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CLARIFICATION OF SOME TAXONOMIC PROBLEMS IN ANISOSCELINI AND LEPTOSCELINI (HEMIPTERA: COREIDAE: COREINAE)

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Abstract.—Genera previously created for species of the genera *Leptoglossus* Guérin-Ménéville and *Anisoscelis* Latreille (Anisoscelini) are given species-group status. These species groups are keyed, their included species listed with synonymies, and their distributions given. *Dallacoris* Osuna (Leptoscelini) is a name never published and therefore invalid; its single species is restored to the genus *Phthia* Stål as *Phthia picta* (Drury). The species groups in *Leptoglosus* (and the number of included species) are the *dilaticollis* species group (3 species), *gonagra* species group (1), *harpagon* species group (3), *cinctipes* species group (3), *lineosus* species group (3), and *zonatus* species group (24).

Key Words: Anisoscelini, Leptoscelini, *Leptoglossus, Anisoscelis, Phthia* synonyms, species groups

In two theses, Osuna revised the coreine tribes Anisoscelini (1977) and Leptoscelini (1981). He made numerous taxonomic and nomenclatorial changes in these theses, including the proposing of several new genera for existing species. However, only one of these theses (1977, Anisoscelini) was published (Osuna 1984), and many of the changes made in the thesis (1977) were not included in the publication (1984). Consequently, many of Osuna's nomenclatorial and taxonomic changes are not published and, therefore, invalid. Some have nevertheless crept into the literature, and others (such as the status of the anisosceline genus *Veneza*) are causing confusion, because workers on the economically important *Leptoglossus zonatus* (Dallas) are unsure of the correct generic name (R. Zucchi, personal communication).

Here we discuss Osuna's changes, reduce many of his proposed new genera to species groups, indicate to which of these groups the various species belong (something Osuna neglected to do in his publication [1984]), key the species groups, and give their currently known distributions and synonymies.

Anisoscelini

In 1984, Osuna published as a monograph part of his dissertation on the coreine tribe Anisoscelini (as Anisoscelidini; because the combining form of the Greek "-scelis" is "-scelin-," "Anisoscelini" is correct [see Packauskas 1994a]). In this monograph, Osuna (1984) created several new genera for species hitherto included in *Leptoglossus* Guérin-Ménéville and *Anisoscelis* Latreille. Unfortunately, he did not indicate what species formerly in those two genera were to be placed in the new ones except for a type species designated for each genus. This leaves many *Leptoglossus* species *ipso fac-*

to remaining in *Leptoglossus,* whereas their (presumably) close relatives are type species of other genera; the same is true of *Anisoscelis* species. Moreover, this monograph appears to be unobtainable in the United States (our copies are copies of The Natural History Museum, London, copy) and the author himself has not responded to inquiries.

In an unpublished revision of the Anisoscelini and related tribes Packauskas (1994b) has examined *Leptoglossus* and *Anisoscelis* (both *sensubus latis*). Packauskas has also studied the new genera of Osuna (1984) as well as the species groupings in Allen's (1969) revision of *Leptoglossus,* many of which Osuna proposed be raised to generic rank.

We do not agree that the new genera for *Leptoglossus* species, or those for *Anisoscelis* species, are worthy of generic rank, and we discuss the reasons here. We also consider additional nomenclatorial matters.

Leptoglossus Guérin-Ménéville

Leptoglossus Guérin-Ménéville 1831 (1838): pl. 12. Fig. 9.
Anisoscelis: Spinola 1837: 200.
Theognis Stål 1862: 294. **New synonymy.**
Theognis: Kiritschenko 1935: 191.
Theognis: Hussey 1953: 33.
Microphyllia Stål 1870: 167. **New synonymy.**
Microphyilia (sic): Gibson & Holdridge 1918: 4.
Haeckelia Kirkaldy 1904: 280. n. n. for *Microphyllia* **New synonymy.**
Nannophyllia Bergroth 1913: 143. n. n. for *Haeckelia* **New synonymy.**
Fabrictilis Osuna 1984: 112. **New synonymy.**
Leptoglossus Osuna 1984: 115. **New synonymy.**
Nannophyllia: Osuna 1984: 113.
Stalifera Osuna 1984: 108. **New synonymy.**
Theognis: Osuna 1984: 111.
Veneza Osuna 1984: 117. **New synonymy.**

Type species: *Leptoglossus dilaticollis* Guérin-Ménéville 1831.

Allen (1969) revised the genus *Leptoglossus,* described five new species, and provided a key to the 38 species known at that time. Since then, nine new species (Brailovsky 1976, 1990; Alayo and Grillo 1977; Yonke 1981; Brailovsky and Barrera 1994) have been described. In addition, Osuna (1984) transferred two species from *Leptoglossus* to the genus *Nannophyllia* Bergroth (= *Microphyllia* Stål). In his revision, Allen (1969) reviewed the genus *Theognis* Stål and discussed reasons for retaining Stål's own proposition to synonymize this genus under *Leptoglossus* Guérin. Allen also proposed two large species groups, each containing four smaller species groups.

In 1984, Osuna published a monograph on the tribe Anisoscelini (as "Anisoscelidini"), in which he claimed to have separated the species within the genus *Leptoglossus* and to have placed them in six genera. Three of these were new, one was an existing genus, and one was a resurrection: *Leptoglossus* Guérin-Ménéville *sensu stricto* (5 spp.); *Nannophyllia* Bergroth, an existing genus (7 spp.); *Fabrictilis* Osuna (2 spp.); *Stalifera* Osuna (4 spp.); *Theognis* Stål, a resurrected genus (3 spp.); and *Veneza* Osuna (26 spp.). The numbers in parenthesis are taken directly from the abstract of Osuna's paper. Nowhere in this published paper does Osuna explicitly move species into each of the newly created genera, with the exception of the type species given for each of the genera. These were the following: *Cimex gonagra* Fabricius (for *Fabrictilis*), *Theognis fasciolatus* Stål (for *Nannophyllia*), *Anisoscelis cincta* Herrich-Schaeffer (for *Stalifera*), *Theognis lineosus* Stål (for *Theognis*), and *Anisoscelis zonata* Dallas (for *Veneza*). Because a type species has been designated for each of these four new genera, they are valid, but each contains only a single species.

In order to determine what Osuna has

done here, one needs to go to Osuna's (1977) original dissertation work on the Anisoscelini, which we emphasize is unpublished and whose new names are invalid under the Rules (ICZN 1985, Art 9(11)). Osuna (1977), in this work, stated into which of these new genera the other *Leptoglossus* species were to be placed. Examining this work, one can see that *Veneza* Osuna consists of Allen's (1969) Division B. Osuna's other four genera, including *Leptoglossus* Guérin (*sensu stricto*), are all elevations of Allen's Division A species groups to generic status. *Stalifera* Osuna consists of Allen's *cinctus* group. *Fabrictilis* Osuna may consist of Allen's *australis* group. Two of the members of Allen's *harpagon* group (*L. harpagon* and *L. flavosignatus*) were transferred to the genus *Nannophyllia* Bergroth, and the other three species (*L. alatus, L. lineosus,* and *L. subauratus*) were placed in the resurrected genus *Theognis* Stål. This left *Leptoglossus* Guérin (*sensu stricto*) containing but three species, *L. dilaticollis, L. fulvicornis,* and *L. rubrescens.*

In his monograph, Osuna referred to "generic equivalence" as the reason for the creation of four new genera, but we believe his reasoning is flawed. We do not find good external structural characters that validate this creation of four new genera. The main reason for doing so appears to be the contention that Stål's *Microphyllia* (the name of which had been changed to *Nannophyllia* by Bergroth [1913] via Kirkaldy [1904]: see generic synonymy) is a genus and, therefore, perhaps other species groups should be also (= generic equivalence?). *Nannophyllia* is a problematic genus with close affinities to *Leptoglossus* (*sensu lato*) and is not separated from *Leptoglossus* by any distinctive characters, other than color differences.

In Stål's original description the genus was differentiated by the shape of the first antennal segment and the tiny tibial expansion (hence his "*Microphyllia*"). Osuna's placement (in his thesis [1977]) of two more species into the genus destroyed the only good external differentiating character (small tibial expansion, which the added species do not possess), although the species are still grouped by color differences.

Because there are no consistent external structural characters separating Osuna's new genera, or *Nannophyllia* from *Leptoglossus sensu lato,* and, moreover, because all Osuna's new genera are based only on color characters, and otherwise have more characters in common than they have differences, we propose that his new genera and the genera *Nannophyllia* and resurrected *Theognis* be considered synonyms of *Leptoglossus* and be reduced to species-group status. This tightens the generic limits of *Leptoglossus* and does not radically change the current taxonomy, as no other authors have followed Osuna since publication of his monograph. We also believe that the addition of new genera within a tribe where very few taxa are identified or differentiated is unwarranted and can lead to confusion; instead, we recognize these units as species groups.

Allen (1969) separates *Leptoglossus* species into two Divisions, one of which he divides further into Groups. Five of our six species groups are Groups of Allen's Division A; the sixth of our groups (*zonatus* species group) is all of Allen's Division B. Allen (1969) named four of his five Division A Groups; one of these, *australis* Group, we rename the *gonagra* species group, because *Leptoglossus australis* has been synonymized with *L. gonagra* by Slater and Baranowski (1986).

The following key will illustrate that most of the differences are those of coloration, and will serve to distinguish the six species groups:

Key to the species groups of *Leptoglossus*

1. Thoracic pleura orange to dark reddish brown, without strongly contrasting yellowish markings; thoracic and abdominal venter usually with numerous small piceous spots 2
– Thoracic pleura with at least three, usually

more strongly contrasting, yellowish maculae, fasciae; or venter widely yellow 3
2. Abdominal tergites with a median pale yellow longitudinal fascia . . . . *dilaticollis* species group
– Abdominal tergites without a median pale yellow longitudinal fascia . . . *zonatus* species group
3. Clavus and corium dark brown with strongly contrasting yellow or ochraceous veins . . . . . *lineosus* species group
– Clavus and corium dark, veins usually concolorous, or, at most, bright red, yellow 4
4. Pronotal disk with narrow, arcuate, pale transverse fascia; thoracic pleura with 10–12 pale yellow maculae on each side; abdominal venter with 6–7 complete or maculate longitudinal fasciae . . . . . *gonagra* species group
– Pronotal disc without narrow, transverse fascia, usually unicolorous or with round pale spots; pleura never with more than 6 yellowish maculae on each side; abdominal venter without longitudinal fasciae 5
5. Pronotum with 4 small yellowish spots, two on anterior disk and two on posterior marginal area (some fusion may occur); lateral margins of pronotum entire, without serrations or teeth . . . . . *harpagon* species group
– Pronotum without spots, disk entirely yellow, contrasting with remainder of pronotum and hemelytra; lateral margins of pronotum serrate . . . . . *cinctus* species group

List of current species of *Leptoglossus* Guérin-Ménéville with species-group placements and distributions

dilaticollis species group

Leptoglossus dilaticollis Guérin-Ménéville 1831(1838): pl. 12; Brazil, Mexico, Panama.

Leptoglossus fulvicornis Westwood 1842: 17; eastern U.S.

Leptoglossus magnoliae Heidemann 1910: 191, syn. by Allen 1969.

Theognis fulvicornis Hussey 1953: 30.

Leptoglossus rubrescens (Walker), 1871: 135; Brazil.

gonagra species group

Leptoglossus gonagra (Fabricius) 1775: 708; world tropics and subtropics

Anisoscelis precipua Walker 1871: 128, syn. by Allen 1969.

Leptoglossus australis (Fabricius) 1775: 708, syn. by Baranowski & Slater 1986.

harpagon species group

Leptoglossus fasciolatus (Stål) 1862: 295; Colombia. **new combination.**

Leptoglossus flavosignatus Blöte 1936: 28; Peru.

Leptoglossus harpagon (Fabricius) 1775: 101; Brazil.

cinctus species group

Leptoglossus cinctus (Herrich-Schaeffer) 1836: 91: Argentina, Brazil, Bolivia, Colombia, Costa Rica, Cuba, Fr. Guiana, Guyana, Honduras, Mexico, Panama, Paraguay, Venezuela.

Leptoglossus crassicornis (Dallas) 1852: 454; Argentina, Bolivia, Colombia, Paraguay, Uruguay.

Leptoglossus fasciatus (Westwood) 1842: 17; Argentina, Brazil.

lineosus species group

Leptoglossus alatus (Walker) 1871: 129; Brazil.

Leptoglossus lineosus (Stål) 1862: 295; Mexico.

Leptoglossus subauratus Distant 1881: 126; El Salvador, Guatemala, Nicaragua.

zonatus species group

Leptoglossus ashmeadi Heidemann 1909: 237; S. E. U.S.

Leptoglossus balteatus (Linnaeus) 1771: 534; Bahamas, Jamaica, Cuba, Dom. Republic, Puerto Rico, St. Thomas, Greater Antilles.

Anisoscelis selecta Walker 1871: 127, syn. by Allen 1969.

Leptoglossus brevirostris Barber 1918: 35: southwestern U.S., Mexico.

Leptoglossus chilensis (Spinola) 1852: 172; Argentina, Brazil, Chile, Paraguay, Uruguay.

Leptoglossus chilensis concaviusculus (Berg) 1892: 70, subspecific status by Allen 1969.

Leptoglossus clypealis Heidemann 1910:

195; Mexico, central & southwestern U.S.

Leptoglossus corculus (Say) 1832: 12 (326); eastern U.S.

Leptoglossus concolor (Walker) 1871: 128; Belize, Costa Rica, Cuba, Dominican Republic, Haiti, Guatemala, Panama, Puerto Rico, Mexico, Virgin Islands.

Leptoglossus conspersus Stål 1870: 163; Brazil, Colombia, Mexico.

Leptoglossus dentatus Berg 1892: 68; Argentina, Uruguay.

Leptoglossus grenadensis Allen 1969: 108; Grenadines.

Leptoglossus humeralis Allen 1969: 126; Guyana, French Guiana.

Leptoglossus ingens (Mayr) 1865: 434; Argentina, Bolivia, Brazil, Paraguay.

Anisoscelis santaremus Walker 1871: 129, syn. by Allen 1969.

Leptoglossus impictipennis Stål 1870: 163; Bolivia, Guyana, Brazil, Colombia.

Leptoglossus impictus (Stål) 1859: 233; Argentina, Uruguay.

Leptoglossus lonchoides Allen 1969: 124; Brazil, Peru.

Leptoglossus macrophyllus Stål 1870: 162; Colombia, Venezuela.

Leptoglossus neovexillatus Allen 1969: 113; Argentina, Bolivia, Brazil, Paraguay, Peru, Uruguay.

Leptoglossus occidentalis Heidemann 1910: 196; formerly western U.S., but has moved east quickly; see McPherson et al. (1990) and Gall (1992), Mexico.

Leptoglossus oppositus (Say) 1832: 12; Mexico, eastern U.S.

Leptoglossus pallidivenosus Allen 1969: 128; Panama.

Leptoglossus quadricollis (Westwood) 1842: 17; Argentina, Brazil.

Leptoglossus impressicollis Berg 1892: 69, syn. by Allen 1969.

Leptoglossus phyllopus (Linnaeus) 1767: 731; U.S., Mexico, Costa Rica, Guatemala.

Leptoglossus stigma (Herbst) 1784: 258; Brazil, Ecuador, Paraguay, Surinam.

Leptoglossus zonatus (Dallas) 1852: 452; Argentina, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, southwestern U.S., Venezuela.

Anisoscelis vexillatus Stål 1855: 485. syn. by Allen 1969.

Species of uncertain species-group placement (not examined)

Leptoglossus confusus Alayo & Grillo 1977: 97; Cuba.

Leptoglossus dearmasi Alayo and Grillo 1977: 101; Cuba.

Leptoglossus dialeptos Brailovsky & Barrera 1994: 57; Venezuala.

Leptoglossus digitiformis Brailovsky 1990: 121; Brazil.

Leptoglossus jacquelinae Brailovsky 1976: 36; Mexico.

Leptoglossus nigropearlei Yonke 1981: 213; Panama.

Leptoglossus tetranotata Brailovsky & Barrera 1994: 60; French Guiana.

Leptoglossus usingeri Yonke 1981: 217; Mexico.

Leptoglossus venustus Alayo & Grillo 1977: 99; Cuba.

Anisoscelis Latreille

Anisoscelis Latreille 1829: 197.

Anisoscelis: Osuna (in part) 1984: 102. **New synonymy**.

Bitta Osuna (in part) 1984: 104. **New synonymy**.

Type species: *Lygaeus foliaceus* Fabricius 1803: 210, designated by Laporte 1833: 31.

Osuna (1984) divided *Anisoscelis* into two genera: *Anisoscelis* (*sensu stricto*) containing only the type species (*A. foliacea*); and a new genus, *Bitta,* naming only one species in the genus (the type, *A. affinis*). In the monograph (1984) he does not mention the other species included in *Anisoscelis* (*sensu lato*), although he does so in his dissertation (1977); again, these genera (*Anisoscelis* [*sensu stricto*] and *Bitta*) each validly contains only a single species.

Osuna (1984) does not discuss the differences between his two genera. However differences are given in his key. The first character in his key—"first antennal segment less than two times length of head (*Anisoscelis*)" versus "first antennal segment two times length of head (*Bitta*)"—varies among species within both groups on either side of his division, often being nearly to more than twice the length of the head (Packauskas 1994b). His second character—"metallic green to blue on scutellum and pronotum (except in *A. discolor* and *A. foliacea marginella,* where pale maroon) (*Anisoscelis*), versus pronotum and scutellum having yellow to white spots (*Bitta*)"—alone does not distinguish groupings at the generic level. We see no good characters or valid apomorphies on which to base the raising of these groupings of species in *Anisoscelis* (*sensu lato*) to generic levels. Therefore, we consider Osuna's genera to be synonyms and recognize them only as species groups, as there are more and stronger characters which unite these two groups and distinguish them as a unit from other anisosceline genera (Packauskas 1994b).

Key to the species groups of *Anisoscelis*

1. Hind tibial dilation long, extending to apex of tibia; genital capsule of male with a U-shaped notch medially . . . . . *foliaceus* species group
– Hind tibial dilation short, not extending to apex of tibia; genital capsule of male with a medial process . . . . . *affinis* species group

List of current species of *Anisoscelis* with species-group placement and distributions

foliaceus species group

Anisoscelis (*Anisoscelis*) *foliaceus* (Fabricius) 1803: 210; Brazil, Peru, Surinam.

Anisoscelis (*Anisoscelis*) *foliaceus marginellus* (Dallas) 1852: 457; Brazil. Subspecific status by Osuna (1984).

Anisoscelis (*Anisoscelis*) *discolor* Stål 1854: 235; Taiti? [sic]

Anisoscelis (*Anisoscelis*) *scutellaris* Stål 1870: 159; Colombia.

affinis species group

Anisoscelis (*Bitta*) *affinis* Westwood 1842: 275; Mexico.

Anisoscelis (*Bitta*) *flavolineatus* Blanchard 1849: pl. 6; Colombia.

Anisoscelis (*Bitta*) *gradadius* Distant 1880: 122; Guatemala.

Anisoscelis (*Bitta*) *hymenipherus* Westwood 1840: 275; Mexico.

Anisoscelis (*Bitta*) *podalicus* Brailovsky & Mayorga 1995: 198, **New combination;** Costa Rica.

Species of uncertain species-group placement (not examined)

Anisoscelis alipes Guérin-Ménéville 1831: pl. 75; Mexico.

Leptoscelini

Phthia Stål

Phthia Stål 1862: 294.

Dallacoris Osuna 1981: 75. ***Nomen nudum.***

Osuna proposed the genus *Dallacoris* for this species, but did so in another dissertation (1981); he never published the name. It is therefore invalid, although Henry and Froeschner (1992) included it and the combination *Dallacoris pictus* as additions to their Catalog (1988). *Phthia picta* is a widespread (see below), mainly neotropical insect, and is a pest on many crops (Mitchell 2000).

Phthia picta (Drury) 1770: 107; Argentina, Brazil, Colombia, Cuba, Honduras, Mexico, Puerto Rico, St. Martin, Surinam, Uruguay, Venezuela.

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