A GENERIC REVISION OF THE NEW WORLD DICTYOPHARINAE (HEMIPTERA: DICTYOPHARIDAE)

by

Leo R. Donovall, III

A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Science in Entomology

Fall 2008

A GENERIC REVISION OF THE NEW WORLD DICTYOPHARINAE (HEMIPTERA: DICTYOPHARIDAE)

by

Leo R. Donovall, III

Approved: _____
Charles R. Bartlett, Ph.D.
Professor in charge of thesis on behalf of the Advisory Committee

Approved: _____
Douglas Tallamy, Ph.D.
Chair of the Department of Entomology and Wildlife Ecology

Approved: _____
Robin Morgan, Ph.D.
Dean of the College of Agriculture and Natural Resources

Approved: _____
Debra Hess Norris, M.S.
Vice Provost for Graduate and Professional Education

ACKNOWLEDGMENTS

I would like to thank: Charles Bartlett, Jason Cryan, Doug Tallamy and Cliff Kiel for their guidance in serving on my thesis committee; Anthony Gonzon, Lois O'Brien, Julie Urban and Lou Dietz for all of their assistance collecting and sending specimens, locating references and listening to and commenting on the ideas that lead to this work; the various collections managers that loaned specimens; Bob Brown for helping with the many troublespots in translating the German descriptions; and, most importantly, my wife, Sara, and our family and friends for all of their patience and support through the long hours involved in researching and writing this thesis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The subfamily Dictyopharinae (Hemiptera: Fulgoroidea: Dictyopharidae) is a loosely defined group of morphologically diverse and geographically widespread planthoppers. The most recent classification defines eleven tribes worldwide (ten extant), with 50 of the 89 genera unplaced at the tribal level. Here I treat the New World (North America, South America and Caribbean) members of Dictyopharinae, referring all extant genera to one of eight existing and proposed wholly New World tribes. Further suggestions for developing a robust phylogenetic hypothesis based on morphological and molecular datasets are discussed.

Chapter 1

INTRODUCTION AND OVERVIEW OF THE FAMILY

1.1 General Introduction

The phytophagous planthopper family Dictyopharidae Spinola, 1839 (Hemiptera: Fulgoroidea) is a cosmopolitan group with extensive morphological diversity. Dictyopharids are found on all continents except Antarctica, with highest diversity in the wet tropics. Some are specialists in arid settings (e.g., the Orgeriinae), while others are found in temperate and tropical fields, edges and forests. Most appear to be specialists on one or few host plants, while others generalize on various herbaceous or semi-woody plants (Wilson *et al.*, 1994). Among other morphological traits, head processes, wing length and texture, color and size vary greatly among taxa, adding difficulty to characterizing this group.

Among the Dictyopharidae, the Dictyopharinae Spinola, 1839 is the largest subfamily, with some 443 species in 89 genera, including more than 63% of the described family diversity. The New World members include 172 species in 36 genera, distributed from southern Canada to south-central Chile and Argentina, as well as Cuba, Jamaica, and Trinidad and Tobago (Metcalf, 1946; O'Brien and Wilson, 1985). The biology of a few taxa have been examined (e.g., *Taosa viridis* Muir, 1931 by De Quattro, 2000; *Nersia florens* Stål, 1862 by Wilson and McPherson, 1981; *Phylloscelis pallescens* Germar, 1839 by McPherson and Wilson, 1995), but information on the biology and life history of most of the Dictyopharinae is limited, particularly for Neotropical taxa. There are no published cladistic phylogenetic

investigations on the Dictyopharinae, and current tribal classification is based on the non-quantitative phenetic investigations of Emeljanov (1983a; Table 1).

The current higher taxonomy of the family Dictyopharidae, including the tribal combinations proposed here, can be summarized as follows (see also Appendix 1):

Subfamily **Aluntiinae** Emeljanov, 1979 (1 genus, 4 species)

Subfamily **Dichopterinae** Emeljanov, 1979 (2 genera, 12 species)

Subfamily **Dictyopharinae** Onuki, 1901

- Tribe **Cladodipterini** Melichar, 1912 (3 genera, 14 species)
- Tribe **Cleotychini** Emeljanov, 1997 (1 genus, 1 species)
- Tribe **Dictyopharini** Melichar, 1912 (47 genera, 236 species)
- Tribe **Hastini** Emeljanov, 1983 (2 genera, 18 species)
- Tribe **Igavini** *tribus nov.* (7 genera, 18 species)
- Tribe **Lappidini** Emeljanov, 1983 (2 genera, 19 species)
- Tribe **Nersiini** Emeljanov, 1983 (8 genera, 28 species)
- Tribe **Orthopagini** Emeljanov, 1983 (6 genera, 26 species)
- Tribe **Rhynchomitrini** *tribus nov.* (9 genera, 26 species)
- Tribe **Scoloptini** Emeljanov, 1983 (4 genera, 39 species)
- Tribe **Sicorini** *tribus nov.* (1 genus, 1 species)
- Tribe **Taosini** Emeljanov, 1983 (1 genus, 17 species)

Subfamily **Dorysarthrinae** Emeljanov, 1979 (1 genus, 4 species)

Subfamily **Capeninae** Emeljanov, 1979 (3 genera, 7 species)

Subfamily **Lyncidinae** Muir, 1930

- Tribe **Lyncidini** Schmidt, 1915 (5 genera, 9 species)
- Tribe **Risiini** Fennah, 1962 (1 genus, 10 species)

Subfamily **Orgeriinae** Fieber, 1872

Tribe **Colobocini** Emeljanov, 1969 (1 genus, 1 species)

Tribe **Orgeriini** Fieber, 1872

Subtribe **Almanina** Kusnetzov, 1936 (15 genera, 100 species)

Subtribe **Orgeriina** Fieber, 1872 (11 genera, 41 species)

Subtribe **Ototettigina** Emeljanov, 1969 (2 genera, 7 species)

Tribe **Ranissini** Emeljanov, 1969 (6 genera, 45 species)

Subfamily **Strongylodematinae** Emeljanov, 1979

Tribe **Capocleini** Emeljanov, 2004 (1 genus, 1 species)

Tribe **Strongylodematini** Fennah, 1962 (4 genera, 9 species)

This study is a taxonomic review of the New World genera of Dictyopharinae, performed as an initial step in investigating the phylogenetic relationships between the subfamilial and tribal phylogenetic relationships within the Dictyopharidae. Particular emphasis is placed on examining Emeljanov's (1983a) revision of the subfamily, with amendments to his tribal definitions and introduction of new tribes. The goals of this project are to provide parallel, clearly defined generic descriptions, identification keys, and illustrations of diagnostic traits, as well as to offer new tribal combinations for phylogenetic analysis. A world checklist of Dictyopharidae is provided, including critical synonymies since the Metcalf (1946) catalogue arranged according to the tribal classification proposed here (Appendix 1). Host plant records are provided for each New World genus (Appendix 2); geographic distributions for all New World genera of Dictyopharinae are also provided (Appedix 3).

1.2 Family Features

The Dictyopharidae are defined by a combination of characters. Overall, members of this group range from 3-33 millimeters long (O'Brien and Wilson, 1985) and resemble the Fulgoridae, the putative sister group to the Dictyopharidae (Emeljanov, 1979b; Bourgoin *et al.* , 1997; Urban and Cryan, 2007). The most diagnostic characters are the presence of a row of spines at the apex of the second hind tarsomere plus either a cephalic process or two to three median carinae on the frons (O'Brien and Wilson, 1985). In Fulgoridae, both the fore- and hindwings are usually elaborately colored, and the anal area of the hindwings is reticulate with many crossveins. The wings of dictyopharids are generally transparent, although some macropters (long, membranous wings) bear patterned, and brachypters (short and thickened or tegminous wings) opaque, forewings. The anal area of the hind wings are not reticulate, although most species bear apical crossveins in the hind wings (O'Brien and Wilson, 1985). The legs are usually slender and elongate, with three to five stout spines along the posterior margin of the hind legs; the front femora and/or tibiae are expanded in some taxa (as in *Phylloscelis* Germar, 1839).

The Dictyopharidae are wing polymorphic at the family and species level, containing both macropterous (long, hyaline wings, claval suture present) and brachypterous (short, leathery wings, claval suture absent) forms. The known faunas of Lyncidinae Muir, 1930 and Orgeriinae Fieber, 1872 are wholly brachypterous, while Dichopterinae Melichar, 1912 and Dorysarthrinae Emeljanov, 1979b contain solely macropterous forms. Within the Dictyopharinae, wing polymorphism (both wing forms present) is found within *Scolops* Schaum, 1850 and *Phylloscelis*, while all other genera have been found to be either wholly macropterous or wholly

brachypterous (Metcalf, 1946; Emeljanov, 1983a). *Brachytaosa* Muir, 1931 exhibits long-winged forms with intervenous membranous areas leathery. The Chilean genus *Sicorisia* Melichar, 1912 is considered brachypterous, with non-flying hind wings and shortened, leathery forewings exposing the apical segments of the abdomen. Excluding *Scolops* and *Phylloscelis*, the clavus lacks cross veins, the wings are transparent and extend far beyond the tip of the abdomen and are held roof-like over the abdomen in all but a few unplaced (at the tribal level) Dictyopharinae (Melichar, 1912; Metcalf, 1938).

The major morphological features defining genera include the presence and relative length of vertical, frontal, and thoracic carinae (specifically the length of the median carinae of the vertex and frons); the shape of intermediate and lateral carinae in relation to median carinae; and the occurrence of pale carinae on the tegulae. Wing venation (Fennah, 1944b; Emeljanov, 1979b), the pretarsus (Fennah, 1945a; Doering, 1956), genitalia (Fennah, 1945b; Emeljanov, 1983b), seminal follicles (Kuznetsova, 1985), and egg structure (Pyka-Fosciak *et al.*, 2003) contain important characters in distinguishing among families of the Fulgoroidea, as a whole. These regions also contain important characters in distinguishing taxa within the Dictyopharidae, as well. Emeljanov (1969, 1993, 1994, 2001) also found nymphal characters to be important in determining relationships within the Orgeriinae (*s.l.*). The shape of the legs is important as well, with some groups exhibiting foliaceous, or antero-posteriorly flattened, pro- and mesothoracic legs (e.g. *Scolops*, *Phylloscelis*, *Cladodiptera* Spinola, 1839, *Diacira* Walker, 1858, and some Orgeriinae).

1.3 Taxonomic History

The family Dictyopharidae contains 693 species in 144 genera worldwide (updated from Metcalf, 1946; O'Brien and Wilson, 1985), distributed among 19 tribes in eight subfamilies (Emeljanov, 1983a; Appendix 1). Germar (1833) defined the genus *Dictyophara* within the Fulgoridae; Desmarest (1849) later established *Fulgora europaea* Linnaeus, 1767 as the type. Spinola (1839) subsequently raised *Dictyophara* to subfamily status within the Fulgoridae and included three new genera: *Cladodiptera, Plegmatoptera* Spinola, 1839 and *Dichoptera* Spinola, 1839. Fieber (1872) recognized the "Orgeriae" (currently Orgeriinae Fieber, 1872) as distinct, dividing the Dictyopharinae into two subfamilial groups. Melichar (1902, 1912) raised Dictyopharidae to family status and recognized three tribes: Dictyopharini, Dichopterini, and Bursini. Muir (1930) recognized the Bursini as a junior synonym of Orgeriini, and referred *Lyncides* Stål, 1866, *Intandela* Hesse, 1925, *Lagoana* Melichar, 1905, *Euhiracia* Melichar, 1908, and *Bananellodes* Strand, 1928 (currently in Tropiduchidae), to the new tribe Lyncidini.

The Metcalf catalogue (Metcalf, 1946) provided the first checklist and exhaustive synonymies of world dictyopharid species. This catalogue showed all revisionary changes for all species ever included in Dictyopharidae, including those that had been moved to other families. Metcalf used a classification modified from Melichar (1912), with two subfamilies, Dictyopharinae and Orgeriinae. The Dictyopharinae included two tribes, Dictyopharini and Dichopterini (with subtribes Dichopterina and Cladodipterina); Orgeriinae also included two tribes, Orgeriini and Lyncidini.

The current higher taxonomy of the Dictyopharidae is largely the product of taxonomic revisions made by Fennah (1962) and Emeljanov (1969, 1979). Based on South African taxa, Fennah (1962) revised the Orgeriinae, describing two new tribes: Risiini and Strongylodematini. Emeljanov (1969) elevated Lyncidini (*s.l.*) and Orgeriini (*s.l.*) to subfamily, and recognized 7 tribes between them: Lyncidini (*s.s.*), Strongylodematini, Risiini and Capenini within Lyncidinae; and Orgeriini (*s.s.*), Ranissini, and Colobocini within Orgeriinae. While attempting to clarify the distinctions between Dictyopharidae and Fulgoridae, Emeljanov (1979) established new monotypic subfamilies for *Dorysarthrus* Puton, 1895 (Dorysarthrinae) and *Aluntia* Stål, 1866 (Aluntiinae) and elevated Dichopterini, Capenini, and Strongylodematini to subfamily status (Dichopterinae, Capeninae and Strongylodematinae, respectively); Emeljanov moved all of these new subfamilies, along with Lyncidinae, to Fulgoridae. However, the distinctions between Fulgoridae and Dictyopharidae remain dubious and are badly in need of taxonomic and phylogenetic analysis, so these subfamilies are considered Dictyopharidae until further analyses can be performed.

Other taxonomic changes have occurred within Dictyopharidae since Metcalf's catalogue (1946) and the revisions made by Fennah (1962) and Emeljanov (1969, 1979), all of them produced by Emeljanov (1983a, 1997, 2001, 2003, 2006). Emeljanov (1983a) suggested that Dictyopharini (*sensu* Metcalf, 1946) was not a natural group (i.e. polyphyletic) based on wing venation and female genitalic characters of fossil and extant species, defining eight new tribes: Netutelini (extinct), Orthopagini, Lappidini, Nersiini, Hastini, Taosini, Scoloptini, and Phylloscelini; all of Emeljanov's tribes remained in Dictyopharinae (see Table 1 for New World taxa). He

later introduced Cleotychini (1997) in Dictyopharinae and Capocleini (2004) in Strongylodematinae. Emeljanov's revisions of the Dictyopharidae form a hypothesis for phylogenetic analysis.

Table 1. Published (i.e. current) tribal classification of the Dictyopharinae found in the New World (Emeljanov, 1983).

Tribes	**Genera**
Cladodipterini	*Cladodiptera*, *Diacira*
Dictyopharini	*Dictyophara*
Nersiini	*Digitocrista*, *Hyalodictyon*, *Nersia*, *Paralappida*, *Pharodictyon*, *Pteroplegma*, *Retiala*, *Toropa*, *Trimedia*
Lappidini	*Lappida*
Taosini	*Mitrops*, *Protachilus*, *Rhynchomitra*, *Taosa*
Phylloscelini	*Phylloscelis*
Scoloptini	*Scolops*
incertae sedis	*Brachytaosa*, *Dictyopharoides*, *Dorimargus*, *Eudictya*, *Hydriena*, *Igava*, *Megadictya*, *Melicharoptera*, *Myrophenges*, *Neomiasa*, *Parahasta*, *Paramisia*, *Plematoptera*, *Sicoris*, *Sicorisia*, *Taractellus*, *Trigava*

Regional treatments (e.g. Fennah, 1944c, 1945c, 1947, 1965; Wilson and McPherson, 1981; Wilson *et al.*, 1994) have resulted in a clearer understanding of the taxonomic relationships among the North American and Old World faunas; however,

the South American taxa remain poorly studied. Emeljanov (1983a) did not place 17 New World genera (and 32 Old World) into tribes, while others were provisionally placed. Emeljanov's tribal designations suggest that New World genera are not closely related to Old World genera. Only two genera of Dictyopharinae (*Dictyophara* and *Nersia* Stål, 1862) presently contain Old and New World elements, but those genera may be paraphyletic. Fennah (1944) suggested that New World *Dictyophara* were not congeneric with the type species, *Dictyophara europaea* (Linnaeus, 1767); and Emeljanov (2003) limited *Dictyophara* to the Palaearctic, rendering the 12 New World species *incertae sedis*, but remaining within *Dictyophara* until they are placed. Fennah (1944) also suggested paraphyly in *Nersia*; however, his contention remains uninvestigated, and *Nersia* currently retains members from both the New World and Africa.

Chapter 2

MATERIALS AND METHODS

2.1 Materials Examined

A total of 1,543 specimens were examined and included in this study. Collection abbreviations follow Arnett *et al* . (1993), except as noted (Table 2). Specimens were examined using a Wild binocular dissecting stereoscope with 10x oculars and a 6-50x objective lens with a dual-arm fiber optic illuminator. Dorsal, lateral, frontal, and wing photographs were produced at the New York State Museum using a Syncroscopy Automontage digital imaging system, with scale bars inset. Line drawings of wing venation were produced by tracing photographs printed onto 25% rag vellum tracing paper, and sketching the veins, margins, and scale bars.

Table 2. Number of specimens examined by collection. Codons follow Arnett *et al.* (1993); author-defined codons not treated by Arnett *et al.* are in **bold**.

Codon	Collection	Specimens
AMNH	Insect Collection, Department of Entomology, American Museum of Natural History, Central Park West at 79th St., New York, NY 10024-5192	59
ANSP	Department of Entomology, Academy of Natural Sciences, 19th and the Parkway, Philadelphia, PA 19103	137

Table 2 (*Continued*).

Codon	Collection	Specimens
BMNH	Department of Entomology, The Natural History Museum, London SW7 5BD	30
CDAE	California State Collection of Arthropods, Analysis and Identification Unit, California Department of Food & Agriculture, 1220 North St., Rm. 340, Sacramento, CA 95814	15
DFLC	**Personal Collection of Duane Flynn; Affiliated with the Entomology Collection, Shiele Natural History Museum, 1500 E. Garrison Blvd., Gaston, NC 28054**	**86**
FMNH	Insect Collection, Field Museum of Natural History, Roosevelt Road and Lake Shore Drive, Chicago, IL 60605	51
INHS	Illinois Natural History Survey Insect Collection, 607 E. Peabody Drive, Champaign, IL 61820	80
IRCW	Insect Research Collection, Department of Entomology, 346 Russell Labs., 1630 linden Drive, University of Wisconsin, Madison, WI 53706	113
LBOB	**Personal Collection of Lois B. O'Brien; Affiliated with California Academy of Sciences**	**180**
LSUC	Louisiana State University Insect Collection, Department of Entomology, Louisiana State University, Baton Rouge, LA 70803-1710	4
MZHF	Zoological Museum, Finnish Museum of Natural History, University of Helsinki, P. Rautatiek 13, SF-00100 Helsinki	76

Table 2 (*Continued*).

Codon	Collection	Specimens
*NHMW	Naturhistorisches Museum Wien, Postfach 417, Burgring 7, 1040 Wien	1
NNZC	**Personal Collection of Nate. H. Nazdrowicz; Affiliated with Department of Entomology and Wildlife Ecology Collection, University of Delaware, Newark, DE 19717**	**1**
NYSM	Insect Collection, New York State Museum, Biological Survey, 3132 Cultural Education Center, Albany, NY 12230	4
STDC	**Personal Collection of Sean T. Dash; Affiliated with Entomology Collection, Centennial Museum of Natural and Cultural History, University of Texas at El Paso, El Paso, TX 79968-0519**	**11**
UCDC	The Bohart Museum of Entomology, University of California, Davis, CA 95616	68
UDCC	Department of Entomology and Wildlife Ecology Collection, University of Delaware, Newark, DE 19717	271
*USNM	United States National Entomological Collection, Department of Entomology, U.S. National Museum of Natural History, Washington, DC 20560	225
UTEP	**Entomology Collection, Centennial Museum of Natural and Cultural History, University of Texas at El Paso, El Paso, TX 79968-0519**	**35**

Table 2 (*Continued*).

Codon	Collection	Specimens
WFBM	W. F. Barr Entomological Collection, Entomology Division, Department of Plant, Soil, and Environmental Sciences, University of Idaho, Moscow, ID 83843	7
WSUC	James Entomological Collection, Department of Entomology Collection, Washington State University, Pullman, WA 99163	89
	Total Specimens	1543

Specimens of all available Dictyopharinae species were examined. Primary type specimens, particularly for the type species of each genus, were examined when available to verify identifications. When primary types were unavailable, paratypes or authoritatively identified specimens were examined to obtain generic characters. Specimens not authoritatively identified to species were used only to examine generic level variability. All specimens used in determining generic characters and their variability were recorded and listed following the generic description (see Chapter 3). Primary and secondary type materials were listed separately from other material examined. Each was recorded in the following format:

"Type Material Examined:

'*G. species* ' 'Author' ('number examined'). Paratypes ('number examined'): '**COUNTRY'**: 'STATE': '<u>County'</u>, 'locality', 'global positioning coordinants', 'date', 'collector', 'collecting method', 'additional information' (COLLECTION ACRONYM: 'number examined' ♂, 'number examined' ♀); …"

All specimens listed share the provided generic characters. When wing polymorphism is present (*Scolops* and *Phylloscelis*), wing forms were indicated with "m" signifying "macropterous" and "b" signifying "brachypterous" forms, i.e.:

"… ('COLLECTION ACRONYM': 'number examined' ♂b, 'number examined' ♀b, 'number examined' ♂m, 'number examined' ♀m); …"

2.2 Species Synonymy List

The species and synonymies list (Appendix 1) contains all combinations and nomenclatural acts since Metcalf's (1946) catalogue. Classifications are modified from Metcalf, and updated using subfamilial and tribal revisions by Emeljanov (1969 [Orgeriinae, Lyncidinae, Strongylodematinae], 1979 [Dichopterinae, Dorysarthrinae], 1983a [Dictyopharinae], 1997 [Cleotychini], 2003 [*Dictyophara*], 2004 [Capocleini]. 2006 [Orgeriinae]), as well as the tribal revisions proposed here. Because the relationship between Dictyopharidae and Fulgoridae remains equivocal (Emeljanov, 1979b), taxa traditionally included in Dictyopharidae are included here even if

tentatively reassigned to Fulgoridae (i.e. Dichopterinae and Strongylodematinae). The following conventions were used in the species synonymy list:

- Taxon listings consist of the current name plus author, year of description, and, when applicable, the page number of the taxon's listing in the Metcalf (1946) catalogue. The known distributions were listed alphabetically under current political entities.
- Nomenclatural acts are indented and preceded by an equals (=) sign. These citations are only included when the action was not recorded in Metcalf's catalogue. These include:

    - Recently described taxa
    - Genus and species synonymies
    - Revised combinations – when necessary, followed by parenthetical explanatory notes

- Genus and subgenus listings include type species and author designating species. Listings followed by "(by original designation)" are type species that were described during the original description of the genus.

2.3 Morphological Overview

Descriptive works in Dictyopharidae may be difficult to compare because of the lack of a consistent terminology. There are no contemporary, definitive works that

provide a clear morphological nomenclature for Dictyopharidae. The morphological terminology used in this work incorporates the ideas from general descriptive taxonomic literature (viz. Snodgrass, 1935) with changes as indicated. Though the terminology used here is not necessarily universally accepted, an attempt has been made to provide a clear description of the anatomical position of each term.

THE HEAD

(Figure 1)

In many dictyopharids, the head is produced forward into a cephalic process anterad of the eyes. The entire dorsum of the head, including the cephalic process, is here called the vertex. The entire ventral surface of the head, including the cephalic process, from the frontoclypeal suture to the fastigium (the inflection between the dorsum and front), is here called the frons.

The vertex is generally bordered by carinae – the anterior (forward-most), lateral (sides), and posterior (hind-most) carinae – and includes the dorsal surface of the cephalic process. The lateral carinae may be expanded apically or constricted just anterad of the eyes. The vertex may also include a median carina, which is considered "complete" when it extends, unbroken, from margin to margin.

The frons is the face of the insect separated from the clypeus by the frontoclypeal suture, from the vertex by a carina at the fastigium and from the genal region and eyes by a distinct "lateral" carina, creating a frontal "plate". Generally, there is a single median carina, considered "complete" when extending from the fastigium to the frontoclypeal suture. Between the median and lateral carinae, intermediate carinae may also be present. The intermediate carinae may be absent anteriorly or posteriorly, but, when "complete", usually meet the median carina at or

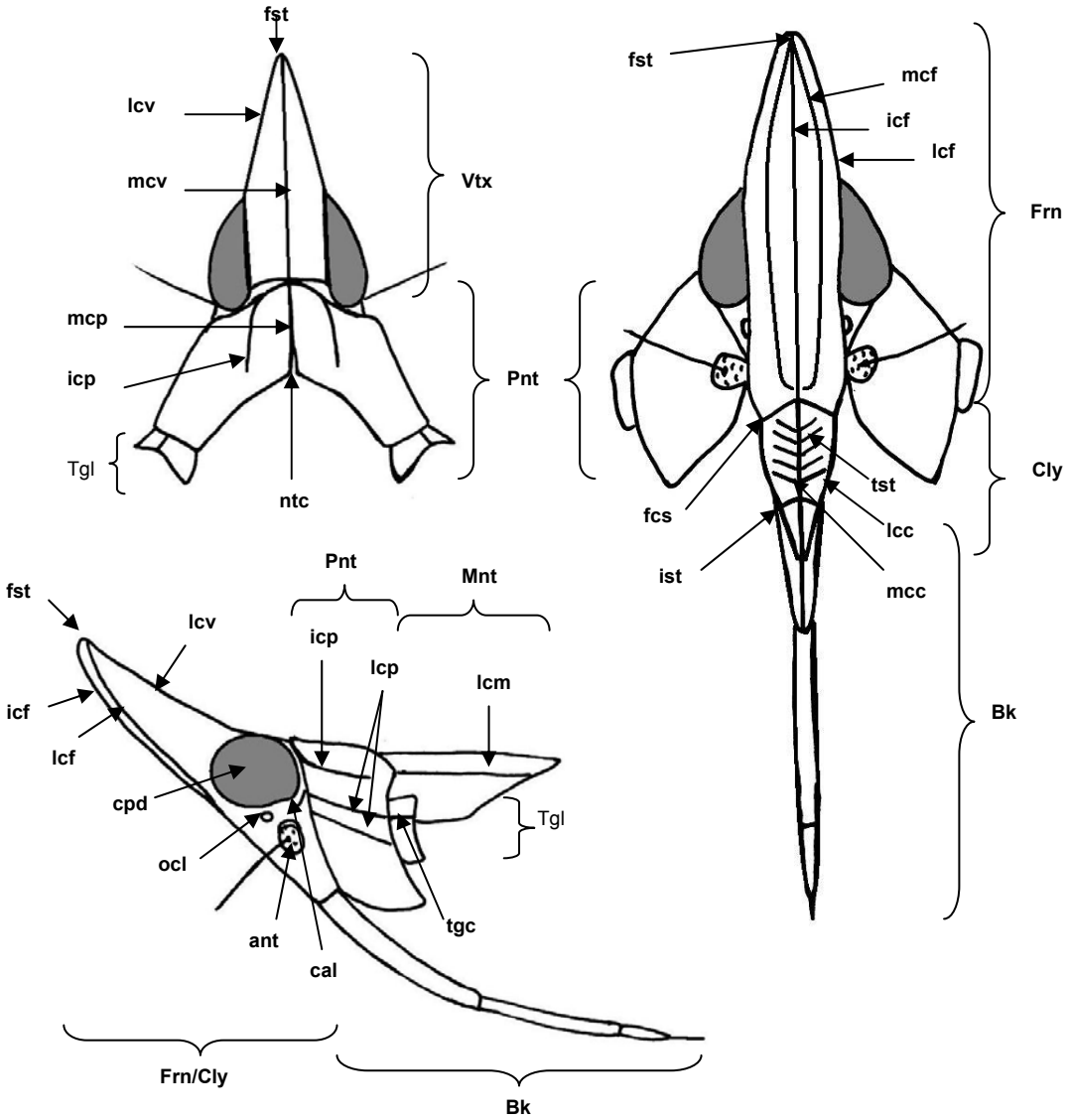

Figure 1. Generalized dorsal, lateral and frontal habitus of the head and pronotum of Dictyopharidae. Abbreviations: ant, antenna; Bk, Beak; Cly, Clypeus; cpd, compound eye; fcs, fronto-clypeal suture; fst, fastigium; Frn, Frons; icf, intermediate carina of frons; icp, intermediate carina of pronotum; icv, intermediate carina of vertex; ist, intraclypeal suture; lcc, lateral carina of clypeus; lcf, lateral carina of frons; lcm, lateral carina of mesonotum; lcp, lateral carina of pronotum; lcv, lateral carina of vertex; mcc, median carina of clypeus; mcf, median carina of frons; mcp, median carina of pronotum; mcv, median carina of vertex; Mnt, Mesonotum; ntc, median notch of pronotum; ocl, lateral ocellus; Pnt, Pronotum; tgc, carina of tegula; Tgl, Tegula; tst, transverse striae; Vtx, Vertex.

near the fastigium and extend to or near the frontoclypeal suture. Because the cephalic process may be oriented in various ways, or absent, the orientation of the frons varies from vertical to nearly horizontal, making directionality on the frons subjective. Here "anterior", "above" and "upper" are used to indicate directionality towards the fastigium, whereas "posterior", "below" and "lower" are used to indicate directionality towards the frontoclypeal suture. The median ocellus is absent in all Dictyopharidae.

The clypeus is located between the frontoclypeal suture and the labrum. The clypeal plate is carinate laterally and, usually, medially, and often possesses diagonally transverse striae. It is divided into an anterior postclypeus and posterior anteclypeus separated by an intraclypeal suture. As in all Hemiptera, the mouthparts form a piercing beak.

The eyes, in lateral view, are generally large and subhemispherical (subequal in height and width) or subelliptical (wider than high), and are positioned laterally. They are often projected caudally beyond the posterior margin of the vertex. The ventral or posterior margins may be more or less emarginate, by proximity to the antennal base, or by a thickened callosity posteroventrad of the eyes. The lateral ocelli are located on the genae anteroventrad of the eyes.

The antennae are composed of a small scape (1st antennal segment), a conspicuous pedicel (2nd antennal segment) and setigerous flagellum (the remaining segments). The pedicel may be subglobose (subequal in diameter and height) or subellipsoidal (expanded in one direction, generally toward the dorsum of the head). The flagellum may be apical or subapical.

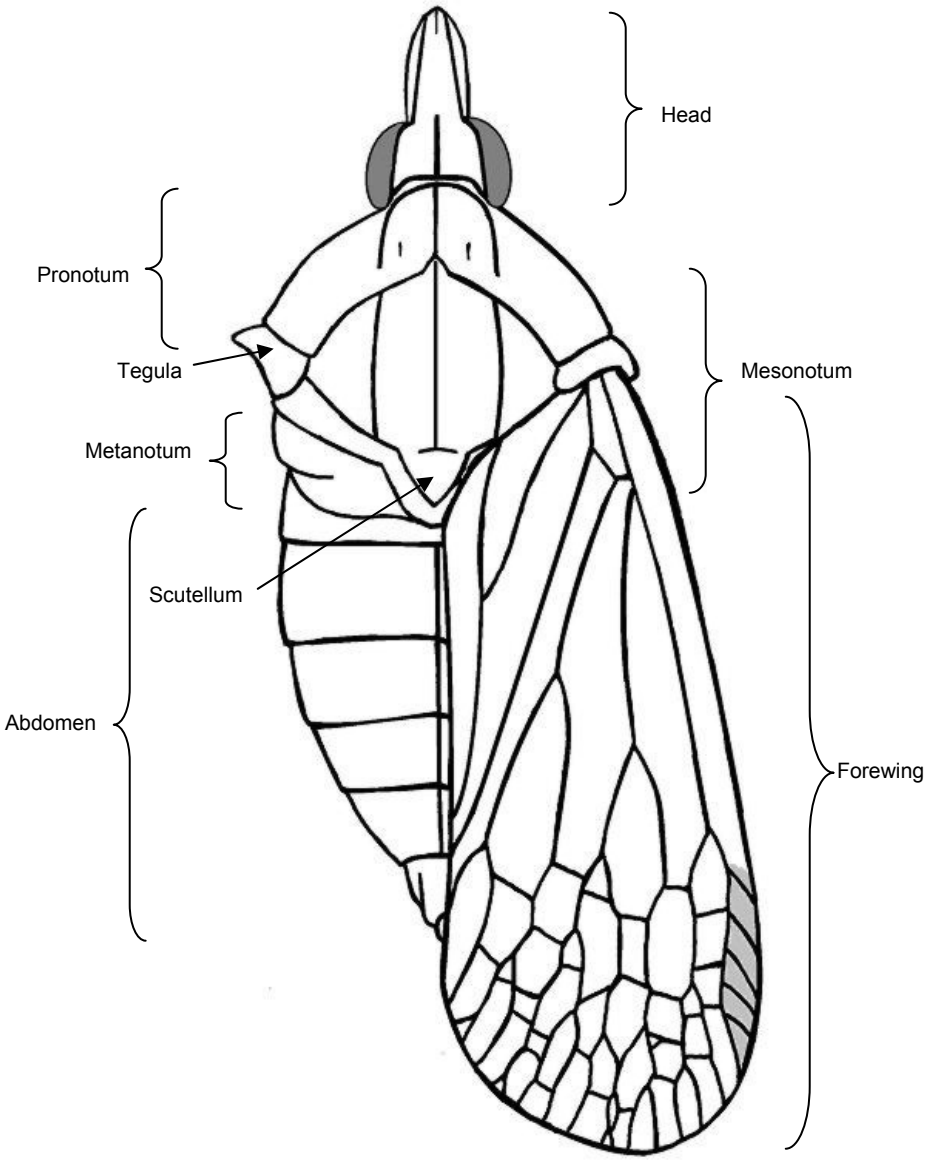

Figure 2. Generalized dorsal habitus of Dictyopharidae.

THE THORAX

(Figure 2)

The pronotum may have up to seven carinae: a median, a pair of intermediate (homologous with lateral carinae of some other Fulgoroidea) and one or two pairs of lateral carinae. The median carina is considered complete when it extends unbroken from anterior to posterior margin. The intermediate carinae follow the anterior margin laterally from the median carina, curved posteriorly onto the pronotal plate inside the inner margins of the eyes. The lateral carinae are approximately between the eye and tegula. The anterior margin, between the intermediate carinae, is projected forward and the posterior margin is, usually, angulately concave, giving the pronotum a chevron-shaped appearance. The posterior margin may or may not possess a median notch that varies in depth. The pronotal plate may be smooth, tuberculate (with small raised bumps), or punctate (with pit-like depressions).

The mesonotum has three carinae, the median and a pair of lateral. The median carina extends from under the pronotal plate before diminishing posteriorly (ending at the "scutellum"). The lateral carinae may either converge anteriorly to reach, or approximate, the median carina, or remain roughly parallel. The tegulae are generally smooth, but may possess a longitudinal carina.

The forewings are typical of other Fulgoroidea (Figure 3). Forewing nomenclature follows Kukalova-Peck (1978) as interpreted by Dworakoska (1988). Macropterous taxa have elongate forewings, extending well beyond the posterior tip of the abdomen, and fully developed locomotory hindwings. The forewings are generally hyaline (clear transparent) and membranous. Brachypterous taxa have short, thickened forewings (tegmina), generally extending only to the middle of the abdomen, leaving one or more abdominal tergites exposed, but is sometimes subequal

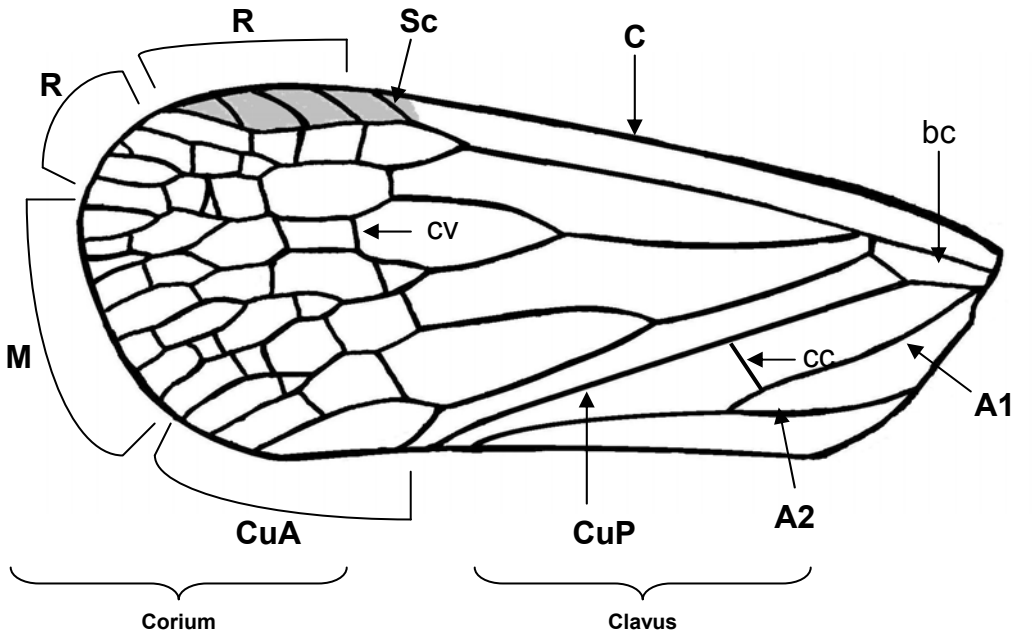

Figure 3. Generalized forewing venation of Dictyopharidae. Abbreviations: A1, anal vein 1; A2, anal veins 2; bc, posterior cell; C, costa; cc, claval crossvein (only found in Cladodipterini and some Nersiini); CuA, anterior cubitus; CuP, posterior cubitus; cv, crossveins; MP, medius; pterostigma (grayed region); RA, anterior radius; RP, posterior radius; Sc, subcosta.

to the abdomen. The hindwings are vestigial and non-locomotory. Overall, the blade (remigium) of the forewings are divided into two primary sections: the corium (including the leading margin of the outstretched wing) and the clavus. The two regions are separated by the "claval furrow", which approximates the Posterior Cubitus (CuP). The corium includes the costa (C), subcosta (Sc), radius (R), media (M) and the cubitus (Cu), all (except the costa) with one or more branches. The R, M, and Cu are understood to consist of an anterior and posterior longitudinal vein, giving the RA and RP, MA (generally undetectable in dictyopharids) and MP, and the CuA and CuP. The clavus contains the anal veins, A1 and A2, that fuse to form a combined vein that either reaches the wing margin ("open clavus") or the CuP ("closed clavus"). The posterior cell is in the proximal portion of the wing, bordered by Sc+R+M anteriorly, the cubital veins posteriorly and a crossvein between Sc+R+M and CuA distally. The pterostigma is a darkened portion of membrane located along the leading edge, between the Sc and posterior-most branch of the RA. Numerous crossveins in the corium break the membrane up into multiple cells, or "areolas", often organized into two or more rows toward the apex of the wing.

The fore- and middle legs may have expanded (foliaceous) femora and/or tibiae. In a few taxa the posterior margin of the fore-femora is dentate. The meso- and metacoxae often have a posteriorly-projecting spine. The hind tibiae have multiple spines (often referred to as "teeth") posteriorly, the preapical spines, with 6 or more apical spines. The tarsi are three-segmented. The basitarsus (1st tarsomere) and penultimate tarsomere (2nd tarsomere) have a row of apical spines, and a few taxa have a thick pad of ventral setae on each tarsomere (Figure 4).

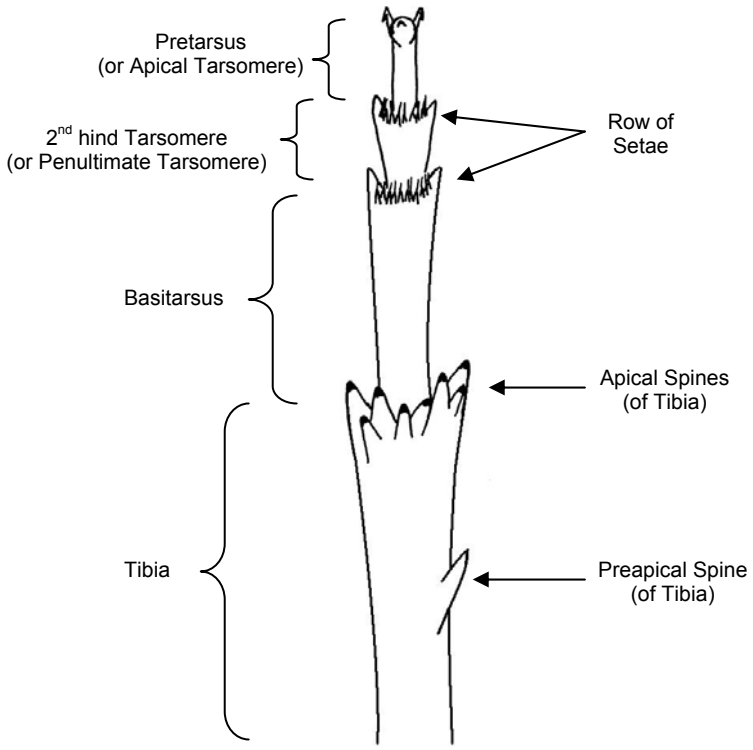

Figure 4. Generalized ventral habitus of apex of hind leg of Dictyopharidae.

Chapter 3

IDENTIFICATION AND DESCRIPTIONS OF NEW WORLD GENERA OF DICTYOPHARINAE

3.1 Key to New World Dictyopharinae

Various attempts at providing keys to the Dictyopharinae have often left out some members of the known fauna or have provided features that are difficult to evaluate in the genera they represent. Melichar (1912) provided a comprehensive key to the world fauna. Metcalf (1938) revised Melichar's key for the New World members from Barro Colorado Island, Panama, and updated the faunal survey. Fennah (1944) provided the most recent comprehensive key to the New World Dictyopharinae, later adding *Paramisia* and *Neomiasa* (Fennah, 1945). One additional genus, *Trigava*, was added by O'Brien (1999)[1]. The following key is presented for the genera and tribes of New World Dictyopharinae:

1 A single crossvein between A1 and CuP present; underside of basal tarsomere covered with a thickened pad of setae. (**Cladodipterini**) 2

1' Crossveins between A1 and CuP absent or, if present, the entire forewing reticulate, with much of clavus crossed by crossveins; basal

[1] Emeljanov recently described a new genus (in press), but it was presented too late in the development of this work to include it.

tarsomere lacking a pad of setae on the underside, at most with scattered setae. 3

2 (1) Median carina completely absent from both the frons and vertex. Posterior margin of pronotum nearly straight, lacking median notch. Pronotal plate tuberculate.

Diacira Walker, 1858 and ***Cladodiptera*** Spinola, 1839[2]

2' Frons with median carina present from apex to base and vertex with median carina present in posterior half. Posterior margin of pronotum broadly angulate, with a shallow median notch. Pronotal plate punctate. ***Protachilus*** Fennah, 1944a

3 (1') Tegulae carinate. (**Nersiini**) 4

3' Tegulae smooth, lacking carinae. 10

4 (3) Forewings lacking crossveins in proximal half of corium, but present in distal third. 5

4' Forewings reticulate throughout corium. 7

5 (4) Veins of the forewings lacking setae; a pale line extends from the thorax onto the tegula (over the carina). 6

5' Veins of the forewings setose; a pale line extends from the thorax, onto the tegula and along the costal margin of the forewing.

Retiala Fennah, 1944a

[2] These genera are in need of taxonomic revision and redefinition before definitive diagnostic features can be provided

6 (5) Cells of the anterior third of the forewing organized into four to five rows. ***Nersia*** Stål, 1862

6' Cells of the anterior third of the forewing organized into three rows. ***Trimedia*** Fennah, 1944a

7 (4') Clavus lacking crossveins, vein M branches from ScR at posterior cell. 8

7' Crossveins present in clavus, vein M contiguous with ScR for some distance. ***Plegmatoptera*** Spinola 1839

8' (7) Hind tibiae with four or five spines. 9

8' Hind tibiae with seven spines. ***Megadictya*** Melichar, 1912

9 (8) Vertex elongate cylindrical, 4x or more as long as wide. Cells of the forewing organized into seven or eight rows of cells. ***Melicharoptera*** Metcalf, 1938

9' Vertex broadly conical, less than 2x as long as wide. Cells of the forewing not well organized. ***Pteroplegma*** Melichar, 1912

10 (3') Forewings brachypterous and tegminous or Forewings macropterous with thickened, smoky wings; medial vein branches from ScR at the posterior cell, if at all contiguous with ScR, contiguous portion less than half as long as posterior cell. (**Scoloptini**) 11

10' Forewings membranous and Forewings macropterous; medial vein contiguous with ScR beyond the posterior cell, the length of the contiguous segment at least half as long as posterior cell. 15

11 (10) Pro- and mesofemora and protibiae compressed, laterally expanded; vertex ends at the anterior margin of the eyes, level with the plane of the pronotum in profile, but raised above the pronotum in *Scolops*; callosity behind eye present or absent. 12

11' Legs normal, not compressed or laterally expanded; vertex projected anterad of the eyes, raised above the plane of the pronotum in lateral view; callosity behind eye present. 13

12 (11) Vertex short, head lacking process, the top of the head level with the pronotum; callosity behind eye absent. ***Phylloscelis*** Germar, 1839

12' Head projected anterad of eyes, elongate, more than twice as long as wide and raised above the plane of the pronotum; callosity behind eye present. ***Scolops*** (***Belanocharis***) Germar, 1839

13 (11') Crossveins limited to the anterior half of the corium, forming two or three loosely organized rows of cells. 14

13' Crossveins present throughout the forewings, lacking any clear organization. ***Brachytaosa*** Muir, 1931

14 (13) Head process long (more than 2x greatest width), dorsally narrow in the anterior half or more, and upturned in lateral view; wings completely tegminous and smokey. ***Scolops*** (***Scolops***) Germar, 1839

14' Head process short (less than 2x greatest width), the vertex nearly as wide before and after the eyes, the apex straight in lateral view; wings thickened and clear, nearly membranous. ***Sicorisia*** Melichar, 1912

15 (10') In profile, vertex raised above thorax, strongly convex dorsally, bent dorsad anterior to the eyes; in dorsal view, vertex constricted anterad of the eyes, remaining parallel to apex. (**Igavini**) 16

15' Vertex level with pronotum, not strongly bent upward anterad of the eyes, not greatly constricted anterad of the eyes, but gradually tapering toward apex. 22

16 (15) Head process short, shorter beyond the anterior margin of the eyes than behind; veins of the forewings usually setose, intervannal areas glabrous. 17

16' Head process long, shorter behind the anterior margin of the eyes than beyond; veins and intervannal areas of the forewings usually glabrous. 19

17 (16) Common vein ScR+M shorter than posterior cell. 18

17' Common vein ScR+M longer than posterior cell. ***Trigava*** O'Brien, 1999

18 (17) Head process present, short. ***Igava*** Melichar, 1912

18' Head process absent. ***Hydriena*** Melichar, 1912

19 (16') Hind tibae with 4 posterior spines. Foretibiae shorter, subequal to 1.3x longer than femora. Callosity behind eye absent. 20

19' Hind tibae with 5 or 6 posterior spines. Foretibiae long, at least 1.5x longer than femora. Callosity behind eye present. ***Toropa*** Melichar, 1912

20 (19) Forewings lacking organization of cells in anterior third; vein M contiguous with ScR, length of common vein subequal to or longer than posterior cell. 21

20’ Forewings with three, relatively well-organized rows of cells in anterior third; vein M branches from ScR at the posterior cell.

Neomiasa Fennah, 1947

21 (20) Forefemora foliaceous posterior margin toothed; anterior margin of forewings emarginate, invaginated at longitudinal folds.

Dictyopharoides Fowler, 1900

21’ Forefemora simple, the posterior margin lacking teeth or with minute, teeth concolorous with rest of femora; anterior margin of forewings not emarginate. ***Paramisia*** Melichar, 1912

22 (15’) In profile, frons flat to convex, the vertex even with the pronotum; the forelegs normal to expanded. 23

22’ In profile, frons concave, the vertex raised above the pronotum; forelegs moderately expanded. (**Sicorini**) ***Sicoris*** Stål, 1866

23 (22) Head process present, the head generally longer than broad; if head process absent, forelegs normal in proportion, and the forewings concolorous throughout the corium. 24

23’ Head process lacking, the head more broad than median length; forelegs elongate, the tibiae 1.5x or more the length of the femora; forewings with apex darkened. (**Taosini**) ***Taosa*** Distant, 1906

24 (23) Head process very long, longer than pro- and mesonotum combined, the apex often flared or bulbous; the apex of the frons strongly bent

upward, perpendicular to both the vertex and the remainder of the frons, not meeting the vertex in a large callosity. (**Lappidini**) 25

24' Length of head process variable, but generally subequal to shorter than pro- and mesonotum combined; head process triangular, pentagonal or rectangular, the apex generally truncate or pointed, not expanded; the apex of the frons on the same plane as the base, meeting the vertex in a large callosity. (**Rhynchomitrini**) 26

25 (24) Apex of head process bulbus; crossveins in apical third of forewing forming three organized rows of cells. ***Lappida*** Amyot and Serville, 1843

25' Apex of head process more or less flared laterally, the vertex and/or frons abruptly broadening near anterior margin; crossveins in apical third of forewing forming four or more rows of cells or highly reticulate, lacking any clear organization. ***Paralappida*** Melichar, 1912

26 (24') Head process present, vertex as long or longer anterad of the eyes as it is posteriorly; Frons and pronotum generally smooth; forelegs normal in shape. 27

26' Head lacking process, vertex ending at the anterior margin of the eyes; frons and pronotum postulate; forelegs compressed and expanded laterally. ***Taractellus*** Metcalf, 1948

27 (26) Crossveins reticulate in anterior half of corium, cells not organized into rows, or with more than three rows of cells, those near the apex less organized. 28

27' Crossveins well-organized, forming three rows of cells in the anterior half of the corium. 32

28 (27) Head process elongate, cylindrical, vertex subparallel to convergent to the apex of the process; wings slender, appearing subparallel when folded over body. 29

28' Head process shorter, only one- to two-thirds of the length of the vertex extending beyond the anterior margin of the eyes; vertex triangular to pentagonal; wings broadening from base to apex, appearing triangular when folded over body. 31

29 (28) Frontoclypeal suture straight to rounded into frons. 30

29' Clypeus deeply rounded into frons. ***Eudictya*** Melichar, 1912

30 (29) Pronotum with intermediate carinae nearly complete; lateral margins of frons visible from above. ***Dorimargus*** Melichar, 1912

30' Pronotum with intermediate carinae diminishing in posterior half; lateral margins of frons not visible from above. ***Parahasta*** Melichar, 1912

31 (28') Vertex elongate-triangular, turned upward at apex; pronotum with deep notch at middle of posterior margin, about twice as wide at posterior margin as deep; crossveins and cells of the distal half of the corium reticulate, disorganized. ***Rhynchomitra*** Fennah, 1944a

31' Vertex pentagonal, flat in profile; pronotum more shallowly notched at median of posterior margin, the base and depth subequal; crossveins

and cells of distal half of corium with six to eight organized rows of cells. ***Hyalodictyon*** Fennah, 1944a

32 (27') Vertex shorter than pro- and mesonotum together; frons weakly expanded near frontoclypeal suture; pronotum with intermediate carinae ending near middle of pronotal plate. 33

32' Vertex elongate, as long as pro- and mesonotum together; frons strongly expanded near frontoclypeal suture; pronotum with intermediate carinae reaching posterior margin. ***Digitocrista*** Fennah, 1944a

33 (32) Vertex elongate-triangular, the apex curved upward, median carina absent or faint; hind tibiae with 4 posterior spines. ***Mitrops*** Fennah, 1944a

33' Vertex as broad as long, straight from base to apex, not curving upward, with a strong median carina throughout; hind tibiae with 3 posterior spines. ***Pharodictyon*** Fennah, 1944a

3.2 Descriptions of Tribes and Genera of New World Dictyopharinae

3.2.1 Tribe Cladodipterini Melichar, 1912:7

Original Description.

"*Kopf breit, so breit wie der Thorax oder et was wenig schmäler, nicht vorgezogen, vorn breit gerundet. Nerven der Deckflügel beborstet. Schenkel unten blattartig erweitert und zusammengedrückt*."

Translation:

Head wide, as wide as the thorax or smaller, not produced forward, broadly rounded onto frons. Veins of the forewing setose. Femora expanded below and compressed.

Diagnosis.

The Cladodipterini are distinguished from all other Dictyopharinae by the presence of a single crossvein within the clavus, connecting vein CuP with A1 (Melichar, 1912, Emeljanov 1983), and by the presence of a thickened pad of setae on the underside of the basal and second hind tarsomeres. All members lack the head process possessed by most Dictyopharid planthoppers, so that the vertex is not produced anterad of the eyes, but is wider than long. All species lack a callosity behind the eye that is typical in other groups (e.g. *Scolops*). The frons is also generally wider than most, with median and intermediate carinae lacking. The crossveins are distributed in the anterior third of the forewings, forming two, or sometimes three relatively well-organized rows of cells. Often, the forewings have darkened areas in the membrane, including a triangular area at the apex and along the crossveins. The fore-femora lack spines on the posterior margin.

Remarks.

The tribe Cladodipterini was first described by Melichar (1912) as Cladyphini, errantly suppressing *Cladodiptera* Spinola 1839 as a junior synonym of *Cladypha* Amyot and Serville 1843. Metcalf (1923) restored *Cladodiptera* as the generic nominative and referred the group as a subtribe of Dichopterini Melichar, 1912. Emeljanov (1979) questioned placement of Dichopterini within Dictyopharidae,

because some features suggested Fulgoridae, and raised Cladodipterina to tribal status by implication, and later explicitly (Emeljanov, 1983).

The tribe consists of 3 genera and 14 species in the New World.

Cladodiptera Spinola, 1839:316

(Figure 5)

= *Cladodiptera* Spinola, 1839:316, 204 (Key). Type species: *C. macrophthalma* Spinola, 1839, by original designation.

= *Cladypha* Amyot and Serville, 1843:502 (applied as *nom nov.* for *Cladodiptera* Spinola, 1839). Restored to *Cladodiptera* Spinola, 1839 by Blanchard, 1845:424.

= *Cladopteryx* Westwood, 1845:90 (applied as *nom nov.* for *Cladodiptera* Spinola, 1839 and *Cladypha* Amyot and Serville, 1843 by Schaum 1850:67). Restored to *Cladodiptera* Spinola, 1839 by Walker, 1851:337. Listed by Schulze *et al.* , 1927:713; Neave, 1939:751.

= *Cladoptera* (Spinola, 1839). Incorrect subsequent spelling by Amyot and Serville, 1843:502; Schulze *et al.*, 1927:713; Neave, 1939:751.

= *Cladodipteryx* (Spinola, 1839). Incorrect subsequent spelling by Walker, 1851:290; 1858a:14; 1858b:75; 1858c:319.

= *Cladodypteryx* (Spinola, 1839). Incorrect subsequent spelling by Walker, 1851:302.

= *Cladidiptera* (Spinola, 1839). Incorrect subsequent spelling by Schulze *et al.,* 1927:710.

= *Cladidoptera* (Spinola, 1839). Incorrect subsequent spelling by Schulze *et al.,* 1927:710; Neave, 1939:749.

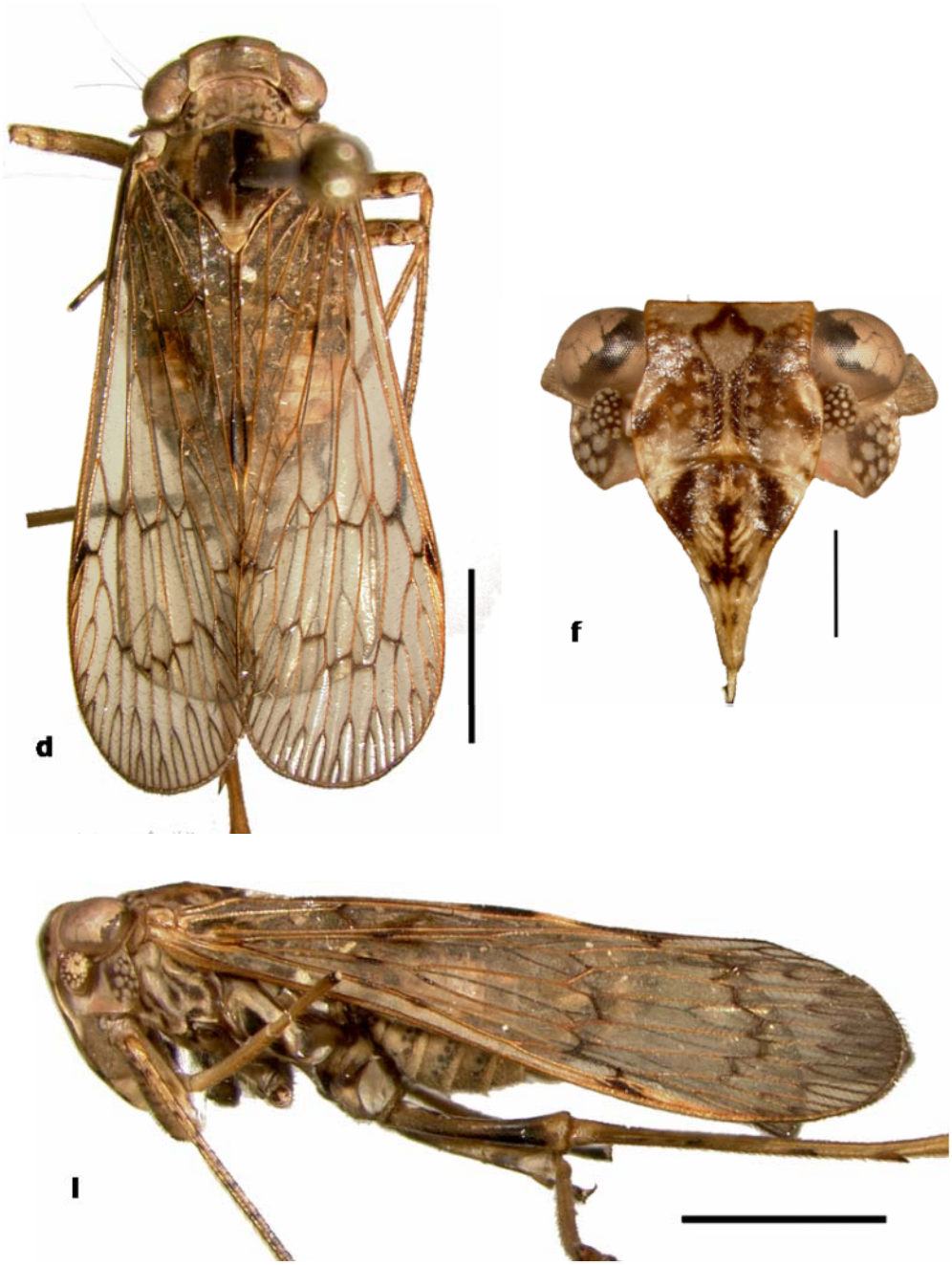

Figure 5. Dorsal (d), lateral (l) and frontal (f) habitus of *Cladodpitera limpida.* Scale bar - Dorsal: 3.0mm; Lateral: 3.0mm; Front: 1.0mm.

= *Diacira* Walker, 1858:34. Genus synonymized by Distant, 1887:38 (as *Cladypha* Amyot and Serville, 1843) (error).

Original Description.

"*Tête*, sans protubérance.

Front, quadrangulaire, presque aussi long que large, sans traces de division en trois facettes, sans arête médiane, ascendant presque verticalement, un peu renverse en arrière, séparé du vertex par une arète transversale qui est plutôt supérieure qu'antérieure.

Faces latérales, nulles.

Vertex, plan, horizontal, deux ou trois fois plus large que long.

Base du front, largement échancrée.

Chaperon, court, peu convexe; arêtes latérales, peu saillantes et nullement dilatées ; arête médiane, nulle; côtès verticaux, plus hauts que dans les genres voisins.

Rostre, ne dépassant as l'origine des pattes posténeures.

Arêtes qui séparent les joues et le front, ne faisant pas saillie sur le front, mais simplement dilatées au dehors et au-dessus des *joues*. Celles-ci, très courtes, et cachées en partie par l'arête qui les sépare du front.

Yeux à réseau , très grands, oblongs, obliquement transversaux, occupant toute la région supérieure des joues, prolongés en arrière bien au delà du vertex, étant en contact immédiat avec le bord antérieur plus que dans teute autre *Fulgorite*.

Un *ocelle* très petit, de chaque côté, placé entre l'œil et l'arête, plutôt qu'entre l'œil et l'antenne.

Massue du second article des *antennes*, granuleuse, épaisse, sub-cylindrique; extrémité, tronquée.

Dos du *prothorax*, plan, sans arêtes dorsales. Lobe médian, large, antérieurement arrondi; six échantrores post-oculaires, insensiblement et largement rentrantes; bord postérieur, largement et très faiblement échancré.

Dos du *mésothorax*, sub-triangulaire, scutelliforme.

Abdomen, oblong, assez large ; convexité moyenne; dos des segments intermédiaires, élevé en carène.

Ailes supérieures, oblongues. Radius, droit à partir de l'origine jusqu'aux trois quarts de la longueur de l'aile. Pan externe, étroit. Deux nervures discoïdales, partant immédiatement du bord postérieur de à cellule basilaire. La première, ayant l'origine commune avec le cubitus. Point de nervures anastomostiques transversales; point de cellules quadrangulaires disposées par rangées. Toute l'innervation consiste dans les ramifications dichotomes et longitudinales des nervures principales, et toutes les cellules sont étroites, allongées et ayant leur angle antérieur, celui dont le sommet est tourné vers l'origine de l'aile, toujours plus ou moins aigu.

Pattes, moyennes; fémurs antérieurs, droits, comprimés; arête interne, lamelliforme; tibias, minceset allongés; quatre épines latérales à ceux de la troisièm paire."

Translation.

Head, lacking process.

Forehead [i.e. *Frons*], quadrangular, almost as long as broad, lacking any trace of three facets, lacking median carina, rising almost vertically, curved backward, separated from vertex by a transverse ridge that is rather higher than former.

Lateral face, lacking.

Vertex, flat, wide, two or three times broader than long.

Base of forehead, widely indented posteriorly.

Hood, runs, only convex; lateral carinae, indistinct and not expanded; median carina, lacking; vertical cotes, higher than in close relatives.

Beak, not exceeding the hind coxae.

Carinae separating the cheeks and the face, not projecting on the forehead, but simply expanded to the outside and above the cheeks. These, very short, and partly hidden by the edge that separates them from the face.

Compound eyes, very large, oblong, obliquely transverse, occupying the entirety of the cheeks, prolonged well beyond the vertex, contacting more of the posterior margin than in other Fulgoroids.

Ocellus very small, on each side, placed between the eye and the carina, rather than between the eye and the antenna.

Club of the scape, granulose, thick, sub-cylindrical; apex, truncated.

Prothorax, plain, lacking dorsal carinae. Median lobe, broad, rounded anteriorly; six post-ocular ridges, hidden and largely recurring; posterior edge, widely and very weakly indented.

Mesothorax, sub-triangular, scutelliform.

Abdomen, oblong, rather wide; normal convexity; back of the intermediary segments, somewhat elevated.

Front wings, oblong. Radius, extending from the base for three quarters of the length of the wing. External side, narrow. Two discoidal veins, immediately departing from the posterior edge of posterior cell. The first, having the common origin with the cubitus. Transverse veins do not adjoin; quadrangular cells not arranged in lines. All innervation results from branches and principal longitudinal veins, and all cells are narrow, elongate and

having their previous angle, whose apex is turned to the origin of the wing, always more or less acute.

Legs, normal; front femora, expanded, compressed; internal edge, plate-like; tibiae, long and thin; four lateral spines on the third pair.

Diagnosis.

The *Cladodiptera* and *Diacira* are morphologically similar groups. These genera need revision and some speciems may be missassigned at the generic level. They are distinguished in that *Cladodiptera* has the front legs (only) expanded laterally, front tibiae subequal to or longer than femora, and the head nearly as wide as the pronotum. The vertex and frons lack median carinae, giving both regions a smooth, shiny surface appearance. The hind margin of the pronotum is straight, lacking a median notch. Further, a single crossvein connects A1 and the CuP within the clavus, and the proximal half of the corium lacks crossveins. Forewings macropterous, the forewings often patterned with darkened anterior margin and triangular incursion extending from the Costal margin in the region of the pterostigma transversely to the middle of the wing.

Description.

Head wider than long, lacking cephalic projection. Vertex rectangular, about 2x as wide as median length; anterior, lateral, and posterior margins carinate, lacking a prominent median carina; anterior margin obtusely rounded to nearly straight; posterior margin smoothly and broadly concave; foveae with one or two darkened depressions. Vertex level (not sloped) in lateral view. Frons wide, with upper half

parallel-sided, expanded laterally in lower half; median and intermediate carinae lacking; frons smooth or with slight depressions along lateral margins light depressions. In profile, frons convex above, concave below. Frontoclypeal suture inversely U-shaped. Postclypeus and anteclypeus convex in profile, widest above, strongly narrowed below; median carina weakly indicated, raised, otherwise clypeus generally smooth, striations lacking; lateral carinae unbroken at intraclypeal suture; clypeus dark, paler below. Beak long, exceeding metacoxae. Eyes very large, subelliptical, each about as wide as vertex, about twice as broad as high; extending posteriorly to lateral margin of pronotum, bisecting pronotum into dorsal and ventral parts. Ocellus below eye, near anterior margin. Scape subellipsoidal to subcylindrical.

Pronotum strongly concave anteriorly; anterior margin broadly rounded; posterior margin weakly convex, lacking median notch; median carina weak or lacking; intermediate carinae smoothly curved, following anterior contour of pronotum, diminishing before reaching posterior margin; lateral carinae lacking. Mesonotum tricarinate; median obsolete prior to posterior margin; lateral subparallel, diverging posteriorly. Tegulae conspicuous, partially concealed by pronotum; pubescent, with numerous setae, especially laterally; carinae absent.

Forewings macropterous and membranous; extending well beyond tip of abdomen; darkened pterostigma present. Veins setose, membranes glabrous; costal margin concolorous with other veins. Apical third of forewing with two irregular rows of crossveins forming three organized bands of cells. Sc+RA 3- to 4-branched. RP 8- to 9-branched; diverging from Sc+R in anterior half of wing, proximad of nodal line. MP 10- to 18-branched, posteriorly contiguous with Sc+R for short distance,

subequal to distal width of posterior cell. CuA 5- to 6-branched. Anal veins convergent in posterior half of clavus; reaching trailing margin, not convergent.

Pro- and mesothoraxic legs with femora expanded, protibiae not expanded. Tibiae 1.5 to 2x longer than femora, lacking lateral and anterior spines. Pro- and mesocoxae lacking posterior spine. Middle of posterior surface of metacoxae with short, posteriorly projecting spine. Hind tibiae with 4 preapical and 7 apical teeth. Basitarsus with 9 to 11 anterior spines; second with 8 to 10 anterior spines.

Species Composition.

This genus contains eight species: *C. bugabensis* (Fowler, 1900), *C. interlita* (Distant, 1887), *C. limpida* (Walker, 1851), *C. macrophthalma* Spinola, 1839 (type species), *C. maculicollis* (Melichar, 1912), *C. rufisparsa* (Walker, 1858), *C. rufivena* (Fowler, 1900) and *C. smaragdula* Walker, 1851. There are no published keys to the species of this genus.

Geographic Distribution.

Bolivia, Brazil, French Guiana, Mexico, Panama.

Host Plants.

No host plants reported.

Specimens Examined.

C. interlita (Distant) (1). **ECUADOR**: Rio Mangosiza, 650 m., 2º53'S, 77º42'W, B.M. 1938-61 1 (BMNH: 1♀).

C. limpida (Walker) (1). **ECUADOR**: Orellana, Tiputini Biodiversity Station nr Yasuni National Park, Erwin Transect-T/5 220-250m, 00º37'55"S 076º08'39"W, 26-X-1998, fogging terre firme forest (USNM: 1♂).

C. rufisparsa (Walker) (1). **BRASIL**: Para (BMNH: 1♂).

Cladodiptera spp. (6). **COSTA RICA**: Pejivalle, 1850-2100 feet, 10-VIII-1927, (ANSP: 1♂). **ECUADOR**: Orellana, Transect Ent. 1 km. S. Onkone Gare Camp 220m, Reserva Ethica Waorani, 00º39'10"S 076º26'00"W, 4-II-1996, T2 fogging terre firme forest (USNM: 1♀); Orellana, Tiputini Biodiversity Station nr Yasuni National Park, Erwin Transect-T/5 220-250m, 00º37'55"S 076º08'39"W, 22-X-1998, fogging terre firme forest (USNM: 1♂, 1♀); Orellana, Tiputini Biodiversity Station nr Yasuni National Park, 00º37'55"S 076º08'39"W, 06-II-1999, fogging terre firme forest (USNM: 1♀). **PERU**: Madre de Dios nr Puerto Maldonado, Posada Amazonas, lodge @ Rio Tambopata, S12º48.115' W069º18.019', 609 ft, (7-10)-X-2004; (UDCC: 1♂).

Diacira Walker, 1858:34-35

(Figure 6)

= *Diacira* Walker, 1858:34. Type species: *D. varia* Walker, 1858, by original designation.

= *Hyalodepsa* Stål, 1869:90. Genus synonymized by Melichar, 1912:12.

= *Diacira* Walker, 1858:34. Genus synonymized with *Cladypha* Amyot and Serville, 1843 by Distant, 1887:38; 1906:349 (error).

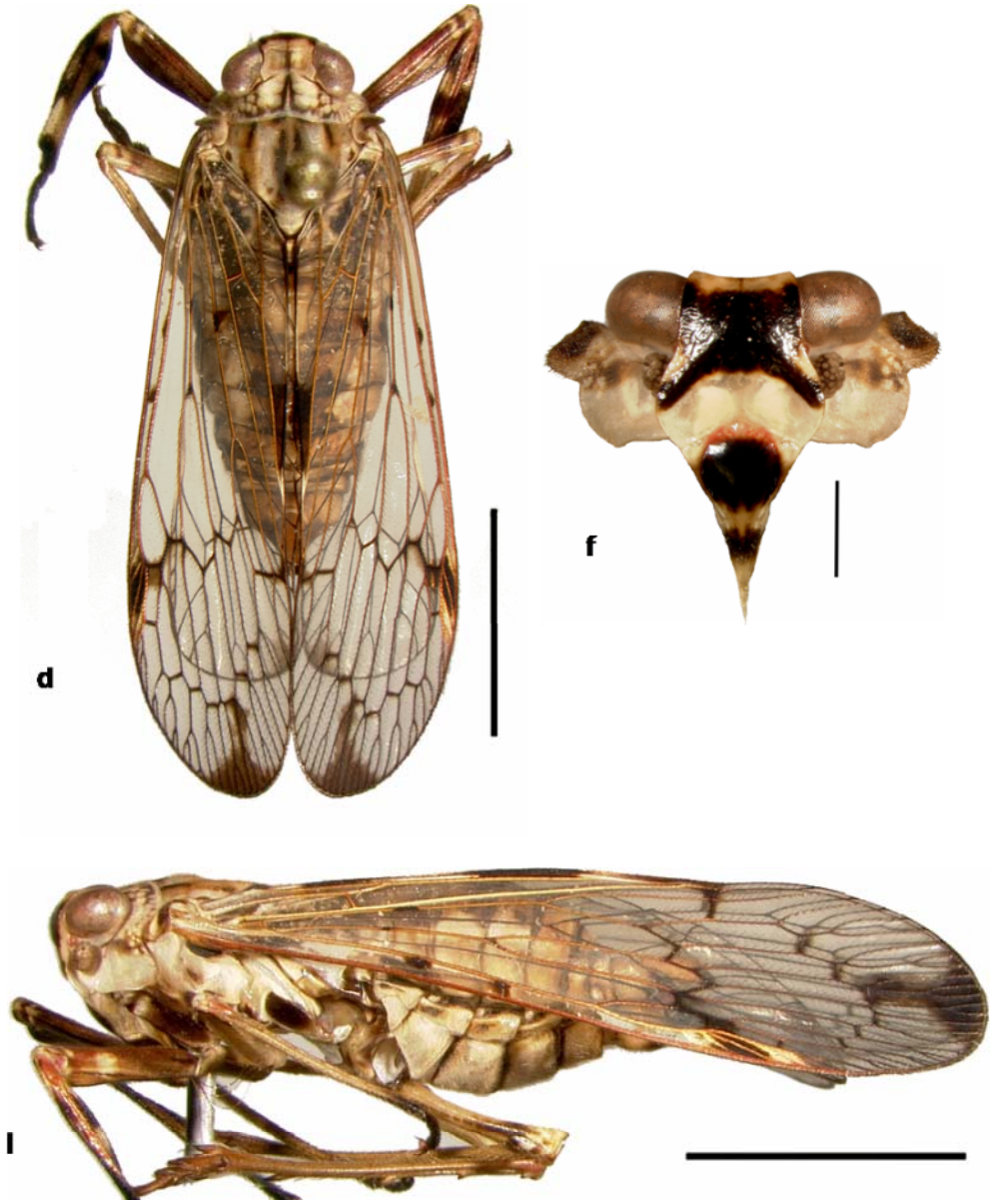

Figure 6. Dorsal (d), lateral (l) and frontal (f) habitus of *Diacira varia.* Scale bar - Dorsal: 5.0mm; Lateral: 5.0mm; Front: 1.0mm.

Original Description.

"*Caput thorace angustius; vertex parvus, s ubconcavus, postice excavatus; frons fere plana, antice latior, margine antico concavo; facies lanceolata. Prothorax transverses, antice convexus. Mesothorax depressus, brevis. Abdomen thorace multo longius et latius. Pedes sat graciles, femoribus tibiisque anticis membranaceis dilatatis, tibiis, posticis spinosis. Alae vitreae; anticae venulis transverses posticaeque venis paucissimis*.

Translation.

Head narrower than the thorax; vertex small, concave, hind margin excavated, its median length less than half its width; frons almost flat, wider near the base, concave near the clypeus, which is lanceolate. Prothorax convex in front; its length less than one-third of its breadth. Mesothorax flat, short. Abdomen much longer and broader than the thorax. Legs rather slender; fore femora and fore tibiae clear, the former dilated on each side; hind tibiae spinose. Wings vitreous. Fore wings with the middle cells about one-third of the length of the posterior cells; anterior cells shorter than the middle cells, their veins forked; transverse veins very few. Hind wings with many fewer veins.

Diagnosis.

Diacira are very similar to *Cladodiptera*. Like *Cladodiptera*, the vertex and frons are smooth, lacking median carinae, and the hind margin of the pronotum is straight, lacking a median notch. It is distinguished from *Cladodiptera* in having only two rows of cells in the anterior third of the forewing, never three, greatly expanded forelegs, and front tibiae more than 1.5x longer than the femora, causing the front legs to appear very long. As in *Protachilus*, the head is narrower than the pronotum.

Description.

Head wider than long, lacking cephalic projection. Vertex subrectangular, about 1.5 to 2x as wide as median length, lateral margins sinuate; anterior, lateral and posterior margins carinate, median carina weak; anterior margin nearly straight; hind margin broadly excavated; a single darkened depression each side in foveae. In profile, vertex level above (i.e. not sloped). Frons wide, with upper portion parallel-sided, lower portion laterally expanded; median and intermediate carinae lacking; smooth or with slight depressions. Frons generally dark in coloration, narrowly paler on upper margin and along frontoclypeal suture, though some are mottled. In profile, convex above, concave below. Frontoclypeal suture inversely U-shaped. Clypeus widest above, strongly narrowed below; clypeus smooth, lacking striations; median carina weak or absent; lateral carinae unbroken at the intraclypeal suture; dark overall. Beak exceeding metacoxae. Eyes large, subelliptical, each approximately as broad as vertex, about 1.5x as broad as high; extended posteriorly, not reaching lateral margin of pronotum. Ocellus below eye, near anterior margin. Scape subcylindrical.

Pronotum semicircular in dorsal view, with broadly rounded concave anterior margin; posterior margin convex, lacking median notch; median carina present, sometimes weak, diminishing anteriorly from posterior margin; intermediate carinae following anterior margin of pronotum, diminishing prior to posterior margin; lateral carina present directly behind eye. Mesonotum tricarinate; median carina weak, obsolete prior to posterior margin (indicated by pale line bordered by dark in some species); lateral carinae subparallel, obsolete anteriorly, reaching posterior margin.

Tegulae partially concealed by pronotum; pubescent, with numerous setae; carinae absent.

Forewings macropterous and membranous, often darkened anteriorly and narrow triangular marking from costat, narrowed toward tralilling margin, near nodal line; wings extend well beyond abdomen; darkened pterostigma present. Veins setose, membrane glabrous. Costal margin concolorous with other veins. Single, ragged line of crossveins in apical third of forewing, forming two organized bands of cells. Sc+RA 4- to 9-branched; RP 5- to 10-branched, diverges from Sc+R beyond anterior half of wing, proximad to nodal line; MP 11- to 21-branched, contiguous with Sc+R for short distance, subequal to distal width of posterior cell; CuA 5- to 10-branched. Anal veins convergent in posterior third of clavus; reaching trailing margin, not convergent with CuP.

Pro- and mesothoracic legs with femora and protibiae expanded. Pro- and mesocoxae lacking posterior spine. Tibiae subequal to 1.5x longer than femora. Metacoxae with a short, wide posteriorly projecting spine. Hind tibiae with 4 to 5 preapical and 7 to 8 apical teeth. Basitarsus with 7 to 13 anterior teeth; second tarsomere with 7 to 9 anterior teeth.

Species Composition.

This genus contains five species: *D. boliviana* (Distant, 1906), *D. diaphana* (Fabricius, 1803), *D. obliquata* (Westwood, 1845), *D. setifera* (Walker, 1851) and *D. varia* Walker, 1858 (type species). There are no published keys to the species of this genus.

Geographic Distribution.

Bolivia, Brazil, Colombia.

Host Plants.

Arecaceae: Palm sp. (New Record).

Specimens Examined.

D. boliviana (Distant) (1). **BOLIVIA**: 1904-311 (BMNH: 1♂).

D. diaphana (Fabricius) (2). **BRASIL**: Amazonas, Teffé (Ega), M. de Mathan, 1er Trimestre 1879 (BMNH: 1♂, 1♀).

D. obliquata (Westwood) (5). **BRASIL**: Rondonia, 62 km SE Ariquemes, (15-22)-III-1991, (LBOB: 1♀); Rondonia, 62 km SW Ariquemes, Fzda. Rancho Grande, 6-X-1993, at Merc. Vap. & UV Light (LBOB: 1♂). **ECUADOR**: Orellana, Transect Ent. 1 km. S. Onkone Gare Camp 220m, Reserva Ethica Waorani, 220m, T-3, 00º39'10"S 076º26'00"W, 5-II-1996, fogging terre firme forest (USNM: 1♂); Orellana, Tiputini Biodiversity Station nr Yasuni National Park, Erwin Transect-T/5, 220-250m, 00º37'55"S 076º08'39"W, 26-X-1998, fogging terre firme forest (USNM: 1♀). **PANAMA**: Barro Colorado I., Canal Zone, 24-I-1959, CNHM Panama Zool. Exped. (1959), On Palm frond (FMNH: 1♀).

D. setifera Walker (1). **BRASIL**: Amazonas, Teffé (Ega), M. de Mathan, 1er Trimestre 1879 (BMNH: 1♀).

D. varia Walker (7). **ECUADOR**: Orellana, Transect Ent. 1 km. S. Onkone Gare Camp 220m, Reserva Ethica Waorani, T2, 00º39'10"S 076º26'00"W, 4-II-

1996, fogging terre firme forest (USNM: 1♂); Orellana, Tiputini Biodiversity Station nr Yasuni National Park, Erwin Transect-T/1, 220-250m, 00º37'55"S 076º08'39"W, 9-II-1999, fogging terre firme forest (USNM: 1♂); Orellana, Tiputini Biodiversity Station nr Yasuni National Park, Erwin Transect-T/7, 220-250m, 00º37'55"S 076º08'39"W, 22-X-1998, fogging terre firme forest (USNM: 1♂); Orellana, Tiputini Biodiversity Station nr Yasuni National Park, Erwin Transect-T/5, 220-250m, 00º37'55"S 076º08'39"W, 26-X-1998, fogging terre firme forest (USNM: 1♀). **PERU**: Madre de Dios, Tambopata Res. Zone, Tambopata Research Cntr on Rio Tambopata, S13º08.305' W069º36.502', 622 ft, (3-7)-X-2004 (UDCC: 1♂, 2♀).

Diacira spp. (4): **BELIZE**: Cayo District, nr. Teakettle Bank, Pook's Hill Lodge, N17º09.257' W088º51.094', 7-VII-2003, Hg Vapor Light (UDCC: 1♀). **COSTA RICA**: Guan. 3 km SE R. Naranjo, (13-31)-VII-1993 (LBOB: 1♀); Guan. 3 km SE R. Naranjo, (1-14)-VII-1993 (LBOB: 1♂). **PERU**: Madre de Dios nr Puerto Maldonado, Posada Amazonas, S12º48.115' W069º18.019', 609 ft, (30-IX)-(3-X)-2004 (UDCC: 1♀).

Protachilus Fennah, 1944a:3-4

(Figure 7)

= *Protachilus* Fennah, 1944a:3. Type species: *P. rex* Fennah, 1944a, by original designation.

Figure 7. Dorsal (d), lateral (l) and frontal (f) habitus of *Protachilus rex*. Scale bar - Dorsal: 3.0mm; Lateral: 3.0mm; Front: 1.0mm.

Original Description.

"Vertex twice as broad as long, anterior margin convex in an obtuse angle, extending to level of anterior margin of eyes, posterior margin angularly excavate, subparallel to anterior, lateral margins carinate, diverging posteriorly, median carina present only in posterior half, a short crescentic carina on each side in anterior half of vertex subparallel to anterior margin, disc of vertex sunken, lowest point at middle; base of frons broadly visible from above, frons longer than broad (1.6 to 1), posterior margin truncate, laeral margins diverging gradually, almost straight to below level of antennae and then incurved to suture, median carina distinct, more feeble at base; clypeus tumid, medially and laterally carinate; frons and clypeus in profile shallowly convex; median ocellus absent; labium with anterior joint less than half length of penultimate; antennae with first segment very short, second segment subglobose, studded with distinct round depressions, constricted anteriorly at point of insertion of third segment; antennal flagellum apparently rather short, situated terminally at middle of distl surface of third segment; head with eyes not quite so broad as pronotum. Pronotum in middle about as long as vertex in middle or very longer, anterior margin convex between eyes, posterior margin angularly excavate, turning cephalad laterally; disc flattened, or very convex median carina distinct, lateral carinae of disc absent, a weak carina at each margin between eye and tegula, lateral fields of pronotum below eyes a little longer than broad; mesonotum broader than long, disc elongate oval, almost flat, tricarinate, lateral carinae convex, curving inwards at base, scutellum short, subrectangularly pointed at tip. Protibiae 1.5x as long as pro-femora, post-tibiae armed with four spines before apex, the first spine small and near base; a row of seven spines at apex; second joint of hind tarsus subequal to third joint in ventral view, distal margin concave, a spine at each angle, distal margin of first and second

joints bordered with an even row of minute teeth (approximately 20 and 14, respectively), with a distal fringe of short setae each almost as stout as one of the teeth.

Tegmina approximately fourx as long as wide, widest across membrane, forking before stigma at a distance equal to its length, M forking about halfway between lvel of Sc+R fork and base of stigma. Cu_1 forking near middle of tegmen, R with four anterior cells, M with six, Cu_1 with two; a complete line of transverse veins subparallel to anterior margin; first vein of clavus joining second at about middle, a transverse vein between Cu_2 and first claval vein; the common claval Stålk entering commissural margin before apex of clavus; apex of clavus closed, approximately three-quarters from base of tegmen; no cross veins on corium apart from R-M and M-Cu, nor on membrane apart from subanterior line. Tegmina devoid of granulation and setae. Wings with Sc simple, R forked twice before apex, M with anterior branch forked near margin, posterior branch simple, Cu_{1a} forked twice, Cu_{1b} simple.

Anal segment of female long, fully threex as long as wide, anterior margin medially excavate, telson not projecting beyond margin, anal foramen comparatively small. Third valvulae not quite so braod as long rounded distally, anterior portion abruptly membranous with distal margin rounded; first valvulae moderately long, straight on dorsal margin, shallowly convex on ventral margin, tapering distally with a row of seven teeth on dorsal margin; a semimembranous lobe of equal size attached ventrally at base; second valvulae as long as first, slender, tapering distally."

Diagnosis.

Like *Cladodiptera* and *Diacira*, *Protachilus* has a single crossvein in the clavus, connecting A1 and CuP. Like *Diacira*, the head is much narrower than the pronotum. *Protachilus* has a median carina on the frons and the posterior portion of

the vertex, unlike the other genera in this tribe. The posterior margin of the pronotum is broadly angulate, with a shallow median notch.

Description.

Head wider than long, lacking cephalic projection. Vertex subrectangular, wider than long, about 1.5 to 2x as wide as median length; anterior, lateral and posterior margins carinate, median carina weak, absent in anterior half; lateral margins divergent posteriorly; hind margin concave, broadly angulate; depressed medially; in profile, level. Frons 2 to 2.5x as long as wide; margins subparallel in upper half, divergent in lower half; median carina complete; intermediate carinae absent; frontal foveae smooth, sometimes tuberculate; convex in lateral view. Frontoclypeal suture straight. Clypeus with complete median carina; generally smooth, lacking striations; lateral carinae unbroken at the frontoclypeal and intra-clypeal sutures; convex in lateral view. Beak reaching abdomen. Eyes moderately large, subhemispherical; width subequal to height, width two-thirds width of vertex; area behind eye thickened. Ocellus near anterior margin of eye. Scape subellipsoidal, covered; flagellum anterior.

Pronotum short, collarlike; anterior margin convex; posterior margin broadly angulate, lacking median notch; median carina complete; intermediate carinae following anterior margin, divergent posteriorly, diminishing before reaching posterior margin; a single lateral carina directly behind eye, prominent posteriorly, diminishing anteriorly. Mesonotum tricarinate; the median carina diminishing posteriorly; lateral carinae complete, convergent in anterior half. Tegula lacking carinae, convex, the dorsal third bent around Costal margin of forewing.

Forewings macropterous, membranous, with darkened membrane in anterior third and along posterior margin; veins pale with darkened patches; exceed tip of abdomen; darkened pterostigma present; costal margin concolorous with other wing veins; veins lacking setae. Crossvein reticulation occurring in apical third of forewing; form two rows of cells. Sc 1-branched, diverging from RA in anterior half. RA 2- to 4-branched, with 4 or more irregularly placed crossveins in pterostigma. RP 4-branched; diverges from Sc+R in anterior half, proximal to nodal line. MP 7- to 8-branched; diverging from Sc+R at posterior cell. CuA 2-branched. Anal veins convergent in posterior half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; crossvein extending from A1 to CuP present.

Prolegs and mesofemora moderately expanded; procoxae lacking posterior spine, mesocoxae with short posterior spine; protibiae about 1.3x longer than profemora, lack lateral and anterior spines. Metacoxae with a short, wide posteriorly projecting spine. Hind tibiae with 4 preapical and 7 apical spines; basal tarsomere with 16 to 24 anterior spines; second tarsomere with 11 to 17 anterior spines.

Species Composition.

Currently, this genus is only represented by *Protachilus rex* Fennah, 1944a. At least one undescribed species was recognized in the examined material.

Geographic Distribution.

Brazil.

Host Plants.

No host plants reported.

Specimens Examined.

P. rex Fennah (2). **PERU**: Madre de Dios, Rio Tambopata Res, 30 ait km. SW Pto. Maldonado, 290m, (6-10)-XI-1979, subtropical moist forest (USNM: 1♀); Madre de Dios, Rio Tambopata Res, 30 ait km. SW Pto. Maldonado, 290m, (16-20)-XI-1979, subtropical moist forest (USNM: 1♂).

Protachilus spp. (6): **ECUADOR**: Orellana, Transect Ent., 1 km. S. Onkone Gare Camp, Reserva Etnica Waorani, 220m., T-4, 00º39'10"S 076º26'00"W, 5-II-1996, Fogging (USNM: 1♂); Orellana, Transect Ent., 1 km. S. Onkone Gare Camp, 220m, Reserva Etnica Waorani, 00º39'10"S 076º26'00"W, 3-VII-1994, fogging terre firme forest (USNM: 1♀); Provincia de Francisco de Orellana, Yasuni National Park, S00º40.478' W076º23.886', 25-IV-2005, @HG Vapor light/night (UDCC: 1♂); Provincia de Francisco de Orellana, Yasuni National Park, S00º40.478' W076º23.886', 26-IV-2005, @HG Vapor light/night (UDCC: 1♂). **PERU**: Madre de Dios, nr Puerto Maldonado, Posadas Amazonas, S12º48.115 W069º18.019', 609 ft, (30-IX)-(3-X)-2004 (UDCC: 1♀); Madre de Dios, nr Puerto Maldonado, Posadas Amazonas, lodge @ Rio Tambopata, S12º48.115 W069º18.019', 609 ft, (7-10)-X-2004 (UDCC: 1♀).

3.2.2 Tribe Igavini, tribus novem

Original Description and Diagnosis.

The Igavini are distinguished by a narrow, usually upward-projecting head process with the vertex raised above the plane of the pronotum. The vertex is narrowly parallel beyond the anterior margin of the eyes, and is strongly bent upward at the same point, such that the frons remains straight throughout. In *Dictyopharoides*, *Neomiasa* and *Paramisia*, the process is laterally compressed and sword-like, while in the other members, the process may gently taper to the apex. Some members possess a thickened callosity anterior- and posterior to the eyes, often forming part of a darkened line extending between the lateral carinae of the pronotum and the costa of the forewing. Unlike members of the Nersiini, which also possess a lateral line, the tegulae are smooth, lacking carinae.

Remarks.

All genera included in this tribe were neglected by Emeljanov's (1983) tribal designations, except *Toropa* (placed in Nersiini). *Dictyopharoides*, *Neomiasa*, and *Paramisia* appear closely related, based partially on genetalic features. These taxa also tend to have expanded forefemora, often with posterior edge lined with denticles, a laterally-compressed head process and tubercules or callosities on the head and pronotum.

The tribe consists of 7 genera and 18 species in the New World.

Igava Melichar, 1912:47-48

(Figure 8)

= *Igava* Melichar, 1912:47, 31 (key), 215 (List). Type species: *Dictyophara callipepla* Gerstaecker, 1895; designated by Melichar, 1912:48.

Original Description.

"Kopf samt Augen schmäler als der Thorax, in einen kurzen nach vorn und aufwärts gerichteten Fortsatz verlängert, welcher von den Seiten etwas zusammengedrückt ist und mit der Scheitelfläche einen fast rechten Winkel bildet. Der Fortsatz liegt in der Längsrichtung der Stirn. Der Scheitel ist länger als breit, die Seitenränder aufgeworfen und aufgerichtet, von der Seite betrachtet, gerundet, in der Mitte des Scheitels ein wulstiger Längskiel. Die Stirn hat die Form eines langschenkligen Dreieckes, mit zwei wulstigen, nach oben und unten konvergierenden Seitenkielen und einen viel schwächeren Mittelkiel, welcher im Gegensatz zu den Seitenkielen nicht bis zur Sdepressionze des Fortsatzes verläuft. Der Clypeus in der Mitte und an den Seiten fein gekielt. Die Augen kugelig, Ocellen klein, Fühler kurz. Pronotum kürzer als der Scheitel, vorn schwach abgerundet, hinten stumpfwinklig ausgeschnitten, auf der Scheibe drei Längskiele, zwischen denselben grubig vertieft, hinter den Augen jederseits zwei Seitenrandkiele. Schildchen breiter als lang, mit drei Kielen, die seitlichen nach außen konvex, vorn mit dem Mittelkiel verbunden. Deckflügel hyalin, nach hinten allmählich verbreitert und am Ende abgerundet. Aus der Posteriorzelle entspringen drei Längsnerven, von welchen der erste vor dem Stigma, der zweite hinter der Mitte des Coriums und der dritte (innere) mehr hinten vor der Clavussdepressionze sich gabelt. Stigma einzellig, braun. Im Anteriorteile drei Reihen von

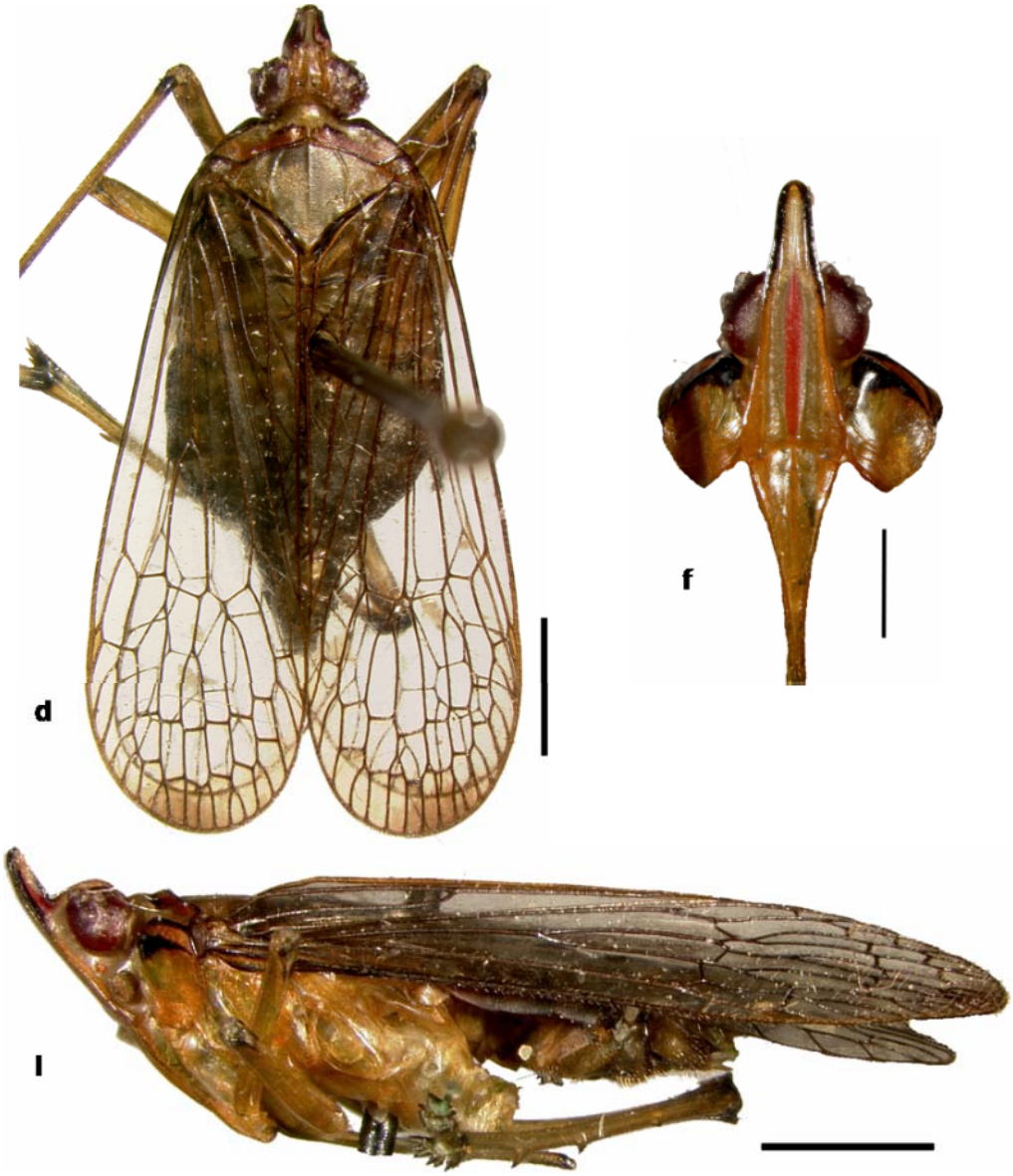

Figure 8. Dorsal (d), lateral (l) and frontal (f) habitus of *Igava callipepla.* Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

einfachen Quernerven. Flügel hyalin, mit zwei Quernerven vor der Sdepressionze. Hinterschienen mit vier Dornen."

Translation.

Head, including eyes, narrower than the thorax, in a short process extended foreward and rearward, which is somewhate laterally compressed and forms a nearly right angle with the top of the vertex, bent upwards. The head process lies in the same plane as the frons. The vertex is longer than wide, the lateral margins carinate, rounded, in profile, the middle of the vertex with a swollen protruding longitudinal carina. The forehead elongate triangular, with two lateral carinae converging above and below, and a much weaker median carina which does not, in contrast to the lateral carinae, continue to the tip of the process. The Clypeus medially and laterally finely carinate. The eyes spherical, ocelli small, antennae short. Pronotum shorter than the vertex, weakly rounded anteriorly, obtusely angled and cut off posteriorly, three prominant longitudinal carinae on the pronotal disk, furrowed between them, two parallel lateral carinae behind the eyes on each side. Mesonotum wider than long, with three carinae, the outer ones convex, connected anteriorly with the median carina. Forewing membranous, gradually widened posteriorly and rounded at the end. Three longitudinal veins extending from the posterior cell, the first of which forks before the stigma, the second behind the middle of the corium, and the third (inner) further behind, before the claval furrow (enters wing margin). Stigma single-cellular, brown. Three rows of simple crossveins anteriorly. Hindwing membranous, with two crossveins before the tip. Hind legs with four spines.

Diagnosis.

In *Igava*, the contiguous portion of veins ScR and M are shorter than the posterior vein (longer in *Trigava*). *Igava* differs from *Hydriena* by the head being produced anterad of the eyes (not produced in *Hydriena*), the length of the vertex beyond the eyes subequal to the posterior portion. The posterior margin of the pronotum is notched medially.

Description.

Head longer than wide, cephalic projection present. Vertex about 2.5 to 4x longer than greatest width; constricted anterior to eyes; posterior half subrectangular;; anterior and lateral margins carinate; anterior margin rounded; lateral margins parallel in anterior and posterior halves, posterior half 3x as wide as anterior; posterior margin concave to straight; median carina only present in posterior quarter. In profile, head process bent upward at approximately a 90º angle anterad of eyes, frontal plate nearly straight and flat, bent upward above. Frons rounded above; about 2.5 to 3x as long as greatest width; lateral margins sinuate, convergent above and below, expanded medially; median carina present above, absent in lower two-thirds; intermediate carinae broadest medially, convex. Frontal plate smooth. Frontoclypeal suture inversely U-shaped. Clypeus flat to convex, in profile; median and lateral carinae complete; clypeal plates smooth to transversely striate. Beak exeeding metacoxae. Eyes large, subhemispherical, width subequal to height, about 2x wider than greatest width of vertex; prominent callosity present behind eye. Ocelli below eyes. Antennal socket about one scape-width from eye margin; scape subellipsoidal, apex directed dorsally; flagellum subanterior.

Pronotum truncate anteriorly; posterior margin sinuate, broadly angulate medially, with median notch present, subequal in depth and posterior width; median carina complete; intermediate carinae follow anterior margin, divergent and convex posteriorly, diminishing before reaching posterior margin; two subparallel lateral carinae directly behind eye, ventral-most complete, dorsal-most diminishing anteriorly. Pronotal plate smooth, with single depressed between median and intermediate carinae. Mesonotum tricarinate; median carina diminishing prior to posterior margin; lateral carinae complete, divergent posteriorly; Tegula lacking carina.

Forewings macropterous and membranous, darkened anteriorly, exceeding tip of abdomen; dark pterostigma present; veins setose; costal margin concolorous with other veins; crossvein reticulation present in apical third of forewing, forming three distinct rows of cells. Sc 1-branched, diverging from RA in anterior third. RA 1-branched. RP 2- to 3-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 10- to 12-branched; contiguous with Sc+R, length of common branch subequal to width of posterior cell. CuA 4- to 5-branched. Anal veins convergent in posterior half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs normal, not foliaceous; procoxae lacking posterior spine, mesocoxae with a very short, wide posterior spine; tibiae subequal to 1.3x length of femora, lateral and anterior spines lacking. Metacoxae with a long, narrow, posteriorly projecting spine. Hind tibiae with 4 preapical and 7 apical spines; basal tarsomere with 12 to 14 anterior spines; penultimate tarsomere with 11 to 12 anterior spines.

Species Composition.

This genus contains two species: *I. callipepla* (Gerstaecker, 1895) (type species) and *I. hartae* O'Brien, 1999. The following key was developed from descriptions made by O'Brien (1999). The specimens cited below as "prob. *hartae*" have not yet been compared against authoritatively identified specimens.

1 Vertex 3x as long as greatest width, head process curved anteriorly; pronotum with a transverse dark bar between the intermediate carinae.

I. callipepla (Gerstaecker, 1895)

1' Vertex 4x as long as greatest width, head process generally straight throughout; pronotum lacking dark bar between the intermediate carinae.

I. hartae O'Brien, 1999

Geographic Distribution.

Bolivia, Peru.

Host Plants.

No host plants reported.

Specimens Examined.

I. callipepla (Gerstaecker) (5). **BOLIVIA**: Ixiamas, XII-1921, Milford Bio. Expl., 1921-22 (USNM: 1♀). **BRASIL**: Rond., 62 km. SW. Ariquemes, Rcho.

Grande, UV & Hg vapor, (4-16)-XI-1997 (LBOB: 1♀); Rondonia, 62 km. SW. Ariquemes, Fzda. Rancho Grande, Lot 1B, 13-XI-1994 (LBOB: 1♂, 1♀); Rondonia, 62 km. SW. Ariquemes nr. Fzda. Rancho Grande, 6-XI-1989 (LBOB: 1♂).

Igava spp. (prob. *hartae* O'Brien) (2). **PERU:** Madre de Dios nr Puerto Maldonado Posadas Amazonas lodge@Rio Tambopata, S12 48.115 W69 18.019, 609 ft; (30-IX)-(3-X)-2004 (UDCC: 2♀).

Dictyopharoides Distant, 1887:44

(Figure 9)

= *Dictyopharoides* Fowler, 1900:44. Type species: *D. tenuirostris* Fowler, 1900, by original designation.

Original Description.

"*Dictyopharae* affinis, sed angustior et magis parallelus; processu cadepressionis longo, tenui, apice haud dilatato, spatio inter oculos multo angustiori, pronoto meonotoque fere laevibus, tegminibusque ad apicem minus subtiliter reticulates, facile distinguendus.

Translation.

"Allied to *Dictyophara*, but narrower; head long, narrow between the eyes (which are large), produced into a long and very slender process which is not dilated at the apex; pronotum and mesonotum almost smooth, with slight traces of a central line; tegmina with

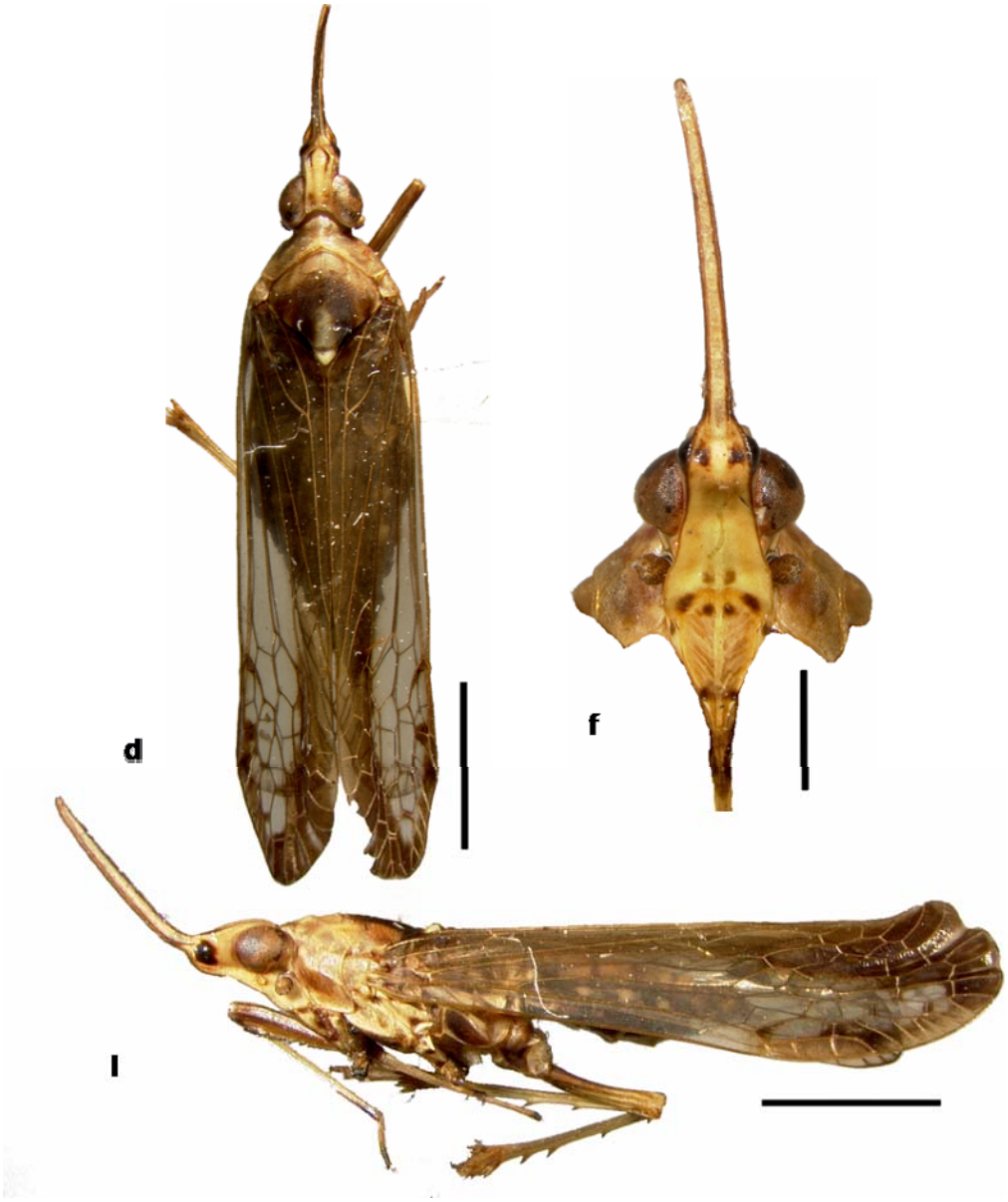

Figure 9. Dorsal (d), lateral (l) and frontal (f) habitus of *Dictyopharoides tenuirostris*. Scale bar - Dorsal: 3.0mm; Lateral: 3.0mm; Front: 1.0mm.

fine elongate veins in front, anterior third rather coarsely reticulate; posterior tibiae with four spines." (Translated in Distant, 1887)

Diagnosis.

Dictyopharoides differs from *Toropa* in possessing a median carina in the posterior half of the vertex only and lacking a callosity behind the eye. Forewings lacking organization of cells in anterior third of the corium, vein M contiguous with ScR for a distance equal to, or longer than, the posterior cell. The anterior margin of forewings are emarginated, the margin dipping inward at folds in the apex of the corium, within the cells produced by the branches and crossveins of the medial vein. The front femora are moderately expanded, the posterior margin lined with black-tipped denticles. The foretibiae are much shorter in *Dictyopharoides* than in *Toropa* , as well, the length only longer than femora, if at all. The hindtibae possess 4 preanterior spines.

Description.

Head longer than wide, cephalic projection present, elongate, laterally compressed and sword-shaped, curved upward. Vertex parallel-sided both anteriorly and posteriorly, very strongly laterally compressed anterad of the eyes; about 9x as long as greatest width; anterior, lateral and posterior margins carinate; anterior margin convex to broadly angulate; lateral margins subparallel posteriorly, constricted anterad of the eyes, parallel anteriorly; posterior margin concave; median carina absent; in profile, posterior half flat, subparallel to rest of body, anterior half moderately to strongly upturned. Frons about 6.5x as long as greatest width; anterior half much

narrower than posterior half, greatly expanded near frontoclypeal suture; lateral margins subparallel in anterior half, divergent below; median carina present in posterior third, strongest closer to the frontoclypeal suture; intermediate carinae present in anterior half only, diminishing near middle of frontal plate; in profile, posterior portion strongly concave, anterior portion bent dorsally; frontal plate smooth throughout. Frontoclypeal suture inversely U-shaped. Clypeus convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak reaching, sometimes exceeding, metacoxae. Eyes large, subelliptical, emarginate postero-ventrally; about 1.5 to 2x wider than high, approximately 3x wider than greatest width of vertex; lacking callosity behind the eye. Ocellus below midline of eye. Antennal socket about one scape-width from eye margin; scape subglobose; flagellum anterior.

Pronotum chevron-shaped; anterior margin convex; posterior margin angulate, median notch shallow, less deep than posterior width; median carina prominent in posterior half, diminishing anteriorly; intermediate carinae acutely divergent from apex, diminishing poteriorly, absent in posterior half; paired lateral carinae distinct, directly behind eye and anterior to tegula, subparallel to divergent anteriorly, distance between them about half length of dorsal-most of the two; the ventral-most complete and dorsal-most diminishing anteriorly; pronotal plate generally smooth throughout. Mesonotum tricarinate; median carina obsolete prior to posterior margin; lateral carinae anteriorly converging medially, in some meeting median carina anteriorly in acute angle; diverging posteriorly. Tegula lacking carinae.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma usually present; costal margin concolorous with other veins of

wing; veins lacking setae; anterior margin emarginate, constricted at sulci within MP and between MP and CuA. Crossveins reticulate in apical third of forewing; cells form three relatively distinct rows. Sc 1-branched, diverging from RA in anterior third. RA 2- to 4-branched. RP 4-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 5- to 7-branched; contiguous with Sc+R for a great distance, common branch 1.5 to 2x as long as posterior cell. CuA 4- to 6-branched. Anal veins convergent in posterior third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; claval crossveins absent .

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with a short, wide posterior spine; tibiae 1.5 to 2x longer than femora, lacking lateral and anterior spines; profemora toothed along posterior margin. Metacoxae with a moderately long, wide posteriorly-projecting spine. Hind tibiae with 4 preapical and 7 to 8 apical spines; basal tarsomere with 7 anterior spines; penultimate tarsomere with 7 anterior spines.

Species Composition.

This genus currently contains six species: *D. apicalis* Melichar, 1912, D. *inficita* Melichar, 1912, *D. lurida* Melichar, 1912, *D. porrecta* Melichar, 1912, *D. rectirostris* (Spinola, 1852), and *D. tenuirostris* Fowler, 1900 (type species). *Dictyopharoides. rectirostris* and *D. inficita* were examined and do not appear to be congeneric with the genotype, *D. tenuirostris*. They differ in many ways, including placement of crossveins and shape of wing, placement and shape of frontal, vertical and thoracic carinae, and shape of the head process. The following key to species is modified from Melichar (1912):

1 Vertex and frons with a transverse furrow anterad of the eyes, separating the posterior portion from the head process. Pterostigma two-cellular. *D. tenuirostris* Fowler 1900

1' Vertex and frons smooth to apex of head process. Pterstigma three-cellular or more. 2

2 Pterostigma three-cellular; legs entirely pale-yellow or greenish-yellow. 3

2' Pterostigma four- to five-cellular; femora with black longitudinal strips. 5

3 The lateral carinae of the vertex and frons pale. *D. rectirostris* (Spinola 1852)

3' The lateral carinae of the vertex and frons dark. 4

4 Median of the vertex dark. *D. porrecta* Melichar, 1912

4' Median of the vertex pale green. *D. lurida* Melichar, 1912

5 Pronotum with three lateral carinae. Forewings with three rows of crossveins. *D. apicalis* Melichar, 1912

5' Pronotum with two lateral carinae. Forewings with two rows of crossveins. *D. inficita* Melichar, 1912

Geographic Distribution.

Brazil, Chile, Ecuador, Mexico, Panama, Peru.

Host Plants.

No host plants reported.

Specimens Examined.

D. tenuirostris Fowler (3). **MEXICO**: (Location not given), M.F. 1381A (USNM: 1♂); SAN LUIS POTOSI: Tamazunchale, 1-XI-1945 (USNM: 1♂); VERACRUZ: Fortín de las Flores, (26-30)-VI-1963 (USNM: 1♀).

Dictyopharoides sp. (nr. t*enuirostris*) (2). **COSTA RICA** : Haredia, nr Puerto Viejo, La Selva Bio. Sta., 179 ft., N10°25' W84°00', at station, 1-III-2004, light (UDCC: 1♂); **PANAMA**: Trinidad Rio, 3-VIII-1912 (USNM: 1♂).

Hydriena Melichar, 1912:50

(Figure 10)

= *Hydriena* Melichar, 1912:50, 31 (key), 215 (List). Type species: *H. distanti* Melichar, 1912, by original designation.

Original Description.

"Diese Gattung ist durch die zwei starken parallelen Stirnkiele, welche oben in einen kallösen glänzenden Höcker einmünden, gekennzeichnet. Der Mittelkiel fehlt vollständig. Der Scheitel ist kurz, die Seitenränder blattartig geschärft und aufgerichtet, im Profil gerundet, die Scheitelfläche in der Mitte gekielt. Die Stirn ist oben breit, die Seiten vor dem Clypeus bauchig erweitert. Clypeus in der Mitte gekielt. Das Pronotum ist vorn abgerundet, hinten sehr flach ausgebuchtet, in der Mitte gekielt und hinter den Augen jederseits zwei parallele Seitenrandkiele, von welchen der untere nach vorn kolbig verdickt ist. Schildchen mit drei Kielen, von welchen die Seitenkiele nach vorn bogenförmig zum Mittelkiel

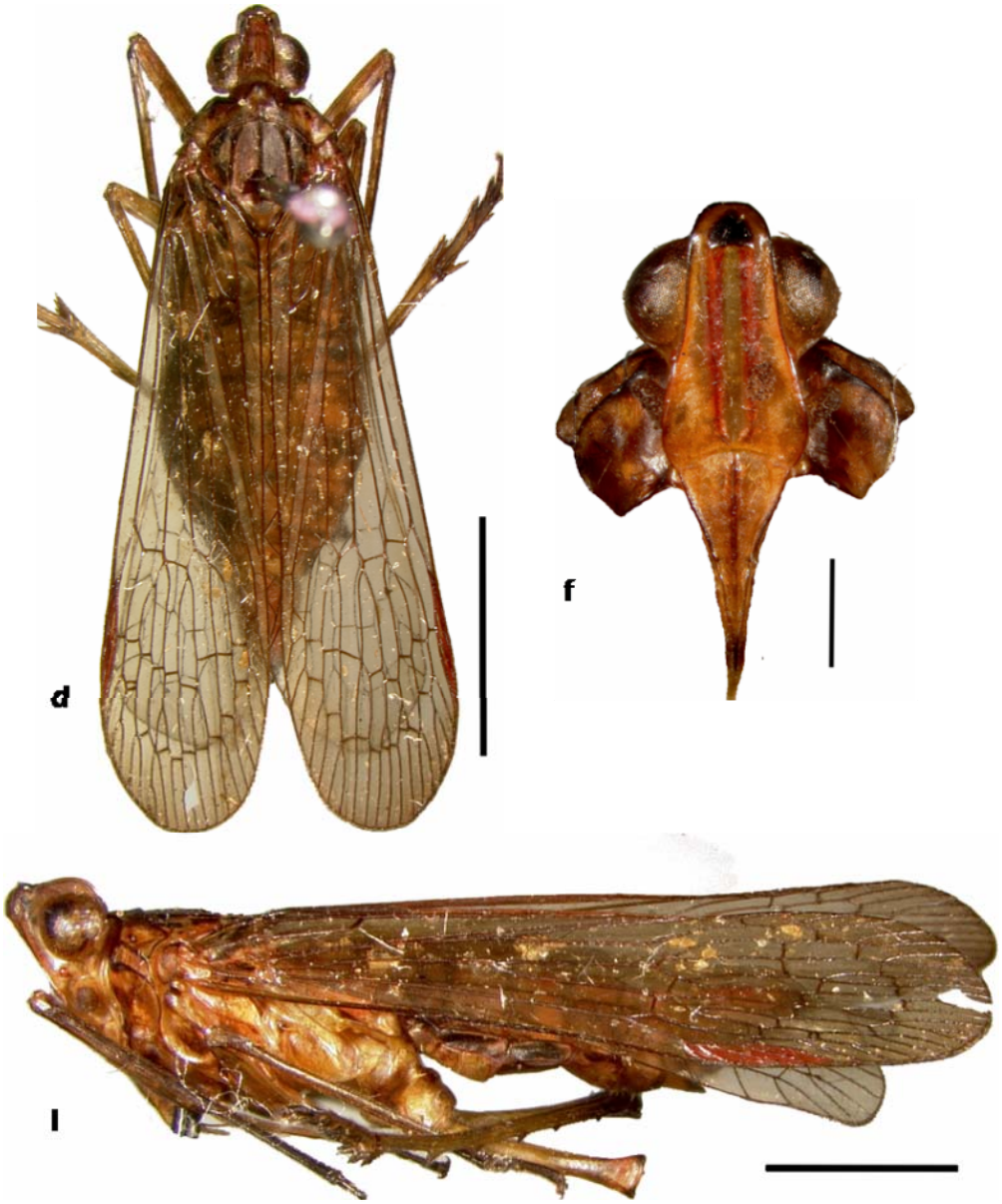

Figure 10. Dorsal (d), lateral (l) and frontal (f) habitus of *Hydriena ferruginea.* Scale bar - Dorsal: 5.0mm; Lateral: 3.0mm; Front: 1.0mm.

verlaufen. Deckflügel hyalin, im Anteriorteile zwei Reihen von Quernerven, die Nerven kurz aufstehend beborstet. Stigma lang, schmal, sechszellig. Beine einfach, die Hinterschienen mit sechs Dornen."

Translation.

This genus is separated from the others by two strong parallel carinae entering a shiny callous at the top of the frons. The median carina is entirely absent. The process is short, the lateral margins sharply expanded and carinate, rounded in profile, the middle of the process carinate. The frons is wide above, the lateral margins expanded before the Clypeus. Clypeus carinate medially. The Pronotum is rounded anteriorly, posterior margin straight, carinate medially and two parallel lateral carinae directly behind the eyes, the lower of which is thickened. Mesonotum tricarinate, the lateral carinae arched outward and not connected to median carina anteriorly. Forewings hyalin, apex with two rows of crossveins, the veins arising from just beyond posterior cell (?). Stigma long, narrow, six-cellular. Legs simple, the hind tibiae with six spines.

Diagnosis.

Hydriena is morphologically similar to *Igava*, with setose veins and forewing margin and a short contiguous vein ScR+M. Unlike the other members of Igavini, the head is not produced anterad of the eyes, but possesses a short knob at the junction of the vertex and the frons. Unlike *Igava* and *Trigava*, the posterior margin of the pronotum is not notched.

Description.

Head longer than wide, cephalic projection present, but very short; in profile, head raised above plane of the thorax. Vertex parallel-sided to somewhate sinuate, projected beyond eyes, about 2x longer than greatest width; anterior, lateral and posterior margins carinate, posterior margin less prominent; anterior margin truncate; lateral margins subparallel for most of length, convergent anteriorly; posterior margin concave; median carina absent, median with a prominent groove from apex to posterior margin; in profile, flat, posterior half of lateral margins projected above the eyes. Frons about 2x as long as greatest width; spatulate, expanded medially, convergent below; median carina absent; intermediate carinae roughly parallel, meeting in a large, subanterior bell-shaped callosity subanteriorly; frontal plate smooth. Frontoclypeal suture weakly convex (inversely U-shaped). Clypeus triangular; convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak exceeding metacoxae. Eyes relatively large, hemispherical; emarginate posteriorly; width about 2x that of vertex; prominent callosity present behind eye. Ocellus posterior to midline of eye. Antennal socket about one scape-width from eye margin; scape subellipsoidal; flagellum subanterior.

Pronotum with anterior margin truncate to rounded projected forward; posterior margin very broadly angulate, lacking median notch; median carina complete; intermediate carinae follow anterior margin, divergent posteriorly, diminishing in posterior half of pronotal plate; two subparallel lateral carinae, the ventral-most complete and the dorsal-most diminishing anteriorly; pronotal plate smooth, a single depression between the median and intermediate carinae.

Mesonotum tricarinate, each diminishing before reaching posterior margin; lateral carinae divergent througout. Tegula lacking carinae.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma usually present; costal margin concolorous with rest of veins; veins setose. Crossvein reticulation occurring in apical third of forewing; cells form three relatively distinct rows. Sc 1-branched, diverging from RA in anterior third. RA 4- to 5-branched. RP 3-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 10- to 14-branched; contiguous with Sc+R, common branch subequal to width of posterior cell. CuA 4- to 6-branched. Anal veins convergent in posterior third to half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; pro- and mesocoxae lacking posterior spine; tibiae about 2x longer than femora, lack lateral and anterior spines. Metacoxae with a relatively long, thin posteriorly projecting spine. Hind tibiae with 5 to 6 preapical and 7 apical spines; basal tarsomere with 9 to 10 anterior spines; penultimate tarsomere with 9 to 10 anterior spines.

Species Composition.

This genus is only represented by *Hydriena ferruginea* (Walker 1851).

Geographic Distribution.

Guyana, Suriname.

Host Plants.

No host plants reported.

Specimens Examined.

H. ferruginea (Walker) (4). **BRITISH GUIANA**: Bartica District, Tropical Research Sta. New York Zool. Society, 24-IV-1924, No. 241034 (AMNH: 1♂); Kartabo, Tropical Research Sta. New York Zool. Society, 25-VII-1924, No. 241035 (AMNH: 1♀); Essequibo River, 29-VII-1921 (USNM: 1♀) Kartabo, Bartica Dist., Tropical Research Sta. New York Zool. Society, 16-V-1924, No. 241036 (AMNH: 1♂).

Neomiasa Fennah, 1947:5

= *Neomiasa* Fennah, 1947:5. Type species: *Dictyphora telifera* Walker, 1858; designated by Fennah, 1947:5.

Original Description.

"Vertex in profile strongly convex, longer than broad (2.6:1), cephalic process about 2.2x as long as eye. Eye viewed from above 1.5x width of vertex. Frons longer than broad (1.7:1), lateral margins straight, diverging distally, abruptly incurved just before apex. Width across frontoclypeal suture about threex width across base; clypeus almost as large as frons, lateral margins converging distally; cephalic process in same plane as frons. Pronotum anteriorly convex, posteriorly broadly emarginated, disc devoid of carinae, in form of a rounded-tumid

elevation; mesonotum obsoletely carinate or ecarinate. Protibiae slender and elongate, posttibiae 4-spined.

Tegmina semicircularly rounded anteriorly, M forked once in corium, stigma 1- to 2-celled, 2 or 3 rows of transverse veins, about 19 areoles along anterior margin."

Diagnosis.

Neomiasa is quite similar to *Dictyopharoides* and *Paramisia*, with the median carina of vertex present in the posterior half only, lacking a callosity behind eye, subequal front tibiae and femora and four preapical spines on the hind tibiae. Unlike *Dictopharoides* and *Paramisia*, the crossveins of the forewings forming three, relatively well-organized anterior rows of cells. Longitudinal vein M branches from ScR at the posterior cell, not forming a contiguous ScR+M for any length.

Species Composition.

This genus is only represented by *Neomiasa telifera* (Walker 1858).

Geographic Distribution.

Brazil.

Host Plants.

No host plants reported.

Specimens Examined.

No specimens were available for study.

Paramisia Melichar, 1912:79

(Figure 11)

= *Paramisia* Melichar, 1912:79, 32 (key), 215 (List). Type species: *P. suturata* Melichar, 1912, by original designation.

= *Dictyopharoides* Fowler, 1900:44. *Paramisia* synonymized with *Dictyopharoides* by Metcalf, 1938:341, 335 (key). Removed from synonymy by Fennah, 1947:4.

Original Description.

"Der Gattung Miasa ähnlich und durch folgende Merkmale charakterisiert. Kopfklein, mit einem stielförmigen nach oben gekrümmten Fortsatz versehen, welcher bedeutend schmäler ist als der Scheitel und an die Form des Kopffortsatzes bei Miasa sehr erinnert. Der Scheitel ist länger als breit, gewölbt, in der Mitte nicht gekielt, die Seiten geschärft und aufgerichtet, im Profil halbkreisförmig. Der Kopffortsatz oben mit einer schmalen Furche, unten mit zwei Kielen, welche eine tiefe Furche begrenzen. Die Stirn zum Clypeus stark verbreitert, die Seiten etwas geschärft und gerundet. Die Stirnfläche mit einem zarten Mittelkiel, welcher sich auf den Clypeus verlängert. Clypeus fast so lang wie die Stirn. Beak bis zu den Hinterhüften reichend. Pronotum vorn etwas konisch vorgezogen, in der Mitte gekielt und mit zwei eingestochenen Punkten Die Seitenkiele fehlen; hinter dem Auge zwei parallele, weit voneinander gerückte Seitenrandkiele. Schildchen gewölbt, mit drei sehr undeutlichen Längskielen. Deckflügel länglich hyalin, mit zarten Nerven. Der äußere Ulnarnerv entspringt vom Radialnerven weit von der Basis desselben und teilt sich unten kurzgabelig, tiefer als der innere Ulnarnerv. (Bei Miasa entspringt der äußere Ulnarnerv von der Basis.) Stigma schmal, länglich vierzellig. Quernerven im Anteriorteile nicht zahlreich.

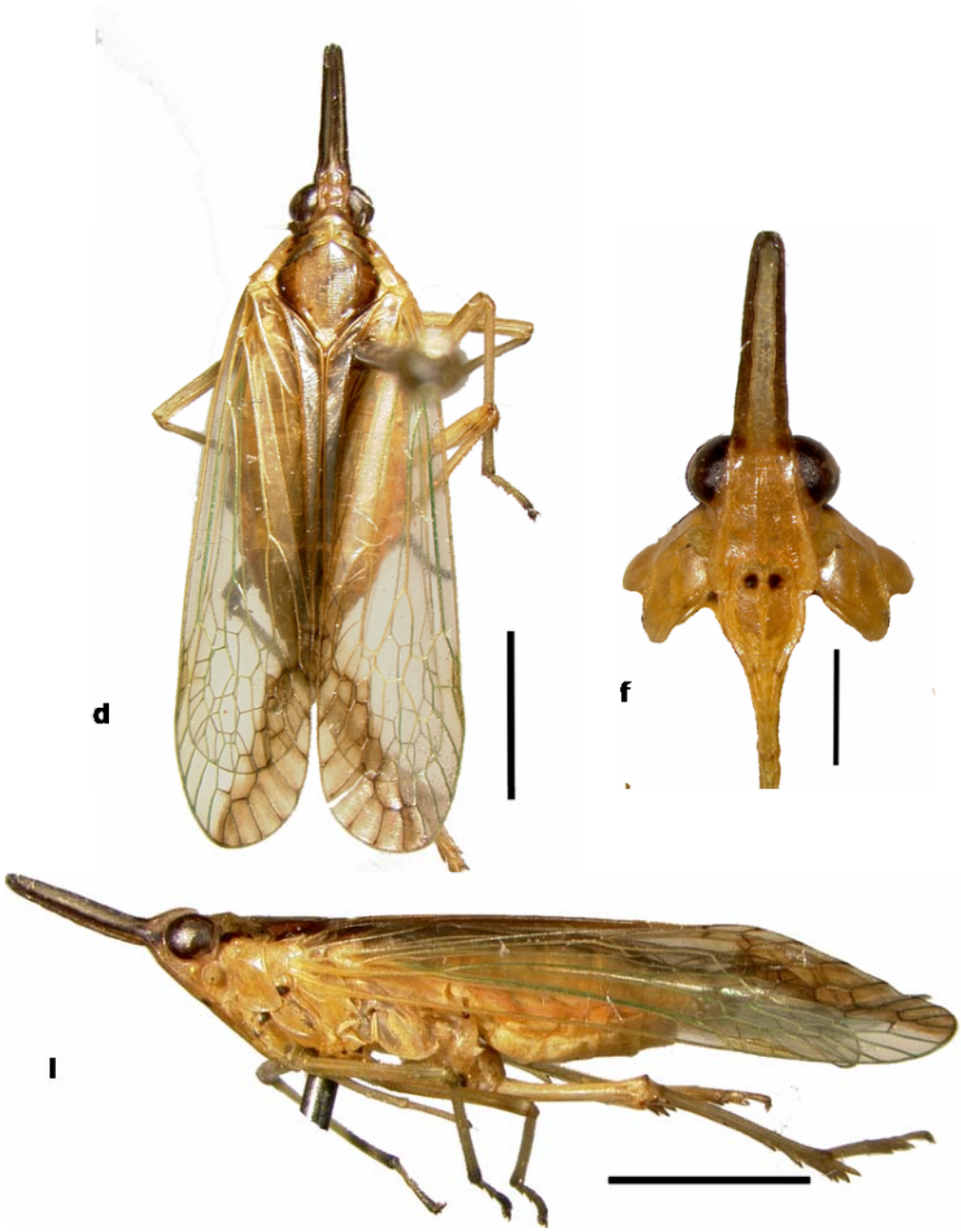

Figure 11. Dorsal (d), lateral (l) and frontal (f) habitus of *Paramisia rufistigma*. Scale bar - Dorsal: 3.0mm; Lateral: 3.0mm; Front: 1.0mm.

Beine nicht auffallend lang, die Vorderschenkel vor der Sdepressionze nicht gezähnt. Hinterschienen mit vier Dornen."

Translation.

Similar to the genus Miasa and characterized by the following features. Small head with an upward-curved, handle-shaped head process, which is significantly narrower than the vertex, the shape very reminiscent of the head process in *Miasa*. The vertex is longer than wide, thick, median carina lacking, the lateral margins sharply carinate and erect, in profile, semicircular. The head process above with a narrow furrow, below with two carinae, which border a deep furrow. Strongly widened from the frons to the clypeus, the lateral margins sharply carinate and rounded, in profile. The surface of the frons with a weak median carina, which extends to the clypeus. Clypeus almost as long as the forehead. Beak reaching hind coxae. Pronotum anteriorly conically produced, carinate medially, intermediate carinae carinate lacking, with two pit-like depressions; two parallel, widely separated lateral carinae behind eyes. Mesonotum large, with three very faint longitudinal carinae. Forewings hyaline, elongate, with weak veins. The outer cubital vein arises from the radial vein far from the posterior cell and shares just forked bottom, deeper than the inner cubital vein. (In *Miasa*, the cubital vein stems from the base.) Stigma narrow, elongate four-cellular. Few crossveins in the anterior portion. Legs not especially long, the front femora not expanded before the tip. Hindlegs with four spines.

Diagnosis.

The vertex tends to be more forward-projecting in *Paramisia* versus curved upward in *Dictyopharoides*. *Paramisia* also lacks a callosity behind the eye. Vein M

is contiguous with ScR for a distance equal to or longer than the posterior cell. The anterior third of the forewings reticulate, with many crossveins, wing apex smoothly rounded (vs. notched in *Dictyopharoides*). Front femora not expanded, or only slightly so, posterior margin lacking teeth (at most minute concolorous teeth). Foretibiae short, like *Dictyopharoides*, about equal in length to femora; the hindtibiae possess four preapical spines.

Description.

Head longer than wide, cephalic projection present. Vertex very elongate, about 5x longer than greatest width (approximately equal to body width at tegulae); elongate rectangular in posterior quarter, constricted anterad of eyes and compressed laterally in anterior three-quarters; anterior and lateral margins carinate; anterior margin rounded; lateral margins parallel posteriorly, abruptly covergent just anterad of eyes, then parallel to apex; median carina lacking. Posterior margin concave medially. In profile, level posteriorly, bent dorsally just beyond anterior margin of eyes, remaing parallel sided in anterior half. Frons about 4.5 to 5.5x as long as greatest width, with a transverse depression just anterior to eyes; apex rounded; lateral margins divergent to just anterior to eyes, then more broadly divergent to near frontoclypeal suture, converging to frontoclypeal suture forming a lateral obtuse point; median carina prominent, extending from just anterior to eyes to frontoclypeal suture. Intermediate carinae of the frons roughly parallels lateral carinae. Frontal plate generally smooth throughout, usually darkened between intermediate and lateral carinae in anterior two-thirds of frons. Frontoclypeal suture strongly arched into frons. Postclypeus and anteclypeus convex, in lateral view; median carina prominent,

extending nearly seamlessly from median carina of frons to anteclypeus apex; clypeal plates generally smooth, with striations directed downward at median; usually with pair of dark spots on either side of median carina near frontoclypeal suture. Postclypeus with lateral margins converging toward labrum; lateral carinae nearly unbroken at frontoclypeal and intraclypeal sutures. Beak reaching or exceeding metacoxae. Eyes moderately large, subhemispherical, emarginate near antennae; width smaller than height, about 1.5 to 2x width of vertex; lacking callosity behind eye. Ocellus below median of eye. Antennal socket far from eye, distance subequal to width of Scape; Scape subglobose; flagellum anterior.

Pronotum anterior, between eyes, broadly projecting cephalad; apex rounded to angulate; posterior margin broadly anteriorly angulate, median notched about as deep as posterior width. Median carina prominent, complete; intermediate rounded, following anterior margin of head, strongly divergent posteriorly, obsolete well prior to posterior margin. Two indistinct subparallel lateral carinae directly between and tegula, separated by distance of less than 1/2 length of dorsal-most carina Pronotal plate generally smooth except for a pair of depressions on either side of median caraina just posterior to midlength and second pair of dark spots just dorsad of lateral carinae. Mesonotum with three indistinct carinae; median carina obsolete prior to posterior margin; lateral carinae usually reaching posterior margin, convexly rounding to subparallel laterally. Tegulae lacking carinae.

Forewings macropterous, membranous; forewings extend well beyond abdomen apex; darkened pterostigma present; costal margin concolorous with other wing veins; veins lacking setae. Crossveins in apical third of forewing forming three loosely organized bands of cells. Sc 1- to 2-branched, fused with RA over most of its

length. RA 2- to 3-branched, sometimes with 1 to 3 irregular crossveins from main branch to [wing?]margin. RP 3-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 6- to 7-branched; contiguous with Sc+R, common branch subequal in length to posterior cell. CuA 2-branched. Anal veins convergent in posterior half of clavus; contiguous vein A reachestrailing margin prior to convergence with CuP. Claval crossveins absent.

Pro- and mesothoracic legs simple, not foliaceous; pro- and mesocoxae lacking posterior spine; tibiae subequal to 1.5x length of femora, lacking lateral and anterior spines. Metacoxae with a short, wide posteriorly projecting spine. Hind tibiae with 4 preapical and 8 apical spines; basal tarsomere with 7 to 8 anterior spines; penultimate tarsomere with 8 anterior spines.

Species Composition.

This genus contains three species: *P. filifera* (Walker, 1858), *P. rufistigma* (Walker, 1851), and *P. suturata* Melichar, 1912 (type species). There are no published keys to species.

Geographic Distribution.

Argentina, Brazil, Paraguay, Uruguay.

Host Plants.

No host plants reported.

Specimens Examined.

P. rufistigma (Walker) (5). **ARGENTINA**: E.R., 13 km. S. Ceibas, Hwy. 12, 14-I-1989 (LBOB: 1♀); **URUGUAY**: Rocha, 10 km. NW. Rocha, R 109, 5-II-1989 (LBOB: 2♂, 1♀); Colonia, Reducto, 29-XII-1978, swept *Ludwigia* (LBOB: 1♂); San Fernando, 9-I-1960 (USNM: 2♂); San Fernando, IV-1954 (USNM: 1♀)

Toropa Melichar, 1912:80

(Figure 12)

= *Toropa* Melichar, 1912:80, 32 (key). Type species: *Dictyophora ferrifera* Walker, 1851; designated by Melichar, 1912:80.

= *Tovopa* (Melichar, 1912). Incorrect subsequent spelling by Melichar, 1912:215 (List).

Original Description.

"Diese Gattung ist dadurch ausgezeichnet, daß der Kopf in einen nicht sehr langen zylindrischen Fortsatz vorgezogen ist, welcher am Ende gestutzt ist und mit dem viel breiteren Scheitel einen stumpfen Winkel bildet. Der Scheitel ist konvex, nach vorn abfallend, in der Mitte gekielt, die Seiten geschärft, und aufgerichtet. Der Fortsatz selbst ist nach oben gerichtet, dessen Kanten scharf, die Oberfläche vertieft. Die Endfläche des Fortsatzes hat die Form eines abgerundeten Quereckes, ohne Sagittalkiel. Die Stirn lang, zum Clypeus verbreitert, die Seiten daselbst bogenförmig nach außen erweitert, nach oben stark verschmälert, mit zwei starken bis zur Clypeusnaht herabreichenden Seitenkielen,

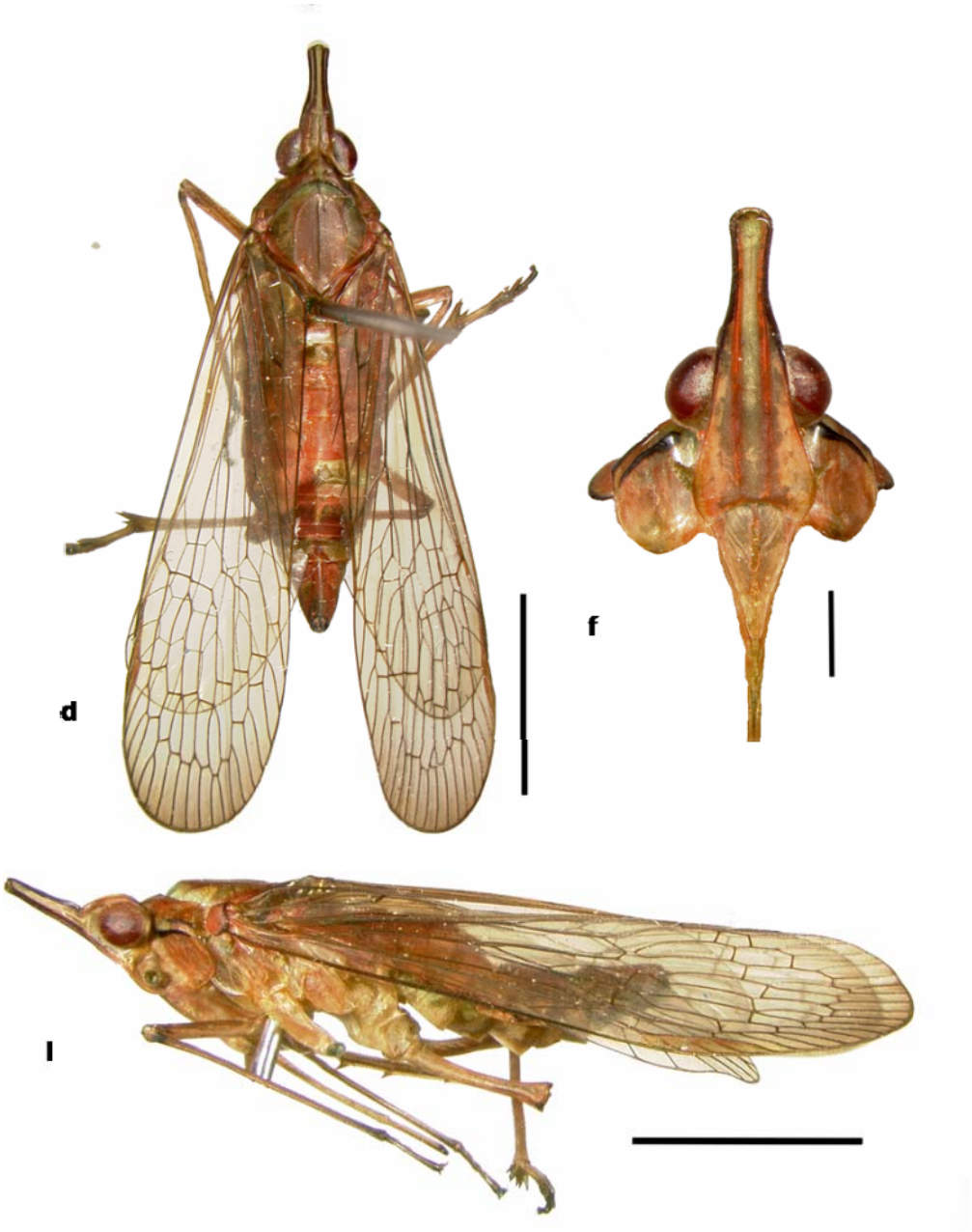

Figure 12. Dorsal (d), lateral (l) and frontal (f) habitus of *Toropa ferrifera.* Scale bar - Dorsal: 5.0mm; Lateral: 5.0mm; Front: 1.0mm

während der Mittelkiel nur als eine sehr schwache feine Linie kaum bis zur Mitte der Stirn herabreicht. Clypeus in der Mitte gekielt. Pronotum winkelig vorgezogen, in der Mitte gekielt, mit zwei eingestochenen Punkten, hinter den Augen jederseits zwei Seitenrandkiele. Fühler kurz. Ocellen groß. Beak die Hinterhüften überragend. Schildchen mit drei Kielen, die Seitenkiele nach vorn bogenförmig zum Mittelkiel genähert. Deckflügel hyalin. Stigma länglich, vierzellig. Im Anteriorteile zwei Reihen von Quernerven. Hinterschinen mit fünf Dornen."

Translation.

This genus is distinguished by a shortened cylindrical head process, which is upturned at the end and forms an obtuse angle with the much broader vertex. The vertex is convex, dipping anteriorly, carinate medially, the margins carinate and raised up. The process is turned upward, its margins carinate, the surface depressed. The anterior face of the process is rounded, lacking median carina. Frons elongate, widening toward the clypeus, outwardly bowed (convex), strongly diminished anteriorly, with two strong lateral carinae extending downward to the clypeal suture, while the median carina only weakly extends downward to the center of the frons. Clypeus carinate medially. Pronotum angularly bent, carinate medially, with two depressions, two lateral carinae situated behind the eyes. Antenna short. Ocellus large. Beak reaching beyond hind coxae. Mesonotum tricarinate, the arcuate lateral carinae approaching the median carina anteriorly. Forewing hyalin. Stigma oblong, four-cellular. The anterior portion with two rows of crossveins. Hindlegs with five spines.

Diagnosis.

The vertex lacks a median carina, but is furrowed from the posterior margin to the anterior edge of the eyes. The head is projected in front of the eyes, its length anterad of the eyes greater than the portion between the eyes. A callosity is present behind the eye. The tibiae of the forelegs are elongate, about 1.5x longer than the femora. The hindtibiae have five or six preapical spines.

Description.

Head longer than wide, cephalic projection present. Vertex constricted anterad of eyes, furrowed transversely at constriction, posteriorly subrectangular; about 4.5 to 5x as long as greatest width; anterior and lateral margins carinate; anterior margin rounded; lateral margins subparallel anteriorly and posteriorly, but narrower on head process than between eyes; posterior margin obtusely angulate; median carina lacking; in profile, bent upward forming an obtuse angle anterad of eyes, anterior portion and posterior portion straight. Frons truncate anteriorly, the frontal plate bent toward the vertex in a 90º angle; about 3.5 to 4x as long as greatest width; lateral margins sinuate and divergent throughout; median carina present in anterior third; intermediate carinae forming a spatulate median fovea, obtusely angulate anteriorly, subparallel below; frontal plate smooth; in profile, flat to convex. Frontoclypeal suture inversely U-shaped. Clypeus flat to convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak exceeding metacoxae. Eyes moderately large, subhemispherical; about 1.25x as wide as high, 1.5 to 2x wider than greatest width of vertex; prominent callosity present behind eye. Ocellus below midline of

eye. Antennal socket more than one scape-width; scape ellipsoidal, apex directed dorsally; flagellum subanterior.

Pronotum chevron-shaped; anterior margin spade-like, median pointed foreward; posterior margin broadly concave, median notch absent; median carina complete; intermediate carinae follow anterior margin, divergent and arcuate posteriorly, diminishing near middle of pronotal plate; two lateral carinae, the ventral-most complete, the dorsal-most diminishing anteriorly; pronotal plate smooth, with a single depression between the median and intermediate carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, divergent posteriorly. Tegula lacking carinae.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma present; costal margin concolorous with other veins; veins setose; apex darkened. Crossvein reticulation occurring in apical third of forewing, forming three rows of cells. Epipleuron present posteriorly, to distal end of posterior cell. Sc 1-branched, diverging from RA in anterior third. RA 4- to 5-branched. RP 3-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 12- to 13-branched; contiguous with Sc+R, length of common branch about a third the length of posterior cell. CuA 3-branched. Anal veins convergent in posterior third to half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with a very short, wide posterior spine; tibiae about 1.5 to 2x longer than femora, lack lateral and anterior spines. Metacoxae with a long, narrow posteriorly projecting spine. Hind tibiae with 5 to 6 preapical and 7 apical spines;

basal tarsomere with 8 to 12 anterior spines; penultimate tarsomere with 7 to 12 anterior spines.

Species Composition.

This genus contains three species: *T. ferrifera* (Walker, 1851) (type species), *T. melanogona* (Walker, 1858), and *T. remanei* O'Brien, 1999. The following key was modified from Melichar (1912) and descriptions in O'Brien, 1999:

1	Raised dark streak on side of head, in front of eyes, present.	2
1'	Raised dark streak on side of head absent.	*T. ferrifera* (Walker 1851)
2	Cephalic projection longer, length of vertex subequal to median length of pro- and mesonotum combined.	*T. melanogona* (Walker 1858)
2'	Cephalic projection short, length of vertex about two-thirds median length of pro- and mesonotum combined.	*T. remanei* O'Brien 1999

Geographic Distribution.

Brazil, Guyana, Peru, Suriname, Trinidad, Venezuela.

Host Plants.

Bombacaceae: *Catostemma fragrans* (New Record); Caesalpiniaceae: *Eperua rubiginosa* (New Record).

Specimens Examined.

T. ferrifera (Walker) (4). **BRITISH GUIANA** : Bartica, 1-V (USNM: 1♀); Bartica, 10-VI (USNM: 1♀); **GUYANA**: Mabura Hill, Camoudi, Station

315, 14-X-1997, Hand collecting/beating, ex. *Catostemma fragrans* (LBOB: 1♂); Mabura Hill, Camoudi, Station 5443, 29-01-1997, Hand collecting/beating, *Eperua rubiginosa*, Seed/Sap/Tree (LBOB: 1♀).

T. melanogona (Walker) (2). **BRITISH GUIANA** : Bartica, Potard RD, 13-IX-1937, B.M. 1937-776 (BMNH: 1♂); Tumutumari, 1953, B.M. 1923-147 (BMNH: 1♀).

Trigava O'Brien, 1999:60

(Figure 13)

= *Trigava* O'Brien, 1999:60. Type species: *Igava brachycephala* Melichar, 1912; designated by O'Brien, 1999:60.

Original Description.

"… The characters that distinguish [*Trigava*] from *Igava* are the green dorsal marginal carina of the pronotum (not continued on the tegula) and the frons of equal width above and below, and the shape of the head in Melichar's illustration (1912, Tafel II). This [genus] name is an arbitrary combination of letters, "*Tri*" signifying the triangular shape of the head in dorsal view, and "*gava*", the genus in which it was originally described."

Diagnosis.

Like *Igava* and *Hydriena*, the veins and margin of the forewings are setose in *Trigava*. The contiguous portion of veins ScR and M is longer than the posterior cell,

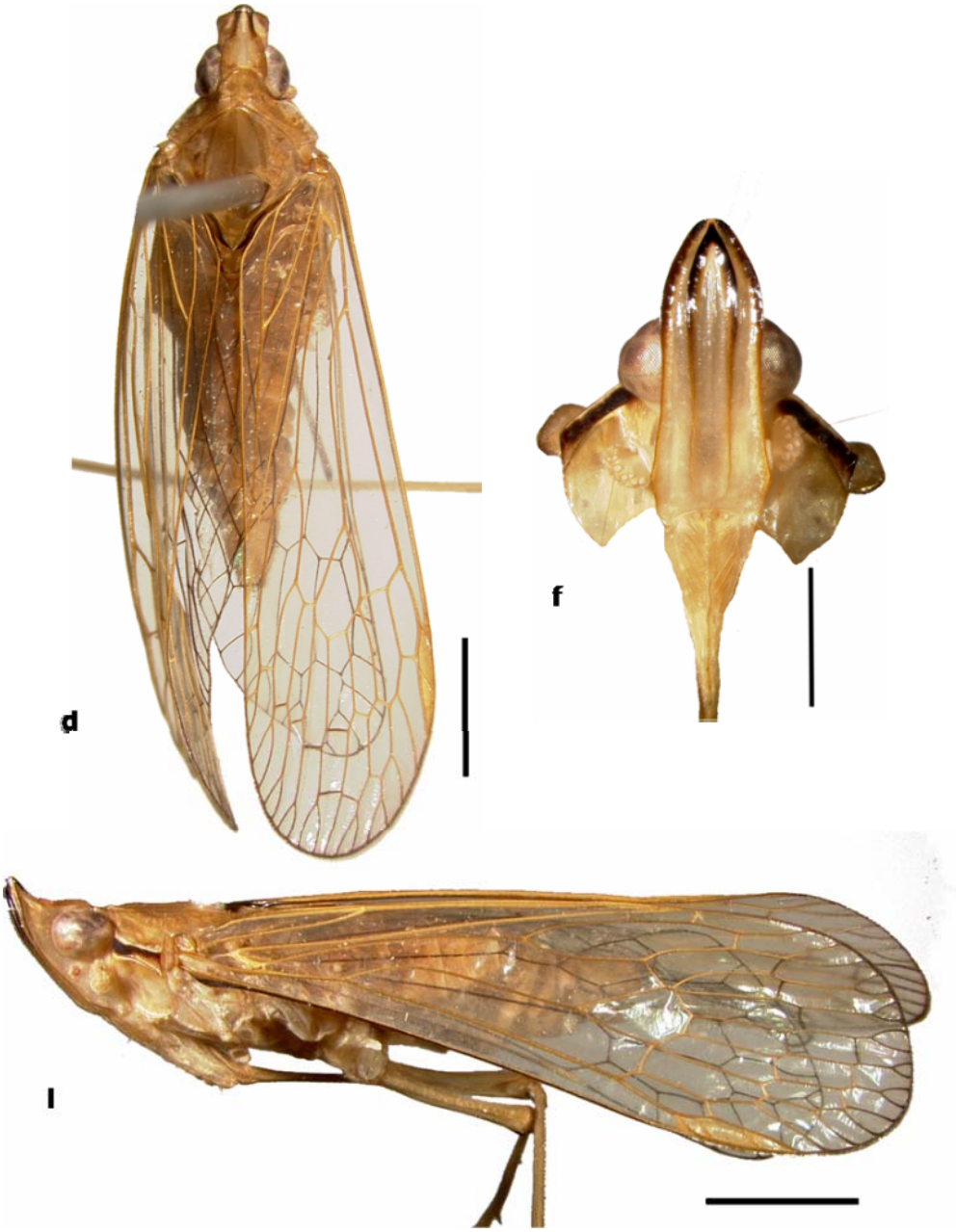

Figure 13. Dorsal (d), lateral (l) and frontal (f) habitus of *Trigava recurva*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

separating it from both *Igava* and *Hydriena*. The head is produced forward, the length of the vertex about twice as long as its greatest width. Unlike the other members of Igavini, the head process is conical, the lateral margins of the frons completely visible in dorsal view, giving the head process a triangular shape. As in *Igava*, the median of the posterior margin of the pronotum is notched.

Description.

Head longer than wide, cephalic projection present. Vertex 1.5 to 2x longer than greatest width; anterior and lateral margins carinate; rounded to obtusely angulate anteriorly; lateral carinae abruptly constricted anterad of eyes; lateral margins parallel in anterior and posterior halves, posterior half subrectangular, 2x as wide as anterior half; posterior margin broadly concave to truncate; median carina absent; vertex smooth on either side of the median, sometimes depressed medially. In profile, head process inflexed upward at obtuse angle anterad of eyes, anterior portion and posterior portions parallel-sided. Frons rounded to acutely angulate anteriorly; about 3 to 3.5x long as greatest width; lateral margins divergent in anterior quarter, subparallel to concave medially, convergent to obtuse point in posterior quarter; median carina obscure, most evident posteriorly near frontoclypeal suture. Intermediate carinae subparallel, meeting subanteriorly at acute angle, posteriorly converging semicircularly near frontoclypeal suture; frontal plate smooth, anterior third of intermediate and lateral carinae broadly darkened; in profile, nearly straight to convex. Frontoclypeal suture curved into frons. Clypeus flat to convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak very long, exceeding metacoxae to middle of abdomen. Eyes large, subelliptical, narrowed

posteriorly, width 1.5 to 2x height, about 1.5x wider than greatest width of vertex; prominent, but small, callosity present behind eye. Ocellus anterad of midline of eye. Antennal socket about one scape-width from eye margin; scape subellipsoidal, apex directed dorsally; flagellum subanterior.

Pronotum with anterior margin broadly convex to truncate; posterior margin broadly angulate with median notch subequal in depth and posterior width; median carina complete; intermediate carinae follow anterior margin, divergent and convex posteriorly, diminishing in middle of pronotal plate. Two parallel, complete lateral carinae directly behind eye; pronotal plate smooth, with multiple depressions between median and intermediate carinae; darkened between lateral carina, forming dark lateral line with costal margin of forewing. Mesonotum tricarinate; median carina weaker posteriorly, not reaching posterior margin; lateral carinae complete, divergent posteriorly. Tegulae lacking carina.

Forewings macropterous, membranous, exceeding tip of abdomen; darkened pterostigma present; costal margin dark relative to other longitudinal veins; veins setose; crossveins in apical third of forewing forming three distinct rows of cells. Sc 1-branched, diverging from RA in anterior third. RA 2- to 3-branched. RP 3- to 4-branched; diverging from Sc+R in anterior third, proximal to nodal line. MP 9- to 11-branched; contiguous with Sc+R, length of common vein subequal to 1.5x length of posterior cell. CuA 3- to 5-branched. Anal veins convergent in posterior third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; crossveins between A1 and CuP absent.

Pro- and mesothoracic legs simple, not foliaceous; pro- and mesocoxae lacking posterior spine; tibiae 2 to 2.5x length femora, lacking lateral and anterior spines.

Metacoxae with long, narrow, posteriorly projecting spine. Hind tibiae with 4 preanterior and 7 to 8 anterior spines; basal tarsomere with 7 to 8 anterior spines; penultimate tarsomere with 9 anterior spines.

Species Composition.

This species contains two species: *T. brachycephala* (Melichar, 1912) (type species) and *T. recurva* (Melichar, 1912). Melichar (1912) included the species of this genus in his description of *Igava*. The following keys are adapted from Melichar's key to the species of *Igava*.

1 Cephalic projection short, vertex shorter at midline anterior to constriction of lateral carinae than in posterior portion; in profile, projection bent upward, nearly perpendicular to base of vertex. *T. brachycephala* (Melichar, 1912)

1' Cephalic projection longer, vertex longer ar midline anterior to constriction than in posterior portion; in profile, projection bent upward in a broader angle. *T. recurva* (Melichar, 1912)

Geographic Distribution.

Bolivia, Peru.

Host Plants.

No host plants reported.

Specimens Examined.

T. recurva (Melichar) (3). **ECUADOR**: Orellana, Transect Ent. 1 km. S. Onkone Gare Camp, 220m, Reserva Etnica Waorani, 00º39'10"S 076º26'00"W, T4, 5-II-1996, Fogging terre firme forest (USNM: 1♀); Orellana, Transect Ent. 1 km. S. Onkone Gare Camp, 220m, Reserva Etnica Waorani, 00º39'10"S 076º26'00"W, 3-VII-1994, Fogging terre firme forest (USNM: 1♂); Orellana, Tiputini Biodiversity Station, nr. Yasuni National Park, Erwin Transect T/5, 220-250m, 00º39'10"S 076º26'00"W, 28-X-1994, Fogging terre firme forest (USNM: 1♂).

3.2.3 Tribe Lappidini Emeljanov, 1983

Original Description.

(From Key in Emeljanov, 1983)

"1 Wings fully developed, membranous, and flat. Stem divides into anterior and posterior branches (ScRA and RP) before pterostigma, and posterior branch in turn branches before its termination. Common stem of Pcu + A1 long, occupying at least half length of clavus.

2 Remigium (corium + membrane) has only two rows of cross veins – nodal and subanterior. First branching of M is either distal to first branching of ScR or proximal to first branching of CuA.

5 Remigium has at least three rows of cross veins, rows usually being out of alignment, but in each field running along whole length of membrane; number of cross veins at least three. First branching of M proximal to first branching of ScR, but distal to first branching of CuA.

9 ScR and M extend from posterior cell in common stem, which is longer (usually considerably longer) than the arculus. Anterior branch of CuA branches proximally to nodal cross vein mcu. Nodal cross vein rm located distally to first branching of MA, or on it, or only proximally to it; RP usually has four or five branches.

10 Pterostigma wide; its posterior margin forms sharp S-curve."

Diagnosis.

The Lappidini are identified by the presence of an elongate head process exceeding the length of the pro- and metanotum combined with the apex expanded, either bulbous or flared, and a brief constriction in the lateral margins of the vertex anterad of the eyes. Other than the aforementioned constriction and expansion, the vertex is subparallel to convergent throughout. The apex of the frontal plate is bent upward at an angle to meet the anterior margin of the vertex. The wings are membranous, though often darkened apically.

Remarks.

This tribe was quite broadly defined by Emeljanov (1983). His identification of this tribe was focused entirely on the doubtful character of the width and shape of the pterostigma; however, it appears to be a natural tribe, based on the synapomorphic characters of constriction of the vertex anterad of the eyes and expanded tip of the head process, and includes both *Lappida* and *Paralappida*. The members of this group are some of the largest and showiest of all Dictyopharidae, reminiscent of the Fulgoridae; however, this tribe was not among the dictyopharid taxa referred to Fulgoridae by Emeljanov (1979).

The tribe consists of 2 genera and 19 species in the New World.

Lappida Amyot and Serville, 1843:505

(Figure 14)

= *Lappida* Amyot and Serville, 1843:505. Type species: *Dyctiophora proboscidea* Spinola, 1839; designated by Amyot and Serville, 1843:505.

= *Dictyophara* Germar, 1833:175. Genus synonymized by Amyot and Serville, 1843:505 (in part).

= *Leptoprora* Gerstaecker, 1895:43. Type species: *L. stratiotes* Gerstaecker, 1895, by original designation. Genus synonymized by Melichar, 1912:81, 32 (key), 89, 91, 99 (comparative notes), 215 List).

= *Pseudophana* Burmeister, 1835:159, 146 (key). Genus synonymized by Blanchard, 1845:424; 1875:424 (Error).

= *Dictyophora* Germar, 1833. Genus synonymized by Spinola, 1850:52; 1852:243 (Error).

Original Description.

"*Tête* trés-prolongée en avant, ce prolongement cylindrique, avec de légères careens longitudinales, conique vers la base, son extrémité un peu renflée. – *Yeux* gros, globuleux, saillant assez fortement en dehors du prothorax. – *Ocelles* éloignés des yeux, places à égale distance à peu près entre l'oeil et de l'antenne. – *Antennes* ayant leur second article en sphere

Figure 14. Dorsal (d), lateral (l) and frontal (f) habitus of *Lappida proboscidea*. Scale bar - Dorsal: 10.0mm; Lateral: 10.0mm; Front: 6.0mm.

allongée, insérées assez loin des yeux. – *Prothorax* rétréci derrière la tête, presque en forme de croissant, fortement échancré et courbé postérieurement; mésothorax plus large que la tête, plus long du double que le prothorax. – *Élytres* allongées et transparentes, à cellules basilaires très-allongées jusqu'au delà du milieu, suivies de trios rangées de cellules plus petites, étroites, très-régulièrement disposes en demi-cercles concentriques parallèles à la courbure de l'extrémité de l'élytre; ailes plus courtes que les élytres, à grandes cellules, et transparentes. – *Abdomen* allongé, se terminant en pointe, avec une légère careen dorsale vers l'extrémité. – *Pattes* grêles, assez petites, et à peu près d'égale longueur.

De l'hébreu **לפיד**, *lappida*, lampe."

Translation.

Head produced into a very long, cylindrical extension, with faint longitudinal carinae, conical prolongation towards the base, the apex inflated. - Eyes large, globular, prominently protruding beyond the prothorax. – Ocelli distant from the eyes, located equidistant between the eye and antenna. - Antennae with the second segment an elongate spheroid, inserted far from the eyes. - Prothorax narrowed behind the head, almost crescent-shaped, strongly indented and bent posteriorly; mésothorax broader than the head, more than double the length of the prothorax. – Forewings elongate and transparent, with elongate posterior cells extending beyond the median, followed by three rows of smaller cells, narrow, in very concentric semicircles that are parallel with the curve of the apical margin of the wing; hindwings shorter than the forewings, with large cells, and transparent. – Abdomen elongate, ending in a point, with a slight dorsal carina posteriorly. - Legs slender, rather small, and about equal in length.

From Hebrew **לפיד**, *lappida*, lamp.

Diagnosis.

The *Lappida* are the largest of the Dictyopharinae, with some members exceeding 4 cm in length. The head is greatly produced anterad of the eyes, far exceeding the length of the pro- and mesonotum combined, and the apex is nearly always bulbous. The crossveins in the anterior third of the forewings are well-organized, forming three rows of cells, distinguishing this genus from *Paralappida*.

Description.

Head longer than wide, cephalic projection present, greatly elongate and expanded anteriorly. Vertex parallel-sided in posterior area, tapering anteriorly in front of eyes, expanded at tip of process; about 2 to 10x as long as greatest width; anterior, lateral and posterior margins carinate; anterior margin convex to broadly angulate; lateral margins subparallel posteriorly, constricted anterad of the eyes, convergent anteriorly to expanded, bulbous tip; posterior margin concave; median carina usually absent, though some species with a short median carina anteriorly; median grooved posteriorly; in profile, flat to upturned anteriorly. Frons about 2 to 8.5x as long as greatest width; expanded and broadly rounded anteriorly, lateral margins subparallel; median carina lacking; intermediate carinae spatulate, complete, widest anteriorly, subparallel below to frontoclypeal suture; frontal plate smooth. Frontoclypeal suture inversely U-shaped. Clypeus convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak exceeding metacoxae. Eyes moderately large, subelliptical; not emarginate; 1.2x as wide as high, subequal to width of vertex; ridge-like callosity present behind eye. Ocelli

located posterior to midline of eye. Antennal socket about one scape-width from eye margin; scape ellipsoidal, apex directed dorsally; flagellum subanterior.

Pronotum chevron-shaped, anterior margin acutely convex; posterior margin broadly rounded, lacking median notch; median carina complete; intermediate carinae complete, divergent to subparallel posteriorly; two subparallel lateral carinae, the ventral-most complete and dorsal-most diminishing anteriorly; pronotal plate with a single depression between the median and intermediate carinae and numerous darkened depressions between the intermediate and lateral carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, subparallel. Tegula lacking carinae.

Forewings macropterous, membranous; exceed tip of abdomen; darkened pterostigma usually present; costal margin concolorous with other veins of wing; veins setose. Crossvein reticulation in apical third of forewing; cells form three relatively distinct rows. Sc 1- to 2-branched, diverging from RA in anterior third. RA 3- to 6-branched, sometimes with 1 or 2 crossveins between primary branches and margin. RP 3- to 4-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 10- to 12-branched; contiguous with Sc+R for a short distance, common branch subequal to width of posterior cell. CuA 3- to 6-branched, sometimes with a crossvein from posterior-most branch to wing margin. Anal veins convergent in posterior third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with a short, wide posterior spine; tibiae 1.5 to 2x longer than femora, lack lateral and anterior spines, but setose. Metacoxae with relatively long,

narrow, posteriorly projecting spine. Hind tibiae with 4 to 6 preanterior and 7 to 8 anterior spines; basal tarsomere with 9 to 11 anterior spines; penultimate tarsomere with 8 to 10 anterior spines.

Species Composition.

This genus contains seventeen species: *L. armata* Melichar, 1912, *L. canaliculata* Melichar, 1912, *L. cayennensis* Melichar, 1912, *L. chlorochroma* (Walker, 1851), *L. ferocula* (Distant, 1887), *L. fusca* Metcalf, 1938, *L. gracilis* Melichar, 1912, *L. harderi* Schmidt, 1931, *L. inca* Schmidt, 1927, *L. instabilis* Melichar, 1912, *L. lappidaoides* Melichar, 1912, *L. longirostris* Schmidt, 1927, *L. metchroma* O'Brien, 1987, *L. proboscidea* (Spinola, 1839) (type species), *L. rubrovittata* Metcalf, 1938, *L. stratiotes* (Gerstaecker, 1895), and *L. tumidifrons* (Walker, 1858). There are no published keys to the species of this genus.

Geographic Distribution.

Argentina, Bolivia, Brazil, Columbia, Costa Rica, Ecuador, French Guiana, Guatemala, Honduras, Mexico, Nicaragua, Panama.

Host Plants.

Erythroxylaceae: *Erythroxylum orinocense* (New Record).

Type Material Examined:

L. fusca Metcalf (2). Paratypes (2): **PANAMA**: Barro Colo. Isld., Canal Zone, 19-XII-1928 (AMNH: 1♂); Barro Colorado Isl., 25-VI-1933 (USNM: 1♂).

L. metchroma O'Brien (2). Paratypes (2): **PANAMA**: Las Cumbres, 14-VII-1962 (LBOB: 1♂); Escobal Road, Atl., Canal Zone, 18-VII-1982 (LBOB: 1♀).

Specimens Examined.

L. armata Melichar (4). **BOLIVIA**: Santa Cruz, 4-6k SSE Buena Vista F & F Hotel, (23-26)-X-2000 (LBOB: 1♀). **BRASIL**: Mato Grosso, Sinop, (12°31'S 55°37'W), X-1975 (LBOB: 1♂); Chapada, Acc. No. 2966, V (May) (LBOB: 1♀); Golas, St. Isabel, R. Araguaia, Isla do Bananal., (27-X)-(4-XI)-1960, at light (FMNH: 1♀).

L. canaliculata Melichar (1). **PANAMA**: El Volcan, Chir. 4-10,000 ft., (VII-VIII)-1937 (ANSC: 1♀).

L. chlorochroma (Walker) (5). **BELIZE**: Orange Walk, Rio Bravo Cons. Area, Mahogany Trail, 10-VII-1996, UV & Hg Vapor Light (LBOB: 1♂). **HONDURAS**: Atlantida, PN Pico Bontio, Esta. CURLA, 18-VII-2001 (LBOB: 1♀). **MEXICO**: Chiapas, 21 km. N Ocozocoautla, 23-VIII-1982 (LBOB: 1♂ as *L. compressifrons* (Walker)); Simojovel, Chis., 28-IX-1961 (LBOB: 1♂ as *L. nigrolineata* (Stål)); Vera Cruz, Catemaco, 6-IX-1974 (LBOB: 1♀ as *L. nigrolineata* (Stål)).

L. ferocula (Distant) (6). **PANAMA**: Taboga I., Coll. J.H. Jennings (USNM: 2♂); 122 (USNM: 1♀); Pipeline Rd. 10 km N Gamboa, C.Z., 28-IV-1975 (LBOB: 1♀); Canal Zone, Barro Colorado VI-1967, at U.V. Light (LBOB: 1♀); Margarita, Canal Zone, (25-28)-X-1972 (LBOB: 1♂).

L. fusca Metcalf (6). **COSTA RICA**: Ala., 20 km. S. Upala, (7-9)-Aug-1990 (LBOB: 1♀). **GUATEMALA**: Alta V. Paz, 26-4, Cacao Trece Aguas

(USNM: 1♀). **PANAMA**: Almirante, 19-VIII-1944 (USNM: 1♂); San Blas, Nusagandi, Nusagandi Tr., 150-350 m., 27-VII-1995 (LBOB: 1♂); Canal Zone, Barro Colorado Is., 25-VI-1968, MT (WSUC: 1♀); 9km. N El Cope, Cocle Prov., 12-VIII-1977 (UCDC: 1♂).

L. gracilis Melichar (7). **COSTA RICA**: Guan., 13 mi. SE. Liberia, 400', 12-VII-1974 (LBOB: 1♂); Guanacoaste Prov., Estacion Exper. Enrique Jimenez Nuñez, 20 km SW Cañas, Nov. 17-V-1991 (USNM: 1♂); Guan. 3 mi. NW. Liberia, 500', 12-VII-1974, at night (AMNH: 1♂). **HONDURAS**: Cop., 2 mi. S. Nueva Arcadia, 2000', 24-VII-1974 (LBOB: 1♂); Com., 7 km. S. La Libertad, 18-VII-1977 (LBOB: 1♀). **NICARAGUA**: Tidepressionapa Managua, 5-VIII-1958, En Vuelo (USNM: 1♂); San Antonio, Managua, 28-VIII-1957, En Vuelo Dentro Caffine ("in flight inside coffee") (USNM: 1♀).

L. inca Schmidt (2). **BOLIVIA**: Santa Cruz, Buena Vista vic. Flora & Fauna Hotel, (14-16)-X-2000 (LBOB: 1♂); S. Cruz, 4-6km. SSE B. Vista F & F Hotel, (13-16)-2003 (LBOB: 1♀).

L. instabilis Melichar (1). **BRASIL**: N.E. Brazil, Sr. Luiz, B.M. 1926-217 (BMNH: 1♀).

L. lappidaoides Melichar (3). **HONDURAS**: Cortes hills above San Pedro Sula, 17-IX-1984 (LBOB: 1♂); S.C.Y., Lago Yojoa, 21-VII-1974 (LBOB: 1♂, 1♀).

L. longirostris Schmidt (4). **BRASIL**: Rond., 62km. SW. Ariquemes, Rcho. Grande, UV & Hg vapor, (4-16)-XI-1997 (LBOB: 1♂); Rondonia, 62km. SW. Ariquemes, Fzda. Rancho Grande, 13-XI-1994 (LBOB: 1♀).

PANAMA: Canal Zone, Barro Colorado Is., (2-4)-II-1967 (WSUC: 1♀); Barro Colorado Is., Canal Zone, 13-IV-1967 (WSUC: 1♀).

L. metchroma (Walker) (1). **PANAMA**: Las Cumbres, 14-VII-1962 (WSUC: 1♂).

L. proboscidea (Spinola) (2). **BRASIL**: RO Fazenda Rancho Grande, 62 km. S. Ariquemes, 29-XI-1991 (UCDC: 1♂). **PANAMA**: Barro Colorado I., CZ, 15-V-1982 (UCDC: 1♂).

L. rubrovittata Metcalf (5). **COSTA RICA**: Prov. Heredia, F. La Selva, 3 km. S. Pto. Viejo, 10°26'N 84°01'W, 25-VI-1986 (LBOB: 1♂); Heredia Pr. La Selva Biol. Sta. 3 km S Pto. Viejo, 10°26'N 84°01'W, 17-VI-1991 (LBOB: 1♀). **PANAMA**: Barro Colorado Is., Canal Zone, 20-V-1967 (WSUC: 1♀); Barro Colorado I., Canal Zone, 21-VIII-1977 (UCDC: 1♀); Canal Zone, Barro Colorado I., 10-IX-1978 (UCDC: 1♀).

L. tumidifrons (Walker) (2). **VENEZUELA**: LA, Guar. 7 km. ESE Calabozo, Est. Biol. Llanos, 380', 26-VII-1988, at night, on *Erythroxylum orinocense* HBK (LBOB: 1♂, 1♀).

Paralappida Melichar, 1912:89

(Figure 15)

= *Paralappida* Melichar, 1912:89, 32 (key), 215 (List). Type species: *Pseudophana limbativentris* Stål, 1862; designated by Melichar, 1912:89.

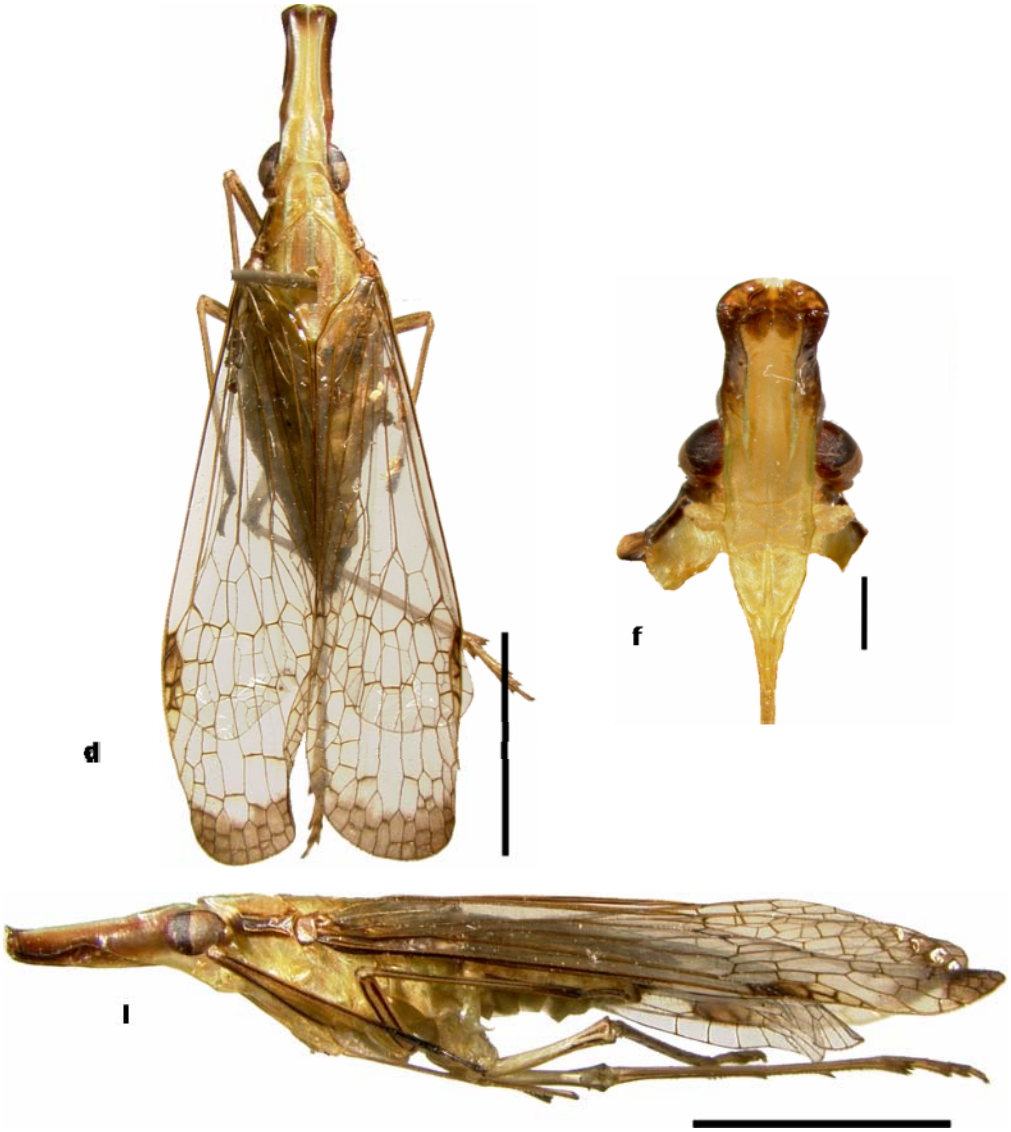

Figure 15. Dorsal (d), lateral (l) and frontal (f) habitus of *Paralappida limbativentris.* Scale bar - Dorsal: 5.0mm; Lateral: 5.0mm; Front: 1.0mm.

Original Description.

"Kopf in einen langen oder kürzeren, nach vorn gerade gerichteten kantigen Fortsatz vorgezogen, welcher in der Mitte stark eingeengt ist, an der Sdepressionze jedoch sich wieder verbreitert. Die Endfläche ist mit zwei Gruben versehen, die durch einen sagittalen Kiel voneinander getrennt sind. Die untere Kante des Fortsatzes, welche vom Seitenrandkiele der Stirn gebildet wird, ist nicht wie bei *Lappida* gerade, sondern bogenförmig gebuchtet. Stirn mit drei Längskielen, die Seitenkiele kaum zur Mitte der Stirn herabreichend, der Mittelkiel nach oben verkürzt. Pronotum und Schildchen mit drei parallelen Kielen. Deckflügel hyalin, nach hinten erweitert. Stigma retikuliert, im Anteriorteile zahlreiche unregelmäßig gestellte Quernerven. Clavusnerven vor der Mitte des Clavus vereinigt. Hinterschienen mit vier Dornen."

Translation.

Head produced into a long or short, straight, forward-facing process, with is strongly constricted medially, but is widened at the tip. The apical area with two depressions, which are separated by a median carina. The lower edge of the head process, which is formed by the carinate lateral carinae of the frons, is not straight as in *Lappida*, but sinuate. Frons with three longitudinal carinae, the lateral carinae barely reaching the middle of the frons, the median carina shortened anteriorly. Pronotum and mesonotum with three parallel carinae. Forewings hyaline, expanded posteriorly. Stigma reticulate, with numerous crossveins in the anterior portion. The claval nerves joining before the middle of the clavus. Hindtibiae with four spines.

Diagnosis.

Paralappida is distinguished from *Lappida* by a flared, rather than bulbus, apex of the head process (compare Figures 5j and k; 9g and m; and 13f and g). The process is shorter, at least relatively, than in *Lappida*, only exceeding the length of the pro- and mesonotum combined. The crossveins of the anterior half of the forewings are quite reticulate, lacking any clear organization of rows, especially along the apex.

Description.

Head longer than wide, cephalic projection present, elongate and expanded anteriorly. Vertex 3.5 to 4x longer than greatest width; anterior, lateral and posterior margins carinate; anterior margin broadly concave; lateral margins sinuate, expanded anteriorly, convergent from posterior margin forward, constricted anterad of eyes; posterior margin straight, posteriorly projected laterally; median carina complete; flat, in profile, may be upturned anteriorly. Frons 6 to 7x as long as greatest width, expanded anteriorly; median carina complete; intermediate carinae spatulate above, subparallel below; bent dorsad above junction of median and intermediate carinae; in profile, anterior portion bulbous, flat posteriorly. Frontoclypeal suture weakly inverted U-shaped. Clypeus convex, in profile; median and lateral carinae complete, unbroken at frontoclypeal and intraclypeal sutures; clypeaus transversly striate. Beak reaching middle of abdomen. Eyes moderately large, subelliptical; about 1.5x as wide as high, about as broad as base of vertex; not emarginate; prominent callosity behind eye present. Ocellus directly below midline of eye. Antennal socket about one-half scape-width from eye margin; scape subellipsoidal; flagellum subanterior.

Pronotum with truncate anteriorly; angulate posteriorly, median notch about 1.5x as deep as wide across posterior margin; median carina complete; intermediate carinae nearly complete, follow anterior margin, subparallel posteriorly; two subparallel lateral carinae; pronotal plate smooth, a single depression between median and intermediate carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, subparallel. Tegulae lacking carinae.

Forewings macropterous and membranous; extending well beyond tip of abdomen; pterostigma darkened. Veins lacking setae; costa concolorous with other veins. Crossveins in apical third of forewing, reticulate, forming 4 to 6 rows. Sc 1- to 2-branched, diverging from RA in anterior third. RA 3- to 4-branched. RP 4- to 5-branched; diverging from Sc+R in anterior third. MP 7- to 10-branched; contiguous with Sc+R proximally, common branch subequal to length of posterior cell. CuA 6- to 7-branched. Anal veins convergent in proximal third of clavus; combined vein reaching posterior margin; crossveins absent in clavus.

Legs simple, not expanded. Procoxae lacking posterior spine, mesocoxae with short, obtusely pointed posteriorly directed spine; metacoxae with longer, acuminate, posteriorly projecting spine. Protibiae 1.5x longer than femora, setose, lacking lateral and anterior teeth. Hind tibiae with 4 preanterior and 8 anterior teeth; basitarsus with 11 to 12 anterior teeth; second tarsomere with 10 to 13 anterior teeth.

Species Composition.

The genus contains two species: *P. limbativentris* (Stål, 1862 (type species) and *P. constricta* (Stål, 1862). The key below is modified from descriptions in Melichar (1912):

1 Vertex long, subequal to median length of pro- and mesonotum together. Frons greenish-yellow throughout. Hind tibiae with 4 spines along shaft.

P. limbativentris Stål 1862

1' Vertex shorter, about half median length of pro- and mesonotum together. Frons dark anteriorly. Hind tibiae with 5 spines along shaft.

P. constricta Stål 1862

Geographic Distribution.

Brazil.

Host Plants.

No host plants reported.

Specimens Examined.

P. limbativentris (Stål) (2). **BRASIL**: Mafra, S. Catarina (BMNH: 1♂); Rio de Janeiro, Guanabara, I-1972B.M. 1972-541 (BMNH: 1♀).

P. spp. (2). **PERU**: Upper Rio Maranon, 23-I-[19]29, F 6050, Acc. 33591 (AMNH, 1♀). **ECUADOR**: Napo Prov. Sierrazul, 2200 m, SW of Baeza, 0° 40'S, 77° 55'W 22-30 Jan. 1996 (1♂, USNM, tentatively placed).

3.2.4 Tribe Nersiini Emeljanov 1983:80

Original Description.

(From Key in Emeljanov, 1983)

"1 Wings fully developed, membranous, and flat. Stem divides into anterior and posterior branches (ScRA and RP) before pterostigma, and posterior branch in turn branches before its termination. Common stem of Pcu + A1 long, occupying at least half length of clavus.

2 Remigium (corium + membrane) has only two rows of cross veins – nodal and subanterior. First branching of M is either distal to first branching of ScR or proximal to first branching of CuA

5 Remigium has at least three rows of cross veins, rows usually being out of alignment, but in each field running along whole length of membrane; number of cross veins at least three. First branching of M proximal to first branching of ScR, but distal to first branching of CuA.

9 ScR and M extend from posterior cell in common stem, which is longer (usually considerably longer) than the arculus. Anterior branch of CuA branches proximally to nodal cross vein mcu. Nodal cross vein rm located distally to first branching of MA, or on it, or only proximally to it; RP usually has four or five branches.

11 Pterostigma narrow, no wider than Costal field; its posterior margin gently arcuate and does not project rearward.

12 Ovipositor (?) "zegrebayushchy-mesyashchy" type; lower parts of third valves of ovipositor sclerotized to usual degree, and for the most part relatively wide and short.

13 Lower parts of third valves of ovipositor at top have outward-bent membranaceous margin. Anal tube of female at bottom has bristles, one on each papilla."

Diagnosis.

The Nersiini are distinguished by distinct, often pale-colored carinae on the tegulae. It is divided between two groups, those with crossveins covering much of the corium (*Plegmatoptera*, *Pteroplegma*, *Megadictya* and *Melicharoptera*) and those with crossveins occupying only the anterior third of the corium (*Nersia*, *Retiala* and *Trimedia*). The forewings of the first group are generally wider anteriorly than those of the second. The head more or less produced, the vertex triangular or elongate pentagonal. Most members are green throughout, including the veins of the forewings.

Remarks.

Emeljanov (1983) neglected mention of this group having carinate tegulae, though it is a unique feature. While nearly all of its members were originally placed within this group, characters of the female genetalia suggested inclusion of *Hyalodictyon*, *Digitocrista*, *Paralappida*, *Pharodictyon* and *Toropa* by Emeljanov (1983), but these genera lack carinae on the tegulae. *Plegmatoptera* is unique in this group, possessing crossveins within the clavus, a character lacking in all genera but *Brachytaosa* and the Cladodipterini, but may be secondarily derived in this group.

The tribe consists of 7 genera and 28 species in the New World.

Nersia Stål, 1862: 62

(Figure 16)

= *Nersia* Stål, 1862:62, 63 (key). Type species: *N. haedina* Stål, 1862, by original designation.

= *Dictyophara* (*Nersia*) Germar, 1833. Genus synonymized by Stål, 1869:91. Status restored by Melichar, 1912:69 (by implication).

= *Dictyophara* Germar, 1833:175. Type species: *Fulgora europaea* (Linneus, 1767); designated by Germar, 1833:175. Genus synonymized by Stål, 1866:154 (with *Dictyophara* as senior synonym); synonymy followed by Berg, 1879a:182; 1879b:217; Oshanin, 1879:128 (30); 1907:226; 1912:226; Atkinson, 1886:25; Distant, 1887:39; 1906a:241; 1906b:350; 1907:190; Melichar, 1903:22, 222; Swezey, 1904:16; Van Duzee, 1914:387; Gibson, 1917:70; Bergroth, 1920:18; Hess, 1925:147; Wu, 1935:99 (Error).

= *Nersiae* Stål, 1862. Incorrect subsequent spelling by Stål, 1862:65.

= *Nersiam* Stål, 1862. Incorrect subsequent spelling by Stål, 1862:487.

Original Description.

"Caput ante oculos plus minus prominens, interdum longe conico- vel cylindrico-productum; fronte medio carinis tribus, raro obsoletis, instructa, media per clypeum continuata. Prothorax angulatus, breviusculus, postice angulato-emarginatus, saepissime cum scutello tricarinatus. Tegmina abdomine longiora, vena longitudinali media prope basin cum vena exteriore confluente, pone medium reticulata, areolis magnitudine, numero formaque variabilibus instructis, stigmate transversim venoso, haud reticulato. Pedes

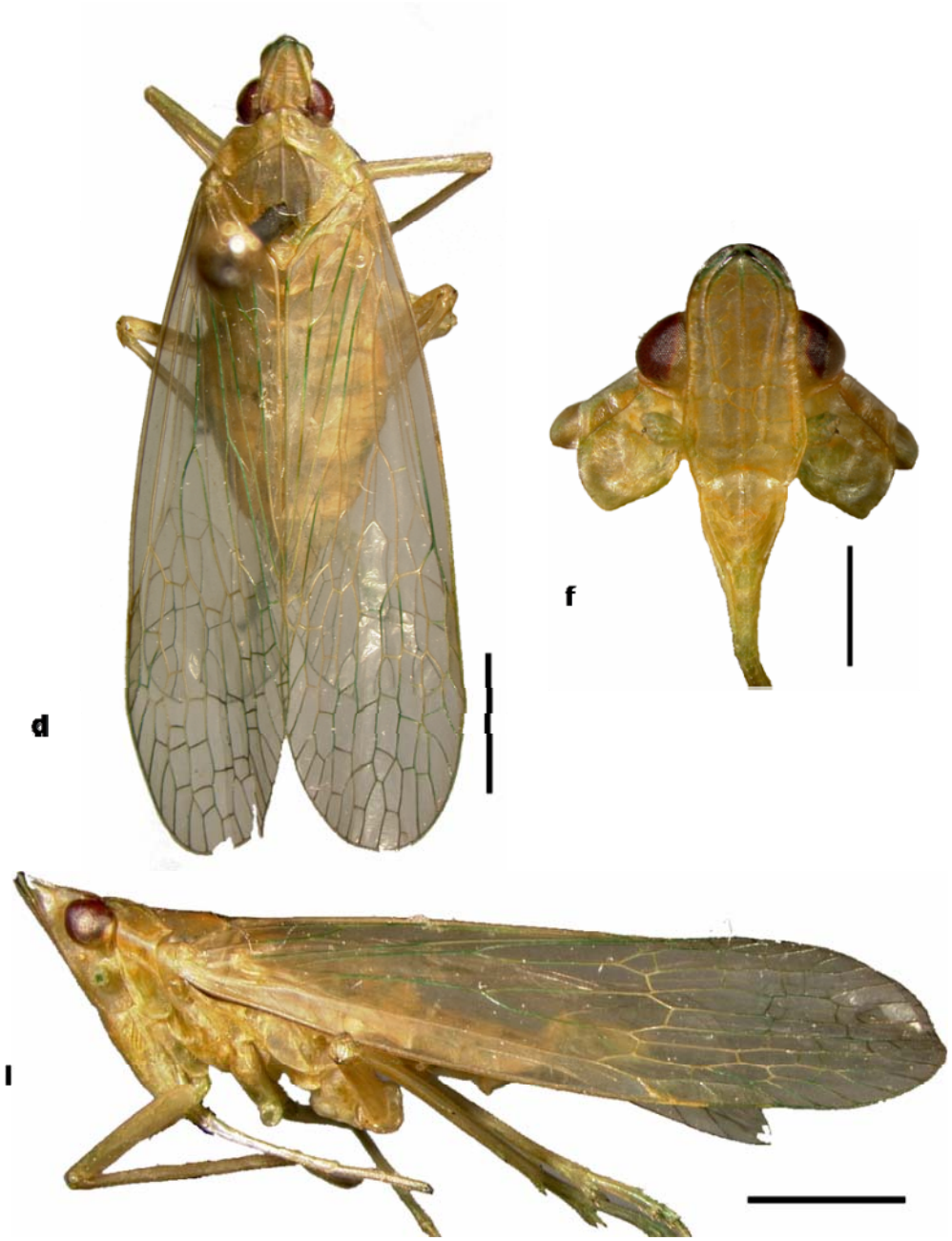

Figure 16. Dorsal (d), lateral (l) and frontal (f) habitus of *Nersia haedina*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

graciles, longiusculi; tibias posticis extus normaliter spinis quattuor, una subposteriori, armatis."

Translation.

"Head projected in front of eye, sometimes conically- or cylindrically-shaped; frons tricarinate medially, rarely diminished, complete, median continuing onto clypeus. Prothorax angulate, shortened, posteriorly angularly emarginate, often when the scutellum is tricarinate. Forewings longer than the abdomen, the median longitudinal vein meeting the exterior (radial) vein near the base, reticulate beyond the middle, greatly areolate, variably arranged overall, marked with transverse veins, not reticulated. On foot slender, rather lengthy; hind tibiae armed with four regularly extending spines, one subposteriorly."

Diagnosis.

Nersia lacks crossveins in the posterior half of the corium, a feature shared with *Trimedia* and *Retiala* among the Nesiini. The head is either triangularly or pentagonally produced, and more or less elongate. The crossveins in the anterior third of the forewing form four or five distinct rows of cells, the anterior two rows often less organized. Like most members of this tribe, the veins of the forewing lack setae, helping to distinguish *Nersia* from *Retiala*.

Description.

Head longer than wide, cephalic projection present. Lateral carinae of frons visible in dorsal view, projecting laterad. Vertex elongate, triangular, subequal to 2x longer than greatest width; anterior, lateral and posterior margins carinate; anterior

margin rounded, sometimes obscure; lateral margins convergent from base to apex, sometimes less strongly in posterior half; posterior margin broadly rounded or angulate, usually shallowly notched medially; median carina complete, often more prominent caudally; often with darkened depressions in posterolateral foveae. Vertex in lateral view level or curved upward in anterior half, parallel to rest of body. Frons length 2 to 4x greatest width; apex rounded, sometimes broadly; subparallel laterally, expanded in posterior quarter. Frons with median carina complete; intermediate carinae sinuate, more prominent and darker dorsad; diverging dorsally, curved to meet median carina near fastigium, callosity connecting to lateral carinae at fastigium. Frons smooth, level in lateral view. Frontoclypeal suture inversely U-shaped. Clypeus flat to convex; in profile, median carina prominent for entire length; lateral carinae unbroken at frontoclypeal and intraclypeal sutures; clypeus smooth, with V-shaped striations meating at median carina. Beak long exceeding metacoxae. Eyes moderately large, height subequal to width of vertex; subhemispherical to subelliptical, wider than high; not, or , emarginate posteriorly, convergent anteriorly; prominent callosity caudad of eye. Ocelli below eyes near midline. Distance from antenna to eye more than diameter of antenna; Scape subellipsoidal; flagellum subanterior.

Thorax with lateral pale line from apex of head to callosity behind eye, pronotal dorsolateral carina, carina of tegula, and costal margin of wing. Anterior margin of pronotum convex, broadly rounded; posterior margin concave, broadly angulate with shallow median notch, 1.0 to 1.5x as wide at posterior margin as median length; median carina complete; intermediate carinae following contour of head medially, laterally obsolete prior to posterior margin. Paired, subparallel lateral

carinae between eye and tegula from anterior to posterior margins, dorsal carina pale, separated by less than half length of dorsal-most carina. Pronotal foveae smooth, with depression between median and intermediate carinae. Mesonotum with median carina obsolete before posterior margin; lateral carinae extending length of mesonotum, parallel in posterior half, convergent anteriorly, reaching median carina at apex with acute angle. Tegulae visible dorsally, partially concealed by pronotum; carina present, pale.

Forewings macropterous and membranous, extending well beyond abdomenal apex; darkened pterostigma present. Veins lacking setae, costal margin pale. Crossveins in anterior third forming four to five incomplete rows of cells. Costal margin thickened, epipleuron visible laterally in posterior quarter of wing. Sc 1- to 2-branched, diverging from RA in anterior third. RA 2- to 4-branched. RP 4- to 5-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 7- to 8-branched; proximally contiguous with Sc+R, common branch about half length of posterior cell. CuA 6- to 8-branched. Anal veins convergent in posterior half of clavus; combined vein reaching posterior margin; anal crossveins absent.

Legs simple, not expanded. Procoxae lacking posterior spine, meso- and metacoxae with a long, stout posterior spine. Tibiae 1.0 to 1.5x length femora, lateral and anterior spines lacking. Hind tibiae with 4 preanterior and 6 to 8 anterior teeth. Basitarsus with 8 to 9 anterior spines. Second tarsomere with an anterior row of 8 to 9 spines.

Species Composition.

This genus contains 14 species: *N. aridella* Melichar, 1912, *N. chlorophana* Melichar, 1912, *N. distinguenda* (Spinola, 1839), *N. florens* Stål, 1862, *N. florida* Fennah, 1944a, *N. haedina* Stål, 1862 (type species), *N. ornata* Melichar, 1912, *N. pudica* Stål, 1862, *N. recurvirostris* Stål, 1862, *N. sertata* (Jacobi, 1904), and *N. viridis* (Olivier, 1791). Additionally, three African species remain in this genus (*N. fugax* (Melichar, 1912), *N. orbata* (Melichar, 1912), *N. serena* (Stål, 1866)); they likely belong to *Afronersia* Fennah, 1958. Fennah's (1944) description of *N. florida* is unclear, primarily using genetalic structures for identification with the shape of the "penial spines", as the defining character separating this species from *N. florens* . Melichar (1912) included all known species (excluding *N. florida*) in the key below:

Key to Species: (Translated and modified from Melichar 1912:68-70)

1	Vertex longer than posterior width.	2
1'	Vertex subequal or shorter than posterior width.	8
2	Top of the head level in lateral view.	3
2'	Apex of head bent upward in lateral view.	7
3	Intermediate carinae of the frons black near fastigium. The leading edge of epipleuron of the forewing brown to black proximally.	4
3'	Carinae of frons concolorous throughout. Leading edge of costal margin of forewing pale proximally.	*N. viridis* (Olivier 1791)
4	Intermediate carinae of frons obsolete prior to frontoclypeal suture.	5
4'	Intermediate carinae of frons reaching frontoclypeal suture.	*N. florens* Stål 1862

5 Intermediate carinae of frons black anteriorly. Pterostigma 3-cellular. Hind tibiae with 4 spines. *N. aridella* Melichar 1912

5' Intermediate carinae of frons green, concolorous with frons. Pterostigma 4- or 5-cellular. Hind tibiae with 4 or 5 spines. 6

6 Pterostigma 4-cellular. Hind tibiae with 4 spines. *N. haedina* Stål 1862

6' Stigma 5-cellular, greenish-yellow, except distal apex. Hind legs with 5 spines. *N. distinguenda* (Spinola 1839)

7 Head process curved upward in lateral view at apex. Lateral margins of vertex strongly convergent anterior to eyes; apex sharply pointed, vertex triangular. Intermediate carinae of frons obsolete before reaching frontoclypeal suture. Stigma 4-cellular. Seven rows of crossveins in anterior half of forewing. *N. pudica* Stål 1862

7' Head strongly curved upward from eyes to apex. Lateral margins gradually convergent anterior to eyes, apex pointed, vertex triangular. Intermediate carinae of frons reaching frontoclypeal suture. Pterostigma 2-cellular. Five to 6 rows of crossveins in anterior half of forewing. *N. recurvirostris* Stål 1862

8 Vertex wider than long, flat, medially carinate. Pterostigma 4-cellular. Hind tibiae with 5 spines. *N. sertata* (Jacobi 1904)

8' Vertex triangular, subequal in length and posterior width, median carina variably carinate. Pterostigma 4- to 5-cellular; if 4-cellular, hind tibiae with 4 spines; if 5-cellular, hind tibiae with 5 spines. 9

9 Carinae of the frons concolorous. In profile, pale line extending along dorsal-most lateral carinae of the pronotum onto costa. Pterostigma 5-cellular. Hind tibiae with 5 spines. *N. chlorophana* Melichar 1912

9' Intermediate carinae of frons black posteriorly. In profile, black line extending between lateral carina of pronotum onto costa. Pterostigma 3-cellular. Hind legs with 4 spines. *N. ornata* Melichar 1912

Geographic Distribution.

Argentina, Bolivia, Brazil, Chile, Columbia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, United States, Uruguay, Venezuela.

Host Plants.

Asteraceae: *Eupatorium* sp. (Maes and O'Brien, 1988); Fabaceae: *Phaseolus* sp. (Maes and O'Brien, 1988); Polygonaceae: *Rumex crispus* (Wilson and McPherson, 1981).

Specimens Examined.

N. aridella Melichar (4). **BOLIVIA**: Yunges de la Paz (USNM: 1♂). **BRASIL**: Monet, IV-1935 (USNM: 1♀); Rondonia, 62 km. SW Ariquemes, nr. Fzda. Rancho Grande, 30-III-1992, at Mercury Vapor Light (LBOB: 2♀).

N. chlorophana Melichar (3). **BRASIL**: Rond., UV trap, 62 km. SW Ariquemes, Fzda. Rancho Grande, (3-15)- XII-1996 (LBOB: 1♂); Rond.,

62 km. SW Ariquemes, Rcho. Grande, (3-15)-XII-1996, UV & Hg vapor (LBOB: 1♀); Espirito Santo (USNM: 1♂).

N. distinguenda (Spinola) (2). **BRASIL**: Est. R. J. Manganatiba, I-1976 (LBOB: 1♂); Novo Teutonio, 27°11'B(S) 52°23'L(W), II-1966, 300-500 m (LBOB: 1♀).

N. florens Stål (36). **BRASIL**: Est. R. J., Concaicao de Macabu, IX-1978 (LBOB: 1♂); Rondonia, 62 km. SW Ariquemes, Fzda. Rancho Grande, J.D. Turner Trail, 17-XI-1994 (LBOB: 1♀). **BELIZE** (as British Honduras): Cayo Dist., Western Highway mile 66, 2-VII-1969, Blacklight Trap (LBOB: 1♀). **COLOMBIA**: Cienago, Magdalena, 8-VII-1971 (INHS: 1♂, 5♀); Palmira Valle, 2-VI-1971 (INHS: 1♀); Palmira Valle, 1-VII-1971 (INHS: 1♀). **COSTA RICA**: Guan., 3 mi. NW Canas (La Pacifica), 12-VII-1974 (LBOB: 1♀); 9.5 mi. SE Piedras Blancas, Pun., 6-VIII-1966 (LBOB: 1♂); Alaj, 3 mi. S Alajuela, 19-VII-1966 (LBOB: 1♂); Car., Turrialba, VI-21-1974 (LBOB: 1♀). **GUATEMALA**: Esmeralda, 5-VI-1917 (INHS: 1♀). **MEXICO**: Hgo., 3400', Minera Autlan, at night, 1-VIII-1982 (LBOB: 1♂); S. L. P., 21 mi. S. Ciudad Valle, 25-V-1974 (LBOB: 1♂); Veracruz, 8 mi. NE Catemaco, 3-VII-1971, Taken at light (LBOB: 1♀). **PANAMA**: Barro Colo. Isl., III-1959 (USNM: 1♂). **UNITED STATES**: ARKANSAS: Mississippi Co., Wilson, 29-VIII-1966 (INHS: 1♀); FLORIDA: Suwanne Co., Live Oak, 30°17'N 82°59'W, Ex: Hg Vapor in field (UDCC: 1♂); ILLINOIS: Alexander Co., Olive Branch, Horseshoe Lake, 2-VIII-1934 (INHS: 1♂); Jackson Co., Grand Tower, 6-VIII-1909, Sweepings (INHS: 1♂);

LOUISIANA: Caddo Par., Curtis, 1-VIII-1955 (LSUC: 1♀); St. Bernard Par., Violet, Soybean, 5-VII-1992, Light trap (LSUC: 1♂); Saint Landry Par., Opelousas, 11-VII-1956 (LSUC: 1♀); Tensas Par., 24-VII-1973 (LSUC: 1♀); NORTH CAROLINA: Sampson Co., nr. Spiveys Corner, Jst. S Jct. NC55 & 242, 18-IX-1994 (UDCC: 1♀); TENNESSEE: Monroe Co., betw. Madisonville & Gudger, 900ft., 7-VIII-1939 (AMNH: 1♂); TEXAS: Brownsville, S. Tex. Garden, 23-VI-1908, at light (INHS: 1♂, 1♀); Brownsville, 1910 S. Tex. Garden, 22-XI-1922 (INHS: 1♀); Brownsville, S. Tex. Garden, 23-XI-1911, in pasture (INHS: 1♀). **VENEZUELA**: Florida, Caracas, 30-XI-1938 (USNM: 1♂, 1♀).

N. florida Fennah (2). **UNITED STATES**: FLORIDA: Gadsden Co., Sta. 13, 12-VII-1954 (USNM: 1♂); Jackson Co., Sta. 55, VIII-1956 (USNM: 1♂).

N. haedina Stål (2). **BRASIL**: Rond., 62 km. SW Ariquemes, Fzda. Rcho. Grande, (16-18)-III-96, UV Trap (LBOB: 1♀); Rondonia, 62 km. SW Ariquemes, Fzda. Rancho Grande, 18-XI-1994, UV & mercury vapor light (LBOB: 1♂).

N. ornata Melichar (4). **BRASIL**: Rond., 62 km. SW Ariquemes, Rcho. Grande, UV Trap, (4-16)-XI-1997 (LBOB: 2♂, 1♀); Rondonia, 62 km. SW Ariquemes, Fzda. Rancho Grande, 18-XI-1994, UV & mercury vapor light (LBOB: 1♀).

N. sertata (Jacobi) (4). **BRASIL**: R. Grande do Sul (USNM: 2♂). **URUGUAY**: Paysandú, Puerto Pepe Ají, (21-25)-I-1970 (LBOB: 1♂, 1♀).

Megadictya Melichar, 1912:64

= *Megadictya* Melichar, 1912:64, 66-67, 31 (key), 215 (List). Type species: *M. multispinosa* Melichar, 1912, by original designation.

Original Description.

"Kopf breit, dreieckig vorgezogen. Scheitel dreieckig, flach, die Seitenränder der Stirn als schmaler Saum an den Seiten des Kopfes von oben sichtbar. Stirn länglich, in der Mitte leicht eingeengt, zum Clypeus etwas verbreitert, die Seiten stumpfeckig erweitert, mit drei Kielen, von welchen der Mittelkiel sich auf den Clypeus verlängert, die Seitenkiele nach unten abgekürzt, oben miteinander und bogenförmig verbunden sind. Röstrum die Hinterhüften erreichend. Zweites Fühlerglied queroval. Das Pronotum vorn bogenförmig, zwischen den Augen vorgeschoben, hinten flachbogig ausgebuchtet, auf der Scheibe mit einem Mittelkiel, die Seitenkiele fehlen. Am Seitenrande jederseits hinter- den Augen zwei parallele Längskiele, der obere verdickt. Hinter den Augen befindet sich jederseits ein stumpfer, nach hinten gerichteter Dorn. Schildchen mit drei Kielen, die Seitenkiele parallel, vorn bogenförmig miteinander verbunden. Deckschuppen in der Mitte gekielt. Deckflügel länglich oval. Der äußere Längsnerv unmittelbar vor dem Stigma kurz gegabelt, der mittlere Nerv fast in gleicher Höhe mit dem inneren Längsnerv gegabelt, der innere Gabelast nach kurzer Strecke nochmals geteilt. Im Anteriorteil zahlreiche einfache Quernerven, welche keine regelmäßigen Querreihen bilden, sondern ganz unregelmäßig verteilt sind und mehr als die Hälfte der Coriumfläche einnehmen. Das Stigma lang, schmal, mit zahlreichen zuweilen gegabelten Quernerven. Flügel hyalin. Hinterschienen mit sieben Dornen."

Translation.

Head broad, triangularly produced. Vertex triangular, flat, the lateral margins of the frons, visible from above, as narrow margin on the sides of the head. Frons oblong, narrowed in center, somewhat widened to Clypeus, the edges of which extend downward angularly, tricarinate, the median carina extending onto the Clypeus, the lateral carinae connected in an arc above and diminishing below. The Beak reaches the hind legs. Scape oval. The Pronotum arc-shaped anteriorly, pushed forward between the eyes, the posterior margin angularly bowed outwards, the median carinate, lacking lateral carinae. Two parallel, longitudinal carinae extending from behind the eyes on the sides (of the pronotum), thickened above. Callous present directly behind the eyes, a thorn-like projection toward the rear. (Meso)thorax transsected by three carinae, the outer carinae parallel, foreward arching, linked together. Tegula carinate medially. Forewing oblong oval. ScR forked immediately proximal to the stigma, the medial vein branching nearly equally with the initial branching of CuP. Crossveins irregularly distributed in the anterior half of the forewings, not forming regular transverse rows, filling more than half of the corium. The stigma long, narrow, with numerous occasionally forking crossveins. Wings membranous. Hind tibiae with seven spines.

Diagnosis.

Resembles a large *Pteroplegma*, *Melicharoptera* or *Plegmatoptera*. Head conically produced with prominent median carina on vertex and pointed callosity directly behind the eye. Crossveins lacking in proximal half of wing. Crossveins in the anterior half of the corium not organized. Hind tibiae with seven preapical spines.

Species Composition.

This genus is only represented by *Megadictya obtusifrons* (Walker 1851).

Geographic Distribution.

Bolivia, Brazil, Costa Rica, Panama, Peru.

Host Plants.

No host plants reported.

Specimens Examined.

No specimens were available for study.

Melicharoptera Metcalf, 1938

(Figure 17)

= *Dictyoptera* Melichar, 1912:77 [nec Latreille, 1829]. Type species: *D. polyneura* Berg, 1883; designated by Melichar, 1912:77.

= *Melicharoptera* Metcalf, 1938:335 (applied as a *nom nov.* for *Dictyoptera* Melichar, 1912 [nec Latreille, 1829]).

Original Description.

"Diese Gattung ist dadurch charakterisiert, daß die Quernerven im Deckflügel sehr zahlreich sind und fast die ganze Fläche einnehmen, nur die Costalzelle bis zum Stigma, dann die Sutural zelle (an der Sutura clavi) und der Clavus selbst sind ohne Quernerven. Das

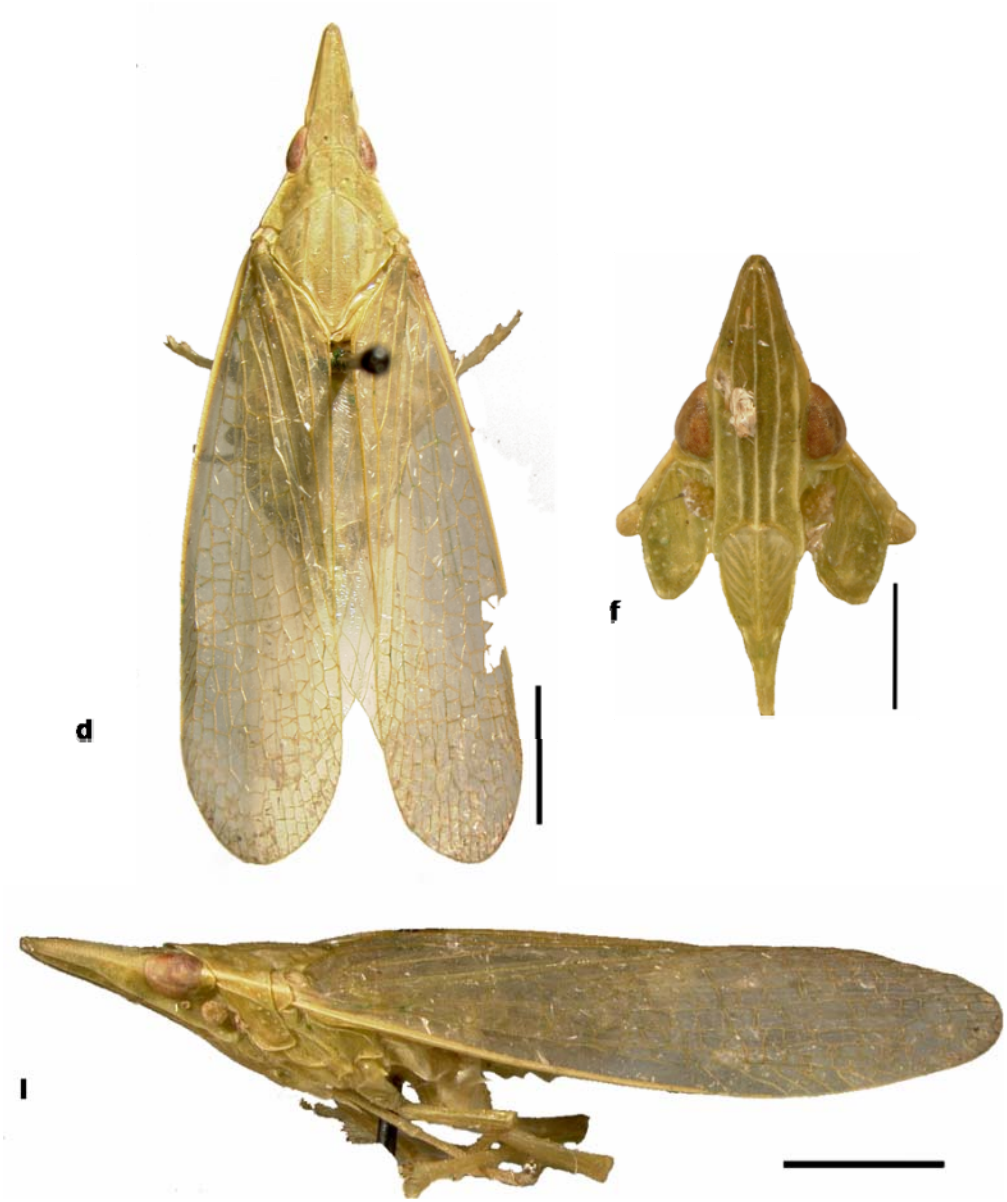

Figure 17. Dorsal (d), lateral (l) and frontal (f) habitus of *Melicharoptera polyneura*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

Stigma ist sehr lang und schmal, von zahlreichen, einfachen Quernerven gebildet, tritt aber nicht deutlich hervor. Die Längsnerven wie bei *Plegmatoptera* und *Megadictya* gebildet. Kopf in einen mehr oder weniger langen, konischen Fortsatz verlängert. Die übrigen Merkmale wie bei *Plegmatoptera.* Hinterschienen mit vier Dornen." (As *Dictyoptera* [nec Latreille, 1829])

Translation.

This genus is characterized by the multiple crossveins that cover almost the entire area of the forewing, only costal cell to the stigma, the sutural cell (at the Sutura clavi) and the clavus itself are lacking crossveins. The stigma is very long and narrow, containing numerous, simple crossveins, but is not distinctly dilimited. The longitudinal veins similar in form to *Plegmatoptera* and *Megadictya*. Head extended in a more or less long, conical process. The remaining features the same as in Plegmatoptera. Hindlegs with four spines.

Diagnosis.

Unlike *Plegmatoptera*, the clavus lacks crossveins; however, like *Plegmatoptera* and *Pteroplegma*, crossveins are present throughout the corium of the forewing. Forewing crossveins not organized into rows, unlike *Pteroplegma*. Head process is cylindrical and nearly four times as long as broad. The M-vein is contiguous with Sc+R posteriorly, diverging from ScR at a distance greater than one-third of the longitudinal length of the posterior cell.

Description.

Head longer than wide, cephalic projection present. Vertex elongate triangular, about 5 to 6x longer than posterior width; anterior, lateral and posterior margins carinate; median carina complete; anterior margin convex; lateral margins straight, divergent; hind margin straight, lacking median notch; in profile, flat, sometimes upturned or downturned anteriorly. Frons elongate and narrow, about 5 to 6x as long as greatest width; upper margin convex; lateral margins arcuate, widest medially, abruptly expanded below; median carina complete; intermediate carinae enclosing spatulate medial fovea, broadest above, subparallel to convergent below, strongly so near frontoclypeal suture; frontal plate smooth; in profile, flat to convex, lacking tubercle in front of eye. Frontoclypeal suture arcuate on either side of median, resembling an M. Clypeaus flat to convex in profile; median and lateral carinae complete, broken at intraclypeal suture; clypeal plates transversely striate. Beak long, exceeding metacoxae. Eyes moderately large, subelliptical, emarginate posteriorly; width about 1.5x height, about three-quarters as wide as vertex; callosity behind eye present. Ocellus slightly posterior to midline of eye. Antennal socket about one scape-width from eye; scape subellipsoidal, apex directed dorsally; flagellum subanterior.

Pronotum cheveron-shaped; anterior margin convex to truncate; posterior margin broadly angulate, median notched, width along posterior margin about 1.5 to 2x as wide depth; median carina complete; intermediate carinae follow anterior margin, convex, subparallel posteriorly, diminishing near middle of pronotal plate; two complete lateral carinae; pronotal plate smooth, a single depression on each side of median. Mesonotum tricarinate; median carina diminishing before reaching

posterior margin; lateral carinae complete, subparallel posteriorly, convergent anteriorly.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma present; costal margin paler than other veins; veins lacking setae. Crossvein reticulation in corium, cells unorganized, clavus lacking crossveins. Epipleuron present along posterior two-thirds of costal margin, approaching pterostigma. Sc 1- to 2-branched, contiguous with RA to anterior third of wing. RA 4- to 6-branched; pterostigma may have unorganized crossveins, as well. RP 3- to 7-branched; diverges from Sc+R in anterior half, proximal to nodal line. MP 12-to 14-branched; contiguous with Sc+R, common branch about half the length of posterior cell. CuA 4- to 5-branched, with 0 to 4 crossveins from posterior-most branches to margin. Anal veins convergent in anterior half to third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with moderately long, broad posterior spine; tibiae about 1.5 to 2x longer than femora, lack lateral and anterior spines. Metacoxae with a relatively long, thin posteriorly projecting spine. Hind tibiae with 4 to 5 preanterior and 8 anterior spines; basal tarsomere with 10 to 17 anterior spines; penultimate tarsomere with 10 to 17 anterior spines.

Species Composition.

This genus contains three species: *M. polyneura* (Berg, 1883) (type species), *M. rostrata* (Melichar, 1912), and *M. tucumana* (Melichar, 1912). Melichar (1912)

described this genus under *Dictyoptera*, an occupied name, and produced a key to all species. The following is a modification of Melichar's key:

1 Vertex 2 1/2x as long as posterior width, triangular in shape. Frons reddish between the carinae. Pterostigma 4- to 5-cellular.

M. polyneura (Berg 1883)

1' Vertex 3 to 4x as long as posterior width. Frontal plate concolorous with frontal carinae, not red. Pterstigma 5- to 6-cellular. 2

2 Head process longer than median length of pro- and mesonotum combined. *M. rostrata* (Melichar, 1912)

2' Head process shorter than median length of pro- and mesonotum combined. *M. tucumana* (Melichar, 1912)

Geographic Distribution.

Argentina, Brazil, Uruguay.

Host Plants.

No host plants reported.

Specimens Examined.

M. polyneura Berg (2). **BRASIL**: Pernambuco, Caruaru, IV-1972 (BMNH: 1♂). **PARAGUAY**: Dept. Hapua, Vega, II-1956 (BMNH: 1♀).

M. rostrata Melichar (3). **BRASIL**: Sao Paulo, Botucaru, light trap, II-1973 (LBOB: 1♀); Santa Catharina, Hansa Humboldt, S26° W50°, 100m, I-1939 (BMNH: 1♀); Parana (BMNH: 1♂).

M. tucumana Melichar (3). **ARGENTINA**: Tucuman, No. 512, 21-V-1927, swept (USNM: 1♂); Santiago de Estero, 22-V-1927, Swept (USNM: 1♂); Villa Ana, F.C.S., Fe., XII-1924 (BMNH: 1♀).

Melicharoptera spp. (9). **BRASIL**: S. Paulo, Botucatu, 23-IV-1971, light trap (LBOB: 1♂); Sao Paulo, Botucatu, light trap, I-1973 (LBOB: 1♀); Boraceia, Salesopolis, Sao Paulo, 800m., (21-25)-X-1963 (AMNH: 1♂); Corupa, S. Cath. (Hansa Humbolt), XII-1948 (AMNH: 2♀); Pinhal, S. Cath. XII-1948, (AMNH: 1♂); Rolandia, Parana, IV-1948 (AMNH: 1♂); Caviuna, Parana, XII-1944, (AMNH: 1♂). **VENEZUELA**: Edo. Lara, Yacambu Nat'l. Pk., 1560 m., 13 km. SE. Sanare, (28-31)-VII-1981, cloud for. (USNM: 1♀).

Plegmatoptera Spinola, 1839:283

(Figure 18)

= *Plegmatoptera* Spinola, 1839:283, 301, 203 (key). Type species: *P. prasina* Spinola, 1839, by original designation.

= *Plegmatopteres* (Spinola, 1839). Incorrect subsequent spelling by Spinola 1839:300.

= *Phlegmatoptera* (Spinola, 1839). Incorrect subsequent spelling by Agassiz, Erichson and Germar, 1842:15; Agassiz, 1848:824; Schulze, Kukenthal and Heider, 1934:2640; Neave, 1940:717.

Original Description.

"*Tête*, protubérante.

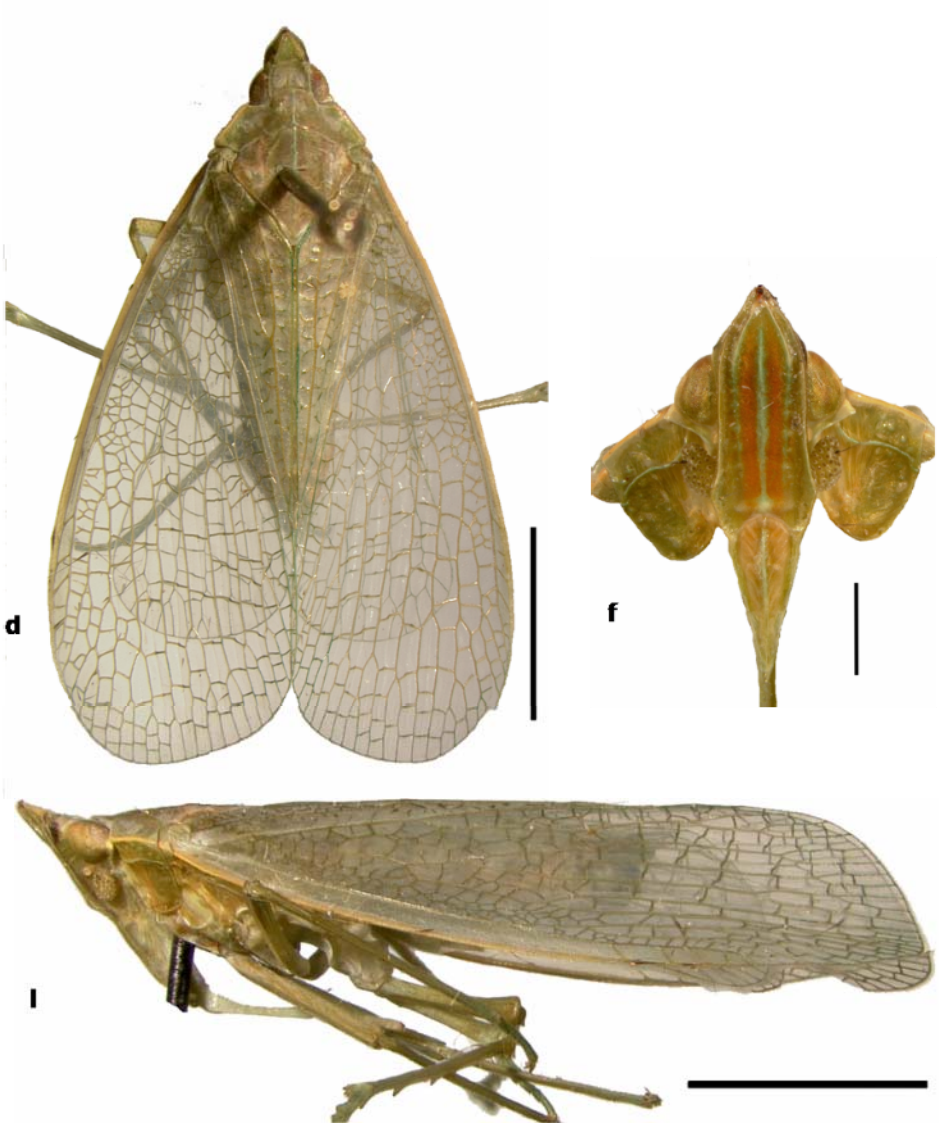

Figure 18. Dorsal (d), lateral (l) and frontal (f) habitus of *Plegmatoptera prasina* . Scale bar - Dorsal: 5.0mm; Lateral: 5.0mm; Front: 1.0mm.

Protubérance céphalique, formée exclusivement par la face frontale, par la face verticale et par un prolongement des joues en remplacement des faces latérales, dirigée en avant, et n'étant ni ascendante, ni recourbée.

Face frontale, plus longue que large, presque plane, ascendante un peu obliquement, faisant avec la face verticale un angle très aigu. Division en trois facettes bien prononcée de la base du front jusqu'au sommet; arêtes intermédiaires en côtes arrondies; facette médiane en forme de fer à cheval oblong et étroit, dont les branches très allongées se rapprochent de la ligne médiane à mesure qu'elles approchent de la base, et dont le sommet est aigu, un peu renversé en arrière et atteignant le sommet du vertex; facettes extérieures se rétrécissant insensiblement de la base à l'extrémité, suivant tout le contour de la facette médiane, se glissant entre elle et le vertex au-dessus des yeux à réseau, et se rapprochant l'une de l'autre sans se rejoindre. Base largement échancrée; bords latéraux ditalés près des angles basilaires.

Faces latérales, nulles et remplacées par un prolongement des joues qui atteint le sommet de la tête.

Face verticale , plane, horizontale, d'une seule pièce triangulaire; sommet antérieur du triangle se confondant avec le sommet de la tête; celui-ci étant en conséquence le sommet d'un angle solide heptaèdre, formé par le contours de sept arêtes; savoir, deux qui séparent le vertex et les joues, deux autres qui séparent les facettes extérieures de la facette médiane, et une septième qui divise longitudinalement toute le face frontale, et qui se prolonge sur le chaperon.

Joues, perpendiculaires, étroites, planes; prolongement faisant partie de la protubérance, triangulaire.

Yeux à réseau, oblongs, sans échancrure, en contact immédiat avec le prothorax; point de tubercule sub-oculaire apparent.

Un *ocele* de chaque côté, au dessous et à une certaine distance de l'œil à réseau.

Antennes enfoncées dans le tubercule antennaire à point que le premier et la tige du second ne sont plus apparents (au moins dans mon exemplaire desséché). Masue du second granuleuse, épaisse, en sphéroïde aplant troisième et quatrième de la forme ordinaire.

Prothorax ayant son lobe médian assez avancé, quolque plus large que long, antérieurement arrondi; échancrures post-oculaires bien rentrantes, en arc de cercle arête médiane peu élevee, effacée en avant; les deux antres tout à fait marginales; pièces extérieures du tergus rejetées sur les flances et presque verticales; bord posterieur largement et assez profondément échancré.

Dos du mésothorax ayant les trois arêtes ordinaires assez élevées, ètroites, mais non tranchantes; la médiane n'atteignant pas la pointe postérieure ; les deux latérales se rejoignant sur la ligne médiane pour former le fer à cheval fermé en avant.

Abdomen assez allongé, faiblement convexe et sans et rène dorsale.

Ailes supérieures, un peu penchées en dehors pendant le repos; pan discoïdal notablement agrandi aux dépendes deux autres; contour du bord antérieur un peu plus arqué que dans les deux genres suivants. Radius et culetus très rapprochés et sub-parallèles; cellule basilaire petite, en quadrilatère irrégulier, ayant un certain espace opaque vis à vis de la seconde cellule discoïdal. Nervures principales et longitudinales du pan discoïdal, au nombre de deux, déliées, sinueuses, étant presque aussi minces que les nervures anastomostiques. Celles-ci commencent immédiatement en arrière de la cellule basilaire; elles se contournent dans tous les sens, en entourant de petites celllules en très grand nombre, et en affectant toutes les formes.

Les pattes sont minces et allongées; il y a cinqu épines latérales aux tibias de la troisième paire.

Ce genre, qui diffère beaucoup des *Dyctiophores* par l'innervation des ailes supérieures, s'en rapproche cependant plus que des *Dichoptères* qui vont suivre, par la substance du corps moins solide, par la forme de la protubérance céphalique et par l'appareil génital de la femelle, comme nous le verrons mieux en parlant des *Dyctiophores*.

Dans la femelle, le seul sexe que je connaisse jusqu'à présent, le tube anal semble se rétrécir d'avant en arrière; mais le tube, proprement dit, est réellement cylindrique, droit, allongé, convexe en dessus, plan en dessous; son ouverture postérieure est ovale, entiere, coupée obliquement de haut en bas et d'avant en arrière; ses bords latéraux ne se détachent pas nettement de la paroi supérieure, mais ils se penchent notablement en dessous, et ils vont en diminuant insensiblement de largeur de la base jusqu'à l'extrèmité postérieure. "

Translation.

Head, protuberant.

Head process, formed exclusively by the face, the face and a vertical extension of the cheeks replacing the side walls, directed forward, and neither rising nor recurved.

Frons, longer than wide, nearly flat, rising at a slight angled, forming an acute angle with the vertex. Divided into three facets from the base of the frons to the summit; intermediary carinae rounded; median facet horseshoe-shaped and elongate oblong, its margins curving toward median as they approach the base, and its apex acute, upturned at the end and reaching the apex of vertex; external facets bordering the median facet from base to apex, filling in the area between the vertex and before the eyes, and getting closer to each other lacking joining. Base widely indented; lateral edges ending close to the posterior angles (?).

Side of face , void and replaced by an extension of the cheeks, which reached the top of the head.

Vertex, flat, triangular overall; apex of the triangle is easily confused with the anterior point of the head, which is actually the summit of a solid seven-pointed shape, formed by the joining of seven carinae: namely, two between the vertex and cheeks, two others that separate each of the outer facets of the frons, and a seventh that longitudinally divides the frons, and extends onto the clypeus.

Cheeks, perpendicular, narrow, flat; extended portion of the protuberance, triangular.

Compound eyes, oblong, lacking notch in immediate contact with the prothorax; thorn-like protuberence behind eye present.

An *ocellus* on each side, below and at a certain distance from the compound eye.

Antennae inserted in the antennal socket at the point where the first and second segments are no longer apparent (at least in my dry specimen). The surface of the second a grainy, thick, spheroid shape, third and fourth of the ordinary form.

Prothorax with projected median lobe, overall wider than longe, rounded anteriorly; postocular notches recurrent, median carina slightly elevated within a semicericular arc, diminished anteriorly; two marginal indentations; exterior tergal areas separated into nearly vertical faces; posterior edge widely and deeply indented.

Abdomen quite extended, dorsally convex and lacking a median carina.

Forewings, outstretched at rest; discoidal cell notably enlarged, bordering two other cells; contour of the posterior edge a little more curved than in the two following genera. Radius and subcosta very close and sub-parallel; posterior cell small, irregularly quadrilateral, partially opaque with respect to the second discoidal cell. Two principle longitudinal veins in the discoidal (i.e. cubital) area, slender, sinuate, almost as thin as the crossveins. These begin immediately after the posterior cell, crossing in all directions; these surrounded by a large number of small cells, which affect their appearance.

Legs thin and elongated with five lateral spines on the hind tibiae.

This genus, which differs from many *Dyctiophores* in the venation of the forewings, is, however, more like the *Dichoptères*, which follow, by the substance of the less solid body, the shape of the cephalic process and female genitalia, as we shall see better while talking about other *Dyctiophores*.

In females, the only sex that I have seen so far, the anal tube seems to shrink from front to back; but the tube, itself, is actually cylindrical, elongate, convex above, flat below; posteriorly its opening is oval-shaped, entire, cut obliquely from top to bottom and front to back; its lateral edges not clearly separate from the top, but look noticeably so below, and the width of the extremities diminishes imperceptibly posteriorly to the base.

Diagnosis.

Plegmatoptera is unique within the tribe in possessing multiple crossveins within the clavus, while the medial vein branches from common vein Sc+R at the posterior cell, thus the contiguous vein ScR+M is virtually absent. *Plegmatoptera* also possesses crossveins in the corium of the forewing (unlike *Nersia*, *Retiala*, and *Trimedia*, but like the remaining genera in Nersiini). The head is conically projected, the vertex pentagonal and about 1.5x as long as wide. A pale lateral line extends from the posterior margin of the eye onto the pronotum and tegula (over the carina), and the costal margin of the forewing. The hind legs have seven preapical spines.

Description.

Head longer than wide, cephalic projection present. Vertex about 1.5x longer than posterior width; posterior half wider than anterior half; anterior, lateral and

posterior margins carinate; median carina present in posterior half only; anterior margin acute; lateral margins roughly parallel in posterior half, convergent anteriorly; hind margin concave to truncate, lacking a median notch; in profile, straight to upturned anteriorly. Frons about 1.5 to 2.5x as long as widest point; upper portion acutely pointed; lateral margins subparallel, convergent above and below; median carina complete; intermediate carinae present above, diminished in lower half; frontal facets smooth throughout; in profile, flat to convex, lacking prominent tubercle in front of eye. Frontoclypeal suture an inverted U-shape. Clypeus flat to convex in profile; median and lateral carinae complete; clypeal plate striate. Beak very long, extending to about the middle of the abdomen. Eyes moderately large, hemispherical; width subequal to height, subequal to two-thirds as wide as vertex; prominent callosity behind eye present. Ocellus below median of eye. Antennal socket about one scape-width from eye; scape subellipsoidal, apex directed dorsally; flagellum subanterior.

Pronotum cheveron-shaped; anterior margin broadly concave to truncate; posterior margin broadly angulate, median notched, width at posterior margin about 1.5 to 2x as wide as depth; median carina complete; intermediate carinae follow anterior margin, diverging posteriorly, diminishing before reaching posterior margin; two complete lateral carinae; pronotal facets smooth, with a single depression on each side of median. Mesonotum tricarinate; the median carina diminishing before reaching posterior margin; lateral carinae convex, broadly arcuate.

Forewings macropterous, membranous, exceeding tip of abdomen; darkened pterostigma present; costal margin paler than other veins; veins lacking setae. Crossvein reticulation occurring throughout the corium and clavus; cells unorganized throughout. Costal margin thickened, epipleuron extending along posterior base of

forewing. ScRA 6- to 10-branched. RP 6- to 17-branched; diverges from Sc+R in anterior half, proximal to nodal line. MP 12- to 27-branched; not contiguous with Sc+R, divergent at posterior cell. CuA 4- to 14-branched. Anal veins convergent in anterior half to third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with moderately long posterior spine; protibiae about 1.5x longer than profemora, lack lateral and anterior spines. Metacoxae with a relatively long, thin posteriorly projecting spine. Hind tibiae with 5 to 7 preanterior and 7 to 8 anterior spines; basal tarsomere with 9 to 10 anterior spines; penultimate tarsomere with 9 to 12 anterior spines.

Species Composition.

This genus contains three species: *P. flaviscutellata* Schmidt, 1915, *P. prasina* Spinola, 1839 (type species), and *P. vicina* Gerstaecker, 1895. There are no published keys to the species of this genus.

Geographic Distribution.

Bolivia, Brazil, French Guiana, Peru.

Host Plants.

No host plants reported.

Specimens Examined.

P. prasina Spinola (6). **PANAMA**: Barro Colorado I., 3-V-1981 (UCDC: 1♀); Canal Zone, Barro Colorado I., 21-Sept-1976 (UCDC: 1♀); Barro Colorado Isl., Canal Zone, R. P., 18-IV-1962, Collected on NSF Grant G9830 (AMNH: 1♀); Barro Colorado Isl., Canal Zone, R. P., 20-VI-1962 (AMNH: 1♀); Canal Zone, Barro Colorado Is., 27-II-1963, Taken at Ultraviolet Light (WFBM: 1♂); Barro Colorado Isl., (25-28)-III-1965 (USNM: 1♀).

P. vicina Gerstaecker (2). **BRASIL**: Rond., 62 km. SW. Ariquemes, Fzda. Rcho. Grande, (4-16)-XI-1997, UV Trap (LBOB: 1♂). **ECUADOR**: Provincia de Francisco de Orellana, Yasuni National Park, S00º40.478' W076º23.866', 29-IV-2005, ex: @ Hg Vapor light/night (UDCC: 1♀).

Plegmatoptera spp. (11). **BRASIL**: M. Grosso, Tapirape Indian Village at confluence of R. Tapirape and R. Araguaia., (11-20)-XI-1960, swept from forest vegetation (FMNH: 1♂). **ECUADOR**: Orellana, Tiputini Biodiversity Station nr. Yasuni National Park, Erwin Transect T/1, 220-250m, 00º37'55"S, 076º08'39"W, 9-II-1999, Fogging terre firme forest (USNM: 2♂); Orellana Translated Ent. 1 km. S. Onkone Gare Cmp, Reserva Etnica Waorani, 220m, 00º39'10"S 076º26'00"W, 7-II-1996, T-5, Fogging terre firme forest (USNM: 1♂); Orellana, Tiputini Biodiversity Station nr. Yasuni National Park, Erwin Transect T/9, 220-250m, 00º37'55"S, 076º08'39"W, 21-X-1998, Fogging terre firme forest (USNM: 1♀). **PERU**: Iquitos, F, 606V, Acc. 33591. (FMNH: 1♀); Rio Santiago, VIII-13-30, F6134, Acc. 33591 (FMNH: 1♀); Madre de Dios, nr. Puerto Maldonado, Posadas

Amazonas, S12º48.115' W69º18.019', 609 ft., (30-IX)-(3-X)-2004 (UDCC: 2♂, 2♀).

Pteroplegma Melichar, 1912:66

(Figure 19)

= *Pteroplegma* Melichar, 1912:66, 68, 31 (key), 215 (List). Type species: *Dictyophora multireticulata* Jacobi, 1904; designated by Melichar, 1912:66.

Original Description.

"Der Gattung *Plegmatoptera* Spin. nahestehend, aber insbesondere dadurch verschieden, daß im Corium und im Clavus keine verzweigten Nerven sich vorfinden, im Clavus sind überhaupt keine Quernerven, im Corium sind wohl zahlreiche, aber stets einfache Quernerven vorhanden. Kopf in einen breiten, flachen, konischen Fortsatz verlängert, die Seitan der Stirn von oben sichtbar. Die Stirn lang, zum Clypeus wenig verbreitert, mit drei Längskielen, die Seitenkiele oben bogenförmig miteinander und mit dem Mittelkiel verbunden. Clypeus in der Mitte gekielt. Fühler kurz. Pronotum vorn zwischen den Augen lappenförmig abgerundet, hinten breit, stumpfwinklig ausgeschnitten, mit drei Kielen, die Seitenkiele nach hinten abgekürzt; hinter den Augen jederseits zwei Seitenrandkiele, der obere verdickt und orange-, zitronengelb oder auch grünlichgelb gefärbt. Am hinteren Augenrande ein nach außen und hinten gerichteter stumpfer Dorn. Die Deckschuppen in der Mitte mit einem Längskiel versehen. Schildchen mit drei Längskielen, von welchen die seitlichen vorn bogenförmig mit dem Mittelkiel zusammenstoßen. Costalrand der Deckflügel

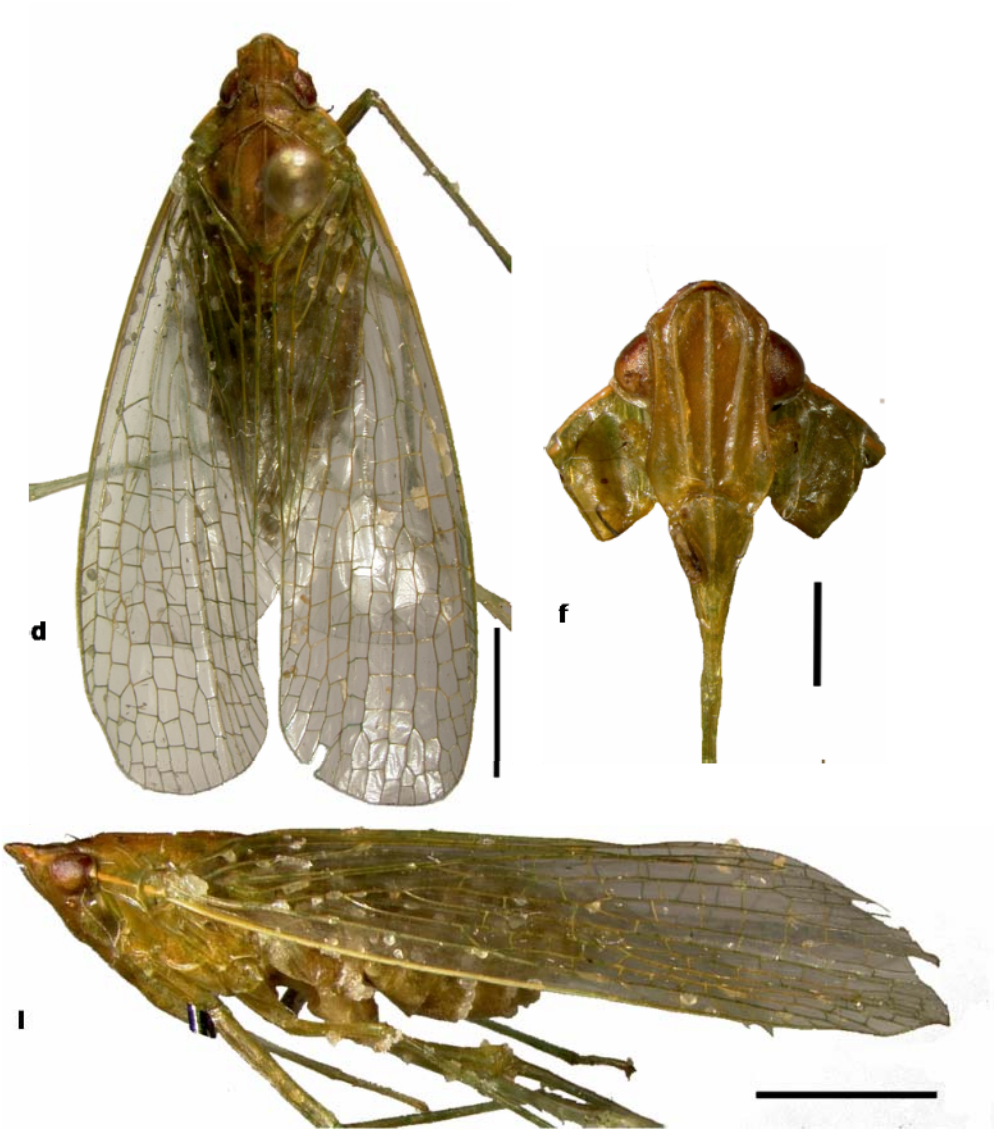

Figure 19. Dorsal (d), lateral (l) and frontal (f) habitus of *Pteroplegma brachycephala*. Scale bar - Dorsal: 3.0mm; Lateral: 3.0mm; Front: 1.0mm.

verdickt und orange-, zitronengelb oder grünlichgelb gefärbt. Stigma länglich, schmal, vielzellig. Im Corium entspringen aus der Posteriorzelle zwei Längsnervenstämme, der äußere sehr nahe der Posteriorzelle geteilt. Im Anteriorteil sehr zahlreiche, unregelmäßig verteilte, einfache Quernerven. Hinterschienen mit vier Dornen.

Von der Gattung *Megadictya* unterscheidet sich diese Gattung durch die mit vier Dornen bewehrten Hinterschienen, von der Gattung *Nersia* durch die verdickte und gefärbte Costa der Deckflügel und von der Gattung *Plegmatoptera* durch die einfachen Quernerven und durch den Mangel von Quernerven im Clavus."

Translation.

Similar to the genus *Plegmatoptera* Spin., but differs in that the veins of the corium and the clavus do not branch, the clavus generally lacking crossveins, the corium with numerous, but always simple crossveins present. Head extended into a wide, flat, conical process, the margin of the forehead visible from above. The frons long, widening a little to the clypeus, with three longitudinal carinae, the arc-shaped lateral carinae connected with one another and with the median carina near the apex. Clypeus carinate medially. Antennae short. Anterior margin of the pronotum convex between the eyes, posterior of pronotum obtusely angulate, tricarinate, the lateral carinae shortened posteriorly; two orange-, lemon-yellow-, or greenish-yellow-colored carinae directly behind the eyes on either side widened above. The posterior margin of the eye with a outwardly- and pteriorly-projecting callosity. The tegulae carinate medially. Mesonotum with three longitudinal carinae, the lateral connected to the median carina anteriorly. Costal margin of the forewings thickened and orange-, lemon-yellow- or greenish-yellow-colored. Stigma oblong, narrow, multicellular. The corium with two

longitudinal veins, springing from the posterior cell, the outer one divided very close to the posterior cell.

This genus differs from the genus *Megadictya* by the presence of four spines on the hind legs, from the genus *Nersia* by the thickened and colored Costa of the forewings, and from the genus *Plegmatoptera* by the simple crossveins and by the lack of crossveins in the clavus.

Diagnosis.

Pteroplegma, *Plegmatoptera*, and *Melicharoptera* all possess crossvein reticulation in the posterior half of the corium; however, *Pteroplegma* lacks crossveins in the clavus. The crossveins of the forewing form seven or eight loosely organized rows of cells (unlike *Melicharoptera*). The head process is conical and short, less than twice as long as wide. The hind legs have four preapical spines.

Description.

Head longer than wide, cephalic projection present. Vertex about 1.25 to 2.5x longer than posterior width; posterior half wider than anterior half; anterior, lateral and posterior margins carinate; median carina complete; anterior margin obtusely to acutely angulate; lateral margins subparallel in posterior half, convergent anteriorly; hind margin concave, lacking median notch; in profile, upturned anteriorly. Frons 2 to 3.5x as long as widest point; lateral margin convergent in upper half, parallel to convergent in lower half; median carina complete; intermediate carinae elongate and spatulate or spade-like, diminishing between midpoint of frons and frontoclypeal suture; frontal plate smooth; in profile, flat to concave, prominent callosity in front of eye. Frontoclypeal suture inverted U-shaped. Clypeus flat to convex; median and

lateral carinae complete; clypeal plates transversely striate. Beak very long, extending to middle of abdomen. Eyes moderately large, hemispherical; width subequal to height, subequal to two-thirds as wide as vertex; prominent callosity behind eye present. Ocellus directly below median of eye. Antennal socket about half a scape-width from eye margin; scape subellipsoidal, apex directed dorsally; flagellum subanterior.

Pronotum with anterior margin convex to truncate; posterior margin broadly angulate, median notched, about 1.5x as wide across posterior margin as depth; median carina complete; intermediate carinae follow anterior margin, divergent posteriorly, diminishing before reaching posterior margin; two complete lateral carinae, diverging posteriorly; pronotal plates smooth, a single depression on each side of median. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, convergent anteriorly, subparallel in posterior half.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma present; costal margin paler than other veins; veins lacking setae. Crossvein reticulation in corium, with seven or eight organized bands of cells; crossveins lacking in the clavus. Epipleuron enlarged in base of wing only. Sc 1-branched, diverging from RA between the anterior half and third. RA 5- to 7-branched. RP 4- to 5-branched; diverges from Sc+R in anterior half, proximal to nodal line. MP 8- to 13-branched; contiguous with Sc+R, length of common vein about a third of length of posterior cell. CuA 5- to 7-branched. Anal veins convergent in posterior third clavus; contiguous vein A enters posterior margin prior to convergence with CuP.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with moderately long posterior spine; protibiae about 1.5x longer than profemora, lack lateral and anterior spines. Metacoxae with a relatively long, thin posteriorly projecting spine. Hind tibiae with 4 preanterior and 8 anterior spines; basal tarsomere with 9 to 11 anterior spines; penultimate tarsomere with 9 to 12 anterior spines.

Species Composition.

This genus contains three species: *P. brachyceps* Melichar, 1912, *P. jacobiana* Metalf, 1946 (type species), and *P. longiceps* Schmidt, 1932. Melichar (1912) provided a key to the two species known to him, *P. brachyceps* and *P. jacobiana* (= *P. multireticulata* (Jacobi, 1904 [nec Mulsant and Rey, 1855]), which has been modified below (Translated from German, lacking *P. longiceps* Schmidt, 1932):

1 Vertex longer than broad between eyes; in dorsal view, the lateral margins of the forehead convergent anteriorly. Vertex with median carina only present posteriorly. The longitudinal stripe on the side of the head, the upper lateral carina of the pronotum, the postocular tubercle, tegula and costa of the forewing orangish-yellow. *P. jacobiana* Metcalf 1946

1' Vertex as long as broad between the eyes; in dorsal view, the lateral margins of the forehead squared. Median carina of vertex complete. The longitudinal stripe on the side of the head, the upper lateral carina of the pronotum, the postocular tubercle, tegula and costa of the forewing greenish. *P. brachyceps* Melichar, 1912

Geographic Distribution.

Bolivia, Brazil.

Host Plants.

No host plants reported.

Specimens Examined.

P. brachyceps Melichar (5). **BRASIL**: Rond., 62 km. SW. Ariquemes, Fzda. Rcho. Grande, UV Trap, (3-15)-XII-1996 (LBOB: 2♂, 1♀); RO Fazenda Rancho Grande, 62 km. S. Ariquemes, 26-XI-1991, Hg-vapor & Headlamp (UCDC: 1♀); Rondonia, Rancho Fazenda Grande, 62 km. S. of Ariquemes, (12-22)-XI-1991, Hg Vapor light (UCDC: 1♀).

P. jacobiana Metcalf (2). **BRASIL**: R. Grande do Sul (USNM: 1♀); Rio de Janeiro, Parc. Nac. Do Itatiaia, Hotel Simon, Elev. 1200m, (19-20)-II-1960 (FMNH: 1♀).

Retiala Fennah, 1944a:83-84

(Figure 20)

= *Retiala* Fennah, 1944a:83, 80 (key), 81, 82 (comparative notes). Type species: *R. proxima* Fennah, 1944a, by original designation.

= *Retalia* (Fennah, 1944a). Incorrect subsequent spelling by Metcalf, 1946:62.

Original Description.

"Vertex longer than broad (less than 2 to 1), acutely triangular, flat or curved dorsad at apex of vertex, disc flat, median carina distinct at base, much weaker distally, apex of vertex pointed, tip of frons and sides of had visible from above; frons elongated, scarcely threex as long as broad, lateral margins parallel, not ampliate before suture, disc flat, median and lateral carinae strong, lateral carinae diverging before uniting in a point at base, forming a mitrate outline, anteriorly reaching transverse ridge near suture, median carina percurrent; clypeus medially carinate. Pronotum anteriorly roundly produced, posteriorly emarginate in an obtuse angle, median carina strong, with an impression on each side, lateral carinae of disc not attaining posterior margin, lateral marginal carinae of disc not attaining posterior margin, lateral marginal carinae of each side unequal, the dorsal carina being thickened, lateral fields devoid of an oblique carina; mesonotum about as long as broad, tricarinate; tegulae distinctly carinate. A white line laterally from apex of head to costa. Protibiae not exceptionally long in relation to femora; post-tibiae with four spines. Tegmina with R branched near stigma, M forked once before nodal line, Cu forked basad of M cell M 1+2 in corium more than twice as long as wide, nodal and subanterior lines of cross veins distinct, anterior line very incomplete, so that only two rows of areoles lie between nodal line and

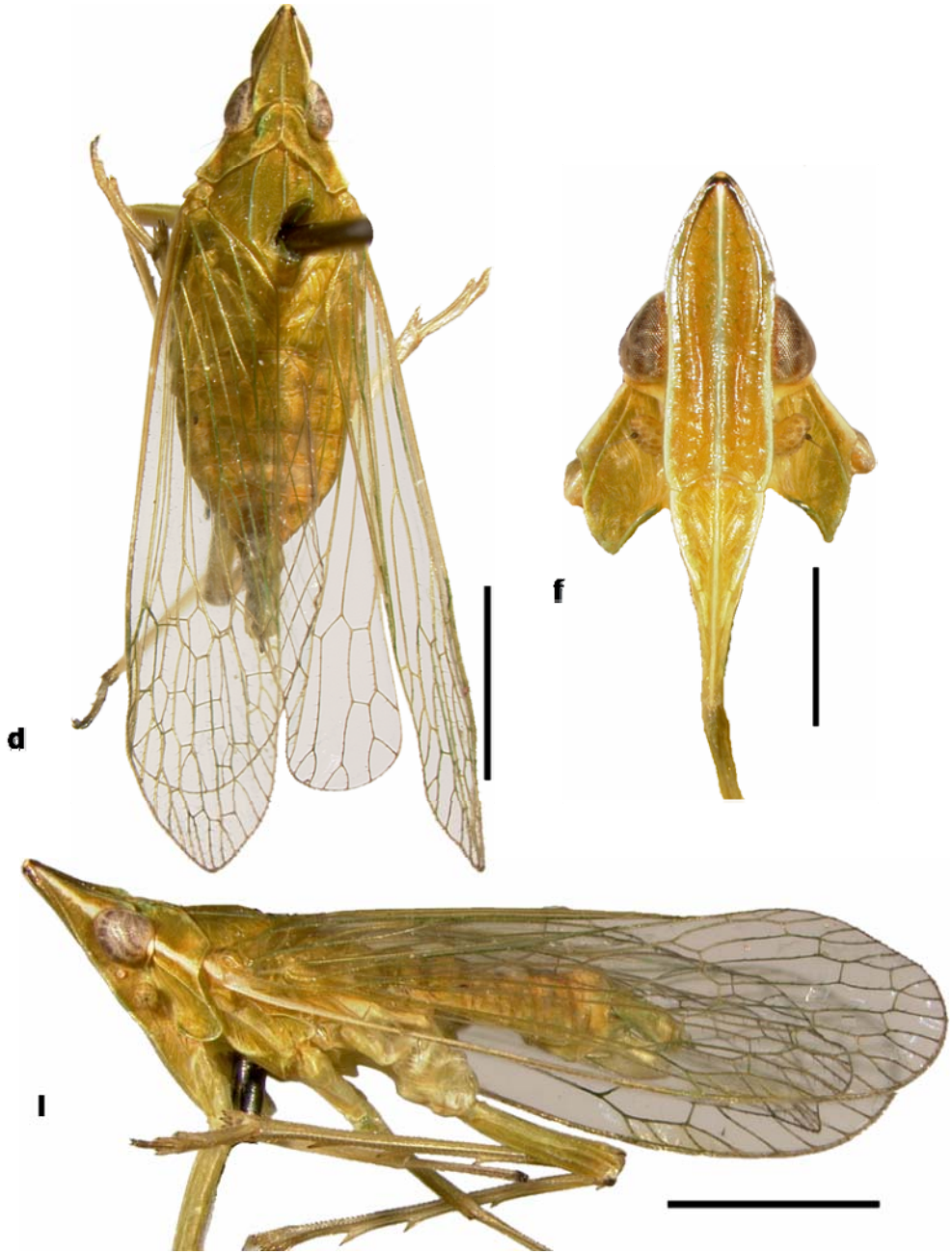

Figure 20. Dorsal (d), lateral (l) and frontal (f) habitus of *Retiala proxima.* Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

margin for most part, seven areoles adjoining nodal line, areoles of anterior series more than twice as long as broad. Wings with R three-branched, M four-branched.

Aedeagus devoid of posterior spines."

Diagnosis.

Like *Nersia* and *Trimedia*, *Retiala* is reticulate only in the anterior third of the forewing. The veins of the forewing are distinctly setose, unique within the entire tribe. It is distinct from *Nersia* and *Trimedia* in possessing only two rows of crossveins in the anterior third of the forewing (four or five in *Nersia*; lacking organization in *Trimedia*). As in many *Nersia*, the vertex is triangularly produced beyond the anterior margin of the eyes.

Description.

Head longer than wide, cephalic projection present. Vertex subtriangular, 1.5 to 2x as long as broad; anterior, lateral and posterior margins carinate; anterior margin rounded to acutly angulate; lateral margins straight, divergent; posterior margin more or less straight; median carina complete; in profile, flat to curving upward anteriorly. Frons about 4.5 to 5.5x as long as greatest width; upper margin acutly angulate; lateral margins convergent in upper third, subparallel in lower two-thirds; median carina complete; intermediate carinae convergent with median carina below upper margin, arcuate, diminishing in posterior quarter; frontal plate smooth throughout, somewhat tuberculate between intermediate and lateral carinae in upper third; in profile, flat. Frontoclypeal suture an inverted U-shape. Clypeus with prominent median carina; lateral carinae unbroken at frontoclypeal and intraclypeal sutures; clypeal plates

transversely striate. Beak extending beyond metacoxae. Eyes moderately large, subhemispherical; emarginate posteriorly; width subequal to height, subequal to width of vertex; prominent callosity directly behind eye. Ocellus below median of eye. Antennal socket about one scape-width from margin of eye; scape subglobose; flagellum anterior.

Pronotum with anterior margin rounded, convex; posterior margin broadly angulate; median notch present, depth less than 1.5x width along posterior margin; median carina complete; intermediate carinae arcuate, follows anterior margin of pronotum, diminishing about half way between anterior and posterior margins; two prominent lateral carinae , complete, parallel; pronotal plate smooth, with single depression between the median and intermediate carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, parallel in posterior half, convergent in anterior half, joining median carina in acute angle anteriorly. Tegula visible dorsally, partially covered by pronotum, carina present and pale.

Forewings macropterous, membranous; langth exceeds tip of abdomen; darkened pterostigma present; costal margin pale; veins lacking setae. Crossvein reticulation occurring in apical third of forewing, forming two rows of cells. Sc 1-branched, diverging from RA in anterior third. RA 2- to 4-branched, sometimes with 1 to 2 irregular crossveins from main branch to margin. RP 3-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 6- to 7-branched; contiguous with Sc+R, common branch subequal in length to posterior cell. CuA 2- to 3-branched. Anal veins convergent in anterior half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs normal, not foliaceous; procoxae lacking posterior spine, mesocoxae with a relatively long, wide posterior spine; protibiae about 1.5x longer than profemora, lack lateral and anterior spines. Metacoxae with a short, wide posteriorly projecting spine. Hind tibiae with 4 preanterior and 8 anterior spines; basal tarsomere with 17 to 19 anterior spines; penultimate tarsomere with 17 to 19 anterior spines.

Species Composition.

This genus contains three species: *R. proxima* Fennah, 1944a (type species), *R. pudibunda* (Stål, 1862), and *R. viridis* Fennah, 1945. There are no published keys to the species of this genus.

Geographic Distribution.

Bolivia, Brazil, Mexico, Trinidad.

Host Plants.

Asteraceae: *Eupatorium rugosum* (Wilson *et al.*, 1994); Rubiaceae: *Coffea* sp. (Fennah, 1945); Casuarinaceae: *Casuarina* sp. (Wilson *et al.* , 1994); Malvaceae: *Hibiscus* sp. (Wilson *et al.*, 1994).

Type Material Examined.

R. proxima Fennah (1). Paratype: **MEXICO**: Mex. 1785 (USNM: 1♂).

R. viridis Fennah (1). Paratype: **TRINIDAD**: West Indies, 1942 (AMNH: 1♂).

Specimens Examined.

R. proxima Fennah (9). **ECUADOR**: Napo Prov., ca. 2 km. E Pto. Napo, 460 m., IV-21-1984 (WSUC: 1♂). **BELIZE**: (as BRITISH HONDURAS) Cayo Dist., Western Highway Mile 66, 14-VII-1964, Blacklight Trap (LBOB: 2♂, 1♀). **HONDURAS**: UV trap, Choluteca, 16-VII-1974 (LBOB: 1♀). **PANAMA**: Colon Pr., Qbda. Lopez, at light, 8°19.3'N 79°48'W, (5-18)-VII-2001 (D. Flynn Collection: 2♂, 1♀); Colon Pr., Qbda. Lopez, at light, 9°19.3'N 79°48'W, (20-30)-VII-2002 (D. Flynn Collection: 1♂).

R. pudibunda (Stål) (1). **TRINIDAD**: Trinidad Isd., IX-1902 (USNM: 1♀).

Trimedia Fennah, 1944a:87

(Figure 21)

= *Trimedia* Fennah, 1944a:87, 80 (key), 81, 82 (comparative notes). Type species: *Nersia viridata* Stål, 1862; by original designation.

Original Description.

"Vertex flat, as long as broad or a little longer, approximately triangular but actually seven-sided, lateral margins converging distally, anterior margin obtusely angulate, posterior margin transverse or very excavate, median carina distinct posteriorly, weakly percurrent, sides of frons visible from above; frons flat, lateral margins subparallel in posterior half ampliate before clypeus, median and lateral carinae equally strongly developed, latter converging distally, reaching clypeus or abruptly ending very near to it, posteriorly uniting to

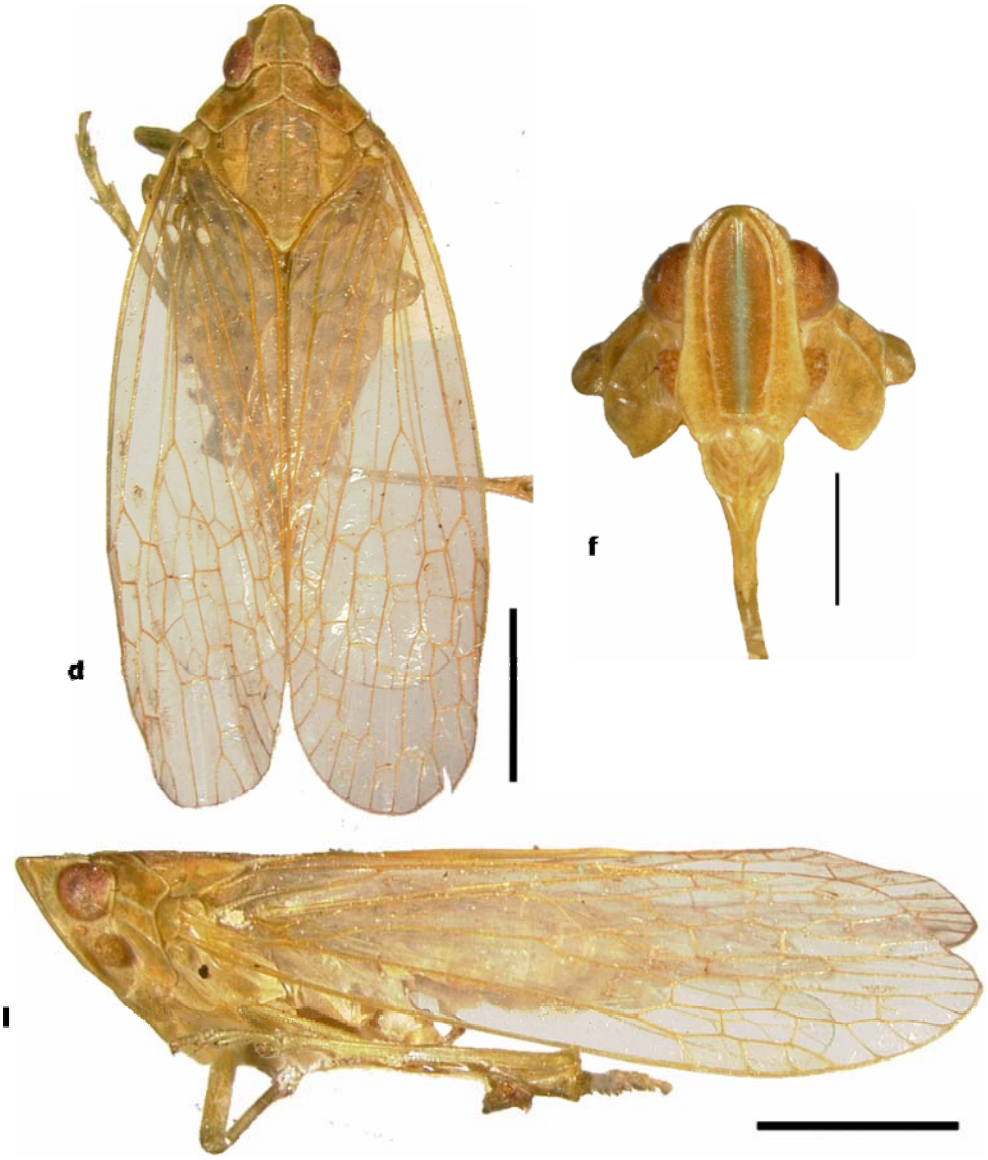

Figure 21. Dorsal (d), lateral (l) and frontal (f) habitus of *Trimedia viridata* . Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 0.9mm.

form a wide curve somewhat pointed at apex. Pronotum two-thirds as long as vertex, median carina distinct, lateral carinae obsolete, the upper carina of each lateral marginal pair thickened. Tegulae distinctly carinate. A white line laterally from apex of head to costa. Protibiae not exceptionally long, post-tibiae with four spines. Tegmina with R forked near stigma, M forked at middle of corium and branch M 3+4 forked in anterior third of corium, Cu forked basad of first fork of media, nodal, subanterior and anterior lines present, eight areoles adjoining nodal line, M embracing three, two of these being grooved, areoles at anterior margin usually more than twice as long as broad. Wings with R three-branched, M four-branched at margin. Ovipositor with first valvulae with three spines on dorsal margin and two curved spines distally, third valvulae subquadrate. Bursa copulatrix ornamented with non-sclerotised rings closely set with about twenty beadlets."

Diagnosis.

This genus is similar to *Nersia*. *Trimedia* lacks crossveins in the posterior half of the corium, veins and forewing margin lacking setae, and a pale line present from the hind margin of the eye, between the lateral carinae of the pronotum and onto the carinae of the tegulae and the forewing costal margins. It differs from *Nersia* by having three rows of cells in the anterior third of the forewings, versus four or five in *Nersia*.

Description.

Head longer than wide, cephalic projection present; frons wider than vertex, lateral margins visible dorsally. Vertex parallel-sided in posterior half, triangular in anterior half; median length about 1.5x greatest width; anterior, lateral and posterior

margins carinate; anterior margin convex; posterior margin concave; median carina complete; in profile, flat. Frons about 2.5 to 3x as long as greatest width; lateral margins sinuate, convergent anteriorly and posteriorly, widened submedially; median carina complete; intermediate carinae spade-like, arcuate in upper third and convergent in lower two-thirds, abruptly convergent above frontoclypeal suture; frontal plate smooth throughout. Frontoclypeal suture an inverted U-shape. Clypeus triangular; median carina complete; lateral carinae unbroken at frontoclypeal and intraclypeal sutures; surface striate; convex in profile. Beak exceeding metacoxae. Eyes moderately large, subelliptical; margins smooth, not emarginated; about as high as broad; vertex about 1.5x wider than width of eye; ridge-like callosity present behind eye. Ocellus below middle of eye. Antennal socket about one scape-width from eye margin; scape subellipsoidal, apex directed dorsally; flagellum subanterior.

Pronotum with anterior margin convex to truncate; posterior margin angulate, concave, median notch present, subequal in depth and width at posterior margin; median carina complete; intermediate carinae follow anterior margin, divergent posteriorly, diminishing in posterior half; two lateral carinae present, complete, divergent posteriorly; pronotal plate smooth, single depression between median and intermediate carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, subparallel anteriorly and divergent posteriorly.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma often present; costal margin concolorous with other veins; veins lacking setae. Crossvein reticulation in apical third of forewing; cells forming three rows. Sc 1- to 2-branched, diverging from RA in anterior third. RA 2- to 3-branched,

sometimes with 1 or 2 crossveins between primary branches and margin. RP 3- to 4-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 7- to 10-branched; contiguous with Sc+R, common branch subequal in length to posterior cell. CuA 4- to 7-branched. Anal veins convergent in posterior third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs normal, not foliaceous; procoxae lacking posterior spine, mesocoxae with short, wide posterior spine; protibiae about 1.3x longer than profemora, lack lateral and anterior spines. Metacoxae with a short, wide posteriorly projecting spine. Hind tibiae with 4 preanterior and 7 to 8 anterior spines; basal tarsomere with 8 to 9 anterior spines; penultimate tarsomere with 8 to 11 anterior spines.

Species Composition.

This genus is only represented by *Trimedia viridata* (Stål 1862).

Geographic Distribution.

Argentina, Brazil, Paraguay, Venezuela.

Host Plants.

No host plants reported.

Specimens Examined.

T. viridata (Stål) (4). **BOLIVIA**: S.C., 10 mi. W. Portachuelo, 11-IV-1978at night (LBOB: 1♀). **ECUADOR**: P. Napo, vic. Puerto Misahuell, 1º2'2.4"S lat. 77º39'49.2"W lon., 1650-1900 ft., (6-19)-IX-1998, Mercury vapor & ultraviolet lights (LBOB: 1♀). **PERU**: Monson Valley, Tingo Maria, 9-XII-1954 (LBOB: 1♂). **VENEZUELA**: Isla Raton, 2-VI-1952, Exp. Fco. Ven. Alto Orinoco (USNM: 1♀).

3.2.5 Tribe Rhynchomitrini, tribus novem

Original Description and Diagnosis.

This tribe contains species that are generally green and unpatterned with a roughly triangular or pentagonal head process subequal or shorter than the pro- and mesothorax combined (lacking the flared or bulbous apex of Lappidini), the process neither compressed nor expanded. The forewings of some taxa are reticulate, but without distinct cell organization, while others have organized rows of cells. The corium lacks crossveins, the tegulae lack carinae. Legs usually not expanded, femora and tibiae of forelegs approximately subequal.

Remarks.

This is a large, diverse tribe. Emeljanov (1983) included *Hyalodictyon*, *Digitocrista* and *Pharodictyon* within Nersiini, and *Rhynchmitra* and *Mitrops* within Taosini; these placements were based solely on structures of the female genitalia; specifically, Emeljanov pointed to a greater degree of dentition on the ovipositor and a

long and narrow third valvulae (vs. short and broad). Because characterizations within this group are difficult, further investigation across a broad range of species is required.

The tribe consists of 6 genera and 22 species in the New World.

26. *Rhynchomitra* Fennah, 1944a:85

(Figure 22)

= *Rhynchomitra* Fennah, 1944a:85, 80 (key), 81, 82 (comparative note). Type species: *Dictyophora microrhina* Walker, 1851; by original designation.

Original Description.

"Vertex elongate or conical, curved upward distally, lateral margins tapering evenly to apex, median carina distinct posteriorly, obsolete at apex. Frons elongate, margins almost parallel, widened before suture, median and lateral carinae strong, all reaching suture, lateral carinae meeting posteriorly in an acute point. Pronotum with anterior margin strongly convex between eyes, posterior margin rectangularly excavate, a deep-parallel sided notch at middle, lateral carinae of disc reaching hind margin. Protibiae not remarkably long; post-tibiae with four spines. Tegmina with R forked near stigma, M forked distad of Cu fork, Cu forked at middle of corium, membrane reticulate with ten or twelve rows of areoles, stigma approximately five-celled. Wings with four branches of R and four of M at anterior margin. Aedeagus with a pair of spines ventro-posteriorly, a longer pair dorso-laterally, a minute spine on anterior membranous sac of each side; penial spines long, curved, fleshy, with a

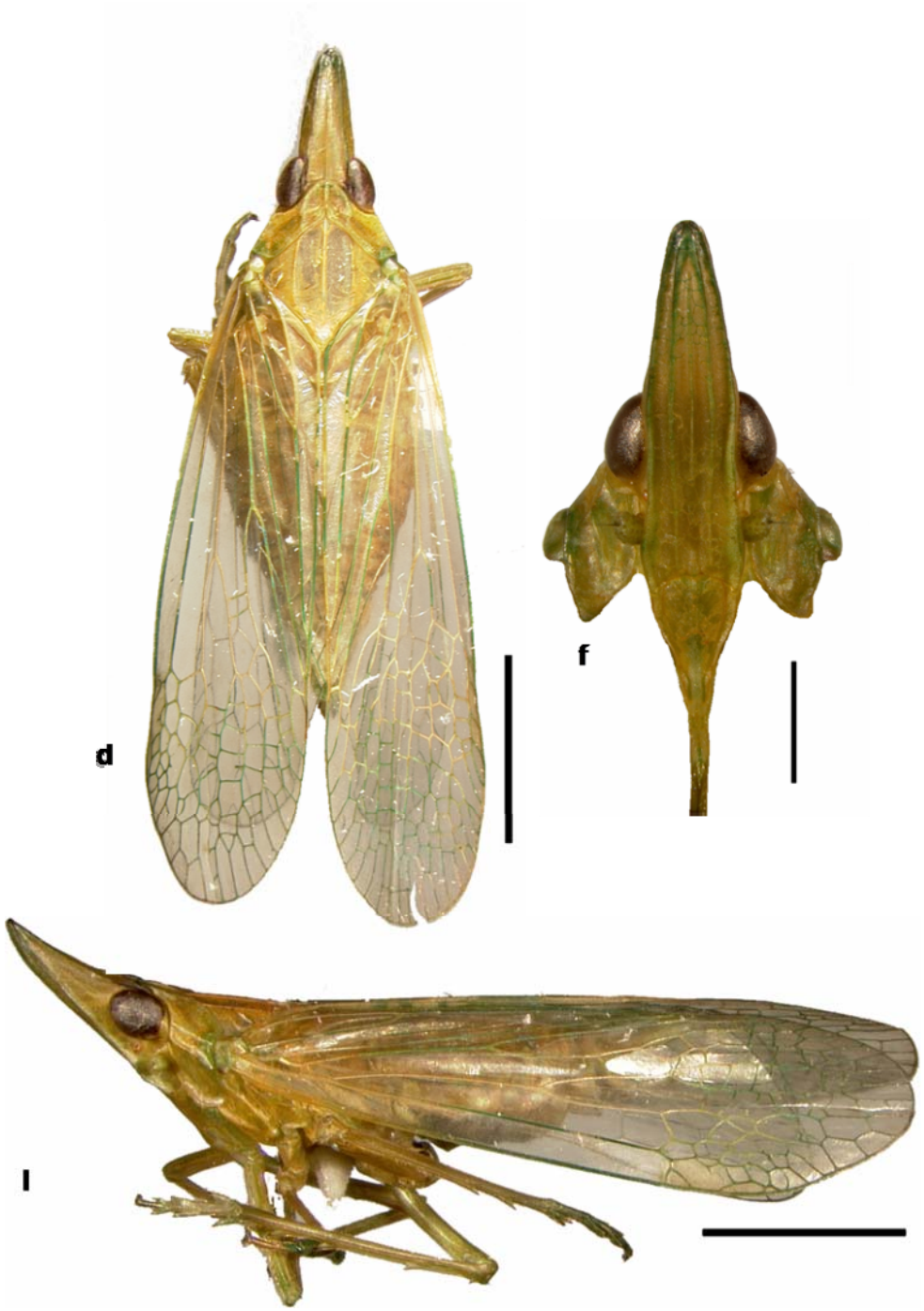

Figure 22. Dorsal (d), lateral (l) and frontal (f) habitus of *Rhynchomitra microrhina*. Scale bar - Dorsal: 3.0mm; Lateral: 3.0mm; Front: 1.0mm.

sclerotised spine at tip. Ovipositor with first valvulae beset dorsally with a row of about ten teeth, a longer curved spine at apex; third valvulae elongate, about threex as long as broad at middle. Ornamentation on bursa copulatrix elongate-oval, three celled, with a beadlet on each dissepiment and two beadlets between each."

Diagnosis.

Rhynchomitra is distinguished by having a triangular head process that is shorter than the pro- and mesonotum combined, reticulate crossveins in the anterior half of the forewings, and a deep median notch on the hind margin of the pronotum. While at rest, the body appears triangular in dorsal aspect, broadening caudally. The forelegs are not expanded, as in *Taractellus*.

Description.

Head longer than wide; cephalic projection present, elongate, upturned anteriorly. Vertex triangular, 2 to 4x as long as greatest width; anterior, lateral and posterior margins strongly carinate; anterior margin rounded or obtusely angulate; lateral margins divergent posteriorly, constricted anterad of the eyes; posterior margin truncate to very broadly angulate; median carina only prominent in posterior quarter, absent anteriorly; in profile, flat posteriorly, flat to moderately upturned anteriorly. Frons triangular, about 3.5 to 4.5x as long as greatest width; lateral margins convergent in upper quarter, parallel below; median carina complete; intermediate carinae enclosing spade-shaped median fovea, anteriorly acute, parallel to convergent below, sharply convergent near frontoclypeal suture; frontal plate smooth. Frontoclypeal suture inversely U-shaped. Clypeus convex, in profile; median and

lateral carinae complete, unbroken at transverse clypeal sutures; clypeal plates transversely striate. Beak exceeding metacoxae. Eyes moderately large, subelliptical; emarginate posteriorly; about 1.3x as wide as high, as wide as vertex; ridge-like callosity behind eye present. Ocellus posterior to midline of eye. Antennal socket about 1 ½ scape-width from eye margin; scape subglobose; flagellum anterior.

Pronotum with anterior margin convex to truncate; posterior margin angulate, median notch present, about 1.5 to 2x deeper than width along posterior margin; median carina complete; intermediate carinae (nearly) complete, subparallel, confining spatulate median fovea; two complete, posteriorly divergent lateral carinae; pronotal plate smooth, with a single depression between the median and intermediate carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae subparallel in posterior two-thirds, convergent in anterior third. Tegula lacking carinae.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma usually present; costal margin concolorous with other veins; veins lacking setae. Crossveins occurring in apical third of forewing, highly reticulate, lacking cellular organization. Sc 1- to 2-branched, diverging from RA in anterior third. RA 4- to 5-branched, sometimes with 1 or 2 crossveins between primary branches and margin. RP 4- to 5-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 8- to 13-branched; contiguous with Sc+R for a short distance, common branch two-thirds length of posterior cell. CuA 4- to 5-branched, sometimes with a crossvein from posterior-most branch to wing margin. Anal veins convergent in posterior third to half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with a moderately long, wide posterior spine; protibiae and profemora subequal in length, lack lateral and anterior spines. Metacoxae with a relatively long, narrow, posteriorly projecting spine. Hind tibiae with 4 to 5 preanterior and 7 to 8 anterior spines; basal tarsomere with 14 to 17 anterior spines; penultimate tarsomere with 9 to 13 anterior spines.

Species Composition.

This genus contains four species: *R. lingula* (Van Duzee, 1908), *R. mexicana* Fennah, 1944a, *R. microrhina* (Walker, 1851) (type species), and *R. recurva* (Metcalf, 1923). Fennah (1944) described *Rhynchomitra* and *R. mexicana* but did not produce a species key. The following key is modified from Metcalf (1923), with additional features. *R. mexicana* Fennah, 1944 is included based on the original description:

1 Vertex at least twice as long as its posterior width. 2

1' Vertex subequal in length and posterior width, or slightly longer.
R. lingula (Van Duzee, 1908)

2 Median carina of vertex present throughout; apex of cephalic process curving upward; males with posterior spines of aedeagus long, more than 3x posterior width. 3

2' Median carina of vertex only present posteriorly; cephalic process nearly flat dorsally, only slightly curved upward at the apex; males with posterior spines of aedeagus very short, less than 3x posterior width.
R. mexicana Fennah, 1944a

3 Cephalic process narrow, strongly tapering toward apex; intermediate carinae of frons subparallel; female with plates longer than the ovipositor.

R. microrhina (Walker, 1851)

3' Cephalic process more robust, nearly parallel-sided; intermediate carinae of frons arched outward; female with ovipositor longer than the plates.

R. recurva (Metcalf, 1923)

Geographic Distribution.

Mexico, United States.

Host Plants.

Arecaceae: *Serenoa repens* (New Record); Malvaceae: *Hibiscus moscheutos* (New Record); Poaceae: *Eragrostis curvula* (Wilson and Wheeler, 2005); Rubiaceae: *Cephalanthus occidentalis* (New Record).

Specimens Examined.

R. lingula Van Duzee (42). **UNITED STATES** : DELAWARE: Sussex Co., Georgetown, Redden S.F., 7-VIII-1999, Sweep Net (UDCC: 1♀); Sussex Co., Fenwick Island S.P., approx. 1.5 km. S of S. Bethany, 01-IX-2000 (UDCC: 1♂, 2♀, 1 undet.); GEORGIA: Charlton Co., Folkston, Traders Hill Rec. Area, N30°46.74' W82°01.61', 5-VII-2005, Hg Vapor Lamp (UDCC: 1♂); FLORIDA: Alchua Co., Gainesville, Austin Cary For., 15-VII-1966,

UV Trap (UDCC: 2♀); Collier Co., Ochopee, 10 mi. NE Everglades, 4-IX-1936 (ANSP: 1♀); Highlands Co., Archbold Biol. Sta., 12-VI-1955, at light (FMNH: 1♂); Jefferson Co., Rt. 59, 2.4 mi. S Wicissa, 27-VII-2000 Sweeping (UDCC: 1♀); Jefferson Co., Wicissa, at Jct. SR259 & 59, 27-VII-2000 Sweeping Roadside (UDCC: 1♂, 1♀); Pinellas Co., Gulfport, 25-VIII-1936 (ANSP: 1♀); Santa Rosa Co., nr. Harold Blackwater St. Park, 21-IX-2002, Sweeping *Serenoa repens* (STDC: 1♂, 1♀); LOUISIANA: E. Baton Rouge Par., Baton Rouge, 27-IX-1994 (STDC: 1♂); Tangipahoa Par., Arcola, Sandy Hollow WMA, 07-IX-2002, Sweeping (UDCC: 1♀); Tangipahoa Par., Arcola, Sandy Hollow WMA, 07-IX-2002, Sweep net (UDCC: 1♂); Tangipahoa Par., nr. Arcola, Oil Field Rd., Sandy Hollow WMA, 07-IX-2002, Sweeping grasses (STDC: 1♂, 1♀); MARYLAND: Ann Arundel Co., South River 4 mi. S Anapolis, 14-VIII-1932 (USNM: 1♂, 1♀); NEW JERSEY: Cape May Co., Avalon, (11-14)-VIII-1998 Sweeping @ marsh (UDCC: 1♂); Cape May Co., Cape May, 9-IX-1932 (ANSP: 1♂); Cape May Co., Cape May, 18-IX-1932 (ANSP: 1♂, 2♀); Cape May Co., Cape May, 8-IX-1933 (ANSP: 1♂); Cape May Co., Cape May, 23-VIII-1934 (ANSP: 1♀); Cape May Co., Cape May, 24-VIII-1938 (ANSP: 1♀); Cape May Co., Cape May, 26-VIII-1938 (ANSP: 1♂, 1♀); Cape May Co., "Peermont" (bet. Avalon and Stone Harbor), 3-IX (FMNH: 2♂, 2♀); Cape May Co., Cold Spring, 31-VIII-1910 (USNM: 1♀); NORTH CAROLINA: Bladen Co., Bladen Lakes State Forest, Sweet Home Trail X Little David Trail, E of Co. Rd. 1510, 11-IX-1992 (UDCC: 1♀); Bladen Co., Bladen Lakes S. F., 18-IX-1993, Sweet Home Trail (UDCC: 1♀).

R. microrhina (Walker) (75). **UNITED STATES**: ALABAMA: Clay Co., Cheaha Mt., Cleburne, 2200 ft., 3-IX-1939 (ANSP: 1♂); Madison Co., 5 mi. W Huntsville, 800 ft., 8-VIII-1939 (ANSP: 1♂, 1♀); ARKANSAS: White Co., 1 mi. W Bald Knob, 280 ft., 10-VIII-1939 (ANSP: 1♀); DELAWARE: Kent Co., Clayton, Blackiston, 20-VII-1997 (UDCC: 1♀); Kent Co., Clayton, Blackiston, 6-IX-1997 (UDCC: 1♂); Kent Co., Big Stone Beach, 23-VII-1939 (UDCC: 1♂); Kent Co., Wyoming, Oak Pt. School Rd., 29-VIII-1999 sweep net (UDCC: 1 undet.); New Castle Co., C&D Canal WA South, near Summit, 04-IX-2004 sweeping sedges (UDCC: 1♀); New Castle Co., Newark, UDel Farm 31-VIII-2003, light trap, tall grass (UDCC: 1♀); New Castle Co., Newark, UD Farm @ Cages, 17-IX-2001, Aerial Net (UDCC: 1♀); Sussex Co., Fenwick Island SP, approx. 1.5 km. S of S. Bethany, 01-IX-2000 (UDCC: 1♀); GEORGIA: Liberty Co., nr. Riceboro, 20-VII-2000 Sweeping Roadside (UDCC: 2♂, 1♀); Liberty Co., nr. Riceboro, 25-VII-2000 Sweeping Roadside (UDCC: 1♀); ILLINOIS: Alexander Co., Olive Branch, X-1-09, Mus. Expd. (FMNH: 1♀); Alexander Co., Olive Branch, 4-X-1909, Mus. Expd. (FMNH: 1♂); Pulaski Co., Karnak, 8-VIII-1934 (INHS: 2♂, 1♀); Williamson Co., 2 mi. S Carterville, 17-VIII-1969 (INHS: 1♂); FLORIDA: Alachua Co., Gainesville, Austin Cary For., 15-VII-1966, UV Trap (UDCC: 1♂, 1♀); Alachua Co., Gainesville, VIII-1938 (USNM: 1 undet.); Alachua Co., Gainesville, IX-1936 (USNM: 1♂); Baker Co., nr. Sanderson, 25-VII-2000 Sweeping Roadside (UDCC: 1♂); Collier Co., Ochopee, at light, 24-VI-1980 (LBOB: 1♂); Collier Co., Collier, Seminole St. Pk., 22-VI-1965, at light (LBOB: 1♀); Highlands Co., Archibold Biol.

Sta., L. Placid, 6-X-1965 (WSUC: 1♂); Highlands Co., Archibold Biol. Sta., 19-IX-1983, at light (ANSP: 1 undet.); Jefferson Co., Wicissa, at Jct. SR259 & 59, 27-VII-2000 Sweeing Roadside (UDCC: 2♂); Leon Co., Tall Timbers Res. Sta., Sheep Island, at night, 22-VIII-1978, on buttonbush (*Cephalanthus occidentalis*) (LBOB: 1♂); Madison Co., 12 mi. SE of Madison, jct. Suwanee & Withlacoochee R., (28-29)-VIII-1949 (FMNH: 1♀); Orange Co., nr. Orlando, Disney World, 3-VII-2000 at light (UDCC: 1♂); Sumter Co., St. Catharine, 26-VIII-1936 (ANSP: 1♂); KANSAS: Cowley Co., 11-IX-1926 (WSUC: 1♂, 1♀); Franklin Co., 30-VIII-1925 (WSUC: 1♀); Sumner Co., 23-VIII-1926 (WSUC: 1♂); LOUISIANA: E. Baton Rouge Par., Baton Rouge, 20-IX-1994 (STDC: 1♂); E. Baton Rouge Par., Baton Rouge, 30-IX-1994 (STDC: 1 undet.); E. Baton Rouge Par., Baton Rouge, nr. LSU Campus, River Rd., Mississippi R. Levee, 20-Jul-2003, Hg Vapor Light (UDCC: 1♀); Tangipahoa Par., nr Arcola, Sandy Hollow WMA, 13-IX-2003, sweeping by hand (STDC: 1♀); MARYLAND: Cecil Co., Fair Hill WMA, 22-VIII-2006 (UDCC: 1♀); Kent Co., Chestertown, 24-VIII-1999 (ANSP: 1♀); Wicomico Co., Salisbury, Pemberton Park, 17-VIII-1995, ex. *Hibiscus palustris* (= *H. moscheutos*) (UDCC: 1♀); MISSISSIPPI: Claiborne Co., Port Gibson, 22-VII-1921 (MZHF: 1♂); Harrison Co., Newman Lumber Co., Landon, 11-VIII-1969, UV Trap (LBOB: 1♀); Gulfport, 16-VIII-1938 (USNM: 1♀); Washington Co., Leland, 15-IX-1921 (MZHF: 1♂); MISSOURI: Boone Co., 3 mi. S Columbia, 4-VIII-2002, mercury vapor light (WSUC: 1♀); NEW JERSEY: Cape May Co., Cape May, 24-VIII-1932 (ANSP: 1♂, 1♀); Cape May Co., Cape May, 18-IX-1932 (ANSP: 1♂); NEW

JERSEY: Cape May Co., "Peermont" (bet. Avalon and Stone Harbor), 3-IX (FMNH: 1♀); NORTH CAROLINA: Brunswick Co., Bald Head Island, Saltmarsh Hammock, 3-IX-2005, sweeping (UDCC: 1♂); Gaston Co., Dallas, 13-VIII-1999, Captured at Black light trap (D. Flynn Collection: 1♂); Gaston Co., Moss Farm, 20-IX-1999, (D. Flynn Collection: 1♀); Gaston Co., Moss Farm, 31-VIII-1999, (D. Flynn Collection: 2♀); Mecklenberg Co., Charlotte, 6-VIII-1970, UV Light (UDCC: 1♀); Wake Co., Raleigh, Schenck Forest, 25-VII-2000 sweeping (UDCC: 1♀); Wake Co., Raleigh, Centennial Campus, 25-VII-2000 sweeping (UDCC: 3♂, 1♀); Wake Co., Raleigh, 23-VIII-1990, sweeping (UDCC: 1♀); Wake Co., Raleigh, 5-X-1990 (UDCC: 1♂); Wake Co., Raleigh, 13-X-1981 (UDCC: 1♀); Wake Co., nr. Raleigh, 17-VIII-1993 Schenck Forest (UDCC: 1♂); VIRGINIA: Fairfax Co., nr. Springfield, 28-VIII-1999 sweeping (UDCC: 1♂, 2♀).

R. recurva (Metcalf) (23). **UNITED STATES**: FLORIDA: Everglades, VIII-1910 (AMNH: 2♀); Alachua Co., Gainesville, (26-IX)-(2-X)-1914 (AMNH: 1♀); Escambia Co., Pensacola, Oct. (11-14)-1914 (AMNH: 1♀); LOUISIANA: (location not given) "2336" (USNM: 1♂); E. Baton Rouge Par., Baton Rouge, 20-IX-1994 (UDCC: 1 undet.); Natchitoches Par., Kisatchie Ranger District, 9-X-2002 (UDCC: 1♂); Orleans Par., New Orleans, 29-VI-1916 (AMNH: 1♀); NORTH CAROLINA: Bladen Co., Bladen, 11-IX-1992, Lakes State Forest, 1.3 km. E of Jones Lake, Co. Rd. 1511 at Turnbull Creek (UDCC: 2♂, 1♀); Bladen Co., nr. Bladen Lake S.F., 16-IX-1995 c 5 mi. S Ammon SR242 (UDCC: 1♀); Gaston Co., Crowders MSP, 2-IX-1998 (D. Flynn Collection: 2♂, 1♀); Gaston Co., Crowders MSP, 17-IX-1999 (D.

Flynn Collection: 1♀); Gaston Co., Moss Farm, 8-IX-1999 (D. Flynn Collection: 1♂); TEXAS: Cameron Co., Brownsville, 31-V-1933 (USNM: 1♂, 1♀); Dimmit Co., Catarina, 2-VI-1933 (USNM: 1♀); Victoria Co., Victoria, 8-VII-1907, Acacia (USNM: 1♀); Victoria Co., Victoria, 21-VI-1909 (USNM: 1♂); Victoria Co., Victoria, 24-VI-1909 (USNM: 1♀).

Digitocrista Fennah, 1944a:84 (66)

(Figure 23)

= *Digitocrista* Fennah, 1944aa:84, 80 (key), 81, 82 (comparative note). Type species: *Nersia bubala* Stål, 1862, by original designation.

Original Description.

"Vertex long, cylindrical, subtruncate but not angled at apex, a minute notch on lateral margins before eyes, sides of frons visible from above, lateral margins of vertex tapering for a short distance before eyes then parallel to apex, sides of head with a blunt ridge before eyes; frons elongate, median carina weak or obsolete at middle, lateral carinae strongly developed terminating just before suture, meeting at base in a curve, not a point; disc grooved in posterior two-thirds, a groove between lateral carinae and lateral margins, deepening to sagittal carina at base of frons medially; lateral margins parallel, angulate or angulately bent forward before clypeal suture. Pronotum with lateral carinae of disc reaching hind margin, carinae of lateral margin prominent, of equal thickness. Tegulae devoid of carina. Protibiae not exceptionally long; post-tibiae with four spines. Tegmina with R forked close to stigma,

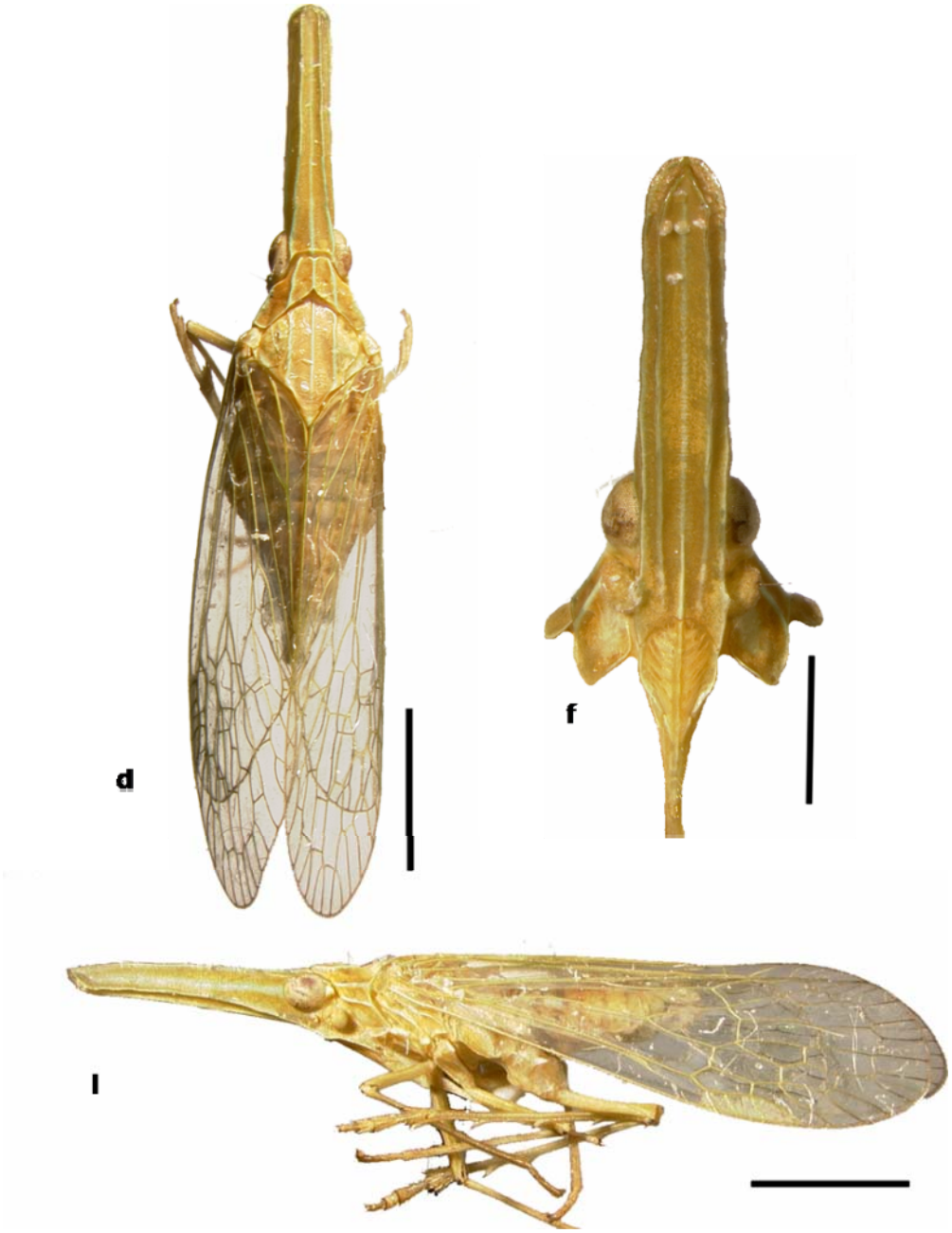

Figure 23. Dorsal (d), lateral (l) and frontal (f) habitus of *Digitocrista bubala.* Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

M once forked just distad of Cu fork, Cu forked in middle of corium, nodal subanterior and anterior lines of cross veins only present, seven rows of areoles adjoining nodal line, M embracing three, a groove along middle areole, areoles on anterior margin moderately long; stigma with three or four cells. Wings with four or five branches of R at anterior margin, two, three or four branches of M.

Aedeagus devoid of a pair of posterior spines, a pair of slender spines dorsally, and a pair of long curved membranous tubes each ending in a sclerotised point; membranous portion of periandrium when inflated forming a large curved sac bordered on each side by a smaller sac with a sclerotised patch at apex.

Anal segment of female short. Ovipositor with first valvulae beset dorsally with four teeth, anteriorly a pair of curved spines; second valvulae slender, blade-like, parallel-sided, third valvulae somewhat elongate, threex as long as broad in middle. Bursa copulatrix ornamented with minute sclerotised beadlets arranged in an elongate oval."

Diagnosis.

As in *Mitrops* and *Pharodictyon*, the crossveins of the forewings form three well-organized rows of cells. The head process is elongate, but its length is greater than the median length of the pro- and mesonotum combined. The cells in the anterior third of the forewings are organized into three easily recognizable rows of cells. The forewings are triangular and relatively broad. The intermediate carinae of the pronotum are complete, reaching the hind margin. The hind tibiae have four preapical spines, versus three in *Pharodictyon*.

Description.

Head longer than wide, cephalic projection present. Vertex parallel-sided, elongate, approximately 5.5 to 6x longer than greatest width; anterior, lateral and posterior margins carinate; anterior margin rounded; lateral margins parallel to divergent, constriction in posterior quarter; posterior margin straight to concave; median carina reaching anterior margin. In profile, posterior two-thirds of vertex approximately straight, parallel to body, anterior third upturned, downturned or straight. Frons about 6.5 to 7.5x as long as greatest width; upper margin rounded; lateral margins subparallel except expanded into obtuse point near frontoclypeal suture. Median carina complete, marked by a pale line, raised in upper and lower quarters. Intermediate carinae roughly parallel, meeting median carina subanteriorly in thickened callous, diminishing prior to frontoclypeal suture. Frons smooth. Frontoclypeal suture inversely U-shaped, notched medially. Clypeus convex; median carina prominent, extending from frontoclypeal suture to labrum; lateral carinae unbroken at frontoclypeal and intraclypeal sutures; clypeus smooth with transverse striations, medially directed ventrad. Beak exceeding metacoxae. Eyes moderate sized, subhemispherical, posteriorly emarginate; width and heigth subequal, as broad as vertex. Callosity behind eye prominent. Ocelli below eye, behind midline of eye. Antennae about half antennal width behind eye; second segment subglobose, with numerous circular, pustulate sensillae; flagellum anterior.

Pronotum with anterior margin anteriorly angulate; broadly truncate medially with slight central notch, depth of notch 1.5 to 2x width at posterior margin; posterior margin angulate, median notch as deep as posterior width; median carina complete; intermediate carinae parallel to divergent, reaching posterior margin; lateral carinae

paired, indistinct, between eyes and tegulae, reaching anterior and posterior pronotal margins, separated by half length of dorsal-most lateral carina, divergent posteriorly. Pronotal foveae smooth, with depression between median and intermediate carinae. Mesonotum with three prominent, parallel carinae; median obsolete prior to posterior margin; lateral reaching posterior margin. Tegulae visible dorsally, partially concealed by pronotum, carinae absent.

Forewings macropterous, membranous; extending well beyond abdominal apex; darkened pterostigma usually present. Veins lacking setae, costal margin concolorous with veins. Two rows of crossveins in anterior third; cells forming three rows. Costal margin thickened, epipleuron visible laterally, subequal to posterior cell. Sc 1-branched, diverging from RA in anterior third. RA 3- to 4-branched. RP 3- to 4-branched, diverging from Sc+R in anterior third, proximal to nodal line. MP 8- to 10-branched, contiguous with Sc+R, common branch length subequal to posterior cell. CuA 2- to 4-branched. Anal veins convergent in posterior third of clavus; reaching posterior margin; clavus lacking crossveins.

Legs simple, not expanded. Procoxae lacking posterior spine, meso- and metacoxae with long, stout spine posteriorly. Tibiae 1.0 to 1.5x length of femora, lacking lateral and anterior spines. Hind tibiae with 3 to 4 preanterior and 7 anterior teeth; basitarsus with 9 to 10 anterior teeth; second tarsomere with 8 to 10 anterior teeth.

Species Composition.

This genus is only represented by *Digitocrista bubala* (Stål, 1862).

Geographic Distribution.

Bolivia, Brazil.

Host Plants.

No host plants reported.

Specimens Examined.

D. bubala (Stål) (5). **BOLIVIA**: Rurrenabaque Beni, Nov. Mulford Biological Expedition, 1921-1922 (USNM: 1♂). **BRASIL**: Rondonia, 62 km. SW. Ariquemes, Fzda. Rancho Grande, 14-XI-1994 (LBOB: 1♀); Rondonia, 62 km. SW. Ariquemes, Fzda. Rancho Grande, 9-XI-1994, UV & merc. Vap. Light (LBOB: 1♂); Rond. UV Trap, 62 km. SW. Ariquemes, Fzda. Rancho Grande, (5-17)-X-1993 (LBOB: 1♀); Rondonia, 62 km. SW. Ariquemes, Fzda. Rancho Grande, 10-XI-1994, UV & mercury vapor lights (LBOB: 1♂).

Dorimargus Melichar, 1912:90-91

(Figure 24)

= *Dorimargus* Melichar, 1912:90, 80 (key), 215 (List). Type species: *D. antoniae* Melichar, 1912, by original designation.

Figure 24. Dorsal (d), lateral (l) and frontal (f) habitus of *Dorimargus antoniae.* Scale bar - Dorsal: 2.0mm; Lateral: 3.0mm; Front: 2.0mm.

Original Description.

"Kopf in einen langen, robusten, am Ende etwas wenig verdickten, oben konvexen, schwach nach oben gerichteten, geraden Fortsatz verlängert. Die feinen Randkiele des Scheitels sind nicht gerade, sondern schwach wellenartig, ebenso die Seitenkiele und die Randkiele der Stirn. Die Stirn selbst ist lang, zum Clypeus etwas verschmälert, die Kiele zart, die Seitenkiele an der Basis (unterhalb der Scheitelsdepressionze) miteinander in einer kallösen Verdickung verbunden, von welcher ein kurzer Sagittalkiel zum stärker gekielten Scheitelrande zieht. Unterhalb der bogenförmigen Verbindung ist ein feiner Querkiel vorhanden, welcher die Stirn nach oben abgrenzt. Clypeus länglich, in der Mitte und an den Seiten gekielt. Die Augen flach, nicht vortretend. Fühler kurz. Beak lang, die Hinterhüften überragend. Pronotum mit drei parallelen Kielen und zwei eingestochenen Punkten. Hinter den Augen zwei Seitenrandkiele. Schildchen mit drei parallelen Kielen. Deckflügel schmal, die Seiten parallel, die Fläche quer gerippt, mit starken vortretenden Längs- und Quernerven letztere bilden im hinteren Drittel ein unregelmäßiges Netzwerk, welches sich zwischen dem ersten und zweiten Längsnerven bis zur Coriummitte vorschiebt. Stigma undeutlich, länglich, vier- bis fünfzellig. Clavusnerven in der Mitte des Clavus vereinigt. Beine einfach. Hinterschienen mit fünf Dornen."

Translation.

Head elongated with a long, robust, anteriorly slightly enlarged, dorsally convex, weakly upturned, straight head process. The lateral carinae of the vertex are not straight, but weakly sinuate, similar to the intermediate and lateral carinae of the frons. The frons itself is elongate, narrowing to the clypeus, the carina delicate, the intermediate carinae connected at the base in a thickened callous (below the tip of the vertex), from which a short transverse carina extends to the stronger lateral edge of vertex. Below the arc-shaped connection a fine

transverse carina is present, which borders the frons from above. Clypeus oblong, median and lateral edges carinate. The eyes flat, not protruding. Antenna short. Beak long, exceeding the metacoxae. Pronotum with three parallel carinae and two depressions. Two lateral carinae behind the eyes. Mesonotum with three parallel carinae. Forewings narrow, parallel-sided, the surface diagonally ribbed, with strong longitudinal and transverse veins, the latter forming an irregular network in the anterior third, which is located between the first and second longitudinal veins of the corium. Stigma indistinct, oblong, four- to five-cellular. Claval veins united in middle of clavus. Legs simple. Hindlegs with five spines.

Diagnosis.

Dorimargus is easily distinguished from the other members of this tribe. Its head process is long and rectangular, the vertex flared and truncate anteriorly. The lateral margins of the vertex are small and somewhat obscure, becoming more pronounced in the anterior third of the process. Unlike *Eudictya*, the clypeus meets the frons in a gently arching suture. The forewings are narrow and subparallel at rest viewed from above, and the cells in the anterior half lack organization.

Description.

Head longer than wide, cephalic projection present, greatly elongate, subparallel, expanded at tip; lateral carinae of frons visible dorsally, broader than vertex. Vertex parallel-sided to divergent posteriorly; about 11x longer than greatest width; anterior, lateral and posterior margins carinate; median carina complete, obscure; anterior margin angulate; lateral margins roughly parallel to divergent posteriorly, not constricted anterad of the eyes; posterior margin straight to broadly

concave; in profile, flat. Frons spade-like, about 6x as long as greatest width; lateral margins with upper portion expanded; tip of frontal plate bent dorsally about 30°; median and intermediate carinae subparallel, extending from bend near upper margin to fronto-clypeal suture; intermediate and lateral carinae scalloped throughout; in profile, flat to concave. Frontoclypeal suture inversely U-shaped. Clypeus convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Eyes moderately large, subelliptical, emarginated posteriorly; about 1.3x as wide as high, about as wide as vertex; prominent callosity behind eye, present. Ocellus posterior to midline of eye. Antennal socket about one-half scape-width from eye margin; scape subellipsoidal, directed dorsally; flagellum subanterior.

Pronotum with anterior margin convex to truncate; posterior margin angulate, median notch present, subequal in depth and width across posterior margin; median carina complete; intermediate carinae follow anterior margin, subparallel posteriorly, diminishing prior to reaching posterior margin; two complee, subparallel lateral carinae. Mesonotum with three subparallel carinae; median carina diminishing before reaching posterior margin. Tegula lacking carinae.

Forewings macropterous, membranous, thickened and cloudy throughout; forewings exceed tip of abdomen; darkened pterostigma absent; costal margin concolorous with other veins of wing; veins sparsely setose. Crossveins numerous, reticulation occurring in anterior half to third of forewing; cells lacking organization, not forming distinct rows. Sc 1-branched, diverging from RA in anterior third. RA 3- to 4-branched, sometimes with 1 or 2 crossveins between primary branches and margin. RP 3- to 4-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 7-branched; contiguous with Sc+R for a short distance, common branch

subequal to width of posterior cell. CuA 6-branched, sometimes with a crossveins from posterior-most branch to wing margin. Anal veins convergent in posterior third to half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with a short, wide posterior spine; tibiae about 1.5x longer than femora, lack lateral and anterior spines, but setose. Metacoxae with a moderately long, narrow, posteriorly projecting spine. Hind tibiae with 4 preanterior and 6 to 7 anterior spines; basal tarsomere with 15 to 17 anterior spines; penultimate tarsomere with 15 anterior spines.

Species Composition.

This genus is only represented by *Dorimargus antoniae* Melichar, 1912.

Geographic Distribution.

Brazil.

Host Plants.

No host plants reported.

Specimens Examined.

D. antoniae Melichar (1). **BRAZIL**: Rio Grande do Sul (NHMW: 1♀).

Eudictya Melichar, 1912:113

(Figure 25)

= *Eudictya* Melichar, 1912:113, 33 (key), 216 (List). Type species: *E. grata* Melichar, 1912, by original designation.

Original Description.

"Diese Gattung ist insbesondere von allen übrigen dadurch charakterisiert, daß der Clypeus tief in die Stirn eingefügt ist, so daß die unteren Stirnecken die Basis des Clypeus umfassen. Der Kopf ist in einen zylindrischen, nach vorn geraden Fortsatz verlängert, welcher überall gleich breit ist und dessen Kanten scharf ausgeprägt sind. Die Stirn ist lang, parallelseitig, mit drei vollständigen Kielen. Auf dem Ende des Fortsatzes ist ein Sagittalkiel, die Seitentälchen mit flachen Grübchen und Querfurchen durchsetzt. Clypeus oval, in der Mitte gekielt. Fühler kurz. Die Augenstützen lappenartig. Das Pronotum vorn breit, lappenförmig abgerundet, hinten bogenförmig ausgeschnitten, auf der Scheibe mit einem Mittelkiel versehen; die Seiten des Pronotums gerade, fast konkav, mit zwei Längskielen hinter den Augen. Schildchen mit drei parallelen Kielen. Die Deckflügel parallelseitig, nach hinten nicht erweitert, im Anteriorteil zahlreiche Quernerven, Stigma vierzellig, länglich, vom Corium nicht deutlich abgesetzt. Hinterschienen mit vier Dornen."

Translation.

This particular genus is separated from all others in that the clypeus is inserted deeply into the frons, so that the lower, lateral corners of the frons surround the base of the clypeus.

Figure 25. Dorsal (d), lateral (l) and frontal (f) habitus of *Eudictya grata*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

The head is extended in a cylindrical, forward-projecting head process, which is equally broad throughout and with sharply carinate margins. The frons is elongate, parallel-sided, with three complete carinae. The apex of the head process with a transverse carina, the sides with shallow depressions and transverse grooves. Clypeus oval, carinate medially. Beak short. The eye margin lobe-like. The front of the pronotum broad, rounded lobe-shaped; posteriorly is arcuate, equipped with a carina in the middle of the pronotal plate; the sides of the pronotum are straight, almost concave, with two longitudinal carinae behind the eyes. Mesonotum with three parallel carinae. The forewings parallel-sided, not expanded to the rear, numerous crossveins in the anterior part, stigma four-cellular, elongated, the corium not clearly separated. Hind legs with four spines

Diagnosis.

Like *Dorimargus* and *Parahasta*, *Eudictya* has an elongate, parallel-sided head process that is longer than the pro- and mesonotum combined. The wings are also narrow and subparallel in dorsal aspect, with the cells of the anterior third of the forewing highly unorganized and numerous. It is distinguished by the deep incursion of the clypeus into the frontal plate, creating a deeply arcuate frontoclypeal suture. This genus is vaguely reminiscent of *Digitocrista* in the appearance of the head process.

Description.

Head longer than wide, cephalic projection present. Vertex parallel-sided, elongate, about 5.5 to 6.5x longer than greatest width; anterior, lateral and posterior margins carinate; anterior margin convex to obtusely angulate; lateral margins

subparallel; posterior margin straight; median carina complete, most prominent near anterior and posterior margins; usually flat, in profile, but can be up- or downturned anteriorly. Frons spatulate, about 4.5 to 5.5x as long as greatest width; lateral margins sinuate, convergent above, divergent below, subparallel medially; median carina complete, obscure; intermediate carinae spatulate, (nearly) complete, subparallel; frontal plate smooth medially, tuberculate between intermediate and lateral carinae in upper third. Frontoclypeal suture arcuate on either side of median, resembling an M. Clypeus convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak exceeding metacoxae. Eyes moderately large, subelliptical, anterior half narrower than posterior half; emarginate posteriorly; about 1.5x as wide as high, about as wide as vertex; prominent callosity behind eye present. Ocellus posterior to midline of eye. Antennal socket about one scape-width from eye margin; scape subglobose; flagellum anterior.

Pronotum with anterior margin truncate; posterior margin broadly angulate, median notched, about as deep as wideth across posterior margin; median carina complete; intermediate carinae follow anterior margin, subparallel posteriorly, diminishing about halfway between anterior and posterior margins; two complete lateral carinae present, divergent posteriorly; pronotal plate smooth, a single depression between the median and intermediate carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete. Tegula lacking carinae.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma usually present; costal margin pale; veins either setose or lacking setae. Crossvein reticulation occurring in apical third of forewing; cells form

two rows. Sc 1-branched, diverging from RA in anterior third. RA 3- to 4-branched. RP 3- to 4-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 7- to 10-branched; contiguous with Sc+R, common branch subequal in length to posterior cell. CuA 4- to 6-branched. Anal veins convergent in posterior third to half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with a short, wide posterior spine that is blunt anteriorly; protibiae 1.3x longer than profemora, lack lateral and anterior spines. Metacoxae with a relatively long, thin posteriorly projecting spine. Hind tibiae with 4 to 5 preanterior and 7 to 8 anterior spines; basal tarsomere with 8 to 9 anterior spines; penultimate tarsomere with 7 to 8 anterior spines.

Species Composition.

This genus contains two species: *E. grata* Melichar, 1912 (type species) and *E. similes* Melichar, 1912. Melichar (1912) provided a key to species in his original description of *Eudicta*, which is modified below:

1 Head process longer than median length of the pro- and mesonotum combined. *E. similis* Melichar, 1912

1' Head process shorter than median length of the pro- and mesonotum combined. *E. grata* Melichar, 1912

Geographic Distribution.

Argentina.

Host Plants.

No host plants reported.

Specimens Examined.

E. grata Melichar (3). **ARGENTINA**: Las Parades, Mend. 21-XII-1926 (USNM: 1♂, 1♀); Alpachiri L.P., 24-II-1927 (USNM: 1♂).

Hyalodictyon Fennah, 1944a:86

(Figure 26)

= *Hyalodictyon* Fennah, 1944aa:86, 80 (key), 81, 82 (comparative notes). Type species: *Dictyophara nodivena* Walker, 1858, by original designation.

Original Description.

"Vertex or distinctly produced before eyes, lateral margins converging distally, rarely parallel, anterior margin transverse or obtusely angulate, often with subparallel base of frontal carinae projecting beyond it; median carina distinct, percurrent, sometimes a slight transverse mark or ridge across vertex a little distad of eyes, most visible at margins, sides of head before eyes visible from above; frons relatively broad, flat, lateral margins subparallel distinctly angulately or roundly widened before suture, median carina percurrent, lateral carinae not always reaching suture, united posteriorly to form a semicircle or an obtuse angle. Pronotum anteriorly convex, posteriorly angularly emarginate, median notch on posterior margin not

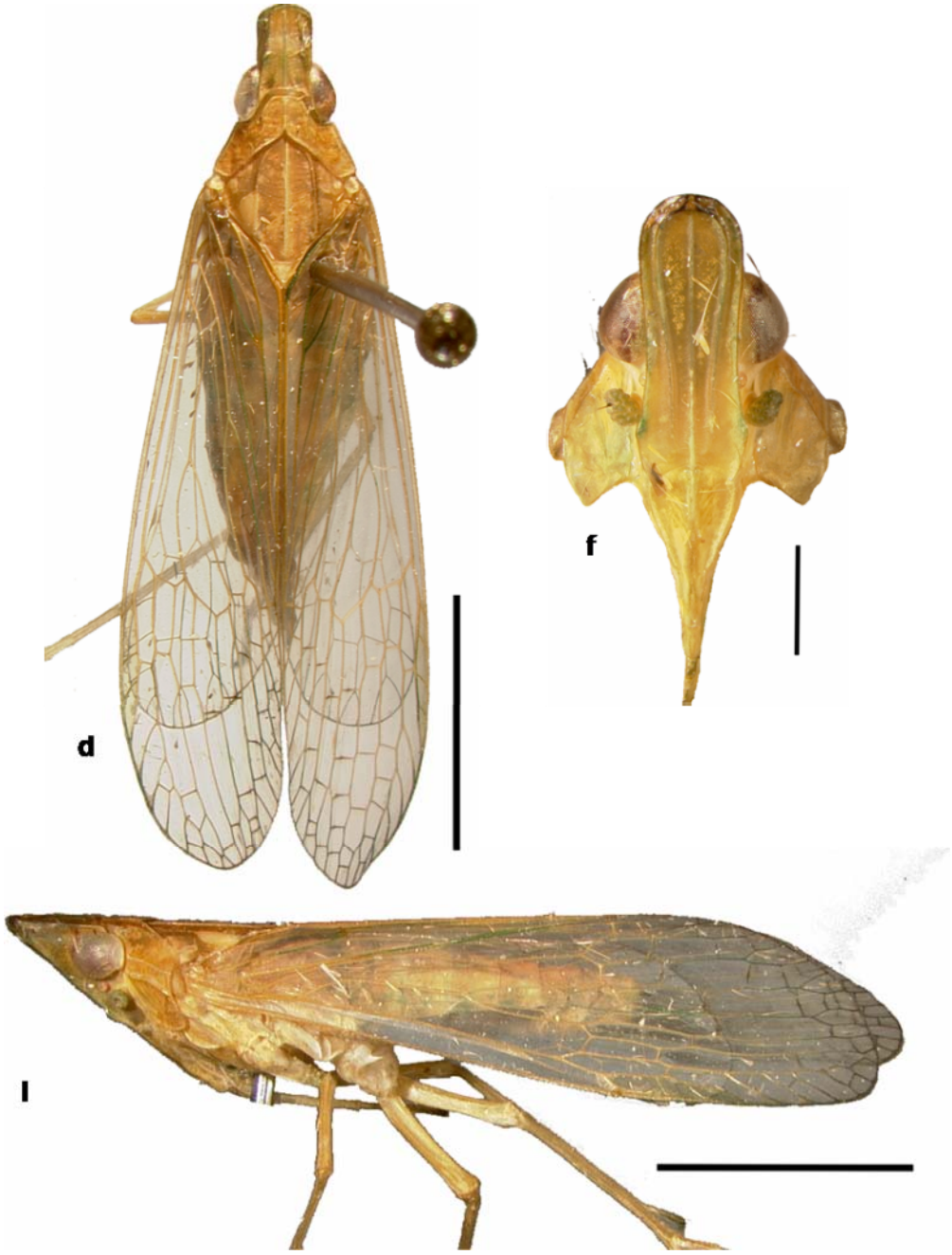

Figure 26. Dorsal (d), lateral (l) and frontal (f) habitus of *Hyalodictyon truncatum*. Scale bar - Dorsal: 5.0mm; Lateral: 5.0mm; Front: 1.0mm.

deep, pronotal disc tricarinate, lateral carinae obliquely interrupted at middle, not reaching posterior margin, lateral marginal carinae equally strong. Tegulae not carinate. Protibiae not relatively long and slender, post-tibiae armed with four spines. Tegmina with R forked near stigma, M forked once before nodal line, cell M 1+2 elongate, Cu forking basad of M, stigma with three to six cells, eight areoles adjoining nodal line, M embracing two or three, nodal areoles long, six to eight rows of anterior areoles, those at margin short, not twice as long as broad, or scarcely so. Wings with R four or five-branched at margin, M four-branched.

Aedeagus with a pair of posterior spines.Ovipositor with first valvulae with a dorso-mesal ridge with three short oblique spines, and a ventro-lateral ridge bearing three blunt curved teeth which project distally, third valvulae subquadrate, somewhat angulately rounded at anterior margin. Ornamentation of bursa copulatrix in form of sclerotised rings each studded with two or three beadlets."

Diagnosis.

In *Hyalodictyon*, the head process is pentagonal in shape, the lateral margins of the vertex convergent to a broadly angulate anterior margin, and the lateral carinae of the frons are visible from above. The head process is shorter than the pro- and mesonotum combined. The median of the pronotum is only shallowly notched, its depth at most subequal to its posterior width. The forewings are broadly triangular, when viewed dorsally, and the anterior half is generally organized into six to eight rows of cells, though the most anterior cells are quite unorganized.

Description.

Head longer than wide, cephalic projection present; lateral carinae of frons often visible dorsally. Vertex 2 to 4.5x longer than greatest width; anterior, lateral and posterior margins carinate; anterior margin truncate to obtusely angulate; lateral margins subparallel to divergent posteriorly; posterior margin straight to broadly concave; median carina complete; vertex flat in profile. Frons 3.5 to 5x longer than greatest width; apex broadly arcuate; lateral margins subparallel; median carina present over most of frons, diminish above; intermediate carinae enclosing spatulate medial fovea anteriorly, converging below, diminishing near frontoclypeal suture; frontal fasciae smooth. Frontoclypeal suture inversely U-shaped. Clypeus convex in profile; median and lateral carinae complete; clypeus striate. Beak exceeding metacoxae. Eyes moderately large, subelliptical to subhemispherical, emarginate posteroventrally; about 1.3x as wide as high, width of eye and width of vertex subequal; callosity behind eye present; partially carinate pale line from eye to cephalic projection present. Ocelli below midline of eye. Antennal socket about one-half scape-width from eye margin; scape subellipsoidal; flagellum subanterior.

Pronotum chevron-shaped, anterior margin broadly truncate medially; posterior margin angulate, medially notched; median carina complete; intermediate carinae (nearly) complete, follows anterior margin, subparallel posteriorly; two subparallel, complete lateral carinae, ventral-most carina sinuate. Pronotal foveae smooth, some with single depression between median and intermediate carinae. Mesonotum tricarinate; median carina diminishing posteriorly; lateral carinae subparallel posteriorly, strongly convergent in anterior half, not reaching median carina. Tegula lacking carinae.

Forewings macropterous and membranous; extending beyond tip of abdomen; darkened pterostigma usually present; veins lacking setae; costal margin concolorous with other veins. Reticulate crossveins in anterior third, forming three to eight rows of cells. Thickened epipleuron extending to median of Costal margin of forewing. Sc 1- or 2-branched, diverging from RA in anterior third. RA 3- to 5-branched. RP 4- to 6-branched; diverging from Sc+R in anterior third, proximal to nodal line. MP 7- to 9-branched; base contiguous with Sc+R, common branch two-thirds length of posterior cell. CuA 4- to 6-branched. Anal veins convergent in proximal half of clavus; combined vein reaching wing margin; clavus lacking crossveins.

Legs simple, not expanded; procoxae lacking posterior spine, meso- and metacoxae with long, stout posteriorly directed spine; tibiae 1.5x length femora, lacking teach. Hind tibiae with 4 preanterior and 8 anterior teeth; basitarsus with 7 to 10 anterior teeth; second with 8 to 11teeth.

Species Composition.

The genus contains twelve species: *H. apicatum* (Melichar, 1912), *H. brachyrhinum* (Walker, 1851), *H. bugabae* Fennah, 1947, *H. centraliamericanum* Fennah, 1947, *H. fallax* Fennah, 1945, *H. fusiforme* (Walker, 1851), *H. metcalfi* O'Brien, 1987, *H. nodivena* (Walker, 1851), *H. platyrhinum* (Walker, 1851), *H. taurinum* (Stål, 1862), *H. teapanum* Fennah, 1947, and *H. truncatum* (Walker, 1851) (type species). There are no published keys to the species of this genus.

Geographic Distribution.

Bolivia, Brazil, Columbia, Costa Rica, Ecuador, Guatemala, Guyana, Mexico, Panama, Peru, Trinidad.

Host Plants.

No host plants reported.

Type Material Examined:

H. metcalfi O'Brien (8). Paratypes (8): **PANAMA**: Canal Zone, Barro Colorado Is., 8-VIII-1967 (LBOB: 1♀); Barro Colorado I. Canal Zone, 30-I-1959, CNHM Panama Zool. Exped. (1959) (LBOB: 1♂; FMNH: 1♀); Barro Colorado I. Canal Zone, 19-I-1959, CNHM Panama Zool. Exped. (1959) (FMNH: 1♂); Barro Colorado I. Canal Zone, 26-I-1959, CNHM Panama Zool. Exped. (1959) (FMNH: 1♂); Gatun Lake, CZ, Tres Rios Plantation, 1931 (LBOB: 1♂, 1♀); Barro Colorado Is., CZ, 1941 (FMNH: 1♀).

Specimens Examined.

H. brachyrhinum (Walker) (10). **PANAMA**: Cano Saddle, Gatun Lake, 12-V-1923 (USNM: 1♀); Trinidad Riv., 2-V-1911 (USNM: 1♀); Barro Colo. Isl. III-1959 (USNM: 1♀); Canal Zone, Barro Colorado I., 13-IX-1978 (CDAE: 1♀); Panama Prov., carro, Jefe, 12-IX-1976 (CDAE: 1♂); Canal Zone, Barro Colorado I., 10-IX-1976 (UCDC: 1♀); Barro Colorado I., Canal Zone, 5-VII-1977 (UCDC: 1♀); Barro Colorado I., 22-IV-1981 (UCDC: 1♂, 1♀); Barro Colorado I., C.Z., 14-IX-1978 (UCDC: 1♀).

H. bugabae Fennah (5). **BRASIL**: Est. R. J. Murundu, Campas, VIII-1978 (LBOB: 1♂). **PANAMA**: Pearl Is., San Jose, Coll. 5-VIII-1944, collected at light (USNM: 1♀); Barro Colo. Is., CZ, 12-III-1937 (USNM: 1♀); Barro Colorado Isl., 30-VI-1933 (USNM: 1♀); Chiriqui, Alto Lino near Boquete, 15-V-1978 (LBOB: 1♀).

H. centraliamericanum Fennah (1). **PANAMA**: Barro Colo. Isld., Canal Zone, 30-XII-1928 (AMNH: 1♂).

H. fallax Fennah (2). **TRINIDAD**: Gloriosa, 21 mi. p. Toco Rd., 3 mi. N. Balanid, I-1974 (LBOB: 1♂, 1♀).

H. nodivena (Walker) (4). **BRASIL**: Viçosa,, Minas Geraes, 14-III-1923, 309 (USNM: 1♀). **ECUADOR**: Napo., Coca, (9-19)-II-1986, 249m. (LBOB: 2♂). **EL SALVADOR**: Santa Tecla, 6-XI-1955, 246 (USNM: 1♀). **GUATEMALA**: Cayuga, V-1915 (USNM: 1♂).

H. platyrhinum (Walker) (5). **BRITISH GUIANA** : Kartabo, Bartica District, Tropical Research Sta., 21-X-1920, New York Zool. Society, No. 201634, (AMNH: 1♀); Kartabo, Bartica District, Tropical Research Sta., 17-III-1922, New York Zool. Society, No. 221164 (AMNH: 1♂); Kartabo, Bartica District, Tropical Research Sta., 1-IV-1922, New York Zool. Society, No. 221165 (AMNH: 1♂); Kartabo, Bartica District, Tropical Research Sta., 5-III-1924, New York Zool. Society, No. 241028 (AMNH: 1♂); Bartica, Bartica District, Tropical Research Sta., New York Zool. Society, No. 221169 (AMNH: 1♀). **COLOMBIA**: Nouv. Grenade, Muzo, 11-X-1877, Distant Collection, 1911-383 (BMNH: 1♀).

H. taurinum (Stål) (4). **BRASIL**: Mato Grosso, Sinop (12°31'S, 55°37'W), X-1976 (LBOB: 2♀). **TRINIDAD**: Simla, (1-15)-VII-1962 (USNM: 1♀); (no other information given) (USNM: 1♂).

H. teapanum (Fennah) (2). **MEXICO**: Tabasco, Teapa, March (BMNH: 1♂, 1♀).

H. trunatum (Walker) (6). **COSTA RICA**: Punt., Est. Biol. Las Alturas, 2000m, (III-V)-1995, Malaise trap (LBOB: 1♀). **PANAMA**: Canal Zone, Barro Colorado Is., 28-II-1963, Taken at Ultraviolet Light (WSUC: 1♂); Canal Zone, Barro Colorado Is., 10-II-1967 (WSUC: 1♀); Canal Zone, Barro Colorado Is., 5-III-1967 (WSUC: 1♀). **TRINIDAD**: Port of Spain, 26-X-1931, at light, No. 266 (USNM: 1♀).

Mitrops Fennah, 1944a: 83 (59)

(Figure 27)

= *Mitrops* Fennah, 1944a:83, 80-81 (comparitive note). Type species: *Fulgora noctivida* (Linneaus, 1758), by original designation.

Original Description.

"Vertex fully twice as long as broad across base, elongate-triangular, curved evenly upward distally, lateral margins converging to apex with a small but distinct notch before eyes, margins raised, horizontal in profile, disc flat, anteriorly concave, devoid of median carina distally, if not entirely, posterior margin transverse; frons elongate, margins feebly sinuate, only a little widened before clypeus, median carina present only at middle, lateral

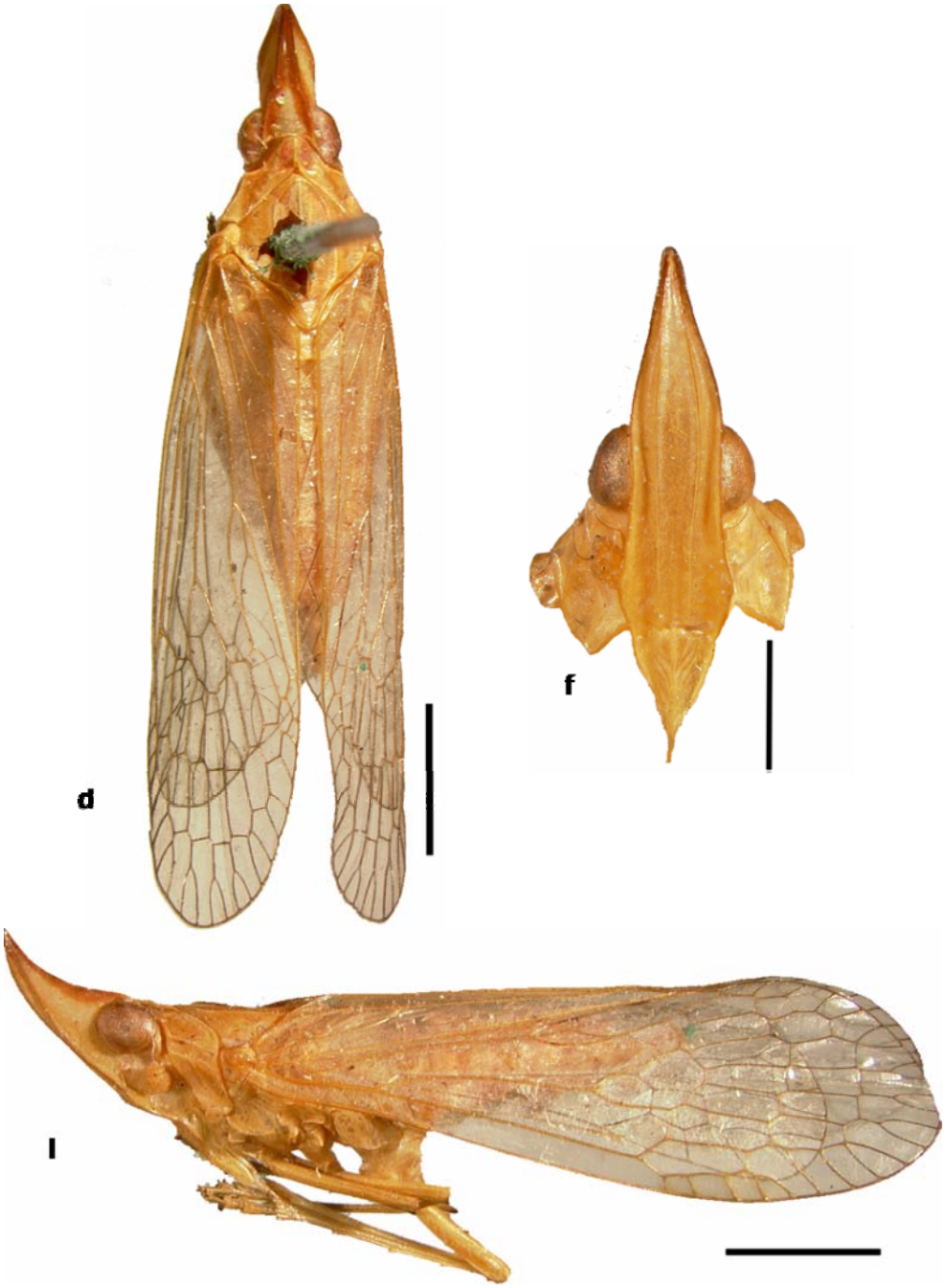

Figure 27. Dorsal (d), lateral (l) and frontal (f) habitus of *Mitrops noctividus* . Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

carinae strongly developed, meeting posteriorly in an acute point, converging in distal two-thirds reaching near to clypeal suture; genae tumid before eyes, not riged. Pronotum in middle line one quarter length of vertex, anteriorly convex, median carina strong, an impression near its base on each side, lateral carinae not reaching hind margin, carinae behind eyes of equal thickness. Protibiae not exceptionally long, post-tibiae with four spines. Tegmina with R simple to nodal line, stigma with four cells. Wings with R four-branched, M four-branched at margin.

Aedeagus with a pair of posterior spines on periandrium, a pair of straight spines at middle, and a pair distally on membranous sacs, penis ending in two long curved membranous limbs with a spine at apex of each. Ovipositor with first valvulae beset dorsally with a row of about ten teeth, a longer oblique tooth at apex, third valvulae elongate, six times as long as wide. Bursa copulatrix ornamented with sclerotised rings each bearing three sclerotised beadlets subequally spaced on ring."

Diagnosis.

Like *Rhynchomitra*, *Nersia* has a triangular head process that is shorter than the pro- and mesonotum combined, and the apex upturned, strongly so in *Mitrops*. However, the cells in the anterior third of the forewings are well-organized, forming three easily recognizable rows of cells. The forewings are triangular, when closed over the body and viewed dorsally, and gradually broaden from base to apex and the forelegs are not expanded. Unlike *Digitocrista*, the intermediate carinae of the pronotum are only present in the anterior half of the pronotal plate and not reaching the hind margin. The hind tibiae have four preanterior spines, versus three in *Pharodictyon*.

Description.

Head longer than wide; cephalic projection present, triangular, sharply pointed and upturned anteriorly. Vertex 2.5 to 3x as long as greatest width; anterior, lateral and posterior margins carinate; anterior margin acutely pointed to rounded; lateral margins convergent anteriorly, strongly constricted anterad of the eyes; posterior margin truncate to very broadly angulate; median carina absent; in profile, flat above eyes, upturned anteriorly. Frons triangular, about 4 to 4.5x as long as greatest width; median carina only present in anterior half, diminishing in posterior half; intermediate carinae enclosing spade-shaped medial fovea, acutely convergent in upper quarter, subparallel to convexly arcuate below, sharply convergent near frontoclypeal suture; frontal plate smooth. Frontoclypeal suture inversely U-shaped. Clypeus convex, in profile; median and lateral carina complete, unbroken at clypeal sutures; clypeal plates transversely striate. Beak exceeding metacoxae. Eyes moderately large, subelliptical, not emarginate; about 1.3x as wide as high, about as wide as vertex; ridge-like callosity behind eye present. Ocellus below medline of eye. Antennal socket about 1 ½ scape-width from eye margin; scape subglobose; flagellum anterior.

Pronotum with anterior margin convex; posterior margin acutely angulate, median notch present, subequal in depth and width across posterior margin; median carina complete; intermediate carinae follow anterior margin, arcuate and divergent posteriorly, (nearly) reaching posterior margin; two complete, posteriorly divergent lateral carinae; pronotal plate smooth, with a single depression between the median and intermediate carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, subparallel. Tegula lacking carinae.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma usually present; costal margin concolorous with other veins; veins lacking setae. Crossvein reticulation occurring in apical third of forewing, forming three rows of cells. Sc 1- to 2-branched, diverging from RA in anterior third. RA 2- to 4-branched, sometimes with 1 or 2 crossveins between primary branches and margin. RP 4-branched; diverges from Sc+R in anterior third, proximal to nodal line. MP 10-branched; contiguous with Sc+R for a short distance, common branch subequal to length of posterior cell. CuA 3- to 5-branched, sometimes with a crossvein from posterior-most branch to wing margin. Anal veins convergent in posterior third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with a short, wide posterior spine; protibiae about 1.5x longer than profemora, lack lateral and anterior spines, but setose. Metacoxae with a relatively long, narrow, posteriorly projecting spine. Hind tibiae with 4 preanterior and 7 to 8 anterior spines; basal tarsomere with 9 to 17 anterior spines; penultimate tarsomere with 8 to 13 anterior spines.

Species Composition.

This genus contains two species: *M. noctidus* (Linnaeus, 1758) (type species) and *M. dioxys* (Stål). Describing this genus, Fennah (1944) produced a key to the species he placed within it:

1. Base of vertex smooth to depressed medially, lacking median carina; apex of cephalic process strongly curved upward; posterior spines of aedeagus threex as long as broad across base. *M. noctividus* (Linneaus)

1' Median carina present in posterior portion of vertex; apex of cephalic projection only curved upward; posterior spines of aedeagus only as long as broad across base. *M. dioxys* (Stål)

Host Plants.

Fabaceae: *Phaseolus vulgaris* (New Record).

Geographic Distribution.

Argentina, Brazil, Costa Rica, French Guiana, Guatemala, Mexico, Panama, Paraguay, Suriname, United States.

Specimens Examined.

M. dioxys (Walker) (18). **BRASIL**: S. Paulo, Botucatu, 12-II-1971 light trap (LBOB: 1♀); S. Paulo, Botucatu, XI-1971 light trap (LBOB: 1♀); S. Paulo, Botucatu, 17-IV-1971 light trap (LBOB: 1♂). **COSTA RICA**: Heredia, nr. Puerto Viajo, La Selva Bio. Sta. 179 ft., N10°25' W84°00', at station, 28-II-04, light (UDCC: 3♂, 3♀); Heredia, La Selva, 10°26'N 84°01'W, 18-VI-1998, BLight (USNM: 1♂); Heredia, La Selva, 10°26'N 84°01'W, 21-VI-1998, BL & MV (USNM: 2♂); Heredia, La Selva, 10°26'N 84°01'W, 25-VI-1998, BL & MV (USNM: 1♂); Heredia, La Selva, 10°26'N 84°01'W, 28-VI-1998, BL & MV (USNM: 1♂); Heredia, La Selva, 10°26'N 84°01'W,

29-June-1998, BL & MV (USNM: 2♂). **MEXICO**: Villaflores, Chiapas, 18-VII-1984, EX: *Phaseolus vulgaris* (USNM: 1♀); Colima, Vulcano (USNM: 1♂).

M. noctividus (Linnaeus) (2). **TRINIDAD**: (no other information given) (USNM: 1♂, 1♀).

Mitrops sp. (1). **ECUADOR**: Orellana, Transect Ent., 1 km. S. Onkone Gare Camp Reserva Etnica Waorani, 220m, T-4, 00°39'10"S 076°26'00"W, 5-II-1998, Fogging, terre firme forest (USNM: 1♀).

Parahasta Melichar, 1912:108-109

= *Parahasta* Melichar, 1912:108, 33 (key), 216 (List). Type species: *P. stiegelmayri* Melichar, 1912, by original designation.

Original Description.

"Der Gattung *Hasta* durch die lange, schmale, parallelseitige Körperform und die quergerippten, länglichen Deckflügel nahestehend. Kopf in einen langen geraden, nach vorn allmählich verschmälerten Kopffortsatz verlängert. Der Scheitel an der Basis breit, nach vorn verschmälert, in der Mitte fein und deutlich gekielt. Die Stirn lang, oben schmal, in der Mitte oberhalb den Augen am breitesten, nach unten zum Clypeus verschmälert, die Seiten daselbst fast parallel, ohne eine Ecke zu bilden. Stirnflache mit drei Kielen, die Seitenkiele nach oben und unten konvergierend, oben miteinander verbunden, der Mittelkiel auf den kleinen kurzen Clypeus verlängert. Die Stirnkiele liegen nicht in einer Ebene, sondern die Seitenkiele treten

dadurch aus der Ebene hervor, daß derselben auf der Kante der dachförmig vortretenden Stirnflächen verlaufen. Pronotum vorn quer gestutzt, hinten tief winklig ausgeschnitten, die Seiten gerade, in der Mitte gekielt, die Seitenkiele nach hinten gekürzt, zwei Seitenrandkiele hinter den Augen. Die Augen flach nicht vorspringend. Beak lang, zu den Hinterhüften reichend. Schildchen mit drei parallelen Kielen. Deckflugel lang, schmal, parallelseitig, fein quer gerippt, mit drei Längsnerven, die beiden inneren in gleicher Höhe gegabelt, in der hinteren Hälfte zahlreiche, unregelmäßig und dicht verteilte Quernerven. Stigma lang, fünfzellig. Clavusnerven in der Mitte des Clavus vereinigt. Beine einfach. Hinterschienen mit vier Dornen."

Translation.

Similar to the genus *Hasta* by the long, narrow, parallel-sided body shape and the transversely serrated, elongate forewing. Head produced foreward into a long, straight, gradually tapering cephalic process. The vertex broad posteriorly, convergent anteriorly, median finely and clearly carinate. The frons long, narrowing anteriorly, broadest in the middle above the eyes, convergent toward the clypeus, the margins nearly parallel, not forming a corner. Frons surface tricarinate, the intermediate carinae convergent anteriorly and posteriorly, meeting anteriorly, the median carina extending onto the small, short clypeus. The frontal carinae not lying in the same plane, but instead the intermediate carinae emerge from the plane, so that they proceed on the edge of the roof-like emergant frons surfaces. Pronotum truncate anteriorly, acutely angulate posteriorly, parallel laterally, median carinate, intermediate carinae shortened posteriorly, two lateral carinae behind the eyes. The eyes flat, not protruding. Beak long, extending to hind coxae. Mesonotum with three parallel carinae. Forewing long, narrow, parallel-sided, transversely finely ribbed, with three longitudinal

veins, the two inner ones forked at the same height, with numerous, irregularly and closely distributed crossveins in the posterior half. Stigma long, five cellular. Claval veins convergent in the middle of the Clavus. Legs simple. Hindlegs with four spines.

Diagnosis.

This genus is similar to *Dorimargus* and *Eudictya* in that it has an elongate, parallel-sided head process that is longer than the pro- and mesonotum combined and narrow forewings that are subparallel in dorsal aspect. The cells of the anterior third of the forewing highly unorganized and numerous. It differs from *Eudictya* by the shape of the frontoclypeal suture, which is relatively straight in *Parahasta* and deeply arcuate (inversely U-shaped) in *Eudictya*, Unlike *Dorimargus*, the lateral margins of the frons are not visible from above and the intermediate carinae of the pronotum are absent in the posterior half of the pronotal plate (vs. complete).

Species Composition.

This genus is only represented by *Parahasta stiegelmayri* Melichar, 1912.

Geographic Distribution.

Brazil.

Host Plants.

No host plants reported.

Specimens Examined.

No specimens were available for study.

Pharodictyon Fennah, 1944a:87-88

(Figure 28)

= *Pharodictyon* Fennah, 1944a:87, 80 (key), 81, 82 (comparative notes). Type species: *P. latum* Fennah, 1944a, by original designation.

Original Description.

"Vertex as long as broad at base, flat lateral margins converging to near apex then parallel, median carina percurrent; frons with sides subparallel, margins a little raised but not ampliate or angulate before suture, sometimes expanded at level of junction with clypeus, lateral carinae prominent, ovately united at base, most widely separated one quarter from base, reaching almost to suture, median carina distinct posteriorly, becoming obsolete distally; clypeus peculiar in having a broad distinct trough, curved in section, inside each lateral margin, median carina very prominent. Pronotum much wider than head, anteriorly moderately convex, posteriorly angularly excavate, median notch small, median carina distinct, lateral carinae obsolete, marginal carinae of equal thickness, angularly bent. Tegulae lacking a distinct carina. Mesonotum broad, feebly tricarinate, a space between point of junction anteriorly of carinae and hind margin of pronotum. Protibiae not exceptionally long, post-tibiae trispinose. Tegmina broad, R forking basad of stigma by half length of latter, M

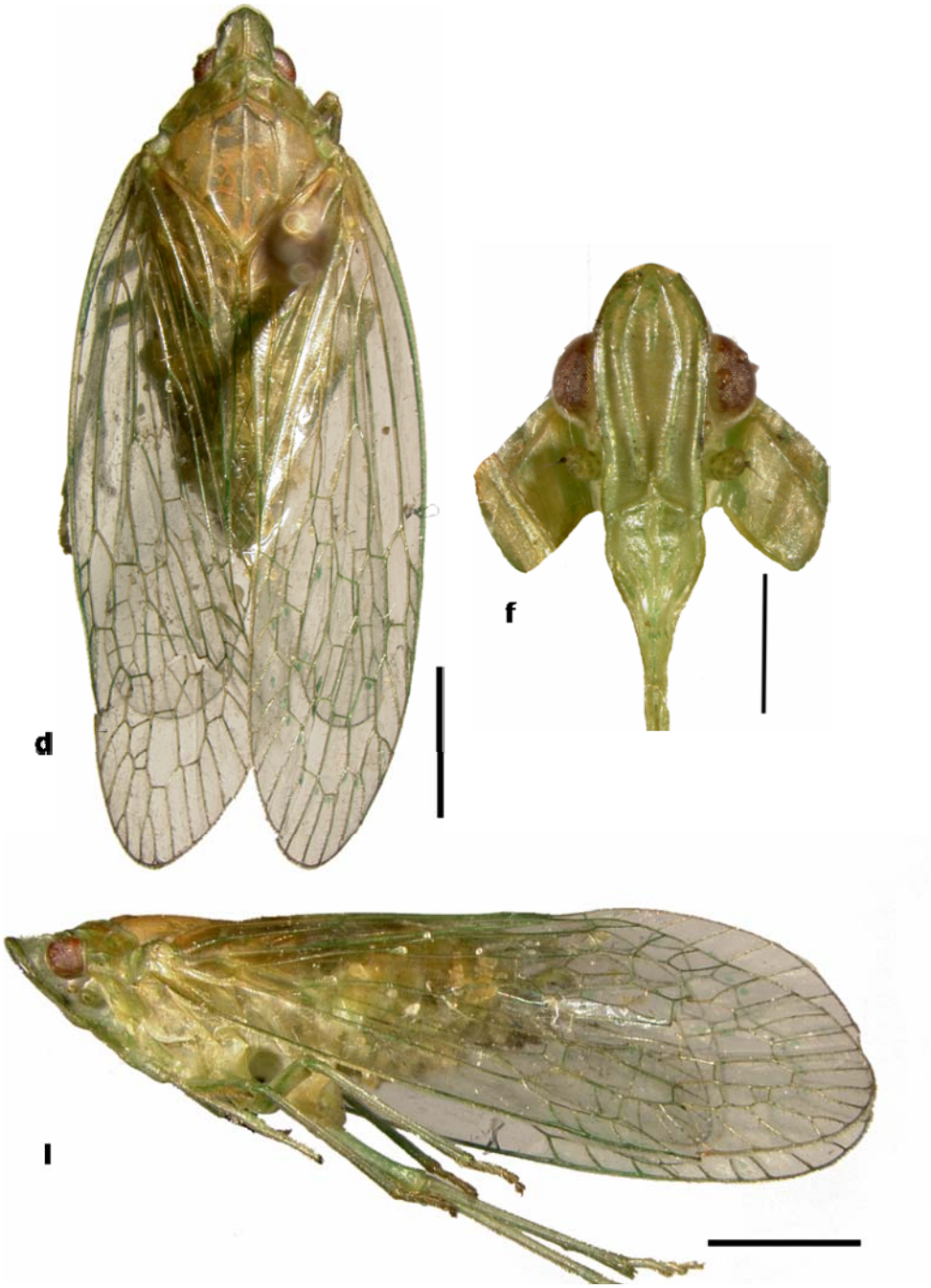

Figure 28. Dorsal (d), lateral (l) and frontal (f) habitus of *Pharodictyon latum*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 0.9mm.

forking at middle of tegmen, M 3+4 forking before M 1+2, transverse veins R-M, M-Cu basad of nodal line, Cu forked at posterior quarter of tegmen, stigma with four cells, a series of six areoles adjoining nodal line, subanterior and anterior lines distinct and regular. Wings with R three-branched at margin, M four-branched.

Pygofer with lateral angle peculiar in being produced in a process. Aedeagus devoid of a posterior pair of spines.

Ovipositor with first valvulae dorsally beset with three spines two lartge curved spines at apex; third valvulae broadly subquadrate. Bursa copulatrix ornamented with large delicate rings each bearing about twelve beadlets."

Diagnosis.

Pharodictyon has a bullet-shaped head process, reminiscent of the pentagonal shape of the head process of hyalodictyon, and is shorter than the pro- and mesonotum combined. The vertex is flattened, the apex not upturned as in *Mitrops*. The forewings are very broad, quickly expanding from base to apex, and the cells in the anterior third of the forewings are well-organized, forming three rows of cells. The forelegs are not expanded and the hind tibiae have three preanterior spines.

Description.

Head longer than wide, cephalic projection present, bullet-shaped. Vertex about 1.5x longer than greatest breadth; convergent anteriorly; anterior, lateral and posterior margins carinate; median carina complete; anterior margin rounded; posterior margin concave to broadly angulate, lacking median notch; in profile, flat. Frons about 2.5 to 3x as long as greatest width; rounded anteriorly; lateral margins

subparallel, converging, divergent in lower quarter; median carina present in upper two-thirds, diminished posteriorly, short recurrance near frontoclypeal suture; intermediate carinae enclosing spade-shaped medial fovea, acutely convergent near upper margin before widening, convergent below, diminishing near frontoclypeal suture; frontal plate smooth; in profile, flat to convex. Frontoclypeal suture broadly convex. Clypeus flat to convex in profile; median carinae complete; lateral margin of postclypeus carinate, smoothly rounded in anteclypeus; clypeal plates transversely striate. Beak long, exceeding metacoxae. Eyes moderately large, subhemispherical; width subequal to height, about half to two-thirds as wide as vertex; prominent ridge-like callosity behind eye present. Ocellus below median of eye. Antennal socket about one scape-width from margin of eye; scape subglobose; flagellum anterior.

Pronotum cheveron-shaped; anterior margin broadly convex; posterior margin broadly angulate, median deeply notched, about 1.5 to 2x as deep as width across posterior margin; median carina complete; intermediate carinae follows anterior margin, arcuate, divergent and diminishing posteriorly; two lateral carinae, complete, divergent posteriorly; pronotal plate smooth, a single shallow depression each side of median. Mesonotum tricarinate; the median carina diminishing before reaching posterior margin; lateral carinae complete, subparallel in posterior two-thirds, sharply convergent in anterior third. Interior third of tegula bent around Costal margin of forewing; lacking carina.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma present; costal margin concolorous with other wing veins; veins lacking setae. Crossvein reticulation occurring in apical third of forewing, forming three rows of cells. Epipleuron thickened in posterior third of Costal margin of

forewing. Sc 1-branched, diverging from RA between the anterior half and third. RA 2- to 4-branched. RP 4- to 5-branched; diverges from Sc+R in anterior half, proximal to nodal line. MP 7- to 9-branched; contiguous with Sc+R, length of common vein about 1/2 of length of posterior cell. CuA 4- to 5-branched. Anal veins convergent in posterior half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with short posterior spine; protibiae about 1.3x as long as profemora, lacking lateral and anterior spines. Metacoxae with a relatively long, thin posteriorly projecting spine. Hind tibiae with 3 to 4 preanterior and 4 to 5 anterior spines; basal tarsomere with 10 to 11 anterior spines; penultimate tarsomere with 9 to 13 anterior spines.

Species Composition.

This genus is only represented by *Pharodictyon latum* Fennah, 1944a.

Geographic Distribution.

Bolivia.

Host Plants.

No host plants reported.

Type Material Examined:

P. latum Fennah (1). Paratype: **BOLIVIA**: Yunges de la Paz (USNM no57252: 1♀).

Specimens Examined.

P. latum Fennah (6). **ECUADOR**: P. Napo, vic. Puerto Misahueli, 1650-1900 ft., 1º2'2.4"S lat. 77º39'49.2"W lon., 19-VI-1998, Mercury vapor & ultraviolet lights (LBOB: 2♂, 2♀); Pastaza Prov., Shell, ca 1150 m, 3-IV-1984, jungle (WSUC: 1♀); Pomona, on Rio Pastaza, Elev. Ca. 2000 ft., 9-VIII-1960 (FMNH: 1♀).

Taractellus Metcalf, 1948:77

(Figure 29)

= *Taracticus* Berg, 1881:265 [nec Leow, 1872]. Type species: *Cixius chilensis* Spinola, 1852, by original designation.

= *Chondrodera* Melichar, 1912:157, 217 [nec Leow, 1872]. Type species: *C. granicollis* Melichar, 1912, by original designation. Genus synonymized with *Taracticus* Berg, 1881 [nec Leow, 1872] by Fennah, 1947:10. Status restored by Fennah, 1965:260. ***Syn. nov.***

= *Taractellus* Metcalf, 1948:77 applied as *nom nov.* for *Taracticus* Berg, 1881 [nec Leow, 1872]. Type species: *Cixius chilensis* Spinola, 1852:265, designated by Berg, 1881:265. Genus synonymized by Fennah, 1965:260 (to *Chondrodera*). Error - Status restored.

= *Chendrodera* Melichar, 1912. Incorrect subsequent spelling by Melichar, 1912:29; Schulze, Kukenthal and Heider, 1927:648; Neave, 1939:686.

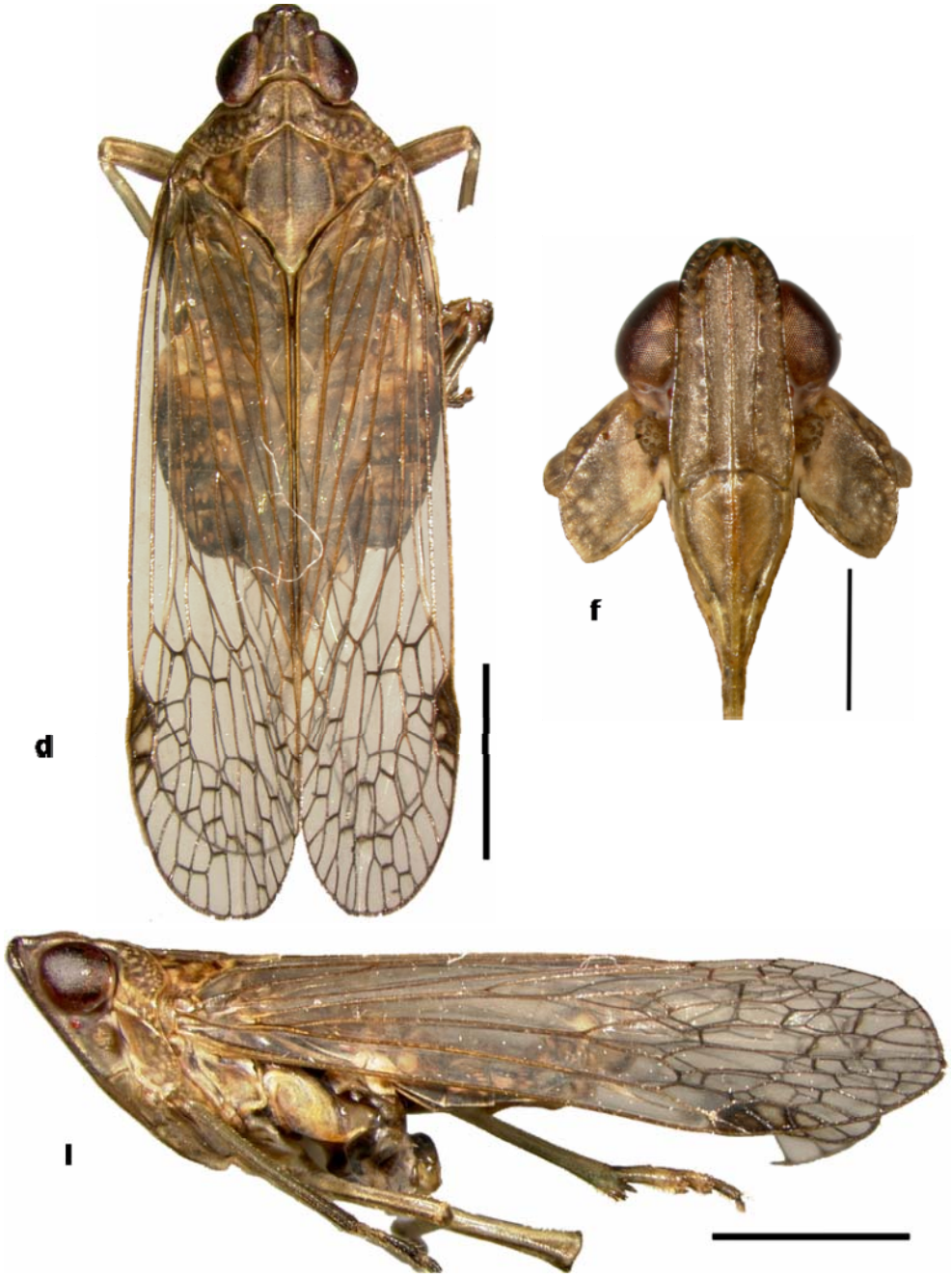

Figure 29. Dorsal (d), lateral (l) and frontal (f) habitus of *Taractellus chilensis*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 0.9mm.

Original Description.

"Diese der Gattung *Dictyophora* nahestehende Gattung ist insbesondere dadurch charakterisiert, daß das Pronotum dicht mit kleinen, flachen Körnchen besetzt ist. Solche Körnchen finden sich auch auf den Stirnkielen und zwar auf der Seite der Seitenkiele and auf der Innenseite der Seitenrandkiele der Stirn, insbesondere im oberen Teile. Der Kopf ist entweder wie bei *Dictyophora* in einen prismatischen Fortsatz verlängert oder kurz, die Augen nur wenig überragend. Die Stirn mit drei Längskielen, die Seitenkiele bei verlängertem Kopfe nach unten abgekürzt, bei kurzem Scheitel nach unten reichend, jedoch vor der Clypeusnaht nach außen bogenförmig gekrümmt, in die unteren Stirnwinkel einmündend. Der Scheitel flach, in der Mitte und an den Seiten gekielt. Auf dem Schildchen drei Kiele, die Seitenkiele vorn mit dem Mittelkiel verbunden, wodurch diese Gattung von *Dictyophora* wesentlich abweicht. Die Deckflügel sind glashell, die drei Längsnerven in ungleicher Höhe gegabelt. Stigma klein, nicht immer deutlich, drei- bis vierzellig. Clavusnerven in der Mitte des Clavus gegabelt. Die untere Seite der Vorderschenkel ist schwach erweitert, an der Kante mit sehr feinen, kaum wahrnehmbaren kleinen Zähnchen besetzt. Hinterschienen mit vier bis sechs Dornen."

Translation.

This genus, which is similar to *Dictyophora*, is characterized, in particular, by small, densely packed granular bumps on the pronotum. These granules can also be found along the anterior carinae, on the sides of the lateral carinae and on the inside edge of the lateral carinae of the forehead, in particular the upper areas. The head is either elongated with a prismatic process as in *Dictyophora*, or a short one, extending only slightly beyond eyes. The forehead with three longitudinal carinae, the outer carinae beside the elongated head shortened

downward, with short vertex extending downward, yet curved outward before the Clypeus suture, running into the lower forewhead angle. The vertex flat, carinate in the middle and along the sides. The pronotum tricarinate, the side carinae connected with the median carina anteriorly, by which this species essentially deviates from the genus *Dictyophora*. The forewings are membranous, the forking of the three longitudinal veins unequal in height. Stigma small, not always three- to four-cellular. The claval nerves forked in the middle of the clavus. The lower side of the forefemora weakly expanded, with very fine, scarcely perceptible teeth along the hind edge. Hind legs with four to six spines.

Diagnosis.

Taractellus, a genus restricted to Chile, lacks a head process. The vertex is triangular, with the lateral carinae of the frons visible from above. The cells of the anterior third of the forewings are arranged in three rows. The forelegs are compressed and somewhat expanded laterally, as in *Sicoris*, Cladodipterini and Scoloptini.

Description.

Head longer than wide, cephalic projection lacking to very short; anterior, lateral and posterior margins carinate; median carina complete; anterior margin convex; hind margin straight to obtusely angulate; in profile, straight. Frons 2.5 to 3.5x longer than greatest width; apex broadly rounded; median carina complete; intermediate carinae meet in callous fastigium, sinuate to nearly parallel, divergent and diminishing medially; lateral carinae subparallel; frontal plate smooth medially, tuberculate along lateral and intermediate carinae; in profile, flat. Frontoclypeal

suture arch-like on ethir side of median. Clypeus convex in profile; median and lateral carinae complete, broken at intraclypeal suture. Beak long, reaching abdomen. Eye moderately large, sub-hemispherical, emarginated posteriorly; width and height subequal, at least twice as wide as vertex; prominent callosity directly behind eye. Ocellus posterior to midline of eye. Scape subglobose; flagellum anterior.

Pronotum with anterior margin truncate to broadly concave; posterior margin broadly angulate, median notched, depth variable; median carina complete; intermediate carinae follow anterior margin, divergent posteriorly and diminishing before reaching posterior margin; two lateral carinae, complete, divergent posteriorly; single depression between median and intermediate carina, tuberculate between intermediate and lateral carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae arcuate, convex, extend to posterior margin; mesonotal plate smooth. Tegula smooth, lacking carinae.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma present; costal margin concolorous with other veins; veins lacking setae. Crossvein reticulation forming three rows of cells in apical third of forewing. Sc 1- to 2-branched; Sc divergent from RA in apical third of forewing. RA 3- to 4-branched. RP 2-branched; diverges from Sc+R in anterior third of wing, just distad of nodal line. MP 7- to 8-branched; posteriorly contiguous with Sc+R for part of its length, length of combined vein about two-thirds that of posterior cell. CuA 3- to 4-branched. Anal veins convergent in posterior third to half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic femora moderately expanded, tibiae not expanded; procoxae lacking posterior spine, mesocoxae with short, wide posterior spine; protibiae about 1.5x longer than profemora, lack lateral and anterior spines. Metacoxae with a short, wide posteriorly projecting spine. Hind tibiae with 5 to 6 preanterior and 8 anterior spines; basal tarsomere with 17 to 24 anterior spines; penultimate tarsomere with 16 to 21 anterior spines.

Species Composition.

This genus contains two species: *T. granicollis* (Melichar, 1912) and *T. chilensis* (Spinola, 1852). The following key to species is modified from Melichar (1912):

1. Head produced forward, beyond the eyes; lateral carinae of the frons diminishing near center of frontal plate, not reaching frontoclypeal suture. Pterostigma opaque. *T. granicollis* (Melichar, 1912)

1'. Head short, vertex ending just anterad of the eyes; lateral carinae of the frons extending to frontoclypeal suture. Pterostigma brown. *T. chilensis* (Spinola, 1852)

Geographic Distribution.

Chile.

Host Plants.

No host plants reported.

Specimens Examined.

T. granicollis Melichar (4). **CHILE**: Atacalco, 22-I-1955 (USNM: 1♂, 1♀); Chillan, Racinto, I-1979 (FMNH: 1♀); Mulchen, Caledonia, 700m, (6-10)-II-1981 (FMNH: 1♀).

T. chilensis (Spinola) (16). **CHILE**: 8 km. E. El Arrayan, P. Santiago, 25-XII-1968 (LBOB: 1♀); P. Santiago, San Alfonso, II-1968 (LBOB: 1♂); Maipo, Rio San Jose, 1500m, 12-II-1984 (FMNH: 1♀); Region VIII Bio-Bio, Route 160 15 km S San Pedro, S36º54'30.2" W073º08'2.5", Alt. 400m, 20-I-2006, sweeping degraded Matorral [old pasture, late succession] (USNM: 5♂, 2♀); Region Metropolitana, Maipo River Valley near Manzano, S33º35'13.1" W070º23'0.2", Alt. 995m, 24-I-2006, sweeping (day), Hg Vapor Lamp (night), Matorral – Sclerophyllous shrub with cactus (USNM: 1♀); Valparaiso, 17-I-1920 (USNM: 1♂); Concepcion, II-1904 (USNM: 1♀); Marga-Marga, XII-1918 (USNM: 1♀); Concepusa, 31-I-1923 (USNM: 1♂).

3.2.6 Tribe Scoloptini Emeljanov, 1983

Original Description.

(From Key in Emeljanov, 1983)

1 (Implied: *Scoloptini*, and *Phylloscelini*, do not fit this lead, go to 16)

Wings fully developed, membranous, and flat. Stem divides into anterior and posterior branches (ScRA and RP) before pterostigma, and posterior branch in turn branches before its termination. Common stem of Pcu + A1 long, occupying at least half length of clavus.

16 Wings flat, strongly sclerotized, shortened and clearly convex; venation varies strongly from one individual to another. Stem ScR does not branch, and only weak cross veins may extend from it. Common stem of CuP + A_1 short.

17 Wings with sharply carinate longitudinal veins, of which vein CuP, running along suture of clavus, is markedly less distinct"

Diagnosis.

The Scoloptini are characterized by tegminous, often brachypterous forewings and the lack of a contiguous ScR + M. The medial vein branches from ScR at the posterior cell. The vertex may or may not be projected beyond the anterior margin of the eyes and, if so, raised above the plane of the pronotum. The forelegs are either simple or foliaceous. The species of this tribe are generally the smallest of all Dictyopharinae.

Remarks.

Emeljanov (1983) regarded *Phylloscelis* and *Scolops* as distinct, monobasic tribes, and neglected placing *Brachytaosa* and *Sicorisia*. Placement of these genera together in a single tribe is prompted by many shared commonalities, including the vertex raised above the plane of the thorax and usually brachypterous forewings (with some macropters). The forelegs are often simple, whereas others are foliaceous. Preliminary phylogenetic analysis suggests that this tribe may be closely related to the subfamily Orgeriinae.

The tribe consists of 4 genera and 39 species in the New World.

Scolops Schaum, 1850:68

(Figure 30)

= *Scolops* Schaum, 1850:68. Type species: *Fulgora sulcipes* Say, 1825, by original designation.

= *Ornithissus* Fowler, 1904:121, 114 (key). Type species: *O. cockerelli* Fowler, 1904, by original designation. Genus synonymized by Kirkaldy, 1907:248.

= *Scalops* Schaum, 1850. Incorrect subsequent spelling by Shackleford and Brown, 1929:20.

Original Description.

"Kopffortsatz sehr schmal, so lang als kopf und halsschild, stabförmig. Uberflügel underchsichtig, ohne gitterförmige Bellen. Die Stirn lánger als breit, mit drei kielen."

Translation.

Head process very narrow, as long as head and pronotum combined, rod-shaped. Hindwing shortened, lacking crossvein reticulation. The frons longer than broad, tricarinate.

Diagnosis.

The majority of individuals in this genus are brachypterous, with tegminous forewings covering all but the last segment or barely extending beyond the tip of the abdomen. Within the population, however, a few individuals have macropterous forewings. The head is raised above the plane of the prothorax. The vertex narrow anterad of the eyes, remaining parallel to the tip of the head process. The subgenera

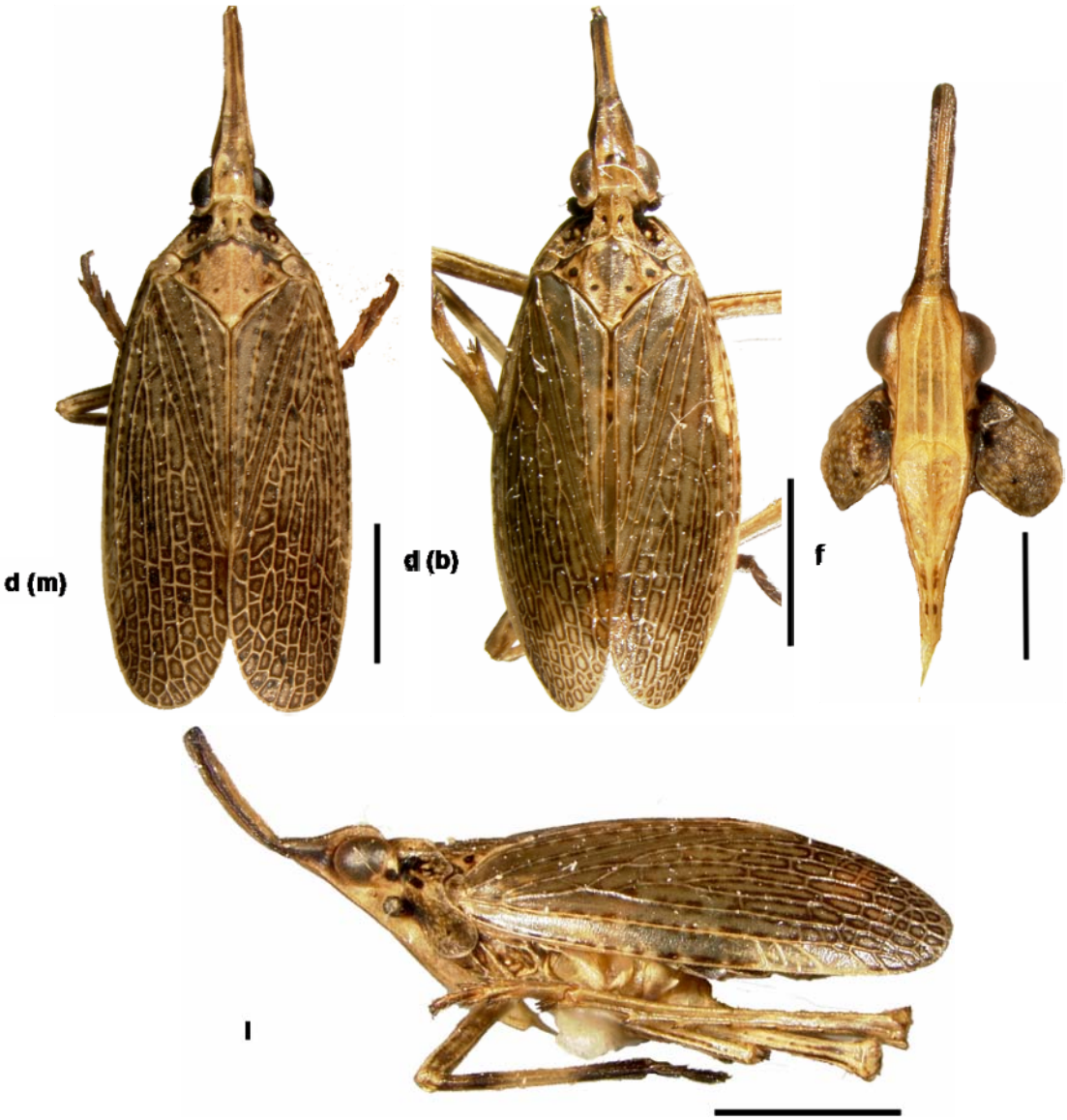

Figure 30. Dorsal (d), lateral (l) and frontal (f) habitus of *Scolops sulcipes*. Both the macropterous (m) and brachypterous (b) forms are shown in dorsal aspect. Scale bar – Dorsal (m and b): 2.0mm; Lateral: 2.0mm; Front: 1.0mm

are distinguished by the appearance of the forelegs, which are compressed and laterally expanded in *Belanocharis* and normal in *Scolops*.

Description.

Head longer than wide, cephalic projection present, usually narrow and upcurved anteriorly. Vertex 3 to 7x as long as greatest width; anterior, lateral and posterior margins carinate; anterior margin truncate; lateral margins narrower anterad of the eyes than between the eyes, posterior portion subparallel, anterior process more or less convergent anteriorly; hind margin truncate; median carina present posteriorly, exceeding anterior margin of eyes, to nearly complete; in profile, vertex raised above plane of thorax, more or less abruptly upturned anterad of the eyes. Frons narrower anteriorly than posteriorly, laterally expanded posteromedially; median carina present in lower half, may continue anteriorly; intermediate carinae subparallel, expanded posteromedially; lateral carinae subparallel in anterior and posterior halves, the posterior half about 2x as wide as the anterior portion, smoothly divergent posteriorly between the eyes; frontal plate smooth; in profile, flat. Frontoclypeal suture M-shaped, arcuate on either side of median, posteriorly pointed at median. Clypeus convex, in profile; median and lateral carinae complete. Beak moderately long, exceeding metacoxae. Eye moderately large, subhemispherical, emarginate posteriorly; about as wide as high, about 1 to 1.3x wider than vertex; prominent callosity present behind eye. Ocellus posterad of midline of eye. Antennal scape about 1 to 1.5 scape-widths from margin of eye; scape subglobose to subellipsoidal, apex directed dorsally; flagellum anterior.

Pronotum subrectangular; anterior margin truncate; posterior margin nearly straight to very broadly angulate, median notched, subequal in depth and posterior width; prominent median carina complete; intermediate carinae complete, subparallel; two complete, subparallel lateral carinae; a single depression between median and intermediate carinae; pronotal plate pustulate laterad of the intermediate carinae. Mesonotum tricarinae; median carina weaker than lateral carinae, diminishing before reaching posterior margin; lateral carinae complete, subparallel posteriorly; mesonotal plate smooth, often with a single dark spot in each fovea, four in total. Tegula lacking carinae.

Forewings elongate brachypterous, extending to penultimate segment or apex of abdomen, or macropterous, intervannal regions tegminous (thickened) and cloudy – less so than in brachypters; pterostigma absent; costal margin paler than, darker than or concolorous with other wing veins. Numerous crossveins in the anterior half to third of forewing, cells loosely organized but not forming distinct rows. Sc, RA and RP individually difficult to distinguish, contiguous anterior third, 2- to 6-branched; in some species, RP more distinguishably branches from the contiguous, single-branched Sc+RA, 1- to 3- branched. MP 3- to 6-branched; diverging from Sc+R at posterior cell. CuA 3- to 7-branched. Anal veins convergent in anterior half to third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; crossvein between A1 and CuP absent.

Procoxae lacking posterior spine, meso- and metacoxae with a very short, stout posterior spine; profemora and/or protibiae not expanded in the subgenus *Scolops*, but moderately to greatly expanded in the subgenus *Belonocharis*; meso- and metafemora and tibiae not to moderately expanded; tibiae and femora subequal in length, lack

lateral and anterior spines. Hind tibiae with 5 to 8 preanterior and 7 to 8 anterior spines; basal tarsomere with 10 to 12 anterior spines; penultimate tarsomere with 9 to 11 anterior spines.

Species Composition.

This genus contains two subgenera, *Scolops* (*Scolops*) Schaum, 1850 and *Scolops* (*Belonocharis*) Uhler, 1891. *Scolops* (*Scolops*) contains twenty-eight species: *S. angustatus* Uhler, 1876; *S. austrinus* Breakey, 1929; *S. cockerelli* (Fowler, 1904); *S. excultus* Lawson and Beamer, 1930; *S. flavidus* Breakey, 1929; *S. graphicus* Ball, 1930; *S. grossus* Uhler, 1876; *S. hesperius* Uhler, 1872; *S. immanis* Breakey, 1929; *S. luridus* Breakey, 1929; *S. maculosus* Ball, 1902; *S. neomexicanus* Lawson and Beamer, 1930; *S. nicholi* Ball, 1937; *S. osborni* Ball, 1902; *S. perdix* Uhler, 1900; *S. pruinosus* Breakey, 1929; *S. pungens* (Germar, 1830); *S. robustus* Ball, 1902; *S. snowi* Breakey, 1929; *S. socorroensis* Lawson and Beamer, 1930; *S. stonei* Breakey, 1929; *S. sulcipes* (Say, 1825) (Type Species of Genus, Subgenus); *S. tanneri* Ball, 1937; *S. texanus* Lawson and Beamer, 1930; *S. uhleri* Ball, 1902; *S. vanduzeei* Ball, 1902; *S. virescens* Ball, 1937; and *S. viridis* Ball, 1902. *Scolops* (*Belonocharis*) Uhler, 1891 contains four species: *S. abnormis* Ball, 1902; *S. californicus* Lawson and Beamer, 1930; *S. fumidus* (Uhler, 1891) (Type Species of Subgenus); and *S. pallidus* Uhler, 1900.

Geographic Distribution.

Canada, Mexico, United States.

Host Plants.

Amaranthaceae: *Atriplex canescens* (Ball, 1930) ; Asclepiadaceae: *Asclepias amplexicaulis* (New Record), *Asclepias eriocarpa* (Isman *et al.* , 1977); Asteraceae: *Ambrosia artemisiifolia* (Breakey, 1928), *Ambrosia confertiflora* (Goeden and Ricker, 1975), *Ambrosia psilostachya* (Ball, 1930), *Artemisia tripartita* (New Record), *Artemesia* sp. (Breakey, 1928), *Bidens* sp. (New Record), *Chrysothamnus viscidifloris* (New Record), *Cynara cardunculus* (New Record); *Euthamia graminifolia* (New Record); *Grindelia camporum* (New Record), *Gutierrezia californica* (Ball, 1930), *Helianthus angustifolius* (Ball, 1930), *Oligoneuron rigida* (New Record), *Silphium laciniatum* (Beamer, 1929), *Solidago canadensis* (New Record), *Solidago trinervata* (Ball, 1930), *Xanthium* sp. (New Record); Brassicaceae: *Lepidium* sp. (New Record); Chenopodiaceae: *Dondia depressa* (Ball, 1930), *Dondia torreyana* (Ball, 1930), *Suaeda* sp. (New Record); Convolvulaceae: *Convolvulus* sp. (Wirtner, 1905); Ericaceae: *Arctostaphylos patula* (New Record); Euphorbiaceae: *Stillingia angustifolia* (Ball, 1930); Fabaceae: *Medicago sativa* (New Record), *Melilotus* sp. (Strickland, 1940); Poaceae: *Agropyron* sp./*Poa* sp. (New Record), *Bouteloua curtipendula* (New Record), *Muhlenbergia* sp. (New Record), *Panicum* sp. (New Record), *Schizachyrium scoparium* (New Record), *Sporobolus heterolepis* (New Record), *Zea mays* (New Record); Polygonaceae: *Eriogonum fasciculatum* (New Record), *Eriogonum* sp. (New Record); Rosaceae: *Purshia tridentata* (New Record), *Rubus flagellaris* (New Record).

Type Material Examined:

S. austrinus Breakey (4). Paratypes (4): **UNITED STATES**: ARIZONA: Pima Co., Tucson (USNM: 1♀b); Santa Cruz Co., Nogales, 16-VIII-1906 (FMNH: 1♂b); Santa Cruz Co., Nogales, 24-VIII-1906 (USNM: 1♂b); Santa Cruz Co., Nogales, 18-IX-06 (FMNH: 1♀b).

S. luridus Breakey (1). Paratype (1): **UNITED STATES**: KANSAS: Cowley Co., 11-IX-1925 (USNM: 1♀b).

S. neomexicanus Lawson and Beamer (2). Paratypes (2): **UNITED STATES**: ARIZONA: Apache Co., 16-VIII-1927 (USNM: 1♀b); NEW MEXICO: Colfax Co., 21-VIII-1927 (USNM: 1♂b).

S. socorroensis Lawson and Beamer (1). Paratype (1): **UNITED STATES**: NEW MEXICO: Socorro Co., 18-VIII-1927 (USNM: 1♀b).

S. pallidus punctatus Lawson and Beamer (2). Paratypes (2): **UNITED STATES**: CALIFORNIA: San Jacinto Mts. 21-VII-1929 (USNM: 1♂b, 1♀b).

Specimens Examined.

Subgenus *Scolops* Schaum

S. angustatus Uhler (44). **UNITED STATES**: DELAWARE: New Castle Co., C & D Canal N., Retriever Training Area, 18-VII-2006, Sweeping (UDCC: 3♂m, 2♀m); New Castle Co., C & D Canal N., Retriever Training Area, 20-VII-2006, Sweeping (UDCC: 2♂m, 1♀m); ILLINOIS: Cass Co., Arenzville, 14-VIII-1913, Bluff sand (INHS: 1♂m, 1♀m); Kankakee Co., St. Anne, 22-VII-1935 (INHS: 1♀m); KANSAS: Cherokee Co., 31-VIII-1927 (INHS: 2♂m); KENTUCKY: Pulaski Co., 21-VIII-1971, General Sweep (UTEP:

2♂m, 2♀m); MARYLAND: Allegheny Co., Little Orleans, 06-VI-1999, Light Trap (UDCC: 1♀m); Allegheny Co., Little Orleans, 17-VII-1999, Mix Forest Floor (UDCC: 1♀m); MICHIGAN: Clinton Co., Ross Lake Wldf. Expt. Sta., 22-VII-1977 (D. Flynn Collection: 2♂m); Clinton Co., Ross Lake Wldf. Expt. Sta., 3-VIII-1977 (D. Flynn Collection: 1♂m); Ingham Co., E. Lansing, 2-VIII-1977 (D. Flynn Collection: 1♂m); Shiawassee Co., Ross Lake Wldf. Expt. Sta., 21-VIII-1977 (D. Flynn Collection: 1♀m); Shiawassee Co., Ross Lake Wldf. Expt. Sta., 23-VIII-1977 (D. Flynn Collection: 1♂m); Tuscola Co., Tin Ride, S. 14, S.-Caro, 30-VIII-1979 (D. Flynn Collection: 1♂m); NEW JERSEY: Morris Co., Boontown, VII-22-1901 (ANSP: 1♂m); Ocean Co., Greenwwod, Wild. Man. Area, 16-VII-1986 (ANSP: 1♀m); NEW MEXICO: Lincoln Co., Ruidosa, 1-IX-1985 (WFBM: 1♂m, 2♀m); NORTH CAROLINA: Durham Co., Durham, 20-X-1984 (UDCC: 1♀m); Wake Co., Raleigh, 3-VIII-1977 (UDCC: 1♀m); Wake Co., Raleigh, 5-VIII-1977 (UDCC: 1♂m); Wake Co., Raleigh, 10-VII-1978 (UDCC: 1♀b); Wake Co., Raleigh, 15-VII-1993, Schenck Forest Sweep (UDCC: 1♂m); Wake Co., Raleigh, 20-VIII-1992 (UDCC: 1♀m); Wake Co., Raleigh, 9-VII-1979 (UDCC: 1♂m); TENNESSEE: Blount Co., GSMNP, Cades Cove, Old Field, ATBI Plot, 39º42'01"N 24º28'63"E, (02-16)-VII-2001, Malaise Trap MT04, MT0420010716 (UDCC: 1♂m); Montgomery Co., Clarksville, 28-VIII-1916 (UDCC: 1♂m); WASHINGTON: Whitman Co., Colton, 15-VII-1960, Virgin Prairie Survey, Ex: *Agropyron/Poa* (WSUC: 1♂m); Whitman Co., Pullman, Virgin Palouse, 26-VI-1955 (WSUC: 1♂m); Whitman Co., Pullman, Round Top, 2-IX-1953 (WSUC:

1♂m); WISCONSIN: Columbia Co., T10N/R9E/Sec. 25/ NW of NW, Gravel Depression Pr., 20-VIII-1987, Taken from Sweep Net in Native Prairie (IRCW: 1♀m).

S. cockerelli (Fowler) (4). **UNITED STATES**: NEW MEXICO: Lea Co., 19 mi. NE. Lovington, 2-X-1970 (LBOB: 1♂m, 1♀m); Philmont Forest, Swpg. Mixed veg., 28-IX-2000 (NYSM: 2♂b).

S. excultus Lawson and Beamer (3). **UNITED STATES**: TEXAS: Dickens Co., 5 mi. SW Dumont, 9-VII-1970, N. Witchita R. at night (LBOB: 1♀m); Hall Co., 6 mi. SE Turkey, 18-VI-1970 (LBOB: 1♀m); Wheeler Co., 8 mi. W. Shamrock, 2600 ft., 16-VIII-1939 (ANSP: 1♀m).

S. flavidus Breakey (5). **UNITED STATES**: CALIFORNIA: Sonoma Co., 2 mi. N Sebastopol, 31-VII-1965, ex. *Grindelia camporum* (LBOB: 2♂m, 2♀m; AMNH: 1♂m).

S. graphicus Ball (3). **UNITED STATES**: ARIZONA: Pinal Co., Oracle, 30-VI-1930 (USNM: 1♂m); Yavapai Co., Yarnell Hts., 8-X-1929 (USNM: 1♂b, 1♀b).

S. grossus Uhler (5). **UNITED STATES**: COLORADO: Sedgwick Co., Julesburg, 4-VIII-1999 (USNM: 1♀b); TEXAS: McLennan Co., Waco, 26-VI-1944 (USNM: 1♀m); Tarrant Co., Ft. Worth, 7-VII-1944, Sweeping, (INHS: 1♂b, 1♀b); Taylor Co., 11-VII-1928 (USNM: 1♀b).

S. hesperius Uhler (5). **UNITED STATES** : COLORADO: Larimer Co., Fort Collins, 6-VI-1946 (IRCW: 1♂b); Logan Co., Sterling (AMNH: 1♂b); KANSAS: Douglas Co., 15-VII-1921 (AMNH: 1♂b); NORTH DAKOTA:

Stark Co., Dickinson, 23-VII-192 (USNM: 1♂b); TEXAS: Dallas Co., Dallas, 18-VI-1906 (USNM: 1♀m).

S. luridus Breakey (4). **UNITED STATES**: KANSAS: Sheridan Co., Hoxie, 4-VII-1933 (USNM: 1♂b, 1♀m); TEXAS: Potter Co., Pantex, 14 mi. E Amarillo, 19-IX-1970 (BMNH: 1♀b); UTAH: Utah Co., 0.5 mi. S Springdell, Uinta N.F., 25-VIII-196 (BMNH: 1♂b).

S. maculosus Ball (7). **UNITED STATES**: ARIZONA: Cochise Co., Bisbee, 14-X-1931, Ex: *Bidens* sp. (USNM: 1♂b); Cochise Co., Chiric. Mts., 18-VII-1933 (USNM: 3♀m); Cochise Co., "D" Hill, 2 mi. NE Douglas, 16-VIII-1978, Sweeping *Lepidium* (UCDC: 1♀b); COLORADO: Larimer Co., Ft. Collins, 10-VIII-1901 (USNM: 1♀b).

S. neomexicanus Lawson and Beamer (2). **UNITED STATES**: NEW MEXICO: Otero Co., 19 mi. E Mayhill, 2-X-1970 (BMNH: 1♂b, 1♀b).

S. nicholi Ball (6). **UNITED STATES**: ARIZONA: Pima/Santa Cruz Cos., Sta. Cruz Rv., 5-IX-1933 (USNM: 2♂m, 4♀m).

S. osborni Ball (7). **UNITED STATES**: KANSAS: Douglas Co., 8-VII-1928 (USNM: 1♂b, 1♀b, 1♀m); Douglas Co., 28-VI (USNM: 1♂b, 1♀b, 1♂m); Pottawatomie Co., Tuttle Cr. Dam, 20-VI-1987, Tallgrass prairie (UDCC: 1♀b)

S. perdix Uhler (27). **UNITED STATES**: DELAWARE: Sussex Co., nr. Bethany Beach, Indian River Inlet, 19-VIII-1999 sweeping (UDCC: 1♂m); FLORIDA: Alachua Co., Gainesville, (26-IX)-(2-X)-1914, (AMNH: 1♀b); GEORGIA: Union Co., 5 mi. N Blairsville, 1900 ft., 4-IX-1939 (ANSP: 1♀m); ILLINOIS: Pope Co., Dixon Springs, 29-VII-1934 (INHS: 1♂m);

Union Co., Dongola, 23-VIII-1916 (INHS: 1♀m); LOUISIANA: Natchitoches Parish, 16-VIII-1928 (MZHF: 1♂m, 3♀m); NEW JERSEY: Cape May Co., Avalon, (11-14)-VIII-1998, sweeping @ marsh (UDCC: 2♂m, 3♀m); Cape May Co., Cape May, 10-IX-1932 (ANSP: 1♂m, 1♀m); Cape May Co., Cape May, 11-IX-1932 (ANSP: 1♀m); Cape May Co., Cape May, 27-VII-1933 (ANSP: 2♂m); Cape May Co., Cape May, 23-VIII-1934 (ANSP: 2♂m); Cape May Co., Cape May, 31-VIII-1935 (ANSP: 1♀m); NORTH CAROLINA: Wake Co., Raleigh, 16-IX-1982 (UDCC: 1♀m); PENNSYLVANIA: (No Information Provided) (ANSP: 2♂m, 2♀m).

S. pruinosus Breakey (1). (Location not given): 13-VII-1899 (USNM: 1♀b).

S. pungens (Germar) (104). **MEXICO**: COAHUILA: Cuatro Cienegas, el. 850 m, 18-VIII-1979 (UCDC: 2♂b); SONORA: 13 km. W Alamos, 1-IX-1975 (UCDC: 1♀m); 44 mi. NE C. Victoria, Tam. 1-VIII-1970 (LBOB: 1♂b, 1♀b). **UNITED STATES**: FLORIDA: Alachua Co., Gainesville, (26-IX)-(2-X)-1914, (AMNH: 2♀b); Duval Co., Jacksonville Beach (as Pablo Beach), 13-VIII-1905, Pinewoods (ANSP: 1♂b, 2♀b); Levy Co., Cedar Key, 15-VIII-1905 (ANSP: 1♂b, 1♀b); GEORGIA: Thomas Co., Thomasville, 30-IX-1903 (ANSP: 1♀b); ILLINOIS: Cook Co., Calumet, Hyde Lake, prairie, sweeping, N41º38.583' W87º31.903', 13-VIII-2003 (INHS: 2♂b); Dupage Co., Warrenville, 10-VIII-1941 (FMNH: 1♂b); INDIANA: Lake Co., Hessville, 8-VIII-1909, Sweeping (FMNH: 1♂b); Lawrence Co., Bedford Fairgrounds, 7-VIII-1971 General Sweep (UTEP: 1♀b); IOWA: Story Co., Ames, 12-VIII-1937 (WSUC: 1 undet. m); Story Co., T83N R23W Sect. 5, Holub Prairie, site H-P-1, 22-VIII-1996 (IRCW: 5♂b, 3♀b);

KANSAS: Bourbon Co., 17-VIII-1924 (WSUC: 1♂b); Chautauqua Co., 3-IX-1926 (WSUC: 1♂b); Cherokee Co., 1927 (MZHF: 1♀b); Franklin Co., 12-IX-1925 (WSUC: 1♀b); Ottawa Co., 22-VIII-1924 (WSUC: 1♂b); KENTUCKY: Pulaski Co., 21-VIII-1971, General Sweep (UTEP: 4♂b, 2♀b) LOUISIANA: Richland Par., Bee Bayou, 2 mi. E Rayville, 60 ft., 1-IX-1939 (ANSP: 1♀b); MASSACHUSETTS: Worcester Co., Jefferson (UDCC: 1♀b); MINNESOTA: Waseca Co., Waseca, 28-VIII-1949 (WSUC: 1♂b, 1♀b); MISSOURI: Marrion Co., Hannibal, 21-VII-1969 (UCDC: 1♀b); NEBRASKA: Madison Co., 3 mi. N Madison, 1700 ft., 21- VIII-1970 (INHS: 1♀m); NEW JERSEY: Burlington Co., Delran, Holiday Lake, 2-VIII-2005, Field, Sweep (UDCC: 1♀b); Cape May Co., Cape May, 9-9-1932 (ANSP: 1♂b, 1♀b); Cape May Co., Cape May, 9-VIII-1933 (ANSP: 1♀b); Cape May Co., Cape May, 8-VIII-1934 (ANSP: 1♂b); Cape May Co., Cape May, 14-VIII-1934 (ANSP: 1♀b); Cape May Co., Cape May, 12-VIII-1935 (ANSP: 1♀m); Cape May Co., Cape May, 15-VIII-1936 (ANSP: 2♂b, 1♀b, 1♀m); Cape May, 19-VIII-1938 (ANSP: 4♂b, 1♀b); Cumberland Co., Husted, VIII-1928 (ANSP: 1♀b); Middlesex Co., Milltown, 10-IX-1919 (FMNH: 1♂b); Ocean Co., Cassville, 17-VIII-1910 (AMNH: 1♂b); Ocean Co., Lakehurst, VIII-1923 (FMNH: 1♀b); Passaic Co., Great Notch, 7-VIII-1910 (AMNH: 1♀b); NEW MEXICO: Otero Co., 2 mi. ab. Mescalero, 7200 ft., 26-VIII-1939 (ANSP: 1♀b); Otero Co., Hueco Mts., Hueco Ranch Rd. at TX-NM line, 32º00'N 105º55'W, 5250 ft., 05-X-1997, grassland (UTEP: 1 undet. B); Sandoval Co., 15 mi. NW San Ysidro, 6800 ft., 21-VIII-1939 (stylopized – 3) (ANSP: 1♂b); NORTH CAROLINA: Bladen Co., Bladen

Lakes S.F., 15-IX-1995, UV light @ Turnbull Crk. (UDCC: 1♀b); Bladen Co., Co. Rd. 1325, 5.5 km. SW of Ammon, 16-IX-1995, taken on *Ambrosia artemisiifolia* (UDCC: 1♀b); Buncombe Co., Black Mts., IX (AMNH: 1♂b); Chowan Co., Edenton, 20-VII-1908 (ANSP: 1♀m); Johnston Co., Clayton, 5-IX-1992 (UDCC: 1♀m); Wake Co., Raleigh, 4-X-1990 (UDCC: 1♀b); Wake Co., Raleigh, 11-X-1984 (UDCC: 1♀b); Wake Co., Raleigh, 26-VII-1977 (UDCC: 1♂b); Wake Co., Raleigh, 31-VIII-1978 (UDCC: 1♂b); Wake Co., Wendell, Eagle Run Rd., 21-VII-2000, Sweeping (UDCC: 6♂b, 6♀b, 1♀m); SOUTH CAROLINA: Charleston Co. (errantly as Saint John's Co.), Seabrook Island, near creek, 21-VIII-1999, Black Light (UDCC: 1♂b, 1♀b); TEXAS: Blanco Co., Round Mt. (ANSP: 1♂b); Dallam Co., 15 mi. W of Dalhart, swpg mixed veg., 28-IX-2000 (NYSM: 1♀b); Denton Co., 13 mi. S of Denton (ANSP: 1♀b); Hidalgo Co., 28-VII-1928 (MZHF: 1♂b); Hidalgo Co., 2-VIII-1926 (MZHF: 1♂b); Kimble Co., 4 mi. N Segovia, 1100 ft., 2-IX-1937 (ANSP: 1♀b); Wharton Co., 2 mi. NW E. Bernard, 7-VI-1984 (UDCC: 1♀b); VIRGINIA: Clarke Co., Leesburg, 9-IX-1919 (UDCC: 1♀b); Clarke Co., Berryville, 3-VIII-1919 (UDCC: 1♂m); WISCONSIN: (Location Not Given), 1938, ex Alfafa (*Medicago sativa*) (WSUC: 1♂b); St. Croix Co., 2-VIII-1949, Coll. From forest floor (IRCW: 1♀b); Sauk Co., Baraboo, 30-VIII-1949 (IRCW: 1♀b).

S. robustus Ball (4). **UNITED STATES** : ARIZONA: Cochise Co., 3 mi. N Cochise,18-IX-1971 (UCDC: 1♀b); Santa Cruz Co., 3 mi. W Sonoita, 13-VIII-198 (UCDC: 2♀b); UTAH: Juab Co., White Sand Dunes, 25 mi. SW Eureka, 3-VII-1966 (UCDC: 1♀b).

S. snowi Breakey (12). **UNITED STATES**: ARIZONA: Apache Co., 8 mi. NE Ft. Apache, 21-VII-1966 (UCDC: 1♂b); Coconino Co., 13 mi. W Flagstaff, 6800', 8-IX-1964 (LBOB: 1♂b); Coconino Co., 13-VIII-1927 (MZHF: 1♂b, 1♀b); Coconino Co., 18-VIII-1927 (MZHF: 2♀b); Navajo Co., 6800', 6 mi. SW Show Low, 10-IX-1964 (LBOB: 1♀b); ILLINOIS: Johnson Co., Belknap, 12-VII-1958 (UCDC: 1♀b); UTAH: Cache Co., Logan Cyn., 17-VIII-1974 (UCDC: 1♀b); Sevier Co., Sevier, 26-VIII-1960 (UCDC: 1♀b); Utah Co., Hope Cmpgd., 5 mi. S. Springdell, 22-VIII-1963 (LBOB: 1♂b, 1♀b).

S. stonei Breakey (3). **UNITED STATES** : ARIZONA: Coconino Co., Padre Canyon, 9 mi. E Winono, 6000 ft., 30-VII-1937 (ANSP: 1♀b); Gila Co., Natames Plateau, nr. Chrysotile NW Globe, 5100 ft., 22-VII-1937 (ANSP: 1♂b); Yavapai Co., Ash Fork, 1-VIII-1919 (ANSP: 1♂b).

S. sulcipes (Say) (439). **CANADA**: ONTARIO: Lanark Co., White Lake, 3 mile Bay, 11-VII-1999 (UDCC: 2♂b, 1♀b); Ottawa Co., Ottawa, 1-IX-1963 (IRCW: 1♀b); QUEBEC: Hudson (as Hudson Heights), (24-30)-VII-1956 (MZHF: 2♂b, 1♀b, 2♂m); Hudson (as Hudson Heights), (25-31)-VIII-1956 (MZHF: 15♂b, 17♀b, 2♂m, 8♀m); Hudson (as Hudson Heights), (1-4)-IX-1956 (MZHF: 1♂b, 1♀b); Choisy pr. Rigaud, 25-VIII-1956 (MZHF: 1♂b); La Minerve, 28-VIII-1956 (MZHF: 2♀b). **UNITED STATES** : ARKANSAS: Hempstead Co., Hope, 8-VI-1925 (IRCW: 1♀b); CALIFORNIA: Trinity Co., Coffee Creek R. S., 14-VII-1955 (UCDC: 1♂b); COLORADO: Boulder Co., Boulder, 10-VIII-1962 (FMNH: 2♂b); Boulder Co., 11-VIII-1973 (UTEP: 1♀b); Mesa Co., Mesa, (18-23)-VII-1933, FMNH

Expedition (FMNH: 1♂b); Mesa Co., Mesa, (13-31)- VIII-1939, 5000 ft. el., FMNH Expedition (FMNH: 1♂b); Otero Co., La Junta, (22-23)-VII-1919 (ANSP: 15♂b, 5♀b 1♀m); DELAWARE: Kent Co., Hartly, Backyard, 25-VII-2002, Hand collected (UDCC: 1♀b); Kent Co., Smyrna, 6-VIII-1997 (UDCC: 1♂b); New Castle Co., (nr.) Wilmington, Rt. 92 nr. Junct. 202, 28-VIII-1988 (UDCC: 2♂b, 5♀b, 1♀m); New Castle Co., Newark, Summer 1988 (UDCC: 2♂b); New Castle Co., Newark, 24-VII-1997 (UDCC: 1♂m); New Castle: Newark, 17-VII-1990 (UDCC: 1♀b); New Castle Co., Wilmington, 13-VIII-1972 (UDCC: 1♂b, 1♀b); New Castle Co., White Clay Creek, 20-IX-1996 (UDCC: 1♀b); New Castle Co., Hockessin, 22-VIII-1940, Swept in Orchard (UDCC: 1♂b); New Castle Co., nr. Newark, Middle Run N.A., 30-VII-1992, abandoned field (UDCC: 1♀b); New Castle Co., nr. Newark, Middle Run N.A., 3-VIII-1992, abandoned field (UDCC: 1♀b); New Castle Co., Corner Ketch nr. Newark, Turkey Run, 31-VII-2001 (Nate Coll.: 1♀b); New Castle Co., Upper Newark, 1101 Corner Ketch Rd., 23-VII-2002, sweeping (UDCC: 1♀b); New Castle Co., Newark, Oak Tree Apts., VI-1997 (UDCC: 1♀m); New Castle Co., Newark, UD Farm, 8-VIII-2003, Sweeping weeds (UDCC: 1♀b); New Castle Co., Newark @ U of D, 18-VII-2002, cages nr. Woodlot (UDCC: 1♀m); New Castle Co., nr. Summit, C&D (Chesapeake & Delaware) Canal, 11-VII-2002 (UDCC: 1♂m); New Castle Co., Newark, Kranz Residence, 25-VII-1999, sweeping (UDCC: 1♀b); New Castle Co., Delaware City, C&D Canal, 29-IX-2000, Sweeping (UDCC: 1♀b); New Castle Co., Newark, University of DE Farm nr. Woodlot, 24-VII-2006, Sweeping, Ex: *Solidago canadensis* (UDCC:

11♂b, 4♀b, 1♀m); New Castle Co., C & D Canal S., 1/4 mi. E of Railroad Bridge, sweeping, 20-VII-2006 (UDCC: 7♂b, 3♀b); New Castle Co., C & D Canal S., 1/4 mi. E of Railroad Bridge, 25-VII-2006, Sweeping (UDCC: 2♂b, 2♀b); New Castle Co., C & D Canal N., Retriever Training Area, Sweeping, 20-VII-2006 (UDCC: 2♂b); New Castle Co., C & D Canal N., Retriever Training Area, 18-VII-2006, Sweeping (UDCC: 1♂b, 1♀b); IDAHO: Idaho Co., Cellway R., 4 mi. beyond Lowell, 15-VIII-1955 (WSUC: 1♀b); ILLINOIS: Champaign Co., Champaign-Urbana, 24-VIII-1971 (INHS: 1♀b); Cook Co., Evergreen Park, 23-VIII-1934 (INHS: 1♂m); Lee Co., Richardson's Estates, 22-IX-1996, malaise trap, burned native prairie (south) (IRCW: 1♂b); Lee Co., Richardson's Estates, 22-IX-1996, duckpond depressionfall trap #8 (IRCW: 1♀b); INDIANA: Lake Co., Hessville, 12-VII-1908 (FMNH: 1♂b); Lake Co., Hessville, 8-VIII-1909 (FMNH: 1♀b); Lawrence Co., Bedford Fairgrounds, 6-VIII-1971, General Sweep (UTEP: 2♀b); Lawrence Co., Bedford Fairgrounds, 7-VIII-1971, General Sweep (UTEP: 1♂b, 2♀b, 1♀m); Porter Co., 5-VIII-1971 (UTEP: 1♂b); IOWA: Hamilton Co., T87N. R24W.Sec. 34, Roadside, Site S-3, 16-VIII-1996 (IRCW: 1♀b); Story Co., Ames, -VII-1925 (INHS: 1♂b); Story Co., 3 miles N Ames, 30-VII-1966 (INHS: 1♀b); Story Co., Ames, 12-VIII-1937 (WSUC: 1♂b, 1♀b); Story Co., T83N R23W Sec. 17, Stargrass Prairie, Site: SGP2, 2-IX-1996 (IRCW: 1♂b); Story Co., T83N R23W Sec. 17, Star Grass Prairie, Site SG-P-1, north field, 2-VIII-1996 (IRCW: 1♂b); Story Co., Sect. 25 83N 23W, Roadside, Site GR-1-E, 2-IX-1996 (IRCW: 2♂b); Story Co., T83N.R23W.Sec.36, Roadside, Site GR-2-E, 2-IX-1996 (IRCW: 1♂b);

Story Co., T83N.R23W.Sec.25, Giant Ridge Prairie, Site GRP 1 (North Ridge), 24-VIII-1996 (IRCW: 1♂b); Story Co., T85N.R24W.Sec.23, Doolittle Prairie, Site D-P-2, 25-VIII-1996 (IRCW: 1♀b); Story Co., T83N 23W Sec. 25, Grant Ridge Prairie, Site: GR-P-3, 24-VIII-1996 (IRCW: 1♀b); Story Co., T83N.23W.Sec. 25, Grant Ridge Prairie, Site GR-P-2 (South Plot), 24-VIII-1996 (IRCW: 1♂b); Story Co., Sct. 25 83n23w, Grant Ridge Pr., Site: GRP1, 24-VIII-1996 (IRCW: 1♀b); Story Co., T85N R23W Sect. 19, Roadside, Site: D-3-N, 25-VIII-1996 (IRCW: 1♀b); Story Co., T85N.R24W.Sec. 23, Roadside, Site D-1, 25-VIII-1996 (IRCW: 1♂b); Story Co., T84N.R23W.Sec. 7, McFarland Prairie, Site M-F-P-2, 14-VIII-1996 (IRCW: 1♂b); Story Co., T86N.R24W. Sec.10, D.Welp Prairie, Site DW-P-1, 16-VIII-1996 (IRCW: 1♂b); Story Co., T83N R23W Sect. 5, Holub Prairie, Site H-P-1, 22-VIII-1996 (IRCW: 2♂b); KANSAS: Cherokee Co., 31-VIII-1927 (INHS: 1♀b, 1♀m); Douglas Co., 28-VII-1926 (MZHF: 1♂b); Elk Co., 31-VIII-1926 (WSUC: 1♂b); Leavenworth Co., 25-VI-1924 (MZHF: 1♂m); Leavenworth Co., 19-IX-1926 (WSUC: 1♀b); Republic Co., 11-VII-1925 (MZHF: 1♂b, 1♀b); KENTUCKY: Fayette Co., 13-VIII-1971 (UTEP: 1♂b, 1♀b); Hardin Co., Ft. Knox, 9-VII-1913 (UCDC: 1♂b); Pulaski Co., 21-VIII-1971General Sweep. (UTEP: 2♂b, 3♀b); MARYLAND: Calvert Co., Sunderland, 23-VIII-1995 (UDCC: 1♀b); Cecil Co., Susquehanna State Park, 9-IX-2006 (UDCC: 1♀b); Cecil Co., @ Fair Hill, Fair Hill NRA, 27-IX-1996, Sweeping/Old Field (UDCC: 1♀b); Cecil Co., Fair Hill NRA, 24-IX-1999, sweeping (UDCC: 1♀b); Cecil Co., Fair Hill, Fair Hill NRA, 22-IX-2000, sweeping (UDCC: 1♂b, 2♀b); Cecil Co.,

Fair Hill NRMA, 22-IX-2000, aspirator (UDCC: 1♀b); Harford Co., Havre de Grace, Park & Ride I95 & 155, 9-IX-2005, Hand/Net (UDCC: 1♀b); Harford Co., nr. Havre de Grace, 1 mi. N of I95, 13-IX-2002, Weeds (UDCC: 1♂b); Garrett Co., Savage River, Savage River, 31-VII-1999 (UDCC: 1♂b); Kent Co., nr. Langford, Chesapeake Farms, 14-VII-1997, sweeping (UDCC: 1♂b, 1♀b); Kent Co., nr. Langford, Chesapeake Farms, 11-VIII-1997, sweeping (UDCC: 5♂b, 2♀b); Kent Co., nr. Fairlee, Chesapeake Farms, 11-VIII-1997, Sweeping (UDCC: 3♂b, 1♀b); Montgomery Co., Cabin John, 9-VII-1943 (MZHF: 1♂b); Washington Co., South Mtn., E. Boonesboro, 750 ft., 29-VII-1939 (ANSP: 2♀b); Wicomico Co., Salisbury, Pemberton Park, 18-IX-1999 (UDCC: 1♂b); MICHIGAN: Benzie Co., 7 mi. S. Benzonia, 25-VIII-1979 (D. Flynn Collection: 3♂b, 1♀b); Cheboygan Co., 9-VIII-1945 (INHS: 3♂b); Cheboygan Co., Black L., 28-VII-1941 (UDCC: 1♀b); Clifton Co., Rose Lake Wldf. Expt. Sta., 22-VII-1977 (D. Flynn Collection: 1♀b); Clifton Co., Rose Lake Wldf. Expt. Sta., 16-VIII-1977 (D. Flynn Collection: 1♀b); Clifton Co., Rose Lake Wldf. Expt. Sta., 21-VIII-1977 (D. Flynn Collection: 1♀b); Emmet Co., Tower Rd., T36N R4W S1, 22-VII-1993 (UDCC: 1♀b); Ingham Co., E. Lansing, 23-VIII-1975 (D. Flynn Collection: 1♀b); Ingham Co., E. Lansing, 10-IX-1975 (D. Flynn Collection: 1♂b); Ingham Co., E. Lansing, 8-VII-1976 (D. Flynn Collection: 1♂b, 1♀b, 3♂m, 2♀m); Ingham Co., E. Lansing, 4-VIII-1976 (D. Flynn Collection: 8♂b, 1♀b); Ingham Co., E. Lansing, 17-VIII-1976 (D. Flynn Collection: 3♀b); Ingham Co., E. Lansing, 20-VIII-1976 (D. Flynn Collection: 1♂b, 1♀b, 1 undet. b); Ingham Co., E. Lansing, 2-VIII-

1977 (D. Flynn Collection: 5♂b); Ingham Co., E. Lansing, 25-VIII-1977 (D. Flynn Collection: 1♂b, 1♀b); Ingham Co., E. Lansing, 20-IX-1977 (D. Flynn Collection: 1♂m); Isabella Co., Broomfield Twp., 13-VIII-1979 (D. Flynn Collection: 1♂b, 1♀b, 1♀m); Isabella Co., Lincoln Twp., T13N, R4W, S. 33, 13-VIII-1979 (D. Flynn Collection: 1♂b, 1♀b); Isabella Co., Lincoln Twp., T13N, R4W, S. 33, 27-VIII-1979 (D. Flynn Collection: 1♂b, 1♀b); Kalamazoo Co., Kalamazoo, 7-VIII-1979 (D. Flynn Collection: 2♂b, 2♀b); Montcalm Co., MSU Exptl. Farm, near Entrican (D. Flynn Collection: 1♂m); Tuscola Co., S. Caro, T12N, R10E, S.14, 30-VIII-1979 (D. Flynn Collection: 1♂b); MINNESOTA: Clearwater/Hubbard/ Becker Co., Itasca Pk., 25-VII-1937 (WSUC: 1♂b); Otter Tail Co., Fergus Falls, 21-VII-1911 (INHS: 1♀b); Saint Louis Co., Eagles Nest, 11-VIII-1959 (INHS: 1♂b); Waseca Co., Waseca, 27-VI-1949 (WSUC: 1♂b); Waseca Co., Waseca, 27-VI-1949 (WSUC: 1♂b); MISSOURI: Pike Co., Louisiana, 29-VII-1925 (INHS: 1♀b); NEW JERSEY: Morris Co., Boonton, 21-VII-1901 (ANSP: 1♂b); Morris Co., Boonton, 24-VII-1901 (ANSP: 1♂b, 1♀b); Salem Co., Carney's Point, 19-VII-1997, Old Alfalfa field (UDCC: 1♂b, 1♂m); Salem Co., Depressiontsgrove, 27-VII-1980, Net, Woodlot/Field (UDCC: 1♀b); NEW YORK: Schungler Co., Van Etlen Township, Arnet Forest, (V-VII)-1999, Cornell Univ. (UDCC: 1♀m); Tompkins Co., Freeville, 23-VIII-1997, Sweep Net, Mowed Field (UDCC: 1♂b, 4♀b); Tompkins Co., Enfield State Pk., 3-X-1936 (ANSP: 1♀b); NORTH CAROLINA: Forsyth Co., US-52 at NC-65, 3 mi. NW of Bethania, 5-VIII-1999, taken on *Solidago* sp. (UDCC: 1♂b); OHIO: Allen Co., Delphos, 16-VIII-1911 (FMNH: 1♂b); Allen Co.,

Delphos, 19-VIII-1911 (FMNH: 1♂b); Hamilton Co., Sharon Woods Pk., 5-IX-1976 (D. Flynn Collection: 1♂b); Paulding Co., Anglaize Twp., 10-VII-1980, 6 mi. E. Junc. Co. 180 & US 127 (D. Flynn Collection: 1♂b, 1♀m); OREGON: Hood River Co., Hood R., 24-VIII-1907 (IRCW: 1♂b); Jackson Co., Medford, 9-IX-1953 (UCDC: 1♂b); PENNSYLVANIA: Bucks Co., Tyler State Park, 5-VII-1981 (ANSP: 1♂m); Chester Co., Unionville, 8-X-1993 (UDCC: 1♀b); Chester Co., 0.5 mi. E Unionville, Swett Property, 10-VIII-1995, by sweep net (UDCC: 1♀b); Chester Co., Landenberg, 12-VII-1970 (UDCC: 1♀b); Delaware Co., Swarthmore, 22-VII-1906 (ANSP: 1♀b); Delaware Co., Swarthmore, 27-VIII-1904 (ANSP: 1♀b); Delaware Co., Folsom, 23-VII-1993 (ANSP: 3♂b, 3♀b); Delaware Co., Secane, 15-VII-1951 (ANSP: 1♂b); Indiana Co., Saltsberg (as Saltyberg), July VII-1926, Abandoned field on hillside (WSUC: 1♂b, 1♀b, 1♂m, 1 undet.); Philadelphia Co., Philadelphia, Pennypack Park, 28-VII-1997 (UDCC: 2♂b); Philadelphia Co., Wissahickon Cr., Philadelphia, 14-VIII-1932, Sweeping (ANSP: 1♂b, 1♀b); Philadelphia Co., Wissahickon Cr., Philadelphia, 13-VIII-1933, On *Solidago graminifolia* (= *Euthamia graminifolia*) (ANSP: 1♂b, 1♀b); Sullivan Co., Lopez, (4-15)-VIII-1913 (ANSP: 4♂b, 1♀b); York Co., York, 23-VII-1944 (ANSP: 1♀b); TENNESSEE: Blount Co., nr. Townsend, GSMNP, Gregory Bald, 11-VII-2002 (UDCC: 1♂m, 1♀m); UTAH: Uintah Co., Hayden, 12-VII-1960 (UCDC: 1♀b); Utah Co., Provo, 20-VIII-1962 (WSUC: 2♀b); VIRGINIA: Bath Co., Warm Spring Mt., E. Warm Sprgs, 2950-3300 ft., 8-IX-1939 (ANSP: 1♂b, 1♀b); WASHINGTON: Benton Co., Hanford Site, ALE. Rattlesnake Spr. T12N

R25E Sec 21, 7-VII-1994 (WSUC: 1♂b); Spokane Co., Spokane (INHS: 1♀b); Whitman Co., Smoot Hill, Pullman, 16-VIII-1970, Malaise Trap (WSUC: 1♀m); Whitman Co., Pullman, virgin Palouse, 24-VI-1955 (WSUC: 2♀b); Yakima Co., Harrah, 24-VII-1941 (WSUC: 2♀b); WEST VIRGINIA: Greenbrier Co., 1900 ft., 1-VIII-1939 (ANSP: 1♀b); Morgan Co., Third Hill Mtn., nr. Sleepy Crk., 625 ft., 30-VII-1939 (ANSP: 1♂b, 2♀b); WISCONSIN: Burnett Co., Crex Meadows, 39N 19W Sec13 N4, 03-VIII-1997, DNR Study 053, Sweep mixed short grasses/unburned sand prairie (IRCW: 1♂b); Columbia Co., Arlington Prairie, T10N, R10E S31/NW, 19-IX-1997, DNR Study 053, sweep net in dry-mesic prairie (IRCW: 1♂b, 1♀b); Columbia Co., Rocky Run Oak Open, T12N R10E Sec32/S, U:2, Study 053, SNA 220, 10-VII-1995, sweep net in old field (IRCW: 1♂b, 1♀m); Columbia Co., 12-VIII-1960 (IRCW: 3♂b); Columbia Co., Mud Lake SWA, T11N/ R10E/Sec28 NE, 29-VII-1998, DNR Study 053, sweepnet dry mesic prairie, mixed grasses & forbs (IRCW: 1♂b); Crawford Co., Tainter Pasture, T9N/R4W/ Sec5 NE4, 13-VIII-1998, DNR Study 053, sweepnet, dry, steep pasture prairie (IRCW: 1♂b, 1♀b); Crawford Co., T9N/R4W/Sec32/N, Hogback Pr., U:2, 01-VIII-1997, WI DNR Study 053, Taken from sweep net in native prairie (IRCW: 1♀b); Dane Co., Mazo Oak Barrens, T9N R6E S23 SE4, 06-VIII-1997, DNR Study 053, Sweep Net, mostly in *Panicum* (IRCW: 1♀b, 1♀m); Dane Co., Hauser Road Prairie, T9N R9E S29/NE, 12-July-1995, DNR Study 053, Sweep Net in Prairie pasture (IRCW: 1♂m); Dane Co., T9N/R9E/Sec29/NE, Hauser Road Pr. U., 31-VII-1997, WI DNR Study 053, Taken From: Sweep Net in native

prairie (IRCW: 1♀b); Dane Co., Thousand's Rock Pt. T6N R6E S18/SW, 26-VIII-1997, U:12, DNR Study 053, Sweep Net (IRCW: 1♀b); Dane Co., Black Earth Pr., T8N R6E S27/SW, 4-IX-1996, DNR Study 053, Sweep Net (IRCW: 1♂b); Dane Co., Black Earth Pr., U:3, T8N/R6E/S27/SW4, 11-IX-1996, Study 053, SNA 210, Sweep Net, Dry/Dry-Mesic Prairie (IRCW: 1♂b); Dane Co., Black Earth Prairie, T8N R6E S27 SW, 8-VIII-1997, TNC/DNR Study 053, Taken from sweep net in prairie dropseed (*Sporobolus heterolepis*) (IRCW: 1♀b); Dane Co., Wright Oak Savanna, T8N/R7E/Sec11/SW4, 24-VII-1996, DNR Study 053, sweep net in Prairie/Savanna (IRCW: 2♀b); Dane Co., Hawkhill (Miller) Pr., T9N R8E Sec5/SE, 21-VII-1995, DNR Study 053, Sweep net in unburned prairie (IRCW: 1♀b); Dane Co., Hawkhill (M), T9N/R8E/Sec 5 SE, 16-VII-1997, DNR Study 053, Sweep net in dry prairie (IRCW: 1♂b); Dane Co., Henderson Oak Sav., T6N R8E Sec7/NW, 20-VIII-1995, DNR Study 053, Collected in sweep net in prairie openings in oak openings (IRCW: 1♀b, 1♀m); Dane Co., UW Arboretum, 2-IX-1967 (IRCW: 3♀b); Grant Co., Hwy 133, sandy prairie, T8N R2W Sect. 11, 14-VII-2000, 1 or 2 seen with proboscis sunk into leaf or stem of *Asclepias amplexicaulis*, 10AM Sunny 74°F (IRCW: 1♀b); Grant Co., Bush Clover Prairie, T5N R3W Sect. 17, 24-VIII-1992, off leaf of *Rubus flagellaris*, 8AM 70°F Sunny (IRCW: 1♂b); Grant Co., Bush Clover Prairie, T5N R3W Sect. 17, 24-VIII-1992, off stem of *Solidago rigida* (= *Oligoneuron rigida*), 8AM 70°F Sunny (IRCW: 1♀b); Green Co., T3N/R9E/ Sec36/S, Oliver Prairie, 13-VII-1998, Agroecosystem proj., sweep net on a prairie remnant (IRCW: 1♂b, 1♀b); Green Co., Oliver

Prairie, T3N R8E S36/SW, 15-VIII-1995, Study 053, SNA 058, sweep net (IRCW: 1♀b); Green Co., 11-VIII-1958 (IRCW: 1♀b); Iowa/Dane Cos., Thompson Prairie, 6N 5E S24/6E S18, 04-VIII-1997, TNC/DNR Study 053, taken from sweep net in prairie dropseed (*Sporobolus heterolepis*) (IRCW: 1♀b); Iowa Co., Barneveld Prairie, 6N/5E/Sec8/SE4, 24-VII-1997, Taken in Little Blue Stem (*Schizachyrium scoparium*) and Side Oats Gramma (*Bouteloua curtipendula*) (IRCW: 2♀b); Iowa Co., Barneveld Prairie, 6N 5E Sec8 SE4, 24-VII-1997, Taken from sweep net in native prairie (IRCW: 1♂b, 1 undet. b); Iowa Co., Barneveld Prairie, 6N 5E Sec8 SE4, 6-VIII-1997, Taken from sweep net in prairie dropseed (*Sporobolus heterolepis*) (IRCW: 3♀b); Iowa Co., Nittany Knoll Farm, T6N/R5E/Sec35/NW, 24-VII-1997, DNR/TNC Study 053, taken from sweep net in native prairie (IRCW: 1♂b); Iowa Co., Thousands Rock Pt., T6N/R5E/Sec24/NE, 4-VIII-1997, DNR/TNC Study 053, Prairie Dropseed (*Sporobolus heterolepis*) (IRCW: 1♀b); Iowa Co., Thomson Prairie, U:12, T6N R5E S24/NE, 21-VIII-1996, DNR Study 053, sweep net in prairie pasture, SW corner dry prairie (IRCW: 1♂b, 1♀b); Jefferson Co., T5N/R16E/ Sec33/SE, SNA230-7, U:0, 05-VIII-1997, DNR Study 053, taken from sweep net in native prairie (IRCW: 1♀m); La Crosse Co., La Crosse Rvr Tr U:1, T17N R4W Sec, 22-VIII-1995, Study 053, SNA 184, sweep net (IRCW: 1♂b); Lafayette Co., T2N/R4E/Sec31/S, Darlington Prairie, 17-VII-1998, Agroecosystem Proj., sweep net on a prairie remnant (IRCW: 2♂b); Marathon Co., Madison, swpg mixed forbs @ top of Rib Mt. Ski lift; 1900 ft.; 7-VIII-1999 (NYSM: 1♀b); Marathon Co., VIII-1940 (WSUC: 1♀b); Pierce Co., Trenton Bluff Prairie, 25N 18W Sec28 SE,

03-VIII-1997, U:3, Study 053, SNA 136, swept from *Muhlenbergia* spp. (IRCW: 1♂b); Polk Co., Amery, 3-VIII-1923 (IRCW: 1♂b); Rock Co., T1N/R12E/Sec2/S, Rock River Prairie, 29-VIII-1997, WI DNR Study 053, sweep net in dry prairie (IRCW: 5♀b); Rock Co., T1N/R12E/Sec1/W, Beloit Pr., 29-VIII-1997, WI DNR Study 053, sweep net in dry prairie (IRCW: 1♂b); Sauk Co., T9N/R6E/Sec4/NW, Schluck(ebier Pr.) (S), U:1, 2-IX-1997, TNC/DNR Study 053, sweep net in dry prairie (IRCW: 1♀b); Sauk Co., T10N/R6E/Sec33/SW, Schluck(ebier Pr.), U:3, 02-IX-1997, TNC/DNR Study 053, sweep net in sand prairie (IRCW: 1♂b, 1♀b); Sauk Co., Schluckebier Pr. S., 9N 6E S4/NW, U:2, 2-IX-1997, TNC/DNR Study 053, sweep net in dry-mesic prairie (IRCW: 1♀b); Sauk Co., Schluckebier Pr., U:3, T10N/R6E/Sec33, 13-VIII-1996, DNR/TNC Study 053, sweep net sand prairie, Prairie Dropseed (*Sporobolus heterolepis*) (IRCW: 1♂b); Sawyer Co., Stonegate, Aug. 16, 1966 (IRCW: 1♂b, 8♀b); Trempealeau Co., 28-VII-1949, taken from forest floor (IRCW: 1♂b, 1♀b); Waukesha Co., 17-VII-1949, collected from forest floor (IRCW: 1♀b); Waukesha Co., T5N/R17E/Sec9 U:2, Kettle Moraine Fen/083, 5-VIII-1997, WI DNR Study 053, sweep net in wes-mesic prairie (IRCW: 1♀b, 1♂m); Waupaca Co., Clintonville, 18-VII-1934, Sweeping field (WSUC: 2♂b); Waupaca Co., Clintonville, VIII-1934, Sweeping field (WSUC: 1♀b).

S. tanneri Ball (2). **UNITED STATES**: Utah Co., Provo, 10-VIII-1930 (USNM: 2♂b, 2♀b).

S. texanus Lawson and Beamer (4). **UNITED STATES** : TEXAS: Bailey Co., Muleshoe, 30-IX-1970, night (BMNH: 1♂b, 1♀b); Potter Co., 7-VII-1927 (USNM: 1♂b, 1♀b).

S. uhleri Ball (14). **UNITED STATES**: ARIZONA: Apache Co., Navajo, 15-VIII-1927 (MZHF: 1♂b, 1♀b); Coconino Co., San Fran. Peaks, 20-IX-1973 (UDCC: 1♂b); Coconino Co., Maine, 7250 ft., 30-VII-1937 (ANSP: 1♂b); Gila Co., Tonto basin, betw. Rye & Payson, 4000ft., 23-VII-1987 (ANSP: 1♂b); CALIFORNIA: San Diego Co., Sunshine Smt., nr. Dodge Vly., 17-VIII-1958 (UCDC: 2♀b); Kings Co., Avenal, 30-IX-1973, ex. *Gutierrezia bracteata* (= *G. californica*) (CDAE: 1♂b, 1♀b); IDAHO: Cassia Co., 3 mi NW Malta, 12-IX-1965, *Gutierrezia* (UDCC: 1♀b); UTAH: Tooele Co., Stockton, 2-IX-1907 (FMNH: 1♂b); Washington Co., 6 mi N St. George, 12-IX-1962 (UCDC: 1♂b); Washington Co., Pintura, 11-VIII-1929 (MZHF: 1♂b, 1♀b).

S. uhleri marginatus Ball (11). **UNITED STATES** : ARIZONA: Pinal Co., Sacaton, 10-VII-1930, ex. *Dondia* (junior synymym of *Suaeda*) (USNM: 2♂b, 1♀b); Pinal Co., Sacaton, 23-VII-1931 (USNM: 2♀b); NEVADA: Nye Co., Beatty, (9-12)-VIII-1919 (ANSP: 1♂b, 1♀b).

S. virescens Ball (6). **UNITED STATES**: ARIZONA: Pinal Co., Sacatan, 31-VII-1930 (USNM: 3♂b); Pinal Co., Sacatan, 23-VII-1931 (USNM: 1♂b, 2♀b).

S. viridis Ball (5). **UNITED STATES** : ARIZONA: Winslow, 30-VII-1919 (ANSP: 1♀b); Cochise Co., 14 mi. E. Bowie, 3600 ft., 14-VII-1965, EX: *Atriplex canescens* (LBOB: 1♂b); TEXAS: Culberson Co., 1 mi. N Van Horn, 26-VII-1970, on *Atriplex canescens* (LBOB: 1♂b, 2♀b).

Subgenus *Belonocharis* Uhler

S. abnormis Ball (64). **UNITED STATES**: CALIFORNIA: Amador Co., 5 mi. SW, Pioneer, 3000 ft., 30-VI-1974 (UCDC: 1♂b, 2♀b); Colusa Co., Colusa, 11-IX-1969, sweeping (CDAE: 1♂b); Lassen Co., 8 mi. W. Nubieber, 30-VII-1955 (AMNH: 1♂b); Nadee Co., 2 mi. S. Perez, 29-VII-1955 (AMNH: 1♂b); Napa Co., Samuel Spr., 30-V-1951 (UCDC: 1♀b); Placer Co., Roseville, 13-V-1946 (UCDC: 1♀b); Plumas Co., Quincy, 4 mi. W, 16-VII-1949 (UCDC: 2♂b, 1♀b); Shasta Co., Hat Creek USFS Insect Lab, T34N R4E Sec 16, 19-VII-1994, ex. Greenleaf manzanita - *Arctostaphylos patula* (WSUC: 1♂b, 2♀b); Shasta Co., Hat Creek USFS Insect Lab, T34N R4E Sec 16, 21-VII-1994, ex. Greenleaf manzanita - *Arctostaphylos patula* (WSUC: 1♂b); Shasta Co., 5 mi. N French Gulch, 31-VII1955 (AMNH: 1♀b); Shasta Co., 6 mi. NW McArthur, 24-VII-1964 (AMNH: 1♀b); Sierra Co., 6 mi. NE Sattley, 24-VII-1971 (UCDC: 1♂b); Siskiyou Co., Yreka, 25-VI-1974 (CDAE: 2♂b, 1♀b); Siskiyou Co., Mt. Hebron Summit, 5-VIII-1961 (AMNH: 1♂b); Siskiyou Co., Swallows, 13 mi. N Yreka, 14-VI-1978 (UCDC: 1♀b); Yolo Co., Rumsey, 27-VI-1913, creek bed (CDAE: 1♀b); IDAHO: Kootenai Co., Athol, 24-VII-1962 (UDCC: 1♂b); OREGON: Jackson Co., Gold Hill, 21-VII-1967, *Eriogonum* (AMNH: 1♀b); Josephine Co., Murphy, 22-VII-1941, on thistle (AMNH: 1♀b); Klamath Co., Bly Mt., *Purshia tridentata*, 28-VIII-1962 (AMNH: 1♀b); WASHINGTON: Asoton Co., Clarkston, 2-VII-1949 (WSUC: 1♂b); Benton Co., Rattlesnake Ridge, Hanford A.E.C. Res., 10-VIII-1967, Foliage of *Chrysothamnus viscidifloris*, el. 3000 ft., head of Snively Canyon (WSUC: 2♂b); Benton Co., Rattlesnake

Ridge, Hanford A.E.C. Res., 17-VIII-1967, Foliage of *Artemesia tripartita*, el. 3000 ft., head of Snively Canyon (WSUC: 1♀b); Benton Co., Hanford Site, ALE, dirt rd. off of 1200 Ft. Rd., N46°24.460' W119°33.459', 20-VII-1995, collected at mercury vapor lamp (WSUC: 1♂b); Benton Co., Hanford Site, ALE, Lower Snively Spring, N46°27.583' W119°43.249', 12-VII-1995, collected at mercury vapor lamp (WSUC: 5♂b); Benton Co., Hanford Site, ALE, dirt rd. off of 1200 Ft. Rd., T11N R26E Sec 28., 18-VII-1994 (WSUC: 1♂b, 2♀b); Benton Co., Hanford Site, ALE, Snively Ranch, T11N R25E Sec 8, 7-VII-1994 (WSUC: 1♂b); Benton Co., Hanford Site, ALE, Rattlesnake Spr., T12N R25E Sec 21, 7-VII-1994 (WSUC: 1♀b); Benton Co., Hanford Site, ALE, Lower Snively Spr., T11N R25E Sec 8, 5-VIII-1994 (WSUC: 2♂b, 3♀b); Columbia Co., Dayton, 7 miles north, 16-VII-1957, Roadside, Rabbit Brush (*Chrysothamnus* sp.) predominant (WSUC: 1♀b); Franklin Co., Palouse Falls, 13-VIII-1971 (UDCC: 1♂b); Grant Co., Moses Lake, 20-VII-1962 (WSUC: 1♀b); Spokane Co., Mt. Spokane, 13-VIII-1937, sweeping among pines (WSUC: 3♂b, 5♀b); Spokane Co., Turnbull Wildlife Refuge, Nr. Cheney, 28-VII-1954 (WSUC: 1♂b); Spokane Co., Dartford, Malaise Trap (27-29)-VII-1969 (WSUC: 1♀b); Whitman Co., Smoot Hill, Pullman, 27-VIII-1970, Malaise Trap (WSUC: 1♂b, 1♀b); Whitman Co., Colton, 15-VII-1960, virgin prairie survey, ex. *Agropyron*/*Poa* (WSUC: 1♀b).

S. californicus Lawson and Beamer (5). **UNITED STATES** : CALIFORNIA: Riverside Co., 3 mi. N.W. Beaumont, 2540 ft., 20-VIII-1937 (ANSP: 1♂b,

3♀b); San Bernardino Co., Mill Creek, 4200 ft., San Bernardino Mts., 30-VIII-1919 (ANSP: 1♀b).

S. fumidus (Uhler) (18). **UNITED STATES**: CALIFORNIA: Contra Costa Co., near Clayton, 6-VI-1925 (UCDC: 3♂b, 2♀b); Glenn Co., Ham(ilton) City, 3-VII-1970, ex. Corn (*Zea mays*) (CDAE: 1♀m); Inyo Co., 3 mi. W. Big Pine, 24-VI-1971 (UCDC: 1♂m); Sacramento Co., Carmichael, 18-VII-1965, sweeping pool (CDAE: 1♂m); Shasta Co., 8 mi. NW McArthur, 24-VII-1964 (AMNH: 3♂b); Sutter Co., Live Oak, 12-VI-1970, ex. Artichoke (= *Cynara cardunculus*) (CDAE: 1♂m); Sutter Co., Robbins, 7-VII-1965, ex *Xanthium* sp. (CDAE: 1♀b); Yolo Co., Woodland, 28-VII-1953 (UCDC: 1♀b); Yolo Co., Davis, 24-VII-1955 (UCDC: 1♂b); Yolo Co., Davis, 11-VII-1953 (UCDC: 1♂b); Yolo Co., Davis, 3-VI-1949 (UCDC: 1♀m); OREGON: Jackson Co., Rogue Elk, 16-VII-1923 (UCDC: 1♀b)

S. pallidus Uhler (11). **UNITED STATES**: CALIFORNIA: Fresno Co., 3 mi. W. Tollhouse, 27-VI-1961, in car (UCDC: 1♀m); Kern Co., Mill Potrero, 6-VII-1959 (UCDC: 1♀m); Los Angeles Co., Sangas, 20-V-1969 sweeping (UCDC: 1♀m); Riverside Co., San Bernardino National Forest, Mormon Rocks nr. Stone Basin Rd. N34°21.328' W117°31.844, alt. 1210m., 17-VIII-2005, Sweeping (Mojave Desert) (UDCC: 1♂b, 1♀m); Santa Barbera Co., Santa Ynez Mts., 24-VI-1959 (UCDC: 1♂b); San Diego Co., Julian, 30-VI-1942 (UCDC: 1♂b); San Diego Co., Mt. Palomar, 21-VII-1959 (UCDC: 1♂b); San Diego Co., Solana beach, 23-VI-1963 (UCDC: 1♀b); San Diego Co., Banner, 6 mi. E., 26-VI-1963 (UCDC: 1♂b); Ventura Co., Westlake Vlg., 1-VII-1970, ex. *Eriogonum fasciculatum* (UCDC: 1♂b).

S. pallidus punctatus Lawson and Beamer (1). **UNITED STATES** : CALIFORNIA: San Diego Co., San Diego, 25-VIII-1927 (compared with type) (USNM: 1♂b).

Brachytaosa Muir, 1931:474-475

(Figure 31)

= *Brachytaosa* Muir, 1931:474. Type species: *B. venturii* Muir, 1931, by original designation.

Original Description.

"The head and thorax of this genus are similar to those of Taosa but the carinae are obscure; the tegmina are very different, being short, diagonally truncate at apex, leathery, and broken up into innumerable small, irregular cells by irregular cross veins, the only portion free from these cells being the extreme base of corium.

The vertex separated from the frons by a transverse carina with a small triangular area where it meets the lateral carinae; an obscure median longitudinal carina; the carinae very obscure. Frons longer than wide, lateral margins sinuate; three longitudinal carinae, the intermediates curving and meeting at the base; all very obscure. Clypeus tricarinate, the base projecting, rounding into apex of frons (clypeal suture arcuate). Pronotum short, the carinae very obscure; mesonotum short, obscurely tricarinate. Legs moderately long, simple, front tibiae only longer than the femora. Hind tibiae with five to six spines on side, apex expanded with a simple row of eight moderately large spines; hind basitarsus long, expanded at apex with an anterior row of fifteen or sixteen minute spines, the outermost pair the largest,

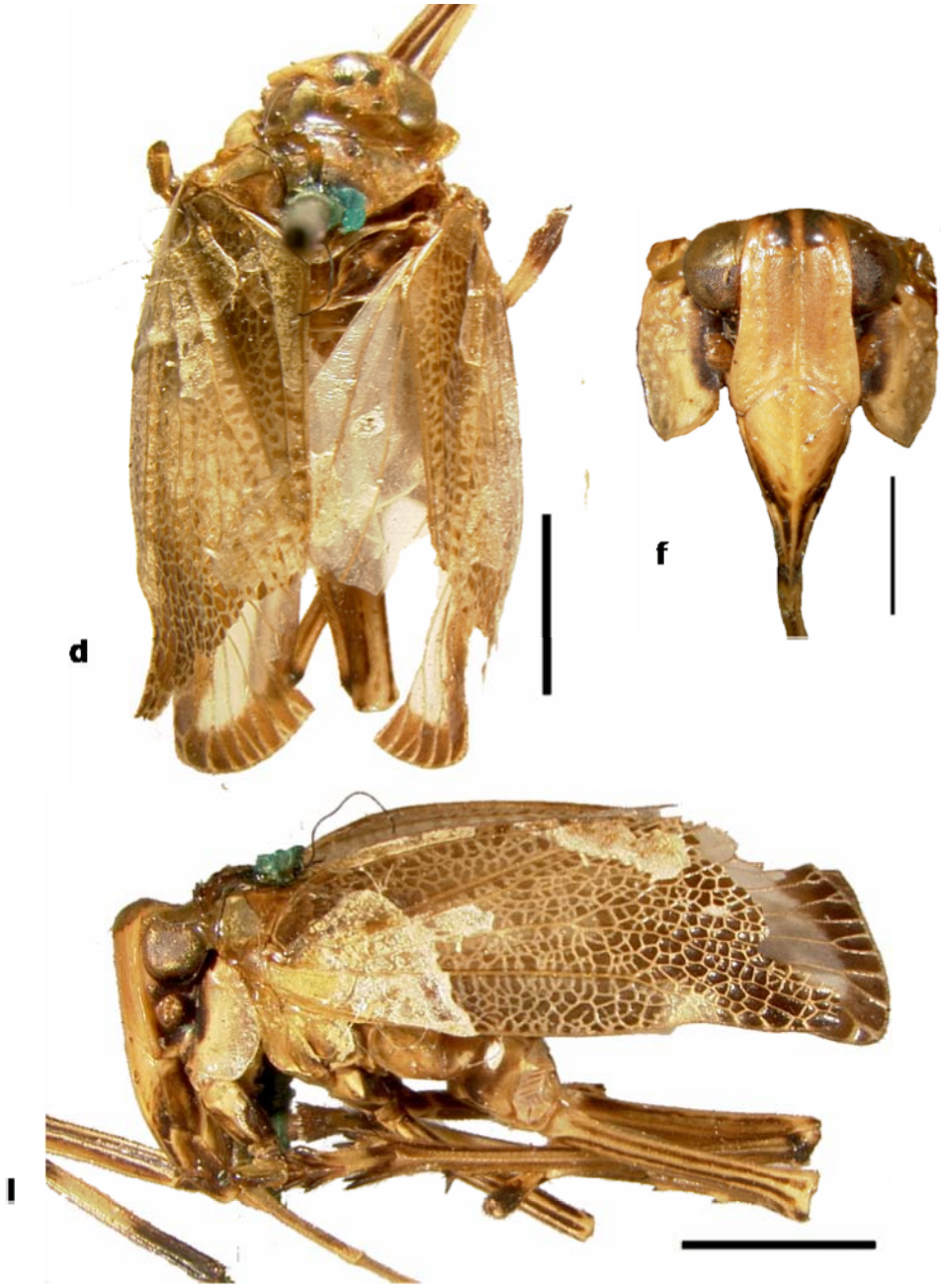

Figure 31. Dorsal (d), lateral (l) and frontal (f) habitus of *Brachytaosa venturii*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

with a row of white flattened small hairs arising behind them; second tarsus fairly large, expanded anteriorly with a similar row of spines and hairs to the basitarsus. Tegmina extending only beyond the abdomen; apex obliquely truncate; claval veins forking about middle of clavus, entering commissure before apex. Main veins obscured on account of the network of cross veins; Sc + R not forking or not before node; M forking a little before the apex of clavus, Cu somewhat basad of that, M arising from posterior cell not joining Sc + R. Tegulae present."

Diagnosis.

Like *Phylloscelis*, *Brachytaosa* lacks a cephalic projection and a callosity behind the eye and the forelegs are flattened and laterally expanded. Though the forewings are thickened, they are not quite brachypterous, the apex extending to just beyond the apex of the abdomen, and hindwings are present. Crossveins are present throughout the wings, including the clavus and the posterior half of the corium, lacking any organization.

Description.

Head short and wide, lacking a cephalic projection. Vertex subrectangular; about twice as wide as median length; anterior, lateral and posterior margins carinate; anterior margin convex; lateral margins subparallel posteriorly; hind margin straight, notched medially; median carina obscure, present in anterior half to middle of vertex; in profile, flat. Frons spatulate, about twice as long as wide; subparallel anteriorly, posterior half broadly expanded laterally; median and intermediate carinae complete; frontal plate smooth; in profile, strongly convex above, flat below. Frontoclypeal

suture inversely U-shaped, sometimes M-shaped, arcuate on either side of median and pointed posteriorly at median. Clypeus convex, in profile; median and lateral carinae complete; clypeal plates transversely striate; postclypeus with a slight, darkened depression on either side of median carina anteriorly. Beak moderately long, exceeding metacoxae. Eyes large, subhemispherical, emarginate ventrally; width about 1.5x that of vertex; lacks a callosity behind eye. Ocellus below midline of eye. Antennal socket about one scape-width from eye margin; scape subglobose, expanded dorsally; flagellum anterior.

Pronotum short, collarlike, subrectangular; anterior margin very broadly convex; posterior margin obtusely angulate, lacking median notch; median carina complete; intermediate carinae lacking; a single lateral carina directly behind and ventral to eye, diminishing anteriorly; pronotal plate smooth. Mesonotum tricarinate; the median carina diminishing before reaching posterior margin; lateral carinae convergent anteriorly and diminishing above. Tegula lacking carinae.

Forewings macropterous, membranous, highly reticulate throughout both clavus and corium; intervannal areas tegminous, cloudy, darkened; pterostigma present, pale; costal margin concolorous with other wing veins; veins lacking setae. Crossvein reticulation occurring throughout the wing, lacking organization. Sc 1-branched, diverging from RA between the anterior half and third. RA 3-branched. RP diverges from Sc+R in anterior half, proximal to nodal line. MP diverging from Sc+R at posterior cell. Anal veins convergent in posterior half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; many crossveins within clavus.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with short, wide posterior spine; tibiae subequal to longer than femora, lack lateral and anterior spines. Metacoxae with a relatively long, narrow posteriorly projecting spine. Hind tibiae with 5 preanterior and 7 to 8 anterior spines; basal tarsomere with 16 to 17 anterior spines; penultimate tarsomere with 16 anterior spines.

Species Composition.

This genus is only represented by *Brachytaosa venturii* Muir 1931.

Geographic Distribution.

Argentina.

Host Plants.

No host plants reported.

Type Material Examined.

B. venturii Muir (1). Paratype (1): **ARGENTINA**: Gob. Chaco, S(anta) Venturi, 13-X-1897 (BMNH: 1 undet. m).

Phylloscelis Germar, 1839:191

(Figure 32)

= *Phylloscelis* Germar, 1839:191. Type species: *P. pallescens* Germar, 1839, by original designation.

= *Phyloscelis* Germar, 1839. Incorrect subsequent spelling by Melichar, 1912:29.

= *Phyllescelis* Germar, 1839. Incorrect subsequent spelling by Metcalf, 1923:154.

Original Description.

"Aus der Familie der Fulgorinen, Issus nahe stehend, auch Eurybrachys verwandt, aber durch Mangel der Flügel, blattförmig erweiterte Vorderschenkel, kleinen Kopf mit schmaler fünfkieliger Stirn und lange sechsstachelige Hinterschienen unterschieden. Kopf klein, von oben geschen fast halbkugelig, mit groſsen Augen und kleinem, fast dreieckigen, gerandeten Scheitel. Stirn und Kopfschild zusammen eine langgezogene schmale Ellipse bildend, die ringsum gerandet und mit einem durchlaufenden Mittelkiel versehen ist, zwei andere Kiele auf der Stirn verschwinden nach dem Scheitel hin. Fühler kurz, das zweite Glied birnförmig. Wangen schmal, senkrecht. Nebenaugen fehlen. Rücken viel breiter als lang, rhombisch, Vorderrücken kürzer als der Hinterrücken. Deckschilde zusammen ein Gewölbe für den Hinterleib bildend, dessen Sdepressionze kaum überragend, mit gabelförmig sich theilenden Längsadern, aber ohne Queeradern. Beine schlank, die Vorderschenkel mit groſser blattförmiger Erweiterung, die Hinterschienen verlängert, mit sechs Stacheln >> Auſsenrande und einem Stachelkranz an der Sdepressionz, die hintertarsen mit Seitenzahnen an den zwei ersten Gliedern.

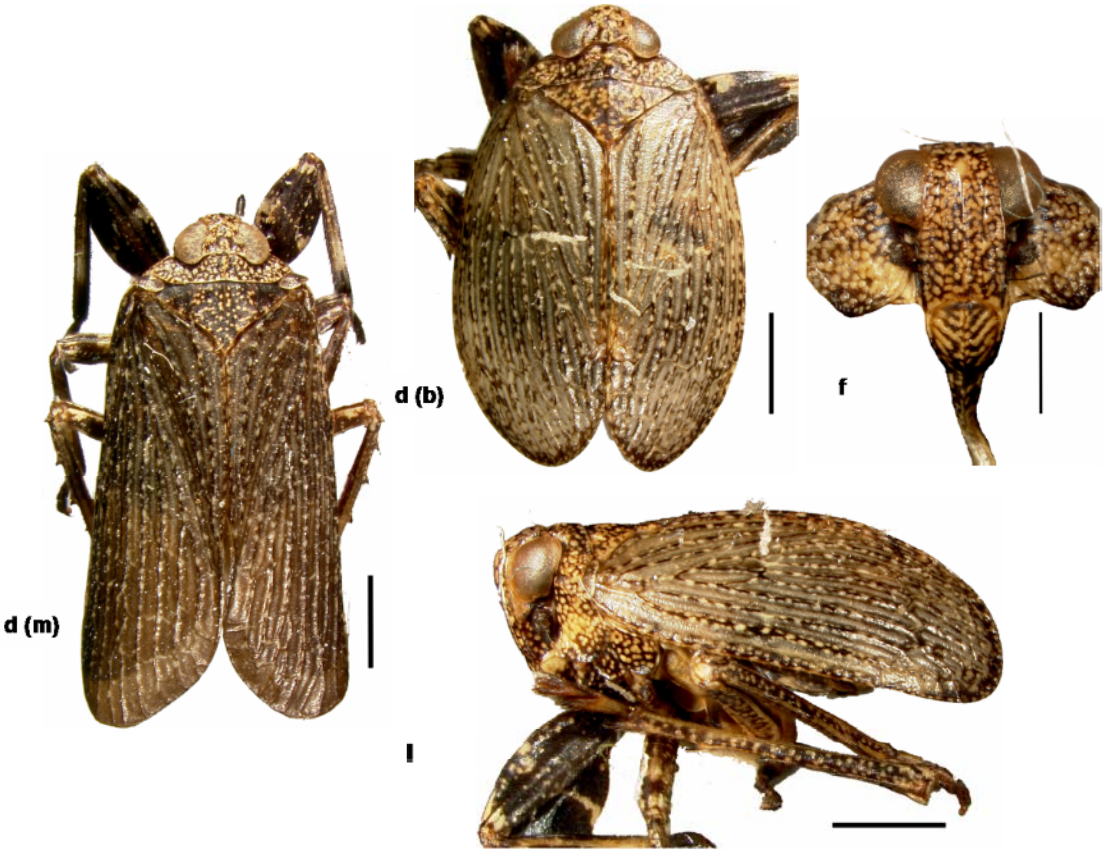

Figure 32. Dorsal (d), lateral (l) and frontal (f) habitus of *Phylloscelis pallescens.* Scale bar – Dorsal (both): 1.0mm; Lateral: 1.0mm; Front: 0.7mm.

Die schen früher von mir (Magaz. d. Entomol. III. S. 192) gemachte Bemenkung, daſs bei den Fulgorinen der Aderverlauf der Deckschilde sehr abändere, findet bei den beiden Arten dieser Gattung eine sehr auffallende Bestätigung."

Translation.

Out of the family Fulgoridae, similar to *Issus*, and also related to *Eurybrachys*, except for the lack of hindwings, foliaceous front femora, small head with five carinae on the narrow forehead and long, six-spined hind tibiae. Small head, nearly hemispherical from above with bulging eyes and a small, almost triangular, bumpy vertex. Frons and head process together forming a narrow elongate ellipse, which is bumpy and contains a complete median carina and two additional carinae that disappear at vertex. Beak short, the second segment conical. Cheeks narrow, vertically oriented. Callous behind eye missing. Thorax wider than long, rhomboid, prothorax shorter than mesothorax. Forewings together encasing the abdomen, the apical margins barely protruding beyond the abdomen, with forked longitudinal veins themselves dividing, but lacking crossveins. Legs slender, the front femora with greatly expanded foliacius expanded, the hind legs elongate, with six spines >> Apical margin with a ring of pointed barbs, hind tarsi with seven spines on the first two segments.

The earlier description by me (Magaz d. Entomol. III. P. 192) noted that, in Fulgoridae the course of the vein of the forewings is variable, shows that this description confirms the two species of this gensus.

Diagnosis.

Phylloscelis lacks a cephalic process, the vertex ending at the anterior margin of the eyes. Unlike *Scolops* and *Sicorisia*, the head is smooth directly behind the eye,

lacking a callosity. The forewings are generally brachypterous, though a few individuals in the population are macropters, with greatly simplified venation and few crossveins. The crossveins that are present are restricted to the anterior half, forming two or three loosely organized rows of cells. The forelegs are flattened and greatly expanded laterally.

Description.

Head short and wide, lacking cephalic projection. Vertex short, frontal plate visible from above, subequal in width and length; anterior, lateral and posterior margins carinate; anterior margin broadly convex; lateral margins divergent posteriorly; hind margin truncate; median carina complete; vertical plate tuberculate posteriorly; in profile, flat. Frons spade-shaped, convergent anteriorly, subparallel below; median and intermediate carinae complete, intermediaries parallel with lateral margin; frontal plate with raised bumps, often clustered along carinae; in profile, strongly concave, especially anteriorly. Frontoclypeal suture an inverted U-shape. Clypeus convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak moderately long, exceeding metacoxae. Eye moderately large, subhemispherical, emarginate posteriorly; subequal in width and length, about as wide as vertex; lacking prominent callosity behind eye. Ocelli anterad of midline of eye. Antennal socket about one-half scape-width from margin of eye; scape subglobose; flagellum anterior.

Pronotum short, collarlike, subrectangular; anterior margin truncate; posterior margin nearly straight, lacking median notch; median carina complete; intermediate carinae obscure, widely divergent posteriorly, diminishing near middle of pronotal

plate; two subparallel lateral carinae, the ventral-most complete and the dorsal-most extending from posterior margin before diminishing anteriorly; pronotal plate with raised bumps throughout. Mesonotum weakly tricarinate; median carina stronger, diminishing before reaching posterior margin; lateral carinae very obscure, follow anterior margin, convex posteriorly; mesonotal plate tuberculate. Tegula lacking carinae.

Forewings brachypterous, exceeding tip of abdomen, or macropterous; intervannal areas tegminous, darkened; pterostigma absent; costal margin concolorous with other wing veins. Crossveins in the apical third of forewing, forming one or two anterior rows of cells. Venation reduced in *P. atra* , with few branches from the longitudinal veins. In other species, Sc 1-branched, contiguous with R to anterior third. RA+RP 1- to 4-branched, difficult to distinguish. MP 3- to 5-branched; diverging from Sc+R at posterior cell. CuA 4- to 8-branched. Anal veins convergent in anterior half to third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; crossvein between A1 and CuP absent.

Profemora foliaceous; meso- and metafemora and pro- and mesotibiae moderately expanded. Procoxae lacking posterior spine, mesocoxae with a very short, stout posterior spine; tibiae and femora subequal in length, lack lateral and anterior spines. Metacoxae with a short, narrow posteriorly projecting spine. Hind tibiae with 4 to 6 preanterior and 7 to 8 anterior spines; basal tarsomere with 9 to 12 anterior spines; penultimate tarsomere with 10 to 11 anterior spines.

Species Composition.

This genus contains four species: *P. atra* Germar, 1839, *P. pallescens* Germar, 1839 (type species), *P. pennata* Ball, 1937, and *P. rubra* Ball, 1930. *P. atra* and *P. rubra* each have two subspecies, *P. atra atra* Germar, 1839 and *P. atra albovenosa* Melichar, 1906, and *P. rubra rubra* Ball, 1930 and *P. rubra nigra* Ball, 1930, respectively. McPherson and Wilson (1995) presented the most recent and complete key to this genus:

1 Body dark brown to black. 2

1' Body reddish, cream colored, light brown or black with yellow markings. 3

2 Dark brown to black; carina of frons weak and intermittent; mesonotal wings with 8 longitudinal veins, M and CuA1 cells large; anal tube angled in ventrally posterior half. *P. atra atra* Germar 1839

2' Black with cream colored spots on frons and clypeus; carina of frons distinct fading, dorsally; mesonotal wings more than 10 longitudinal veins, cells not as above; anal tube not as above. *P. rubra nigra* Ball 1930

3 Body yellow; mesonotal wings black with yellow veins, 8 longitudinal veins, M and CuA1 cells large; anal tube angled ventrally in posterior half; male, endosome bulbous, smooth, bifurcating to just dorsolateral of endosomal process; female with width of median gonapophysis of the 9th abdominal segment narrowest portion at least two-thirdsX width of widest distal portion, distal process angled ca. 45º narrowing strongly toward apex; gonapophysis of the 8th abdominal segment, in profile, with posteriormost tooth short and weak. *P. atra albovenosa* Melichar 1906

3' Body reddish, cream or light brown; mesonotal wings, if dark colored, lacking yellow veins, and with 10 or more longitudinal veins; anal tube almost straight; male, endosoma, if smooth, does not bifurcate; female with width of median gonapophysis of the 9th abdominal segment narrowest portion at least 3/4X width of widest distal portion, distal process angled ca. 30º or less; gonapophysis of the 8th abdominal segment, in profile, with posteriormost tooth either distinct or rudimentary. 4

4 Body reddish; branches of anterior cubitus of mesonotal wings with numerous cross-veins; male endosoma bulbous with many folds, bifurcating into distinct lateral processes; female median gonapophysis of the 9th abdominal segment narrowing strongly toward apex; gonapophysis of the 8th abdominal segment, in profile, with posteriormost tooth rudimentary. *P. rubra rubra* Ball 1930

4' Body cream colored to brown, generally with numerous cream colored spots; branches of anterior cubitus of the mesonotal wings with few to no cross-veins; male endosoma with few to no folds and not bifurcating into distinct lateral processes; female median gonapophysis of the 9th abdominal segment almost truncate, rounded toward apex; median gonapophysis of the 8th abdominal segment with posteriormost tooth pronounced. 5

5 Body brown with numerous cream colored spots; carina of frons distinct and entire; anterior cubitus 2 vein of mesonotal wing branching in posterior 1/3, cross-venation between most veins in distal ½; male dorsal

process of style in distal ¼, process 1/4X height of syle; endosoma smooth with no dorsally raised process in lateral view; aedeagus diameter 1/6X length; female gonapophysis of the 9th abdominal segment almost truncate, rounded toward apex; median gonapophysis of the 8th abdominal segment with posteriormost tooth pronounced.

P. pallescens Germar 1839

5' Body cream colored with brown; longitudinal carina of frons weak and intermittent; media and anterior cubitus 1 veins of mesothoracic wings branching in posterior ¼, cross-venation between most veins in distal ¼; male dorsal process of style in distal ½, process 1/2X style height; aedeagus diameter 1/4X length; endosoma, in profile, a raised process beginning ½ aedeagus length ending as a double fold at apex of aedeagus. *P. pennata* Ball 1937

Geographic Distribution.

Mexico, United States.

Host Plants.

Anacardiaceae: *Rhus copallina* (New Record); Ericaceae: *Vaccinium macrocarpon* (Sirrine and Fulton, 1914); Lamiaceae: *Pycnathemum tenuifolium* (Wilson *et al.*, 1994); Solanaceae: *Solanum* sp. (New Record).

Specimens Examined.

P. atra Germar (59). **UNITED STATES** : ILLINOIS: Cook Co., Eggers, S. Chicago, 23-VII-1921 (FMNH: 2♀m); Jackson Co., Grand Tower, 5-VIII-1909, Sweeping, Bake Oven (INHS: 1♂b); Johnson Co., Vienna, 29-VII-1934 (INHS: 1♀b); Pope Co., Brownfield, 17-VIII-1916 (INHS: 1♂b); Pope Co., Jackson Hollow, 30-VIII-1982 (INHS: 1♂b); Union Co., Wolf Lake, 30-VII-1934 (INHS: 1♂b); Vermilion Co., Kickapoo St. Pk., 18-VIII-1981 (INHS: 1♀m); Vermilion Co., Kickapoo State Park, 15-XI-1979 (INHS: 1♀b); Washington Co., DuBois, 9-VIII-1917 (INHS: 2♂b); IOWA: Johnson Co., Iowa City, 18-VIII-1934 (LBOB: 1♀b); KANSAS: Burbon Co., 12-X-1924 (LBOB: 1♂b, 1♀b); Montgomery Co., 1-IX-1928 (LBOB: 2♂b); KENTUCKY: Jackson Co., Turkey Foot, 10-VIII-1977 (INHS: 1♀b); Jackson Co., Hisel, 13-VIII-1967 (INHS: 1♂b); Pulaski Co., 21-VIII-1971 General Sweep (UTEP: 5♂b, 2♀b); LOUISIANA: East Baton Rouge Parish, Baton Rouge, 19-X-1994 (STDC: 1 undet. b); Natchitoches Parish, Kisatchie Natl. For., Scenic Overlook nr. Depressioncher Plant bog, 20-IX-2003, Sweeping, 31°27'N 93°06'W (STDC: 1♂b); Tangipahoa Parish, Arcola, Sandy Hollow, 5-VI-2003, Sweeping *R. copallina* (STDC: 1♂b); MASSACHUSETTS: Worcester Co., Jefferson, 3-VII-1916 (UDCC: 1♂b); Worcester Co., Jefferson, 4-VII-1916 (UDCC: 1♂b); Worcester Co., Jefferson, 8-VII-1916 (UDCC: 1♂b); MISSISSIPPI: Marshall Co., Holly Springs, 17-IX-1921 (MZHF: 1♂b); Yazoo Co., Yazoo City, 6-VII-1921 (MZHF: 1♂b); MISSOURI: Boone Co., Rockbridge, 22-VIII-1972 (INHS: 1♂b, 1♀b); Boone Co., 30-VII-1972 (INHS: 1♂b); NORTH CAROLINA:

Gaston Co., Crowders MSP, 3-VIII-1999 (D. Flynn Collection: 1♂b); Gaston Co., Crowders MSP, 17-IX-1999 (D. Flynn Collection: 1♂b, 4♀b); Gaston Co., Crowders MSP, 20-IX-1999 (D. Flynn Collection: 2♀b); Gaston Co., Moss Farm, 15-IX-1999 (D. Flynn Collection: 1♂b); Gaston Co., Moss Farm, 39°11.2' N 81°13.6'W, 7-VIII-2004, Gated Meadow, On Car Windshield (D. Flynn Collection: 1♀b); PENNSYLVANIA: Bedford Co., W. side of Ray's Hill, 1 mi. E. of Breezewood, 1750 ft., 23-VII-1960 (ANSP: 1♀b); OHIO: Adams Co., 1-IX-1931 (LBOB: 3♂b); Hamilton Co., Sharon Woods, 29-VIII-1976 (D. Flynn Collection: 1♀b); Hocking Co., 10-X-1931, Dusting Scrub Pine (LBOB: 1♀b); TENNESSEE: Cocke Co., GRSM (Great Smokey Mountains N.P.), 35.77771N 83.21354W, 610m., Cosby Guest House, 12-VIII-2006, Ex. Hg Vapor Light (UDCC: 1♀m); TEXAS: Dallas Co., Dallas, White Rock Park, 21-VIII-2006, Nets (UDCC: 1♂b); Wharton Co., 2 mi. NW E. Bernard, 14-VII-1984 (WFBM: 1♂b, 2♀m); VIRGINIA: Loudoun Co., Leesburg, 9-IX-1919 (UDCC: 1♂b, 2♀b).

P. pallescens Germar (16). **UNITED STATES**: FLORIDA: Jefferson Co., Rt. 59, 2.4 mi. S Wicissa, 27-VII-2000, Sweeping (UDCC: 1♀m); Jefferson Co., Wicissa, at Jct. SR259 & SR60, 27-VII-2000, Sweeping Roadside (UDCC: 1♀b); ILLINOIS: Champaign Co., U. of I. South Farms, 11-VII-1981 (INHS: 1♀b); Cook Co., Eggers, S. Chicago, 23-VII-1921 (FMNH: 1♀m); Lee Co., Amboy, 8-VIII-1934 (INHS: 2♂b, 1♀b, 1♂m, 1 undet. m); IOWA: Johnson Co., Iowa City, 12-VIII-1934 (LBOB: 1♀b); LOUISIANA: St. Laundry Parish, Eunice, 19-X-1995 (UDCC: 1♂b); KANSAS: Burbon Co., 12-X-1924 (LBOB: 1♀b); Cowley Co., 11-IX-1928 (LBOB: 1♂b);

KENTUCKY: Pulaski Co., 21-VIII-1971, General Sweep (UTEP: 1♀b); NEW JERSEY: Burlington Co., Riverton, 8-IX-1901 (ANSP: 1♀b); TEXAS: (No Additional Information Provided) (INHS: 1♀b).

P. pennata Ball (7). **UNITED STATES**: TEXAS: Brewster Co., Marathon, 8-VIII-1936 (USNM: 2♂b); Pecos Co. (?), 20 mi. W A. Stocktan, 7-VIII-1959, on *Solanum* (INHS: 2♀b); Tom Green Co., 13 mi. N San Angelo, 20-VIII-1970 (LBOB: 1♂b, 1♀b); Val Verde Co., Comstock, 9-VIII-1936 (USNM: 1♂b).

P. rubra Ball (15). **UNITED STATES**: FLORIDA: Santa Rosa Co., Blackwater R. St. For., 1.6 mi. SW Riley's Ck., 29-VII-1972 (LBOB: 1♂b, 1♀b); Seminole Co., Sanford, 29-VI-1928 (USNM: 1♂b, 1♀b); Seminole Co., Sanford, 15-IX-1927 (USNM: 1♂b, 1♀b); (County Unknown), Farmingdale, 19-VIII-1945 (INHS: 1♂b, 1♀b); NEW JERSEY: Burlington Co., Whitesbog, Quaintance No. 11906, 5-IX-1914, On Cranberry (*Vaccinium macrocarpon*) (USNM: 1♀m); Cape May Co., nr. Belleplaine, Belleplaine S.F., 14-VIII-1998 Sweeping (UDCC: 1♂b); Ocean Co., Stafford's Forge, 31-VIII-1908, Coll. J.A.G. Rehn, Brush (ANSP: 1♀b); Southern, Cranberry Bogs (USNM: 1♀m); NORTH CAROLINA: Bladen Co., c. 5 mi. S Ammon SR242, nr. Bladen Lake S.F., 15-IX-1995 (UDCC: 1♀b); Bladen Co., 5.5 km. SW of Ammon, Road 1325, 19-IX-1981 (UDCC: 1♀b); Bladen Co., Road 1325, 5.5 km. SW of Ammon, 08-IX-1990 (UDCC: 1♂b).

Sicorisia Melichar, 1912:160

(Figure 33)

= *Sicorisia* Melichar, 1912:160, 29 (key), 217 (List). Type species: *S. discreta* Melichar, 1912, by original designation.

= *Sicoris* Melichar, 1912. Incorrect subsequent spelling by Metcalf, 1946:113.

Original Description.

"Scheitel flach, nach vorn vorgezogen und abgerundet, die Seiten und in der Mitte gekielt. Stirn flach, nach oben verschmälert, mit drei parallelen Kielen, welche oben miteinander verbunden sind. Die Seitenkiele in der Mitte der Stirn dem Rande angelehnt, die Seitentälchen daselbst unterbrochen. Clypeus in der Mitte gekielt. Pronotum kurz in der Mitte gekielt, zwei Seitenrandkiele. Schildchen kurz mit drei Kielen. Deckflügel subhyalin, die Hinterleibssdepressionze wenig uberragend, am Ende etwas zugesdepressionzt und abgerundet, mit deutlichen zarten Nerven und zahlreichen unregelmäßig verteilten Quernerven. Stigma fehlt. Clavusnerven in der Mitte des Clavus vereinigt. Flügel rudimentär als schmale längliche Lappen, dem Rücken anliegend. Vorderschenkel nicht erweitert. Hinterschienen mit sechs Dornen."

Translation.

Top of head flattened, extended forward and rounded off, the sides and middle carinate. Frons flattened, narrowing above, with three parallel carinae, which are interconnected above. The lateral edges in the middle of the frons touching the rim, the lateral carinae interrupted there. Clypeus carinate medially. Pronotum with a short median carina, two

Figure 33. Dorsal (d), lateral (l) and frontal (f) habitus of *Sicorisia discreta*. Scale bar - Dorsal: 1.0mm; Lateral: 1.0mm; Front: 0.7mm.

lateral carinae present. Scutum short, tricarinate. Forewing sub-membranous, not reaching the tip of the abdomen, the end somewhat sharpened and rounded off, with clearly delicate longitudinal veins and numerous irregularly distributed crossveins. Stigma absent. Claval nerves united in the middle of the clavus. Rudimentary (hind) wing as narrow oblong flaps, joined posteriorly. Front femora not expanded. Hind tibiae with six spines.

Diagnosis.

The members of this genus are among of the smallest of the Dictyopharinae. The forewings are cloudy and brachypterous, extending to the eighth abdominal segment. As in *Scolops*, the vertex is raised above the plane of the pronotum and produced beyond the anterior margin of the eyes. The head process is straight in lateral view, and much shorter than in *Scolops*, its length about twice its greatest width. The forelegs are slightly expanded.

Description.

Head short and wide; cephalic projection present, but short, the dorsal length beyond anterior margin of eyes equal to or less than the greatest width of the vertex. Vertex about 1.5-2x as long as greatest width; anterior, lateral and posterior margins carinate; median carina complete; anterior margin convex; lateral margin arcuate, outwardly curved; posterior margin concave; in profile, convex, with anterior margin below dorsal margin of eye. Frons with anterior half narrower than posterior half, with margins divergent posteriorly; median and intermediate carinae complete, subparallel; frontal plate smooth medially, ill-defined depressions between the intermediate and lateral carinae; in profile, convex. Frontoclypeal suture an inverted

U-shape. Clypeus convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak very long, extending onto abdomen. Eye large, subelliptical, anterior margin narrower than posterior margin; width and height subequal, about twice as wide as vertex; a prominent ridge-like callosity present behind eye. Ocelli posterad of midline of eye. Antennal scape about three-quarters scape-width from eye margin; scape subglobose; flagellum anterior.

Pronotum very short, collarlike, chevron-shaped; anterior margin broadly concave, notched at median; posterior margin broadly angulate, median notched, about 1.5x as wide along posterior margin as deep; median carina complete; intermediate carinae follow anterior margin, divergent posteriorly, diminishing before reaching posterior margin; two complete, subparallel lateral carinae; single depression between median carina and intermediate carina; irregularly punctate laterad of the intermediate carinae. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, convex posteriorly; a single depression on each fovea, four total. Tegula lacking carinae.

Forewings brachypterous, membranous, but intervannal areas thickened; forewings cover all but the terminal abdominal segments; darkened pterostigma absent; costal margin concolorous with rest of wing. Crossvein reticulation occurring in an irregular pattern in apical third of forewing in *S. discreta* (Melichar, 1912), and in two nearly distinct transverse rows in *S. breviceps* Fennah 1965. Sc and RA unbranched; Sc remains contiguous with RA for most of its length before diverging prior to RA entering the Costal margin. RP 2-branched; diverges from Sc+R in anterior third of wing, just distad of nodal line. MP 2- to 7-branched, some branches contiguous for part of their length; divergent from Sc+R at posterior cell. CuA 3- to

5-branched. Anal veins convergent in anterior third of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; crossvein between A1 and CuP absent.

Pro- and mesothoraxic legs simple, not expanded; pro- and mesocoxae lacking posterior spine; tibiae 1.5 to 2x longer than femora, lack lateral and anterior spines. Metacoxae with a short, wide posteriorly projecting spine. Hind tibiae with 5 to 6 preanterior and 7 to 8 anterior spines; basal tarsomere with 14 to 18 anterior spines; penultimate tarsomere with 13 to 17 anterior spines.

Species Composition.

This genus contains two species: *S. breviceps* Fennah, 1965 and *S. discreta* (Melichar, 1912) (type species). Fennah (1965) produced a key to both species of this genus:

1 Forewings with crossvein reticulation forming two loosely organized rows, remainder of membrane lacking any markings; vertex short, extending only beyond anterior margin of the eyes. *S. breviceps* Fennah 1965

1' Forewings with crossvein reticulation lacking any clear organization, posterior two-thirds transverse brown lines similar in appearance to crossveins of anterior third; about one-third of vertex extending beyond anterior margin of eyes. *S. discreta* (Melichar, 1912)

Geographic Distribution.

Chile.

Host Plants.

Boraginaceae: *Heliotropium stenophyllum* (New Record)

Specimens Examined.

S. breviceps Fennah (4). **CHILE**: 4 km. W. Rungue, P. Santiago, 24-XII-1967, Coll. L. & C.W. O'Brien (LBOB: 1♂, 1♀); 4 km. E. Cartagena, P. Santiago, 1-I-1968, Coll. L. & C.W. O'Brien (LBOB: 1♂, 1♀).

S. discrepans (Melichar) (4). **CHILE**: 28 km. S.W. Ovalle, P. Coquimbo, 14-XII-1967, Coll. L. & C.W. O'Brien, Ex: *Heliotropium* sp. at night (LBOB: 1♂, 1♀); 33 km. S.W. Ovalle, P. Coquimbo, 15-XII-1967, C.W. O'Brien, Ex: *Heliotropium stenophyllum* (LBOB: 1♂, 1♀).

3.2.7 Tribe Sicorini, tribus novem

Original Description and Diagnosis.

The Sicorini identified by the strong concavity of the frons, vertex raised above the level of the pronotum and the cloudy, macropterous forewings, lacking organization in distal reticulation. Unlike the Igavini, the vertex is not greatly narrowed anterad of the eyes and is flat in profile, rather than being bent upward at an angle. As some Scoloptini and Cladodipterini, the front and middle femora are somewhat compressed and laterally expanded.

Remarks.

This group is currently represented by one genus, *Sicoris*, found only in Chile, South America. Superficial morphological and geographic affinities suggest that *Sicorisia* (Scoloptini) or *Taractellus* (Rhynchomitrini) may be phylogenetically allied with this tribe. Available specimens include some undescribed specimens with characters intermediate between *Sicorisia* and *Sicoris*, which are likely to be assigned to a new genus within this tribe.

The tribe consists of a single genus and species in the New World.

Sicoris Stål, 1866:151

(Figure 34)

= *Sicoris* Stål, 1866:151. Type species: *Dictiophora gayi* Spinola, 1852, by origincal designation.

Original Description.

"(1)Tegminibus haud vel vix abbreviates, apicem abdominis saltem attingentibus, saepissime superantibus, clavo distincto. (9)Clavo inter vanam interiorem et suturam clavi vena transversa destituto, vel tegminibus totis venis numerosis transverses ramulosis instructis. (10)Alis completes; tegminibus membranaceis, planis vel planiusculis, apicem abdominis saepissime multo superantibus, areis anterioribus numerosis instructis. (12)Tibiis simplicibus, anticis femoribus longioribus; femoribus anticis raro paullo dilatatis. (13)Articulo secundo antennarum brevi, subgloboso. (21)Thoracis medio antrorsum sensim

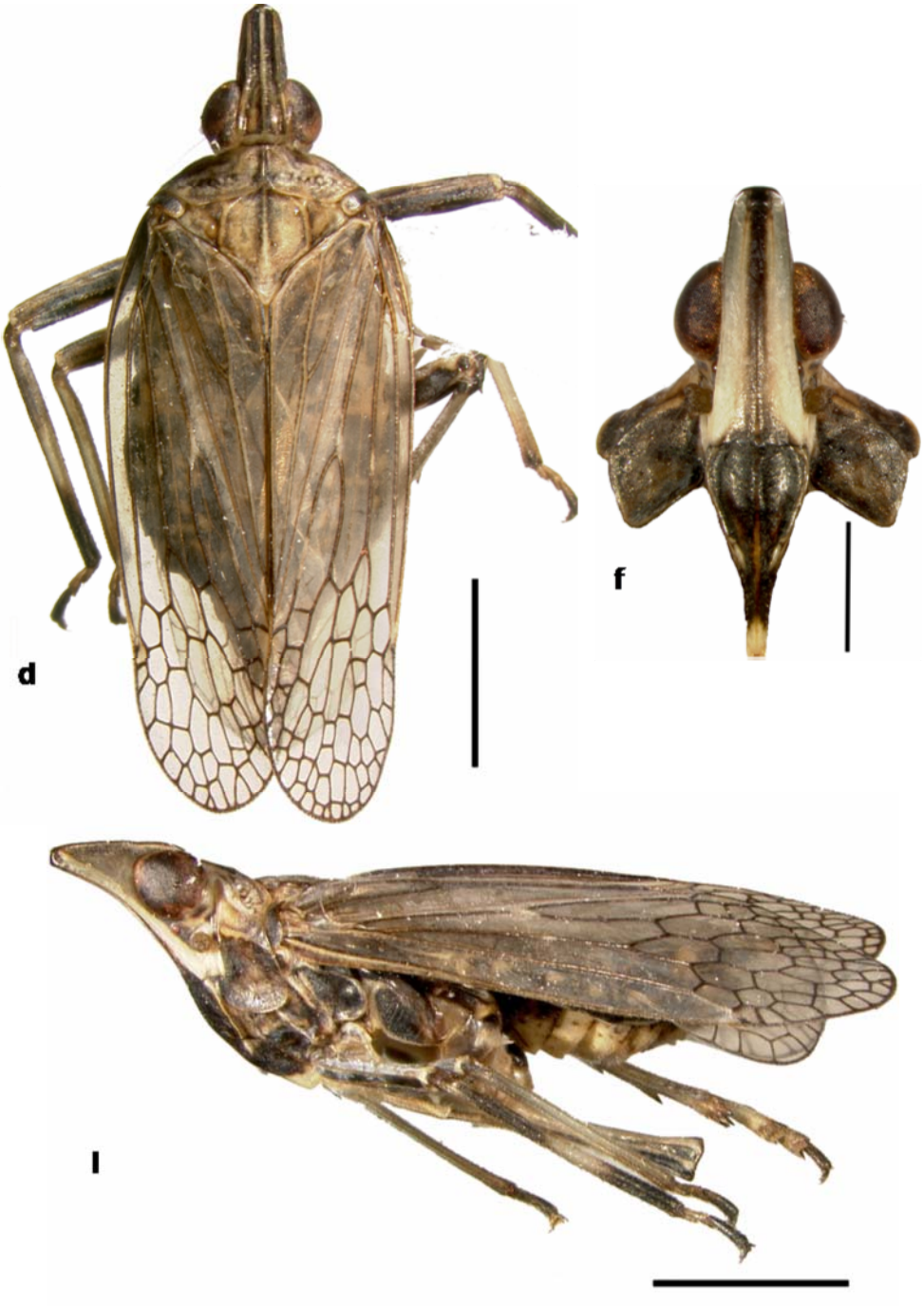

Figure 34. Dorsal (d), lateral (l) and frontal (f) habitus of *Sicoris gayi*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 1.0mm.

elevato; cadepressione producto; fronte scutelloque tricarinatis; thorace unicarinato; tibias postici quinquespinosis." (From Key in Stål, 1866)

Translation.

(1)Forewings not or scarcely abbreviated, at least attaining tip of abdomen, usually surpassing the margin, clavus distinct. (9)Claval veins and claval suture lacking crossveins, or entire forewing reticulate, covered in numberous crossveins. (10)Hindwing present; forewings membranous, flat or gently sloped, greatly surpassing the tip of abdomen, numberous cells in anterior portion. (12)Tibiae simple, anterior femora elongate; hind femora rarely slightly dilated. (13)Second antennal segment short, subglobose. (21)Median of thorax slightly elevated anteriorly; head somewhat produced; prothorax tricarinate; mesothorax unicarinate; hind tibiae with five spines.

Diagnosis.

Generic diagnostic characters are the same as described for the tribe.

Description.

Head longer than wide, cephalic projection present. Vertex elongate, about 2.5 to 3x as long as greatest width; anterior, lateral and posterior margins carinate; median carina complete, but weak; anterior margin broadly convex; lateral margins constricted just anterad of eyes; hind margin truncate; in profile, flat. Frons with lateral margins nearly parallel, converging in anterior third; anterior margin convex; median carina present in posterior half, diminishing in middle of frons; intermediate carinae present in anterior half, diminishing in middle of frons; frontal plate smooth;

in profile, concave. Frontoclypeal suture an inverted U-shape. Clypeus convex, in profile; median carinae complete; lateral carinae complete, but broken at intraclypeal suture. Beak long, exceeding metacoxae. Eye large, subelliptical, narrower anteriorly than posteriorly, emarginate posteriorly; about as wide as high, about 2x as wide as vertex; lacking callosity behind eye. Ocelli posterad of midline of eye. Antennal socket about 1.5 scape-widths from eye margin; scape subglobose; flagellum anterior.

Pronotum short, collarlike, chevron-shaped; about 7 to 8x as wide as long; anterior margin convex; posterior margin broadly angulate, median notch present, about as deep as posterior width; median carina complete; intermediate carinae follow anterior margin, diverging posteriorly, diminishing before reaching posterior margin; two lateral carinae, the ventral-most complete and the dorsal-most extending from posterior margin before diminishing anteriorly; area between median carina and intermediate carina smooth; area between intermediate and interior lateral and between the interior and exterior lateral carinae with pale tubercles. Mesonotum tricarinate; median carina diminishing before reaching posterior margin; lateral carinae complete, arching outward posteriorly; mesonotum otherwise smooth. Tegula lacking carinae.

Forewings macropterous, membranous; forewings exceed tip of abdomen; darkened pterostigma absent; costal margin concolorous with other wing veins. Crossvein reticulation occurring in anterior third of forwing, nearly arranged in 3 rows, but with many cells and crossveins disrupting the regularity. Sc+RA 3- to 4-branched, Sc probably the initial anterior branch. RP 2- or 3-branched; diverges from Sc+R in anterior third of wing, just distad of nodal line. MP 8- to 9-branched; posteriorly contiguous with Sc+R, length of common vein about half the length of

posterior cell. CuA 3- to 4-branched. Anal veins convergent in anterior half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; crossvein between A1 and CuP absent.

Pro- and mesothoraxic coxae lacking posterior spine; femora moderately expanded, especially pro-femora; tibiae longer than femora, lack lateral and anterior spines. Metacoxae with a narrow, posteriorly projecting spine. Hind tibiae with 4 to 6 preanterior and 7 to 8 anterior spines; basal tarsomere with 22 to 25 anterior spines; penultimate tarsomere with 19 to 21 anterior spines.

Species Composition.

This genus is only represented by *Sicoris gayi* (Spinola 1852).

Geographic Distribution.

Chile.

Host Plants.

No host plants reported.

Specimens Examined.

S. gayi (Spinola) (10). **CHILE**: San Jose de Maipo, P. Santiago, 26-XII-1967 (LBOB: 1♂); 23 km. N. of Rancagua, O'Higgins, 21-XII-1950 (LBOB: 1♀); Region Metropolitana, Maipo River Valley near Manzano, S33 35' 13.5", W070 23' 0.2", Alt. 955 m, 24-I-2006, Sweeping (day), Hg Vapor Lamp (night), Matorral – Sclerophyllous shrub with cactus (USNM: 1♀); Santiago,

Q Macul, 20-II-1983 (FMNH: 1♂); Maipo, Rio San Jose, 1500m, 12-II-1984 (FMNH: 3♂, 2♀); Rancagua, Reed 2, 1956 (USNM: 1♀).

3.2.8 Tribe Taosini Emeljanov, 1983

Original Description.

(From Key in Emeljanov, 1983)

"1 Wings fully developed, membranous, and flat. Stem divides into anterior and posterior branches (ScRA and RP) before pterostigma, and posterior branch in turn branches before its termination. Common stem of Pcu + A1 long, occupying at least half length of clavus.

2 Remigium (corium + membrane) has only two rows of cross veins – nodal and subanterior. First branching of M is either distal to first branching of ScR or proximal to first branching of CuA

5 Remigium has at least three rows of cross veins, rows usually being out of alignment, but in each field running along whole length of membrane; number of cross veins at least three. First branching of M proximal to first branching of ScR, but distal to first branching of CuA.

9 ScR and M extend from posterior cell in common stem, which is longer (usually considerably longer) than the arculus. Anterior branch of CuA branches proximally to nodal cross vein mcu. Nodal cross vein rm located distally to first branching of MA, or on it, or only proximally to it; RP usually has four or five branches.

11 Pterostigma narrow, no wider than Costal field; its posterior margin gently arcuate and does not project rearward.

15 Ovipositor of secondary prickly-sawtoothed type, narrow, attenuate; lower parts of its third valves strongly sclerotized, very narrow, and envelop first and second segments like jacket."

Diagnosis.

The Taosini resemble the Cladodipterini, but lack crossveins in the clavus. They can be identified by the broad, short head lacking a cephalic process and broad frons. The forewings are long and membranous, the apex and pterostigma darkened, resemblining those of the Cladodipterini. The front tibiae are elongate, about 1.5x as long as the femora.

Remarks.

This tribe originally included *Rhynchomitra*, *Protachilus*, and *Mitrops* based on similarity in female genetalia (Emeljanov, 1983); however, this grouping seems unnatural given that *Taosa* unique morphological characters similar to the Cladodipterini. *Taosa* shares a wide head (wider than long), rounded vertex (lacking a head process) and similar wing venation with *Protachilus* (which is probably way Emeljanov placed them together in the same tribe) and the other Cladodipterini, except that it lacks a crossvein in the clavus and possesses a median carina on the frons. *Rhynchmitra* and *Mitrops* have been included in a new tribe, Rhynchomitrini, while *Protachilus* has been tentatively placed in the Cladodipterini, though it is acknowledged that it may constitute a unique tribe, in and of itself.

The tribe consists of a single genus and 17 species in the New World.

Taosa Distant, 1906:7

(Figure 35)

= *Taosa* Distant, 1906:355. Type species: *Flata suturalis* Germar, 1830, by original designation.

Original Description.

"Head not produced in front, rotundately truncate a little in front of eyes, front broader at apex than at base, lateral margins subparallel; face moderately broad, ampliated on each side before clypeus, obscurely tricarinate, the central carination distinct; clypeus strongly centrally carinate; pronotum only about half the length of front of head centrally carinate; mesontum more than threex longer than pronotum, tricarinate; tegmina threex as long as broad, ampliated towards apex, anterior third with three series of transverse veins defining more or less clearly three series of cellular areas; wings broader than tegmina, with some anterior marginal transverse and forked veins; posterior tibiae with four spines, one being at extreme base."

Diagnosis.

Diagnostic characters as described for the tribe.

Description.

Head wider than long, lacking a cephalic projection. Vertex subrectangular posteriorly and convergent anteriorly, about 1 to 2x as wide as median length;

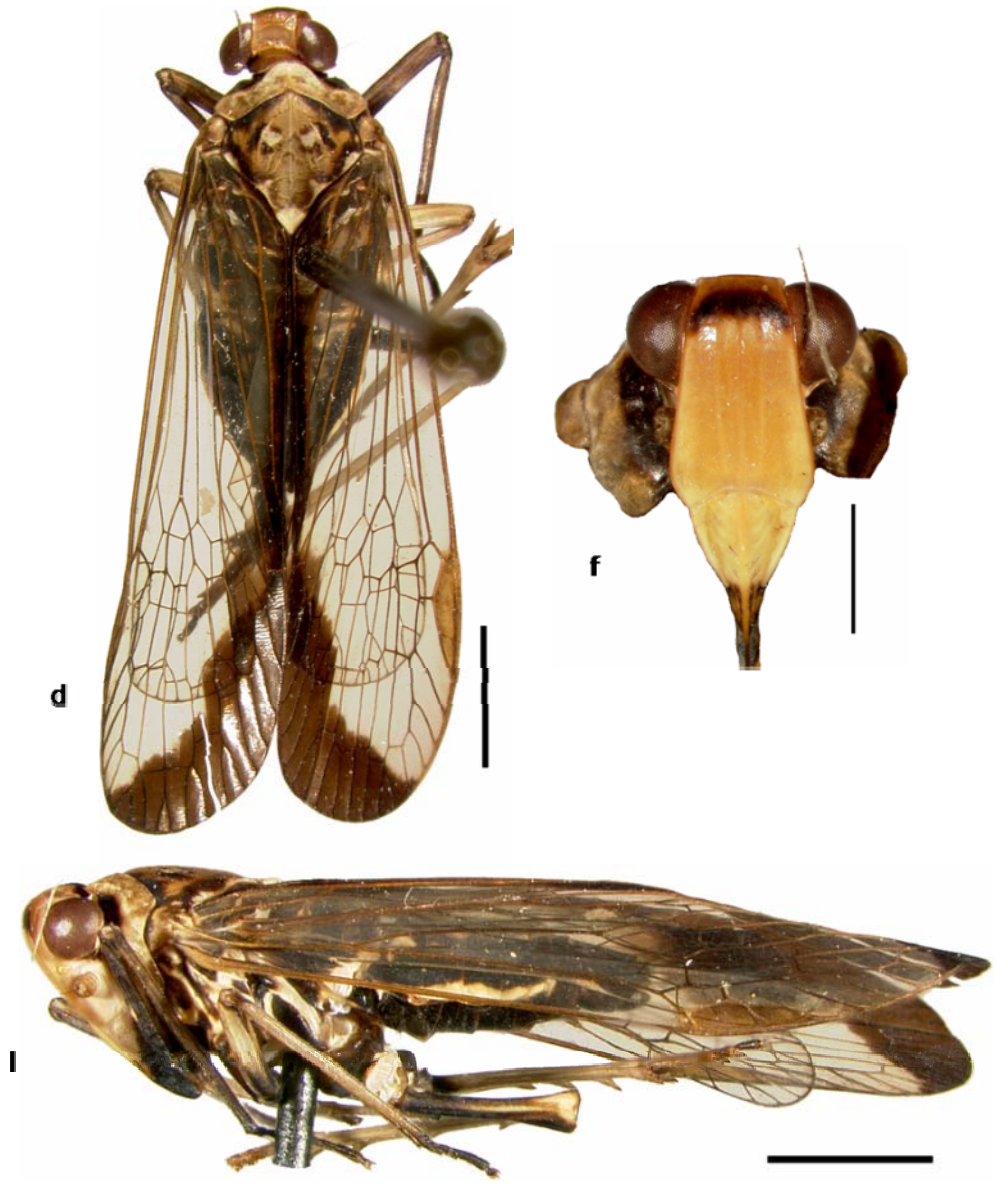

Figure 35. Dorsal (d), lateral (l) and frontal (f) habitus of *Taosa suturalis*. Scale bar - Dorsal: 2.0mm; Lateral: 2.0mm; Front: 0.9mm.

anterior, lateral and posterior margins carinate, lacking a median carina; anterior margin broadly convex; lateral margins subparallel posteriorly; posterior margin straight to broadly angulate; vertical plate with a slight depression submedially; in profile, flat. Frons about 2 to 2.5x as long as wide; anterior half roughly parallel, posterior half expanded laterally; median and intermediate carinae subparallel and complete, but weak; frontal plate smooth; in profile, convex. Frontoclypeal suture inversely U-shaped, sometimes with downward-projecting point at median (thus, M-shaped). Clypeus convex, in profile; median and lateral carinae complete; clypeal plates transversely striate. Beak exceeding metacoxae. Eyes moderately large, subhemispherical; about as wide as high, about as wide as vertex; small callosity behind eye present. Ocellus anterad of midline of eye. Antennal socket about one scape-width from eye margin; scape subglobose; flagellum anterior.

Pronotum short, collarlike, cheveron-shaped; anterior margin broadly convex; posterior margin broadly concave, lacking median notch; median carina prominent in posterior half, diminishing in anterior third of pronotal plate; intermediate carinae follow anterior margin, divergent posteriorly, diminishing before reaching posterior margin; a single lateral carina directly behind and below eye, present posteriorly, diminishing in anterior third; pronotal plate smooth, with a single depression between median and intermediate carinae. Mesonotum tricarinate; the median carina diminishing before reaching posterior margin; lateral carinae complete, subparallel posteriorly. Tegula lacking carinae, but quite concave, the dorsal-most third bent around Costal margin of forewing.

Forewings macropterous, membranous; often with darkened membrane along the anterior margin; forewings exceed tip of abdomen; darkened pterostigma present;

costal margin concolorous with other wing veins; veins lacking setae. Crossvein reticulation occurring in apical third of forewing, forming three bands of cells. Sc 1- to 2-branched, diverging from RA between the anterior half and third. RA 3- to 4-branched. RP 4- to 6-branched; diverges from Sc+R in anterior half, proximal to nodal line. MP 7- to 8-branched; contiguous with ScR, length of common vein subequal to length of posterior cell. CuA 5- to 6-branched. Anal veins convergent in posterior third to half of clavus; contiguous vein A enters posterior margin prior to convergence with CuP; clavus lacking crossveins.

Pro- and mesothoraxic legs simple, not expanded; procoxae lacking posterior spine, mesocoxae with short, wide posterior spine; tibiae subequal to 1.5x longer than femora, lack lateral and anterior spines. Metacoxae with a short, wide posteriorly projecting spine. Hind tibiae with 4 preanterior and 8 anterior spines; basal tarsomere with 7 anterior spines; penultimate tarsomere with 7 to 8 anterior spines.

Species Composition.

This genus contains seventeen species: *T. amazonica* Fennah, 1945, *T. bimaculifrons* Muir, 1931, *T. holmgreni* Muir, 1931, *T. lineatifrons* Muir, 1931, *T. muliebris* (Walker, 1858), *T. muiri* Metcalf, 1945, *T. peruviana* Synave, 1969, *T. rufa* Muir, 1931, *T. scriptiventris* (Walker, 1858), *T. sororcula* (Berg, 1879), *T. suturalis* (Germar, 1830) (type species), *T. terminalis* (Germar, 1830), *T. viridifrons* (Walker, 1858), *T. viridis* Muir, 1931, *T. vitrata* (Fabricius, 1803), *T. herbida* (Walker, 1851), and *T. inexacta* (Walker, 1858). There are no published keys to the species of this genus.

Geographic Distribution.

Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad, Uruguay, Venezuela.

Host Plants.

Anacardiaceae: *Mangifera* sp. (Maes and O'Brien, 1988); Arecaceae: *Elaeis* sp. (Maes and O'Brien, 1988); Bromeliaceae: *Ananas* sp. (Maes and O'Brien, 1988); Euphorbiaceae: *Manihot* sp. (Maes and O'Brien, 1988); Malvaceae: *Gossypium* sp. (Maes and O'Brien, 1988); Poaceae: *Oryza* sp. (Maes and O'Brien, 1988); Rubiaceae: *Coffea* sp. (Fennah, 1945).

Specimens Examined.

T. amazonica Fennah (2). **BOLIVIA**: S.C., 10 mi. W. Portachuelo, 11-IV-1978, at night (LBOB: 1♀). **PERU**: Dpto. Loreto Quebrada, Oran, ca. 5 km. N. Rio Amazonas, 85 km. NE Iquitos, el. 110 m., VI-1984 (LBOB: 1♂).

T. bimaculifrons Muir (2). **ECUADOR**: Orellana Tiputini Biodiversity Station nr. Yasuni National Park, Erwin Transect T/4, 220-250 m, 00º37'55"S 076º08'39"W, 24-X-1998, fogging terre firme forest (USNM: 1♂); Orellana Tiputini Biodiversity Station nr. Yasuni National Park, Erwin Transect T/6, 220-250 m, 00º37'55"S 076º08'39"W, 24-X-1998, fogging terre firme forest (USNM: 1♂).

T. herbida (Walker) (10). **BRASIL**: Amazonas, Manaus, Uypiranga, Rio Negro, 14 km. From Manaus, 81 m., X-1941 (AMNH: 1♂). **COSTA RICA** :

Heredia, nr. Puerto Viajo, La Selva Bio. Sta. 179 ft., N10°25' W84°00', at station, 28-II-2004, light (UDCC: 3♂, 3♀). **GUATEMALA**: Tucuru, 1600 ft., 12-VII-1947 (AMNH: 1♀). **MEXICO**: Ver., 250', Biol. Sta. UNAM, Los Tuxtlas, at light, 24-VIII-1982 (LBOB: 1♂, 1♀); Jalisco, 38.8 mi. S. Puerto Vallarta, 9-VII-1982, blacklight (CDAE: 1♂, 1♀; UCDC: 1♀). **VENEZUELA**: El Tucuco, Perija, Zulia, 24-VI-1979 (UCDC: 1♂, 2♀)

T. holmgreni Muir (6). **BOLIVIA**: Cbb., Villa Tunari at UV light, 31-III-1978 (LBOB: 1♂, 1♀); Cbb., Villa Tunari, Rio Espiritu Santo, 31-III-1978 (LBOB: 2♂, 2♀).

T. inexacta (Walker) (3). **MEXICO**: Tamazunchale, San Luis Potosi, 20-V-1952 (AMNH: 1♂). **VENEZUELA**, Guar. 35 km. N. Calabozo, 610', 21-VII-1988 (LBOB: 1♀); Bol., 29km. E. Caicara de Orinoco, 180', 29-VII-1988, on grayish aquatic grass (LBOB: 1♂).

T. lineatifrons Muir (2). **BRASIL**: Chapada, May (AMNH: 2♀).

T. rufa Muir (8). **BRASIL**: Rio de Janiero, Inst. O. Cruz, 21-I-1969 (USNM: 1♂, 1♀; LBOB: 1♂, 1♀; FMNH: 1♀). **GUATEMALA**: Finca El Zapote, Zapote, Escuintla, 18-VII-1948, Elev. 2400 ft., CNHM Guatemala Zool. Exped. (1948) (FMNH: 1♂). **PANAMA**: Almirante, 4-VII-1938 (FMNH: 2♀).

T. scriptiventris (Walker) (1). **PANAMA**: Bugaba, Champion (BMNH: 1♀).

T. sororcula (Berg) (2). **BRASIL**: Vila Velha Parana, 12-I-1969 (LBOB: 1♂, 1♀).

T. suturalis (Germar) (4). **ARGENTINA**: Gob. Chaco, S. Venturi, 16-XI-1897 (BMNH: 1♀). **BOLIVIA** : LaPaz, 3 mi. SW. Yolosa, 1700m, 9-IV-1978 (LBOB: 1♂, 1♀). **BRASIL**: Rond., 62 km. SW. Ariquemes, Rcho. Grande,

UV & Hg vapor, (4-16)-XI-1997 (LBOB: 1♀). **COSTA RICA**: Heredia Prov., Finca La Selva, 22-X-1981 (AMNH: 1♀). **GUYANA**: Essequibo Dist., Skull Point Landing, 9-VII-1982, UV light (AMNH: 1♂). **PARAGUAY**: San Bernardin, 1905-327 (BMNH: 1♂). **SURINAM**: Brokopondo, 29-I-1969 (LBOB: 1♂).

T. terminalis (Germar) (2). **BRASIL**: Corupa, S. Cath., Hansa Humbolt, III-1948 (AMNH: 1♀); Corupa, S. Cath., Hansa Humbolt, I-1947 (AMNH: 1♀); (D?)erbe, 1905-100 (BMNH: 1♀).

T. vitrata (Fabricius) (5). **BRASIL**: Rondonia, 62 km. S.W. Ariquemes, Fzda. Rancho Grande, 8-XI-1994, UV & merc. Vapor light (LBOB: 1♂); Rondonia, 62 km. S.W. Ariquemes, nr. Fzda. Rancho Grande, (6-15)-XII-1990, collected at light (LBOB: 1♀); Chapada, Dec., Acc. 23739 (AMNH: 1♀). **COSTA RICA**: Puntarenas Prov., Rincon de Osa, Osa Peninsula, (14-26)-JVII-1969 (AMNH: 1♀). **PERU**: Tingo Maria Huan., Peru, Alt. 2200 ft., 16-I-1947 (AMNH: 1♂).

3.3 Notes on Excluded Neotropical Taxa.

Myrophenges Fennah, 1965:263

= *Myrophenges* Fennah, 1965:263. Type species: *Issus planifrons* Spinola, 1852, by original designation.

Original Description.

"Head with eyes much narrower than pronotum. Vertex about twice as broad as long, anterior margin convex, lateral margins straight, diverging basad, posterior margin shallowly concave, median carina distinct, obsolete distally, disc shallowly depressed, base of frons amply visible from above, more shallowly convex than anterior margin of vertex; frons about as long as broad, disc shallowly convex posteriorly, less so anteriorly, posterior margin, as visible in anterior view, transverse or shallowly convex, lateral margins diverging to below level of antennae, thence rather strongly incurved to frontoclypeal suture, disc rugose punctate, with median carina absent posteriorly, broad and only feebly indicated distally; clypeus about as long as broad at base, carinate, mandibular sclerites amply visible in anterior view; Beak surpassing mesotrochanters, scarcely attaining post-trochanters, anterior segment about two-thirds of length of subanterior; antennae short, posterior segment ring-like, scarcely visible, second segment subglobose; ocelli relatively large, eyes rounded, not or little excavated beneath. Pronotum about as long as vertex, median disc about twice as broad as long, tricarinate, a carina on each side between eye and posterior cell in tegmen, a stouter carina on each side below this, between eye and tegula; mesonotum broader than long, disc flat, lateral carinae distinct, median carina absent; legs rather short, profemora and mesofemora a little compressed laterally, post-tibiae with three spines laterally, one large and five smaller spines anteriorly, posterior metatarsal segment with seven small even teeth anteriorly, second segment with six teeth, one larger than the others. Third, fourth and fifth abdominal terga each with two transverse rows of pores.

Tegmina subcoriaceous, little surpassing abdomen and decurved distally, $Sc + R$ forked near base, each of these veins simple to apex, M forked near apex, Cu_1 forked at level of union of claval veins, two rows of transverse veinlets present; claval suture distinct, claval

veins uniting at three quarters from base, common vein entering apex of clavus. Wings as long as tegmina, all veins simple.

Anal segment of male short. Pygofer short, distal margin transverse, united with convolute genital styles."

Diagnosis.

Myrophenges is strongly dorsoventrally flattened, with the forewings convex and entirely covering the abdomen. The trailing margin of the forewings overlap in the anterior half. The head is not produced foreward and the frons is relatively smooth, with a relatively obscure median carina, these characters greatly reminiscent of *Taosa*, *Brachytaosa*, *Cladodiptera* and *Diacira*. However, the tarsi lack the pad of setae associated with the cladodipterines.

Species Composition.

This genus is only represented by *Myrophenges planifrons* (Spinola 1852).

Geographic Distribution.

Chile.

Host Plants.

No host plants recorded.

Specimens Examined.

M. planifrons (Spinola) (2). **CHILE**: 32 km. N. Quellon, Chiloe Is., 6-II-1968 (LBOB: 1♀); Chiloe Is., 9 km. NW Dalcahue, 7-II-1968 (LBOB: 1♂).

The genus *Myrophenges* Fennah, 1965 was originally placed in Dictyopharidae based on the combination of characters generally associated with this family; however, several features indicate that this genus should be moved to Achilidae. *Myrophenges* has overlapping forewings and the combined anal vein ends at the junction of the claval furrow and the wing margin (i.e. the apex of the clavus), defining features of the Achilidae, whereas the wings of Dictyopharidae do not overlap and the combined anal vein enters the wing margin before reaching the apex of the clavus. Additionally, the male terminalia do not align with any representatives of the Dictyopharidae, with heavily spined pygofer and claspers.

Chapter 4

DISCUSSION

The New World Dictyopharinae is a large and diverse group. In this paper, I have presented a revised tribal classification for all described New World genera (Table 3). This new classification recognizes 12 tribes, including eight located entirely in the New World, although the monophyly of some tribes (i.e. Scoloptini and Lappidini) requires quantitative phylogenetic investigation for confidence. Three of these New World genera are new: Igavini, Rhynchomitrini, and Sicorini; Phylloscelini Emeljanov, 1983 is here considered a junior synonym of Scoloptini. Additionally, the remaining [Old World] genera left unplaced, with regard to tribe, by Emeljanov (1983) should be referred, *de facto*, to Dictyopharini (Appendix 1) until that tribe is revised. The changes here can be classified into three groups: supported tribes (Cladodipterini, Nersiini, and Lappidini), redefined tribes (Taosini and Scoloptini), and newly formed tribes (Igavini, Rhynchomitrini, and Sicorini).

The Cladodipterini appear particularly distinctive, and may be the most basal tribe in the Dictyopharinae (discussed below). The recognition of a potential autapomorphy (a pad of setae on the underside of the hind basitarsus), along with the presence of a single crossvein in the claval area of the forewing, support Emeljanov's (1983) placement of the *Cladodiptera* and *Diacira* together into the Cladodipterini, but also supports the reassignment of *Protachilus* to this tribe. The genera *Cladodiptera* and *Diacira* require revision since these genera could not be unambiguously separated.

Table 3. Revised tribal classification of the Dictyopharinae found in the New World.

Tribes	**Genera**
Cladodipterini	*Cladodiptera*, *Diacira*, *Protachilus*
Igavini	*Dictyopharoides*, *Hydriena*, *Igava*, *Neomiasa*, *Paramisia*, *Toropa*, *Trigava*
Lappidini	*Lappida, Paralappida*
Nersiini	*Megadictya*, *Melicharoptera*, *Nersia*, *Plegmatoptera*, *Pteroplegma*, *Retiala*, *Trimedia*
Rhynchomitrini	*Digitocrista*, *Dorimargus*, *Eudictya*, *Hyalodictyon*, *Mitrops*, *Parahasta*, *Pharodictyon*, *Rhynchomitra*, *Taractellus*
Scoloptini	*Brachytaosa*, *Phylloscelis*, *Scolops*, *Sicorisia*
Sicorini	*Sicoris*
Taosini	*Taosa*

As presented here, the Nersiini are also quite distinctive, possessing the autapomorphic feature of a longitudinal carina on each tegula. This feature was not recorded by Emeljanov (1983), who instead focused on female genitalia (specifically, the length and width of the 3rd valvula [short and wide] and the relatively few dentitions of the ovipositor [as opposed to Taosini *sensu* Emeljanov, 1983]). Nersiini can be divided into two distinct groups: *Nersia*, *Retiala* and *Trimedia* (retained from Emeljanov's tribal grouping) with crossveins only in the distal third of the forewing; and *Pteroplegma* (also retained from Emeljanov's tribal grouping), along with the previously untreated *Megadictya*, *Melicharoptera* and *Plegmatoptera*, form a group with crossveins throughout the corium. *Toropa* has been transferred to Igavini.

Lappidini now includes both *Lappida* and *Paralappida* (from Emeljanov's Nersiini). Emeljanov (1983) loosely defined this tribe based on the shape and width of the pterostigma. The head also possesses features that support the joining of these two genera: the vertex is constricted (i.e. the lateral carinae are strongly convergent) anterad of the eyes; the tip of the head process is expanded (bulbous in *Lappida* and flared in *Paralappida*); and the frons is bent dorsad (forming two, nearly perpendicular planes of the frons) to meet the fastigium.

Emeljanov's (1983) Phylloscelini has been synonymized with Scoloptini based on intermediate characters found in *Brachytaosa* and *Sicorisia*. Synapomorphies of Scoloptini include: wing polymorphy (both macropterous and brachypterous forms present; not yet found in *Brachytaosa*); Sc+R and M branching at basal cell (i.e. lack of a contiguous portion of Sc+R+M beyond the basal cell); and the vertex is raised above the pronotum (also in Igavini, Lappidini, Sicorini). The head is often not produced anterad of the eyes (except in *Scolops*) and the forelegs are often foliaceous. Preliminary phylogenetic analysis (not presented here) suggests relatedness between Scoloptini and Orgeriinae (brachypterous taxa specializing in arid/semiarid habitats), which would suggest paraphyly in Dictyopharinae.

Emeljanov (1983) suggested a much broader Taosini than is presented here, including *Taosa* (retained), *Rhynchomitra,* and *Mitrops* (now Rhynchomitrini), and *Protachilus* (Cladodipterini). His grouping was based on features of the female genitalia, contrasting them with those of Nersiini: long, narrow third valvulae (vs. short and wide in Nersiini) and a highly dentate ovipositor (vs. much less dentition in Nersiini). Here, the Taosini superficially resembles Cladodipterini, with a short, broad head, rounded vertex (i.e. head process lacking), and elongate, often patterned

forewings. However, Taosini lacks crossveins in the clavus and the frons is medially carinate.

Rhynchomitrini is comprised of genera with green-colored species that have a short, triangular or pentagonal head process. Superficially resembling Nersiini, the Rhynchmitrini are readily distinguished (from the Nersiini) by a lack of carinae on the tegulae. It includes: *Rhynchomitra* and *Mitrops* from Emeljanov's (1983) Taosini; *Digitocrista*, *Hyalodictyon* and *Pharodictyon* from Emeljanov's Nersiini; and *Dorimargus, Eudictya* , *Parahasta,* and *Taractellus*, which were not treated by Emeljanov.

Igavini is largely made up of genera left unplaced by Emeljanov (1983); only *Toropa*, which had been placed in Nersiini, was treated by Emeljanov. Synapomorphies include: a narrow, [usually] upward-projecting head process that is greatly constricted and bent dorsally anterad of the eyes; the vertex raised above the pronotum; and the tegulae are smooth, lacking carinae. There appears to be two groups within Igavini: *Dictyopharoides*, *Neomiasa,* and *Paramisia* are narrow-bodied, with a long, strongly laterally-compressed (i.e. sword-shaped) head process, and often expanded forelegs that may be posteriorly dentate; and *Igava*, *Hydriena*, *Trigava*, and *Toropa* are stouter with a short, stout head process, and with unexpanded forelegs that lack posterior dentitions.

Sicorini is monobasic, including only *Sicoris*. It is characterized by a flat vertex raised above the pronotum, a strongly concave frons (in lateral view), the presence of a head process that is not constricted anterad of the eyes (vs. Igavini), and slightly expanded forelegs. Specimens of potentially novel taxa have been seen that possess characteristics intermediate between *Sicoris* and *Sicorisia* (Scoloptini),

suggesting a closer relationship between these taxa. Further analysis is needed to determine the relationship between Sicorini and Scoloptini.

The proposed tribal classification presents a hypothesis to be tested using phylogenetic analysis. Within this classification, Cladodipterini is potentially the most basal group, based on the presence of a claval crossvein, a character also found in Dichopterinae (Old World) and in some Fulgoridae. Lappidini and Igavini are putative sister groups, sharing constriction of the head process anterad of the eyes, and similar wing venation and pterostigmal shape. Scoloptini and Sicorini share a vertex raised above the prothorax, as well as expanded forelegs and thickened, shortened forewings. The potential Scoloptini-Sicorini clade is likely a more derived lineage, potentially sister to the Orgeriinae, based on presence of brachyptery (only found in Orgeriinae and Old World Lyncidinae) and similarity in body shape and size. Rhynchomitrini, Nersiini, and Taosini are likely related based on similarity in placement of carinae on the head and thorax and relative length and shape of head process (when present). The Rhynchomitrini-Nersiini-Taosini clade is probably intermediary between the Lappidini-Igavini clade and the Scoloptini-Sicorini clade.

From this study, many potential phylogenetic questions have developed. What are the relationships between: *Cladodiptera* and *Diacira*; genera of Scoloptini; *Dictyopharoides*, *Paramisia*, and *Neomiasa*; or species of *Taosa*? Is Igavini two tribes or subtribes, one comprised of *Dictyopharoides*, *Paramisia* and *Neomiasa*, and the other comprised of *Igava*, *Hydriena*, *Toropa* and *Trigava*? Where should the New World *Dictyophara* and Old World *Nersia* be placed? Are there any phylogenetic links between Orgeriinae and Scoloptini/Sicorini? What is the relationship between

Dictyopharidae and Fulgoridae? Phylogenetic analysis would address many of these questions.

Some taxa that have traditionally been treated as Dictyopharidae have been tentatively referred to Fulgoridae by Emeljanov (1979), leaving open the question of the family limits of both taxa. The morphological characters utilized in this study, along with those found in studies of Fulgoridae (Urban, 2008), provide a potential combined dataset to examine this question. A molecular dataset has been developed for Fulgoridae (Urban and Cryan, in press), but not yet for Dictyopharidae; a morphological dataset for Fulgoridae is currently under examination by Urban and Cryan (personal communication). A combined morphological-molecular dataset for Dictyopharidae and Fulgoridae would elucidate the relationships among the two families.

The classificatory hypotheses generated by this study need to be tested via quantitative phylogenetic analysis. Quantitative analyses would clarify the relationships among the tribes and genera within each tribe, testing the both Emeljanov's (1983) tribal groupings and the revised tribal hypothesis presented here. Further, these analyses will provide a basis for elucidating explicit ecological-evolutionary hypotheses. Also, during this investigation, new taxa were observed, some of which do not fit readily into described genera as currently defined; many genera require taxonomic investigation to develop new or to refine existing identification tools. The current study is a significant step in the investigation of the Dictyopharinae, and it is hoped that this work will stimulate interest and encourage further investigation of this unique group of planthoppers.

REFERENCES

Amyot, C.J.B. and J.G.A. Serville. 1843. Deuxieme partie. Homopteres. Homoptera Latr. Histoire Naturelle des Insectes. Hemipteres **1843**: I-lxxvi, 1-676, pls. 1-12 (455-588; pls. 9-12).

Arnett, R.H., G.A. Samuelson and G.M. Nishida. 1993. *The insect and spider collections of the world.* Second ed. Gainesville, FL, USA. vi + 310 p.

Blöte, H.C. 1957. Notes sur les Orgeriini d'Espagne (Homoptera). Zoologische Mededelingen. **35**:1-7, 2 Figures

Bourgoin, T., J.D. Steffen-Campbell and B.C. Campbell. 1997. Molecular Phylogeny of Fulgoromorpha (Insecta, Hemiptera, Archaeorrhyncha). The Enigmatic Tettigometridae: Evolutionary Affiliations and Historical Biogeography. Cladistics **13** (3):207-224.

De Quattro, J. 2000. Watch out Water-hyacinth! New Jungle Enemies are Coming. Agricultural Research Magazine **48** (3):10-12.

Desmarest, E. 1849. Dictyophara. *In*: C. d'Orbigny (ed). Dictionnaire universel d'histoire naturelle 5: 2.

Distant, W.L. 1887. Rhynchota: Homoptera. Biologia Centrali-Americana: contributions to the knowledge of the fauna and flora of Mexico and Central America 1: 33-40.

Distant, W.L. 1906. Rhynchotal notes xl. Annals and Magazine of Natural History (7) 18: 349-356.

Dlabola, J. 1957a. Results of the Zoological Expedition of the National Museum in Prague to Turkey. 20. Homoptera Auchenorrhyncha. Acta Entomologica Musei Nationalis Prague **31**:19-68, 114 Figures

Dlabola, J. 1957b. Die Zikaden Afghanistans (Hompt.-Auchenorrhyncha) nach der Ergebnisse der von Herrn J. Klapperich in den Jahren 1952-1953 nach Afghanistan untergenommenen Expedition. Mitteilungen der Münchner Entomologischen Gesellschaft **47**:265-303, 10 pls.

Dlabola, J. 1960. Eine neue *Dictyophara* Art aus Kaschmir. Atti del Museo Civico di Storia Naturale di Trieste **22**:51-54, 6 Figures

Dlabola, J. 1967a. Ergebnisse der 1. mongolisch-tschechoslowakiechen entomologisch botanischen Expedition in der Mongolei. Nr. 3: Homoptera Auchenorrhycha [Ergänzung]. Sb. Faun. Prací. Ent. Odd. Nár. Mus. Praze **12**:51-102, 8 pls.

Dlabola, J. 1967b. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. Nr. 122: Homoptera-Auchenorrhycha. Sb. Faun. Prací. Ent. Odd. Nár. Mus. Praze **12**:137-152, 21 Figures

Dlabola, J. 1967c. Ergebnisse der 2. mongolisch-tschechoslowakiechen entomologisch-botanischen Expedition in der Mongolei. Nr. 12: Reisebericht, Lokalitätenübersicht und Bearbeitung der gesamelten Zikaden [Homopt. Auchenorrh.]. Sb. Faun. Prací. Ent. Odd. Nár. Mus. Praze **12**:207-230, 4 pls, 36 Figures

Dlabola, J. 1974. Ergebnisse der Eschechslowakisch – iranischen entomologischen Expedition nach dem Iran 1970. Nr. 3: Homoptera, Auchenorrhyncha (I. Teil). Acta ent. Mus. Natn. Pragae **6** (supple.):29-73, 103 Figures

Dlabola, J. 1979. Neue Zikaden aus Anatolien, Iran und aus Südeuropäischen Ländern (Homoptera: Auchenorrhyncha). Acta zool. Hung. **25** (3-4):235-237, illustr. [English summary]

Dlabola, J. 1980. Insects of Saudi Arabia. Homoptera: Auchenorrhyncha (Part 2). Fauna Saudi Arabia **2**:74-94, illustr. [In German with Arabic & English summaries]

Dlabola, J. 1984. Neue Zikadearten aus Mediterraneum und dem Iran mit weiteren Beitragen zur Iranischen fauna (Homoptera-Auchenorrhyncha). **Sborník Národního muzea v Praze** (B) **40** (1):21-64, illustr. [In German with Czech summary]

Dlabola, J. 1986. Neue Arten der Fulgoromorphen Zikaden – Familien vom Mittelmeergebiet und nahen Osten. (Homoptera: Auchenorrhyncha: Cixiidae, Meenoplidae, Derbidae, Dictyopharidae, Lophopidae und Issidae). **Sborník Národního muzea v Praze** (B) **42** (3-4): 169-196, illustr. [In German with Czech summary]

Dlabola, J. 1989. Neue Issiden und Andere Zikadenarten des Mediterraneums und vom Zuliegenden Eremial (Homoptera, Auchenorrhyncha). Sbornik Narodniho Muzea V Praze (B) **45** (1):21-59, illustr. [In German with Czech summary]

Dlabola, J. 1993. Erganzungen zur iranischen, israelischen und benachbarten Zikadenfaunen mit Beschreibungen 30 neuer Taxone (Homoptera, Auchenorrhyncha). Sbornik Narodniho Muzea v Praze (B) **49** (1-4):41-110, illustr. [In German with Czech summary]

Dlabola J. and F. Heller. 1962. Iranische Zikaden II (Ergebnisse der Entomologischen Reisen Willi Richter, Stuttgart, im Iran 1954 und 1956 – Nr. 42). Stuttgarter Beitraege Zur Naturkunde (90):1-8, 1 pl., 1 Figure [I think this should be series A]

Doering, K.C. 1955. Some taxonomic and morphological studies of two genera of North American Dictyopharidae. University of Kansas Science Bulletin **37**:195-221.

Doering, K.C. 1956. The taxonomic value of the pretarsal structures in the classification of certain Fulgoroidea. Kansas University Science Bulletin **37**:627-643, 4 pls.

Doering, K.C. and H.H. Darby. 1943. A contribution to the taxonomy of the genus *Orgerius* in America, north of Mexico (Fulgoridae, Homoptera). Journal of the Kanses Entomological Society **16**:64-98, 6 pls.

Dubovskii, G.K. 1966. Tsikadovye (Auchenorrhyncha) Ferganskoi doliny. [Cicadinea (Auchenorrhyncha) of the Fergana Valley]. Fan., Tashkent (1966):1-256, illustr. [In Russian]

D'Urso, V. 1995. Fascicolo 42. Homoptera Auchenorrhyncha. *In*: A. Minelli, S. Ruffo and S. La Posta (eds): Checklist Dele Specie Della Fauna Italiana. Calderini, Bologna, Italy. 35 pp.

Dworakowska, I. 1988. Main veins of the wings of Auchenorrhyncha (Insecta, Rhynchota: Hemelytrata). Entomologische Abhandlungen und Berichte aus dem Staatlichen Museum für Tierkunde in Dresden **52**(3): 63–108.

Emeljanov, A.F. 1964. New Auchenorrhyncha from Kazakhstan (Homoptera). [in Russian.] Trudy Zoologicheskogo Instituta **34**:3-51, 180 Figures

Emeljanov, A.F. 1969. Reclassification of Palaearctic planthoppers of the subfamily Orgeriinae (Homoptera, Dictyopharidae). Entomologicheskoe Obozrenie **48**:324-339, 9 Figures [In Russian, translated in Entomological Review **48**:189-198.]

Emeljanov, A.F. 1972a. New species of the subfamily Orgeriinae of Palaearctic fauna (Homoptera, Dictyopharidae). Trudy Vsesoyuznogo Entomologicheskogo Obshchestva **55**:14-38. [In Russian]

Emeljanov, A.F. 1972b. New leaf-hoppers from the Mongolian People's Republic (Homoptera, Aucherorrhyncha). Nasekomye Mongol. **1** (1):199-260, 121 Figures [In Russian]

Emeljanov, A.F. 1978. New genera and species of leafhoppers (Homoptera, Auchenorrhyncha) from the USSR and Mongolia. Entomologicheskoe Obozr. **57** (2):316-332, illstru. [In Russian, translated in Entomological Review **57** (2):1978[1979]:220-233]

Emeljanov, A.F. 1979a. [A new species of the genus *Sphenocratus* Horv. (Homoptera, Dictyopharidae) from Tadzhikistan.] Trudy vses. Ent. Obshch. **61**:21-24, illustr. [In Russian]

Emeljanov, A.F. 1979b. The problem of family distinction between the Fulgoridae and the Dictyopharidae (Homoptera, Auchenorrhyncha). Trudy zool. Inst. Leningrad **82**:3-22, illustr. [In Russian]

Emeljanov, A.F. 1981. Two new species of the genus *Nymphorgerius* (Homoptera, Auchenorrhyncha, Dictyopharidae) from the south of the Middle Asia. Trudy zool. Inst. Leningrad **105**:3-6. [In Russian]

Emeljanov, A.F. 1983a. Dictyopharidae from the Cretaceous deposits on the Taymyr Peninsula (Insecta, Homoptera). Paleontologicheskii Zh. **1983** (3):79-85, illustr. [In Russian, translated in Paleontological Journal **17** (3) 1983[1984]:77-82]

Emeljanov, A.F. 1983b. The number of seminal follicles as a phylogenetic and taxonomic feature in the Dictyopharidae (Homoptera) and other leafhoppers. Zoologicheskii Zh. **62** (10):1583-1586, illustr. [In Russian with English summary]

Emeljanov, A.F. 1993. Morphological peculiarities of the larae of the family Dictyopharidae (Homoptera). 1. General characteristic and a key to the genera of the Palaearctic fauna. Entomologicheskoe Obozrenie **72** (4):794-812, illustr. [In Russian]

Emeljanov, A.F. 1994. Morphological peculiarities of the larae of the family Dictyopharidae (Homoptera). 2. Developmental changes. Entomologicheskoe Obozrenie **73** (3):645-665, illustr. [In Russian]

Emeljanov, A.F. 1997a. A new genus and species of the Dictyopharidae from Australia belonging to a new tribe (Homoptera, Cicadina). Zoosystematica Rossica **6** (1-2):77-82, illustr.

Emeljanov, A.F. 1997b. New species and new data on the distribution of the subfamily Orgeriinae in the Palaearctic region (Homoptera: Dictyopharidae). Zoosystematica Rossica **6** (1-2):83-90, illustr.

Emeljanov, A.F. 1998. New species of the genus *Ranissus* Fieb. (Homoptera, Dictyopharidae) from Greece. Entomologicheskoe Obozrenie **77** (2):327-330, 524. [In Russian with English summary]

Emeljanov, A.F. 1999. A new genus of planthoppers of the subfamily Orgeriinae (Homoptera, Dictyopharidae) from the Mediterranean. Entomologicheskoe Obozrenie **78** (4):825-827. [In Russian]

Emeljanov, A.F. 2001. Larval characters and their ontogenetic development in Fulgoroidea (Homoptera, Cicadina). Zoosystematica Rossica **9** (1):101-121.

Emeljanov, A.F. 2003. New taxa and new data on distribution of the subfamily Orgeriinae in the Mediterranean (Homoptera: Dictyopharidae). Zoosystematica Rossica **11** (2):311-319.

Emeljanov, A.F. 2004a. The subgeneric revision of the genus *Dictyophara* Germar, 1833 (Homoptera: Dictyopharidae). Russian Entomological Journal **12** (4):357-358. [with Russian summary]

Emeljanov, A.F. 2004b. A new genus and tribe of Strongylodematinae (Homoptera: Fulgoridae). Zoosystematica Rossica **13** (1):52.

Emeljanov, A.F. 2006. Taxonomic changes in American Orgeriinae (Homoptera: Dictyopharidae. Zoosystematica Rossica **15** (1):73-76.

Emeljanov, A.F. and A. Drosopoulos. 2004. A new species of the genus *Bursinia* A. Costa (Homoptera, Dictyopharidae) from southern Portugal. Entomologicheskoe Obozrenie 83 (3):521-522. [In Russian with English summary]

Evans, J.W. 1947. A natural classification of leaf-hoppers (Jassoidea, Homoptera). Transactions of the Entomological Society of London **98**:105-271.

Fennah, R.G. 1944a. New Neotropical Fulgoroidea. American Museum Novitates 1265:1-9, 45 Figures

Fennah, R.G. 1944b. The morphology of the tegmina and wings in Fulgoroidea (Homoptera). Proceedings of the Entomological Society of Washington **46**:185-199, 2 pls.

Fennah, R.G. 1944c. New Dictyopharidae from the New World (Homoptera: Fulgoroidea). Proceedings of the Biological Society of Washington **57**:77-94, 48 Figures

Fennah, R.G. 1945a. Characters of taxonomic importance in the pretarsus of Auchenorhyncha (Homoptera). Proceedings of the Entomological Society of Washington **47**:120-128, 2 pls.

Fennah, R.G. 1945b. The external male genitalia of Fulgoroidea (Homoptera). Proceedings of the Entomological Society of Washington **47**:217-229, 3 pls.

Fennah, R.G. 1945c. The Fulgoroidea, or lanternflies, of Trinidad and adjacent parts of South America. Proceedings of the U.S. National Museum **95** (3184):411-520, 11 pls.

Fennah, R.G. 1947. Notes on Neotropical Dictyopharidae and synonymy in two other groups. Smithosonian Miscellaneous Collections **107** (11):1-13, 2 pls.

Fennah, R.G. 1958a. Fulgoroidea from the Belgian Congo (Hemiptera Homoptera). Ann. Mus. Congo belge **59**:1-206, 132 Figures

Fennah, R.G. 1958b. Fulgoroidea from West Africa. Bull. Inst. Franc. Afr. Noire **20**:460-538, 30 Figures

Fennah, R.G. 1958c. Fulgoroidea of South-Eastern Polynesia. Translated R. ent. Soc. London **110**:117-220, 77 Figures

Fennah, R.G. 1961. Homoptera Fulgoroidea. Le Parc National du Niokolo-Koba fasc. II. Mém. Inst. Franc. Afr. Noire (62):305-320, 6 Figures

Fennah, R.G. 1962. New Orgeriine Dictyopharidae from South Africa (Homoptera). Ann. Natal Mus. **15**:219-245, 13 Figures

Fennah, R.G. 1963. *Leprota* Melichar, 1912 (Insecta, Homoptera): proposed designation of a type-species under the Plenary Powers. Z.N. (S.) 1530. Bull. Zool. Nom **20**:303-304.

Fennah, R.G. 1965. Fulgoroidea from southern Chile (Hemiptera). Bull. Br. Mus. Nat. Hist., London (Ent.) **17**:231-272, 199 Figures

Fennah, R.G. 1967. New and little known Fulgoroidea from South Africa (Homoptera). Ann. Natal Mus. **18**:655-714, 29 Figures

Fennah, R.G. 1971. Homoptera: Fulgoroidea. Supplement. Insects Micronesia **6** (8):563-609, 24 figs, 1 map.

Fennah, R.G. 1978. Fulgoroidea (Homoptera) from Viet-nam. Annales zool. Warsz. **34** (9):207-279, illustr. [Polish & Russian summaries]

Fieber, F.X. 1872. Katalog der europäischen Cicadinen, nach Originalien mit Benützung der neuesten Literatur. (Carl Gerold's Sohn, Wien). 19pp.

Germar, E.F. 1833. Conspectus generum Cicadariarum. Revue Entomologique **1** (1):174-184.

Germar, E.F. 1839. Drei neue Gattungen der Cicadinen, aufgestellt. Zeitschrift für die Entomologie **1** (1):187-192.

Jacobi, A. 1943. Zur Kenntnis der Inseckten von Mandschukuo. Eine Homopterenfauna der Mandschurei (Homoptera: Fulguroidea, Cercopoidea & Jassoidea). Arb. Morph. Taxon. Ent. Berlin-Dahlem **10**:21-31, 10 Figures

Kartal, V. 1987. Eine neue und wenig bekannte Arten der Gattung *Ranissus* aus der Turkei (Homoptera, Auchenorrhyncha, Dictyopharidae). Turk Bitki Koruma Derg **11** (3):145-150, illustr. [In German with Turkish summary]

Kukalova-Peck, J. 1978. Origin and evolution of insect wings and their relation to metamorphosis, as documented by the fossil record. Journal of Morphology **156** (1): 53-125.

Kuznetsova, V.G. 1985. Phylogenetical analysis of the chromosome variability and karyosystematics of the leaf-hoppers of the family Dictyopharidae (Homoptera, Auchenorrhyncha). Entomologicheskoe Obozr. **64** 3):539-553, illustr. [In Russian with English summary]

Lallemand, V. 1942a. Homoptères recueillis par M. L. Chopard en Afrique occidentale (nov. 1938 – Janv. 1939). Bulletin de l'Societe Entomologic du France **47**: 68-71.

Lallemand, V. 1942b. Notes sur quelues espèces recueillies par le R. Piel et le R. P. de Cooman. Notes Ent. chinoise **9**:69-77.

Lallemand, V. 1949. Acta Zoologica Lilloana **7**:329.

Lallemand, V. 1950a. Nouveaux Homoptères de l'Oest africain. Bull. Inst. Franç. Afr. Noire **12**:630-633.

Lallemand, V. 1950b. Contribution à l'étude des Homoptères de Madagascar. Mém. Inst. Sci. Madagascar **4A**:83-96, 5 Figures

Lallemand, V. 1952. Mission A. Villiers au Togo et au Dahomey (1950). IX. Hémiptères Homoptères. Bull. Inst. Franç. Afr. Noire **14**:164-169.

Lallemand Synave, 1952. Contribution à l'étude des Hémiptères-Homoptères. I. II. Bull. Inst. Sci.nat. Belg. **28** (7):1-28, 9 Figures

Lang, V. 1945. Zlomky z cikadologického výzkumu mohelnské reservace. Pátý příspěvek k poznání našich cikád. (With a Latin summary). Ent. Listy **8**:95-99, 6 Figures

Liang, A.-P. 2000. Taxonomic notes on oriental and eastern Palaearctic Fulgoroidea (Hemiptera). Journal of the Kansas Entomological Society **73** (4):235-237.

Liang, A.-P, Z.-S. Song and G.-M. Jiang. 2006. *Sphenocratus xinjiangensis* Liang, sp. nov., the first authentic record of the dictyopharid subfamily Orgeriinae (Hemiptera: Fulgoroidea: Dictyopharidae) in China. Zootaxa **1296**:55-61.

Lindberg, H. 1948. On the insect fauna of Cyprus. Results of the expedition of 1939 by Harald, Håkan and P. H. Lindberg. I-II. Comment. Biol. **10** (7):1-175, 64 Figures

Linnavuori, R. 1953. Contributions to the Hemipterous fauna of Palestine II. Annales Entomologici Fennici **19**:119-124, 1 Figure

Linnavuori, R. 1956. On some Palearctic Homoptera. Annales Entomologici Fennici **22**:136-138, 2 Figures

Linnavuori, R. 1961. New Palearctic Hemiptera. Annales Entomologici Fennici **27**:85-89, 2 Figures

Linnavuori, R. 1962. Hemiptera of Israel. 3. Annales Zoologici Societatis Zoologicae-Botanicae Fennicae 'Vanamo' **24** (3):1-108, illustr. [with Finnish summary]

Linnavuori, R. 1965. Studies on the South- and East-mediterranean Hemipterous fauna. Annales Entomologici Fennici. **21**:1-69, 24 Figures

Linnavuori, R. 1970. On some Palaearctic Hemiptera. Annales Entomologici Fennici **36**:91-99, 8 Figures

Linnavuori, R. 1973. Hemiptera of the Sudan, with remarks on some species of the adjacent countries. 2. Hoomoptera Auchenorhyncha: Cicodidae, Cercopidae, Machaerotidae, Membracidae and Fulgoroidea. (Zoological contribution from the Finnish expeditions to the Sudan No. 33). Notulae Entomologicae **53** (3):65-137, 84 Figures

Linnavuori, R. 1976. A hemipterous material from Somalia. Bollettino della Società Entomologica Italiana **108** (5-7):123-130, 4 Figures

Matsumura, S. 1941. New species of Dictyophoridae (Hom.) from Formosa. Insecta Matsumurana **15**:162-163.

McPherson, K.R. and S.W. Wilson. 1995. Life history and descriptions of immatures of the dictyopharid planthopper *Phylloscelis pallescens* (Homoptera: Fulgoroidea). Journal of the New York Entomological Society **103** (2):170-179, illustr.

Melichar, L. 1902. Monographie der Acanoloniiden und Flatiden (Homoptera) (Fortsetzung). Ann. Nat. Hofmus. Wien **17** (1):1-253.

Melichar, L. 1912. Monographie der Dictyopharidae (Homoptera). Abhandlungen der K. K. Zoologisch-Botanischen Gesellschaft in Wien **7** (1): 1-221.

Metcalf, Z.P. 1938. The Fulgorina of Barro Colorado and other parts of Panama. Bull. Mus. Comp. Zool. Harvard Coll. **82**: 277-423; Pls. 1-23.

Metcalf, Z.P. 1945. Fulgoroidea (Homoptera) of Kartabo, Bartica district, British Guiana. Zoologica **30**:125-144, 3 pls.

Metcalf, Z.P. 1946. General catalogue of the Hemiptera. Fasc. IV Fulgoroidea. Part 8 Dictyopharidae. Smith College, Northampton, MA, USA. 246 pp.

Metcalf, Z.P. 1955. New names in the Homoptera. Journal of the Washington Academy of Science **45**:262-267.

Metcalf, Z.P. 1964. *General Catalogue of the Homoptera. Fascicle VI. Cicadelloidea. Part 11. Coelidiidae*. U.S. Department of Agriculture, Agriculture Research Service. 182 pp.

Mityaev, I.D. 1967. New and poorly known species of Homoptera, Auchenorrhyncha from East Kazakhstan. Et. Obozr. **46**:712-723, 44 Figures [In Russian, transl. In Ent. Rev. Wash. **46**:422.]

Mityaev, I.D. 1971. Leafhoppers of Kazkhstan (Homoptera – Cicadinea). The determinant. Nauka, Alma Ata (1971):1-209, illustr. [In Russian]

Mityaev, I.D. 1994. New species of cicades of the genus *Cnodalum* (Cicadinea, Orgeriinae) from Kazakhstan. Zoologicheskii Zhurnal **73** (1):55-58, illustr. [In Russian with English summary]

Muir, F. 1930. On the classification of the Fulgoroidea. Annals and Magazine of Natural History, London **10** (6):461-478.

Mushtaq, S. 1991. *Gilgatia*, a new genus of the family Dictyopharidae (Homoptera: Fulgoroidea) from Pakistan. Pakistan Journal of Zoology **23** (4):289-290, illustr.

Mushtaq, S., S.H. Mahmood and M. Ahmed. 1992. Plant hopper genus *Viridophara* novo (Dictyopharidae: Fulgoroidea) from Pakistan. Pakistan Journal of Entomology Karachi **7** (1-2):37-48, illustr.

Mushtaq, S. and S. Akbar. 1995. A new genus *Chiltana* (Dictyopharidae: Homoptera) from Pakistan. Journal of the Kansas Entomological Society **68** (3):373-376, illustr.

Nast, J. 1949. Notes on the genus *Aluntia* Stål with description of a new species *Aluntia hova* sp. n. from Madagascar (Homoptera, Dictyopharidae). Ann. Mus. Zool. Polon. **14**:121-124, 3 Figures

Nielson, M.W. 1979. A revision of the subfamily Coelidiinae (Homoptera: Cicadellidae) III. Tribe Teruliini. Pacific Insects Monograph **35**:1-329.

Nielson, M.W. 1982. A revision of the subfamily Coelidiinae (Homoptera: Cicadellidae) IV. Tribe Coelidiini. Pacific Insects Monograph **38**:1-318.

O'Brien, L.B. 1987. Corrections and additions to Metcalf's 'The Fulgorina of Barro Colorado and other parts of Panama' (Homoptera: Fulgoroidea). Annales of the Entomological Society of America **80** (3):379-390, illustr.

O'Brien, L.B. 1999. New species of *Toropa* and *Igava* and a new genus, *Trigava* gen. n. (Hemiptera: Auchenorrhyncha: Fulgoromorpha: Dictyopharidae). Reichenbachia **33** (1):55-60, illustr.

O'Brien, L.B. and S.W. Wilson, 1985. Planthopper systematics and external morphology. *In* L.R. Nault and J.G. Rodriguez (eds): The Leafhoppers and Planthoppers. New York, John Wiley & Sons. 500 pp.

Pyka-Fosciak, G., W. Jankowska and T. Szklarzewicz. 2003. Ultrastructural studies on the formation of egg envelopes in fulgoromorphans (Insecta, Hemiptera, Fulgoromorpha: Dictyopharidae). Folia Biologica (Cracow) **51** (3-4):171-179.

Schaum, H.R. 1850. Fulgorellae. Allgemeine encyklopädie der wissenschaften und künste **51** (1):58-73.

Snodgrass, R.E. 1935. *Principles of Insect Morphology.* MacGraw-Hill, New York. 667 pp.

Song, Z.-S. And A.-P. Liang. 2006a. Two New Species of the Genus *Dicytopharina* Melichar (Hemiptera, Fuloroidea, Dictyopharidae) from Southeast Asia. Acta Zootaxonomica Sinica **31** (3):595-600.

Song, Z.-S. and A.-P. Liang. 2006b. First record of the genus Dictyopharina Melichar (Hemiptera: Fulgoroidea: Dictyopharidae) from China, with descriptions of two new species. Zootaxa **1166**:21-33.

Spinola, M. 1839. Essai sur les Fulgorelles, sous-tribu des Cicadaires, ordre des Rhyngotes. Annales de la Société Entomologique de France **8**: 133-337, pls. 1-7.

Stål, C. 1866. Hemiptera Homoptera Latr. Hemiptera Africana **4**: 1-276, pl. 1.

Stalle, J. van. 1982. Scientific results of the Belgian Mount-Cameroon Expedition (February-April 1981). 3. Fam. Cixiidae, Derbidae, Meenoplidae, Dictyopharidae, Achilidae, Lophopidae, and Tettigometridae (Homoptera – Fulgoroidea). Bulletin Inst. R. Sci. nat. Belg. (Ent.) **54** (6):1-18, illustr.

Synave, H. 1958. Hemiptera Homoptera: Cixiidae, Meenoplidae, Dictyopharidae, Tropiduchidae, Flatidae, Ricaniidae, Issidae, Eurybrachidae, Lophopidae, Cercopidae. *In* Hanström, Brinck & Rudebeck, South African Animal Live **V**: 158-189, 12 Figures

Synave, H. 1960. Homoptera. Mission zoologique de l'I.R.S.A.C. en Afrique orientale (P. Basilewsky et N. Leleup, 1957). Ann. Mus. Congo belge, Tervuren (Sér. 8º) Sci. Zool. **88**:377-394, 18 Figures

Synave, H. 1965a. Dictyopharidae (Homoptera Fulgoroidea). Explor. Parc nat. Garamba Miss. de Saeger 1949-1952 (47):1-63, 139 Figures

Synave, H. 1965b. Descriptions de Fulgoroïdes nouveaux récoltés par M. J. Decelle en Côte d'Ivoire. Revue Zool. Bot. Afr. **71**:1-9, 25 Figures

Synave, H. 1969a. Some African Fulgoroidea in the United States National Museum. Proc. Ent. Soc. Wash. **71**:174-190, 16 Figures

Synave, H. 1969b. Note sur le genre Taosa Distant (Dictyopharidae) et sur Harmosa bivulneratum Fennah (Eurybrachidae) (Homoptera-Fulgoroidea). Bulletin de l'Institut royal des sciences naturalles de Belgique **45** (8):1-17.

Synave, H. 1971. Le genre *Raphiophora* Schaum (Homoptera-Dictyopharidae). Bull. Inst. R. Sci. nat. Belg. **47** (39)1-34, 60 Figures

Synave, H. 1972. Contribution à l'etude biologique du Sénégal septentrional. 17. Homoptères Cercopidae et Fulgoroidea (sauf Delphacidae). Bulletin Inst. Fond. Afr. Noire. **34** (1):104-110.

Synave, H. 1978. Fulgoroïdes africains nouveaux (Homoptera). Bulletin Inst. Fond. Afr. Noire **40** (3):587-604, illustr.

Synave, H. 1979. Description d'espèces noubelles appartenant aux familles: Cercopidae, Cixiidae, Derbidae, Dictyopharidae, et Tropiduchidae (Homoptera). Bulletin Inst. R. Sci. Nat. Belg. (Ent.) **51** (6):1-31, illustr.

Urban, J.M. 2008. *A Phylogenetic Investigation of the Planthopper Superfamily Fulgoroidea (Insecta: Hemiptera) with emphasis on the family Fulgoridae*. Ph.D. Dissertation, University at Albany, State University of New York; Albany, New York.

Urban, J.M. and J.R. Cryan. 2007. Evolution of the planthoppers (Insecta: Hemiptera: Fulgoroidea). Molecular Phylogenetics and Evolution **42** (2):556-572.

Urban, J.M., and J.R. Cryan. In Press. Entomologically famous, yet evolutionarily unexplored: the first phylogeny of the Fulgoridae (Hemiptera: Fulgoridae). *Molecular Phylogenetics and Evolution:* in press.

Vilbaste, Y. 1980. [Cicada fauna of Tuva.] Valgus Tallin (1980):1-218, illustr. [In Russian]

Wilson, S.W., C. Mitter, R.F. Denno and M.R. Wilson. 1994. Evolutionary patterns of hostplant use by delphacid planthoppers and their relatives. *In* R.F. Denno and T.J. Perfect (eds.), *Planthoppers: their Ecology and Management*, pp. 7-113.

Wilson, S.W. and J.E. McPherson. 1981. Notes on the biology of *Nersia florens* (Homoptera: Fulgoroidea: Dictyopharidae) with descriptions of eggs, and first, second, and fifth instars. Great Lakes Entomologist **14** (1):45-48, illustr.

Woodward, T.E. 1960. Studies on Queensland Hemptera. Part IV.- The first record of Orgeriinae (Fulgoroidea; Dictyopharidae) from Australi. Univ. Qd. Pap., Brisbane (Dep. Ent.) **1**:149-156, 3 Figures

Yang, C.-T. and W.-B. Yeh. 1994. Nymphs of Fulgoroidea (Homoptera: Auchenorrhyncha) with descriptions of two new species and notes on adults of Dictyopharidae. Chinese Journal of Entomology Special Publication **8**:i-iv, 1-189, illustr. [with Chinese summary]

Appendix 1.

Checklist of the Dictyopharidae of the World

The following list is comprised of all extant species of Dictyopharidae, including all synonymies since Metcalf's (1946) catalogue, arranged according to the proposed tribal classification for Dictyopharinae. Generic and specific epithets are followed by author, year of description and, when relevant, the location of the taxonomic listing in Metcalf's catalogue (ex. "***Dichoptera*** Spinola, 1839 [Metcalf, 1946:22-24]"). The "*" before a species name indicates type species of genus; a "^" before a species name indicates designated type species of a subgenus. At all taxonomic levels, taxa are listed alphabetically. Additionally, genera included in Metcalf's Catalogue not currently recognized as dictyopharids are listed under their current combinations; Achilidae is included to show the proposed reclassification of *Myrophenges* Fennah, 1965. Species distributions are listed alphabetically by country or region; all distributions are updated from Metcalf's catalogue using current political entities. Though not exhaustive, distributions not found in Metcalf's catalogue are listed along with their literary citations.

FAMILY **ACHILIDAE**

Myrophenges Fennah, 1965

= *Myrophenges* Fennah, 1965:263. Type species: *Issus planifrons* Spinola, 1852:265 (designated by Fennah, 1965:263 in Dictyopharidae).

planifrons (Spinola, 1852) – Chile.

= *Issus planifrons* Spinola, 1852. Status revised by Fennah, 1965:263.

FAMILY **CICADELLIDAE**

Daridna Walker, 1858 [Metcalf, 1946:29 in Dictyopharidae; 1964(VI:11):46, 56, 77 as jr. syn. of *Coelidia*]

= *Daridna* Walker, 1858:319. Type species: *D. subtangens* Walker, 1858, by original designation. Genus synonymized with *Coelidia* Germar, 1821 by Evans, 1947:194. Status restored by Nielson, 1982:229.

subtangens Walker, 1858 [Metcalf, 1946:29 in Dictyopharidae; 1964:46] - Bolivia, Brazil, Peru, Venezuela.

= *Daridna subtangens* Walker, 1858:320.

= *Coelidia subtangens* (Walker, 1858): Evans, 1947:194. Status restored by Nielson, 1982:320.

= *Jassus trivittatus* Spångberg, 1878:28. Species synonymized by Nielson, 1982:230.

= *Coelidia trivittata* (Spångberg, 1878): Metcalf, 1964:78.

= *Jassus bellus* Jacobi, 1905:185. Species synonyized by Nielson, 1982:230.

= *Coelidia bella* (Jacobi, 1905): Metcalf, 1964:42.

Korsigianus Nielson, 1982

= *Korsigianus* Nielson, 1982:319. Type species: *Daridna exoptata* Walker, 1858:320, by original designation.

exoptata Walker, 1858 [Metcalf, 1946:29 in *Daridna* (Dictyopharidae); 1964 (VI:11):46] - Brazil, Guayna, Peru.

= *Daridna exoptata* Walker, 1858:320.

= *Coelidia exoptata* (Walker, 1858): Metcalf, 1964:48.

= *Korsigianus exoptata* (Walker, 1858): Nielson, 1982:320.

Licontinia Nielson, 1982

= *Licontinia* Nielson, 1982:141. Type species: *Daridna introducens* Walker, 1858:108, by original designation.

****introducens*** Walker, 1858 [Metcalf, 1946:29 in *Daridna* (Dictyopharidae); 1964 (VI:11):46] - Costa Rica, Ecuador, Guatemala, Mexico, Panama.

= *Daridna introducens* Walker, 1858:108.

= *Coelidia introducens* (Walker, 1858): Metcalf, 1964:56.

= *Coelidia fasciaticollis* Stål, 1864:85. Species synonymized by Nielson, 1982:143.

= *Terulia fasciaticollis* (Stål, 1864): Spångberg, 1879:21.

= *Licontinia introducens* (Walker, 1858): Nielson, 1982:143.

FAMILY **TROPIDUCHIDAE**

Bananellodes Strand, 1928 [Metcalf, 1946:183-184]

= *Bananella* Schmidt, 1924:105 [nec Labbe, 1895]. Type species: *B. rubrinervis* Schmidt, 1924, by original designation.

= *Bananellodes* Strand, 1928:73. (applied as a nom. nov. for *Bananella* Schmidt, 1924 [nec Labbe, 1895])

= Transferred from Dictyopharidae to Tropiduchidae by ??. See ZooRec 1958 (Tropiduchidae).

****rubrinervis*** (Schmidt, 1924) [Metcalf, 1946:184] - Democratic Republic of the Congo.

= *Bananella rubrinervis* Schmidt, 1924:106.

= *Bananellodes rubrinervis* (Schmidt, 1924): Strand, 1928:73 (by implication).

FAMILY **DICTYOPHARIDAE**

Subfamily **ALUNTIINAE** Emeljanov, 1979

Aluntia Stål, 1866 [Metcalf, 1946:45-46]

= *Aluntia* Stål, 1866. Transferred from Dictyopharidae by Emeljanov, 1979:11.

borneensis Schmidt, 1915 [Metcalf, 1946:46] - Brunei, Indonesia, Malaysia.

hova Nast, 1949 – Madagascar.

= *Aluntia hova* Nast, 1949:121, 125 (key).

ramosa (Melichar, 1903) [Metcalf, 1946:46] - Malaysia, Sri Lanka.

***schimperii** (Guerin-Meneville, 1849) [Metcalf, 1946:46] - Cameroon, ”East Africa”, Ethiopia, ”Ethiopian Region”, Guinea-Bissau, Kenya, Malawi, Namibia, South Africa, Tanzania,”West Africa”.

Subfamily **DICHOPTERINAE** Melichar, 1912

Dichoptera Spinola, 1839 [Metcalf, 1946:22-24]

conspersa Schmidt, 1911 [Metcalf, 1946:24-25] - Thailand.

guttulosa Stål, 1870 [Metcalf, 1946:25] - Philippines.

hampsoni Distant, 1892 [Metcalf, 1946:25] - India, Sri Lanka.

hyalinata (Fabricius, 1781) [Metcalf, 1946:25-27] - Bangladesh, India, Sri Lanka.

lurida (Walker, 1858) [Metcalf, 1946:27] - Indonesia.

maculata Schmidt, 1911 [Metcalf, 1946:27] - Indonesia.

nasuta Distant, 1892 [Metcalf, 1946:27] - Indonesia, ”Malay Archipelago”.

picticeps Stål, 1870 [Metcalf, 1946:28] - Philippines.

signifrons Stål, 1870 [Metcalf, 1946:28] - Philippines.

similis Schumacher, 1915 [Metcalf, 1946:28] - Japan, Taiwan.

strigivitta Walker, 1858 [Metcalf, 1946:28] - Brunei, India, Indonesia, Malaysia, Myanmar (Burma).

Pibrocha Kirkaldy, 1902 [Melichar, 1946:31 as *Pibrocha* and *Awaramada*]

= *Awaramada* Distant, 1914:412. Type species: *A. fryeri* Distant, 1914 (by original designation). Genus synonymized by Liang, 2000:235.

****egregia*** (Kirby, 1891) [Metcalf, 1946:31 as *P. egregia and Awaramada fryeri*] - Sri Lanka.

= *Awaramada fryeri* Distant, 1914:413. Species synonymized by Liang, 2000:235.

Subfamily **DICTYOPHARINAE** Onuki, 1901

Tribe **Cladodipterini** Melichar, 1912

Cladodiptera Spinola, 1839 [Metcalf, 1946:16]

bugabensis (Fowler, 1900) [Metcalf, 1946:18] - Panama.

interlita (Distant, 1887) [Metcalf, 1946:18] - Bolivia, Panama.

limpida (Walker, 1851) [Metcalf, 1946:18] - Brazil.

****macrophthalma*** Spinola, 1839 [Metcalf, 1946:19] - Brazil.

maculicollis (Melichar, 1912) [Metcalf, 1946:19] - French Guiana.

rufisparsa (Walker, 1858) [Metcalf, 1946:19] - Brazil.

rufivena (Fowler, 1900) [Metcalf, 1946:19] - Mexico.

smaragdula Walker, 1851 [Metcalf, 1946:20] - Brazil.

Diacira Walker, 1858 [Metcalf, 1946:20]

boliviana (Distant, 1906) [Metcalf, 1946:21] - Bolivia.

diaphana (Fabricius, 1803) [Metcalf, 1946:21] - Bolivia, Brazil.

obliquata (Westwood, 1845) [Metcalf, 1946:21, 22] - Brazil, Colombia.

setifera (Walker, 1851) [Metcalf, 1946:22] - Brazil.

****varia*** Walker, 1858 [Metcalf, 1946:22] - Brazil.

Protachilus Fennah, 1944a [Metcalf, 1946:20]

****rex*** Fennah, 1944 [Metcalf, 1946:20] - Brazil.

Tribe **Cleotychini** Emeljanov, 1997b

Cleotyche Emeljanov, 1997

= *Cleotyche* Emeljanov, 1997a:78. Type species: *C. mariae* Emeljanov, 1997a:78 (by original designation).

****mariae*** Emeljanov, 1997 – Australia.

= *Cleotyche mariae* Emeljanov, 1997a:81.

Tribe **Dictyopharini** Melichar, 1912

Afronersia Fennah, 1958

= *Afronersia* Fennah, 1958a:65, 66, 71, 76, 81 (keys). Type species: *A. dionaea* Fennah, 1958:66 (by original designation).

clymene Linnavuori, 1973 – Sudan.

= *Afronersia clymene* Linnavuori, 1973:87.

coronis Fennah, 1958 – Democratic Republic of the Congo.

= *Afronersia coronis* Fennah, 1958a:77.

datis Fennah, 1958 – Democratic Republic of the Congo.

= *Afronersia datis* Fennah, 1958a:74.

****dionaea*** Fennah, 1958 – Democratic Republic of the Congo.

= *Afronersia dionaea* Fennah, 1958a:66.

discrepans Fennah, 1958 – Democratic Republic of the Congo, Senegal.

= *Afronersia discrepans* Fennah, 1958a:72.

= *Afronersia proclivis* Fennah, 1958a:73. Species synonymized by Synave, 1965:29.

= *Afronersia juba* Fennah, 1958a:78. Species synonymized by Synave, 1965:29.

impicta Fennah, 1958 – Democratic Republic of the Congo, Ruanda.

= *Afronersia impicta* Fennah, 1958a:69.

= *Afronersia junix* Fennah, 1958a:70. Species synonymized by Synave, 1965:27.

= *Afronersia comus* Fennah, 1958a:80. Species synonymized by Synave, 1965:27.

katangana Fennah, 1958 – Democratic Republic of the Congo.

= *Afronersia katangana* Fennah, 1958a:83.

liriope Fennah, 1958 – Niger, Senegal.

= *Afronersia liriope* Fennah, 1958b:521.

lysis Fennah, 1958 – Democratic Republic of the Congo.

= *Afronersia lysis* Fennah, 1958a:68.

monacha Fennah, 1958 – Democratic Republic of the Congo.

= *Afronersia monacha* Fennah, 1958a:76.

scylax Fennah, 1958 – Democratic Republic of the Congo.

= *Afronersia scylax* Fennah, 1958a:82.

Amboina Kirkaldy, 1913 [Metcalf, 1946:86]

****moluccana*** Kirkaldy, 1913 [Metcalf, 1946:86] - Indonesia.

Arjuna Muir, 1934 [Metcalf, 1946:90]

****dohertyi*** Muir, 1934 [Metcalf, 1946:90] - Indonesia.

Aselgeia Walker, 1851 [Metcalf, 1946:51]

****ramulifera*** Walker, 1851 [Metcalf, 1946:51] - Democratic Republic of the Congo, ”East Africa”, Mozambique, Namibia, Somalia, South Africa.

rhodesiana Synave, 1979 – Rhodesia.

= *Aselgeia rhodesiana* Synave, 1979:11.

Aselgeoides Distant, 1917 [Metcalf, 1946:49]

****insularis*** Distant, 1917 [Metcalf, 1946:49] - Seychelles.

Callodictya Melichar, 1912 [Metcalf, 1946:77-78]

****kruperi*** (Fieber, 1876) [Metcalf, 1946:78] - Austria, Croatia, Greece, Montenegro, ”Palearctic Region”, ”Yugoslavia”.

k. moreana Melichar, 1912 [Metcalf, 1946:78]

Centromeriana Melichar, 1912 [Metcalf, 1946:39]

*****jocosa*** (Gerstaecker, 1895) [Metcalf, 1946:40] - Cameroon, Equatorial Guinea, Nigeria, Sierra Leone, Togo "West Africa".

simplex Melichar, 1912 [Metcalf, 1946:40] - Equatorial Guinea.

Chiltana Mushtaq and Akbar, 1995

= *Chiltana* Mushtaq and Akbar, 1995:374. Type species: *C. baluchi* Mushtaq and Akbar, 1995:374 (by original designation).

*****baluchi*** Mushtaq and Akbar, 1995 – Pakistan.

= *Chiltana balachi* Mushtaq and Akbar, 1995:374.

Cixiopsis Matsumura, 1900 [Metcalf, 1946:90-91]

*****punctatus*** Matsumura, 1900 [Metcalf, 1946:91] - Japan.

Dictyomorpha Melichar, 1912 [Metcalf, 1946:81]

*****elongata*** Melichar, 1912 [Metcalf, 1946:81] - Indonesia, Papua New Guinea.

hectica Haupt, 1926 [Metcalf, 1946:81] - Philippines.

Dictyophara Germar, 1833 [Metcalf, 1946:138-148]

(Subgenus ***Ancylocrius*** Emeljanov, 2004a)

= *Dictyophara* (*Ancylocrius*) Emeljanov, 2004a:357. Type species: *D. albata* Dlabola and Heller, 1962:2 (designated by Emeljanov, 2004a:357).

^***albata*** Dlabola and Heller, 1962 – Iran.

= *Dictyophara albata* Dlabola and Heller, 1962:2. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

exoptata Dlabola and Heller, 1962 – Iran.

= *Dictyophara exoptata* Dlabola and Heller, 1962:1. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

nizipa Dlabola, 1986 – Turkey.

= *Dictyophara nizipa* Dlabola, 1986:178. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

tangigharuha Dlabola, 1957 – Afghanistan.

= *Dictyophara tangigharuha* Dlabola, 1957a:273. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

(Subgenus ***Euthremma*** Emeljanov, 2004a)

= *Dictyophara* (*Euthremma*) Emeljanov, 2004a:357. Type species: *D. multireticulata* Mulsant and Rey, 1855:197 (designated by Emeljanov, 2004a:357).

anatina Puton, 1890 [Metcalf, 1946:148] - Algeria, Tunisia.

= *Dictyophara anatina* Puton, 1890. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

bergevini Metcalf, 1946 [Metcalf, 1946:149] - Algeria.

= *Dictyophara bergevini* Metcalf, 1946. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

curvata Matsumura, 1910

= *Dictyophara curvata* Matsumura, 1910. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

hoberlandti Dlabola, 1974 – Iran.

= Dictyophara hoberlandti Dlabola, 1974:36. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

lallemandi de Bergevin, 1921 [Metcalf, 1946:166] - Algeria.

= Dictyophara lallemandi de Bergevin, 1921. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

^***multireticulata*** Mulsant and Rey, 1855 [Metcalf, 1946:167-170] - Algeria, Austria, Bosnia, "Caucasus", France, Germany, Greece, Hungary, Israel/Palestine, Italy, "North Africa", Portugal, Russia, Serbia, Spain, "Transcaucasus", Tunisia, Ukraine, "Yugoslavia".

= *Dictyophara multireticulata* Mulsant and Rey, 1855. Status revised by Emeljanov, 2004a:357 (subgeneric revision).

m. sulphuricollis Rey, 1894 [Metcalf, 1946:170]

obtusiceps Lethierry, 1889 [Metcalf, 1946:172] - Algeria, "North East Africa".

= *Dictyophara obtusiceps* Lethierry, 1889:317, 315 (List). Status revised by Emeljanov, 2004a:357 (subgeneric revision).

(Subgenus ***Dictyophara*** Germar, 1833)

affinis Spinola, 1839 [Metcalf, 1946:148] – Brazil, "South America".

afghana Dlabola, 1986 – Afghanistan.

= *Dictyophara afghana* Dlabola, 1986:175.

asiatica (Melichar, 1912) – Israel/Palestine, Turkey.

= *Dictyophora asiatica* Melichar, 1912. Species synonymized with *D. europaea* (Linnaeus, 1776) by Haupt, 1917: 255, 256. Status restored by Dlabola, 1957b:29.

australiaca (Lallemand, 1935) [Metcalf, 1946:149] - Australia.

beebei Metcalf, 1945 - Guyana.

borneides (Kirkaldy, 1913) [Metcalf, 1946:149] - Brunei, Indonesia, Malaysia.

bovina (Stål, 1862) [Metcalf, 1946:149] - Brazil, "South America".

colombonis Matsumura, 1940 [Metcalf, 1946:150] - "East Indies", Sri Lanka.

concolor Walker, 1851 [Metcalf, 1946:151] - Australia.

confusa (Stål, 1862) [Metcalf, 1946:151] - Brazil.

cribrata Walker, 1870 [Metcalf, 1946:151] - Indonesia, Philippines.

cubanensis Melichar, 1912 [Metcalf, 1946:151-152] - Cuba.

cummingi Distant, 1906 [Metcalf, 1946:152] - Bangladesh, China, India, Japan, Taiwan.

cyrnea Spinola, 1839 [Metcalf, 1946:152-153] - France, Italy.

distincta Melichar, 1912 [Metcalf, 1946:153] - Greece.

dixoni Distant, 1906 [Metcalf, 1946:153] - Bangladesh, India.

eremica Linnavuori, 1962 – Israel/Palestine.

= *Dictyophara eremica* Linnavuori, 1962:12.

eugeniae (Stål, 1859) [Metcalf, 1946:154] - Brunei, China, Indonesia, Malaysia.

****europaea*** (Linneaus, 1767) [Metcalf, 1946:154-163] - Albania, Algeria, Armenia, Austria, Azerbaijan, Belgium, Bosnia, "Caucasus", Czech Republic, England, France, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Montenegro, Netherlands, "North Africa", Poland, Portugal, Romania, Russia, Serbia, Sierra Leone, Spain, Switzerland, "Transcaucasia", Tunisia, "Turkestan", Turkey, Ukraine, Uzbekistan, "Yugoslavia".

e. lutea (Lang, 1945)

= *Fulgora europaea lutea* Lang, 1945:21 (not seen by Metcalf, 1946). Generic status revised by implication.

e. rosea Costa, 1862 [Metcalf, 1946:164]

flavocostata Jacobi, 1943 – China.

= *Dictyophara flavocostata* Jacobi, 1943:23 (not seen by Metcalf, 1946).

formosicola Matsumura, 1940 [Metcalf, 1946:164] - Taiwan.

frontalis Melichar, 1912 [Metcalf, 1946:165] - Brazil.

fuscovittata Matsumura, 1910 [Metcalf, 1946:165] - Japan, Taiwan.

futana Matsumura, 1940 [Metcalf, 1946:165] - China.

glaucides (Kirkaldy, 1913) [Metcalf, 1946:165] - Brunei, Indonesia, Malaysia.

haywardi Lallemand, 1949 – Taiwan.

= *Dictyophara haywardi* Lallemand, 1949:329.

inscia Walker, 1858 [Metcalf, 1946:166]

iracina Dlabola, 1989 – Iraq.

= *Dictyophara iracina* Dlabola, 1989:32.

iranica Linnavuori, 1962 – Iran.

= *Dictyophara iranica* Linnavuori, 1962:7.

koreana Matsumura, 1915 [Metcalf, 1946:166] - Korea.

kotoshonis Matsumura, 1941 – Taiwan.

= *Dictyophara kotoshonis* Matsumura, 1941:162 (not seen by Metcalf, 1946).

lacustris Jacobi, 1912 [Metcalf, 1946:166] - Tanzania.

lindbergi Metcalf, 1955 – Cyprus, Spain.

= *Fulgora acuminata* Lindberg, 1948:106 [nec Olivier, 1791].

= *Dictyophara lindbergi* Metcalf, 1955:263. Applied as *nom nov.* for *Fulgora acuminata* Lindberg, 1948 [nec Olivier, 1791]

l. hispanica Linnavuori, 1965

= *Dictyophara acuminata hispanica* Lindberg, 1948:106. Status revised by by Metcalf, 1955:263 (by revision).

longirostrata Kato, 1933 [Metcalf, 1946:167] - Japan, Thailand.

manchuricola Matsumura, 1940 [Metcalf, 1946:167] - China.

melichariana Metcalf, 1946 [Metcalf, 1946:167] - Tanzania.

minuta (Lallemand, 1935) [Metcalf, 1946:167] - East Timor, Indonesia.

misionensis Jensen-Haarup, 1920 [Metcalf, 1946:167] - Argentina.

nakanonis Matsumura, 1910 [Metcalf, 1946:170] - China, Japan.

nekkana Matsumura, 1940 [Metcalf, 1946:171] – China.

nereides (Kirkaldy, 1913) [Metcalf, 1946:171] - Brunei, Indonesia, Malaysia.

nigrimacula Walker, 1851 [Metcalf, 1946:171] - India.

nigrosuturalis Melichar, 1912 [Metcalf, 1946:171] - Brazil, "South America".

nigrovittata Matsumura, 1913 [Metcalf, 1946:171-172] - Japan.

nilgiriensis Distant, 1906 [Metcalf, 1946:172] - India, Myanmar/Burma.

okinawensis Matsumura, 1906 [Metcalf, 1946:172] - Japan, Taiwan.

pakistana Dlabola, 1986 – Pakistan.

= *Dictyophara pakistana* Dlabola, 1986:177.

pales Linnavuori, 1970 – Israel/Palestine.

= *Dictyophara pales* Linnavuori, 1970:97.

palisoti Metcalf, 1946 [Metcalf, 1946:173] - "Africa".

patruelis (Stål, 1859) [Metcalf, 1946:173-174] - China, Japan, Malaysia, Taiwan.

picta Walker, 1858 [Metcalf, 1946:174] - Brazil.

prasina Melichar, 1912 [Metcalf, 1946:174] - Taiwan.

prognatha Distant, 1906 [Metcalf, 1946:174] - Australia.

sauropsis Walker, 1862 [Metcalf, 1946:176] - Bangladesh, Brunei, India, Indonesia, Malaysia.

seladonica Melichar, 1912 [Metcalf, 1946:176] - ”Caucasus”, Portugal, Russia, Spain.

sordida Jensen-Haarup, 1920 [Metcalf, 1946:179] - Argentina.

speicarina Walker, 1857 [Metcalf, 1946:179] - Brunei, Indonesia, Malaysia.

spuria (Stål, 1859) [Metcalf, 1946:179] - ”Santiago”.

striata Oshanin, 1879 - Armenia, ”Caucasus”, China, Iraq, Israel/Palestine, Kazakhstan, Russia, ”Turkestan”, Turkey.

= *Chanithus striatus* (Oshanin, 1879). Stpecies synonymized with *Chanithus gramineus* (Fabricius, 1803) by Metcalf, 1946:94-97. Status restored by Linnavuori, 1962:1015.

s. albostriata Linnavuori, 1962

= *Dictyophara striata albostriata* Linnavuori, 1962:7.

subsimilis Linnavuori, 1953 – Israel/Palestine.

= *Dictyophara subsimilis* Linnavuori, 1953:121.

sumatrana (Lallemand, 1931) [Metcalf, 1946:179] - Indonesia.

suturalis (Stål, 1854) [Metcalf, 1946:178-179] - Brazil.

timorina (Lallemand, 1935) [Metcalf, 1946:179] - East Timor, Indonesia.

tomon Matsumura, 1940 [Metcalf, 1946:179] - China.

unicolor Signoret, 1860 [Metcalf, 1946:179-180] - Algeria, Azores Islands (Portugal), "Ethiopian Region", Israel/Palestine, Madagascar.

u. ochracea Lallemand, 1950

= *Dictyophora unicolor ochracea* Lallemand, 1950b:86.

(Subgenus ***Chanithus*** Kolenati, 1857) [Metcalf, 1946:92-93]

= *Chanithus* Kolenti, 1857:427. Type species: *Flata pannonica* Germar, 1830:47 (designated by Kolenati, 1857:427). Status revised to subgenus of *Dictyophara* by Emeljanov, 2004a:358.

avocetta (Oshanin, 1879) [Metcalf, 1946:93-94] - Armenia, "Caucasus", Iran, Kazakhstan, Russia, "Transcaucasus", "Turkestan".

centroasiaticus Dubovskii, 1966 – Tadzhikistan.

= *Chanithus centroasiaticus* Dubovskii, 1966:44. Status revised by Emeljanov, 2004a:358 (by generic revision).

eifeliana Dlabola, 1993 – Jordan.

= *Dictyophara eifeliana* Dlabola, 1993:65. Status revised by Emeljanov, 2004a:358 (generic synonymy and subgeneric revision).

gramineus (Fabricius, 1803) [Metcalf, 1946:94-97] - Bangladesh, China, "East Indies", India, Indonesia, Guam (United States), Palau, Sri Lanka, Taiwan, Yap (Federated Islands of Micronesia).

hastatus Kusnezov, 1929 [Metcalf, 1946:97] "Turkestan".

infumatus de Bergevin, 1916 [Metcalf, 1946:97] - Morocco.

kaszabi Dlabola, 1967 – Mongolia.

= *Dictyophara kaszabi* Dlabola, 1967b:139. Status revised by Emeljanov, 2004a:358 (generic synonymy and subgeneric revision).

kazeruna Dlabola, 1986 – Iran.

= *Dictyophara kazeruna* Dlabola, 1986:179. Status revised by Emeljanov, 2004a:358 (generic synonymy and subgeneric revision).

longirostris (Walker, 1851) [Metcalf, 1946:98-99] - Caucasus, Portugal, Spain, "Transcaucasia", "Turkestan", Uzbekistan.

merjensis Linnavuori, 1965 – Libya.

= *Dictyophara merjensis* Linnavuori, 1965:17. Status revised by Emeljanov, 2004a:358 (generic synonymy and subgeneric revision).

^***pannonica*** (Germar, 1830) [Metcalf, 1946:99-101] - Austria, Bulgaria, Czech Republic, Germany, Hungary, Italy, Kazakhstan, Romania, Russia, Spain, "Turkestan", Turkey, Uzbekistan.

p. diminutus (Horvath, 1901) [Metcalf, 1946:101]

p. fieberi Metcalf, 1946 [Metcalf, 1946:101-102]

p. viridis (Fieber, 1876) [Metcalf, 1946:102]

scolopax (Oshanin, 1879) [Metcalf, 1946:102] - Kyrgyzstan, "Turkestan", Uzbekistan.

validicornis (Stål, 1859) [Metcalf, 1946:102-103] - Greece, Portugal, Spain.

vittata (Puton, 1892) [Metcalf, 1946:103] - Algeria, Egypt, Eritrea, Isreal/Palestine.

xiphias (Puton, 1884) [Metcalf, 1946:103-104] - Israel/Palestine, Syria.

x. compacta Linnavuori, 1962

= *Dictyophara xiphias compacta* Linnavuori, 1962:9. Status revised by Emeljanov, 2004a:358 (generic synonymy and subgeneric revision).

(Subgenus ***Conopenchus*** Emeljanov, 2004a)

= *Dictyophara* (*Conopenchus*) Emeljanov, 2004a:358. Type species: *Philotheria pazukii* Dlabola, 1984:25 (designated by Emeljanov, 2004a:358).

^***pazukii*** (Dlabola, 1984) – Iran.

= *Philotheria pazukii* Dlabola, 1984:25. Status revised by Emeljanov, 2004a:358(subgeneric revision).

lodosi (Dlabola, 1979) – Turkey.

= *Philotheria lodosi* Dlabola, 1979:239. Status revised by Emeljanov, 2004a:358 (subgeneric revision).

Dictyopharina Melichar, 1903 [Metcalf, 1946:111-112]

consanguinea Distant, 1906 [Metcalf, 1946:112] - India, Myanmar/Burma, Lower Burma, "Indo-China".

longicephala Song and Liang, 2006 – Malaysia.

= *Dictyopharina longicephala* Song and Liang, 2006:595.

octaprotrusa Song and Liang, 2006 – China.

= *Dictyopharina octaprotrusa* Song and Liang, 2006b:27.

pahangensis Song and Liang, 2006 – Malaysia.

= *Dictyopharina pahangensis* Song and Liang, 2006a:597.

sichuanensis Song and Liang, 2006 – China.

= *Dictyopharina sichuanensis* Song and Liang, 2006b:31.

****viridissima*** Melichar, 1903 [Metcalf, 1946:112] - India, Sri Lanka.

Doryphorina Melichar, 1912 [Metcalf, 1946:87]

sobrina (Stål, 1859) [Metcalf, 1946:94-97 as synynym of *Chanithus gramineus*] - Armenia, Bangladesh, Brunei, China, "East Indies", India, "Indo-China", Indonesia, Malaysia, Myanmar/Burma, Philippines, Sri Lanka, Taiwan, "Turkestan".

= *Dictyophara sobrina* (Stål, 1859). Species synonymized with *D. pallida* (Donovan, 1800) by Melichar, 1912. Status revised and restored by Fennah, 1971:595.

****stali*** Melichar, 1912 [Metcalf, 1946:87] - Indonesia, Malaysia, Myanmar/Burma, Vietnam.

s. minor Fennah, 1978

= *Doryphorina stali minor* Fennah, 1978:254.

s. subdeflexa Fennah, 1978

= *Doryphorina stali subdeflexa* Fennah, 1978:254.

Electryone Kirkaldy, 1913 [Metcalf, 1946:79]

****macaonica*** Kirkaldy, 1913 [Metcalf, 1946:79] - China.

Engela Distant, 1906 [Metcalf, 1946:81]

****minuta*** Distant, 1906 [Metcalf, 1946:81-82] - South Africa.

Fernandea Melichar, 1912 [Metcalf, 1946:48]

****conradti*** Melichar, 1912 [Metcalf, 1946:48] - Equatorial Guinea.

Gilgitia Mushtaq, 1991

= *Gilgitia* Mushtaq, 1991:289. Type species: *G. lobata* Mushtaq, 1991:289 (by original designation).

lobata Mushtaq, 1991 – Pakistan.

= *Gilgitia lobata* Mushtaq, 1991:289.

Indrival Fennah, 1978

= *Indrival* Fennah, 1978:257. Type species: *I. nerinus* Fennah, 1978:258 (by original designation).

****nerinus*** Fennah, 1978 – Vietnam.

= *Indrival nerinus* Fennah, 1978:258.

Issomimus Jacobi, 1910 [Metcalf, 1946:119-120]

****meruanus*** Jacobi, 1910 [Metcalf, 1946:120] - Tanzania.

Leprota Melichar, 1912 [Metcalf, 1946:74-75]

****fulgoroides*** (Walker, 1858) [Metcalf, 1946:75 as *fulgoroides*, 47 as *Saigona gibbosa*] - Brunei, China, Indonesia, Japan, Malaysia, Taiwan.

= *Leprota melichari* Fennah, 1963:303-304. Applied as *nom nov.* for *Leprota fulgoroides* Melichar, 1912.

= *Saigona gibbosa* Matsumura, 1910:112, 111 (key), 100, 113 (List). Species synonymized by Liang, 2000:235.

Macronaso Synave, 1960

= *Macronaso* Synave, 1960:382. Type species: *M. ulugurensis* Synave, 1960:382 (by original designation).

****ulugurensis*** Synave, 1960 – Tanzania.

= *Macronaso ulugurensis* Synave, 1960:382

Metaurus Stål, 1866 [Metcalf, 1946:38-39]

****reticulatus*** Stål, 1866 [Metcalf, 1946:39] - Cambodia, Vietnam.

Montrouzierana Signoret, 1861 [Metcalf, 1946:104]

****oxycephala*** (Montrouzier, 1861) [Metcalf, 1946:105] - New Caledonia.

Neodictya Synave, 1965

= *Neodictya* Synave, 1965:35, 43 (key). Type species: *N. izzardi* Synave, 1965:37 (by original designation).

arethusa Linnavuori, 1973 – Sudan.

= *Neodictya arethusa* Linnavuori, 1973:88.

currax Fennah, 1958 – Democratic Republic of the Congo.

= *Paradictya currax* Fennah, 1958a:86. Status revised by Synave, 1965:35.

fluvialis Synave, 1965 – Democratic Republic of the Congo.

= *Neodictya fluvialis* Synave, 1965:40.

****izzardi*** Synave, 1965 – Democratic Republic of the Congo.

= *Neodictya izzardi* Synave, 1965:37.

paupera (Melichar, 1912) [Metcalf, 1946:57] – Democratic Republic of the Congo, Ghana, Tanzania, Togo, "West Africa".

= *Nersia paupera* (Melichar, 1912). Status revised by Fennah, 1958a:65 (to *Afronersia paupera*).

= *Afronersia paupera* (Melichar, 1912). Status revised by Synave, 1965:41.

= *Dictyophora obtusa* Lallemand Synave, 1952:20. Species synonymized by Synave, 1965:41.

suavis Fennah, 1958 – Democratic Republic of the Congo.

= *Paradictya suavis* Fennah, 1958a:87. Status revised by Synave, 1965:35.

Neodictyophara Distant, 1910 [Metcalf, 1946:91]

****nasuta*** Distant, 1910 [Metcalf, 1946:91] - Philippines.

Neommatissus Muir, 1913 [Metcalf, 1946:71-72]

bakeri Muir, 1931 [Metcalf, 1946:72] - Philippines.

basifuscus (Kato, 1933) [Metcalf, 1946:72] - Japan, Taiwan.

batuensis (Baker, 1927) [Metcalf, 1946:72] - Indonesia.

benguetensis (Baker, 1919) [Metcalf, 1946:72] - Philippines.

formosanus (Kato, 1933) [Metcalf, 1946:72] - Japan, Taiwan.

jacobsoni (Melichar, 1914) [Melichar, 1946:72-73] - Indonesia, Philippines.

melichari (Baker, 1919) [Metcalf, 1946:73] - Philippines.

montanus (Baker, 1919) [Metcalf, 1946:73] - Philippines.

penangensis (Baker, 1919) [Metcalf, 1946:73] - Malaysia.

philippinensis (Baker, 1919) [Metcalf, 1946:73] - Philippines.

****spurcus*** Muir, 1913 [Metcalf, 1946:73] - Indonesia.

typicus (Distant, 1916) [Metcalf, 1946:73] - India.

zanatus (Kato, 1933) [Metcalf, 1946:73] - Japan, Taiwan.

Orodictya Kirkaldy, 1913 [Metcalf, 1946:87]

****monticola*** Kirkaldy, 1913 [Metcalf, 1946:87] - Brunei, Indonesia, Malaysia.

Padanda Distant, 1906 [Metcalf, 1946:91-92]

****atkinsoni*** Distant, 1906 [Metcalf, 1946:92] - India.

denti Muir, 1934 [Metcalf, 1946:92] - Kenya.

Paradictya Melichar, 1912 [Metcalf, 1946:105]

****bicoronata*** Melichar, 1912 [Metcalf, 1946:105] - ”East Africa”, Tanzania.

Paranagnia Melichar, 1912 [Metcalf, 1946:48]

aethiopica Melichar, 1912 [Metcalf, 1946:48-49] - ”East Africa”, Ethiopia, Tanzania.

****afra*** (Stål, 1866) [Metcalf, 1946:49] - Senegal, Somalia, Tanzania, ”West Africa”.

apicata Melichar, 1912 [Metcalf, 1946:49] - Tanzania.

fuminervis (Lethierry, 1892) [Metcalf, 1946:49] - Ethiopia, India, ”North East Africa”.

lyco Linnavuori, 1973 – Zaire.

= *Paranagnia lyco* Linnavuori, 1973:87.

pseudoafra Linnavuori, 1976 – Somalia.

= *Paranagnia pseudoafra* Linnavuori, 1976:123-130.

tumida Melichar, 1912 [Metcalf, 1946:49]

villiersi Synave, 1978 – Central African Republic.

= *Paranagnia villiersi* Synave, 1978:591.

Philotheria Melichar, 1912 [Metcalf, 1946:75]

africana Synave, 1965 – Democratic Republic of the Congo.

= *Philotheria africana* Synave, 1965a:21.

antigone Linnavuori, 1973 – Sudan.

= *Philotheria antigone* Linnavuori, 1973:86.

apicata (Melichar, 1904) [Metcalf, 1946:80] - "East Africa", "Northeast Africa".

= *Putala apicata* Melichar, 1904:29. Status revised by Fennah, 1958c:56.

apicemaculata (Stål, 1855) [Metcalf, 1946:148-149] - Cameroon, Ghana, South Africa, Tanzania, Togo, "West Africa".

= *Dyctiophora apicemaculata* (Stål, 1855). Status revised by Synave, 1965a:5.

ceryx Fennah, 1961 – Senegal.

= *Philotheria ceryx* Fennah, 1961:314.

ceto Fennah, 1958 – Democratic Republic of the Congo.

= *Philotheria ceto* Fennah, 1958c:62.

choraules Fennah, 1958 – Senegal.

= *Philotheria pandion* Fennah, 1958b:514.

circe Linnavuori, 1973 – Sudan.

= *Philotheria circe* Linnavuori, 1973:87.

conviva (Melichar, 1912) [Metcalf, 1946:151] - Democratic Republic of the Congo, Togo, "West Africa".

= *Dictyophora conviva* Melichar, 1912. Status revised by Synave, 1965a:5.

damon Fennah, 1958 – Democratic Republic of the Congo, Senegal.

= *Philotheria damon* Fennah, 1958c:60.

decellei Synave, 1965 – Côte d'Ivoire.

= *Philotheria decellei* Synave, 1965b:3.

discalis (Walker, 1858) [Metcalf, 1946:33] - Gambia.

= *Raphiophora discalis* (Walker, 1858): Melichar, 1912:35. Status revised by Synave, 1965a:5.

eurydice Linnavuori, 1973 – Sudan.

= *Philotheria eurydice* Linnavuori, 1973:86.

gorgo Fennah, 1958 – Guinea, Senegal.

= *Philotheria pandion* Fennah, 1958b:517.

jacobii (Melichar, 1912) [Metcalf, 1946:166] - Eritrea, Somalia.

= *Dictyophora jacobii* Melichar, 1912. Status revised by Synave, 1965a:5.

maenalis Fennah, 1958 – Democratic Republic of the Congo.

= *Philotheria maenalis* Fennah, 1958c:59.

natalensis (Stål, 1855) [Metcalf, 1946:170-171] - Demacratic Republic of Congo, South Africa, Sudan, Tanzania.

= *Dyctiophora natalensis* (Stål, 1855). Status revised by Linnavuori, 1973:86 (by implication).

n. affinis Linnavuori, 1973

= *Philotheria natalensis affinis* Linnavuori, 1973:86.

nexa (Melichar, 1912) [Metcalf, 1946:171] - Uganda.

= *Dictyophora nexa* Melichar, 1912. Status revised by Synave, 1965a:5.

pandion Fennah, 1958 – Senegal.

= *Philotheria pandion* Fennah, 1958b:515.

proxima Melichar, 1912

= *Dictyophara proxima* Melichar, 1912. Status revised by Synave, 1965:5.

ornata (Lallemand, 1942) – Niger (Lallemand, 1942a).

= *Dictyophara ornata* Lallemand, 1942a:69 (not seen by Metcalf, 1946). Status revised by Synave, 1965a:5.

rochetii (Guerin-Meneville, 1849) [Metcalf, 1946:175 as rochetii, as transvaaliensis] - "East Africa", Ethiopia, Namibia, Nigeria, Somalia, South Africa, Tanzania, Zimbabwe.

= *Putala transvaaliensis* Distant, 1906:416. Status revised by Fennah, 1958c:56. Species synonymized by Synave, 1965a:14.

****senegalensis*** (Spinola, 1839) [Metcalf, 1946:75] - Angola, Guinea-Bissau, Senegal.

talassio Fennah, 1958 – Democratic Republic of the Congo, Mozambique.

= *Philotheria talassio* Fennah, 1958c:64.

validirostris (Stål, 1866) [Metcalf, 1946:103] - Cameroo, Ghana, Sierra Leone, Tanzania, Togo, "West Africa".

= *Chanithus validirostris* (Stål, 1866). Status revised by Synave, 1965a:5.

vinula (Stål, 1855) [Metcalf, 1946:180] - Kenya, Malawi, Mozambique, "North East Africa", South Africa, Tanzania, Togo.

= *Dyctiophora vinula* (Stål, 1855). Status revised by Synave, 1965a:5.

Piela Lallemand, 1942

= *Piela* Lallemand, 1942b:72. Type species: *P. singularis* Lallemand, 1942b:72-73 (by original designation).

****singularis*** Lallemand, 1942 – China.

= *Piela singularis* Lallemand, 1942b:73 (not seen by Metcalf, 1946).

Protolepta Melichar, 1912 [Metcalf, 1946:77]

****turbata*** Melichar, 1912 [Metcalf, 1946:77] - Indonesia.

Pseudophanella Fennah, 1958

= *Pseudophanella* Fennah, 1958a:93-95. Type species: *P. regina* Fennah, 1958a:94 (by original designation).

astigmatica (Bergroth, 1920) [Metcalf, 1946:149] - Cameroon, Eritrea, "French Congo", Kenya, Malawi, South Africa, Tanzania, Togo.

= *Dyctiophora casta* (Stål, 1855). Species synonymized by Fennah, 1958a:93.

crantor Fennah, 1958 – "French Equatorial Africa", Mali.

= *Pseudophanella crantor* Fennah, 1958b:523.

devincta (Bergroth, 1920) [Metcalf, 1946:153] - Kenya.

= *Dictyophora devincta* Bergroth, 1920. Status revised by Synave, 1965a:47.

frontata (Haglund, 1899) [Metcalf, 1946:165] - Cameroon, Ghana, Togo.

= *Dictyophara frontata* Haglund, 1899. Status revised by Synave, 1965a:47.

montana (Lallemand, 1950) – Senegal.

= *Dictyophora montana* Lallemand, 1950a:632. Status revised by Synave, 1965a:47.

****regina*** Fennah, 1958 – Democratic Republic of the Congo.

= *Pseudophanella regina* Fennah, 1958a:94.

r. sollennis Fennah, 1958

= *Pseudophanella regina* sollennis Fennah, 1958a:95.

ripuaris (Lallemand, 1952) – Benin.

= *Dictyophora ripuaris* Lallemand, 1952:166. Status revised by Synave, 1965a:47.

saegeri Synave, 1965 – Democratic Republic of the Congo.

= *Pseudophanella saegeri* Synave, 1965a:59.

similis van Stalle, 1982 – Cameroon.

= *Pseudophanella similis* van Stalle, 1982:16.

somaliana (Lallemand, 1935) [Metcalf, 1946:179] - Somalia.

= *Dictyophara somaliana* (Lallemand, 1935). Status revised by Synave, 1965a:47.

turbata (Lallemand, 1950) – "French Equatorial Africa", Mali, Senegal.

= *Dictyophora turbata* Lallemand, 1950a:633. Status revised by Synave, 1965a:47.

= *Pseudophanella cliduchus* Fennah, 1958b:521. Species synonymized by Synave, 1965a:47.

Raivuna Fennah, 1978

= *Raivuna* Fennah, 1978:255. Type species: *R. micida* Fennah, 1978:255 (by original designation).

albivitta (Walker, 1851) [Metcalf, 1946:94-97 as syn. of *Chanithus gramineus*] - Bangladesh, India, Sri Lanka.

= *Dictyophora albivitta* Walker, 1851. Species synonymized with *Dictophara pallida* (Donovan, 1800) by Distant, 1906. Status restored and revised by Fennah, 1978:256.

coimbatorensis Distant, 1914 [Metcalf, 1946:150] - India.

= *Dictyophara coimbatorensis* Distant, 1914. Status revised by Fennah, 1978:256.

despecta (Walker, 1851) [Metcalf, 1946:94-97 as syn. of *Chanithus gramineus*] - India.

= *Dictyophora despecta* Walker, 1851. Species synonymized with *Dictophara pallida* (Donovan, 1800) by Distant, 1906. Status restored and revised by Fennah, 1978:256.

inscripta (Walker, 1851) [Metcalf, 1946:176-177 as *Dictyophora sinica*] - China, Japan.

= *Dictyophora inscripta* Walker, 1851. Species synonymized with *D. sinica* by Stål, 1862. Status restored and revised by Fennah, 1978:256.

insculpta (Walker, 1858) [Metcalf, 1946:176-177 as *Dictyophora sinica*] – China, Taiwan.

= *Dictyophora insculpta* Walker, 1858. Species synonymized with *D. sinica* by Stål, 1862. Status restored and revised by Fennah, 1978:256.

leptorhina (Walker, 1851) [Metcalf, 1946:94-97 as syn. of *Chanithus gramineus*] - "East Indies", India, Indonesia.

= *Dictyophora leptorhina* Walker, 1851. Species synonymized with *Dictyophara pallida* (Donovan, 1800) by Distant, 1906. Status restored and revised by Fennah, 1978:256.

micida Fennah, 1978 – Vietnam.

= *Raivuna micida* Fennah, 1978:255.

percarinata (Kirby, 1891) [Metcalf, 1946:94-97 as syn. of *Chanithus gramineus*] - Indonesia, Sri Lanka.

= *Dictyophora percarinata* Kirby, 1891. Species synonymized with *Dictyophara pallida* (Donovan, 1800) by Distant, 1906. Status restored and revised by Fennah, 1978:256.

sinica (Walker, 1851) [Metcalf, 1946:176-177] - China, Japan, Korea, Taiwan, Thailand.

= *Dictyophora sinica* Walker, 1851. Status revised by Fennah, 1978:256.

walkeri (Atkinson, 1886) [Metcalf, 1946:181] - India.

= *Dictyophara walkeri* Atkinson, 1886. Status revised by Fennah, 1978:256.

Raphiophora Schaum, 1851 [Metcalf, 1946:32-33]

gollnerae Synave, 1971 – Tanzania.

= *Raphiophora gollnerae* Synave, 1971:7.

intricata Melichar, 1912 [Metcalf, 1946:33] - South Africa, Tanzania.

nigrifrons Melichar, 1912 [Metcalf, 1946:33] - Cameroon, Democratic Republic of the Congo, Gabon, Togo.

tihama Dlabola, 1980 – Saudi Arabia.

= *Raphiophora tihama* Dlabola, 1980:76.

****vitrea*** (Schaum, 1850) [Metcalf, 1946:33-34] - Botswana, Cameroon, Mozambique, Nigeria, Senegal, South Africa.

zephyra (Gerstaecker, 1895) [Metcalf, 1946:34] - Cameroon, Democratic Republic of the Congo, ”French Equitorial Africa”, Gabon, Guinea-Bissau, Nigeria, Senegal, Sierra Leone, Togo.

Rhaba Distant, 1906 [Metcalf, 1946:89]

****fasciata*** Distant, 1906 [Metcalf, 1946:89] - South Africa.

Scolopsomorpha Melichar, 1912 [Metcalf, 1946:114]

****africana*** Melichar, 1912 [Metcalf, 1946:114] - Tanzania.

Sinodictya Matsumura, 1940 [Metcalf, 1946:120]

****tukana*** Matsumura, 1940 [Metcalf, 1946:120] - China, Singapore.

Spathocranus Muir, 1934 [Metcalf, 1946:92]

*****mikado*** Muir, 1934 [Metcalf, 1946:92] - Kenya.

Symplana Kirby, 1891 [Metcalf, 1946:114]

*****viridinervis*** Kirby, 1891 [Metcalf, 1946:114] - India, Philippines, Sri Lanka.

Tenguella Matsumura, 1910 [Metcalf, 1946:111]

*****mitsuhashii*** Matsumura, 1910 [Metcalf, 1946:111] - Japan.

Tenguna Matsumura, 1910 [Metcalf, 1946:111]

*****watanabei*** Matsumura, 1910 [Metcalf, 1946:111] - Japan, Taiwan.

Togaphora Matsumura, 1940 [Metcalf, 1946:120]

*****hokuryonis*** Matsumura, 1940 [Metcalf, 1946:120] - China.

Tropidophara Bierman, 1910 [Metcalf, 1946:104]

*****dubiata*** Bierman, 1910 [Metcalf, 1946:104] - Indonesia.

javana (Lethierry, 1888) [Metcalf, 1946:104] - Brunei, China, Indonesia, Malaysia, Philippines, Singapore.

Viridophara Mushtaq, Mahmood and Ahmed, 1992

= *Viridophara* Mushtaq, Mahmood and Ahmed, 1992:38, 39 (key). Type species: *V. cynodonae* Mushtaq *et al.*, 1992:38 (by original designation).

angulata Mushtaq, Mahmood and Ahmed, 1992 – Pakistan.

= *Viridophara angulata* Mushtaq, Mahmood and Ahmed, 1992:41.

carinata Mushtaq, Mahmood and Ahmed, 1992 – Pakistan.

= *Viridophara carinata* Mushtaq, Mahmood and Ahmed, 1992:43.

****cynodonae*** Mushtaq, Mahmood and Ahmed, 1992 – Pakistan.

= *Viridophara cynodonae* Mushtaq, Mahmood and Ahmed, 1992:39.

tschitralica (Dlabola, 1960) – "Kashmir".

= *Dictyophara tschitralica* Dlabola, 1960:51. Status revised by Mushtaq, Mahmood and Ahmed, 1992:45.

Zedochir Fennah, 1978

= *Zedochir* Fennah, 1978:253. Type species: *Fulgora lineata* Donovan, 1800:[1] (designated by Fennah, 1978:253).

****lineata*** (Donovan, 1800) [Metcalf, 1946:85] - Bangladesh, China, India, Sri Lanka.

= *Thanatodictya lineata* (Donovan, 1800). Status revised by Fennah, 1978:253.

Tribe **Hastini** Emeljanov, 1983a

Hasta Kirkaldy, 1906 [Metcalf, 1946:88]

atbarae (Distant, 1906) [Metcalf, 1946:88] - "East Africa", Ethiopia, Kenya.

****hastata*** Kirkaldy, 1906 [Metcalf, 1946:88] - Australia.

lineata Muir, 1934 [Metcalf, 1946:88] - Côte d'Ivoire.

ogadensis (Melichar, 1904) [Metcalf, 1946:88-89] - "East Africa", Somalia, Sudan, Tanzania, Uganda.

pallidinervis Muir, 1934 [Metcalf, 1946:89] - Namibia.

pallidior Fennah, 1958 – Mali.

= *Hasta pallidior* Fennah, 1958b:518.

paupera Kirkaldy, 1906 [Metcalf, 1946:89] - Australia.

ufudensis (Melichar, 1904) [Metcalf, 1946:89] - "East Africa", Somalia, Sudan, Tanzania.

viridis Muir, 1934 [Metcalf, 1946:89] - Namibia.

Thanatodictya Kirkaldy, 1906 [Metcalf, 1946:82]

(Subgenus ***Thanatodictya*** Kirkaldy, 1906) [Metcalf, 1946:83]

****praeferrata*** (Distant, 1892) [Metcalf, 1946:83] - Australia.

handschini Lallemand, 1935 [Metcalf, 1946:82] - Australia.

nigricoxis Jacobi, 1941 [Metcalf, 1946:83] - Indonesia.

(Subgenus ***Niculda*** Kirkaldy, 1906) [Metcalf, 1946:83-84]

fuscovittata (Stål, 1859) [Metcalf, 1946:84] - Indonesia, Malaysia, Philippines, Taiwan.

hebe Kirkaldy, 1906 [Metcalf, 1946:84] - Australia.

^***insignis*** (Distant, 1892) [Metcalf, 1946:84] - Australia.

psyche Kirkaldy, 1906 [Metcalf, 1946:85] - Australia.

tillyardi Myers, 1923 [Metcalf, 1946:85] - New Zealand.

(Subgenus ***Lucinda*** Kirkaldy, 1906) [Metcalf, 1946:86]

^***bifasciata*** (Distant, 1892) [Metcalf, 1946:86] - Australia.

Tribe **Igavini,** tribus nov.

Dictyopharoides Fowler, 1900 [Metcalf, 1946:75-76]

apicalis Melichar, 1912 [Metcalf, 1946:76] - Brazil.

inficita Melichar, 1912 [Metcalf, 1946:76] - Ecuador.

lurida Melichar, 1912 [Metcalf, 1946:76] - Ecuador.

porrecta Melichar, 1912 [Metcalf, 1946:76] - Peru.

rectirostris (Spinola, 1852) [Metcalf, 1946:77] - Chile.

****tenuirostris*** Fowler, 1900 [Metcalf, 1946:77] - Mexico, Panama.

Hydriena Melichar, 1912 [Metcalf, 1946:46]

****ferruginea*** (Walker, 1851) [Metcalf, 1946:46, as *H. distanti*] - Guyana, Suriname.

= *Hydriena distanti* Melichar, 1912. Species synonymized by Fennah, 1947:2.

Igava Melichar, 1912 [Metcalf, 1946:39]

****callipepla*** (Gerstaecker, 1895) [Metcalf, 1946:39] - Peru.

hartae O'Brien, 1999 – Bolivia.

= *Igava hartae* O'Brien, 1999:60.

Neomiasa Fennah, 1947

= *Neomiasa* Fennah, 1947:5. Type species: *Dictyphora telifera* Walker, 1858:64 (designated by Fennah, 1947:5).

****telifera*** Walker, 1858 [Metcalf, 1946:67, as *Toropa ferrifera*] - Brazil.

= *Dictyophora telifera* Walker, 1858. Species synonymized with *Toropa ferrifera* (Walker, 1851) by Melichar, 1912. Status restored and revised by Fennah, 1947:5.

Paramisia Melichar, 1912 [Metcalf, 1946:75-76, as a synonymy of *Dictyopharoides*]

= *Paramisia* Melichar, 1912. Genus synonymized with *Dictyopharoides* Fowler, 1900 by Metcalf, 1938. Status restored by Fennah, 1947:4

filifera (Walker, 1858) [Metcalf, 1946:164] - Brazil.

= *Dictyophora filifera* Walker, 1858. Status revised by Fennah, 1947:4.

rufistigma (Walker, 1851) [Metcalf, 1946:175 as *Dictyophora rufistigma*, 77 as *Dictyopharoides sulcirostris*] - Argentina, Brazil, Uruguay.

= *Dictyophora rufistigma* Walker, 1851. Status revised by Fennah, 1947:4.

= *Dictyopharoides sulcirostris* (Berg, 1879). Species synonymized by Fennah, 1947:4.

****suturata*** Melichar, 1912 [Metcalf, 1946:77] - Paraguay.

= *Dictyopharoides suturata* (Melichar, 1912). Status restored by Fennah, 1947:4.

Toropa Melichar, 1912 [Metcalf, 1946:67]

****ferrifera*** (Walker, 1851) [Metcalf, 1946:67] – Brazil, Guyana, Peru, "South America", Suriname, Trinidad, Venezuela.

= *Dictyophora telifera* Walker, 1858:64. Species synonymized by Melichar, 1912:80.

melanogona (Walker, 1858) [Metcalf, 1946:67 as synonym of *T. ferrifera*] – Brazil.

= *Dictyophora melanogona* Walker, 1858:63. Species synonymized with *D. ferrifera* Walker, 1851 by Distant, 1906:351. Status restored and revised by O'Brien, 1999:56.

remanei O'Brien, 1999 – Venezuela.

= *Toropa remanei* O'Brien, 1999:58.

Trigava O'Brien, 1999

= *Trigava* O'Brien, 1999:60. Type species: *Igava brachycephala* Melichar, 1912:49 (designated by O'Brien, 1999:60).

****brachycephala*** (Melichar, 1912) [Metcalf, 1946:39] - Peru.

= *Igava brachycephala* Melchar, 1912. Status revised by O'Brien, 1999:60.

recurva (Melichar, 1912) [Metcalf, 1946:39] - Bolivia, Peru.

= *Igava recurva* Melichar, 1912. Status revised by O'Brien, 1999:60.

Tribe **Lappidini** Emeljanov, 1983a

Lappida Amyot and Serville, 1843 [Metcalf, 1946:67-69]

armata Melichar, 1912 [Metcalf, 1946:69] - Brazil.

canaliculata Melichar, 1912 [Metcalf, 1946:69] - Columbia.

cayennensis Melichar, 1912 [Metcalf, 1946:69] - French Guiana.

chlorochroma (Walker, 1851) [Metcalf, 1946:69] - Guatemala, Honduras, Mexico, Panama.

ferocula (Distant, 1887) [Metcalf, 1946:69-70] - Bolivia, "Central America", Colombia, Costa Rica, Ecuador, Panama, "South America".

fusca Metcalf, 1938 [Metcalf, 1946:70] - Panama.

gracilis Melichar, 1912 [Metcalf, 1946:70] – Costa Rica, Honduras, Nicaragua.

harderi Schmidt, 1931 [Metcalf, 1946:70] - Columbia.

inca Schmidt, 1927 [Metcalf, 1946:70] - Bolivia.

instabilis Melichar, 1912 [Metcalf, 1946:70] - French Guiana, Panama.

lappidaoides Melichar, 1912 [Metcalf, 1946:70] - Mexico.

longirostris Schmidt, 1927 [Metcalf, 1946:70] - Panama.

metchroma O'Brien, 1987 – Panama.

= *Lappida metchroma* O'Brien, 1987:384.

****proboscidea*** (Spinola, 1839) [Metcalf, 1946:70-71] - Argentina, Brazil.

rubrovittata Metcalf, 1938 [Metcalf, 1946:71] - Panama.

stratiotes (Gerstaecker, 1895) [Metcalf, 1946:71] - Brazil.

tumidifrons (Walker, 1858) [Metcalf, 1946:179] - Brazil, Panama, "South America".

= *Dictyophora tumidifrons* Walker, 1858:65. Status revised by Fennah, 1947:3.

Paralappida Melichar, 1912 [Metcalf, 1946:73-74]

constricta (Stål, 1862) [Metcalf, 1946:74] - Brazil.

limbativentris (Stål, 1862) [Metcalf, 1946:74] - Brazil.

Tribe **Nersiini** Emeljanov, 1983a

Megadictya Melichar, 1912 [Metcalf, 1946:52]

obtusifrons (Walker, 1851) [Metcalf, 1946:63 as *Hyalodictyon obtusifrons*, 52 as *M. multispinosa*] - Bolivia, Brazil, "Central America", Costa Rica, "Guiana", Panama, Peru, "South America", "West Indies".

= *Hyalodictyon obtusifrons* (Walker, 1851). Status revised by Fennah, 1947:2, 3.

= *Megadictya multispinosa* Melichar, 1912. Species synonymized by Fennah, 1947:2, 3.

Melicharoptera Metcalf, 1938 [Metcalf, 1946:52]

polyneura (Berg, 1883) [Metcalf, 1946:52] - Argentina, Brazil, Uruguay.

rostrata (Melichar, 1912) [Metcalf, 1946:52-53] - Brazil, "South America".

tucumana (Melichar, 1912) [Metcalf, 1946:53] - Argentina, "South America".

Nersia Stål, 1862 [Metcalf, 1946:54]

aridella Melichar, 1912 [Metcalf, 1946:54-55] - Brazil.

chlorophana Melichar, 1912 [Metcalf, 1946:55] - Brazil, "South America".

distinguenda (Spinola, 1839) [Metcalf, 1946:55] - Brazil, Chile, French Guiana, "South America", Venezuela.

florens Stål, 1862 [Metcalf, 1946:55-56] – Argentina, Bolivia, Brazil, ”Central America”, Columbia, El Salvador, Guatemala, Guyana, Jamaica, Mexico, Nicaragua, ”North America”, Panama, Peru, ”South America”, Suriname, United States.

florida Fennah, 1944c [Metcalf, 1946:56] - United States.

fugax (Melichar, 1912) [Metcalf, 1946:56]: Cameroon.

****haedina*** Stål, 1862 [Metcalf, 1946:56] – Brazil, Costa Rica, Paraguay.

orbata (Melichar, 1912) [Metcalf, 1946:57] - ”East Africa”, Malawi, Tanzania.

ornata Melichar, 1912 [Metcalf, 1946:57] - ”Guiana”, ”South America”.

pudica Stål, 1862 [Metcalf, 1946:57] - Brazil, ”South America”.

recurvirostris Stål, 1862 [Metcalf, 1946:57] - Brazil, ”South America”.

serena (Stål, 1866) [Metcalf, 1946:57-58] - Cameroon, Democratic Republic of the Congo, ”East Africa”, Guyana, Nigeria, Sierra Leone, South Africa, Tanzania, Togo, Uganda, ”West Africa”.

sertata (Jacobi, 1904) [Metcalf, 1946:58] - Brazil, ”South America”, Uruguay.

viridis (Olivier, 1791) [Metcalf, 1946:58-59] - Argentina, Bolivia, Brazil, ”Central America”, Columbia, Ecuador, Honduras, Mexico, Peru, ”South America”, Suriname, Venezuela.

Plegmatoptera Spinola, 1839 [Metcalf, 1946:49-50]

flaviscutellata Schmidt, 1915 [Metcalf, 1946:50] - Bolivia.

****prasina*** Spinola, 1839 [Metcalf, 1946:50-51] - Brazil, French Guiana, ”South America”.

vicina Gerstaecker, 1895 [Metcalf, 1946:51] - Peru.

Pteroplegma Melichar, 1912 [Metcalf, 1946:53]

brachyceps Melichar, 1912 [Metcalf, 1946:53] - Bolivia.

****jacobiana*** Metalf, 1946 [Metcalf, 1946:53] - Brazil, ”South America”.

longiceps Schmidt, 1932 [Metcalf, 1946:53] - Brazil.

Retiala Fennah, 1944c [Metcalf, 1946:61-62]

****proxima*** Fennah, 1944c [Metcalf, 1946:62] - Mexico.

pudibunda (Stål, 1862) [Metcalf, 1946:62] - Bolivia, Brazil.

viridis Fennah, 1945c [Metcalf, 1946:62] - Trinidad.

Trimedia Fennah, 1944c [Metcalf, 1946:61]

****viridata*** (Stål, 1862) [Metcalf, 1946:61] - Argentina, Brazil, Paraguay, ”South America”, Venezuela.

Tribe **Orthopagini** Emeljanov, 1983a

Centromeria Stål, 1870 [Metcalf, 1946:36]

cephalica Distant, 1906 [Metcalf, 1946:36] - India, Indonesia.

inspinata Haupt, 1917 [Metcalf, 1946:37] - Indonesia.

****longipennis*** (Walker, 1851) [Metcalf, 1946:37] - Brunei, Indonesia, Malaysia, Philippines.

manchurica Kato, 1932 [Metcalf, 1946:37] - China, Japan.

simulata Distant, 1906 [Metcalf, 1946:37] - India.

speilinea (Walker, 1857) [Metcalf, 1946:37-38] - Brunei, India, Indonesia, Malaysia, Myanmar/Burma, Singapore.

viridistigma (Kirby, 1891) [Metcalf, 1946:38] - Sri Lanka, "East Indies".

v. flavolineata Melichar, 1912 [Metcalf, 1946:38]

Miasa Distant, 1906 [Metcalf, 1946:34-35]

producta (Lethierry, 1888) [Metcalf, 1946:35] - Brunei, Indonesia, Malaysia, Myanmar/Burma.

rubrovittata Schmidt, 1906 [Metcalf, 1946:35] - Brunei, Indonesia, Malaysia.

****smaragdilinea*** (Walker, 1857) [Metcalf, 1946:35-36] - Brunei, India, Indonesia, Malaysia, Myanmar/Burma, Singapore.

wallacei Muir, 1923 [Metcalf, 1946:36] - Malaysia, Thailand.

Orthopagus Uhler, 1896 [Metcalf, 1946:40-41]

elegans Melichar, 1912 [Metcalf, 1946:41-42] - Japan, Taiwan.

helios Melichar, 1912 [Metcalf, 1946:42] - Japan, Taiwan.

h. diffusus Melichar, 1912 [Melichar, 1946:42]

****lunulifer*** Uhler, 1896 [Metcalf, 1946:42-43] - China, India, Japan, Taiwan.

philippinus Melichar, 1912 [Metcalf, 1946:43] - Philippines.

splendens (Germar, 1830) [Metcalf, 1946:43-45] - China, "East Indies", India, Indonesia, Japan, Malaysia, Myanmar/Burma, "Oriental Region", Philippines, Sri Lanka, Taiwan.

s. tibialis (Kirkaldy, 1913:12)

Phaenodictyon Fennah, 1958

= *Phaenodictyon* Fennah, 1958c:88, 89, 91. Type species: *P. theonoe* Fennah, 1958c:89 (by original designation).

elliptica (Walker, 1851) [Metcalf, 1946:153-154] - Angola, Cameroon, Equatorial Guinea, "Frence Congo", Gabon, Sierra Leone, Somalia, Tanzania, Togo, "West Africa".

= *Dictyophora elliptica* Walker, 1851. Status revised by Fennah, 1958c:88.

nigropictum Fennah, 1958 – Democratic Republic of the Congo.

= *Phaenodictyon nigropictum* Fennah, 1958c:91.

****theonoe*** Fennah, 1958 – Democratic Republic of the Congo.

= *Phaenodictyon theonoe* Fennah, 1958c:89.

Putala Melichar, 1903 [Metcalf, 1946:79-80]

brachycephala Distant, 1906 [Metcalf, 1946:80] - India, Malaysia, Singapore.

figurata Singh-Pruthi, 1925 [Metcalf, 1946:80]

maculata Distant, 1906 [Metcalf, 1946:80] - India.

****rostrata*** Melichar, 1903 [Metcalf, 1946:80] - Sri Lanka.

Saigona Matsumura, 1910 [Metcalf, 1946:47 as *Saigona*, 78 as *Neoputala*]

capitata (Distant, 1914) [Melichar, 1946:78] - "Indo-China".

= *Neoputala capitata* Distant, 1914. Status revised by Liang, 2000:236.

taiwanella Matsumura, 1941 – Taiwan.

= *Saigona taiwanella* Matsumura, 1941:163 (not seen by Metcalf).

ussuriensis (Lethierry, 1878) [Metcalf, 1946:48 as *S. ussuriensis*, 47 as *S. ishidae*, 79 as *Neoputala lewisi*] - China, Japan, Russia.

= *Saigona ishidae* (Matsumura, 1905). Species synonymized by Liang, 2000:236.

= *Neoputala lewisi* (Distant, 1906). Species synonymized by Liang, 2000:236.

Tribe **Rhynchomitrini,** tribus nov.

Digitocrista Fennah, 1944c [Metcalf, 1946:66]

****bubala*** (Stål, 1862) [Metcalf, 1946:66] - Bolivia, Brazil, "South America".

Dorimargus Melichar, 1912 [Metcalf, 1946:74]

****antoniae*** Melichar, 1912 [Metcalf, 1946:74] - Brazil, "South America".

Eudictya Melichar, 1912 [Metcalf, 1946:90]

****grata*** Melichar, 1912 [Metcalf, 1946:90] - Argentina.

similis Melichar, 1912 [Metcalf, 1946:90] - Argentina.

Hyalodictyon Fennah, 1944c [Metcalf, 1946:62]

apicatum (Melichar, 1912) [Metcalf, 1946:62] - Brazil.

brachyrhinum (Walker, 1851) [Metcalf, 1946:62-63] - Columbia, Ecuador, Guatemala, Panama.

bugabae Fennah, 1947 [Metcalf, 1946:63, as *H. obtusifrons*] – Bolivia, Brazil, "Guiana", Panama, Peru, "West Indies".

= *Hyalodictyon bugabae* Fennah, 1947:8. Applied as a *nom nov.* for *H. obtusifrons* (Distant, 1887) [nec Walker, 1851].

centraliamericanum Fennah, 1947 – Guatemala.

= *Hyalodictyon centrali-americanum* Fennah, 1947:8.

fallax Fennah, 1945c [Metcalf, 1946:63] - Trinidad.

fusiforme (Walker, 1851) [Metcalf, 1946:63, as jr. syn. of *H. platyrhinum*] - Bolivia, Brazil, Columbia, Costa Rica, Guyana, Mexico, Panama.

= *Dictyophora fusiformis* Walker, 1851:315. Species synonymized with *H. platyrhinum* (Walker, 1851) by Stål, 1862:487. Status restored by Fennah, 1947 (to *Hyalodictyon*).

metcalfi O'Brien, 1987 – Panama.

= *Hyalodictyon metcalfi* O'Brien, 1987:384.

nodivena (Walker, 1858) [Metcalf, 1946:64, as jr. syn. of *H. truncatum*] - Bolivia, Brazil, "Central America", Ecuador, Guyana, Panama, Peru, "South America".

platyrhinum (Walker, 1851) [Metcalf, 1946:63] - Brazil, Panama, "South America".

taurinum (Stål, 1862) [Metcalf, 1946:64] - Brazil.

teapanum Fennah, 1947 – Mexico.

= *Hyalodictyon teapanum* Fennah, 1947:6.

****truncatum*** (Walker, 1851) [Metcalf, 1946:64] - Brazil, "Central America", Guyana, "South America", "West Indies".

Mitrops Fennah, 1944c [Metcalf, 1946:59]

dioxys (Walker, 1858) [Metcalf, 1946:59-60] - Argentina, "Central America", Costa Rica, Guatemala, Mexico, Panama, Paraguay, "South America", United States.

****noctividus*** (Linnaeus, 1758) [Metcalf, 1946:60-61] - Brazil, "Central America", French Guiana, "South America", Suriname, "West Indies".

Parahasta Melichar, 1912 [Metcalf, 1946:87-88]

****stiegelmayri*** Melichar, 1912 [Metcalf, 1946:88] - Brazil, "South America".

Pharodictyon Fennah, 1944c [Metcalf, 1946:66-67]

****latum*** Fennah, 1944c [Metcalf, 1946:67] - Bolivia.

Rhynchomitra Fennah, 1944c [Metcalf, 1946:64]

lingula (Van Duzee, 1908) [Metcalf, 1946:64-65] - United States.

mexicana Fennah, 1944c [Metcalf, 1946:65] - Mexico.

****microrhina*** (Walker, 1851) [Metcalf, 1946:65-66]: United States.

recurva (Metcalf, 1923) [Metcalf, 1946:66] - United States.

Taractellus Metcalf, 1948 [Metcalf, 1946:113 as *Chondrodera*]

= *Chondrodera* Melichar, 1912:157, 217 [nec Karsch, 1890]. Type species: *C. granicollis* Melichar, 1912, by original designation. Genus

synonymized with *Taracticus* Berg, 1881 [nec Leow, 1872] by Fennah, 1947:10. Status restored by Fennah, 1965:260. ***Syn. nov.***

= *Taractellus* Metcalf, 1948:77 applied as *nom nov.* for *Taracticus* Berg, 1881 [nec Leow, 1872]. Type species: *Cixius chilensis* Spinola, 1852:265, designated by Berg, 1881:265. Genus synonymized by Fennah, 1965:260 (to *Chondrodera*). Error - Status restored.

****chilensis*** (Spinola, 1852) [Metcalf, 1946:113] - Chile.

= *Cixius chilensis* Spinola, 1852. Status revised by Berg, 1881 (to *Taracticus*, missed by Metcalf, 1946).

= *Taracticus chilensis* (Spinola, 1852). Status revised by Metcalf, 1948:77 (to *Taractellus*, by generic revision).

= *Taractellus chilensis* (Spinola, 1852). Status revised by Fennah, 1965:260 (to *Chondrodera*). Error – Status restored.

= *Chondrodera chilensis* Melichar, 1912. Species synonymized with *Taracticus chilensis* (Spinola, 1852) by Fennah, 1947:10.

granicollis Melichar, 1912 [Metcalf, 1946:113-114] - Chile.

= *Chondrodera granicollis* Melichar, 1912. Status revised by Fennah, 1947:10 (to *Taracticus*, by implication). Status restored by Fennah, 1965:260. Status revised.

Tribe **Scoloptini** Emeljanov, 1983a

Brachytaosa Muir, 1931 [Metcalf, 1946:110]

****venturii*** Muir, 1931 [Metcalf, 1946:110] - Argentina.

Phylloscelis Germar, 1839 [Metcalf, 1946:114-116]

atra Germar, 1839 [Metcalf, 1946:116-117] - Mexico, United States.

a. albovenosa Melichar, 1906 [Metcalf, 1946:117-118]

a. ocala Ball, 1930 [Metcalf, 1946:118]

****pallescens*** Germar, 1839 [Metcalf, 1946:118-119] - Mexico, United States.

pennata Ball, 1937 [Metcalf, 1946:119] - United States.

rubra Ball, 1930 [Metcalf, 1946:119] - United States.

r. nigra Ball, 1930 [Metcalf, 1946:119]

Scolops Schaum, 1850 [Metcalf, 1946:120-122]

(Subgenus ***Belonocharis*** Uhler, 1891) [Metcalf, 1946:136]

abnormis Ball, 1902 [Metcalf, 1946:136-137] - United States.

californicus Lawson and Beamer, 1930 [Metcalf, 1946:137] - United States.

fumidus (Uhler, 1891) [Metcalf, 1946:137] - United States.

pallidus Uhler, 1900 [Metcalf, 1946:137-138] - Mexico, United States.

p. punctata Lawson and Beamer, 1930

(Subgenus ***Scolops*** Schaum, 1850) [Metcalf, 1946:124]

angustatus Uhler, 1876 [Metcalf, 1946:124-125] - Canada, United States.

austrinus Breakey, 1929 [Metcalf, 1946:125] - United States.

cockerelli (Fowler, 1904) [Metcalf, 1946:125] - Mexico, United States.

excultus Lawson and Beamer, 1930 [Metcalf, 1946:125] - United States.

flavidus Breakey, 1929 [Metcalf, 1946:125-126] - United States.

f. pellos Breakey, 1929 [Metcalf, 1946:126]

graphicus Ball, 1930 [Metcalf, 1946:126] - United States.

grossus Uhler, 1876 [Metcalf, 1946:126] - Canada, United States.

hesperius Uhler, 1872 [Metcalf, 1946:126-127] - Canada, United States.

immanis Breakey, 1929 [Metcalf, 1946:127] - United States.

luridus Breakey, 1929 [Metcalf, 1946:127] - United States.

maculosus Ball, 1902 [Metcalf, 1946:127-128] - United States.

neomexicanus Lawson and Beamer, 1930 [Metcalf, 1946:128] - United States.

nicholi Ball, 1937 [Metcalf, 1946:128] - United States.

osborni Ball, 1902 [Metcalf, 1946:128] - United States.

perdix Uhler, 1900 [Metcalf, 1946:128-129] - United States.

pruinosus Breakey, 1929 [Metcalf, 1946:129] - United States.

pungens (Germar, 1830) [Metcalf, 1946:129-131] – Canada, Mexico, United States.

robustus Ball, 1902 [Metcalf, 1946:131] - Mexico, United States.

snowi Breakey, 1929 [Metcalf, 1946:131] - United States.

socorroensis Lawson and Beamer, 1930 [Metcalf, 1946:132] - United States.

stonei Breakey, 1929 [Metcalf, 1946:132] - United States.

****sulcipes*** (Say, 1825) [Metcalf, 1946:132-134] - Canada, United States.

tanneri Ball, 1937 [Metcalf, 1946:134] - United States.

texanus Lawson and Beamer, 1930 [Metcalf, 1946:134] - United States.

uhleri Ball, 1902 [Metcalf, 1946:134-135] - United States.

u. marginatus Ball, 1930 [Metcalf, 1946:135]

vanduzeei Ball, 1902 [Metcalf, 1946:135] - United States.

virescens Ball, 1937 [Metcalf, 1946:135] - United States.

v. salsus Ball, 1937 [Metcalf, 1946:135]

viridis Ball, 1902 [Metcalf, 1946:135-136] - United States.

Sicorisia Melichar, 1912 [Metcalf, 1946:113]

breviceps Fennah, 1965 – Chile (Fennah, 1965).

= *Sicorisia breviceps* Fennah, 1965:261.

****discreta*** (Melichar, 1912) [Metcalf, 1946:113] - Chile.

Tribe **Sicorini,** tribus nov.

Sicoris Stål, 1866 [Metcalf, 1946:112]

****gayi*** (Spinola, 1852) [Metcalf, 1946:113] - Chile.

Tribe **Taosini** Emeljanov, 1983a

Taosa Distant, 1906 [Metcalf, 1946:105]

(Subgenus ***Taosa*** Distant, 1906:355)

amazonica Fennah, 1945c [Metcalf, 1946:106] - Brazil.

bimaculifrons Muir, 1931 [Metcalf, 1946:106] - Brazil, Ecuador, Venezuela.

holmgreni Muir, 1931 [Metcalf, 1946:106] - Bolivia, Peru.

lineatifrons Muir, 1931 [Metcalf, 1946:106] - Brazil.

muiri Metcalf, 1945 - Guyana

= *Taosa muiri* Metcalf, 1945:132 (not included in Metcalf, 1946)

muliebris (Walker, 1858) [Metcalf, 1946:106] - Brazil, Guyana.

peruviana Synave, 1969 – Peru.

= *Taosa peruviana* Synave, 1969b:3, 12-13.

rufa Muir, 1931 [Metcalf, 1946:107] - Brazil.

scriptiventris (Walker, 1858) [Metcalf, 1946:107, as *T. scriptiventris* and *T. pseudoscriptiventris*] - Brazil, Panama.

= *Taosa pseudoscriptiventris* Muir, 1931. Species synonymized by Fennah, 1947:9.

sororcula (Berg, 1879) [Metcalf, 1946:107] - Argentina, "South America", Uruguay.

****suturalis*** (Germar, 1830) [Metcalf, 1946:107-108] - Brazil, Paraguay, Peru, "South America", Suriname, Uruguay.

terminalis (Germar, 1830) [Metcalf, 1946:108] - Brazil, Costa Rica, Guyana, "South America".

viridifrons (Walker, 1858) [Metcalf, 1946:108] - Bolivia, Brazil, Peru.

viridis Muir, 1931 [Metcalf, 1946:108] - Brazil.

vitrata (Fabricius, 1803) [Metcalf, 1946:109] - Brazil, Mexico, Panama, Peru, "South America", Venezuela.

(Subgenus ***Cuernavaca*** Kirkaldy, 1913)

herbida (Walker, 1851) [Metcalf, 1946:109-110 as *T. herbida*, 106 as *T. nigronotata*] – Argentina, Belize, Brazil, "Central America", Colombia, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, "South America", Venezuela.

= *Taosa nigronotata* (Stål, 1862). Species synonymized by Synave, 1969b:3, 5, 7.

inexacta (Walker, 1858) [Metcalf, 1946:110 as *T. paraherbida*, 109-110 as syn. of *T. herbida*] - Colombia, Guyana, Trinidad.

= *Dictyophora inexacta* Walker, 1858. Species synonymized with *T. herbida* (Walker, 1851) by Muir, 1931. Status restored by Fennah, 1947:5, 9.

= *Taosa paraherbida* Muir, 1931. Species synonymized by Fennah, 1947:9.

Subfamily **DORYSARTHRINAE** Emeljanov, 1979b

Dorysarthrus Puton, 1895 [Metcalf, 1946:29]

alfierii de Bergevin, 1924 [Metcalf, 1946:30] - Egypt.

****mobilicornis*** Puton, 1895 [Metcalf, 1946:30] - Israel/Palestine, Syria.

simonyi Melichar, 1912 [Metcalf, 1946:30] - "Arabia", Yemen.

sumakowi Oshanin, 1908 [Metcalf, 1946:30] - Iran, Turkmenistan, "Turkestan".

Subfamily **CAPENINAE** Emeljanov, 1979

Capena Stål, 1866 [Metcalf, 1946:186]

****fuscinervis*** Stål, 1866 [Metcalf, 1946:186] - South Africa.

Diasphax Fennah, 1962

= *Diasphax* Fennah, 1962:227. Type species: *D. elegans* Fennah, 1962:227 (by original designation).

****elegans*** Fennah, 1962 – South Africa.

= *Diasphax elegans* Fennah, 1962:228.

Menenches Fennah, 1962

= *Menenches* Fennah, 1962:220. Type species: *M. nona* Fennah, 1962:220-221 (by original designation).

atropos Fennah, 1967 – South Africa.

= *Menenches atropos* Fennah, 1967:683.

decuma Fennah, 1962 – Natal.

= *Menenches decuma* Fennah, 1962:223.

imbrex Fennah, 1962 – Lesotho.

= *Menenches imbrex* Fennah, 1962:226.

morta Fennah, 1962 – Lesotho.

= *Menenches morta* Fennah, 1962:224.

****nona*** Fennah, 1962 – Natal.

= *Menenches nona* Fennah, 1962:221.

Subfamily **LYNCIDINAE** Muir, 1930

Tribe **Lyncidini** Schmidt, 1915

Euhiracia Melichar, 1908 [Metcalf, 1946:183]

****conspersa*** Melichar, 1908 [Metcalf, 1946:183] - Tanzania.

Intandela Hesse, 1925 [Metcalf, 1946:182]

****respersionis*** Hesse, 1925 [Metcalf, 1946:182] - Namibia.

Lagoana Melichar, 1905 [Metcalf, 1946:182-183]

****bipunctata*** Melichar, 1905 [Metcalf, 1946:183] - Mozambique, Tanzania.

livida Schmidt, 1924 [Metcalf, 1946:183] - Democratic Republic of the Congo.

longiceps Melichar, 1905 [Metcalf, 1946:183] - Mozambique, Tanzania.

natalensis Synave, 1958 – Natal.

= *Lagoana natalensis* Synave, 1958:165.

rotundata Schmidt, 1924 [Metcalf, 1946:183] - Democratic Republic of the Congo.

Lyncides Stål, 1866 [Metcalf, 1946:182]

****coquerelii*** (Signoret, 1860) [Metcalf, 1946:182] - Madagascar, Mayotte Island (France).

Nesolyncides Fennah, 1958

= *Nesolyncides* Fennah, 1958c:203. Type species: *N. io* Fennah, 1958c:203 (by original designation).

****io*** Fennah, 1958 – Mangareva Island (France).

= *Nesolyncides io* Fennah, 1958c:203.

Tribe **Risiini** Fennah, 1962

Risius Stål, 1859 [Metcalf, 1946:198]

astyanax Fennah, 1967 – South Africa.

= *Risius astyanax* Fennah, 1967:673.

belona Fennah, 1967 – South Africa.

= *Risius belona* Fennah, 1967:666.

darwini Fennah, 1962 – South Africa.

= *Risius darwini* Fennah, 1962:233.

gibbus Fennah, 1967 – South Africa.

= *Risius gibbus* Fennah, 1967:664.

limonias Fennah, 1967 – South Africa.

= *Risius limonias* Fennah, 1967:663.

omega Fennah, 1967 – South Africa.

= *Risius omega* Fennah, 1967:674.

palamedes Fennah, 1967 – South Africa.

= *Risius palamedes* Fennah, 1967:671.

patroclus Fennah, 1967 – South Africa.

= *Risius patroclus* Fennah, 1967:670.

porrectus Fennah, 1967 – South Africa.

= *Risius porrectus* Fennah, 1967:668.

****spurcus*** Stål, 1859 [Metcalf, 1946:198] - South Africa.

Subfamily **OGERIINAE** Fieber, 1872

Tribe **Colobocini** Emeljanov, 1969

Colobocus Emeljanov, 1969

= *Colobocus* Emlejanov, 1969:333. Type species: *Orgerius conspersus* Puton, 1888:107 (designated by Emeljanov, 1969:333).

****conspersus*** (Puton, 1888) [Metcalf, 1946:204] - Algeria, "North Africa", Tunisia.

= *Orgerius conspersus* Puton, 1888. Status revised by Emeljanov, 1969:333.

Tribe **Orgeriini** Fieber, 1872

(Subtribe **Almanina** Kusnetzov, 1936)

Almana Stål, 1861 [Metcalf, 1946:184-185]

****longipes*** (Dufour, 1849) [Metcalf, 1946:185-186] - Algeria, Morocco, Portugal, Spain.

Bursinia Costa, 1862 [Metcalf, 1946:186-187] -

= *Paraburs*inia Blote, 1957:3. Type species: *Bursinia latipes* Horvath, 1913:454 (designated by Blote, 1957:3). Genus synonymized by Emeljanov, 1969:338.

acuticeps de Bergevin, 1918 [Metcalf, 1946:187] - Algeria.

asphodeli Horvath, 1910 [Metcalf, 1946:187-188 as *B. asphdeli*, 188-189 as *B. flava*] – Algeria, Morocco.

= *Bursinia flava* Horvath, 1910. Species synonymized by Emeljanov, 1969:338.

a. socialis Horvath, 1910 [Metcalf, 1946:188]

a. vidua Horvath, 1910 [Metcalf, 1946:188]

breviceps Horvath, 1913 [Metcalf, 1946:188] - Spain.

carinata Horvath, 1936

discolor Horvath, 1936

elongatula Linnavuori, 1965 – Italy (d'Urso, 1995), Tunisia.

= *Bursinia elongata* Linnavuori, 1965:36.

fallax Horvath, 1936

galaxia Emeljanov and Drosopoulos, 2004 – Portugal.

= *Bursinia galaxia* Emeljanov and Drosopoulos, 2004:521.

genei (Dufour, 1849) [Metcalf, 1946:189] - France, Hungary, Italy, Portugal, Spain, "Yugoslavia".

g. dispar Horvath, 1910 [Metcalf, 1946:190]

griseola Horvath, 1936

****hemiptera*** (Costa, 1840) [Metcalf, 1946:190-191] - Austria, Croatia, France, Hungary, Italy, Spain, Tunisia, "Yugoslavia".

latipes Horvath, 1913 [Metcalf, 1946:191] - Spain.

= *Bursinia latipes* Horvath, 1913. Status revised by Blote, 1957:3 (to *Parabursinia*).

= *Paraburs*inia *latipes* (Horvath, 1913). Status restored by Emeljanov, 1969:338 (to *Bursinia*, by implication).

parvula Horvath, 1910 [Metcalf, 1946:190 as subspecies of *B. genei*]

= *Bursinia genei parvula* Horvath, 1910), Figure 6. Status revised by Emeljanov, 1969:338 (subspecies raised to species status).

pithyusa Emeljanov, 1972 – Spain.

= *Bursinia pithyusa* Emeljanov, 1972a:22.

rugosa Emeljanov, 1972 – Spain.

= *Bursinia rugosa* Emeljanov, 1972a:23.

seminitens Horvath, 1910 [Metcalf, 1946:192] - Algeria, Tunisia.

sicula Emeljanov, 1972 – Italy.

= *Bursinia sicula* Emeljanov, 1972a:24.

Coppa Emeljanov, 1969

= *Coppa* Emeljanov, 1969:335. Type species: *Sphenocratus huldaensis* Linnavuori, 1962:13 (designated by Emeljanov, 1969:335).

****huldaensis*** (Linnavuori, 1962) – Israel/Palestine, Jordan.

= *Sphenocratus huldaensis* Linnavuori, 1962:13. Status revised by Emeljanov, 1969:335.

libanotica Emeljanov, 2003 – Lebanon.

= *Coppa libanotica* Emeljanov, 2003:317.

volkovitshi Emeljanov, 1997 – Israel/Palestine, Lebanon.

= *Coppa volkovitshi* Emeljanov, 1997b:86.

Coppidius Emeljanov, 1969

= *Coppidius* Emeljanov, 1969:335. Type species: *Mesorgerius semidesertus* Mitjaev, 1967:713 (designated by Emeljanov, 1969:335).

****semidesertus*** (Mitjaev, 1967) – Kazakhstan.

= *Mesorgerius semidesertus* Mitjaev, 1967:713. Status revised by Emeljanov, 1969:335.

Haumavarga Oshanin, 1907 [Metcalf, 1946:229]

****fedtschenkoi*** (Oshanin, 1879) [Metcalf, 1946:229-230] - Russia, Kazakhstan,"Turkestan", Uzbekistan.

Iphicara Emeljanov, 1978

= *Iphicara* Emeljanov, 1978:322. Type species: *Bursinia bouvieri* Bergevin, 1913:368 (designated by Emeljanov, 1978:322).

****bouvieri*** (de Bergevin, 1913) [Metcalf, 1946:188] - Algeria.

= *Bursinia bouvieri* de Bergevin, 1913. Status revised by Emeljanov, 1978:322.

globiceps (Linnavuori, 1961) – Italy.

= *Bursinia globiceps* Linnavuori, 1961:88. Status revised by Emeljanov, 1978:323.

risleri (de Bergevin, 1925) [Metcalf, 1946:192] - Algeria.

= *Bursinia risleri* de Bergevin, 1925. Status revised by Emeljanov, 1978:323.

socors (Horvath, 1910) [Metcalf, 1946:192 as *B. socors*, 191 as *B. laticeps*] - Algeria, Tunisia.

= *Bursinia socors* Horvath, 1910. Status revised by Emeljanov, 1978:323.

= *Bursinia laticeps* de Bergevin, 1913. Species synonymized by Emeljanov, 1969:338.

Mesorgerius Kusnezov, 1933 [Metcalf, 1946:222]

= *Stephenorgerius* Kusnezov, 1933:151. Type species: *S. zaisanensis* Kusnezov, 1933:151 (by original designation). Genus synonymized by Emeljanov, 1969:338.

altaicola Vilbaste, 1965 – Kazakhstan.

= *Mesorgerius altaicola* Vilbaste, 1965:??.

breviceps Emeljanov, 1972 – Mongolia.

= *Mesorgerius breviceps* Emeljanov, 1972b:201.

emmamosus Emeljanov, 1972 – Russia.

= *Mesorgerius emammosus* Emeljanov, 1972a:36.

monticola Vilbaste, 1980 – Russia.

= *Mesorgerius monticola* Vilbaste, 1980:20.

****rysakovi*** Kusnezov, 1933 [Metcalf, 1946:222 as *M. rysakovi* and *M. sibiricus*] - Kazakhstan, Russia.

= *Mesorgerius sibiricus* Kusnezov, 1933:150. Species synonymized by Emeljanov, 1969:338.

submontanus Dlabola, 1967 – Mongolia.

= *Mesorgerius submontanus* Dlabola, 1967a:56.

= *Mesorgerius gobinus* Dlabola, 1967c:214. Species synonymized by Emeljanov, 1969:338.

tshujensis Vilbaste, 1965

= *Mesorgerius tshujensis* Vilbaste, 1965:??.

zaisanensis (Kusnezov, 1933) [Metcalf, 1946:221] - Kazakhstan, Russia.

= *Stephanorgerius zaisanensis* Kusnezov, 1933. Status revised by Emeljanov, 1969:338.

Nymphorgerius Oshanin, 1913 [Metcalf, 1946:216 as *Nymphorgerius*, 213 as *Anorgeriopus*, 196 as *Sphenocratoides*]

= *Anorgeriopus* Kusnezov, 1930:90. Type species: *Orgerius stali* Oshanin, 1879:148 (50) (designated by Kusnezov, 1930:90). Genus synonymized by Emeljanov, 1969:338.

= *Sphenocratoides* Kusnezov, 1930:90. Type species: *Orgerius longiceps* Oshanin, 1879:141 (43) (designated by Kusnezov, 1930:90). Genus synonymized by Emeljanov, 1969:338.

alboniger Emeljanov, 1972 – Russia.

= *Nymphorgerius alboniger* Emeljanov, 1972a:26.

angustipes Emeljanov, 1972 – Tadzhikistan.

= *Nymphorgerius angustipes* Emeljanov, 1972a:29.

armeniacus Emeljanov, 1997 – Armenia.

= *Nymphorgerius armeniacus* Emeljanov, 1997b:87.

auriculatus Emeljanov, 1972 – Tadzhikistan.

= *Nymphorgerius auriculatus* Emeljanov, 1972a:30.

balchanicus Emeljanov, 1978 – Turkmenistan.

= *Nymphorgerius balchanicus* Emeljanov, 1978:323.

bucharicus (Oshanin, 1912) [Metcalf, 1946:213-214] - "Turkestan".

= *Anorgeriopus bucharicus* (Oshanin, 1912). Status restored by Emeljanov, 1969:338 (to *Nymphorgerius*).

clariceps Emeljanov, 1972 – Kyrgyzstan.

= *Nymphorgerius clariceps* Emeljanov, 1972a:27.

convergens Emeljanov, 1972 – Iran.

= *Nymphorgerius convergens* Emeljanov, 1972a:25.

curticeps (Linnavuori, 1965) – Turkey.

= *Sphenocratus curticeps* Linnavuori, 1965:62. Status revised by Emeljanov, 1969:338.

cyprius (Lindberg, 1948) – Cyprus.

= *Sphenocratus cyprius* Lindberg, 1948:108. Status revised by Emeljanov, 1969:338.

****dimorphus*** (Oshanin, 1879) [Metcalf, 1946:217] - Russia, "Turkestan", Uzbekistan.

eburneolus Emeljanov, 1978 – Turkmenistan.

= *Nymphorgerius eburneolus* Emeljanov, 1978:324.

emeljanovi Dlabola, 1979 – Iran.

= *Nymphorgerius emeljanovi* Dlabola, 1979:242.

fuliginosus Emeljanov, 1972 – Turkmenistan.

= *Nymphorgerius fuliginosus* Emeljanov, 1972a:30.

gemmatus (Horvath, 1929) – Lebanon.

= ??? *gemmatus* Horvath, 1929:??. Status revised by Emeljanov, 1969:338.

grigorievi Oshanin, 1913 [Metcalf, 1946:217] - "Turkestan".

gussakovskii (Kusnezov, 1933) [Metcalf, 1946:193] - "Turkestan".

= *Sphenocratus gussakovskii* Kusnezov, 1933. Status revised by Emeljanov, 1969:338.

horvathi Oshanin, 1913 [Metcalf, 1946:214] - "Turkestan".

= *Anorgeriopus horvathi* (Oshanin, 1913). Status restored by Emeljanov, 1969:338 (to *Nymphorgerius*).

ivanovi Kusnezov, 1928 [Metcalf, 1946:217-218] - "Turkestan".

i. turkestanicus Kusnezov, 1928 [Metcalf, 1946:218]

korolkovi (Oshanin, 1879) [Metcalf, 1946:218] - Iran, "Punjab", Tadzhikistan, "Turkestan", Uzbekistan.

longiceps (Oshanin, 1879) [Metcalf, 1946:196] - Iran, "Punjab", "Turkestan", Uzbekistan.

= *Orgerius longiceps* Oshanin, 1879:141 (43), 138 (40) (key).

= *Sphenocratus longiceps* (Oshanin, 1879): Horvath, 1910:177.

= *Sphenocratoides longiceps* (Oshanin, 1879). Status restored by Emeljanov, 1969:338 (to *Nymphorgerius*).

medius (Oshanin, 1879) [Metcalf, 1946:214] - Iran, Tazikistan, "Turkestan", Uzbekistan.

= *Anorgeriopus medius* (Oshanin, 1879). Status restored by Emeljanov, 1969:338 (to *Nymphorgerius*).

mullah Dlabola, 1979 – Iran.

= *Nymphorgerius mullah* Dlabola, 1979:241.

oxianus (Oshanin, 1913) [Metcalf, 1946:196-197] - "Turkestan".

= *Sphenocratoides oxianus* (Oshanin, 1913). Status restored by Emeljanov, 1969:338 (to *Nymphorgerius*).

plotnikovi Kusnezov, 1929 [Metcalf, 1946:218] – Iran, Kazakhstan, "Turkestan".

prasinus Emeljanov, 1981 – Tadzhikistan.

= *Nymphorgerius prasinus* Emeljanov, 1981:3.

reuteri (Oshanin, 1879) [Metcalf, 1946:214] - Tadzhikistan, "Turkestan".

= Anorgeriopus reuteri (Oshanin, 1879). Status restored by Emeljanov, 1969:338 (to *Nymphorgerius*).

rotundus Kusnetzov, 1936

= *Nymphorgerius rotundus* Kusnetzov, 1936:?? (missed by Metcalf, 1946).

skobelevi (Oshanin, 1879) [Metcalf, 1946:214-215] – Kazakhstan.

= *Anorgeriopus skobelevi* (Oshanin, 1879). Status restored by Emeljanov, 1969:338 (to *Nymphorgerius*).

stali (Oshanin, 1879) [Metcalf, 1946:215] - "Turkestan".

= *Anorgeriopus stali* (Oshanin, 1879). Status restored by Emeljanov, 1969:338 (to *Nymphorgerius*).

transcaucasicus Sidorski, 1938 [Metcalf, 1946:219] - Russia.

tryphema Emeljanov, 1981 – Uzbekistan.

= *Nymphorgerius tryphema* Emeljanov, 1981:5.

Orgamarella Emeljanov, 1969

= *Orgamarella* Emeljanov, 1969:336. Type species: *O. lata* Emeljanov, 1969:336 (by original designation).

****lata*** Emeljanov, 1969 – Kazakhstan.

= *Orgamarella lata* Emeljanov, 1969:336.

oblonga Emeljanov, 1969 – Uzbekistan.

= *Orgamarella oblonga* Emeljanov, 1969:337.

Parorgerioides de Bergevin, 1928 [Metcalf, 1946:212]

= *Parorgerius* (*Parorgerioides*) de Bergevin, 1928:248. Type species: *Orgerius alluaudi* de Bergevin, 1922b:288 (designated by de Bergevin, 1928:248). Status revised by Emeljanov, 1969:338 (raised to generic status).

(Subgenus ***Parorgerioides***) de Bergevin, 1928

albocinctus (Melichar, 1912) [Metcalf, 1946:211] - Spain.

= *Parorgerius* (*Parorgerius*) *albocinctus* (Melichar, 1912). Status revised by Emeljanov, 1969:338.

albofasciatus (Puton, 1888) [Metcalf, 1946:216] – Algeria, Morocco.

= *Nymphorgerius albofasciatus* (Puton, 1888). Status revised by Emeljanov, 1969:338.

****alluaudi*** (de Bergevin, 1922) [Metcalf, 1946:212-213] - Morocco.

angusticeps (Blote, 1957) – Spain.

= *Nymphorgerius angusticeps* Blote, 1957:5. Status revised by Emeljanov, 1969:338.

aschei Emeljanov, 1997 – Morocco.

= *Parorgerioides aschei* Emeljanov, 1997b:84.

bolivari (Horvath, 1913) [Metcalf, 1946:203] - Spain.

= *Orgerius bolivari* Horvath, 1913. Status revised by Emeljanov, 1969:338.

cyrenaicus (Linnavuori, 1965)

= *Nymphorgerius immundus cyrenaicus* Linnavuori, 1965:17. Status revised by Emeljanov, 1969:338 (subspecies raised to species status).

dumonti de Bergevin, 1928 [Metcalf, 1946:213] - Tunisia.

= *Parorgerius* (*Parorgerioides*) *dumonti* (de Bergevin, 1928). Status restored by Emeljanov, 1969:338 (by implication).

immundus (Horvath, 1913) [Metcalf, 1946:213 as *P. immundus* and *P. rupicola*] – Algeria, Lybia, Morocco.

= *Parorgerius* (*Parorgerioides*) *immundus* (Horvath, 1913). Status restored by Emeljanov, 1969:338 (by implication).

= *Parorgerioides rupicola* (de Bergevin, 1919). Species synonymized by Emeljanov, 1969:338.

numanni (Blote, 1957) – Spain.

= *Nymphorgerius numanni* Blote, 1957:3. Status revised by Emeljanov, 1969:338.

perezii (Bolivar and Chicote, 1879) [Metcalf, 1946:208] - Portugal, Spain.

= *Orgerius perezii* Bolivar and Chicote, 1879. Status revised by Emeljanov, 1969:338.

saboureti (de Bergevin, 1915) [Metcalf, 1946:212] - Morocco.

= *Parorgeriu*s (*Parorgerius*) *saboureti* (de Bergevin, 1915). Status revised by Emeljanov, 1969:338.

transversus (Blote, 1957) – Spain.

= *Nymphorgerius transversus* Blote, 1957:3. Status revised by Emeljanov, 1969:338.

(Subgenus ***Pepirus*** Emeljanov, 1997b)

= *Parorgerioides* (*Pepirus*) Emeljanov, 1997b:85. Type species: *Parorgerioides peyerimhoffi* de Bergevin, 1928:247 (designated by Emeljanov, 1997b:85).

bergevini Emeljanov, 1969 – Morocco.

= *Parorgerius bergevini* Emeljanov, 1969:338. Applied as *nom nov.* for unavailable combination *Parorgerioides peyerimhoffi* (de Bergevin, 1924) [nec de Bergevin, 1928].

^***peyerimhoffi*** de Bergevin, 1928 [Metcalf, 1946:213] - Morocco.

= *Parorgerioides peyerimhoffi* de Bergevin, 1928. Species synonymized with *Parorgerius peyerimhoffi* de Bergevin, 1924 by Metcalf, 1946. Status restored by Emeljanov, 1969:338.

= *Nymphorgerius pardoi* Linnavuori, 1965:38. Species synonymized by Emeljanov, 1969:338.

Scirtophaca Emeljanov, 1969

= *Scirtophaca* Emeljanov, 1969:335. Type species: *Nymphorgerius tianshanskyi* Oshanin, 1913:139 (5) (designated by Emeljanov, 1969:335).

bungei Emeljanov, 1978 – Azerbaijan, Georgia.

= *Scirtophaca bungei* Emeljanov, 1978:325.

evoluta Emeljanov, 1972 – Kazakhstan.

= *Scirtophaca evoluta* Emeljanov, 1972a:33.

junatovi Emeljanov, 1972 – Mongolia.

= *Scirtophaca junatovi* Emeljanov, 1972b:199.

narynensis Emeljanov, 1972 – Kyrgyzstan.

= *Scirtophaca narynensis* Emeljanov, 1972a:31.

subtilis Emeljanov, 1972 – Kazakhstan.

= *Scirtophaca subtilis* Emeljanov, 1972a:32.

tianshanskyi (Oshanin, 1913) [Metcalf, 1946:218-219] - Russia, Kazakhstan, "Turkestan".

= *Nymphorgerius tianshanskyi* Oshanin, 1913. Status revised by Emeljanov, 1969:335.

uralensis Emeljanov, 1972 – Russia.

= *Scirtophaca uralensis* Emeljanov, 1972a:35.

Sphenarchus Emeljanov, 2003

= *Sphenarchus* Emeljanov, 2003:317. Type species: *S. abdulnouri* Emeljanov, 2003:317 (by original designation).

****abdulnouri*** Emeljanov, 2003 – Lebanon.

= *Sphenarchus abdulnouri* Emeljanov, 2003:319.

Tachorga Emeljanov, 1969

= *Tachorga* Emeljanov, 1969:334. Type species: *Tigrahauda recurviceps* Linnavuori, 1956:136 (designated by Emeljanov, 1969:334).

adiaplasta Emeljanov, 2003 – Egypt.

= *Tachorga adiaplasta* Emeljanov, 2003:316.

****recurviceps*** (Linnavuori, 1956) – Israel/Palestine.

= *Tigrahauda recurviceps* Linnavuori, 1956:136. Status revised by Emeljanov, 1969:334.

Tigrahauda Oshanin, 1891 [Metcalf, 1946:226-227 as *Tigrahauda*, 228 as *Otorgerius*]

= *Otorgerius* Kusnezov, 1930:90. Type species: *Orgerius ototettigoides* Oshanin, 1913:140 (6) (designated by Kusnezov, 1930:90). Genus synonymized by Emeljanov, 1969:338 (by implication).

ototettigoides (Oshanin, 1913) [Metcalf, 1946:228] – Iran, Russia, "Turkestan".

= *Otorgerius ototettigoides* (Oshanin, 1913). Status revised by Emeljanov, 1969:337.

semiglabra Emeljanov, 1972 – Uzbekistan.

= *Tigrahauda semiglabra* Emeljanov, 1972a:37.

****tiarata*** Oshanin, 1891 [Metcalf, 1946:227] - Russia, Kazakhstan, "Turkestan".

zarudnyi Oshanin, 1913 [Metcalf, 1946:227] - Russia, Kazakhstan, "Turkestan".

Tilimontia Emeljanov, 1969

= *Tilimontia* Emeljanov, 1969:333. Type species: *Bursinia canariensis* Lindberg, 1936:15 (designated by Emeljanov, 1969:333).

canariensis (Lindberg, 1936) [Metcalf, 1946:188] - Canary Islands (Spain).

= *Bursinia canariensis* Lindberg, 1936. Status revised by Emeljanov, 1969:333.

c. gomerensis Emeljanov, 2003

= *Tilimontia canariensis gomerensis* Emeljanov, 2003:315.

c. hierroensis Emeljanov, 2003

= *Tilimontia canariensis hierroensis* Emeljanov, 2003:315.

c. tenerifiensis Emeljanov, 2003

= *Tilimontia canariensis tenerifiensis* Emeljanov, 2003:315.

insularis (Melichar, 1912) [Metcalf, 1946:191] - Canary Islands (Spain).

= *Bursinia insularis* Melichar, 1912. Status revised by Emeljanov, 1969:338.

(Subtribe **Orgeriina** Fennah, 1962)

Acinaca Ball and Hartzell, 1922 [Metcalf, 1946:219]

lurida Ball and Hartzell, 1922 [Metcalf, 1946:219] - United States.

Almanetta Emeljanov, 1999

= *Almanetta* Emeljanov, 1999:825. Type species: *A. sarda* Emeljanov, 1999:825 (by original designation).

sarda Emeljanov, 1999 – Italy.

= *Almanetta sarda* Emeljanov, 1999:826.

Aridia Ball and Hartzell, 1922 [Metcalf, 1946:220]

*****compressa*** (Ball, 1909) [Metcalf, 1946:220] - United States.

erecta (Ball, 1909) [Metcalf, 1946:220] - United States.

Austrorgerius Woodward, 1960

= *Austrorgerius* Woodward, 1960:149. Type species: *A. collinus* Woodward, 1960:149, 151 (by original designation).

****collinus*** Woodard, 1960 – Australia.

= *Austrorgerius collinus* Woodward, 1960:151.

Deserta Ball and Hartzell, 1922 [Metcalf, 1946:198-199]

****bipunctata*** (Ball, 1909) [Metcalf, 1946:199] - United States.

fuscata Doering, 1955 – United States.

= *Deserta fuscata* Doering, 1955:??.

obesa (Ball, 1909) [Metcalf, 1946:199] - United States.

obscura (Ball, 1909) [Metcalf, 1946:199] - United States.

pinturensis Doering, 1955 – United States.

= *Deserta pinturensis* Doering, 1955:??.

raptoria Ball, 1937 [Metcalf, 1946:199] - United States.

Orgamara Ball, 1909 [Metcalf, 1946:197]

****acuta*** Ball, 1909 [Metcalf, 1946:198] - Mexico, United States.

argentia Ball, 1937 [Metcalf, 1946:198] - United States.

reducta Ball, 1909 [Metcalf, 1946:198] - United States.

Orgerius Stål, 1859 [Metcalf, 1946:200-202]

(Subgenus ***Opsigonus*** Emeljanov, 2006)

= *Orgerius* (*Opsigonus*) Emeljanov, 2006:76. Type species: *Orgerius minor* Ball, 1909: 202 (designated by Emeljanov, 2006:76).

bicornis Doering and Darby, 1943 - United States.

= *Orgerius bicornis* Doering and Darby, 1943:85 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

foliatus Doering and Darby, 1943 - United States.

= *Orgerius foliatus* Doering and Darby, 1943:87 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

^***minor*** Ball, 1909 [Metcalf, 1946:211-212] - United States.

= *Orgerius minor* Ball, 1909:202. Status revised by Melichar, 1912:218 (subgeneric revision).

= *Orgerius* (*Parorgerius*) *minor* Ball, 1909. Status revised by Metcalf, 1946: 211-212 (to *Parorgerius* (*Parorgerius*)).

= *Parorgerius* (*Parorgerius*) *minor* (Ball, 1909). Status restored by Doering and Darby, 1943 (missed by Metcalf, 1946). Status revised by Emeljanov, 2006: 76 (subgeneric revision).

ventosus Ball and Hartzell, 1922 [Metcalf, 1946:209-210] - United States.

= *Orgerius rhyparus ventosus* Ball and Hartzell, 1922. Status revised by Doering and Darby, 1943:64 (subspecies raised to species status; not seen by Metcalf).

= *Orgerius ventosus* Ball and Hartzell, 1922. Status revised by Emeljanov, 2006:76 (placed in subgenus).

(Subgenus ***Orgerius*** Stål, 1859)

= *Orgerius* Stål, 1859:273. Type species: *O. rhyparus* Stål, 1859:274 (by original designation).

bilobatus Doering and Darby, 1943 - United States.

= *Orgerius bilobatus* Doering and Darby, 1943:77 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

bucculentus Doering and Darby, 1943 - United States.

= *Orgerius bucculentus* Doering and Darby, 1943:75 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

concordus Ball and Hartzell, 1922 [Metcalf, 1946:209] - Mexico, United States.

= *Orgerius rhyparus concordus* Ball and Hartzell, 1922. Status revised by Doering and Darby, 1943:64 (subspecies raised to species status; not seen by Metcalf).

= *Orgerius concordus* Ball and Hartzell, 1922. Status revised by Emeljanov, 2006:76 (placed in subgenus).

disgregus Doering and Darby, 1943 - United States.

= *Orgerius disgregus* Doering and Darby, 1943:83 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

glaucus Emeljanov, 2006 – United States.

= *Orgerius* (*Orgerius*) *glaucus* Emeljanov, 2006:76.

junceus Doering and Darby, 1943 - United States.

= *Orgerius junceus* Doering and Darby, 1943:78 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

pajaronius Ball and Hartzell, 1922 [Metcalf, 1946:209] - United States.

= *Orgerius rhyparus pajaronius* Ball and Hartzell, 1922. Status revised by Doering and Darby, 1943:64 (subspecies raised to species status; not seen by Metcalf).

= *Orgerius pajaronius* Ball and Hartzell, 1922. Status revised by Emeljanov, 2006:76 (placed in subgenus).

proprius Doering and Darby, 1943 - United States.

= *Orgerius proprius* Doering and Darby, 1943:70 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

****rhyparus*** Stål, 1859 [Metcalf, 1946:208-209] - Mexico, United States.

= *Orgerius rhyparus* Stål, 1859. Status revised by Emeljanov, 2006:76 (placed in subgenus).

spicatus Doering and Darby, 1943 - United States.

= *Orgerius spicatus* Doering and Darby, 1943:82 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

triquestrus Doering and Darby, 1943 - United States.

= *Orgerius triquestrus* Doering and Darby, 1943:71 (not seen by Metcalf). Status revised by Emeljanov, 2006:76 (placed in subgenus).

Ticida Uhler, 1891 [Metcalf, 1946:222-223 as *Ticida*, 224 as *Loxophora*, 220-221 as *Timodema*]

= *Loxophora* Van Duzee, 1908:472, 469 (key). Type species: *L. transversa* Van Duzee, 1908:473 (by original designation). Genus synonymized by Van Duzee, 1914:387, Emeljanov, 2006:73-74.

= *Timodema* Ball, 1909:201. Type species: *T. miracula* Ball, 1909:201 (by original designation). Genus synonymized by Emeljanov, 2006:74.

(Subgenus ***Heicophora*** Emeljanov, 2006)

= *Ticida* (*Heicophora*) Emeljanov, 2006: 74. Type species: *Loxophora dammersi* Van Duzee, 1934:191 (designated by Emeljanov, 2006:74).

^***dammersi*** (Van Duzee, 1934) [Metcalf, 1946:224] - United States.

= *Loxophora dammersi* Van Duzee, 1934. Status revised by Emeljanov, 2006: 73-74.

(Subgenus ***Ticida*** Uhler, 1891)

****cingulata*** Uhler, 1891 [Metcalf, 1946:223-224] - United States.

transversa (Van Duzee, 1908) [Metcalf, 1946:224-225] - United States.

= *Loxophora transversa* Van Duzee, 1908. Status revised by Emeljanov, 2006: 73-74.

(Subgenus ***Timodema*** Ball, 1909)

= *Timodema* Ball, 1909:201. Type species: *T. miracula* Ball, 1909:201 (by original designation). Status revised by Emeljanov, 2006:74 (by generic synonymy).

^***miracula*** (Ball, 1909) [Metcalf, 1946:221] - Mexico, United States.

= *Timodema miracula* Ball, 1909:201. Status revised by Emeljanov, 2006:74.

rakitovi Emeljanov, 2006 – United States.

= *Ticida* (*Timodema*) *rakitovi* Emeljanov, 2006:74-75.

subapplanata Emeljanov, 2006 – United States.

= *Ticida* (*Timodema*) *subapplanata* Emeljanov, 2006:75-76.

Ticrania Emeljanov, 2006

= *Ticrania* Emeljanov, 2006:73. Type species: *Ticida chamberlini* Van Duzee, 1923:187 (designated by Emeljanov, 2006:73).

****chamberlini*** (Van Duzee, 1923) [Metcalf, 1946:223] - Mexico.

= *Ticida chamberlini* Van Duzee, 1923. Status revised by Emeljanov, 2006:73.

Timonidia Ball and Hartzell, 1922 [Metcalf, 1946:226]

nodosa (Ball, 1937) [Metcalf, 1946:220] - United States.

= *Aridia nodosa* Ball, 1937. Status revised by Emeljanov, 2006:76.

****solitaria*** Ball and Hartzell, 1922 [Metcalf, 1946:226] - United States.

Yucanda Ball and Hartzell, 1922 [Metcalf, 1946:200]

****albida*** (Ball, 1909) [Metcalf, 1946:200] - United States.

miniata Ball, 1937 [Metcalf, 1946:200] - United States.

ornata Ball, 1937 [Metcalf, 1946:200] - United States.

(Subtribe **Ototettigina** Emeljanov, 1969)

Kumlika Oshanin, 1913 [Metcalf, 1946:228]

desertorum (Oshanin, 1913) [Metcalf, 1946:226] - "Turkestan".

= *Ototettix desertorum* Oshanin, 1913. Status revised by Emeljanov, 1969:338.

mandrita Emeljanov, 1997 – Iran.

= *Kumlika mandrita* Emeljanov, 1997b:89.

****recurviceps*** Oshanin, 1913 [Metcalf, 1946:228] - Kazakhstan, "Turkestan".

surda (Oshanin, 1913) [Metcalf, 1946:226] - "Turkestan".

= *Ototettix surdus* Oshanin, 1913. Status revised by Emeljanov, 1969:338.

Ototettix Oshanin, 1913 [Metcalf, 1946:225 as *Ototettix*, 222 as *Repetekia*]

= *Repetekia* Oshanin, 1913:137 (3), 143 (9) (List). Type species: *R. orbicularis* Oshanin, 1913:18 (by original designation). Genus synonymized by Emeljanov, 1969:338.

****auritus*** Oshanin, 1913 [Metcalf, 1946:226] - "Turkestan".

jaxartensis Oshanin, 1913 [Metcalf, 1946:226] - Kazakhstan, "Turkestan".

orbicularis (Oshanin, 1913) [Metcalf, 1946:222] - "Turkestan".

= *Repetekia orbicularis* Oshanin, 1913. Status revised by Emeljanov, 1969:338.

Tribe **Ranissini** Emeljanov, 1969

Cnodalum Emeljanov, 1978

= *Cnodalum* Emeljanov, 1978:322. Type species: *Sphenocratoides rugosus* Emeljanov, 1964:3 (designated by Emeljanov, 1978:322).

atraphaxium Mityaev, 1994 – Kazakhstan.

= *Cnodalum atraphaxium* Mityaev, 1994:55.

montanum Mityaev, 1994 – Kazakhstan.

= *Cnodalum montanum* Mityaev, 1994:57.

****rugosus*** (Emeljanov, 1964) – Kazakhstan.

= *Sphenocratoides rugosus* Emeljanov, 1964:3. Status revised by Emeljanov, 1969:337 (to *Sphenocratus*).

= *Sphenocratus rugosus* (Emeljanov, 1964). Status revised by Emeljanov, 1978:322.

zaisanicum Mityaev, 1994 – Kazakhstan.

= *Cnodalum zaisanicum* Mityaev, 1994:57.

Elysiaca Emeljanov, 1969

= *Elysiaca* Emeljanov, 1969:333. Type species: *Orgerius ferganensis* Oshanin, 1913 (designated by Emeljanov, 1933).

chomutovi (Oshanin, 1879) [Metcalf, 1946:203-204] - Kazakhstan, "Turkestan", Uzbekistan.

= *Orgerius chomutovi* Oshanin, 1879. Status revised by Emeljanov, 1969:337.

elliptica (Oshanin, 1871) [Metcalf, 1946:205] - Kazakhstan, "Turkestan", Uzbekistan.

= *Orgerius ellipticus* (Oshanin, 1871). Status revised by Emeljanov, 1969:337.

****ferganensis*** (Oshanin, 1913) [Metcalf, 1946:206] - "Turkestan".

= *Orgerius ferganensis* Oshanin, 1913. Status revised by Emeljanov, 1969:333.

fusca (Oshanin, 1879) [Metcalf, 1946:206] - Kazakhstan, Pakistan, "Turkestan".

= *Orgerius fuscus* Oshanin, 1879. Status revised by Emeljanov, 1969:337.

kiritschenkoi (Oshanin, 1913) [Metcalf, 1946:206-207] - "Turkestan".

= *Orgerius kiritschenkoi* Oshanin, 1913. Status revised by Emeljanov, 1969:337.

kusnetsovi Emeljanov, 1972 – Turkmenistan.

= *Elysiaca kusnetsovi* Emeljanov, 1972a:19.

oshanini Emeljanov, 1972 – Kazakhstan.

= *Elysiaca oshanini* Emeljanov, 1972a:18.

ruderata Emeljanov, 1972 – Uzbekistan.

= *Elysiaca ruderata* Emeljanov, 1972a:21.

sclerosa Emeljanov, 1972 – Kazakhstan.

= *Elysiaca sclerosa* Emeljanov, 1972a:20.

similis (Oshanin, 1879) [Metcalf, 1946:210] - Kazakhstan, "Turkestan", Uzbekistan.

= *Orgerius similis* Oshanin, 1879. Status revised by Emeljanov, 1969:337.

Parorgerius Melichar, 1912 [Metcalf, 1946:210-211]

****platypus*** (Fieber, 1866) [Metcalf, 1946:212] - Albania, Greece.

Phyllorgerius Kusnezov, 1928 [Metcalf, 1946:225]

****jacobsoni*** (Oshanin, 1912) [Metcalf, 1946:225] - Kazakhstan, "Turkestan".

Ranissus Fieber, 1866 [Metcalf, 1946: as *Ranissus*, 215 as *Palaeorgerius*, 219 as *Schizorgerius*]

= *Ranissus* Fieber, 1866:499, 150 (key). Type species: *R. leptopus* Fieber, 1866:499 (by original designation). Genus synonymized with *Orgerius* by Fieber, 1872. Status restored by Emeljanov, 1969:337.

= *Schizorgerius* Kusnezov, 1930a:90. Type species: *Orgerius scytha* Oshanin, 1913:140 (6) (designated by Kusnezov, 1930:90). Genus synonymized by Emeljanov, 1969:337.

= *Palaeorgerius* Fennah, 1944c:90. Type species: *Orgerius montandoni* Horvath, 1911:609 (designated by Fennah, 1944c:90). Genus synonymized by Emeljanov, 1969:337 (by implication).

(Subgenus ***Antherus*** Emeljanov, 2003)

= *Ranissus* (*Antherus*) Emeljanov, 2003:311. Type species: *R. discrepans* (Fieber, 1866:511) (designated by Emeljanov, 2003:311).

acucephalus Fieber, 1866 [Metcalf, 1946:202-203] - Algeria, Greece.

= *Orgerius ac*(*u*)*cephalus* (Fieber, 1866). Status restored by Emeljanov, 1969:338 (to *Ranissus*, by implication). Status revised by Emeljanov, 2003:311 (placed in subgenus).

albiceps Emeljanov, 1998 – Greece.

= *Ranissus albiceps* Emeljanov, 1998:327. Status revised by Emeljanov, 2003:311 (placed in subgenus).

candidatus Emeljanov, 1972 – Greece.

= *Ranissus candidatus* Emeljanov, 1972a:17. Status revised by Emeljanov, 2003:311 (placed in subgenus).

collaris Emeljanov, 1998 – Greece.

= *Ranissus collaris* Emeljanov, 1998:328. Status revised by Emeljanov, 2003:311 (placed in subgenus).

^***discrepans*** Fieber, 1866 [Metcalf, 1946:204-205] - France, Greece, Italy, Portugal, Spain.

= *Orgerius discrepans* (Fieber, 1866). Status restored by Emeljanov, 1969:338 (to *Ranissus*, by implication). Status revised by Emeljanov, 2003:311 (placed in subgenus).

drosopoulosi Emeljanov, 1998 - Greece

= *Ranissus drosopoulosi* Emeljanov, 1998:329. Status revised by Emeljanov, 2003:311 (placed in subgenus).

punctiger (Horvath, 1905) [Metcalf, 1946:208] - Turkey.

= *Orgerius punctiger* Horvath, 1905:187 (9). Status revised by Dlabola, 1957b:28 (to *Palaeorgerius*).

= *Palaeorgerius punctiger* (Horvath, 1905). Status revised by Emeljanov, 1969:337.

= *Ranissus punctiger* (Horvath, 1905). Status revised by Emeljanov, 2003:311, 313 (placed in subgenus).

= *Ranissus anatolicus* Kartal, 1987:146. Species synonymized by Emeljanov, 2003:313.

(Subgenus ***Ranissus*** Fieber, 1866)

capnisus Emeljanov, 1998 – Greece.

= *Ranissus capnisus* Emeljanov, 1998:329.

edirneus (Dlabola, 1957) – Turkey.

= *Palaeorgerius edirneus* Dlabola, 1957b:28. Status revised by Emeljanov, 1969:337.

kartali Emeljanov, 2003 – Turkey.

= *Ranissus* (*Ranissus*) *kartali* Emeljanov, 2003:312.

****leptopus*** Fieber, 1866 [Metcalf, 1946:207] - Bulgaria, Greece, Turkey.

= *Orgerius leptopus* (Fieber, 1866). Status restored by Emeljanov, 1969:338 (to *Ranissus*, by implication).

montandoni (Horvath, 1911) [Metcalf, 1946:215-216] - Romania.

= *Palaeorgerius montandoni* (Horvath, 1911). Status revised by Emeljanov, 1969:338.

productus (Fieber, 1876) [Metcalf, 1946:194-195] - Greece.

= *Sphenocratus productus* (Fieber, 1876). Status revised by Emeljanov, 1998:330.

scytha (Oshanin, 1912) [Metcalf, 1946:219] - Moldova, Romania, Russia.

= *Schizorgerius scytha* (Oshanin, 1913). Status revised by Emeljanov, 1969:337.

Sphenocratus Horvath, 1910 [Metcalf, 1946:192-193]

akakius Emeljanov, 1979 – Tadzhikistan.

= *Sphenocratus akakius* Emeljanov, 1979a:21.

alakulis Emeljanov, 1972 – Kazakhstan.

= *Sphenocratus alakulis* Emeljanov, 1972a:14.

barbanigra Emeljanov, 1972 – Tadzhikistan.

= *Sphenocratus barbanigra* Emeljanov, 1972a:17.

floridus Emeljanov, 1972 - Kazakhstan.

= *Sphenocratus floridus* Emeljanov, 1972a:16.

griseus Emeljanov, 1972 – Kazakhstan.

= *Sphenocratus griseus* Emeljanov, 1972a:15.

hastatus Oshanin, 1913 [Metcalf, 1946:193] - Kazakhstan, "Turkestan".

heptapotamicus (Oshanin, 1913) [Metcalf, 1946:206] - Kazakhstan, "Turkestan".

= *Orgerius heptapotamicus* Oshanin, 1913. Status revised by Emeljanov, 1969:337.

lukjanovitshi (Kusnezov, 1933) [Metcalf, 1946:196] - "Altai", Kazakhstan, Russia.

= *Sphenocratoides lukjanovitshi* Kusnezov, 1933. Status revised by Emeljanov, 1969:337.

****megacephalus*** (Oshanin, 1879) [Metcalf, 1946:193-194] - China, Kazakhstan, "Turkestan".

palaeomastodon Kusnezov, 1927 [Metcalf, 1946:194] - Russia.

peyerimhoffi de Bergevin, 1922 [Metcalf, 1946:194] - Algeria.

reticulatus (Oshanin, 1891) [Metcalf, 1946:208] - Kazakhstan, "Turkestan".

= *Orgerius reticulatus* Oshanin, 1891. Status revised by Emeljanov, 1969:337.

septentrionalis (Oshanin, 1913) [Metcalf, 1946:210] - Kazakhstan, "Turkestan".

= *Orgerius septentrionalis* Oshanin, 1913. Status revised by Emeljanov, 1969:337.

tarbagataicus Emeljanov, 1972 – Kazakhstan.

= *Sphenocratus tarbagataicus* Emeljanov, 1972a:14.

xinjiangensis Liang, Song and Jiang, 2006 – China.

= *Sphenocratus xinjiangensis* Liang, Song and Liang, 2006:57.

Subfamily **STRONGYLODEMATINAE** Emeljanov, 1979

Tribe **Capocleini** Emeljanov, 2004b

Capocles Emeljanov, 2004b

= *Capocles* Emeljanov, 2004b:52. Type species: *Capenopsis socrates* Fennah, 1967:679 (designated by Emeljanov, 2004b:52).

socrates (Fennah, 1967) – South Africa.

= *Capenopsis socrates* Fennah, 1967:679. Status revised by Emeljanov, 2004b:52.

Tribe **Strongylodematini** Fennah, 1962

Capenopsis Melichar, 1912 [Metcalf, 1946:195]

****horvathi*** Melichar, 1912 [Metcalf, 1946:196] - South Africa.

krameri Synave, 1969 – South Africa.

= *Capenopsis krameri* Synave, 1969:181.

minos Fennah, 1962 – South Africa.

= *Capenopsis minos* Fennah, 1962:243.

Codon Fennah, 1962

= *Codon* Fennah, 1962:237. Type species: *C. praestana* Fennah, 1962:237, 238 (by original designation).

adrastus Fennah, 1967 – Namibia.

= *Codon adrastus* Fennah, 1967:681.

****praestana*** Fennah, 1962 – South Africa.

= *Codon praestana* Fennah, 1962:238.

Strongylodemas Stål, 1853 [Metcalf, 1946:195]

breviceps Fennah, 1962 – South Africa.

= *Strongylodemas breviceps* Fennah, 1962:241.

****circularis*** Stål, 1855 [Metcalf, 1946:195] - Namibia, South Africa.

retarius Fennah, 1967 – South Africa.

= *Strongylodemas retarius* Fennah, 1967:676.

Tecmar Fennah, 1962

= *Tecmar* Fennah, 1962:235. Type species: *T. pausanias* Fennah, 1962:235 (by original designation).

****pausanias*** Fennah, 1962 – South Africa.

= *Tecmar pausanias* Fennah, 1962:236.

Appendix 2.

Host Plant Use By Dictyopharidae

The following is a list of potential host plants used by Dictyopharidae. New world species are represented by all literary records; Old World records are as recorded by Wilson *et al.* (1994). Novel plant host records for New World Dictyopharinae are taken from label information on examined specimens.

Plant Host	**Dictyopharidae**	**Reference**
Amaranthaceae		
Atriplex canescens	*Scolops viridus*	Ball, 1930
Anacardiaceae		
Mangifera sp.	*Taosa herbida*	Maes and O'Brien, 1988
Rhus copallina	*Phylloscelis atra*	New Record
Apocynaceae		
Asclepias amplexicaulis	*Scolops sulcipes*	New Record
Arecaceae		
Elaeis sp.	*Taosa herbida*	Maes and O'Brien, 1988
Palm sp.	*Diacira obliquata*	New Record
Serenoa repens	*Rhynchomitra lingula*	New Record
Asclepiadaceae		

Asclepias eriocarpa	*Scolops abnormis*	Isman *et al.*, 1977
Asteraceae		
Ambrosia artemisiifolia	*Scolops pungens*	Breakey, 1928
Ambrosia confertiflora	*Scolops pallidus*	Goeden and Ricker, 1975
Ambrosia psilostachya	*Scolops robustus*	Ball, 1930
Artemisia tripartita	*Scolops abnormis*	New Record
Artemisia sp.	*Scolops luridus*	Breakey, 1928
Euthamia graminifolia	*Scolops sulcipes*	New Record
Bidens sp.	*Scolops maculosus*	New Record
Chrysothamnus viscidifloris	*Scolops abnormis*	New Record
Cynara cardunculus	*Scolops fumidus*	New Record
Eupatorium rugosum	*Retial viridis*	Wilson *et al.*, 1994
Eupatorium sp.	*Nersia florens*	Maes and O'Brien, 1988
Grindelia camporum	*Scolops flavidus*	New Record
Gutierrezia californica	*Scolops graphicus*	Ball, 1930
	Scolopsleri	New Record
Helianthus angustifolius	*Scolops perdix*	Ball, 1930
Oligoneuron rigida	*Scolops sulcipes*	New Record
Silphium laciniatum	*Scolops osborni*	Beamer, 1929
Solidagonadensis	*Scolops sulcipes*	New Record
Solidago trinervata	*Scolops snowi*	Ball, 1930
Xanthiumstrumarium	*Dictyophara* sp.	Hilgendorf and Goeden, 1982

Xanthium sp.	*Scolops fumidus*	New Record
Bombacaceae		
Catostemma fragrans	*Toropa ferrifera*	New Record
Boraginaceae		
Heliotropium stenophyllum	*Sicorisia discreta*	New Record
Brassicaceae		
Lepidium sp.	*Scolops maculosus*	New Record
Bromeliaceae		
Ananas sp.	*Taosa herbida*	Maes and O'Brien, 1988
Caesalpinaceae		
Eperua rubiginosa	*Toropa ferrifera*	New Record
Casuarinaceae		
Casuarina sp.	*Retiala viridis*	Wilson *et al.*, 1994
Chenopodiaceae		
Dondia depressa	*Scolops uhleri*	Ball, 1930
Dondia torreyana	*Scolops uhleri marginatus*	Ball, 1930
Suaeda sp.	*Scolops uhleri marginatus*	New Record
Convolvulaceae		
Convolvulus sp.	*Scolops sulcipes*	Wirtner, 1905
Ericaceae		
Arctostaphylos patula	*Scolops abnormis*	New Record

Vaccinium macrocarpon	*Phylloscelis rubra*	Sirrine and Fulton, 1914
Erythroxylaceae		
Erythroxylum orinocense	*Lappida tumidifrons*	New Record
Euphorbiaceae		
Mallotus sp.	*Orthopagus lunulifer*	Wilson *et al*., 1994
Manihot sp.	*Taosa herbida*	Maes and O'Brien, 1988
Stillingia angustifolia	*Scolops stonei*	Ball, 1930
Fabaceae		
Medicago sativa	*Scolops pungens*	New Record
Melilotus sp.	*Scolops grossus*	Strickland, 1940
Phaseolus vulgaris	*Mitrops dioxys*	New Records
Phaseolus sp.	*Nersia florens*	Maes and O'Brien, 1988
Fagaceae		
Pueraria sp.	*Orthopagus lunulifer*	Lee and Kwon, 1977
Quercus sp.	*Dictyophara nakanonis*	Lee and Kwon, 1977
Lamiaceae		
Pycnanthemum tenuifolium	*Phylloscelis pallescens*	Wilson *et al.*, 1994
Malvaceae		
Hibiscus moscheutos	*Rhynchomitra microrhina*	New Record
Hibiscus sp.	*Retiala viridis*	Wilson *et al*., 1994

Gossypium sp.	*Taosa herbida*	Maes and O'Brien, 1988
Poaceae		
Agropyron sp./*Poa* sp.	*Scolops angustatus*	New Record
Bouteloua curtipendula	*Scolops sulcipes*	New Record
Eragrostis curvula	*Rhynchomitra microrhina*	Wilson and Wheeler, 2005
Muhlenbergia sp.	*Scolops sulcipes*	New Record
Oryza sativa	*Dictyophara patruelis*	Wilson *et al.*, 1994
Oryza sp.	*Taosa herbida*	Maes and O'Brien, 1988
Panicum sp.	*Scolops sulcipes*	New Record
Saccharum offinarum	*Dictyophara patruelis*	Schumacher, 1920
	Orthopagus helios	Schumacher, 1920
Schizachyrium scoparium	*Scolops sulcipes*	New Record
Sporobolus heterolepis	*Scolops sulcipes*	New Record
Zea mays	*Scolops fumidus*	New Record
Polygonaceae		
Eriogonum fasciculatum	*Scolops pallidus*	New Record
Eriogonum sp.	*Scolops abnormis*	New Record
Rumex crispus	*Nersia florens*	Wilson and McPherson, 1981
Pteridiaceae		
Pteridium esculentum	*Thanatodictya hillyardi*	Myers, 1923

Rosaceae		
Purshia tridentate	*Scolops abnormis*	New Record
Rubus flagellaris	*Scolops sulcipes*	New Record
Rubiaceae		
Cephalanthus occidentalis	*Rhynchomitra microrhina*	New Record
Coffea sp.	*Retiala viridis*	Fennah, 1945
	Taosa herbida	Fennah, 1945
Solanaceae		
Solanum sp.	*Phylloscelis pennata*	New Record
Polyphagous Species		
	Dictyophara europaea	Synave, 1951

Appendix 3.

Distribution Maps of New World Dictyopharinae

The following distribution maps depict the geographic range of each New World genus in Dictyopharinae. Distributions are as provided by Metcalf (1946), updated with published and specimen records. All known distributions of all species within a genus are combined to form the generic range. Genera are listed in alphabetical order.

a) Brachytaosa Muir

b) Cladodiptera Spinola

c) Diacira Walker

d) Dictyopharoides Fowler

e) *Digitocrista* Fennah

f) *Dorimargus* Melichar

g) *Eudictya* Melichar

h) *Hyalodictyon* Fennah

i) *Hydriena* Melichar

j) *Igava* Melichar

k) *Lappida* Amyot and Serville

l) *Megadictya* Melichar

m) *Melicharoptera* Metcalf

n) *Mitrops* Fennah

o) *Neomiasa* Fennah

p) *Nersia* Stål

q) *Parahasta* Melichar

r) *Paralappida* Melichar

s) *Paramisia* Melichar

t) *Pharodictyon* Fennah

u) *Phylloscelis* Germar

v) *Plegmatoptera* Spinola

w) *Protachilus* Fennah

x) *Pteroplegma* Melichar

y) *Retiala* Fennah

z) *Rhynchomitra* Fennah

aa) *Scolops* Schaum

bb) *Sicoris* Stål

cc) *Sicorisia* Melichar

dd) *Taosa* Distant

ee) *Taractellus* Metcalf

ff) *Toropa* Melichar

gg) *Trigava* O'Brien

hh) *Trimedia* Fennah