

BRAZILIAN APHIDOIDEA. III. SUB-FAMILY DREPANOSIPHINAE¹

V.F. EASTOP², CLÁUDIO L. COSTA³ and ROGER L. BLACKMAN²

ABSTRACT - Keys are provided for the identification of the tribes, genera and species of Brazilian Drepanosiphinae. Host plant and distribution data are given for each species.

Index terms: Brazilian aphids, identification keys, host plants, check list of genera and species, distribution

AFÍDIOS BRASILEIROS: III. SUBFAMÍLIA DREPANOSIPHINAE

RESUMO - São fornecidas chaves para a identificação das tribos, gêneros e espécies de afídios da subfamília Drepanosiphinae, que ocorrem no Brasil. Apresentam-se também dados sobre as hospedeiras e a distribuição geográfica das espécies.

Termos para indexação: Aphidoidea, afídios brasileiros, chaves para identificação, hospedeiros, distribuição geográfica.

INTRODUCTION

Previous papers (Costa et al. 1993a; 1993b) provided keys for the identification of the families and subfamilies of Aphidoidea known from Brazil and discussed the family Phylloxeridae and the subfamilies Lachninae, Chaitophorinae, Greenideinae, Anoeciinae and Hormaphidinae. Keys for the identification of genera and species, host plant and geographical distribution data were also included. In this paper the sub-family Drepanosiphinae is discussed. The Aphidinae and Pemphiginae will be dealt with in future parts.

In many Drepanosiphinae all the parthenogenetic viviparae are alate, only some oviparae being apterous. As the apterae may look very different from their alatae, separate keys for apterae and alatae are given to the tribes, subtribes, genera and species. Otherwise the techniques and data presentation follow Costa et al. (1993a). Which paper also contains figures 12-15 and 25-28.

Key to the Brazilian Drepanosiphinae

Apterae viviparae

- 1 (2) Neither head, thorax nor abdomen with elongate processes; usually with 4 distinct rudimentary gonapophyses, each bearing 2 or 3 hairs, between the genital and anal plates (fig. 72). In wax dust on Podocarpaceae and Araucariaceae (tribe Neophyllaphidini).....*Neophyllaphis* (*Chileaphis*) *podocarpini*?
- 2 (1) Apterae and immature forms with processes on head, thorax and abdomen, either with numerous short knobbed processes on the dorsal surface, with up to 14 processes per segment, or with segmentally arranged paired lateral pointed finger-like processes. Rudimentary gonapophyses with a tendency to fuse to form two small tubercles each bearing 5 or 6 hairs (fig. 73) but sometimes forming an irregular row of 8-10 hairs. On dicotyledons (tribe Lizeriini).*Lizerius*.
- 3 (6) Vertex with 3 or more pairs of posterior discal setae on processes. Apical setae on processes often extremely small or rudimentary. Abdominal tergites with setae in several longitudinal rows, pleural and spinopleura! setae developed, often on

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² Entom., Ph.D., Department of Entomology, The Natural History Museum, Cromwell Road, London, SW7 5BD, England.

³ Eng.-Agr., Doutor em Agronomia, Departamento de Fitopatologia, Universidade de Brasília (UnB), CEP 70919-970 Brasília, DF.

processes of various shapes. Abdominal tergite V with lateral processes. Cornicle poriform or scarcely raised above body surface. Subgenus *Lizerius* s.str.

- 4 (5) Antennae 5-segmented. Dorsum of body membranous, without wax pores, with numerous short rugose or spinulose club-shaped processes. Eighth tergite with 4 finger-like processes with nodules developed into short branches on basal periphery. Ultimate rostral segment longer than second joint of hind tarsus. On *Nectandra* *Lizerius* (*Lizerius*) *tuberculatus*
- 5 (4) Antennae 6-segmented. Dorsum of body with numerous sclerites containing minute wax pores, only lateral abdominal sclerites developed into short processes, lateral abdominal setae mostly single. Eighth tergite with 2 finger-like and 2-4 small wart-like processes with scabrous integument. Ultimate rostral segment shorter than second joint of hind tarsus. On *Ocotea* *Lizerius* (*Lizerius*) *ocoteae*
- 6 (3) Vertex with only 2 pairs of posterior discal setae, and only the lateral pair on processes. Apical setae on processes well developed. Abdominal tergites with only rows of spinal setae and lateral setae complete, pleural setae mostly absent, only lateral processes developed, finger-like, curved and tapering, and absent from tergite V. Cornicle mammiform or cone-shaped, well raised above body surface. Subgenus *Paralizerius*.
- 7 (8) Third antennal segment with many setae. Antennae 6-segmented, processus terminalis more than half as long as the base of last antennal segment. Lateral abdominal processes sclerotic, bearing 2-4 setae subventrally near their bases. Cornicle sclerotic, cone-shaped. Reticulation of dorsal integument only on vertex and pronotum. Apterous-alate intermediates. On *Bougainvillea* .. *Lizerius* (*Paralizerius*) *cermellii*.
- 8 (7) Third antennal segment with few setae. Antennae in true apterae 5-segmented,

processus terminalis much less than half as long as the base of the last antennal segment. Lateral abdominal processes membranous, only one lateral seta developed on each side of the abdominal tergites, placed on the apex of each processus. Cornicles membranous, mammiform. Reticulation of dorsal integument on all tergites. On *Terminalia australis*
..... *Lizerius* (*Paralizerius*) *brasiliensis*.

Alatae viviparae

- 1 (8) Wing venation normal, media of fore-wing twice branched (Fig. 77).
- 2 (3) Empodial hairs setiform (Fig. 71). Third antennal segment (of Brazilian species) bearing 47-72 annular rhinaria extending over most of its length. Processus terminalis only about 0.25 times as long as the base of the last antennal segment. Ultimate rostral segment 0.4-0.5 times as long as the second segment of the hind tarsus and without accessory hairs. Wing veins pale. Usually with 4 rudimentary gonapophyses (Fig. 72) (tribe *Neophyllaphidini*)
Neophyllaphis (*Chileaphis*) *podocarpini* ?
- 3 (2) Empodial hairs flattened, strap like, somewhat sigmoid (Figs 68,70). Third antennal segment bearing 2-20 round, oval or transversely elongate rhinaria confined to the basal half of the segment. Sixth antennal segment with the processus terminalis 0.6-2.1 times as long as the base. Ultimate rostral segment 0.6-1.2 times as long as the second segment of the hind tarsus and bearing 2-12 accessory hairs. Wing veins often dark banded especially near their apices. Gonopophyses usually fused to form a pair (Fig. 73) each with 5 or 6 hairs (tribe *Phyllaphidini*).
- 4 (5) Lateral and dorsal abdominal sclerites on segments 1-7 each bearing only a single hair (Fig. 74). Sixth antennal segment with processus terminalis 0.6-0.7 of the length of the base. Head and thorax dark

- laterally but pale dorsally. The dark dorsal abdominal sclerites variable in size but mostly largest on tergite 4 and 5 and gradually decreasing towards the extremities, thus those on 4 and 5 are little larger than those on 3 and 6. Wing veins strongly dark bordered towards the apex. On *Tilia*.....*Eucallipterus tiliae*.
- 5 (4) Lateral abdominal sclerites bearing 3-5 hairs (Figs 15, 75). Sixth antennal segment with the processus terminalis 0.8-2.2 times as long as the base. When head and thorax dark laterally, then also with a dark spinal stripe and pale pleurally. On Fagaceae.
- 6 (7) Head and thorax dark laterally and spinally, pale pleurally. Abdomen bearing paired dorsal sclerites on tergites 1-7, those on tergites 4 and 5 usually much larger than those on tergites 3 and 6 (Fig. 15). Spinal sclerites of anterior tergites not projecting and each bearing 2-7 hairs. Processus terminalis 1.5-2.1 times as long as the base of the last antennal segment (Fig. 14). Ultimate rostral segment 0.9-1.2 times as long as the second segment of hind tarsus.....*Myzocallis castanicola*.
- 7 (6) Head and thorax pale, abdomen bearing paired tubercles on tergites 1-3, those on the third tergite much the largest (Fig. 75), each tubercle bearing only a single hair. Processus terminalis 0.8-1.2 times as long as the base of the sixth antennal segment. Ultimate rostral segment 0.7-0.9 times as long as the second segment of the hind tarsus *Tuberculatus annulatus*.
- 8 (1) Media of fore-wing once branched, venation characteristic. (Figs 13, 76) (tribe Lizeriini). *Lizerius*.
- 9 (16) Fore femur much thicker than mid and hind femora, secondary rhinaria usually confined to the third antennal segment.
- 10 (11) Processus terminalis longer than the base of the sixth antennal segment *Lizerius melanocallis*.
- 11 (10) Processus terminalis 0.2-0.8 times as long as the base of sixth antennal segment.
- 12 (13) Processus terminalis 0.55-0.80 times as long as the base of the sixth antennal segment (Fig. 26); first antennal segment bearing 11-16 hairs. *Lizerius cermelii*.
- 13 (12) Processus terminalis 0.2-0.5 times as long as the base of the sixth antennal segment (Fig. 25); first antennal bearing 3-6 hairs.
- 14 (15) Ultimate rostral segment 0.9-1.0 times as long as the second segment of the hind tarsus; flagellum 0.6-0.9 times as long as the body; third antennal segment 0.55-0.95 times as long as the fourth and fifth segments together and 1.0-1.8 times as long as the fourth segment alone; processus terminalis 0.25-0.35 times as long as base of sixth antennal segment. *Lizerius tuberculatus*.
- 15 (14) Ultimate rostral segment 1.1-1.2 times as long as the second segment of the hind tarsus; flagellum about half body length; third antennal segment 1.2-1.4 times as long as the fourth and fifth together and 2.0-2.9 times as long as the fourth alone; processus terminalis 0.4-0.5 times as long as base of sixth antennal segment. *Lizerius intermedius*.
- 16 (9) Fore femora normal, similar to the other femora; rhinaria often present on the fourth antennal segment.
- 17 (18) Fourth and fifth antennal segments without rhinaria, third with 13-15. Processus terminalis 0.33 times as long as the base of the sixth antennal segment. Flagellum 0.7-0.75 times as long as the body. *Lizerius acunai*.
- 18 (17) Fourth antennal segment bearing 4-8 rhinaria, third with 10-38 and fifth with 0-8; processus terminalis less than 0.2 times as long as the base of the sixth antennal segment (Fig. 25); flagellum 0.4-0.6 times as long as the body.
- 19 (20) Secondary rhinaria distributed III 30-38, IV 7-8, V 0-1, VI 0. Third antennal segment 2.2-2.5 times as long as the fourth antennal segment and 1.0-1.24 times as long as fourth and fifth together *Lizerius costai*.
- 20 (19) Secondary rhinaria distributed III 10-19, IV 4-7, V 0-1. Third antennal segment

1.5-1.8 times as long as fourth and 0.79-0.96 times as long as the fourth and fifth together.

21 (22) First antennal segment bearing 4-8 hairs; vertex with 3 pairs of postero-dorsal hairs; ultimate rostral segment 0.6-0.8 times as long as the second segment of hind tarsus. Secondary rhinaria sub-oval.

..... *Lizerius ocoteae*.

22 (21) First antennal segments bearing 8-12 hairs; vertex with 2 pairs of postero-dorsal hairs. Ultimate rostral segment 0.9-1.1 times as long as the second segment of hind tarsus. Secondary rhinaria oval to narrow elliptical. *Lizerius brasiliensis*.

Tribe Neophyllaphidini

A largely Southern Hemisphere tribe with only *Neophyllaphis* known from South America.

Genus *Neophyllaphis* Takahashi, 1920
Figs. 71, 72

A small mostly Southern Hemisphere genus associated with Coniferae of the family Podocarpaceae and Araucariaceae with a distinct sub-genus in South America.

Sub-genus *Chileaphis* Essig, 1954

Neophyllaphis (Chileaphis) podocarpini, Carrillo, 1980

Collection data

PARANÁ: Curitiba, *Podocarpus*, 15.x; 15-16.x.1972 (V. F. Eastop).

Distribution in the South and Central America: Chile.

Tribe Phyllaphidini

Only two genera of this predominantly tree-living tribe are known from Brazil, but species of *Therioaphis* living on *Trifolium* and *Medicago* may be introduced to the southern states in the future.

Genus *Eucallipterus* Schouteden, 1906

A genus of 2 species associated with Tiliaceae, only *E. tiliae* is known from the Americas.

Eucallipterus tiliae (Linnaeus, 1758)
Figs. 68, 73, 74, 77

Collection data

SÃO PAULO: Campinas, suction trap, 14-15.vi.1972 (C. L. Costa).

Distribution in the South and Central America: only known from Brazil.

Genus *Myzocallis* Passerini, 1860

A genus of about 30 species associated with Fagaceae, only *M. castanicola* is known from Brazil.

Myzocallis castanicola Baker, 1917
Figs. 14, 15, 27, 28, 70.

Collection data

SÃO PAULO: Campinas, water traps, v-vi.1968; vi-ix.1969; suction traps iv-v; vi; vi-vii.1969 (C. L. Costa).

Distribution in South and Central America: Argentina.

Genus *Tuberculatus* Mordvilko, 1894

A genus mostly associated with Fagaceae. Most species are in sub-genus *Tuberculoides*, characterized by small paired tubercles on the anterior abdominal tergites.

Sub-genus *Tuberculoides* van der Goot, 1915

Tuberculatus (Tuberculoides) annulatus
(Hartig, 1841)
Fig. 75

Synonymy: *Tuberculoides elegans* Blanchard, 1939.

Collection data

PARANÁ: Curitiba, *Quercus robur*, 12.x.1972 (V. F. Eastop)

Distribution in South and Central America: Argentina

Tribe Lizeriini

A Southern Hemisphere group comprising the

largely African genus *Paoliella* Theobald and South American genus *Lizerius*.

Genus *Lizerius* E.E. Blanchard, 1923

Quednau's (1974) revision of *Lizerius* is the basis of the above key to the Brazilian species.

Lizerius (= *Neolizerius*) *acunai* (Holman, 1974)

Only one male was collected in a suction trap, at Campinas, São Paulo, ix.1968. Data included in the key were taken from two Cuban specimens deposited in the British Museum collection and from the original description of the species. According to Holman (1974) this species is probably anholocyclic on the host plant, *Nectandra reticularis*. In the females examined the fore femora are normal although in the male they are enlarged.

Collection data

SÃO PAULO: Campinas, suction trap, ix.1968 (C. L. Costa).

Distribution in South and Central America: Cuba.

Lizerius (*Paralizerius*) *brasiliensis* Quednau, 1974

Figs 12, 13.

Host plants are not known; V. F. Eastop collected alatae from *Terminalia australis* in Paysandu, Uruguay, 5.1.1973.

Collection data

SÃO PAULO: Campinas, water trap, xii.1969; suction trap, 1.1970 (C. L. Costa).

Distribution in South and Central America: Uruguay.

Lizerius (*Paralizerius*) *cermelii* Quednau, 1974
Figs 26, 69.

Collection data

PARANÁ: Curitiba, *Bougainvillea*, 7.xi.1972 (V. F. Eastop).

SÃO PAULO: Campinas, water & suction traps, ix.1972 (C. L. Costa).

Distribution in South and Central America: Argentina and Venezuela.

Lizerius (*Paralizerius*) *costai* Quednau, 1974
Fig. 25

Collection data

SÃO PAULO: Campinas, water trap; 14.ix.1972; water & suction traps, iv.1973 (C. L. Costa).

Distribution in South and Central America: only known from Brazil.

Lizerius (*Paralizerius*) *intermedius* Quednau, 1974

Collection data

SÃO PAULO: Campinas, suction trap, ix.1968; water trap, 14.ix.1971 (one male); water & suction traps, ix.1972 (C. L. Costa).

Distribution in South and Central America: only known from Brazil.

Lizerius *ocoteae* E. E. Blanchard, 1939

Collection data

SÃO PAULO: Monte-Mor, water trap, viii-ix.1968 (C. L. Costa).

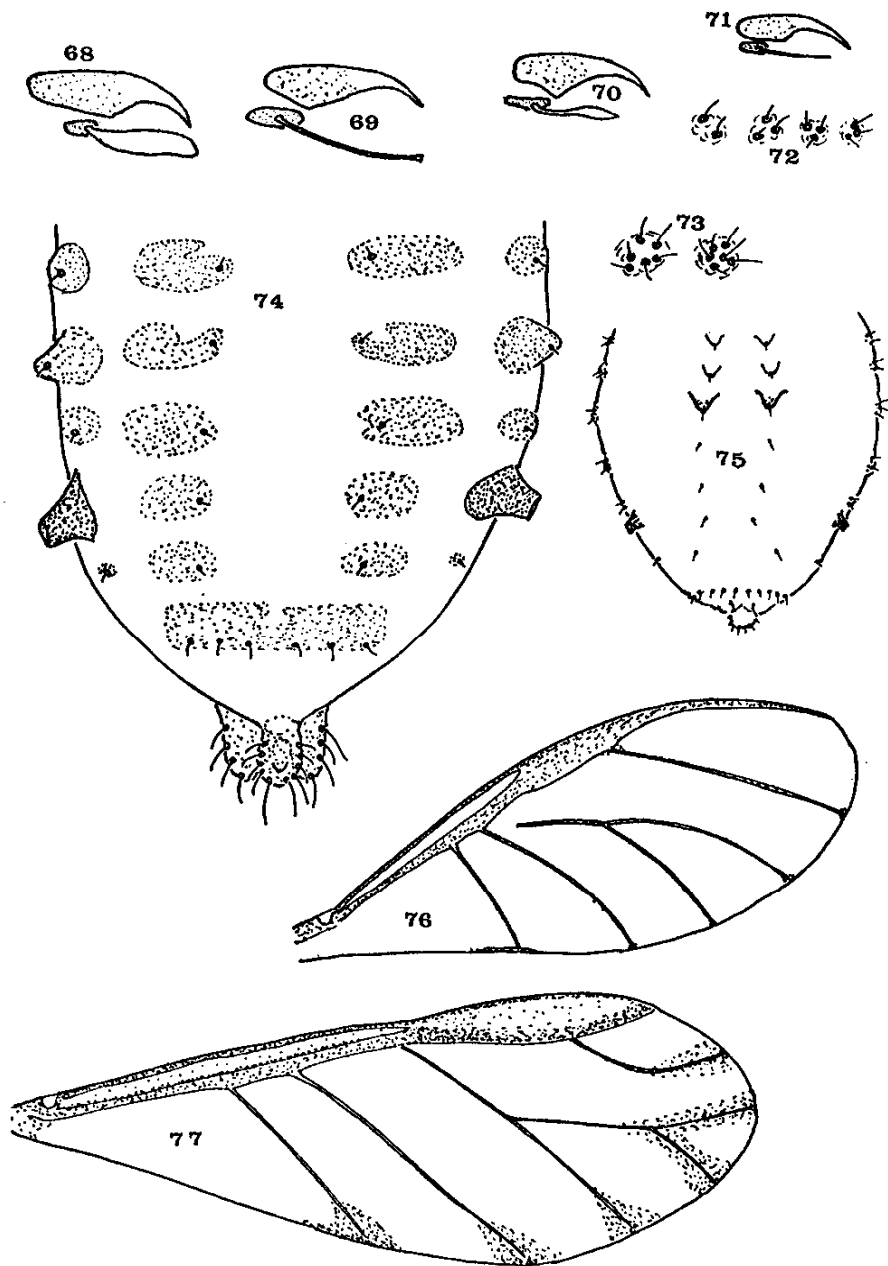
Distribution in South and Central America: Argentina.

Lizerius *melanocallis* (Quednau, 1974)

This species was described in the genus *Paoliella* and transferred into *Lizerius* by Eastop Hille Ris Lambers (1976), the generic position depending on characters selected to discriminate *Paoliella* from *Lizerius*.

Collection data

SÃO PAULO: Campinas, water trap, 26.x.1971 (C. L. Costa).



Figs 68-71. claws and empodial hairs of alatae, 68 *Eucallipterus tiliae*; 69 *Lizerius cermelii*, 70 *Myzocallis castanicola*, 71 *Neophyllaphis*. 72 & 73 rudimentary gonapophyses, 72 *Neophyllaphis*, 73 *E. tiliae*. 74 & 75 dorsum of abdomen, 74 *E. tiliae*, 75 *Tuberculatus annulatus*. 76 & 77 fore-wings, 76 *Lizerius tuberculatus*, 77 *E. tiliae*.

Distribution in South and Central America: only known from Brazil.

Lizerius (Paralizerius) tuberculatus
(E.E.Blanchard, 1939)

Collection data

SÃO PAULO: ?Eugenia (hedge), 11.vii.1966 (E. I. Schlinger); Campinas, water trap, 24.vii.1967; vii-viii, 1968; ix.1970 (C. L. Costa).

Distribution in South and Central America: Argentina, Jamaica and Venezuela.

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ERRATUM

In the Brazilian Aphidoidea I. published in PAB vol 28 no. 2, Feb 1993, page 201 the date for *Toxoptera aurantii* should read 1841, not 1907.