

A new genus and species of grass specialist short-winged leafhopper from Chile and Argentina (Hemiptera: Cicadellidae: Deltocephalinae: Faltalini)

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Abstract. *Ackbaria vermiformis* gen. & sp. nov. (Deltocephalinae: Faltalini) is described from Chile (Bío Bío and Araucanía Regions) and Argentina (La Pampa and Entre Ríos Provinces). It is differentiated from other Faltalini by the following combination of characters: narrow and dorsoventrally compressed body, brachypterous, forewing without reticulate venation, male pygofer with ventroapical tooth and side with 10–15 macrosetae dorsoapically, and female pygofer with many macrosetae.

Resumen. Se describe *Ackbaria vermiformis* gen. & sp. nov. (Deltocephalinae: Faltalini) de Chile (Regiones del Bío Bío y la Araucanía) y Argentina (Provincias de La Pampa y Entre Ríos). El género se diferencia de los otros Faltalini por la siguiente combinación de caracteres: cuerpo angosto y dorsoventralmente comprimido, braquíptero, ala anterior sin venación reticulada, pygofer masculino con diente ventroapical y 10–15 macrosetas por lado, y pygofer femenino con numerosas macrosetas.

Key words. Auchenorrhyncha, Cicadomorpha, *Faltala* group, taxonomy, brachyptery, Poaceae, grassland, Andean region, Neotropical Region, South America

Introduction

The leafhopper tribe Faltalini Zahniser & Dietrich, 2010 (Cicadellidae: Deltocephalinae) includes the brachypterous genera known as the *Faltala* group (*Faltala* Oman, 1938; *Clorindaia* Linnavuori, 1975; *Aequecephalus* DeLong & Thambimuttu, 1973; *Kramerana* DeLong & Thambimuttu, 1973 and *Virganana* DeLong & Thambimuttu, 1973) in addition to macropterous genera *Bonamus* Oman, 1938, *Tenucephalus* DeLong, 1944 and *Hecalocorica*

Nielson, 1996, and two genera that are sexually dimorphic for wing length, *Hecullus* Oman, 1949 and *Acrolithus* Freytag & Ma, 1988 (ZAHNISER & DIETRICH 2013). The *Faltala* group is distributed in South America and its representatives have been studied by OMAN (1938), LINNAVUORI (1959, 1975), DELONG & THAMBIMUTTU (1973), LINNAVUORI & DELONG (1977), CHENG (1980), BLOCKER & FANG (1992), ZAHNISER & WEBB (2004), PARADELL & REMES LENICOV (2005) and REMES LENICOV & PARADELL (2009). The purpose of this contribution is to describe a new genus of this group which conspicuously differs from all currently known genera.

Material and methods

Morphological terminology mainly follows DIETRICH (2005). The abdomen of some males and females was removed and cleared in a saturated KOH solution at room temperature for up to 48 hours. Then, it was rinsed in water and stored in glycerine within a microvial pinned below respective specimen. Photographs were taken by a digital camera adapted to stereoscopic and compound optical microscopes. Scanning electron microscope (SEM) images were taken on a Zeiss EVO MA15 machine under high vacuum conditions. Specimens were coated with a 30 nm layer of gold-palladium. Measurements are given in millimeters; range and number of measured specimens is given for total length and width (taken at level of pronotum).

The type material is deposited in the following collections:

| | |
|------|--|
| INHS | Illinois Natural History Survey, Champaign, Illinois, USA; |
| JCSC | Juan F. Campodonico private collection, Santiago, Chile; |
| MEUC | Museo Entomológico, Facultad de Ciencias Agronómicas, Universidad de Chile, Santiago, Chile; |
| MLPA | Museo de La Plata, La Plata, Argentina; |
| MNNC | Museo Nacional de Historia Natural, Santiago, Chile; |
| NMPC | National Museum, Prague, Czech Republic; |
| USNM | U.S. National Museum of Natural History, Smithsonian Institution, Washington D.C., USA. |

Taxonomy

Ackbaria gen. nov.

(Figs 1–33)

Type species. *Ackbaria vermiformis* sp. nov., here designated.

Diagnosis. Brachypterous. Body distinctly narrow, strongly dorsoventrally flattened. Forewings without reticulate venation. Male pygofer with ventroapical tooth; pygofer side with 10–15 macrosetae dorsoapically. Female pygofer with numerous macrosetae. Subgenital plates narrow with single row of macrosetae.

Description. *Body* (Figs 1–3) dorsoventrally flattened, narrow, more than 4 times as long as wide.

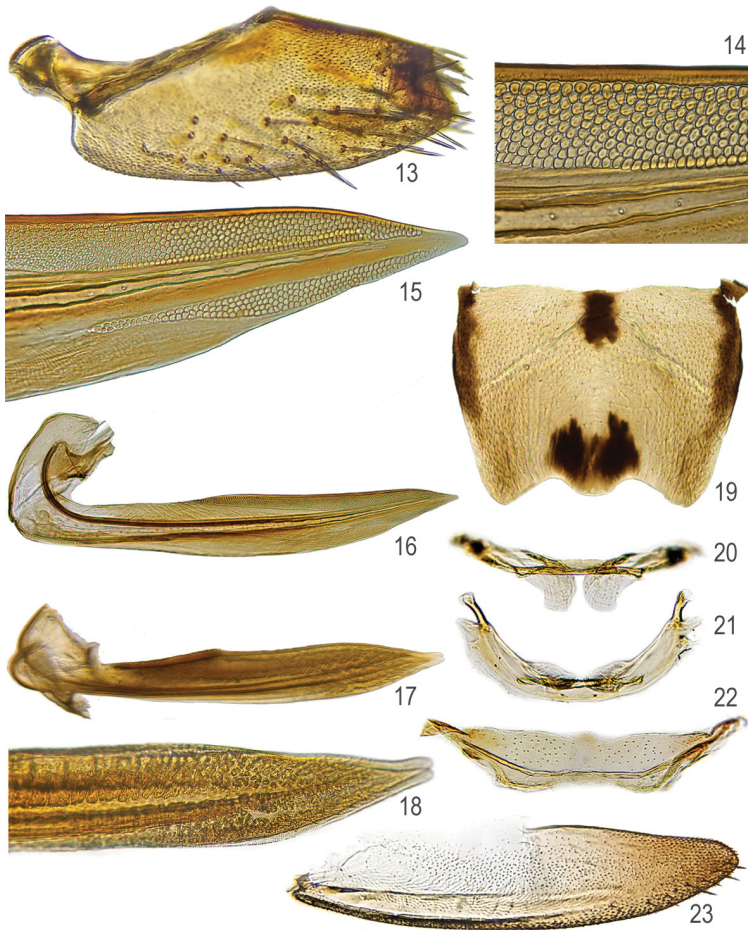
Coloration (Figs 1–4). Dorsal side of head (Figs 1–2) and thorax mostly concolorous, yellowish to creamy white, sometimes with faint longitudinal brown markings; dorsal side of abdomen (Figs 1–2) similarly colored, but with faint markings loosely resembling longitudinal lines, each segment with a small dark dot near lateral margin on both sides. Eyes greenish



Figs 1–12. *Ackbaria vermiformis* sp. nov. 1 – female, dorsal view; 2 – male, dorsal view; 3 – female, lateral view; 4 – face; 5 – connective and style, ventral view; 6 – male pygofer, lateral view (Argentina, PN Lihuel Calel); 7 – same (Chile); 8 – aedeagus, lateral view (Chile); 9 – same (Argentina, PN Lihuel Calel); 10 – same, caudal view; 11 – male pygofer, dorsal view; 12 – valve and subgenital plates, ventral view. Scale bars: 1 mm.

in color. Face and anterior margin of head (Fig. 4) with transverse brown bands; in darkly pigmented specimens, brown coloration occupying anterior half of face, continuing beneath eye to proepimeron. Proepimeron (Fig. 3) always with a dark longitudinal mark. Ventrally, brown coloration continuing near lateral margins along and beside laterotergites; abdominal segments sometimes with brownish markings medially.

Head (Figs 1–4, 26–29, 33) wider than pronotum. Anterior margin keeled, sometimes forming faint carina, acutely angled to face. Crown (Figs 1–3) with apex rounded; strongly produced, median length 2.5–3 times length of median margin of eye; maximum width at level of anterior margin of eyes; texture shagreen near anterior margin and next to eyes, discal



Figs 13–23. *Ackbaria vermiformis* sp. nov. 13 – female pygofer, lateral view; 14 – detail of first valvula dorsal sculpturing; 15 – first valvula apex; 16 – first valvula; 17 – second valvulae; 18 – second valvulae apices; 19 – female sternite VII; 20 – male apodeme of abdominal sternite I, ventral view; 21 – same, anterior view; 22 – male apodeme of abdominal sternite II, ventral view; 23 – gonoplac.

region texture shiny, with shallow irregular rugae. Ocelli (Figs 3, 29, 33) on anterior margin of head, reduced, positioned near midlength from eyes to apex of head, slightly closer to eye than head apex. Frontoclypeus (Figs 4, 26) with lateral margins nearly straight. Anteclypeus (Figs 4, 26) subrectangular. Rostrum (Fig. 26) short. Gena margin (Fig. 4) with small, distinct insinuation below eye, more broadly insinuated below. Antennal bases (Figs 4, 33) situated near middle of eye. Fine erect seta (Fig. 27) below antennal base present. Texture of face shagreen near upper margins (Fig. 29), changing to smooth, shiny, and with irregular rugae centrally and posteroventrally (Figs 28–29, 33).

Thorax (Figs 1–3). Pronotum (Figs 1–2) wider than long; anterior margin smoothly rounded; posterior margin concave; anteriorly, texture shagreen to rugose and shiny; posteriorly, texture transversely striate; lateral margins carinate. Mesonotum (Figs 1–2) wider than long; apex acute; texture shagreen; only faint carina separating scutellum.

Wings (Figs 1–3). Forewings (Figs 1–3) short, truncate; coriaceous; tightly associated with each other; venation unappreciable; texture slightly rugose; inconspicuously longitudinally striated at apex; not surpassing abdominal tergite III. Hindwings vestigial.

Legs (Figs 24–26) short, compact. Protrochanter (Fig. 24) with stout apical seta. Profemur (Fig. 24) row AV with about 5 to 6 thick setae, moderately long; intercalary row with about 4 to 6 fine setae; AV1 present; AM1 present, situated just below mid-height of femur; dorsally with pair of apical setae. Protibia (Fig. 26) row AD with 4 setae, the most proximal of which smaller than rest; row PD with 4 setae. Mesotrochanter with stout apical seta. Mesofemur row AV with several widely spaced stout setae, apical seta present. Mesotibia dorsal setae 4+4. Metafemur apical setae 2+2+1. Metatibia row PD macrosetae alternating short and long; row AD macrosetae with 2–4 small intercalary setae; row AV with macrosetae occupying apical 4/5 of tibia. Metatarsomere I (Fig. 25) short, expanded apically; with 5 apical platellae, flanked on each side with normal, tapered seta.

Male abdomen (Figs 5–12, 20–22, 30–32). Apodemes of sternite I (Figs 20–21) distinct, directed caudad. Apodemes of sternite II (Fig. 22) short, directed caudad. Pygofer (Figs 6–7, 11, 30–32) subrectangular in lateral view, subtriangular in dorsal view, bearing a group of 10–15 macrosetae on dorsoapical quarter; membranous ventrolateral cleft present, continuing as an inflection line along pygofer side and terminating at ventroapical tooth; dorsoapical margin strongly sclerotized, with or without tooth or irregular teeth; anteroventral corner with distinct notch, allowing for insertion of valve. Segment X (Fig. 11) short, membranous, withdrawn into pygofer. Valve (Fig. 12) lateral margin long, not pointed; wrapping dorsally and inserting into pygofer notch; articulated with pygofer. Subgenital plates (Figs 12, 30–32) triangular, longer than wide; lateral margin concave; with macrosetae uniseriate laterally, or uniseriate medially and with or without few extra scattered macrosetae. Connective (Fig. 5) “Y” shaped, arms divergent. Aedeagus (Figs 8–10) simple; articulated with connective; dorsal side of aedeagal base attached membranously to pair of inner lobes bearing setae and sclerotized phragma, connecting to inner membranous tissue of pygofer and segment X.

Female abdomen (Figs 13–19, 23). Pygofer (Fig. 13) bearing many macrosetae along ventral 3/4 and apex. Segment X short, withdrawn into pygofer. Ovipositor not protruding far beyond pygofer. First valvulae (Figs 14–16) with two granulose sculptured areas, dorsal sculptured area distinctly longer than anteroventral sculptured area. Second valvulae (Figs 17–18) with dorsal margin entire, without teeth. Gonoplac (Fig. 23) with several macrosetae ventrally.

Etymology. This genus is named after Admiral Gial Ackbar (a fictional character in the Star Wars film series). The Latinized word is feminine in gender.

Notes. Two other species of the genus are known from Argentina and will be described separately. Morphological variation within the genus was described taking these other species into account.

Ackbaria vermiformis sp. nov.

(Figs 1–33)

Type locality. Chile, Araucanía Region, Malleco Province, Nahuelbuta Mountains, Vegas Blancas, Los Corrales, 37°48'S, 72°56'W, 950 m a.s.l.

Type material. HOLOTYPE: ♂, "Chile, [Araucanía reg.] Malleco prov., / Nahuelbuta, Vegas Blancas, / Los Corrales, 37°48'S. 72° / 56'W., 950 m., 25-26.I.2017, / J.F. Campodonico leg., / sweep netting" (MNNC, dry-mounted). PARATYPES: **CHILE:** 14 ♂♂ 4 ♀♀, same data as holotype (MNNC: 2 ♂♂ 2 ♀♀; MEUC: 2 ♂♂; MLPA: 2 ♂♂; USNM: 2 ♂♂; INHS: 2 ♂♂ 1 ♀; NMPC: 2 ♂♂; JCSC: 2 ♂♂ 1 ♀); 2 ♂♂, "Chile, [Araucanía reg.] Malleco prov., / Nahuelbuta, ~8 km W Angol, / 37°49'S. 72°48'W., 850 m., / 26.I.2017, / J.F. Campodonico leg., / sweep netting" (JFSC); 1 ♀, "Chile, [Bío Bío reg.] Arauco prov., / Nahuelbuta, Caramavida, / 37°48'S. 73°05'W., 1000 m., / 8-9.X.2016, / J.F. Campodonico leg., / sweep netting" (JCSC). **ARGENTINA:** 13 ♂♂ 10 ♀♀, "ARGENTINA: La Pampa / P.N. Lihuel Calel, 5.ii.2014 / S 38.00251° W 65.59337° / AR14-2 J.N.Zahniser, vacuum" (USNM, MLPA); 5 ♂♂ 3 ♀♀, 2 nymphs, "ARGENTINA: Entre Rios / P.N. El Palmar, ca. entrance / 15.ii.2014, 30 m. / S 31.85316° W 58.31636° / AR14-25 J.N. Zahniser" (USNM, MLPA); 1 ♂ 1 ♀, "ARGENTINA: Entre Rios / P.N. El Palmar, jct. Pref. Naval / 14.ii.2014, 33 m. / S 31.87321° W 58.21846° / AR14-22 J.N. Zahniser" (USNM).

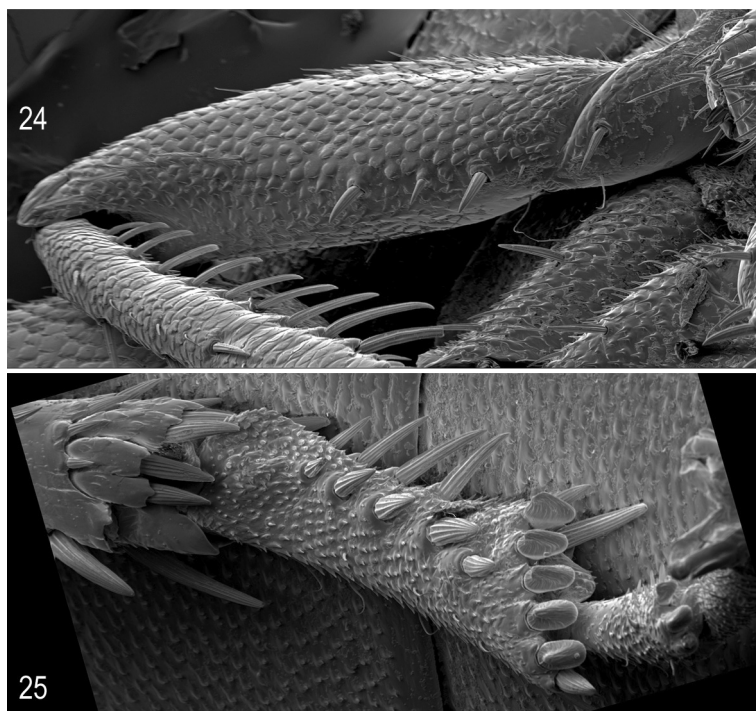
Description. Measurements. Total length: male, 4.28–4.70 (N=4); female, 4.93–5.06 (N=3). Width: male, 0.95–1.00 (N=4); female, 1.00–1.07 (N=3).

Coloration (Figs 1–4). Males (Fig. 2) yellow. Females (Figs 1, 3) pale yellow. Lateral black or brown band running on both ventrolateral sides of abdomen, thorax and head joining at anterior side of frontoclypeus (Fig. 4) where band is broadened and transversely striped with yellow. Narrow black transverse stripe running at anterior margin of crown (Figs 1–3). Abdominal tergites (Figs 1–3) laterally with small black spot; anteromedially with or without distinct or indistinct narrow markings, and sometimes indistinct narrow markings between last tergites and lateral spots resembling dissipated stripes. Tergite VIII and pygofer (Figs 1–3) mostly blackened, more completely pigmented in males. Sternites anteromedially with distinct, indistinct or absent irregular black markings.

Head (Figs 1–4, 26–29, 33). Crown (Figs 1–2) with length subequal to width between posterior angles; disc slightly convex until apex which is slightly curved dorsad at margins. Eyes from lateral view (Fig. 3) elliptical; height about 4/7 of length. Frontoclypeus (Figs 4, 26) with length about 1.25 times maximum width; lateral margins (laterofrontal suture) nearly straight; posterior margin (suture between frontoclypeus and anteclypeus) about 2/5 of maximum width. Anteclypeus (Figs 4, 26) about 1.5 times longer than anterior width, slightly wider at posterior margin. Labrum (Fig. 26) narrow.

Thorax (Figs 1–3). Pronotum (Figs 1–2) with median length about 2/5 of maximum width. Mesonotum (Figs 1–2) with median length from posterior margin of pronotum to apex of about 3/5 of basal width.

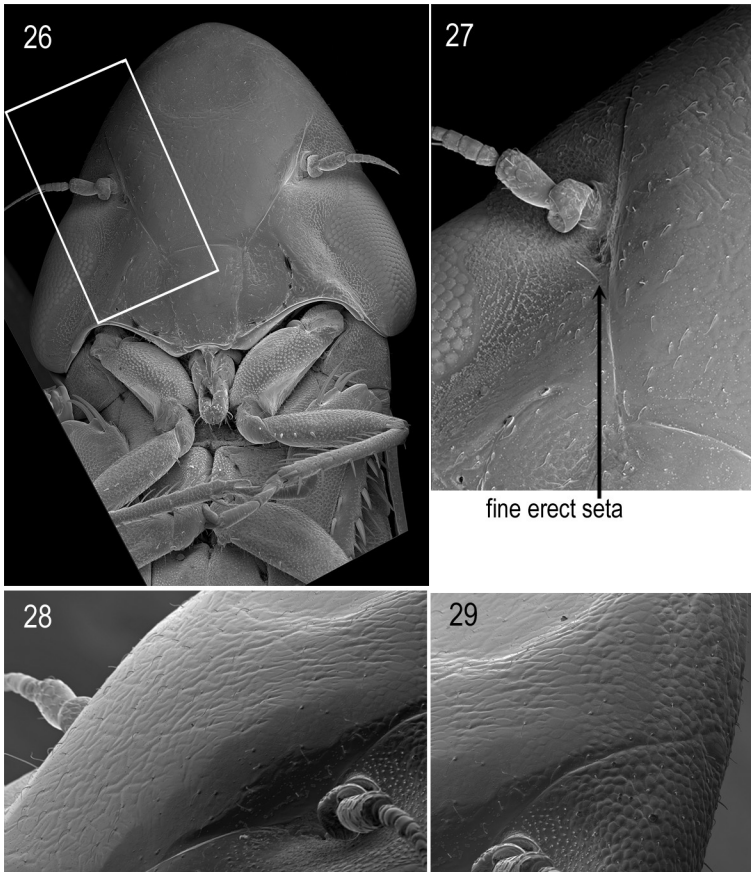
Male abdomen (Figs 5–12, 20–22, 30–32). Tergite VIII (Fig. 2) and occasionally other tergites bearing several macrosetae distally and/or laterally. Apodemes of abdominal sternite I (Figs 20–21) basally wider than long; inner margins slightly separated between each other, broadly rounded; outer margins first straightly narrowed, then concave; apex truncate. Apodemes of sternite II (Fig. 22) distinctly separated between each other, wide and obtuse. Pygofer side (Figs 6–7, 30, 32) bearing ~12–15 long macrosetae on dorsoapical 1/4; slightly wider than long (dorsal view, Fig. 11); height about 2/3 of length (lateral view; Figs 6–7); dorsal concavity about 2/5 of length (dorsal view, Fig. 11); ventral margins and dorsal surface



Figs 24–25. *Ackbaria vermiformis* sp. nov., SEM micrographs. 24 – profemur and protrochanter, anteroventral view; 25 – metatarsomere I, ventrolateral view.

subparallel (lateral view; Figs 6–7); caudal margins rounded, rough, with irregular teeth (Figs 30, 32); ventroapical margin squared in lateral view and with short tooth. Valve (Fig. 12) wider at level of posterior angles; apex obtusely angled; basal width about twice of length. Subgenital plates (Figs 12, 31) longer than wide, narrow at apex; outer margin sinuate (concave at apical 2/3); with median row of 5–7 macrosetae and with or without few extra scattered macrosetae. Connective (Fig. 5) abruptly widened at apex of stem; arms subapically widened onto rounded lobes, then abruptly and distinctly narrowed at apex. Style (Fig. 5) with apophysis curved at base, then nearly straight with subapical obtuse and inconspicuous tooth; outer angle slightly acute, not produced. Aedeagus (Figs 8–10) symmetrical, socle broad, shaft narrower; from lateral view (Figs 8–10) broadened subbasally, shaft curved dorsad ending in flat and basally slightly widened lobe over gonopore; gonopore opened caudally; from caudal view (Fig. 10) with socle slightly narrowed near middle.

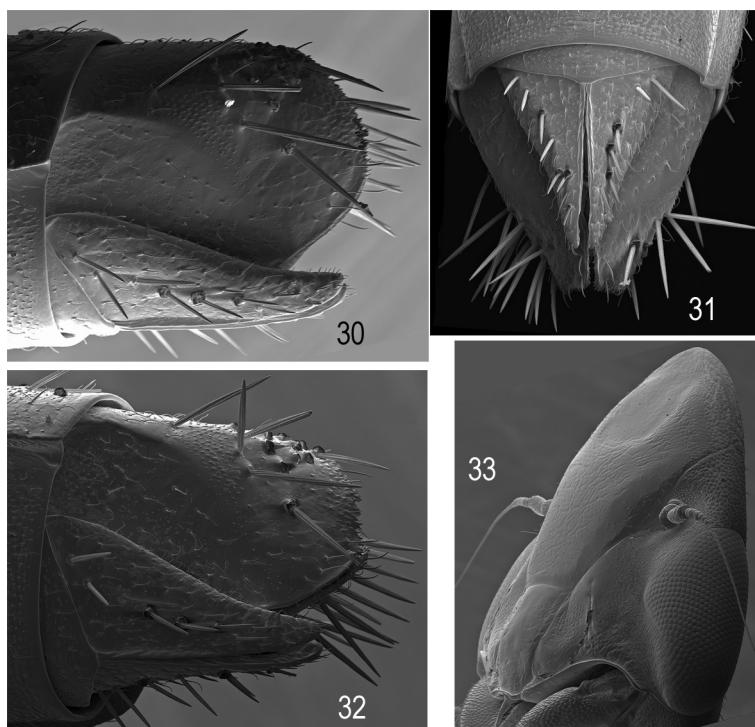
Female abdomen (Figs 13–19, 23). Abdominal tergites VII and VIII (Figs 1, 3) bearing 6–10 and 8–16 distinct macrosetae, respectively, distally and/or laterally. Sternite VII (Fig. 19) slightly narrower at level of posterior angles; median length about 2/3 of basal width; posterior margin trilobulated, median lobe short and rounded. Pygofer (Fig. 13) subconical, bearing numerous long macrosetae ventrally and apically. First valvulae (Figs 14–16) with



Figs 26–29. *Ackbaria vermiformis* sp. nov., SEM micrographs. 26 – face and anterior legs, ventral view; 27 – detail of face, outlined in 27; 28 – frontoclypeus, anterolateral view; 29 – face, anterior margin of head, and ocellus, anterovenral view.

shaft slightly widened distad on basal 2/5, then narrowed to apex; dorsal sculptured area occupying near 2/3 of length of shaft, more than twice length of ventral sculptured area; ventral sculptured area narrow; ventral portion indistinctly transversely striated until sculptured area. Second valvulae (Figs 17–18) with irregular ducts; dorsally separated from each other on apical 3/5; shaft slightly widened distad on basal 3/4, then narrowed to apex; ducts first transversely elongate on dorsal portion of shaft, then smaller. Gonoplags (Fig. 23) suboval; more than 4 times longer than wide; dorsal margin about distal half of length; with ~12–14 macrosetae ventroapically.

Etymology. The specific name is an adjective made by the combination of the Latin noun *vermis* (= worm) and the suffix *-formis* (= having the form of). This is in reference to the narrow body of this species.



Figs 30–33. *Ackbaria vermiformis* sp. nov., SEM micrographs. 30 – male genital capsule, lateral view; 31 – same, ventral view; 32 – same, ventrolateral view; 33 – face, ventrolateral view.

Host plant. Unidentified grasses (Poaceae). Specimens from the Lihuel Calel National Park, Argentina were consistently collected on bunch grasses. Other material was collected on herbaceous stratum on open spaces dominated by tufted grasses.

Distribution. Argentina (Entre Ríos and La Pampa Provinces) and Chile (Bío Bío Region: Arauco Province; Araucanía Region: Malleco Province).

Discussion

Within Faltalini, *Ackbaria* gen. nov. is related with the rest of genera of the *Faltala* group by the complete brachyptery in both males and females. The limits of some of these genera are not clear and probably may be redefined as further studies are developed on this group (see ZAHNISER & WEBB 2004). However, *Ackbaria* gen. nov. conspicuously differs from other genera of the *Faltala* group by a combination of characters, including its characteristic body shape, absence of reticulation on forewings, the narrowly triangular subgenital plates, the male pygofer with a ventroapical tooth, and the number and distribution of setae on the subgenital plates and both male and female pygofers.

Despite its brachyptery, *Ackbaria vermiformis* sp. nov. shows a wide distribution in the Southern Cone of South America, not being restricted by geomorphological conditions and inhabiting grasslands of different ecoregions at both sides of the Andes. Additional collections focused on grassland insect communities are required to determine the distribution of the species of the *Faltala* group and the factors that influence it.

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