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**Phylogenetic revision of the Stenodemini with a review of the
Mirinae (Heteroptera: Miridae)**

Schwartz, Michael David, Ph.D.

City University of New York, 1987

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PHYLOGENETIC REVISION
OF THE STENODEMINI
WITH A REVIEW OF THE MIRINAE
(HETEROPTERA: MIRIDAE)

by

MICHAEL DAVID SCHWARTZ

A dissertation submitted to the Graduate Faculty
in Biology in partial fulfillment of the
requirements for the degree of Doctor
of Philosophy, The City University of New York.

1987

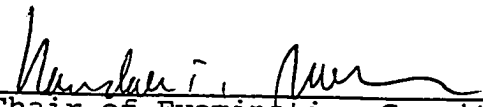
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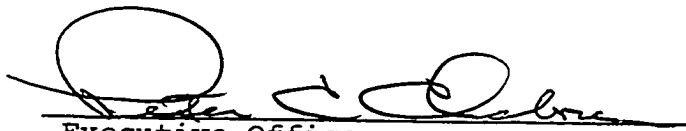
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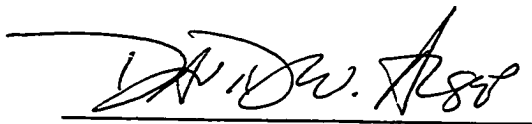
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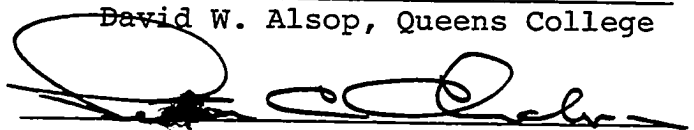
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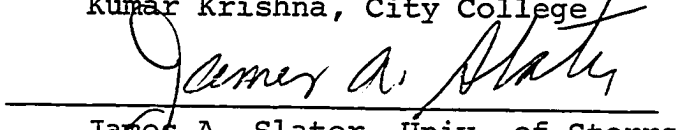
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Abstract

PHYLOGENETIC REVISION
OF THE STENODEMINI
WITH A REVIEW OF THE MIRINAE
(HETEROPTERA: MIRIDAE)

by

MICHAEL DAVID SCHWARTZ

Adviser: Professor Randall T. Schuh

A phylogenetic study of the subfamily Mirinae Hahn provides an analysis of the monophyly, gives a rediagnosis of the seven included tribes, and proposes generic groups for all the tribes except the Mirini. The phylogenetic hypothesis here proposed for a monophyletic Mirinae is: ((Stenodemini + Mecistoscelini) + (Hyalopeplini + (Resthenini + Herdoniini + Mirini))). Representatives of 96 mirine genera were examined with eight genera of Deraeocorinae being used for outgroup comparison. The Mirinae classification of Carvalho was evaluated using the following character systems: (1) pretarsi; (2) metaepisternal scent efferent system; (3) external cuticular ultrastructure; (4) male and female genitalia; (5) metafemoral trichobothria; and (6) external morphology of head and pronotum.

The following taxonomic changes resulted from the analysis. Pithanini Douglas and Scott is synonymized with the Stenodemini. Acegima Poppius and Heidemanniella Poppius are removed from the Herdoniini [Mirinae] and given new subfamily placement within the Orthotylinae [Ceratocapsini] and the Phylinae [incertae sedis] respectively. Stenoparedra Reuter is removed from the Resthenini and placed in the Mirini.

For the tribe Stenodemini China a key to the included genera, a diagnosis and a redescription for each genus, descriptions of new genera, and a phylogenetic analysis based on 36 characters are provided. A list of the included species, with their distributions is given for each genus. Photomicrographs, scanning micrographs, and illustrations of structural features of the genera of Stenodemini are provided.

The revised Stenodemini includes 28 genera. Autumnimiris (type species, Megaloceroea rubicundus Uhler) and Caracoris (type species, nigropunctatus, new species) are described as new. The following taxonomic changes are made: The genera Notostiropsis Poppius [= Ebutius Distant] and Trigonotylicus Carvalho [= Trigonotylus Fieber] are synonymized. A lectotype is designated for Ebutius bellus Distant.

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INTRODUCTION

The original goal of this research was to document the monophyly of, and provide a cladistic classification for the tribe Stenodemini in the subfamily Mirinae. After initial investigations of several character systems of genera traditionally placed in the Stenodemini it became apparent that all eight mirine tribes listed by Carvalho (1952c, 1959) were poorly defined. As a consequence, the accurate determination of the homology and apomorphic states of many of the character systems intended for use in a cladistic analysis of the Stenodemini would not be possible until the monophyly of each of the tribes in the subfamily was determined.

The Mirinae is the largest subfamily of Miridae consisting of at least 4000 species placed in approximately 318 genera. This subfamily is cosmopolitan in distribution. The monophyly of the Mirinae has been supported on the basis of male genitalia (Kelton, 1959), female genitalia (Kullenberg, 1947; Slater, 1950), pretarsal structure (Reuter, 1875b; Carvalho, 1952c; Knight, 1923; Schuh, 1976), and trichobothrial structure (Schuh, 1974). The following attributes diagnose the subfamily: (1) vesica of male genitalia membranous, with sclerotized spiculae, and well defined aperture of the secondary gonopore; (2) inter-ramal sclerite of posterior wall of female genitalia complex usually with sclerotized median process, dorsal structure, inter-ramal lobes, and sometimes with lateral lobes; (3) pretarsus with pulvilli present and attached to ventral margin of claw, and with parempodia lamelliform and apically divergent; and (4) trichobothrial numbers often greater than six on

mesofemora and eight on metafemora.

This study is the first to seek information concerning the utility of the characters for cladistic analysis within the Mirinae. The approach to the problem was to examine the current diagnostic features of the recognized tribes to establish whether or not these characters are actually synapomorphies of the genera comprising the tribes. The structure of the following character systems to evaluate tribal monophyly has been investigated: (1) pretarsi; (2) metaepisternal scent efferent system; (3) external cuticular ultrastructure; (4) male and female genitalia; (5) metafemoral trichobothria; and (6) external morphology of head and pronotum.

A primary objective of this research was to separate apomorphic from plesiomorphic characters at the tribal level within the Mirinae. The subfamily Deraeocorinae was used for outgroup comparison with representatives of eight genera from four tribes examined (see Appendix A). The Deraeocorinae is used as an outgroup with the knowledge that the taxon has no cladistic classification. Therefore many of the polarity determinations made in this study must be considered tentative. A sister group relationship between the Mirinae and Deraeocorinae has been hypothesized by several workers. Slater (1950) suggested affinity based on the curved and twisted sclerotized rings and thickened medial process of the inter-ramal sclerite of the female genitalia. Kelton (1959) and Leston (1961) cited the specialized aedeagus, with the ductus seminis flexible and with distal membranous portion bearing

peripheral spiculae, as indicative of a close relationship between the two subfamilies. Kelton (1959) and Schuh (1976) also mentioned the similarity of habitus of several genera in the subfamilies (e.g., Lygus Hahn, [Mirini] and Deraeocoris Kirschbaum, [Deraeocorini]).

The organization of this paper is designed to identify the synapomorphic attributes of the tribes of the Mirinae and to understand the phylogenetic relationships of these groups. A discussion of the comparative information regarding structural features critical for tribal recognition is presented. A diagnosis for each tribe is provided, and where warranted generic groups are suggested within the tribes. The tribe Stenodemini is treated in depth. A key to all included genera, a diagnosis and a redescription for each genus, descriptions of new genera, and a phylogenetic analysis are provided. A list of the included species, with their distributions is given for each genus. Photomicrographs and illustrations of structural features of the tribes and genera of the Stenodemini are placed within the appropriate discussion sections.

MATERIALS AND METHODS

MATERIALS. This study was based upon examination of representatives from all mirine, and several deraeocorine tribes. The genera and species examined is given in Appendix A.

METHODS. Specimens were examined using incandescent or quartz halogen fibre optics. Genitalic structures were illustrated using Wild M5 and M20 microscopes with camera lucida at magnifications of 156X to 400X. Photomicrographs of genitalic structures were taken with green filter and Normarski interference contrast on an Olympus BH-2 at magnifications of 100X to 400X on Polaroid type 667 film. Photomicrographs of dorsal and lateral habitus were taken on a Wild M400 at magnifications from 10X to 40X with Kodak Tri-X film. Scanning electron micrographs were taken at magnifications from 100X to 10,000X on Polaroid 55 positive/negative film on a Cambridge 250.

Preparations of the male and female genitalia and metafemoral trichobothria were made from dried specimens using the techniques described in Kelton (1959), Slater (1950), and Schuh (1974), respectively. Slide mounts of genitalia were made in glycerin jelly. To facilitate viewing, dissections were placed in a Chlorazol Black E suspension in 70% alcohol after treatment with dilute acetic acid. The dissected structures were placed in a plastic microvial containing glycerin and attached to the pin bearing the appropriate specimen. Dried museum specimens were used in SEM observations. Whole specimens were usually attached to aluminum stubs by the card points with silver paint or double sided sticky tape, and coated with gold. Sometimes individual metafemora

and tibiae with intact tarsi were affixed to the stubs separately.

The terminology used in this study is a refinement of those of several mirid workers. Application of their terminologies within the appropriate character discussions is given in the following section.

External structures and male and female genitalia of specimens from different portions of the range of each genus were examined. The number of specimens examined varied according to the variability of the characters, extent of the distribution, and the availability of material. The descriptions or redescriptions of each genus are composite taking into account the size, structural, and color variations of the species and specimens encountered. The characters for each generic treatment are presented in the same order. A range is given for each measurement in millimeters.

Phylogenetic analyses of the mirine tribes and stenodemine genera were performed by hand, using a character tree building method which allows a first approximation cladogram of the character data, but does not guarantee a most parsimonious classification for the data. The description of the characters used to determine the stenodemine generic phylogeny is found in Table 2 and the matrix of the characters is found in Appendix B. I have employed a modified notation for presenting the character states. Each character has a number followed by various character states. The plesiomorphic condition is denoted as a '0' state, as determined by outgroup comparison with other tribes in the subfamily, and with the Deraeocorinae. Characters with letter designations after the

apomorphic '1' state indicate multiple expressions of the character, but do not now imply a transformation series, except in the case where double letters follow the previous character state (e. g., where laa follows la). An asterisk precedes an autapomorphic character state of a genus. The autapomorphic states were not used in this analysis, but have been retained in the character descriptions to aid future investigation of the possible transformation series.

HISTORICAL REVIEW

Mirinae Hahn, 1831

The family-group name *Mirina* was first used by Reuter (1910a) to distinguish a subfamily level taxon. Reuter (1878b) previously established the subfamily concept using the name *Capsina*. Van Duzee (1916) was the first to adopt a modern suffix with *Mirinae*. The type genus of the subfamily is *Miris* Fabricius (type species *Cimex striatus* Fabricius, 1794). The concept of the subfamily has not changed appreciably since the conception of Fieber (1861) and Reuter (1875b, 1910a) when the *Mirinae* were recognized by the divergent, wide parempodia and a rounded pronotal collar with a distinct posterior sulcus.

The first worldwide classification of the subfamily *Mirinae* to be widely accepted was provided by Reuter (1910a). He established the following five divisions [or tribes]: *Mirina*, *Mecistoscelaria*, *Dionconotaria*, *Restheniaria*, and *Capsaria*. Reuter (1910a) provided explicit arguments for his taxonomic judgments and included documentation for the groups he recognized (Schuh, 1986). The classification of Reuter (1910a) was primarily based on the structure of the parempodia. Distant (1904) in an artificial classification, divided the *Miridae* into three subfamilies on the basis of the presence or absence of both a longitudinal sulcus on the frons and ocelli. Distant's subfamilies were the *Mirinae* with sulcus and without ocelli, *Isometopinae* without sulcus and with ocelli, and *Capsinae* without sulcus or ocelli. The presence of ocelli is a plesiomorphy, with the *Isometopinae* recognized by

synapomorphies of the head and trichobothria (Schuh, 1976). The presence of a longitudinal sulcus is an extremely homoplasious attribute, being found in species from at least four of the currently recognized subfamilies.

Reuter's Mirina contained 13 genera now placed in the Stenodemini, and Austromiris Kirkaldy and Nesiomiris Kirkaldy currently placed in the Austromirini of the Orthotylinae. The Mecistoscelaria is unchanged. The monotypic Dioconotaria containing Dioconotus Reuter forms a monotypic generic series [group] of the Mirini in the classification of Wagner (1971). The genera contained in the Restheniaria conforms to the current composition of that tribe, but originally also included Capsodes Dahlbom which now forms, with Horvathia Reuter, the generic group Horistaria as recognized by Wagner (1971) (see discussion in following tribal Review). Capsaria, the largest of Reuter's divisions, was a collection of approximately 150 genera. Genera of the modern Herdoniini, and Hyalopeplini, as well as other genera eventually placed in Reuter's other tribes, were all contained in the Capsaria. Genera not removed from Capsaria now constitute the current tribe Mirini.

Carvalho's (1952c) world classification of the Mirinae incorporated the divisions of Reuter (1910a) as the tribes Mecistoscelini and Resthenini, renamed the divisions Miraria as the Stenodemini China and Capsaria as the Mirini Hahn, reinstated Pithanini Douglas and Scott and Horistini Van Duzee, added the Herdoniini Distant, and the new tribe Hyalopeplini Carvalho. The

tribes of Carvalho (1952c) were distinguished by the following external attributes:

- (1) Herdoniini Distant, 1904 - myrmecomorphic habitus.
- (2) Horistini Van Duzee, 1916 - eyes placed dorsad on head, and pronotal collar wide.
- (3) Hyalopeplini Carvalho, 1951 - hemelytra glassy and transparent.
- (4) Resthenini Reuter, 1905 - metaepisternal scent efferent system with small evaporative surface.
- (5) Mecistoscelini Reuter, 1910 - first segment of antennae longer than combined length of head and pronotum.
- (6) Pithanini Douglas and Scott, 1865 - myrmecomorphic habitus and first segment of metatarsus longer than second and third segments combined.
- (7) Stenodemini China, 1943 - first segment of metatarsus longer than second and third segments combined; pronotum with a prominent lateral ridge, and with flattened, but well defined collar.
- (8) Mirini Hahn, 1831 - contains species whose genera cannot be accommodated by the other tribes, and therefore is almost certainly not a natural taxon.

It is the classification of Carvalho (1952c, 1959) that I will use as a hypothesis for evaluating the tribal monophyly of the Mirinae.

DISCUSSION OF CHARACTERS USED IN
TRIBAL CLASSIFICATION OF THE MIRINAE

The character systems considered to be the most useful in recognizing inter-tribal relationships within the Mirinae are: (1) body form; (2) head structure; (3) longitudinal sulcus of the frons; (4) lateral margin and collar of the pronotum; (5) pretarsal structure; (6) metatarsal structure; (7) sexual dimorphism; (8) dorsal surface structure; (9) metafemoral trichobothrial structure; (10) ostiolar peritreme; (11) male genitalic structure; and (12) female genitalic structure. The plesiomorphic and apomorphic conditions of each system are established for the subsequent phylogenetic analyses (see Table 1 for summary of the character state information). The autapomorphic attributes which serve to diagnose the tribes are also highlighted.

There are only four phylogenetic analyses of mirine genera, all from the tribe Mirini. The revisionary studies on Irbisia Reuter (Schwartz, 1984), Lygocoris Reuter (Clayton, 1982), Neurocolpus Reuter (Henry and Kim, 1984), and Phytocoris Fallen (Stonedahl, 1983) were based on Nearctic taxa and utilized most of the same character systems analyzed here. However, all of the previous studies sampled only a small portion of the great variability that actually exists in the subfamily. Outgroup determinations for the cladistic analyses in the four revisions noted above were made without a framework of higher mirine relationships.

1. BODY FORM

The body form is the most obvious characteristic of most living organisms. In the Miridae, body form partially discriminates genera

TABLE 1

Characters States for Phylogenetic
Analysis of Mirine Tribes

<u>PLESIOMORPHIC STATE</u>	<u>APOMORPHIC STATE</u>
A. Body form rounded or ovoid; head usually appressed to pronotum.	Body form elongated, or myrmecomorphic.
B. Head with pointed facial angle; clypeus and frons protruding; eye not reaching ventral margin of head; vertex ecarinate.	Head porrect with blunt facial angle, or flattened with anteocular portion short, or gular area enlarged, and with neck.
C. Longitudinal sulcus of frons absent.	Longitudinal sulcus of frons present (form of sulcus variable).
D. Pronotum trapazoidal; collar rounded with complete posterior sulcus (including lateral aspect); proepisternum short; lateral margin not strongly carinate.	Pronotum quadrate, or rounded; collar flattened with incomplete posterior sulcus, or collar obsolete; proepisternum sometimes elongated; lateral margin strongly carinate, or rounded.
E. Pretarsus with pulvilli and broadened divergent paraempodia.	Pretarsus without pulvilli, or sometimes with narrowed lamelliform paraempodia.
F. Metatarsus with first segment shorter than combined length of second and third.	Metatarsus with first segment longer than combined length of second and third.
G. No sexual dimorphism.	Sexually dimorphic.
H. Dorsal surface deeply punctate.	Dorsal surface either smooth, rugulose, concentrically rugulose, or sometimes with pillarlike structures.
I. Trichomae of metafemoral trichobothria well developed with long spiculae arranged without definite orientation.	Trichomae of some metafemoral trichobothria very weakly developed with very short spiculae.

- J. Ostiolar channel reaching lateral surface of metaepisternum, peritremal disk present and knob shaped, evaporative surface large and triangular. Metaepisternal scent efferent system reduced without evaporative surface, or evaporative surface narrow with undeveloped anterior region.
- K. Male genitalia with ductus seminis narrow; aperture of secondary gonopore complete; membranous portion of aedeagus not sclerotized posterior of gonopore. Male genitalia with ductus seminis broad, or hourglass shaped; aperture of secondary gonopore incomplete ventrally or dorsally, sometimes with ornamentation; membranous portion of aedeagus sometimes sclerotized posterior of gonopore, or completely surrounding ductus.
- L. Female genitalia simple, with platelike ultrastructure on surface of dorsal structure, inter-ramal lobes, and sclerite; on lateral lobes. Female genitalia complex, with strongly spinose ultrastructure; sometimes with lateral lobes.

(Slater and Baranowski, 1978), and in the Mirinae, body form serves to distinguish several tribes (Carvalho, 1952c). The similar body form of many species of the Mirini and Deraeocorini has been noted by Kelton (1959) and Schuh (1976). The shared habitus of the two tribes is hypothesized here as being plesiomorphic, based on the presences of the habitus type in the Isometopinae and Microphysidae. The distinguishing features of this body form are as follows: (1) pronotum and hemelytra rounded or ovoid in dorsal and lateral view; (2) head usually appressed to pronotum; (3) legs usually of roughly similar length; and (4) antennae linear, usually without clavate, or terrete segments. The habitus of the other tribes of the subfamily will be considered as apomorphic compared to the Mirini.

The habitus of the mirine tribes Herdoniini and Pithanini [-Stenodemini] is myrmecomorphic. However, as in the subfamilies Phylinae and Orthotylinae, where the recognition of higher taxa on the basis of antlike appearance produced artificial groupings (Schuh, 1974), formation of monophyletic groups within the Mirinae is not congruent with myrmecomorphic habitus. For example, the myrmecomorphic Mimoceps [Pithanini] and the non-antlike Teratocoris [Stenodemini], as a result of the analysis in this work are stenodemine sister genera.

The attribution of an antlike habitus to bug classification has been inconsistently applied because the term is so poorly defined. In an effort to standardize usage McIver and Stonedahl (1987) presented an outline of the following morphological features which

define the myrmecomorphic habitus: (1) aptery or striking brachyptery; (2) hemelytra of macropterous forms either mesially constricted, and/or with a color pattern of white patches basally which enhances the myrmecomorphic contours; (3) bulbous, petiolate abdomen with anterior two to three segments strongly constricted and the lateral margins (connexiva) abruptly upturned; (4) large, elongate head with greatly enlarged gular region; (5) long thin legs; and (6) distal thickening of second antennal segments. Carvalho's use of myrmecomorphic habitus is broad, including taxa possessing only some of these morphological conditions.

Analysis of the tribe Herdoniini (see head structure discussion) has revealed that the included generic groups manifest three or four different myrmecomorphic conformations.

In addition to the antlike habitus the narrow elongate body form of the Stenodemini is also apomorphic. The following features distinguish the body structure: (1) head porrect; (2) proepisternum elongate; (3) pronotum with subparallel lateral margins; (4) Lateral margins of pronotum usually carinate; (5) coxal cleft deeply inserted under lateral carinate margin; (6) hemelytra elongate and parallel sided; and (6) legs, including coxae, usually long. The Mecistoscelini display certain features of the narrow elongate body form. The legs and antennae of Mystilus and Mecistoscelis are also extremely long.

2. HEAD STRUCTURE

Much has been written concerning the morphology of the head as it relates to the identification of the mirine tribes. Until this

investigation, however, head structure was not analyzed within a cladistic context and was used for the taxonomy of the group only in the classical works of Fieber (1861) and Reuter (1910a). Seidenstucker (1965) reviewed the terminology pertaining to head features and clarified some of the confusing terms encountered in the German literature. The angulus facialis, as used by Wagner, is an angle measured as the intersection of a line drawn between the anteroventral to the posterodorsal margins of the head and a line drawn parallel to the long axis of the head in lateral view. This angle was found to be a meaningless statistic, as heads of obviously different shape have similar facial angles. The facial angle of Fieber and Reuter, however, is measured as the angle of intersection of a line drawn on the clypeal suture with a line drawn on the peristomal edge [ventral margin of buccula]. This angle expresses the blunt [obtuse], straight [right] or pointed [acute] facial forms indispensable to understanding Reuter's classification of Miridae.

The forms of the facial angle of Reuter correspond grossly to the characterizations of overall head structure used here as one of the diagnostic features of the sister groups Mirinae and Deraeocorinae and their included tribes. The head structure of the Deraeocorini is uniform and is characterized by the following features: pointed facial angle; clypeus and anterior portion of the frons narrowed and sloping anteroventrally and protruding; ventral margin of eye usually not reaching ventral margin of head; and vertex ecarinate. This characterization of the head of the Deraeocorini does not extend to the other tribes of the subfamily.

The Clivinemini, excluding Largidea Van Duzee, are highly modified with a straight facial angle, recessed clypeal-frons junction, a small eye protruding anteriorly, and the frons rounded and produced above the eye. The Hyaliadini and Largidea have the antecular portion of the head foreshortened with a blunt facial angle and large eye with the ventral margin reaching ventrad of lower margin of head. Deraeocorinae have the eye broadly joined to the head, and no longitudinal sulcus on the frons.

On the basis of the deraeocorine head structures, the tribe Deraeocorini (Deraeocoris Kirschbaum) typifies a plesiomorphic condition of head structure. This form is approached by the majority of the genera placed in the Mirini (e.g., Calocoris Fieber, Horcias Distant, Allorhinocoris Reuter) and will be hypothesized here as plesiomorphic for both subfamilies. The tribes Saturniomirini Carvalho and Termatophylini Reuter have not been investigated.

Head structure of other mirine tribes is diverse, ranging from the porrect, with a blunt facial angle as in most stenodemines, to the highly modified ventrally produced head with pointed facial angle as in the Herdoniini. These head modifications (found in the other mirine tribes and discussed in the following tribal Discussions) are considered to be apomorphic as compared to the (plesiomorphic) head structure of most Mirini.

3. LONGITUDINAL SULCUS OF THE FRONS

This feature served as the primary diagnostic character in the classification of Distant (1904), and as discussed by Schuh (1974)

had no predictive utility at the subfamily level. Investigation of the mirines indicates that at the generic-group level the presence of the longitudinal sulcus is apomorphic occurring in otherwise unrelated taxa, some of which are: Creontiades Distant, Minytus Distant [Mirini]; Onomaus group and Hyalopeplus group [Hyalopeplini]; Mecistoscelini; Xenetus group and Paraxenetus group [Herdoniini]; and all Stenodemini except Acetopis, Actitocoris, Leptopterna, Mimoceps, Mymecoris, Pithanus and Teratocoris. The sulcus is also found in species of the following non-mirine genera: Hallodapus Fieber, Clapmarius Distant, and Systellonotus Fieber [Phylinae: Hallodapini]; Saturniomiris Kirkaldy [Deraeocorinae: Saturniomirini]; Harpedona Distant [Bryocorinae: Eccritotarsini].

The presence of a sulcus does not appear to be correlated with a particular head form, as sulci occur in species with porrect, flattened, rounded or ovoid heads. The longitudinal sulcus is apparently an inflection along the ecdysial line of the head in the adult (Chapman, 1971). The sulcus of all Mecistoscelini has a deep fovea in the posterior end. In stenodemine genera the degree of development of the sulcus is variable, ranging from very shallowly depressed in Autumnimiris albescens (Van Duzee), to deep as in Nabidomiris. However, the length in stenodemines is fairly constant, with the sulcus occupying the middle of the frons from the base of the declivous part of the vertex to a position even with the middle of the eyes in dorsal view.

4. LATERAL MARGIN AND COLLAR OF THE PRONOTUM

The presence of the lateral pronotal carina and flattened

pronotal collar with obsolete posterior sulcus were the primary characters used by Fieber (1861) and Reuter (1875b) to diagnose the group of mirines currently known as the stenodemines. Within the Mirinae there are many forms of pronotal structure. This present investigation confirms the usefulness of the lateral margin and collar areas of the pronotum as characters of phylogenetic information.

Outgroup comparison with the Deraeocorinae indicates that a pronotum with the following attributes is plesiomorphic for the Mirinae: (1) collar rounded in cross section, posterior suture clearly delineated, deep, extending completely across dorsal surface of pronotum, attaining lateral margins, continuing ventrally around sides of pronotum, and forming a complete ring surrounding head insertion; (2) lateral portion of collar not offset anteriorly by proepisternum intrusion; (3) coxal cleft short, terminating before attaining lateral carina of pronotum, not bridged dorsad by carinate margin, nor extending under carinate margin; (4) lateral carinate margin offset from curvature of propleura, lateral margin protrudes dorsolaterally beyond propleura; (5) anterior end of lateral carinate margin terminating in broad anterolateral angle and not merging with anterior portion of pronotum beyond collar; (6) proepisternum short, clearly distinguished from lateral portion of collar in lateral view; and (7) portions of proepisternum and propleura adjacent to coxal cleft, clearly delimited from remainder of propleura by pruinose surface structure (ventral collar area always pruinose) and transverse dorsal crease, ventrad of prominent

lateral carinate margin of pronotum.

Close examination of many genera of Mirinae indicates that the pronotal condition of the deraeocorines does not occur in the subfamily Mirinae. Some species of Mirini closely approximate the plesiomorphic form, but differ significantly in the structure of the propleuron, lateral carinate margin, and anterolateral angle.

Calocoris typifies this form with the following characteristics:

(1) lateral margin of collar usually offset anteriorly by intrusion of proepisternum; (2) lateral carina not offset dorsolaterally from propleura and proepisternum, but forming sharp angle or curved junction of pronotal disk and propleura; (3) anterolateral angle never standing out from adjacent ventral surfaces; and (4) coxal cleft extending to lateral carina, and usually extending under carina.

The Mirini usually have rounded collars with a complete posterior sulcus attaining the lateral margins of the pronotum and continuing ventrally around the pronotum in lateral view, often forming a complete ring surrounding the head capsule. The pronotal shape is usually trapezoidal in dorsal view, without anterior and posterior lobes, and with calli present (fig. 9A).

The pronotal forms found in the other mirine tribes are considered here as apomorphic (see tribal Review).

5. PRETARSAL STRUCTURE

Schuh (1976) reviewed the classification of the Miridae in light of the structure of the pretarsus and other character systems. His analysis of the subfamily Mirinae was brief because his treatment

encompassed the entire family and the structure of the mirine pretarsus was not known to display structural diversity. The observations herein of many mirine taxa generally confirm the idea of structural uniformity of the mirine pretarsus. However, several interesting pretarsal modifications have been discovered (see tribal Discussions).

Kelton (1959) noted the mirine type of male genitalia in Closterocoris amoenus (Provancher). This genus was at that time placed in the Phylini (Carvalho, 1958). Schuh (1976), with SEM documentation, revealed the slender, straplike, but lamelliform, parempodia of amoenus, strengthening the subfamily placement of this genus in the Mirinae. Examination of the parempodia of Cyphopelta modesta Van Duzee (fig. 4H) shows that it has parempodia similar to those of Closterocoris. Carvalho (1986) suggested that Cyphopelta is a Herdoniini. Head and genitalic structure, as indicated by the investigations reported here, have shown both Closterocoris and Cyphopelta to be correctly placed in the Herdoniini. The narrow, straplike, lamelliform parempodia are apomorphic compared to the enlarged, fleshy parempodia of all other mirines (figs. 4G, 9B). No other mirines have parempodia as narrow as those of Closterocoris and Cyphopelta.

Under SEM examination the stenodemine genera Myrmecoris, Pithanus, Mimoceps, and Teratocoris lack pulvilli on the ventral surface of the claw (figs. 22B, D). The polarity of this condition is problematic. Schuh (1976) attributed apomorphy to the possession of pulvilli on the ventral surface of the claw. The lack of

pulvilli may be construed as either a secondary loss and thus apomorphic, or less likely, the absence of pulvilli is a retention of a plesiomorphic condition in the taxa which are otherwise typical mirine bugs. Herein, the absence of the pulvilli is considered as apomorphic.

6. METATARSAL STRUCTURE

Within the Mirinae, tarsal structure -- with the first segment of the tarsus of the posterior legs [metatarsus] ranging in length from subequal to slightly longer than the combined length of the second and third segments -- has been used to define tribal level groups of mirid bugs in the classifications of Fieber (1861), Reuter (1875b), Carvalho (1952c), and others. Today, bugs having that type of metatarsi are distributed among the tribes Stenodemini [including Pithanini], and Mecistoscelini. Until this project, the congruence of the metatarsal structure with other characters has not been investigated. The tarsal condition of the Stenodemini and Pithanini as defined by Carvalho (1952c) appear very similar and differ from that of Mecistoscelini, where the metatarsus is much more delicate or slender, as well as having a very short wedge shaped second tarsal segment. The metatarsus of the Stenodemini [including Pithanini] is more robust or thicker, and the second tarsal segment is longer and barrelshaped.

7. SEXUAL DIMORPHISM

Divergent hemelytral structure is widespread in the Mirinae, with brachyptery occurring in several habitus types. There is a tendency for bugs with a myrmecomorphic habitus to have the females,

and sometimes males, brachypterous, e.g., the Pithanus group of stenodemines (Myrmecoris, Pithanus, and Actitocoris). The genera Mimoceps and Teratocoris display a submacropterous condition. Other unrelated non-myrmecomorphic stenodemine genera (Leptopterna, Kuscheliana, and Opisthocasis), have brachypterous or submacropterous species. The Herdoniini, diagnosed by myrmecomorphy, have only a few species of Sphinctothorax Stal, Camponotidea Reuter, Paradacerla Carvalho and Usinger, and Herdonius Stal with brachypterous forms. The remainder of the herdoniine genera examined are macropterous, but have medially constricted hemelytra.

In the Resthenini both sexes are usually entirely macropterous. Stenoparedra fallax Signoret from Chile, has submacropterous representatives of both sexes. However, this genus is problematically placed in the Resthenini, because it possesses a large evaporative surface of the metaepisternal scent efferent system and typical mirine dorsal surface structure.

The Hyalopeplini and Mecistoscelini are macropterous in both sexes. Since the tribe Mirini has diverse hemelytral structure it must be presume that brachyptery has occurred many times in unrelated genera of this tribe.

8. DORSAL SURFACE STRUCTURE

There are a great variety of surface structures in the Mirinae. Outgroup analysis indicates that a deeply punctate surface, as found in almost all deraeocorines, is plesiomorphic. The surface of many deraeocorines is also distinctly polished; at magnifications of 10,000X no surface structure is revealed, although certain portions

of the bugs are pruinose and contrast sharply with the polished surface. Usually the entire collar, but always a portion on the ventral aspect, is pruinose, and when examined with SEM are shown to be covered with densely distributed trichomes (fig. 3A).

The most unusual surface feature discovered in this study are the pillarlike cuticular ultrastructure of the Resthenini which contributes to the dull appearance of these bugs. In addition to the plainly visible simple setae, many species are also covered with a mat of long, densely distributed trichomes. The variously distributed flat topped pillarlike cuticular projections that stand above the trichome mat (fig. 10E) are a synapomorphic attribute of the Resthenini. The "pillars" are capped with a minute and blunt papillose surface. Some genera possess a variation of the "pillar." This condition is distinguished by regularly distributed openings in the trichome mat occupied by papillose, convex structures which appear similar to the dorsal surface of the "pillar" (fig. 10F). Those genera with greatly reduced efferent systems have a cuticular surface with the pillarlike structures, whereas the small papillose patches occur in genera with more well developed scent systems.

The Herdoniini is the only mirine tribe in which punctures were not observed. All genera examined are either smooth, rugulose, or shagreened, with setae of various distribution and length.

Hyalopeplini of the Hyalopeplus group exhibit a unique condition in which major portions of the pronotal disk are covered with transverse or concentric rugosities (fig. 7A). The Guianeius group

is coarsely punctate (fig. 7D), and the Onomaus group is smooth. The Mirini has diverse surface structure but in depth examination of this tribe was beyond the scope of the present investigation.

Within the Stenodemini the surface structure is congruent with other characters. The Stenodema group is coarsely punctate with the exception of Chaetofoveolocatoris. The remainder of the tribe is either smooth, shagreened, or rugulose, but never coarsely punctate. The Mecistoscelini is mostly coarsely punctate but Erimiris is smooth with velvety black patches formed by densely set trichomes. Mystilus has an iridescent surface formed by long mats of trichomes or setae.

9. METAFEMORAL TRICHOBOTHRIAL STRUCTURE

Schuh (1975) in a survey of mirid trichobothria reported that mirine trichomae were very weakly developed, with very short spiculae only slightly denser than the spiculae of the adjacent cuticle. My investigation demonstrates that certain species of Herdoniini and Stenodemini possess some metafemoral trichobothria with strongly developed trichomae bearing long spiculae, arranged without definite orientation. The Cylapinae, Deraeocorinae and Mirinae all possess taxa with diffuse trichomae and weakly recessed or flush bothria (Schuh, 1975). There is a tendency, as noted by Schuh (1975), for mirine taxa to have reduced trichomae (figs. 7E, G; 11A). The well developed trichomae found on Ophthalmomiris, Chaetofoveolocatoris, and Stenodema (fig. 39D) of the Stenodemini, and Allommatus, Paraxenetus (fig. 4D), and Zachynthus of the Herdoniini perhaps share the plesiomorphic condition for mirines and

deraeocorines. Those taxa with more reduced trichomal structure are apomorphic for this character.

Metafemoral trichobothrial number for the subfamily Mirinae is quite variable, ranging from 5 to 11 trichs; species within the same genus often vary by one trich. As reported by Schuh (1975), accurate discrimination of a trich from a simple seta is difficult when the accompanying trichoma is poorly developed; thus, determination of trichobothrial number can be difficult. Verification of trich identity must be made by SEM examination in order to ascertain the longitudinal "fluted" structure of trichs.

The present observations of metafemoral trichobothrial number do not differ greatly from those of Schuh (1975) as follows: (1) Hyalopeplini with 8 to 10 trichs (figs. 12G, H); (2) Resthenini with 5(?) or 9 trichs (figs. 12J, K); (3) Mecistoscelini [not reported by Schuh, 1975] with flush or very slightly recessed bothria, developed trichomae adjacent to the trichobothrial base, and spiculae without definite orientation [Mecistoscelis and Mystilus have an apomorphic arrangement of metafemoral trichobothria (figs. 16B, C) with the distal portion of the femora bearing only two trichs [Schuh's numbers 1, 1a or 2]; the remaining five trichs are located on the basal half of the femora. Erimiris has the usual trichobothrial arrangement as found in other mirines (fig. 16A).]; (4) Herdoniini with either 7 or 8 trichs (figs. 12A-F). (5) Stenodemini with from 5 [Stenodema trispinosa (Reuter)] to 11 [Stenodema vicina (Provancher)] trichs (figs. 40 J, L). Kuscheliana has an unusual arrangement, with 7 trichs located on the distal third of the

metafemora (fig. 58D).

This survey of metafemoral trichobothria in the Mirini is limited and only the presence of 10 trichs with or without well developed diffusely arranged trichomae can be reported (fig. 12I). Schuh (1974) noted that Taylorilygus vosseleri (Poppius) has 9 trichs.

10. OSTIOLAR PERITREME

The terminology of the heteropteran metaepisternal scent efferent system of Carayon (1971) and Staddon (1979), as interpreted by Cassis (1984), is accepted here with slight elaboration. The terms applied herein are: (1) ventral ostiole (originating bilaterally at the junction of the metacoxae, metasternum and abdomen); (2) ostiolar channel (formed by folded integument extending from the ostiole laterad); (3) peritremal disc ("knob-like" structure with microfilamentous surface extending laterad of apex of ostiolar channel); and (4) evaporative surface with evaporative bodies (extending anteriad, posteriad and dorsad of peritremal disc).

Cassis (1984) determined that the Cylapinae, Mirinae, Deraeocorini [Deraeocorinae] and Bryocorini [Bryocorinae] shared a similar thoracic pleural structure which he described as follows: Mesepimeric spiracle, internal, intersegmental; metaepisternal scent efferent system well developed, with peritremal disc raised and 'U' shaped. The present observation of many mirine taxa demonstrates that the structure of the scent efferent system is relatively uniform throughout the subfamily Mirinae (see figure 9C for typical

mirine ostiolar peritreme).

Based on outgroup comparison with the Deraeocorini it has been determined that the plesiomorphic form of the metaepisternal scent efferent system is one in which the ostiolar channel reaches the lateral surface of the metaepisternum, the peritremal disk is present and knob shaped, and the evaporative surface is large and usually triangular in shape. Most of the variation encountered in mirine taxa occurs in the location of the dorsal terminus of both the evaporative surface and the ostiolar channel on the metaepisternum.

In the Resthenini the metaepisternal scent efferent system is always present in a reduced or apomorphic condition as compared with other mirines. The most apomorphic condition is exemplified by the genus Prepops Reuter, where the ostiolar channel terminates even with the ventralmost lateral surface of the meso- and metacoxae, and lacks all remnants of the evaporative surface and peritremal disc except for a few solitary evaporative bodies made visible by scanning microscopy (fig. 10D). The species with less reduced efferent systems retain a prominent peritremal disk that merges dorsally with a very small evaporative surface of well differentiated evaporative bodies (fig. 10A).

A previously unreported morphological condition was observed in some species of Teratocoris (fig. 21F), in which the metaepisternal scent efferent system is as greatly reduced as in Prepops. The Herdoniini have the preponderance of genera with the evaporative surface narrow and anterior region undeveloped (fig. 4C). However,

many genera of the Mirini and Stenodemini have evaporative surfaces not unlike those found in the Herdoniini. The taxa of all three generic groups of the Hyalopeplini have large well developed triangular evaporative surfaces (figs. 7B, C). The Mecistoscelini have somewhat reduced evaporative surfaces (figs. 15A-C).

11. MALE GENITALIC STRUCTURE

Kelton (1959) investigated mirine male genitalia as a means of assessing the higher level systematics of the subfamilies. Previous to his research, the male genitalia, particularly the parameres and portions of the vesica, had been used chiefly to identify mirid species, although Knight (1917), Wagner (1940) and Kelton (1955) also included details of the genitalia as indicators of infrageneric relationships. Kelton's (1959) work was the basis for the present comparative analysis on mirine male genitalia, and the publications of Carvalho (1943 to present) and Wagner (1971) greatly facilitated comparisons among taxa unavailable to me for examination.

It is judged herein that the secondary gonopore and ductus seminis are the features of the male genitalia which hold the most promise of resolving infrasubfamilial relationships in the Mirinae.

Kelton (1959) stated that the male genitalia of the Mirinae are distinctive, emphasizing the diagnostic coiled, springlike structure of the secondary gonopore, and the various sclerotized processes of the lobate, membranous vesica. He also compared the secondary gonopore of the Deraeocorinae and Mirinae and determined the deraeocorine gonopore to be plesiomorphic and the type from which the mirine gonopore was derived. However, considering the

morphological evidence, it is not possible to know if such a relationship is correct, as it is equally plausible that the deraeocorine gonopore structure was derived from mirines, or that the types found in both subfamilies are apomorphic types derived from an unknown plesiomorphic condition. A more intensive study of the mirid gonopore structure may clarify this problem.

Two facts are apparent, however. First, the secondary gonopore types present in the six deraeocorine tribes show greater structural diversity than those found in the Mirinae; and second, the gonopore structure of both subfamilies is unique. All mirine secondary gonopore apertures have the following characteristics (fig. 9E): (1) terminating flush with surface of membrane and located medially on vesica; (2) large and coil-like, or smaller and with concentric rows of diffuse spinulae; (3) usually orientated parallel to axis of ductus seminis; and (4) complete, except as found in some stenodemines (fig. 39G). Secondary gonopores in the Deraeocorini have the following features: (1) termination adjacent to, and usually basad of membrane; (2) aperture usually orientated perpendicular to long axis of ductus; (3) aperture large and opening into depressed trough sometimes with associated serrate sclerotized plates (fig. 3B) [Razafimahatratra (1980), in a revision of western North American species of *Deraeocoris* Kirschbaum, partially diagnosed the *fasciolus* and *brevis* species groups on the presence or absence of these sclerotized plates respectively]; and (4) aperture complete or incomplete (this attribute is not homologous with the Mirinae type because of the divergent construction of the gonopore

of each subfamily). The other tribes of Deraeocorinae have smaller secondary gonopores than those found in the Deraeocorini.

Polarity of character states for the mirine secondary gonopore is problematic. Outgroup comparison with the Deraeocorinae, because of the previously mentioned divergence of structure, must be tentative. However, with this in mind, it is preferred to classify the small diffuse aperture of the Stenodemini and Mecistoscelini as plesiomorphic, because vaguely similar types of secondary gonopores occur in some species of Hyaliodes Reuter and Largidea Van Duzee [Deraeocorinae]. Even though the secondary gonopore structure in the stenodemines and mecistoscelines is plesiomorphic, some members of each tribe possess gonopores which are not found in other mirines and their conditions are regarded as apomorphic. Apomorphic conditions of the secondary gonopore for the phylogenetic analysis of the Stenodemini are listed separately in the character descriptions with no transformation series implied (Table 2).

Of particular interest for the phylogenetic relationships within the Mirinae is the narrow, undeveloped ductus seminis found in most deraeocorines regardless of tribal affiliation. Thus, through outgroup comparison, the narrow ductus seminis of the Stenodemini would represent the plesiomorphic condition within the Mirinae. However, it is not known if the narrow ducti of the Stenodemini and Deraeocorini are homologous. If the narrow ductus is found not to be homologous, then the similar appearance of the ducti of these two higher taxa would be homoplasious. While knowledge of the tribal relationships of the Deraeocorinae would help clarify this matter,

it was beyond the scope of the present study.

Kelton (1959) suggested that the Mirinae may be divided into two groups, basing his judgment on the structure of the subapical region of the ductus seminis. One group, containing the Mecistoscelini, Pithanini, and Stenodemini, is distinguished by a narrow, uniformly slender, cylindrical ductus seminis. In the other group (Herdoniini + Mirini + Resthenini) the ductus seminis is noticeably expanded distally, sometimes with an hourglass shape. The present investigation of the ductus seminis supports this dichotomy (fig. 1).

The narrow ductus also occurs in several unrelated genera of the Mirini [e.g., Proba vittiscutis (Stal) (fig. 9G), Phytocoris candidus (Van Duzee) (fig. 9F), and Polymerus Hahn sp.], where its presence is best interpreted as a reversal from the large, apomorphic ductus found in the majority of the Mirini. Here it is preferred to consider a narrow ductus seminis as plesiomorphic within the Mirinae, with the knowledge that the outgroup comparison with the Deraeocorinae is tentative, considering the unresolved nature of the interrelationships of that subfamily.

Analysis of the multitude of sclerotized processes attached to the outside of the membranous portion of the vesica [Kelton (1955, 1959), Razafimahatratra (1980), Clayton (1982), Stonedahl (1983), and Schwartz (1984)], is difficult. It seems that both deraeocorines and mirines share many of these types of endosomal appendages. Ascribing polarity to the many types of processes is not appropriate at the tribal level. However, the one apparently autapomorphic condition of the vesica in the mirine tribe Herdoniini

must be described.

In the Xenetus group the usually membranous portion of the vesica is strongly sclerotized, forming a shell around the aperture of the secondary gonopore. Also the distal end of the sclerotized vesica is characteristically recurved (fig. 5A).

TERMINOLOGY. The terminology of the parameres by Kelton (1959), Carvalho and Jurberg (1976), Clayton (1982), Stonedahl (1983), and Schwartz (1984) is incorporated in this work, but the terminology for the vesical appendages as found in those publications is not satisfactory for analysis at the subfamily level. Previous to this study, terminology for the male genitalia was either too general, obscuring relationships because the terms were applied to the entire subfamily (Kelton, 1959), or too specific, with terms used in generic revisions without regard for the diversity of appendages encountered in the remainder of the subfamily.

The terminology of others is amended as follows: (1) Lobal sclerites - originate at or near the periphery of the membranous lobe and are always simple outgrowths of the membrane. (2) Ribbonlike strap - formed by a basal sclerite with or without an attached sclerotized process(es) extending distad of ductus, and attached to posterobasal portion of ductus seminis. This is a term unifying the separate basal process and sclerotized process of Stonedahl (1983). The spiculae of Clayton (1982) are a specialized type of ribbonlike strap (not found in Stenodemini). (3) Sclerotized processes - when basal sclerite is not present, but a solitary process is present, or if basal sclerite is present with an

attached sclerotized process and another process is also present (other than a lobal sclerite) without a basal attachment to the ribbonlike strap.

12. FEMALE GENITALIC STRUCTURE

Slater (1950) studied the female genitalia of Miridae in an effort to discern if that character system could be used to discriminate taxa within large genera with closely related species, as well as to assess if female genitalia could be used to ascertain phylogenetic relationships of higher level taxa. As a result of the work of Kullenberg (1947) and Slater (1950) two areas of the bursa copulatrix have been used in systematic studies. These are the sclerotized rings and associated structures and the posterior wall and associated structures. Lansbury (1963), Fontes (1981), and others have used the valvulae to discriminate species. The terminology for these structures is purely descriptive, and the terminologies of Slater (1950), Davis (1955), and Kelton (1955) as summarized by Clayton (1982) are used here.

Within the Mirinae female genitalic characters have been used in generic revisions by Fontes (1981), Clayton (1982), Schwartz (1984), and Henry and Kim (1984). The frequency of documentation of female genitalic structure in generic revisions or descriptions of new species is less than for male genitalia. Also there is no convention for uniform orientation of female genitalic illustrations. In this report, all of the illustrations of the posterior wall were drawn in anterior view (the anterior surface as seen in the intact insect); and the sclerotized rings are

illustrated in dorsal view.

Slater (1950) stated that the female genitalia of the Mirinae are specialized structures. He concurred with Kullenberg's (1947) assessment that the stenodemines do not merit subfamily status and are correctly conceived as a tribal level taxon. Slater (1950) placed 29 genera of Mirini in 5 categories based on the structure of the female genitalia. Evaluating the validity of these groups in a phylogenetic context is beyond the scope of this study. Slater (1950) also investigated the resthenine genus, Platytylellus Reuter and found no characters in the female genitalia to warrant tribal status for the included genera. In light of the present analysis of 14 resthenine genera, the female genitalia possess no autapomorphic features (see figure 11C for typical mirine inter-ramal lobe structure in Prepops [Resthenini]). One feature reported by Slater (1950), the narrow straplike sclerotized bar between the sclerotized rings of Platytyellus, does not occur in the other resthenine genera (figs. 11B, D).

Analyzing the female genitalia for synapomorphic characters at the tribal level of the Mirinae was made difficult by the great complexity of the structures and the seemingly haphazard distribution of the various structures among the included taxa. However, the Herdoniini, Mirini and Resthenini as a group possessed much more complicated sclerotized rings and posterior walls than do the Stenodemini, Hyalopeplini and Mecistoscelini. The former three tribes can be characterized as having developed lateral lobes (H structure of Slater, 1950) of the posterior wall. Lateral lobes

were not found in members of the last three tribes.

Determination of character state polarity for mirine female genitalia was based on outgroup comparison with the simple, flattened and platelike posterior wall of the Deraeocorinae (fig. 3C). The twisted sclerotized rings, and thickened medial portion of the inter-ramal sclerite (posterior wall), indicate a relationship between the two subfamilies. Both subfamilies have complex sclerotized rings, and in the mirines the medial process (B structure of Slater, 1950) is found in the same position on the posterior wall as the thickened medial area in the deraeocorines. Because the posterior wall is simple in the Deraeocorinae [and most other mirid subfamilies except the Orthotylinae] a more complicated posterior wall structure is considered as apomorphic. Thus, the presence of the lateral lobe in the Herdoniini, Mirini and Resthenini is hypothesized to be synapomorphic.

SEM examination of the posterior surface of inter-ramal lobes of the posterior wall of several mirine species shows a fringed platelike structure (fig. 10F).

Several features of the stenodemine female genitalia are autapomorphic for subsets of the tribe, and are as follows:
Pithanus group - lateral subapical surface of the second valvulae with a small arc shaped ridge dorsally in lateral view (figs. 20B, G, K). Trigonotylus group - inter-ramal lobe of posterior wall with lateral portion extending ventrad of sclerite, medial portion of lobes deeply excavated (figs. 31B, D, F, H, J, L, N, P). Stenodema group (in part) - medial process with narrow, tapered dorsal

portion, extending anteriorly into dorsal structure; dorsal structure
sac-like (without medial crease), narrowly surrounding anterior
projection of medial process (figs. 44F, P).

REVIEW OF MIRINE TRIBES

This section includes, for each recognized tribe, a summary of nomenclature, statement of previous defining characters, revised diagnosis in light of the discussion of subfamily characters from the preceding section, discussions of autapomorphic characters, recognized infratribal groups, and taxa removed from the tribe. Tribal synonymy does not differ from that compiled by Carvalho (1959) and is not included here. This present analysis of the large and diverse tribe Mirini was too superficial to adequately determine if this taxon possesses unique defining characters. Thus the Mirini are considered as unresolved and is not treated further except for the taxonomic history of the generic group Horistaria.

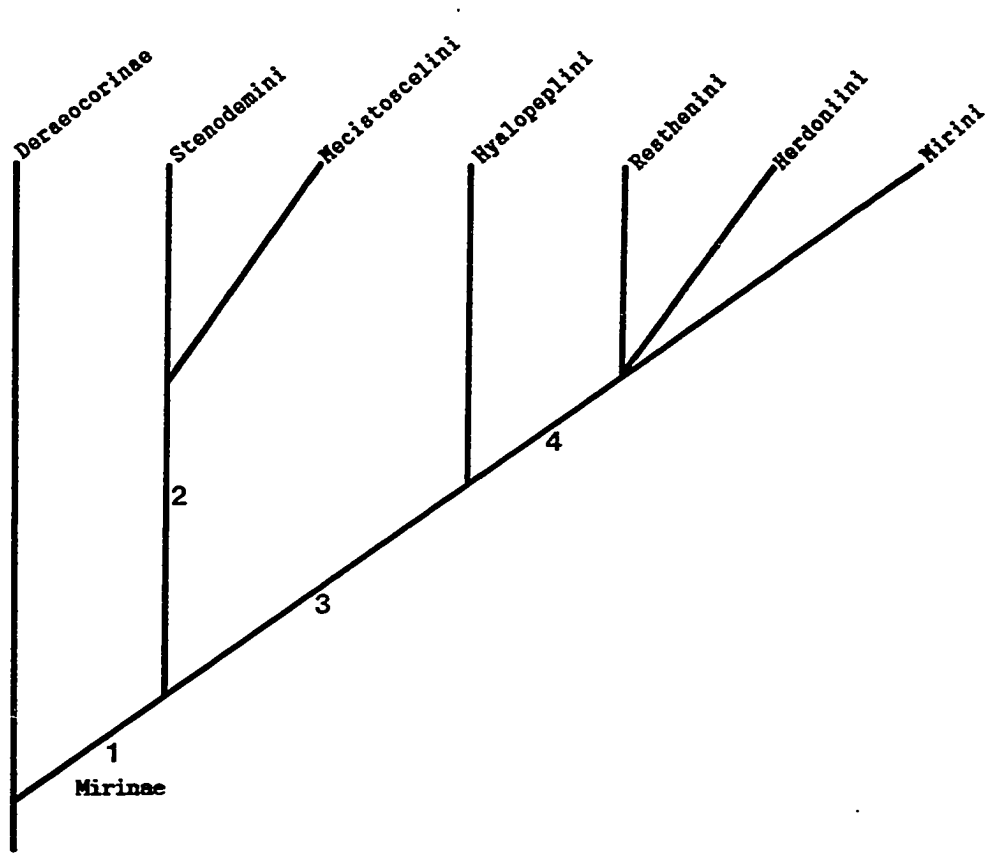
The monophyly of five of seven mirine tribes was substantiated by the preceding Character Analysis. Four synapomorphies provide the structure of cladogram 1 (fig. 1). The revised diagnoses presented in the following Tribal Sections serve as autapomorphic characters for the terminal taxa in cladogram 1 (fig. 1).

Herdoniini Distant, 1904

Figures 4A-H; 5A, B; 6A-F; 12A-F

The family-group name Herdoniini was first used by Distant (1904), who designated Herdonius Stal, 1858, as the type genus of the nominal taxon Herdoniaria. The Herdoniaria, as conceived by Distant, was a subset of taxa placed in his subfamily Mirinae (mirids with a longitudinal sulcus on the frons) which possessed a

Fig. 1. Cladogram 1 - Mirinae. Analysis is based on preceding character Discussion. The characters on the cladogram are: (1) Female genitalia with complex posterior wall; inter-ramal sclerite a single plate; medial process, dorsal structure and inter-ramal lobes present. (2) Metatarsus with first segment subequal or longer than the combined length of second and third segments. (3) Male genitalia with ductus seminis thickened and sometimes hourglass shaped, and secondary gonopore with wide aperture and distinct coil-like margin. (4) Lateral lobes present on posterior wall in female. Autapomorphies for each tribe are presented in the following tribal Discussions.



Cladogram 1 Phylogeny of Mirine Tribes

prominent head, transversely constricted pronotum with broad and long anterior lobe, apically incrassate second antennal segment, and spinose scutellum. Reuter (1910a) synonymized the Herdoniaria (in part) with his Mecistoscelaria, Capsaria, Cremnocephalaria, and Genera incerta. Knight (1923) recognized Myrmecoraria Reuter, 1907 [Reuter previously (1910a) synonymized Myrmecoraria with Capsaria] as the tribe Myrmecorini and placed Paraxenetus Reuter and Barberiella Poppius in it. Carvalho (1952c) grouped the genera Herdonius Stal, Xenetus Distant, Zacinthus Distant, and Zosippus Distant, originally placed in Herdoniaria, and the two genera of Myrmecoraria to form a reconstituted Herdoniini. Carvalho (1952c) also placed 12 other genera in this tribe. In a long series of publications between 1973 and 1983 Carvalho revised the New World genera placed in Herdoniini, and provided a comprehensive key for their identification (Carvalho, 1973).

Carvalho (1952c) used the following characters to define the tribe: (1) myrmecomorphic habitus including brachypterous or macropterous species with the first segment of the metatarsus shorter than the combined length of segment two and three; (2) hemelytra with distinctive dorsal color pattern. (3) Abdomen constricted at base; (4) pronotal collar a depressed line; (5) lateral margin of pronotum rounded, without carina; and (6) eye on middle of side of head and not prominent.

These characteristics are expressions of the myrmecomorphic habitus, and as such are apomorphic to the Mirinae ground plan. However, the antlike features present are not identical for each

generic group.

REVISED DIAGNOSIS.

Genera placed in this tribe are recognized by the following synapomorphies: (1) strongly produced gular portion of head; (2) eye forming lateral contour of head; (3) smooth, shagreened dorsal surface; (4) metaepisternal scent efferent system sometimes narrow with small but prominent ostiolar disk (fig. 4C); and (5) vesica of male genitalia strongly sclerotized, with variously modified distal portion (usually recurved).

DISCUSSION.

Head structure of this tribe is of three types, each characteristic of a generic group (see following group Discussions). The pronotum is highly modified in keeping with the myrmecomorphic habitus. The lateral margin is always broadly rounded. The disk of the pronotum is divided into anterior and posterior lobes, the calli are usually absent, and the disk is sometimes rounded (fig. 4B). The coxal cleft is small, not extending under a lateral carina, and the proepisternum is usually small. The collar is usually modified, either flattened with an obscure posterior sulcus as in the Mexicomiris and Paraxenetus groups, or small and recessed under the anterior lip of the pronotal disk as in the Xenetus group. In the Xenetus group the lateral margin of the collar is visible as a small bead surrounding the head capsule laterally and ventrally.

GENERIC GROUPS.

1. XENETUS GROUP. (1) Sclerotized rings with large and spinose

dorsomedial extensions (fig. 6B). (2) Posterior wall with strongly spinose inter-ramal sclerites (fig. 6E). (3) Vesica strongly sclerotized and characteristically sharply recurved medially (fig. 5A). (4) Trichobothria with large well developed trichoma (fig. 4E). (5) Abdomen constricted basally. (6) Head structure: the genera of this group may be placed in two subgroups by head structure. Those close to Herdonius have the following features: head with neck; jugum flattened, with lateral margin strongly carinate, protruding laterally, and obscuring jugal-loral suture; carinate margin of jugum continued dorsad and usually reaching anteroventral margin of eye; gular area large and buccular flange large and flaplike; and no longitudinal sulcus. Genera close to Xenetus have the following features: head structure with lorum strongly carinate; head slightly flattened with smaller gular region than Herdonius; frons usually with longitudinal sulcus; and antennal fossa located in ventral half of eye in lateral view.

This group includes the type genus of the tribe Herdonius Stal, 1860 and ten other Neotropical genera: Adxenetus Carvalho and Ferreira, 1973; Allommatisca Carvalho and Ferreira, 1973; Allommatus Reuter, 1907; Barberiella Poppius, 1914; Formicomiris Carvalho and Schaffner, 1975; Haarupia Poppius, 1921; Lepidoxenetus Poppius, 1921; Myrmecomiris Maldonado Capriles, 1976; Xenetus Distant, 1883, and Zacynthus Distant, 1884.

Seven other herdoniine genera may belong to the Xenetus group, but because specimens or illustrations of the male vesicae were not available for study it has not been possible to positively place

them. These genera are: Gearana Carvalho and Ferreira, 1973; Guarania Carvalho and China, 1951; Herdonisca Carvalho and Ferreira, 1973; Veramiris Carvalho, 1974; Xenetopsis Poppius, 1921; Zelotocoris Poppius, 1921; and Zosippus Distant, 1883.

2. MEXICOMIRIS GROUP. (1) Parempodia sometimes narrow and straplike (fig. 4H). (2) Posterior wall with distinctive lateral lobes (fig. 6F). (3) Dorsal wall of genital chamber well sclerotized and continuous with lateral lobes of posterior wall (fig. 6C). (4) Vesica partially sclerotized or membranous sometimes with strong sclerotized processes (fig. 5B). (5) Trichobothria without trichoma (fig. 2F). (6) Abdomen usually constricted basally. (7) Head structure close to the plesiomorphic condition but with the following modifications: outline of eye in anterior view closely follows curvature of head; antennal fossa located either ventrad of eye or within ventral portion of eye in lateral view; gular portion of head large and strongly produced ventrad; buccular flange merging smoothly with gular area; and frons with longitudinal sulcus absent.

This group includes the following six genera: Amapamiris Carvalho, 1980; Dacerla Bergroth, 1897; Mexicomiris Carvalho and Schaffner, 1973; Nuevoleonia Schaffner and Carvalho, 1985; Paradacerla Carvalho and Usinger, 1957; Totolapanus Carvalho and Schaffner, 1975. I also include in the Mexicomiris group two genera, Closterocoris Van Duzee, 1890 and Cyphopelta Uhler, 1910, that were previously placed in the Mirini. These sister genera are united by narrow hairlike parempodia, and differ from the other

genera in this group by possessing wider evaporative areas and a basally broad abdomen. Species of the Mexicomiris group are distributed from mountainous western North America to tropical Mexico with one genus, Amapamiris, from northeast Brazil.

3. PARAXENETUS GROUP. (1) Sclerotized rings reduced and tilted anteriorly (fig. 6A). (2) Posterior wall with dorsal structure large and strongly spinose (fig. 6D). (3) Vesica membranous with distinctive terminal spiculi [lobal sclerites]. (4) Trichobothria with well developed trichoma (fig. 4D). (5) Head structure with these modifications (fig. 4A): antennal fossa located medially within margins of eye in lateral view; anteocular portion of head foreshortened with only slight, convex contoured surface of lorum, jugum and clypeus (head not as flattened as the Guianeius group of the Hyalopeplini); gular region small; buccular flange not smoothly merging with gular region and flange usually reaching posteroventral margin of head; eye large protruding laterad of head curvature in anterior view; and frons with longitudinal sulcus present.

This group includes Paraxenetes Reuter, 1907, which has an essentially Neotropical distribution with the range of one species, guttulatus (Uhler), having a range extending as far northeast as Ontario, Canada. Proxenetes Carvalho and Ferreira, 1973, may also belong to this group.

TAXA REMOVED FROM TRIBE.

The remainder of the genera included in the Herdoniini by Carvalho (1973) cannot be accurately placed in one of the previous generic groups or may belong instead to other mirid higher taxa.

The genus Acegima Poppius, 1921, as noted by Carvalho and Felipe (1983), shares a similar facies with genera of the orthotyline tribe Ceratocapsini Knight, 1923. The only character that belies a relationship to the Mirinae are the apically divergent parempodia, as the vesica is ceratocapsine (see Carvalho, 1973:111, 112, figs. 3, 8). It is my opinion, after examining the holotype of Acegima guiana Carvalho, retained at the United States National Museum, that the correct placement of Acegima is within the Ceratocapsini.

Wagner (1957) removed Laurinia Reuter, 1884 from the Herdoniini and related it to Globiceps Le Peletier and Serville, 1825 in the Orthotylini because of the apically convergent paraempodia and orthotyline male genitalia. Schuh (1976) placed Laurinia in the orthotyline tribe Nichomachini Schuh, 1976 on the basis of the unique structure of both male and female genitalic characters.

Schuh (1974) removed Heidemanniella Poppius, 1914 from the Hallodapini [Phylinae], after examining the female holotype of H. scutellaris Poppius, and transferred the genus to the Mirinae [Herdoniini] citing a relationship with Cyphopelta and Closterocoris. I have reexamined the same specimen from the United States National Museum, and verified that the paraempodia are setiform, invalidating the placement of Heidemanniella in the Mirinae; it is instead a phylinae.

The genera Camponotidea Reuter, 1879, Sphinctothorax Stal, 1853, Sulcatylus Akingbohunge, 1975, and Xenetomorpha Poppius, 1912 are all distributed in the Old World with the first genus located in Mediterranean Europe and Asia Minor and the last three genera from

east and south Africa. The distribution of these four taxa brings into serious question their assignment to the Herdoniini; unfortunately, there has been no opportunity to examine any of their included species.

Hyalopeplini Carvalho, 1951

Figures 7A-G; 8A-C; 12G-H

The family-group name Hyalopeplini was first used by Carvalho (1951c), who designated Hyalopeplus Stal, 1870 the type genus (type species Capsus vitripennis Stal). Genera formerly contained in Mirini were transferred to Hyalopeplini by Carvalho (1951c) based on the presence of glassy and transparent hemelytra, with or without incomplete veins, allowing the membranous wings and abdomen to be visible in dorsal view. Carvalho (1952c, 1959) included 16 genera in the tribe. Odhiambo (1960) found the characterization of the tribe to be unsatisfactory, citing a gradation of transparency in the hemelytra, and lack of distinctive male genitalic structure in species of Pleurochilophorus Reuter from east Africa. Odhiambo (1960) stated that genera placed in the Hyalopeplini would be more appropriately contained in the Mirini. Carvalho and Gross (1979), who revised the Hyalopeplini of the World, recognized 15 included genera, described four new genera, synonymized two genera, and removed Pleurochilophorus, as well as Iridopeplus Bergroth and Moroça Poppius to the Mirini.

REVISED DIAGNOSIS.

The present examination of two-thirds of the included genera indicates that the Hyalopeplini contains three generic groups which are united by the transparent forewing, and the following characters: (1) metaepisternal scent efferent system with evaporative surface very large reaching dorsad of ventral margin of mesepimeron, posterior portion very large (figs. 7B, C); (2) pronotal collar sometimes flattened; (3) dorsal surface of pronotum usually with concentric or transverse rugosity (figs. 7A, D).

DISCUSSION.

Glassy and transparent hemelytra are also present on representative genera throughout the Miridae (e.g., Mystilus [Mecistoscelini]; see figure 7F for scanning micrograph at 10,000X of hyaline corium). The hyalopepline pronotum has flattened or rounded collars with distinct posterior sutures dorsally and laterally. The lateral margin of the pronotum is broadly rounded, the coxal cleft is small and not intruding under the lateral margin, and sometimes the disk (Onomaus group) is divided into anterior and posterior lobes. All hyalopeplines have the antennal fossa appearing to be placed medially within the margins of the eye in lateral view, and the vertex is ecarinate. Genera of the Guianeius and Onomaus groups display an apomorphic head structure as compared to the Hyalopeplus group (see below).

GENERIC GROUPS.

1. HYALOPEPLUS GROUP. (1) Dorsal surface structure of pronotum and scutellum entirely or partially transversely rugose (fig. 7A).

(2) Claval suture deeply and confluent punctate. (3) Posterior wall with relatively simple inter-ramal sclerite. (4) Inter-ramal lobes with surface of non-overlapping fringed plates (fig. 8A). (5) Head structure does not diverge greatly from the plesiomorphic condition (see p. 16). Hyalopeplus Stal and Isabel Kirkaldy have the anterior portion of the head including the clypeus and frons sloping anteroventrad, a longitudinal sulcus sometimes present, eye does not reach the ventral margin of head and is not contiguous with the pronotal collar. The anterior portion of the head is slightly shorter in Hyalopeplinus Carvalho and Gross. All the genera in this group have a short buccular flange completely surrounding the buccal cavity.

This group contains nine closely related genera with an Indo-Pacific distribution extending from the Marquesas Islands to tropical West Africa. The included genera are: Corizidolon Reuter, 1907; Guisardus Distant, 1904 [= Euhyalopeplus Hsiao, 1944, synonymy by Carvalho and Gross (1979)]; Hyalopeplinus Carvalho and Gross, 1979; Hyalopeploides Poppius, 1912; Hyalopeplus Stal, 1870; Hyaloplictus Carvalho and Gross, 1979; Isabel Kirkaldy, 1902; Nasutimiris Odhiambo, 1960; and Otuchis Odhiambo, 1968.

2. GUIANEIUS GROUP. (1) Dorsal surface structure of pronotum and scutellum deeply rugulose or deeply and coarsely punctate (fig. 7D). (2) Posterior wall distinctive, without dorsal structure; medial process reduced dorsally; inter-ramal sclerite very narrow and tapered laterally; inter-ramal lobe narrow (fig. 8B). (3) Head structure with these features: greatly foreshortened antecular

region; dorsal portion of clypeus, juga and lora flattened; buccular flange short and complete; eye removed from pronotum and not reaching ventral margin of head; and frons without longitudinal sulcus.

This group contains six genera distributed in mainland Asia, Southeast Asia, and the western Pacific. The included genera are: Austrohyaloma Carvalho and Gross, 1979; Chrysorrhaniis Kirkaldy, 1902 [Macrolonidea Hsiao, 1944, synonym by Carvalho and Gross (1979)]; Guianerius Distant, 1903; Guisardinus Carvalho and Gross 1979; Kosmiomiris Kirkaldy, 1902; and Macrolonius Stal, 1870.

3. ONOMAUS GROUP. (1) Dorsal surface structure of pronotum and scutellum smooth. (2) Pronotum constricted anteriorly, with anterior lobe consisting almost entirely of enlarged calli. (3) Suture between mesoscutum and scutellum greatly reduced and with a pair of distinct and deep fovea. (4) Posterior wall extremely reduced and membranous -- if inter-ramal sclerite present, then with tripartite construction, dorsal structure open anteriorly and large, inter-ramal lobe wide, and unique strongly serrate sclerite ventrad of inter-ramal sclerite (fig. 8C). (5) Head structure with these attributes: triangular in anterior view; anteocular region narrowed and protruding anteroventrally; buccular flange short and complete; eye not reaching ventral margin of head; and frons with longitudinal sulcus present.

This group contains two genera, Onomaus Distant, 1904, and Rambea Poppius, 1912, which are distributed in Southeast Asia and the western Pacific.

Mecistoscelini Reuter, 1910

Figures 13A-F; 14A-F; 15A-E; 16A-K

Distant (1904) placed Mecistoscelis Reuter and Mystilus Distant in his division Herdoniaria. Kirkaldy (1906) placed Mystilus in the Capsini and Mecistoscelis in the Mirini. The family-group name Mecistoscelini was first used by Reuter (1910a), who designated Mecistoscelis Reuter, 1891 as the type of the nominal taxon Mecistoscelaria. This tribe was proposed to contain Mecistoscelis and Mystilus, and was diagnosed by Reuter as having the following features: first segment of metatarsus as long as combined length of second and third segments; long, delicate antennae and legs; first antennal segment as long as combined length of head and pronotum; and anterior margin of pronotum with complete collar. Lansbury (1963) revised the tribe, described two new species, and provided a key to the species. The genus Erimiris Miyamoto and Hasegawa was removed from the Mirini by Kerzhner (1978) and placed in the Mecistoscelini based on its similarity to the other two genera. A catalog to the original descriptions and the post-1959 literature of the species included herein is presented below.

REVISED DIAGNOSIS.

Analysis of the diagnostic characters of the tribe corroborates the notion that the three genera form a monophyletic group. The following characters diagnose the tribe: (1) longitudinal sulcus of head with deep fovea terminating the posterior end (figs. 13D-F); (2) dorsal posterior corner of juga with prominent broad mound or blunt tubercle located ventrad of antennal insertion; (3)

interdistal region of metafemora with deep grooves; and (4) sclerotized rings sometimes situated caudad of usual mirinae position on ramal sclerites (fig. 16F).

DISCUSSION.

The head structure is uniform with the following attributes (figs. 13D-F; 14A-C): eye large, protruding, separated from pronotal margin and located on dorsal margin of head; antennal fossa located medially within margins of eye in lateral view; dorsal portion of jugum with blunt or pointed tubercle ventrad of antennal fossa; frons with distinctive longitudinal sulcus; vertex ecarinate; buccular flange short and complete; anterior portion of head not greatly produced; and hypognathous.

The pronotal structure is unique with the following characteristics (figs. 13D-F; 14A-C): (1) collar enlarged and rounded with posterior suture obsolete medially between calli; (2) no carinate lateral margin of pronotum; and (3) posterior suture of collar obscure laterally and ventrally.

The pulvilli of Mecistoscelis (fig. 14D) and Mystilus (fig. 14E) is minute while Erimiris (fig. 14F) possesses typical mirine pulvilli.

The relationship between the mirines possessing a long first metatarsal segment was discussed in the preceding Character Discussion. The mecistosceline pronotal collar described as being complete by Carvalho (1952c) is correctly diagnosed as rounded and with posterior suture obsolete medially. The lateral margins of the posterior suture of the collar are delimited by the anterior

junction of the anterior margin of the calli and pronotal surface (figs. 14A-C). The first segment of the antenna is subequal to the combined length of the head and pronotum in Erimiris.

This tribe has a classic Indo-West Pacific distribution pattern, with Erimiris found as far north as Japan and southern Sakalin Island of the Soviet Union.

INCLUDED SPECIES.

ERIMIRIS Miyamoto and Hasegawa

Erimiris Miyamoto and Hasegawa, 1967:68 (type species by monotypy tenuicoris Miyamoto and Hasegawa).

tenuicoris Miyamoto and Hasegawa

Erimiris tenuicoris Miyamoto and Hasegawa, 1967:68, figs. 1-8, pl. 3. -- Kerzhner, 1978:43 (new tribal placement).

Distribution: Japan and Sakhalin Island.

MECISTOSCELIS Reuter

Mecistoscelis Reuter, 1891a:131 (type species by monotypy scirtetoides Reuter).

nigrosignatus Poppius

Mecistoscelis nigrosignatus Poppius, 1911b:200. -- Carvalho and Da Silva Alfonso, 1977:822, figs. 44-47 (description, male genitalia).

Distribution: New Guinea.

phillipinensis Lansbury

Mecistoscelis phillipinensis Lansbury, 1963:6, figs. 7, 8, 16.

Distribution: Philippines.

scirtetoides Reuter

Mecistoscelis scirtetoides Reuter, 1891a:132, fig. 269. -- Carvalho, 1956:71 (distribution).

Distribution: Indo-Pacific: Indonesian, Taiwan, and southern India.

MYSTILUS Distant

Mystilus Distant, 1904:420 (type species by monotypy priamus Distant).

antrammi Distant

Mystilus antrammi Distant, 1909:443.

Distribution: India.

carinatus Lansbury

Mystilus carinatus Lansbury, 1963:10, figs. 1, 2, 17.
Distribution: Southern India.

manni Distant

Mystilus manni Distant, 1909:444.
Distribution: India.

priamus Distant

Mystilus priamus Distant, 1904:420, fig. 268.
Distribution: Indochina and Philipines.

Mirini Hahn, 1831

Figures 9A-G; 12I

HORISTARIA VAN DUZEE [=HORISTINI V. D., 1916]. This tribal name was first used by Van Duzee (1916) as a replacement name for the division Restheniaria Reuter (1905). Van Duzee believed that Restheniaria Reuter was a synonym of Lopidae Douglas and Scott (1865), with its type genus Lopus auct. (not Hahn, 1831). Van Duzee recognized that Lopus auct. was the junior synonym of the genus Horistus Fieber, 1861 and replaced the name. Carvalho (1952c, after China, 1943) established that Horistus was also the junior synonym of the genus Capsodes Dahlbom, 1851, and more importantly that Capsodes did not share the diagnostic characters or Neotropical distribution of Reuter's Restheniaria type genus Resthenia Spinola, 1837. Wagner (1952c) agreed with Carvalho and established the tribe Capsodini for the two Palearctic genera Capsodes and Horvathia Reuter, 1891. Carvalho (1952c) maintained Horistini Van Duzee at the tribal level. Wagner (1971) considered this taxon as a generic group with the name Horistaria.

The definitive characters of the group (Wagner, 1952c, 1973) are

as follows: (1) eye prominent and not extending ventrally beyond the middle of the head; and (2) pronotal collar strongly convex.

The head structure is similar to the Resthenini with these features: small eye situated on the dorsal portion of head; dorsal margin of antennal fossa practically even with ventral margin of eye in lateral view; frons gently rounded but not protruding. This head structure is considered plesiomorphic.

I investigated some of the species of Capsodes and Horvathia and determined that there were no characters to substantiate a close relationship between these two genera and the Resthenini. However, the definitive characters of the two genera were found in many resthenine genera, but the features are also widespread throughout mirine and therefore are not synapomorphic. I concur with Wagner's (1971) assessment that the Horistaria is a generic group of Mirini.

Resthenini Reuter, 1905

Figures 10A, B, D-F; 11A-D; 12J, K

The family-group name Resthenini was first used by Reuter (1905), who designated Resthenia Spinola, 1837 as the type genus of the nominal taxon Restheniaria. Douglas and Scott (1865) erected the family Lopidae for the genus Lopus of other authors, not Hahn 1831 (= Horistus Fieber 1860). Reuter (1875b) lowered this family-group taxon to the division level (tribe) as Loparia. Reuter (1905) synonymized Lopus with Capsodes Dahlbom, 1851 (type species Cimex gothicus Linnaeus, 1758, designated by Stichel [1935]).

Loparia was synonymized with Restheniaria by Reuter (1910a) who transferred Capsodes to the latter tribe. Reuter (1910a) defined Restheniaria to include 15 mirine genera with calli and sulcus posteriad of calli not reaching lateral margins of pronotum, and eye occupying dorsal half of head and separated from pronotal margin. Van Duzee (1916) synonymized Restheniaria and Lopidae under the family-group name Horistini. Carvalho (1952c) removed Capsodes from the Horistini, reinstating the Resthenini. The tribe as diagnosed by Carvalho contained 14 genera distributed in the Neotropical and Nearctic regions. Carvalho and Fontes (1971) constructed a key to the 17 genera forming the tribe at that time.

REVISED DIAGNOSIS.

The following characters define the tribe: (1) metaepisternal scent gland efferent system with dorsal margin of evaporative area situated below ventral margin of mesepimeron (figs. 10A, B, D); (2) pronotal collar on anterior portion of pronotum strongly convex, rounded, clearly visible laterally, with deep posterior suture; (3) surface of body dull black with red, orange, yellow or green patterning; and (4) cuticular microstructure with pillar shaped structures (see previous Character Discussion).

DISCUSSION.

Examination of 14 of the 17 included genera of this tribe indicates that all of the diagnostic characters are synapomorphic, although there is some variability in the expression of these characters in the constituent species (see Character Discussion of metaepisternal scent gland efferent system). No generic groups are

recognized.

Head structure is fairly uniform, with most of the structural variation encountered among genera the result of eye size and placement, and extent of roundness and protrusion of the frons. In many resthenine genera the eye is small, narrowly joined to, and placed on the dorsal portion of the head; the ventral margin of the antennal fossa is located ventrad of the ventral margin of the eye in lateral view, the frons is sometimes slightly swollen as in Resthenia Spinola or strongly rounded as in Oncerometopus Reuter. The longitudinal sulcus of the frons is absent and the vertex is ecarinate in all Resthenini.

The pronotum is robust, with a rounded collar, possessing a posterior sulcus even with or in line with the coxal cleft in lateral view. The collar sometimes projects dorsad of the disk of the pronotum, the lateral portion usually merges broadly with the proepisternum. Calli are present. Usually the lateral margin of the pronotum is smoothly curved. Morphology divergent from these features and considered here as apomorphic are found in these genera: Mimoncopeltus Kirkaldy, with large explanate carina; collar of Resthenia Spinola, flat, without a impressed posterior sulcus; collar of Mebelia Kirkaldy, very strongly convex and much wider medially than laterally.

The Resthenini has a New World distribution and includes the following genera: Callichila Reuter, 1876; Callichillela Carvalho, 1954; Chiloxionotus Reuter, 1907; Eurylomata Reuter, 1909; Euryscystophora Reuter, 1909; Heteroscytus Reuter, 1909; Kamaiurana

Carvalho, 1952; Lampsophorus Reuter, 1909; Mabelia Kirkaldy, 1903; Mimoncopeltus Kirkaldy, 1906; Nanniresthenia Carvalho, 1961; Oncerometopus Reuter, 1876; Opistheurista Carvalho, 1959; Platytyliscus Carvalho, 1976; Platytyloides Carvalho and Fontes, 1971; Platytylus Fieber, 1858; Prepops Reuter, 1905; Prepopsella Carvalho, 1974; Prepopsoides Carvalho and Schaffner, 1974; Pygophorisca Carvalho and Wallerstein, 1978; Resthenia Spinola, 1837; Restheniella Carvalho, 1974; and Zapotecoris Carvalho and Schaffner, 1974.

Stenoparedra Reuter, 1852, even though it has a strongly convex pronotal collar, does not possess the three other diagnostic characters of the Resthenini and is therefore transferred to the Mirini.

Stenodemini China, 1943

Figures 17A-F -- 60A-L

The family-group name Stenodemini was first used by China (1943), who designated Stenodema Laporte, 1832, as the type genus. The essence of the group was established by Amyot and Serville (1843) for the nominal group Mirides which contained three species of Miris Fallen (the species are now placed in Stenodema and Notostira). Reuter (1875b) defined the division Miraria which included the European stenodemine genera, [Stenodema, as well as, Acetropis, Leptopterna, Megaloceroea, Notostira, Teratocoris, and Trigonotylus all established by Fieber (1858)].

The division Mirina (Reuter, 1910a) contained 19 genera, including all the stenodemine genera described between 1875 and 1910 (13 currently recognized genera) and the orthotyline Austromiris Kirkaldy and Nesiomiris Kirkaldy. Carvalho (1951c, 1952c) added five more genera to the Stenodemini making a total of 26 genera in his catalog of the Miridae of the World (Carvalho, 1959).

Subsequent to Carvalho's catalog (1959) six mostly monotypic genera were removed from the tribe and placed in the Orthotyline, Bryocorinae or Mirini (see Genera Removed from Stenodemini), and six new genera were placed in the Stenodemini (Chaetedus Eyles, 1975; Chaetofoveolocatoris Knight, 1968; Litomiris Slater, 1956; Neotropicomiris Carvalho and Fontes, 1969; Penacoris Carvalho and Rosas, 1966 [-Stenodema]; and Trigonotyliscus Carvalho, 1975). Two new genera, Autumnimiris and Caracoris are described herein. Practically all the genera have received revisional study on a regional or worldwide basis (the most recent or useful of these studies are cited in the systematic section of the included species).

Mimoceps, Pithanus, and Myrmecoris were placed in the Pithanini (Carvalho, 1952c) because of their myrmecomorphic appearance. However, each of these genera have different morphological approaches to myrmecomorphy and represent three independent expressions of an evolutionary grade. The Pithanini are here synonymized with the Stenodemini on the basis of the following synapomorphic characters: (1) metatarsi robust or thickened with first segment longer than the combined length of the second and

third, and with second segment long and barrelshaped; and (2) vesica of male genitalia with ductus seminis narrow, or very narrow, widest at base, and narrowing slightly toward apex.

REVISED DIAGNOSIS.

(1) Body form elongate, narrow, habitus produced by porrect head, anteriorly produced proepisternum, parallel-sided pronotum and hemelytra. (2) Lateral margin of pronotum usually carinate. (3) Coxal cleft always bridged by lateral margin of pronotum. (4) Pronotal collar flattened and with obsolete posterior margin medially. (5) Frons usually with longitudinal sulcus. (6) Male genitalia with narrow ductus and small secondary gonopore. (7) Female genitalia without lateral lobes.

DISCUSSION.

In the past genera were placed in the tribes Pithanini and Stenodemini because of the long first metatarsal segment and were then separated on the basis of habitus (Carvalho, 1952c) -- pithanines were considered myrmecomorphic and stenodemines were considered elongate and narrow. However, head structure is not congruent with a tribal dichotomy based on habitus. Four head types can be recognized in the revised Stenodemini. Three of the four head groups are discussed below within corresponding generic group diagnosis. The most common stenodemine head type has the following features: porrect with subrectangular shape; facial angle blunt; frons with longitudinal sulcus (except for Acetropis and Leptopterna); vertex ecarinate; antennal fossa located medially within margins of eye in lateral view; frons with variously produced

anterior margin, ranging from faintly produced in Autumnimiris to strongly produced in Notostira; eye broadly joined to head [except in Acetropis, Ebutius and Leptopterna with narrowly joined eye]; antecular portion of head long; antennal fossa pedunculate; gular region present, buccular flange short or moderate in length, incomplete, declivous to parallel carina not reaching posterior margin of head; and clypeus variously produced anteriorly.

The pronotal structure of the Stenodemini is unique from that of all other mirines. However, the typical structure is not completely manifested in all genera included in the tribe. The following attributes are basic to the stenodemine pronotal ground plan: (1) collar flattened; (2) posterior suture of collar obsolete medially or obsolete across entire dorsal, lateral, and ventral surfaces of pronotum; (3) lateral margin of pronotum carinate from anterior to posterior margins of pronotum; if lateral margins are not entirely carinate, then carina at least present dorsad (bridged) of coxal cleft and proepisternum; (4) anterior margin of lateral carina usually attaining flattened lateral collar area, or sometimes attaining anterior margin of pronotum anterior of flattened collar area; (5) coxal cleft extended under lateral carinate margin; (6) proepisternum enlarged anteriorly and usually produced; and (7) coxal cleft extending as incisure around dorsal margin of proepisternum. Some species of Collaria (e.g., oleosa Distant) have deep lateral portions of the posterior suture of the collar, but the collar is flattened and the lateral carina is bridged dorsad of the coxal cleft.

Occasionally a species of Mirini displays pronotal structure similar to the stenodemine type. For example, Phytocoris roseipennis Knight, found in bunch grasses of southwest North America, has a pronotal structure reminiscent of the stenodemine type, but in all other characters is otherwise a member of the Mirini.

The pronotal structure of the slightly myrmecomorphic genera of the Stenodemini, Mimoceps, Pithanus, and Myrmecoris diverges somewhat from that of the other stenodemines. These genera lack a carinate lateral margin, but the coxal incisure is deep, delimiting the dorsal portion of the proepisternum. The posterior suture of the collar of Mimoceps is complete dorsally, but does not continue around the lateral margin of the pronotum, and the collar is obscure and flattened in lateral view. The collar is never beadlike ventrad of the lip of the anterior margin of the pronotum as in some genera of Herdoniini.

CLADISTIC ANALYSIS.

The character analysis of the data presented in Table 2 and Appendix B, reveals a cladogram of 65 steps (fig. 2). The Pithanus Group (component 2) includes Actitocoris, Pithanus, and Myrmecoris and is supported by four synapomorphies. Mimoceps and Teratocoris form the Mimoceps Group (component 6), and is recognized by seven synapomorphies. The Leptopterna Group with three synapomorphies is the sister group of the Mimoceps group, together both groups form component 5. The Collaria Group is recognized by three synapomorphies. This group is part of a trichotomy at component 7,

TABLE 2

Description of Characters for Phylogenetic
Analysis of Stenodemine Genera

Body Form

1. 0 Habitus ovoid, rounded, or rectangular in dorsal and lateral view.
1 Habitus narrow, elongated or rectangular in dorsal and lateral view.

Head Structure

2. 0 Hypognathous, ventral margin of clypeus ventrad of posteroventral margin of head in lateral view, anteocular and antefossal portion of head short.
1 Porrect, ventral margin of clypeus even with posteroventral margin of head in lateral view, anteocular and antefossal portion of head long.
3. 0 Frons without medial longitudinal sulcus, frons either gently curved or shallowly concave.
1 Frons with medial longitudinal sulcus, reaching from base of vertex to even with middle of eyes in dorsal view.
4. 0 Eyes broadly joined to head in dorsal view.
1 Eyes narrowly joined to head in dorsal view.
5. 0 Eyes located near posterior margin of head, posteocular portion of head short, eyes contiguous or subcontiguous to pronotal collar.
1 Eyes located in middle of head, posteocular portion of head long, eyes separated from pronotal collar by distance equal to, or greater than, dorsal width of eye.

Pretarsal Structure

6. 0 Pulvilli present, ranging in size from minute to large.
1 Pulvilli obsolete (absent under SEM examination).

Metafemoral Trichobothrial Structure

7. 0 At least one trichoma strongly developed, with many concentric circles of diffusely orientated spines surrounding trichs.
1 All of trichoma weakly developed, with only one small circle of of diffusely orientated spines surrounding trichs.

Dorsal Surface Structure

8. 0 Pronotum, and sometimes head, scutellum, and hemelytra distinctly and deeply punctate.
 1 Dorsal surface either smooth, rugose or only finely, shallowly or obscurely punctate.
9. 0 Hemelytra with embolium, corium and clavus concolorous.
 1 Embolium contrasting in color with corium and clavus, embolium usually lighter than remainder of hemelytra.

Sexual Dimorphism

10. 0 Hemelytra of both sexes always macropterous, sometimes females submacropterous.
 1 Females and sometimes males strongly brachypterous.

Structure of Lateral Margin of Pronotum

11. 0 Lateral margin rounded, if margin carinate then only carinate dorsad of proepisternum and diminished before anterior margin of pronotum.
 * 1 Lateral margin carinate, usually reaching both anterior and posterior margins of pronotum and strongly bridged dorsad of coxal cleft; always bridged dorsad of rounded and produced proepisternum.

Structure of Pronotal Collar

12. 0 Posterior suture clearly impressed; reaching, and continuing around lateral margin of pronotum forming anterior margin of proepisternum.
 * 1 Posterior suture either obsolete, or present only at anterolateral margin merging with anterolateral foveae; terminating dorsad of lateral carinate margin of pronotum; posterior suture never forming anterior margin of proepisternum.

Structure of Metaepisternal Scent Efferent System

13. 0 Ostiolar channel reaching lateral surface of metaepisternum; apex present (shape variable); peritremal disk present (size variable); evaporative surface large, triangular.
 1a Ostiolar channel short, terminating on ventralmost section of metaepisternum; peritremal disk slightly projecting laterad of evaporative surface or merging with surface; surface narrow, with weakly developed anterodorsad and posterior sections.
 * 1b Ostiolar channel extremely reduced, recessed between coxae, attaining ventralmost portion of metaepisternum; peritremal disk obsolete; evaporative surface obsolete.

Male Genitalia

14. !0 Ductus seminis narrow throughout; widest basally tapering to narrow apex; not hourglass shaped in lateral view.
 1 Ductus seminis wide throughout; widest basally slightly narrowed distally; usually hourglass shaped.
15. 0 Secondary gonopore small; aperture complete; width of aperture approximately equal to diameter of ductus seminis.
 * 1a Aperture of secondary gonopore with notched posterodorsal margin.
 1aa Aperture of secondary gonopore with notched posterodorsal margin; right side with flattened sclerite, or sclerotized process present.
 1b Aperture of secondary gonopore complete with ventral portion thickened and bent ventrally.
 1bb Aperture of secondary gonopore orientated posteriorly; left side of aperture with flattened, funnel shaped process.
 * 1c Aperture of secondary gonopore complete with ventral portion thickened and bent ventrally; aperture large and laterally compressed.
 * 1d Aperture of secondary gonopore orientated posterodorsally; left side of aperture with long spinelike process.
 1e Aperture of secondary gonopore with spinose sclerite attached to ventral portion.
16. 0 Ductus seminis and secondary gonopore orientated to left side of phallobase.
 1 Ductus seminis and secondary gonopore orientated to middle of phallobase.
17. 0 Genital capsule with posteroventral portion of aperture usually not differentiated, or with at most broadly expanded margin.
 1 Genital capsule with posteroventral margin of aperture with large spatulate process.
18. 0 Genital capsule without tubercles dorsad of either paramere insertion.
 1 Genital capsule with tubercles present dorsad of both paramere insertions, or if with only one tubercle then tubercle present dorsad of left paramere.
19. !0 Surface of left paramere without tubercles or spines.
 1 Surface of left paramere with tubercles or spines.

20. 0 Left paramere with arm short; angle broad; shaft short and perpendicular to sensory lobe area; apex truncate.
 1 Left paramere with arm long; angle sharp; shaft long and bent basad to sensory lobe area; apex needlelike.
21. 0 Right paramere with distal end tapered or evenly expanded, with apical spine.
 1 Right paramere with distal end bulbous, with small preapical spine.
22. 0 Distal end of right paramere with width equal to diameter of apical end, or tapered to narrow apex; with small apical spine.
 1 Distal end of right paramere expanded and with large, or very large apical spine.
23. 0 Left paramere with small, rounded sensory lobe.
 1 Left paramere with large, quadrate or rectangular sensory lobe.
24. 0 Left paramere with sensory lobe undifferentiated; arm of moderate length; angle broad; shaft short with diameter subequal to diameter of arm; distal portion of shaft straight, gradually tapered to truncated apex.
 * 1 Left paramere with sensory lobe broadly produced and rounded; arm short; angle small or acute; shaft long with diameter less than diameter of arm; distal portion of shaft curved, gradually tapered to pointed apex.
25. 0 Membrane of vesica without lobal sclerites.
 1 Vesica with lobal sclerites on periphery of membrane.
26. 0 Membrane of vesica without long basal processes.
 1a Membrane of vesica with two long basal processes; joined at base.
 1b Membrane of vesica with three long basal processes; joined at base.
27. 0 Membrane without ribbonlike strap.
 1a Membrane of vesica with large ribbonlike strap attached to back of base of ductus seminis; strap extends dorsally and supports a portion of the membrane.
 1b Membrane of vesica with ribbonlike strap attached to back of base of ductus seminis; strap very short not extending dorsad beyond middle of ductus seminis.
 1c Membrane of vesica with ribbonlike strap attached to back of base of ductus seminis; strap extends dorsad of membrane and terminates as sclerotized process.

- 1d Membrane of vesica with ribbonlike strap attached to back of base of ductus seminis; strap extends dorsad of membrane curving around base of right sclerotized process appearing socketlike.
- 1dd Membrane of vesica with wide ribbonlike strap attached to back of base of ductus seminis; strap extends dorsad of membrane curving around bases of left and right sclerotized processes producing socketlike structure.
- * 1e Membrane of vesica with ribbonlike strap attached to back of base of ductus seminis; strap sometimes extended dorsad terminating as archlike structure within membrane.
- 1f Membrane of vesica with ribbonlike strap attached to back of base of ductus seminis; wrapped around base of ductus seminis anteriorly.
- 28. 0 Membrane of moderate or large size, larger than sclerotized appendages.
- 1 Membrane small, located basally on vesica, smaller than sclerotized appendages.

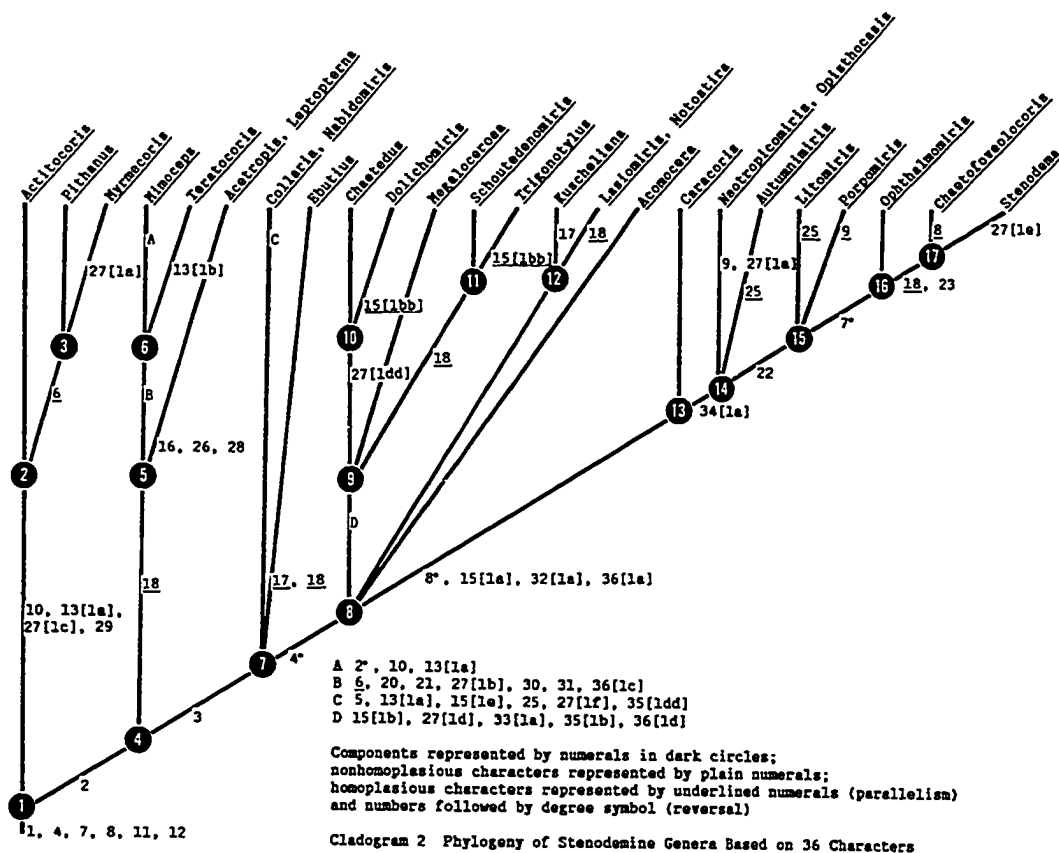
Female Genitalia

- 29. 0 Lateral subapical surface of second valvulae without ornamentation.
- 1 Lateral subapical surface of second valvulae with small arc shaped ridge dorsally in lateral view.
- 30. 0 Dorsal structure of posterior wall of bursa copulatrix rounded and saclike with faint, minutely spinose surface structure.
- 1 Dorsal structure of posterior wall of bursa copulatrix laterally flattened in plane of inter-ramal sclerite, subquadrate in shape, and with strong, densely distributed, spinose surface structure.
- 31. 0 Inter-ramal sclerotization of ventral labiate plate without narrow, straplike process projecting into genital chamber.
- 1 Inter-ramal sclerotization of ventral labiate plate with narrow, straplike process projecting into genital chamber caudally.
- 32. 0 Inter-ramal lobes of posterior wall no larger than sclerite in posterior view, and not surrounding dorsal structure.
- 1a Inter-ramal lobes of posterior wall large; forming membranous sheet surrounding dorsal structure, covering inter-ramal sclerite and extending below sclerite; interior margins of lobes separated medially, ventrad of dorsal structure.

- * 1b Inter-ramal lobes of posterior wall large; forming membranous sheet surrounding dorsal structure, covering inter-ramal sclerite and extending below sclerite; interior margins of lobes meet and nearly overlap medially, ventrad of dorsal structure.
- 33. 0 Inter-ramal lobe of posterior wall with lateral portion not extending ventrad of sclerite.
 - 1a Inter-ramal lobe of posterior wall with lateral portion extending ventrad of sclerite.
 - * 1aa Inter-ramal lobe of posterior wall with lateral portion extending ventrad of sclerite; medial portion of lobes deeply excavated.
- 34. 0 Inter-ramal sclerotization of ventral labiate plate present caudad of sclerotized rings.
 - 1a Inter-ramal sclerotization of ventral labiate plate adhering to ramae and with no posterolateral projections.
 - * 1b Inter-ramal sclerotization of ventral labiate plate adhering to ramae laterally and with narrow band spanning genital chamber posterolaterally.
 - * 1c Inter-ramal sclerotization of ventral labiate plate adhering to ramae laterally and with broad projection intruding genital chamber posterolaterally.
- 35. 0 Dorsal structure of posterior wall of bursa copulatrix present, shape variable, saclike or flat; medial process projecting into dorsal structure.
 - * 1a Dorsal and medial structures of posterior wall of bursa copulatrix obsolete, forming continuous membranous medial extension of inter-ramal lobes; dorsal structure not recessed and without saclike construction; medial structure sometimes subobsolete
 - 1b Dorsal structure of posterior wall of bursa copulatrix obsolete, forming continuous membranous medial extension of inter-ramal lobes; dorsal structure not recessed and without saclike construction; medial structure sometimes present, but not projecting into dorsal structure.
 - * 1c Dorsal structure of posterior wall of bursa copulatrix obsolete; dorsal structure adhered to dorsal portion of medial process not forming continuous membranous medial extension of inter-ramal lobes.
 - 1d Dorsal structure of posterior wall of bursa copulatrix very large, not recessed or saclike, open posteriorly, or sometimes dorsal structure flat and occupying entire area dorsad of inter-ramal sclerite, merging with inter-ramal sclerotization of ventral labiate plate.

36. 0 Medial process with flattened distal extension projecting anteriorly of inter-ramal sclerite and forming floor of dorsal structure; dorsal structure flattened, sometimes saclike without medial crease.
- 1a Medial process with narrow, tapering dorsal portion, extending anteriorly into dorsal structure; dorsal structure saclike without medial crease, narrowly surrounding anterior projection of medial process.
- * 1b Medial process with narrow, tapering, distally bifid dorsal portion, extending anteriorly into dorsal structure; dorsal structure saclike, rounded with medial crease.
- 1c Medial process small, buttonlike, dorsal portion short not projecting anteriorly; broad, saclike dorsal process.
- 1d Medial process usually obsolete; if present than with flattened distal extension projecting anteriorly of inter-ramal sclerite and forming floor of flattened dorsal structure.
- * 1e Medial process flattened, wide forming practically all of inter-ramal sclerite.
- * 1f Medial process very large, pointed, with plowlike posterior apex, dorsal portion very large projecting anteriorly, with 'Y' shaped terminus; dorsal structure not developed.
- * Character states are autapomorphies; ! Character states are plesiomorphic for the tribe.

Fig. 2. Cladogram 2 - Stenodemini based on 36 characters.



with Ebutius and the rest of the tribe, component 8. Component 9 has five synapomorphies and represents the Trigonotylus Group. Component 13 is recognized by four characters and forms the Stenodema Group. Placement of Opisthocasis in this group is based on non-genitalic characters because examination of those features was not possible. The most homoplasious character on the cladogram is number 18, (tubercles present dorsad of paramere insertions). This feature is found in many species of Miridae and is of dubious value as a defining character.

GENERIC GROUPS.

1. PITHANUS GROUP. (1) Small lateral ridge on outer surface of the first valvulae of female genitalia. (2) Females and sometimes males strongly brachypterous. (3) Evaporative surface of metaepisternal scent efferent system. (4) Vesica with ribbonlike strap terminating in sclerotized process. (5) Head structure -- hypognathous with the following features: blunt facial angle, antecular portion of head short; antennal fossa with dorsal margin even with ventral margin of eye in lateral view, fossa not pedunculate; eye protruding laterally, narrowly joined to head; vertex ecarinate; frons without longitudinal sulcus, and undeveloped anterior margin; and buccular flange complete, with gular region short. Myrmecoris is modified as compared to the other genera in this group. It has a very large gular region, a buccular flange merged with the head, and an expanded anterior portion of the head. Actitocoris, Pithanus, and Myrmecoris belong to this group.

2. MIMOCEPS GROUP. (1) Pretarsi without fleshy pulvilli. (2)

Inter-ramal sclerite with dorsal structure large and baglike with densely distributed strong spinulae surface. (3) Well defined pronotal collar. (4) Distal end of right paramere of male genitalia with small preapical spine. (5) Left paramere with angle sharp and needlelike apex. (6) Vesica with short ribbonlike strap. (7) Inter-ramal sclerotization narrow and straplike. (8) Medial process buttonlike. (9) Head structure -- hypognathous with these attributes: blunt facial angle; short, anteocular portion of head, quadrate in profile; antennal fossa not pedunculate, and with ventral margin even with ventral margin of eye in lateral view; eye round, protruding laterally and narrowly joined to head; vertex ecarinate; frons without longitudinal sulcus, and undeveloped anterior margin; buccular flange open posteriorly with long gular region. Mimoceps and Teratocoris belong to this group.

All of the genera of these two groups are Holarctic in distribution, except for Mimoceps which is Nearctic.

3. STENODEMA GROUP. (1) Dorsal surface with distinct punctures. (2) Genital capsule of male genitalia usually without tubercles present dorsad of left and right paramere insertions. (3) Sensory lobe of left paramere usually small, only projecting slightly beyond surface of arm. (4) Vesica without basal processes. (5) Dorsal structure of inter-ramal sclerite usually saclike. (6) Lobes of inter-ramal sclerite usually large, meeting medially, and obscuring sclerite in posterior view. This group contains the New World genera, Autumnimiris, Caracoris, Chaetofoveolocoris, Litomiris, Neotropicomiris, Opistocasis, Ophthalmomiris, and

Porpomiris, as well as the Holarctic Stenodema (the three species previously placed in the junior synonym Penacoris, are Neotropical).

4. TRIGONOTYLUS GROUP. (1) Dorsal surface without punctures. (2) Genital capsule with tubercles present dorsad of left and right paramere insertions. (3) Sensory lobe of left paramere usually not projecting beyond surface of arm. (4) Vesica usually with basal processes. (5) Dorsal structure of inter-ramal sclerite obsolete. (6) Lobes of inter-ramal sclerite very large, and widely separated with apices converging medially and surpassing ventral margin of sclerite. This group contains five mostly Cosmopolitan genera Chaetedus, Dolichomiris, Megaloceroea, Schoutedenomiris, and Trigonotylus.

5. COLLARIA GROUP. (1) Head narrowed posteriad of eye and sometimes with anteocular portion long. (2) Vesica with dorsal and ventral ornamentation on secondary gonopore. (3) Membrane of vesica with small spinose or filamentous sclerite basad of gonopore. (3) Head structure -- large posteocular region with neck; anteocular portion long; facial angle blunt or straight; eye ovoid, protruding, narrowly joined to head, located in medial portion of head; antennal fossa located within medial portion of eye in lateral view; fossa pedunculate; buccular flange short, incomplete posteriorly, declivous to long medial carina, gula long; vertex ecarinate; and frons without longitudinal sulcus. This group contains Collaria and Nabidomiris.

6. LEPTOPTERNA GROUP. (1) Vesica with long basal processes, and small, basally attached membranes. (3) Frons concave with

longitudinal sulcus. This group includes the Holarctic genera Acetropis and Leptopterna.

For the present Acomocera, Ebutius, Kuscheliana, Lasiomiris, and Notostria must be considered as being incertae sedis.

GENERA FORMERLY IN STENODEMINI

MISPLACED GENERA. Four genera included in the Stenodemini by Carvalho (1959), were subsequently placed in the Orthotylineae. Protomiris Poppius, 1911, was transferred by Eyles (1973). Austromiris Kirkaldy, 1902, Dasymiris Poppius, 1911, and Zanessa Kirkaldy, 1902 were transferred by Eyles and Carvalho (1975). Carvalho (1976) erected the orthotyline tribe Austromirini Carvalho and Gross to contain the previous four genera (plus the genera Porphyrodema Reuter, 1904 and Porphyrocapsus Poppius, 1915) based on the possession of the following features: Large size; vertex sulcate longitudinally; frons protruding between antennae; anterior portion of pronotum narrowed; calli flat and prominent; rostrum reaching apex of mesosternum; paraempodia large, divergent basally, and convergent apically. I now place the genus Nesiomiris Kirkaldy, 1902 in the Austromirini because it possesses all of the defining characters of that tribe.

The monotypic genus Chorosomella Horvath was included in the Mirina by Reuter (1910a), and remained in the tribe Stenodemini (Carvalho, 1959). Kerzhner (1962) placed this genus in the Halticini. Wagner (1973) agreed that Chorosomella is correctly diagnosed as a halticine, but created the new tribe Chorosomellini to accommodate it, and raised the Halticini to subfamily status.

Based on an investigation of the male and female genitalia of Chorosomella, I agree with the non-mirine placement of this unique taxon.

The monotypic genus Nymannus Distant, 1904 was also included in the Stenodemini (Carvalho, 1959) based on the length of the first segment of the metatarsi subequal to the combined length of the second and third segments. Carvalho (1981) treated this genus as the junior synonym of the mirine genus Stenotus Jakovlev, 1877. I agree with the inclusion of Nymannus in the tribe Mirini. Nymannus typicus Distant, the type species, does not possess the following synapomorphic characters of the Stenodemini: Narrow ductus seminis; flattened pronotal collar with posterior suture obsolete medially; and lateral margin of pronotum carinate at least dorsad of coxal cleft.

GENERA INCERTAE SEDIS.

Eurymiris Kirkaldy, 1902a.

The placement of Eurymiris within the Stenodemini was based on the first segment of the metatarsi twice as long as the second, and the frons with a longitudinal sulcus. I have not seen specimens of this monotypic genus erected for the species eurynome Kirkaldy from Victoria, Australia, and therefore the subfamily placement of Eurymiris must remain uncertain. Efforts to locate the holotype were inconclusive: W. R. Dolling of the British Museum (Natural History) (personal comm.) reported that eurynome is not retained in that collection. J. C. M. Carvalho (personal comm.) placed Eurymiris in the Bryocorinae "... somewhat near Rayeria [Odhiambo,

1962].” of the Monaloniini, and also stated that the type of Eurymiris "... should be at the National Museum at Victoria, Australia, but it seems to be lost."

NOMINA DUBIA

Chaetomiris Bliven, 1973.

I have not seen specimens of this monotypic genus for the species sequoiarum Bliven from Humboldt County, California. Efforts to acquire the holotype for examination were unsatisfactory. N. D. Penny (personal comm.) stated that the collection of the California Academy of Sciences "... does not have the holotypes and paratypes of Chaetomiris sequoiarum Bliven. In fact, we have none of the new species from Bliven's last paper [Bliven, 1973; including the stenodemines, Litomiris tritavus Bliven and Leptopterna silacea Bliven] and as far as we know, these specimens have never been located." My interpretation of the description of the genus Chaetomiris indicates that sequoiaum is probably the junior synonym of Megaloceroea recticornis (Geoffroy).

REVISION OF STENODEMINI

Tribe STENODEMINI China

- Mirides Amyot and Serville, 1843:38, 277. -- Provancher, 1886:101.
 Pithanidae Douglas and Scott, 1865:28. NEW SYNONYMY.
 Miridae Dohrn, 1859:37. -- Douglas and Scott, 1865:283. -- Oshanin, 1910:761
 Miraria Puton, 1875:59. -- Reuter, 1875a:17; 1875b:5.
 Myridina Berg, 1879:117.
 Myrmecoraria Reuter, 1883a:564. -- Van Duzee, 1917:313.
 Mirinae Cockerall, 1893:363. -- Knight, 1923:545.
 Mirini Kirkaldy, 1906:143. -- Van Duzee, 1917:298. -- Wagner, 1943:33.
 Myrmecorini Kirkaldy, 1906:372. -- Wagner, 1952c:85.
 Pithanaria Van Duzee, 1917:313.
 Stenodemini China, 1943:262. -- Carvalho, 1952c:35. -- Wagner, 1952c:74.
 Pithanini Carvalho and China, 1951:113. -- Carvalho and Leston, 1952:248. -- Cavalho, 1952c:38; 1959:281.

The Stenodemini have long been recognized as a distinct group within the family Miridae. Before this report the species of this group were characterized by few morphological features other than those associated with their gross appearance and exclusive use of monocot host plants, and were never studied to determine if they were a monophyletic unit. Most of the species which now form the Stenodemini were described as parts of extensive faunal works, reports of expeditions and collecting trips. As presently defined the Stenodemini, including the Pithanini, are a worldwide group consisting of 28 genera and 185 species. Ten genera are cosmopolitan or Holarctic, ten genera are distributed in the New World and eight genera are found in the Old World.

Diagnoses for the recognised generic groups were presented in the previous section. Synonymy and type information and the included species with their known distributions are presented for each included stenodemine genus.

KEY TO ADULT STENODEMINE GENERA

1. Pulvilli absent 2
- Pulvilli present 5
2. Posterior margin of collar clearly impressed and extending
to lateral margins of pronotum 3
- Posterior margin obsolete or broadly depressed 4
3. Dorsal coloration contrasting black and white; peritremal
disk large, extending to lateral portion of
metaepisternum (Nearctic) Mimoceps Uhler, p. 101
- Dorsal coloration green, yellow or stramineous; or if head,
pronotum, scutellum, and adjacent portion of hemelytra
black then peritremal disk and evaporative surface
obsolete (Holarctic) Teratocoris Fieber, p. 106
4. Second segment (first visible segment) of abdomen extremely
narrow (Holarctic) Myrmecoris Gorski, p. 91
- Second segment of abdomen not modified, as wide as
remainder of abdomen (Holarctic) . Pithanus Fieber, p. 95
5. Frons without medial longitudinal sulcus 6
- Frons with medial longitudinal sulcus 8
6. Antennal segment II clavate (Palearctic; Canada: Prairie
Provinces) Actitocoris Reuter, p. 86
- Antennal segment II linear, either uniformly thickened,
thickened basally and tapering distad, or narrow 7

7. Pronotum with explanate lateral margins, if lateral margins only slightly explanate then frons conical and pointed anteriorly; pronotum with medial ridge (Holarctic; Europe, central Asia, north Africa, northwest United States) Acetropis Fieber, p. 190
- Pronotum without explanate lateral margins; if lateral margin carinate then frons broadly rounded anteriorly; pronotum without medial ridge (Holarctic)
..... Leptopterna Fieber, p. 195
8. Eye narrowly joined to head, strongly exerted and placed near middle of head; posterior margins of eye removed from pronotal collar by distance equal to or greater than dorsal width of eye; head with neck 9
- Eye broadly joined to head, usually not strongly exerted and placed posterior to middle of head; posterior margin of eye in contact with collar; or if eye narrowly joined to head, then eye removed from collar by distance equal to less than dorsal width of eye; head without neck ... 10
9. Anteocular portion of head longer than one-half total head length; dorsal portion of clypeus produced and bulbous; lateral carinate margin of pronotum bridged dorsad of coxal cleft (Africa: east, south, central)
..... Nabidomiris Poppius, p. 209

- Anteocular portion of head equal to or shorter than
 one-half total head length; dorsal portion of clypeus not
 produced; lateral carinate margin of pronotum present
 dorsad of proepisternum and anterior of coxal cleft
 (Africa, Americas) Collaria Provancher, p. 202
10. Pronotum, and sometimes head, scutellum, and hemelytra
 distinctly and deeply punctate 11
- Dorsal surface either smooth, rugose or only finely,
 shallowly or obscurely punctate 18
11. Hemelytra without distinct punctures or smooth (Holarctic;
 Indonesia; New Guinea) Stenodema Laporte, p. 179
- Hemelytra with punctures at least on clavus 12
12. Scutellum faintly punctured, hemelytra punctate on
 embolium, corium between claval suture and cubitus, and
 clavus; pronotum sometimes explanate; membrane of vesica
 with two small sclerotized processes (or lobal sclerites)
 (Nearctic) Litomiris Slater, p. 157
- Scutellum and hemelytra deeply punctate 13
13. Eye large, height of eye equal to nine-tenths of head
 height in lateral view; body long, 7.8 to 10.0 mm;
 membrane of vesica finely spinose, without sclerotized
 processes (Neotropical) Ophthalmomiris Berg, p. 167
- Eye smaller, height of eye ranging from two- to four-
 fifths head height in lateral view; body not longer than
 7.2 mm; membrane of vesica either with strongly spinose
 lobes or with one sclerotized process 14

14. Body small, length 3.5 mm; brachypterous; pronotum quadrate
in dorsal view, with lateral carina obsolete except for
minute bridge dorsad of proepisternum in lateral view
(Neotropical: Argentina) Opisthocasis Berg, p. 172
- Body larger, length ranging from 4.0 mm to 7.2 mm;
macropterous; pronotum subtriangular in dorsal view;
lateral carina either present dorsad of propleura and/or
at least present dorsad of coxal cleft 15
15. Posterior margin of eye contiguous with collar; pronotum
without posterior and anterior lobes; membrane of vesica
with one cockscrewlike sclerotized process; inter-ramal
sclerotization of female genitalia contiguous with
sclerotized rings and not present caudad of and adhering
to ramae (North America: eastern and central;
Neotropical: Argentina, Brazil) .. Porpomiris Berg, p. 175
- Posterior margin of eye separated from collar; pronotum
with posterior and anterior lobes, if without defined
lobes then antefossal portion of head long, equal to
one-third head length; membrane of vesica either with one
straight or curved sclerotized process or with only
spinose lobes; inter-ramal sclerotization of female
genitalia adhering to ramae caudally 16

16. Pronotum without distinct anterior and posterior lobes,
 anterior lobe gradually tapered to width of posterior
 lobe in dorsal view, posterior lobe produced slightly
 more dorsad of anterior lobe in lateral view; antefossal
 portion of head long (ratio of antefossal portion to head
 length, in dorsal view, equals 0.31:1.00); membrane of
 vesica with strongly spinose lobes; inter-ramal sclerite
 with small cadually projecting process (Neotropical:
 Brazil) Caracoris new genus, p. 147
- Pronotum with distinct anterior and posterior lobes,
 anterior lobe abruptly joined to and more narrow than
 posterior lobe in dorsal view, posterior lobe produced
 more dorsad of anterior lobe in lateral view; antefossal
 portion of head shorter (ratio of antefossal portion to
 head length, in dorsal view, equals 0.23-0.29:1.00)
 membrane of vesica with either single sclerotized process
 ribbonlike strap or finely spinose lobes 17
17. Membrane of vesica with single straight or curved
 sclerotized process, inter-ramal sclerotization adhering
 to ramae laterally and sometimes narrowly projecting
 interiorly (Nearctic: southwest United States)
 Autumnimiris new genus, p. 141

- Membrane of vesica without sclerotized processes, with finely spinose lobes and sometimes with ribbonlike strap adhering to membrane posteriorly; inter-ramal sclerotization broadly intruding interiorly (Neotropical: Central and South America)
Neotropicomiris Carvalho and Fontes, p. 162
18. Antennal segment I with setae shorter than half the width of the segment 19
- Antennal segment I with setae at least as long as half the width of the segment 24
19. Metatibia with densely distributed, erect setae at least as long or longer than width of segment 20
- Metatibia with less densely distributed, suberect setae shorter than width of segment 22
20. Brachypterous (Neotropical: Juan Fernandez Is.)
 Kuscheliana Carvalho, p. 224
- Macropterous 21
21. Eye small, dorsoventrally compressed in lateral view; lateral margin of pronotum strongly carinate; membrane of vesica with single bulbose process; dorsal structure of posterior wall of female genitalia obsolete (Africa)
 Schoutedenomiris Carvalho, p. 128

- Eye large, rounded in lateral view; lateral margin of pronotum, moderately carinate; membrane of vesica without sclerotized processes; dorsal structure of posterior wall of female genitalia present and saclike (Indo-Pacific) ...
..... Acomocera Eyles, p. 214
22. Antennal segment I very long, length subequal to longer than combined length of head and pronotum (Holarctic; New Zealand; South America) Megaloceroea Fieber, p. 123
- Antennal segment I about as long as length of head 23
23. Antennal segment II with dark setae near base; membrane of vesica of male genitalia usually with two basal processes (New Guinea; New Zealand; New South Wales, Tasmania)
..... Chaetedus Eyles, p. 112
- Antennal segment II without dark setae near base; membrane of vesica usually with one basal process (Cosmopolitan) ..
..... Trigonotylus Fieber, p. 133
24. Head, pronotum, and scutellum with short, recumbent simple setae 25
- Head, pronotum, and scutellum with long, erect or suberect simple setae 26
25. Frons prominent, protruding anteriorly, obscuring clypeus in dorsal view (Palearctic) Notostria Fieber, p. 234
- Frons not protruding anteriorly, and not obscuring clypeus in dorsal view; if frons produced anteriorly then not prominent, only finely upturned (Pantropical; Pansubtropical; Japan; China; South Africa)
..... Dolichomiris Reuter, p. 117

26. Posterior margin of eye separated from collar by distance equal to from two-fifths to four-fifths of distal width of antennal segment I; left paramere with slight sensory lobe; sclerotized ring of female genitalia usually obsolete) 27
- Posterior margin of eye subcontiguous to collar; left paramere with prominent quadrate sensory lobe; sclerotized rings of female genitalia large and open (United States: Arizona to Texas)
 Chaetofoveolocatoris Knight, p. 153
27. Dorsal vestiture of moderately to densely distributed, erect, long simple setae; pronotum with light fasciae; posteroventral portion of genital capsule slightly produced; membrane with from one to four sclerotized processes; sclerotized rings of female genitalia present (Indo-Pacific) Lasiomiris Reuter, p. 228
- Dorsal vestiture of sparsely distributed, recurved, short simple setae; pronotum uniformly brown or fuscous; posteroventral margin of genital capsule with large spatulate process; sclerotized rings of female genitalia obsolete (Indo-Pacific) Ebutius Distant, p. 219

SYSTEMATICS

PITHANUS GROUPACTITOCORIS REUTER

Figures 17A; 18A, D; 19A-D; 20A-E

Actinocoris [sic] Reuter, 1878a:194 (type species by monotypy
Actitocoris signatus Reuter).

Actitocoris: Reuter, 1880a:167 (emendation for Actinocoris).

Diagnosis: Recognized by the frons broad, not projecting beyond clypeus, without longitudinal sulcus; head hypognathous; antennal segment II clavate; usually brachypterous, hemelytra reduced to stub; male genitalia with tubercles present dorsad of paramere insertions (fig. 19A); vesica with single notched sclerotized process (fig. 19D); female genitalia with very large, 'T' shaped dorsal structure (fig. 20D); and second valvulae with small subapical lateral ridge (fig. 20B).

Redescription: Dorsal Aspect: Small size 3.9-5.0; yellowish-green and marked with reddish-fuscous marks and fasciae on head, pronotum, scutellum and hemelytra; metafemora distally, and antennal segment II, fuscous; surface slightly roughened, and shagreened. Vestiture: Dorsal: Sparsely distributed, moderately long, light or dark, erect, stout simple setae. Antennae: I and II with dark, erect, stout simple setae; III and IV as I and II and with densely distributed, suberect, light simple setae. Legs: With setae as on dorsum; tibiae with one short row of black bristles distally. Vestiture of antennal segment II and metatibiae longer than diameter of segments. Head: Ovate in dorsal view, hypognathous, and subovate in lateral view; eye of moderate size,

broadly joined to head, with anterior margin slightly concave, posterior margin sinuate, facets not in contact with head, subcontiguous with pronotum; dorsal margin of eye slightly dorsad of dorsal margin of head; antennal fossa not pedunculate, with small flaring margin; fossa separated from eye by distance equal to distal width of antennal segment I; dorsal margin of fossa even with ventral margin of eye in lateral view; dorsal surface of head strongly curved from vertex to apex of frons in lateral view; vertex ecarinate, and faintly declivous to frons; frons slightly concave between shagreened temporal areas and without longitudinal sulcus, projecting anteriorly and anterodorsad of eye, broad apically and smoothly merging with clypeus, junction sunken; clypeus smoothly curved, dorsal portion not produced in lateral view; juga, lora and bucculae anteriorly of frons in lateral view; bucculae anteriorly of juga and lora; juga triangular; lora quadrate and somewhat produced, with crease present from anteroventral margin of fossa to ventrad of eye; gena large and vertical; buccal flange large, rounded in lateral view, surrounding concavity and not reaching posterior margin of head; gula large; labium just reaching apices of mesocoxae, I attaining xyphus. Antennae: I widest medially, tapered basally, bowed; II thickened, subclavate or clavate; III and IV much shorter and thinner than II. Structure of pronotum, mesoscutum, scutellum and hemelytra related to wing form.

Brachypterous male and female: Pronotum: Campanulate with proepisternum visible in dorsal view; anterior margin straight, posterior margin broadly concave, with posterolateral angles

projecting posteriad; lateral margin sinuate and rounded, with posterior end merging with propleural surface before posterior margin of pronotum, anterior end merging with small bridge dorsad of coxal incisure attaining lateral portion of collar in lateral view; calli smooth, wide and slightly produced, occupying most of disk, attaining lateral margin of pronotum, not confluent anteriorly; peripheral sulci surrounding calli, and pair of medial foveae obsolete; pronotal disk without anterior and posterior lobes, posterior one-half slightly truncate and striate; flattened collar area contrasting with convex pronotum, posterior sulcus of collar and anterolateral foveae obsolete; coxal cleft large, incisure perpendicular, extending slightly under lateral carina, terminating dorsad of strongly rounded and produced proepisternum; coxal flange slightly flaring; xyphus shallowly concave. Mesoscutum and scutellum: Mesoscutum very broadly exposed, evenly rounded; suture obsolete, confluent over entire width; surface flat in lateral view; lateral area faintly delineated. Hemelytra: Claval suture obscure; veins obsolete; embolium wide, diminished subapically. Macropterous male: Pronotum: Subtriangular with proepisternum visible in dorsal view, anterior margin slightly concave, posterior and lateral margins straight; lateral margin carinate medially, posterior end merged with propleura before posterior margin of pronotum, and anterior end merged with pronotum dorsad of middle of proepisternum; anterolateral angle slightly produced; calli small, not attaining lateral margins of pronotum, with very shallow peripheral sulci, and pair of medial foveae; disk without anterior and posterior lobes;

collar with faint posterior sulcus or crease, merged with shallow anterolateral foveae laterally; pronotal incisure reaching under lateral carina and terminating dorsad of proepisternum. Mesoscutum and scutellum: Suture broadly confluent, only lateralmost portion of suture present; lateral area deeply excavated with edge acute; mesoscutum very broadly exposed, strongly produced dorsad of, and smoothly declivous to, scutellum; surface faintly striate.

Hemelytra: Without cuneal fracture and incisure; veins faint and diminished distally; cuneus weakly differentiated; interior cell obsolete; outer cell ovate, rounded distally. Legs: Metafemora longer than abdomen, and equal to metatibiae; femora slightly flattened dorsoventrally, thickest medially; metatarsus with segment I longer than combined length of segments II and III. Metafemoral trichobothria: With eight trichs; trichoma small; bothria slightly sunken below surrounding cuticle. Claws: Moderately curved with minute pulvilli, connate to angle.

Ratios: Anteocular portion of head to head length (0.40:1.00).
 Eye height to head height (0.65:1.00).
 Gena to head height (0.42:1.00).
 Buccular flange and cavity to ventral head length (0.61:1.00).
 Antennal segment I to dorsal head width (0.74-0.85:1.00).
 Antennal segment II to dorsal pronotal width (1.00:0.44-0.58)

Metaepisternal scent efferent system: Ostiolar channel short, recessed between coxae, terminating on ventral aspect of metaepisternum; peritremal disk developed but not produced laterad of evaporative surface; evaporative surface reduced, narrowly

bordering peritremal disk, extending posterodorsad.

Male Genitalia: Genital capsule: With large tubercle dorsad of left paramere insertion, small tubercle near right paramere; posteroventral portion of capsule slightly produced, and tilted toward right side. Left paramere: Small; sensory lobe small, forming widest part of triangular arm; arm longer than shaft; angle broad; shaft slightly thickened; apex with small point; surface smooth. Right paramere: Distal end bulbous, larger than proximal end, with slight constriction medially; apex with spine or tuberclelike spine. Vesica: Ductus seminis: Narrow; wider at base, narrowing slightly toward apex; basal portion slightly humped. Secondary gonopore: Large, with aperture complete and coil-like. Membrane: With basal processes; process on left side, notched with smaller portion strongly spinose, terminating in flattened plate, and attached to thin sclerotized plate basally wrapped around base of process; small ribbonlike sclerite adhering to membrane posteriad of gonopore.

Female Genitalia: Sclerotized rings: Compressed, open, and elongate. Dorsal labiate plate: Obsolete. Ventral labiate plate: Not spanning rings, present from middle of ring mesad and narrowing to point, deeply notched laterally; inter-ramal sclerotization faint, and moderately projecting caudad into genital chamber. Posterior wall: Inter-ramal sclerite: Narrow and broadly joined. Median process: Very large and pointed with plowlike apex; with dorsal portion very large and 'Y' shaped. Dorsal structure: Obsolete and without sac. Inter-ramal lobes: Narrow, but obscuring

sclerites. Oviducts: Common and laterals joined posteriorly.

Second valvulae: With small subapical, lateral ridge.

Included species:

signatus Reuter

Actitocoris signatus Reuter, 1878a:195. -- Kelton, 1966b:1307,

fig. 2 (distribution).

Distribution: Holarctic.

MYRMECORIS GORSKI

Figures 17B; 18B, E; 19E-G; 20F-I

Myrmecoris Gorski, 1852:167 (type species by monotypy Globiceps gracilis Sahlberg).

Diagnosis: Recognized by myrmecomorphic habitus, with junction of pronotum and mesoscutum, and base of abdomen narrow; usually brachypterous, sometimes male macropterous; head hypognathous, vertex without longitudinal sulcus; frons not projecting beyond clypeus; antennal segment I small; antennal segment II clavate; male genitalia with genital capsule without tubercles dorsad of paramere insertions; vesica with single, large, narrow sclerotized process (fig. 19G); female genitalia with posterior wall without dorsal and medial structures (fig. 20I); and second valvulae with small, subapical lateral ridge (fig. 20G).

Redescription: Dorsal Aspect: Medium length, 4.0-5.3; dark fuscous or black; when brachypterous, antennal segment I, or when macropterous, middle of hemelytra basally, and apex of hemelytra, white; surface slightly shagreened throughout. Vestiture: Dorsal: With sparsely distributed, short, erect, light simple setae throughout. Antennae: II with densely distributed, short, suberect

simple setae distally; III as II, and with sparsely distributed, erect, longer simple setae. Legs: As dorsum; tibiae with several rows of sparsely distributed, suberect, fuscous bristles; without minute black spinulae. Head: Triangular in dorsal view, strongly hypognathous in lateral view; eyes of moderate size, rounded, not pedunculate, broadly joined to head, anterior margin straight, posterior margin sinuate, with facets not in contact with head, and contiguous with pronotum; dorsal margin of eye even with dorsal margin of head in lateral view; width of head across eyes wider than width of pronotum in dorsal view; antennal fossa not pedunculate, with small marginal flange, distance between fossae and eye equal to slightly more than twice the distal width of antennal segment I; ventral margin of fossae even with ventral margin of eye, and dorsal margin of fossae within ventral one-fourth of eye in lateral view; dorsal surface of head strongly curved ventrally from vertex to tylus; vertex ecarinate, and undifferentiated; frons strongly produced anteriorly and anterodorsally of eye in lateral view; frons smoothly merging with clypeus, junction undifferentiated, without longitudinal sulcus; frons even with lora, juga, and bucculae; dorsal portion of clypeus not produced; juga triangular; lora subquadrate; jugal-loral suture not reaching fossa; lora with slight crease present from fossa ventrad of eye; gena wide, horizontal; buccular flange cone shaped, suture between buccula and head obsolete; buccular cavity completely enclosed by flange; gula very large; labium reaching apices of mesocoxae, I just surpassing buccular flange. Antennae: I short, tapered basally, not bowed,

distal end of II slightly clavate; III and IV thinner than II; II longer than IV. Structure of pronotum related to wing form.

Brachypterous specimens: Pronotum: Subspherical, widest medially, with ventralmost portion of propleura, coxal cleft, and proepisternum visible in dorsal view; pronotum with anterior margin straight and posterior margin convex and rounded; calli obsolete, females sometimes with faint pair of medial foveae; lateral margin of pronotum smoothly rounded, carinate margin obsolete dorsad of coxal cleft; pronotum without distinct anterior and posterior lobes; collar without posterior sulcus, sometimes just broadly concave, anterolateral foveae and lateral end of posterior sulcus obsolete; coxal cleft wide, incisure deep, extending under lateral margin of pronotum and continuing around strongly rounded and produced proepisternum; procoxal flange small, broadly carinate; xyphus shallow. Macropterous male: Subrectangular, hourglass shaped, posterior margin straight; collar raised, broadly rounded, and without posterior sulcus; otherwise structure as brachypterous pronotum. Mesoscutum and scutellum: Mesonotum as large as pronotum, entirely exposed, insertion of hemelytra visible and removed from pronotum; in brachypterous specimens produced or bulbose dorsally; suture obsolete, confluent with scutellum; lateral areas present, with acute margin. Hemelytra: Usually brachypterous, sometimes male macropterous; if macropterous then cuneus obsolete and membrane with solitary, ovate outer cell.

Legs: Coxae long and prominent; metafemora even in length to abdomen and shorter than metatibae; metatarsus with length of

segment I slightly longer than combined length of segments II and III. Metafemoral trichobothria: With nine trichs; trichoma very small; bothria slightly sunken within surrounding cuticle. Claws: without pulvilli.

Ratios: Antecular portion of head to head length (0.50-0.57:1.00).

Eye height to head height (0.78:1.00).

Gena to head height (0.26:1.00).

Buccular flange and cavity to ventral head length (0.47-0.51:1.00).

Antennal segment I to dorsal head width (0.37-0.44:1.00).

Antennal segment II to dorsal pronotal width (1.00:0.37-0.40).

Metaepisternal scent efferent system: Ostiolar channel extending laterad of coxal surfaces, terminating on lateral section of metaepisternum; peritremal disk well developed and produced laterad of evaporative surface; evaporative surface reduced and narrow, anterior section obsolete, posterior section narrowed but extending posterodorsad.

Male Genitalia: Genital capsule: Triangular in dorsal view; without tubercles dorsad of paramere insertions; posteroventral portion of capsule not produced. Left paramere: Small; sensory lobe very small, only forming widest portion arm; shaft subequal to arm in length; angle very broad, 'U' shaped; truncate bilobed apex; surface smooth. Right paramere: Small; not constricted medially, slightly expanded distally; apex with tuberclelike spine. Vesica: Ductus seminis: Narrow and short, slightly expanded at base. Secondary gonopore: Small, with complete diffusely coiled

aperture. Membrane: Bilobed with fine spinulae; one large sclerotized process, and faint ribbonlike strap supporting portion of membrane.

Female Genitalia: Sclerotized rings: Large, open, with wide dorsolateral projection. Dorsal labiate plate: Obsolete. Ventral labiate plate: Not projecting mesad beyond middle of rings; inter-ramal sclerotization small, following angle of ramae. Posterior wall: Inter-ramal sclerite: Narrowed and elongate. Median process and Dorsal structure: Obsolete. Inter-ramal lobes: Narrow and broadly confluent. Oviducts: Common and laterals joined dorsally. Second valvulae: With small subapical, lateral ridge.

Included Species:

gracilis Sahlberg

Globiceps gracilis Sahlberg, 1848:123.

Myrmecoris agilis Gorski, 1852:168 (synonym by Flor, 1860:638). -- Reuter, 1879:174-175 (var. fusca and rufuscula).

Distribution: Palearctic.

rubricatus Jakovlev

Myrmecoris rubricatus Jakovlev, 1882:362.

Distribution: Asia Minor.

PITHANUS FIEBER

Figures 17C-F; 18C, F; 19H-J; 20J-N

Pithanus Fieber, 1858:303 (type species by monotypy Capsus maerkeli Herrich-Schaeffer).

Diagnosis: Distinguished by somewhat myrmecomorphic habitus; pronotum rounded; usually brachypterous (hemelytra reduced to stub), sometimes female macropterous; head prognathous; antennal segment I small, less than one-half width of head across eyes; frons not

projecting beyond clypeus; femora with two or three short, dark bristles ventrally; male genitalia with genital capsule with posteroventral margin produced and twisted, without tubercles dorsad of paramere insertions; vesica with two sclerotized processes (fig. 19J); female genitalia with well developed medial and dorsal structures of posterior wall (fig. 20M); and second valvulae with small subapical lateral ridge (fig. 20K).

Redescription: Dorsal Aspect: Small size 3.7-5.8; dark fuscous or black; antennal segment I distally, temporal areas, hemelytra laterally and posteriorly, white, legs and antennal segment II testaceous; surface mostly shagreened or somewhat shining; hemelytra rugulose; macropterous female with pronotum shagreened and slightly roughened. Vestiture: Dorsal: Subglabrous with sparsely distributed, recumbent, short, light simple setae. Antennae: I with slightly longer, more erect setae; II with densely distributed, suberect setae (more densely distributed on distal half); III and IV with densely distributed mixture of suberect and erect setae. Legs: Metafemora with sparsely distributed, recumbent, light simple setae, with several dark bristles ventrally; tibiae as femora and with several rows of light bristles, and without minute black spinulae. Head: Subtriangular; width across eyes wider than maximum pronotal width in dorsal view, hypognathous and subovate in lateral view; eyes moderate size, rounded, anterior margin slightly concave, posterior margin sinuate, slightly pedunculate, facets not in contact with head and contiguous with pronotum; antennal fossa not pedunculate, with marginal flange small; fossa separated from

eye by distance equal to three-fifths of distal width of antennal segment I; ventral margin of fossa even with ventral margin of eye, dorsal margin of fossae within ventral one-third of eye in lateral view; dorsal margin of eye even with dorsal margin of head in lateral view; dorsal surface of head strongly and smoothly curved from vertex to tylus; frons smoothly merging with vertex, undifferentiated from temporal areas, and without longitudinal sulcus; temporal area slightly shagreened, not depressed; anterior margin of frons obsolete, smoothly merging with clypeus; clypeus rounded, dorsal portion not produced; lora and juga triangular, large, and rounded; jugal-loral suture not reaching antennal fossae; lora anterior of bucculae and juga, and with crease present from fossa to ventrad of eye; gena large and horizontal; buccula flange enclosing cavity, not reaching posterior margin of head; flange separated from head by crease; gula present; labium reaching middle of metacoxae, I reaching xyphus. Antennae: I short, thickness even, tapered basally, not bowed; II of even thickness over entire length, thicker than III and IV; III subequal in length to II, IV shorter than III. Structure of pronotum, mesoscutum, scutellum and hemelytra related to wing form. Brachypterous specimens: Pronotum: Quadrate, with proepisternum, coxal cleft, and ventralmost portion of propleura visible in dorsal view; anterior and posterior margins of pronotum slightly concave, lateral margin broadly rounded, not carinate over entire length, with minute bridge dorsad of coxal cleft; calli very large, occupying most of disk, broadly confluent anteriorly and medially, attaining, and forming,

lateral margins, with pair of medial foveae; disk without anterior and posterior lobes; posterior portion of pronotum very small; collar with posterior sulcus obsolete medially, with small lateral crease terminating at cuneal incisure, anterolateral foveae obsolete; coxal cleft wide, incisure deep, diminishing dorsad of strongly produced and rounded proepisternum, not reaching anterior margin of pronotum, terminating in flattened area delineating lateral margin of collar. Mesoscutum and scutellum: Contiguous; mesoscutum broadly exposed; dorsal surface flattened; lateral area indistinct; scutellum faintly striate. Hemelytra: Fused with scutellum basally. Macropterous female: Pronotum: Subtriangular with proepisternal area visible in dorsal view, anterior margin straight, posterior margin concave, lateral margin concave; disk with anterior and posterior lobes; posterior lobe much wider than anterior lobe; lateral margin of pronotum slightly carinate, bridged dorsad of coxal cleft; calli small; slight sulcus posteriad of calli; collar with distinct posterior sulcus, surface flattened, posterior sulcus diminishing laterally near coxal bridge; coxal incisure terminating dorsad of proepisternum; proepisternum strongly produced and rounded laterad of lateral surface of collar; coxal flange fine and upturned; xyphus shallow. Mesoscutum and scutellum: Mesoscutum very broadly exposed; suture obsolete; surface slightly concave; lateral area distinct, with sharp carinate margin; scutellum with surface striate. Hemelytra: Embolium narrow, diminished before cuneal area; without cuneal incisure, cuneus obsolete; membrane with faint cells. Legs: Coxae long,

femora tapered distally, metafemora widest medially, with two stout bristles ventrally just surpassing abdomen and slightly shorter than metatibiae; segment I of metatarsus equal to combined length of segments II and III. Metafemoral trichobothria: With seven trichs; trichoma very small; bothria slightly sunken below surface of surrounding cuticle. Claws: Without pulvilli.

Ratios: Anteocular portion of head to head length
(0.35-0.40:1.00).

Eye height to head height (0.67-0.69:1.00).

Gena to head height (0.30-0.32:1.00).

Buccular flange and cavity to ventral head length (0.69-0.71:1.00).

Antennal segment I to dorsal head width (0.45-0.50:1.00).

Antennal segment II to dorsal pronotal width (1.00:0.40-0.46).

Metaepisternal scent efferent system: Ostiolar channel short, extending laterad of coxal surface, terminating in large well developed peritremal disk; peritremal disk produced laterad of evaporative surface; evaporative surface reduced, anterior section longer than posterior section, dorsal section obsolete.

Male Genitalia: Genital capsule: Without tubercles present dorsad of paramere insertions; posteroventral portion of capsule enlarged, twisted to left, and truncate. Left paramere: Sensory lobe large and broadly merged with arm; angle sharp; shaft long, much longer than arm; bispinose apex; surface smooth. Right paramere: Small; slightly expanded distal portion; small spine apically. Vesica: Ductus seminis: Narrow, widest at base. Secondary gonopore: Complete coil-like aperture. Membrane: One

large basal process and one lobal sclerite; with several spinose lobes; basal process attached to small ribbonlike strap supporting a portion of membrane.

Female Genitalia: Sclerotized rings: Moderate size, open, and pointed medially. Dorsal labiate plate: Obsolete. Ventral labiate plate: Faint, dorsolateral portion curved around corner of ring, not extending mesad beyond middle of, and, not spanning, rings; inter-ramal sclerotization extensive and projecting caudad into genital chamber. Posterior wall: Inter-ramal sclerite: Moderate depth. Median process: Triangular in posterior view, with dorsal projection forming floor of dorsal structure. Dorsal structure: Subquadrate, broadly open on posterior aspect. Inter-ramal lobes: One-half depth of sclerite and separated ventrad of dorsal structure. Oviducts: Common and laterals broadly joined dorsally. Second valvulae: With small subapical, lateral ridge.

Included Species:

hrabei Stehlik

Pithanus hrabei Stehlik, 1952:168, figs. 1, 4.
Distribution: Czechoslovakia.

maerkeli Herrich-Schaeffer

Capsus maerkeli Herrich-Schaeffer, 1838:78, fig. 406.
Pithanus maerkeli: Fieber, 1861:239 (new combination). --
Kelton, 1966b:1306 (distribution).
Distribution: Holarctic.

marshalli Douglas and Scott

Pithanus marshalli Douglas and Scott, 1868:114.
Distribution: Great Britain.

MIMOCEPS GROUP

MIMOCEPS UHLER

Figures 21A-C; 22A, B; 23A, B; 24A-D; 25A-D

Mimoceps Uhler, 1890:83 (type species designated by Uhler, 1890:84 insignis Uhler).

Diagnosis: Distinguished by slightly myrmecomorphic habitus; hemelytra white basally, pronotum slightly narrowed basally; usually submacropterous (hemelytra without cuneus and membrane), sometimes both sexes macropterous; head hypognathous; frons rounded and projecting beyond clypeus; antennal segment I long and linear (more than three-fourths head width); metaepisternal scent efferent system with ostiolar channel very short, and deeply recessed (fig. 21C); genital capsule of male genitalia with tubercles present dorsad of paramere insertions (fig. 24A), left paramere strongly angulate with long, pointed shaft (fig. 24C), vesica with two basal processes and ductus seminis with basal ornamentation (fig. 23A); and female genitalia with dorsal structure of posterior wall well developed flattened and strongly spinous (fig. 23B), sclerotized rings usually obsolete (fig. 25D).

Redescription: Dorsal Aspect: Small size 2.9-5.0; black; hemelytra basally and apically, antennal segment I variably, patches laterad of vertex, and posterior margin of head, white; legs reddish-fuscous; surface shining, slightly shagreened and rugulose.

Vestiture: Dorsal: Mostly glabrous or with very sparsely distributed, short, recumbent, light simple setae. Antennae: I and II as dorsum; II also with more densely distributed, suberect, and slightly longer simple setae distally, III and IV like distal

portion of II but also intermixed with sparsely distributed, longer, light simple setae. Legs: As dorsum; metafemora without short bristlelike setae; protibiae with two rows of light bristles; metatibia without minute black spicules. Head: Subovate in dorsal view, hypognathous, tylus ventrad of posteroventral margin of head; subovate in lateral view; eyes round, broadly joined to head, slightly pedunculate, anterior margin straight, posterior margin sinuate, facets not in contact with head, separated from pronotum; dorsal margin of eye slightly ventrad of dorsal margin of head; antennal fossae not pedunculate, flush to head, flange slightly produced; ventral margin of fossae even with ventral margin of eye; dorsal margin within ventral one-third of eye in lateral view; distance between fossa and eye equal to three-fourths of distal width of antennal segment I; dorsal surface of head broad, rounded, and smoothly curved from vertex to junction of frons and clypeus; frons projecting dorsad and anterodorsad of eye; junction of frons and clypeus angulate; frons rounded, without longitudinal sulcus, not projecting anteriorly of clypeus; clypeus with dorsal portion produced anteriorly of tylus, slightly rounded; vertex ecarinate, smoothly merging with frons; temporal area distinguished from frons by shagreened surface; bucculae, lora and juga even and anteriorly of frons; juga and lora produced and triangular; jugal-loral suture strong reaching fossa, with slight crease projecting ventrad of eye; gena horizontal; buccal flange short, just open distally, but enclosing most of cavity; junction of flange and head with crease in lateral view; gula large; labium reaching mesocoxae, I reaching

between buccula and posterior margin of head. Antennae: I long, thickest submedially, narrowed basally, bowed; II long, thinner than I; III approximately one-third length of II; III and IV slightly thinner than II. Structure of pronotum, mesoscutum, scutellum and hemelytra related to wing form. Both sexes with macropterous and submacropterous specimens. Submacropterous specimens: Pronotum: Subcomplanate; with proepisternum, coxal cleft, and propleura, adjacent to cleft, visible in dorsal view; pronotum with anterior and posterior margins slightly concave; posterior margin wider than width at calli area; pronotal disk without anterior and posterior lobes; posterior portion reduced; lateral margin of pronotum sinuate, broadly rounded at calli, posterior end slightly angulate; anterior end carinate dorsad of coxal cleft, merging with posterolateral portion of collar, anterior end not reaching anterior margin of pronotum; calli very large, reaching lateral margins of pronotum, broadly confluent anteriorly and medially, and with pair of medial foveae; collar flat, with well defined posterior sulcus; lateral portion of posterior sulcus merging with anterolateral foveae, sulcus continues anterolaterally slightly, then terminates even with anterior margin of proepisternum in dorsal view; coxal cleft deep, incisure extending under lateral margin of pronotum, continuing dorsad of proepisternum, terminating even with posterior sulcus of collar in lateral view; proepisternum slightly produced, and rounded; procoxal flange small; xyphus concave. Mesoscutum and scutellum: Suture confluent over entire width; extent of individual structures obscured; lateral area small, notchlike; surface

striate. Hemelytra: Veins obsolete. Macropterous specimens:
Pronotum: Structure as in submacropterous specimens except for these differences: Subtriangular; disk with distinct anterior and posterior lobes, posterior lobe as wide as calli in dorsal view; lateral margin with posterior end broadly carinate; calli with posterior sulci. Mesoscutum and scutellum: Confluent over entire width, lateral area strongly depressed, margin sharp. Hemelytra: Embolium narrow, diminishing distally; cuneus obsolete, membrane present; interior cell obsolete, outer cell elongate and rounded distally. Legs: Metafemora slightly longer than abdomen, and shorter than metatibiae; metatarsi with segment I subequal to combined length of II and II. Metafemoral trichobothria: With seven trichs; trichoma very small; bothria slightly sunken within surrounding cuticle. Claws: Without pulvilli.

Ratios: Antecular portion of head to head length (0.29-0.36:1.00).
 Eye height to head height (0.74-0.75:1.00).
 Gena to head height (0.22-0.30:1.00).
 Buccular flange and cavity to ventral head length (0.57-0.67:1.00).
 Antennal segment I to dorsal head width (0.76-0.90:1.00).
 Antennal segment II to dorsal pronotal width (1.00:0.30-0.48).

Metaepisternal scent efferent system: Ostiolar channel very short, deeply recessed between bases of coxae, orifice broad, terminating on ventralmost portion of metaepisternum; peritremal disk very large, extending to lateral portion of metaepisternum, not extending laterad of evaporative surface; evaporative surface

extremely reduced, only anterior section present, continuing dorsad of peritremal disk to posterodorsal section.

Male Genitalia: Genital capsule: With tubercles present dorsad of left and right parameres (left side larger); posteroventral portion of capsule not produced. Left paramere: With moderate size sensory lobe; arm subequal to shaft in length; angle sharp; shaft long curving basad to sensory lobe; with large, flat spine apically; surface smooth. Right paramere: Distal end bulbous, with small preapical spine. Vesica: Ductus seminis: Narrow, long, with well sclerotized ornamentation basad. Secondary gonopore: Small, coiled and complete. Membrane: With two sclerotized processes (one narrower than other); without ribbonlike strap supporting a portion of membrane.

Female Genitalia: Sclerotized rings: Obsolete, indistinguishable from ventral labiate plate. Dorsal labiate plate: Obsolete. Ventral labiate plate: Occupying sclerotized ring area, not spanning rings; inter-ramal sclerotization wide laterally, narrowing to pointed apex, not spanning rings, with long, thin, projection caudad of ring area. Posterior wall: Inter-ramal sclerite: Moderate depth. Median process: Small, buttonlike, with large plowlike projection posteriad. Dorsal structure: Very large, subquadrate, flattened, and surface with obvious stout spinulae. Inter-ramal lobes: Large, obscuring most of sclerite, not confluent medially. Oviducts: Common and laterals joined dorsally. Second valvulae: Without small subapical, lateral ridge.

Included Species:

insignis Uhler

Globiceps flavomaculatus, Provancher not Fabricius,
1886:147 (synonym by Van Duzee, 1912:322).

Mimoceps insignis Uhler, 1890:84.

Mimoceps gracilis Uhler, 1890:85. -- Knight, 1927:41 (new
synonym).

Distribution: Nearctic.

TERATOCORIS FIEBER

Figures 21D-F; 22C, D; 23C, D; 24E-G; 25E-I

Teratocoris Fieber, 1858:302 (type species by monotypy Capsus
antennatus Boheman). -- Kelton, 1966a:1265 (review of
Nearctic species); p. 1267, figs. 1-7 (male genitalia).

Diagnosis: This genus is distinguished from Pithanus by the quadrate head in lateral view; frons usually produced anteriorly of clypeal base; antennal segment one at least twice as long as width of head across eyes; metaepisternal scent efferent system with ostiolar channel short and deeply recessed, and with peritremal disk small (fig. 21F); genital capsule of male genitalia with tubercles present dorsad of paramere insertions (fig. 24E), left paramere strongly angulate with long pointed shaft (fig. 24F), vesica with two or three basal processes and ductus semini with basal ornamentation (fig. 24G); and female genitalia with dorsal structure of posterior wall well developed, flattened, and strongly spinose (fig. 23D), and sclerotized rings obsolete.

Redescription: Dorsal Aspect: Medium size 3.80-6.80; stramineous or greenish with antennal segment I, head, pronotum, scutellum, and hemelytra variously marked with fuscous or black, legs sometimes reddish; surface of head, collar, pronotal disk,

mesocutum and shagreened; pronotum basad of calli, and scutellum, slightly striate and rugulose; hemelytra broadly roughened.

Vestiture: Dorsal: Sparsely distributed, short to moderate length, recumbent or suberect, light simple setae. Antennae: I and II with sparsely distributed, short, dark, simple suberect setae; II with more densely distributed, suberect, light setae distally; III and IV with densely distributed, suberect, light simple setae, with very sparsely distributed, long, erect, light simple setae. Legs: Femora with sparsely distributed, erect, short, dark simple setae; tibiae as femora, and with densely distributed, erect, light simple setae distally; tibiae with scattered, dark bristles over entire length; metatibiae with extensive minute black spinulae. Head: Ovate in dorsal view, quadrate in lateral view; tylus even with posterior margin of head; eyes small, sometimes very small, ovate and tilted in lateral view; anterior margin of eye entire, evenly rounded or slightly concave; posterior portion pedunculate, facets removed from head, sometimes facets contiguous; posterior margin sinuate, and contiguous or subcontiguous with pronotum; dorsal margin of eye even with dorsal margin of vertex in lateral view; antennal fossa sometimes pedunculate, flange slightly carinate; ventral margin of antennal fossae even with or slightly ventrad of ventral margin of eye in lateral view; dorsal margin within ventral one-half of eye in lateral view; sometimes margins of fossae slightly wider than eye in lateral view; distance between antennal fossa and eye equal to one-half to three-fourths of, to equal to, distal width of antennal segment I; dorsal surface mostly flattened

across frons; vertex ecarinate, rounded and smoothly declivous to slightly concave and shagreened temporal area; frons usually without longitudinal sulcus, sometimes sulcus faintly present; anterior margin of frons broadly produced and rounded, usually projecting anteriorly of clypeus, juga, lora and bucculae; sometimes frons just slightly produced anteriorly; clypeus with dorsal portion slightly produced and rounded; juga anteriorly of lora and bucculae; juga triangular and produced, lora rectangular and produced; gena horizontal; buccula flange short, varying from short to long, enclosing buccula cavity; with distal end slightly open; labium reaching middle of mesosternum, I varying from attaining only one-half distance between buccula and posterior margin of head to reaching posterior margin. Antennae: I long to very long, sometimes longer than segment II, swollen submedially and basally, bowed; II long and narrower than I, III and IV narrower than II; III as long as, to one-half as long as II. Pronotum: Campanulate or quadrate with proepisternum barely visible in dorsal view; with anterior margin straight, posterior margin broadly concave, posterolateral angle directed posteriorly, lateral margin slightly sinuate, sometimes explanate; calli large, occupying more than one-half of disk, usually produced, not quite attaining lateral pronotal margins, confluent anteriorly, with pair of medial foveae, and with peripheral sulci posteriorly; sometimes calli mostly flattened and undifferentiated; pronotal disk without anterior and posterior lobes; posterior one-half expanded; collar flattened, usually with clearly delineated deep posterior sulcus, sometimes

posterior sulcus obsolete; lateral portion of posterior sulcus merging with anterolateral foveae and attaining anterolateral margins of pronotum; sulcus separating lateral margin of collar and anteriormost portion of lateral carinate margin of pronotum; lateral carinate margins of pronotum with anterior end strongly bridged dorsad of coxal cleft and merging with lateral margin of collar; posterior end merged with propleura before attaining posterior margin of pronotum; coxal cleft small, incisure perpendicular to, and extending deep under lateral carina, then curving dorsad around proepisternum, terminating anteriorly of proepisternum; proepisternum rounded, somewhat produced, sometimes only as prominent as adjacent portion of propleura; flange of procoxae moderately produced, not flaring; xyphus shallow. Mesoscutum and scutellum: Mesoscutum broadly exposed, broadly confluent medially, with suture laterally; lateral area with strong carinate margin. Hemelytra: Both sexes submacropterous (with greatly reduced or obsolete membranes) or macropterous, embolium of moderate width, attaining very small cuneal cleft; interior cell barely visible, shorter than cuneus, outer cell longer than cuneus, ovate in shape, rounded distally. Legs: Metafemora even with, or slightly longer than venter, barely longer than metatibiae; metatibiae with a few minute black spinulae distally; metatarsi with segment I subequal to combined length of segments II and III. Metafemoral trichobothria: With seven trichs; trichoma small to medium; bothria slightly sunken within surrounding cuticle. Claws: strongly curved, without pulvilli, paraempodia broad with sharply tapered apex.

Ratios: Anteocular portion of head to head length
(0.26-0.38:1.00).
Eye height to head height (0.50-0.76:1.00).
Gena to head height (0.24-0.42:1.00).
Buccular flange and cavity to ventral head length (0.44-0.81:1.00).
Antennal segment I to dorsal head width (1.00:0.36-0.94).
Antennal segment II to dorsal pronotal width (1.00:0.41-0.63).

Metaepisternal scent efferent system: Ostiolar channel extremely reduced, recessed between coxae, attaining only ventralmost portion of metaepisternum; peritremal disk obsolete; evaporative surface obsolete, only represented by several evaporative bodies on posterior portion of surface.

Male Genitalia: Genital capsule: With variable shaped tubercle present dorsad of left paramere insertion; small tubercle sometimes present dorsad of left paramere insertion; posteroventral portion of capsule undifferentiated. Left paramere: Sensory lobe obsolete; arm long; angle sharp; shaft long, bent basad to sensory lobe; needlelike apically; sometimes arm short and bent basad of sensory lobe; surface smooth. Right paramere: Distal end bulbous, with small preapical spine. Vesica: Ductus seminis: Long and narrow throughout, with well sclerotized ornamentation basad. Secondary gonopore: Well differentiated and complete. Membrane: With two or three basal processes (one thick and stout apically, one narrow and needlelike); without ribbonlike strap supporting a portion of membrane.

Female Genitalia: Sclerotized rings: Minute and closed,

adhered to ventral labiate plate. Dorsal labiate plate: Obsolete.
 Ventral labiate plate: Occupying sclerotized ring area, not
 spanning rings; inter-ramal sclerotization large, slanting mesially
 from ramae anteriorly to occupy ring area, with strap of variable
 width projecting caudad into genital chamber. Posterior wall:
 Inter-ramal sclerite: Moderately deep, with concave ventral
 margin. Median process: Small, without dorsal projection into
 dorsal structure; with plowlike plate posteriorly. Dorsal
 structure: Large, saclike, with surface stoutly spinose. Sometimes
 dorsal structure and median process obsolete. Inter-ramal lobes:
 Moderately deep, not obscuring sclerite, and with large angle
 between lobe and sclerite. Oviducts: Common and laterals joined
 dorsomedially. Second valvulae: Without small subapical, lateral
 ridge.

Included Species:

antennatus (Boheman)

Capsus antennatus Boheman, 1852:76.

Teratocoris antennatus: Fieber, 1861:246 (new combination).

Distribution: Palearctic.

borealis Kelton

Teratocoris borealis Kelton, 1966a:1269, fig. 6.

Distribution: Canada: Northwest Territories.

caricis Kirkaldy

Teratocoris longicornis Uhler, 1895:29 (name preoccupied).

Teratocoris caricis Kirkaldy, 1909:390 (new name for
longicornis). -- Kelton, 1966a:1268, fig. 5 (revised
 synonymy of saundersi Douglas and Scott).

Teratocoris elegans Woodroffe, 1967:229, figs. 7, 11a, 12,
 13, 18a, 19a. -- Woodroffe, 1969:105 (new synonym).

Distribution: Nearctic.

depressus Kerzhner

Teratocoris depressus Kerzhner, 1979:35-37, figs. 80-83.

Distribution: Far eastern Soviet Union.

discolor Uhler

Teratocoris discolor Uhler, 1887:68. -- Kelton, 1966a:1270, fig. 7 (description).

Distribution: Nearctic.

paludum Sahlberg

Teratocoris paludum Sahlberg, 1870:291. -- Kelton, 1966a:1266, fig. 3 (description)

Distribution: Holarctic.

saundersi Douglas and Scott

Miris longicornis Sahlberg, 1848:87. -- Reuter, 1875d:4 (new synonym).

Miris antennatus Flor not Boheman, 1860:433. -- Reuter, 1875d:4 (new synonym).

Teratocoris saundersi Douglas and Scott, 1869:260.

Teratocoris flori Sahlberg, 1870:290. -- Reuter, 1875d:4 (new synonym).

Teratocoris herbaticus Uhler, 1887:67. -- Kelton, 1966a:1266 (new synonym).

Teratocoris lineatus Wagner, 1952b:158-160, figs. upper row 1-7. -- Kelton, 1966a:1266 (new synonym).

Teratocoris saundersi: Kelton, 1966a:1266, fig. 2 (description).

Distribution: Holarctic.

viridis Douglas and Scott

Teratocoris hyperboreus Sahlberg, 1867:225. -- Reuter, 1883b:135 (new synonym).

Teratocoris viridis Douglas and Scott, 1867:46-47, fig. 2. -- Kelton, 1966a:1268, fig. 4 (description).

Distribution: Holarctic.

TRIGONOTYLUS GROUPCHAETEDUS EYLES

Figures 27A,G; 29A, B; 31A,B

Chaetodus Eyles, 1975:155 (revision; type species by original designation Megaloceroea reuteriana White). -- Carvalho and Da Silva Afonso, 1977:810, figs. 7-10; -- Carvalho and Gross, 1978:79, figs. 10-15 (male genitalia).

Diagnosis: Recognized by antennal segment II with dark,

bristlelike setae basally; vestiture of antennal segments I and II and metatibae shorter than width of segments; dorsal surface smoothly rugulose; head porrect, frons projecting slightly anteriorly

of posterodorsal margin of clypeus, and even with juga; vesica of male genitalia with two basal processes, left process hooked; and posterior wall of female genitalia with inter-ramal lobes large, with widely separated apices which extend ventrad of lateral portion of sclerite; medial portion of lobes narrow, not obscuring sclerite (fig. 31B).

Redescription: Dorsal aspect: Medium size 5.0-9.0; uniformly green, stramineous, or red, and sometimes with reddish longitudinal fasciae; head shagreened, pronotum and hemelytra slightly roughened, dorsal surface of collar and posterior lobe of pronotum with fine punctures; calli somewhat shagreened, mesoscutum slightly shagreened, scutellum striate, hemelytra smooth. Vestiture: Dorsal: With sparsely distributed, suberect or recumbent, short, light simple setae. Antennae: I with sparsely distributed or moderately distributed, short, suberect, dark bristlelike setae; II with shorter, suberect, dark bristlelike setae basally and with densely distributed, light, suberect or recumbent, simple setae distally; III and IV with densely distributed, short, light, suberect or recumbent simple setae intermixed with sparsely distributed, long, erect simple setae. Legs: Femora with sparsely or moderately distributed, short, dark bristlelike setae; metafemora glabrous basally; tibiae with two or three rows of dark bristles, ventral surface with several minute spinulae distally. Head: Triangular in dorsal view; porrect and rectangular in lateral view; anterior margin of eye sublinear; eyes broadly joined to head, and subcontiguous with pronotum; antennal fossa pedunculate with

anterodorsal flange; distance between fossa and eye two-thirds of distal width of antennal segment I; ventral margin of fossa slightly dorsad of ventral margin of eye, posterior margin even with or ventrad of dorsal margin of eye; dorsal surface, including temporal area, flat in lateral view; vertex rounded, gently declivous to temporal area; longitudinal sulcus present; frons projecting dorsad and anterodorsad of eye; frons projecting slightly anteriorly of dorsal margin of clypeus, but not projecting anteriorly of juga; apex of frons sometimes slightly upturned; clypeus with dorsal portion rounded, and projecting anteriorly of tylus; juga even with bucculae; juga triangular, lora rectangular; gena horizontal; jugal-loral suture reaching fossa; buccular flange tapering posteriorly, shorter than length of buccular cavity; cavity long, almost reaching posterior margin of head, gula short; labium reaching middle of mesocoxae, I just reaching posterior margin of head. Antennae: I widest sub-basally, bowed; II evenly thick throughout; III longer than II, IV shorter than III. Pronotum: Subquadrate, subconical or parallel-sided, with proepisternum and coxal cleft visible in dorsal view; anterior and posterior margins concave; lateral margin straight; dorsal surface convex; pronotum not divided into anterior and posterior lobes; calli small, not confluent anteriorly, not reaching lateral margin, and with pair of foveae; collar flat, with mostly obsolete sulcus posteriorly, faintly present near anterolateral foveae, directed anteriorly and diminished before attaining proepisternum; lateral surface of collar flat, posterior margin in lateral view obscure and merging with propleura; lateral

carinate margin of pronotum strongly bridged dorsad of coxal cleft, anterior end of margin merges with collar, and continues around slightly rounded proepisternum; lateral carinate margin obsolete before posterior margin of pronotum; coxal cleft inserted deeply under carinate margin; coxal cleft deep, coxal flange slightly produced; xyphus shallow, collar obsolete ventrally. Mesoscutum and scutellum: Narrowly confluent medially, suture reaches lateral margins, dorsal surface flat. Hemelytra: Macropterous; cuneal fracture faint, not reaching interior cuneal base; embolium thin reaching to cuneal fracture; inner cell thin, outer cell large, subrectangular, longer than cuneus. Legs: Narrow; femora widest basally tapered to apices, metafemora shorter than metatibiae; metatarsus with segment I equal to combined length of II and III. Metafemoral trichobothria: With 6 or 9 trichs; trichoma small to very small; bothria slightly sunken in surrounding cuticle. Claws: Gently curved with very small pulvilli.

Ratios: Anteocular of head to head length (0.54:1.00).

Eye height to head height (0.65:1.00).

Gena and head height (0.24:1.00).

Buccular flange to ventral head length (0.90:1.00).

Antennal segment I to dorsal head width across eyes (1.00:0.68-0.80).

Antennal segment II to dorsal pronotal width (1.00:0.31-0.39).

Metaepisternal scent efferent system: Ostiolar channel extending to lateral section of metaepisternum, terminating at peritremal disk; disk moderately produced laterad of evaporative surface; surface subtriangular, anterior and posterior sections

small, posterior section with margin projecting posterodorsad.

Male Genitalia: Genital capsule: Very large truncate tubercle present dorsad of left paramere insertion; right side with small spine; posteroventral portion of capsule produced. Left paramere: Sensory lobe slightly differentiated, merges extensively with arm; angle broad; shaft broad medially tapering basad and distad; bispinose apex; surface smooth. Right paramere: Slightly bulbous distally with tuberclelike bispinose apex. Vesica: Ductus seminis: Very narrow, widest at base. Secondary gonopore: Complete, and coil-like, ventral region bent and narrowed. Membrane: With two large spinose basal processes, (left bent, right straight and thicker); both socketlike, wrapping around and attached to ribbonlike strap basally; socket ventrad and to right of gonopore with small sclerite .

Female Genitalia: Sclerotized rings: Small, oval, and open. Dorsal labiate plate: Obsolete. Ventral labiate plate: Large, present behind ring, extending medially but not spanning rings; inter-ramal sclerotization extending from lateral margin of ramae to broadly occupy anterior portion of genital chamber. Posterior wall: Inter-ramal sclerite: Moderately deep with large medial notch. Median process: Well sclerotized, but without projecting dorsal or posterior sections. Dorsal structure: Not saclike, broadly open anteriorly, and flattened dorsally; Inter-ramal lobes: Two large, widely separated lobes, with apices directed ventrally, and surpassing ventral margin of sclerite; obscuring only lateral portion of sclerite. Oviducts: Common and laterals joined anteriorly.

Included Species:

longiceps Eyles

Chaetodus longiceps Eyles, 1975:156, figs. 5-10. --
 Carvalho and Gross, 1980:77, figs. 8-16 (description).
 Distribution: New South Wales, New Zealand, and Tasmania.

plumalis Eyles

Chaetodus plumalis Eyles, 1975:157, figs. 11-14.
 Distribution: Norfolk and Raoul Islands.

reuterianus (White)

Megaloceroea reuteriana White, 1878:130. -- Woodward,
 1954:230 (hosts and distribution).
Chaetodus reuterianus: Eyles, 1975:159, figs. 15-21 (new
 combination).
 Distribution: New Zealand.

rutilans Eyles

Chaetodus rutilans Eyles, 1975:161, figs. 22-26. --
 Carvalho and Da Silva Afonso, 1977:810, figs. 6-10
 (description).
 Distribution: Papua-New Guinea.

DOLICHOMIRIS REUTER

Figures 26A; 27B, C; 29C-E; 30A; 31 C-H

Dolichomiris Reuter, 1882:29 (type species by monotypy linearis
 Reuter). -- Eyles and Carvalho, 1975:257 (revision); p.
 259, figs. 2-5; p. 263, figs. 15-18, 24-26; p. 265, figs.
 27-30, 32-35 (male genitalia). -- Carvalho, 1975:123, figs.
 2-4; p. 125, figs. 6-8 (male genitalia).

Eioneus Distant, 1893:461 (type species by monotypy bilineatus
 Distant). -- Reuter, 1909b:5 (new synonym). -- Carvalho and
 Dolling 1976:794 (lectotype designation).

Diagnosis: Recognized by the vestiture of antennal segments I
 and II, and metatibiae wider than at least one-half width of
 segments; dorsal surface smooth, sometimes pronotum minutely
 punctate; head porrect, frons slightly or more strongly, projecting
 anteriorly of posterodorsal margin of clypeus and even with juga,
 sometimes not projecting anteriorly of but only even with margin;
 vesica of male genitalia complex, with one, two or three large

processes; and posterior wall of female genitalia with inter-ramal lobes variable, but always with two large well separated and ventrally produced apices, medial portion either narrow and not obscuring sclerite or obsolete (figs. 31D, F, H).

Redescription: Dorsal Aspect: Medium to large size 6.5-10.2; green, stramineous or sometimes reddish appendages with contrasting fuscus to reddish spots, fasciae or patches; head smooth, temporal areas shagreened, anterior section of frons transversely striate; pronotum minutely punctate, calli shagreened, mesoscutum and scutellum shagreened, appearing velvety; hemelytra smoothly rugulose. Vestiture: Dorsal: Subglabrous or with sparsely distributed, short, suberect, light simple setae. Antennae: I and II densely distributed, short, recumbent, simple light setae, or with densely distributed, long (as wide as segments), suberect, dark simple setae; III-IV as on segment II but without sparsely distributed, longer, erect, light simple setae. Legs: Metafemora with sparsely distributed simple setae, metatibiae sometimes with densely distributed, long (as wide as tibiae), suberect, dark simple setae also with patch of minute black spinulae extending over entire length of tibiae; distal half of tibiae with two rows of sparsely distributed black bristles.

Head: Subovate in dorsal view, rectangular in lateral view; anterior margin of eye broadly concave or rounded; eyes broadly joined to head and separated from pronotum; antennal fossa pedunculate, directed anteriorly, with flange obsolete; distance between fossa and eye equal to one-fifth width of antennal segment

I; ventral margin of fossa dorsad of ventral margin of eye and dorsal margin of fossa ventrad of, or almost even with dorsal margin of eye in lateral view; dorsal surface of head flat in lateral view; vertex broadly rounded, smoothly declivous to temporal area; longitudinal sulcus deep; frons flat with anterior margin extremely produced, projecting beyond posterodorsal margin of clypeus, apex of frons rounded and sometimes finely upturned, and extending anteriorly of juga, lora and bucculae; juga triangular, lora rectangular; jugal-loral suture deep, reaching ventral margin of fossa; gena horizontal and small; buccular flange thin, gradually diminishing to gula, shorter than buccular cavity; cavity not reaching posterior margin of head, gula present; labium just surpassing apices of mesocoxae, I even with posteroventral margin of head. Antennae: I long, somewhat thicker basally, bowed; II variable length, either shorter or longer than III, thickest basally, gradually tapered distally, thicker than III and IV. Pronotum: Triangular; proepisternum visible in dorsal view; anterior margin concave, lateral margin broadly concave; calli slightly produced, not confluent anteriorly, reaching lateral margin of pronotum; disk flattened just slightly posteriorly of anterior part of pronotum; dorsal surface of posterior portion of disk broadly rounded in posterior view; collar, including lateral margin, flattened and broad, minutely punctate dorsally, posterior sulcus obsolete, lateral margin of sulcus a faint crease; lateral carinate margin sinuate, with posterior end attaining posterior margin of pronotum, medial area very strongly carinate posteriorly of cleft and dorsad of

coxal cleft, anterior end merging with lateral portion of pronotal collar and curving dorsad just anterior of proepisternum; coxal cleft deep and wide; coxal incisure deep, extending under lateral carinate margin; proepisternum slightly rounded, curved to coxal margin; procoxal flange small; xyphus shallowly depressed.

Mesoscutum and scutellum: Narrowly confluent medially, with lateral suture; dorsal surface of mesoscutum and scutellum flat; apex of scutellum pointed. Hemelytra: Macropterous; translucent or strongly sclerotized with prominent veins, embolium tapering to cuneal cleft; inner cell small, subequal to cuneus; outer cell much longer than cuneus and angulate distally. Legs: Metafemora thin to moderately thick; metatibiae longer than metafemora, segment one of metatarsus longer than combined length of segments II and III.

Metafemoral trichobothria: With 7 or 9 trichs; trichoma very small to small; bothria slightly sunken in surrounding cuticle. Claws: With small pulvillus, claws long and broadly rounded.

Ratios: Anteoocular of head to head length (0.52-0.58:1.00).
 Eye height to head height (0.58-0.80:1.00).
 Gena to head height (0.10-0.17:1.00).
 Buccular flange to ventral head length (0.44-0.57:1.00).
 Buccular cavity to ventral head length (0.72-0.77:1.00).
 Antennal segment I to dorsal head width (1.00:0.49-0.57).
 Antennal segment II to dorsal pronotal width (1.00:0.34-0.43).

Metaepisternal scent efferent system: Ostiolar channel short terminating ventrad on metaepisternum; peritremal disk moderately developed laterad of evaporative surface; surface subtriangular,

anterior section reduced, posterior section with margin projecting posterodorsad.

Male Genitalia: Genital capsule: Tubercle, of variable size and shape, dorsad of left paramere insertion; posteroventral portion of capsule slightly produced. Left paramere: Small sensory lobe merges with arm; angle broad; shaft slightly curved; bispinose or pointed apex; surface smooth. Right paramere: Moderately bulbous distally with tuberclelike bispinose apex. Vesica: Ductus seminis: Narrow, thickest basally. Secondary gonopore: Complete, and coil-like, ventral region bent and narrowed; sometimes left side of aperture with large, flattened sclerite extending dorsad of gonopore. Membrane: Complex; with one or two variously shaped large spinose basal processes (left process, either present or absent [if absent, sleeve-like base present]); sometimes with three processes (two basal, one lobal sclerite).

Female Genitalia: Sclerotized rings: Of moderate or small size, open, and subtriangular. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present, behind and larger than ring, spanning rings; inter-ramal sclerotization extensive, broadly occupying genital chamber. Posterior wall: Inter-ramal sclerite: Moderately deep and concave. Median process: Variable; either well sclerotized, with dorsal portion curved anteriorly beyond sclerite, forming ventral floor of dorsal structure and with prominent posterior portion; or obsolete. Dorsal structure: Not sac-like, very large, broadly open anteriorly, and flattened dorsally; sometimes merging with inter-ramal sclerotization and associated

with ventral labiate plate. Inter-ramal lobes: Variable; two large, widely separated lobes, with apices directed ventrally, and surpassing ventral margin of sclerite; obscuring only lateral portion of sclerite. Oviducts: Common and laterals joined anterolaterally. Sometimes with large anal tube.

Included species:

Subgenus DOLICHOMIRIS Linnavuori, 1975:17-18.

antennatis (Distant)

Megaloceroea antennata Distant, 1904:424.

Dolichomiris antennatis: Eyles, 1975:166 (new combination, lectotype designation). -- Eyles and Carvalho, 1975:259, figs. 1-6 (description).

Distribution: India.

brevifrons (Odhiambo)

Notostira brevifrons Odhiambo, 1958:733, figs. 1-6.

Dolichomiris brevifrons: Linnavuori, 1975:17-18 (new combination).

Distribution: Northeast Africa: Uganda and Ethiopia.

hirticornis Zheng

Dolichomiris hirticornis Zheng, 1986:86, figs. 2, 4, 8.

Distribution: China.

kuwayamai Miyamoto

Dolichomiris kuwayamai Miyamoto, 1967:65, figs. 1-6, pl. 2.

Distribution: Japan.

linearis Reuter

Dolichomiris linearis Reuter, 1882:29. -- Carvalho and Ferreira 1972:178 (distribution). -- Eyles and Carvalho, 1975:260, figs. 7-14 (description). -- Carvalho and Da Silva Afonso, 1977:812, figs. 11-18 (description). -- Carvalho and Gross, 1980:76, figs. 1-7, 16 (description).

Notostira pacifica Kirkaldy, 1908:380. -- Carvalho and Wallerstein, 1976:514 (new synonym).

Distribution: Circumtropical and subtropical.

planiceps Zheng

Dolichomiris planiceps Zheng, 1986:87, figs. 3, 6, 9.

Distribution: China.

planifrons Eyles and Carvalho

Dolichomiris planifrons Eyles and Carvalho, 1975:262, figs. 15-19. -- Carvalho, 1975:123, figs. 1-4 (description).

Distribution: South Africa.

puncticerus Carvalho

Dolichomiris puncticerus Carvalho, 1975:124, figs. 5-8, 52.
Distribution: Brazil (Nova Teutonia) and Argentina (Missones).

punctipes Poppius

Dolichomiris punctipes Poppius, 1912:159.
Distribution: East Africa and Cameroon.

uniformis Eyles and Carvalho

Dolichomiris uniformis Eyles and Carvalho, 1975:265, figs. 31-36.
Distribution: India.

Subgenus OMMATOMIRIS Poppius

Ommatomiris Poppius, 1910:29-30 (new genus, type species by monotypy sjostedti Poppius). -- Carvalho, 1952c:84 (synonym of Dolichomiris). -- Linnavuori, 1975:17 (new subgenus, new status).

sjostedti (Poppius)

Ommatomiris sjostedti Poppius, 1910:29.
Dolichomiris sjostedti: Carvalho, 1952c:85 (new combination).
Dolichomiris punctatus Odhiambo, 1958:736, figs. 7-14. -- Linnavuori, 1975:18 (new synonym).
Distribution: East Africa and Cameroon.

MEGALOCEROEA FIEBER

Figures 26B, C; 27D; 28A, C, D; 29F, G; 30B, C; 31I, J

Megaloceroea Fieber, 1858:301 (type species by original designation Miris longicornis Fallen, a synonym of Cimex recticornis Geoffroy). -- Carvalho, 1975:127, figs. 11-17 (male genitalia).

Diagnosis: Distinguished by vestiture of antennal segment I short; dorsal surface smooth or smoothly rugulose, appearing glabrous, but with minute vestiture; head porrect, frons either broadly triangular and projecting anteriorly of dorsoposterior margin of clypeus and slightly anteriorly of juga, or narrow, subequal to clypeus and greatly surpassing juga; vesica of male genitalia with two processes (fig. 30C); and posterior wall of female genitalia

with large median process and dorsal structure, and two large widely separated inter-ramal lobes with medially converging apices which surpass ventral margin of sclerite (fig. 31J).

Redescription: Dorsal aspect: Medium to large size 7.6-10.0; green or stramineous, sometimes antennal segment I with reddish spots, and head, pronotum and scutellum with reddish brown fasciae; head, calli, propleura, and mesoscutum smooth; hemelytra and pronotal disk smoothly rugulose; disk, collar, and clypeus with fine punctures; scutellum striate. Vestiture: Dorsal: Partially glabrous, frons with very sparse, short, erect, dark simple setae; remainder of dorsum with more sparsely distributed, recumbent, light simple setae. Antenna: I and II with slightly longer, moderately distributed, suberect, black or fuscous bristlelike setae; III, IV, and distal half of II with densely distributed, light, recumbent to suberect, simple setae, and with very sparse, sometimes longer, erect, light simple setae which stand above recumbent setae. Legs: Metatibiae with short, black bristles and many minute spinulae on distal ventral or internal surface. Head: Triangular in dorsal view, porrect and rectangular in lateral view; anterior margin of eye rounded or very slightly concave; eye broadly joined to head and subcontiguous or contiguous with pronotum; posterior part of eye round or oval in dorsal view; antennal fossa pedunculate, with small anteroventral flange, extended laterad to even with middle of eye in dorsal view, and with ventral margin of fossa dorsal of, or even with ventral margin of eye, dorsal margin even with dorsal margin of eye in lateral view; distance between fossa and anterior margin of

eye equals approximately one-half distal width of antennal segment I; dorsal surface in lateral view broadly rounded or flattened; vertex without carina, rounded, declivous to sunken temporal area, longitudinal sulcus present; frons either blunt, projecting dorsad and anterodorsad of eyes, and projecting anteriorly of base of clypeus, but not juga, lora and bucculae, or frons tapered, pointed, and projecting anteriorly of juga, lora and bucculae, with length subequal to clypeus; dorsal half of clypeus bulbous; lora anteriorly of juga and bucculae, juga quadrate and flat or triangular and produced; jugal-loral suture reaching antennal fossa, slight crease extending from fossa to ventrad of eye; gena narrow, and ventral; buccular flange short, cavity longer than flange; labium reaching metacoxae, I reaching xyphus. Antennae: I long, bowed; II long, narrower than I, III subequal to II; III and IV narrower than II; IV very short, about one-third length of I. Pronotum: Subconical or subquadrate, not divided into anterior and posterior lobes, obscuring proepisternum, in dorsal view; anterior and posterior margins concave; calli faint, not confluent anteriorly, with faint posterior sulcus, and pair of medial foveae; anterior margin of calli without sulcus; collar flattened, without posterior sulcus, lateral portion denoted by anterolateral foveae; lateral carinate margin strong and slightly concave, reaching posterior margin of pronotum, anterior margin merging with lateral side of pronotum posteriorly of collar; coxal cleft deep, incisure obsolete upon attaining lateral portion of collar and not continuing around proepisternum; proepisternum not produced; xyphus without anterior

flange. Mesoscutum and scutellum: Confluent medially, laterally suture present, dorsal surface flattened. Hemelytra: Macropterous; parallel-sided, slightly tapered distally, embolium evenly wide, throughout; hemelytra smoothly rugulose, claval and costal veins with fine, shallow punctures; claval fracture small; incisure short, not reaching interior basal margin of cuneus; inner cell narrowly triangular and shorter than cuneus; outer cell oblong, rounded distally, and longer than cuneus. Legs: Metafemora longer than venter, subequal or shorter than metafemora; segment one of metatarsus longer than combined length of segments II and III. Metafemoral trichobothria: With 9 trichs; trichoma very small; bothria slightly sunken in surrounding cuticle. Claws: Curved with small pulvilli.

Ratios: Antecular of head to head length (0.59-0.61:1.00).
 Eye height to head height (0.50-0.63:1.00).
 Gena to head height (0.47-0.64:1.00).
 Buccular flange to ventral head length (0.42-0.54:1.00).
 Buccular cavity to ventral head length (0.81-0.92:1.00).
 Antennal segment I to dorsal head width across eyes (1.00:0.31-0.53).
 Antennal segment II to dorsal pronotal width (1.00:0.28-0.38).

Metaepisternal scent efferent system: Ostiolar channel extending to lateral surface of metaepisternum, terminating in peritremal disk; peritremal disk slightly elevated laterad of evaporative surface, apex of disc directed anterodorsad; evaporative surface poorly developed, anterior section obsolete dorsally, posterior section small.

Male Genitalia: Genital capsule: Tubercle present dorsad of left paramere insertion; posteroventral portion of capsule slightly or strongly produced (if strongly than also with large anal tube). Left paramere: Sensory lobe not strongly differentiated; arm and shaft of subequal length; apex pointed; surface smooth. Right paramere: Distal portion rounded with moderate size spine. Vesica: Ductus seminis: Narrow, thickest at base. Secondary gonopore: Complete, coil-like aperture bent ventrad and notched slightly diffuse. Membrane: With one basal process attached to ribbonlike sclerite in socket basally, one sclerotized process; several lobes spinose.

Female Genitalia: Sclerotized rings: Of moderate size, open, and subquadrate; adjacent to inter-ramal sclerotization. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind, but not spanning, rings; inter-ramal sclerotization large, extending from lateral ramal area broadly into genital chamber. Posterior wall: Inter-ramal sclerite: Large, but relatively narrow and concave. Median process: Large, strongly sclerotized, sigmoid in lateral view, and with dorsal portion curved anteriorly beyond sclerite, forming ventral floor of dorsal structure; without plowlike plate posteriorly. Dorsal structure: Not saclike, very large, broadly open anteriorly, and flattened dorsally. Inter-ramal lobes: Two large, widely separated lobes, with apices converging medially and surpassing ventral margin of sclerite; obscuring only lateral portion of sclerite. Oviducts: Common and laterals joined dorsomedially or anteriorly. Sometimes with long anal tube.

Species Included:

costicollis (Berg)

Miris costicollis Berg, 1878:268.

Trigonotylus costicollis: Berg, 1883:6 (new combination).

Dolichomiris costicollis: Reuter, 1901c:159 (new combination). -- Carvalho, 1951b:131 (distribution).

Megaloceroea costicollis: Carvalho, 1975:126, figs. 9-14, 53 (new combination).

Distribution: Neotropical: Argentina, Brazil, and Uruguay.

recticornis (Geoffroy)

Cimex linearis Fuessly, 1775:26 (preoccupied by Cimex linearis Fabricius, 1775 [Coreidae]).

Cimex recticornis Geoffroy, 1785:209 (description).

Miris longicornis Fallen, 1807:108. -- Reuter, 1888:611 (new synonym).

Megaloceroea recticornis: Eyles, 1975:154, figs. 1-4 (description).

Distribution: Holarctic, and New Zealand.

SCHOUTEDENOMIRIS CARVALHO

Figures 26D; 27E, H; 28E; 29H; 30D; 31K,L

Schoutedenomiris Carvalho, 1951a:100 (type species by monotypy acutotylus Carvalho).

Diagnosis: Distinguished by clypeus large with anterodorsal portion prominent and pointed; metatibiae with densely distributed vestiture longer than width of segment; head porrect; anterior margin of frons obsolete; dorsal surface slightly rugulose, subglabrous; vestiture of antennal segment I sparsely distributed and short, cuneus of hemelytra long, attaining apex of membrane; male genitalia with genital capsule without tubercles dorsad of paramere insertions, vesica with one bulbous process (fig. 30D); and posterior wall of female genitalia with dorsal structure obsolete, inter-ramal lobes large with apices extending ventrad of sclerite (fig. 31L).

Redescription: Dorsal Aspect: Medium 7.0-9.0, green to stramineous, antennal segment II sometimes with reddish patches ventrally; slightly shining; head and pronotum slightly rugulose; scutellum, mesoscutum and hemelytra smooth or slightly rippled; pronotum, mesocutum, scutellum and hemelytra flat in lateral view. Vestiture: Dorsal: Subglabrous. Antennae: I with sparsely distributed, short, recumbent, fuscous to black simple setae; without dark bristlelike setae; II with densely distributed, short, suberect, fine, light simple setae; III and IV with densely distributed, suberect fine, light simple setae. Legs: Femora with sparsely distributed, short, appressed, black simple setae (somewhat longer at apex); tibiae with densely distributed, long, erect simple setae and sparsely distributed black spinulae distally, also with a few bristlelike setae apically. Head: Conical in dorsal view, porrect and rectangular in lateral view; anterior margin of eye entire, not emarginate; eyes small, dorsoventrally compressed, broadly joined to head and contiguous with pronotum; anteroventral margin of antennal fossa with slight projection; fossa produced on prominent, cylindrical ridge, which project as far laterally from surface of head as eyes; distance between fossa and eye equal to distal width of antennal segment I; dorsal and ventral margins of fossa even with dorsal and ventral margins of eye; dorsal surface of head flat in lateral view, gently sloping to apex of clypeus; vertex obsolete, ecarinate; area anterior of vertex slightly sunken; longitudinal sulcus present; frons projecting dorsad and anterodorsad of eyes; anterior margin of frons obsolete, merging

fully with clypeus; clypeus somewhat swollen and rounded dorsally, with anterior portion prominent, and produced to narrow apex; clypeus posteriad of juga, lora and bucculae; juga quadrate with anterodorsal portion slightly produced, lora rectangular, juga anteriad of lora; jugal-clypeal suture very strong; gena small, ventral; buccular flange shorter than length of buccular cavity; gula small; labium reaching metacoxae, I not extending beyond posterior margin of head. Antennae: I long, bowed; II long, much thinner than I; III and IV thinner than II, II and III equal in length. Pronotum: Conical; proepisternum obscured by lateral carina in dorsal view; posterior margin broadly, and anterior margin strongly, concave; anterolateral foveae slightly depressed; calli weakly differentiated, not confluent anteriorly, and with pair of medial foveae; disk flat, without posterior and anterior lobes; posterior sulcus of collar denoted by punctures in contrast with smooth calli; lateral portion of collar faint, collar obsolete ventrally; lateral margin of pronotum slightly sinuate, with anterior portion strongly carinate, surpassing pronotal collar and reaching anterior margin of pronotum; posterior end obsolete before posterior margin of pronotum; coxal cleft deep, incisure reaching under lateral carina and continues around proepisternum; proepisternum flat in lateral view; xyphus strongly depressed and marginally carinate. Mesoscutum and scutellum: Very broadly exposed, merging with scutellum medially; scutellum elongate. Hemelytra: Submacropterous, elongate, gently tapered distally, cuneal incisure very small, cuneal fracture faintly delineated but

long; embolium gradually narrowed approaching cuneal incisure; with one long and narrow cell reaching tip of membrane. Legs: Femora rounded, of equal thickness over entire length; metatibae longer than metafemora; segment one of metatarsus longer than combined length of segments II and III. Metafemoral trichobothria: With 7 (or 8) trichs; trichoma small; bothria slightly sunken in surrounding cuticle. Claws: curved, with minute pulvilli.

Ratios: Anteocular of head to head length (0.55:1.00).

Eyes height to head height (0.50:1.00).

Gena and head height (0.24:1.00).

Buccular flange to ventral head length (0.30:1.00).

Buccular cavity to ventral head length (0.88:1.00).

Antennal segment I to dorsal head width across eyes (1.00:0.64).

Antennal segment II to dorsal pronotal width (1.00:0.40).

Metaepisternal scent efferent system: Ostiolar channel small; apex recessed between coxae, situated on ventral aspect of metaepisternum and broadly open; peritremal disk small, but distinct, weakly prominent, merging with evaporative surface; evaporative surface subtriangular or narrow, anterior section slightly more developed than posterior section.

Male Genitalia: Genital capsule: With one small tubercle present dorsad of left paramere insertions; posteroventral portion of capsule produced; with elongate anal tube. Left paramere: Very small sensory lobe, indistinguished from arm; shaft thick and equal to length of arm; small spine apically; surface smooth. Right paramere: Large with expanded distal portion and large hook

apically. Vesica: Ductus seminis: Small and narrow. Secondary gonopore: Complete coil-like aperture. Membrane: With one, large, apically bulbous, basal process and one, short socketlike basal process.

Female Genitalia: Sclerotized rings: Small, open, and oval. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind entire ring, spanning ring area with even thickness throughout, deeply cleft medially; inter-ramal sclerotization present laterally. Posterior wall: Inter-ramal sclerite: Narrow. Median process: Thin, not projecting dorsad of sclerite. Dorsal structure: Obsolete. Inter-ramal lobes: Very large, deeper than sclerite, angle between sclerite and lobe small. Oviducts: Common and lateral joined anteriorly.

Dicussion: I tentatively place the brazilian endemic genus Trigonotyliscus in synonymy with the large and cosmopolitan genus Trigonotylus. The diagnostic features of Trigonotyliscus, short first antennal segment, wide head and rounded frons, are subsumed within the variation encountered in species of Trigonotylus I have examined.

Included Species:

acutotylus Carvalho

Schoutedenomiris acutotylus Carvalho, 1951a:101, figs. 4a-d.
Distribution: Africa: Angola, and Zaire.

longicornis Linnavuori

Schoutedenomiris longicornis Linnavuori, 1975:18, fig. 11e.
Distribution: Africa: Ethiopia.

propinquus Odhiambo

Schoutedenomiris propinquus Odhiambo, 1958:744, figs. 27-32.
Distribution: Africa: Uganda.

TRIGONOTYLUS FIEBER

Figures 26E; 27F, I; 28B, E; 29I, J; 30E-G; 31M-P

Trigonotylus Fieber, 1858:302 (type species by monotypy Miris ruficornis Fallen, a synonym of Cimex ruficornis Geoffroy). -- Carvalho and Wagner, 1957:120-155 (world revision). -- Kelton, 1971:685-705 (revision of North American species); pp. 693, 698, figs. 8-19 (male genitalia). -- Carvalho and Gross, 1980:82, figs. 19-24 (male genitalia). -- Zheng, 1985:283, figs. 1-12 (male genitalia).

Callimiris Reuter, 1876:60 (type species designated by Kirkaldy, 1906:144, uhleri Reuter). -- Reuter, 1909a:5 (new synonym).

Oronomiris Kirkaldy, 1902b:144 (type species by monotypy hawaiiensis Kirkaldy). -- Carvalho, 1952c:84 (new synonym).

Trigonotyliscus Carvalho, 1975:137 (type species by monotypy brasiliensis Carvalho). NEW SYNONYM.

Diagnosis: Dorsal surface smooth or smoothly rugose; vestiture of antennal segments I and II and metatibiae shorter than width of segments; head porrect, frons projecting anteriorly of antennal fossae and posterodorsal margin of clypeus; vesica of male genitalia with one sclerotized process (figs. 30E, F), sometimes process obsolete (fig. 30G); female genitalia with these features: sclerotized rings sometimes absent or merging with inter-ramal sclerotization (fig. 31M); Median process faint and not projecting into dorsal structure (fig. 31); dorsal structure flat and platelike; inter-ramal lobes large and extending ventrad of sclerite (figs. 31N, P).

Redescription: Dorsal Aspect: Small size, 3.5-4.0; uniformly green or stramineous; sometimes head, pronotum, scutellum, and hemelytra with several longitudinal fasciae; sometimes antennal segment I, tibiae, and tarsus reddish or orange; surface smooth and/or shagreened throughout. Vestiture: Dorsal: Subglabrous or with very sparsely distributed, extremely short, appressed light

simple setae. Antennae: I with sparsely distributed, suberect, short, black simple setae; II with densely distributed, recumbent, short, light simple setae; III-IV same as II but with sparsely distributed, longer, erect, pale simple setae. Legs: Metafemora and distal portion of metatibiae with sparsely distributed, light, simple, erect and suberect setae; metatibiae also with small patch of minute black spinulae, and two rows of light suberect bristles.

Head: Triangular in dorsal view, porrect and rectangular in lateral view; anterior margin of eye shallowly concave; eyes broadly joined to head and contiguous with pronotum; antennal fossa pedunculate, directed anteriorly, with small flange; distance between fossa and eye equals one-third to four-fifths width of antennal segment I; fossa situated medially within dorsal and ventral margins of eye in lateral view; dorsal surface of head flat in lateral view; vertex slightly produced, rounded, gradually declivous to temporal area, longitudinal sulcus present; frons projecting dorsad and anterodorsad of eye; anterior portion of frons projecting anteriorly of posterodorsal margin of clypeus; apex of frons rounded and very wide, situated slightly anteriorly of juga, lora and bucculae; clypeus long, protuberant dorsally, projecting anteriorly of tylus, narrow in dorsal view; juga anteriorly of lora and bucculae; juga triangular, lora rectangular or quadrate; jugal-loral suture reaching fossa, crease below eye obsolete; gena horizontal; buccular flange thin, shorter than length of buccular cavity; cavity open posteriorly; gula present; labium reaching apex of mesosternum, I attaining posterior margin of flattened portion of xyphus. Antennae: I

slightly narrowed basally, bowed; II thinner than I; III and IV thinner than II, III subequal to length of II. Pronotum: Trapezoidal, and with coxal cleft and proepisternum barely visible in dorsal view; anterior margin slightly concave, posterior margin broadly concave; posterolateral angles of pronotum directed posteriorly; calli not produced dorsad of disk, with anterior margins separated, with slight anterior and deeper posterior sulci; disk not raised dorsad of anterior lobe; collar flattened, posterior sulcus obsolete, denoted by thinness of cuticle; anterolateral foveae present between collar and calli; lateral carinate margin straight, reaching posterior margin of pronotum, medial area strong, bridging coxal cleft dorsad, continuing anteriorly, merging with lateral flattened portion of collar, anterior end even with anterior margin of rounded and curved proepisternum; coxal cleft wide; coxal incisure deep extending under lateral carina; procoxal cavity with flange; xyphus shallowly depressed with anterior margin slightly raised adjacent to head. Mesoscutum and scutellum: Broadly exposed; mesoscutum and scutellum confluent medially, suture present laterally, dorsal surface straight and smooth. Hemelytra: Macropterous; sometimes brachypterous; smoothly rugulose; embolium broad basally, narrowing toward cuneal cleft; cleft small; incisure a crease, not reaching internal corner of cuneus; interior cell small, obscure, not as long as cuneus; outer cell somewhat rectangular, larger than cuneus, pointed distally. Legs: Narrow; femora widest basally, tapering distally, metatibiae longer than metafemora; segment one of metatarsus subequal to combined length of

segments II and III. Metafemoral trichobothria: With six or seven trichs; trichoma very small; bothria slightly sunken in surrounding cuticle. Claws: With small round pulvilli, claws broadly rounded.

Ratios: Anteocular of head to head length (0.60:1.00).

Eye height to head height (0.69:1.00).

Gena to head height (0.25:1.00).

Buccular flange to ventral head length (0.63:1.00).

Buccular cavity to ventral head length (0.90:1.00).

Antennal segment I to dorsal head width across eyes (1.00:0.58--1.09).

Antennal segment II to dorsal pronotal width (1.00:0.36--0.60).

Metaepisternal scent efferent system: Ostiolar channel short, apex recessed between coxae; anterior half of channel extending more mesad than posterior half; peritremal disk reduced, not produced laterad of evaporative surface; surface elongate, not triangular, with anterior and posterior sections reduced.

Male Genitalia: Genital capsule: Tubercle present dorsad of left paramere insertion, sometimes tubercle present on right side; small notch or spine present ventrad of left paramere insertion; posteroventral portion of capsule slightly produced. Left paramere: Small; sensory lobe variable, either somewhat quadrate or only slightly produced above curvature of arm; arm short; angle broad, or large; shaft of even thickness or thickened basally, sometimes sinuate; pointed apex; surface smooth. Right paramere: Small; distal half enlarged and bulbous; apical spine curved interiorly. Vesica: Ductus seminis: Narrow and long. Secondary

gonopore: Large, complete with diffuse aperture; ventral portion of aperture thickened, bent ventrad; sometimes left side of aperture projects dorsad and appears funnel shaped. Membrane: With one variably shaped basal process (either straight, sinuate or coiled); faintly attached to ribbonlike strap basally; sometimes sclerotized process obsolete, but ribbonlike strap present; sometimes with sclerotized patch ventrad of gonopore.

Female Genitalia: Sclerotized rings: Present or absent; when present, of moderate size, oval, open, and with posterior margin merged with inter-ramal sclerotization. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind lateralmost portion of ring area; when ring present, plate situated posteriad of ring; inter-ramal sclerotization present laterally (near ramae), with narrow band spanning posterior portion of genital chamber; when ring absent also with narrow band spanning ring area. Posterior wall: Inter-ramal sclerite: Small and concave. Median process: Very faint, dorsal portion slightly projecting anteriorly of sclerite and forming floor of dorsal structure. Dorsal structure: Not saclike, only a concave plate, widely open anteriorly. Inter-ramal lobes: Obscuring sclerite and extending ventrad of ventral margin of sclerite; sclerite and lobe separated by small angle. Oviducts: Common and laterals joined posterolaterally.

Discussion: I tentatively treat Trigonotyliscus as a junior synonym because the diagnostic features of this poorly known and endemic taxon are subsumed in the features of the species of the large and cosmopolitan genus Trigonotylus. Species of Trigonotylus

I have examined possess the short first antennal segment, wide head, and rounded frons diagnostic of Trigonotyliscus brasiliensis.

Included Species:

americanus Carvalho

Trigonotylus americanus Carvalho, In Carvalho and Wagner, 1957:126, fig. 1.

Distribution: Western North America.

antennatus Kelton

Trigonotylus antennatus Kelton, 1970:337, fig.4.

Distribution: Western North America.

bianchii Kiritshenko

Trigonotylus bianchii Kiritshenko, 1926:27.

Distribution: Palearctic: Northeastern Siberia (Kamchatka).

brasiliensis Carvalho

Trigonotyliscus brasiliensis Carvalho, 1975:138, figs. 46, 56. NEW COMBINATION.

Distribution: Neotropical: Brazil (Espirito Santo, Rio de Janeiro).

brevipes Jakovlev

Trigonotylus brevipes Jakovlev, 1880:215.

Trigonotylus dissimulatus Stichel, 1957:576. -- Wagner, 1971:125 (new synonym).

Distribution: Palearctic: Irano-Turanic region.

brooksi Kelton

Trigonotylus brooksi Kelton, 1970:334, fig. 1.

Distribution: Western Canada.

canadensis Kelton

Trigonotylus canadensis Kelton, 1970:336, fig. 3.

Distribution: Central Canada.

coelestialium (Kirkaldy)

Megaloceroea coelestialium Kirkaldy, 1902a:266.

Trigonotylus coelestialium: Reuter, 1903:1 (new combination, description). -- Wheeler and Henry, 1985:699 (biology).

Distribution: Holarctic.

confusus Reuter

Trigonotylus confusus Reuter, 1909a:6.

Distribution: Coastal region of southeast and south United States.

crassicornis Odhiambo

Trigonotylus crassicornis Odhiambo, 1958:739, figs. 15-21.
Distribution: Africa.

doddi (Distant)

Megaloceroea doddi Distant, 1904:269.

Megaloceroea dohertyi Distant, 1904:425. -- Eyles, 1975:162
(new synonymy). -- Carvalho, 1956:72 (distribution).

Trigonotylus californicus Carvalho, In Carvalho and
Wagner, 1957:128, fig. 3. -- Kelton, 1971:697 (new
synonym).

Trigonotylus doddi: Eyles, 1975:162, figs. 27-32 (new
combination).

Distribution: Pantropical and subtropical.

dorsalis Say

Miris dorsalis Say, 1832:26.

Stenodema dorsalis: Van Duzee, 1917:304 (new combination).
-- Kelton, 1961:452 (nomen oblitum).

Trigonotylus dorsalis: Henry and Wheeler, 1987:in press
(new combination).

Distribution: Eastern United States.

elymi (Thomson)

Miris elymi Thomson, 1871:2391.

Trigonotylus ruficornis var. psammaecolor Reuter, 1885:45.

Trigonotylus psammaecolor: Reuter, 1904b:5 (new status). --
Carvalho and Wagner, 1957:139, fig. 12 (new synonym).

Distribution: North and western Europe.

flavicornis Kelton

Trigonotylus flavicornis Kelton, 1970:335, fig. 2.

Distribution: Central Canada.

hawaiiensis (Kirkady)

Oronomiris hawaiiensis Kirkady, 1902b:144, fig. 30.

Trigonotylus hawaiiensis: Carvalho, 1952a:85 (new
combination).

Distribution: Hawaiian Islands.

lineatus (Butler)

Miris lineata Butler, 1877:89.

Trigonotylus lineatus: Carvalho and Wagner, 1957:135 (new
combination).

Distribution: Galapagos Islands.

longipes Slater and Wagner

Trigonotylus longipes Slater and Wagner, 1955:101, figs. 1-5 upper row, 6, 9. -- Carvalho and Ferreira 1972:178 (distribution).

Trigonotylus californicus Carvalho, In Carvalho and Wagner, 1957:128, fig. 3. -- Kelton, 1971:694 (new synonym in part).

Distribution: Western North America.

major Zheng

Trigonotylus major Zheng, 1985:283, figs. 5, 11, 12.

Distribution: China.

mexicanus Kelton

Trigonotylus mexicanus Kelton, 1971:696, fig. 12.

Distribution: Subtropical and tropical Mexico and Belize.

pallidicornis Reuter

Trigonotylus pallidicornis Reuter, 1899:161.

Distribution: Palearctic, north Africa, and Canary Is.

pulchellus (Hahn)

Miris pulchellus Hahn, 1831:119, fig. 200.

Trigonotylus ruficornis var. b, Fieber, 1861:243 (new combination, new status).

Trigonotylus ruficornis var. pulchellus: Reuter, 1885:45 (note).

Trigonotylus pulchellus: Wagner, 1945:259 (description, revised status).

Distribution: Palearctic: Central Europe, Egypt, and Turkistan.

pulcher Reuter

Trigonotylus pulcher Reuter, 1876:59.

Distribution: Southwest North America.

ruficornis (Geoffroy)

Cimex n. 45 Geoffroy, 1762:47.

Cimex ruficornis Geoffroy, 1785:209.

Miris ruficornis Fallen, 1807:112 (as new).

Trigonotylus ruficornis: Fieber, 1861:243 (new combination). -- Reuter, 1901a:213 (var. viridicornis).

Miris viridis Provancher, 1872:78. -- Kelton, 1968:1073 (lectotype designation); 1971:702 (new synonym).

Trigonotylus montanus Carvalho, In Carvalho and Wagner, 1957:125,. -- Kelton, 1971:702 (new synonym).

Distribution: Holarctic.

saileri Carvalho

Trigonotylus saileri Carvalho, In Carvalho and Wagner, 1957:145, fig. 16.

Distribution: Southwest North America.

slateri Carvalho

Trigonotylus slateri Carvalho, In Carvalho and Wagner, 1957:147, fig. 17.

Distribution: East and south United States.

tarsalis (Reuter)

Callimiris tarsalis Reuter, 1876:60.

Trigonotylus tarsalis: Reuter, 1909a:6 (new combination).

Distribution: Mid and western North America.

tenuis Reuter

Trigonotylus ruficornis var. tenuis Reuter, 1893:208 (new variation).

Trigonotylus tenuis: Reuter, 1907:1 (new status).

Distribution: Seychelles Islands.

uhleri Reuter

Callimiris uhleri Reuter, 1876:60.

Trigonotylus uhleri: Smith, 1910:163 (new combination).

Distribution: Coastal east and south United States.

usingeri Carvalho

Trigonotylus usingeri Carvalho, 1952a:1-2, fig. 1.

Distribution: Hawaii Islands.

STENODEMA GROUPAUTUMNIMIRIS, NEW GENUS

Figures 32A-D; 33A-O; 37A; 38A; 39A, H; 40A-C; 44A-F

Diagnosis: Recognised by male genitalia with posteroventral portion of capsule slightly produced, distal portion of right paramere of moderate size (figs. 33D, G, L, O), vesica with one notched or simple lobal sclerite (figs. 33B, E, J); dorsal surface with shining deep punctures throughout; rostrum usually reaching metacoxae; eyes slightly removed from pronotum; and female genitalia with small or medium size ovoid shaped sclerotized rings (figs. 44A,

C, E), inter-ramal sclerotization narrowly adhering ramae laterally and not projecting interiorly (figs. 44, C, E).

Description: Dorsal Aspect: Medium size, 6.4-7.2; general coloration yellow, stramineous, or reddish; usually variously marked with fuscous or black bilaterally on head, pronotum, scutellum, hemelytra, and cuneus, sometimes scutellum medially, antennae knees of legs, and bilateral vittae of venter with reddish or fuscous markings; surface smooth and deeply punctate; frons and vertex with sparsely distributed punctures; collar and calli deeply punctate, sometimes punctures faint and sparsely distributed; mesoscutum smooth, scutellum, clavus, corium and embolium with variously distributed punctures. Vestiture: Dorsal: With moderately distributed, short, recumbent, light simple setae, sometimes with moderate to long, erect, simple setae. Antennae: I with either light or black simple setae; II-IV with densely distributed, shorter, recumbent, light simple setae; III-IV with occasional longer, erect, light simple setae. Legs: Moderately distributed, moderately long, reclining, pale simple setae, tibiae with several rows of light or dark bristlelike setae, and metatibiae usually with scattered minute black spinulae. Vestiture of tibiae, and antennal segments I and II usually shorter than segments. Head: Triangular or subquadrate in dorsal view, subrectangular or rectangular in lateral view; eyes broadly joined to head, anterior margin slightly concave; slightly separated from pronotum; antennal fossa slightly pedunculate; fossa and eye separated by distance equal to one-third to one-half of distal end of antennal segment I; ventral and dorsal

margins of fossa in middle of margins of eye in lateral view; vertex ecarinate and slightly rounded; dorsal surface of head smoothly curved from vertex to apex of frons; vertex with longitudinal sulcus; apex of frons rounded and produced anterodorsad of base of clypeus, and not anterior of juga; juga anterior of lora and bucculae; anterodorsal portion of clypeus rounded and produced anterior of tylus; jugal-loral suture just short of or just reaching antennal fossa; lora sometimes with crease directed toward fossae; juga triangular, lora rectangular; gena ventral; buccular flange shorter than cavity, flange either gradually or abruptly tapered to carina which surrounds basal portion of cavity; gula short; labium reaching metacoxae, sometimes just reaching distal end of mesosternum, I reaching xyphus. Antennae: I of even thickness throughout, not bowed, I thicker and shorter than II, III and IV thinner than II; III shorter than II and longer than IV. Pronotum: Subtriangular with proepisternum visible in dorsal view, with distinct anterior and posterior lobes, posterior lobe rounded and produced dorsad of anterior lobe; anterior margin concave, posterior margin broadly rounded, lateral margin slightly to moderately concave medially; calli weakly differentiated, confluent anteromedially, not reaching lateral margins of pronotum, posterior sulcus usually obsolete, anterior sulcus present, merging with anterolateral foveae which continues anteriorly to margin of pronotum, forming sulcus between collar and lateral carina, and then continues ventrally forming anterior margin of proepisternum; collar flattened, posterior sulcus obsolete medially, confluent with

anterior sulcus of calli laterally; lateral margin of pronotum mostly rounded, margin carinate and bridged dorsad of coxal cleft; coxal cleft deep reaching under carina, proepisternum rounded and produced; procoxal flange small; xyphus deep. Mesoscutum and scutellum: Suture obsolete medially, present laterally, mesoscutum broadly exposed; dorsal surface usually flat, sometimes suture depressed in lateral view. Hemelytra: Macropterous; elongated parallel-sided, tapered distally, cuneal incisure small but distinct reaching interior base of cuneus; inner cell triangular and shorter than cuneus, outer cell longer than cuneus, angulate distally. Legs: Metafemora usually longer than or sometimes subequal to abdomen, metatibae longer than metafemora; metatarsi with segment I subequal to combined length of segment II and III. Metafemoral trichobothria: With seven or eight trichs; trichoma very small or small; bothria slightly sunken within surrounding cuticle. Claws: With small rectangular pulvilli.

Ratios: Anteocular portion of head to head length (0.43-46:1.00).
 Antefossal portion of head to head length (0.23-0.29:1.00).
 Eye height to head height (0.83-0.90:1.00).
 Gena to head height (0.10-0.13:1.00).
 Buccular flange to ventral head length (0.42-0.45:1.00).
 Buccular cavity to ventral head length (0.60-0.75:1.00).
 Antennal segment I to dorsal head width (0.97:1.00 to 1.00:0.83).
 Antennal segment II to dorsal pronotal width (1.00:0.41-0.44).

Metaepisternal scent efferent system: Ostiolar channel short; apex just reaching lateral surface of coxae, terminating on ventral portion of metaepisternum; peritremal disk prominently developed, projecting laterad of evaporative surface; evaporative surface subtriangular, anterior section less extensively developed than posterior section; posterior section slightly produced posterodorsad.

Male Genitalia: Genital capsule: Without tubercles present dorsad of paramere insertions; posteroventral portion of capsule not produced. Left paramere: Sensory lobe not differentiated above curvature of arm; surface smooth. Right paramere: Distal portion not expanded, with small pointed apex. Vesica: Ductus seminis: Narrow from middle to gonopore. Secondary gonopore: prominent coil-like structure with incomplete dorsal margin; (dissections with folded gonopore.) Membrane: Single, large lobal sclerite; sometimes process continuous with small spinulae basally.

Female Genitalia: Sclerotized rings: Open, rectangular, of small or moderate size. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind lateral one-half of rings; inter-ramal sclerotization obsolete caudally only present laterally, narrowly adhering ramae, sometimes posteriormost edge of inter-ramal sclerotization with narrow band spanning genital chamber. Posterior wall: Inter-ramal sclerite: Moderately deep with straight ventral margin. Median process: Well sclerotized, extending dorsad and ventrad of sclerite, extending anteriorly into dorsal structure, with plowlike plate posteriorly. Dorsal structure: Small, pointed, surrounding anterior projection of median process, saclike.

Inter-ramal lobes: Large, obscuring sclerite; membranous extension surrounding periphery of dorsal structure. Oviducts: Common and laterals broadly joined posteriorly.

Etymology: From the latin autumn and miris, referring to the autumn occurrence of members of the genus on cool season grasses in the desert southwest of North America; neuter.

Type species: Megaloceroea rubicundus Uhler.

Discussion: This genus is erected to contain four species previously placed in Litomiris, Neotropicomiris, and Porpomiris. All species possess vesicae and with one prominent notched or simple lobal sclerite, and sclerotized rings with inter-ramal sclerotization narrowly adhering to ramae laterally, sometimes with narrow band spanning genital chamber. Both features of the genitalia distinguish Autumnimiris from related genera as follows: Litomiris has two lobal sclerites and inter-ramal sclerotization caudad of rings not adhering to ramae; Neotropicomiris does not have lobal sclerites, and possesses bluntly protruding inter-ramal sclerotization; Porpomiris has one corkscrew shaped lobal sclerite, and inter-ramal sclerotization contiguous to rings.

I have examined the paratypes of Megaloceroea kobelei Van Duzee (CAS) and the holotype of M. letheri Knight (USNM) and determined that the latter is a junior synonym based on genitalic and external morphology. I have also examined many specimens of Neotropicomiris roseus (Distant) from Mexico and the holotype of Megaloceroea punctata Knight (USNM) from Nogalas, Arizona, as well as from other parts of Arizona and Texas, and have determined that punctata is the junior synonym of roseus based on all examined characters.

Included species:

albescens (Van Duzee)

Mesomiris albescens Van Duzee, 1925:35.

Distribution: Southwestern North America, including Mexico.

koebelei (Van Duzee)

Megaloceroea koebelei Van Duzee, 1921:118.

Megaloceroea letheri Knight, 1928:250. NEW SYNONYM.

Distribution: United States: Arizona.

roseus (Distant)

Miris roseus Distant, 1883:236. -- Carvalho and Dolling 1976:805 (lectotype designation).

Megaloceroea punctata Knight, 1928:249. NEW SYNONYM.

Litomiris punctata: Slater, 1956:120 (new combination). -- Knight, 1968:179 (key, distribution.)

Neotropicomiris roseus: Carvalho and Fontes, 1969:339 (new combination).

Distribution: United States: Arizona.

rubicundus (Uhler)

Megaloceroea rubicunda Uhler, 1872:409.

Litomiris rubicundus: Slater, 1956:120 (new combination).

-- Knight, 1968:179 (key, distribution).

Distribution: Southwestern North America, including Mexico.

CARACORIS, NEW GENUS

Diagnosis: Distinguished by long antefossal portion of head; male genitalia with posteroventral margin of genital capsule only slightly produced (fig. 35B), vesica without sclerotized processes with small spinous patch near secondary gonopore (fig. 35A); dorsal surface shining with deep distinct punctures throughout; labium reaching middle of abdomen; eyes separated from pronotum; pronotum without distinct anterior and posterior lobes; and female genitalia with inter-ramal sclerotization present caudad of sclerotized rings and not adhering to ramae distally (fig. 44G).

Description: Dorsal Aspect: Small size 4.5-4.8; general coloration including antennae and legs reddish with fuscous cast on

head, pronotum and scutellum; punctures and sulci black; embolium and lateral margin of cuneus yellow; surface with deep punctures on head, pronotum, mesoscutum, scutellum and basal portion of hemelytra. Vestiture: Dorsal: Head and pronotum with sparsely distributed, short, erect, light simple setae; pronotum with much longer setae. Antennae: I with short, reclining, light simple setae; II-IV with setae more densely distributed; III and IV without sparsely distributed, long, erect simple setae. Legs: With moderately distributed, moderate length, suberect, light simple setae; tibiae with few light bristlelike setae; metatibiae with patch of minute black spinulae distally. Vestiture of metatibiae and antennal segments I and II with setae shorter than segments. Head: Acutely pentangular in dorsal view; rectangular in lateral view; eyes broadly joined to head, anterior margin straight, separated from pronotum by small neck equal to distal width of antennal segment I; antennal fossa subpedunculate; fossae and eye separated by distance equal to distal end of I; ventral and dorsal margins of fossa within margins of eye in lateral view; frons produced anterodorsad and just dorsad of eyes in lateral view; vertex ecarinate and flat; dorsal surface of head gently curved from vertex to dorsal apex of clypeus; vertex with longitudinal sulcus; frons smoothly merging with clypeus, junction slightly sunken and posteriad of juga, lora, and bucculae; anterodorsal portion of clypeus slightly rounded and posterior of tylus; jugal-loral suture reaching antennal fossae; crease present from fossae to anteroventrad of eye; juga quadrate, lora rectangular, gena ventral;

buccular flange shorter than cavity, flange abruptly tapered to carina, and even with base of antennal fossae in lateral view; cavity not completely surrounded by carina, open posteriorly; gula long; labium reaching middle of abdomen; I long reaching anterior margin of procoxae. Antennae: I tapered to base, even throughout, bowed; I thicker than II; III and IV shorter and thicker than II; II longer than IV. Pronotum: Subtriangular with proepisternum just barely visible in dorsal view, without anterior and posterior lobes, anterior margin slightly concave, posterior margin mostly straight, posterolateral angles rounded, lateral margin straight; calli weakly differentiated, practically confluent anteromedially, just reaching lateral margins of pronotum; posterior and anterior sulci obsolete; anterolateral foveae present, adjoining sulcus, continuing anterolaterally, and separating lateral carinate margin of pronotum from collar; sulcus continues ventrally and merges with extension of coxal incisure to form anterior margin of proepisternum; collar flattened, posterior sulcus obsolete medially, confluent with anterolateral foveae laterally; lateral margin of collar slightly rounded; lateral margin of pronotum rounded on posterior half, anterior half carinate and strongly bridged dorsad of coxal cleft, anterior end terminates at sulcus, and not merging with lateral portion of collar; coxal cleft deep reaching under carina, proepisternum rounded and produced; procoxal flange small; xyphus broad, but deep. Mesoscutum and scutellum: Suture obsolete medially, mostly present laterally, mesoscutum moderately exposed; suture depressed, scutellum slightly rounded in lateral view.

Hemelytra: Macropterous; not greatly elongated; tapered distally; embolium wide reaching cuneal incisure, incisure reaching narrow inner cell, shorter than cuneus; outer cell rectangular, longer than cuneus, barely angulate distally. Legs: Length of metafemora even with abdomen, shorter than metatibiae; metatarsi with segment I subequal to combined length of segments II and III. Metafemoral trichobothria: With seven trichs; trichoma small; bothria slightly sunken within surrounding cuticle. Claws: With small rectangular pulvilli.

Ratios: Antecular portion of head to head length (0.48:1.00).
Antefossal portion of head to head length (0.31:1.00).
Eye height to head height (0.76:1.00).
Gena to head height (0.18:1.00).
Buccular flange to ventral head length (0.44:1.00).
Buccular cavity to ventral head length (0.77:1.00).
Antennal segment I to dorsal head width (0.85:1.00).
Antennal segment II to dorsal pronotal width (0.44:1.00).

Metaepisternal scent efferent system: Ostiolar channel of moderate length, extending to lateral portion of metaepisternum; apex raised and terminating in peritremal disk; disk prominent, projecting slightly laterad of evaporative surface; surface large, crescent shaped, anterior section less developed than posterior section, dorsal margin not carinate.

Male Genitalia: Genital capsule: Without tubercles dorsal of paramere insertions; posteroventral portion of capsule narrowed and slightly produced. Left paramere: Small; without sensory lobe;

surface with smooth. Right paramere: Distal portion expanded with small spine apically. Vesica: Ductus seminis: Narrowing from base to gonopore. Secondary gonopore: Incomplete, dorsal edge notched and folded. Membrane: Without spiculae, only with spinose lobes, and small spinose patch near gonopore.

Female Genitalia: Sclerotized rings: Shape small, open and subovoid. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind lateral one-fourth of, and not spanning, rings; inter-ramal sclerotization present caudad of rings, slanted toward adjacent portion of ramae, and with small caudally projecting process. Posterior wall: Inter-ramal sclerite: Moderate depth, ventral margin notched. Median process: Small, with anterior plate. Dorsal structure: Small, not surrounding median process, dorsal area occupied by membranous extension of inter-ramal lobes. Inter-ramal lobes: Large, rectangular, obscuring sclerite slightly rounded interomedially. Oviducts: Common and laterals broadly joined anterolaterally.

Etymology: Named for the occurrence of the taxon in Serra dos Carajas, Brazil; neuter.

Type species: Caracoris nigropunctatus, new species.

Caracoris nigropunctatus, new species

Figures 34A, B; 35A-D; 40D; 44G, H

Diagnosis: Recognized by the deep, darkly colored punctures of the head, pronotum, scutellum, and basal portion of the hemelytra;

general reddish coloration; elongated anteocular and antefossal portion of the head; pronotum without distinct anterior and posterior lobes; and by the structure of the male genitalia, especially the strongly spinose membranous lobes of the vesica (fig. 35A).

Description: Male. As in generic description. Measurements. Head: Width across eyes 0.69-0.70; width of vertex 0.35-0.36; length of antennal segment I 0.58; length of antennal segment II 2.48. Pronotum: Posterior width 1.08-1.14; median length 0.72-0.73. Genitalia. As in figures 35A-D.

Female. Length 4.75. Slightly more robust than male, otherwise as in generic description. Measurements. Head: Width across eyes 0.66; width of vertex 0.36; length of antennal segment I 0.50; length of antennal segment II 1.93. Pronotum: Posterior width 1.03; median length 0.75. Genitalia. As in figures 44G, H.

Etymology: Named for the deep, darkly colored punctures of the dorsum of these bugs.

Holotype Male: BRAZIL: Para: Serra dos Carajas, 6 S lat. 50 18 W long. 720m., March 25-27, 1974, R. T. and J. C. Schuh; sweeping sedge meadow; deposited at American Museum of Natural History, N. Y (AMNH).

Paratypes: Four males, same data as holotype (AMNH). One female, VENEZUELA: Bolivar: Northern edge of Gran Sabana, at Pioneer Monument, March 21, 1982, G. F. and J. F. Hevel (USNM).

CHAETOFOVEOLOCORIS KNIGHT

Figures 35E-I; 36A; 37B; 38B; 40G; 44K, L

Chaetofoveolocatoris Knight, 1968:179 (type species by monotypy
Megaloceroea hirsuta Knight).

Diagnosis: Distinguished from other species in the Stenodema group by the dorsal surface which is shagreened, without punctures, and with long vestiture. This genus is further recognized by the male genitalia with tubercles dorsad of paramere insertions (fig. 35F), sensory lobe on left paramere quadrate or rectangular (fig. 35G), expanded distal portion of right paramere with very large apical spine (fig. 35I), vesica without sclerotized processes (fig. 35E); labium just reaching bases of mesocoxae; eyes subcontiguous with pronotum; and female genitalia with large, elongate sclerotized rings (fig. 44K), inter-ramal sclerotization a pair of isolated plates located caudad of medial portion of rings (fig. 44K).

Redescription: Dorsal Aspect: Medium to large size, 8.2-10.0; stramineous, with dark fuscous bilateral markings on head and pronotum; head shagreened or smooth, temporal areas shagreened, vertex with longitudinal sulcus; calli roughened or shagreened; collar, pronotal disk, mesocutum, and scutellum smooth; hemelytra roughened or smoothly rugulose. Vestiture: Dorsal: With densely distributed, long, erect, light or dark simple setae. Antennae: I with long, black vestiture, II with a few, long, black setae basally; II-IV with shorter, suberect to erect, densely distributed, light simple setae; III and IV with sparsely distributed, erect, longer simple setae. Legs: With same vestiture as dorsum; metatibae without minute spinulae or bristles. Vestiture with setae

on antennal segment I, extreme base of segment II and legs, longer than width of segments. Head: Triangular in dorsal view, rectangular in lateral view; eyes large, broadly joined to head, anterior margin emarginate, eyes subcontiguous with pronotum; antennal fossa pedunculate, with large flange, and with dorsal and ventral margin of fossae within margins of eye in lateral view; fossae and eye practically subcontiguous, distance equal to one-third of distal width of antennal segment I; dorsal surface of head flattened or somewhat concave, and even with frons in lateral view; vertex rounded, ecarinate, smoothly declivous to somewhat concave temporal area; frons projecting anteriorly and anterodorsad of eye, and projecting slightly anterodorsad of posterodorsal margin of clypeus; clypeus with dorsal portion strongly produced, rounded and bulbous, produced anteriorly of tylus; juga triangular, lora quadrate; jugal-loral suture reaching to anterior fossa, with short crease running posterodorsal of fossa under eye; gena practically ventral; bucculae anteriorly of clypeus, lora and juga; buccular flange long, tapering to carina, and surrounding buccular cavity; labium reaching mesocoxae, I reaching xyphus. Antennae: I long, with even thickness throughout, II thinner than I; II longer than III; III and IV thinner than II. Pronotum: Triangular; proepisternum not visible in dorsal view; anterior margin concave, lateral margins slightly concave, posterior margin sharply concave medially with posterolateral portion extending posteriorly of medial region and posterolateral angles; calli strongly produced and wrinkled, confluent anteriorly, with pair of medial foveae; pronotum not

divided into anterior and posterior lobes, but with posterior portion of pronotum produced dorsad of anterior part in lateral view; collar flattened, posterior sulcus obsolete, lateral region slightly rounded, with posterolateral sulcus of collar merging with deep anterolateral foveae; lateral margin carinate, posterior end merging with propleura before posterior margin of pronotum, medial region strongly bridged, posteriad of coxal cleft, anterior end curving ventrad and merging with posterolateral margin of collar; proepisternum not produced laterad of propleura; cleft incisure reaching deep under lateral carinate margin of pronotum, continuing anterodorsad and anteriorly of proepisternum; coxal margin slightly flattened; xyphus with smooth sculpted chevron. Mesoscutum and scutellum: Confluent medially with suture laterally; sutured area concave; mesoscutum broadly exposed; scutellum convex. Hemelytra: Macropterous, sometimes females brachypterous; embolium thin, well demarcated; cuneal cleft strong, incisure running to cuneal base, incisure overlapping; interior cell long and narrow, pointed basally, not reaching cuneal base; outer cell subrectangular and large, longer than cuneus; veins of membrane angulate distally. Legs: Metafemora longer than venter, shorter than metatibiae; metatarsus with first segment much longer than combined length of segments II and III. Metafemoral trichobothria: With eight or nine trichs; trichoma very large; bothria slightly sunken within surrounding cuticle. Claw: With moderately large, fused pulvilli.

Ratios: Anteocular portion of head to head length (0.45:1.00).
Eye height to head height (0.68-0.72:1.00).

Gena to head height (0.23-0.26:1.00).

Buccular flange to ventral head length (0.42-0.45:1.00).

Buccular cavity to ventral head length (0.63:1.00).

Antennal segment I to dorsal head width (1.00:0.49-0.62).

Antennal segment II to dorsal pronotal width (1.00:0.43-0.48).

Metaepisternal scent efferent system: Ostiolar channel extending to lateral portion of metaepisternum; peritremal disk slightly produced laterad of evaporative surface; evaporative surface large and triangular, anterior section smaller than posterior section.

Male Genitalia: Genital capsule: With tubercles present dorsad of paramere insertions; posteroventral portion of capsule moderately produced. Left paramere: With large, rectangular sensory lobe; arm subequal to shaft in length; surface smooth. Right paramere: Expanded distal lobe with very large apical hook. Vesica: Ductus seminis: Narrow from middle to gonopore. Secondary gonopore: prominent coil-like structure with incomplete dorsal margin. Membrane: With a strongly spinose covered lobe, without sclerotized processes.

Female Genitalia: Sclerotized rings: Large, open, and curved. Dorsal labiate plate: Obsolete. Ventral labiate plate: Narrow, present behind lateralmost margin of, and not spanning, rings; with isolated inter-ramal sclerotization caudad of medial portion of rings. Posterior wall: Inter-ramal sclerite: Large, with concave ventral margin. Median process: Small, not projecting ventrad of sclerite, extending anteriorly into dorsal structure. Dorsal

structure: Very large, saclike with dorsal surface flattened.
 Inter-ramal lobes: Obscuring one-half of sclerite; dorsal
 membranous extension surrounding periphery of dorsal structure.
Oviducts: Common and laterals joined anteriorly.

Included species:

hirsutus (Knight)

Megaloceroea hirsuta Knight, 1928:248.

Chaetofoveolocoris hirsuta: Knight, 1968:180 (new
 combination).

Distribution: United States: Arizona and Texas.

LITOMIRIS SLATER

Figures 36D; 37C; 40H; 41A-D; 44M,N

Litomiris Slater, 1956:118 (type species by original
 designation Miris debilis Uhler). -- Kelton, 1959:58, figs.
 5a-c, 6a-c (male genitalia).

Diagnosis: Recognized by male genitalia with these features:
 posteroventral portion of capsule slightly projecting (fig. 41A);
 distal portion of right paramere with strong spine protruding
 ventrally (fig. 41D); vesica with two sclerotized processes, one
 twisted and one straight (fig. 41B). The genus is also
 distinguished by the dorsal surface mostly smooth and shining with
 sparse, shallow or sometimes deep punctures on pronotum, scutellum
 and clavus; eyes removed from pronotum; and female genitalia with
 elongate narrow sclerotized rings (fig. 44M), ventral labiate plate
 not spanning rings, inter-ramal sclerotization present slightly
 caudad of rings and spanning genital chamber (fig. 44M).

Redescription: Dorsal Aspect: Medium to large size, 7.2-8.0;
 stramineous, usually with black or fuscous bilateral markings on

head, pronotum, and scutellum; antennal segment I, usually segments II to IV, and legs fuscous; surface smooth, temporal area with shagreened patches, vertex with longitudinal sulcus present; pronotum with calli smooth, disk with punctures; mesoscutum smooth, scutellum with scattered punctures; hemelytra smooth, and rugulose with scattered punctures on clavus. Vestiture: Dorsal: With sparsely to densely distributed, short to long, light simple setae, (when sparse, setae recumbent). Antennae: I with somewhat stout and suberect simple setae and without bristles; II-IV with denser simple setae; segments III and IV without longer setae standing above more shorter densely distributed simple setae. Legs: Metafemora with suberect, light simple setae; metatibiae with variable diffuse patch of spinulae and two or three distal row of bristles. Vestiture of metatibiae and antennal segments I and II shorter than segments. Head: Triangular in dorsal view, subrectangular in lateral view; eyes large, anterior margin slightly emarginate, broadly joined to head, and slightly removed from margin of pronotum; antennal fossa pedunculate, flange produced, ventral and dorsal margin of fossae within margins of eye; distance between fossa and eye equal to one-half of width of distal end of antennal segment I; dorsal surface produced dorsad of dorsal margin of eye, somewhat convex; vertex ecarinate, rounded and not strongly produced, temporal area slightly concave, frons rounded in lateral view; apex not strongly produced, projecting slightly anterodorsad of posterior margin of clypeus; clypeus with dorsal half produced and rounded, projecting just slightly anterior of tylus; juga, lora

and bucculae project anteriorly of frons; juga anteriorly of lora and bucculae; juga slightly produced, triangular, and reaching fossa; lora rectangular; jugal-loral suture deep and reaching antennal fossa; gena ventral; buccular flange gradually tapering to carina, obsolete before end of buccular cavity, middle of flange not very wide; buccular cavity not reaching posterior margin of head; labium reaching metacoxae, I reaching xyphus. Antennae: I with even diameter throughout, not bowed. Pronotum: Triangular in dorsal view; proepisternum slightly visible in dorsal view; anterior margin concave, posterior margin straight, lateral margins slightly concave; calli faint, confluent anteriorly, not attaining lateral margins, with pair of foveae medially, anterior margin with slightly depressed sulcus; collar flattened, with faint punctures, posterior sulcus obscure medially, lateral portion of posterior margin denoted by slightly rounded dorsal aspect of collar in dorsal view; lateral margin of pronotum with posterior end carinate and attaining posterior margin of pronotum, lateral margin strongly carinate medially, bridged dorsad of coxal cleft, with anterior end merging with posterolateral margin of collar and contiguous to lateral collar sulcus and anterolateral foveae depression; sometimes entire lateral margin explanate; coxal cleft deep, incisure perpendicular to lateral margin of pronotum, coxal incisure extending deep under propleura; anterior extension of coxal incisure, delineating curved slightly produced proepisternum; flange of procoxae not very strong; xyphus smoothly depressed. Mesoscutum and scutellum: Broadly exposed and merging with scutellum medially, lateral part of

scutellar suture deep, reaching margin. Hemelytra: Macropterous, sometimes females submacropterous; with moderately wide embolium, reaching cuneal cleft, incisure deep reaching to internal basal margin of cuneus; inner cell triangular shorter than cuneus, outer cell large, longer than cuneus, oblong, curved distally. Legs: Metafemora longer than abdomen, and subequal to metatibiae; metatarsus with segment one longer than combined length of segments II and III. Metafemoral trichobothria: With eight trichs; trichoma very small; bothria slightly sunken within cuticle. Claws: Pulvilli moderately large and rectangular.

Ratios: Anteocular portion of head to head length (0.43-0.47:1.00).

Eye height to head height (0.75-0.86:1.00).

Gena to head height (0.09-0.20:1.00).

Buccular flange to ventral head length (0.48-0.67:1.00).

Buccular cavity to ventral head length (0.68-0.80:1.00).

Antennal segment I to dorsal head width (1.00:0.65-0.74).

Antennal segment II to dorsal pronotal width (1.00:0.41-0.59).

Metaepisternal scent efferent system: Ostiolar channel extending to lateral portion of metaepisternum; apex terminating at large peritremal disk; disk strongly produced laterad of evaporative surface; surface triangular, anterior and posterior sections wide.

Male Genitalia: Genital capsule: Without tubercles dorsad of paramere insertions; posteroventral portion of capsule slightly produced. Left paramere: Without differentiated sensory lobe; surface smooth. Right paramere: Distal portion enlarged, strongly

protruding ventrad. Vesica: Ductus seminis: Narrowing from base to gonopore. Secondary gonopore: Incomplete, dorsal edge of aperture notched. Membrane: With two lobal sclerites (one twisted, one straight); small sclerite basad and in front of gonopore.

Female Genitalia: Sclerotized rings: Elongate, narrow, open, and lateral edge curved dorsad. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind lateral one-half of, and not spanning rings; inter-ramal sclerotization present slightly caudad of rings and spanning genital chamber, without extensively lateral sclerotization. Posterior wall: Inter-ramal sclerite: Moderate or narrow with straight ventral margin. Median process: Short, not projecting ventrad of sclerite, extending anteriorly into dorsal structure, with plowlike plate posteriorly. Dorsal structure: Small and flat, not saclike. Inter-ramal lobes: Practically adhered to sclerite, angle small. Oviducts: Common and laterals broadly joined posteriorly.

Included Species:

curtus (Knight)

Megaloceroea curta Knight, 1928:247.

Litomiris curta: Slater, 1956:120 (new combination). --

Knight, 1968:179 (key, distribution).

Distribution: Western North America.

debilis (Uhler)

Miris debilis Uhler, 1871:471 (name not available).

Megaloceroea debilis Uhler, 1872:403.

Litomiris debilis: Slater, 1956:120 (new combination). --

Knight, 1968:179 (key, distribution).

Distribution: Western North America.

gracilis (Van Duzee)

Stenodema gracilis Van Duzee, 1914:25.

Litomiris gracilis, Slater, 1956:120 (new combination). --

Knight, 1968:179 (key, distribution).

Distribution: United States: California.

tritavus Bliven

Litomiris tritavus Bliven, 1973:135, figs. 5, 6. NOMEN
DUBIUM.

Distribution: United States: California.

NEOTROPICOMIRIS CARVALHO AND FONTES

Figures 36B; 37D; 38C; 39F; 40E; 41E-L; 440-R

Neotropicomiris Carvalho and Fontes, 1969:332 (type species by
original designation pilosus Carvalho and Fontes); pp.
332-342, figs. 5-24 (male genitalia).

Diagnosis: This genus is distinguished by these attributes:

male genitalia with posteroventral portion of genital capsule
slightly projecting (fig. 41H), vesica without spiculae, only with
ribbonlike strap; female genitalia with ventral labiate plate not
spanning sclerotized rings (fig. 44Q), inter-ramal sclerite adhering
to ramae laterally and with small blunt projection interiorly (fig.
44Q); dorsal surface shining or dull with deep punctures throughout;
vestiture of segment I always longer than width of segment II;
labium reaching metacoxae or venter; and eyes separated from
pronotum.

Redescription: Dorsal Aspect: Small to medium size 3.9-6.7;
black or reddish with contrasting lighter embolium, sometimes medial
portion of body with broad light fasciae; legs reddish or lighter,
sometimes femora with fuscous spots; surface deeply punctate, and
shagreened or roughened; frons and vertex distinctly punctate, frons
with longitudinal sulcus; collar and calli deeply punctate;
mesoscutum smooth, embolium and cuneus without punctures.

Vestiture: Dorsal: With densely or moderately distributed,
moderately long to long, suberect or erect, light simple setae.

Antennae: I with moderately distributed, erect or suberect, dark simple setae; II-IV with densely distributed, shorter, suberect, light simple setae; distal three-fourths of II, III and IV with sparsely distributed, longer, erect simple setae. Legs: Moderately distributed, moderately long, suberect, light simple setae; metatibiae with diffuse patch of minute black spinulae throughout ventral surface. Head: Pentangular in dorsal view, subrectangular in lateral view; eyes small, deeply emarginate anteriorly, broadly joined to head; eyes separated from pronotum by small neck; antennal fossa pedunculate, flange strongly projecting anterolaterally; ventral and dorsal margins of fossa within margins of eye in lateral view; fossa and eye subcontiguous, separated by distance equal to one-fifth of distal width of antennal segment I; vertex ecarinate, sometimes with row of punctures anterior of rounded area; temporal areas slightly concave; frons projecting dorsad and anterodorsad of eye, sometimes eye even with dorsal margin of frons in lateral view; frons either slightly produced dorsad of clypeus, and not projecting anterior of suture of clypeus and frons, or smoothly merging with clypeus; dorsal portion of clypeus slightly produced, rounded not projecting anterior of tylus; clypeus produced, rounded, and somewhat creased medially; claval-frons suture posterior of juga, lora and bucculae; lora rectangular; juga triangular, produced, and anterior of lora and bucculae; jugal-loral suture strong and reaching antennal fossa; slight crease projecting from fossa to eye; gena ventral; buccular flange short, and narrow; buccular cavity

longer than flange but not reaching posterior margin of head; labium reaching abdomen, I extending just beyond posterior margin of procoxae. Antennae: I gradually thickened over entire length, not bowed. Pronotum: With well defined anterior and posterior lobes, narrow anteriorly, broad and triangular posteriorly; anterior margin slightly concave, posterior margin broadly rounded, lateral margin concave at juncture of anterior and posterior lobes; posterior lobe produced dorsad of anterior lobe; calli inconspicuous denoted by shagreened surface, not confluent anteriorly, not attaining lateral margin of pronotum; anterior sulcus of calli obsolete, with pair of foveae indistinguishable from deep pronotal punctures; collar flat, deeply punctate, with obsolete medial portion of posterior sulcus, extreme lateral portion of posterior sulcus present, merging with anterodorsal portion of lateral marginate carinate at anterolateral foveae;

lateral portion of collar flat, without posterior sulcus, only denoted by line of punctures, ventral portion of collar flattened, extreme anterior margin of collar with beadlike margin; lateral margin of pronotum broadly rounded, not carinate, strongly bridged dorsad of coxal cleft, with antermost part of lateral margin carinate, merging with top of proepisternum; proepisternum small, produced; coxal cleft small, deep, with incisure perpendicular to lateral pronotal margin; anterior margin of procoxal flange produced; xyphus deep, with well differentiated margins posteriorly. Mesoscutum and scutellum: Mesoscutum just exposed; suture obsolete medially, present laterally. Hemelytra:

Macropterous; embolium wide extending to cuneal cleft; cleft small, cuneal incisure long and extending to innerbase of cuneus; veins of cells in membrane angulate distally; inner cell narrowly triangular, outer cell longer than cuneus and rectangular. Legs: Metafemora longer than abdomen and shorter than metatibiae; first segment of metatarsi subequal to combined length of segments II and III.

Claws: with small oval pulvilli.

Ratios: Antecular portion of head to head length
(0.41-0.48:1.00).

Antefossal portion of head to head length (0.25-0.29:1.00).

Eye height to head height (0.67-0.87:1.00).

Gena to head height (0.10-0.22:1.00).

Buccular flange to ventral head length (0.25-0.58:1.00).

Buccular cavity to ventral head length (0.71-0.85:1.00).

Antennal segment I to dorsal head width (1.00:0.91-0.95 to
0.84:1.00).

Antennal segment II to dorsal pronotal width (1.00:0.30-0.61).

Metaepisternal scent efferent system: Ostiolar channel moderate in length, extending to lateral portion of metaepisternum; apex raised and terminating in peritremal disk; disk prominent, projecting laterad of evaporative surface; evaporative surface large, subtriangular, anterior section less developed than posterior section, dorsal margin not carinate.

Male Genitalia: Genital capsule: Without tubercles dorsad of paramere insertions; posteroventral portion of capsule slightly produced, sometimes more strongly produced. Left paramere: Usually

without sensory lobe sometimes sensory lobe is quadrate and large; surface smooth. Right paramere: Distal portion slightly rounded and with point apically. Vesica: Ductus seminis: Narrowing from base to gonopore. Secondary gonopore: Incomplete, dorsal edge notched; usually appearing folded. Membrane: Without spiculae but with variously shaped and located spinose lobes, and usually with ribbonlike strap behind gonopore supporting membrane, strongly sclerotized and archlike distally.

Female Genitalia: Sclerotized rings: Shape variable but always small and open. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind entire, or one-half of, but not spanning, rings; inter-ramal sclerotization present laterally, adhering ramae, broadly intruding interiorly. Posterior wall: Inter-ramal sclerite: Deep, ventral margin sometimes slightly notched. Median process: Well sclerotized, usually short, dorsal portion not projecting into dorsal structure, sometimes curving anteriorly with pointed apex; with posterior flangelike plate. Dorsal structure: Small; usually obsolete, with dorsal area occupied by membranous extension of inter-ramal lobes, sometimes extension pointed, narrowly surrounding anterior projection of median process, not broadly saclike;. Inter-ramal lobes: Large, rectangular, and obscuring sclerite; sometimes lobes meet medially; when dorsal structure present than lobes with membranous extension surrounding periphery of structure. Oviducts: Common and laterals broadly joined anterolaterally, appears triangular.

Included Species:

costalis Carvalho and Fontes

Neotropicomiris costalis Carvalho and Fontes, 1969:334,
figs. 5-8. -- Carvalho and Ferreira 1972:178
(distribution).

Distribution: Neotropical: Brazil.

ecuadorensis Carvalho and Fontes

Neotropicomiris ecuadorensis Carvalho and Fontes, 1969:336,
figs. 9-12.

Distribution: Neotropical: Ecuador.

longirostris Carvalho and Fontes

Neotropicomiris longirostris Carvalho and Fontes, 1969:337,
figs. 13-16.

Distribution: Neotropical: Brazil.

nordicus Carvalho and Fontes

Neotropicomiris nordicus Carvalho and Fontes, 1969:338,
figs. 17-20.

Distribution: Neotropical: Venezuela, and Ecuador.

pilosus Carvalho

Ophthalmomiris reuteri, Carvalho not Berg, 1945:186, figs.
11, 43-45.

Neotropicomiris pilosus Carvalho and Fontes, 1969:340,
figs. 21-24.

Distribution: Neotropical: Brazil.

OPHTHALMOMIRIS BERG

Figures 37F; 38D; 40I; 43A; 45A, B

Ophthalmomiris Berg, 1883:6 (type species by monotypy reuteri
Berg). -- Carvalho, 1945:185, figs. 44-45 (male genitalia).
-- Carvalho and Fontes, 1969:345, figs. 27-29 (male
genitalia).

Diagnosis: Distinguished by the male genitalia with distal
portion of right paramere slightly enlarged and with large apical
spine; vesica without sclerotized processes; female genitalia with
very large, elongated sclerotized rings and extensive inter-ramal
sclerotization just caudad of rings and not spanning genital chamber
(fig. 45A); dorsal surface shining with deep punctures throughout;

antennal segment II with shorter setae than I; dorsal margin of eyes dorsad of frons in lateral view; labium reaching bases of metacoxae; and eyes subcontiguous to pronotum.

Redescription: Dorsal Aspect: Medium to large size, 7.8-10.0; tannish to fuscous with darker brown highlights, medial line lighter, antennal segment I and apex of clypeus with reddish margin; head without punctures, frons striate, temporal areas shagreened, frons with longitudinal sulcus; posterior disk of pronotum punctate, collar punctate; calli shagreened; mesoscutum narrowly exposed, smooth, scutellum punctate; hemelytra, smoothly roughened, claval vein with row of punctures. Vestiture: Dorsal: With moderately distributed, erect or suberect, moderate length, light simple setae. Antennae: I with moderately distributed, longer, dark simple setae; II-IV with densely distributed, much shorter suberect, light simple setae, and with sparsely distributed, longer setae standing above other setae. Legs: moderately distributed, long simple setae; meta- and mesotibiae with dense patch of minute spinulae interiorly, and without rows of bristles. Vestiture on metatibiae and antennal segment I as long as width of segments. Head: Broadly triangular in dorsal view, subquadrate in lateral view; anterior margin of eye deeply emarginate; eyes very large, broadly joined to head, posterior margin subcontiguous to pronotum, and with dorsal margin protruding dorsad of frons; antennal fossa slightly pedunculate, with large flange, protuberant anterodorsally; fossa subcontiguous to eye; ventral and dorsal margins of fossa within margins of eye; dorsal surface of head smoothly curved from

vertex to tylus in lateral view; vertex ecarinate, not projecting above temporal areas; frons projecting anteriorly and anterodorsad of eyes, with anterior margin obsolete, and smoothly joined to clypeus; clypeus rounded dorsally, gently curved to tylus, with apex very slightly projecting anteriorly of tylus; juncture of clypeus and frons posteriorly of juga, lora and bucculae; lora anteriorly of juga and bucculae, juga triangular, lora subtriangular; jugal-loral suture reaching antennal fossa; crease from fossa to ventrad of eye obsolete; gena small and ventral; buccular flange almost surrounding buccular cavity, practically reaching posteroventral margin of head, widest medially appearing subtriangular in lateral view; labium reaching bases of metacoxae, I just reaching even with anterior margin of procoxal flange. Antennae: I thickest submedially and distally, bowed; II longer and thicker than III and IV. Pronotum: Broadly triangular, and with proepisternum visible in dorsal view; anterior margin slightly concave, posterior margin broadly convex with slight concave notch medially; lateral margin mostly rounded, even with, and anteriorly of coxal cleft; coxal cleft bridged dorsally; calli faint, confluent anteriorly, with foveae medially, not reaching lateral margins of pronotum, and without anterior sulcus; pronotum with two delineated lobes, anterior narrow, posterior wide and produced dorsad of anterior portion; collar slightly curved and wide in dorsal view, posterior sulcus obsolete medially, lateral sulcus deep, merging with anterolateral foveae; collar slightly rounded in lateral view, and without posterior sulcus; anterolateral margin of pronotum curving ventrad around

proepisternum, with sulcus between lateral margin and lateral side of collar; coxal cleft narrow at base, incisure long, reaching under and perpendicular to lateral margin of pronotum. Mesoscutum and scutellum: Narrowly exposed, confluent with scutellum medially with suture laterally, surface strongly striate, surface straight in lateral view. Hemelytra: Long; embolium merging with corium before reaching coxal cleft; incisure long reaching interior corner of cuneus; inner cell very narrow, and triangular, shorter than cuneus; outer cell large, longer than cuneus, rectangular, angulate distally. Legs: Metafemora longer than abdomen, shorter than metatibiae; metatarsi with segment I subequal to combined length of segments II and III; metafemora without excavated distal end.

Metafemoral trichobothria: With eight trichs; trichoma large and well developed ; bothria sunken slightly into cuticle. Claws: Pulvilli minute and rectangular.

Ratios: Anteocular portion of head to head length (0.43-0.50:1.00).

Eye height to head height (0.92:1.00).

Gena to head height (0.12:1.00).

Buccular flange to ventral head length (0.52:1.00).

Buccular cavity to ventral head length (0.78:1.00).

Antennal segment I to dorsal head width (1.00:1.00).

Antennal segment II to dorsal pronotal width (1.00:0.43).

Metaepisternal scent efferent system: Ostiolar channel completely enclosed by anterior margin, extending to lateral portion

of metaepisternum; terminating with very large well developed peritremal disk; disk very prominent laterad of evaporative surface; surface triangular, large, well developed anterior and posterior sections, dorsal margin carinate.

Male Genitalia: Genital capsule: Without tubercles present dorsad of paramere insertions, this area only slightly produced above curvature of capsule; posteroventral portion of capsule slightly produced. Left paramere: Sensory lobe slightly differentiated above curvature of arm; arm and shaft sinuate; apex truncate and broad; surface smooth. Right paramere: Distal portion slightly enlarged with large apical spine. Vesica: Ductus seminis: Narrow, widest basally. Secondary gonopore: prominent coil-like structure with incomplete dorsal margin. Membrane: With finely spinose lobes, without sclerotized processes.

Female Genitalia: Sclerotized rings: Very large, elongate, open, and rectangular. Dorsal labiate plate: Obsolete. Ventral labiate plate: Faint but present behind entire ring, not spanning rings; inter-ramal sclerotization with extensive interior projections, not spanning genital chamber. Posterior wall: Inter-ramal sclerite: Large, with deep, broad notch ventrally. Median process: Small, projecting anteriorly. Dorsal structure: Small, saclike, narrowing to point, and containing median structure. Inter-ramal lobes: Large, covering most of sclerite. Oviducts: Common and laterals joined anterolaterally, appears triangular.

Included species:

reuteri Berg

Ophthalmomiris reuteri Berg, 1883:7. -- Carvalho and Fontes, 1977:343, figs 25-29 (description).

Distribution: Neotropical: Argentina, Bolivia, Brazil, Peru, and Uruguay.

spurius (Stal)

Miris spurius Stal, 1859:254.

Ophthalmomiris spurius: Carvalho, 1954:425 (new combination).

Distribution: Neotropical: Ecuador (Puna Is.)

OPISTHOCASIS BERG

Figures 37E; 42

Opisthocasis Berg, 1883:83 (type species by monotypy albocostata Berg).

Diagnosis: Distinguished by the brachypterous habitus, and the following characters: dorsal surface shining, strongly punctured and with short, sparse distributed vestiture; pronotum without lateral carina; vestiture of antennal segments I and II, moderately distributed and long; and frons slightly projecting anteriorly of clypeus.

Redescription: Dorsal Aspect: Small size 3.5; pronotum and hemelytra shining black, head fuscous, embolium greenish-yellow, legs and venter yellow; surface strongly punctured throughout, including frons, vertex, pronotum; scutellum, and embolium not punctate; posterior half of pronotum, transversely rugulose.

Vestiture: Dorsal: Extremely sparsely distributed, short, appressed simple setae. Antennae: I and II with moderately distributed, suberect, long, black bristlelike setae. Legs:

Holotype with only mesofemora and tibiae and two tarsal segments

present. Metafemora with sparsely distributed, erect, simple setae; tibiae with two rows of short, light bristles. Head: Subquadrate in dorsal view, subquadrate in lateral view; eyes small, anterior margin convex, posterior margin contiguous with pronotum; eyes broadly joined to head; antennal fossa flange small; distance between antennal fossa and anterior margin of eye equal to slightly more than one-third width of an eye in lateral view; ventral margin of fossa even with ventral margin of eye, dorsal margin ventrad of dorsal margin of eye in lateral view; dorsal surface of head smoothly curving from vertex to frons; vertex flat, frons with longitudinal sulcus; frons projecting dorsad and anterodorsad of eye; frons projecting slightly anteriorly of clypeal junction; dorsal half of clypeus rounded; frons even with juga, lora and bucculae; juga subquadrate, lora subrectangular, jugal-loral suture reaching antennal fossa; buccular flange shorter than cavity, neither reaching posteroventral margin of head; gena large; labium reaching metacoxae, I reaching posteroventral margin of head. Antennae: I long and thick, subequal to II in length and diameter, III and IV missing from type. Pronotum: Quadrate, proepisternum and coxal cleft visible in dorsal view; anterior margin of pronotum broadly concave, posterior margin straight, lateral margin straight; calli obsolete, medial foveae obscure; disk not divided into posterior and anterior lobes; collar with posterior sulcus obsolete, lateral margin obscure; anterolateral foveae obsolete; lateral margin of collar flat, ventral margin rounded and forming anterior portion xyphus; lateral margin of pronotum broadly rounded, not carinate;

coxal cleft deep, incisure extending to dorsal portion of proepisternum; proepisternum very slightly produced; xyphus with flange on procoxal margins. Mesoscutum and scutellum: Mesoscutum very broadly exposed, much larger than scutellum; suture located posteriorly; surface flat. Hemelytra: Brachypterous; embolium wide, continuing to apex of hemelytra; cuneus obsolete; clavus obscure. Legs: Procoxae large. Trichobothria and claws not examined.

Ratios: Antecular portion of head to head length (0.54:1.00).
 Eye height to head height (0.55:1.00).
 Gena to head height (0.38:1.00).
 Buccular flange to ventral head length (0.44:1.00).
 Buccular cavity to ventral head length (0.63:1.00).
 Antennal segment I to dorsal head width (1.00:0.50).
 Antennal segment II to dorsal pronotal width (1.00:0.55).

Metaepisternal scent efferent system: Ostiolar channel moderate in length, attaining lateral surface of coxae, and lateral aspect of metaepisternum; peritremal disk large and projecting laterad of evaporative surface; surface triangular with well developed anterior and posterior sections.

Male and female genitalia: Unavailable for study.

Included species:

albocostata Berg

Opisthocasis albocostata Berg, 1883:83. -- Drake and Poor, 1938:103, fig. 1 (transferred to Miridae).

Distribution: Neotropical: Argentina (Buenos Aires Prov.)

PORPOMIRIS BERG

Figures 36C; 37G; 38E; 39B; 40F; 43B-E; 44I,J

Porpomiris Berg, 1883:8 (type species by monotypy picturatus Berg. -- Carvalho and Fontes, 1969:346-349, figs. 30-37 (male genitalia).

Mesomiris Reuter, 1909a:4 (type species by monotypy curtulus Reuter, 1909). -- Carvalho, 1952c:84 (new synonym).

Diagnosis: This genus is recognized by the male genitalia with posteroventral portion of genital capsule prominently projecting (fig. 43B), vesica with one cork screwlike sclerotized process (fig. 43C); female genitalia with ventral labiate plate not spanning rings, inter-ramal sclerotization contiguous to rings; dorsal surface dull or shining with deep punctures throughout; labium reaching middle of mesosternum; and eyes contiguous to pronotum.

Redescription: Dorsal Aspect: Medium size 5.2-5.6; yellowish; antennal segment I, lateral side of head, disk of pronotum, mesoscutum, clavus, corium, cuneus, and femora with reddish or fuscous marking; surface slightly shining; with uniformly distributed deep punctures; vertex with longitudinal sulcus; calli and collar punctate; scutellum, clavus, and corium with faint punctures; embolium and cuneus smooth. Vestiture: Dorsal: Consisting of minute, suberect, pale simple setae. Antennae: With reclining simple setae. Legs: Femora and tibiae with reclining, pale, simple setae; dorsal portion of femora with suberect, black bristlelike setae; scattered minute black spinulae and several black bristles on distal end half of tibiae. Vestiture of metatibiae, and antennal segments I and II shorter than width of segments. Head: Subquadrate in dorsal view; subquadrate in lateral view; eyes small;

dorsal surface of frons produced dorsad of dorsal margin of eye in lateral view; anterior margin of eye shallowly concave; eyes contiguous or subcontiguous with pronotum; antennal fossa separated from eye by distance equal to one-fourth distal width of antennal segment I; fossae very slightly pedunculate; dorsal surface of head smoothly curved; dorsal and ventral margins of fossae within margins of eye in lateral view; frons projecting anteriorly of fossa, but even with juga; frons slightly produced anteriorly of dorsal surface of clypeus; bucculae, juga and lora equal; gena broad, horizontal; vertex ecarinate, broadly rounded; gula present; buccular flange and cavity of equal length, short, not reaching to posterior margin of head, widest medially; labium reaching distal margin of mesosternum, I even with posterodorsal margin of head. Antennae: I widest sub-basally, slightly bowed, tapering gradually apically.

Pronotum: Subtriangular; proepisternum just visible in dorsal view, without distinct anterior and posterior lobes; anterior margin deeply concave, posterior margin broadly rounded; calli weakly differentiated, confluent anteromedially, not attaining lateral margins of pronotum; surface moderately convex; lateral margin carinate anteriorly, strongly carinate at anterior angles and dorsad of coxal cleft, margin arcuate medially, with anterior end attaining collar, and posterior end diminishing before posterior margin of pronotum; anterolateral angle distinguished by deep foveae; posterior margin of collar indistinct on pronotal disk, deeply impressed laterally; coxal cleft deep, reaching lateral carina; coxal cleft incisure borders proepisternum anteriorly and dorsally;

proepisternum distinctly rounded and smooth. Mesoscutum and scutellum: Mesoscutum broadly exposed, elevated dorsad of scutellum; suture obsolete medially, present laterally. Hemelytra: Elongate, parallel-sided, tapering distally; cuneal incisure distinct, cuneal fracture angled anteromedially; embolium prominent of even width throughout; inner cell elongate, widest distally, outer cell subrectangular; thickened and acute distally. Legs: Femora rounded, tapering on both distal and proximal ends; metafemora shorter than abdomen and metatibiae; distal end of metafemora not abruptly excavated; tibiae cylindrical; metatarsus with segment one subequal to combined length of segments two and three. Metafemoral trichobothria: With seven trichs; trichoma very small; bothria slightly sunken within surrounding cuticle. Claws: Evenly curved; with small rectangular pulvilli.

Ratios: Antecular portion of head to head length (0.41:1.00).
 Antefossal portion of head to head length (0.20:1.00).
 Eye height to head height (0.68-0.75:1.00).
 Gena to head height (0.20-0.28:1.00).
 Buccular flange and cavity to ventral head length (0.64-0.66:1.00).
 Antennal segment I to dorsal head width (1.00:0.80 to 0.90-0.94:1.00).
 Antennal segment II to dorsal pronotal width (1.00:0.56-0.71).

Metaepisternal scent efferent system: Ostiolar channel short; apex reaching lateral surface of coxae, terminating on ventral portion of metaepisternum; peritremal disk flattened, slightly produced laterad of evaporative surface; surface subtriangular,

anterior section weakly developed, posterior section produced posterodorsad.

Male Genitalia: Genital capsule: Without tubercles dorsad of paramere insertions; posteroventral portion of capsule prominently projecting. Left paramere: With small sensory lobe; surface smooth. Right paramere: Distal portion rounded, but not projecting dorsad; apex with large hook. Vesica: Ductus seminis: Narrowing from base to gonopore. Secondary gonopore: Incomplete, dorsal edge notched. Membrane: With one corkscrewlike lobal sclerite.

Female Genitalia: Sclerotized rings: Moderate size, open, and subrectangular. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind lateral one-half of, but not spanning, rings; inter-ramal sclerotization contiguous with rings, not present caudally, or laterally. Posterior wall: Inter-ramal sclerite: Moderately deep with broad ventral notch. Median process: Well sclerotized, curving anteriorly with pointed apex. Dorsal structure: Small, pointed, surrounding anterior projection of median process, saclike. Inter-ramal lobes: Large, obscuring sclerite. Oviducts: Common and laterals joined medially.

Included Species:

campinensis Carvalho

Porpomiris campinensis Carvalho, 1947:4. -- Carvalho and Fontes, 1969:346, figs. 30-32 (description).

Distribution: Neotropical: Argentina, and Brazil.

curtulus (Reuter)

Mesomiris curtulus Reuter, 1909a:5.

Porpomiris curtulus: Carvalho, 1952c:85 (new combination).

-- Carvalho and Fontes, 1969:348, figs. 34-37 (description).

Distribution: Eastern and Central United States.

picturatus Berg

Porpomiris picturatus Berg, 1883:9. -- Carvalho and Fontes, 1969:347, figs. 33 (description).

Distribution: Neotropical: Argentina.

STENODEMA LAPORTE

Figures 36E, F; 37H; 38F; 39C-E, G, I; 40J-N; 45C-J

Stenodema Laporte, 1832:40 (type species by monotypy Miris virens Fabricius, a synonym of Cimex virens Linnaeus). -- Reuter, 1904a:1 (synopsis of palearctic species). -- Kelton, 1961:450 (review of North American species). -- Wagner, 1970:115, figs. 90a-f (male genitalia). -- Steyskal, 1973:208 (nomenclature; feminine termination). -- Carvalho, 1975:128-129, figs. 19-21, 23-25; pp. 131-134, figs. 27-29, 31-33, 35-37, 39-41; p. 136, figs. 43-45 (male genitalia). -- Carvalho and Da Silva Alfonso, 1977:820, figs. 33-35 (male genitalia).

Miris Herrich-Schaeffer, 1836:37.

Diagnosis: This genus is distinguished by the male genitalia with vesica usually without sclerotized processes; and with dorsal margin of secondary gonopore incomplete (fig. 39G); posterior wall of female genitalia with dorsal structure usually large and saclike (figs. 45H, J); dorsal surface shining; head, pronotum, and scutellum strongly punctate; hemelytra without punctures; vestiture of antennal segment I and metatibae densely distributed, wider than width of segments; and frons either produced anterodorsad of, or smoothly merging with, clypeus.

Redescription: Dorsal Aspect: Medium to large size 6.2-13.5; yellow, stramineous, or green, sometimes head, pronotum, scutellum and hemelytra, variously marked with fuscous or black; sometimes antennal segment I with reddish fasciae; membrane darkly infuscate or hyaline, with veins usually contrasting with color of membrane;

specimens collected late in season sometimes uniformly darker; surface shining sometimes without lustre; head finely rugulose; collar, propleura, pronotum, and scutellum strongly punctate; clavus very slightly punctate, remainder of hemelytra smooth; sometimes pronotum with punctures sparse, and hemelytra smooth. Vestiture: Dorsal: Moderately long, appressed, recumbent, or suberect, golden or dark simple setae; setae distributed densely on frons, accenting striate; anteriad of calli, mesoscutum, and remainder of dorsum with less densely distributed setae. Antenna: I with long, very densely distributed, dark, suberect or erect simple setae; without black bristlelike setae; II with very dense, shorter, suberect simple setae; sometimes setae as long as setae on I; III and IV like II, intermixed with sparsely distributed, long, erect simple setae. Legs: With moderately or densely distributed, light or golden, recumbent or suberect simple setae; tibiae with one or two short rows of light erect bristles; metatibiae with diffuse patch of black minute spinulae and sometimes long simple setae longer on ventral surface than exterior. Head: Triangular in dorsal view, quadrate in lateral view; eyes broadly joined to head; with shallowly concave anterior margin; dorsal and ventral margins of fossa contained within margins of eye in lateral view; eyes contiguous with pronotum; antennal fossa slightly to strongly pedunculate, flaring, margin of fossa carinate; fossa separated from anterior margin of eye by one-third of, to subequal to, distal width of antennal segment I; dorsal surface of head mostly flattened; vertex ecarinate, gently convex; vertex smoothly declivous to temporal

areas, longitudinal sulcus present; frons either smoothly merging with posterodorsal margin of clypeus or variously produced and projecting anteriorly of clypeus, juga, lora, and bucculae; if frons produced, then with slightly notched apex; dorsal half of clypeus swollen and produced anteriorly; juga triangular, lora rectangular, sometimes projecting anterolaterally; lora anteriorly of juga and bucculae; jugal-loral suture extending to antennal fossa; gena large, horizontal; buccula short, widest anteriorly, tapered posteriorly and forming carina surrounding buccula cavity, cavity not reaching posterior end of head; length of labium variable, reaching mesocoxae, or extending to metacoxae, I attaining anterior carinate margin of procoxae. Antennae: Length and shape variable; I usually long and tapered distally or short and barrel shaped; II slightly thinner and longer than I, gently tapered distally; II longer than III and IV combined, III and IV much thinner than II; IV shorter than III. Pronotum: Conical, proepisternum faintly visible or obscured by lateral carina in dorsal view; anterior margin slightly concave or straight; posterior margin concave medially, broadly rounded laterally, sometimes straight; calli variable, slightly roughened, not convergent anteriorly, with medial foveae, and very faint anterior and posterior sulcus adjoining calli, calli not attaining lateral margin of pronotum; calli sometimes very faint, smooth and shining; anterolateral foveae usually deep and triangular, with associated lateral sulcus terminating even with coxal incisure on lateral carinate margin; pronotum broadly convex; collar flat, posterior sulcus obsolete

medially, present dorsolaterally, merging with anterolateral foveae; lateral margin of pronotum slightly carinate becoming rounded as margin approaches lateral portion of collar, margin not attaining anterior margin of pronotum; sometimes lateral margin broadly rounded, and only carinate dorsad of coxal cleft; posterolateral margin merging with posterior margin of pronotum; coxal incisure extremely deep, perpendicular to and extending under lateral carinate margin, terminating at anterolateral region of collar; proepisternum rounded; margin of procoxae slightly flared; xyphus obsolete anteriorly. Mesoscutum and scutellum: Confluent medially, suture deeply incised laterally; mesocutum slightly exposed or concealed; mesoscutum and scutellum flattened. Hemelytra: Macropterous, sometimes females submacropterous; embolium wide and extending to cuneal cleft; cleft small, incisure almost reaching internal basal corner of cuneus; inner cell shorter than cuneus, elongate and triangular; outer cell longer than cuneus, elongate and rectangular, distal end rounded, and narrower than base. Legs: Metafemora not longer than abdomen, metatibiae longer than metafemora, distal end of femora slightly narrowed, sometimes notched, thickest between middle and distal end; metatarsi with segment I subequal to combined length of II and III. Metafemoral trichobothria: With eight, nine or ten trichs; trispinosa and calcarata with five; trichoma well developed and of medium or large size; bothria slightly sunken within surrounding cuticle. Claws: With small triangular pulvilli.

Ratios: Antecular portion of head to head length
(0.43-0.56:1.00).
 Eye height to head height (0.55-0.76:1.00).
 Gena to head height (0.18-0.30:1.00).
 Buccular flange and cavity to ventral head length (0.35-0.60:1.00).
 Antennal segment I to dorsal head width (1.00:0.40-0.66 to
 0.82-1.00).
 Antennal segment II to dorsal pronotal width (1.00:0.31-0.90).

Metaepisternal scent efferent system: Ostiolar channel
 extending to lateral portion of metaepisternum, terminating with
 deeply inserted peritremal disk; disk large, produced laterad of
 evaporative surface; surface large, triangular, anterior and
 posterior sections well developed, dorsal margin sometimes carinate.

Male Genitalia: Genital capsule: With or without tubercles
 present dorsad of paramere insertions (if tubercle present than
 located on left side); posteroventral portion of capsule slightly or
 not produced. Left paramere: Variable; sensory lobe either
 indistinct, subquadrate or strongly quadrate; arm sometimes
 thickened; angle sometimes acute; shaft flat, sinuate or slightly
 curving; apex pointed, or bispinose; surface smooth. Right
paramere: Variable; apex expanded distally, either large, hooklike
 spine, small point, or long, projecting shaftlike structure.
Vesica: Ductus seminis: Narrow throughout. Secondary gonopore:
 prominent coil-like structure with incomplete dorsal margin;
 sometimes with sclerite attached to right margin of aperture.
 Membrane: Variable; with spinose covered lobes, usually without

large sclerotized processes; sometimes with ribbonlike strap attached to ductus seminis, supporting spinose patches; sometimes approaching or merging with margin of secondary gonopore.

Female Genitalia: Sclerotized rings: Large, open, and subquadrate. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present behind lateral half of, and not spanning, rings; inter-ramal sclerotization present posteriad of rings, slanting mesiad from lateral ramal area, not within genital chamber.

Posterior wall: Inter-ramal sclerite: Large and concave. Median process: Variable; either faintly sclerotized, with dorsal portion not projecting anteriorly into dorsal structure, and with small plowlike plate posteriorly; or well sclerotized, with dorsal portion projecting anteriorly, and large plowlike plate posteriorly, which extends dorsad of dorsal margin of sclerite. Dorsal structure: Variable; either obsolete or large and saclike. Inter-ramal lobes: Variable; either large and obscuring sclerite, or only one-half as deep as sclerite. Oviducts: Common and laterals joined posteriorly or dorsomedially; sometimes floor of common oviduct sclerotized and wrinkled.

Discussion: Penacoris is the junior synonym of Stenodema. I base this opinion on the fact that the diagnostic characters of Penacoris: Length of antennal segment I twice as long as width of head and cuneus six times as long as wide (Carvalho and Rosas, 1966), are found in species of Stenodema as well. Investigation of the internal genitalia revealed no uniquely derived characters.

Included species:

Subgenus BRACHYSTIRA Fieber

Brachystira Fieber, 1858:301 (new genus, type species by monotypy Miris calcaratus Fallen).

Brachytropis Fieber, 1858:343 (unnecessary name for Brachystira Fieber). -- Reuter, 1875:8 (new subgenus).

calcarata (Fallen)

Miris calcaratus Fallen, 1807:110.

Brachytropis calcarata: Fieber, 1861:241 (new combination).

Brachytropis australis Wallengren, 1875:135. -- Carvalho, Dutra and Becker, 1960:465 (new synonym).

Stenodema (Brachytropis) calcaratus, Hueber, 1896:240 (new combination).

Distribution: Palearctic: Central Asia, Europe, and Turkistan.

pilosa (Jakovlev)

Brachytropis pilosa Jakovlev, 1890:243.

Stenodema pilosa, Reuter, 1904a:3, (new status).

Distribution: Palearctic: Turkistan.

trispinosa Reuter

Brachytropis calcaratus Uhler, not Linnaeus, 1876:316 (list).; 1877:413 (list).

Stenodema trispinosum Reuter, 1904a:4.

Stenodema falki Bliven, 1958:13, fig. 2.; 1960:41 figs. 5, 5a (left paramere illustration). -- Kelton, 1961:452 (description). NEW SYNONYM.

Distribution: Holarctic.

Subgenus STENODEMA Laporte

Lobostethus Fieber, 1858:301 (type species by monotypy virens Fabricius) -- Reuter, 1904a:2 (new synonym).

Miris Reuter, 1875b:8.

Neomiris Distant, 1891:113 (type species by monotypy praecelsus Distant). -- Carvalho, 1952c:4 (new synonym).

Stenodema: Reuter, 1904a:4 (new subgenus).

Penacoris Carvalho and Rosas, 1966:73, (type species by monotypy longicuneatus Carvalho and Rosas. NEW SYNONYM.

algotiensis Schmidt

Stenodema algotiense Schmidt, 1934:34-36, figs. 1, 2.

Distribution: Europe: Alps.

alpestris Reuter

Stenodema alpestre Reuter, 1904a:13.

Stenodema elegans Reuter, 1904a:14. -- Carvalho, 1976:58 (new synonym).

Stenodema rubrinerve Horvath, 1905:413. -- Zheng, 1982:96
(new synonym).

Distribution: China (Mou Pin).

alticola Zheng

Stenodema alticola Zheng, 1981:57, figs. 1, 2.

Distribution: China (Sichuan, Li Xian).

andina Carvalho

Stenodema andina Carvalho, 1975:128, figs. 18-21, 55.

Distribution: Neotropical: Argentina, Columbia, and Ecuador.

angustata Zheng

Stenodema angustatum Zheng, 1981:61, figs. 20-22.

Distribution: Tibet (Chagyab, Quando).

antennata Zheng

Stenodema antennatum Zheng, 1981:59, fig. 12.

Distribution: Tibet (Chagyab).

argentina Carvalho

Stenodema argentina Carvalho, 1975:129, figs. 22-25, 25a.

Distribution: Neotropical: Argentina (Catamarca).

atkinsoni (Distant)

Miris atkinsoni Distant, 1904a:423, fig. 270.

Stenodema atkinsoni: Carvalho, 1959:303 (new combination).

Distribution: India (Nilgiri Hills).

brasiliansa Carvalho

Stenodema brasiliansa Carvalho, 1980:304, fig. 20.

Distribution: Neotropical: Brazil (Mato Grosso).

chinense Reuter

Stenodema chinense Reuter, 1904a:19.

Distribution: China (Szechwan).

columbiensis Carvalho

Penacoris columbiensis Carvalho, 1985:7, figs. 1-5. NEW COMBINATION.

Distribution: Colombia.

crassipes Kiritshenko

Stenodema crassipes Kiritshenko, 1931:103, figs. 8, 10.

Distribution: Soviet Union (Pamir, Tadzhik).

curticollis (Costa)

Miris curticollis Costa, 1852:57.

Stenodema curticollis: Oshanin, 1909:770 (new combination).

Distribution: Italy.

dohrni (Stal)

Miris dohrni Stal, 1859:254.

Stenodema dohrni: Reuter, 1909b:8 (new combination). --
Carvalho, 1975:130, figs. 26-29 (description).

Distribution: Neotropical: Chile (Patagonia).

gridellii Hoberlandt

Stenodema gridellii Hoberlandt, 1960:61, figs. 1, 3, 6-8.

Distribution: Palearctic: Central and High Asia
(Karakorum).

guaraniana Carvalho

Stenodema guaraniana Carvalho, 1975:131, figs. 30-33.

Distribution: Neotropical: Brazil (Nova Teutonia).

guatemalana (Distant)

Miris guatemalanus Distant, 1883:236. -- Carvalho and
Dolling 1976:798 (lectotype designation).

Stenodema guatemalana: Carvalho, 1952d:8 (new combination).
-- Carvalho, 1975:133, figs. 34-37 (description).

Distribution: Neotropical: Guatemala, Mexico, and Panama.

holsata (Fabricius)

Cimex holsatus Fabricius, 1787:306.

Stenodema holsatum: Reuter, 1888:610 (new combination).

Distribution: Western Mediterranean.

hsiaoi Zheng

Stenodema hsiaoi Zheng, 1982:95, figs. 2, 3, 5, 8, 11, 12.

Distribution: China (Hiaojin, Jinchuan, Sichuan, Wenchuan,
and Xiaojin).

imperii Bliven

Stenodema imperii Bliven, 1958:14, fig. 4.; 1960:41, figs.
4, 4a (left paramere illustration). -- Kelton, 1961:453
(description).

Distribution: United States: California.

insuavis (Stal)

Miris insuavis Stal, 1860:45.

Stenodema insuavis: Reuter, 1909:7 (new combination). --
Carvalho, 1975:134, figs. 38-41 (description).

Distribution: Neotropical: Argentina, and Uruguay.

javanica Poppius

Stenodema javanicum Poppius, 1914b:140. -- Carvalho and Da
Silva Alfonso, 1977:819, figs. 32-35 (description).

Distribution: Indonesia, and Papua-New Guinea.

laevigata (Linnaeus)Cimex laevigatum Linnaeus, 1758:449.Stenodema laevigatum: Reuter, 1888:608 (new combination).

Distribution: Palearctic (not including North Africa).

laolaoensis CarvalhoPenacoris laolaoensis Carvalho, 1985:9, figs. 6-9. NEW COMBINATION.

Distribution: Argentina

lonagula ZhengStenodema lonagulum Zheng, 1981:58, figs. 5-9.

Distribution: China (Jiangxi).

longicollis PoppiusStenodema longicolle Poppius, 1915:43.

Distribution: Taiwan.

longicuneatus Carvalho and RosasPenacoris longicuneatus Carvalho and Rosas, 1966:75, figs. 1-4. -- Carvalho, 1985:11, figs 10-12 (male genitalia). NEW COMBINATION.

Distribution: Neotropical: Chile, and Argentina (both Río Negro region).

nigricalla ZhengStenodema nigricallum Zheng, 1981:60, figs. 15-19.

Distribution: China (Baoping, Jinchuan, Sichuan, and Xiaojin).

panamensis (Distant)Miris panamensis Distant, 1893:415, pl. 36, fig. 8. -- Carvalho and Dolling 1976:803 (lectotype designation).Stenodema panamensis: Carvalho, 1952d:12 (new combination).

Distribution: Neotropical: Panama.

parvula ZhengStenodema parvulum Zheng, 1981:60, figs. 13-14.

Distribution: China and Tibet.

pilosipes KeltonStenodema pilosipes Kelton, 1961:453.

Distribution: Western North America.

plebeja ReuterStenodema plebejum Reuter, 1904a:17.

Distribution: China and Tibet.

praecelsa (Distant)Neomiris praecelsus Distant, 1891:113 (illustration); 1893:87, (description).

Stenodema praecelsa: Carvalho, 1952c:85 (new combination).
 -- Carvalho and Fontes, 1969:331, figs. 1-4 (description).
 -- Carvalho, 1975:135, figs. 42-45 (description).
 Distribution: Neotropical: Argentina, Bolivia, Colombia,
 and Ecuador.

sequoiae Bliven

Stenodema sequoiae Bliven, 1955:8.; 1956:11, fig. 6
 (photo).; 1960:41, figs. 3, 3a (left paramere
 illustration). -- Kelton, 1961:453 (description).
 Distribution: United States: California.

sericans (Fieber)

Miris sericans Fieber, 1861:240.
Stenodema sericeus: Atkinson, 1890:35 (spelling error for
sericans Fieber, new combination).
 Distribution: Europe: Alps, Balkan and Carpathian
 peninsula Mts., and Pyrenees.

sibirica Bergroth

Miris virens lateralis Sahlberg, 1878:23 (new variation).
Stenodema laterale Reuter, 1891b:187 (new status).
Stenodema sibirica: Bergroth, 1914:183 (new name for Miris
virens lateralis).
 Distribution: Palearctic: Siberia.

tibeta Zheng

Stenodema tibetum Zheng, 1981:57, figs. 3, 4.
 Distribution: Tibet.

turanica Reuter

Stenodema turanicum Reuter, 1904a:11.
 Distribution: Palearctic: Irano-Turanic and Mediterranean
 region.

vicina Provancher

Miris vagans Say, 1832:26 (error for vicinum Provancher).
Miris vicinus Provancher, 1872:77. -- Kelton, 1968:1072
 (lectotype designation).
Stenodema vicinum: Van Duzee, 1916:36 (new combination).
Stenodema instabilis Uhler, 1876:316. -- Bergroth, 1898:33
 (new synonym).
Stenodema affinis Reuter, 1876:59. -- Van Duzee, 1916:36
 (new synonym).
 Distribution: Northeastern North America.

virens Linnaeus

Cimex virens Linnaeus, 1767:730 (new species).

Stenodema virens var. lateralis Sahlberg, 1878:23 (new combination).

Stenodema virens: Reuter, 1888:607 (new status).; 1904a:9, (new var. virescens, testacea, fulva, nigrofusca).

Distribution: Holarctic.

LEPTOPTERNA GROUPACETROPIS FIEBER

Figures 46A-E; 48A-F

Acetropis Fieber, 1858:302 (type species by monotypy Lopus carinatus Herrich-Schaeffer). -- Stys, 1973:9 (key). -- Lattin and Schwartz, 1986:34, figs. 1-15 (male genitalia).

Diagnosis: Recognized by the frons broadly conical and projecting dorsad of clypeus or sometimes just slightly produced; pronotum with broadly explanate lateral margins sometimes with medial ridge; vestiture of dorsum sparse and very short; vestiture of antennal segment I and II and tibiae short, usually black and bristlelike; male genitalia with posteroventral portion of capsule strongly expanded distally; left paramere small and with short shaft; vesica with two or three long sclerotized processes (figs. 48C, D); and female genitalia with narrow inter-ramal sclerite (fig. 48F).

Redescription: Dorsal Aspect: Size medium, 5.4-8.4; stramineous, usually with dusky marking on hemelytra; sometimes with three black longitudinal fasciae on head and pronotum; antennal segments I and II sometimes black; legs sometimes reddish; femora usually with fuscous patches; surface smoothly rugulose, and slightly shagreened, or hemelytra sometimes finely punctured and

shining. Vestiture: Dorsal: Composed of sparsely distributed, short, fine, light, suberect simple setae; sometimes with short, stout setae. Antennae: I with either reclined simple setae, and black bristlelike setae, or with short, stout setae. Legs: Femora and tibiae with short, reclining, simple pale setae, distal end of tibiae with a few bristlelike setae, and single row of bristlelike setae; without scattered minute spinulae; profemora with row of black bristlelike setae. Head: Pentangular in dorsal view, quadrate in lateral view; eyes large, narrowly joined to head, anterior margin either straight or curved; posterior margin strongly curved, subcontiguous to, or slightly removed from, pronotum; dorsal and ventral margins of antennal fossa within margins of eye; antennal fossa not pedunculate, flange small, subcontiguous to eye; frons variable, either projecting strongly beyond anterodorsal margin of eye and even with clypeus in lateral view, or just strongly produced; dorsal margin of eye usually projecting dorsad of dorsal margin of head, sometimes eye even with surface; frons conical in dorsal view, slightly anterior of bucculae, clypeus, juga, and lora; posterior margin of head ecarinate; vertex broadly and shallowly concave, without longitudinal sulcus; sometimes with remnant of sulcus between temporal areas; gena large, horizontal; buccular flange short, not reaching to posterior margin of head; gula present and large; labium reaching slightly beyond distal margin of mesosternum, sometimes reaching abdomen; I even with posterior margin of head. Antennae: I short, not bowed, of even thickness throughout length, apex somewhat narrowed, sub-basally

thickened; females with I very short; III and IV slightly thinner than II; III much shorter than II, and much longer than IV.

Pronotum: Subtriangular, without distinct anterior and posterior lobes; anterior margin deeply concave, posterior margin straight posterolateral angles curved; disk moderately convex sometimes with longitudinal carina medially, carina diminished towards anterior and posterior ends; lateral margins distinctly and widely explanate, slightly arcuate medially, sometimes margins subexplanate; fovate depression at anterior angle obsolete; lateral carina with anterior margin attaining anterior margin of collar and with posterior margin attaining posterior margin of pronotum; carina widest dorsad of coxal cleft; collar rounded or sometimes mostly flattened, with posterior sulcus mostly distinct, slightly indistinct laterally and not attaining lateralmost margin of explanate carina, terminating at junction of explanate carina and pronotal disk; calli weakly differentiated, not attaining lateral margin of pronotum; sometimes calli separated by longitudinal carina medially, when carina obsolete, calli confluent anteriorly; coxal cleft extremely deep, reaching under explanate lateral carina; proepisternum, mostly flattened and smooth with small upturned margin near procoxae.

Mesoscutum and scutellum: Broadly exposed, elevated dorsad of scutellum; suture broadly obsolete medially, distinct laterally; scutellum strongly convex, protruding dorsad of corium. Hemelytra: Macropterous or female sometimes submacropterous; elongate, parallel-sided; cuneal incisure distinct; embolium prominent, reaching cuneus; interior cell, narrow, widest subdistally; outer

cell subrectangular, with obtuse angles distally. Legs: Femora rounded, slightly tapered at distal and proximal ends; metafemora shorter than abdomen and metatibiae; tibiae cylindrical, slightly flaring distally; metatarsi with segment I shorter than combined length of segments II and III. Metafemoral trichobothria: With six or seven trichs; trichoma small; bothria slightly sunken in surrounding cuticle. Claws: Mostly straight, distal portion curved; pulvilli long, rectangular, and connate.

Ratios: Anterior portion of head to head length (0.33-0.41:1.00).

Eye height to head height (0.70-0.93:1.00).

Gena to head height (0.19-0.29:1.00).

Buccular flange to ventral head length (0.48-0.55:1.00).

Buccular cavity to ventral head length (0.63-0.83:1.00).

Antennal segment I to dorsal head width (0.92-0.96:1.00 to 1.00:0.72).

Antennal segment II to dorsal pronotal width (1.00:0.57-0.68).

Metaepisternal scent efferent system: Ostiolar channel situated ventrally on metaepisternum, very short; apex recessed between meso- and metacoxae, narrow; peritremal disk small and narrow not produced laterad of evaporative surface; surface narrow with anterior and posterior area reduced and with poorly differentiated microstructure.

Male Genitalia: Genital capsule: With large tubercles dorsad of paramere insertions; posteroventral portion of capsule strongly expanded distad. Left paramere: Small; sensory lobe somewhat offset from curvature of arm; arm slightly longer than shaft; shaft

stout; apex with small point; surface smooth. Right paramere: With slightly bulbous distal portion; apex with small point. Vesica: Ductus seminis: Very long and narrow, thickest at base tapering to small apical diameter posteriad of gonopore. Secondary gonopore: Orientated anteriorly; small, well coiled and complete. Membrane: membrane relatively small, situated basally; with two or three basally connected, long basal processes.

Female Genitalia: Sclerotized rings: Moderately large, open, ovoid, slightly twisted, rings separated by one-half ring diameter. Dorsal labiate plate: Obsolete. Ventral labiate plate: Spanning rings, present ventrad of lateralmost portion of rings, with small prolongation dorsad of rings, widest caudad of rings; inter-ramal sclerotization broadly extending caudad into genital chamber.

Posterior wall: Inter-ramal sclerite: Narrow, and weakly joined. Median process: broad and shovel shaped. Dorsal structure: Very small, without sac. Inter-ramal lobes: Large, covering most of sclerite; with serrately margined platelike microstructure.

Oviducts: Common and laterals joined posteriorly.

Included species:

Subgenus ACETROPIS Wagner, 1962:47.

Acetropis Wagner, 1962:47.

americana Knight

Acetropis americana Knight, 1927:206. -- Lattin and Schwartz, 1986:32 (review).

Distribution: United States: Oregon.

carinatus (Herrich-Schaeffer)

Lopus carinatus Herrich-Schaeffer, 1841:49, fig. 609.

Acetropis carinatus: Fieber, 1858:302 (new combination).

Distribution: Europe and Mediterranean.

gimmerthali (Flor)Miris gimmerthali Flor, 1860:428.Acetropis gimmerthali: Fieber, 1863:57 (new combination).Acetropis gimmerthali gimmerthali Wagner, 1968:271 (new subspecies).

Distribution: Europe and Mediterranean.

gimmerthali parva WagnerAcetropis gimmerthali parva Wagner, 1968:271, figs. 1a-e (new subspecies).

Distribution: Portugal.

josifovi WagnerAcetropis josifovi Wagner, 1967b:205, figs. 1a, b, e, f, 2a-c.

Distribution: Bulgaria.

longirostris PutonAcetropis longirostris Puton, 1875:511. -- Stys, 1973:1 (discussion of species).; 1974:667 (biology).

Distribution: Eastern Europe.

sinuata WagnerAcetropis sinuata Wagner, 1951:145.

Distribution: Northwest Africa.

Subgenus PALACETROPIS WagnerPalacetropis Wagner, 1962:45 (type species by monotypyAcetropis atropis Reuter; new subspecies).atropis ReuterAcetropis atropis Reuter, 1895:131-132.

Distribution: North Africa.

LEPTOPTERNA FIEBER

Figures 47A-E; 48G-L

Leptopterna Fieber, 1858:302 (type species by monotypy Miris dolabratus Fabricius, a synonym of Cimex dolabratus Linnaeus). -- Kelton, 1959:58, figs. 1-3 (male genitalia). -- Vinokurov, 1981:93-115 (revision); p. 94, figs. 1-8, 11-17; p. 101, figs. 19-25, 27-34; p. 104, figs. 37-52; p. 108, figs. 55-78; p. 110, figs. 79-99; p. 113, figs. 101-116 (male genitalia).Lopomorphus Douglas and Scott, 1865:293 (type species designated by Kirkaldy, 1906:144 Miris ferrugatus Fallen. -- Reuter, 1910a:167 (new synonym).Lopus Herrich-Schaeffer not Hahn, 1836:35.Miris other authors not Fabricius, Latreille, 1796:84.

Diagnosis: This genus is distinguished by these features: frons rounded, broad, and without longitudinal sulcus; eyes removed from pronotum, head with slight neck; dorsal surface smooth; females sometimes brachypterous or submacropterous; genital capsule of male with tubercles present dorsad of both paramere insertions; vesica usually with two narrow sclerotized processes (figs. 48I, J); and female genitalia with large, extensively developed anterior portion of ventral labiate plate, and with large well sclerotized and convoluted inter-ramal sclerotization extending caudad and dorsad into genital chamber (fig. 48G).

Redescription: Dorsal Aspect: Medium to large size 6.8-10.2; base color stramineous or yellow; antenna, head, pronotum, hemelytra, and legs with reddish, fuscous or black areas; surface smooth or slightly shagreened, hemelytra gently roughened.

Vestiture: Dorsal: Moderately distributed, moderate or long, erect, light simple setae. Antennae: I with moderately distributed, long, suberect or erect, light or black simple setae; II with densely distributed, recumbent and shorter, light simple setae distally; III and IV with densely distributed, recumbent, short, light simple setae and with longer, sparsely distributed, erect, light simple setae. Legs: With densely distributed, long, erect, dark simple setae; tibiae with two rows of bristles on distal half and without minute black spinulae. Vestiture usually not as wide as segments. Head: Subovate in dorsal view, subquadrate in lateral view; eyes narrowly joined to head, pedunculate posteriorly and curved anteriorly; anterior margin slightly concave, posterior

margin sinuate and removed from pronotal margin; facets not contiguous with head; distance between antennal fossa and eye equal to one-third of distal width of antennal segment I; ventral margin of fossa even with ventral margin of eye, dorsal margin even with middle of eye in lateral view; fossa flush to head, not pedunculate, fossal flange small, dorsal surface of head broadly curved in lateral view, temporal areas shagreened and concave, vertex ecarinate and smoothly declivous to temporal area; frons without longitudinal sulcus; dorsal margin of eye even with or slightly dorsad of dorsal surface of head in lateral view; anterior portion of frons strongly swollen and rounded, smoothly merging with dorsal portion of clypeus; dorsal portion of clypeus slightly rounded but not projecting anteriorly of tylus; buccula anteriorly of lora and juga; juga triangular and slightly swollen; lora rectangular; jugal-loral suture reaching antennal fossa; strong crease present ventrad of fossae; buccula flange surrounding cavity; gula present; labium reaching bases of metacoxae, I attaining middle of procoxal opening. Antennae: I somewhat narrowed basally, slightly thicker on interior surface, bowed; sometimes thick basally and tapered distally; II narrower than I; sometimes female with thickened II; III and IV more narrow and much shorter than II. Pronotum: Triangular, with proepisternum extending laterad of pronotal margin, and visible in dorsal view; anterior margin of pronotum slightly concave, posterior margin straight, lateral margin slightly concave, and slightly to strongly carinate; lateral margin strongly arched dorsad of coxal cleft, bridging cleft; anterior end of lateral

margin merging with posterolateral portion of collar, not attaining anterior margin of pronotum; posterior end merging with propleura before attaining posterior portion of pronotum; calli with very faint anterior and posterior sulci; calli not confluent anteriorly and with pair of medial foveae; pronotum convex without anterior and posterior lobes; posterior sulcus of collar broadly obsolete merging with pronotum, denoted by smoothly sunken area medially and laterally; lateral margin of collar obsolete in lateral view; anterolateral sulcus deep, but smooth, forming terminus of lateral carinate margin of pronotum; coxal cleft deep; incisure extending deeply under bridged lateral margin, and continuing anteriorly around proepisternum; proepisternum not produced or rounded laterally, coxal margin explanate; xyphus shallow. Mesoscutum and scutellum: Suture confluent over entire width except for extreme lateral ends of macropterous specimens; mesoscutum very broadly exposed and convex, projecting prominently dorsad of scutellum, scutellum projecting dorsad hemelytra. Hemelytra: Macropterous, females sometimes submacropterous or brachypterous; embolium narrow and extending to coxal cleft, incisure deep, corium overlapping cuneus; interior cell small, triangular, much shorter than cuneus; outer cell large, longer than cuneus, distal angle rounded. Legs: Metafemora slightly tapered distally, metafemora just longer than abdomen, and shorter than distally expanded metatibia; metatarsi with segment I subequal to combined length of segments II and III. Metafemoral trichobothria: With eight or ten trichs; trichoma very small; bothria flush with cuticle. Claws: Long, distally curved;

pulvilli small, filling interior angle of claw.

Ratios: Anteocular portion of head to head length
(0.38-0.43:1.00).

Eye height to head height (0.29:1.00).

Gena to head height (0.26:1.00).

Buccular flange to ventral head length (0.52-0.59:1.00).

Buccular cavity to ventral head length (0.60:1.00).

Antennal segment I to dorsal head width (1.00:0.71-0.96).

Antennal segment II to dorsal pronotal width (1.00:0.47-0.59).

Metaepisternal scent efferent system: Ostiolar channel reaching lateral surface of coxae; apex oval; peritremal disk large, slightly produced laterad of evaporative surface; surface subtriangular, anterodorsal section small, width of posterior section narrow; terminally truncate.

Male Genitalia: Genital capsule: With one large tubercle dorsad of left and right paramere insertions; posteroventral portion of capsule strongly produced appearing flangelike in lateral view. Left paramere: Sensory lobe small; angle large; shaft small with simple apex; surface smooth. Right paramere: Constricted medially; distal portion bulbous with small spine apically. Vesica: Ductus seminis: Very long and narrow, widest at base, narrow behind gonopore. Secondary gonopore: Large and complete with distinct coil-like and folded appearance; orientated anteriorly. Membrane: With two long, basally connected, basal processes, sometimes one process is bifurcate and usually with platelike sclerotization basally; front of membrane with small spinose sclerite; membrane

very small situated basally; sometimes with narrow, elongate lobes.

Female Genitalia: Sclerotized rings: Large, round, and open; sometimes with medial angles contiguous. Dorsal labiate plate: Obsolete. Ventral labiate plate: Large, present behind rings, extending anteriorly, usually not spanning rings; inter-ramal sclerotization complex lateral section well sclerotized and convoluted, interior of genital chamber with deeply concave pocketlike sclerite. Posterior wall: Inter-ramal sclerite: Large and wide. Median process: Large, well sclerotized, with very large dorsal portion extending anteriorly over sclerite into dorsal process, and with large plowlike plate posteriorly. Dorsal structure: Large, saclike with narrowly open, posterior aspect. Inter-ramal lobes: Narrow, one-half width of sclerite, microstructure without scalelike pattern. Oviducts: Common and laterals joined posteriorly.

Included Species:

albescens (Reuter)

Miris ferrugatus var. albescens Reuter, 1891b:188 (new variation).

Leptopterna longicornis Wagner not Reuter, 1967a:64. -- Vinokurov, 1981:109 (new synonym).

Leptopterna albescens, Wagner, 1969:31, figs. 1a-h (new combination and status). -- Vinokurov, 1981:109, figs. 63-78 (description).

Distribution: Eastern Europe and central and western Soviet Union.

dentifer Linnavuori

Leptopterna dentifer Linnavuori, 1970:95, figs. 4a, 5b-d (new species).

Distribution: Southern Spain.

dolabrata (Linnaeus)

Cimex dolabratus Linnaeus, 1758:449.

Leptopterna dolabrata: Fieber, 1861:245 (new combination).

- Miris belangeri Provancher, 1872:104. -- Provancher, 1886:104 (new synonym). -- Kelton 1968:1072 (lectotype designation).
Distribution: Holarctic.
- emeljanovi Vinokurov
Leptopterna emeljanovi Vinokurov, 1981:105, figs. 37-44.
Distribution: Southwestern Soviet Union: Kazakh S.S.R.
- euxina Vinokurov
Leptopterna euxina Vinokurov, 1981:100, figs. 10-18.
Distribution: Southwestern Soviet Union: Crimea, Caucasus.
- ferrugata (Fallen)
Miris ferrugatus Fallen, 1807:107.
Leptopterna dolabrata var. a, Fieber, 1861:245 (new combination).
Leptopterna amoena Uhler, 1872:409. -- Carvalho, 1959:292 (new synonym).
Leptopterna ferrugata: Reuter, 1875c:14 (description).
Distribution: Holarctic.
- guiesheimae Wagner
Leptopterna guiesheimae Wagner, 1952a:1, figs. (middle a-e).
Distribution: Sicily, southern France, and Spain.
- inopinata Vinokurov
Leptopterna inopinata Vinokurov, 1981:111, figs. 92-99.
Distribution: Southwestern Soviet Union: Georgian S.S.R.
- kerzhneri Vinokurov
Leptopterna kerzhneri Vinokurov, 1981:103, figs. 27-36.
Distribution: Eastern Soviet Union: Yakutsk, Magadan, and Kamchatka.
- longicornis (Reuter)
Miris ferrugatus var. longicornis Reuter, 1901b:161 (new variation).
Leptopterna longicornis: Vinokurov, 1981:111, figs. 79-91, 100 (new combination, new status).
Distribution: Southcentral Soviet Union: Tadzhik, and Kirgiz.
- pilosa Reuter
Leptopterna pilosa Reuter, 1880b:13.
Distribution: Iberian peninsula.
- putshkori Vinokurov
Leptopterna putshkori Vinokurov, 1981:114, figs. 101-107.
Distribution: Southwestern Soviet Union: Armenian and Ozerbaijan.

ruficornis VinokurovLeptopterna ruficornis Vinokurov, 1981:102, figs. 19-26.

Distribution: Eastern Soviet Union: Khabarovsk.

silacea BlivenLeptopterna silacea Bliven, 1973:136, figs. 7, 8. NOMEN
DUBIUM.

Distribution: United States: California.

COLLARIA GROUPCOLLARIA PROVANCHER

Figures 49A-H; 51A-D; 52A-J

Collaria Provancher, 1872:79 (type species by monotypy Collaria
meilleurii Provancher). -- Carvalho and Fontes, 1981:11-46
(revision of new world species); pp. 32-45, figs. 2-4,
8-10, 14-17, 21-23, 27-29, 33-36, 40-44 (male genitalia).Trachelomiris Reuter, 1876:61 (type species designated by
Kirkaldy, 1906:143 oculatus Reuter). -- Reuter, 1905c:47
(new synonym).Nabidea Uhler, 1878:397 (type species by monotypy coracina
Uhler. -- Uhler, 1887:230 (new synonym).

Diagnosis: Distinguished by these features: frons broad and smoothly merging with clypeus; juga produced and strongly rounded; eyes removed from pronotum by distance equal to twice distal width of antennal segment I; head with neck; females sometimes with abdomen longer than hemelytral membrane; male genitalia with complex vesicae, usually with sclerotized and/or basal processes and with either spinose or filamentous sclerotized patches (figs. 51A, B, D); and female genitalia with well developed dorsal structure of posterior wall, sometimes dorsal structure as large as inter-ramal sclerite (fig. 52E).

Redescription: Dorsal Aspect: Medium size 5.0-7.8; variable coloration, usually with brownish-grey ground color and variably marked with fuscous; head, pronotum, mesoscutum, scutellum, and

hemelytra sometimes black; femora with diffuse fuscous patches; surface mostly shining, shagreened, roughened, strongly striate, or coarsely punctate; pronotum with pair of velvety black patches of variable size bilaterally on posterior lobe. Vestiture: Dorsal: Sparsely distributed, short to moderate length, suberect to erect, light simple setae. Antenna: As dorsum; I with sparsely distributed, short, suberect, black bristlelike setae or with mat of minute setae, or with setae longer than width of segment; II with more densely distributed, short, suberect to erect, black, bristlelike setae, (somewhat longer and denser, and less bristlelike toward distal end), intermixed with light, recumbent or suberect simple setae distally; III-IV with dense, light, recumbent or suberect simple setae. Legs: With moderately distributed short to moderately long, dark, suberect simple setae; tibiae with two or three rows of dark bristles; metatibiae with minute, black spinulae ventrally. Head: Subquadrate in dorsal view, head subquadrate in lateral view; eyes large, narrowly joined to head, slightly pedunculate, with facets contiguous with head except for posteriormost portion, with anterior margin minutely concave, posterior margin separated from pronotum by distance equal to slightly more than twice distal width of antennal segment I; head with neck; dorsal margin of eye even with or sometimes slightly ventrad of dorsal surface of head in lateral view; antennal fossae slightly pedunculate, fossal flange carinate; ventral and dorsal margins of fossa between margins of eye in lateral view; usually situated within ventral half of eye; distance between fossa and eye

equal to two-thirds to four-fifths of distal width of antennal segment I; vertex ecarinate, gently convex, broadly declivous to temporal area; frons with short longitudinal sulcus, basolateral patches of head and juga smooth; frons projecting anteriorly, and slightly anterodorsad of eye; frons strongly deflexed, and merging with clypeus in region between eye and antennal fossa; junction of frons and clypeus denoted by faint suture; clypeus with dorsal portion smoothly rounded, produced and sometimes slightly bulbous, tylus slightly anteriorly of dorsal portion of clypeus; juga and lora large, triangular, produced, sutures deep; lora anteriorly of juga, and bucculae; jugal-loral suture present and almost reaching eye and with faint creases ventrad of eye; buccular flange short, surrounding cavity and not reaching posterior margin of head; posterior end of flange merging into narrow, solitary carina which almost reaching posterior margin of head; gena wide, horizontal.

Antennae: I length variable, with even thickness; slightly bowed; sometimes terrete; II longer than III. Pronotum: Subtriangular or companulate, with proepisternum visible in dorsal view; anterior margin slightly concave; posterior margin broadly convex; lateral margins sinuate, usually broadly rounded to propleura; only carinate between anterior extension of coxal incisure and anterolateral foveae; sometimes lateral margins of pronotum slightly carinate at propleura; posterior end of lateral margin not reaching posterior margin of pronotum; anterior end of lateral margin usually completely obsolete even with calli, and merging with lateral portion of collar, and not attaining anterior margin of pronotum;

calli very large, strongly convex, reaching lateral margin of pronotum, slightly confluent anteriorly; usually with medial pair of fovate depressions merging with transverse sulcus on posterior margin of calli; pronotum with clearly defined anterior or posterior lobes; dorsal surface of collar usually flattened; sometimes slightly rounded, posterior sulcus narrowly obsolete medially, sulcus present laterally and merging with anterolateral foveae; lateral portion of collar merging with proepisternum; coxal cleft deep, incisure continuing dorsad around proepisternum and terminating in anteromedial portion of proepisternum; proepisternum, rounded and produced; propleura with strong procoxal flange; xyphus shallow. Mesoscutum and scutellum: Confluent medially, suture present laterally, mesoscutum projecting dorsad of, and steeply declivous to, scutellum, scutellum weakly convex. Hemelytra: Macropterous; sometimes female with abdomen extending posteriad of membrane; embolium wide, reaching cuneal fracture; interior cell small, shorter than cuneus and triangular; outer cell longer than cuneus, subrectangular, rounded distally. Legs: Metafemora longer than abdomen, and shorter than metatibia; with even diameter throughout; metatarsi with segment I equal to combined length of segments II and III. Metafemoral trichobothria: with eight, nine, or ten trichs; trichoma small; bothria slightly sunken within surrounding cuticle. Claws: Long, with elongate, narrow, connate pulvilli.

Ratios: Anteocular portion of head to head length
(0.32-0.46:1.00).
 Eye height to head height (0.66:1.00).
 Gena to head height (0.68-0.77:1.00).
 Buccular flange to ventral head length (0.24-0.39:1.00).
 Buccular cavity to ventral head length (0.41-0.70:1.00).
 Antennal segment I to dorsal head width (1.00:0.64-0.95 to
 0.88-0.94:1.00).
 Antennal segment II to dorsal pronotal width (1.00:0.24-0.68).

Metaepisternal scent efferent system: Ostiolar channel short, terminating on ventralmost section of metaepisternum; peritremal disk slightly projecting laterad of evaporative surface; surface narrow, with weakly developed anterodorsal and posterior sections.

Male Genitalia: Genital capsule: Usually without tubercles dorsad of paramere insertions, sometimes small tubercle present of left side; posteroventral portion of capsule not produced. Left paramere: With small sensory lobe, faintly differentiated above arm curvature; angle gentle; arm and shaft of subequal length; surface smooth. Right paramere: Very small, slightly thickened distally. Vesica: Ductus seminis: Narrow, thickest at base, sometimes with sclerites attached to base. Secondary gonopore: Small, usually complete, and with wide diffuse spinose aperture; sometimes aperture incomplete ventrally; sometimes with dorsal and/or ventral ornamentation. Membrane: Complex; sometimes with spinose or filamentous sclerites, usually wrapping around vesica and attached to ductus, adhering to membrane ventrad of gonopore; sometimes with

combinations of spinose lobes, lobal sclerites, and basal processes attached to ribbonlike strap basally.

Female Genitalia: Sclerotized rings: Variable; either subtriangular and open with medially projecting process, or narrow and closed. Dorsal labiate plate: Obsolete. Ventral labiate plate: Variable; present behind ring, and either spanning rings medially, or not; inter-ramal sclerotization present laterally near ramae; sometimes with broad posteriorly directed plate occupying genital chamber extensively. Posterior wall: Inter-ramal sclerite: Short and of moderate depth. Median process: Variable; either short, well sclerotized, with plowlike plate posteriorly, and with broad, fan shaped anteriorly projecting dorsal portion which form floor of dorsal process; or very flat, extending dorsad of sclerite but not projecting anteriorly, and not extending posteriorly of sclerite as plowlike plate. Dorsal structure: Variable; either very large, open anteriorly not saclike, with broad medial crease; or greatly expanded into two large and wide flat plates which merge with inter-ramal sclerotization and associated ventral labiate plate. Inter-ramal lobes: Variable; either consisting of two widely separated lobes which extend ventrad of sclerite; or narrow, contiguous lobes which obscure one-half of sclerite; microstructure spinose. Sometimes inter-ramal sclerite and lobes with well sclerotized dorsolateral regions. Oviducts: Common and laterals joined ventromedially.

Included species:

capixaba Carvalho and Fontes

Collaria capixaba Carvalho and Fontes, 1981:14, figs. 1-6, 47.

Distribution: Brazil: Espirito Santo.

columbiensis Carvalho

Collaria columbiensis Carvalho, 1984:12, figs. 1-8.

Distribution: Columbia.

danae Linnavuori

Collaria danae Linnavuori, 1974:18.

Distribution: West Africa: Ivory Coast.

guaraniana Carvalho and Fontes

Collaria guaraniana Carvalho and Fontes, 1981:16, figs. 7-12, 48.

Distribution: Brazil: Parana.

husseyi Carvalho

Collaria explicata, Carvalho not Uhler, 1945:180, fig. (description).

Collaria husseyi Carvalho, 1955:222 (new name for explicata Carvalho). -- Carvalho and Fontes, 1981:18, figs. 13-19, 49 (description).

Distribution: Brazil: Minas Gerais.

improvisa Reuter

Collaria improvisa Reuter, 1893:208.

Distribution: South and East Africa, Madagascar, and Seychelles Islands.

meilleurii Provancher

Collaria meilleurii Provancher, 1872:79. -- Kelton, 1968:1073 (lectotype designation). -- Carvalho and Fontes, 1981:19, figs. 20-25, 50 (description).

Distribution: Northcentral and eastern Nearctic.

nigra Linnavuori

Collaria nigra Linnavuori, 1975:17.

Distribution: Ethiopia.

obscuricornis Poppius

Collaria obscuricornis Poppius, 1910:30.

Distribution: East Africa.

oculata ReuterTrachelomiris oculatus Reuter, 1876:61.Collaria oculata: Van Duzee, 1894:176 (new combination). --
Carvalho and Fontes, 1981:21, figs. 26-31, 51
(description).

Distribution: Eastern United States.

oleosa DistantTrachelomiris oleosus Distant, 1883:238, fig. 2. --

Carvalho and Dolling, 1976:803 (lectotype designation).

Collaria explicata Uhler, 1887:230. -- Carvalho 1959:285
(new synonymy).Collaria oleosa: Carvalho and Fontes, 1981:23, figs. 32-38,
52, 53 (description).

Distribution: Neotropical (including southern Florida).

scenica (Stal)Miris scenica Stal, 1859:254.Collaria scenica: Reuter, 1909b:12 (new combination). --
Carvalho

and Fontes, 1981:26, figs. 39-46, 54 (description).

Distribution: Neotropical: Argentina, Brazil, and Uruguay.

villiersi CarvalhoCollaria villiersi Carvalho, 1953:3, fig. 1 (new species).

Distribution: West Africa: Ghana and Senegal.

NABIDOMIRIS POPPIUS

Figures 50A-F; 51E-H; 52K-H

Nabidomiris Poppius, 1914a:125 (type species by monotypy
clypealis Poppius).

Diagnosis: This genus is recognized by the produced and bulbous dorsal portion of the clypeus; eyes small, widely separated from pronotum; anteocular portion of head longer than one-half of total head length; male genitalia with secondary gonopore of vesica diffusely spinose and with dorsal process (fig. 51H); female genitalia with small and closed sclerotized rings (fig. 52L).

Redescription: Dorsal Aspect: Small to medium size, 6.0-8.0; color variable, either gray, rufus or stramineous with rufus

infuscation, sometimes with fuscous spots; sometimes pronotum with pair of velvety black spots laterally, or head and antennal segment I with reddish fasciae; head and hemelytra roughened, pronotum rugulose or rugulopunctate; scutellum transversely striate.

Vestiture: Dorsal: Sparsely distributed, short, recumbent to suberect, light simple setae; setae erect and longer on claval vein. Antenna: I with recumbent, short, light or suberect, longer, dark simple setae and without black bristlelike setae; II-IV with densely distributed, suberect, short, light or less densely distributed, longer, dark simple setae. Legs: With more densely distributed, light or dark, suberect simple setae, intermixed with dark bristlelike setae; tibiae with two or three rows of dark bristlelike setae distally; metatibiae with diffuse patch of minute black spinulae covering interiolateral surface. Head: Subconical in dorsal view; rectangular in lateral view; eyes small, narrowly joined to head, without peduncle, anterior margin entire and rounded, posterior margin separated from pronotum by distance equal to distal width of antennal segment I; antennal fossa pedunculate with flaring margin and small spinous projection on ventroanterior margin; fossa separated from eye by distance equal to slightly more than half of distal width of antennal segment I; frons slightly projecting dorsad of or even with dorsal margin of eye and greatly projecting anterodorsad of eye; ventral and dorsal margin of fossae within margins of eye in lateral view; dorsal surface of head smoothly curving from tip of clypeus to posterior margin of head; vertex ecarinate, gently declivous to shagreened temporal area;

longitudinal sulcus present and deep; frons merging with clypeus, junction slightly convex; bucculae projecting anteriorly of lora and juga; lora anteriorly of juga; jugal-loral suture reaching fossa; slight crease present running from fossa ventrally; juga quadrate and slightly produced; lora rectangular, produced; dorsal portion of clypeus produced and bulbous, sometimes shining, projecting anteriorly of tylus; buccular flange smaller than cavity, flange short, diminishing to carina, carina pointed posteriorly; sometimes carinae merge and continued as single line; carina not reaching posterior margin of head, gula large; labium reaching base of abdomen, I reaching anterior margin of procoxae. Antennae: Longer than length of body; I thickest medially, tapered at base, not bowed; II thinner than I; III and IV slightly thinner than II; III usually as long as II; IV subequal to III. Pronotum: Triangular with proepisternum visible in dorsal view; anterior margin slightly concave, posterior margin sinuate, concave medially; lateral margin slightly concave between calli and coxal cleft; calli large, distinct, usually confluent anteriorly, anterior and posterior sulci deep; pair of medial fovate depressions present and merging with posterior sulcus; surface of calli just slightly roughened; dorsal surface of pronotum with distinct anterior and posterior lobes; posterior lobe rounded and slightly produced dorsad of anterior lobe; lateral carina obsolete on posterior lobe of pronotum, anterior lobe with carinate lateral margin dorsad of coxal cleft; posterior end of lateral margin of pronotum convex and gently adjoining propleura laterally, anterior end of lateral carina

merging with lateral portion of collar and continuing around proepisternum as lateral margin of collar; anterolateral foveae deep, forming junction of base of lateral carina and posterolateral margin of collar; posterior margin of collar distinct medially and laterally; coxal cleft deep; incisure deeply reaching under lateral carina; incisure inscribing curvature of proepisternum; proepisternum rounded and bulbous; margin of procoxae flaring and carinate; xyphus present and deep; propleura rugulose. Mesoscutum and scutellum: Suture broadly confluent medially, present laterally, mesoscutum steeply declivous to scutellum; scutellum produced above surface of pronotum. Hemelytra: Macropterous, sometimes brachypterous (including one cell), if macropterous, then embolium wide, reaching cuneus, cuneal fracture small, indented, cuneal incisure short; interior cell shorter than cuneus, triangular; outer cell subrectangular, longer than cuneus, rounded distally. Legs: Metafemora longer than abdomen, shorter than metatibiae, rounded, of even width over entire length, distal end of metafemora without excavated area; metatarsi with segment I subequal to or longer than combined length of segments II and III. Metafemoral trichobothria: With ten trichs; trichoma of moderate size; bothria slightly sunken in surrounding cuticle. Claws: Long and broadly curved; pulvilli curved and connate.

Ratios: Antecular portion of head to head length (0.48-0.53:1.00).

Eye height to head height (0.58-0.82:1.00).

Gena to head height (0.26-0.30:1.00).

Buccular flange to ventral head length (0.29-0.38:1.00).

Buccular cavity to ventral head length (0.47-0.84:1.00).

Antennal segment I to dorsal head width (0.91-1.00:1.00).

Antennal segment II to dorsal pronotal width (1.00:0.39-0.56).

Metaepisternal scent efferent system: Ostiolar channel short, just attaining lateral margin of coxae, situated on ventral aspect of metaepisternum; peritremal disk small, not prominent, merges with evaporative surface; surface narrow, both anterior and posterior sections weakly developed.

Male Genitalia: Genital capsule: Small, with very large dorsal tergite anterad of anal tube; with small tubercle dorsad of left paramere insertion; posteroventral portion of capsule slightly expanded. Left paramere: Small; without prominent sensory lobe and spines; arm and shaft project laterad not dorsad; shaft with diameter as wide as arm; apex abruptly truncate; surface smooth. Right paramere: Very small; with small rounded distal portion; with small spine apically. Vesica: Ductus seminis: Very narrow, and not expanded basad of gonopore. Secondary gonopore: Aperture complete, coil-like structure obsolete, with wide, diffuse spinose surface, and sometimes with dorsal projection or ornamentation. Membrane: Small, with two expansive spinose sclerites below gonopore; with one or two small lobal sclerite behind gonopore; sometimes with ribbonlike strap posteriorly.

Female Genitalia: Sclerotized rings: Small, and closed. Dorsal labiate plate: Obsolete. Ventral labiate plate: Narrow, present behind, and spanning rings; inter-ramal sclerotization

extensive caudad of rings, and with small section adjacent to ramae laterally, sometimes with narrow band spanning genital chamber.

Posterior wall: Inter-ramal sclerite: Moderately deep. Median process: Large, narrow, and extends anterodorsad to even with lateral apex of sclerite. Dorsal structure: Saclike and not creased. Inter-ramal lobes: One-half as deep as sclerite, not confluent medially; with fringelike microstructure. Oviducts: Common bisected, each half with lateral joined laterally.

Included Species:

clypealis Poppius

Nabidomiris clypealis Poppius, 1914a:126.

Distribution: East Africa.

giloicus Linnavuori

Nabidomiris giloicus Linnavuori, 1975:16.

Distribution: East Africa.

longipennis Odhiambo

Nabidomiris longipennis Odhiambo, 1958:742, figs. 22-26.

Distribution: East Africa.

GENERA INCERTAE SEDIS

ACOMOCERA EYLES

Figures 53A-F; 58A, B; 59A: 60A,B

Acomocera Eyles, 1975:164 (type species by monotypy

Megalocerocera elongata Distant). -- Carvalho and Da Silva Afonso, 1977:809, figs. 3-5 (male genitalia).

Diagnosis: Distinguished from other stenodemines by the mostly dull, dorsal surface with sparse and short vestiture; vestiture of antennal segment I shorter than width of segment; metatibiae with vestiture longer than segment; frons not produced anteriorly of clypeus; eyes very large and slightly removed from pronotum;

antennal segment III subequal in diameter to, and usually longer than segment II; male genitalia with elongated left paramere, vesica with secondary gonopore narrow, deeply notched (fig. 59A); and female genitalia with ventral labiate plate very narrow and spanning rings (fig. 60A).

Redescription: Dorsal Aspect: Medium to large size, 7.6-12.3; stramineous with reddish markings and/or fasciae on head, antennal segment I, pronotum, scutellum, and hemelytra; surface of head and pronotum slightly rugulopunctate, scutellum, mesoscutum and hemelytra smooth and slightly shining. Vestiture: Dorsal: With sparsely distributed, short, recumbent simple setae; ventral surface of head including labium with longer setae. Antennae: With densely distributed, short, appressed simple setae; I without bristlelike setae. Legs: With suberect, longer simple setae; interior surface of metatibiae with three rows and exterior surface with one complete row of minute stout spiculae, spiculae obsolete apically, distal portion with rows of bristlelike setae; tarsi with dense, suberect simple setae. Head: Triangular in dorsal view; subconical in lateral view; eyes very large, broadly joined to head, not pedunculate, anterior margin deeply emarginate, posterior margin with facets reaching head and slightly separated from pronotum; antennal fossae slightly pedunculate and with small flange; eye nearly contiguous to fossae, separated by distance equal to one-third length of antennal segment I; ventral and dorsal margin of fossae within margins of eye; dorsal margin of head smoothly and gently sloping and ventrad of dorsal margin of eye in lateral view;

vertex slightly rounded, anterior margin with faint transverse crease; frons with deep longitudinal sulcus; frons not or only slightly produced, usually gradually declivous to clypeus; frons posteriad of juga; bucculae and lora anterior of juga; clypeus large, dorsal half projecting anteriorly with pointed apex; juga quadrate, lora rectangular and strongly produced laterally; jugal-loral suture reaching fossae; gena ventral, narrow, width equal to two-thirds of width distal end of antennal segment I; gula large, buccular flange shorter than cavity, flange diminishing to long carina surrounding cavity; labium reaching base of abdomen or fourth sternite, I reaching even with coxal cleft. Antennae: Long, length approximately one-fifth longer than body; I long, thickest submedially, bowed; II long, much thinner than I, slightly thicker than III; III one and one-half as long as II; III and IV very thin, filamentlike. Pronotum: Conical, with proepisternum visible in dorsal view; calli weakly differentiated, flattened, just reaching lateral margin of pronotum, not confluent anteromedially; without anterior and posterior lobes; disk convex; anterior margin straight, posterior margin broadly concave, lateral margin straight or broadly concave, narrower than proepisternum in dorsal view; lateral margin of pronotum carinate, anterior end smoothly merging with lateral surface of collar, not attaining anterior margin of pronotum, posterior end diminishing before posterior margin of pronotum; collar with posterior sulcus faintly merging with triangular anterolateral foveae laterally and continuing anteriorly, junction of anterior end of merging with lateral carina of pronotum and collar;

coxal incisure deep, reaching under lateral carina, and continuing anteriorly around proepisternum; proepisternum rounded and bulbous; procoxal margin slightly upturned and carinate; xyphus elongate.

Mesoscutum and scutellum: Mesoscutum very broadly exposed, smoothly curved; suture obsolete medially, present laterally; scutellum convex and elongated. Hemelytra: Macropterous, elongate, lateral margins straight; embolium thin, diminishing anteriorly of cuneus; interior cell shorter than cuneus, elongate and narrow, widest distally; outer cell longer than cuneus, apex slightly pointed.

Legs: Rounded, thickest sub-basally; metatibiae longer than abdomen and metafemora; metatarsi with segment I one-third longer than combined length of segments II and III. Metafemoral trichobothria: With eleven trichs; trichoma very small; bothria slightly sunken in surrounding cuticle. Claws: long, curved distally; pulvilli small, triangular.

Ratios: Anteocular portion of head to head length
(0.48-0.51:1.00).

Eye height to head height (1.00:0.85).

Gena not visible in lateral view.

Buccular flange to ventral head length (0.39:1.00).

Buccular cavity to ventral head length (0.75:1.00).

Antennal segment I to dorsal head width (1.00:0.56-0.78).

Antennal segment II to dorsal pronotal width (1.00:0.31-0.35).

Metaepisternal scent efferent system: Ostiolar channel short, terminating with broad orifice on ventral aspect of metaepisternum; peritremal disk small but distinct, slightly prominent laterad and

merging with evaporative surface; evaporative surface narrow, posterior portion small and anterodorsal portion reduced.

Male Genitalia: Genital capsule: Relatively small; without tubercles present dorsad of paramere insertions; posteroventral portion of capsule slightly produced. Left paramere: Small, elongate; sensory lobe slightly expanded above arm; arm longer than shaft; apex small but prominent; surface smooth. Vesica: Ductus seminis: Extremely narrow, short. Secondary gonopore: Very large and complete, coil-like structure diffuse, deeply cleft ventrally. Membrane: With spinose lobes, without sclerotized processes.

Female Genitalia: Sclerotized rings: Large, open, angulate medially. Dorsal labiate plate: Obsolete. Ventral labiate plate: Faint, present behind, and with narrow strap spanning rings; inter-ramal area narrowly present caudad of rings without extensive sclerotization. Posterior wall: Inter-ramal sclerite: Moderately wide, pointed ventrally. Median process: Large and deeply bifid, projecting dorsad into dorsal structure. Dorsal structure: Small, sac creased medially. Inter-ramal lobes: Moderately deep, obscuring most of sclerite. Oviducts: Common widely separating laterally joined laterals.

Species Included:

elongata (Distant)

Megaloceroea elongata Distant, 1904:425.

Acomocera elongata: Eyles, 1975:165, figs. 33-36 (new combination). -- Carvalho and Da Silva Afonso, 1977:808, figs. 1-5 (description).

Distribution: Papua-New Guinea, New Britain, and Sri-Lanka.

EBUTIUS DISTANT

Figures 54A-E; 58C; 60C,D

Ebutius Distant, 1909:440 (type species by monotypy bellus Distant).

Notostiropsis Poppius, 1914b:138 (type species by monotypy plebejus Poppius). -- Carvalho and Da Silva Afonso, 1977:818-819, figs. 28-31 (male genitalia). NEW SYNONYM.

Diagnosis: This genus is recognized by the small rounded eyes, removed from pronotum; antennal segments II and III equal in length; frons slightly produced anteriorly of clypeus; male genitalia with large spatulate process on posteroventral margin of genital capsule, vesica without sclerotized processes; and female genitalia with sclerotized apparently obsolete (fig. 60C).

Redescription: Dorsal Aspect: Medium size, 6.7-8.0; yellow or stramineous; hemelytra with castaneous markings; antennal segment I, head, and pronotum, with longitudinal reddish fasciae; mesonotum with black patches laterally; surface slightly shining, rugulose; posterior disk of pronotum faintly punctate. Vestiture: Dorsal: Pronotum with sparsely distributed, short, fine, recurved simple setae; head and pronotum also with suberect or erect, longer simple setae. Antennae: I with moderately distributed, longer, more erect simple setae, without bristlelike setae. Legs: Femora and tibiae, and ventral surface including labium with longer, erect, light simple setae; tibiae with row of three black bristlelike setae on distal end; without minute black spinulae. Vestiture of antennal segment I and metatibiae about equal in length as diameter of segments. Head: Quadrate, subrectangular in lateral view; eyes small, narrowly joined to head, anterior margin entire, posterior

margin with facets adjacent to head, removed from pronotum by distance equal to two-fifths of distal width of antennal segment I; ventral margin of fossa slightly dorsad of or equal to ventral margin of eye; dorsal margin of fossae ventrad of dorsal margin of eye in lateral view; frons strongly protruding anterodorsad of eyes; eyes even with dorsal margin of head; antennal fossa with pediculate, flange small, separated from eye by a distance subequal to width of distal end of antennal segment I; frons and vertex gently convex in lateral view; posterior margin of head with small, broadly rounded carina; portion of frons anterior of carina gently declivous to wide temporal depressions; frons with longitudinal sulcus present, long, but usually faint; frons projecting just slightly beyond base of clypeus, even with juga, lora and bucculae; dorsal half of clypeus somewhat swollen and rounded; juga, lora and bucculae equal; juga quadrate, lora rectangular, both slightly swollen; gena broad, horizontal; buccular flange short, tapering to faint carina surrounding cavity, not reaching posterior margin of head; gula large; labium reaching slightly beyond distal margin of metacoxae, I reaching anterior margin of procoxae insertion.

Antennae: Length subequal to length of body; I long, thickest subbasally, bowed; II long and much thinner than I; II and III of equal length; III and IV subequal in diameter to II. Pronotum: Conical, with prominent proepisternum visible in dorsal view, anterior margin concave, posterior margin straight, slightly curved laterally; calli moderately differentiated, ringed (except anteromedially) by dark, depressed sulcus, calli not confluent

anteriorly, with bifovate depression medially; pronotum without distinct anterior and posterior lobes, disk slightly flattened; lateral margin of pronotum carinate, deeply incised dorsad of coxal cleft with anterior end terminating dorsad of proepisternum, and not attaining lateral margin of collar, posterior end attaining posterior margin of pronotum; anterolateral foveae small, located at junction of lateral carina, collar, and calli; posterior margin of collar obsolete medially, confluent with small anterolateral foveae laterally; coxal incisure extending to lateral carina; incisure continuing dorsad of proepisternum; proepisternum rounded and bulbous; procoxal flange very small. Mesoscutum and scutellum: Broadly exposed; medial suture obsolete; lateral portion present; scutellum mostly flattened. Hemelytra: Macropterous; lateral margins straight; cuneal incisure very small; embolium thin, just reaching cuneal incisure; interior cell elongate and acuminate, attenuated basally, subequal in length to cuneus; outer cell longer than cuneus, pointed distally. Legs: Rounded, femora slightly bowed, and diameter slightly thicker on proximal half; narrowed at base; tibiae cylindrical; metafemora longer than abdomen and shorter than metatibiae; metatarsi with segment I subequal to combined length of segments II and III. Metafemoral trichobothria: With nine trichs; trichoma of moderate size; bothria slightly sunken in surrounding cuticle. Claws: long, mostly straight; pulvilli elongate and connate.

Ratios: Anteocular portion of head to head length (0.50:1.00).
Eye height to head height (0.50-0.52:1.00).

Gena to head height (0.46:1.00).

Buccular flange to ventral head length (0.50-0.60:1.00).

Buccular cavity to ventral head length (0.75:1.00).

Antennal segment I to dorsal head width (1.00:0.74-0.83).

Antennal segment II to dorsal pronotal width (1.00:0.40-0.44).

Metaepisternal scent efferent system: Ostiolar channel moderate in length, terminating at lateral surface of coxae on ventral aspect of metaepisternum; peritremal disk small, slightly produced laterad of evaporative surface; evaporative surface narrow, anterior section and posterior section weakly developed, posterior section directed posterodorsad.

Male Genitalia: Genital capsule: Large, tubercle present dorsad of left paramere insertion; posteroventral portion of capsule with very large, spatulate projection, extending dorsad, even with dorsal margin of aperture in lateral view. Left paramere: Very small, elongate; sensory lobe slightly expanded above elongated arm; shaft very short, merging into short spine apically; surface smooth. Right paramere: Elongate even thickness throughout, with long spine apically. Vesica: Ductus seminis: Slightly more robust than other stenodemines. Secondary gonopore: Well differentiated and complete. Membrane: With spinose lobes, without sclerotized processes.

Female Genitalia: Sclerotized rings: Either obsolete or teneral with only lateralmost portions of rings apparent. Dorsal labiate plate: Obsolete. Ventral labiate plate: Obsolete; inter-ramal sclerotization spanning ring area, with broad caudal and

lateral extensions. Posterior wall: Inter-ramal sclerite: Deep. Median process: Not projecting into dorsal structure. Dorsal structure: Large and flattened. Inter-ramal lobes: Large, obscuring dorsal portion of sclerites, and weakly joined. Oviducts: Common and laterals joined dorsally.

Discussion: I have examined three syntypes of Ebutius bellus Distant retained at the British Museum (Natural History) and determined that only one male and one female are correctly placed in the genus. The male is here by designated as the lectotype and bears the following label data: Sikkim, Maj. Roberts; Distant Coll. 1911-383; SYNTYPE. I have affixed a red lectotype label signifying the designation. Another male syntype not congeneric with the other two syntypes, is a mirine of undetermined generic placement. All three specimens are in poor condition having been placed on card points after storage in alcohol (Distant, 1909).

I place Notostiropsis plebejus Poppius in synonymy with Ebutius based on the identical spatulate process on the posteroventral margin of the genital capsule of the male genitalia. I have examined 45 specimens of E. bellus from India, New Guinea, and Philippines, many identified by Carvalho, and determined that they are all conspecific. However, I have not examined the types of N. plebejus from Java, deposited in the Zoological Museum of the University of Helsinki, which when examined may represent a distinct species of Ebutius.

Included Species:

bellus Distant

Ebutius bellus Distant, 1909:441. -- Distant, 1910:229, fig 126 (description).

Notostiropsis plebejus Poppius, 1914b:139. -- Carvalho and Da Silva Afonso, 1977:818, figs. 27-31 (description). NEW SYNONYM.

Distribution: India, Indonesia, and New Guinea.

KUSCHELIANA CARVALHO

Figures 55A-C; 58D; 59B, C; 60E-G

Kuscheliana Carvalho, 1952b:21 (type species by monotypy masatierrensis Carvalho).

Diagnosis: Distinguished by dull pronotum with peripheral punctures posteriorly; vestiture on antennal segment I very short; vestiture on metatibiae densely distributed, erect and twice as long as width of segment; frons slightly produced anteriorly of clypeus; eyes large and broadly joined to head; brachypterous; male genitalia with spatulate process on posteroventral portion of capsule (fig. 59C), vesica without sclerotized processes; and female genitalia with isolated medial sclerite of ventral labiate plate (fig. 60E), bracelike ornamentation present in valvulae angle (fig. 60G).

Redescription: Dorsal Aspect: Medium to large size, 6.0-8.5; yellowish green to stramineous; antennal segment I, head, pronotum, scutellum and hemelytra with reddish or fuscous markings; surface of head, disk, and scutellum smooth; lateral and posterior portions of pronotum and hemelytra punctate. Vestiture: Dorsal: With sparsely distributed, very short, appressed, fine simple setae. Antennae: With short, recumbent, simple setae more densely distributed than on

body; I without black bristlelike setae. Legs: Femora and mesotibiae with short, moderately distributed, recumbent to suberect, light simple setae; metatibiae with densely distributed, long, erect, fuscous simple setae, and interior surface with diffusely distributed, minute black spinulae. Head: Triangular in dorsal view, subquadrate in lateral view; eyes large, broadly joined to head, anterior margin slightly concave, posterior margin subcontiguous with pronotum; antennal fossa slightly pedunculate; dorsal and ventral margins of fossa within margins of eye in lateral view; distance between fossa and eye equal to distal width of antennal segment I; dorsal surface of head smoothly curving from apex of frons to posterior margin of head; vertex ecarinate, gently declivous to frons, medial longitudinal sulcus present; frons projecting just dorsad of, and strongly anterodorsad of eye, anterior margin of frons projecting dorsad of clypeus, and even with juga, lora and bucculae in lateral view; dorsal one-half of clypeus slightly swollen; lora triangular, anterior portion somewhat produced laterally; gena rectangular, horizontal with anterior portion produced; jugal-loral suture present, reaching antennal fossae; crease present from fossa posteriad to ventrad of eye; buccular flange subequal to length of cavity, flange diminishing to carina surrounding cavity, distal end of cavity arcuate; gula long; labium reaching metacoxae, I reaching xyphus. Antennae: I thickest subbasally, tapered at base, interior surface thickest, bowed, II thinner than I; III and IV thinner than II. Pronotum: Campanulate or quadrate with proepisternum obscured by lateral carinate margin

in dorsal view; posterior and anterior margins slightly concave; lateral margins sinuate, and carinate, disk convex; lateral carinate margin with anterior end surpassing collar and attaining anterior margin of pronotum, and forming anterolateral angle of pronotum; and with posterior end terminating at posterior margin of pronotum; calli very large, occupying practically entire pronotal disk; medial foveae faint; calli confluent anteriorly; pronotal disk without distinct anterior and posterior lobes; anterolateral foveae deep and forming sulcus between lateral margin of pronotal collar and anterior end of lateral carinate margin of pronotum; entire posterior sulcus of collar obscure, except for anterolateral foveae; coxal cleft deep, incisure wide and reaching under carinate lateral margin and continuing dorsad of rounded, knoblike proepisternum, faint extension of incisure anterodorsad of, and recurved on proepisternum; margin of procoxae flaring and carinate, posterior portion punctate; xyphus without anterior ridge. Mesoscutum and scutellum: Confluent; flat, apex produced dorsally in beadlike nub. Hemelytra: Both sexes brachypterous, without hind wings, hemelytra fused, ovate and punctate lateral of, and on, costal vein; embolium wide, diminishing distally; cuneus obsolete. Legs: Metafemora longer than abdomen, shorter than metatibae, evenly round and thick over entire length; metatarsi with segment I longer than combined length of segments II and II. Metafemoral trichobothria: With six trichs, all trichs on distal half of femora; trichoma of moderate size; bothria slightly sunken in surrounding cuticle. Claws: Long and broadly curved; pulvilli small, connate.

Ratios: Antecular portion of head to head length (0.49:1.00).
 Eye height to head height (0.72:1.00).
 Gena to head height (0.28:1.00).
 Buccular flange to ventral head length (0.55:1.00).
 Buccular cavity to ventral head length (0.92:1.00).
 Antennal segment I to dorsal head width (0.67:1.00).
 Antennal segment II to dorsal pronotal width (1.00:0.35).

Metaepisternal scent efferent system: Ostiolar channel moderate in length, attaining lateral margin of coxae and lateral portion of metaepisternum; peritremal disk well developed and produced laterad but merged with evaporative surface; evaporative surface large, triangular, anterior and posterior sections well developed, dorsal margin carinate.

Male Genitalia: Genital capsule: Without tubercles present dorsad of paramere insertions; posteroventral portion of capsule with large, narrow spatulatelike process. Left paramere: 'V' shaped; sensory lobe obsolete; arm and shaft long; surface smooth. Right paramere: Distal half bulbous; apex with bent hook. Vesica: Ductus seminis: Narrow, widest basally. Secondary gonopore: Small, with complete aperture. Membrane: Without sclerotized processes, with only narrow ribbonlike sclerite supporting membrane, strap flattened dorsally.

Female Genitalia: Sclerotized rings: Large, open, and oval. Dorsal labiate plate: Obsolete. Ventral labiate plate: Present ventrad of lateralmost portion of rings, merging with posterior margin of rings, not spanning rings, with small medial and separate

sclerite between rings; inter-ramal sclerotization with large caudal extension. Posterior wall: Inter-ramal sclerite: Large and elongate. Median process: Stout and short, dorsal portion broadly extending anteriorly, forming floor of dorsal structure; posterior portion a broad plow shaped plate. Dorsal structure: Large, rounded but not saclike. Inter-ramal lobes: Large, wider than sclerite, angle between sclerite and lobe small. Oviducts: Common small, laterals close set and wide. Anterior portion (within angle) of valvulae with unique bracelike ornamentation medially.

Included Species:

masatierrensis Carvalho

Kuscheliana masatierrensis Carvalho, 1952b:22, figs. 1, 3-6.

Distribution: Juan Fernandez Islands: Mas a Tierra Island.

LASIOMIRIS REUTER

Figures 56A-E; 58E; 59D; 60H-J

Lasiomiris Reuter, 1891a:130 (type species by monotypy Miris albopilosus Lethierry). -- Carvalho and Da Silva Afonso, 1977:815, figs. 20-22, p. 817, figs. 24-26 (male genitalia). -- Zheng, 1986:88 (review of species).

Metanesius Distant, 1904:426 (type species by monotypy marginatus Distant). -- Bergroth, 1906:145 (new synonym).

Diagnosis: Recognized by the smooth dorsal surface with long vestiture; vestiture of antennal segments I, II, and metatibiae longer than segments; frons rounded and slightly produced dorsad of clypeal base; eyes small and removed from pronotum; head with slight neck; sometimes both sexes brachypterous; male genitalia with genital capsule with small tubercles usually present dorsad of both paramere insertions, vesica usually with two sclerotized processes,

sometimes with ribbonlike strap (fig. 59D); and female genitalia usually with well sclerotized sclerotized rings (fig. 60I).

Dorsal Aspect: Small to medium size, 3.6-7.0; fuscous, or brown; head, pronotum, scutellum and hemelytra with yellow or stramineous patches or fasciae; head, mesoscutum, scutellum and hemelytra smooth; collar and disk punctate, calli shagreened.

Vestiture: Dorsal: Moderately or densely distributed, erect, long simple setae. Antennae: I as dorsum; II with sparsely distributed, simple setae on basal half, shorter more densely distributed, suberect, light simple setae on distal half; III and IV as distal portion of II. Legs: As body; metatibiae with small patch of minute black spinulae distally. Head: Ovate or round in dorsal view, quadrate in lateral view; eyes small, broadly joined to head, not pedunculate; anterior margin slightly concave, posterior margin with facets contiguous with head; head with slight neck, eyes separated from pronotum by distance equal to four-fifths of distal end of antennal segment I; fossa and eye separated by one-fifth of distal end of antennal segment I; antennal fossae just moderately pedunculate, flange evenly developed over entire margin without spinelike projections; ventral margin of fossa usually dorsad of ventral margin of eye sometimes even with margin; dorsal margin ventrad of dorsal margin of eye; dorsal margin of eye ventrad of dorsal margin of head in lateral view; vertex ecarinate, faintly rounded, declivous to slightly sunken shagreened temporal area; frons with longitudinal sulcus; frons usually produced and rounded, extending just anterior of clypeus; sometimes frons merging with

clypeus, junction denoted by slight roundness; dorsal half of clypeus rounded, slightly produced, and barely projecting anteriorly of tylus; frons even with juga and lora; juga slightly anteriorly of lora and bucculae; juga triangular, lora subtriangular, both structures slightly produced; small tubercle on basal portion of jugal-loral suture, suture reaching fossae; crease ventrad of eye; buccular flange surrounding cavity and not reaching posteroventral end of head; labium reaching distal end of metacoxae, I reaching anterior margin of chevron depression of xyphus. Antennae: I narrow basally, slightly thickened medially, with distal half thinner, bowed; II thinner than I; III and IV thinner than II; III longer than or equal to II; IV shorter than III. Pronotum: With different macropterous and brachypterous structure. Subrectangular with proepisternum just visible or obscure in dorsal view, anterior margin concave; posterior margin broadly convex or sinuate; lateral margin carinate and concave medially; calli small, widely separated, shagreened, and produced; not attaining lateral carinate margin; calli with slight sulcus on anterior margin, with shallow or deep marginal sulcus on posterior margin, which sometimes merges with pair of foveae medially; disk broadly convex, without anterior and posterior lobes; collar wide and flat, posterior sulcus obsolete medially, sulcus present laterally, merging with anterolateral foveate depression; depression forms junction between lateral carinate margin and lateral margin of collar; macropterous species with lateral carinate margin wide; brachypterous species with lateral carinate margin reduced, but strongly bridged dorsad of

coxal cleft, carina delineates section of propleura posteriad of coxal cleft; lateral carinate margin with posterior end just merging with posterior margin of pronotum; anterior end variable either just reaching collar, or terminating on anterior margin of pronotum; coxal incisure long, deeply extended under lateral carinate margin; proepisternum produced and rounded separated from lateral portion of collar anteriorly and from lateral carinate margin dorsally, by extension of coxal incisure; propleura surrounding procoxal opening with strong flange; xyphus shallow. Mesoscutum and scutellum: Broadly confluent medially, suture present laterally; sometimes terminating in medial foveae; mesoscutum moderately exposed and strongly declivous to scutellum. Hemelytra: Macropterous, sometimes both sexes brachypterous; smooth, embolium narrow and reaching cuneal cleft; corium overlaps cleft; interior cell small, triangular, shorter than cuneus, outer cell larger than cuneus, subrectangular, veins of membrane angulate distally. Legs: Metafemora subequal to length of venter, metatibiae longer than metafemora; metatarsi with segment I equal to two-thirds of combined length of segments II and III. Metafemoral trichobothria: With eight trichs; trichoma very small; bothria flush with cuticle. Claws: With very small pulvilli within angle of claw.

Ratios: Antecular portion of head to head length
(0.38-0.46:1.00).

Eye height to head height (0.52-0.64:1.00).

Gena to head height (0.29-0.33:1.00).

Buccular flange to ventral head length (0.52-0.59:1.00).

Buccular cavity to ventral head length (0.73:1.00).

Antennal segment I to dorsal head width (1.00:0.90-0.80 to 0.97:1.00).

Antennal segment II to dorsal pronotal width (1.00:0.57-0.71).

Metaepisternal scent efferent system: Ostiolar channel situated laterally on metaepisternum, extending slightly laterad of coxae; peritremal disk small but well developed, produced laterad of evaporative surface; surface oval, anterior and posterior sections small, posterior section extending posterodorsad.

Male Genitalia: Genital capsule: With very small tubercles dorsad of paramere insertions, left side tubercle slightly larger than right, sometimes both sides with tubercle obsolete; posteroventral portion of capsule slightly flangelike in lateral view. Left paramere: Surface smooth; sensory lobe slight; angle 'U' shaped, arm long; shaft shorter than arm, slightly thickened in lateral view, with simple hook apically. Right paramere: Either narrow throughout length or with distal end slightly produced; apex with small spine. Vesica: Ductus seminis: Long and narrow, widest at base. Secondary gonopore: Small, entire, with coiled structure distinct. Membrane: Complex and variable, with from one to four basal and or lobal sclerites, or with processes obsolete; usually one variable basal process attached to ribbonlike strap (strap attached to back of ductus basally), sometimes without strap; sometimes with patch of spiculae on dorsal and/or ventral portion of membrane.

Female Genitalia: Sclerotized rings: Present or sometimes absent; when present, subquadrate and open, with broad inter-ramal sclerotization projecting from lateral margin mesially. Dorsal labiate plate: Obsolete. Ventral labiate plate: If rings absent, with small plate in ring location, and with narrow inter-ramal sclerotization spanning genital chamber; sometimes with thin straplike, and/or quadrate, sclerite projecting from narrow inter-ramal sclerotization caudad into genital chamber. Posterior wall: Inter-ramal sclerite: Small and narrow. Median process: Very small, dorsal portion projecting anteriorly into dorsal structure; with strongly curved plate posterior of sclerite. Dorsal structure: Small and saclike. Inter-ramal lobes: Narrow and obscuring sclerite. Oviducts: Common and laterals variably joined anteriorly.

Included Species:

albopilosus (Lethierry)

Miris albopilosus Lethierry, 1888:464.

Lasiomiris lineaticollis Reuter, 1891:130. -- Distant, 1910:234 (new synonymy).

Metanesius marginatus Distant, 1904:426. -- Poppius, 1911a:8 (new synonym).

Lasiomiris albopilosus: Distant, 1910:234 (new combination). -- Zheng, 1986:89, figs. 11, 15, 16 (description).

Leptopterna papuensis Woodward, 1957:31.

Lasiomiris papuensis: Carvalho, 1976:55 (new combination). -- Carvalho and Afonso, 1977:816 (new synonym).

Distribution: Indo-West Pacific: southern India, Sri Lanka, Indochina, Indonesia, New Guinea, and Philippines.

neoguineanus Carvalho and Afonso

Lasiomiris neoguineanus Carvalho and Afonso, 1977:816, figs. 23-26.

Lasiomiris papuensis: Carvalho and Afonso, 1977:816 (synonym in part, not holotype).

Distribution: New Guinea.

picturatus Zheng

Lasiomiris picturatus Zheng, 1986:88, figs. 12, 17, 18.
Distribution: China.

purpurascens Zheng

Lasiomiris purpurascens Zheng, 1986:88, figs. 10, 13, 14.
Distribution: China.

NOTOSTIRA FIEBER

Figures 57A-E; 58F, G; 59E-G; 60K, L

Notostira Fieber, 1858:301 (type species by monotypy Miris erratica Fallen, a synonym of Cimex erraticus Linnaeus). -- Golub, 1978:1359 (revision); p. 1362, figs. 1-10 (male genitalia).

Diagnosis: Recognized by frons projecting anteriorly, and obscuring clypeus in dorsal view, apex of frons notched; dorsal surface shining and rugulose; male genitalia with tubercles dorsal of paramere insertions, vesica with ductus seminis thickened (fig. 59F), secondary gonopore diffuse, cone shaped and with large pointed process (fig. 59F), membrane with one short sclerotized process; and female genitalia with large subrectangular sclerotized rings, inter-ramal sclerotization large, adjacent to rings and broadly extending into genital chamber, posterior wall with large saclike and medially creased dorsal structure (fig. 60L).

Redescription: Dorsal Aspect: Size medium to large, 6.8-9.0; stramineous, green or dark tannish, usually with medial portion of body black, except for patches of concolorous general coloration on temporal area and linear fasciae of pronotum, sometimes with black markings or longitudinal fasciae; surface slightly shagreened and/or slightly shining, somewhat rugulose, with several small,

subsurficial punctures on collar and sporadically throughout dorsum. Vestiture: Dorsal: Consisting of sparsely distributed mixture of short, fine, suberect or appressed, light simple setae, and longer, suberect to erect simple setae. Antennae: I with densely distributed, long, suberect, black or light simple setae; without short, black bristlelike setae; segments II to IV with densely distributed, reclined simple setae; if I with black setae than II usually with similar setae basally. Legs: With longer, erect light setae; metatibae with several bristlelike setae, and without scattered, minute black spiculae apically. Vestiture of antennal segment I and II and legs about as long as segments.

Head: Triangular in dorsal view; rectangular in lateral view; eyes small, broadly joined to head, with anterior margin entire, posterior margin subcontiguous to pronotum; antennal fossa pedunculate with obvious flange, and separated from eyes by distance equal to distal width of antennal segment I; ventral margin of fossa ventrad of anterior margin of eye, dorsal margin of fossae ventrad of dorsal margin of eye; dorsal margin of head mostly flat and projecting dorsad and posteroanteriorly of eyes in lateral view; frons very large, conical, and projecting anteriorly of clypeus; apex of frons usually notched; frons with longitudinal sulcus; dorsal portion of clypeus produced anteriorly of tylus, round and slightly expanded; juga produced and quadrate, lora rectangular, suture reaching fossae; without crease; bucculae and juga extending slightly anteriorly of lora; vertex ecarinate, slightly raised, rounded, and smoothly declivous to vertex; temporal areas shallow;

buccular flange shorter than cavity, flange tapering to carina and surrounding cavity; gula large; labium just reaching bases of mesocoxae, I attaining anterior margin of procoxae. Antennae: I long, thickest subbasally and bowed distally, III and IV thinner than II; III shorter than II, and longer than IV. Pronotum: Subquadrate; proepisternum no visible in dorsal view, without distinct anterior and posterior lobes; disk slightly flattened; anterior margin of pronotum concave; posterior margin mostly straight, slightly curved posterolaterally; lateral margins mostly carinate and sinuate; lateral carinate margin with anterior end terminating in lateral collar area, posterior margin attaining posterior margin of pronotum; carina strongly bridged dorsad of coxal cleft; calli faintly differentiated, just confluent anteriorly, not attaining lateral margins of pronotum; collar flat, posterior sulcus mostly obsolete, merging with anterolateral foveae laterally, and continuing as sulcus anterolaterally, defining anterior margin of lateral carina of pronotum and collar; collar with obsolete lateral margin, smoothly merging with proepisternum in lateral view; coxal incisure deep, perpendicular to dorsal surface of pronotum, reaching under lateral carina and continuing anteriorly and ventrally around proepisternum; proepisternum slightly swollen; xyphus shallow; procoxae flange short and not greatly upturned. Mesoscutum and scutellum: Broadly exposed and declivous from posterior margin pronotum to scutellum; suture obsolete medially, present laterally. Hemelytra: Macropterous, sometimes females submacropterous; lateral margins elongate and slightly sinuate;

embolium reaching cuneus; interior cell shorter than cuneus, elongate; outer cell subrectangular, elongate, and arcuate distally. Legs: Rounded, femora gradually expanded subbasally and narrowed basally; metafemora longer than abdomen and subequal to metatibiae; segment I of metatarsi equal to combined length of segments II and III. Metafemoral trichobothria: With seven trichs; trichoma of medium size; bothria sunken within surrounding cuticle. Claw: Long and mostly straight; pulvilli ovoid and connate.

Ratios: Anteocular portion of head to head length (0.48-0.52:1.00).

Eye height to head height (0.54-0.59:1.00).

Gena to head height (0.27-0.38:1.00).

Buccular flange to ventral head length (0.45-0.60:1.00).

Buccular cavity to ventral head length (0.79-0.86:1.00).

Antennal segment I to dorsal head width (1.00:0.46-0.77).

Antennal segment II to dorsal pronotal width (1.00:0.47-0.53).

Metaepisternal scent efferent system: Ostiolar channel extending to lateral surface of metaepisternum, anterior portion of channel well developed; peritremal disk strongly produced laterad of evaporative surface; evaporative surface triangular, posterior and anterior sections well developed.

Male Genitalia: Genital capsule: With large tubercles present dorsad of paramere insertions, right tubercle sometimes small; posteroventral portion of capsule enlarged and somewhat quadrate.

Left paramere: Large; prominent sensory lobe; arm short; angle sharp; shaft very large and angled basad to sensory lobe; bulbous

distally with pointed apex; surface smooth. Right paramere: Somewhat elongate distally with bispinose apex. Vesica: Ductus seminis: Very stout, wider than other stenodemines (almost hourglass in shape), narrow somewhat at apex. Secondary gonopore: With posterodorsal opening, left side with long spine; coiled aperture very diffuse. Membrane: Large and multilobed; with one, short sclerite near gonopore, and ribbonlike sclerite at base supporting membrane.

Female Genitalia: Sclerotized rings: Large, subquadrate, open, posterior margin merging with ventral labiate plate. Dorsal labiate plate: Obsolete. Ventral labiate plate: Spanning rings, present ventrad and attached to lateralmost portion of ring; inter-ramal sclerotization extending broadly adjacent to rings, and caudad into genital chamber. Posterior wall: Inter-ramal sclerite: Deep, and broadly joined. Median process: Small, dorsal portion extending anteriorly into, and forming sclerotized support of, bilobed dorsal structure. Dorsal structure: Large, saclike, deeply creased medially. Inter-ramal lobes: Very large, angled tilted away from sclerite. Oviducts: Common and laterals joined anteriorly.

Included species:

elongata (Geoffroy)

Cimex elongata Geoffroy, 1785:208.

Miris caucasica Kolenati, 1845:97, fig. 25.

Notostira caucasica: Reuter, 1910:78 (new combination). -- Kerzhner, 1962:385 (new synonym).

Distribution: Mediterranean Europe.

erratica (Linnaeus)

Cimex erraticus Linnaeus, 1758:449.

Notostira erraticus, Fieber, 1861:242 (new combination).

Miris tricostatus Costa, 1852:58. -- China, 1943:261 (new synonym).

Distribution: Mediterranean Europe.

poppiusi Reuter

Notostira caucasica var. poppiusi Reuter, 1911:118 (new variation). -- Golub, 1967:1360, figs. 3, 4 (new status).

Distribution: Turkistan.

sibirica Golub

Notostira sibirica Golub, 1978:1361, figs. 5, 10.

Distribution: Soviet Union: Amur, and Khabarovsk.

Fig. 3. Deraeocoris. A. brevis, lateral view of pronotal collar. B. piceicola, anterior view of vesica, arrow at edge of secondary gonopore. C. quercicola, anterior view of inter-ramal lobe.

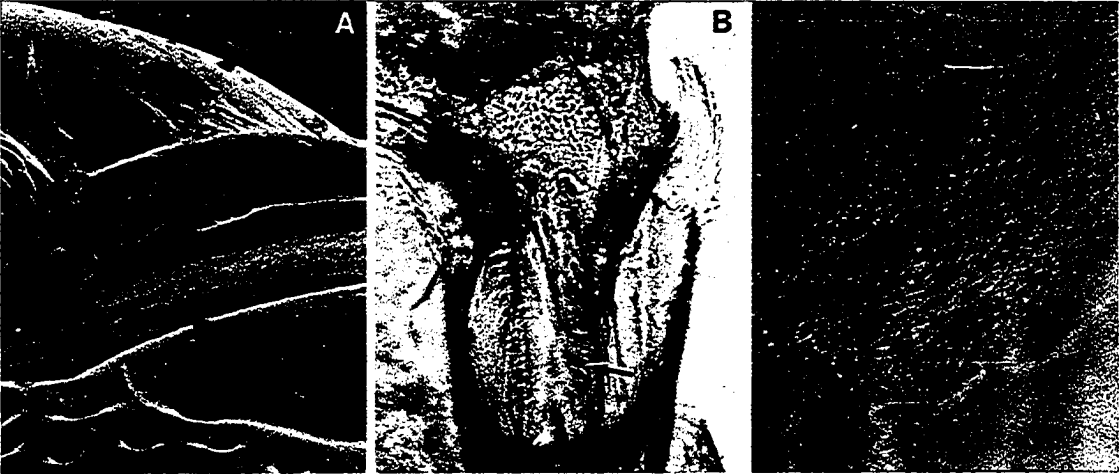


Fig. 4. Herdoniini. A, B. Dorsal view of head and pronotum. A. Paraxenetus guttulatus. B. Paradacerla formicina. C. P. guttulatus, lateral view of ostiolar peritreme. D-F. Trichobothria. D. P. guttulatus. E. Haarupia spinosa. F. Dacaerla alata. G, H. Pretarsus. G. P. guttulatus. H. Cyphopelta modesta.

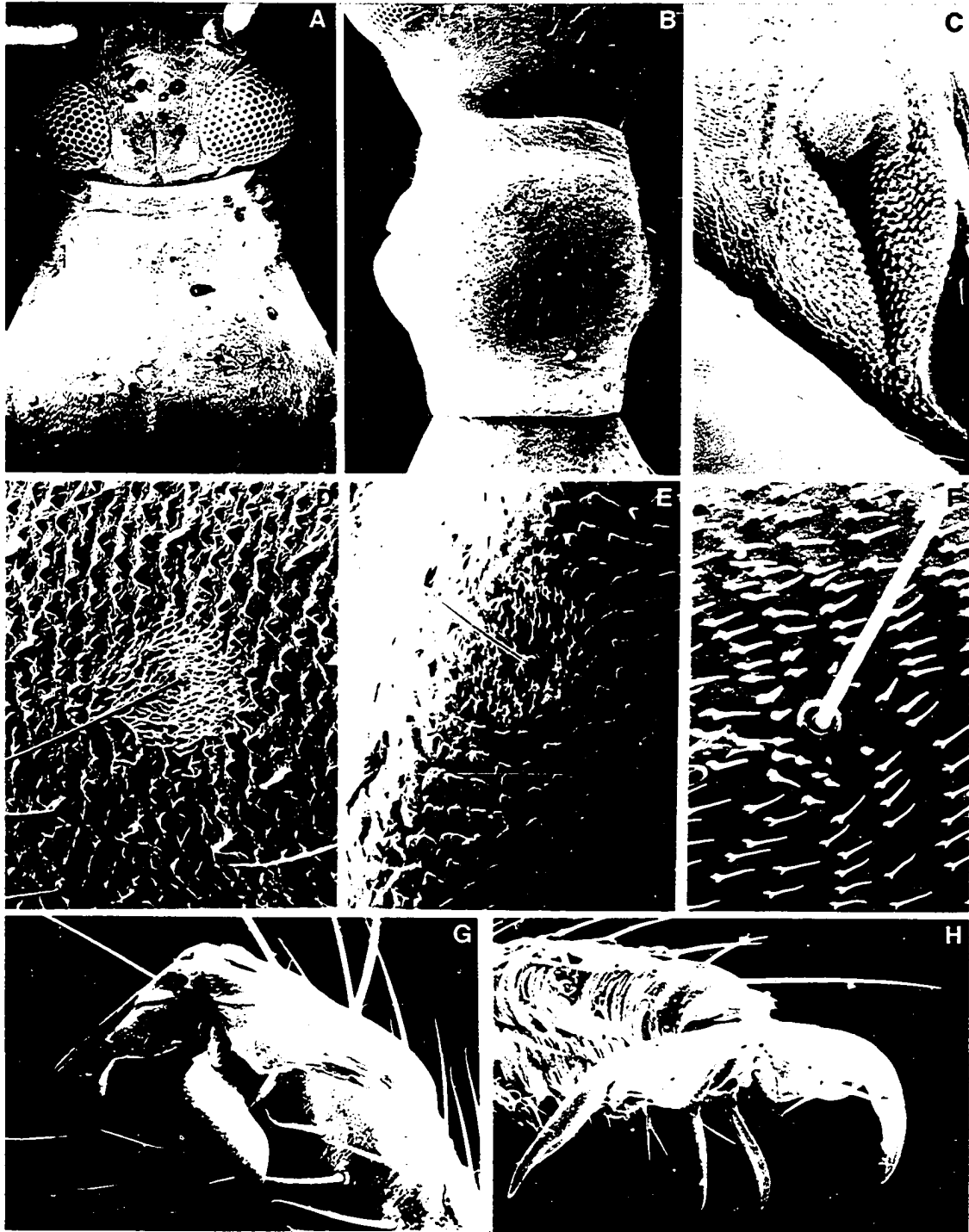


Fig. 5. Herdoniini. Anterior view of vesica. A. Haarupia spinosa. B. Mexicomiris sp.



B



Fig. 6. Herdoniini. Female genitalia. A-C. Posterior view of sclerotized rings and dorsal labiate plate. A. Paraxenetus sp. B. Haarupia spinosa. C. Paradacerla formicina, dorsal view of inter-ramal sclerotization. D-F. Posterior view of posterior wall. D. Paraxenetus sp. E. Xenetus sp., inter-ramal sclerite. F. Closterocoris amoenus.



Fig. 7. Hyalopeplini. A, B. Hyalopeplus rama. A. Dorsal view of head and pronotum. B. Lateral view of ostiolar peritreme. C, D. Macrolonius sobrinus. C. Lateral view of ostiolar peritreme. D. Dorsal view of head and pronotum. E. H. rama, trichobothrium. F, G. M. sobrinus. F. Ultrastructure of hyaline corium. G. Trichobothrium.

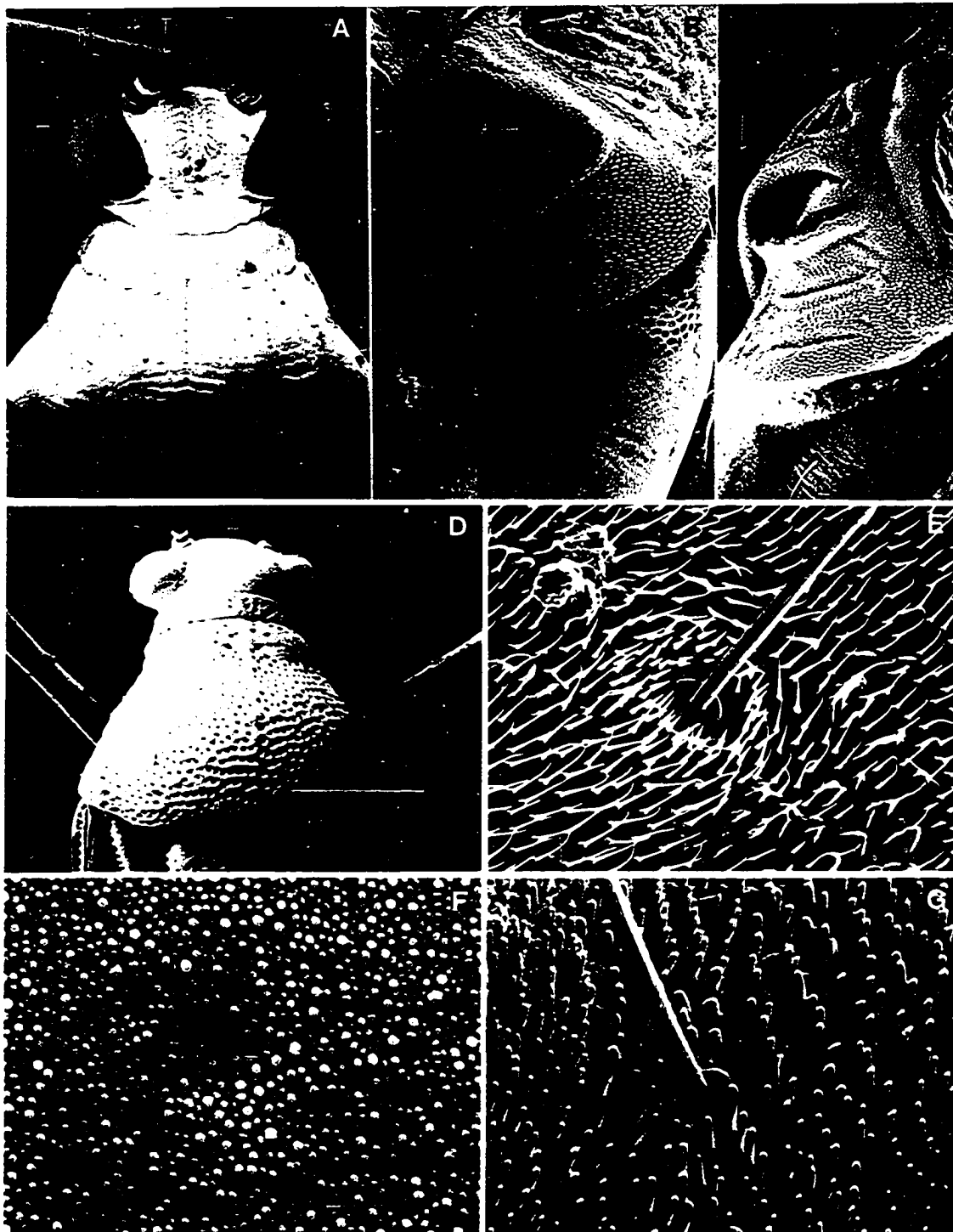


Fig. 8. Hyalopeplini. Posterior view of posterior wall. A. Hyalopeplus rama. B. Macrolonius sobrinus. C. Onomaus elegans.



Fig. 9. Mirini. A. Irbisia fuscipubescens, dorsal view of pronotum. B. Capsodes cingulatus, pretarsus. C. Nymannus sp., lateral view of ostiolar peritreme. D. I. limata, ultrastructure of inter-ramal lobe. E-G. Anterior view of vesica. E. Phytocoris longihirtus. F. P. candidus. G. Proba vittiscutis.

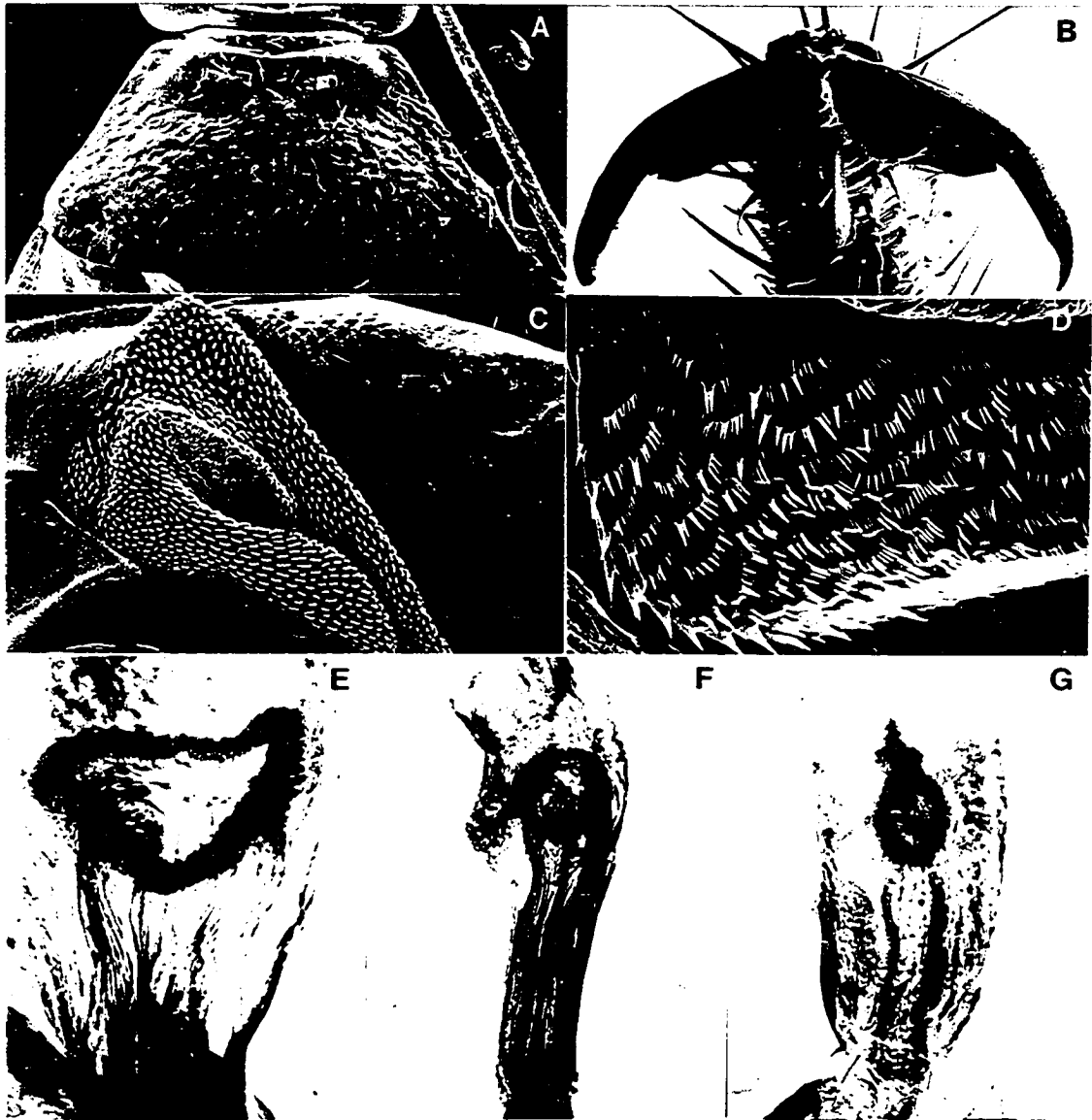


Fig. 10. Resthenini. A-D. Lateral view of ostiolar peritreme.
A. Eurylomata sp. B. Mimoncopletus sp. C. Stenoparedra sp.
[Mirini]. D. Prepops sp. E, F. Ultrastructure of corium. E.
Prepops sp. F. Platylygus sp.

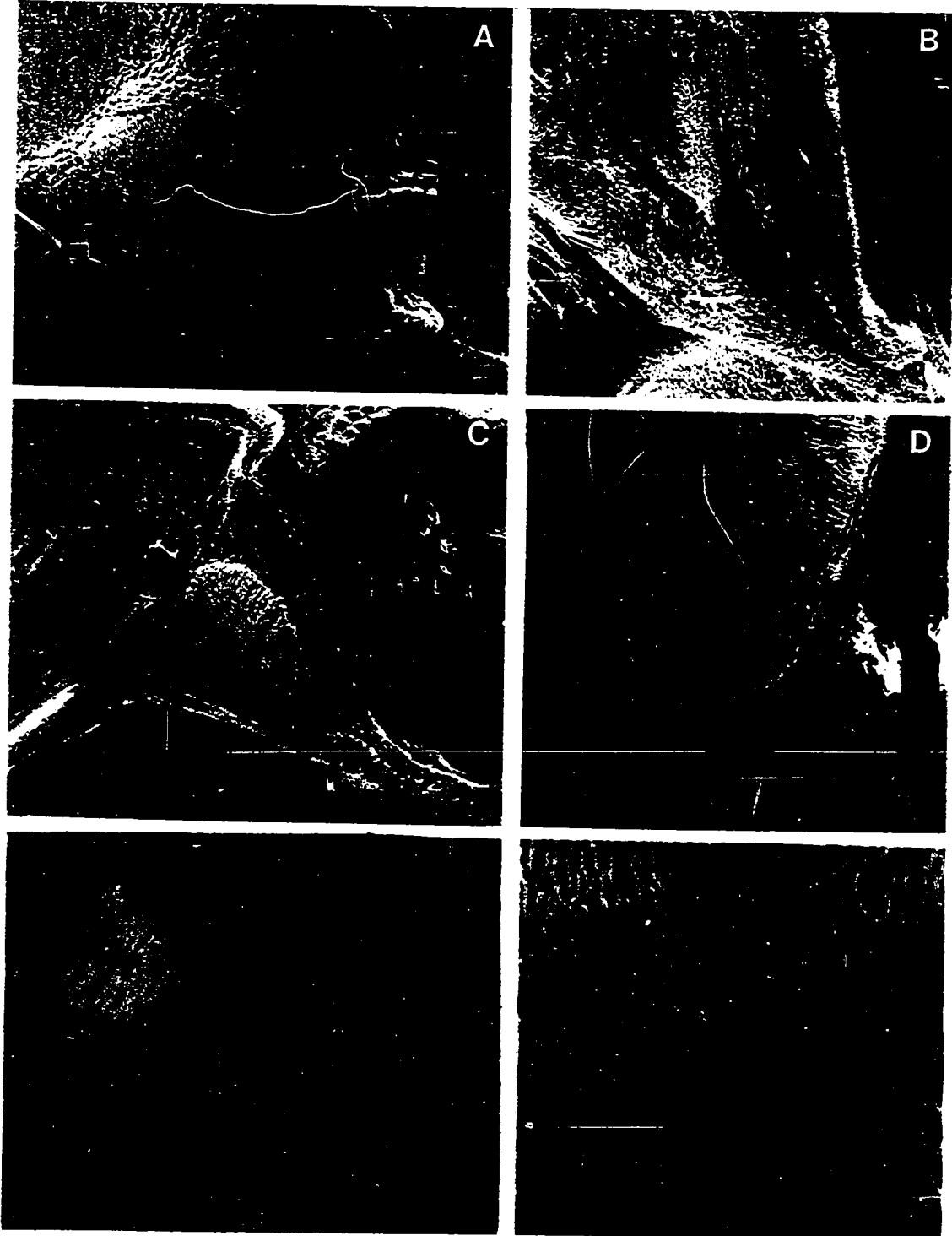


Fig. 11. Resthenini. A. Eurylomata sp., trichobothrium. B, C. Prepops sp. B. Sclerotized ring. C. Inter-ramal lobe. D. Platylygus sp., sclerotized ring.

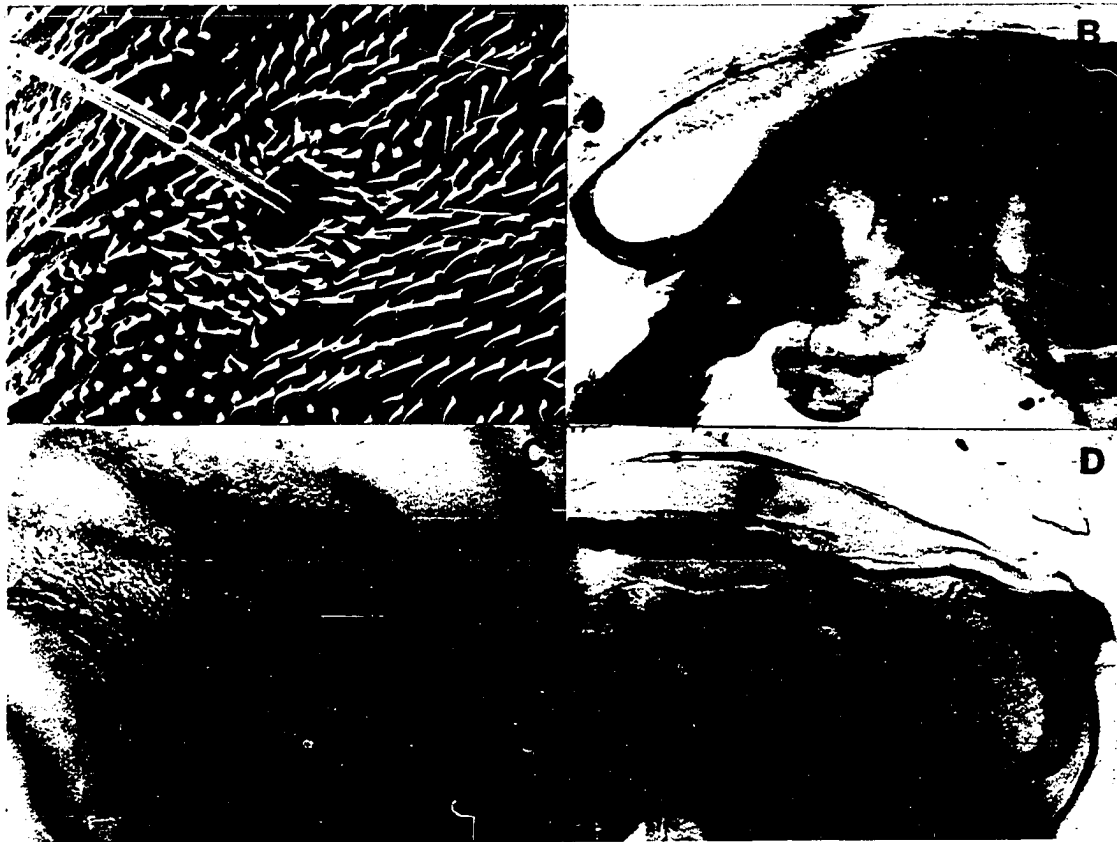


Fig. 12. Metafemoral trichobothria. A-F. Herdoniini. A. Paraxenetus guttulatus. B. Paraxenetus sp. C. Zachynthus sp. D. Allommatus sp. E. Paradacerla formicina. F. Cyphopelta modesta. G, H. Hyalopeplini. G. Hyalopeplus rama. H. Rambea sp. I. Mirini, Nymannus sp. . J, K. Resthenini. J. Eurylomata sp. K. Oncermetopus sp.

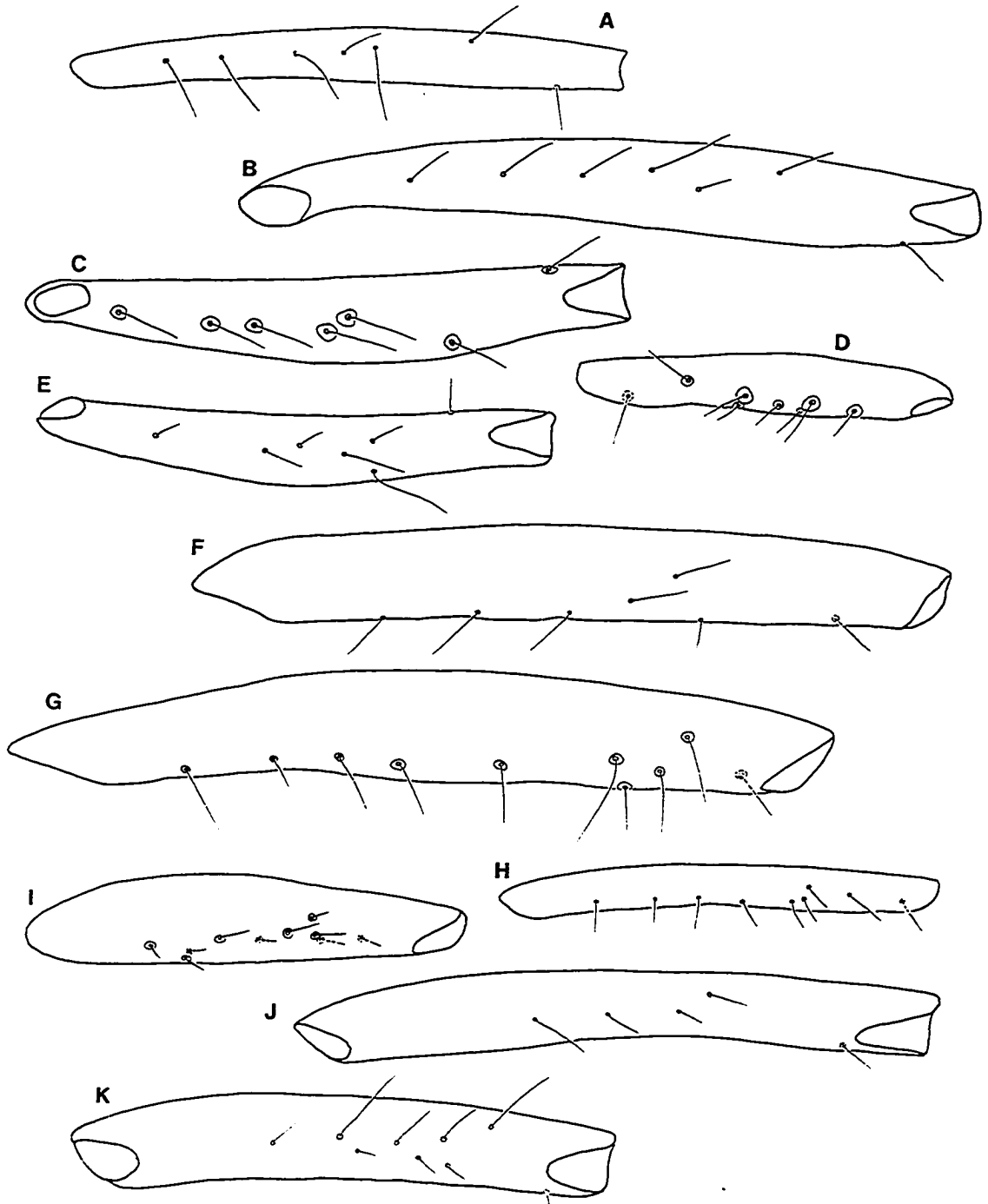


Fig. 13. Mecistoscelini. A-C. Dorsal habitus. A. Mescistoscelis scirtetoides. B. Mystilus priamus. C. Erimiris tenuicoris. D-F. Dorsal view of head and pronotum. D. M. scirtetoides. E. M. priamus. F. E. tenuicoris.

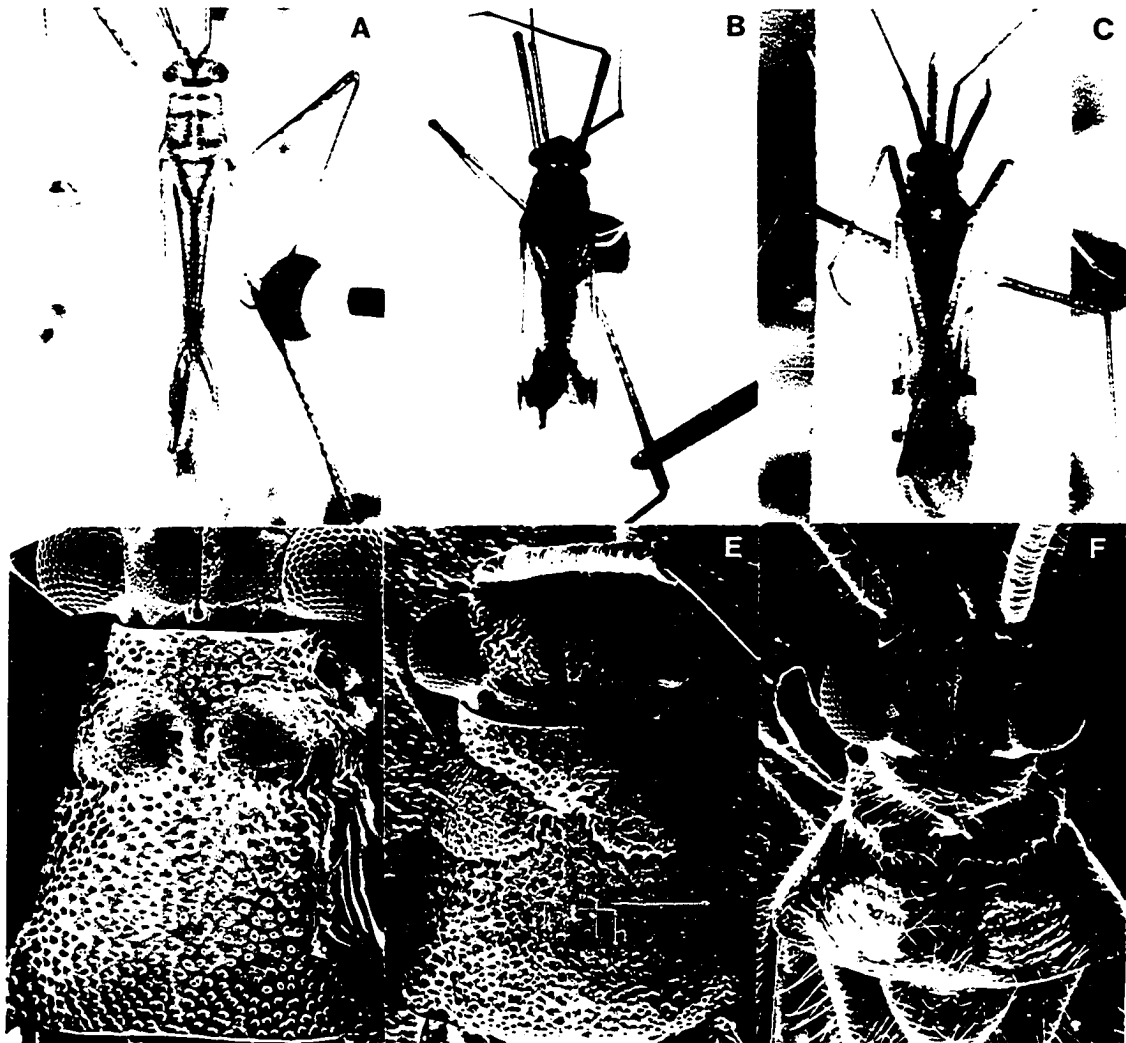


Fig. 14. Mecistoscelini. A-C. Lateral view of head and pronotum. A. Mescistoscelis scirtetoides. B. Mystilus priamus. C. Erimiris tenuicoris. D-F. Pretasus. D. M. scirtetoides. E. M. priamus. F. E. tenuicoris.

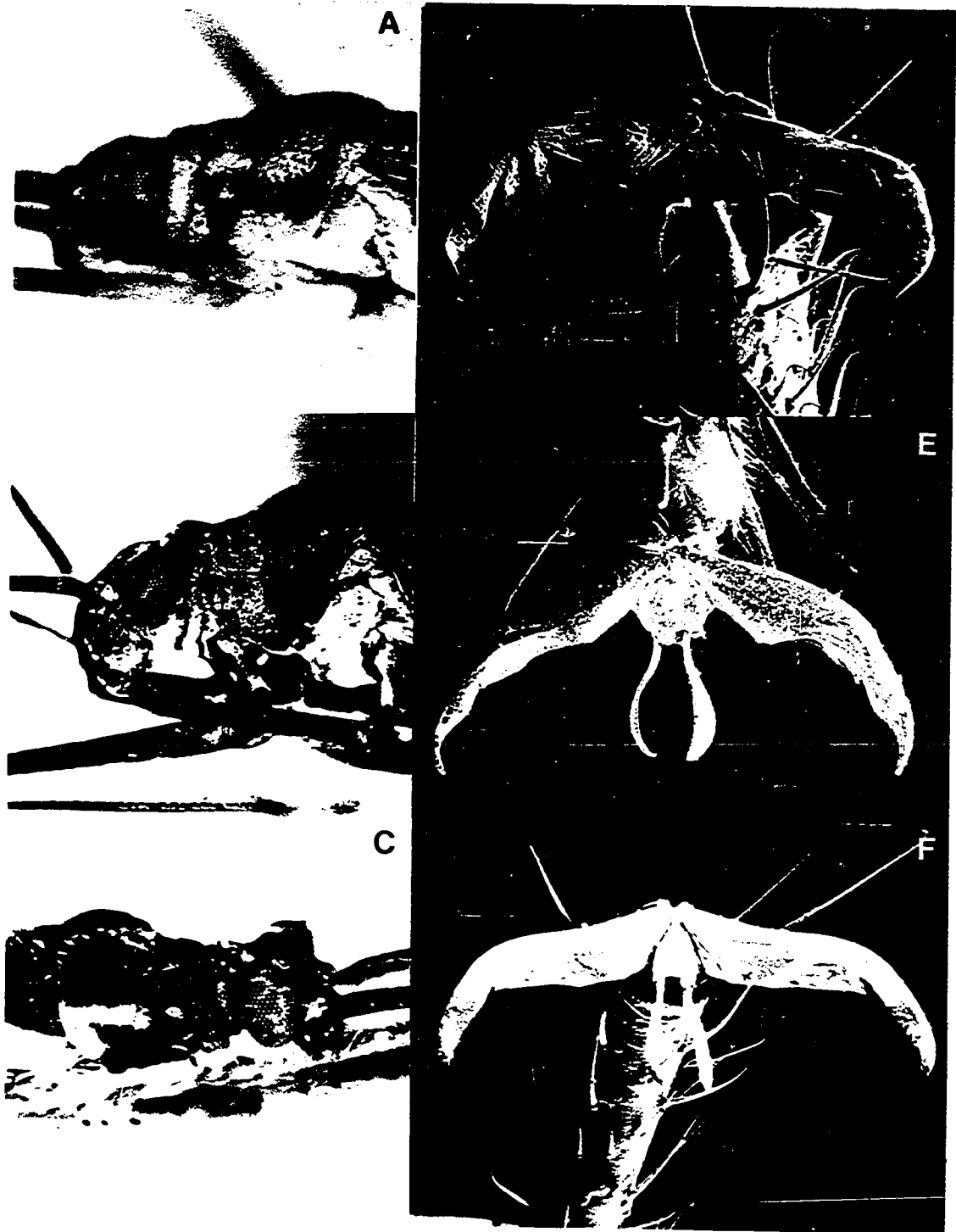


Fig. 15. Mecistoscelini. A-C. Lateral view of ostiolar peritreme. A. Erimiris tenuicoris. B. Mystilus priamus. C. Mecistoscelis scirtetoides. E, F. Trichobothrium. D. M. priamus. E. E. tenuicoris.

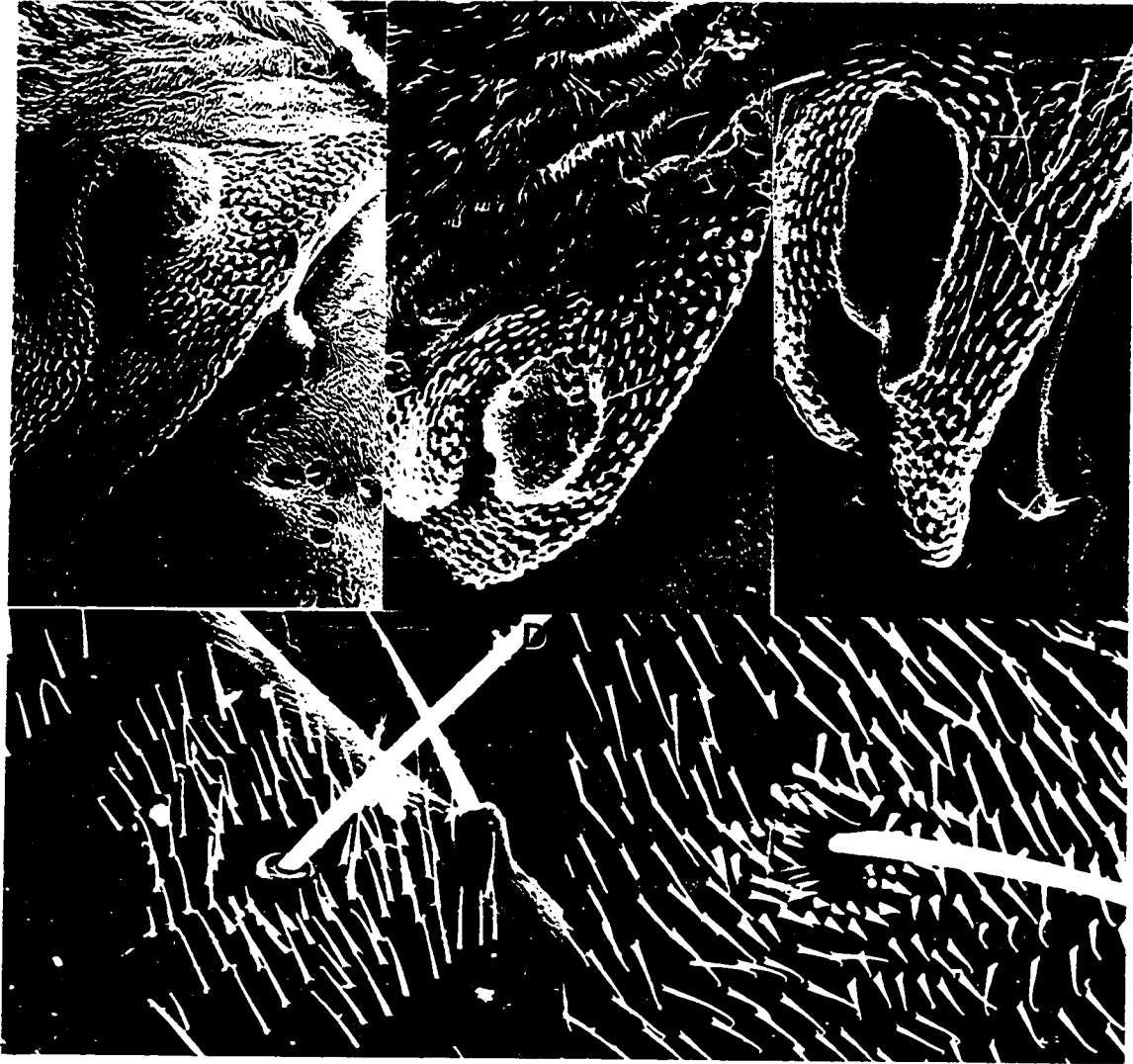


Fig. 16. Mecistoscelini. A-C. Metafemoral trichobothria. A. Erimiris tenuicoris. B. Mecistoscelis scirtetoides. C. Mystilus priamus. D-K. Female genitalia. D, E. E. tenuicoris. D. Sclerotized ring, and associated structures. E. Posterior wall. F, G. M. scirtetoides. F. Sclerotized ring, and associated structures. G. Posterior wall. H-K. Mystilus spp. H, I. antrammi Distant. H. Sclerotized ring, and associated structures. I. Posterior wall. J, K. priamus. J. Sclerotized ring, and associated structures. K. Posterior wall.

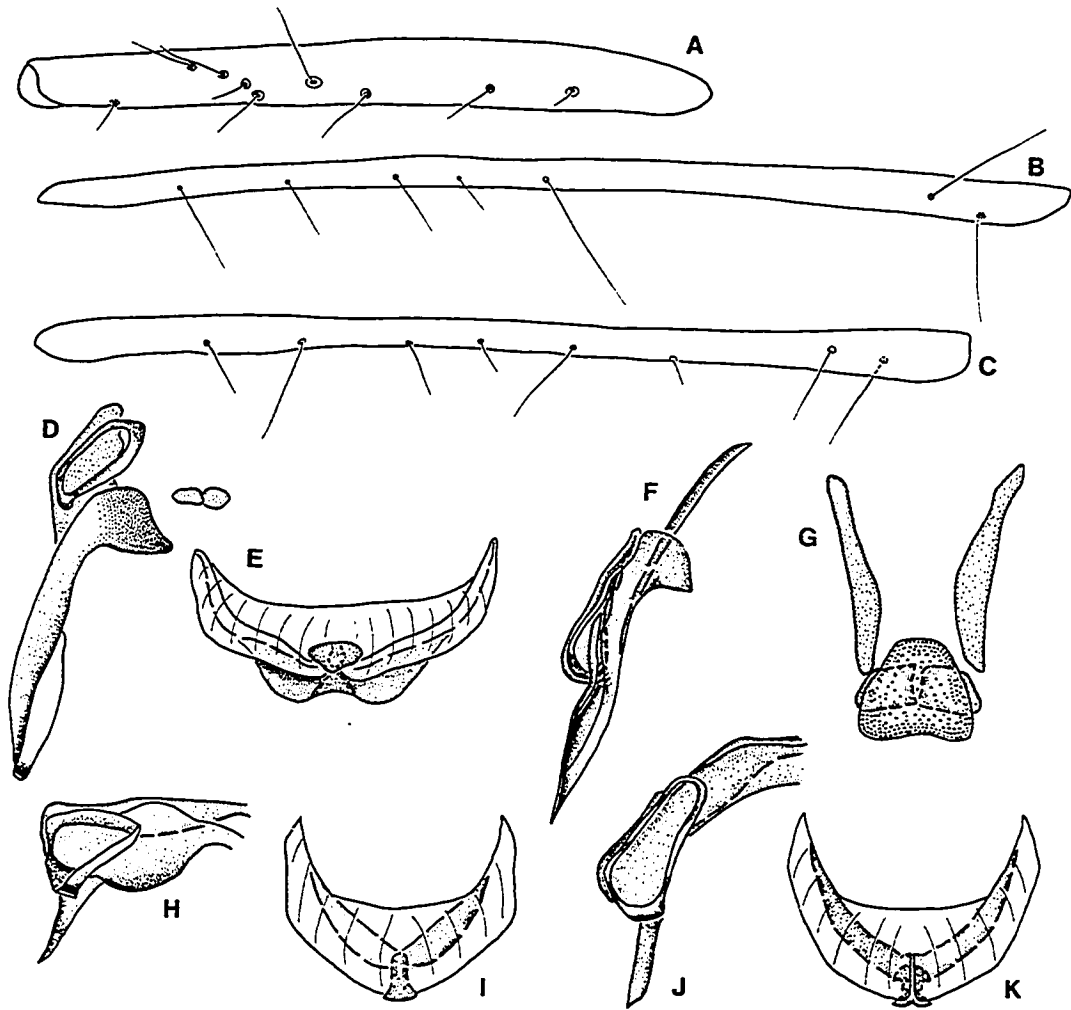


Fig. 17. Pithanus group. A, B. Dorsal habitus. A. Actitocoris signatus. B. Myrmecoris gracilus. C-F. Pithanus maerkeli. C. Dorsal habitus. D. Dorsal view of head and pronotum. E. Trichobothrium. F. Lateral view of ostiolar peritreme.

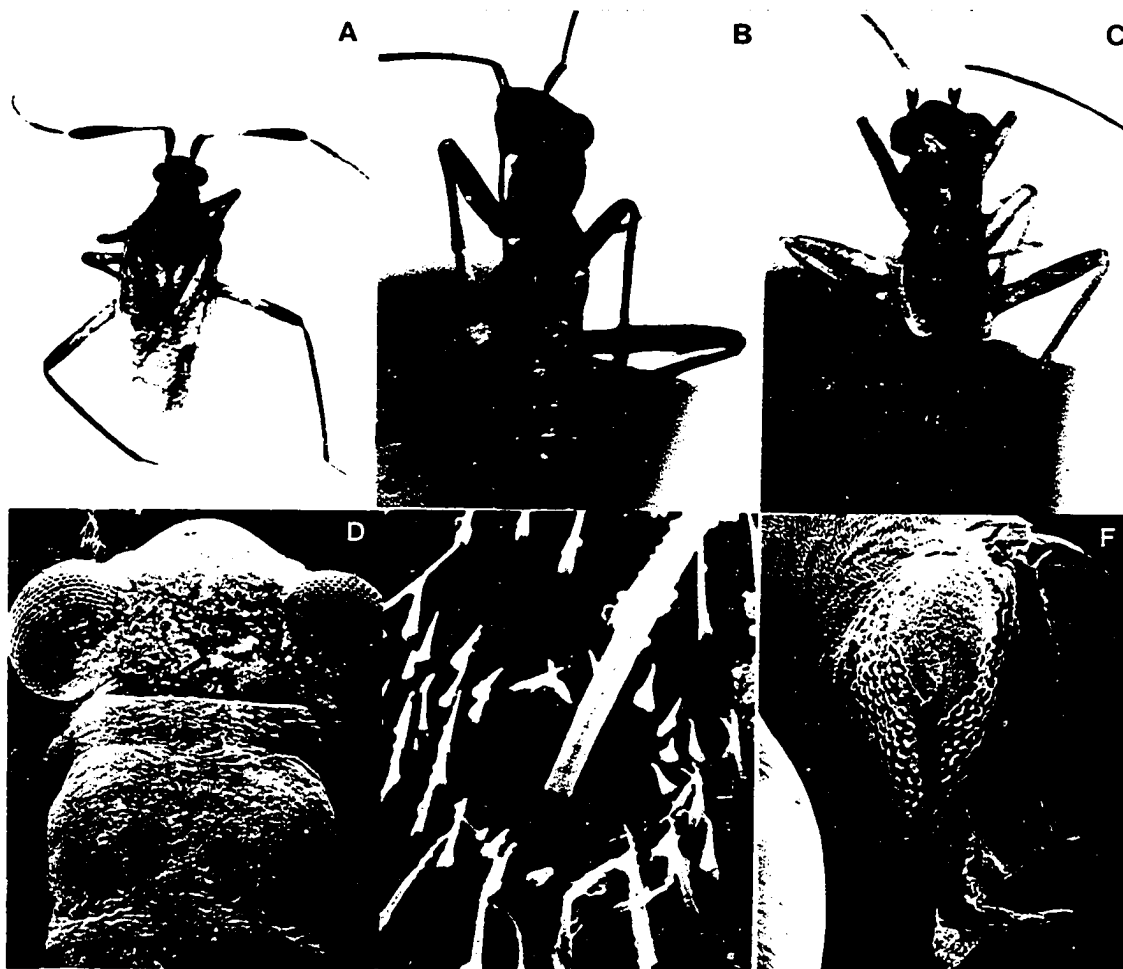


Fig. 18. Pithanus group. A-C. Lateral view of head and pronotum. A. Actitocoris signatus. B. Myrmecoris gracilus. C. Pithanus maerkeli. D-F. Pretarsus. D. A. signatus. E. M. gracilus. F. P. maerkeli.



Fig. 19. Pithanus group. Male genitalia. A-D. Actitocoris signatus. A. Dorsal view of genital capsule. B. Lateral view of left paramere. C. Lateral view of right paramere. D. Anterior view of vesica. E-G. Myrmecoris gracilus. E. Lateral view of left paramere. F. Lateral view of right paramere. G. Anterior view of dorsal portion of vesica. H-J. Pithanus maerkeli. H. Lateral view of left paramere. I. Lateral view of right paramere. J. Anterior view of vesica.

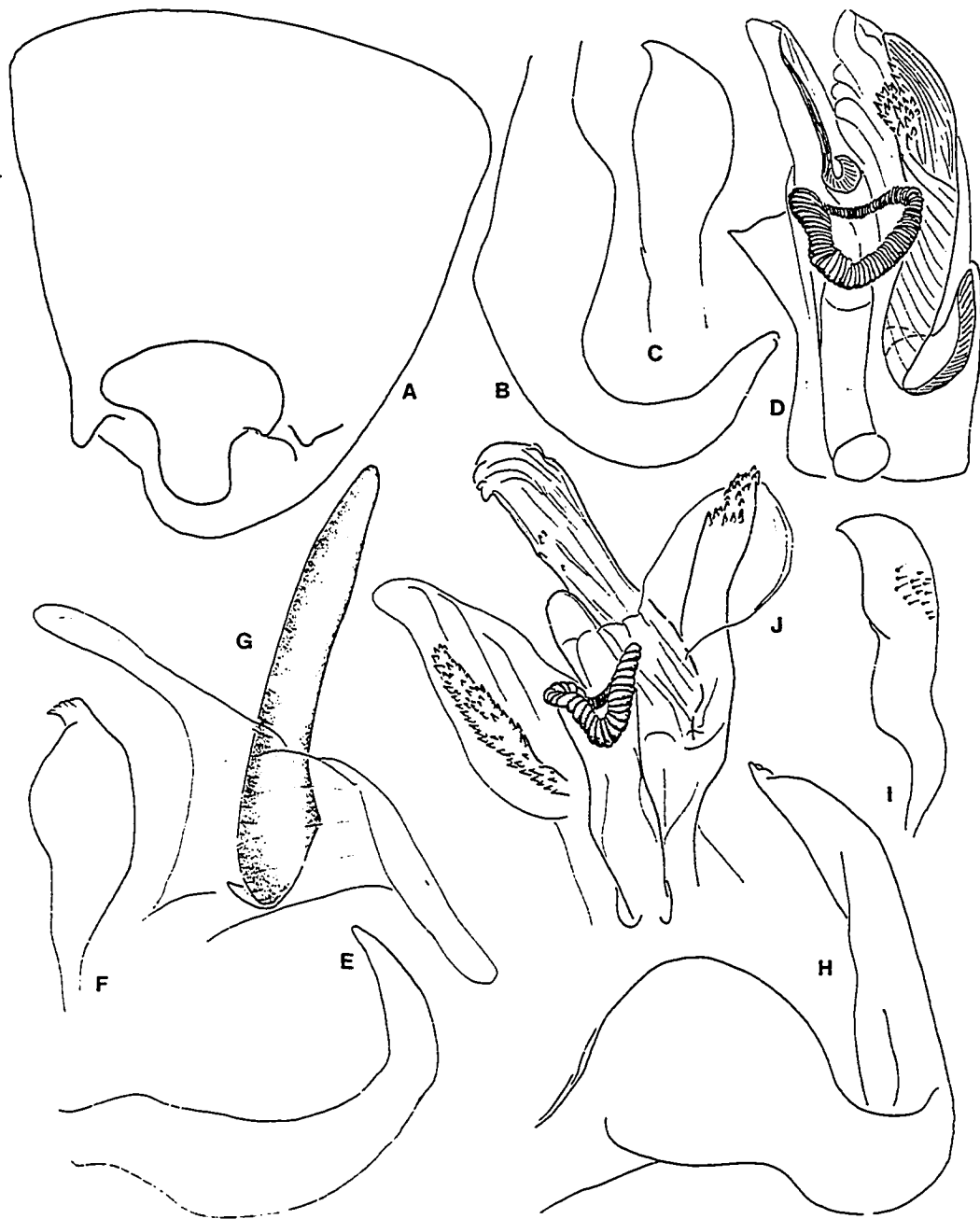


Fig. 20. Pithanus group. Metafemoral trichobothria and female genitalia. A-E. Actitocoris signatus. A. Metafemoral trichobothria. B. Lateral view of second valvula. C. Posterior view of sclerotized ring and ventral labiate plate. D, E. Posterior wall. D. Anterior view. E. Posterior view. F-I. Myrmecoris gracilus. F. Metafemoral trichobothria. G. Lateral view of second valvula. H. Posterior view of sclerotized ring and ventral labiate plate. I. Posterior view of posterior wall. J-N. Pithanus maerkeli. J. Metafemoral trichobothria. K. Lateral view of second valvula. L. Posterior view of sclerotized ring and ventral labiate plate. M. Posterior view of posterior wall.

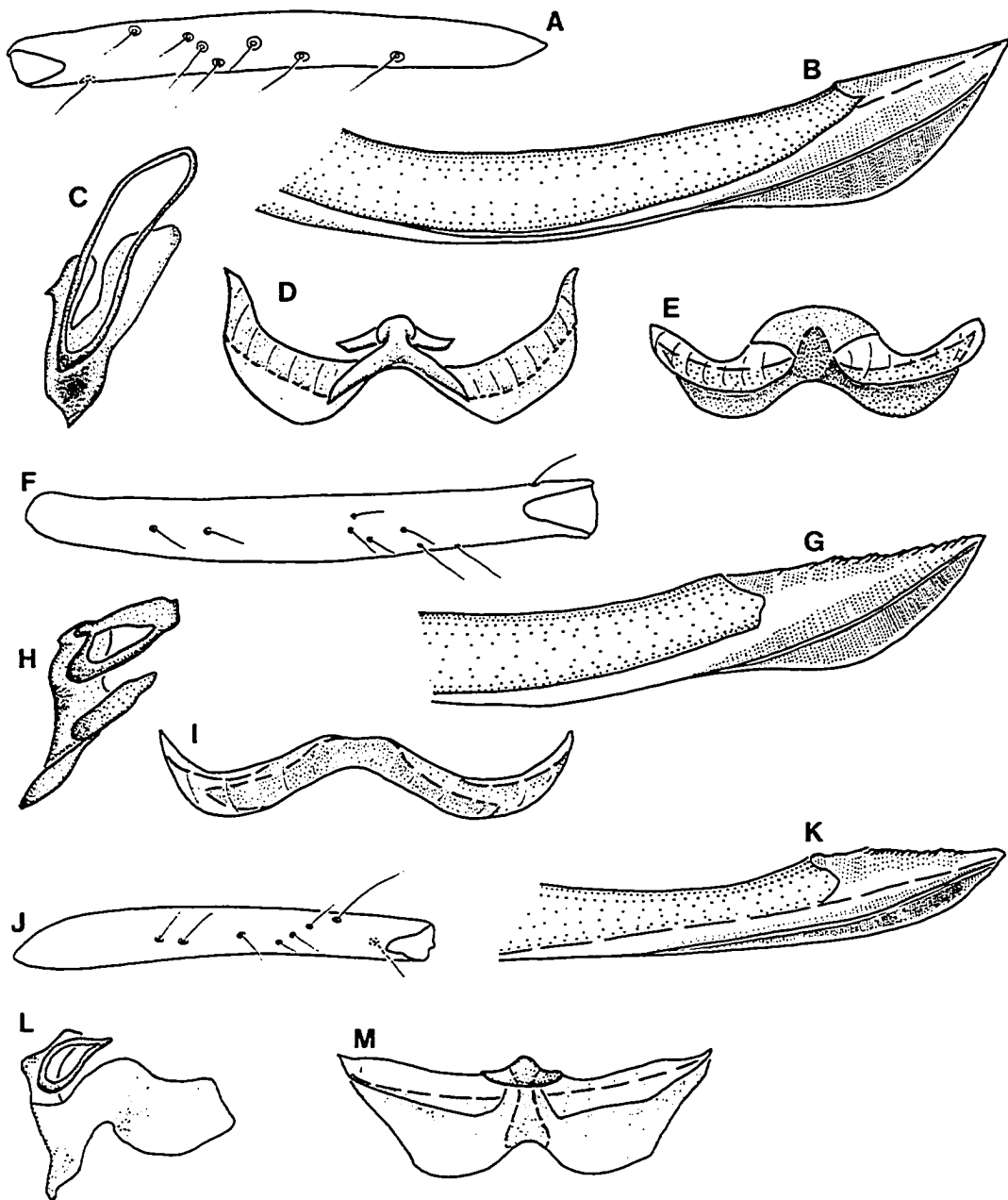


Fig. 21. Mimoceps group. A-C. Mimoceps insignis. A. Dorsal habitus. B. Dorsal view of pronotum. C. Lateral view of ostiolar peritrema. D-F. Teratocoris discolor. D. Dorsal habitus. E. Dorsal view of head and pronotum. F. Lateral view of ostiolar peritrema.



Fig. 22. Mimoceps group. A, B. Mimoceps insignis. A. Lateral view of head and pronotum. B. Pretarsus. C, D. Teratocoris discolor. C. Lateral view of head and pronotum. D. Pretarsus.

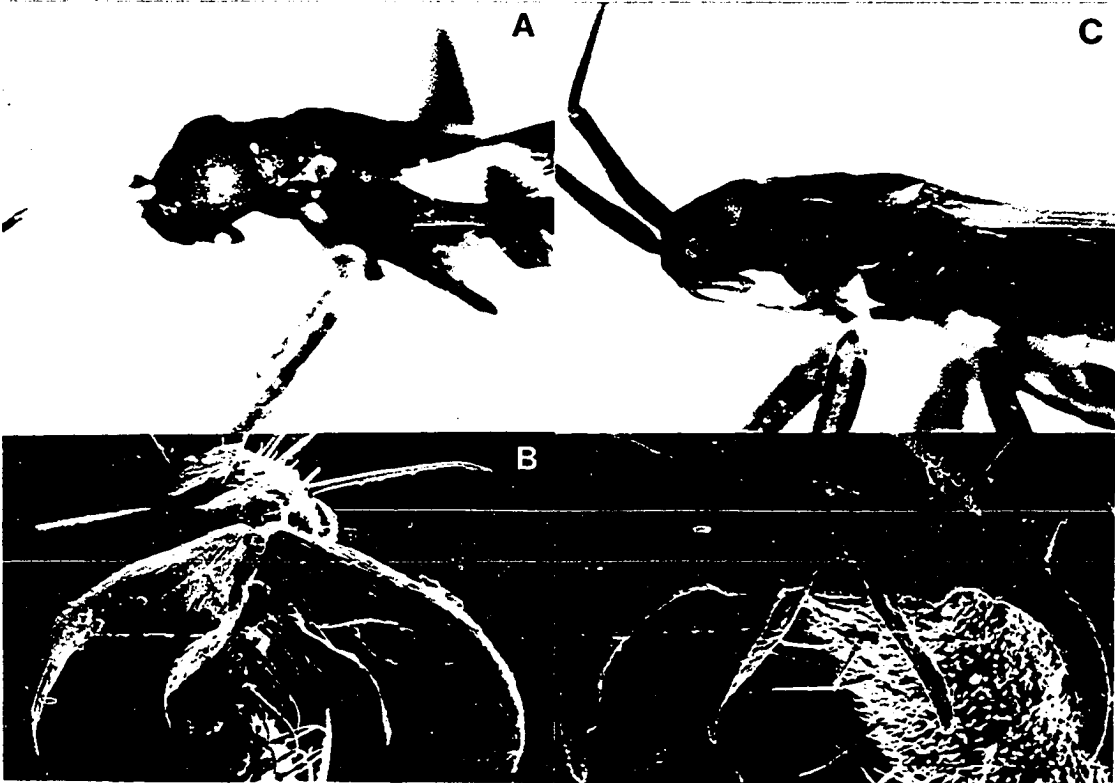


Fig. 23. Mimoceps group. A, B. Mimoceps insignis. A. Lateral view of vesica. B. Dorsal structure of posterior wall. C, D. Teratocoris discolor. C. Lateral view of vesica. D. Dorsal structure of posterior wall.



Fig. 24. Mimoceps group. Male genitalia. A-D. Mimoceps insignis. A. Dorsal view of genital capsule. B. Lateral view of right paramere. C. Lateral view of left paramere. D. Anterior view of vesica. E-G. Teratocoris discolor. E. Dorsal view of genital capsule. F. Lateral view of left paramere. G. Anterior view of vesica.

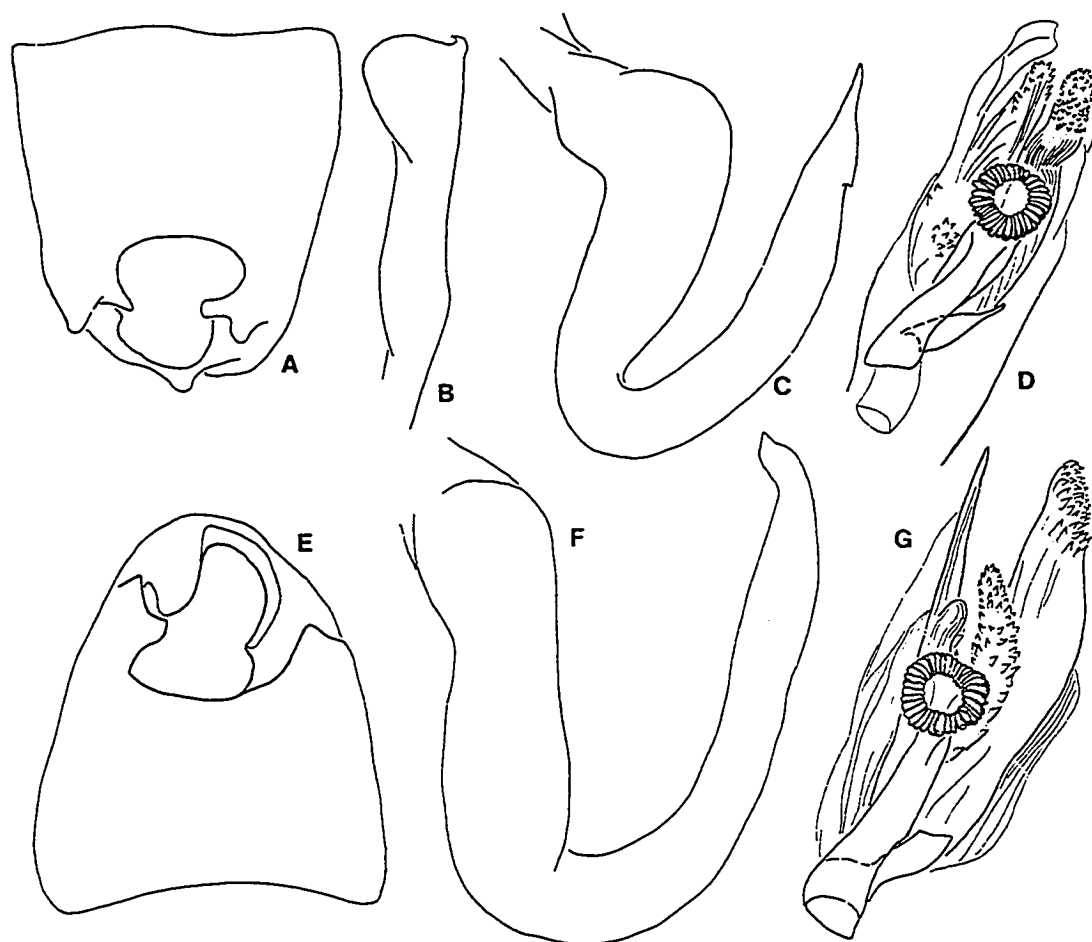


Fig. 25. Mimoceps group. Metafemoral trichobothria and female genitalia. A-D. Mimoceps insignis. A. metafemoral trichobothria. B. Lateral view of second valvula. C, D. Posterior view of sclerotized ring and ventral labiate plate. C. With ring. D. Ring obsolete. E. Posterior view of posterior wall. F-J. Teratocoris spp. F, G. Metafemoral trichobothria. F. discolor. G. saundersi. H. saundersi, lateral view of second valvula. I, J. caricis. I. Posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate. J. Posterior view of posterior wall.

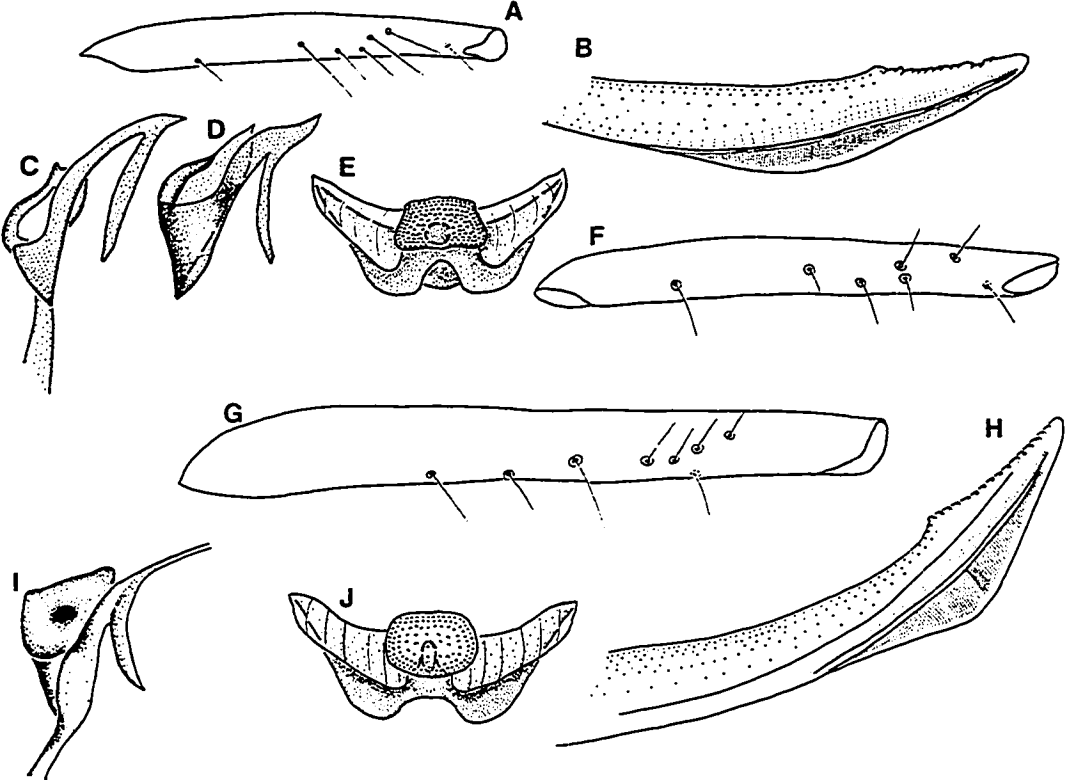


Fig. 26. Trigonotylus group. A, B. Dorsal habitus. A. Dolichomiris sjostedti. B. Megaloceroea costicollis. C-E. Lateral view of head and pronotum. C. M. recticornis. D. Schoutedenomiris acutotylus. E. Trigonotylus ruficornis.



Fig. 27. Trigonotylus group. A-F. Dorsal view of head and pronotum. A. Cheatedus rutilans. B. Dolichomiris linearis. C. D. sjostedti. D. M. retilicornis. E. Schoutedenomiris acutotylus. F. Trigonotylus ruficornis. G-I. Lateral view of ostiolar peritreme. G. C. rutilans. H. S. acutotylus. I. T. ruficornis.

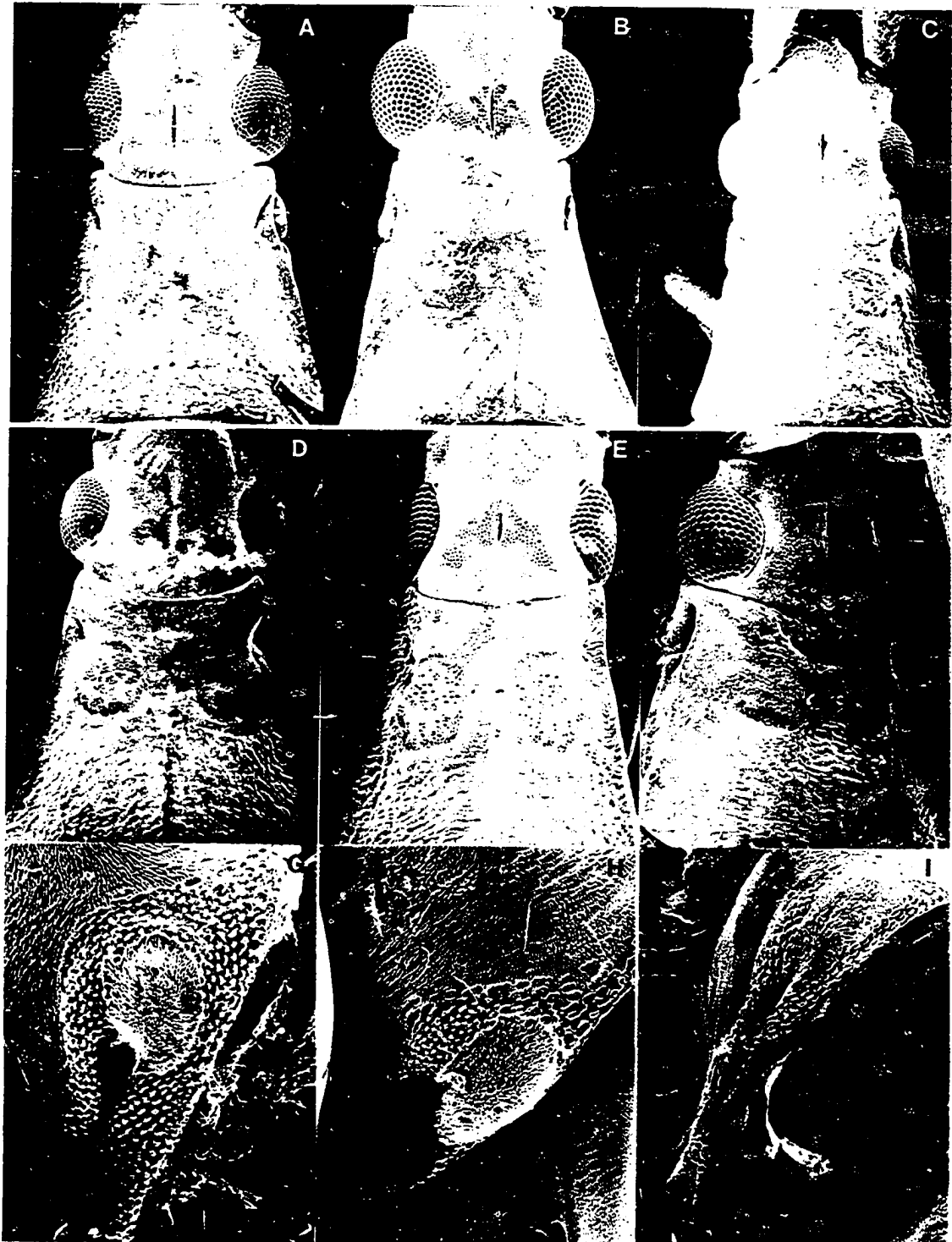


Fig. 28. Trigonotylus group. A. Megaloceroea recticornis, pretarsus. B. Trigonotylus ruficornis, trichobothrium. C, D. Megaloceroea recticornis. C. Secondary gonopore. D. Inter-ramal lobe. E. Schoutedenomiris acutotylus, Inter-ramal lobe.

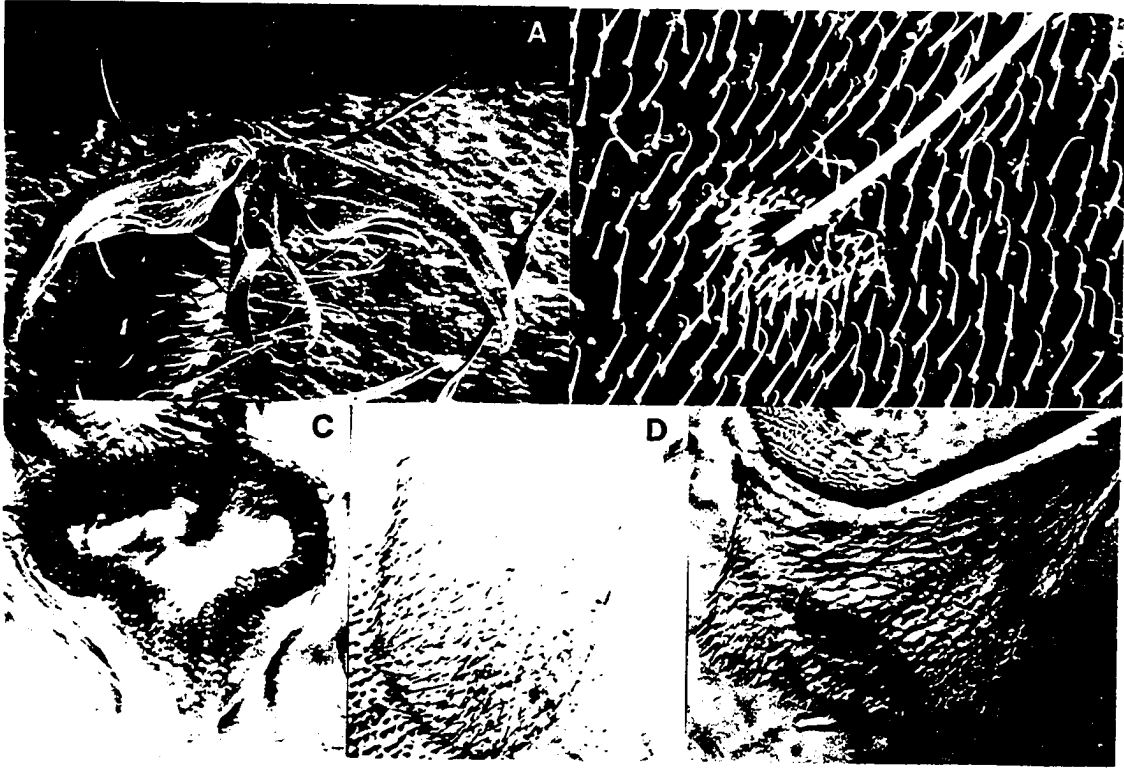


Fig. 29. Trigonotylus group. Metafemoral trichobothria. A, B. Cheatedus spp. A. rutilans. B. reuteriana. C-E. Dolichomiris spp. C. puncticerus. D. linearis. E. antennatis. F, G. Megaloceroea spp. F. costicollis. G. recticornis. H. Schoutedenomiris acutotylus. I, J. Trigonotylus spp. I. mexicanus. J. tarsalis.

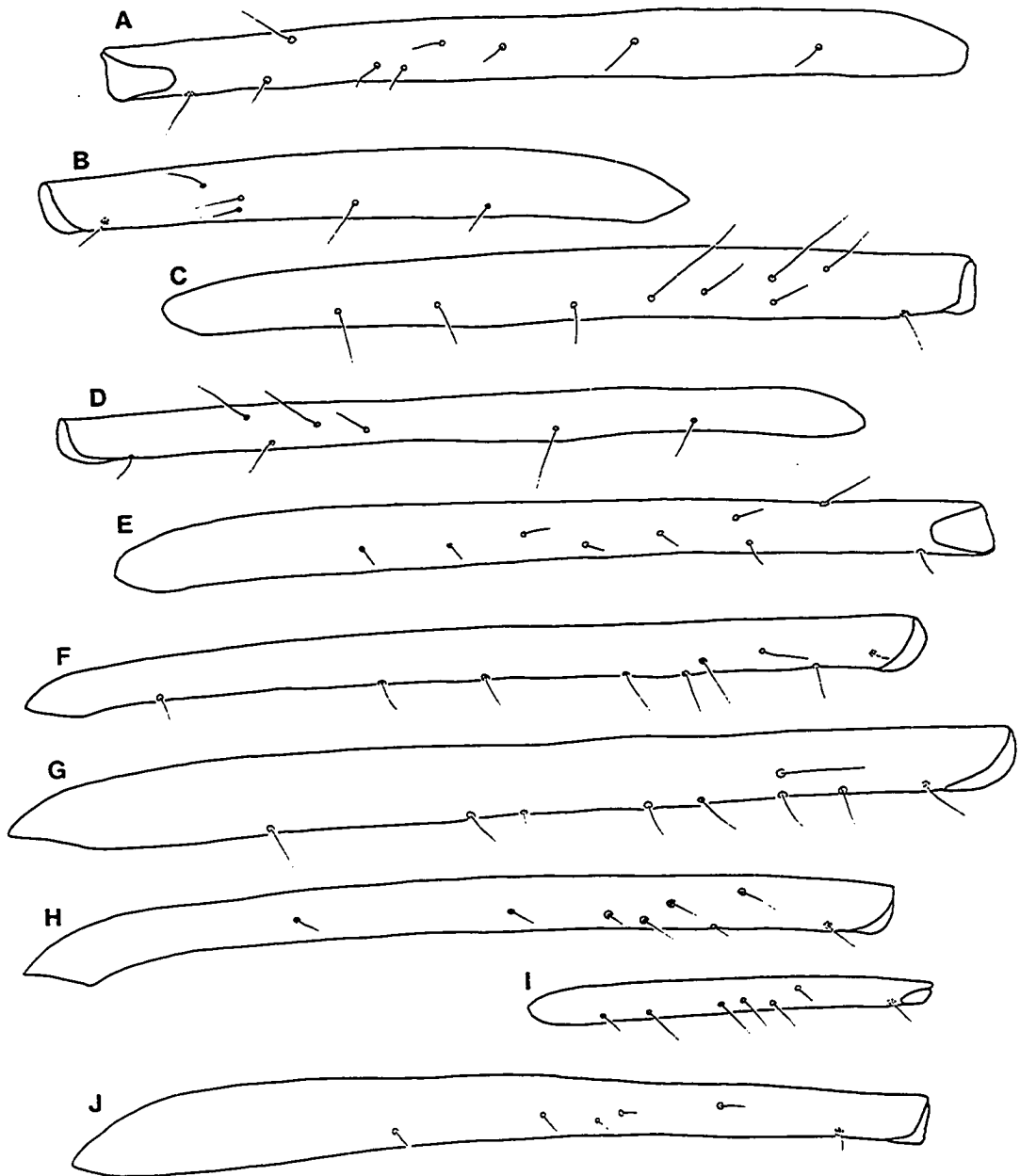


Fig. 30. Trigonotylus group. Male genitalia. A. Dolichomiris kuwayamai, secondary gonopore and ductus seminis. B, C. Megaloceroea relicticornis. B. basal and sclerotized processes. C. secondary gonopore and ductus seminis. D. Schoutedenomiris acutotylus, vesica. E-G. Trigonotylus spp. E. lineatus. F. antennatus. G. coelestialum.

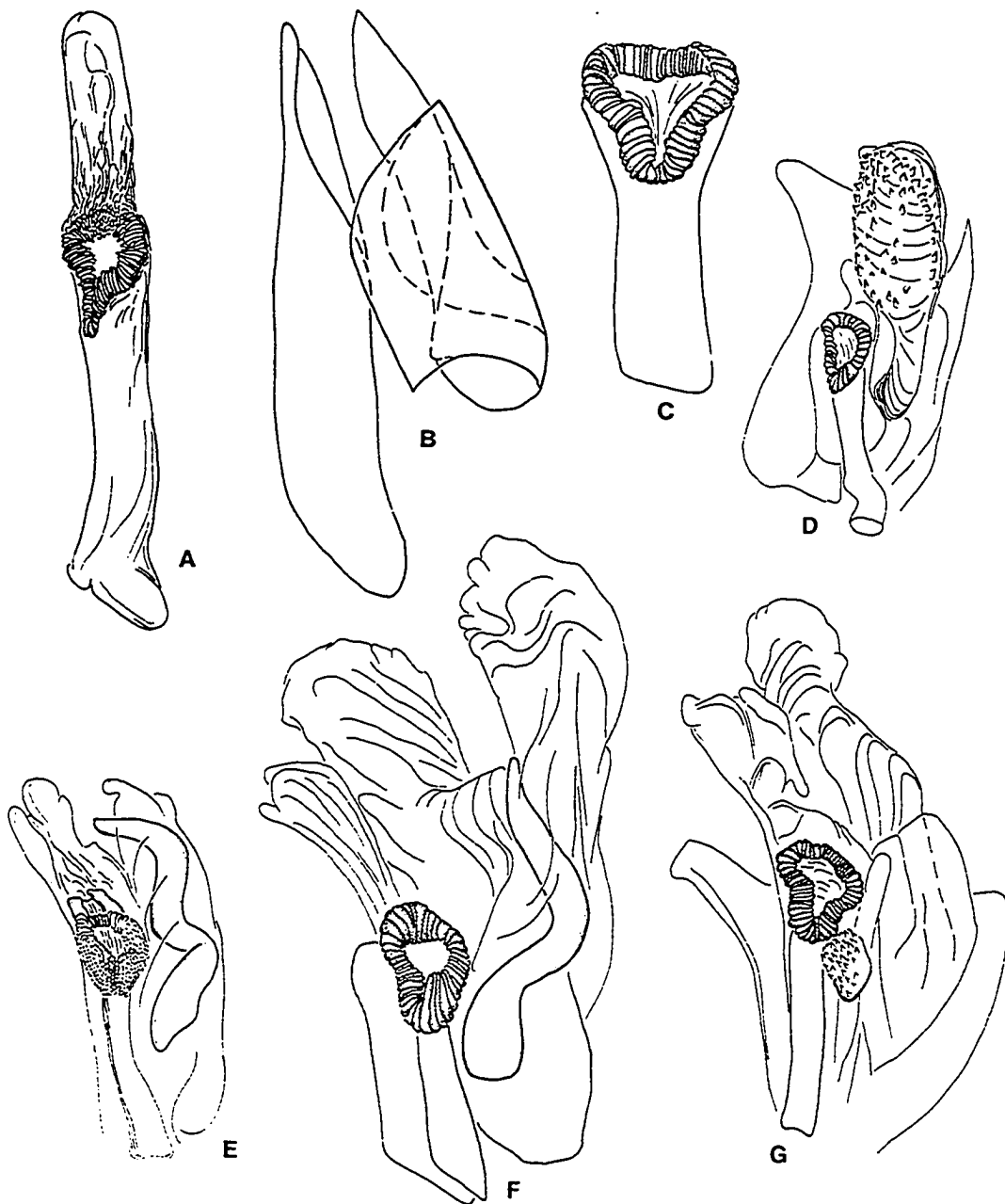


Fig. 31. Trigonotylus group. Female genitalia, posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate; and posterior view of posterior wall. A, B. Cheatedus reuteriana. A. Sclerotized ring. B. Posterior wall. C-H. Dolichomiris spp. C, D. linearis. C. Sclerotized ring. D. Posterior wall. E, F. sjostedti. E. Sclerotized ring. F. Posterior wall. G, H. antennatis. G. Sclerotized ring. H. Posterior wall. I, J. Megaloceroea recticornis. I. Sclerotized ring. J. Posterior wall. K, L. Schoutedenomiris acutotylus. K. Sclerotized rings. L. Posterior wall. M-P. Trigonotylus spp. M, N. mexicanus. M. Sclerotized ring. N. Posterior wall. O, P. ruficornis. O. Sclerotized ring. P. Posterior wall.

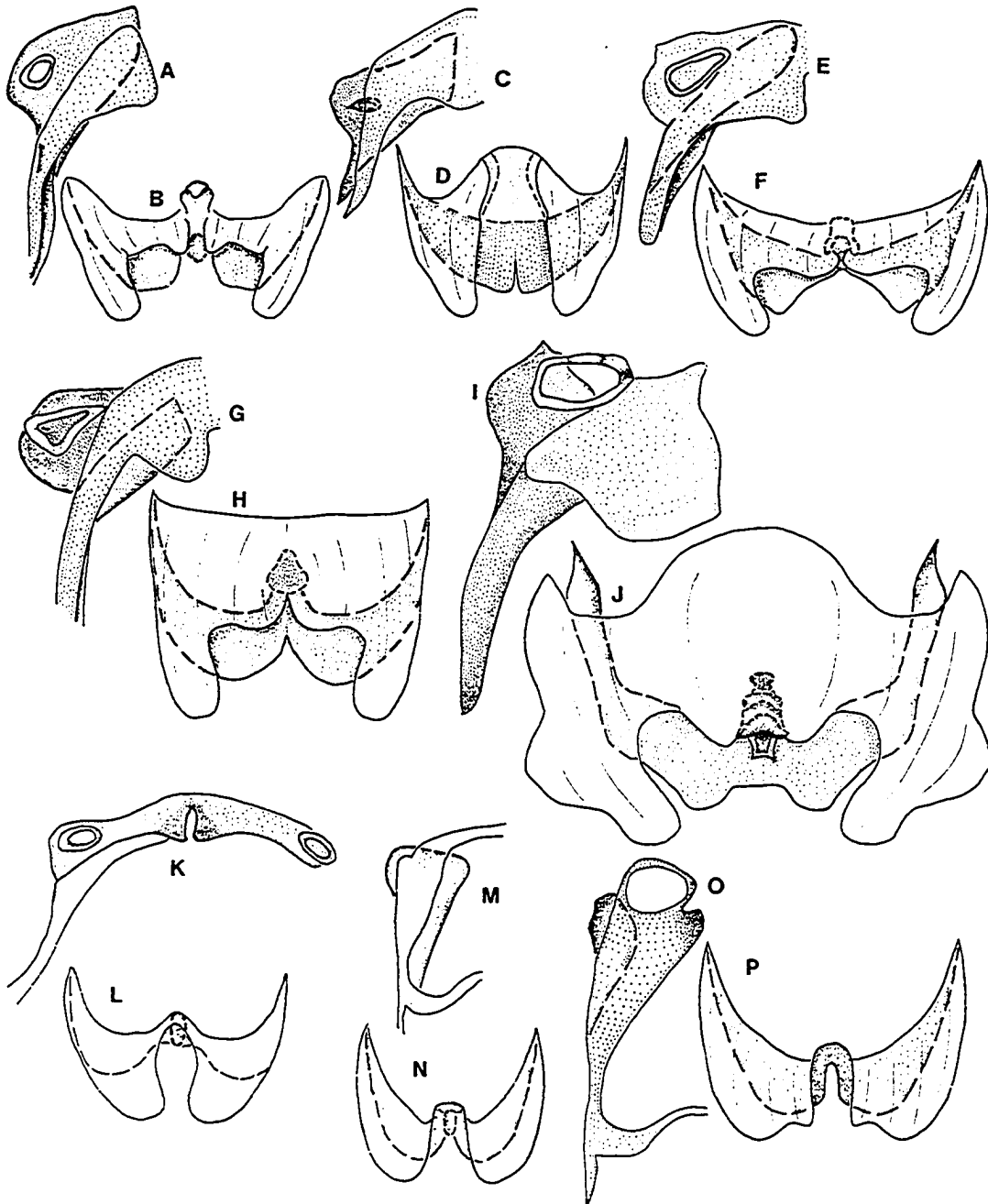


Fig. 32 Stenodema group. Autumnimiris spp. A, B. Dorsal habitus. A. albescens. B. koebelei. C, D. Lateral view of head and pronotum. C. albescens. D. koebelei.

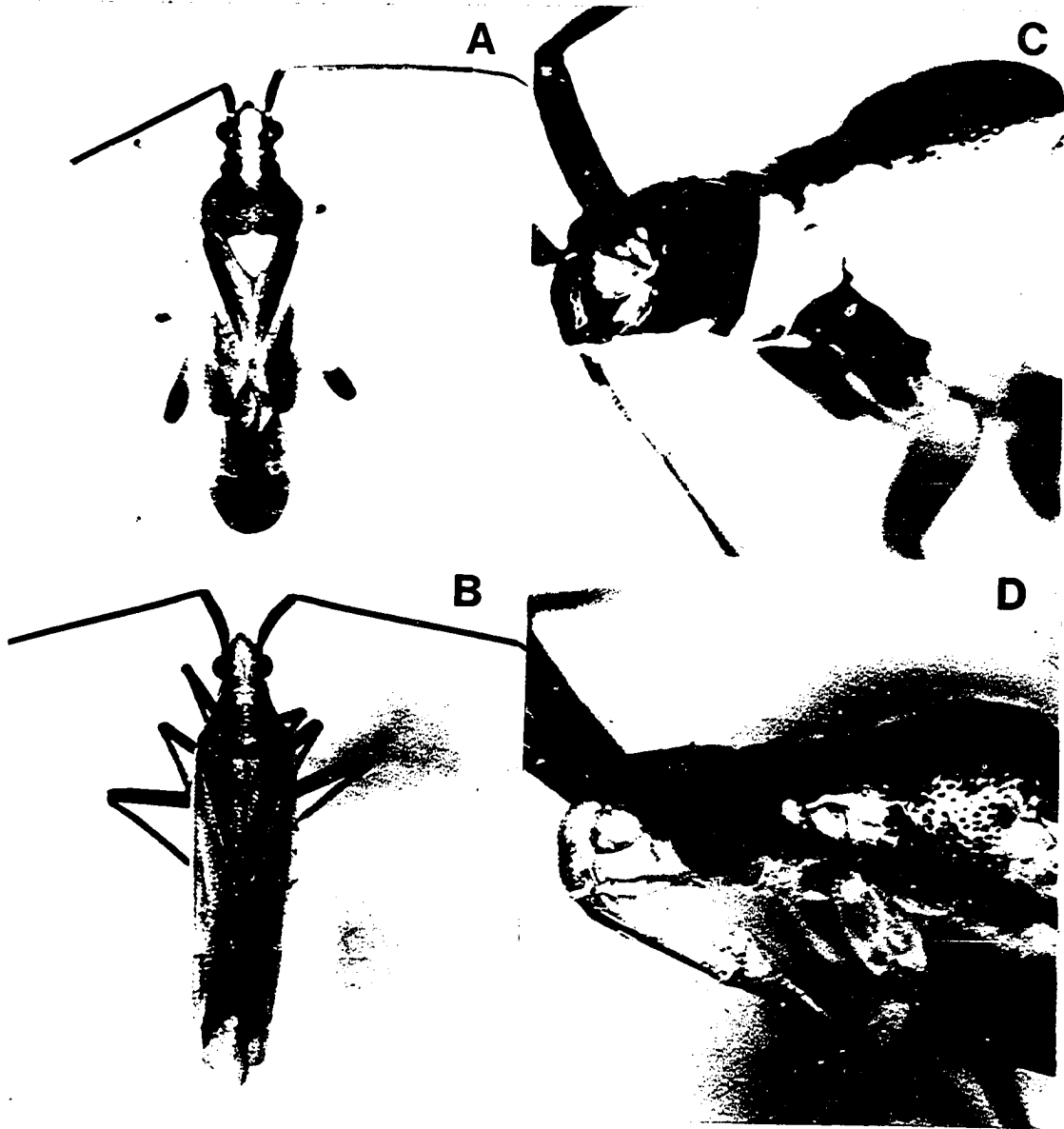


Fig. 33. Stenodema group. Male genitalia. Autumnimiris spp.
A-D. albescens. A. Anterior view of vesica. B. Lateral view
of lobal sclerite. C. Lateral view of left paramere. D.
Lateral view of right paramere. E-G. koebelei. E. Lateral view
of lobal sclerite. F. Lateral view of left paramere. G.
Lateral view of right paramere. H-L. roseus. H. Dorsal view of
genital capsule. I. Anterior view of vesica. J. Lateral view
of lobal sclerite. K. Lateral view of left paramere. L.
Lateral view of right paramere. M-O. rubicundus. M. Anterior
view of dorsal portion of vesica. N. Lateral view of left
paramere. O. Lateral view of right paramere.



Fig. 34. Stenodema group. Caracoris nigropunctatus. A. Dorsal habitus. B. Lateral view of head and pronotum.

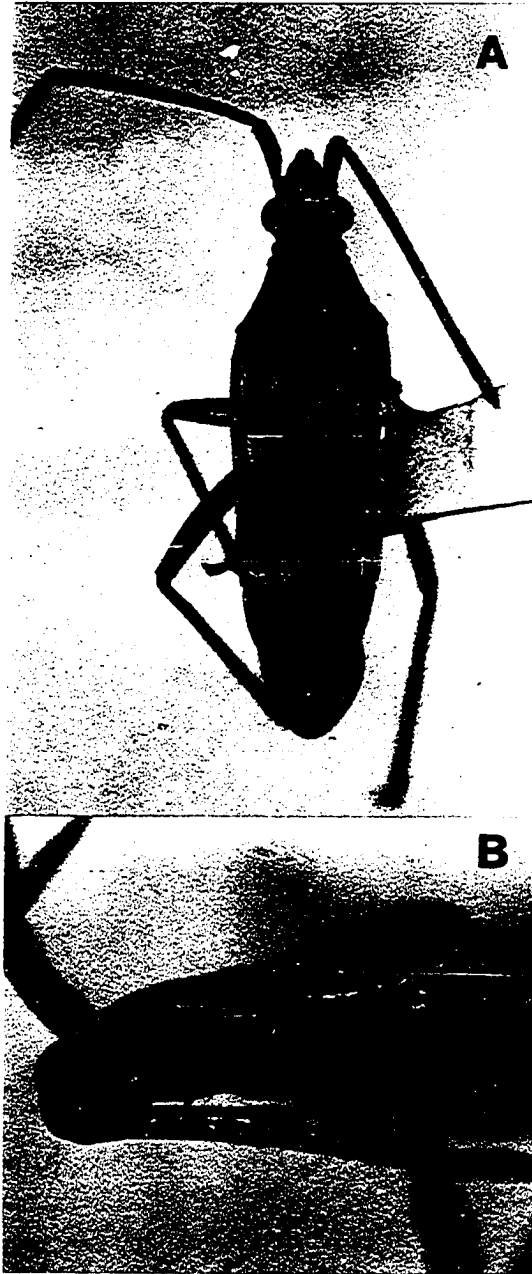


Fig. 35. Stenodema group. Male genitalia. A-D. Caracoris nigropunctatus. A. Anterior view of vesica. B. Dorsal view of genital capsule. C. Lateral view of left paramere. D. Lateral view of left paramere. E-I. Chaetofoveolocatoris hirsuta. E. Anterior view of dorsal portion of vesica. F. Dorsal view of genital capsule. G, H. Left paramere. G. Lateral view. H. Anterior view. I. Lateral view of right paramere.

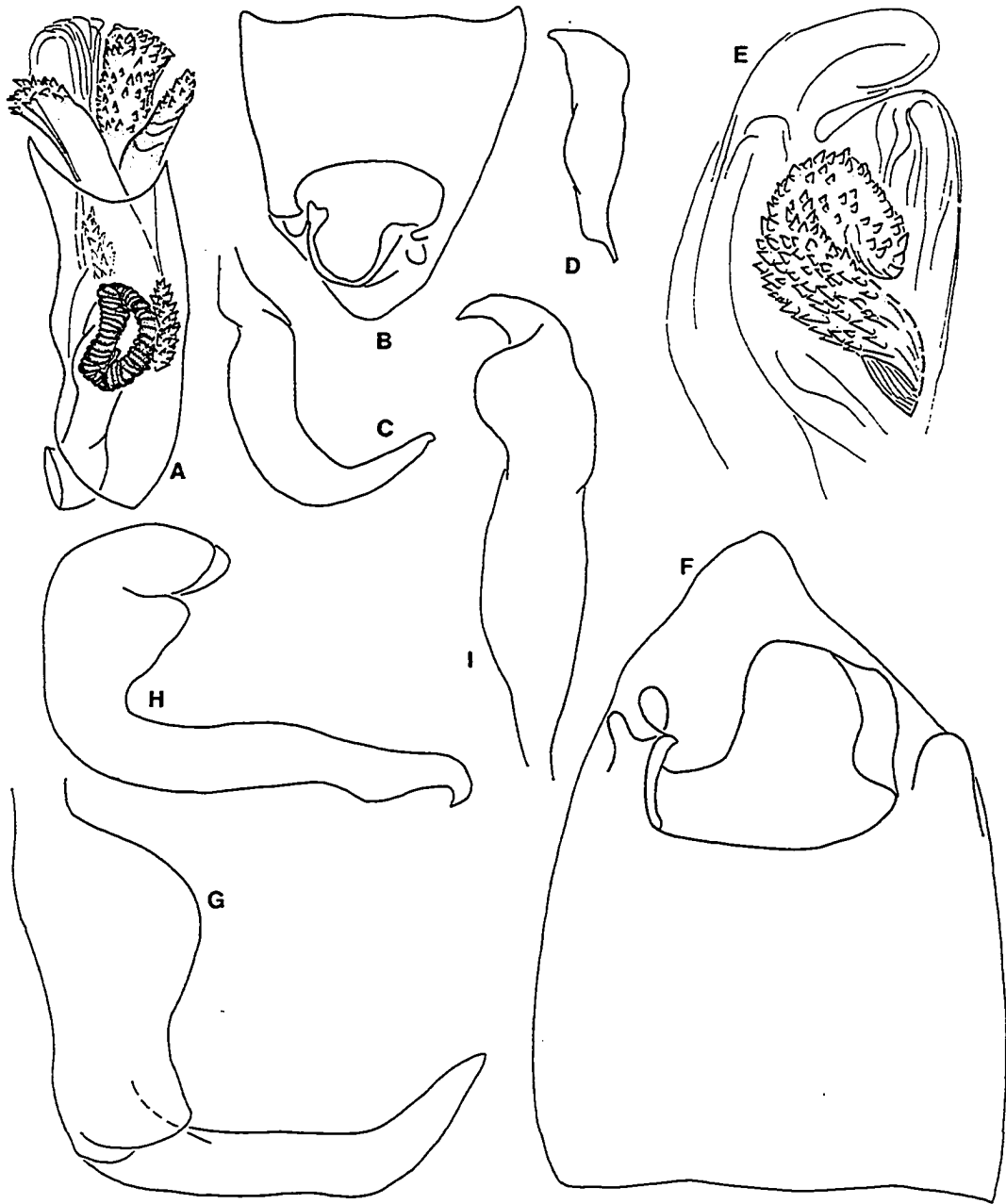


Fig. 36. Stenodema group. Dorsal habitus. A. Chaetofoveolocoris hirsuta. B. Neotropicomiris nordicus. C. Porpomiris curtulus. D. Litomiris debilis. E, F. Stenodema. E. vicina. F. trispinosa.

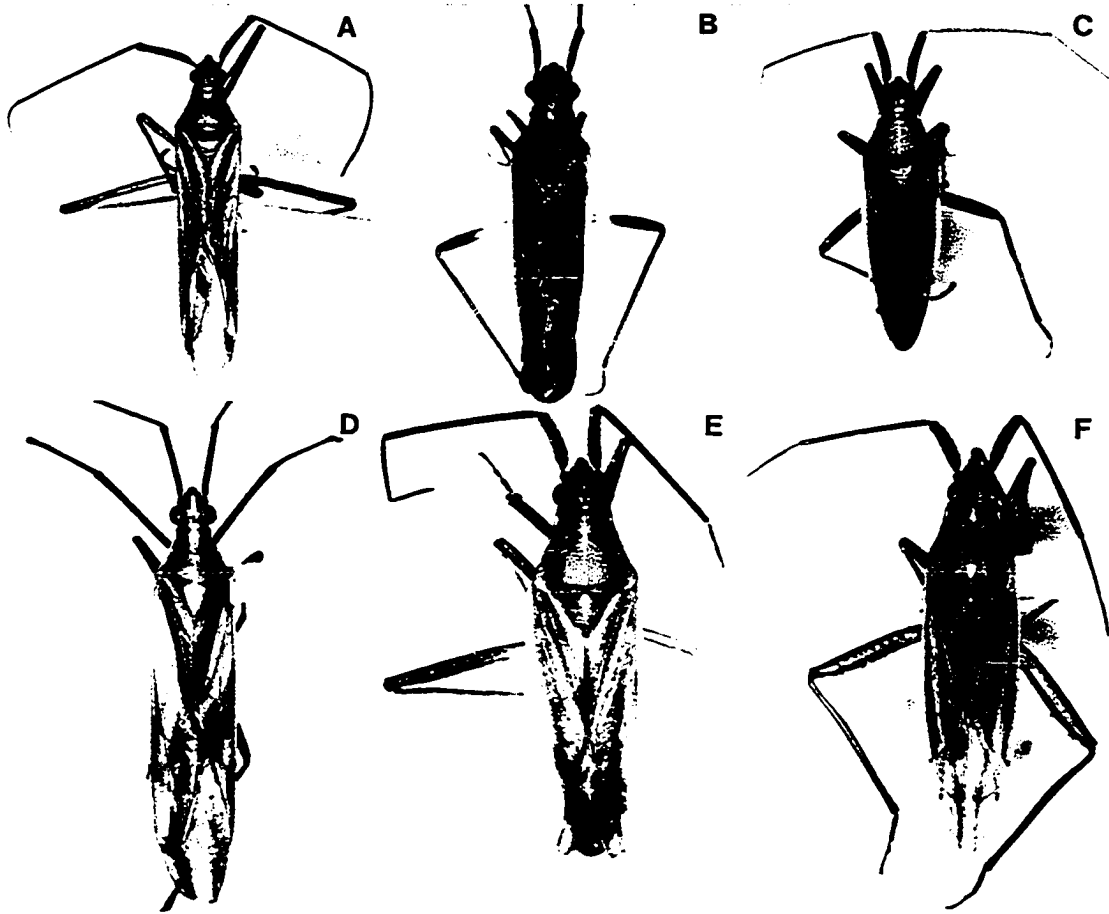


Fig. 37. Stenodema group. Lateral view of head and pronotum.
A. Autumnimiris roseus. B. Chaetofoveolocatoris hirsuta. C.
Litomiris debilis. D. Neotropicomiris nordicus. E. Opisthocasis
albocostata. F. Ophthalmomiris reuteri. G. Porpomiris
curtulus. H. Stenodema trispinosa.

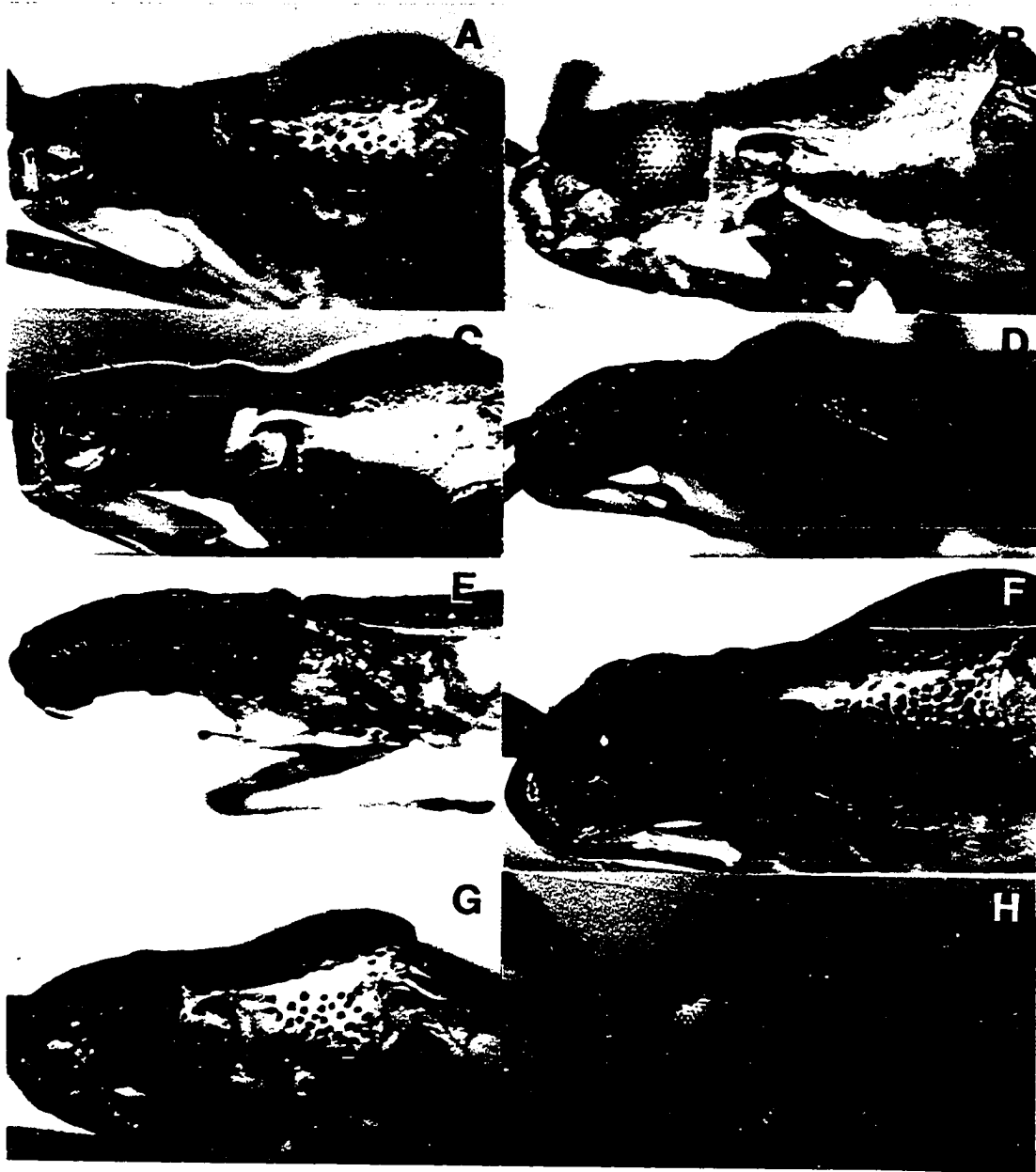


Fig. 38. Stenodema group. Dorsal view of head and pronotum.
A. Autumnimiris koebelei. B. Chaetofoveolocatoris hirsuta. C.
Neotropicomiris nordicus. D. Ophthalmomiris reuteri. E.
Porpomiris curtulus. F. Stenodema virens.



Fig. 39. Stenodema group. A-C. Lateral view of ostiolar peritreme. A. Autumnimiris koebelei. B. Porpomiris curtulus. C. Stenodema insuavis. D-F. Detail of metafemoral trichobothria. D. Stenodema longicuneatus. E. S. vicina. F. Neotropicomiris nordicus. G. S. virens, anterior view of secondary gonopore. H, I. Dorsal structure of posterior wall. H. A. albescens. I. S. pilosipes.



Fig. 40. Stenodema group. Metafemoral trichobothria. A-C. Autumnimiris. A. koebeleri. B. albescens. C. roseus. D. Caracoris nigopunctatus. E. Neotropicomiris nordicus. F. Porpomiris curtulus. G. Chaetofoveolocoris hirsuta. H. Litomiris debilis. I. Ophthalmomiris reuteri. J-N. Stenodema. J. vicina. K. pilosipes. L. trispinosa. M. insuavis. N. longicuneatus.

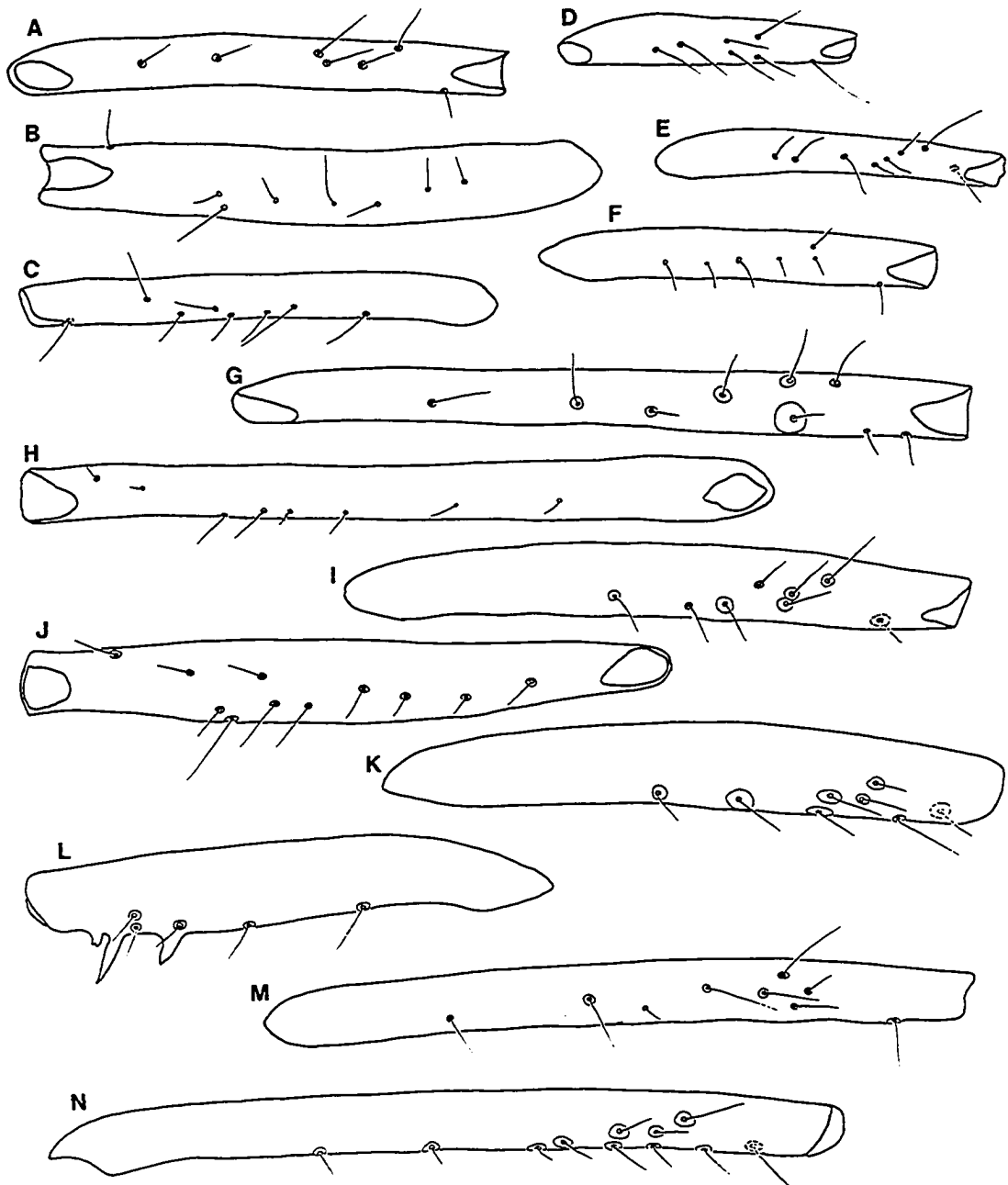


Fig. 41. Stenodema group. Male genitalia. A-D. Litomiris gracilis. A. Dorsal view of genital capsule. B. Lateral view of lobal sclerite. C. Lateral view of left paramere. D. Lateral view of right paramere. E-G. Neotropicomiris nordicus. E. Anterior view of vesica. F. Lateral view of left paramere. G. Lateral view of right paramere. H-L. Species nr. pilosus, Brazil, Parana, 15 km W. of Paranagua. H. Dorsal view of genital capsule. I, J. Vesica. I. Anterior view. J. Posterior view of dorsal portion. K. Lateral view of left paramere. L. Lateral view of right paramere.

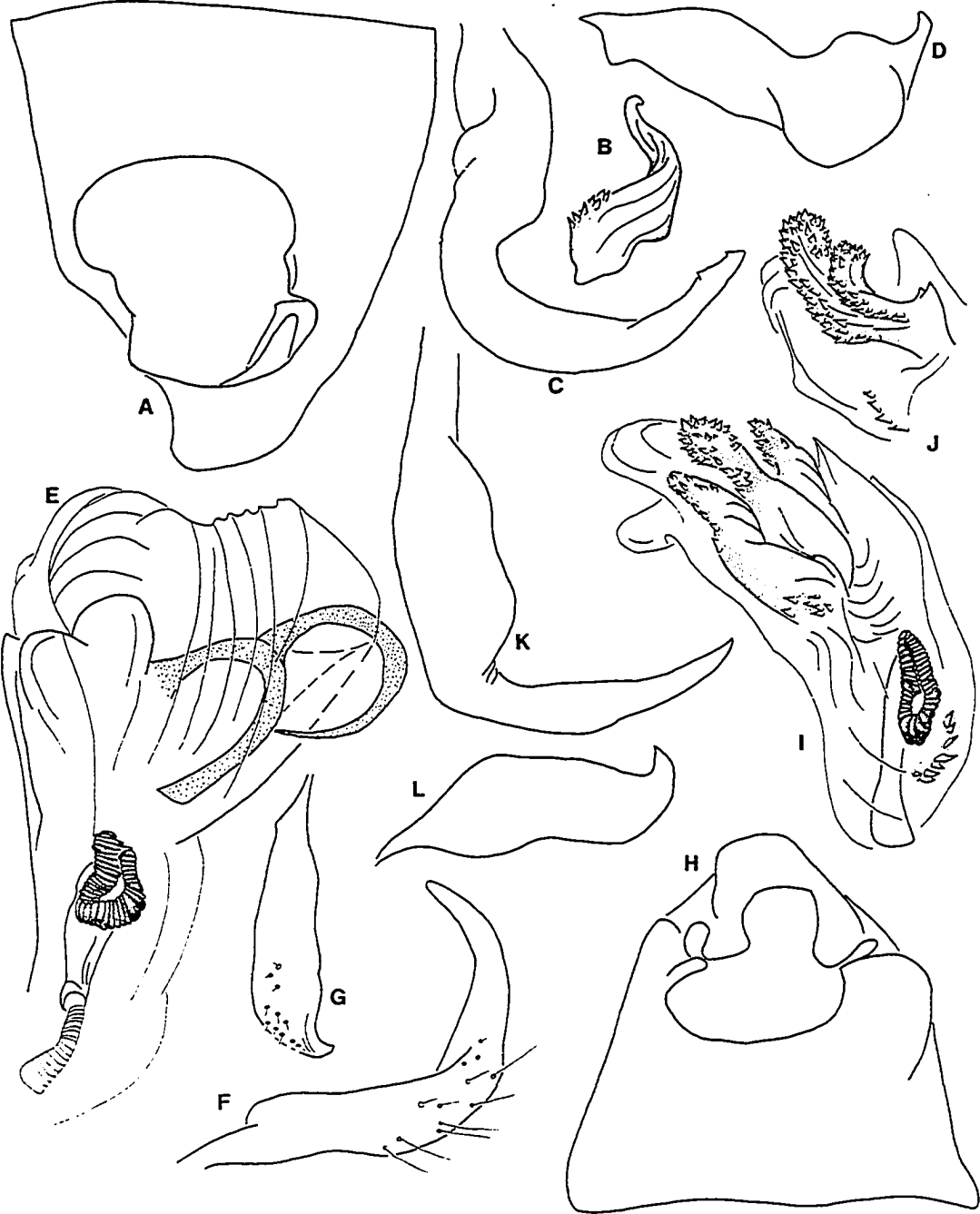


Fig. 42. Stenodema group. Opisthocasis albocostata, dorsal habitus.

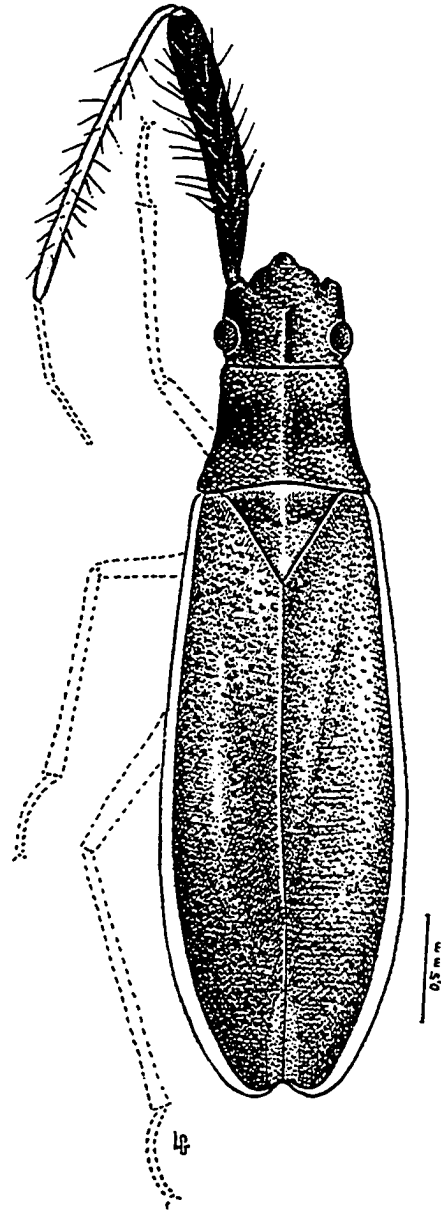


Fig. 43. Stenodema group. Male genitalia. A. Ophthalmomiris reuteri, dorsal view of genital capsule. B-E. Porpomiris curtulus. B. Dorsal view of genital capsule. C. Lateral view of lobal sclerite. D. Lateral view of left paramere. E. Lateral view of right paramere.

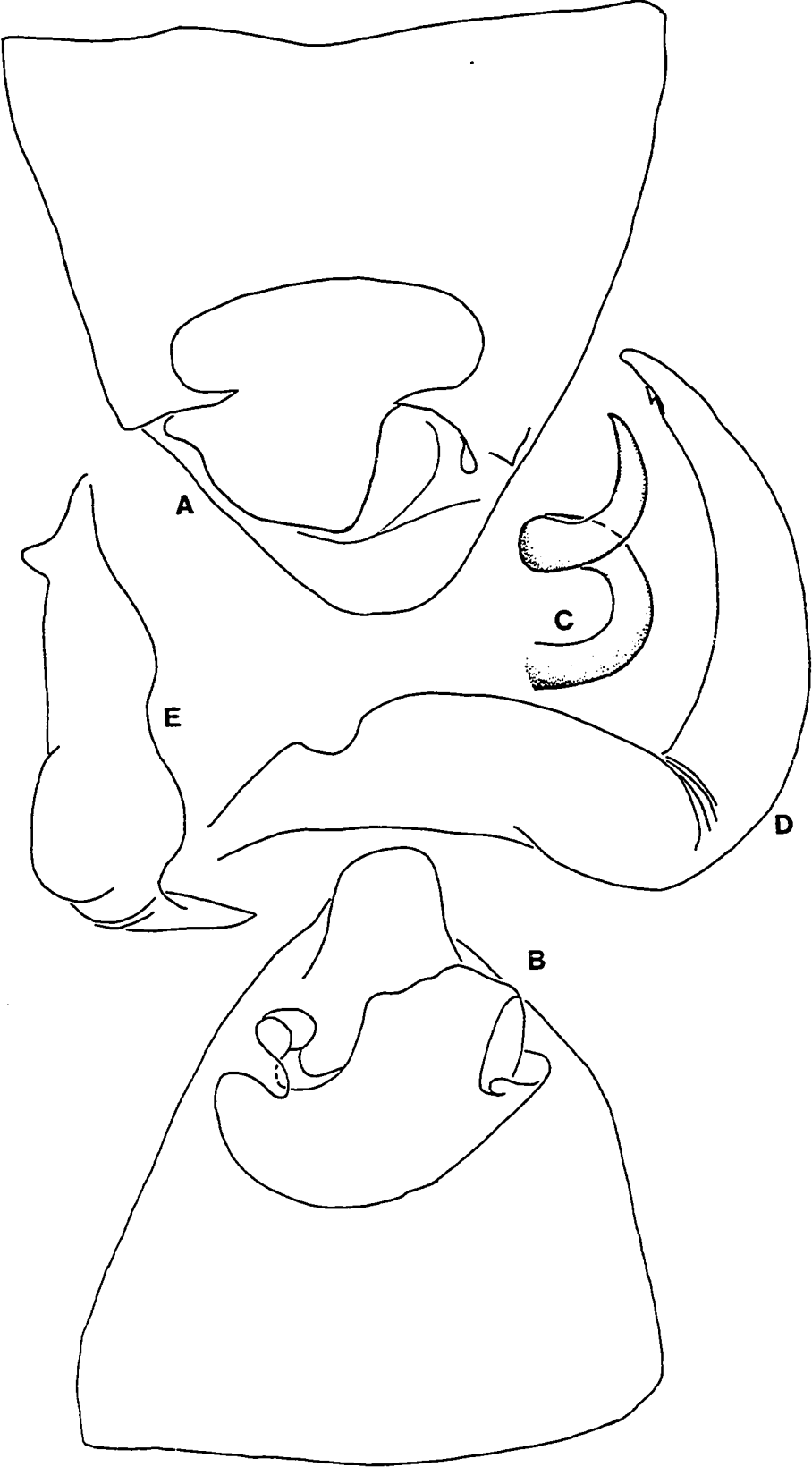


Fig. 44. Stenodema group. Female genitalia, posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate; and posterior view of posterior wall. A-F. Autumnimiris. A, B. albescens. A. Sclerotized ring. B. Posterior wall. C, D. koebelei. C. Sclerotized ring. D. Posterior wall. E, F. roseus. E. Sclerotized ring. F. Posterior wall. G, H. Caracoris nigropunctatus. G. Sclerotized ring. H. Posterior wall. I, J. Porpomiris curtulus. I. Sclerotized ring. J. Posterior wall. K, L. Chaetofoveolocatoris hirsuta. K. Sclerotized ring. L. Posterior wall. M, N. Litomiris debilis. M. Sclerotized ring. N. Posterior wall. O-R. Neotropicomiris spp. O, P. pilosus. O. Sclerotized ring. P. Posterior wall. Q, R. nordicus. Q. Sclerotized ring. R. Posterior wall.

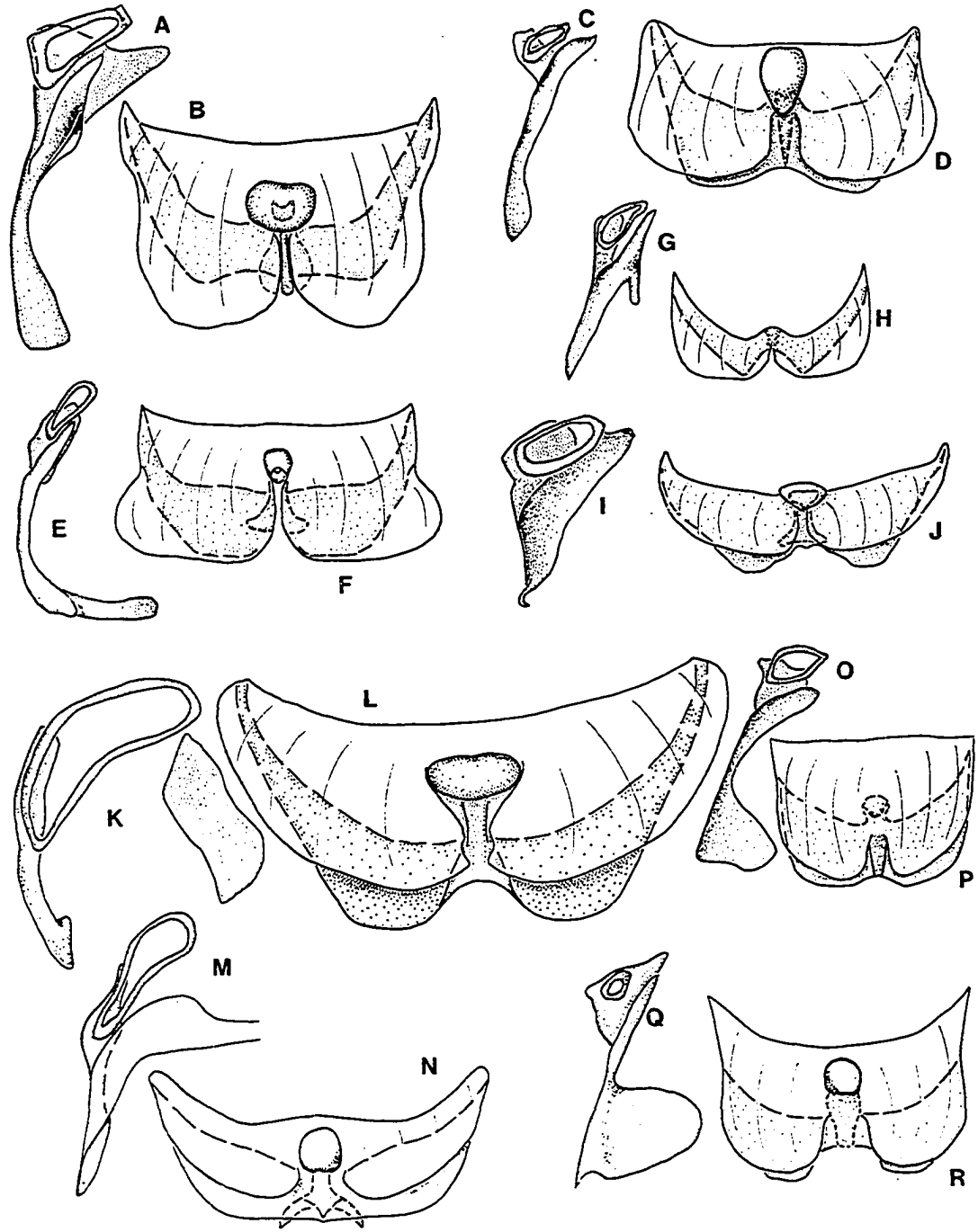


Fig. 45. Stenodema group. Female genitalia, posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate; and posterior view of posterior wall. A, B. Ophthalmomiris reuteri. A. Sclerotized ring. B. Posterior wall. C-J. Stenodema spp. C, D. New species, Columbia, Cundinamarca. E, F. trispinosa. E. Sclerotized ring. F. Posterior wall. G, H. virens. G. Sclerotized ring. H. Posterior wall. I, J. longicuneatus. I. Sclerotized ring. J. Posterior wall.

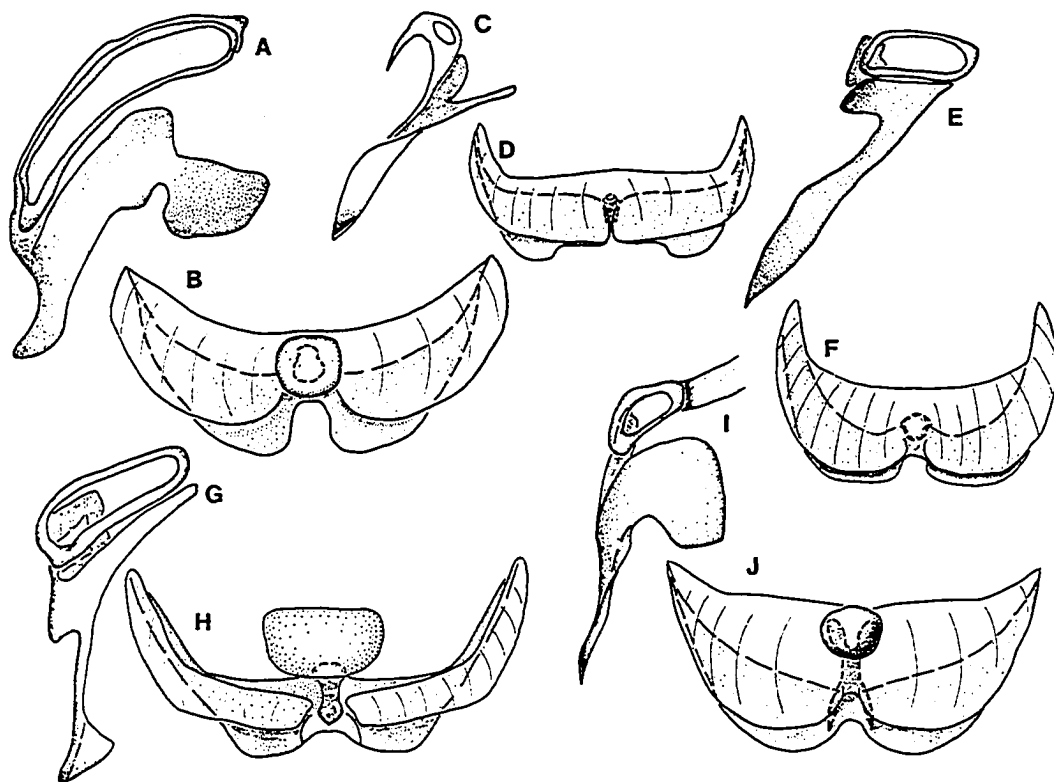


Fig. 46. Leptopterna group. Acetropis carinatus. A,B. Head and pronotum. A. Lateral view. B. Dorsal view. C. Pretarsus. D. Dorsal habitus. E. Lateral view of ostiolar peritreme.

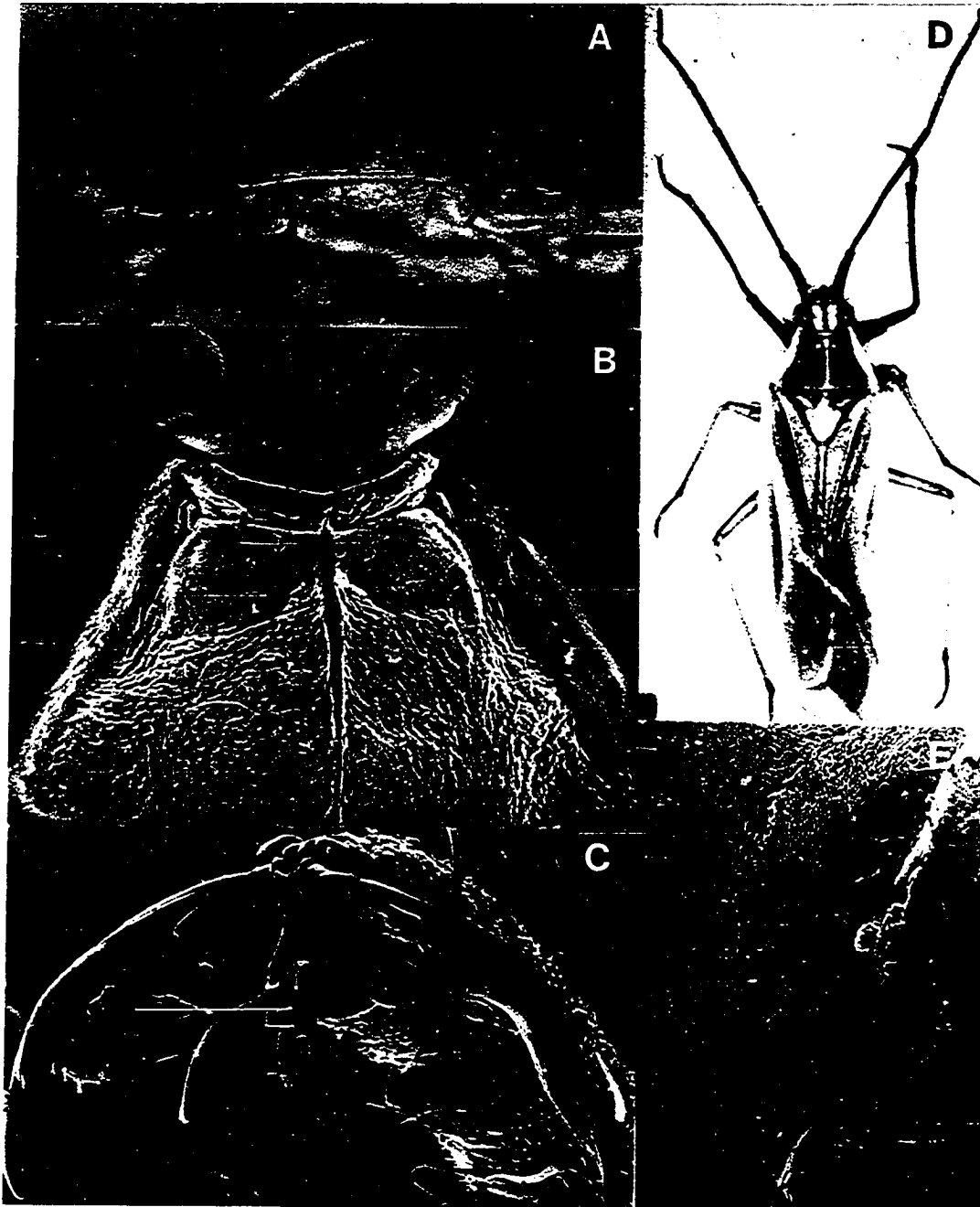


Fig. 47. Leptopterna group. Leptopterna dolabrata. A. Dorsal habitus. B. Dorsal view of head and pronotum. C. Lateral view of ostiolar peritreme. D. Lateral view of head and pronotum. E. Inter-ramal lobe of posterior wall, arrows at edge of lobe.

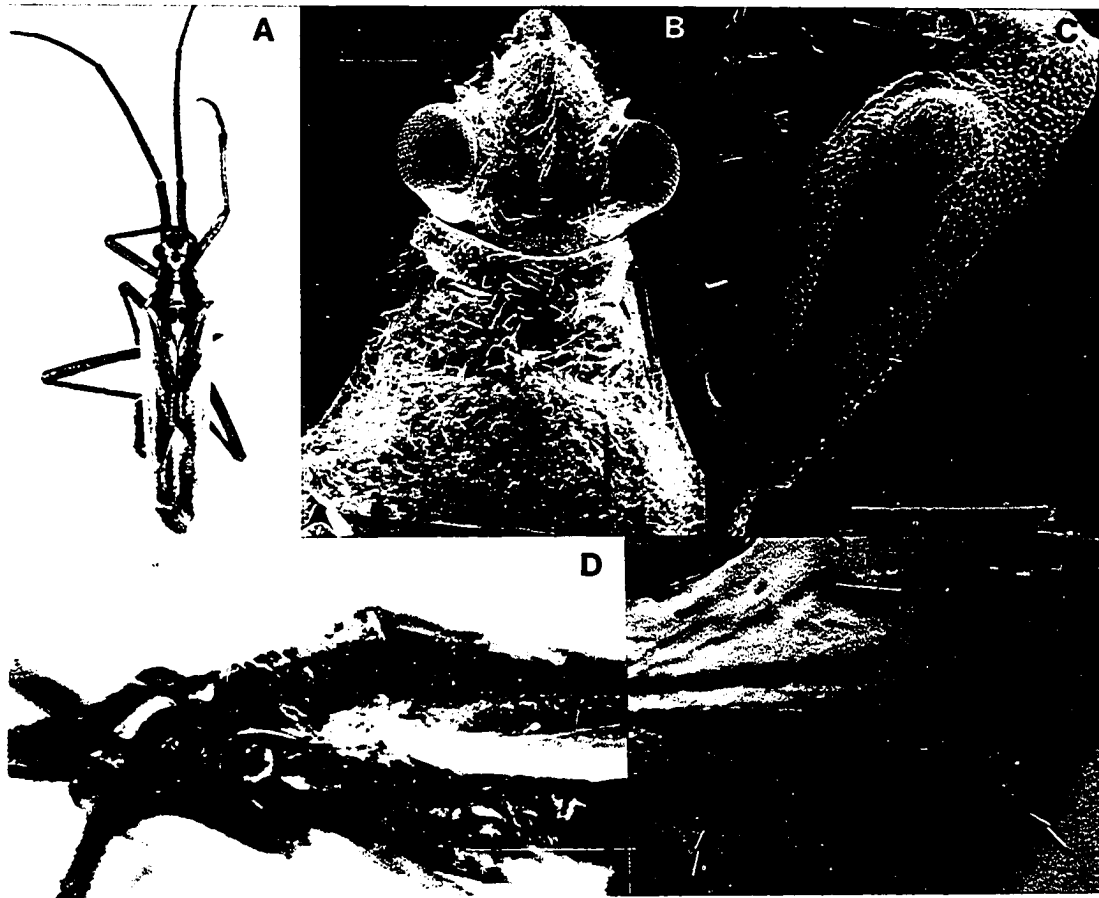


Fig. 48. Leptopterna group. A-F. Acetropis spp. A, B. Metafemoral trichobothria. A. carinatus. B. gimmerthali. C-F. americana. C, D. Lateral views of vesica. E. Posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate. F. Posterior view of posterior wall. G-L. Leptopterna dolobrata. G, H. G. Posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate. H. Posterior view of posterior wall. I, J. Lateral views of vesica. K, L. Metafemoral trichobothria. K. dolobrata. L. ferrugata.

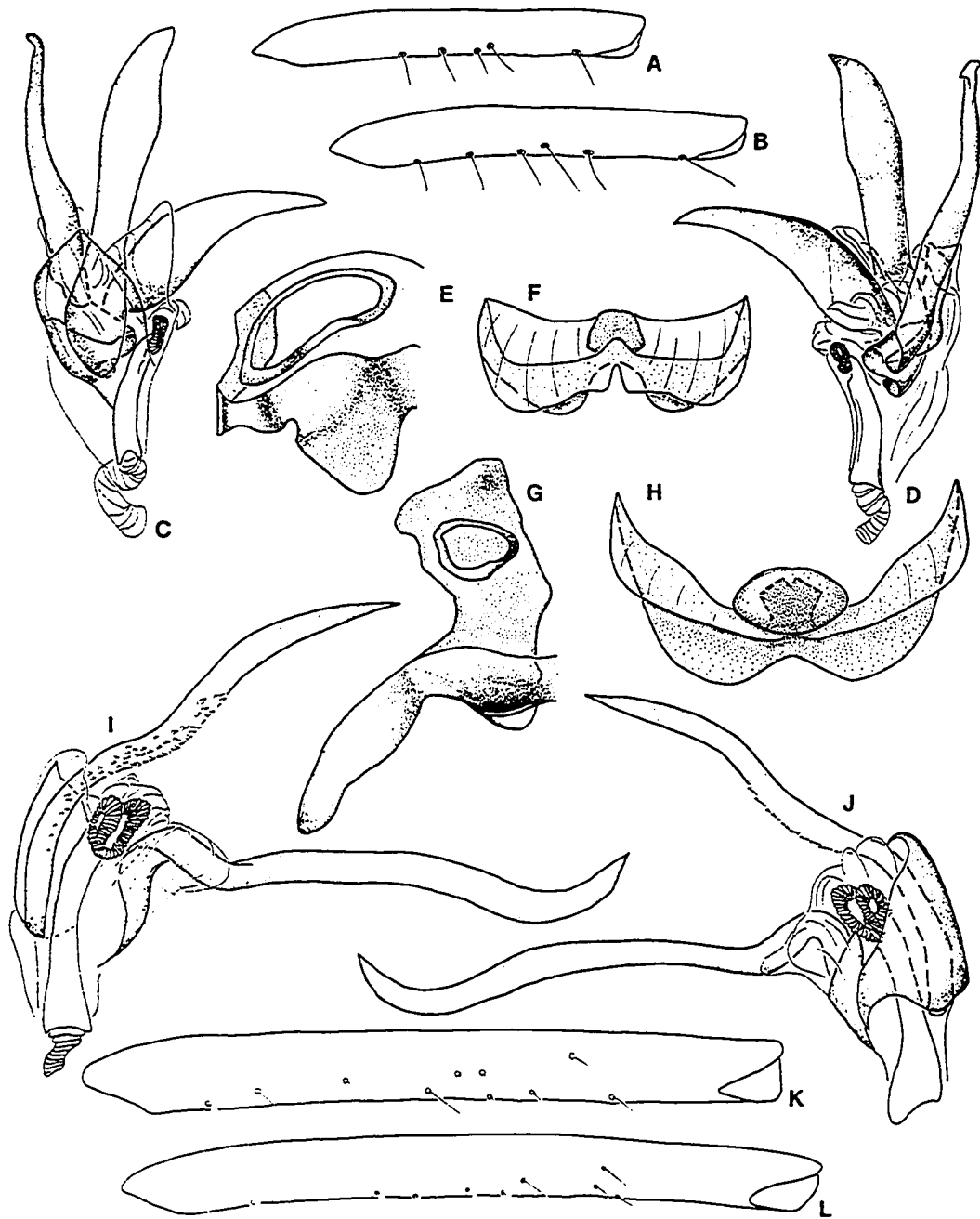


Fig. 49. Collaria group. Collaria spp. A-D. Head and pronotum. A, B. meilleurii. A. Dorsal view. B. Lateral view. C, D. oleosa. C. Dorsal view. D. Lateral view. E, F. meilleurii. E. Dorsal habitus. F. Lateral view of ostiolar peritreme. G, H. Secondary gonopore of vesica. G. guaraniana. H. oleosa.

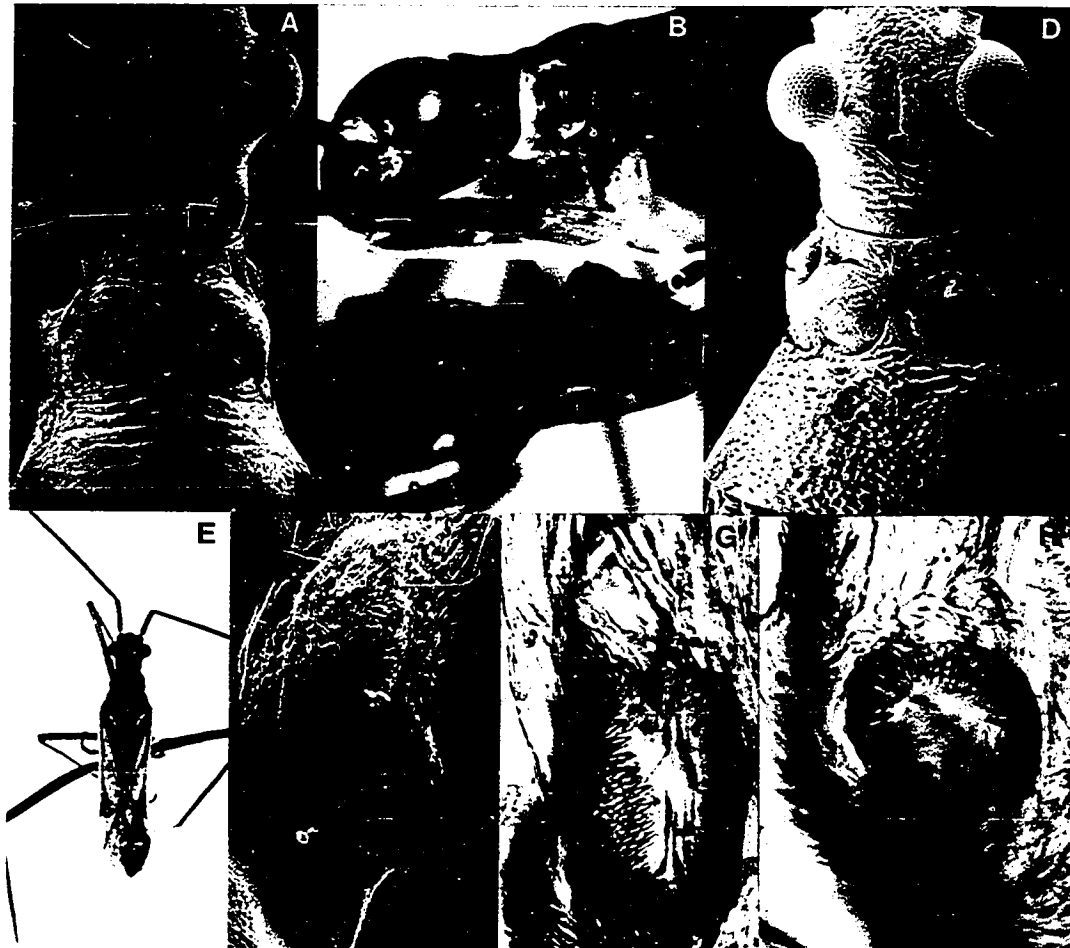


Fig. 50. Collaria group. Nabidomiris, new species, South Africa, Natal Giants Castle Park. A. Dorsal view of head and pronotum. B. Lateral view of ostiolar peritreme. C. Lateral view of head and pronotum. D. Dorsal habitus. E. Secondary gonopore of vesica. F. Pretarsus.



Fig. 51. Collaria group. A-D. Collaria spp., anterior view of vesica. A. guaraniana. B, C. oculata. B. Vesica. C. Lateral view of secondary gonopore and ductus seminis. D. New species, Peru, Junin, San Ramon de Pangoa. E-H. Nabidomiris, new species, South Africa, Natal Giants Castle Park. E. Dorsal view of genital capsule. F. Lateral view of left paramere. G. Lateral view of right paramere. H. Anterior view of vesica.



Fig. 52. Collaria group. A-J. Collaria spp. A-C. Metafemoral trichobothria. A. oleosa. B. improvisa. C. meilleurii. D-J. Female genitalia. D-F. improvisa. D. Posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate. E, F. Posterior wall. E. Posterior view. F. Anterior view. G. oculata. H. oleosa. I, J. meilleurii. I. Posterior view of posterior wall. J. Posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate. K-M. Nabidomiris, new species, South Africa, Natal Giants Castle Park. K. Metafemoral trichobothria. L. Posterior view of sclerotized rings, inter-ramal sclerotization, and ventral labiate plate. M. Posterior view of posterior wall.

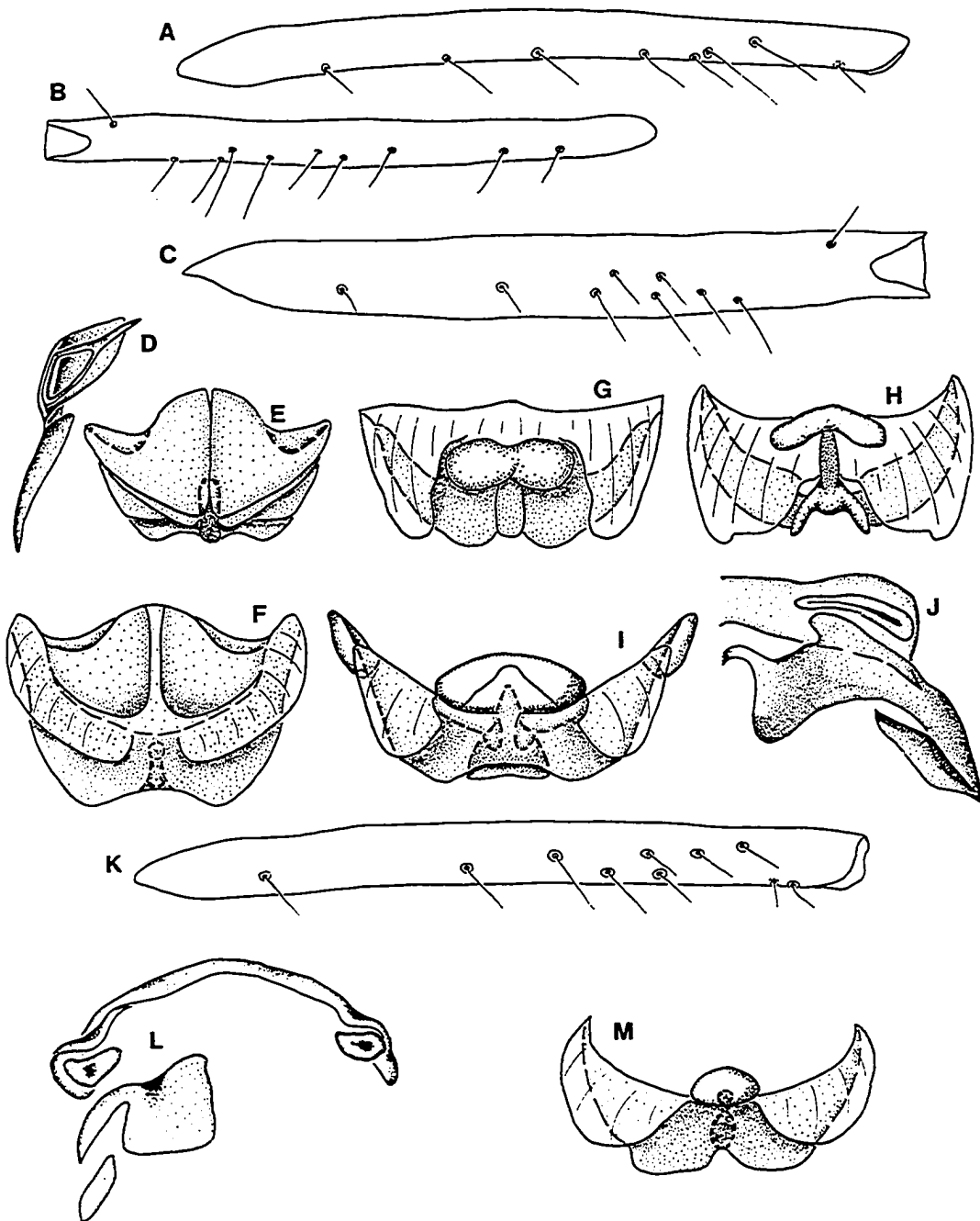


Fig. 53. Acomocera elongata. A. Dorsal view of head and pronotum. B. Lateral view of ostiolar peritreme. C. Trichobothrium. D. Lateral view of head and pronotum. E. Posterior view of inter-ramal lobe of posterior wall. F. Pretarsus.

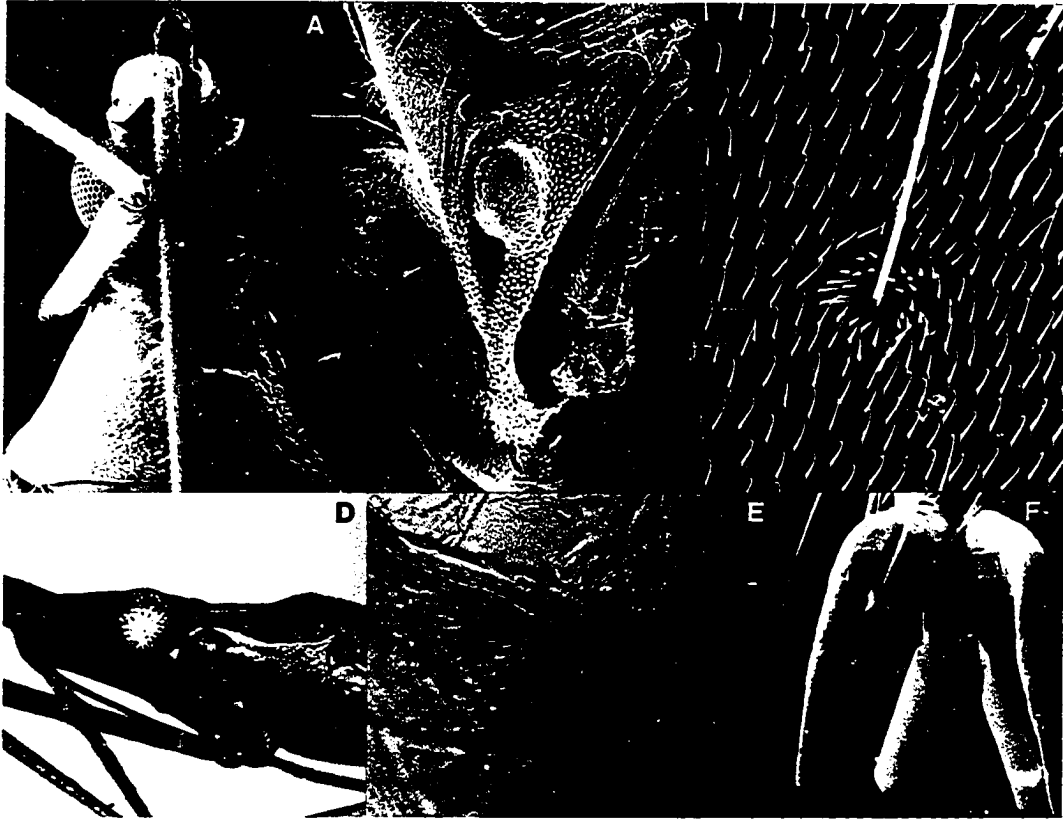


Fig. 54. Ebutius bellus. A. Dorsal view of head and pronotum. B. Dorsal habitus. C. Lateral view of ostiolar peritreme. D. Lateral view of head and pronotum. E. Lateral view of metafemora showing trichobothria.

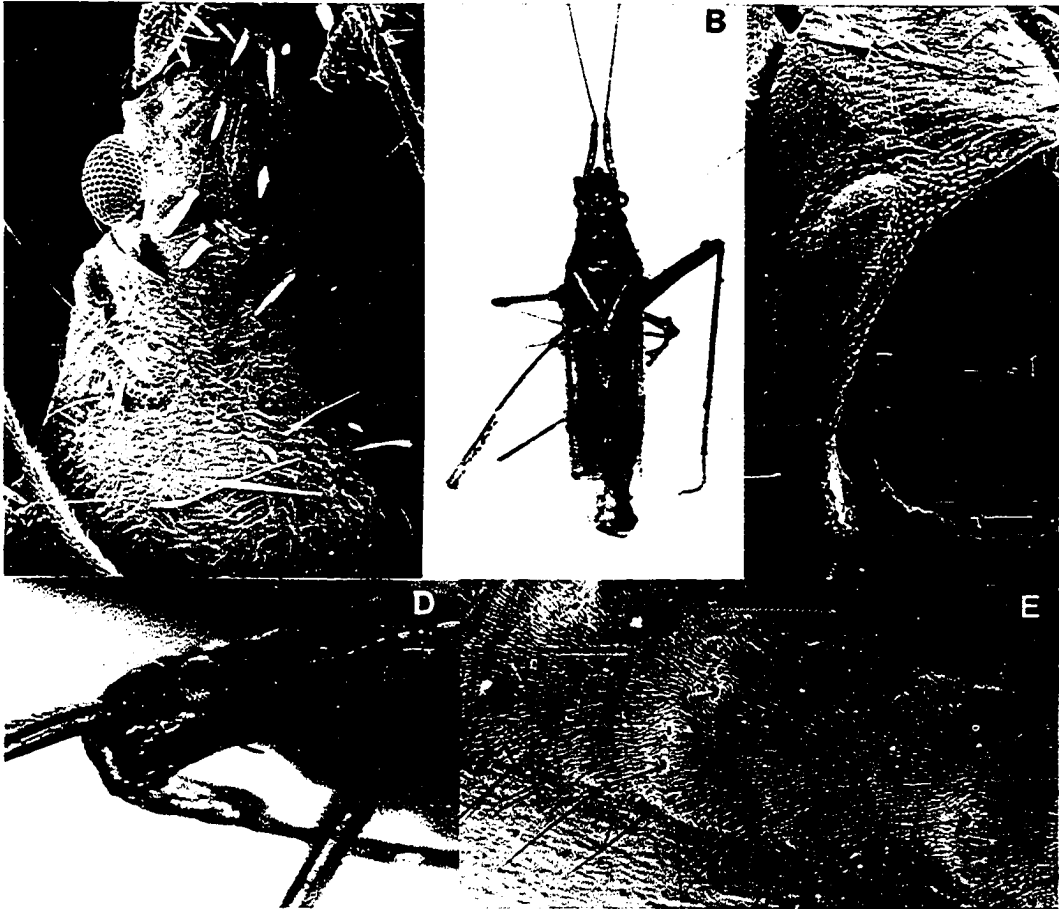


Fig. 55. Kuscheliana masatierrensis. A. Dorsal habitus.
B. Lateral view of head and pronotum. C. Pretarsus.

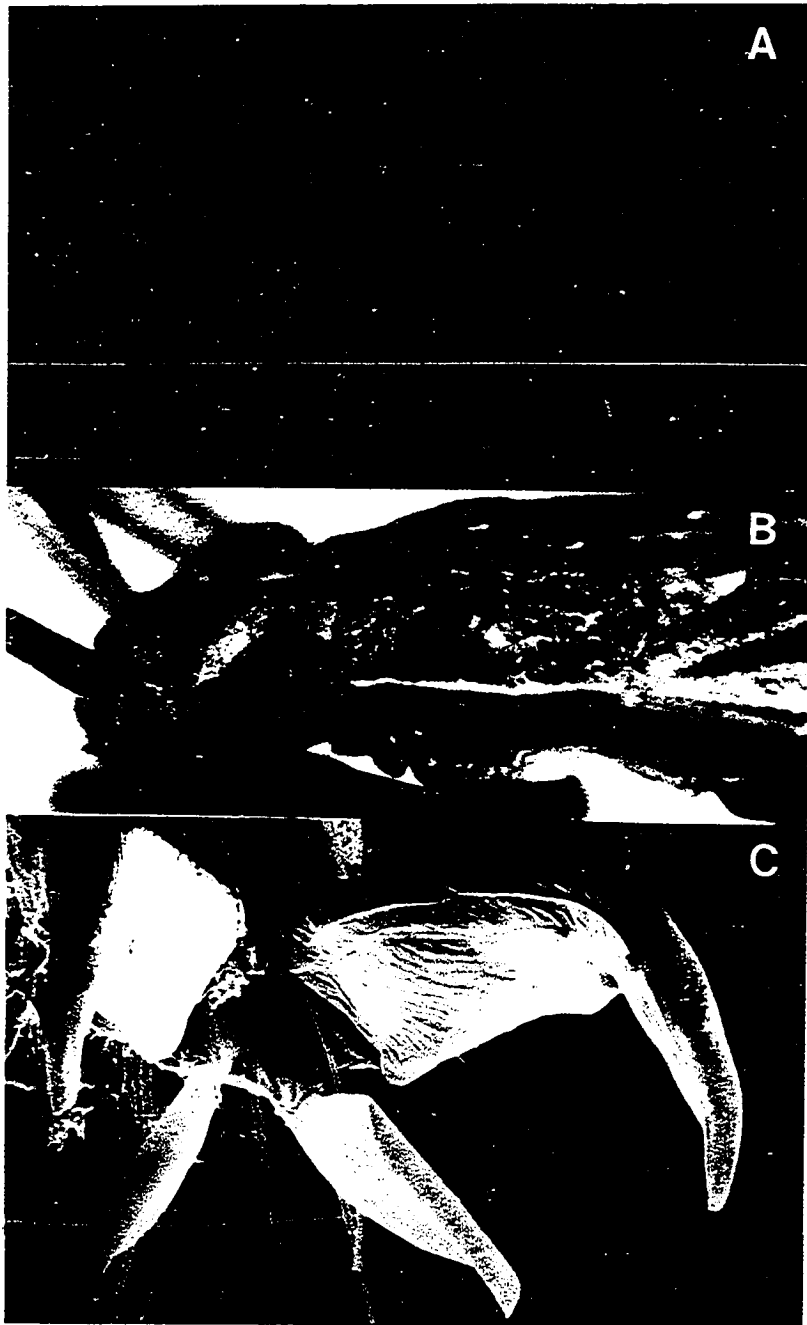


Fig. 56. Lasiomiris albopilosus. A. Dorsal view of head and pronotum. B. Lateral view of ostiolar peritreme. C. Dorsal habitus. D. Lateral view of head and pronotum. E. Pretarsus.

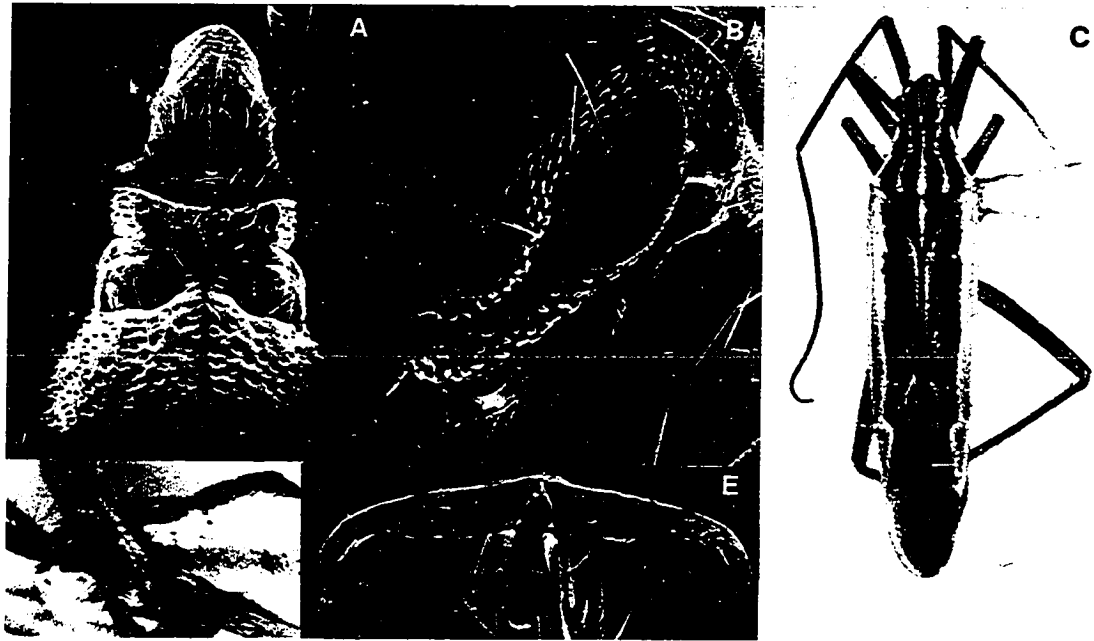


Fig. 57. Notostria erratica. A. Dorsal view of head and pronotum. B. Dorsal habitus. C. Lateral view of ostiolar peritreme. D. Lateral view of head and pronotum. E. Pretarsus.

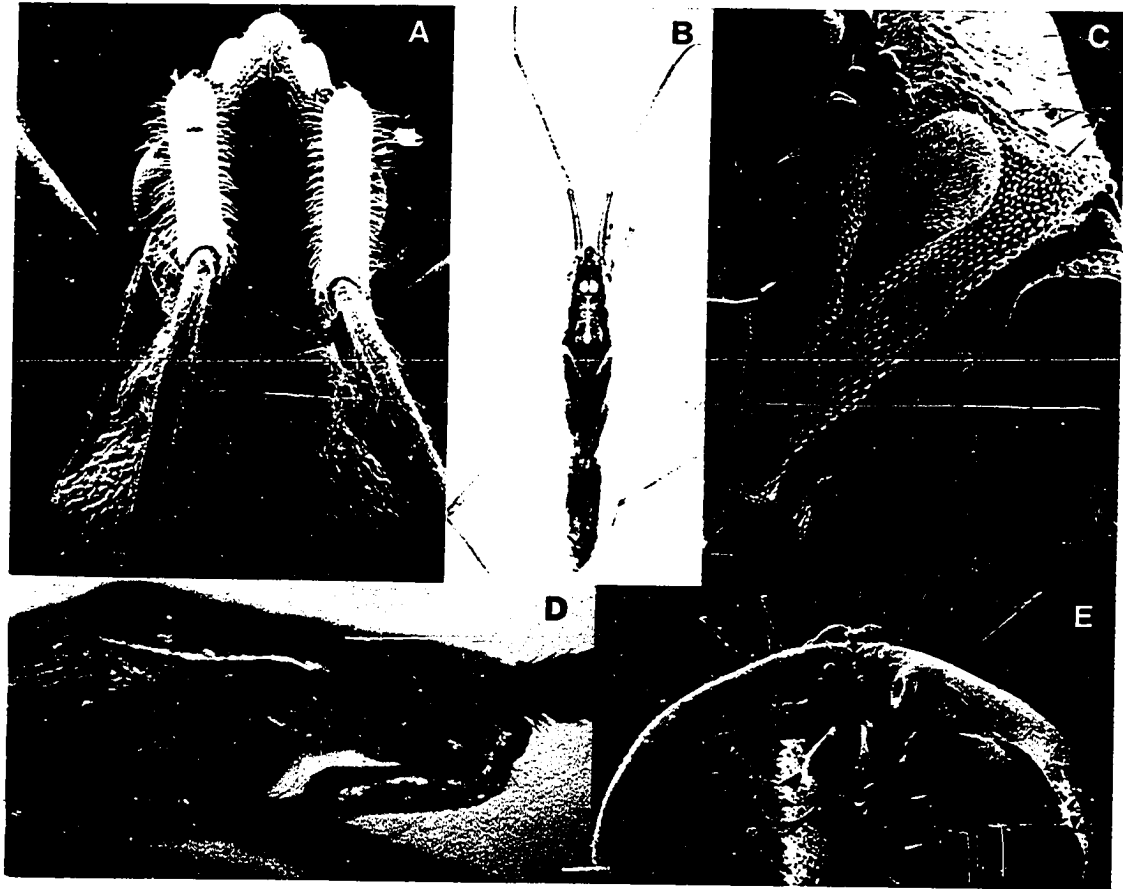


Fig. 58. Metafemoral trichobothria. A, B. Acomocera
elongata. A. Female. B. Male. C. Ebutius bellus. D.
Kuscheliana masatierrensis. E. Lasiomiris albopilosus. F. G.
Notostria spp. F. elongata. G. erratica.

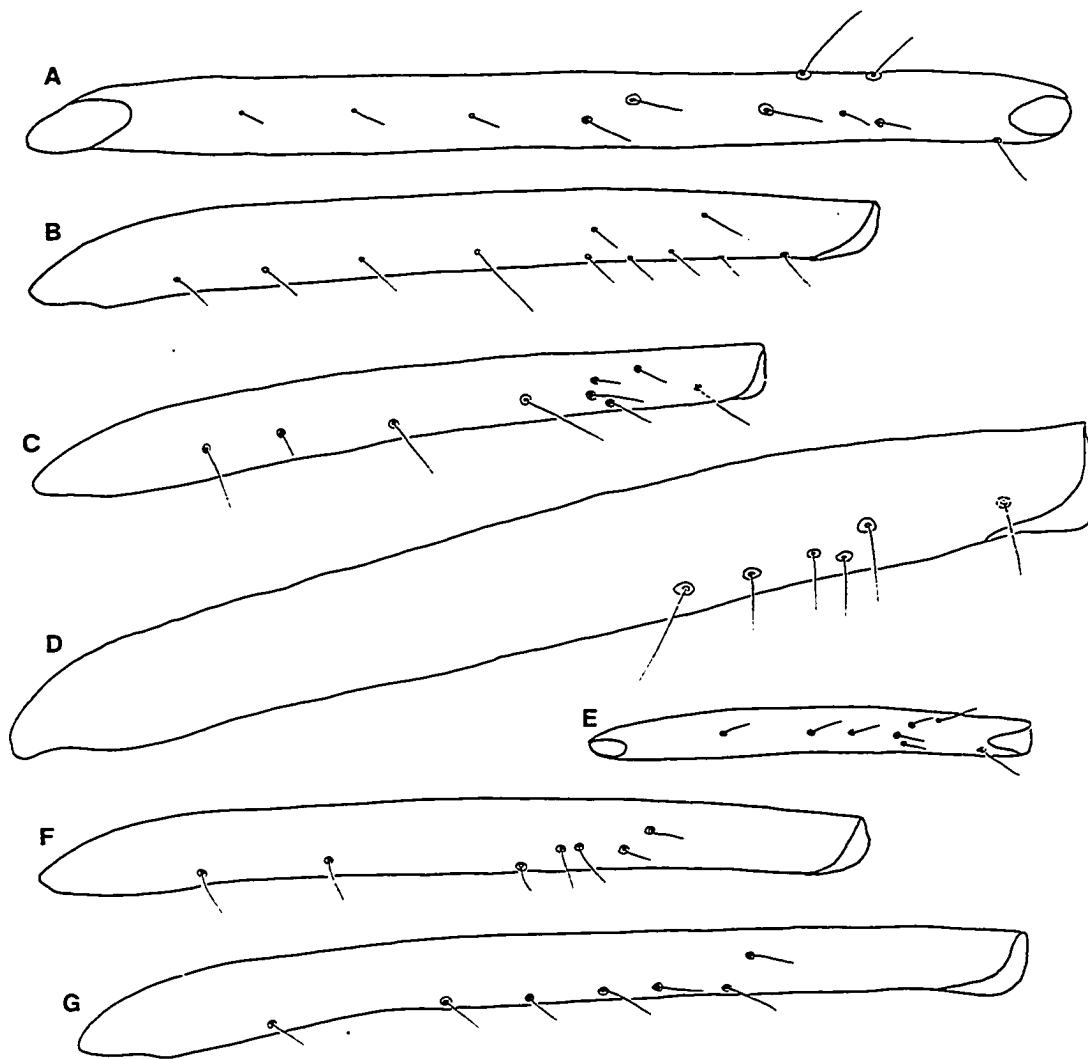


Fig. 59. Male genitalia. A. Acomocera elongata, posterior view of secondary gonopore and ductus seminis. B, C. Kuscheliana masatierrensis. B. Anterior view of vesica. C. Dorsal view of genital capsule. D. Lasiomiris albopilosus, lateral view of vesica with detail of ribbonlike strap, ductus seminis, and secondary gonopore. E-G. Notostria elongata. E. Dorsal view of genital capsule. F. Anterior view of vesica. G. Lateral view of left paramere.

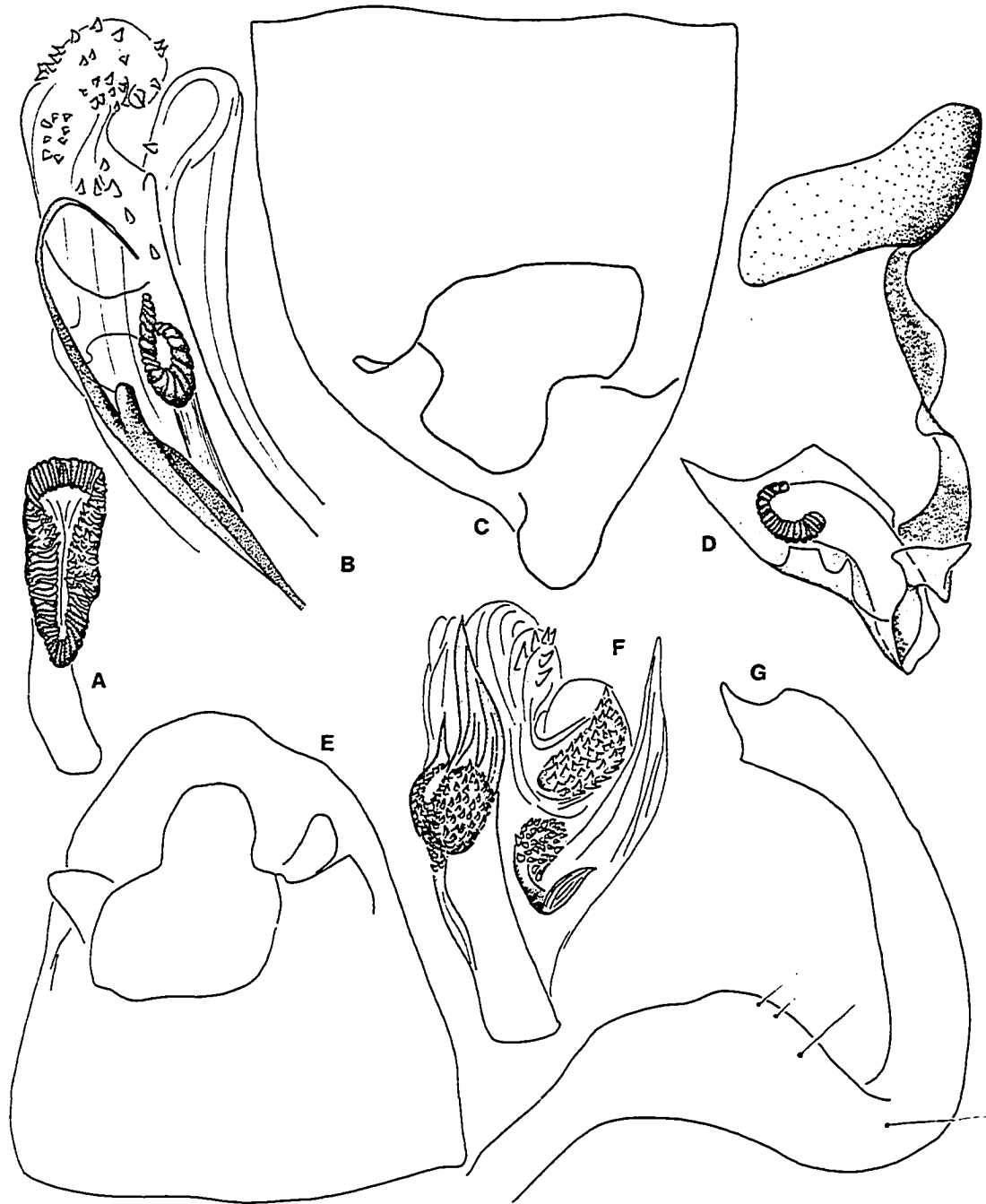
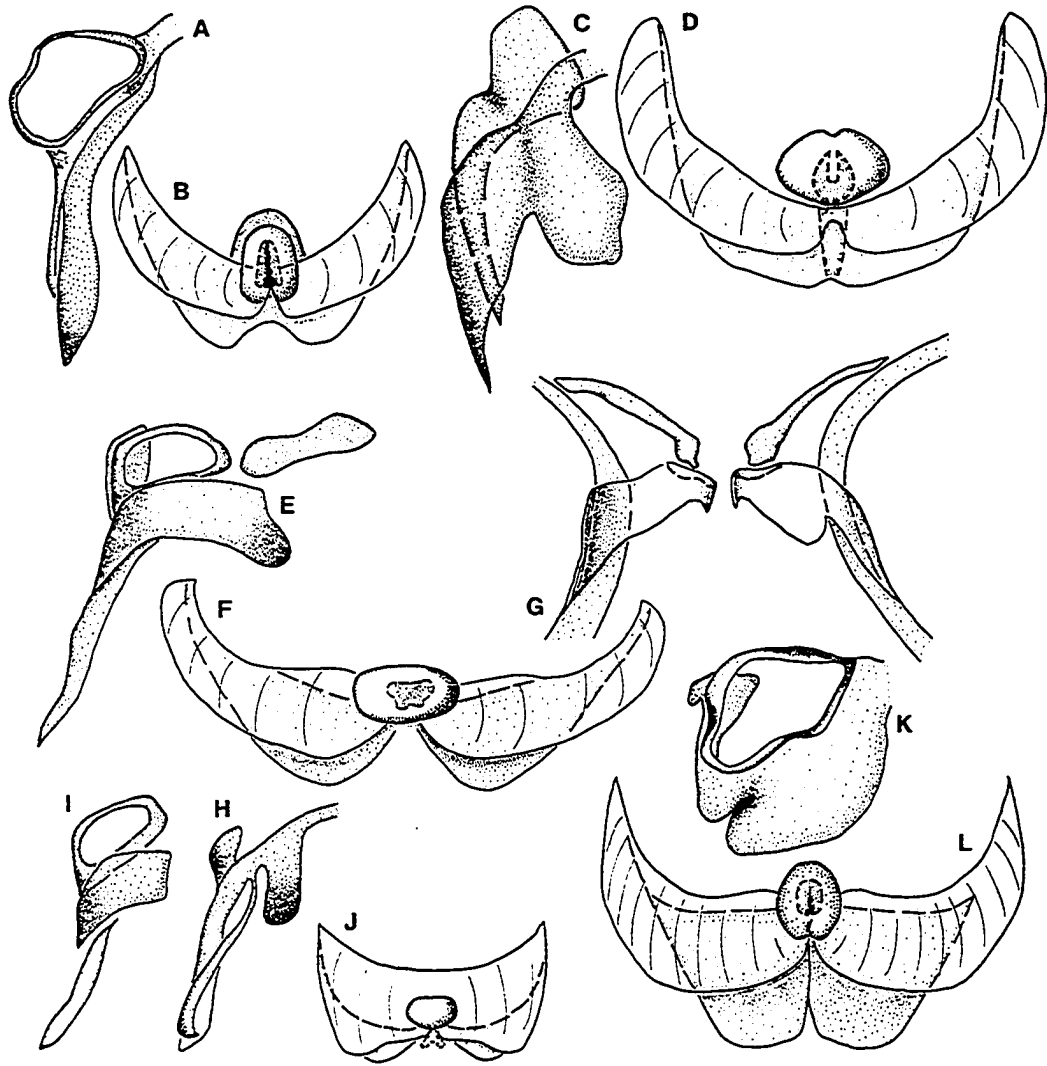


Fig. 60. Female genitalia. Posterior view of sclerotized ring, inter-ramal sclerotization, and ventral labiate plate; and posterior view of posterior wall. A, B. Acomocera elongata. A. Sclerotized ring. B. Posterior wall. C, D. Ebutius bellus. C. Sclerotized ring. D. Posterior wall. E-G. Kuscheliana masatierrensis. E. Sclerotized ring. F. Posterior wall. G. Anterior view of interior angle of valvulae. H-J. Lasiomiris spp. H. Species nr. albopilosus, New Guinea, Morobe Dist. Edie Creek, sclerotized ring. I, J. albopilosus. J. Sclerotized ring. F. Posterior wall. K, L. Notostria elongata. K. Sclerotized ring. L. Posterior wall.



APPENDIX A
LIST OF GENERA AND STRUCTURES ANALYZED*

Subfamily Mirinae:

Tribe HERDONIINI: 14 genera

Adxenetus petiolatus (Stal)[1]; Allommatisca sp.[1]; Allommatus sp.[1-5]; Barberrella sp.[2]; Closterocoris amoenus (Provancher)[1,2]; Cyphopelta modesta Van Duzee[1-5]; Dacerla alata Carvalho & Usinger[1-5]; Haarupia spinosa Poppius[1,2]; Herdonius sp.[1,2]; Lepidoxenus amyoti (Stal)[1]; Mexicomiris myrmecoris & pueblensis both Carvalho & Schaffner[1,2]; Paradacerla formicina (Parshley)[2-5]; Paraxenus guttulatus (Uhler)[1-5], two spp. from Mexico[1,2]; Xenus spp.[1,2]; Zachynthus sp.[1,2]

Tribe HYALOPEPLINI: 8 genera

Guanerius typicus Distant[1,2]; Hyalopeplinus samoanus (Knight)[2]; Hyalopeplus rama (Kirby)[2-5]; Isabel sp.[2]; Kosmiomiris rubroornatus (Kirkaldy)[2]; Macrolonius sobrinus (Stal)[2]; Onomus elegans Poppius[2]; Rambea sp.[2,4].

Tribe MECISTOSCELINI: All [1,2,3,4,5]; 3 genera

Erimiris tenuicoris Miyamoto; Mescistoscelis nigrosignatus Poppius; Mystilus antrammi Distant; M. carinatus Lansbury; M. priamus Distant

Tribe MIRINI: 43 genera

Adelphocoris rapidus (Say)[1,2]; Agnocoris rubicundus (Fallen)[1,2]; Allorhinocoris flavus Sahlberg[1,2]; Bolteria sp.[1]; Calocoris sp.[2]; Capsodes cingulatus (Fabricius)[1-5]; Capsus ater (Linnaeus)[1,2]; Creontiades sp.[2]; Dagbertus olivaceus Reuter[1,2]; Dichrooscytes sp.[1]; Dionconotus neglectus (Fabricius)[1,2]; Ectopiocerus anthracinus Uhler[1,2]; Horcias sp.[2]; Horciasinus signoreti (Stal)[2]; Horciasisca signatus (Distant)[1]; Irbisia 23 spp.[1-5]; Knightomiris distinctus (Knight)[1,2]; Lygidea mendex Reuter[1,2]; Lygidolon sp.[1,2]; Lygocoris (Apolygus) spinolae (Meyer)[1,2]; L. (Lygocoris) pabulinus (L.)[1,2]; L. (Neolygus) communis (Knight)[1,2]; L. (N.) hirticulus (Van Duzee)[1]; L. (N.) johnsoni (Knight)[1]; Lygus nubilatus Knight[1,2]; L. pratensis (Linnaeus)[1,2]; Moroca sp.[2]; Metriorhycomiris dislocatus (Van Duzee)[2]; Neoborella xanthenes Herring[1,2]; Neocapsus cuneatus Distant[1,2]; Neurocolpus arizonae Knight[1,2]; Nymannus sp.[1,2]; Orthops campestris (Linnaeus)[1,2]; O. cervinus (Herrich-Schaeffer)[1,2]; O. kalmii (Linnaeus)[1,2]; Palocoris sp.[2]; Phytocoris 5 spp.[1,2]; Pinalitus approximatus (Stal)[1,2]; Platylygus rubripes Kelton[1,2]; Polymerus sp.[1,2]; Poecilocapsus lineatus (Fabricius)[1,2]; Proba sallei (Stal)[1]; P. vittiscutis (Stal)[1,2]; Pycnocoris ursinus (Van Duzee)[1,2]; Rhasis sp.[2]; Salignus distinguendus (Reuter)[1,2]; Stenotus binotatus (Fabricius)[1,2]; Stittocapsus mexicanus Carvalho[1,2]; Taedia scrupeus (Say)[1,2]; Taylorilygus apicalis (Fieber)[1,2]; one sp. from South Africa[1,2]; Tropidosteptes sp.[2].

APPENDIX A (continued)

Tribe REATHENINI: 7 genera

Eurylomata sp.[1-5]; Kamaiurana sp.[1]; Mimoncopeltus sp.[2-5];
Oncerometopus sp.[2-5]; Platylygus sp.[2-5]; Prepops sp.[2-5];
Stenoparedra sp.[3-5].

Tribe STENODEMINI: All [1,2,3,4,5]; 28 genera.

Acetropis

americana Knight
atropis (Reuter)
carinatus (Herrich-Schaeffer)
gimmerthali (Flor)
longirostris Puton

Acomocera

elongata (Distant)
one new species

Actitocoris

signatus Reuter

Autumnimiris new genus

albescens (Van Duzee)
koebeleii (Van Duzee)
roseus (Distant)
rubicundus (Uhler)

Caracoris new genus

nigropunctatus new species

Chaetodus

longiceps Eyles
plumalis Eyles
reuteriana (White)
rutilans Eyles
two new species

Chaetofoveolocatoris

hirsuta (Knight)

Collaria

guaraniana Carv. and Fontes
improvisa Reuter
meilleurii Provancher
obscuricornis Poppius
oculata Reuter
oleosa Distant
scenica (Stal)
two new species

Dolichomiris

antennatis (Distant)
brevifrons (Odhiambo)
hirticornis Zheng
kuwayamai Miyamoto
linearis Reuter
planifrons Eyles and Carvalho
puncticerus Carvalho
punctipes Poppius
sjostedti (Poppius)
uniformis Eyles and Carvalho
two new species

Ebutius

bellus Distant

Kuscheliana

masatierrensis Carvalho

Lasiomiris

albopilosus (Lethierry)
neoguineanus Carvalho and Afonso
picturatus Zheng
five new species

Leptopterna

albescens (Reuter)
dolabrata (Linnaeus)
emeljanovi Vinokurov
euxina Vinokurov
ferrugata (Fallen)
inopinata Vinokurov
kerzhneri Vinokurov
longicornis (Reuter)
putshkovi Vinokurov
ruficornis Vinokurov

Litomiris

curta (Knight)
debilis (Uhler)
gracilis (Van Duzee)

APPENDIX A (continued)

Tribe STENODEMINI (continued):

Megaloceroeacosticollis (Berg)recticornis (Geoffroy)Mimocepsinsignis UhlerMyrmecorisgracilis SahlbergNabidomirisclypealis Poppiusgiloicus Linnavuorilongipennis Odhiambo

one new species

Neotropicomiriscostalis Carvalho and Fontesecuadorensis Carv. and Fontesnordicus Carvalho and Fontespilosus Carvalho

two new species

Notostiraelongata (Geoffroy)erratica (Linnaeus)poppiusi Reutersibirica GolubOphthalmomirisreuteri BergOpisthocasisalbocostata BergPithanusmaerkeli FieberPorpomiriscampinensis CarvalhoSchoutedenomirisacutotylus CarvalhoStenodemaBrachystiracalcaratus (Fallen)trispinosa (Reuter)Stenodemaargentina Carvalhoalgotiensis Schmidtcrassipes Kirtshenkodohrni (Stal)holsata (Fabricius)insuavis (Stal)javanicum Poppiuslaevigata (Linnaeus)longicuneatus Carvalho and Rosaspilosipes Keltonpraecelsa (Distant)sericans Fiebersibirica Bergrothturanica Reutervicina (Provancher)virens (Linnaeus)

one new species

Teratocorisantennatus (Boheman)curtulus (Reuter)caricis Kirkaldydepressus Kerzhnerdiscolor Uhlerpaludum Sahlbergsaundersi Douglas and Scottviridis Douglas and ScottTrigonotylusantennatus Keltoncoelestialium (Kirkaldy)lineatus (Butler)mexicanus Keltonruficornis (Geoffroy)tarsalis (Reuter)

APPENDIX A (continued)

Subfamily Deraeocorinae:

Tribe DERAEOCORINI:

Alloeotomus gothicus (Fallen)[1]; Deraeocoris brevis Uhler[1]; D. finisterrensis Carvalho[1]; D. fulgidus Van Duzee[1,2]; D. piceicola Knight[1]; two spp. from China[1]; Eustictus[1]; Papuacoris vittatus (Reuter)[1].

Tribe CLIVINEMINI:

Clivinema sp.[1,2].

Tribe HYALIODINI:

Hyaliodes harti Knegt.[1,2]; Annona sp.[1].

Tribe LARGIDEINI:

Largidia sp.[1,2].

*Key to structures: [1] Male genitalia, dissection; [2] Female genitalia, dissection; [3] Metaepisternal scent efferent system, scanning electron microscope (SEM); [4] Metafemoral trichobothria, compound microscope and SEM; [5] Pretarsus, SEM.

APPENDIX B
MATRIX OF CHARACTERS FOR PHYLOGENETIC ANALYSIS OF THE STENODEMINI

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
<u>Actitocoris</u>	1	0	0	1	0	0	1	1	0	1	1	1
<u>Myrmecoris</u>	1	0	0	1	0	1	1	1	0	1	1	1
<u>Pithanus</u>	1	0	0	1	0	1	1	1	0	1	1	1
<u>Mimoceps</u>	1	0	0	1	0	1	1	1	0	1	1	1
<u>Teratocoris</u>	1	1	0	1	0	1	1	1	0	0	1	1
<u>Chaetedus</u>	1	1	1	0	0	0	1	1	0	0	1	1
<u>Dolichomiris</u>	1	1	1	0	0	0	1	1	0	0	1	1
<u>Megaloceroea</u>	1	1	1	0	0	0	1	1	0	0	1	1
<u>Schoutedenomiris</u>	1	1	1	0	0	0	1	1	0	0	1	1
<u>Trigonotylus</u>	1	1	1	0	0	0	1	1	0	0	1	1
<u>Autumnimiris</u>	1	1	1	0	0	0	1	0	0	0	1	1
<u>Caracoris</u>	1	1	1	0	0	0	1	0	0	0	1	1
<u>Chaetofoveolocoris</u>	1	1	1	0	0	0	0	1	0	0	1	1
<u>Litomiris</u>	1	1	1	0	0	0	1	0	0	0	1	1
<u>Neotropicomiris</u>	1	1	1	0	0	0	1	0	1	0	1	1
<u>Ophthalmomiris</u>	1	1	1	0	0	0	0	0	0	0	1	1
<u>Opisthocasis</u>	1	1	1	0	0	0	1	0	1	0	1	1
<u>Porpomiris</u>	1	1	1	0	0	0	1	0	1	0	1	1
<u>Stenodema</u>	1	1	1	0	0	0	0	0	0	0	1	1
<u>Acetropis</u>	1	1	0	1	0	0	1	1	0	0	1	1
<u>Leptopterna</u>	1	1	0	1	0	0	1	1	0	0	1	1
<u>Collaria</u>	1	1	1	1	1	0	1	1	0	0	1	1
<u>Nabidomiris</u>	1	1	1	1	1	0	1	1	0	0	1	1

APPENDIX B (continued)
MATRIX OF CHARACTERS FOR PHYLOGENETIC ANALYSIS OF THE STENODEMINI

	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>
<u>Actitocoris</u>	1a	0	0	0	0	1	0	0	0	0	0	0
<u>Myrmecoris</u>	1a	0	0	0	0	0	0	0	0	0	0	0
<u>Pithanus</u>	1a	0	0	0	0	0	0	0	0	0	0	1
<u>Mimoceps</u>	1a	0	0	0	0	1	0	1	1	0	0	0
<u>Teratocoris</u>	1b	0	0	0	0	1	0	1	1	0	0	0
<u>Chaetedus</u>	0	0	1b	0	0	0	0	0	0	0	0	0
<u>Dolichomiris</u>	0	0	1bb	0	0	0	0	0	0	0	0	0
<u>Megaloceroea</u>	0	0	1b	0	0	0	0	0	0	0	0	0
<u>Schoutedenomiris</u>	0	0	1b	0	0	1	0	0	0	0	0	0
<u>Trigonotylus</u>	0	0	1bb	0	0	1	0	0	0	0	0	0
<u>Autumnimiris</u>	0	0	1a	0	0	0	0	0	0	0	0	0
<u>Caracoris</u>	0	0	1a	0	0	0	0	0	0	0	0	0
<u>Chaetofoveolocoris</u>	0	0	1a	0	0	1	0	0	0	1	1	0
<u>Litomiris</u>	0	0	1a	0	0	0	0	0	0	1	0	0
<u>Neotropicomiris</u>	0	0	1a	0	0	0	0	0	0	0	0	0
<u>Ophthalmomiris</u>	0	0	1a	0	0	0	0	0	0	1	0	0
<u>Opisthocasis</u>	0	0	?	?	?	?	?	?	?	?	?	?
<u>Porpomiris</u>	0	0	1a	0	0	0	0	0	0	1	0	0
<u>Stenodema</u>	0	0	1aa	0	0	1	0	0	0	1	0	0
<u>Acetropis</u>	0	0	0	1	0	1	0	0	0	0	0	0
<u>Leptopterna</u>	0	0	0	1	0	1	0	0	0	0	0	0
<u>Collaria</u>	1a	0	1e	0	0	0	0	0	0	0	0	0
<u>Nabidomiris</u>	1a	0	1e	0	0	0	0	0	0	0	0	0

APPENDIX B (continued)
MATRIX OF CHARACTERS FOR PHYLOGENETIC ANALYSIS OF THE STENODEMINI

	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>32</u>	<u>33</u>	<u>34</u>	<u>35</u>	<u>36</u>
<u>Actitocoris</u>	0	0	1c	0	1	0	0	0	0	0	0	1e
<u>Myrmecoris</u>	0	0	1a	0	1	0	0	0	0	0	1a	1f
<u>Pithanus</u>	0	0	1c	0	1	0	0	0	0	0	0	0
<u>Mimoceps</u>	0	0	1b	0	0	1	1	0	0	0	0	1c
<u>Teratocoris</u>	0	0	1b	0	0	1	1	0	0	0	0	1c
<u>Chaetedus</u>	0	0	1dd	0	0	0	0	0	1a	0	1b	1d
<u>Dolichomiris</u>	0	0	1dd	0	0	0	0	0	1a	0	1b	1d
<u>Megaloceroea</u>	0	0	1d	0	0	0	0	0	1aa	0	1b	1d
<u>Schoutedenomiris</u>	0	0	1d	0	0	0	0	0	1a	0	1b	1d
<u>Trigonotylus</u>	0	0	1d	0	0	0	0	0	1a	0	1b	1d
<u>Autumnimiris</u>	1	0	1d	0	0	0	0	1b	0	1b	0	1a
<u>Caracoris</u>	0	0	0	0	0	0	0	1a	0	0	0	1a
<u>Chaetofoveolocoris</u>	0	0	0	0	0	0	0	1a	0	1a	0	1a
<u>Litomiris</u>	1	0	0	0	0	0	0	1a	0	1a	0	1a
<u>Neotropicomiris</u>	0	0	1e	0	0	0	0	1a	0	1c	0	1a
<u>Ophthalmomiris</u>	0	0	0	0	0	0	0	1a	0	1a	0	1a
<u>Opisthocasis</u>	?	?	?	?	?	?	?	?	?	?	?	?
<u>Porpomiris</u>	1	0	0	0	0	0	0	1a	0	1a	0	1a
<u>Stenodema</u>	0	0	1e	0	0	0	0	1a	0	1a	0	1a
<u>Acetropis</u>	0	1	0	1	0	0	0	0	0	0	1c	0
<u>Leptopterna</u>	0	1	0	1	0	0	0	0	0	0	0	0
<u>Collaria</u>	1	0	1f	0	0	0	0	0	0	0	1d	0
<u>Nabidomiris</u>	1	0	1f	0	0	0	0	0	0	0	1d	0

APPENDIX B (continued)
 MATRIX OF CHARACTERS FOR PHYLOGENETIC ANALYSIS OF THE STENODEMINI

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
<u>Acomocera</u>	1	1	1	0	0	0	1	1	0	0	1	1
<u>Ebutius</u>	1	1	1	1	0	0	1	1	0	0	1	1
<u>Kuscheliana</u>	1	1	1	0	0	0	1	1	0	0	1	1
<u>Lasiomiris</u>	1	1	1	0	0	0	1	1	0	0	1	1
<u>Notostira</u>	1	1	1	0	0	0	1	1	0	0	1	1
	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>
<u>Acomocera</u>	0	0	1c	0	0	0	0	0	0	0	0	0
<u>Ebutius</u>	0	0	0	0	1	1	0	0	0	0	0	0
<u>Kuscheliana</u>	0	0	0	0	1	0	0	0	0	0	0	0
<u>Lasiomiris</u>	0	0	0	0	0	1	0	0	0	0	0	0
<u>Notostira</u>	0	0	1d	0	0	1	0	0	0	0	0	0
	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>32</u>	<u>33</u>	<u>34</u>	<u>35</u>	<u>36</u>
<u>Acomocera</u>	0	0	0	0	0	0	0	0	0	0	0	1b
<u>Ebutius</u>	0	0	0	0	0	0	0	0	0	0	0	0
<u>Kuscheliana</u>	0	0	1a	0	0	0	0	0	0	0	0	0
<u>Lasiomiris</u>	0	0	1a	0	0	0	0	0	0	0	0	0
<u>Notostira</u>	0	0	1a	0	0	0	0	0	0	0	0	0

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