

On the Subdivision of the Family Lophopidae (Homoptera, Auchenorrhyncha: Fulgoroidea) on the Subfamilies and Tribes with Description of Two New Tribes

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Abstract—A new classification of the family Lophopidae is proposed where it is subdivided into two subfamilies Menoscinae Melichar with four tribes (Carrioniini trib. n., Virgiliini trib. n., Menoscini Melichar, and Acarnini Baker) and Lophopinae Stål with two tribes (Elasmoscelini Melichar and Lophopini Stål).

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Due to the recent studies of Soule-Perkins (1998, 2000, 2001, 2008), the knowledge of the family Lophopidae has made considerable progress. Soule-Perkins described 3 new genus and several new species, compiled an original key to the genera, constructed the phylogenetic cladogram refined to a genus, and proposed a hypothesis of the formation and distribution of the family. A number of descriptions were also made by Liang Aiping (1996, 2000). Meanwhile the taxonomy and distribution of the family remain little-studied, accessions of the new material are scanty, and thus the ranges of the species and genera have still been incompletely revealed.

The subdivision of the family in subfamilies and tribes is also imperfect, even though a number of taxa were established by Melichar (1915) and Baker (1925). Soule-Perkins subjected these taxa to criticism but did not suggested her own new classification; she only distinguished 4 clades without providing them with a nomenclature status: Carriona+, Makota+, Bisma+ and Sarebasa+. For the clade Bisma+, there are two names of the families-group: Menoscini Melichar, 1915 and Acarninae Baker, 1925; for the clade Sarebasa+: Lophopini Stål, 1866 and Elasmoscelini Melichar, 1915; the clades Carriona+ and Makota+ remain nameless. In my opinion, the family can be divided into two subfamilies, Menoscinae Melichar, 1915 and Lophopinae Stål, 1863, based on the key character of the structure of their hind basitarsi: the tarsal plantar surface of the former subfamily is covered with teeth, and that of the latter one, with small platellae, in other words, papil-

lae; Fennah (1956) mentioned this character but did not use it in his classification. In the subfamily Menoscinae, the following taxa deserve separation into distinct tribes: the genus *Carrionia* (clade Carriona+)—the Carrioniini trib. n. with the distinguishing features of the genus *Carrionia* indicated by Soule-Perkins; the clade Makota+ under the name Virgiliini trib. n. (according to the genus *Virgilia* Stål, 1863 superior in the group); the tribe Menoscini Melichar, 1915 corresponding to the root part of the clade Bisma+; and Acarnini Baker, 1925 corresponding to the apical part of the same clade with the genera *Megacarna* Bak., *Zophiuma* Fenn., *Jugoda* Mel., *Maana* S.-P., *Kasserota* Dist., *Acarna* Stål, *Magia* Dist., *Onycta* Fenn., and *Meloenoipia* Metc. In the subfamily Lophopinae, the genus *Elasmoscelis* Spin is distinguished based on the structure of the apex of the hind tibia. The differences between these subfamilies and tribes are given in the below key in which the characters used by Soule-Perkins are supplemented with characters of venation. The genera *Asantorga* Mel. and *Jivatma* Dist. (the type species of this genus) do not go into the scheme; these genera seem to belong to Lophopini but possess teeth on the plantar surface of the basitarsus, as it was indicated in Soule-Perkins's key.

The name *Jivatma* erroneously reduced by Baker (1925) to a synonym of the generic name *Menosca* Stål actually seems to be a synonym of the generic name *Serida* (Lophopini). My opinion is based on the Fenna's description of the type species of the genus *Jivatma* (Fennah denied the synonymy of *Jivatma* and

Menosca without argumentation). I have examined the specimens of *J. metallica* from Vietnam (the collection of the Zoological Institute, the Polish Academy of Sciences, Warsaw), identified by Fennah; they well fit the figure and description by Distant. Another species, *J. insignis* Dist. undoubtedly not related closely to the type species, must have belonged to the tribe Menoscini and the genus *Apia* Dist.

Soule-Perkins excluded the Neotropical genera *Hesticus* Walker and *Silvanana* Metcalf from the family Lophopidae and left open the question on their ascription to any other family. Within the outer group, she did not use characters of the family Tropicuchidae, quite possible ancestors of Lophopidae. However, it is the family Tropicuchidae to which the genus *Hesticus* seems to belong; the genus *Silvanana* was transferred by V.M. Gnezdilov (2009) to the family Ricaniidae.

*A Key to the Subfamilies and Tribes
of the Family Lophopidae*

[taking into account the characters given by Soule-Perkins (1998)]

- 1(8). Plantar surface of basitarsus covered with teeth. Apex of hind tibia with more than 10 large teeth. (Subfamily Menoscinae Melichar, 1915).
- 2(5). Cross-vein *mcu* of fore wing situated distally of furcation of *M* or disguised by secondary chaotically branching veins.
- 3(4). Precostal area wide, developed only in distal half of anterior margin of corium. Lateral ocelli absent Carrioniini trib. n.
- 4(3). Precostal area uniformly narrow nearly up to most nodal line. Lateral ocelli present Virgiliini trib. n.
- 5(2). Cross-vein *mcu* of fore wing situated proximally of furcation of *M*, secondary veins absent.
- 6(7). Ocellar carina absent. Genal carina nearly always present. Veins *MP* and *CuA* not anastomosing Menoscini Melichar, 1915, stat. n.
- 7(6). Ocellar carina developed. Genal carina absent. Veins *MP* and *CuA1* anastomosing Acarnini Baker, 1925, stat. n.
- 8(1). Plantar surface of basitarsus covered with dense brush of papillae or microplatellae, separate teeth situated at sides of apex. Whole apex of hind tibia or only its lateral parts with numerous

narrow (elongate) teeth densely arranged in transverse rows. (Subfamily Lophopinae Stål, 1863, sensu n.).

- 9(10). Dense brush of papillae occupying only distal half of plantar surface of segment, brush formed by longitudinal stripes separated (as though furrowed) by glabrous intervals. At apex of hind tibia, part of teeth, forming wide longitudinal stripe, replaced by papillae laterally adjacent to teeth. In fore wing, furcation of *M* situated distally of that of *CuA* Elasmoscellini Melichar, 1915.
- 10(9). Dense brush of papillae occupying entire lower surface of segment, continuous, without furrows. Apex of hind tibia without papillae, only with teeth. On fore wing, furcation of *M* situated proximally of that of *CuA*. Lophopini Stål, 1863, sensu n.

*A List of the Genera of the Family Lophopidae
of the World fauna*

Subfamily **MENOSCINAE** Melichar, 1915, stat. n.

Tribe CARRIONIINI Emeljanov, trib. n.

Carrionia Muir, 1931

Tribe VIRGILIINI Emeljanov, trib. n.

Buxtoniella Muir, 1927

Clonaspe Fennah, 1955

Makota Distant, 1909

Painella Muir, 1927

Virgilia Stål, 1870

Tribe MENOSCINI Melichar, 1915

Aluma Distant, 1909

Apia Distant, 1909

Asantorga Melichar, 1915

Bisma Distant, 1906

Epiptyxis Gerstaecker, 1895

Jivathma Distant, 1906

Lapitasa Melichar, 1914

Menosca Stål, 1870

Pseudocorethrura Melichar, 1915

Pseudotyxis Soulier-Perkins, 1998

Zelega Melichar, 1915

Tribe ACARNINI Baker, 1925, stat. n. (Acarinae)

Acarna Stål, 1863

Acarnana Emeljanov, 2012

Jugoda Melichar, 1915

Kasserota Distant, 1906

Maana Soulier-Perkins, 1998

Magia Distant, 1907

Megacarna Baker, 1925

Meloenopia Metcalf, 1952

Onycta Fennah, 1955

Zophiuma Fennah, 1955

Subfamily **LOPHOPINAE** Stål, 1866

Tribe ELASMOSCELINI Melichar, 1915

Elasmoscelis Spinola, 1839

Tribe LOPHOPINI Stål, 1866

Acothrura Melichar, 1915

Corethrura Hope, 1843

Katoma Baker, 1925

Lacusa Stål, 1862

Lophops Spinola, 1839

Paracorethrura Melichar, 1915

Pitambara Distant, 1906

Podoschtroumpfa Soulier-Perkins, 1998

Pyrilla Stål, 1859

Sarebasa Distant, 1909

Serida Walker, 1857

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