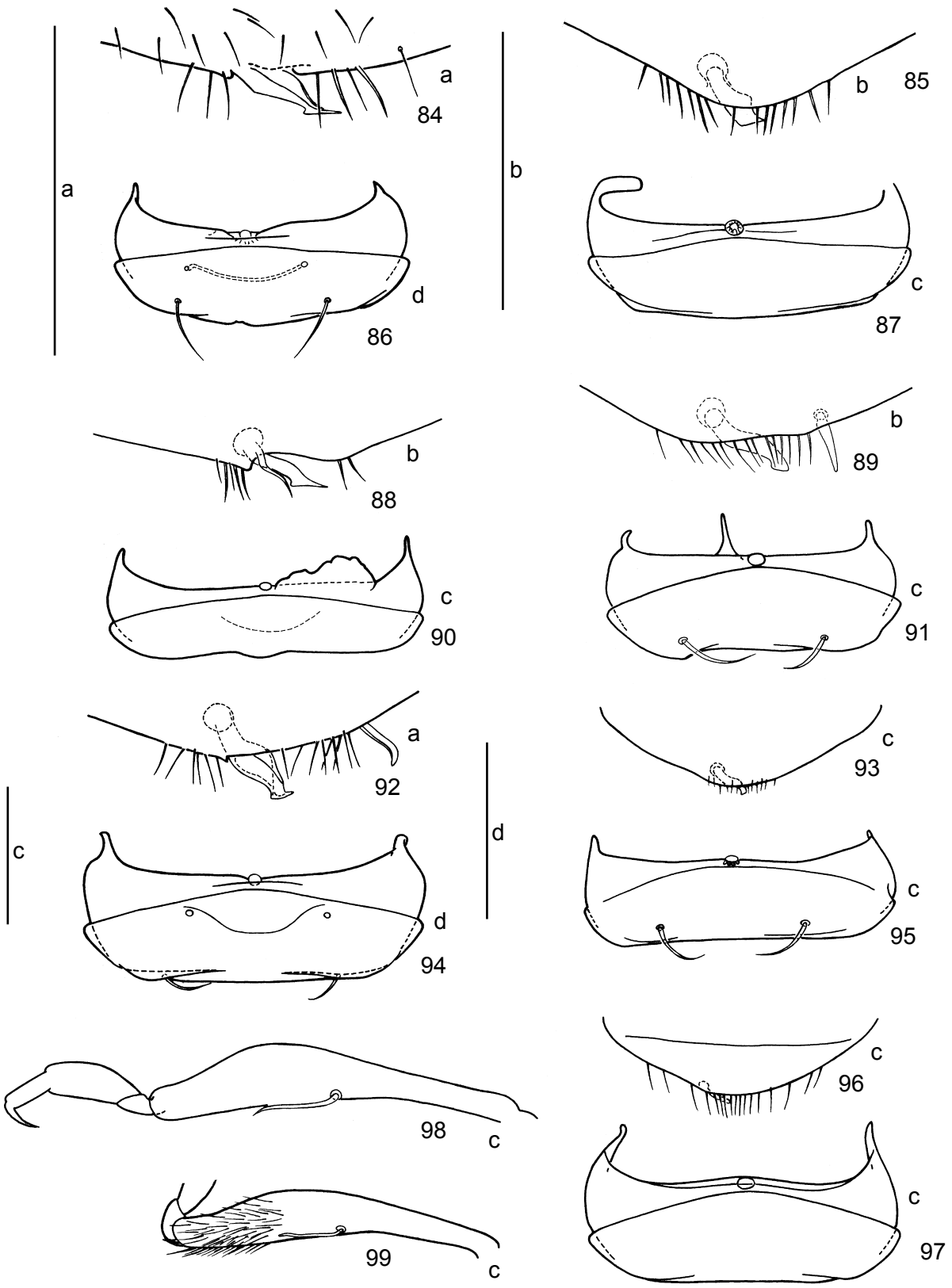
Figures 58–61. 59. *Maya bracata*; 61. *M. chargellae*; 58, 60. *M. dilatata*. (60) Antenna; (58) central part of meso– and metasternum; (59) last sternite, male; (61) aedeagus, dorsal. Scale bars = 0.1 mm.



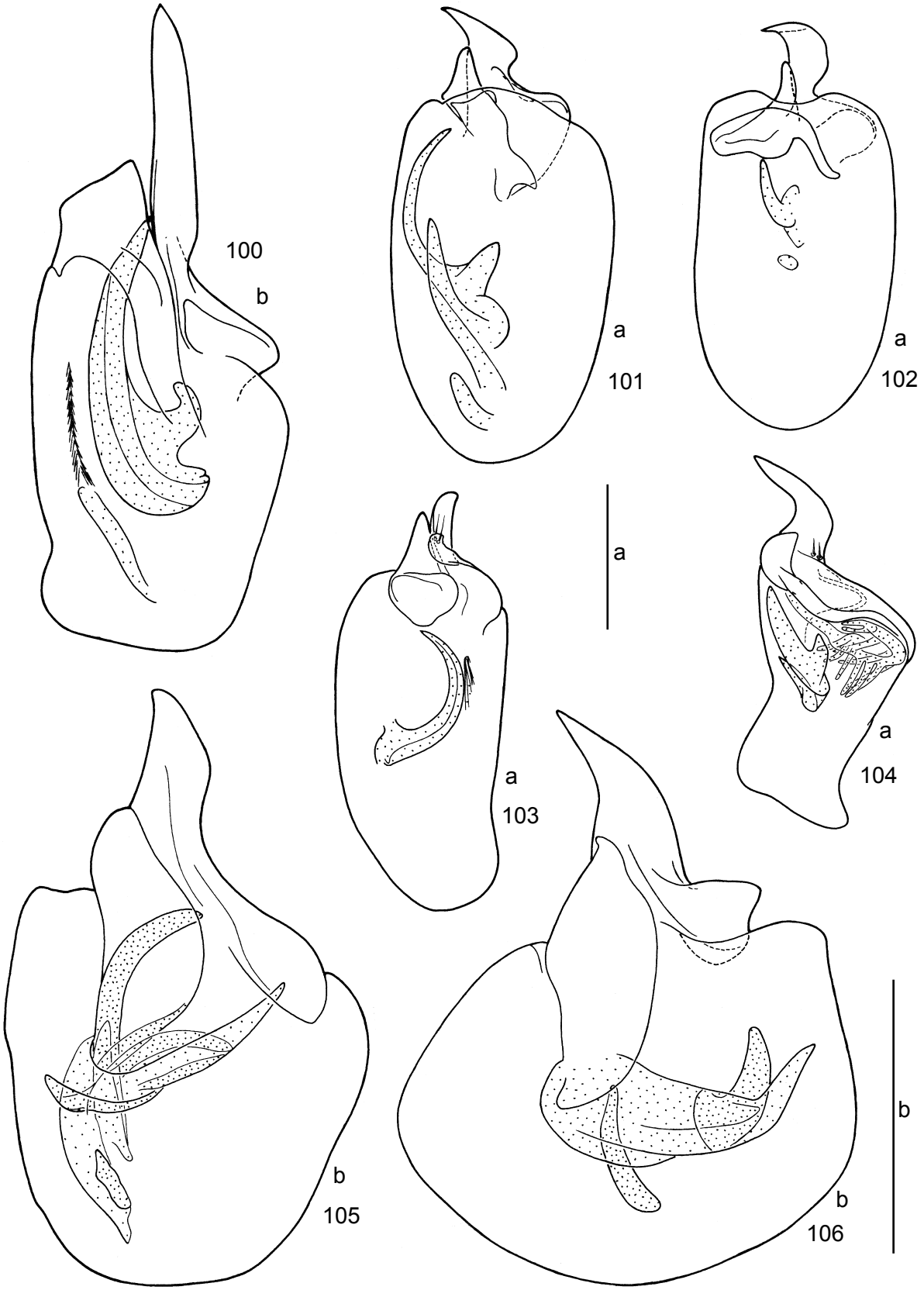
Figures 62–68. 67–68. *Morana bara*; 63. *M. elegans*; 62. *M. epastifrons*; 64–65. *M. oni*; 66. *M. puella*. (62–68) Apex of antenna, male. Scale bars = 0.1 mm.



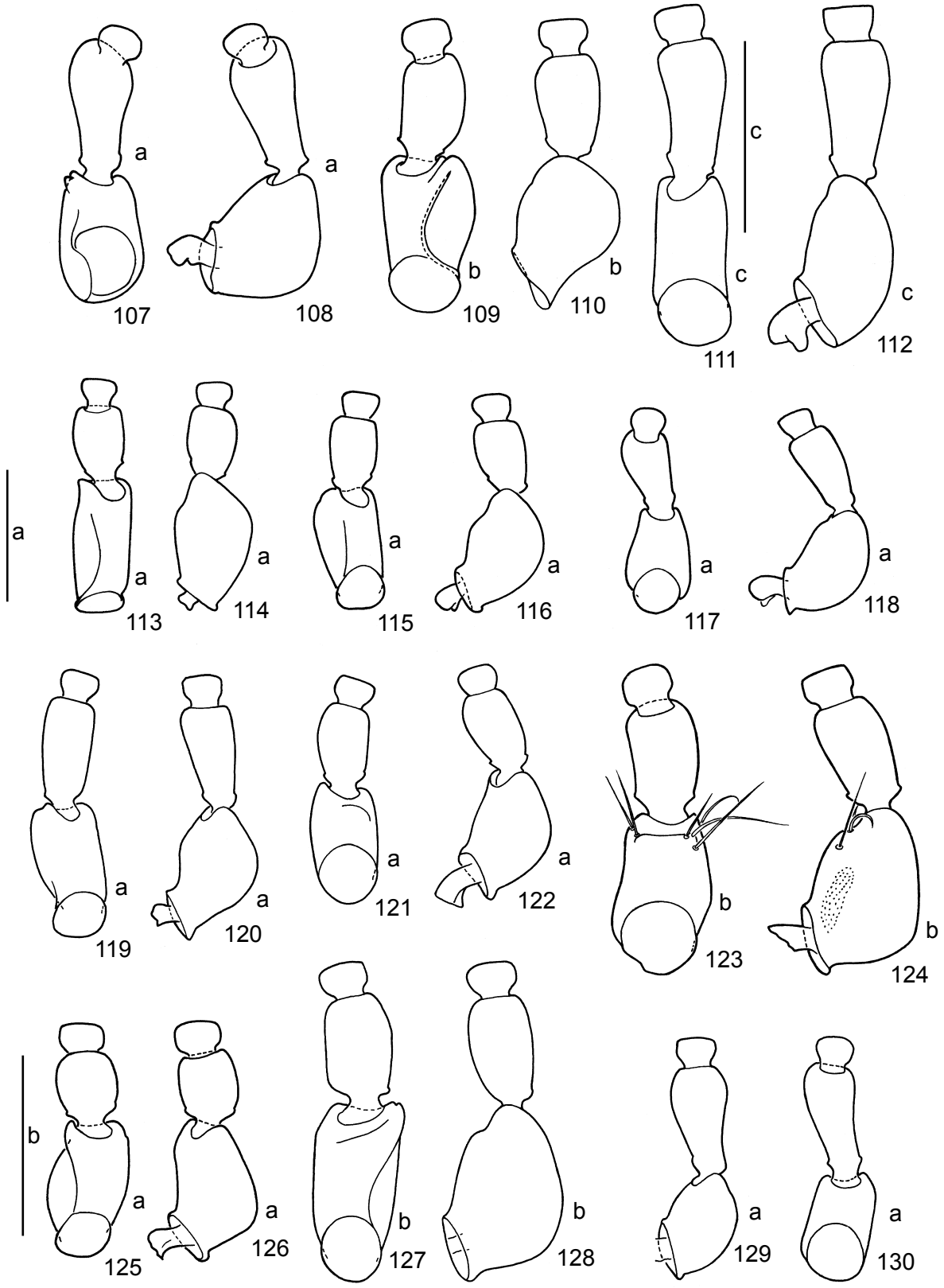
Figures 69–83. 75–76. *Morana bara*; 69–70. *M. discedens*; 73–74. *M. elegans*; 81–82. *M. epastifrons*; 77–78, 83. *M. hastulata*; 71–72. *M. oni*; 79–80. *M. puella*. (69–82) Base of antenna, male (69, 71, 73, 75, 77, 79, 81, 83 – dorsal; 70, 72, 74, 76, 78, 80, 82 – lateral); (83) maxillary palpus. Scale bars = 0.1 mm.



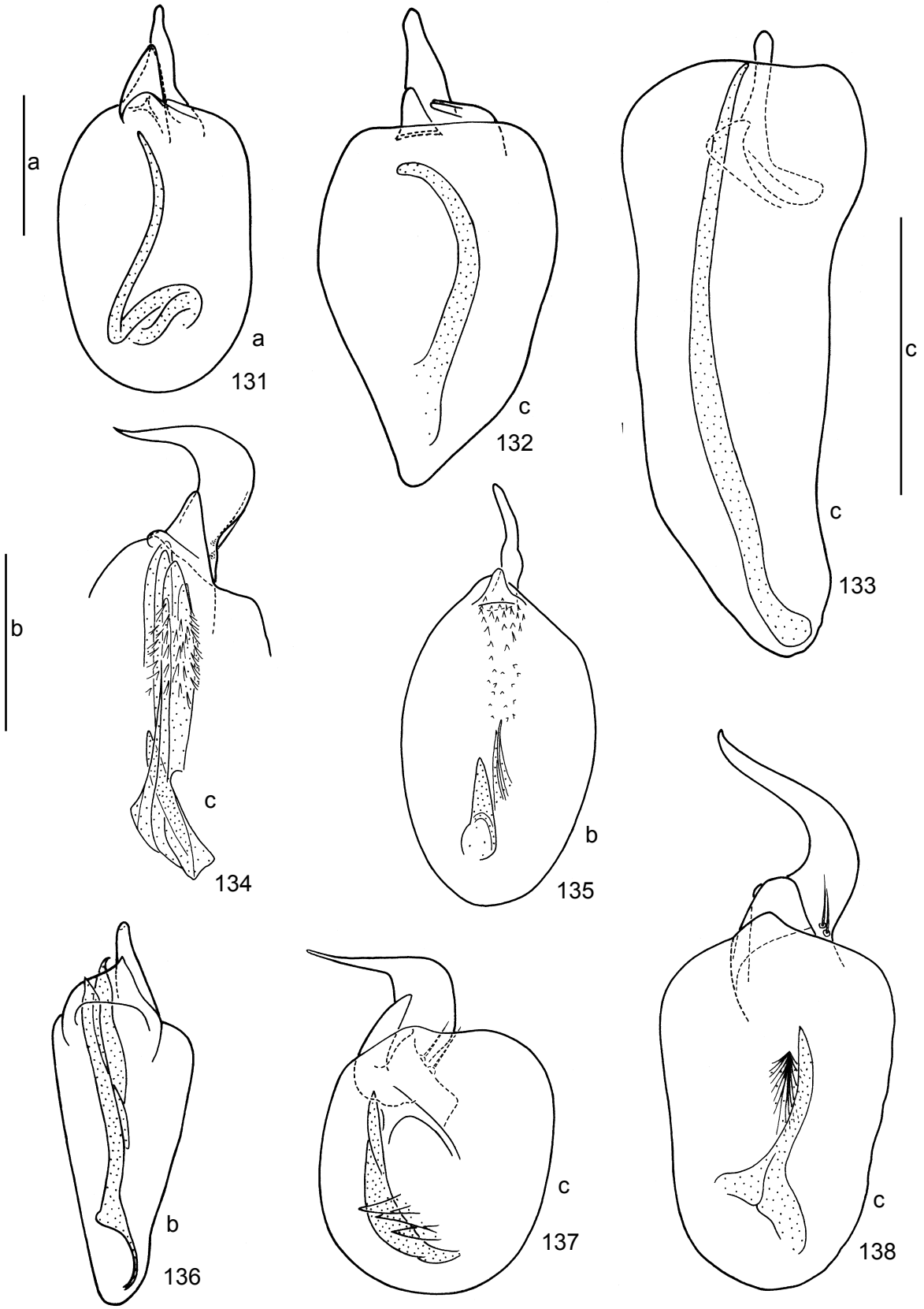
Figures 84–99. 93, 95, 98. *Morana bara*; 84, 86. *M. discedens*; 85, 87. *M. elegans*; 89, 91. *M. epastifrons*; 92, 94, 99. *M. hastulata*; 96–97. *M. oni*; 88, 90. *M. puella*. (84–85, 88–89, 92–93, 96) Apex of last tergite, male; (86–87, 90–91, 94–95, 97) last sternite, male; (98–99) protibia, male. Scale bars = 0.1 mm.



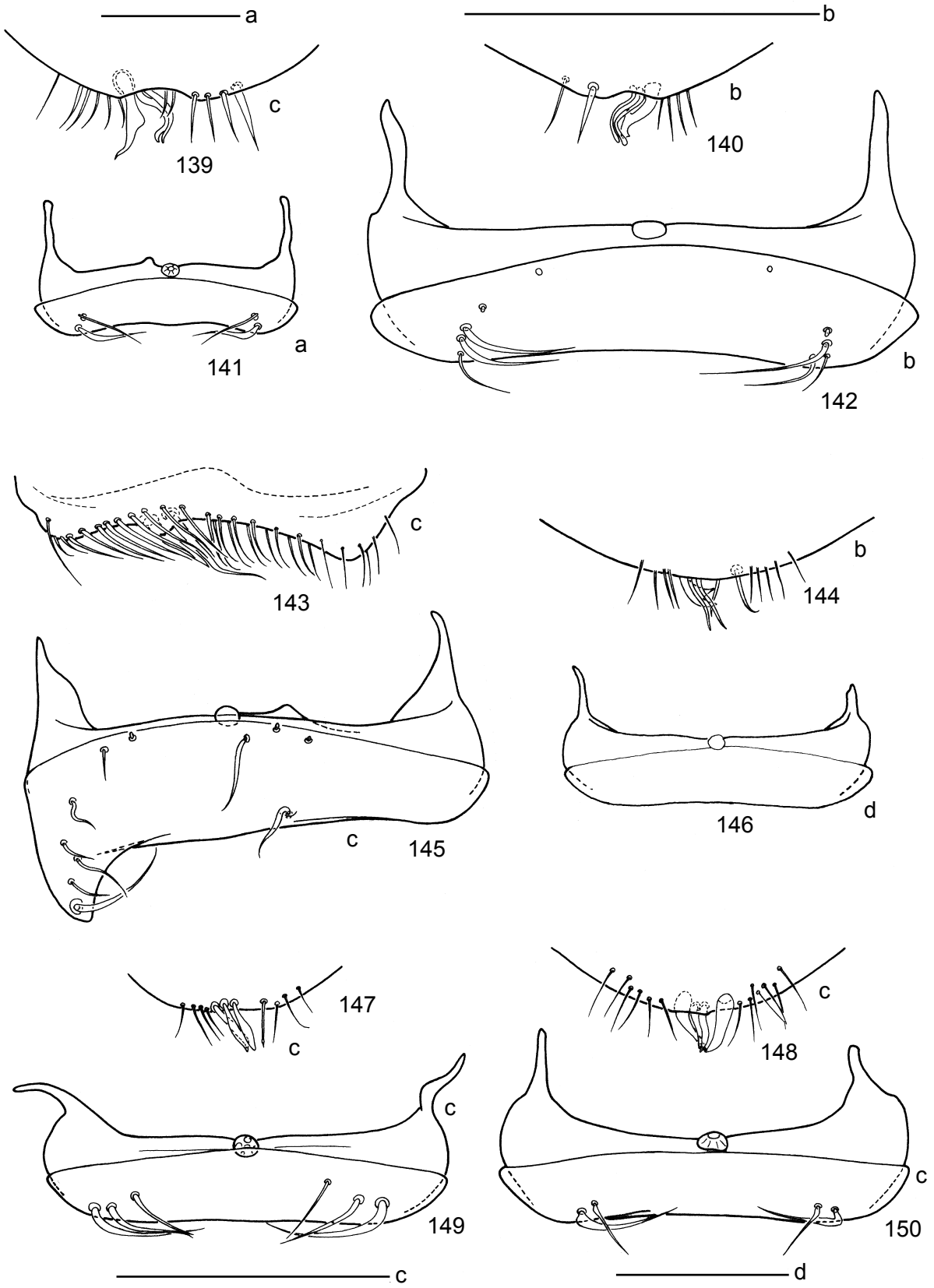
Figures 100–106. 106. *Morana bara*; 100. *M. discedens*; 101. *M. elegans*; 104. *M. epastifrons*; 103. *M. hastulata*; 102. *M. oni*; 105. *M. puella*. (100–106) Aedeagus, dorsal. Scale bars = 0.1 mm.



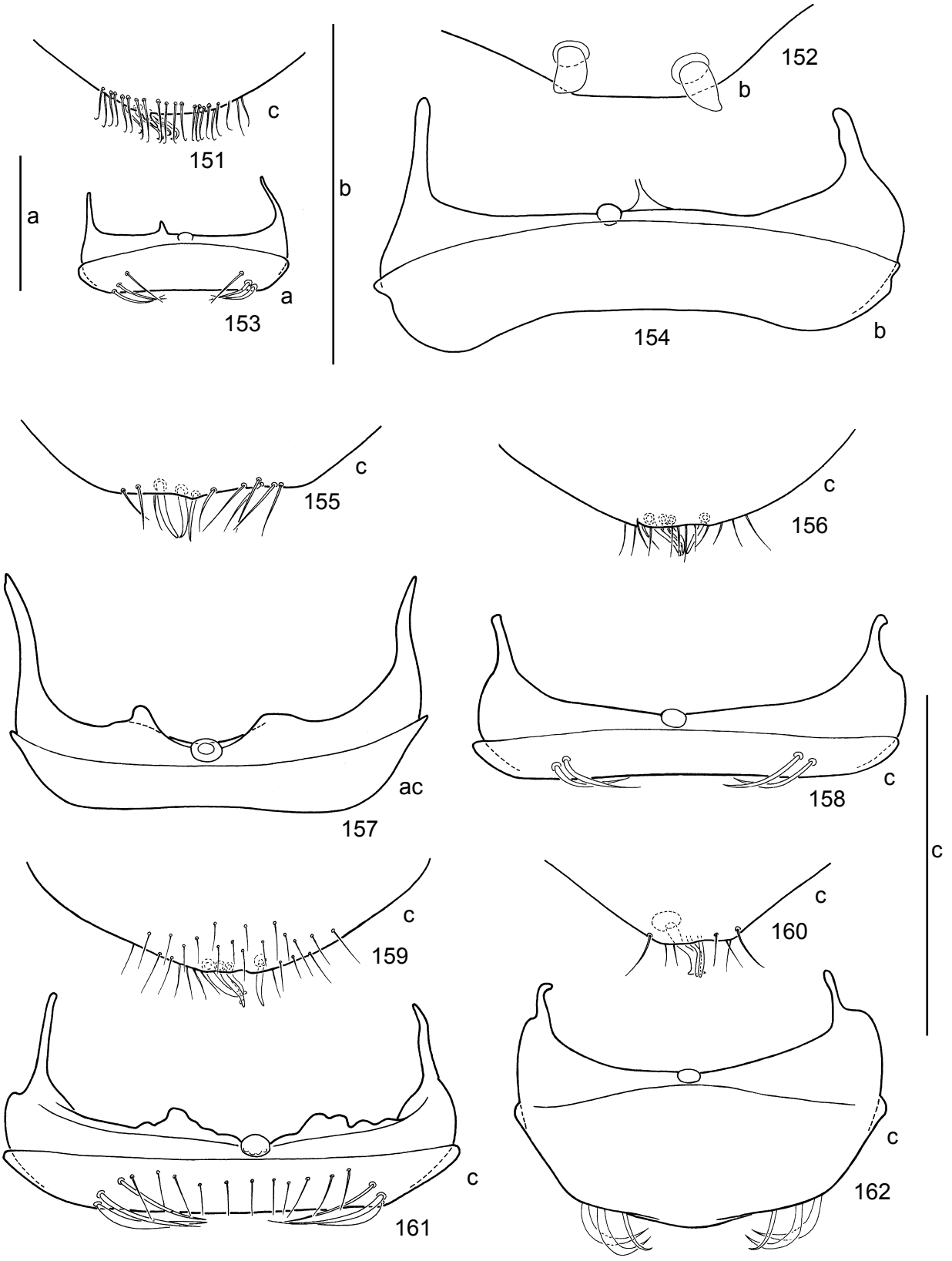
Figures 107–130. 123–124. *Morana belajevae*; 129–130. *M. diatretaria*; 107–108. *M. lupula*; 109–110. *M. murphyi*; 115–116. *M. nana*; 117–118. *M. obbatifrons*; 127–128. *M. palpalis*; 125–126. *M. repandirostra*; 111–112. *M. sagax*; 121–122. *M. schwendingeri*; 113–114. *M. tibialis*; 119–120. *M. vultuosa*. (107–130) Base of antenna, male (107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129 – dorsal; 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130 – lateral). Scale bars = 0.1 mm.



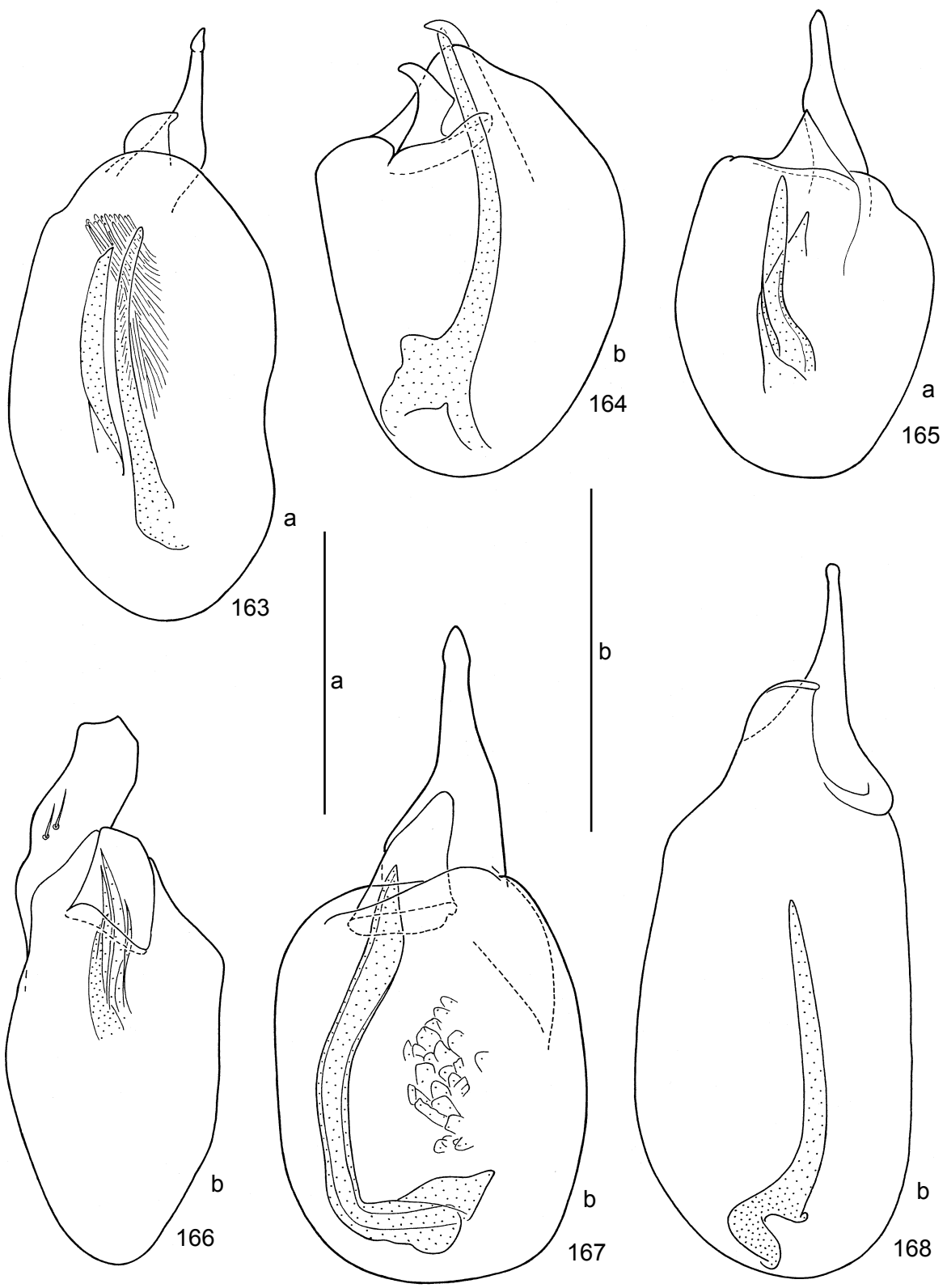
Figures 131–138. 136. *Morana belajevae*; 131. *M. lupula*; 135. *M. murphyi*; 132. *M. nana*; 137. *M. obbatifrons*; 134. *M. sagax*; 133. *M. tibialis*; 138. *M. vultuosa*. (131–138) Aedeagus, dorsal. Scale bars = 0.1 mm.



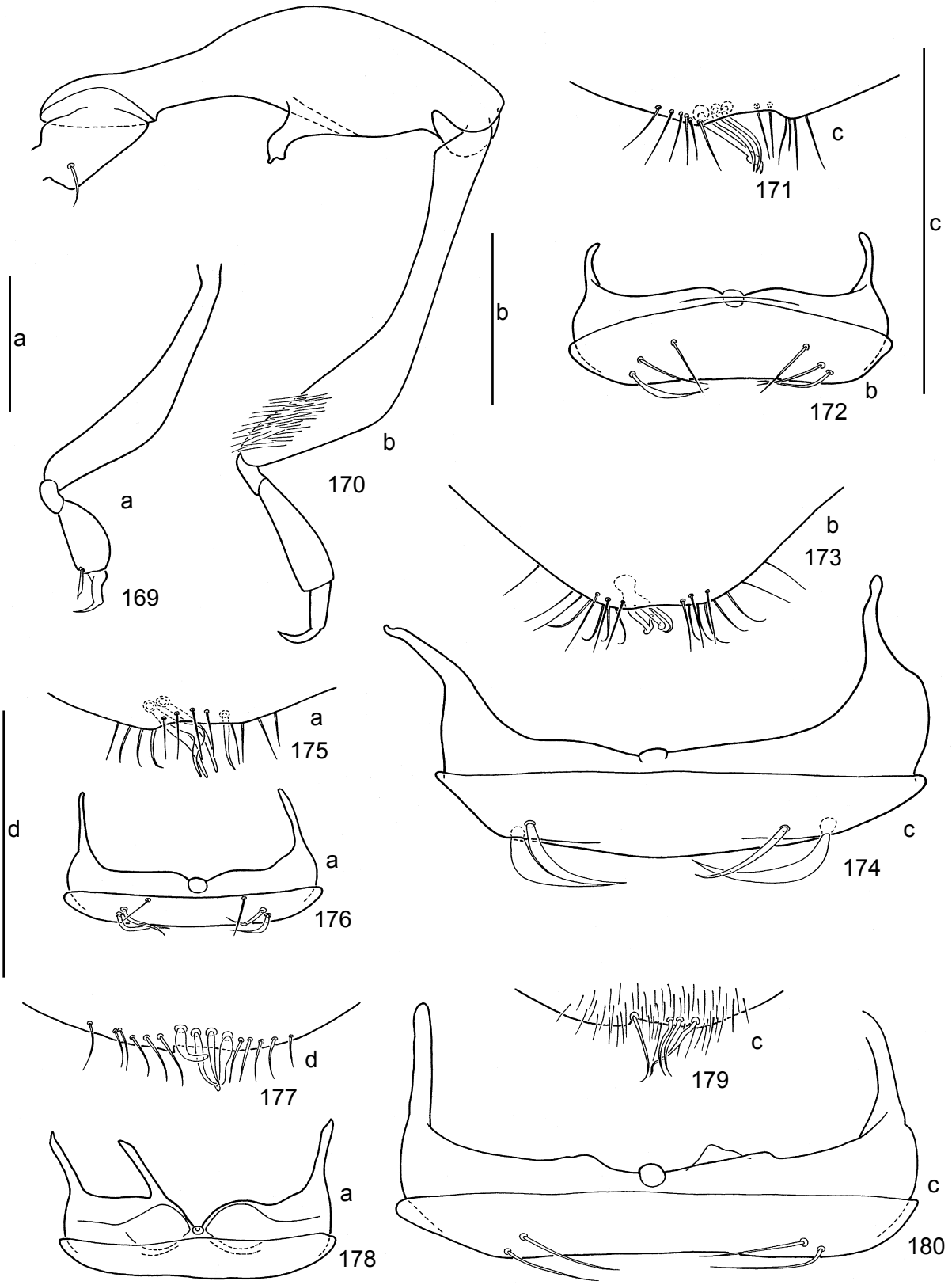
Figures 139–150. 144, 146. *Morana belajevae*; 139, 141. *M. lupula*; 140, 142. *M. murphyi*; 148, 150. *M. nana*; 143, 145. *M. sagax*; 147, 149. *M. tibialis*. (139–140, 143–144, 147–148) Apex of last tergite, male; (141–142, 145–146, 149–150) last sternite, male. Scale bars = 0.1 mm.



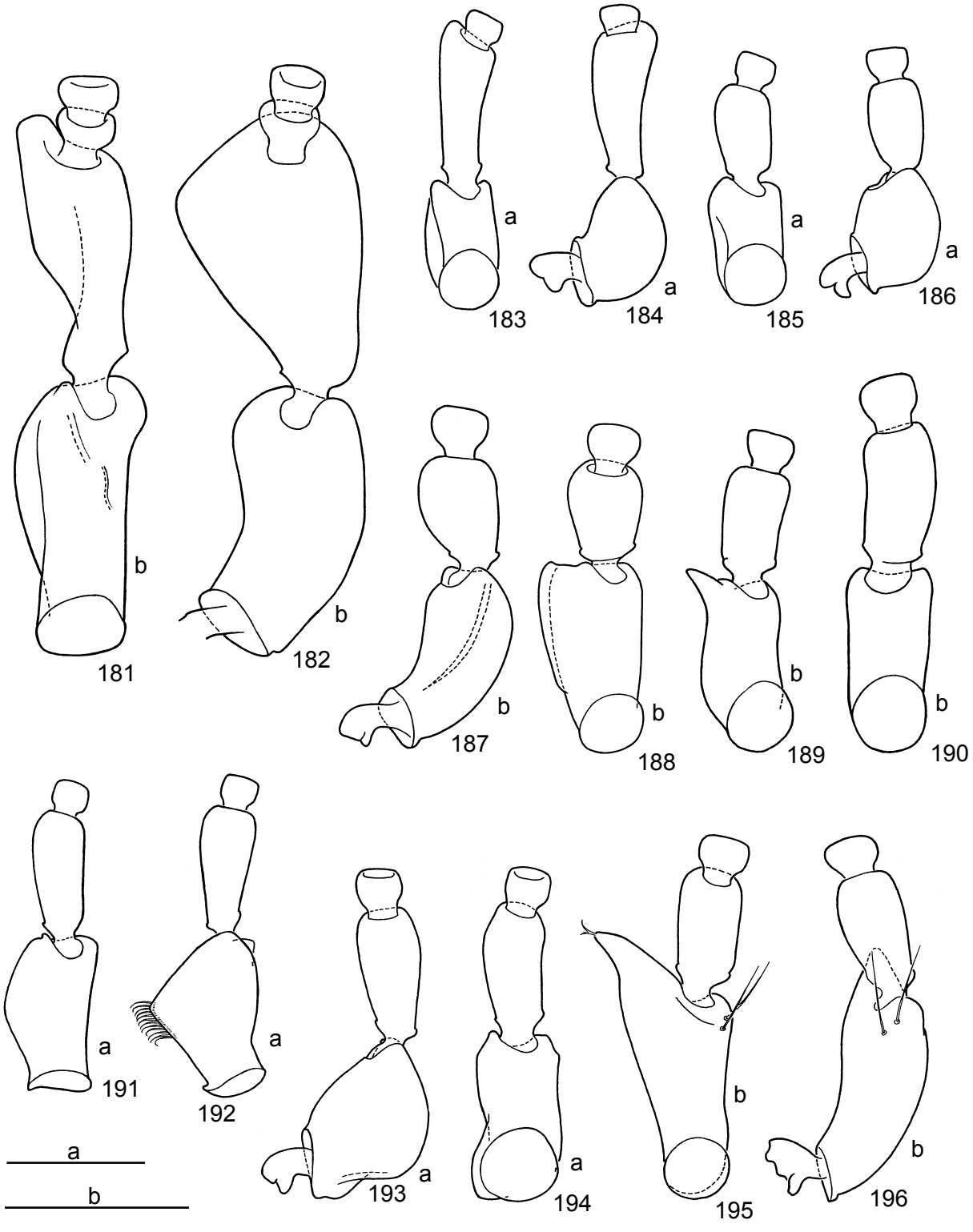
Figures 151–162. 160, 162. *Morana diatretaria*; 152, 154. *M. femoralis*; 155, 157. *M. obbatifrons*; 159, 161. *M. repandirostra*; 156, 158. *M. schwendingeri*; 151, 153. *M. vultuosa*. (151–152, 155–156, 159–160) Apex of last tergite, male; (153–154, 157–158, 161–162) last sternite, male. Scale bars = 0.1 mm.



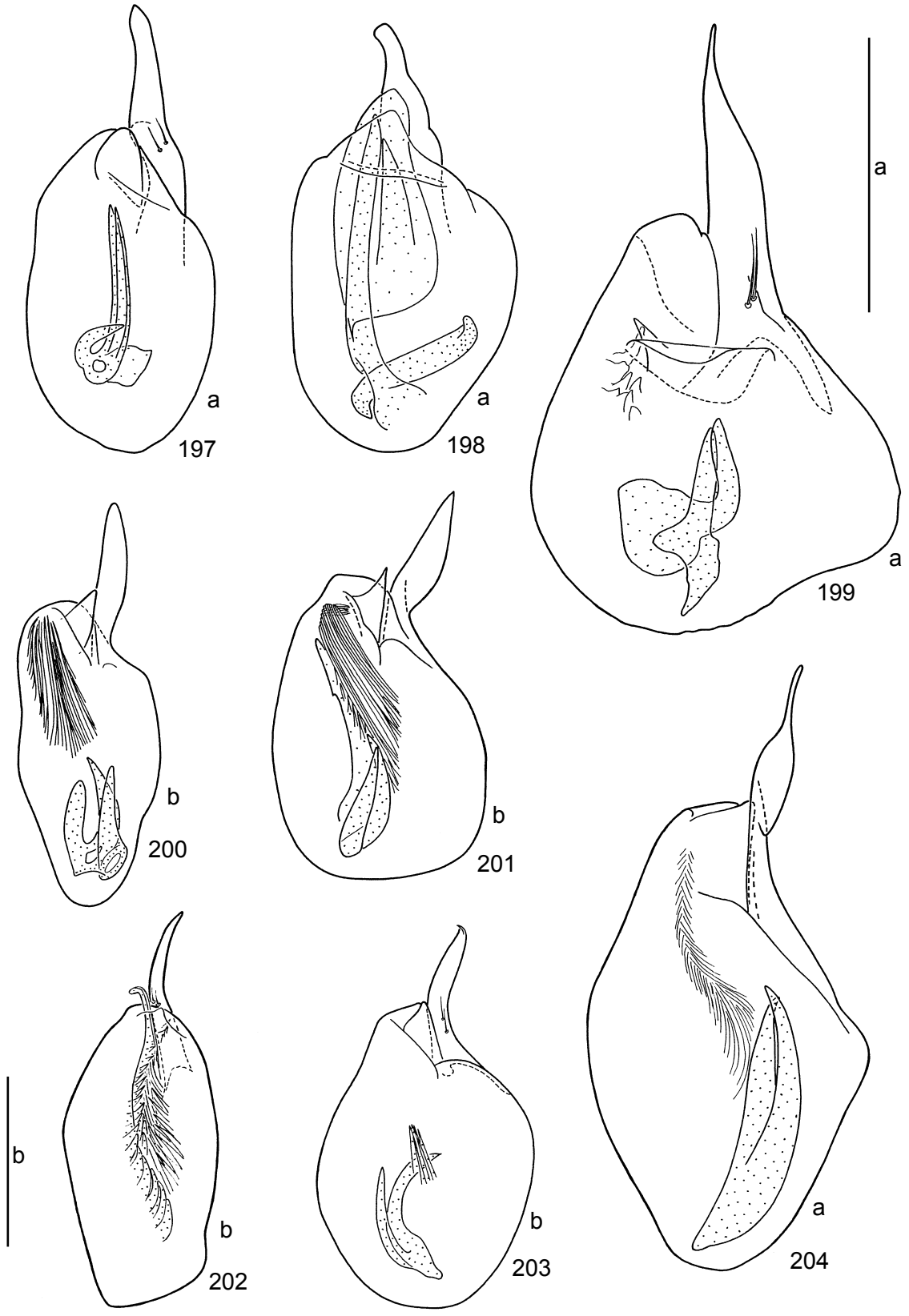
Figures 163–168. 163. *Morana diatretaria*; 166. *M. femoralis*; 167. *M. hoplomacha*; 164. *M. palpalis*; 165. *M. schwendingeri*; 168. *M. virago*. (163–168) Aedeagus, dorsal. Scale bars = 0.1 mm.



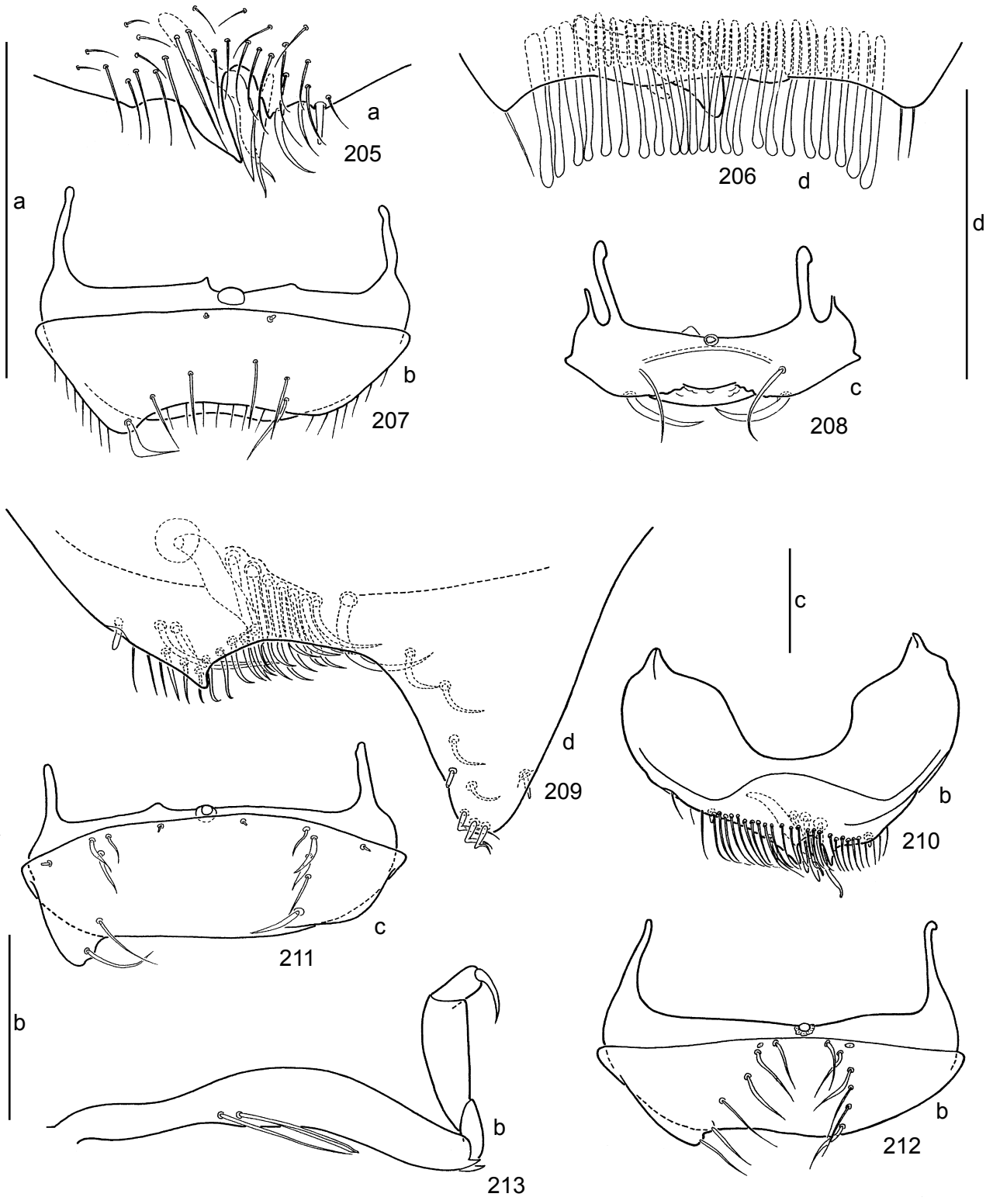
Figures 169–180. 175–176. *Morana eromenion*; 170. *M. femoralis*; 171–172. *M. hoplomacha*; 169. *M. obbatifrons*; 179–180. *M. palpalis*; 177–178. *M. petulca*; 173–174. *M. virago*. (171, 173, 175, 177, 179) Apex of last tergite, male; (172, 174, 176, 178, 180) last sternite, male; (169) protibia and protarsi, male; (170) posterior leg, male. Scale bars = 0.1 mm.



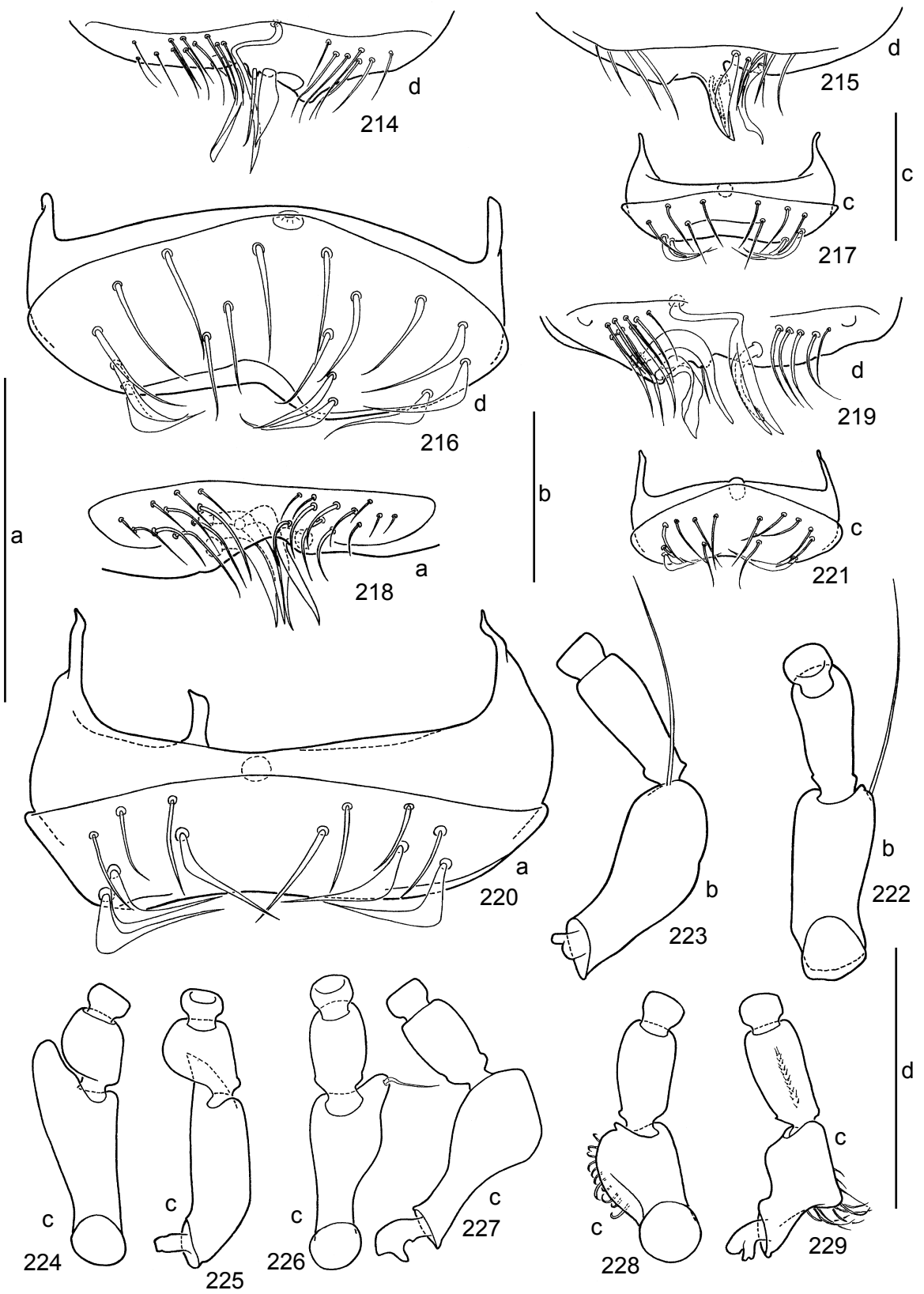
Figures 181–196. 193–194. *Morana caudata*; 191–192. *M. crustosa*; 185–186. *M. eromenion*; 181–182. *M. hoplomacha*; 187–188. *M. loquax*; 190. *M. persolla*; 183–184. *M. petulca*; 195–196. *M. smetanai*; 189. *M. virago*. (181–196) Base of antenna, male (181, 183, 185, 187, 189–191, 193, 195 – dorsal; 182, 184, 186, 188, 192, 194, 196 – lateral). Scale bars = 0.1 mm.



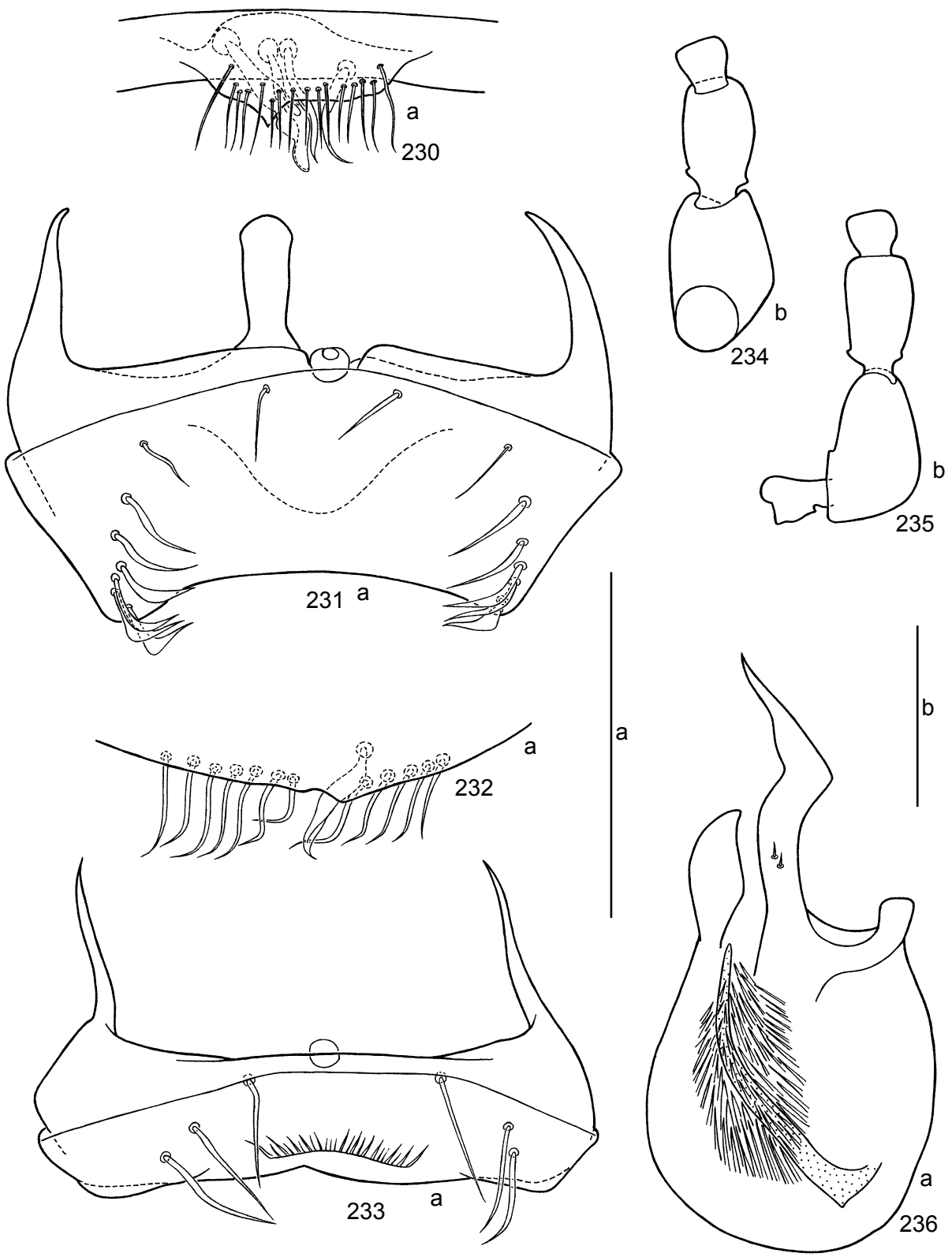
Figures 197–204. 203. *Morana caudata*; 204. *M. crustosa*; 197. *M. eromenion*; 200. *M. loquax*; 202. *M. persolla*; 199. *M. petulca*; 198. *M. repandirostra*; 201. *M. smetanai*. (197–204) Aedeagus, dorsal. Scale bars = 0.1 mm.



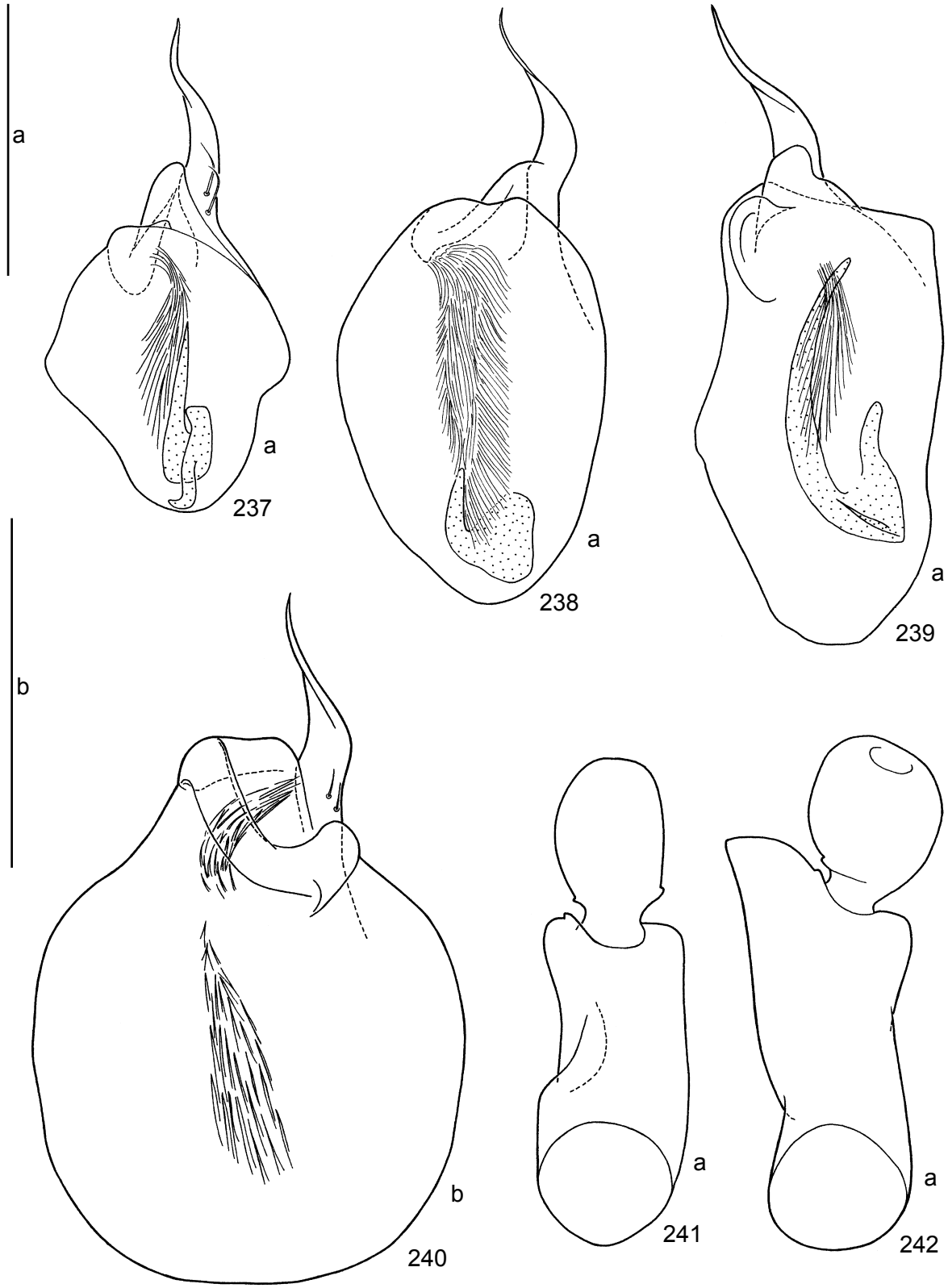
Figures 205–213. 209, 211. *Morana caudata*; 206, 208. *M. crustosa*; 205, 207. *M. loquax*; 210, 212–213. *M. smetanai*. (210) Last tergite, male; (205–206, 209) apex of last tergite, male; (207–208, 211–212) last sternite, male; (213) protibia and protarsi, male. Scale bars = 0.1 mm.



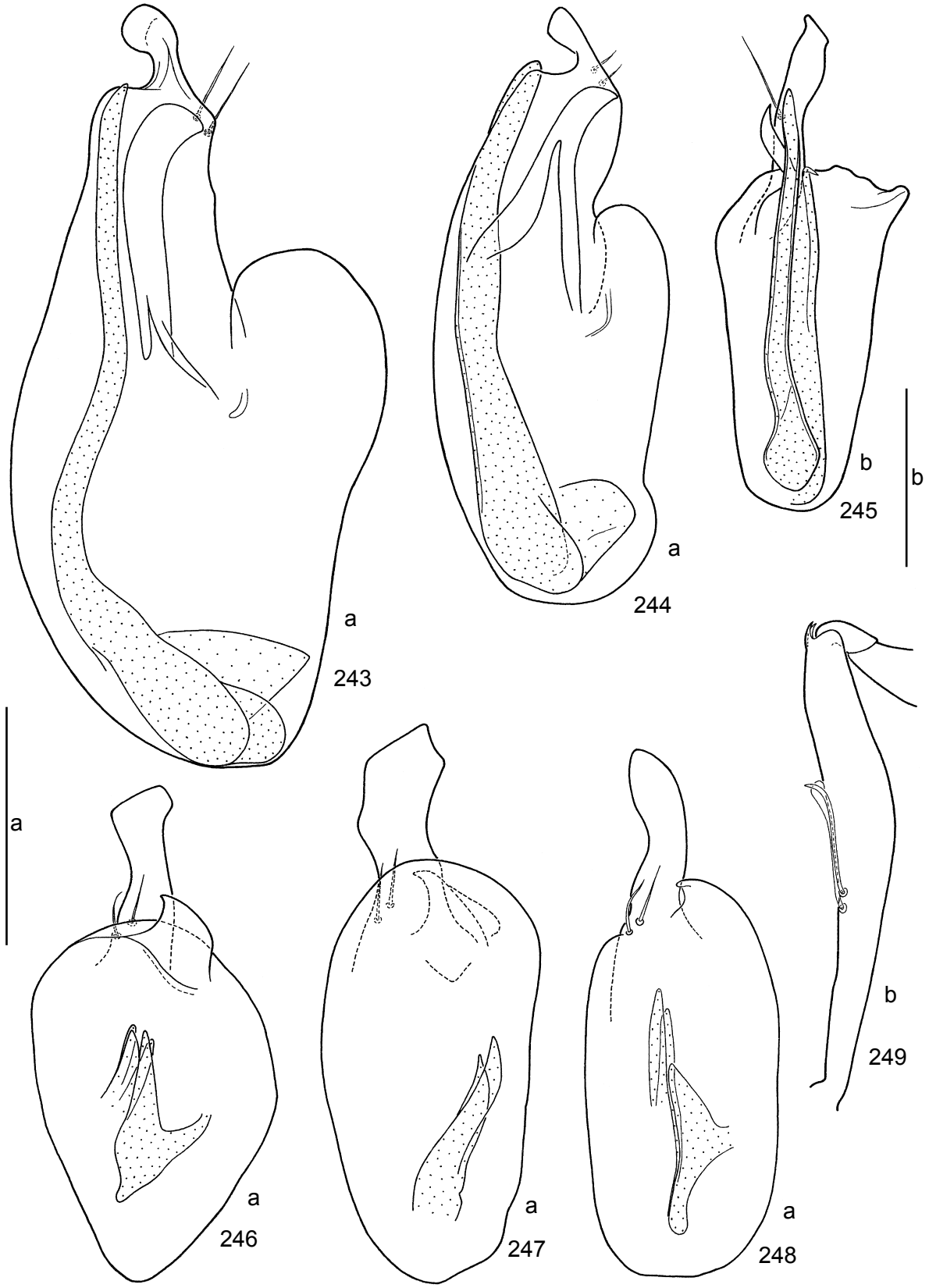
Figures 214–229. 219, 221, 228–229. *Morana agostii*; 214, 216, 224–225. *M. brinevi*; 218, 220, 222–223. *M. rebellis*; 215, 217, 226–227. *M. sinciput*. (214–215, 218–219) Apex of last tergite, male; (216–217, 220–221) last sternite, male; (222–229) base of antenna, male (222, 224, 226, 228 – dorsal; 223, 225, 227, 229 – lateral). Scale bars = 0.1 mm.



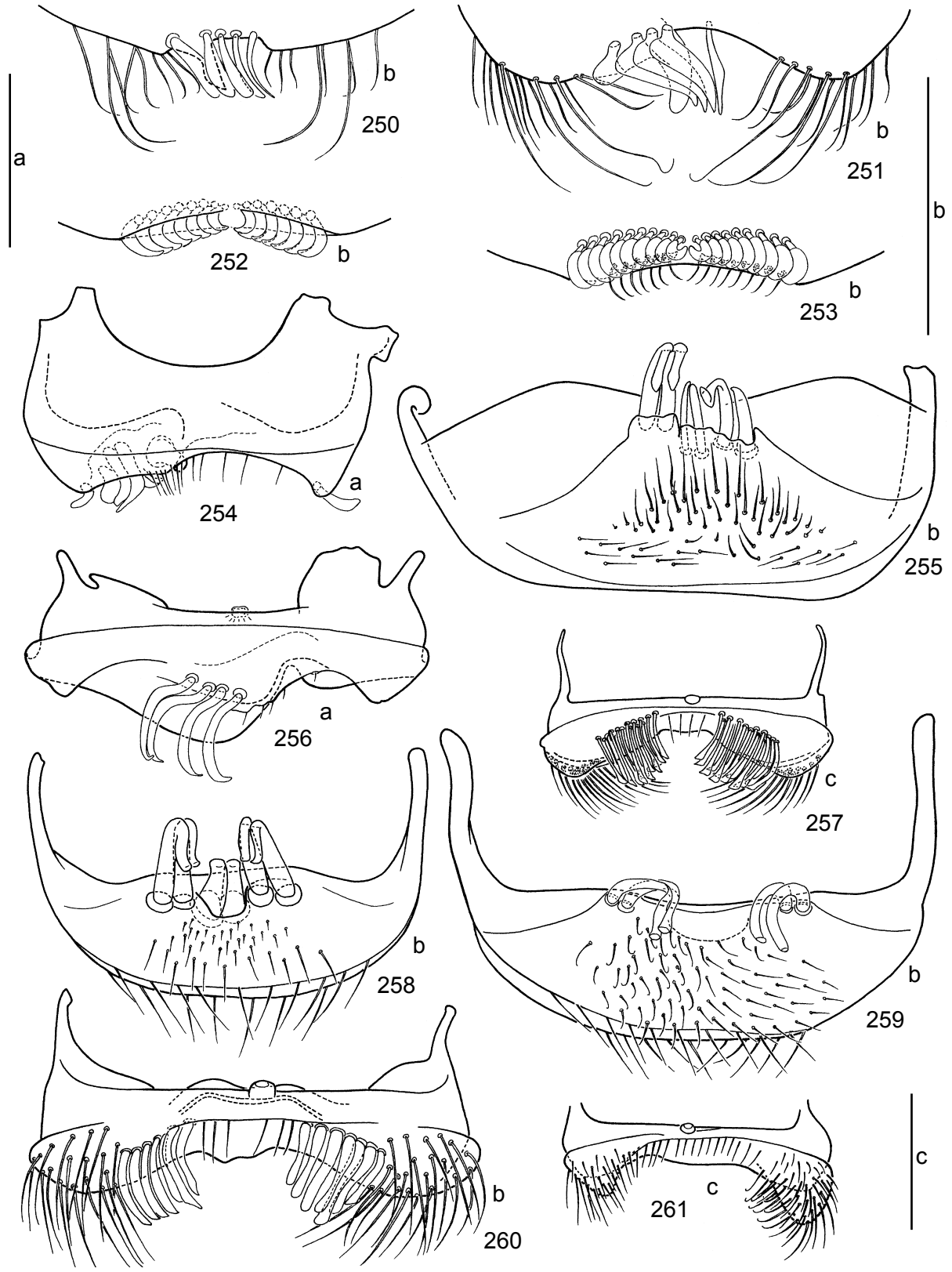
Figures 230–236. 230–231. *Morana persolla*; 232–236. *M. palulifrons*. (230, 232) Apex of last tergite, male; (231, 233) last sternite, male; (234–235) base of antenna, male (234 – dorsal; 235 – lateral); (236) aedeagus, dorsal. Scale bars = 0.1 mm.



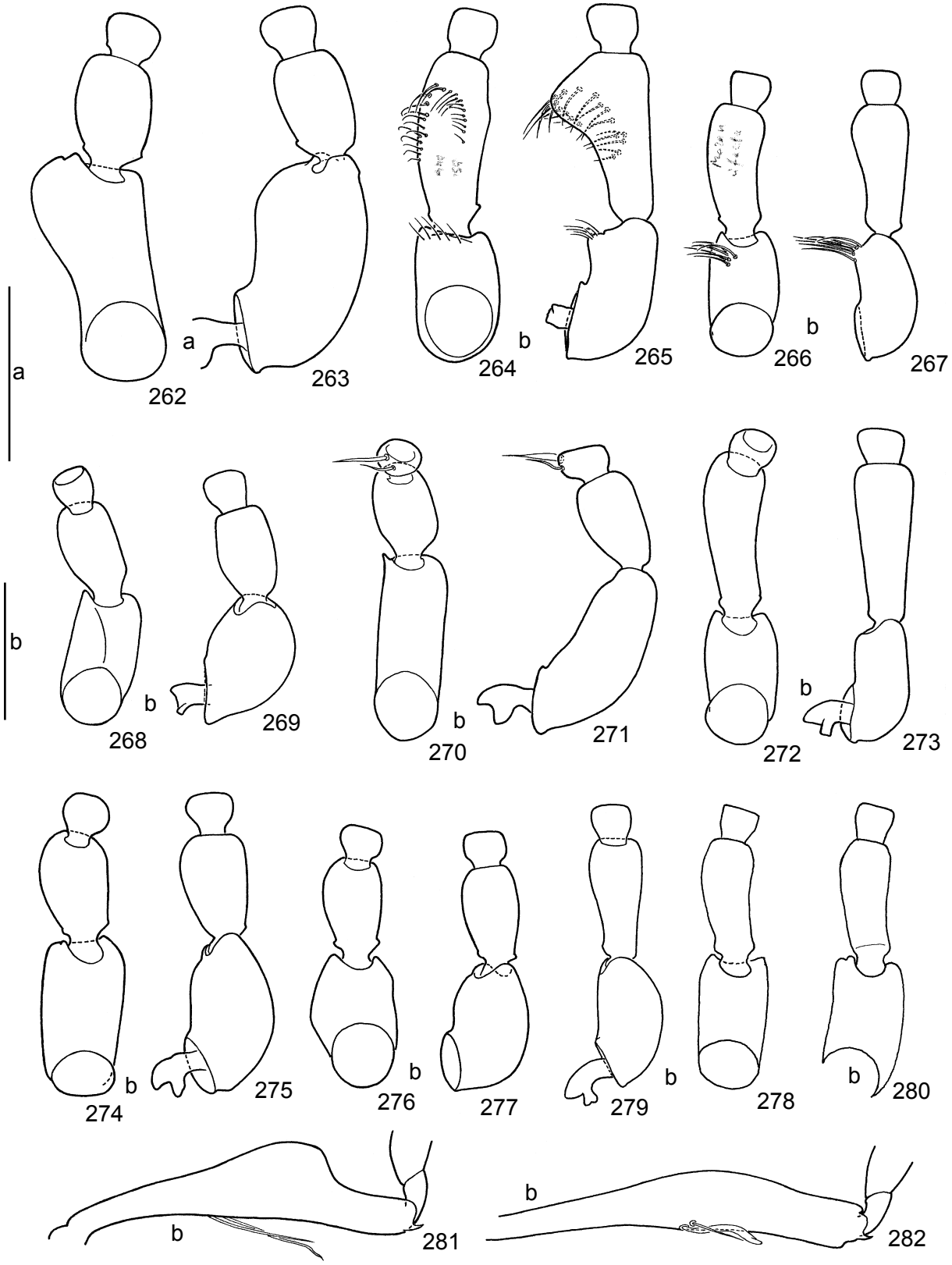
Figures 237–242. 239. *Morana agostii*; 241. *M. bidentata*; 238. *M. brinevi*; 242. *M. palaung*; 240. *M. rebellis*; 237. *M. sinciput*. (241–242) Base of antenna, male, dorsal; (237–240) aedeagus, dorsal. Scale bars = 0.1 mm.



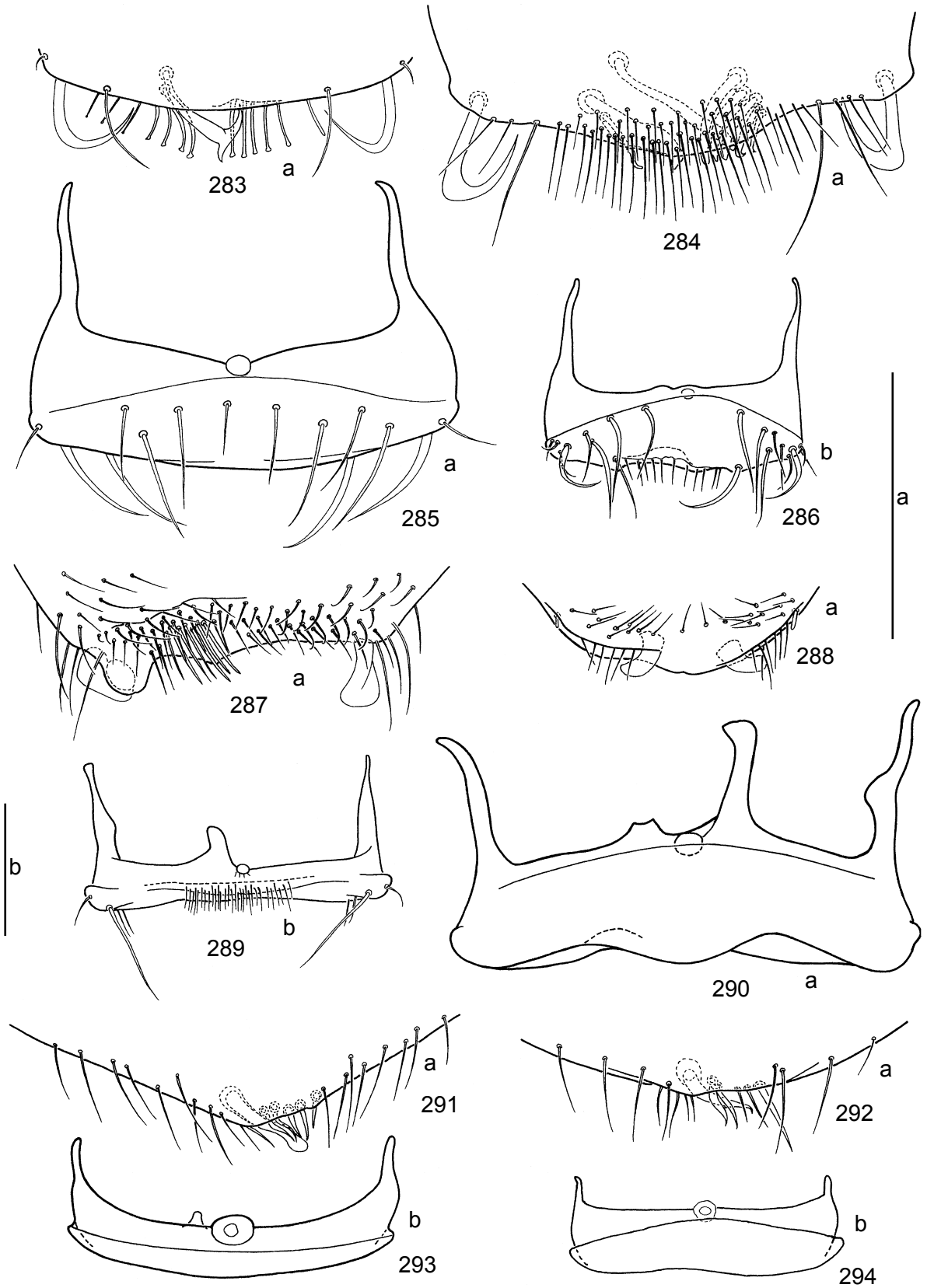
Figures 243–249. 248. *Morana bellicosa*; 244. *M. bidentata*; 245, 249. *M. clypeata*; 243. *M. palaung*; 246. *M. semifacta*; 247. *M. sycosifrons*. (243–248) Aedeagus, dorsal; (249) protibia, male. Scale bars = 0.1 mm.



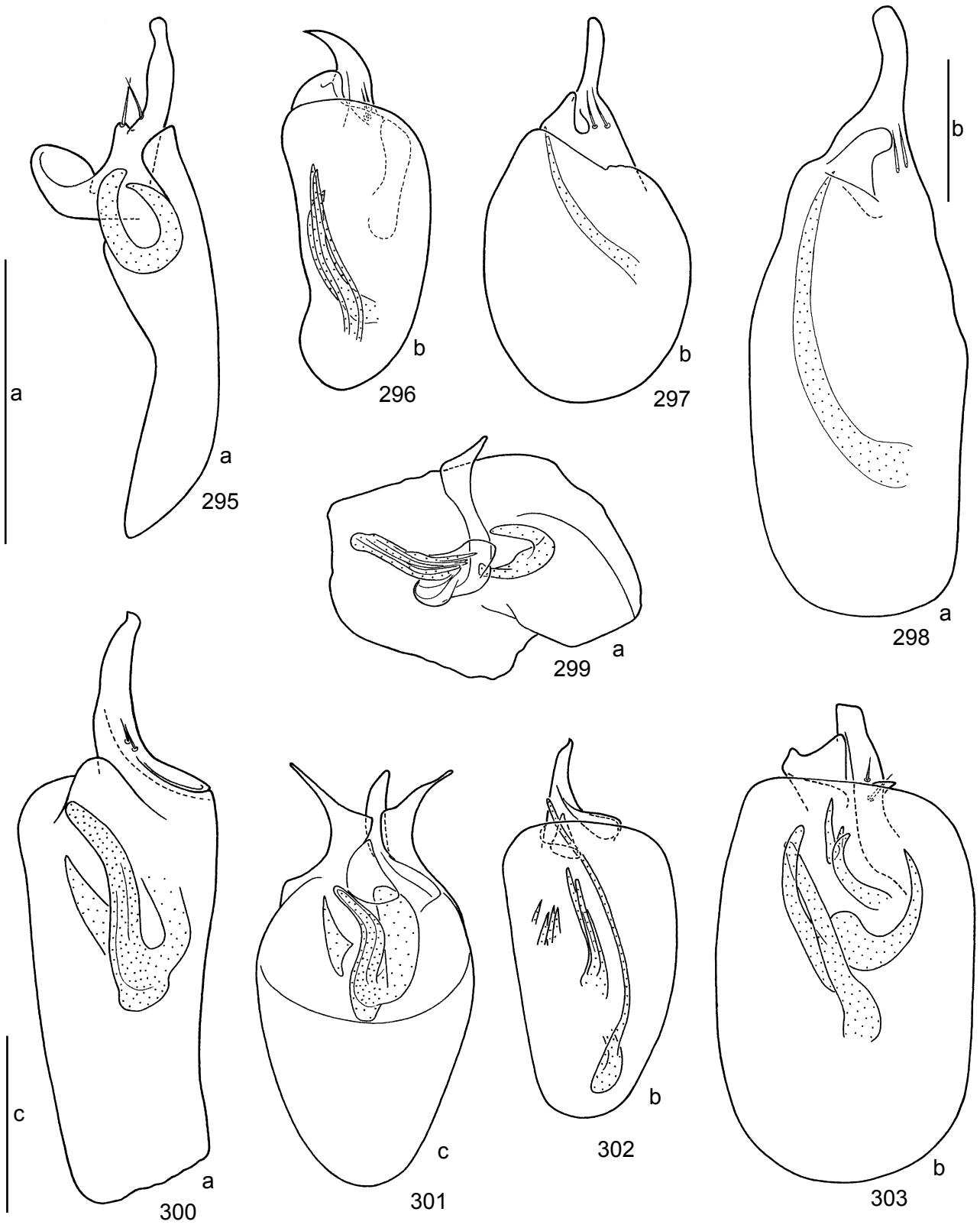
Figures 250–261. 255, 257. *Morana bellicosa*; 250, 252. *M. bidentata*; 254, 256. *M. clypeata*; 251, 253. *M. palaung*; 258, 260. *M. semifacta*; 259, 261. *M. sycosifrons*. (254–255, 258–259) Last tergite, male; (250–251) apex of last tergite, male; (256–257, 260–261) last sternite, male; (252–253) apex of last sternite, male. Scale bars = 0.1 mm.



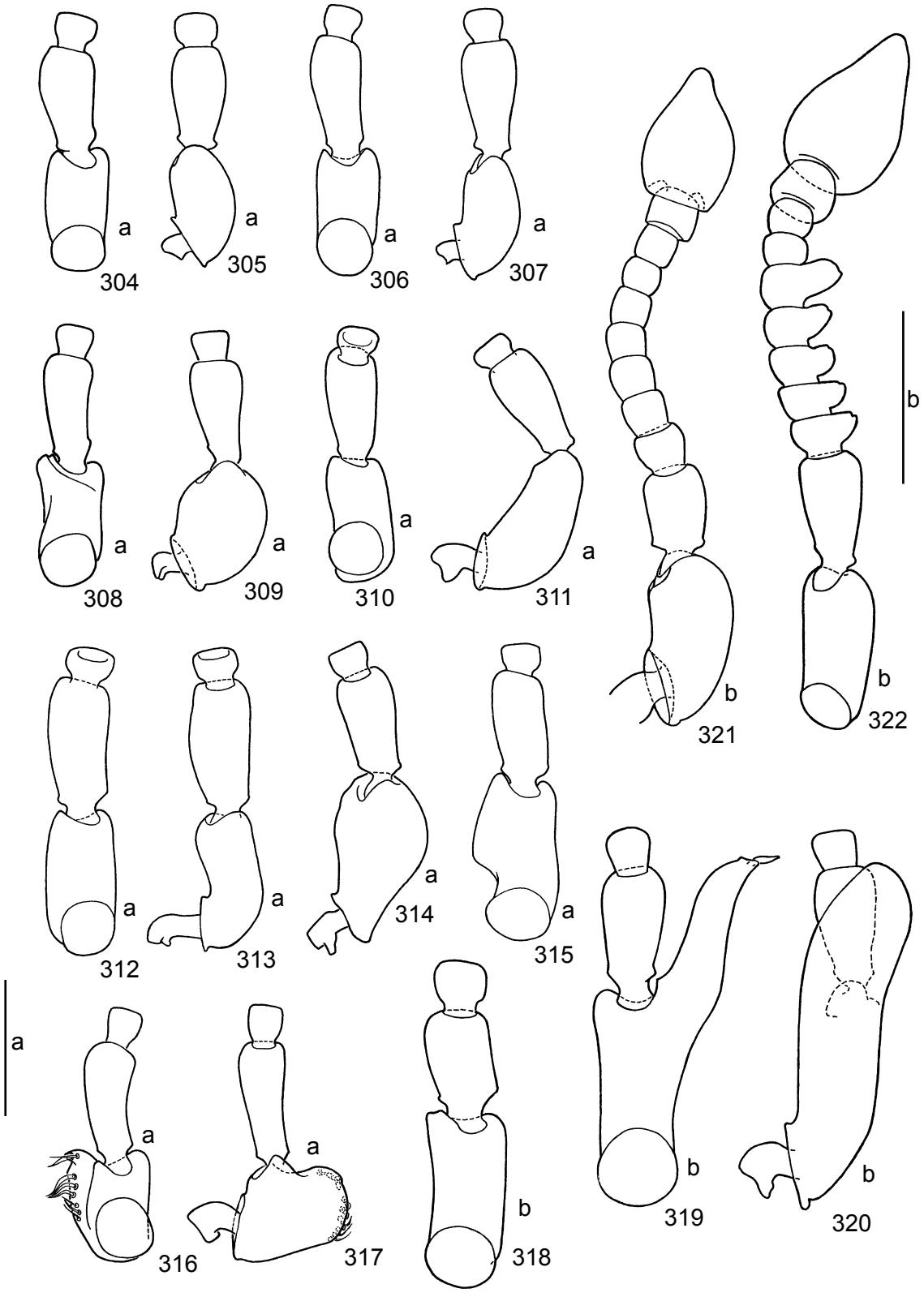
Figures 262–282. 264–265. *Morana bellicosa*; 262–263. *M. clypeata*; 274–275. *M. distensiceps*; 276–277. *M. lusciosa*; 278–279. *M. mahadewa*; 270–271. *M. minax*; 268–269, 281. *M. platypes*; 280. *M. punctata*; 266–267. *M. semifacta*; 272–273, 282. *M. sycosifrons*. (262–280) Base of antenna, male (262, 264, 266, 268, 270, 272, 274, 276, 278, 280 – dorsal; 263, 265, 267, 269, 271, 273, 275, 277, 279 – lateral); (281–282) protibia, male. Scale bars = 0.1 mm.



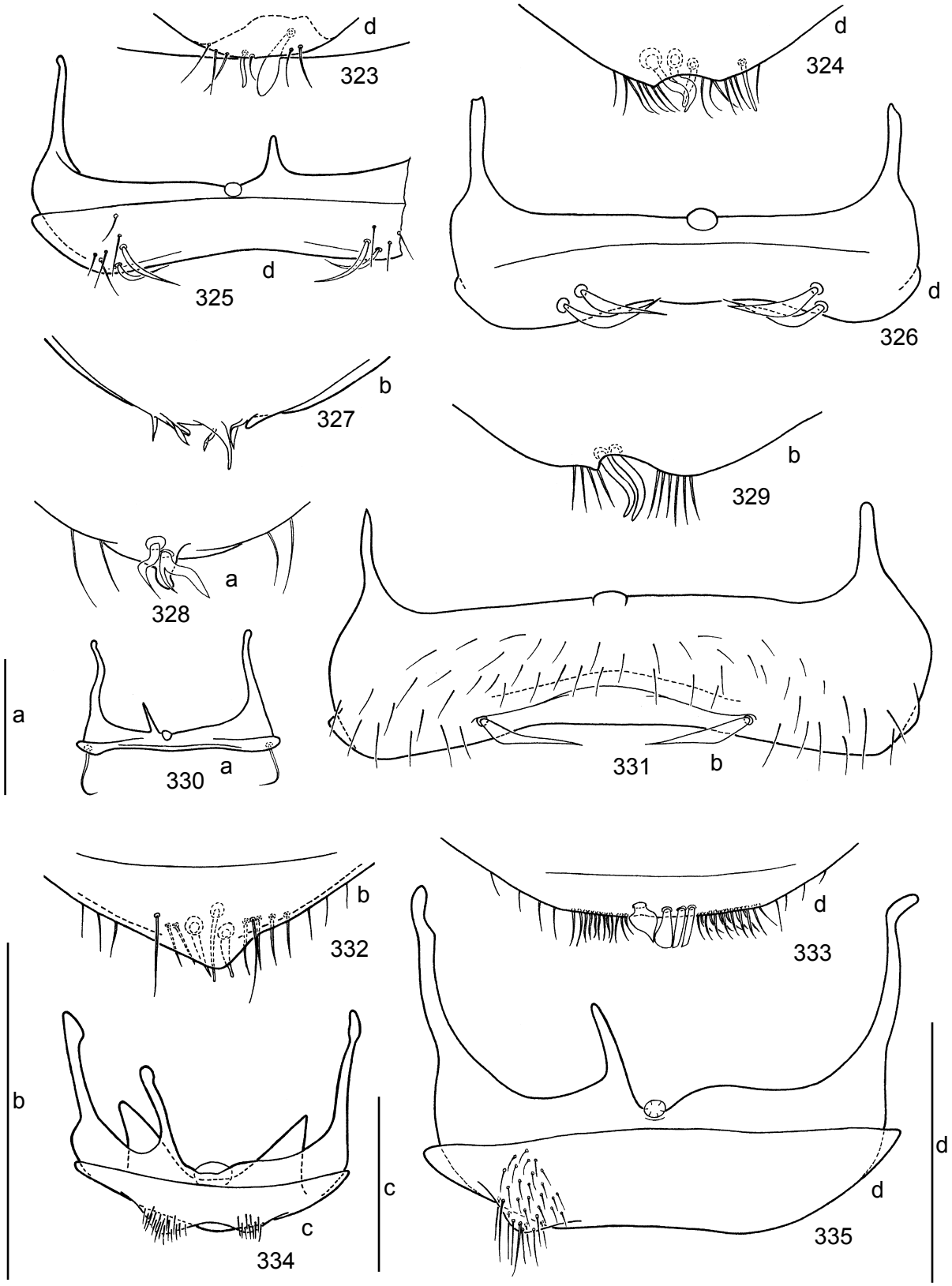
Figures 283–294. 291, 293. *Morana distensiceps*; 292, 294. *M. lusciosa*; 287, 289. *M. mahadewa*; 284, 286. *M. minax*; 283, 285. *M. platypes*; 288, 290. *M. punctata*. (283–284, 287–288, 291–292) Apex of last tergite, male; (285–286, 289–290, 293–294) last sternite, male. Scale bars = 0.1 mm.



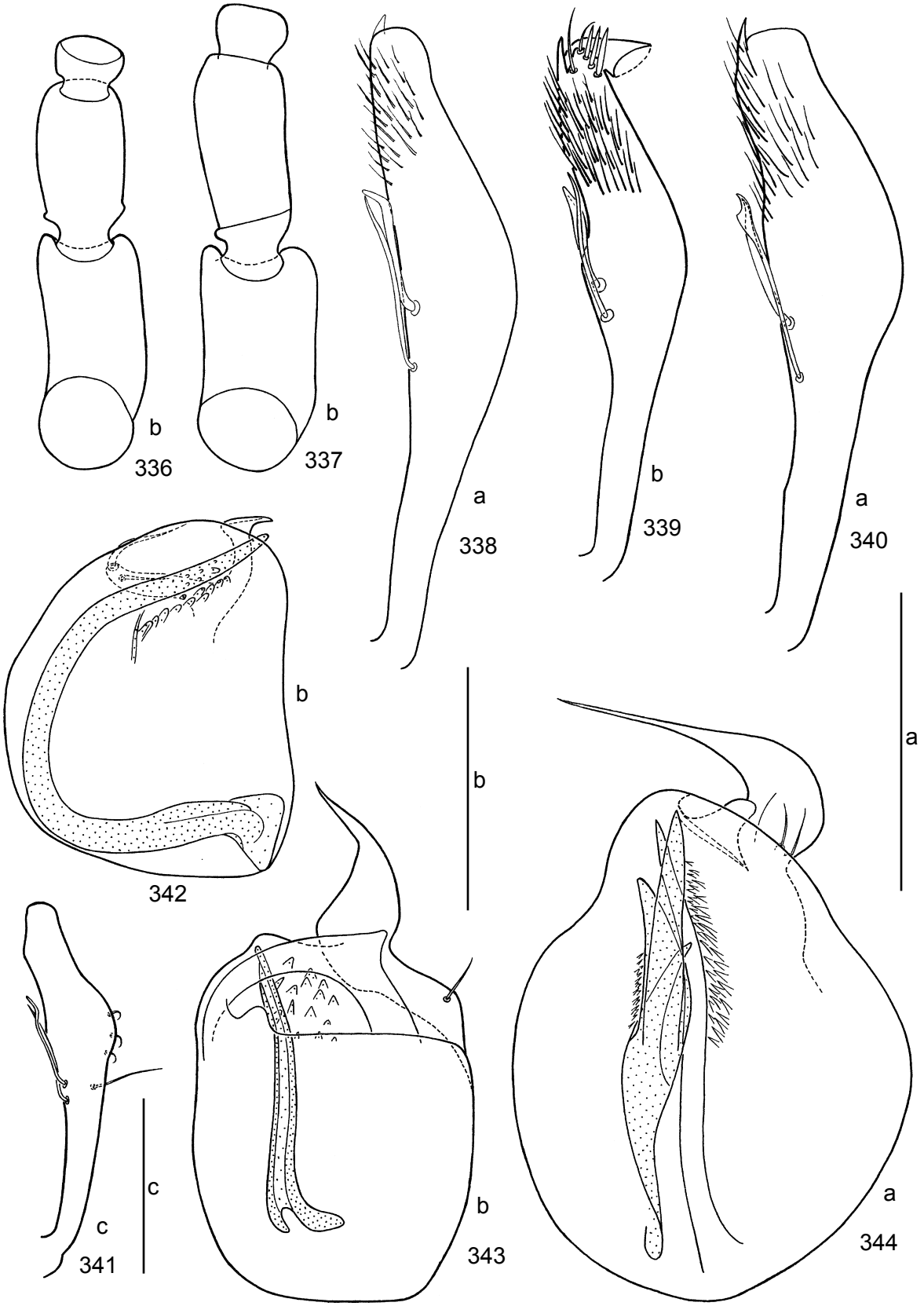
Figures 295–303. 300–301. *Morana afflictrix*; 303. *M. distensiceps*; 296. *M. lusciosa*; 299. *M. mahadewa*; 297. *M. minax*; 302. *M. papulifera*; 298. *M. platypes*; 295. *M. punctata*. (295–303) Aedeagus, dorsal (301 – from the abberrant specimen with atavic paramers). Scale bars = 0.1 mm.



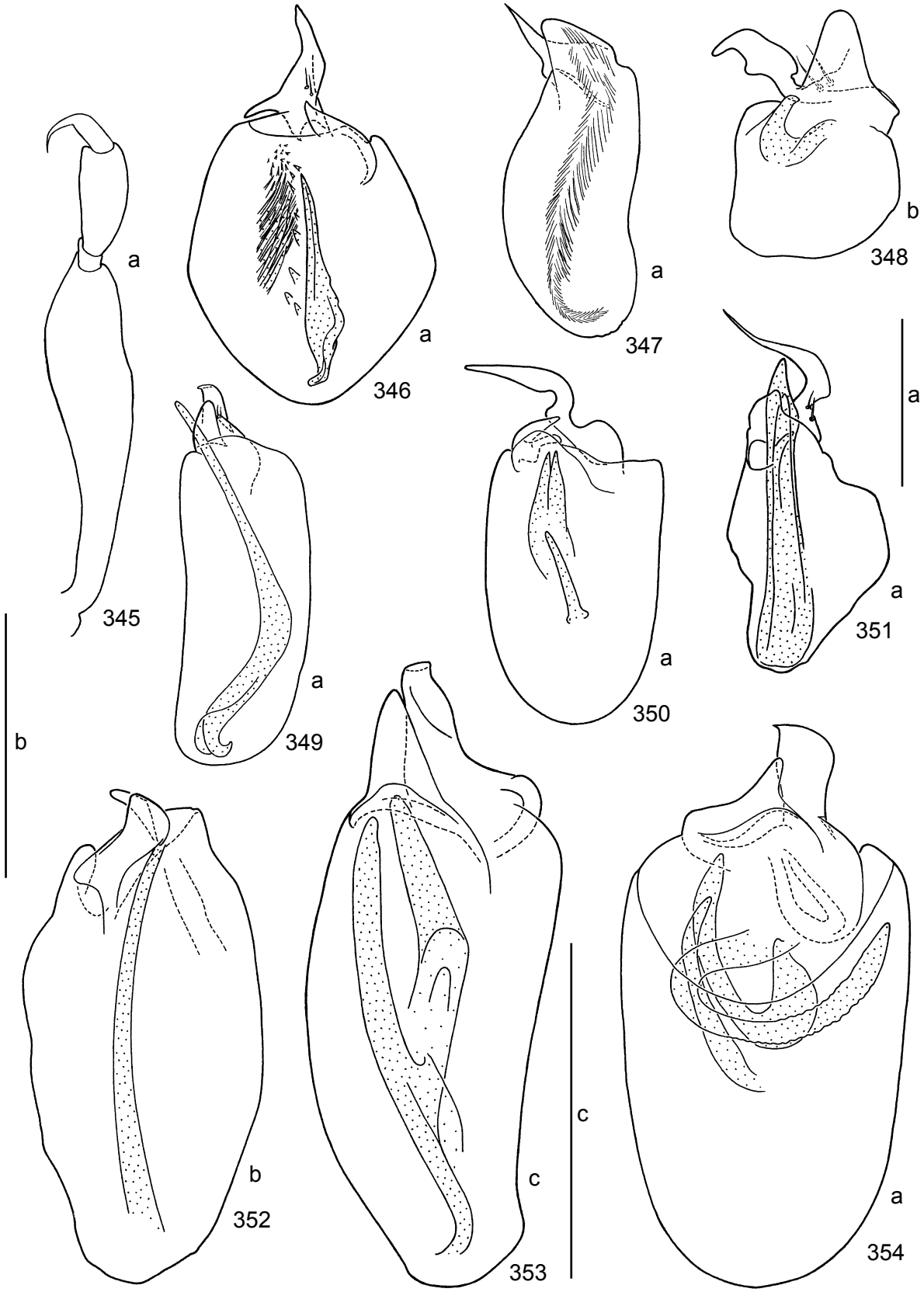
Figures 304–322. 304–305. *Morana afflictrix*; 310–311. *M. burckhardti*; 321. *M. dorsuosa*; 312–313. *M. fastigata*; 319–320. *M. histanoceroides*; 318. *M. lucipeta*; 314–315. *M. machaerifera*; 306–307. *M. papulifera*; 322. *M. pectinicornis*; 316–317. *M. scapus*; 308–309. *M. sima*. (321–322) Antenna; (304–320) base of antenna, male (304, 306, 308, 310, 312, 314, 316, 318–319 – dorsal; 305, 307, 309, 311, 313, 315, 317, 320 – lateral). Scale bars = 0.1 mm.



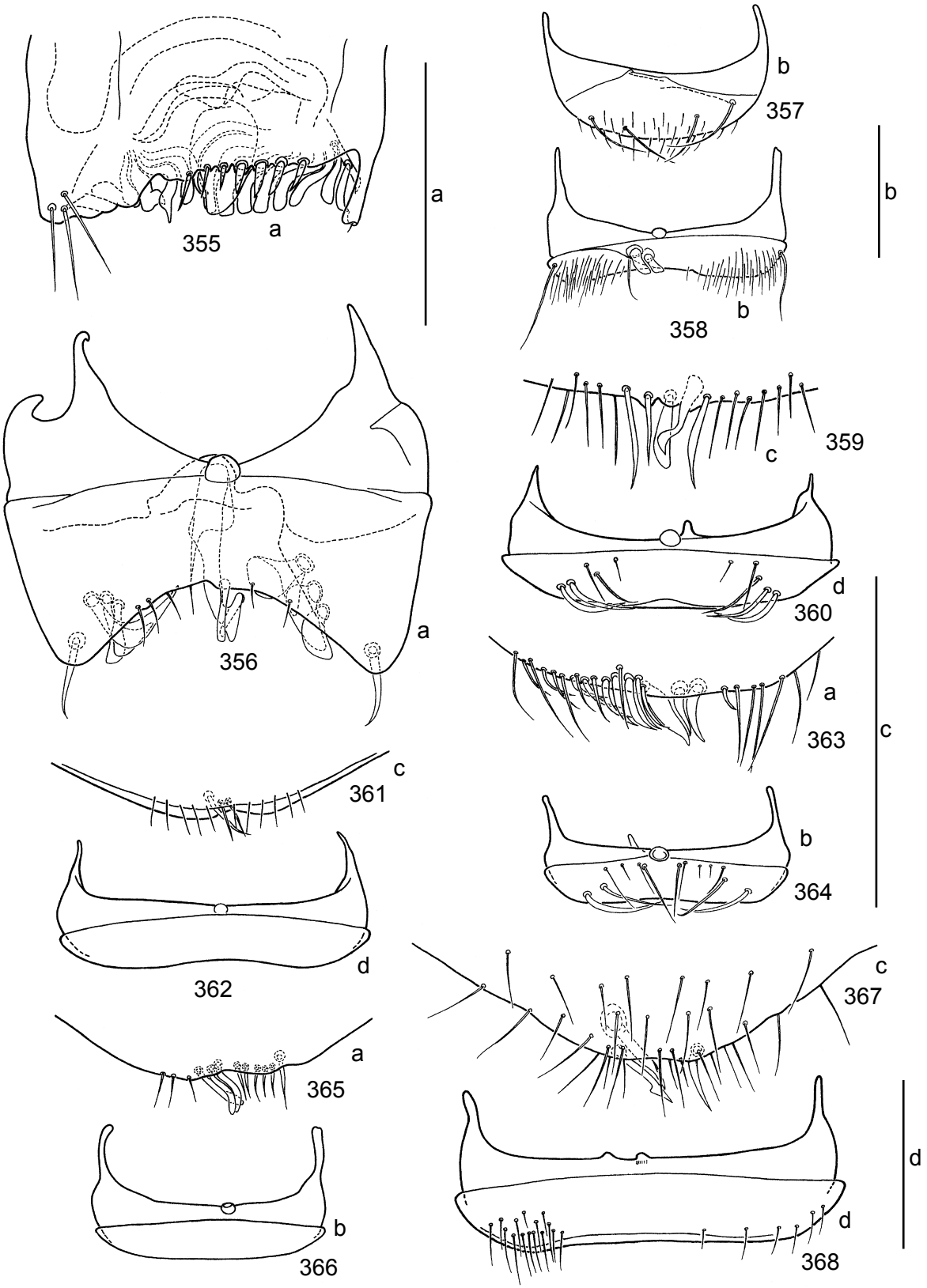
Figures 323–335. 329, 331. *Morana afflictrix*; 333, 335. *M. dorsuosa*; 327. *M. exilis*; 323, 325. *M. latebrosa*; 324, 326. *M. papulifera*; 332, 334. *M. pectinicornis*; 328, 330. *M. scapus*. (323–324, 327–329, 332–333) Apex of last tergite, male; (325–326, 330–331, 334–335) last sternite, male. Scale bars = 0.1 mm.



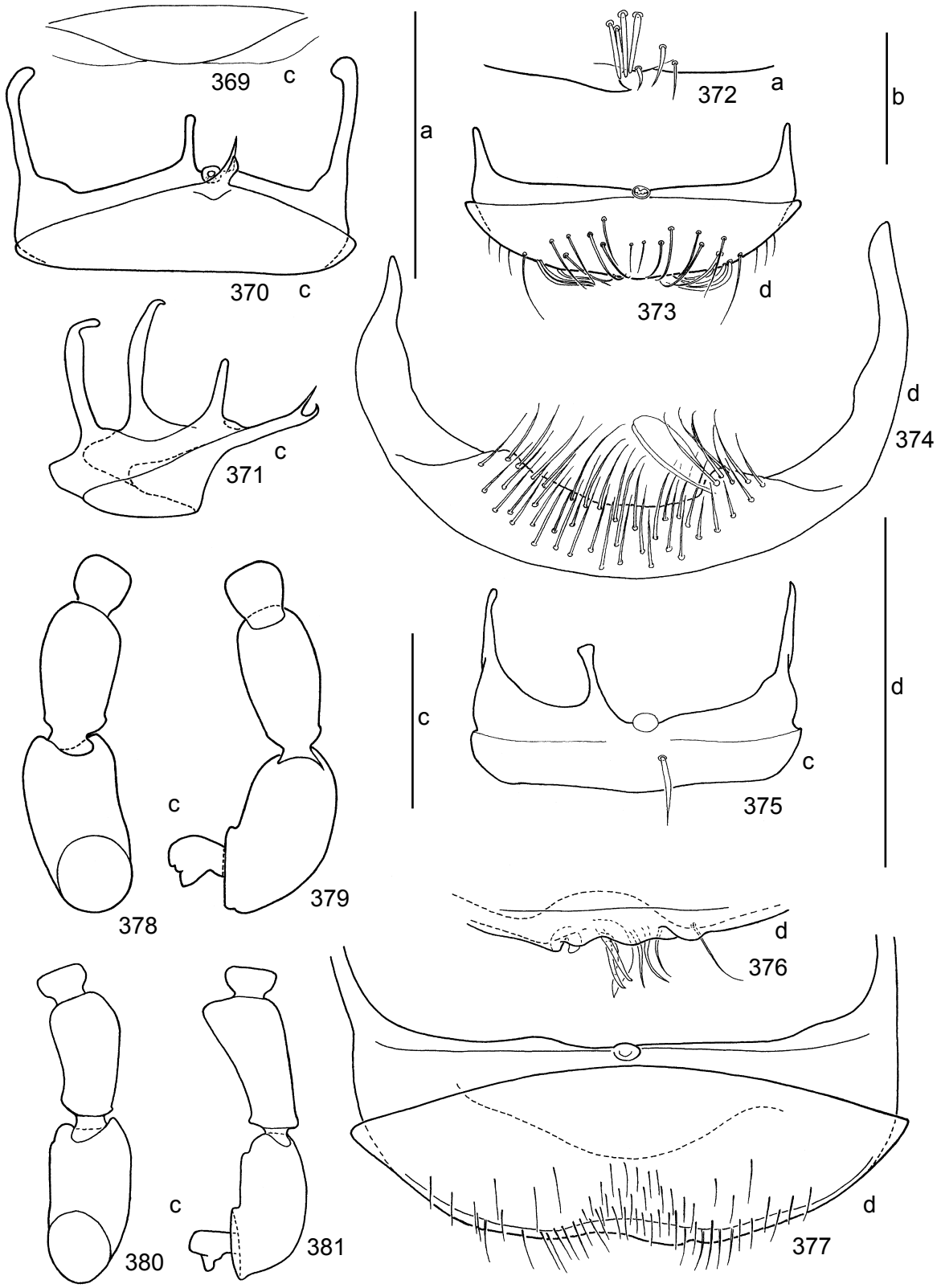
Figures 336–344. 338. *Morana bidentata*; 340, 344. *M. dorsuosa*; 337, 339, 343. *M. exilis*; 336, 342. *M. latebrosa*; 341. *M. pectinicornis*. (336–337) Base of antenna, male, dorsal; (338–341) protibia, male; (342–344) aedeagus, dorsal. Scale bars = 0.1 mm.



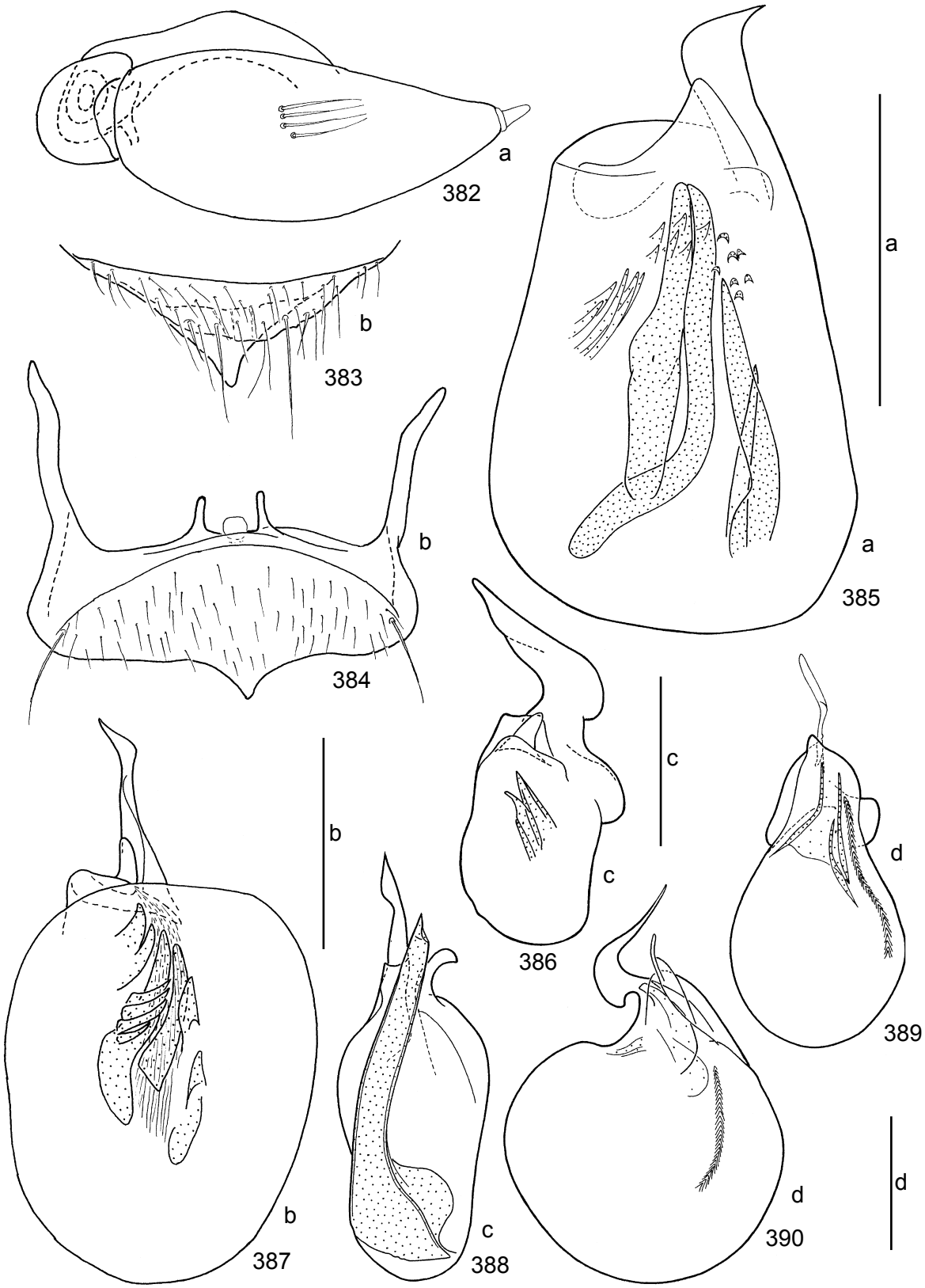
Figures 345–354. 354. *Morana asema*; 352. *M. burckhardti*; 345, 347. *M. fastigata*; 346. *M. histanoceroides*; 353. *M. lucipeta*; 349. *M. machaerifera*; 351. *M. pectinicornis*; 348. *M. scapus*; 350. *M. sima*. (345) Mesotibia and mesotarsi, male; (346–354) aedeagus, dorsal. Scale bars = 0.1 mm.



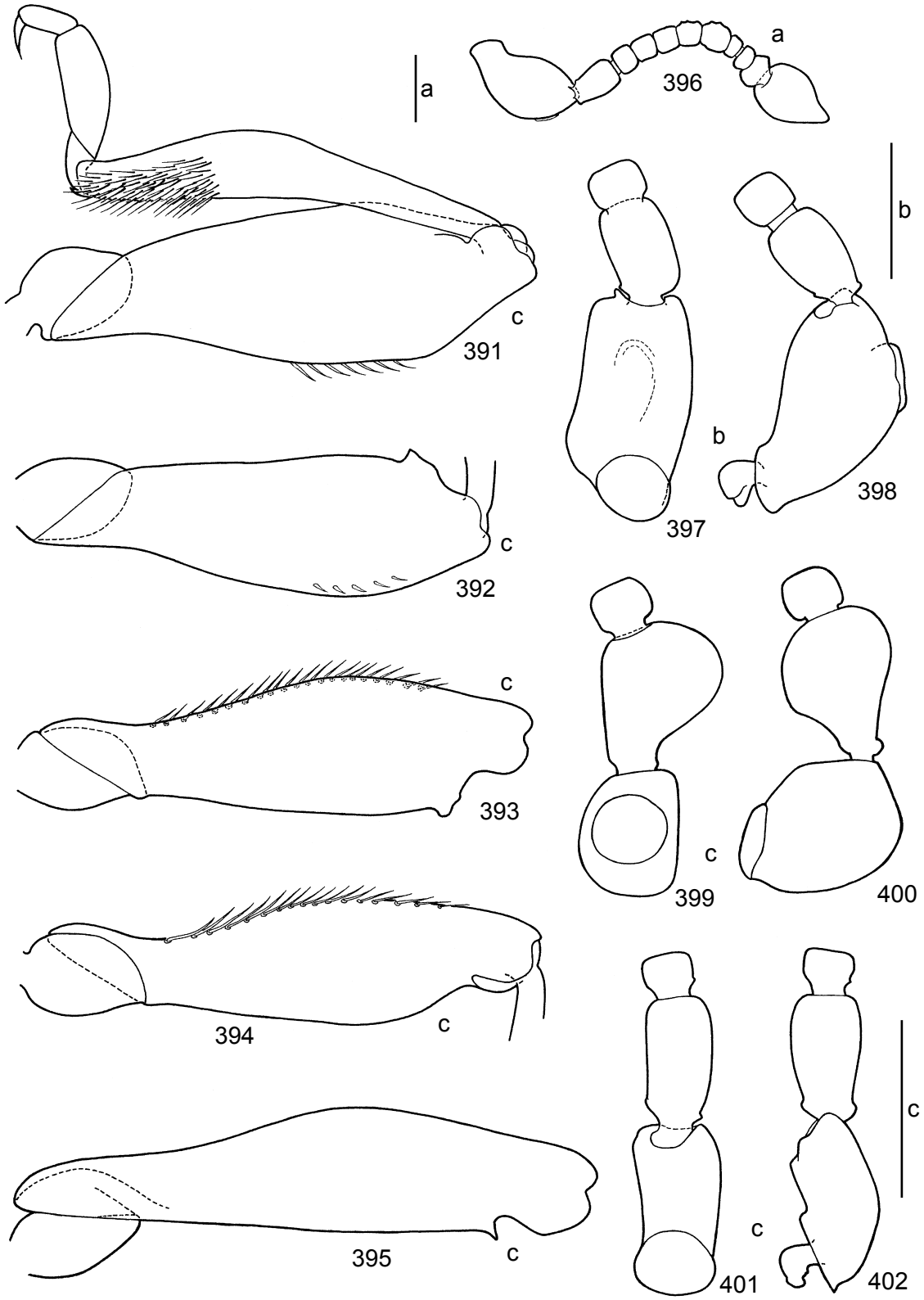
Figures 355–368. 367–368. *Morana asema*; 355–356. *M. burckhardti*; 357–358. *M. fastigata*; 359–360. *M. histanoceroides*; 361–362. *M. lucipeta*; 365–366. *M. machaerifera*; 363–364. *M. sima*. (357) Last tergite, male; (355, 359, 361, 363, 365, 367) apex of last tergite, male; (356, 358, 360, 362, 364, 366, 368) last sternite, male. Scale bars = 0.1 mm.



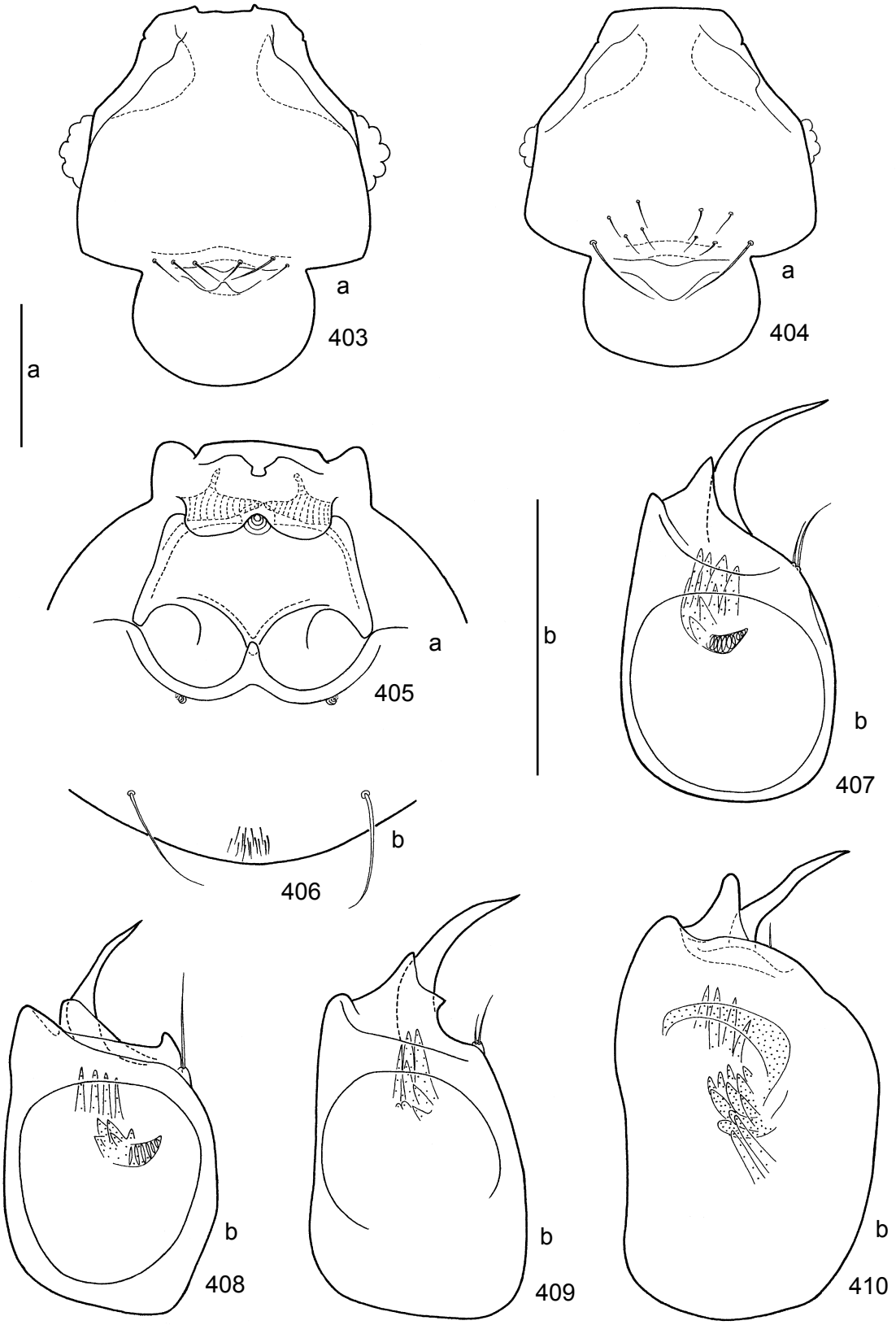
Figures 369–381. 374–375. *Morana ampullaria*; 378–379. *M. asema*; 376–377, 380–381. *M. derosa*; 369–371. *M. galeata*; 372–373. *M. oxymoron*. (374) Last tergite, male; (369, 372, 376) apex of last tergite, male; (370–371, 373, 375, 377) last sternite, male (370, 373, 375, 377 – dorsal; 371 – lateral); (378–381) base of antenna, male (378, 380 – dorsal; 379, 381 – lateral). Scale bars = 0.1 mm.



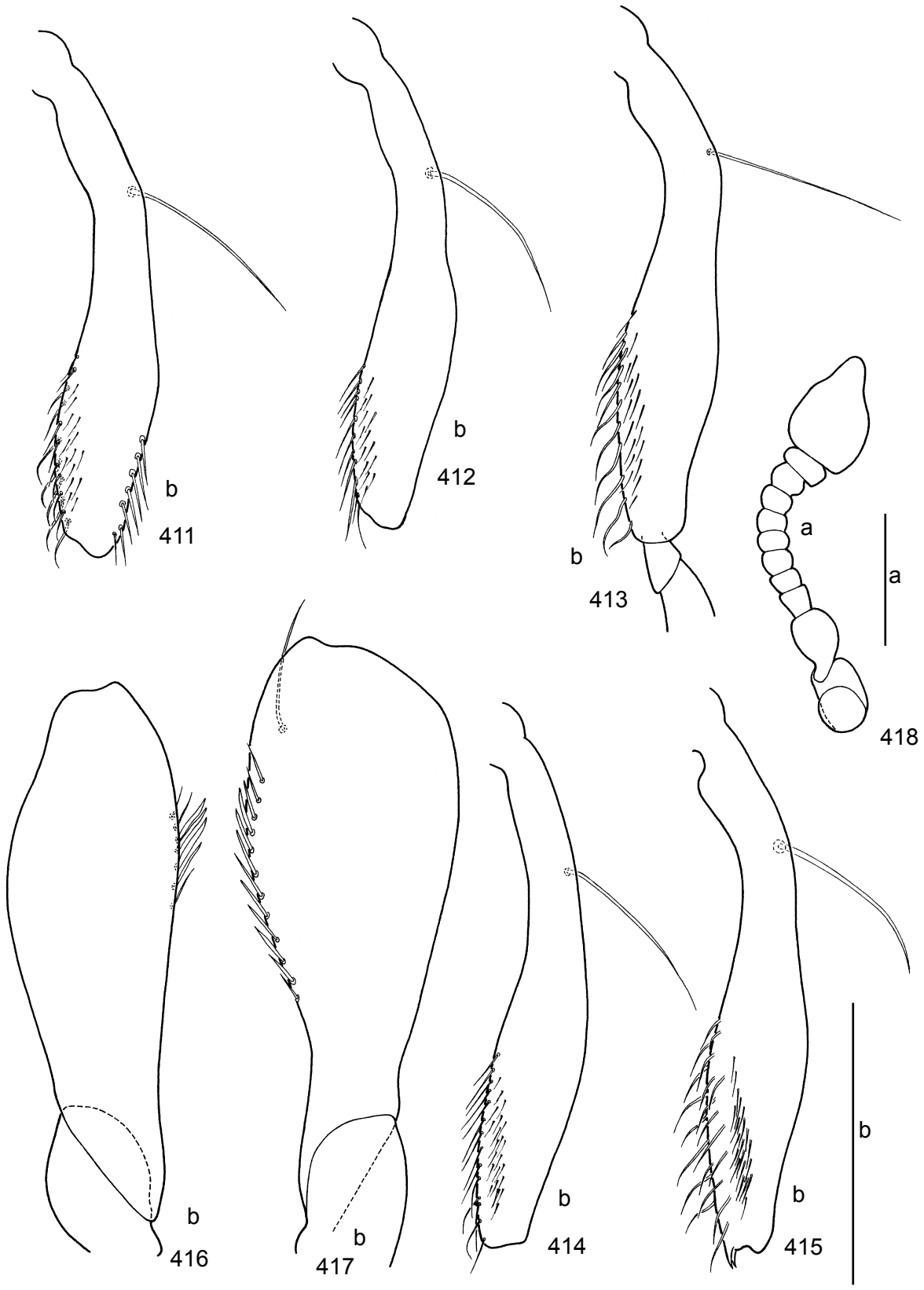
Figures 382–390. 382. *Morana afflictrix*; 386. *M. ampullaria*; 388. *M. derosa*; 385. *M. galeata*; 389–390. *M. oxymoron*; 383–384, 387. *M. perreaui*. (382) 4th article of maxillary palpus with sensilla, outer side; (383) apex of last tergite, male; (384) last sternite, male; (385–390) aedeagus (385–389 – dorsal; 390 – lateral). Scale bars = 0.1 mm.



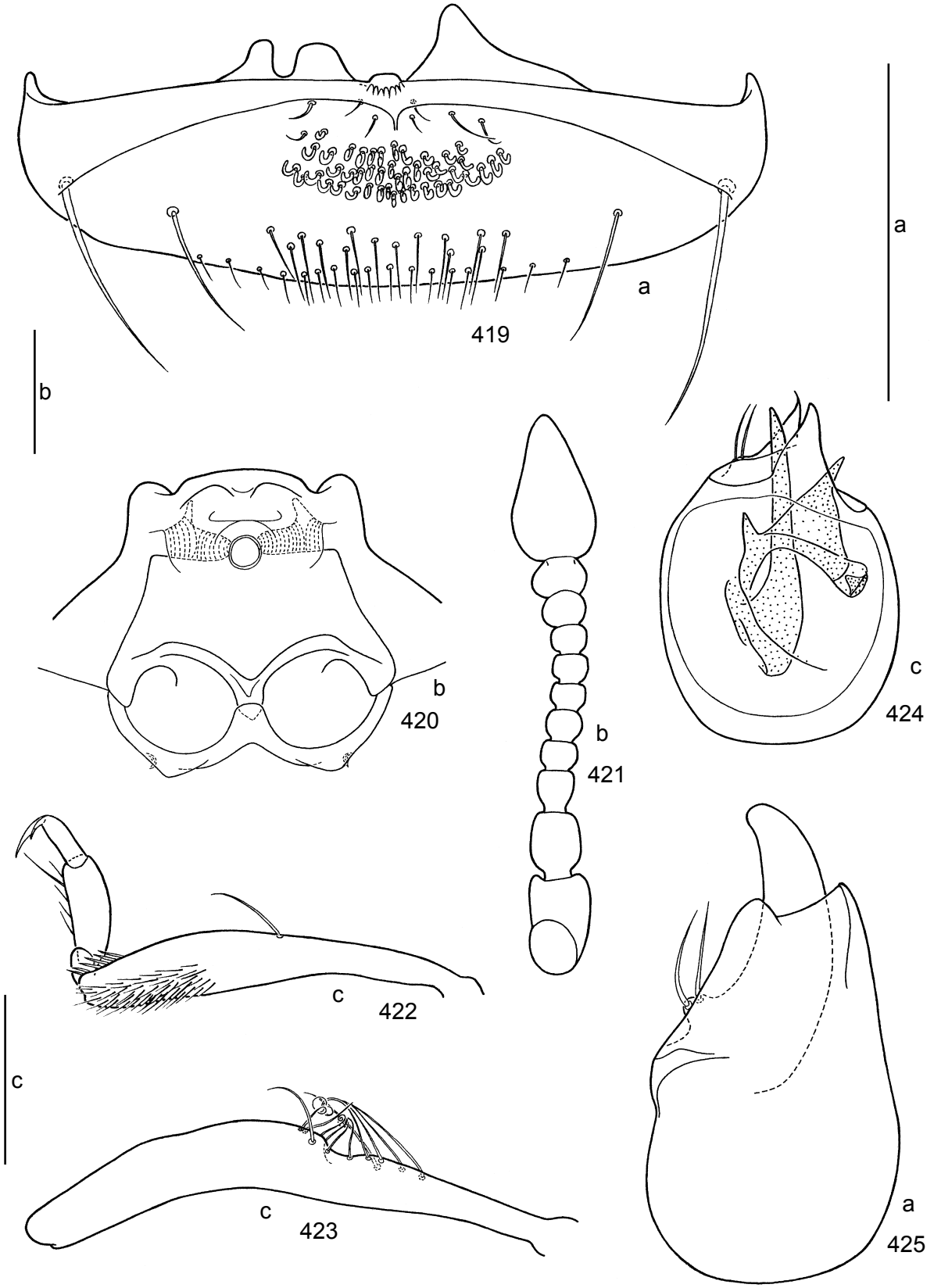
Figures 391–402. 391. *Morana afflictrix*; 399–400. *M. ampullaria*; 394. *M. clypeata*; 392–393, 395, 401–402. *M. galeata*; 396–398. *M. oxymoron*. (396) Antenna, male; (397–402) base of antenna, male (397, 399, 401 – dorsal; 398, 400, 402 – lateral); (391) anterior leg, male; (392) profemur; (393–394) mesofemur; (395) metafemur. Scale bars = 0.1 mm.



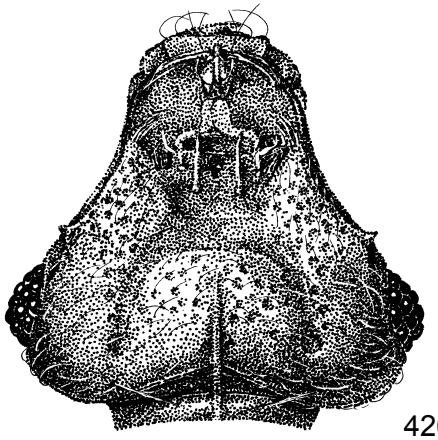
Figures 403–410. 408. *Multesimus cuniculus*; 404, 407. *M. gallulus*; 406, 410. *M. jaccoudi*; 403, 405, 409. *M. talpula*. (403–404) Head; (405) meso- and metasternum; (406) apex of last sternite, male; (407–410) aedeagus, dorsal. Scale bars = 0.1 mm.

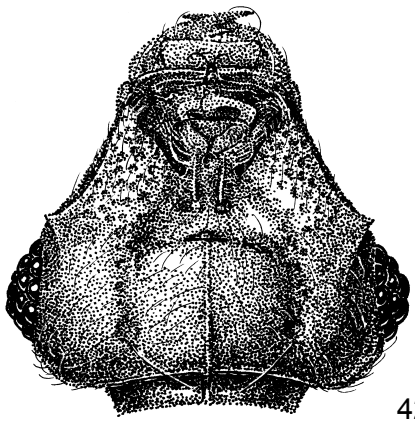


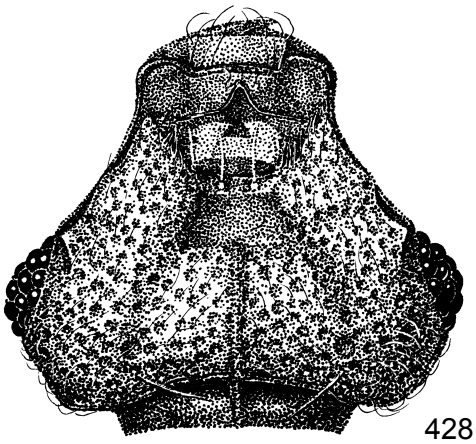
Figures 411–418. 414. *Multesimus cuniculus*; 411–412, 418. *M. gallulus*; 415. *M. jaccoudi*; 413, 416–417. *M. talpula*. (418) Antenna; (416) profemur; (417) mesofemur; (411–415) mesotibia (411, 413–415 – male; 412 – female). Scale bars = 0.1 mm.

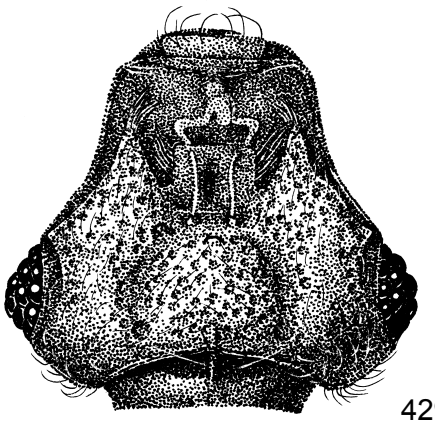


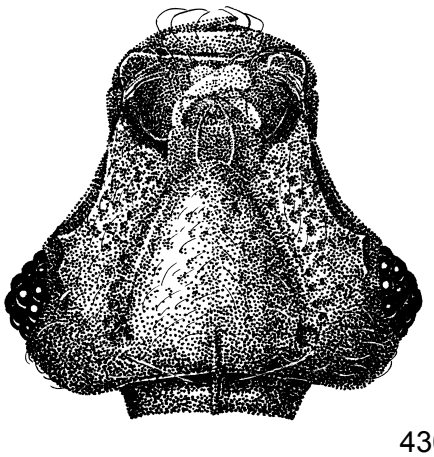
Figures 419–425. 420–421, 423, 425. *Nippiliphus crurifragius*; 419, 422, 424. *N. napolovi*. (421) Antenna; (420) meso- and metasternum, central part; (419) last sternite, male; (422) protibia; (423) metatibia, male; (424–425) aedeagus, dorsal. Scale bars = 0.1 mm.

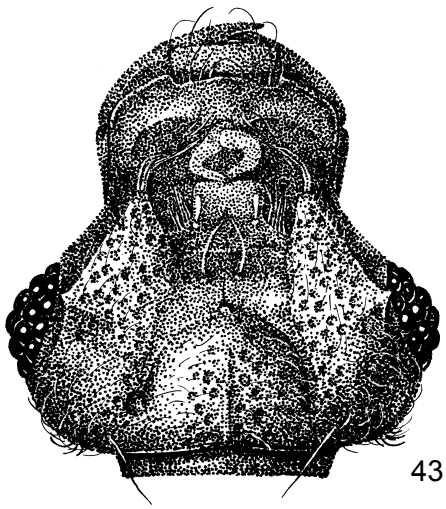




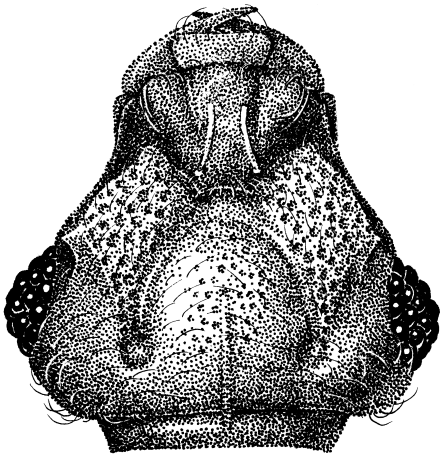








Figures 426–431. 429. *Morana bara*; 426. *M. discedens*; 427. *M. elegans*; 431. *M. epastifrons*; 428. *M. oni*; 430. *M. puella*. (426–431) Head, male, dorsal.



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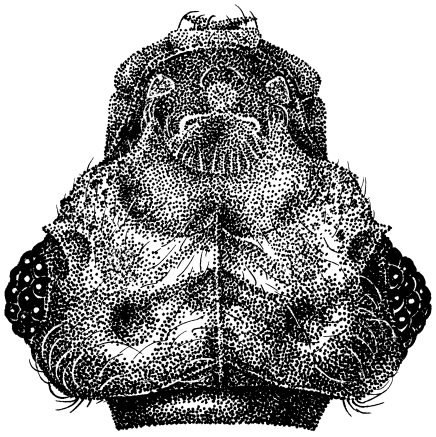

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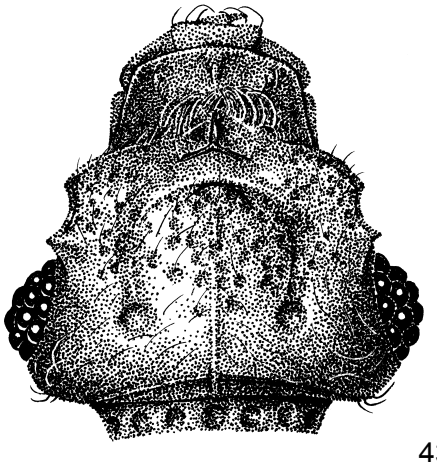

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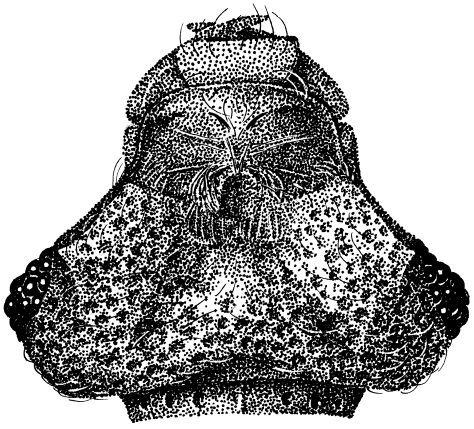

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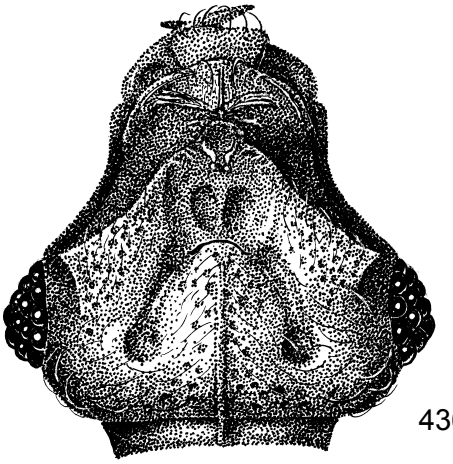

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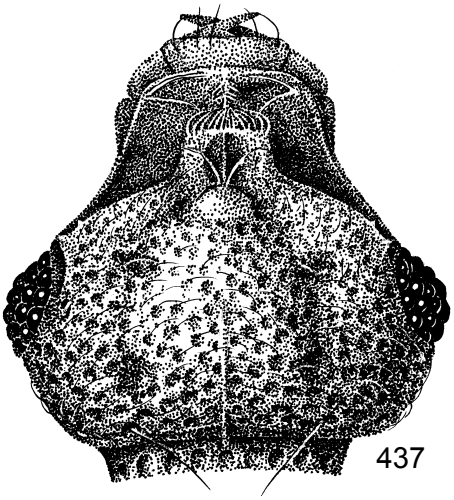
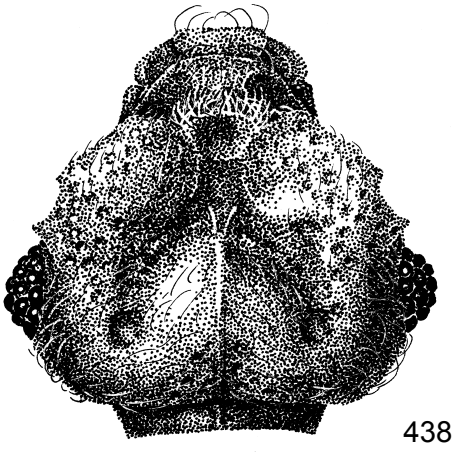
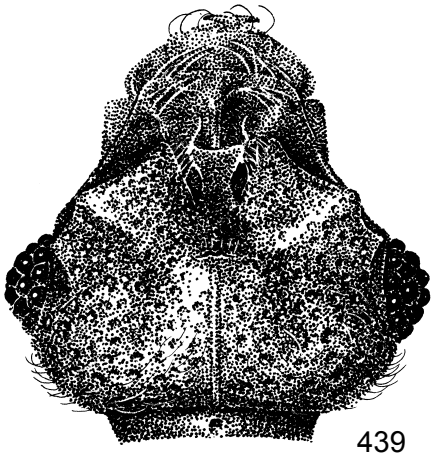
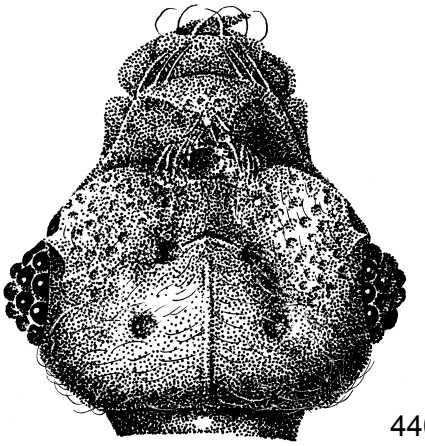


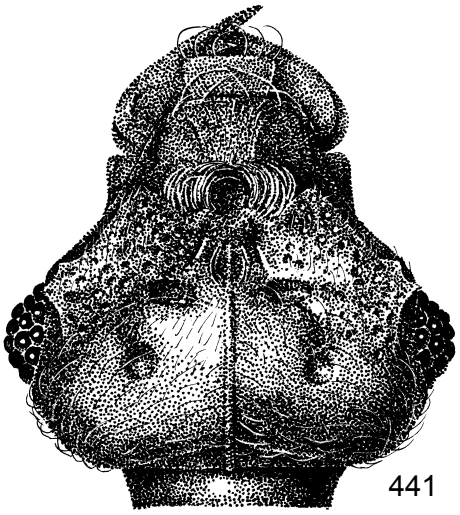
437

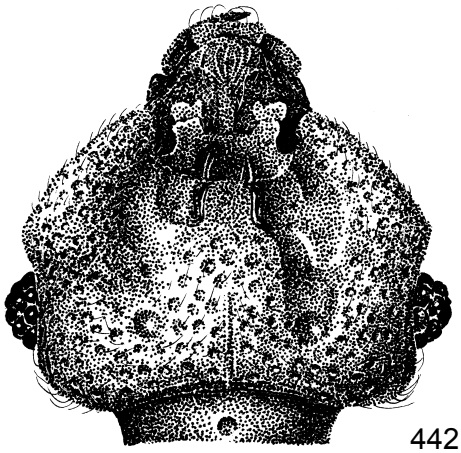
Figures 432–437. 432. *Morana hastulata*; 433. *M. lupula*; 435. *M. murphyi*; 434. *M. nana*; 436. *M. sagax*; 437. *M. tibialis*. (432–437) Head, male, dorsal.

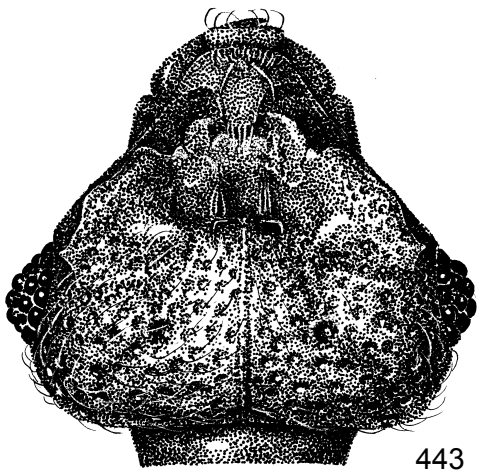




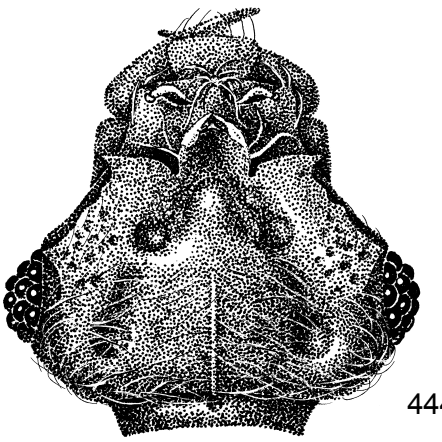


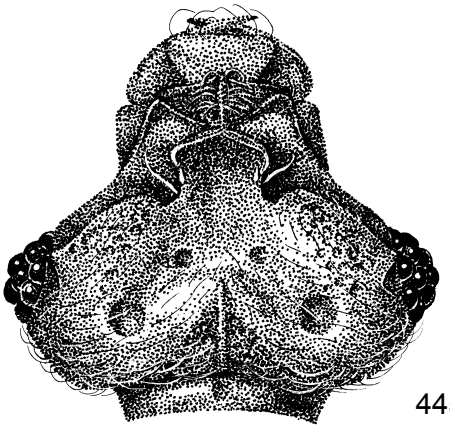


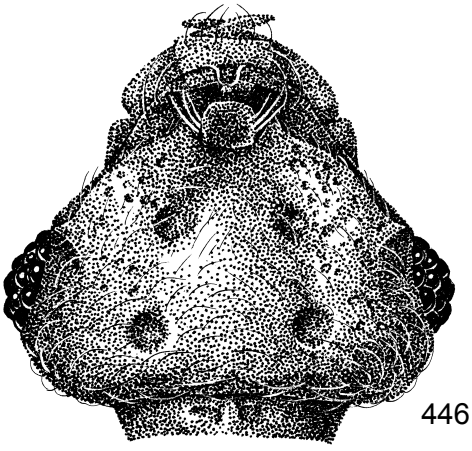


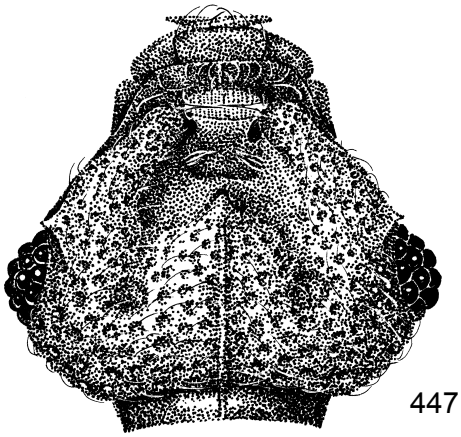


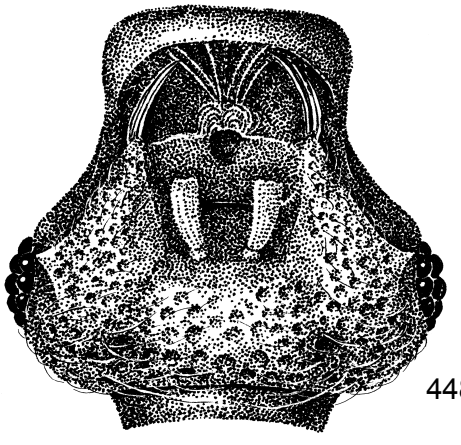
Figures 438–443. 441. *Morana belajevae*; 438. *M. obbatifrons*; 443. *M. palpalis*; 442. *M. repandirostra*; 440. *M. schwendingeri*; 439. *M. vultuosa*. (438–443) Head, male, dorsal.

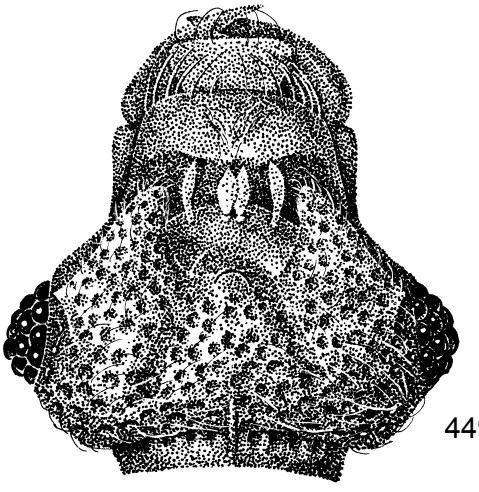




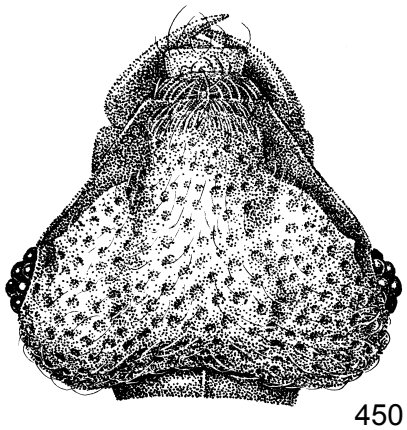








Figures 444–449. 445. *Morana diatretaria*; 449. *M. eromenion*; 446. *M. femoralis*; 448. *M. hoplomacha*; 447. *M. petulca*; 444. *M. virago*. (444–449) Head, male, dorsal.



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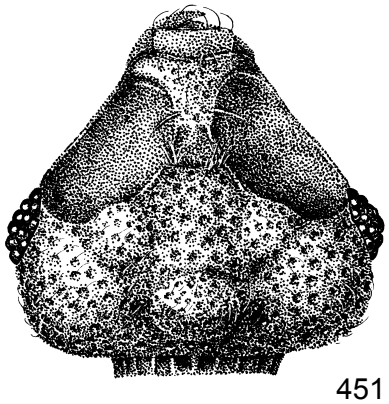

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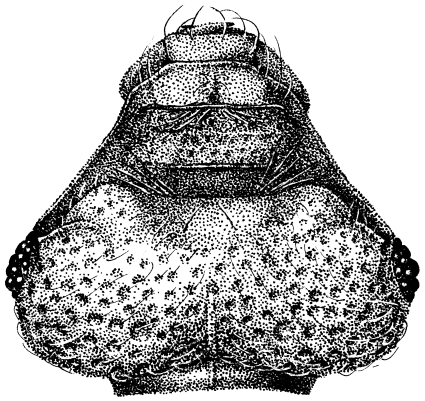

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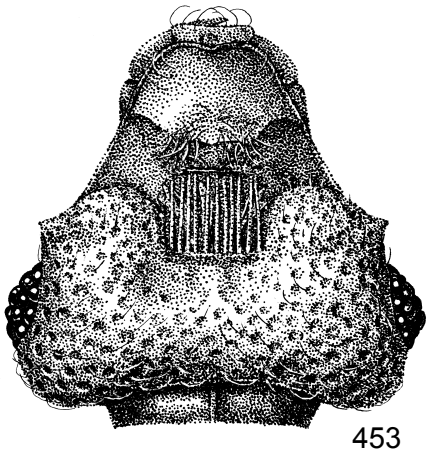

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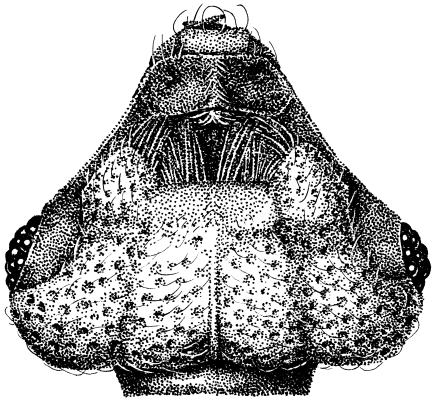

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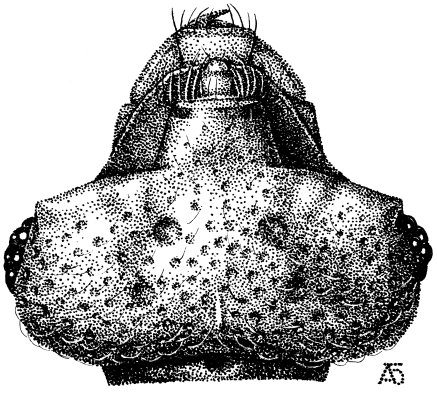

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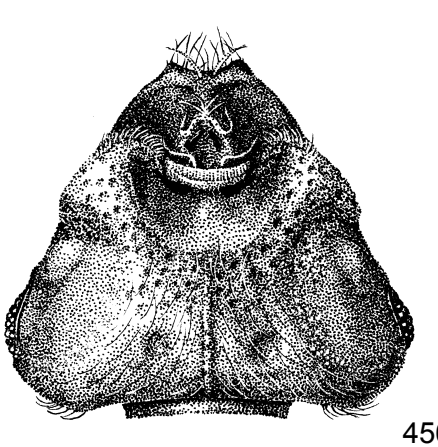
Figures 450–455. 445. *Morana caudata*; 451. *M. crustosa*; 450. *M. loquax*; 455. *M. palulifrons*; 454. *M. persolla*; 452. *M. smetanai*. (450–455) Head, male, dorsal.



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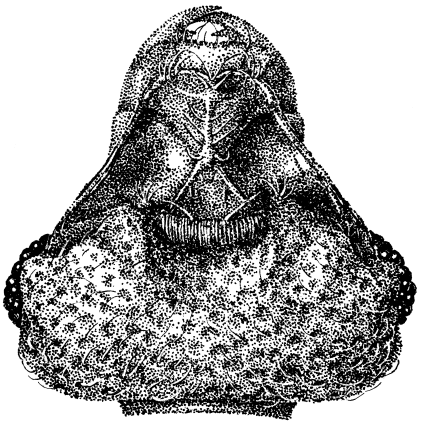

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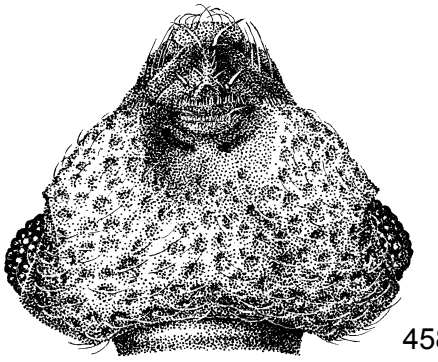

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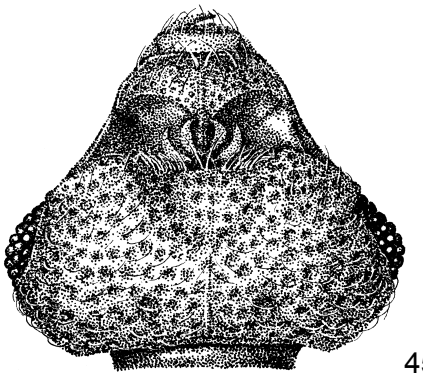

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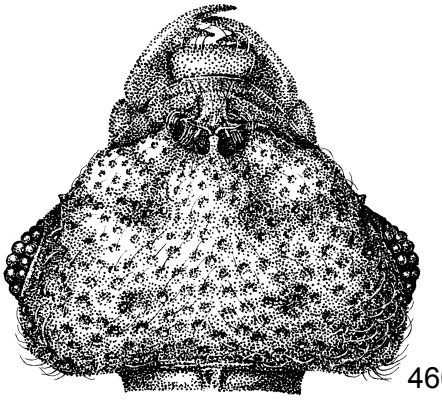

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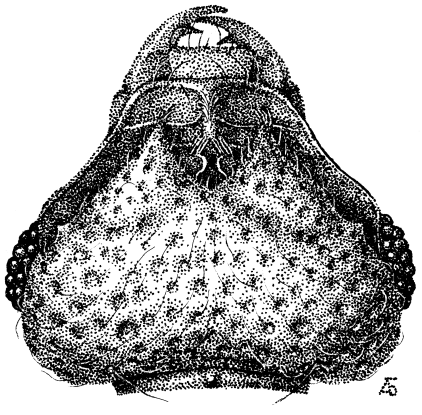
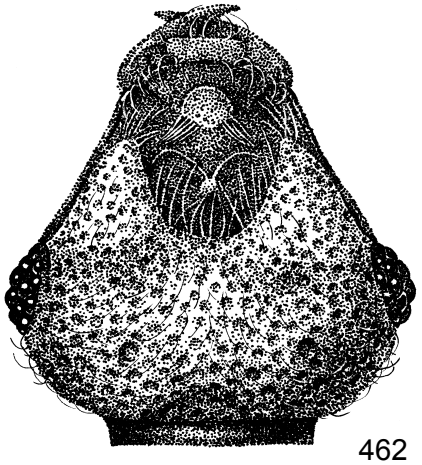


461

Figures 456–461. 458. *Morana agostii*; 461. *M. bidentata*; 456. *M. brinevi*; 460. *M. palaung*; 459. *M. rebellis*; 457. *M. sinciput*. (456–461) Head, male, dorsal.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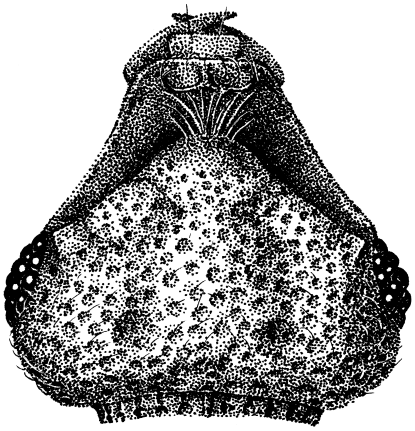
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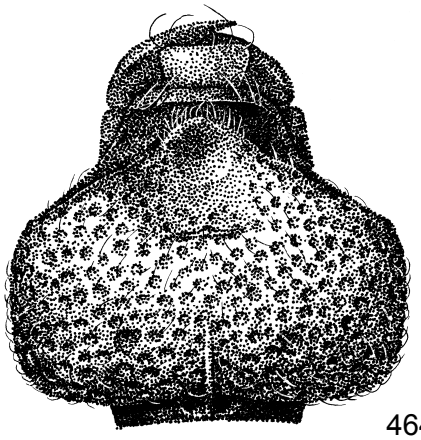
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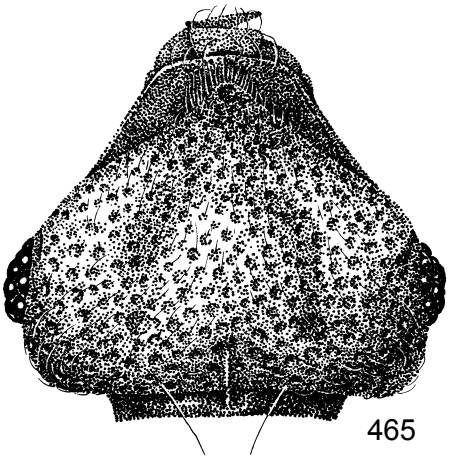
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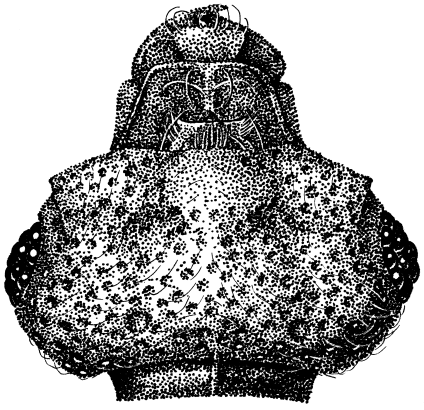
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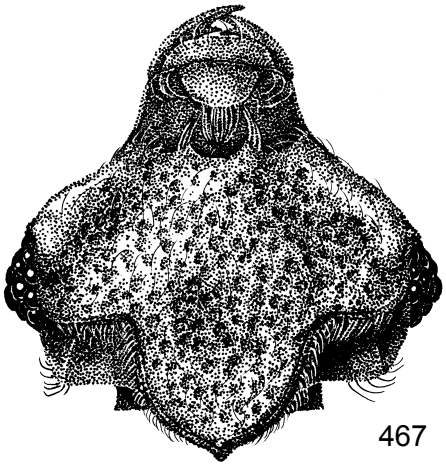
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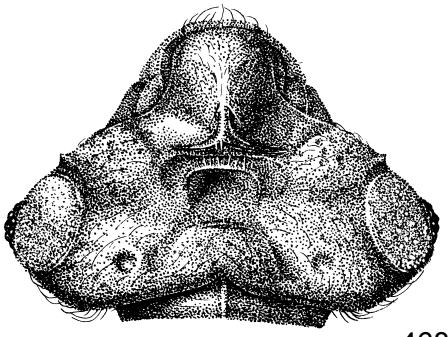
Figures 462–467. 463. *Morana ampullaria*; 462. *M. clypeata*; 465. *M. distensiceps*; 467. *M. fastigata*; 464. *M. lusciosa*; 466. *M. scapus*. (462–467) Head, male, dorsal.



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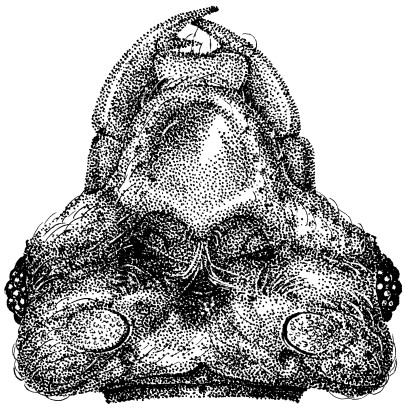

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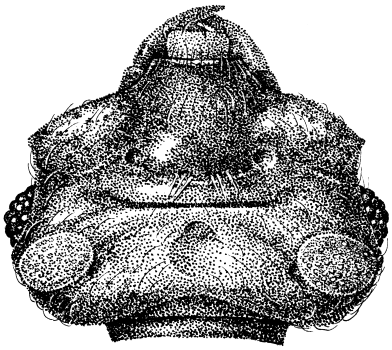

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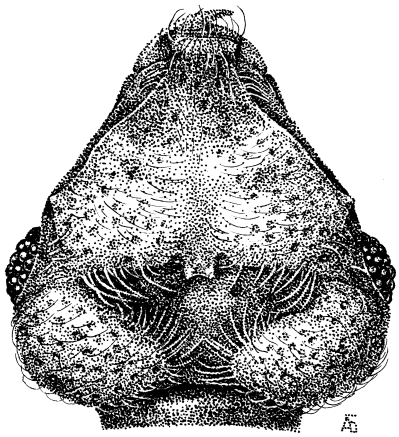

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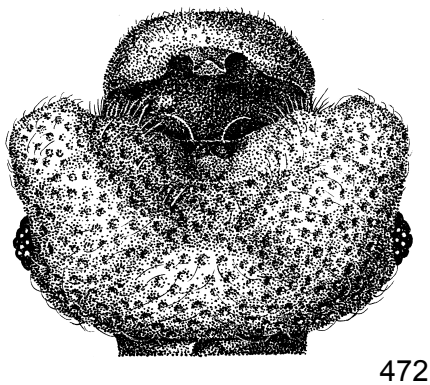

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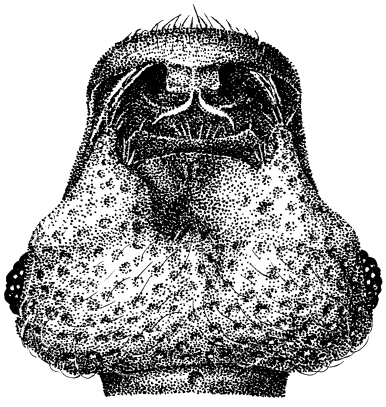

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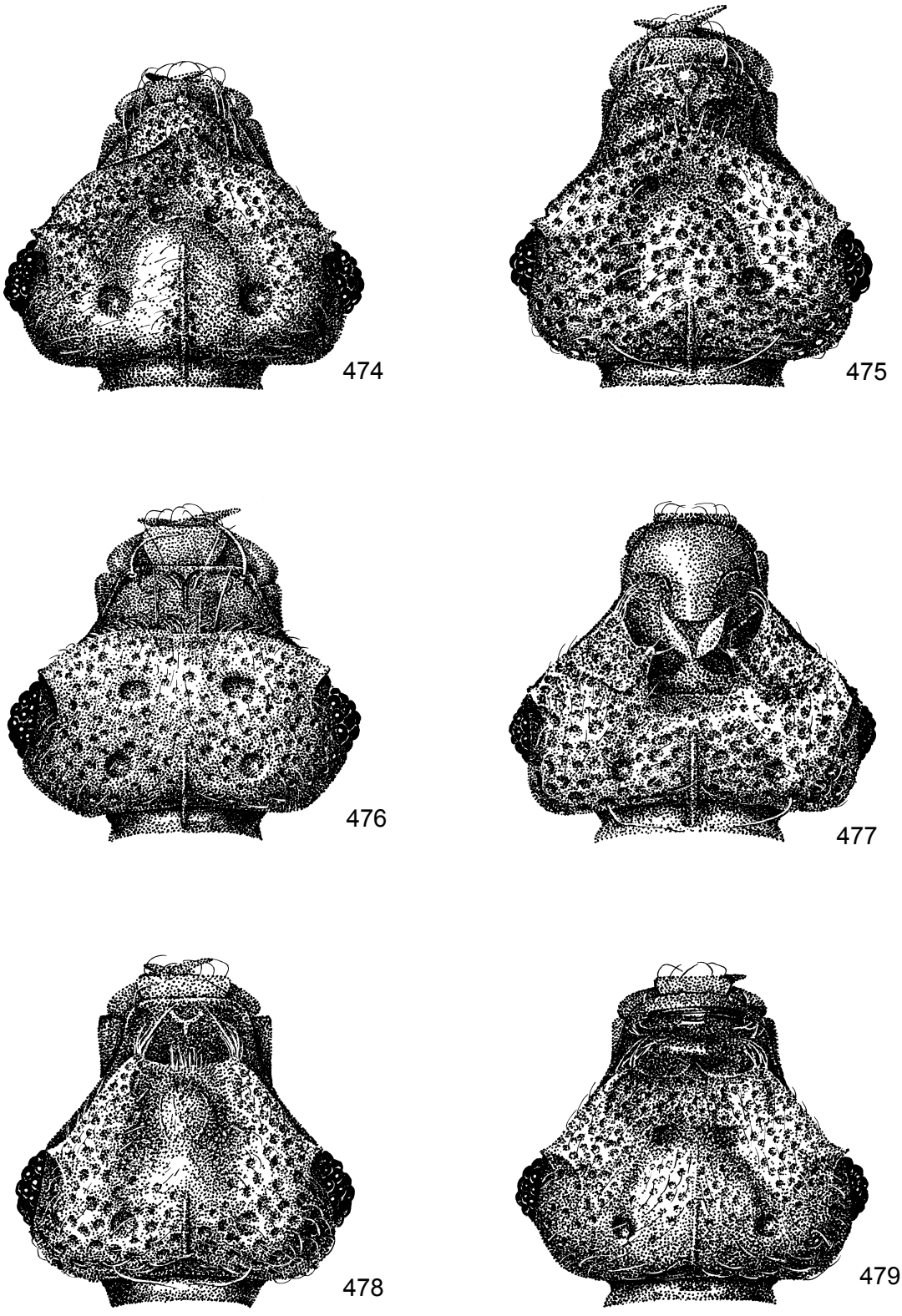
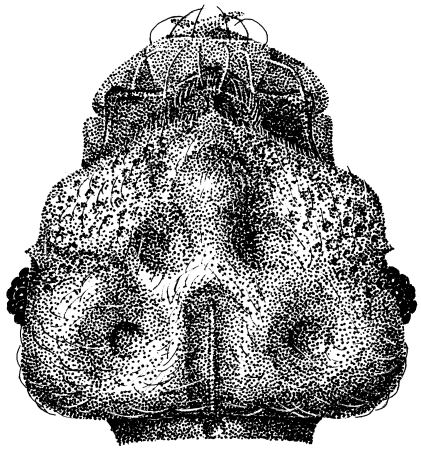
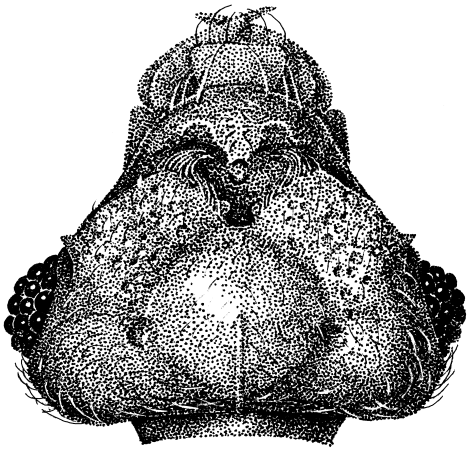
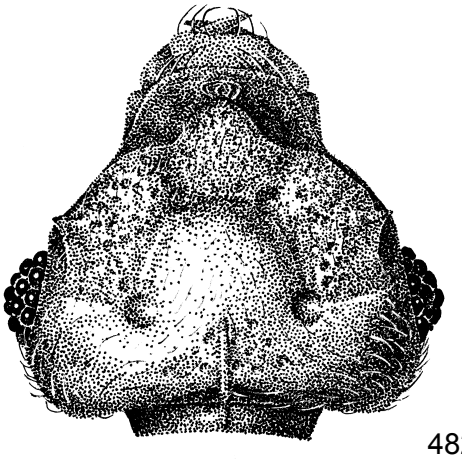
Figures 468–473. 469. *Morana bellicosa*; 471. *M. burckhardti*; 472. *M. minax*; 473. *M. platypes*; 470. *M. semifacta*; 468. *M. sycosifrons*. (468–473) Head, male, dorsal.

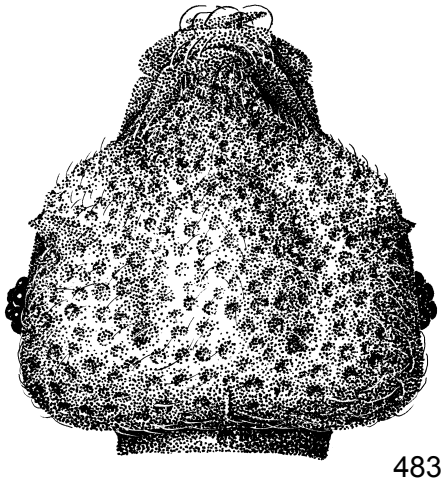


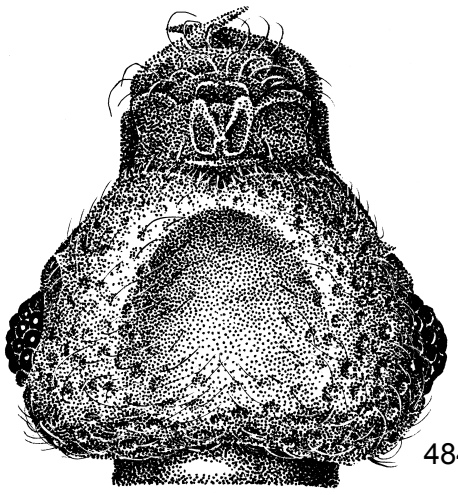
Figures 474–479. 474. *Morana afflictrix*; 479. *M. histanoceroides*; 477. *M. machaerifera*; 476. *M. mahadewa*; 475. *M. papulifera*; 478. *M. pectinicornis*. (474–479) Head, male, dorsal.

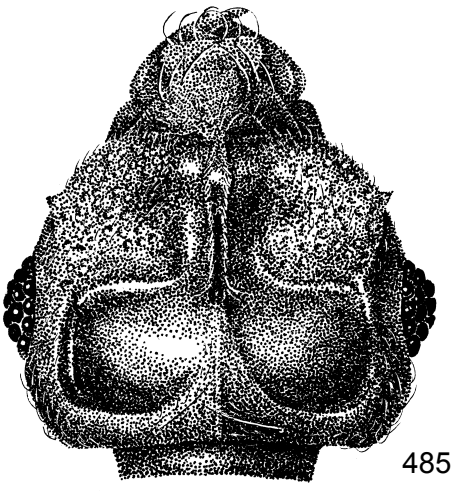












Figures 480–485. 483. *Morana asema*; 480. *M. dorsuosa*; 485. *M. galeata*; 482. *M. lucipeta*; 484. *M. oxymoron*; 481. *M. sima*. (480–485) Head, male, dorsal.

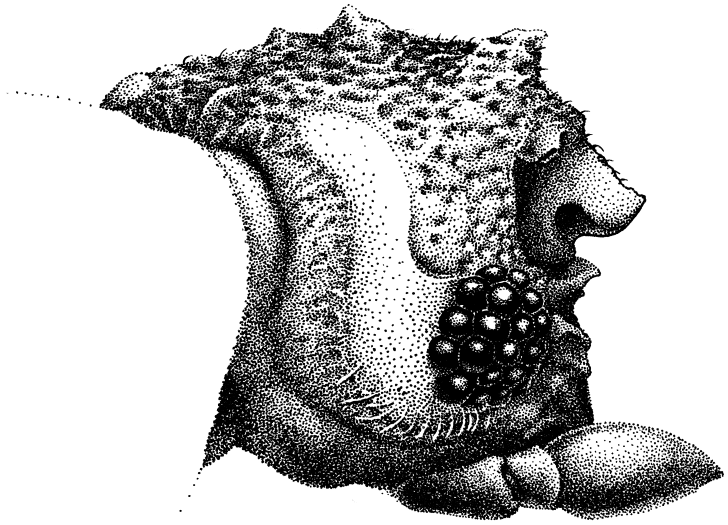


Figure 486. *Bythinophanax bicornis*, head of male (without antennae), posterolateral.