

Systematic revision of Neotropical *Achalcus* and a related new genus (Diptera: Dolichopodidae, Achalcinae) with comments on their phylogeny, ecology and zoogeography

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Received September 2003; accepted for publication June 2004

A revision of the species of the subfamily Achalcinae of the Neotropical region is presented. A new genus, *Australachalcus* gen. nov., is erected based on the presence of six dorsocentral bristles and synapomorphies in the hypopygium. Eight new *Achalcus* species (*bilineatus*, *brevicornis*, *costaricensis*, *cynocephalus*, *maculipennis*, *micromorphoides*, *niger*, *tibialis*) and eight new *Australachalcus* species (*acornis*, *browni*, *cummingsi*, *incisicornis*, *pseudorobustus*, *robustus*, *setosus*, *variabilis*) are described, and *Achalcus albipalpus* Parent, *A. brevinervis* Van Duzee, *A. longicornis* Van Duzee and *Enlinia edwardsae* (Van Duzee) are newly referred to *Australachalcus* and redescribed. A key to males of all species and females of eight species is provided. One Palaearctic species, *Achalcus melanotrichus* Mik, and nine New Zealand *Achalcus* species (*chaetifemoratus*, *luteipes*, *medius*, *minor*, *minusculus*, *minutus*, *nigroscutatus*, *relictus*, *separatus*) described by Parent are also transferred to *Australachalcus*. In Neotropical Achalcinae, three *Achalcus* and more than four different *Australachalcus* species groups can be distinguished, whereas all Holarctic *Achalcus* species belong to the single *A. flavicollis* species group. In the Neotropics, *Australachalcus* is nearly entirely confined to Chile, whereas *Achalcus* is recorded from Costa Rica, Venezuela, Ecuador, Colombia, Peru and Chile, with no or little overlap in distribution between the separate species groups. Beyond Chile, most achalcine species treated here were collected at higher altitudes. Most Chilean species are only active during the southern summer, whereas in Costa Rica achalcine representatives are encountered throughout the year. © 2005 The Linnean Society of London, *Zoological Journal of the Linnean Society*, 2005, 143, 27–73.

ADDITIONAL KEYWORDS: *Australachalcus* – Central America – Chile – Costa Rica – INBio – South America – taxonomy.

INTRODUCTION

At first sight, representatives of the genus *Achalcus* are rather atypical within the Dolichopodidae (Diptera). Most species do not feature the characteristic dolichopodid metallic body colour but are usually yellow to brownish black. Moreover, in contrast to most other long-legged flies, where the wing veins R_{4+5} and M_{1+2} are either strongly converging or parallel, these veins are slightly to distinctly divergent in *Achalcus*. It shares this character state only with

other Achalcinae (*Scepastopyga*, some *Xanthina*) and Enliniinae (*Enlinia*, *Harmstonia*). In the literature, very few data are found on the biology and ecology of *Achalcus*, except for the information provided by Pollet (1996b) and Pollet & Cumming (1998). It is not readily found by sweeping, although Malaise or water traps in swamp and reedmarsh habitats in western Europe sometimes yield reasonable numbers of the more common species *A. cinereus* (Haliday in Walker, 1851), *A. flavicollis* (Meigen, 1824) and *A. vaillanti* Brunhes, 1987 (Pollet, 1992).

In the frame of a global revision of *Achalcus*, the Palaearctic fauna (the western European species in particular) was discussed in Pollet (1996b), Pollet & Cumming (1998) treated the Nearctic fauna, whereas

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Pollet & Grootaert (1998) presented an incomplete taxonomic account of the Neotropical fauna. Preliminary results of the global phylogeny and zoogeography of this genus are presented in Pollet (1996a) and further elucidated in Pollet (1998). This analysis revealed that the western Palaearctic *A. melanotrichus* Mik, 1878 and most Chilean and New Zealand species differed from all other Holarctic species in a number of features (e.g. number of dorsocentral bristles, fine structure of the hypopygial appendages) which suggested two distinct phylogenetic lineages. At this stage, however, only part of the available Neotropical material had been examined and no new Nearctic nor Neotropical species had been described. In what follows, 'Neotropical fauna' comprises both tropical and temperate elements.

Aldrich (1896) was the first to report *Achalcus* from the Neotropical region, with the description of *A. sordidus* from St. Vincent. Six years later, he described a second species, *A. caudatus* Aldrich, from Grenada (Aldrich, 1902). In the early 1930s another five species were described from Chile: *A. atratus*, *A. brevinervis*, *A. edwardsae*, and *A. longicornis* by Van Duzee (1930) and *A. albipalpus* by Parent (1931). Robinson (1970) transferred *A. caudatus* to *Micromorphus* and *A. atratus* and *A. sordidus* to *Enlinia*, and placed *Chrysotus thoracicus* Philippi, 1865 in *Achalcus*. He also transferred *A. edwardsae* to *Enlinia*, although he noted that the antennal structure of this species differs considerably from that of other *Enlinia* species and that it might belong to a new genus. As a result, only four Chilean species were listed under *Achalcus* in Robinson's (1970) Catalogue of the Neotropical Dolichopodidae.

A new genus, *Australachalcus* gen. nov., is erected to include most Chilean species, including *Achalcus albipalpus* Parent, 1931, *A. brevinervis* Van Duzee, 1930 and *A. longicornis* Van Duzee, 1930. Both sexes of *Enlinia edwardsae* Van Duzee, 1930 were examined, which yielded sufficient evidence to place also this species in *Australachalcus*. All new species are described; *A. albipalpus*, *A. brevinervis*, *A. edwardsae* and *A. longicornis* are redescribed and the zoogeography and biology of both genera is discussed. A thorough phylogenetic analysis has not been attempted; it awaits the taxonomic characterization of additional new Holarctic, Neotropical, Australian and New Zealand species.

MATERIAL AND METHODS

During the examination of unidentified *Achalcus* specimens from a number of collections – the Canadian National Collection (CNC), samples gathered by I. Gauld and P. Hanson in collections for the Hymenoptera of Costa Rica (INBio) in particular

(Hanson & Gauld, 1995) and other INBio collections in general – 16 additional species were discovered. Samples from more recent inventories in Costa Rica (ALAS IV, see viceroy.eeb.uconn.edu/alas/alas.html), the Colombian Arthropod Project (CAP; see uky.edu/~mjshar0/colombia/welcome.html) and the recently retrieved USNM collections contained yet more new species; these will be dealt with in a separate paper.

The main source of Neotropical *Achalcus* and *Australachalcus* – including eight of the 16 new species – is undoubtedly the collection made by L. Pena in Chile now in the CNC in Ottawa. The other collections yielded less than five species. Table 1 gives an overview of the different institutions that provided relevant material. Specimens collected by Bickel [Australian Museum, Sydney, Australia (AMS)] are deposited in the CNC, whereas part of the collection of Chilean *Australachalcus* specimens currently at INHS (see below) will be distributed throughout collections in Chile and North America. The Chilean institutions are Museo Entomológico Luis Peña, Universidad de Chile, Santiago (MEUC; incl. holotype of *A. acornis* sp. nov.), Museo Nacional de Historia Natural, Santiago (MNNC), Museo Entomológico, Universidad de Concepción, Concepción (UCCC), and Instituto Entomología, Universidad Metropolitana, Santiago. The North American institutions are CAS, CNC and USNM. Six specimens of *A. setosus* sp. nov. will be retained in the personal collection of the author (POLLET).

Except for the specimens caught in Malaise (INBio), pan and sticky traps (Bickel), which are stored in 70% alcohol solution, most descriptions are based on dry mounted material. Body parts of diagnostic value (wing, antenna, hypopygium, legs) of preferably paratype specimens were mounted in a semipermanent slide. In cases where the holotype was the single specimen of the species, only the hypopygium was removed for mounting. This information is mentioned explicitly in the species records. Redescriptions were based on holotypes, except for *A. edwardsae* which can hardly be confused with any other dolichopodid species. During (re)descriptions, as many morphological characters as possible were considered and stored in a Microsoft Access database, which enabled efficient comparisons between species and an easy extraction of specific and generic characters.

Next to the measurement of the body and wing length the following biometric ratios on (parts of) wing and antenna were calculated in as many specimens as considered appropriate to provide additional and reliable diagnostic criteria: (i) proximal/apical section of vein CuA₁; (ii) apical section of vein CuA₁/outer cross-vein (m-cu or tp), the so-called CuA_x ratio (Bickel, 1994); (iii) length/depth of 1st flagellomere (post-pedicle); (iv) length of 1st flagellomere/scape and pedicle combined, and (v) length of arista/first three

Table 1. Distribution of species and specimens within entomological collections

Species	BMNH	CAS	CNC	INBio	INHS	POLLET	SMTD	USNM	Total
<i>Achalcus</i>									
<i>bilineatus</i> sp. nov.	–	–	–	2	–	–	–	–	2
<i>brevicornis</i> sp. nov.	–	–	5	–	–	2	–	1	8
<i>costaricensis</i> sp. nov.	–	–	–	126	–	–	–	–	126
<i>cynocephalus</i> sp. nov.	–	1	–	–	–	–	–	–	1
<i>maculipennis</i> sp. nov.	–	2	–	–	–	1	–	–	3
<i>micromorphoides</i> sp. nov.	–	–	1	–	–	–	–	–	1
<i>niger</i> sp. nov.	–	1	–	–	–	–	–	–	1
<i>tibialis</i> sp. nov.	–	–	–	1	–	–	–	–	1
unidentified females	–	4	10	10	–	–	–	4	28
unidentified males	–	1	1	–	–	–	–	–	2
<i>Australachalcus</i> gen. nov.									
<i>acornis</i> sp. nov.	–	–	–	–	1	–	–	–	1
<i>albipalpus</i> (Parent)	–	–	24	–	–	1	1	1	27
<i>brevinervis</i> (Van Duzee)	1	–	–	–	–	–	–	–	1
<i>browni</i> sp. nov.	–	–	–	4	–	–	–	–	4
<i>cummingi</i> sp. nov.	–	–	2	–	–	–	–	–	2
<i>edwardsae</i> (Van Duzee)	–	21	2	–	–	1	–	8	32
<i>incisicornis</i> sp. nov.	–	–	3	–	–	–	–	–	3
<i>longicornis</i> (Van Duzee)	1	–	1	–	–	–	–	–	2
<i>pseudorobustus</i> sp. nov.	–	–	1	–	–	–	–	–	1
<i>robustus</i> sp. nov.	–	–	2	–	–	–	–	–	2
<i>setosus</i> sp. nov.	–	–	5	–	221	–	–	–	226
<i>variabilis</i> sp. nov.	–	–	5	–	–	–	–	–	5
unidentified females	–	3	94	–	–	–	–	4	101
No. species ¹	2	4	11	4	2	4	1	3	20
No. specimens ²	2	33	156	143	222	5	1	18	580

¹only named species included²all specimens included

antennal joints combined. These data are included in the species descriptions. The minimum and maximum values and the number of specimens examined (if more than one) are listed for body and wing length, whereas average values are used for the other criteria. The ratios between the different segments of the legs are not included because of their low diagnostic value.

Features shared by all species of a genus are only given in the generic diagnoses and are not repeated in the species diagnoses and descriptions, unless they are of significant diagnostic importance or significantly deviate from the generic character state. Information on the colour of antenna, body and legs is generalized in the key to species; more detailed data are given in the species descriptions. Here, 'eye size' refers to the vertical diameter of the eye, and 'face width' to the distance between eyes measured at the narrowest point (just above the clypeus). For practical reasons, the size of the palp is related to that of the eye. The number of acrostichal (ac) and dorsocentral (dc) bristles reflects the number of ac and dc pairs. Only ac from the level of, and posterior to the first dc

are considered. Ventral chaetotaxy arrangements in femora are only given when differing from the normal anteroventral (av) row (femur I), and av and posteroventral (pv) rows (femur II and III) of small inclined bristles, sometimes increasing in length towards the apex. The latter rows are present in both sexes, but females lack the (rows of) erect bristles on the femora and other MSSC (see *A. flavicollis* and *A. cummingi* species group).

The colour of bristles and pubescence on legs applies to the coxae as well. In case no colour of a particular body part is explicitly mentioned, the overall colour mentioned holds true. If the basal anterodorsal (ad) and posterodorsal (pd) bristles on tibia II are inserted at the same level, this is described as 'ad-pd couple'. Whenever possible, drawings were made of the wing, antenna and the hypopygium of each species. Other drawings were made to illustrate key diagnostic features. The unit of measurement used in Figures 1–27 is millimetres.

Terms used for the male genitalia (Figs 1, 2, 27) follow Cumming, Sinclair & Wood (1995) and were gen-

erally adopted for the Nearctic species of *Achalcus* by Pollet & Cumming (1998). In describing the hypopygium, 'dorsal' and 'ventral' refer to the morphological position prior to genitalic rotation and flexion; as a result, the top of the drawing is actually the ventral face and the bottom the dorsal face. Special attention is given to the form and shape of the hypandrium (= opisthyandrium; Ulrich, 1974), epandrial lobe and setae, surstylus (= musc(u)l(at)ed appendage; Ulrich, 1974, 1988; = lamella medialis; Buchmann, 1961), cercus, and the presence of the ventral and dorsal process of the epandrium, and the postgonites.

Institutional abbreviations

BMNH The Natural History Museum, London, UK
 CAS California Academy of Sciences, San Francisco, California, USA
 CNC Canadian National Collection of Insects, Ottawa, Ontario, Canada
 INBio Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica
 INHS Illinois Natural History Survey, Urbana-Champaign, Illinois, USA
 USNM National Museum of Natural History, Washington D.C., USA
 POLLET personal collection of author
 SMTD Staatliches Museum für Tierkunde, Dresden, Germany

Sampling device abbreviations

MT Malaise trap
 ST sticky traps
 YWT yellow water trap

Preservation method abbreviations

D mounted on pin
 W preserved in 70% alcohol solution
 M specimen entirely mounted

Morphological abbreviations

ac acrostichal
 ad anterodorsal
 av anteroventral
 dc dorsocentral
 DEP dorsal process of epandrium
 MSSC male secondary sexual character
 pd posterodorsal
 PGO postgonites
 ps presutural
 pv posteroventral
 VEP ventral process of epandrium

SYSTEMATICS

While examining Neotropical species, only a minority matched the generic concept of *Achalcus* as given by Pollet & Cumming (1998), i.e. five dc bristles and epandrial setae inserted on the shaft of the epandrial lobe. Since the remaining species differed by a consistent number of character states, some of which are interpreted as synapomorphies, it was decided to erect a new genus, *Australachalcus* gen. nov., to include them. It must be emphasized that this genus is very closely related to *Achalcus* and many species of both genera show a similar 'Gestalt'.

Species from *Achalcus* and *Australachalcus* can be distinguished from other Dolichopodidae by a combination of the following features: small to rather large species with body length of 1.5–3.7 mm and wing length of 1.6–4.5 mm.

Body with, at most, faint metallic reflection, ranging between species from whitish yellow to almost black. Bristles and pubescence of body and legs usually dark to black.

Face usually narrow, at most $2 \times$ as wide as anterior ocellus, narrowing below antennae and parallel-sided to slightly widening on clypeus. Palp almost circular to elongate ovoid, variable in size and sometimes quite large, usually with dark pubescence and a strong dark apical bristle. Eye pubescent. Postocular bristles uniseriate, simple. Antenna with scape bare and pedicel with apical crown; 1st flagellomere triangular to elongate and tapering, with ventral border usually rather straight, generally with strong pubescence; arista subapical to nearly apical (the antenna of *A. edwardsae* is exceptional in this context, see Fig. 18), inserted on outer face of 1st flagellomere, rarely in subapical notch; arista with short pubescence.

Thorax with distinct prescutellar depression. Upper propleuron bare or with at most one minute seta, lower propleuron with one dark prothoracic bristle and a few minute setae. ac strictly biseriate, five or six dc bristles; one large and 1–2 smaller humeral bristles, one inner posthumeral, one presutural, two notopleural, two supraalar and one postalar bristles; presence and size of sutural bristle differs strongly between species. Scutellum bare, with two strong inner bristles and two minute outer setae. Squamal fringe usually dark. Wing with veins R_{4+5} and M_{1+2} rather straight, slightly to distinctly divergent; anal vein absent.

Abdomen cylindrical, variable in colour among species; 5th sternite with ventral invagination to enclose the hypopygium (even in species with six pubescent tergites). *Hypopygium* globular, free but not pedunculate, with often distinct appendages (Fig. 1); hypandrium (HP) robust with rigid attachment to genital

capsule; [ventral] epandrial lobe (EL) with normally one flattened apical bristle; unpaired ventral (VEP) and paired dorsal processes of epandrium (DEP), and unpaired symmetrical postgonites (PGO) usually present; cercus (CC) of various shape. Females with six pubescent abdominal segments. Legs rather slender. Coxa II with elongate brownish spot (absent in *Achalcus tibialis*), coxa III with one erect dark bristle at about middle (pale in *A. tibialis*). Femur II and III with one strong preapical ad or anterior bristle. Tarsus III with metatarsus $0.7 \times$ to as long as 2nd tarsomere.

Both genera can be separated on the basis of the following character states:

ACHALCUS LOEW, 1857

Achalcus Loew, 1857: 30

Type species: *Porphyrops flavicollis* Meigen, 1824: 56

Achalcus flavicollis (Meigen, 1824) as designated by Robinson (1970: 22)

Head. Uppermost postoculars usually darker than lower ones (exc. *A. costaricensis*, *A. tibialis*). Arista usually longer than first three antennal joints.

Thorax and abdomen. Five dc (synapomorphy). No small additional setae between posthumeral, presutural and first two dc bristles. Abdomen with five pubescent segments (synapomorphy). Hypopygium (Figs 1, 2). Hypandrium simple, without spines on apex; aedeagus simple, at most with subapical dorsal bend; ventral (not dorsal, as in Pollet & Cumming, 1998) epandrial lobe slender with three epandrial setae on shaft (synapomorphy); midventral bristle of surstylus usually without or with only minute apical flag. Legs. Tibia I with one, two or without dorsal bristles. Tibia II with two ad bristles (exc. *niger*). Femur III mostly with strong preapical ad bristle, usually inserted at middle of anterior face.

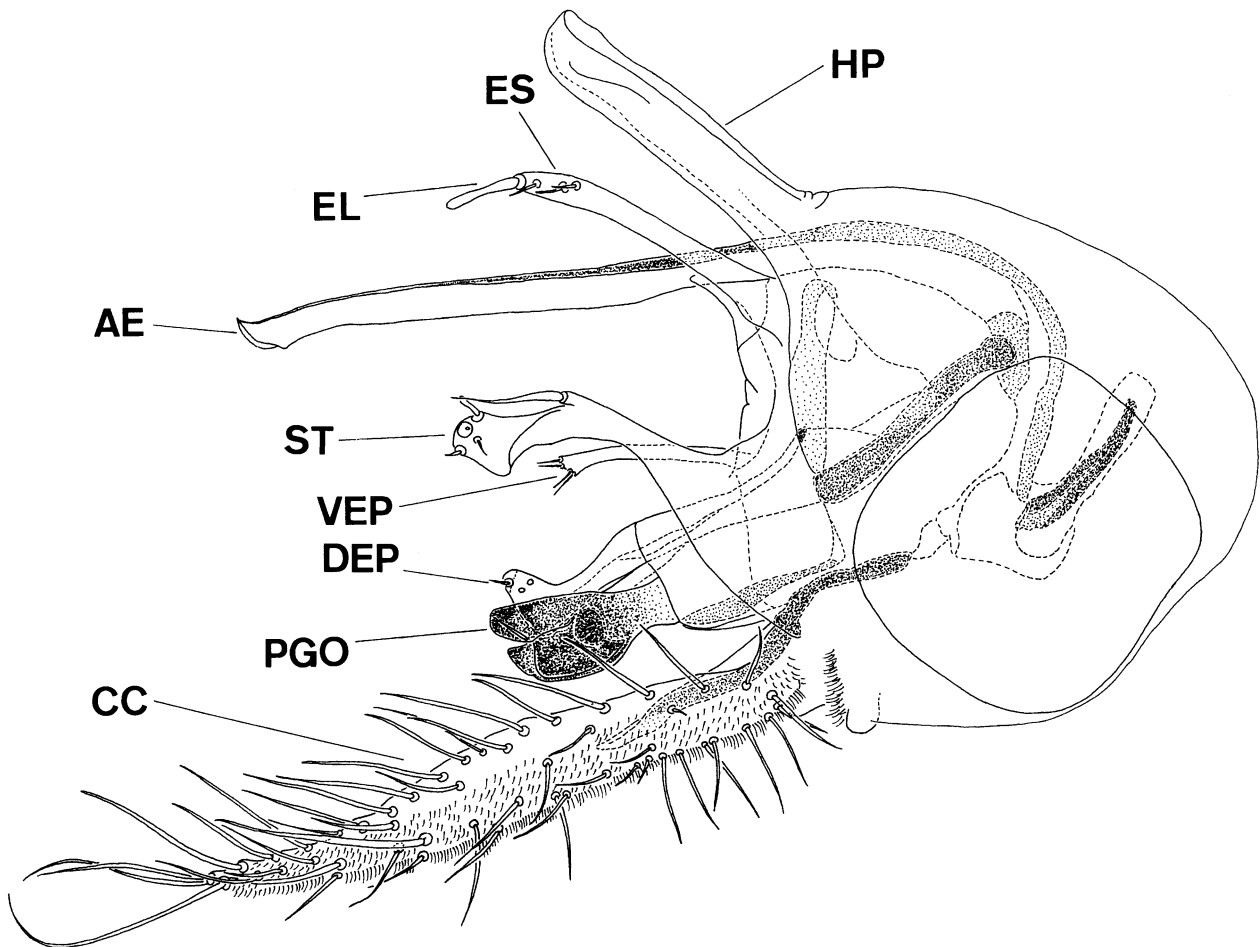


Figure 1. *Achalcus flavicollis* (Meigen) (male). Hypopygium. AE, aedeagus; CC, cercus; DEP, dorsal process of epandrium; EL, epandrial lobe; ES, epandrial setae; HP, hypandrium; PGO, postgonites; ST, surstylus; VEP, ventral process of epandrium.

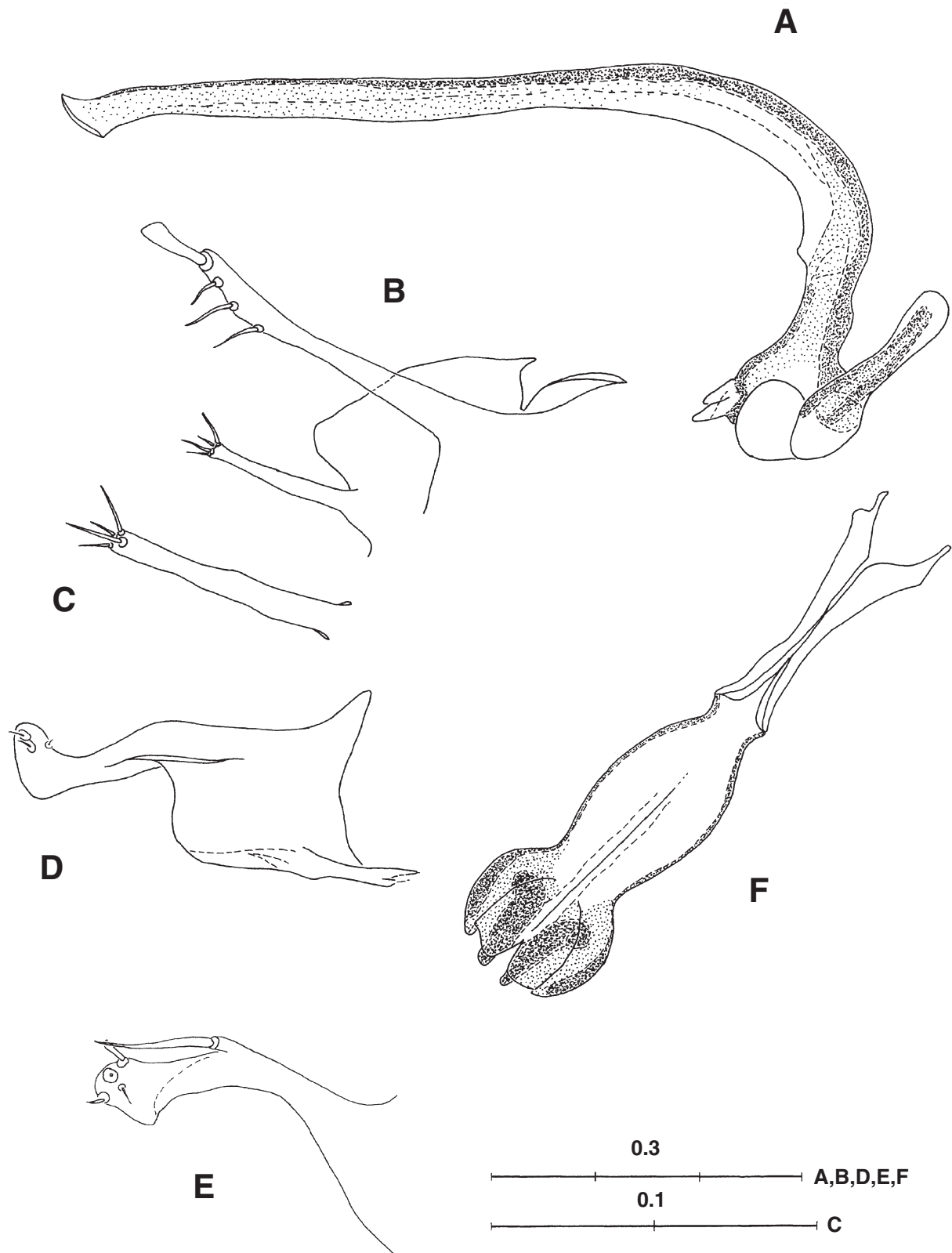


Figure 2. *Achalcus flavicollis* (Meigen). Hypopygial appendages. A, aedeagus; B, epandrial lobe; C, ventral process of epandrium; D, dorsal process of epandrium; E, surstylus; F, postgonites (ventral view).

AUSTRALACHALCUS GEN. NOV.

Type species here designated: Aachalcus albipalpus
Parent, 1931: 20

Head: All postoculars dark. Arista at most about as long as first three antennal joints (exc. *A. edwardsae*).

Thorax and abdomen: Six DC. Small additional setae between posthumeral, presutural and first two DC bristles present in some species. Mostly six pubescent abdominal segments (five in *A. albipalpus* and *A. brevinervis*). Hypopygium (Figs 13, 27). Hypan-drium mostly with ventral apex clearly spined, or with raised marginal edge (*A. variabilis* group) (synapo-

morphy); aedeagus often with subapical modifications; epandrial lobe massive to slender with three epandrial setae at basis; midventral bristle of surstylus usually with apical flag (excl. *A. edwardsae*, *A. inciscornis*) (synapomorphy).

Legs: Femur I usually with erect basoventral bristle (exc. *A. variabilis*). Tibia I without (baso)dorsal bristle(s) (synapomorphy). Femur III with weak to moderately strong preapical bristle, inserted on lower 1/3 of anterior face.

Etymology: Refers to the southern hemisphere ('southern *Aachalcus*'), where this genus reaches its highest levels of species richness.

KEY TO NEOTROPICAL ACHALCUS AND AUSTRALACHALCUS**Males**

1. Thorax and abdomen unmetallic, from whitish yellow to almost black, with at most a faint bluish reflection. ac biseriate, 5–6 dc bristles. Antenna with 1st flagellomere triangular to tapering with apical or subapical arista (except for *A. edwardsae* (Van Duzee)); if 1st flagellomere subcircular, then frons with distinct blue reflection. Wing with veins R_{4+5} and M_{1+2} rather straight, slightly to distinctly diverging towards wing apex. Coxa III with bristle at about middle. Femur III with prominent preapical ad or anterior bristle. Hypopygium with appendages as in Figure 1; hypandrium elongated and epandrial lobes symmetrical (*Aachalcus* and *Australachalcus*) 2
 - Not with this combination of characters remaining Dolichopodidae
2. Five dc. Five pubescent abdominal segments. Hypopygium with epandrial setae on shaft of epandrial lobe (*Aachalcus*) 3
 - Six dc. Mostly six pubescent abdominal segments. Hypopygium with epandrial setae at base of epandrial lobe (***Australachalcus* gen. nov.**) 10
3. Frons and sometimes occiput shining blue. First flagellomere subcircular, mostly about as long as deep. Second segment of arista often entirely white. Tibia III with one or two small but distinct anteroventral bristles. Small species without distinct femoral or tibial chaetotaxy beyond normal bristles (*Aachalcus costaricensis* species group) 4
 - Frons dark brown, either shining or dusted. First flagellomere triangular, at least 1.3× as long as deep. Arista never white. Tibia III with at most erect ventral setae. Larger species with often distinct femoral and/or tibial chaetotaxy 6
4. Wing with brown areas at apex and near centre (Fig. 7). Antenna largely reddish yellow ***Aachalcus maculipennis* sp. nov.** (Peru, Ecuador) 5
 - Wing pale without dark spots. Antenna mainly brown 5
5. Mesonotum dark brown with bluish reflection. Arista entirely white (Fig. 5) ***Aachalcus costaricensis* sp. nov.** (Costa Rica)
 - Mesonotum largely reddish yellow. Arista entirely brown (Fig. 6) ***Aachalcus cyanocephalus* sp. nov.** (Colombia)
6. Femur I without basoventral bristle. Body mainly dark to blackish brown 7
 - Femur I with at least one erect basoventral bristle. Body at least in part yellow 9
7. Tibia I without dorsal bristles. Clypeus bare. Coxa I and II reddish yellow to brown, legs pale yellow. Antenna with 1st flagellomere heart-shaped, largely dark with pedicel and base of 1st flagellomere yellow (Fig. 4) ***Aachalcus brevicornis* sp. nov.** (Chile)
 - Tibia I with one or two dorsal bristles. Clypeus with dense white pubescence. Coxa I and II brown to dark brown. Antenna ovate triangular to triangular with pedicel mainly dark 8
8. Tibia I with one dorsal bristle at basal 1/3. Antenna mainly dark brown with pedicel and basis of 1st flagellomere partly yellow, latter more than 1.5× as long as deep. Arista apical, less than 1.5× as long as first three antennal joints. Epandrial lobe slender with bristles on shaft (Fig. 9) ***Aachalcus niger* sp. nov.** (Chile)
 - Tibia I with two dorsal bristles at basal 1/3 and 2/3. Antenna entirely black with 1st flagellomere ovate triangular, latter less than 1.5× as long as deep. Arista subapical, more than 1.5× as long as first three antennal joints. Epandrial lobe stout with subapical bristles (Fig. 8) ***Aachalcus micromorphoides* sp. nov.** (Chile)

9. Body and legs whitish yellow with most of the abdomen contrastingly black. First three antennal joints entirely reddish yellow. All pubescence yellow. Basoventral bristle on femur I 1.6× as long as femur is deep. Femur II and tibia II with long erect ventral bristles (Fig. 10). ***Achalcus tibialis* sp. nov.** (Costa Rica)
- Thorax largely reddish yellow with abdomen mainly brown. Antenna with scape and pedicel infuscated dorsally and 1st flagellomere mainly pale brown. All pubescence dark. Basoventral bristle on femur I 1.3× as long as femur is deep (Fig. 3). Femur II and tibia II without conspicuous ventral pubescence ***Achalcus bilineatus* sp. nov.** (Costa Rica)
10. Wing broad with seven conspicuous brown spots. Antenna with dorsal arista with distinct basal curve (Fig. 18) *Australachalcus edwardsae* (Van Duzee, 1930) **comb. nov.** (Chile)
- Wing narrower, without numerous brown spots 11
11. Arista lacking, antenna dark brown with 1st flagellomere more than 2.5× as long as deep (Fig. 12). Rather small stout blackish brown species. ***Australachalcus acornis* sp. nov.** (Chile)
- Arista present. 12
12. Arista inserted in distinct subapical notch of 1st flagellomere. Antenna pale yellow, only 1st flagellomere darkened dorsally (Fig. 20). Thorax mostly reddish yellow. Halter black. Femur II and III whitish yellow with apical 2/3 abruptly blackish. ***Australachalcus incisicornis* sp. nov.** (Chile)
- First flagellomere without subapical notch. Arista subapical or apical 13
13. Proximal section of vein CuA₁ more than 3× as long as apical section. Apical section of vein CuA₁ at most as long as outer crossvein. Larger species, wing length over 3 mm. (*Australachalcus albipalpus* species group) 14
- Proximal section of vein CuA₁ less than 3× as long as apical section. Apical section of vein CuA₁ more than 1.4× as long as outer crossvein. Smaller species, wing length less than 3 mm 16
14. Proximal section of vein CuA₁ more than 5× as long as apical section. Apical section of CuA₁ very short, less than half of outer crossvein. No additional bristles between presutural, sutural and anterior dc bristles. Cercus very long and distinctly tapering, with curved marginal bristles (Fig. 15). Femur I and II with strong erect ventral bristles. *Australachalcus brevinervis* (Van Duzee, 1930) **comb. nov.** (Chile)
- Proximal section of vein CuA₁ less than 5× as long as apical section. Apical section of CuA₁ longer, at least 0.8× as long as outer crossvein. Additional bristles present between presutural, sutural and anterior dc bristles. Cercus shorter, not tapering 15
15. Palp large, 2/5 of eye and conspicuously silvery white. Arista about as long as first three antennal joints. Mesonotum dark yellowish brown, without sutural bristle. Halter pale. Cercus large, pale yellow, ovoid with strong marginal bristles (Fig. 13). Tibia III with three ad and three pd bristles *Australachalcus albipalpus* (Parent, 1931) **comb. nov.** (Chile)
- Palp smaller, 1/4 of eye and brownish yellow with dark outer margin. Arista about half as long as first three antennal joints (Fig. 21). Mesonotum almost entirely dark brown with rather strong sutural bristle. Halter dark. Cercus small, whitish, with three strong flattened apical bristles (Fig. 22). Tibia III with two ad and four pd bristles *Australachalcus longicornis* (Van Duzee, 1930) **comb. nov.** (Chile)
16. Coxa I at least infuscated dorsally, coxa II and III dark brown. Femora distinctly infuscated dorsally, femur I with basoventral bristle about 1.5× as long as femur is deep. Tibia III with two pd bristles. Aedeagus with recurrent process at apex (Figs 23, 24). Stout species with blackish brown body 17
- All legs including coxae pale yellow. If present, basoventral bristle on femur I at most 1.2× as long as femur is deep. Tibia III with three pd bristles. Aedeagus without apical recurrent process. Mostly more slender species with abdomen usually yellowish brown to brown (except for *A. browni* sp. nov.) 18
17. Tibia III brown, with one ad bristle. Femur II with row of 5–6 strong erect av bristles, basal bristles about 1.5× as long as femur is deep (Fig. 24). Tibia II with very strong ad and pd bristles, about 1/5 of tibial length, basal pair inserted at basal 1/4 ***Australachalcus robustus* sp. nov.** (Chile)
- Tibia III dark yellow, with two ad bristles. Femur II with one strong basal av and a row of 12 strong pv bristles, two basal bristles about as long as femur is deep. Tibia II with small ad and pd bristles, basal pair inserted at basal 1/3 ***Australachalcus pseudorobustus* sp. nov.** (Chile)
18. Tibia II with two ad bristles and without ventral chaetotaxy. First flagellomere ovoid triangular, about 1.2× as long as scape and pedicel combined. Proximal section of vein CuA₁ 2× as long as apical section, latter 1.5× as long as outer crossvein. Abdominal tergites dark brown. Hypopygium with simple epandrial lobe and ribbon-shaped cercus (Fig. 16). ***Australachalcus browni* sp. nov.** (Costa Rica)

- Tibia II with one ad bristle and mostly distinct ventral rows of small spines. First flagellomere elongate triangular, more than 1.5× as long as scape and pedicel combined. Proximal section of vein CuA₁ at most 1.7× as long as apical section, latter at least 1.9× as long as outer crossvein. Abdominal tergites in part yellowish brown. Epandrial lobe with strongly enlarged apex and terminal bristle. Cercus with apical extension. (*Australachalcus cummingi* species group) 19
- 19. Femur I without erect basoventral bristle. Antenna almost entirely brown, at most pedicel partly yellow. Femur II with a pv row of 12 strong erect bristles, four basal bristles largest (Fig. 26). ***Australachalcus variabilis* sp. nov.** (Chile)
- Femur I with erect basoventral bristle and a row of smaller anteroventral bristles. Scape and pedicel largely yellow, only infuscated dorsally 20
- 20. Palp dark brown. Halter pale. Femur II with 1–2 strong erect av bristles at extreme base, 1.5× as long as femur is deep. Tibia II with multiple ventral rows of short spine-like bristles on apical 2/3. Cercus very large, lamelliformous, reddish yellow (Fig. 17). ***Australachalcus cummingi* sp. nov.** (Chile)
- Palp whitish. Halter infuscated. Femur II with pv row of strong erect bristles, 4–5 basal bristles 1.4× as long as femur is deep. Tibia II without conspicuous ventral pubescence. Cercus moderately developed, club-shaped, yellowish (Fig. 25). ***Australachalcus setosus* sp. nov.** (Chile)

Females

1. Thorax and abdomen unmetallic, from whitish yellow to almost black, with at most a faint bluish reflection. ac biseriate, 5–6 dc bristles. Antenna with 1st flagellomere rounded triangular to triangular with apical or subapical arista (except for *A. edwardsae* (Van Duzee)); if 1st flagellomere subcircular, then frons with distinct blue reflection. Wing with veins R₄₊₅ and M₁₊₂ rather straight, slightly to distinctly diverging towards wing apex. Coxa III with bristle at about middle. Femur III with prominent preapical ad or anterior bristle (*Achalcus* and *Australachalcus*) 2
- Not with this combination of characters remaining Dolichopodidae
2. Five dc (*Achalcus*) 3
- Six dc (***Australachalcus* gen. nov.**) 6
3. Frons with steel-blue reflection. Apical segment of arista white. Wing narrow. Small, rather slender species 4
- Frons without steel-blue reflection. Arista entirely brown. Wing broader 5
4. Wing with brown areas at apex and near centre (Fig. 7). Antenna largely pale yellow. Tibia III with two ventral bristles. ***Achalcus maculipennis* sp. nov.**
- Wing clear. Antenna entirely dark brown, except for arista (Fig. 5). Tibia III with one ventral bristle ***Achalcus costaricensis* sp. nov.**
5. Stout species. Body entirely dark to blackish brown. Antenna heart-shaped, largely brown ***Achalcus brevicornis* sp. nov.**
- Slender species. Mesonotum reddish yellow with upper pleura contrastingly dark brown; abdominal tergites mainly dark brown, sternites largely yellowish white. Antenna rounded triangular, brownish yellow ***Achalcus bilineatus* sp. nov.**
6. Arista distinctly basodorsal (Fig. 18) *Australachalcus edwardsae* (Van Duzee, 1930) **comb. nov.**
- Arista subapical to apical 7
7. Large species, wing length over 3.5 mm. Proximal section of vein CuA₁ more than 5× as long as apical section. Apical section of vein CuA₁ at most as long as outer crossvein (Fig. 13). Tibia III with three ad and three pd. *Australachalcus albipalpus* (Van Duzee, 1930) **comb. nov.**
- Smaller species, wing length less than 3.5 mm. Proximal section of vein CuA₁ less than 3× as long as apical section. Apical section of vein CuA₁ more than 1.4× as long as outer crossvein. 8
8. Stout, dark brown species. Face very wide below antennae. Tibia II with two ad bristles. Proximal section of vein CuA₁ 2× as long as apical section, latter 1.5× as long as outer crossvein (Fig. 16) ***Australachalcus browni* sp. nov.**
- Slender species with largely brown body. Face narrower below antennae. Tibia II with one ad bristle. Proximal section of vein CuA₁ at most 1.7× as long as apical section, latter at least 1.9× as long as outer crossvein (Fig. 25). ***Australachalcus setosus* sp. nov.**

ACHALCUS BILINEATUS SP. NOV. (FIG. 3)

Male: Rather small, slender species. **Head.** Face dark brown, dusted, as wide as ocellus. Frons dark brown. Occiput flat with broad central furrow, dark brown,

shining. Uppermost four postocular bristles dark brown, lower seven yellow. Palp ovoid, about 1/3 of eye, brown with basal half yellowish. Antenna with scape and pedicel pale yellow, scape infuscated on less than dorsal half; pedicel narrowly infuscated dorsally; first

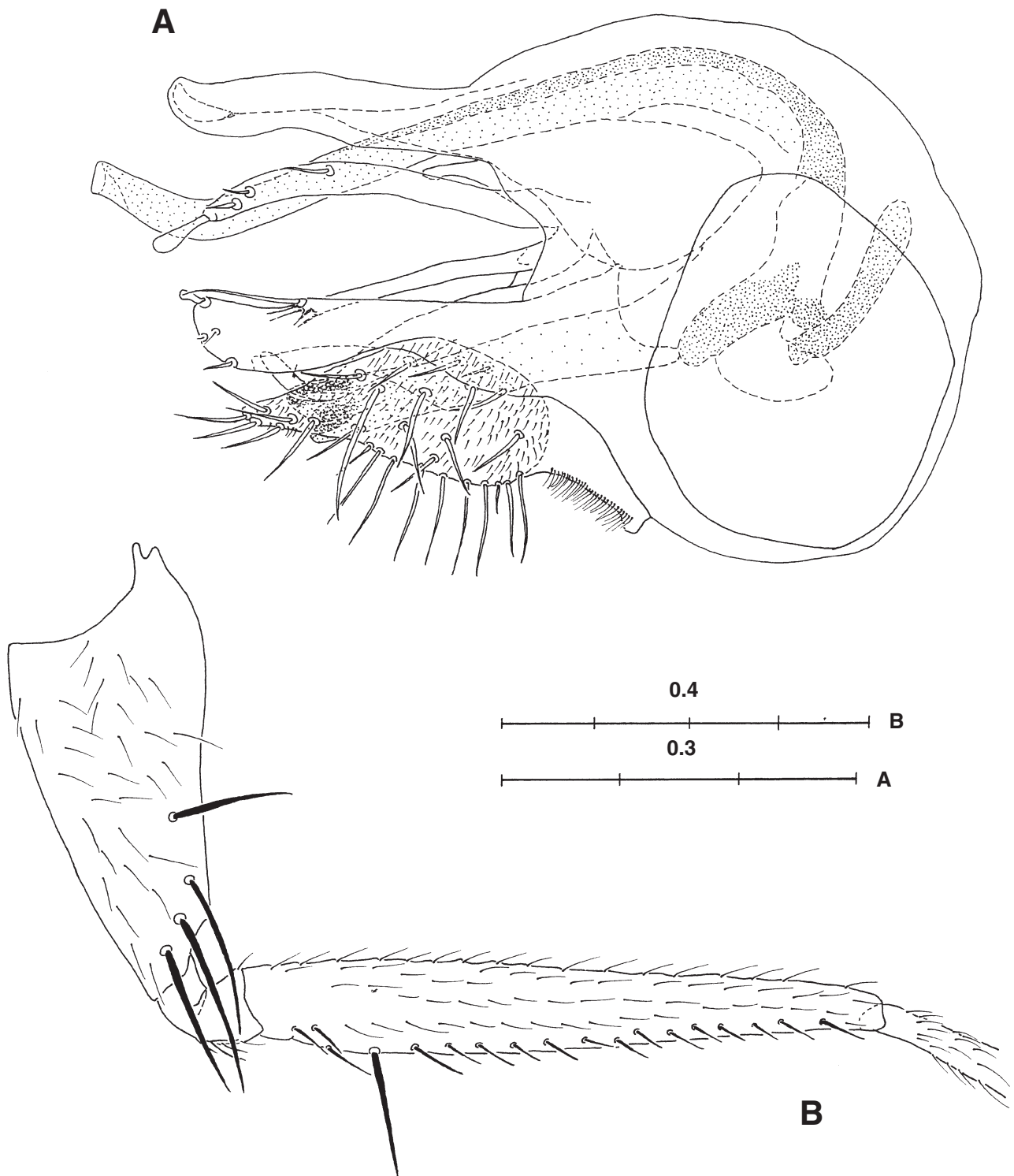


Figure 3. *Achalcus bilineatus* sp. nov. (male). A, hypopygium; B, coxa and femur I.

flagellomere pale brown with less than basoventral 1/3 yellow, rounded triangular, 1.5× as long as deep and 1.3× as long as scape and pedicel combined. Arista nearly apical, with short pubescence (2nd segment of arista lacking in holotype).

Thorax: Mesonotum, including humeri, reddish yellow and scutellum with large brownish central spot. Uppermost half of pleura contrasting dark brown, lower half reddish yellow. Postnotum concolorous with mesonotum with broad black frontolateral edge and fine central dark line on dorsum. Metapleura with lower 3/5 reddish yellow, uppermost 2/5 dark brown. Seven ac, longer than distance between rows. Sutural bristle absent.

Abdomen with 6th segment small but visible. Abdominal tergites dark brown with 1st tergite largely yellow and 2nd with a few small yellow patches. Sternites yellowish white, darker from 6th onwards; with brown pubescence. Genital capsule brown. *Hypopygium* with dark aedeagus with subapical dorsal bend; ventral bristle of surstylus simple; VEP and DEP evident; postgonites pale but evident; cercus small, triangular (Fig. 3A).

Wing. Halter slightly infuscated. Wing pale, with R_{4+5} and M_{1+2} parallel in apical 1/3. Proximal section of vein CuA_1 2.3× as long as apical section; CuA_x ratio 2.2. Wing length 2.5 mm.

Legs including coxae entirely yellow with only coxa I infuscated along whole length on outer half. Trochanters pale yellow. Femur I with erect ventral bristle inserted at basal 1/5, 1.3× as long as femur is deep; with 1–2 strong pv preapical bristles (Fig. 3B). Femur II with one strong ad, one small av and one rather strong pv preapical bristles. Femur III with one strong ad and one strong av preapical bristles. Tibia I with one very weak dorsal bristle at basal 1/4; tibia II with two ad and one pd bristles, basal bristles inserted at basal 1/5 and almost forming ad-pd couple; tibia III with three ad and four (3rd smaller, atypical ?) pd bristles and 7–9 small erect ventral setae on basal 2/3. All tarsi yellow. First tarsomere of leg III 0.8× as long as 2nd tarsomere. Body length 2.5 mm.

Female. As in male, except for the following: face pale brown. Antenna with 1st flagellomere brownish yellow, rounded triangular, 1.2× as long as deep (2nd segment of arista lacking in allotype); six ac. Abdomen with six pubescent segments, dark brown with 1st segment largely whitish yellow on dorsum; 8th segment with eight stout dark brown dornen; cercus reddish yellow. CuA_x ratio 1.8. Tibia III with three ad and three pd bristles. Body length 2.7 mm, wing length 2.7 mm.

Etymology. Refers to the dark brown upper pleura that contrasts strongly with the reddish yellow dorsum of the thorax.

Holotype. 1♂, COSTA RICA: Cartago, 4 km NE Canon, Genesis II, 2350 m, 9°42–43'N, 83°54–55'W, ii.1995, MT (Hanson) (INBio; W, genitalia mounted).

Allotype. 1♀, same data.

ACHALCUS BREVICORNIS SP. NOV. (FIG. 4)

Male. Rather small and stout species. *Head*. Face dark brown, as wide as ocellus. Frons dark brown. Occiput convex ventrally, distinctly concave dorsally, dark brown, slightly dusted. Uppermost postocular bristles black, lower ones brownish. Palp large (3/10 of eye), ovoid, greyish brown. Antenna mainly dark with scape entirely dark and pedicel dark with ventral 2/3 yellow on inner face; first flagellomere dark with basoventral corner yellow, heart- or radish-shaped, 1.4× as long as deep and 1.3× as long as scape and pedicel combined. Arista 1.7× as long as first three joints of antenna, distinctly subapical, pubescent (Fig. 4B).

Thorax. Mesonotum mainly brownish black, with humeri, notopleural and postalar areas yellowish and with scutellum brown on disc with broad yellow margin. Pleura (dark) brown, heavily dusted. Postnotum yellowish with black frontolateral triangle. Metapleura dark brown. 5–6 ac, less than 1.5× as long distance between rows. Sutural bristle absent.

Abdomen with 6th segment entirely covered by 5th segment. Abdominal tergites including genital capsule entirely blackish brown, shining, with strong marginal bristles. Sternites dark brown, heavily dusted greyish; 5th sternite with strong caudal incision. Genital capsule very small, less than half of height of 5th tergite. *Hypopygium*. Aedeagus with distinct subapical dorsal bend; ventral bristle of surstylus simple; VEP and DEP evident; postgonites pale but evident; cercus very small, triangular with strong marginal bristles (Fig. 4C).

Wing. Halter and wing slightly infuscated, with yellow veins; vein R_{4+5} hardly curved, R_{4+5} and M_{1+2} distinctly diverging. Proximal section of vein CuA_1 1.9× as long as apical section; CuA_x ratio 1.9. Wing length 2.2–2.4 mm ($n = 5$) (Fig. 4A).

Legs mainly yellow with coxa I reddish brown, infuscated laterally, with pale pubescence; coxa II reddish yellow, and coxa III pale brown. Trochanters reddish yellow. Femora yellow, sometimes slightly infuscated dorsally; femur I without erect ventral bristle and with one strong pv preapical bristle. Femur II with

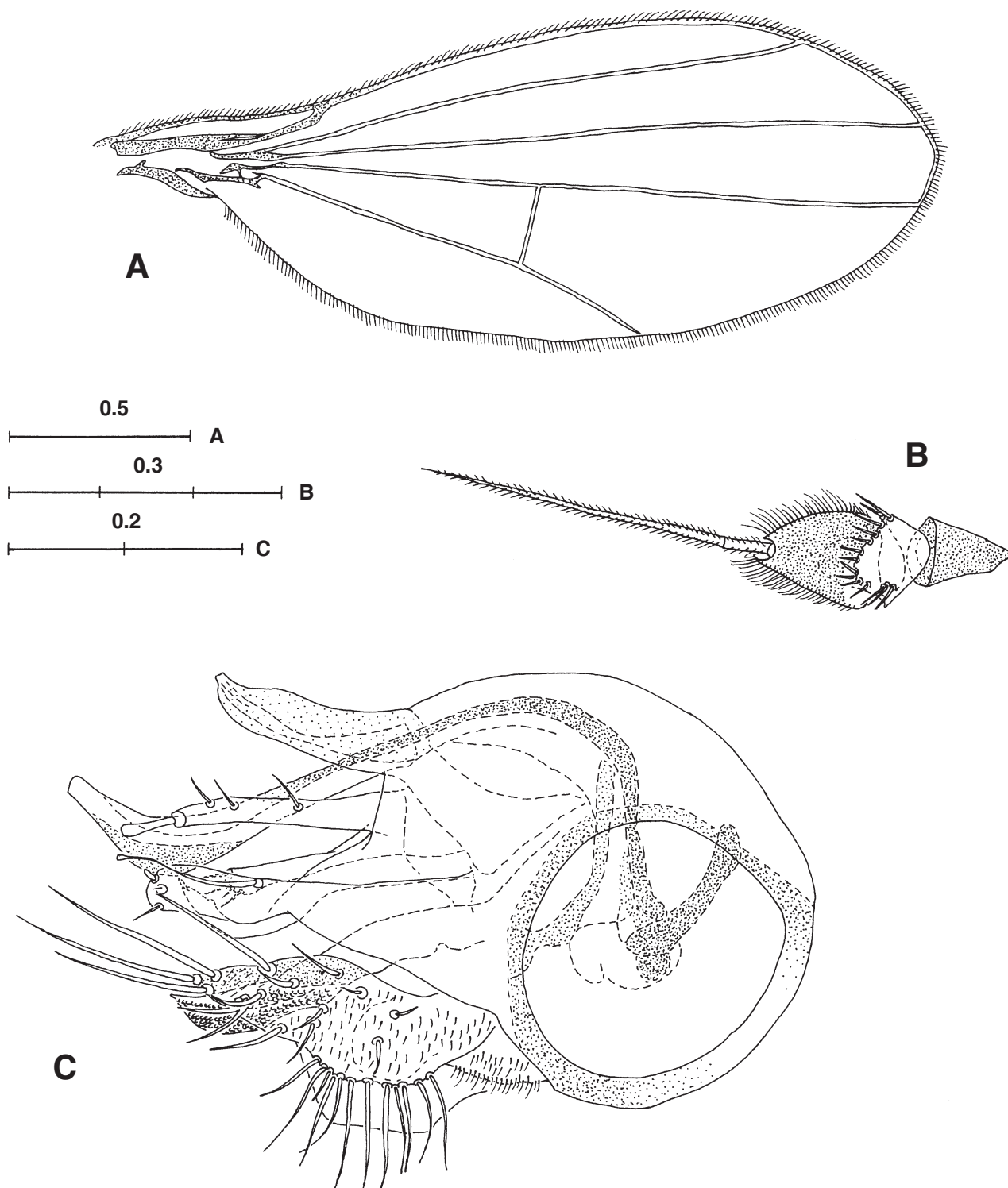


Figure 4. *Achalcus brevicornis* sp. nov. (male). A, wing; B, antenna; C, hypopygium.

one strong ad and one strong pv preapical bristles. Femur III with one moderately strong ad and one strong av preapical bristles. Tibiae pale yellow; tibia I without dorsal bristles; tibia II with two very strong ad and one very strong pd bristles (1/5 of tibial length), basal bristles forming no ad-pd couple; tibia III with 2–3 strong ad and 2–3 strong pd bristles; with five minute ventral setae. All tarsi with 5th tarsomeres dark; tarsus I yellow, infuscated from apical 1/3 of 1st tarsomere; tarsus II and III dark yellow, gradually infuscated towards apex. First tarsomere of leg III 0.8× as long as 2nd tarsomere. Body length 2.3–2.4 mm ($n = 5$).

Female. As in male, except for the following: face somewhat wider than ocellus. Antenna with 1st flagellomere rounded triangular with basal half yellow. Femora slightly infuscated dorsally. Abdomen with six pubescent segments; 8th segment pale brown with eight thin dornen; cercus dark brown. Body length 2.7 mm, wing length 2.5–2.7 mm ($n = 2$).

Etymology. Refers to the modest size of the 1st flagellomere as compared to its Neotropical congeners, except for the representatives of the *A. costaricensis* species group.

Holotype. 1♂, CHILE: Region de la Araucania, Prov. Malleco, Rio Blanco, 1100–2000 m, ii.1964 (*L. Peña*) (CNC; D, hypopygium mounted).

Paratypes. CHILE: 1♂, Region de los Lagos, Prov. Osorno, Lago Puyehue, 80 km E. of Osorno (secondary forest), 17–18.i.1997, YWT (*Bickel*) (CNC; W, antenna, wing and hypopygium mounted); 1♂, same date (CNC; W); Region del Biobio, Prov. Arauco: 2♂, 2♀, Nahuelbuta, P.N., Road to Caneta (mixed *Nothofagus*), 13–14.ii.1997, YWT (*Bickel*) (POLLET, CNC; W); 1♀, Cord. Nahuelbuta, 41 km E. Cañete, 1070 m, 8.ii.1998 (*Woodley*) (USNM; D).

ACHALCUS COSTARICENSIS SP. NOV. (FIG. 5)

Male. Small, rather slender species. Head. Face dark brown, dusted, as wide as ocellus with eyes almost touching above clypeus. Frons dark brown with strong blue reflection. Occiput flat, dark brown, shining. All postocular bristles dark. Palp large (2/5 of eye), ovoid, brown with basal 1/3 yellowish; with brown pubescence, and one strong brown apical bristle (Fig. 5E). Proboscis well developed, 0.6× as long as head. Antenna mainly brown with pedicel brownish yellow, infuscated dorsally; first flagellomere brown with basoventral half yellow, rounded triangular, 1.2× as long as deep and 1.2× as long as scape and pedicel combined. Arista 2.4× as long as first three joints of antenna, inserted apically on outer face; with 1st seg-

ment dark and 2nd white except for extreme basis; with short pubescence (Fig. 5C).

Thorax. Mesonotum and scutellum dark brown, shining bluish. Upper pleura dark brown, lower reddish yellow. Postnotum entirely dark brown with broad black frontolateral edge. Lower half of metapleura pale brown, upper half pale yellow. Three ac, more than 1.5× as long as distance between rows. One large sutural bristle present.

Abdomen with small bare 6th segment. Abdominal tergites including genital capsule dark brown, 2nd tergite and sternites slightly paler. Aedeagus with distinct subapical dorsal bend; ventral bristle of surstylus simple; VEP and DEP evident; postgonites pale but evident; cercus small, triangular (Fig. 5F).

Wing. Halter pale, squamal fringe brown. Wing pale, with R_{4+5} and M_{1+2} diverging. Proximal section of vein CuA_1 2.3× as long as apical section; CuA_x ratio 2.2. Wing length 1.9–2.1 mm ($n = 10$) (Fig. 5A).

Legs yellow with coxae and trochanters pale yellow. Femur I without erect ventral bristle; with one av and one strong pv preapical bristles (Fig. 5B). Femur II with one strong ad, one strong av and one strong pv preapical bristles. Femur III with one strong ad and one strong av preapical bristles. Tibia I without dorsal bristles; tibia II with two moderate (1/7 of tibial length) ad and one smaller pd bristles, ad bristles inserted at about basal 1/3 and 2/5; tibia III with 2–3 rather small ad and three rather small pd bristles; with one true ventral bristle at apical 2/5. All tarsi entirely yellow. First tarsomere of leg III 0.9× as long as 2nd tarsomere. Body length 1.8–2.1 mm ($n = 10$).

Female. As in male, except for the following: face about as wide as ocellus. Palp rounded rectangular, with strong pubescence. Antenna entirely dark brown with 1st segment of arista brownish and 2nd white (Fig. 5D). Abdomen with six pubescent segments; 8th reddish brown with eight stout dark dornen; cercus reddish yellow, short. Body length 2.0–2.3 mm, wing length 1.9–2.2 mm ($n = 10$).

Etymology. Refers to the country where the species was initially discovered. Thus far it has only been recorded from Costa Rica, where it has been found in sometimes large numbers at higher altitudes.

Holotype. 1♂, COSTA RICA: San José, 26 km N. of San Isidro, 2100 m, 9°30'N, 83°43'W, ix–x.1992, MT (*Hanson*) (INBio; W).

Allotype. 1♀, same data.

Other paratypes. COSTA RICA: 1♀, San José, 2 km W. of Empalme, 2300 m, 9°43'N, 83°58'W, vi.1995; 2♀, vii.1995; 41♂, 73♀, 26 km N. of San Isidro, 2100 m,

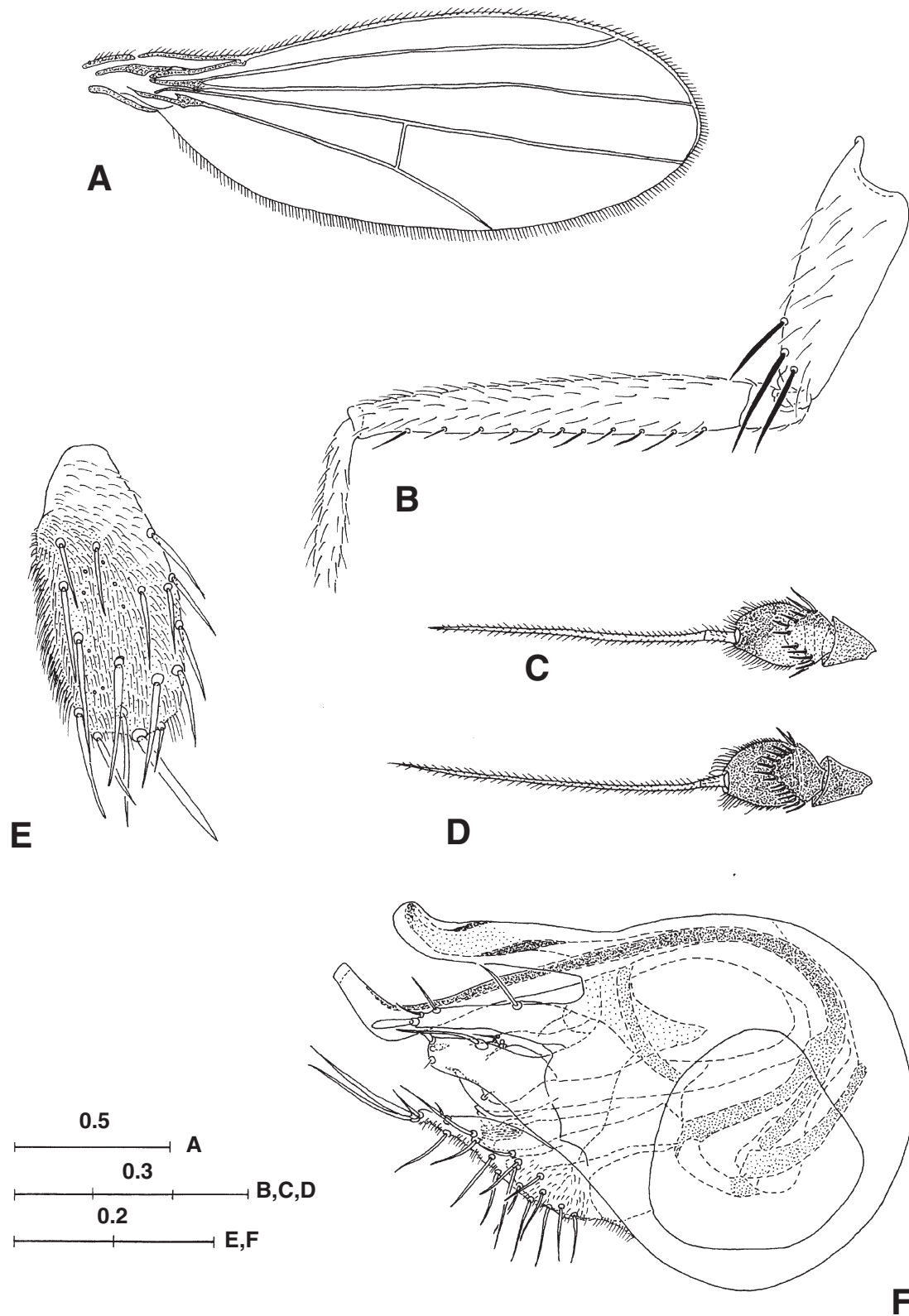


Figure 5. *Achalcus costaricensis* sp. nov. (male, unless mentioned otherwise). A, wing; B, coxa and femur I; C, antenna; D, female antenna; E, palp; F, hypopygium.

9°30'N, 83°43'W, ix–x.1992 (wing, antenna, leg I and hypopygium of 2♂; antenna of 1♀ mounted); 7♀, Zurqui de Moravia, 1600 m, 10°03'N, 84°01'W, ii.1995, all collected by MT (*Hanson*) (INBio; W).

ACHALCUS CYANOCEPHALUS SP. NOV. (FIG. 6)

Male. Small, rather stout species. *Head*. Face velvet black with grey patches laterally, narrow, eyes almost touching above clypeus. Frons brilliantly blue. Occiput with strong central concavity, sides bulbous, shining blue. Uppermost 4–5 postocular bristles brownish, lower 7–8 yellowish. Palp moderately large (1/4 of eye), ovoid, brown with paler basis. Antenna largely pale, with scape brown, paler on basal half; pedicel entirely yellow; first flagellomere brownish with less than basoventral half paler, trapezoid, as long as deep and 2× as long as scape and pedicel combined. Arista 3.4× as long as first three joints of antenna, distinctly apical, entirely brown, pubescent (Fig. 6B).

Thorax. Mesonotum with pleura and scutellum reddish yellow with brown areas between and laterad of dc rows; pleura with brownish patches. Postnotum dark reddish yellow with distinct frontolateral black triangle. Metapleura entirely dark brown. Three ac, 2× as long as distance between rows. Five dc with 1st dc small. One relatively strong sutural bristle present.

Abdomen with tergites including genital capsule brown. Sternites whitish yellow, with pale (dark yellow) pubescence. *Hypopygium*. Aedeagus with subapical dorsal bend; ventral bristle of surstylus simple; VEP and DEP present; postgonites not distinct; cercus small, triangular (Fig. 6C).

Wing. Halter brown. Wing pale, with R_{4+5} and M_{1+2} distinctly diverging. Proximal section of vein CuA_1 2.1× as long as apical section; CuA_x ratio 2.3. Wing length 1.8 mm (Fig. 6A).

Legs pale yellow with coxae mainly brown; legs and coxae with brownish bristles. Coxa II brown, coxa III brown with anterior half pale yellow. Trochanter of leg I pale, of leg II and III brown. Femur I without erect ventral bristle and with one preapical av and pv bristles. Femur II with one strong ad, one small av and one strong pv preapical bristles. Femur III with one strong ad, inserted at lower 1/3, and one strong av preapical bristles. Tibia I without dorsal bristles; tibia II with two moderate ($2.6\text{--}3.2 \times$ tibial depth) ad and one moderate ($2 \times$ tibial depth) pd bristles, ad bristles inserted at basal 1/4 and $< 2/3$; tibia III with three moderate ad and three moderate pd bristles; with two true av bristles on basal half and 2/3 amid other erect setae. All tarsi pale yellow with 5th tarsomeres dark.

First tarsomere of leg III 0.7× as long as 2nd tarsomere.

Female. Unknown.

Etymology. Refers to the brilliantly blue frons in this species (a character shared with *A. costaricensis* and *A. maculipennis*).

Holotype. 1♂, COLOMBIA: 27 mi. S. Popayan Cauca, 1750 m, 5.iii.1955 (*Schlinger & Ross*) (CAS; D, hypopygium, antenna and wing mounted).

ACHALCUS MACULIPENNIS SP. NOV. (FIG. 7)

Male. Small, rather slender species. *Head*. Face dark brown, not as wide as ocellus, eyes almost touching above clypeus. Frons very large and broad, shining blue. Occiput rather flat with central dorsal furrow, dark brown, shining. Postocular bristles yellow, uppermost slightly darker. Palp large (about 1/4 of eye), ovoid triangular, pale yellow, reddish at apex; with pale pubescence, and one pale apical bristle. Antenna reddish yellow with scape slightly infuscated dorsally and first flagellomere brown on dorsal 1/3; latter ovoid triangular, 1.3× as long as deep and 1.7× as long as scape and pedicel combined. Arista 2.9× as long as first three joints of antenna, inserted apically, with 1st segment darker and 2nd white; with short pubescence (Fig. 7B).

Thorax pale reddish yellow with brown central area on dorsum between dc rows until scutellum. Upper half of pleura darker. Postnotum large, with small black frontolateral triangle. Lower half of metapleura pale reddish yellow, upper half pale brown. Three ac, 1.5× as long as distance between rows. Five dc, with 1st dc small. One rather small sutural bristle present.

Abdomen with tergites including genital capsule brown. Sternites yellowish white, with yellowish pubescence. *Hypopygium*. Aedeagus mainly pale, rather long with subapical dorsal bend; ventral bristle of surstylus simple; VEP and DEP evident; postgonites large and dark; cercus small, short triangular (Fig. 7C).

Wing. Halter brown. Wing pale with two distinct spots at wing centre and apex, with R_{4+5} and M_{1+2} diverging, R_{4+5} slightly sinuous. Proximal section of vein CuA_1 3.2× as long as apical section; CuA_x ratio 1.6. Wing length 1.6 mm (Fig. 7A).

Legs including trochanters mainly pale yellow with darker coxae; with brownish pubescence and bristles. Coxae brownish yellow with coxa I darker especially on outer face. Femur I without erect basoventral bristle and with two pv preapical bristles. Femur II with

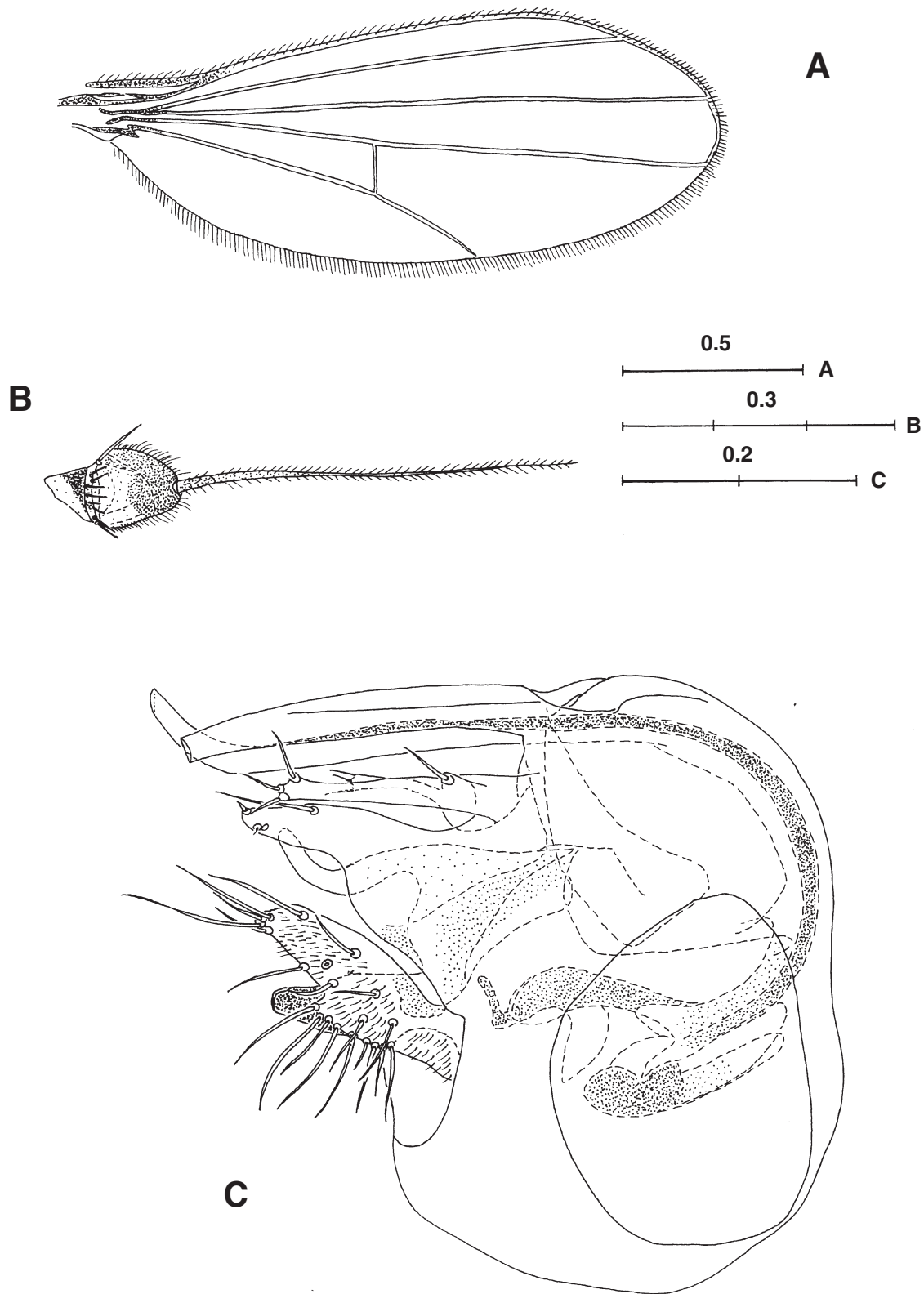


Figure 6. *Achalcus cyanocephalus* sp. nov. (male). A, wing; B, antenna; C, hypopygium.

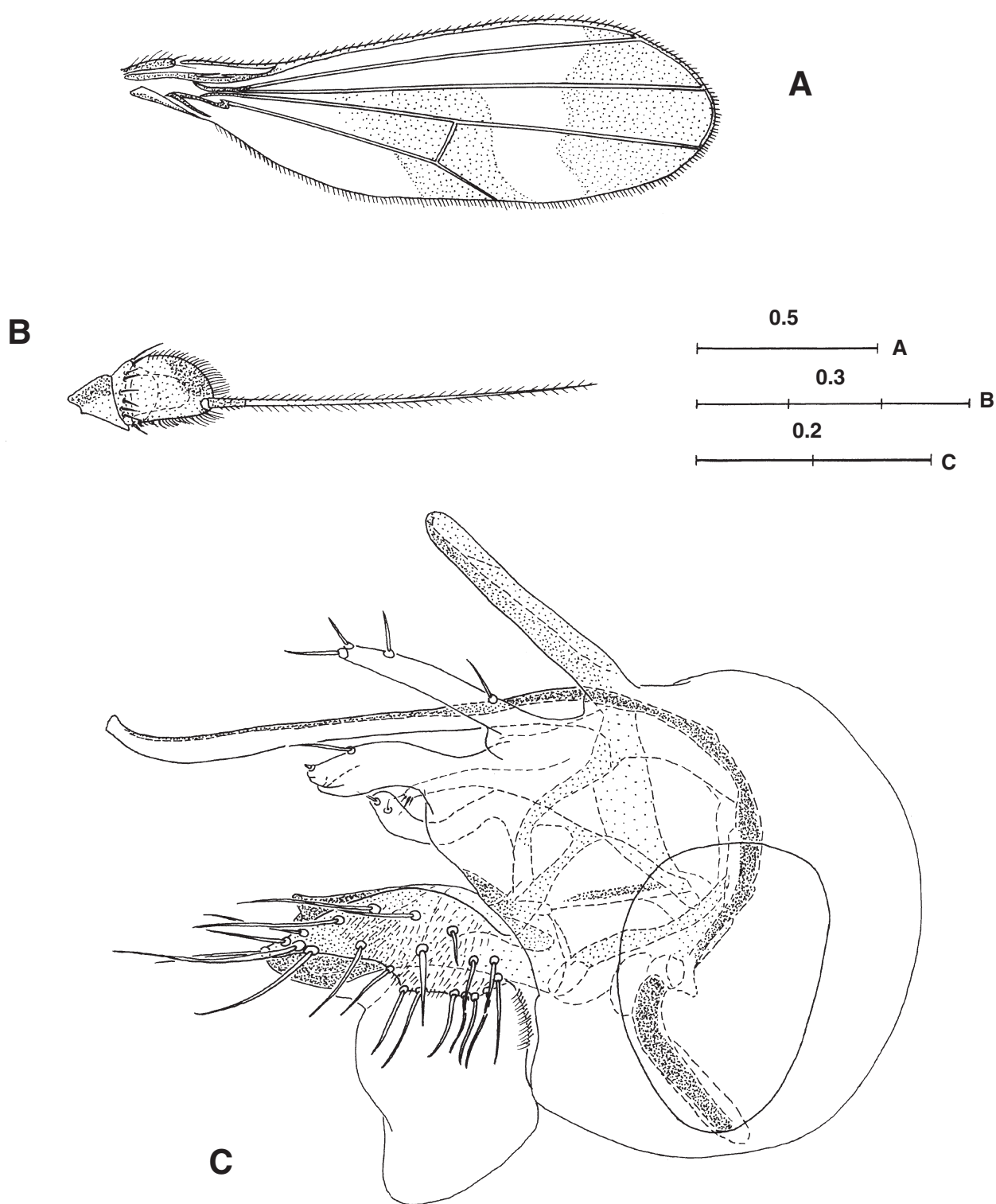


Figure 7. *Achalculus maculipennis* sp. nov. (male). A, wing; B, antenna; C, hypopygium.

one strong ad, one indistinct av and one strong pv preapical bristles. Femur III with one strong ad, inserted in lower half, and one strong av preapical bristles. Tibia I without dorsal bristles; tibia II with two strong thin ($> 2 \times$ tibial depth) ad and one moderate pd bristles, ad bristles inserted at basal 1/4 and 2/3; tibia III with three moderate ad and three moderate pd bristles; with two true av bristles on apical half and several erect pv setae. All tarsi yellow with 5th tarsomeres darker, only slightly darker in leg I and II. First tarsomere of leg III $0.7\times$ as long as 2nd tarsomere.

Female As in male, except for the following: palp 2/5 of eye, rectangular, brownish at apex with two apical bristles. Antenna with 1st flagellomere as long as deep; arista entirely white. Thorax pale reddish yellow with only notopleura brownish; one ac. Abdomen with six pubescent segments with sternites 2–5 brownish yellow and sternite six brown; 8th segment reddish brown with eight stout dark dornen; cercus dark. Halter pale; proximal section of vein CuA_1 $2.6\times$ as long as apical section; CuA_x ratio 2.1. Legs including coxae entirely pale yellow. Body length 1.7 mm, wing length 1.6 mm.

Etymology. Refers to the maculated wing in both male and female specimens of this species.

Holotype. 1♂, PERU: Monson Valley, Tingo Maria, 9.xii.1954 (*Schlenger & Ross*) (CAS; D, hypopygium, antenna and wing mounted).

Allotype. 1♀, same data.

Paratypes. ECUADOR: 1♀, Napo Province, approx. 1 km N. Napo River, E. of Coca Orellana, Sacha Lodge, 0.5S 76.5 W (edge of old growth forest), 270 m, 3–13.vii.1994, MT (*Hibbs Kerr*) (POLLET, W).

ACHALCUS MICROMORPHOIDES SP. NOV. (FIG. 8)

Male. Small, compact species. *Head.* Face dark brown, $1.5\times$ as wide as ocellus; with epistoma bare and clypeus with dense white pubescence. Frons dark brown. Occiput convex ventrally, distinctly concave dorsally, dark brown, slightly dusted. Uppermost postocular bristles black, lower brown. Palp rather large (1/5 of eye), circular, dark brown. Antenna entirely black with first flagellomere short, ovate triangular, $1.6\times$ as long as deep and $1.3\times$ as long as scape and pedicel combined. Arista $1.6\times$ as long as first three joints of antenna, distinctly subapical, with microscopic pubescence.

Thorax blackish brown on dorsum of mesonotum and scutellum, dark brown on pleura, postnotum and metapleura. Postnotum with black frontolateral trian-

gle. Five ac, less than $1.5\times$ as long distance between rows. Sutural bristle absent.

Abdomen blackish brown, shining, conical. Genital capsule concolorous, moderately developed. *Hypopygium.* Aedeagus long, with slight subapical dorsal bend; all epandrial setae inserted near apex of epandrial lobe (Fig. 8A); ventral bristle of surstylus simple; VEP and DEP evident; postgonites pale but evident; cercus fairly small, triangular with fairly short marginal bristles (Fig. 8B).

Wing. Halter distinctly infuscated. Wing pale, with R_{4+5} hardly curved, R_{4+5} and M_{1+2} practically parallel. Proximal section of vein CuA_1 $2.1\times$ as long as apical section; CuA_x ratio 1.9. Wing length 1.8 mm.

Legs mainly obscure (brownish) yellow with brown coxae; only coxa I dark brown, yellowish laterally. Trochanters brownish yellow. Femur I brownish yellow, femur II and III dark yellow; femur I without erect ventral bristle and with one strong pv preapical bristle. Femur II with one strong ad, one small av and one strong pv preapical bristles. Femur III with one strong ad and one strong av preapical bristles. Tibia I and III brownish yellow, tibia II yellow; tibia I with two dorsal bristles at basal 1/3 and 2/3; tibia II with two very strong (1/5 of tibial length) ad and one strong pd bristles, basal bristles forming ad-pd couple; tibia III with three very strong ad, three very strong pd bristles and four ventral setae. Tarsus I and II brownish yellow with 5th tarsomere dark; tarsus III with 1st and 2nd tarsomeres dark yellow, from 3rd onwards entirely dark. First tarsomere of leg III $0.8\times$ as long as 2nd tarsomere. Body length 1.5 mm.

Female. Unknown.

Etymology. Refers to the stout and small *Micromorphus*-like habitus of this species.

Holotype. 1♂, CHILE: Region de Coquimbo, Prov. Elqui, Coquimbo, Huaquen, 26.vii.1960 (*L. Peña*) (CNC; D, hypopygium mounted).

ACHALCUS NIGER SP. NOV. (FIG. 9)

Male. Rather small, stout species. *Head.* Face brownish black, $1.5\times$ as wide as ocellus; clypeus with dense white pubescence. Frons brownish black. Occiput concave, shining brownish black. Uppermost four postocular bristles dark, lower seven paler (brownish). Palp small (less than 1/5 of eye), broad ovoid, dark brown. Antenna almost entirely brown with lower half of pedicel paler on inner face and extreme basis of first flagellomere somewhat paler; latter triangular, $1.8\times$ as long as deep and $1.6\times$ as long as scape and pedicel combined. Arista $1.2\times$ as long as first three joints of

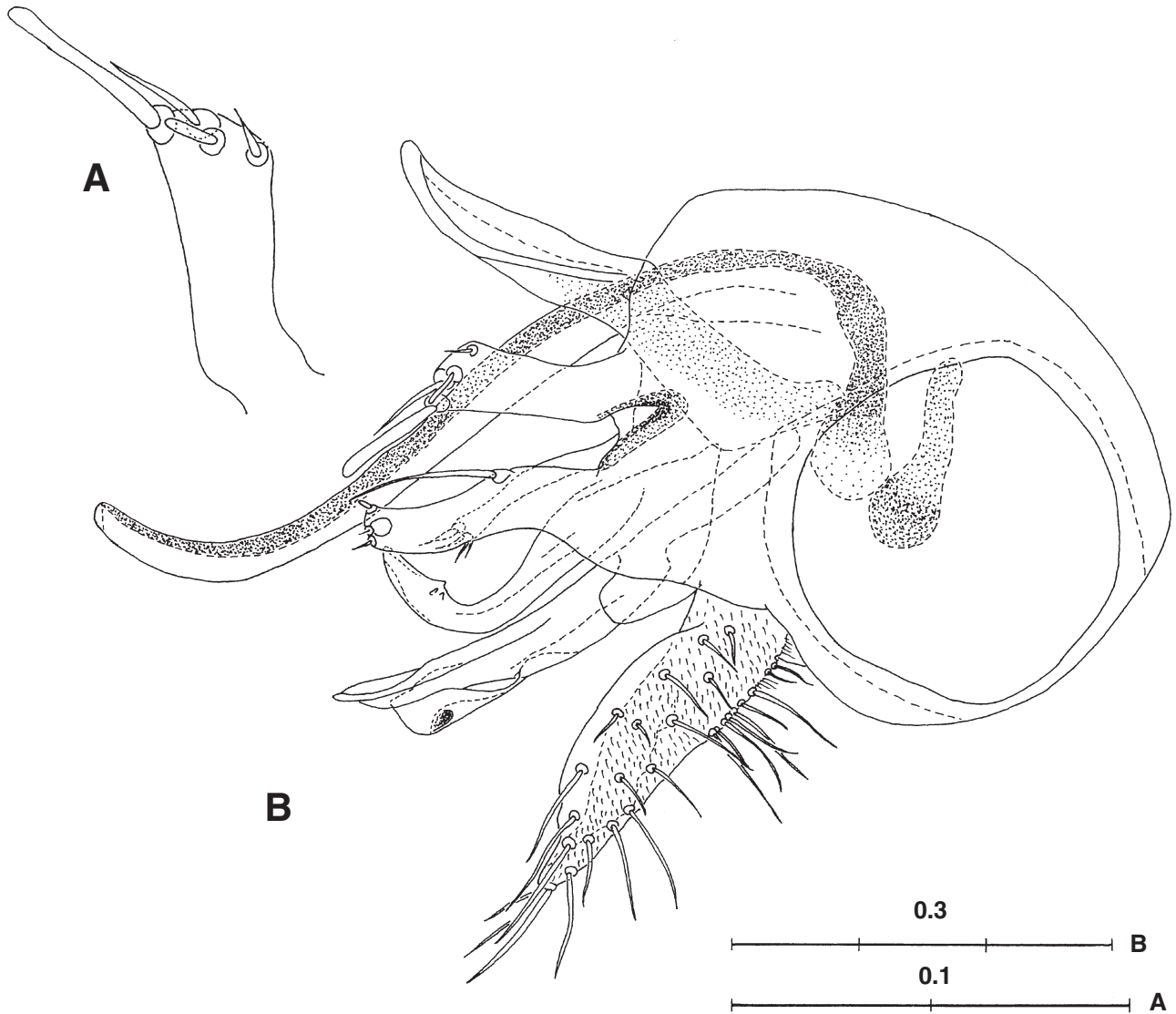


Figure 8. *Achalcus micromorphoides* sp. nov. (male). A, epandrial lobe; B, hypopygium.

antenna, distinctly apical, with microscopic pubescence (Fig. 9B).

Thorax including pleura and metapleura dark to blackish brown, shining. Postnotum with distinct fronto-lateral black triangle. Six ac, 1.5× as long as distance between rows. One very small sutural bristle present.

Abdomen with tergites including genital capsule dark brown, shining. Sternites greyish brown. **Hypopygium.** Aedeagus with subapical dorsal bend; ventral bristle of surstylus with small apical flag; VEP and DEP evident; postgonites darkened at apex; cercus moderately developed, elongate (Fig. 9C).

Wing. [Halter lacking]. Wing pale with R_{4+5} and M_{1+2} clearly diverging. Proximal section of vein CuA_1 2.3× as long as apical section, latter 1.6× as long as outer crossvein. Wing length 2.2 mm (Fig. 9A).

Legs largely yellow with coxa I brown with anterior and inner half pale yellow, coxa II and III dark brown, former paler on posterior half. Trochanter of leg I pale, of leg II and III brown. Femur I slightly infuscated dorsally, femur III brownish yellow. Femur I without erect basoventral bristle and with two av and two pv preapical bristles. Femur II with one strong ad, one small av and one strong pv preapical bristles. Femur III with one strong ad and one strong av preapical

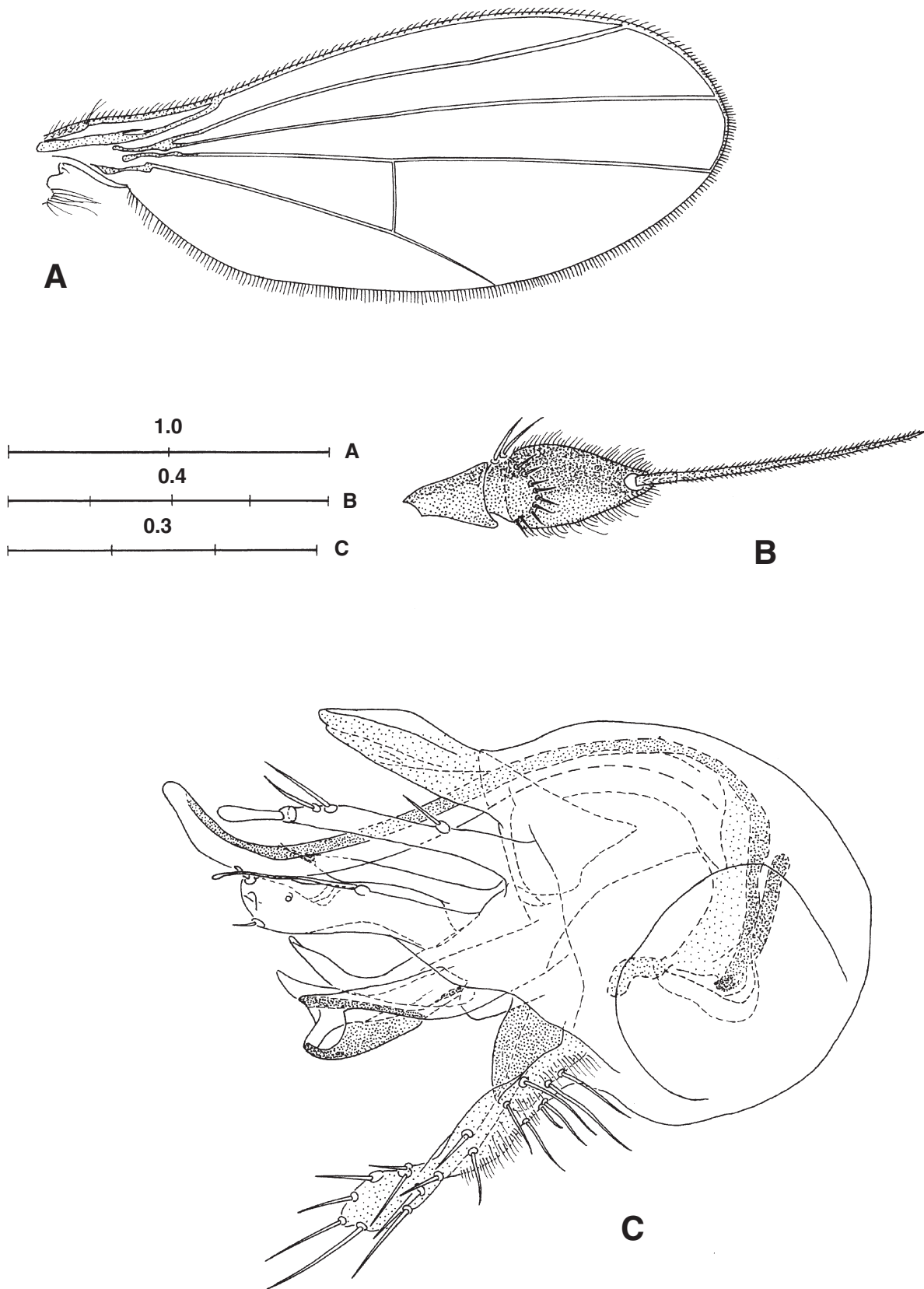


Figure 9. *Achalcus niger* sp. nov. (male). A, wing; B, antenna; C, hypopygium.

bristles. Tibia I dark yellow, tibia II and III yellow; tibia I with one dorsal bristle ($1.7 \times$ tibial depth) at less than basal $1/3$; tibia II with one very strong ($> 3 \times$ tibial depth) ad and one very strong pd bristles, basal bristles forming ad-pd couple at basal $1/5$; tibia III with three strong ad and three strong pd bristles, and seven slightly erect ventral setae mainly in basal half. All tarsi with 1st till 3rd tarsomeres brownish yellow and 4th and 5th tarsomeres brown. First tarsomere of leg III $0.8 \times$ as long as 2nd tarsomere.

Female. Unknown.

Etymology. Refers to the overall blackish brown body colour of this species.

Holotype. 1♂, CHILE: Region de la Araucania, Prov. Malleco, Palo Botado, Cord. Nahuelbuta, Nac. Pk. Contulmo, $37^{\circ}40'S$, $72^{\circ}55'W$, 1.ii.1967 (*Schlinger*) (CAS; D, antenna, wing and hypopygium mounted).

ACHALCUS TIBIALIS SP. NOV. (FIGS 10, 11)

Male. Rather large, slender and elegant species. All bristles and pubescence on body (including postoculars and prothoracic bristle) yellowish white, bristles and pubescence of legs reddish yellow. *Head.* Face whitish yellow, very narrow ($0.5 \times$ as wide as ocellus) but eyes not touching. Frons dark brown. Occiput strongly convex, dark brown, shining. Palp very large (almost $3/5$ of eye), elongate ovoid, pale reddish yellow. Proboscis pale, large, as long as eye. Antenna entirely pale yellow with extreme apex and arista dark; first flagellomere elongate triangular, $1.9 \times$ as long as deep and $1.1 \times$ as long as scape and pedicel combined. Arista as long as first three joints of antenna, inserted apically on outer face, entirely dark, with short pubescence (Fig. 10B).

Thorax entirely yellowish white with thin dark line on anterior part between ac, extending till 2nd dc. Postnotum with very small blackish frontolateral triangle. six ac, $2 \times$ as long as distance between rows. Sutural bristle absent.

Abdomen with 1st abdominal tergite yellowish white, 2nd dark brown with large white lateral spots, 3rd till 5th black; 2nd sternite white, sternites brownish black from 3rd onwards; 5th sternite with caudal invagination. Genital capsule blackish brown. *Hypopygium.* Aedeagus dark, with slight subapical dorsal bend; ventral bristle of surstylus with small apical flag; VEP and DEP evident; postgonites pale, distinctly bifurcate; cercus very long and tapering, with midventral enlargement, bearing long curved bristles (Fig. 11).

Wing. Halter pale, squamal fringe yellowish white. Wing pale, with yellow veins, with R_{4+5} and M_{1+2}

slightly diverging apically. Proximal section of vein CuA_1 $2.4 \times$ as long as apical section; CuA_x ratio 1.3. Wing length 3.2 mm (Fig. 10A).

Legs yellowish white including coxae and tarsi. Femur I with erect ventral bristle at basal $1/6$, $1.6 \times$ as long as femur is deep, with one row of rather strong ($0.5 \times$ femur depth) inclined av bristles (also basad of basoventral bristle) and four erect very strong pv preapical bristles (Fig. 10C). Femur II with one row of enlarged inclined av bristles, and one row of erect strong pv bristles; three pv bristles in basal $1/4$ as long as femur is deep, more apical bristles inclined until middle of femur; seven pv bristles in apical half $1.5 \times$ as long as femur is deep; femur II with one strong ad, two strong av and one strong pv preapical bristles (Fig. 10D). Femur III with one strong ad and one very strong av preapical bristles. Tibia I with one moderately strong dorsal bristle at basal $1/4$; tibia II with two strong ($> 3 \times$ tibial depth) ad and one strong pd bristles, basal bristles forming ad-pd couple at about basal $1/4$; with ten very strong ($3 \times$ tibial depth) erect ventral bristles, apical bristles clustered (Fig. 10D). Tibia III with three very strong ad and three very strong pd bristles; with long pd pubescence in basal half and 4–5 minute ventral setae amid dense pubescence. Tarsus I pale yellow, slightly darker than tibia; tarsus III with large incision at comb. First tarsomere of leg III $0.7 \times$ as long as 2nd tarsomere. Body length 2.7 mm.

Female. Unknown.

Etymology. Refers to the peculiar ventral chaetotaxy of tibia II in this species.

Holotype. 1♂, COSTA RICA: Cartago, 4 km NE Canon, Genesis II, 2350 m, $9^{\circ}42'43''N$, $83^{\circ}54'55''W$, 2350 m, viii.1995, MT (*Hanson*) (INBio; W, hypopygium, antenna, wing and leg II mounted).

UNIDENTIFIED *ACHALCUS* SPECIMENS

Twenty-eight female specimens could not be assigned to one of the described species. Twelve of them were collected in Chile: Region de la Araucania, Prov. Malleco (CAS; D), Prov. Cautin; Region del Biobio, Prov. Nuble; Region del Maule, Prov. Cauquenes (all CNC; D); Region de los Lagos, Prov. Osorno (USNM; D), Prov. Chiloé (CNC; D); Region metropolitana de Santiago, Prov. Maipo (CAS, D). The remaining 16 specimens were recorded from Costa Rica (Cartago, San José; INBio, W), Ecuador (Azuay, c. 6 km SW Giron, and Chimborazo Naranjapota Chilicay, USNM, D; Loja, CNC, D) and Venezuela (Yacambu; USNM, D).

The two following male specimens were not yet identified: CHILE: Region de los Lagos, Prov. Valdivia: 1♂, U. Austral de Chile, Isla de Teja, 6–8.i.1997, YWT

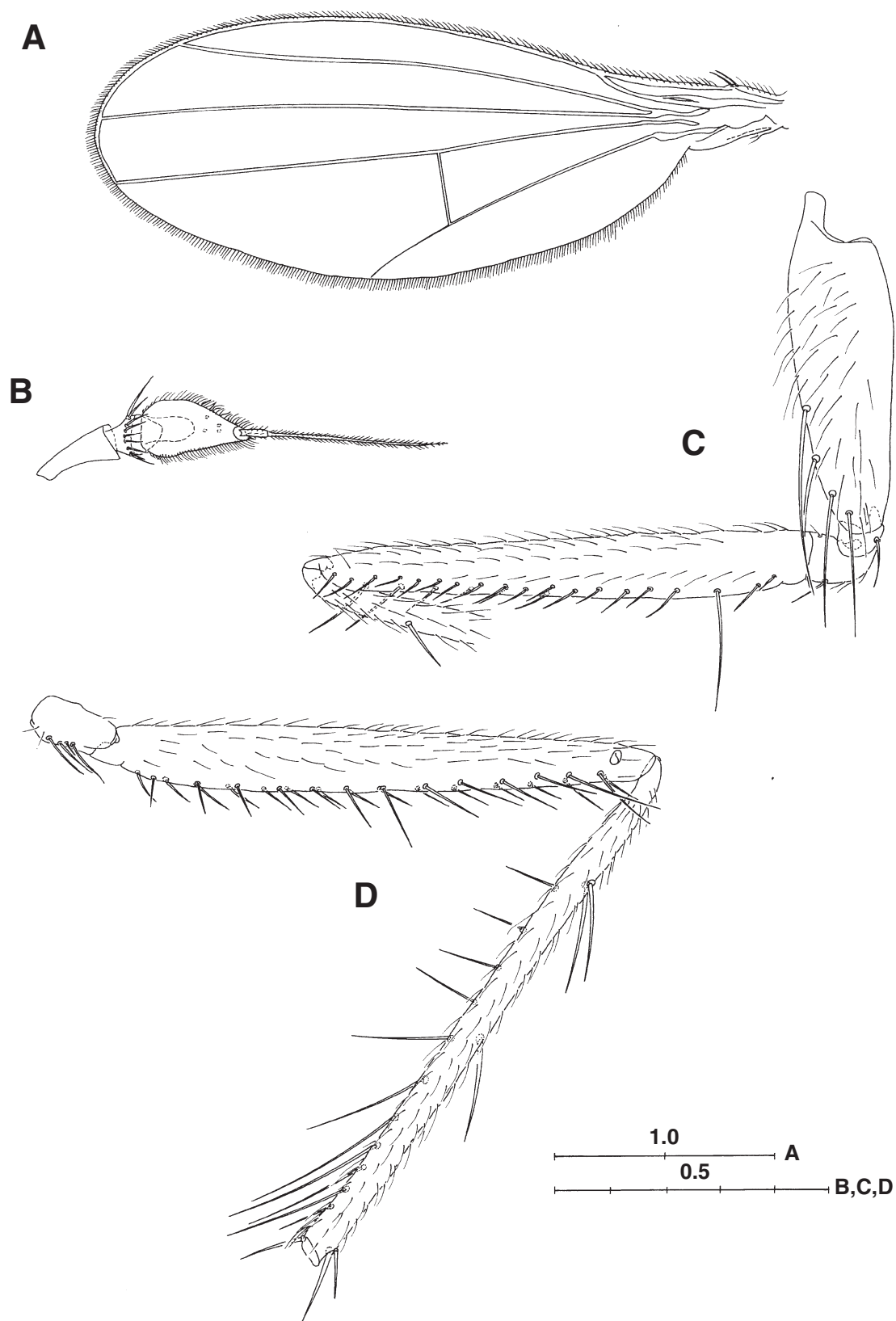


Figure 10. *Achalculus tibialis* sp. nov. (male). A, wing; B, antenna; C, coxa and femur I; D, femur and tibia II.

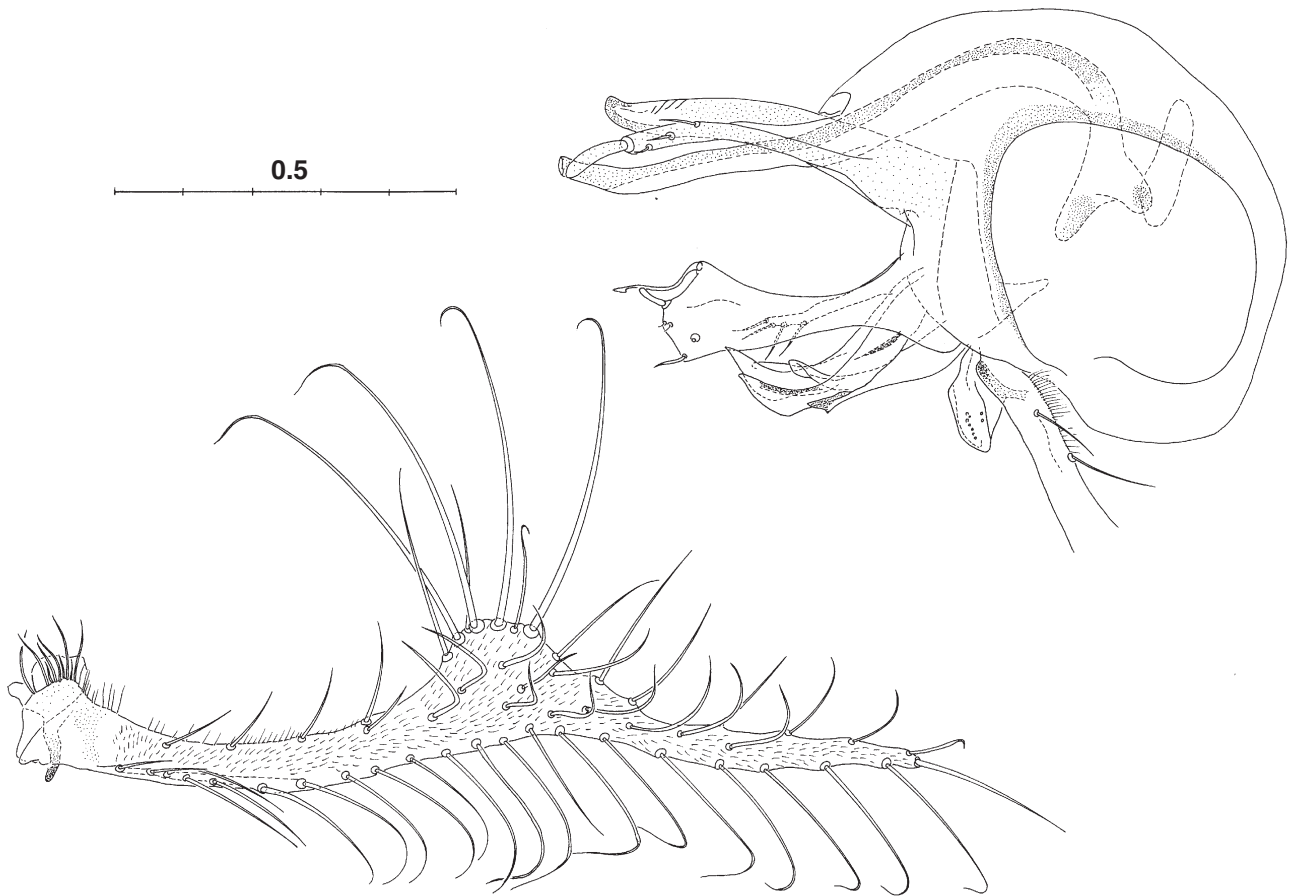


Figure 11. *Achalculus tibialis* sp. nov. (male). Hypopygium with cercus separated.

(Bickel) (CNC; D); COLOMBIA: 1♂, 13 mi. W. of Cali, Valle, 20.iii.1955 (Schlinger & Ross) (CAS; D).

AUSTRALACHALCUS GEN. NOV.

AUSTRALACHALCUS ACORNIS SP. NOV. (FIG. 12)

Male. Rather small, stout species. *Head.* Face blackish brown, at least 2× as wide as ocellus, not reaching lower eye margin. Frons brownish black. Occiput strongly concave, brownish black, shining bronze. Palp circular, very small, 1/13 of eye, dark brown, partly hidden behind inner eye margin. Antenna mainly dark with scape brownish black; pedicel pale brown; first flagellomere dark brown, acute, 2.9× as long as deep and 2× as long as scape and pedicel combined. No arista present (Fig. 12C).

Thorax. Almost entirely blackish brown with slight green metallic reflection, only postalar area of pleura yellowish. Metapleura concolorous with thorax. Eight ac, more than 2× as long as distance between rows. One (broken off) sutural bristle present. Several small

bristles present between dc 1–3, presutural and sutural bristles.

Abdomen, including genital capsule, blackish brown, slightly shining metallic green. *Hypopygium* with apicoventrally spined hypandrium; aedeagus dark, very long with lateral extensions before apex; ventral bristle of surstylus with apical flag; VEP and DEP evident; postgonites doubtful; cercus very small, ribbon-shaped (Fig. 12E).

Wing. Halter pale, squamal fringe brownish. Wing pale, with R_{4+5} and M_{1+2} slightly diverging; vein R_{4+5} curved. Proximal section of vein CuA_1 1.2× as long as apical section; CuA_x ratio 2.1. Wing length 2.3 mm (Fig. 12D).

Legs including coxae mainly pale yellow. Coxa I with basal 1/4 slightly darkened on outer face, coxa II and III yellow, brown on basal half and 1/3 resp. Femur I with erect ventral bristle at basal 1/5, preceded by two small setae; with two strong pv preapical bristles (Fig. 12A). Femur II with one row of short inclined pv

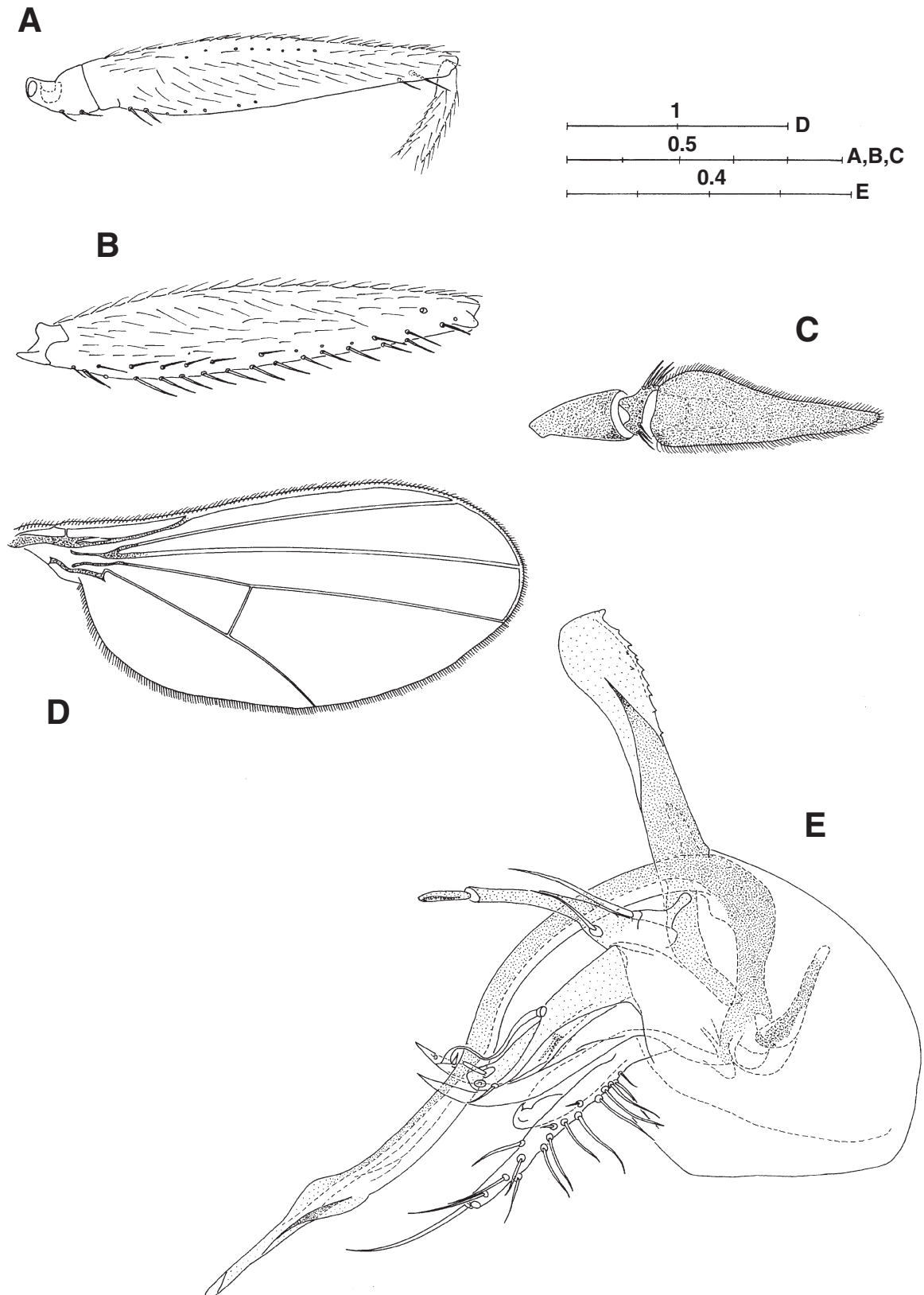


Figure 12. *Australachalcus acornis* sp. nov. (male). A, femur I; B, femur II; C, antenna; D, wing; E, hypopygium.

bristles on whole length, shortest at middle, at base almost half as long as femur is deep; with one ad preapical bristle (Fig. 12B). Femur III slightly infuscated on dorsal 1/3 with one small ad, inserted in lower half, and one strong av preapical bristles. Tibia I and II whitish yellow, tibia III pale yellow, infuscated on extreme apex; tibia I without dorsal bristles; tibia II with two moderate ad and one rather weak pd bristles ($2 \times$ tibial depth), basal bristles forming ad-pd couple at basal 1/5; tibia III with two weak ad and three weak pd bristles and three slightly erect ventral setae amid dense pubescence. Tarsus I and II whitish yellow, tarsus I with 4th and 5th tarsomeres darker; tarsus II gradually darker towards apex; tarsus III dark brown. First tarsomere of leg III $0.9 \times$ as long as 2nd tarsomere.

Female. Unknown.

Etymology. Refers to the absence of the arista in this species.

Holotype. 1♂, CHILE: Region de Valparaiso, Prov. Quillota, Palma de Ocoa, Parque Nacional Campanas, hillside draw, $32^{\circ}93'24$ S, $71^{\circ}07'81$ W, 215 m, 21.xi–6.xii.1997, MT (Barria & Irwin) (INHS; W, antenna, hypopygium, leg I and II mounted).

AUSTRALACHALCUS ALBIPALPUS (PARENT)
COMB. NOV. (FIGS 13, 14)

Achalculus albipalpus Parent, 1931: 20

Male. Large, slender species. *Head.* Face greyish brown, about as wide as ocellus. Frons dark brown. Occiput dark brown, convex with slightly concave area dorsally. Palp very large ($2/5$ of eye), ovoid, conspicuously silvery white with black setae on disc and short white marginal fringe. Proboscis distinctly protruding. Antenna largely dark with scape yellowish on ventral half at apex; pedicel yellow, infuscated on dorsal half; first flagellomere dark, paler at extreme base, elongate triangular, $2 \times$ as long as deep and $1.6 \times$ as long as scape and pedicel combined. Arista $0.9 \times$ as long as first three joints of antenna, apparently subapical, pubescent (Fig. 13C).

Thorax. Mesonotum and scutellum yellowish brown with dark areas anteriorly and between dc, extending upon prescutellar depression. Pleura brown. Postnotum yellowish with very broad black frontolateral margin. Metapleura with lower part brownish yellow and upper part brown. Six ac, $1.5 \times$ as long as distance between rows. Sutural bristle absent. One small bristle present between ps and 2nd dc.

Abdomen with five pubescent segments, 6th segment largely enclosed by 5th segment. Abdominal tergites brown to dark brown, 2nd with lateral yellow-

ish spots on lower half. Sternites dark brown, 5th divided in two triangular parts by caudal incision. Genital capsule brownish yellow to yellow, well developed. *Hypopygium* with apicoventrally spined hypandrium; aedeagus pale, straight and slender; ventral bristle of surstylus with apical flag; VEP and DEP evident; postgonites large and dark; cercus large, elongate ovoid, pale yellow with strong external and small internal bristles (Fig. 13D).

Wing. Halter pale. Wing slightly infuscated, with R_{4+5} distinctly curved, diverging from M_{1+2} at apex. Proximal section of vein CuA_1 $3.6 \times$ as long as apical section; CuA_x ratio 0.9. Wing length 3.6–3.9 mm ($n = 7$) (Fig. 13A).

Legs mainly yellow with coxa I pale yellow and coxa II and III brown, former only yellow on anterior face. Femur I and II slightly infuscated, femur III distinctly infuscated on dorsal half and on knee. Femur I with erect ventral bristle, almost as long as femur is deep, basad of row of 6–7 very strong and erect av bristles, decreasing in length towards apex (Fig. 14); with 1–2 pv preapical bristles (Fig. 14). Femur II with one rather weak ad, one av and one strong pv preapical bristles. Femur III with one thin but long ad, inserted in lower 1/3 and one strong av preapical bristles. Tibiae pale yellow; tibia I without dorsal bristles, with dense short dorsal and ventral pubescence as long as tibial depth; tibia II with two weak ad and one stronger pd bristles; basal bristles not forming ad-pd couple; tibia III with three ad and three pd bristles, and about nine distinct ventral setae. Tarsus I pale yellow, tarsus II and III dark yellow. First tarsomere of leg III $0.8 \times$ as long as 2nd tarsomere. Body length 2.6–3.0 mm ($n = 7$).

Female. As in male, except for the following: face dark brown, $2 \times$ as wide as ocellus. Palp large ($1/3$ of eye), ovoid triangular, dark brown with yellowish spot at extreme inner basis. Antenna with scape and pedicel pale yellow with dorsal half and 1/3 resp. distinctly infuscated; 1st flagellomere dark with basal 1/3 pale, rounded triangular, $1.3 \times$ as long as deep and $1.3 \times$ as long as scape and pedicel combined; arista $1.4 \times$ as long as first three joints of antenna (Fig. 13B). Coxa I with basis infuscated, coxa III reddish yellow. Abdomen with six pubescent segments; tergites brownish black and sternites dark brown, dusted greyish. Body length 2.7–3.7 mm, wing length 3.9–4.5 mm ($n = 16$).

Syntype. 1♂, CHILE: Region de los Lagos, Prov. Valdivia, Corral, 7.ix.1902 (Schnuse) (SMTD; D, hypopygium mounted), examined (hypopygium mounted but unrecognizable by overclearing). Labels: 'Chile 7.IX.02 Corral' (green label)/'Typus *Achalculus albipalpus* Par.' (red label)/'Syntypus des. U. Kallweit, 1993' (red orange label)/'*Achalculus albipalpus* O. Par-

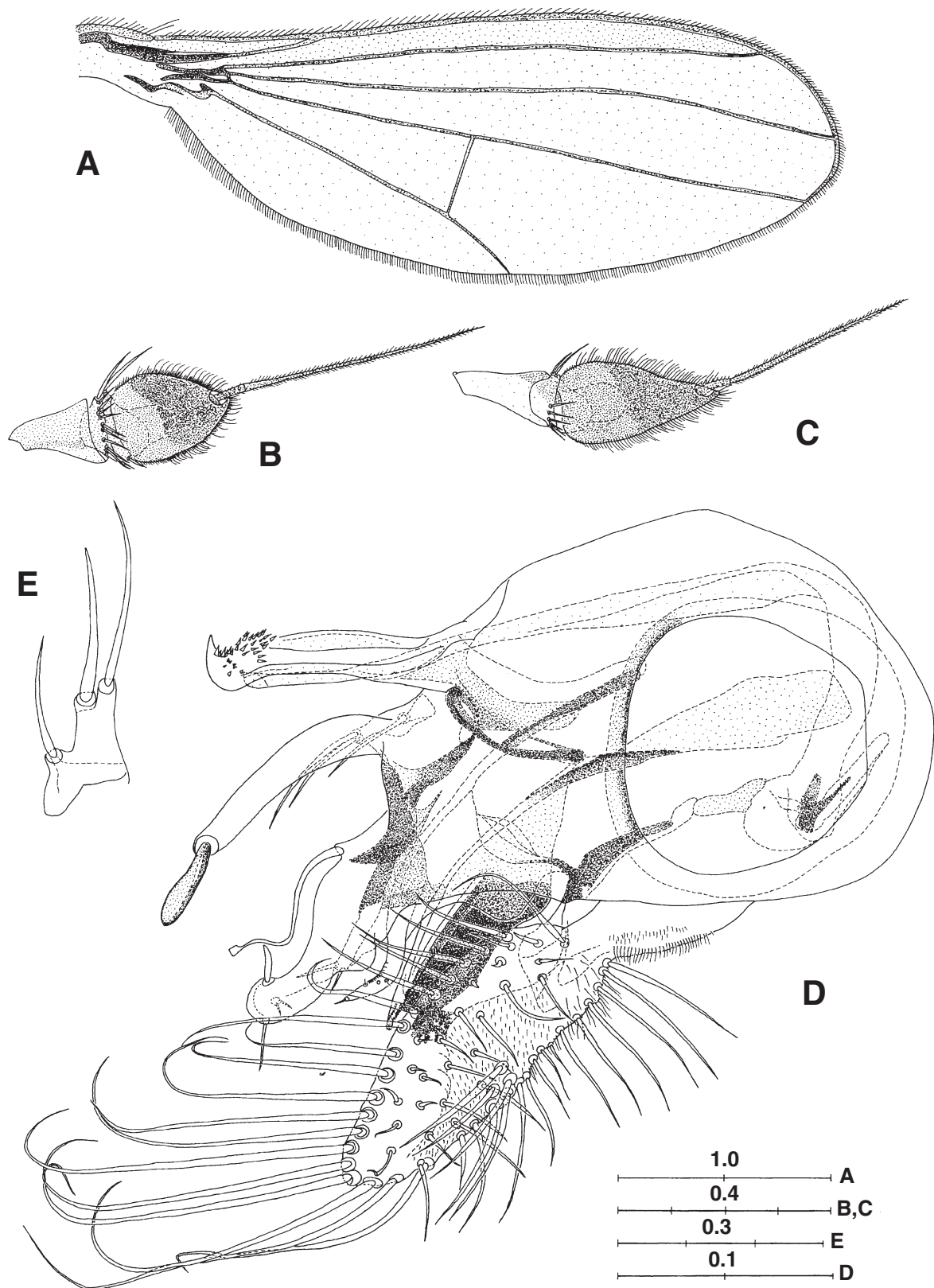


Figure 13. *Australachalcus albipalpus* (Parent) (male, unless mentioned otherwise). A, wing; B, female antenna; C, antenna; D, hypopygium; E, epandrial setae at base of epandrial lobe.

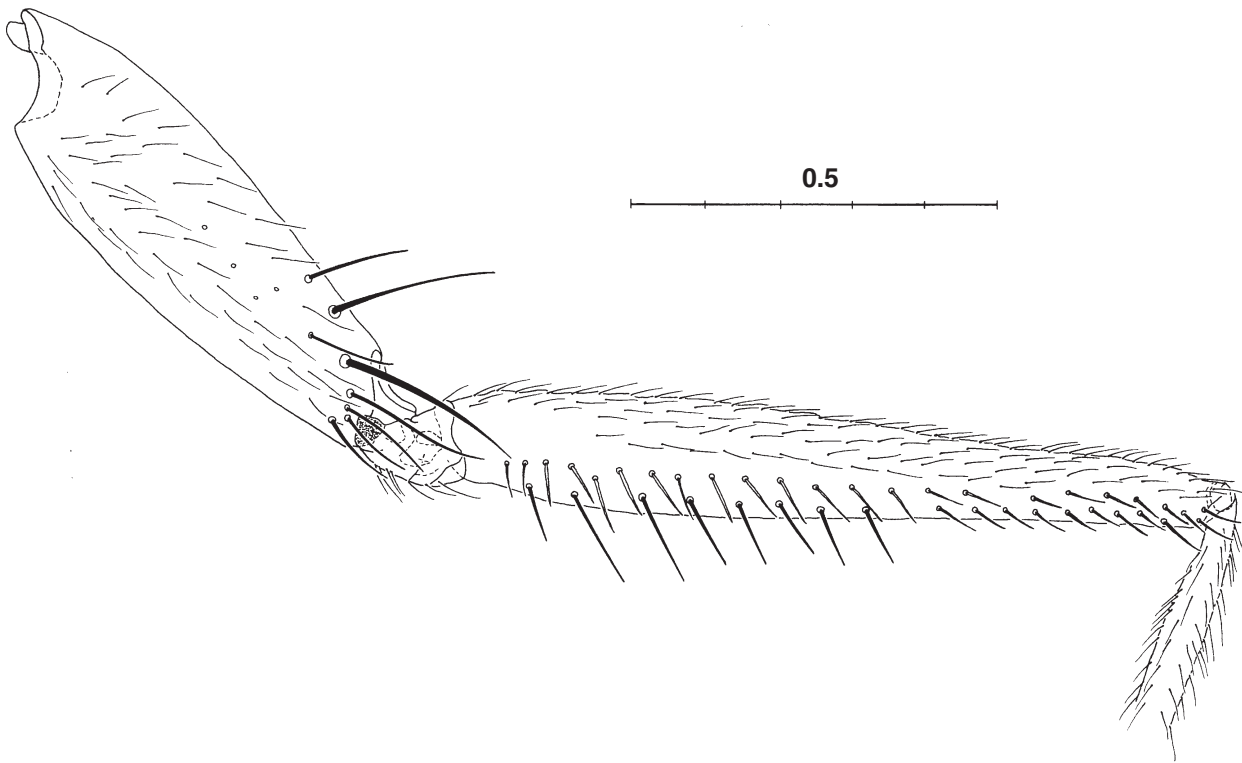


Figure 14. *Australachalcus albipalpus* (Parent) (male). Coxa and femur I.

ent' (white folded label)/'Staatl. Museum für Tierkunde, Dresden' (white label).

Material examined. CHILE: Region Aisen, Prov. Aisen: 2♂, 5♀, Puerto Cisnes 72°40'W 44°45'S, 1–15.ii.1961; 1♂, 1♀, 15–28.ii.1961; 3♂, 4♀, 16–28.ii.1961; Region de la Araucania, Prov. Malleco: 1♀, Rio Blanco, 1100–2000 m, ii.1964 (all *L. Peña*) (POLLET, CNC; D); 1♀, Rio Manzanares, 2.i.1966 (*Flint & Cekalovic*) (USNM; D); Rio Region de los Lagos, Prov. Chiloé: 1♀, Isla Chiloé, Dalcahue, 1–8.ii.1962; 1♂, 2♀, 17–22.i.1962; Prov. Llanquihue: 2♀, Ensenada, *Nothofagus* forest, 13–15.i.1962 (all *L. Peña*) (CNC; D); Prov. Osorno: 1♂, Lago Puyehue, 80 km E. of Osorno (tree trunk), 17–18.i.1997, ST (*Bickel*) (CNC; W, hypopygium mounted); Region del Biobio, Prov. Arauco: 1♀, Arauco, Pichinahuel, Cord. Nahuelbuta, 28.iii.1955 (*L. Peña*) (CNC; D).

**AUSTRALACHALCUS BREVINERVIS (VAN DUZEE)
COMB. NOV. (FIG. 15)**

Achalcus brevinervis Van Duzee, 1930: 23

Male. Rather large, slender species. **Head.** Face blackish brown, dusted, about 2× as wide as ocellus. Frons dark brown. Occiput with central dorsal concavity, dark brown, shining. Palp ovoid circular, about 1/4 of

eye size, dark brown. Antenna almost entirely dark brown with pedicel yellowish brown on inner face; first flagellomere elongate triangular and 1.2× as long as scape and pedicel combined. Arista as long as first three joints of antenna, distinctly subapical.

Thorax almost entirely dark brown with small parts of alar and postalar areas and lateral parts of scutellum yellowish. Seven ac, 2× as long as distance between rows. One strong sutural bristle present.

Abdomen with five pubescent segments. Abdominal tergites including genital capsule entirely shining dark brown, with strong marginal bristles, especially on 1st tergite. Sternites entirely brown. Genital capsule small. **Hypopygium** with apicoventrally spined hypandrium; aedeagus long and gently curved ventrally; ventral bristle of surstylus with apical flag; VEP and DEP evident; postgonites robust and dark; cercus very long and tapering, with curved marginal bristles (Fig. 15).

Wing. Halter small and pale. Wing slightly darkened with vein CuA₁ stronger than other veins; vein R₄₊₅ slightly curved and M₁₊₂ straight, both parallel at wing apex. Proximal section of vein CuA₁ 7.5× as long as apical section, CuA_x ratio 0.4×. Wing length 3.3 mm.

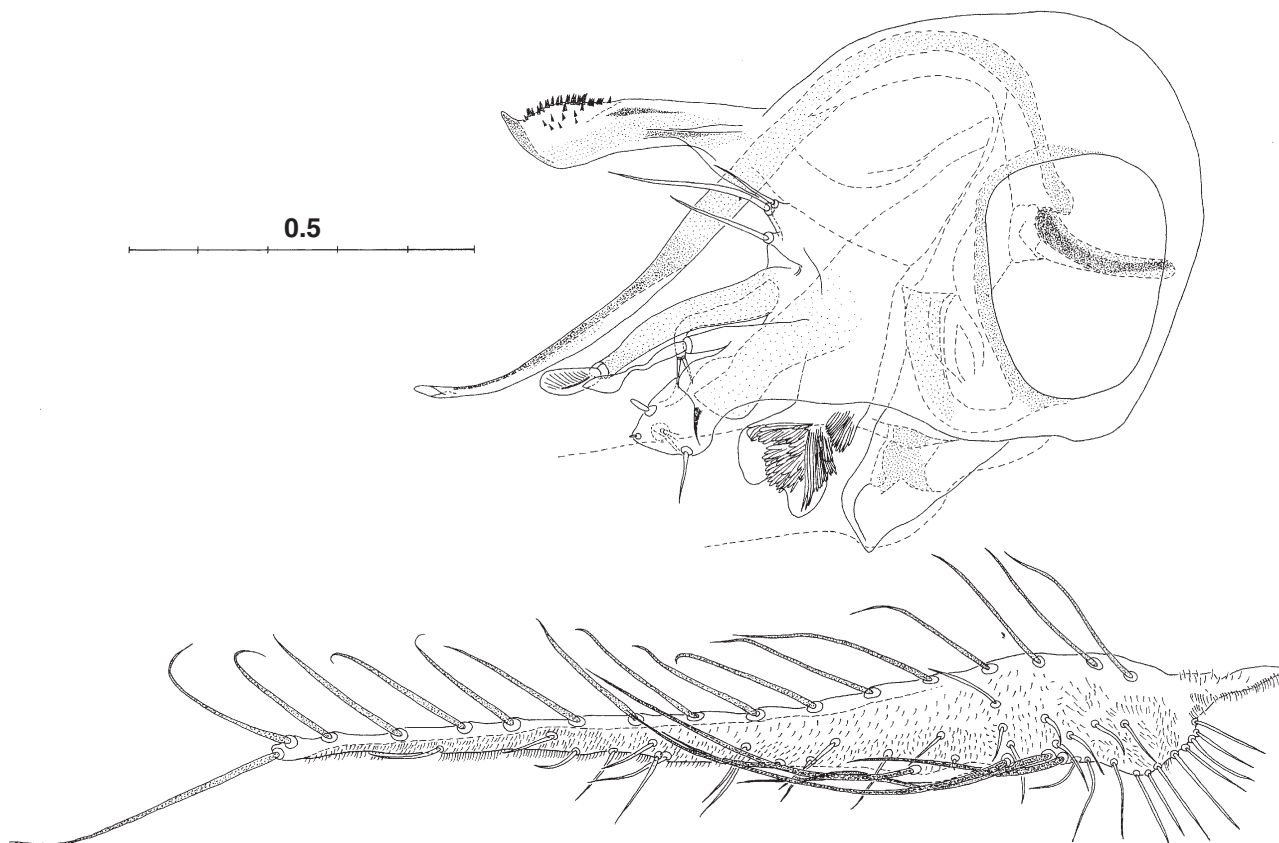


Figure 15. *Australachalcus brevinervis* (Van Duzee) (male). Hypopygium with cercus separated.

Legs mainly dark yellow with darker coxae. Coxa I brownish yellow, infuscated anteriorly with pale pubescence, coxa II mainly brown, and coxa III dark yellow, slightly infuscated. Trochanters dark yellow. Femur I and II yellow and femur III dark yellow, all broadly infuscated along whole length dorsally. Femur I with erect basoventral bristle, $0.7\times$ as long as femur is deep, basad of row of very strong, erect av bristles; with one row of erect pv bristles, not as long as femur is deep; with one pv preapical bristle. Femur II with one strong ad preapical bristle; with one row of very strong (basal ones $2/3$ of femur depth) erect av bristles, and one row of smaller erect pv bristles on less than apical half; av and pv bristles of femur I and II decreasing in length towards apex. Femur III with one weak ad, inserted just above lower $1/3$ of femur, and two very strong av preapical bristles; with one row of thin av bristles along whole length, increasing in length towards apex; with one row of very strong erect pv bristles, bristles in basal half longer than femur is deep. Tibia I dark yellow, without dorsal bristles, with short ventral pubescence; tibia II and III yellow, tibia II with two moderate ad and one moderate pd bristles, basal bristles forming no ad-pd couple; with dense and long (longer than tibial depth) erect ventral pubes-

cence along whole length; tibia III with three strong ad, four strong pd bristles and about 20 strong pv setae. Tarsus I and II brown with 5th tarsomeres almost black, tarsus III dark brown; tarsus II and III with 1st tarsomere pale on extreme base. First tarsomere of leg III as long as 2nd tarsomere.

Holotype. 1♂, CHILE: Region de los Lagos, Prov. Llanquihue, Puerto Montt, 24.xii.1926 (F. & M. Edwards) (BMNH; D, hypopygium mounted), examined. Labels: 'Puerto Montt 24.XII.1926 Y/S. Chile: Llanquihue prov. F. & M. Edwards BM 1927-63'/ '*Achalcus brevinervis* HOLOTYPE Van Duzee'.

AUSTRALACHALCUS BROWNI SP. NOV. (FIG. 16)

Male. Rather small, stout species. *Head*. Face dark brown, paler on clypeus, about $2\times$ as wide as ocellus. Frons dark brown. Occiput flat with broad central furrow, dark brown, slightly shining green. Palp rather small (less than $1/4$ of eye), rounded rectangular, reddish yellow with dark apex; with two black apical bristles. Antenna mainly dark with scape pale on apicoventral $1/3$ and pedicel pale on ventral $2/3$; first flagellomere elongate triangular, $1.9\times$ as long and deep and $1.5\times$ as long as scape and pedicel combined.

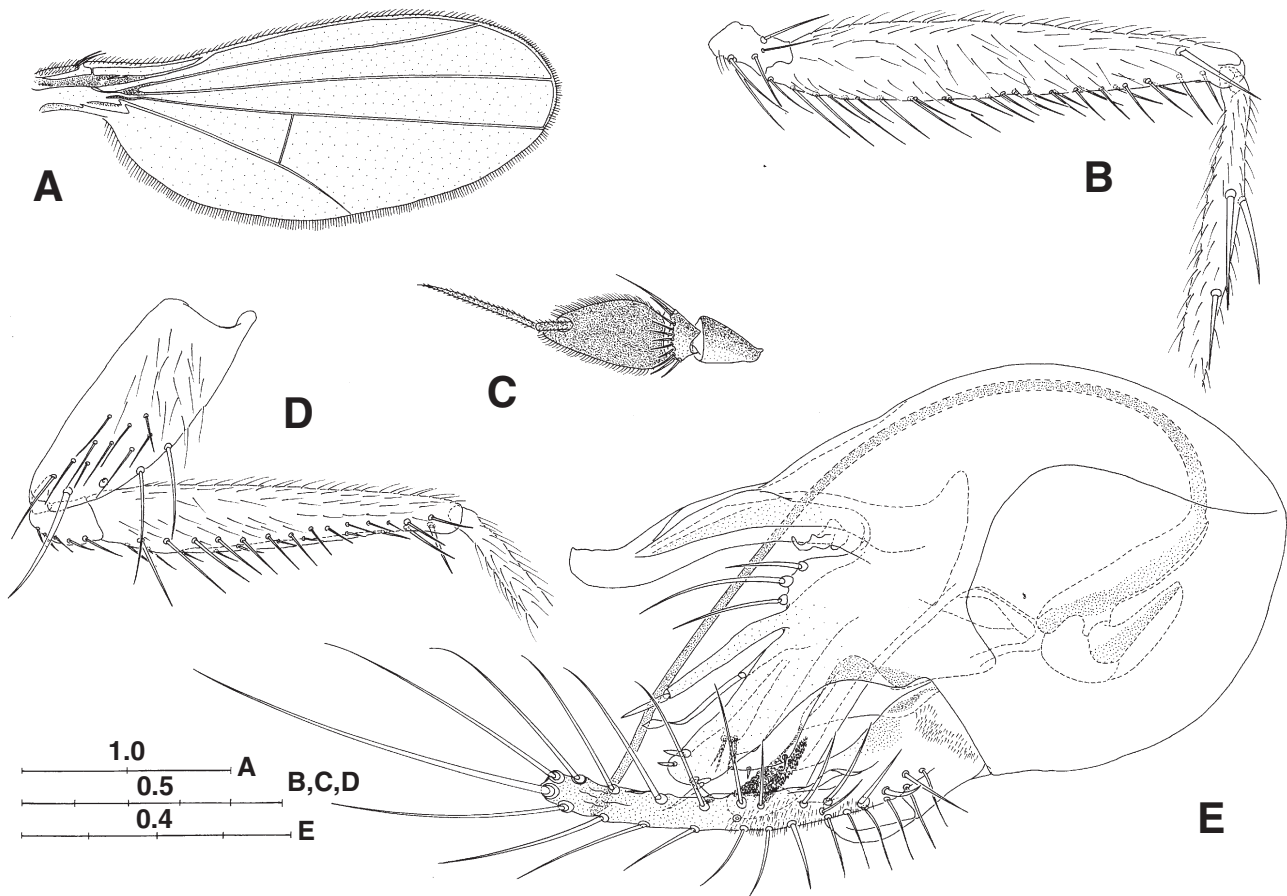


Figure 16. *Australachalcus browni* sp. nov. (male). A, wing; B, femur II; C, antenna; D, femur I; E, hypopygium.

Arista 0.8× as long as first three joints of antenna, distinctly subapical, with short pubescence (Fig. 16C).

Thorax entirely dark brown with slight green metallic reflection, with only postalar area slightly paler. Nine ac, more than 2× as long as distance between rows. One (broken off) sutural bristle present. Several small bristles present between dc 1–3, ps and sutural bristles.

Abdomen entirely dark brown with black genital capsule. **Hypopygium** with simple hypandrium; aedeagus dark, very long and rather straight; ventral bristle of surstylus with apical flag; VEP and DEP evident; postgonites whitish; cercus moderately large, ribbon-shaped (Fig. 16E).

Wing. Halter pale. Wing rather pale, with R_{4+5} and M_{1+2} slightly diverging; R_{4+5} curved. Proximal section of vein CuA_1 1.9× as long as apical section; CuA_x ratio 1.7. Wing length 2.4–2.5 mm ($n = 3$) (Fig. 16A).

Legs including coxae mainly pale yellow with tarsi (especially of leg III) darker. Femur I with erect ven-

tral bristle at basal 1/7, slightly longer than femur is deep, basad of av row of strong bristles, decreasing in length towards apex; most basal bristles erect, apical ones inclined towards apex; with two pv preapical bristles (Fig. 16D). Femur II with one row of strong inclined pv bristles on whole length, decreasing in length towards apex, basal bristles about as long as femur is deep; with one strong ad and one strong pv preapical bristles (Fig. 16B). Femur III with one ad (lacking) and one strong av preapical bristles. Tibia I and II whitish yellow, tibia I without dorsal bristles; tibia II with two strong ad and one rather strong pd bristles; ad bristles inserted at less than basal 1/3 and at middle, basal bristles forming ad-pd couple; tibia III with three moderate ad and three moderate pd bristles, without distinct erect setae among dense pubescence. Tarsus I whitish yellow with 4th and 5th tarsomeres very slightly infuscated, tarsus II pale yellow; tarsus III brownish yellow with 1st tarsomere somewhat paler. First tarsomere of leg III 0.8× as long as 2nd tarsomere. Body length 2.5–3.0 mm ($n = 3$).

Female. As in male, except for the following: face pale brown, very wide below antennae, distance between eyes at narrowest wide about 3× as wide as ocellus. Palp rectangular, reddish yellow with dark apex, 1/5 of eye. Antenna with 1st flagellomere brown with basal half paler; 1st flagellomere 1.4× as long as deep and 1.1× as long as scape and pedicel combined; arista 1.1× as long as first three joints of antenna. Femora distinctly infuscated dorsally along whole length, especially femur I. Femur II and III with dense, rather strong av and pv pubescence. Abdomen with six pubescent segments; 8th segment conical with six long setae instead of dornen; cercus slender, brownish. Body length 3.0 mm, wing length 2.5 mm.

Etymology. Species named in honour of Brian Brown (Natural History Museum of Los Angeles County, Los Angeles, USA), who initiated my interest in Costa Rican dolichopodid biodiversity and provided me with numerous Malaise trap samples.

Holotype. 1♂, COSTA RICA: San José, Zurqui de Moravia, 1600 m, iv.1991 (*Hanson*) (INBio; W).

Allotype. 1♀, same data.

Other paratypes. COSTA RICA: 1♂, San José, Zurqui de Moravia, 1600 m, vii.1991; 1♂, vi–vii.1993, MT (*Hanson*) (INBio; W, wing, antenna, leg I and II, and hypopygium of latter ♂ mounted).

AUSTRALACHALCUS CUMMINGI SP. NOV. (FIG. 17)

Male. Rather small, slender species. *Head.* Face dark brown, heavily dusted, as wide as ocellus. Frons dark brown. Occiput distinctly concave dorsally, dark brown. All postocular bristles dark. Palp small (1/6 of eye), ovoid, dark brown. Antenna with scape and pedicel yellow, slightly infuscated dorsally; first flagellomere entirely dark brown, elongate triangular, about 2× as long as deep and 1.6× as long as scape and pedicel combined. Arista 0.8× as long as first three joints of antenna, distinctly subapical, practically bare.

Thorax. Mesonotum including pleura shining brown with greyish lines along ac and dc; humeri and notopleura yellowish brown with scutellum brown with yellowish lateral corners. Postnotum slightly paler than pleura, with distinct triangular black frontolateral margin. Metapleura entirely dark brown. nine ac, less than 1.5× as long as distance between rows. One small sutural bristle present. About three small bristles present between dc 1–2, ps and sutural bristles.

Abdomen with first three abdominal tergites yellowish brown with dark caudal edge, from posterior half

of 4th onwards (including genital capsule) blackish brown; with strong marginal bristles. Sternites greyish brown. *Hypopygium* with simple hypandrium with raised apical rim; aedeagus dark, straight and slender; ventral bristle of surstylus with apical flag; VEP and DEP evident; postgonites robust and dark; cercus large, lamelliformous, with strong apical and dorsal bristles (Fig. 17).

Wing. Halter and wing pale, latter with R_{4+5} slightly curved; R_{4+5} and M_{1+2} nearly converging at apex. Proximal section of vein CuA_1 1.3× as long as apical section; CuA_x ratio 2.6 x. Wing length 2.6–2.7 mm ($n = 2$).

Legs including coxae and trochanters mainly pale yellow, with leg III darker. Femur I with erect ventral bristle at basal 1/4, longer than femur is deep, basad of row of erect av bristles, decreasing in length towards apex; two most basal av bristles distinctly longer than apical ones; with two pv preapical bristles. Femur II with 1–2 very strong (about 1.5× femur depth) erect av bristles at extreme base, followed by short inclined setae until apex; with one strong ad and one av preapical bristles. Femur III dark yellow, slightly infuscated dorsally, with one row of inclined equal-sized rather strong (1/2–1/3 of femur depth) av bristles; with one moderately strong ad, inserted in lower 1/3, and one av preapical bristles. Tibia I without dorsal bristles; tibia II with one rather small (1/9 of tibial length) ad and one rather small pd bristles; basal bristles inserted at basal 1/3, forming ad-pd couple; with multiple ventral rows of short spine-like bristles on apical 2/3; tibia III brownish yellow, slightly swollen towards apex, with two small ad and three small pd bristles; with dense pubescence and distinct ventral setae. All tarsi with 5th tarsomere dark; tarsus I pale yellow, from 2nd tarsomere gradually darkened, slightly dorsoventrally flattened; tarsus II dark yellow, gradually darkened; tarsus III entirely brown. First tarsomere of leg III as long as 2nd tarsomere.

Female. Unknown.

Etymology. Species named in honour of Jeffrey Cumming (Invertebrate Biodiversity, Agriculture and Agri-Food Canada, Ottawa), who supported my study of the Chilean achalcine specimens from the CNC.

Holotype. 1♂, CHILE: Region de la Araucania, Prov. Malleco, Gualletue, 1200 m, 9–14.xii.1963 (*L. Peña*) (CNC; D, hypopygium mounted).

Paratypes. CHILE: 1♂, Region del Maule, Prov. Curicó, Curicó, El Coigual, 20–26.i.1964 (*L. Peña*) (CNC; D, lacking hypopygium).

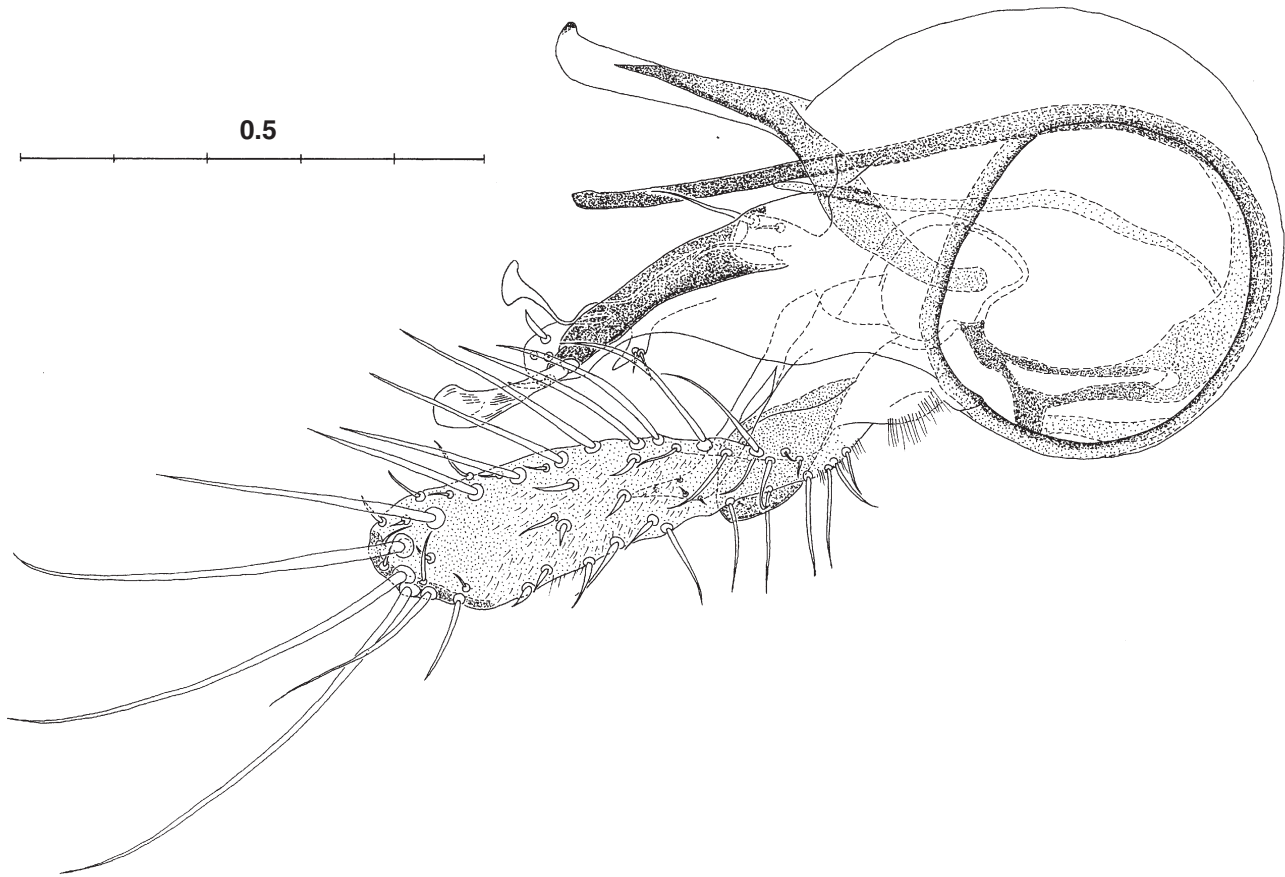


Figure 17. *Australachalcus cummingi* sp. nov. (male). Hypopygium.

AUSTRALACHALCUS EDWARDSAE (VAN DUZEE)

COMB. NOV. (FIGS 18, 19)

Achalcus edwardsae Van Duzee, 1930: 24

Enlinia edwardsae (Van Duzee), 1930: 24

Male. Small, rather stout species. **Head.** Face yellow, not as wide as ocellus, eyes almost touching. Frons dark brown. Occiput flat, dark brown, shining. Uppermost seven postoculars black, lower eight brownish. Palp small ($1/5$ of eye), triangular, yellow, infuscated at apex. Antenna entirely pale yellow with first flagellomere blunt-tipped, $1.1\times$ as long as deep and $0.7\times$ as long as scape and pedicel combined. Arista $2.1\times$ as long as first three joints of antenna, inserted basodorsally on outer face, black with extreme base pale; with 1st segment very long and distinctly curving; with microscopic pubescence (Fig. 18C).

Thorax. Mesonotum and scutellum reddish yellow with brown spot on prescutellar depression extending upon scutellum. Pleura pale brown. Postnotum concolorous with mesonotum with frontolateral part pale brown with small black triangle, and large pale brown

spot on dorsum. Metapleura with lower half white, uppermost half pale brown. Five ac, $1.5\times$ as long as distance between rows. One small sutural bristle present.

Abdomen with tergites brown; 1st tergite paler and without dorsocentral marginal bristles; 2nd and 3rd sternites whitish with brown tinge, 4th and 5th pale brown, 5th sternite with caudal incision. Genital capsule pale brown. **Hypopygium** with apicoventrally spined hypandrium; aedeagus enlarged well before bifurcate apex; midventral bristle of surstylus simple (Fig. 18F); VEP evident, postgonites pale, DEP not evident; cercus small, elongate triangular (Fig. 18E, G).

Wing. Halter pale. Wing remarkable, very broad with eight distinct brown spots, with R_{4+5} and M_{1+2} curved, distinctly diverging. Proximal section of vein CuA_1 $1.1\times$ as long as apical section; CuA_x ratio 2.1. Wing length 1.9–2.2 mm ($n = 11$) (Fig. 18A).

Legs including coxae yellowish white, with femora I and III and apical tarsomeres infuscated. Coxa I with

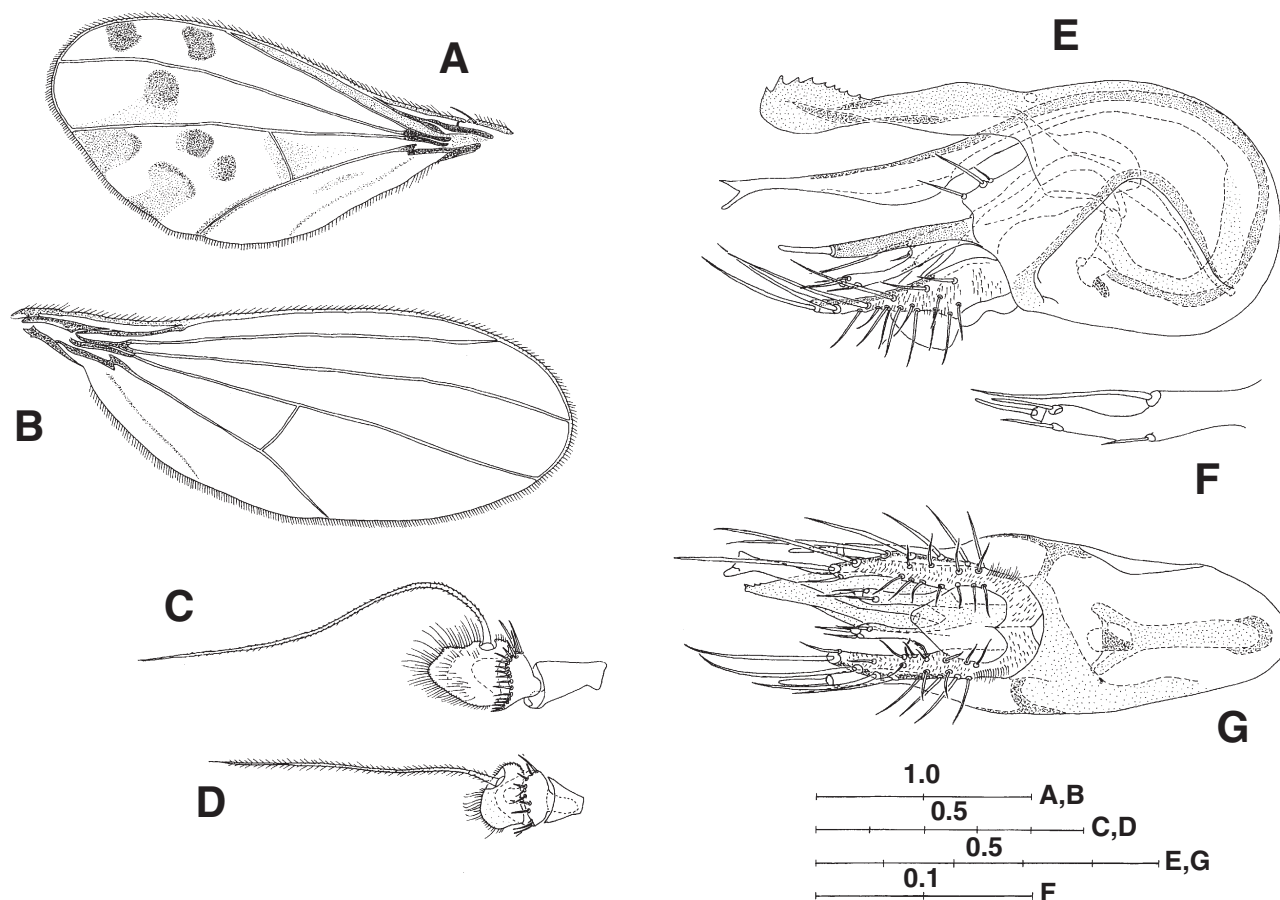


Figure 18. *Australachalcus edwardsae* (Van Duzee) (male, unless mentioned otherwise). A, wing; B, female wing; C, antenna; D, female antenna; E, hypopygium, lateral view; F, surstylus; G, hypopygium, dorsal view.

very dense white microscopic pubescence. Trochanters slightly infuscated. Femur I greyish, with basal 1/3 white due to dense microscopic pubescence; with one erect ventral bristle, basad of row of 4–5 erect bristles in basal half, bristles about half as long as femur is deep; with one strong av and one strong pv preapical bristles (Fig. 19). Femur II with one strong ad, inserted rather low, one rather strong av and one strong pv preapical bristles. Femur III yellowish white, pale brown on apical 3/5, with dark knee; with one strong ad and one strong av preapical bristles. Tibia I white, without dorsal bristles; tibia II with two strong ad and one strong pd bristles (1/6 of tibial length), ad bristles inserted at basal 1/5 and 3/5; tibia III with two moderately large ad, three moderately large pd bristles and 3–4 small erect ventral setae. Tarsus I with 1st to 3rd tarsomere white, 1st tarsomere infuscated on base, and 4th and 5th tarsomeres contrastingly black; tarsus II yellowish white with 5th tarsomere darker; tarsus III brownish yellow, contrastingly darker than tibia. First tarsomere of leg III

0.9× as long as 2nd tarsomere. Body length 1.4–1.7 mm ($n = 11$).

Female. Considerably different from male. Face about as wide as ocellus. Palp ovoid, more than 1/4 of eye. Antenna with first three antennal joints infuscated, at least dorsally; 1st flagellomere entirely infuscated, 0.6× as long as deep and 0.6× as long as scape and pedicel combined; arista straight, 2.8× as long as first three joints of antenna (Fig. 18D). Abdomen with yellowish to dark brown tergites; sternites of 4th and 5th segment greyish brown, and of 6th segment dark brown; 7th and 8th segment shining, black brown, telescopic; apex of 8th segment reddish yellow, with eight short dornen; cercus brown, slender. Wing clear, with costal cell slightly infuscated; proximal section of CuA_1 1.8× as long as apical section; CuA_x ratio 1.8 (Fig. 18B). Legs including trochanters whitish yellow, with femora slightly infuscated on apical half dorsally. Wing length 2.4–2.7 mm ($n = 5$).

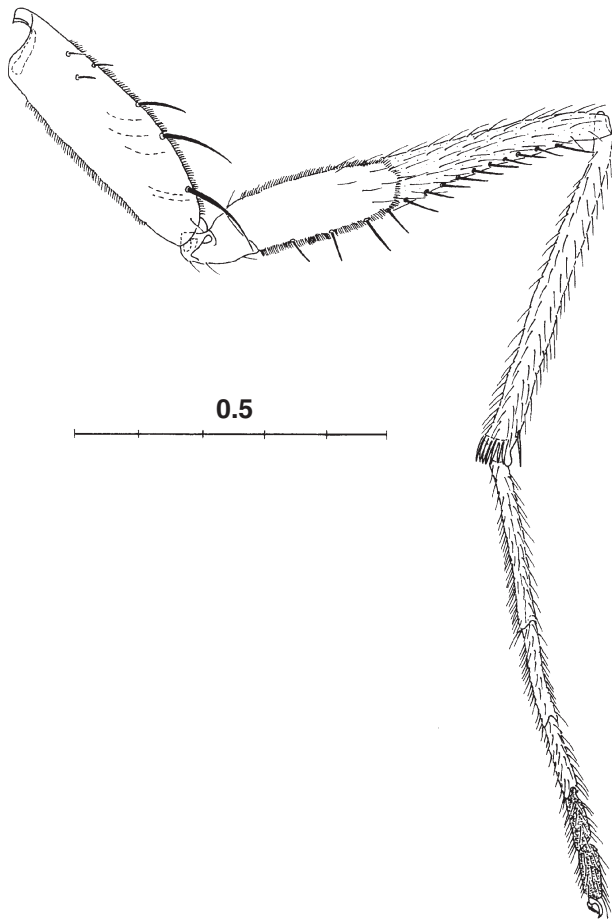


Figure 19. *Australachalcus edwardsae* (Van Duzee) (male). Leg I.

Holotype. 1♂, CHILE: Region del Biobio, Prov. Concepción, Concepción (F. & M. Edwards) (BMNH; D), not examined.

Other material examined. CHILE: Region de los Lagos, Prov. Llanquihue: 1♂, 3♀, 3 km NW Ensenada 41°11'S 72°32'W, 29.i.1998; 1♂, 1♀, 30.i.1998 (Woodley) (USNM; D); Prov. Osorno: 3♂, Lago Puyehue, 80 km E. of Osorno (secondary forest), 17–18.i.1997, YWT (Bickel) (POLLET, CNC; W, antenna, leg I and hypopygium of one ♂ mounted); 1♂, Rio Coihueco, c. 31 km NW Las Cascades 40°54'S 72°44'W, 222 m, 6.i.1998 (Woodley) (USNM; D); Region del Biobio, Prov. Nuble: 1♀, vicinity of Cueva Pincheira, 41 km SE Chillán 36°54'S 71°33'W, 1100 m, 16.ii.1998 (Woodley) (USNM; D); 11♂, 9♀, 40 km E. of San Carlos, 23.xii.1950; 1♂, 24.xii.1950 (Ross & Michelbacher) (CAS; D, wing and antenna of one ♀ mounted).

Remarks. The male antenna as depicted by Van Duzee (1930: plate II, fig. 58) is not very accurate and most

probably the direct result of the shrivelled state of the antenna after mounting.

***Australachalcus incisicornis* SP. NOV. (FIG. 20)**

Male. Rather small and slender species. **Head.** Face dark brown, narrow, not as wide as ocellus. Frons dark brown. Occiput convex with distinct central dorsal concavity, dark brown. Lower postocular bristles distinctly shorter than uppermost ones. Palp minute (1/11 of eye), ovoid, yellowish white; with black pubescence on disc and whitish marginal fringe. Antenna mainly yellow, distinctly infuscated dorsally; first flagellomere triangular, with deep subapical notch, 1.4× as long as deep, and 1.9× as long as scape and pedicel combined. Arista as long as first three joints of antenna, inserted in subapical notch, with microscopic pubescence (Fig. 20B).

Thorax. Mesonotum and scutellum reddish yellow with presutural depression entirely dark and scutellum slightly darkened on disc; with notopleura slightly infuscated and humeri paler. Pleura and postnotum brownish yellow, latter with very small black frontolateral triangle. Metapleura entirely reddish yellow. 7–8 ac, 1.5–2× as long as distance between rows. One small sutural bristle present.

Abdomen, including genital capsule, blackish brown with olive-green shining; tergites with very strong marginal bristles; 6th tergite small, 5th sternite with caudal incision. **Hypopygium** with apicoventrally spined hypandrium; aedeagus with two free-ended subapical lateral processes; midventral bristle of surstylus simple; VEP evident, postgonites pale, DEP not evident; cercus very small, tapering, with long black apical bristle (Fig. 20C).

Wing. Halter distinctly black. Wing slightly darkened, costal cell darker, with R_{4+5} curved; R_{4+5} and M_{1+2} diverging at apex. Proximal section of vein CuA_1 2.5× as long as apical section; CuA_x ratio 1.5. Wing length 2.5–2.7 mm ($n = 3$) (Fig. 20A).

Legs. Including coxae whitish yellow, largely infuscated. Coxa I with whitish, dense, short pubescence and black, small marginal and large apical bristles. Femur I with erect ventral bristle, less than half as long as femur is deep, basad of row of rather short av bristles along whole length, decreasing in length towards apex; with two strong pv preapical bristles. Femur II with basal 1/3 whitish yellow, then abruptly blackish on apical 2/3; with one strong ad, one av and one pv preapical bristles. Femur III with basal 1/3 whitish yellow and dorsal, ventral and entire apical 2/3 blackish; with one thin but long ad, inserted in lower 1/3, one very strong av and one small preapical pv bristles. Tibia I blackish, except for extreme base, without dorsal bristles; tibia II whitish yellow, infus-

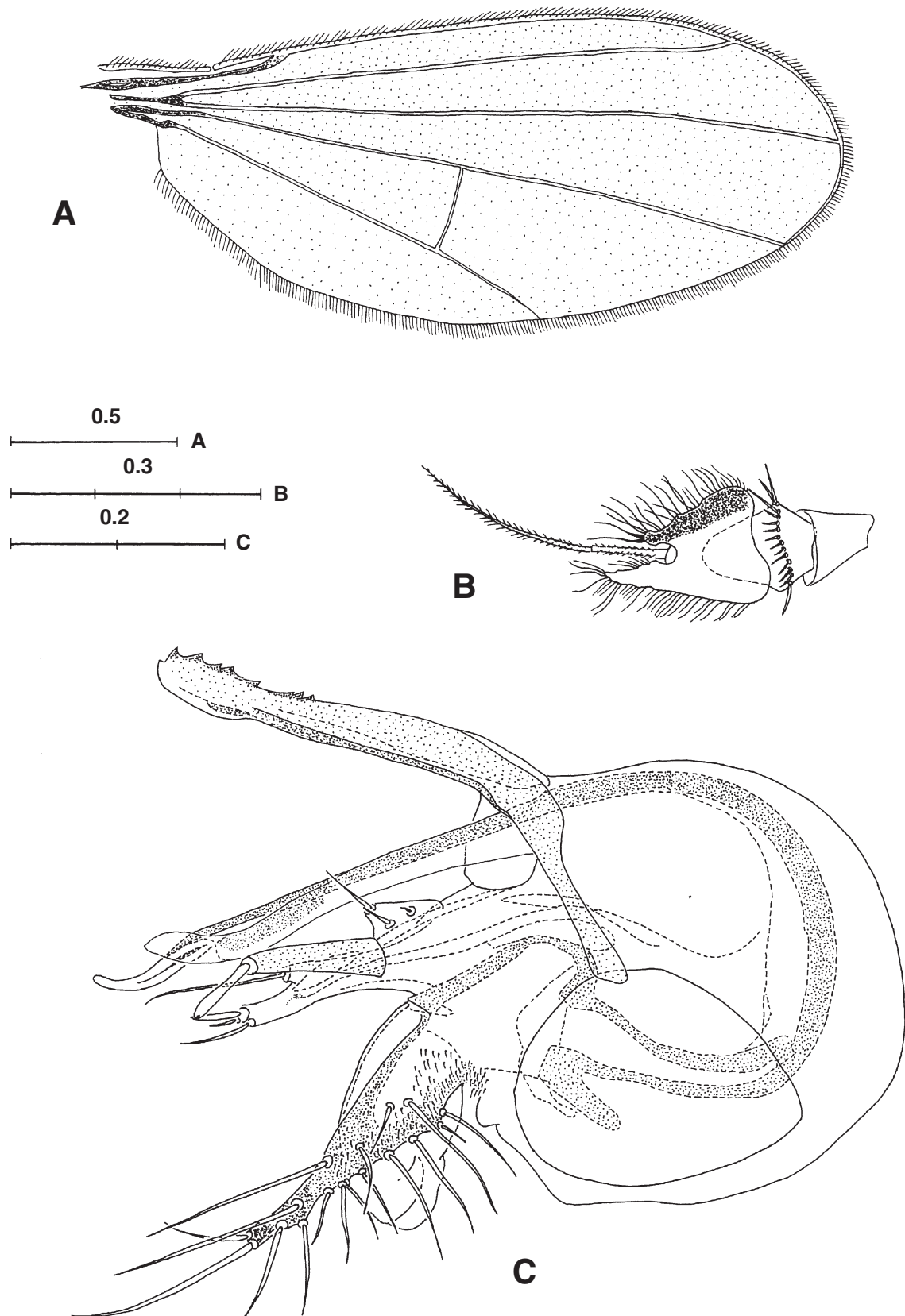


Figure 20. *Australachalcus incisicornis* sp. nov. (male). A, wing; B, antenna; C, hypopygium.

cated at middle with two strong ad and one strong pd bristles, basal bristles not forming ad-pd couple; tibia III brownish, with three ad and three pd bristles, dense pd pubescence and a few ventral setae. Tarsus I and II brown with 5th tarsomere black; tarsus III entirely black. First tarsomere of leg III $0.7\times$ as long as 2nd tarsomere. Body length 1.8–2.1 mm ($n = 3$).

Etymology. Refers to the distinct subapical notch of the 1st flagellomere in this species.

Holotype. 1♂, CHILE: Region de los Lagos, Prov. Chiloé, Isla Chiloé, Dalcabue, 17–31.i.1962 (*L. Peña*) (CNC; D, hypopygium mounted).

Paratypes. CHILE: 2♂, Region Aisen, Prov. Aisen, Puerto Cisnes $44^{\circ}45'S$ $72^{\circ}40'W$, 1–15.ii.1961 (*L. Peña*) (CNC; D, antenna, wing and hypopygium of 1♂ mounted).

AUSTRALACHALCUS LONGICORNIS (VAN DUZEE)

COMB. NOV. (FIGS 21, 22)

Achalculus longicornis Van Duzee, 1930: 22

Male. Rather large, slender species. *Head.* Face blackish brown, dusted, about as wide as ocellus (undetermined in holotype due to strong shrinkage of head). Frons dark brown. Occiput concave, dark brown, shining. Palp about $1/4$ of eye, ovoid circular, brownish yellow, with dark outer margin. Antenna dark brown with ventral half of pedicel whitish yellow on outer face; first flagellomere elongate triangular, rather tapering, $2.3\times$ as long as deep and $1.9\times$ as long as scape and pedicel combined. Arista $0.7\times$ as long as first three joints of antenna, distinctly subapical (Fig. 21B).

Thorax including metapleura dark brown with alar and lateral scutellar areas yellowish. Eight ac, $2\times$ as long as distance between rows. One rather strong sutural bristle present. Small additional bristles present between ps, sutural and dc 1–2.

Abdomen, including genital capsule, shining brown; tergites with strong marginal bristles, especially on 1st tergite; 6th tergite less than $1/3$ as long as 5th. *Hypopygium* (Fig. 22B) with apicoventrally spined hypandrium; aedeagus robust, with asymmetrical enlargement near apex (Fig. 22A, B); midventral bristle of surstylus with apical flag; VEP and DEP evident; postgonites large, with dark apex; cercus rather short, narrow, with three flat apical bristles (Fig. 22C).

Wing. Halter dark. Wing very slightly infuscated, with R_{4+5} gently curved and M_{1+2} straight; both veins parallel at wing apex. Proximal section of vein CuA_1 $3.4\times$ as long as apical section; CuA_x ratio 0.9. Wing length 2.6–3.1 mm ($n = 2$) (Fig. 21A).

Legs including coxae mainly pale yellow, with femora and entire leg III largely infuscated. Coxa II and III reddish yellow. Trochanters of legs I and II pale yellow, reddish brown in leg III. Femur I infuscated dorsally along whole length, with one erect ventral bristle at less than basal $1/5$, about as long as femur is deep; with one row of small inclined av bristles along whole length; with one strong pv preapical bristle (Fig. 21C). Femur II very slightly infuscated dorsally, with 3–4 very strong (longer than femur is deep) erect av bristles at extreme base; with one strong ad preapical bristle inserted rather anteriorly. Femur III brownish yellow, strongly infuscated on dorsal half; with one row of strong av bristles in apical $1/3$ (not visible in Fig. 21D) and one row of perpendicular short but strong pv bristles on basal half; with one rather small ad, inserted in lower $1/3$, and one rather weak av preapical bristles (Fig. 21D). Tibia I yellow, without dorsal bristles; tibia II whitish yellow with two moderate ad and one moderate pd bristles, basal bristles forming no clear ad-pd couple; tibia III brownish yellow, darkened on apical $1/4$, with two small ad and four small pd bristles. Tarsus I yellow with 5th tarsomere dark; tarsus II whitish yellow, gradually darker towards apex with 5th tarsomere dark; tarsus III entirely dark brown. First tarsomere of leg III as long as 2nd tarsomere.

Female. Unknown.

Remarks. During the examination of the holotype, the long ventral bristle on the 3rd tarsomere of leg I, regarded as a diagnostic feature by Van Duzee (1930: fig. 55, plate II), appeared to be an artefact. The bristle was not inserted and only present on one of the legs.

Holotype. 1♂, CHILE: Region de los Lagos, Prov. Llanquihue, Casa Pangué, 4–10.xii.1926 (*F. & M. Edwards*) (BMNH; D, hypopygium mounted), examined. Labels: 'Casa Pangué'/'S. Chile: Llanquihue prov. F. & M. Edwards BM 1927–63'/'*Achalculus longicornis* HOLOTYPE Van Duzee'.

Other material examined. CHILE: 1♂, Region de los Lagos, Prov. Chiloé, Isla Chiloé, Dalcabue, 17–22.i.1962 (*L. Peña*) (CNC; D, antenna, wing, leg I and II mounted).

AUSTRALACHALCUS PSEUDOROBUSTUS SP. NOV.

(FIG. 23)

Male. Small and stout species. *Head.* Face pale brown, slightly wider than ocellus. Frons dark brown. Occiput convex ventrally and distinctly concave dorsally, dark brown, shining. Uppermost postocular bristles black, lower ones brown. Palp very small ($1/10$ of eye), ovoid, almost circular, dark brown. Antenna largely dark with scape with pale spot at extreme base and pedicel

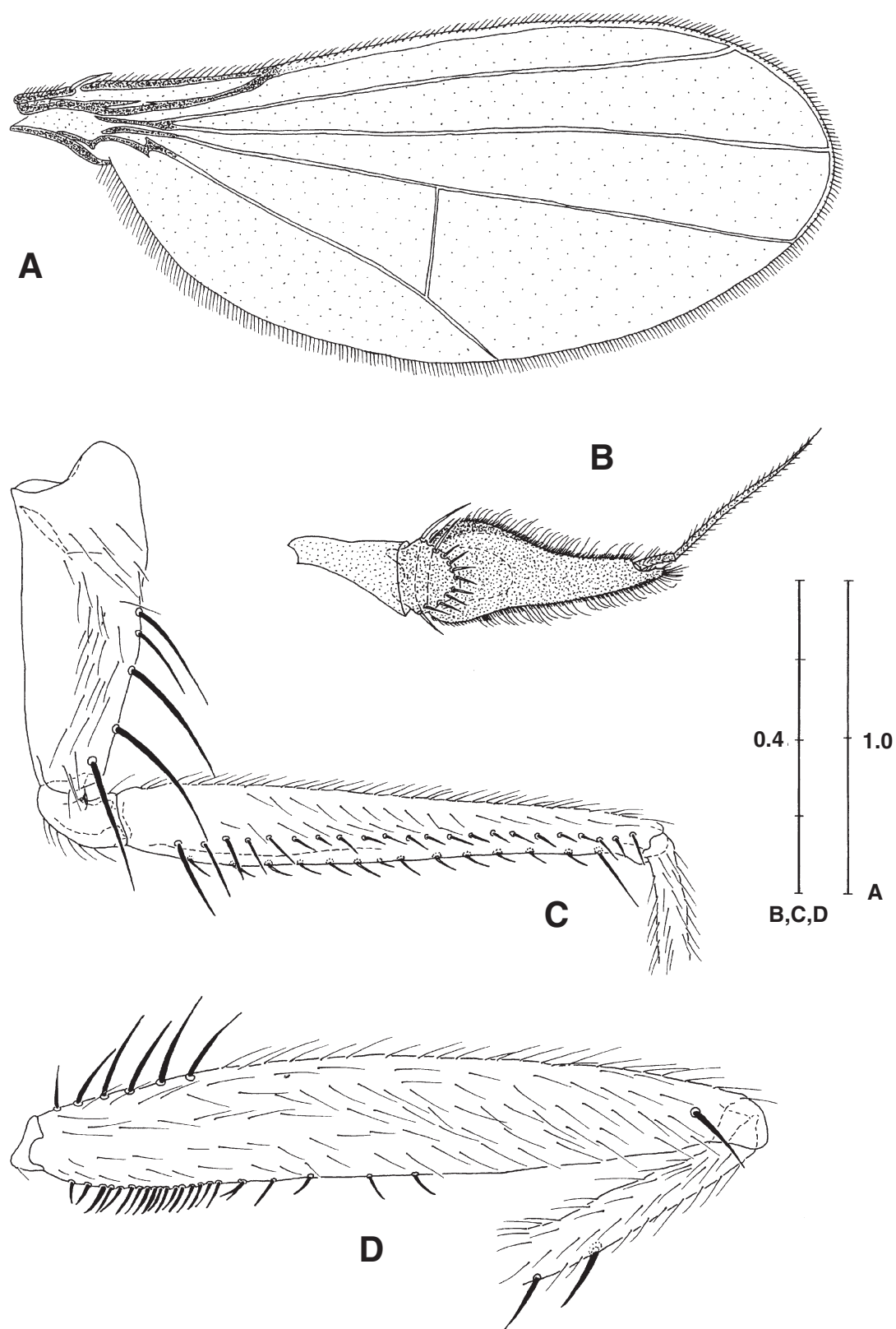


Figure 21. *Australachalcus longicornis* (Van Duzee) (male). A, wing; B, antenna; C, coxa and femur I; D, femur III, posterior view.

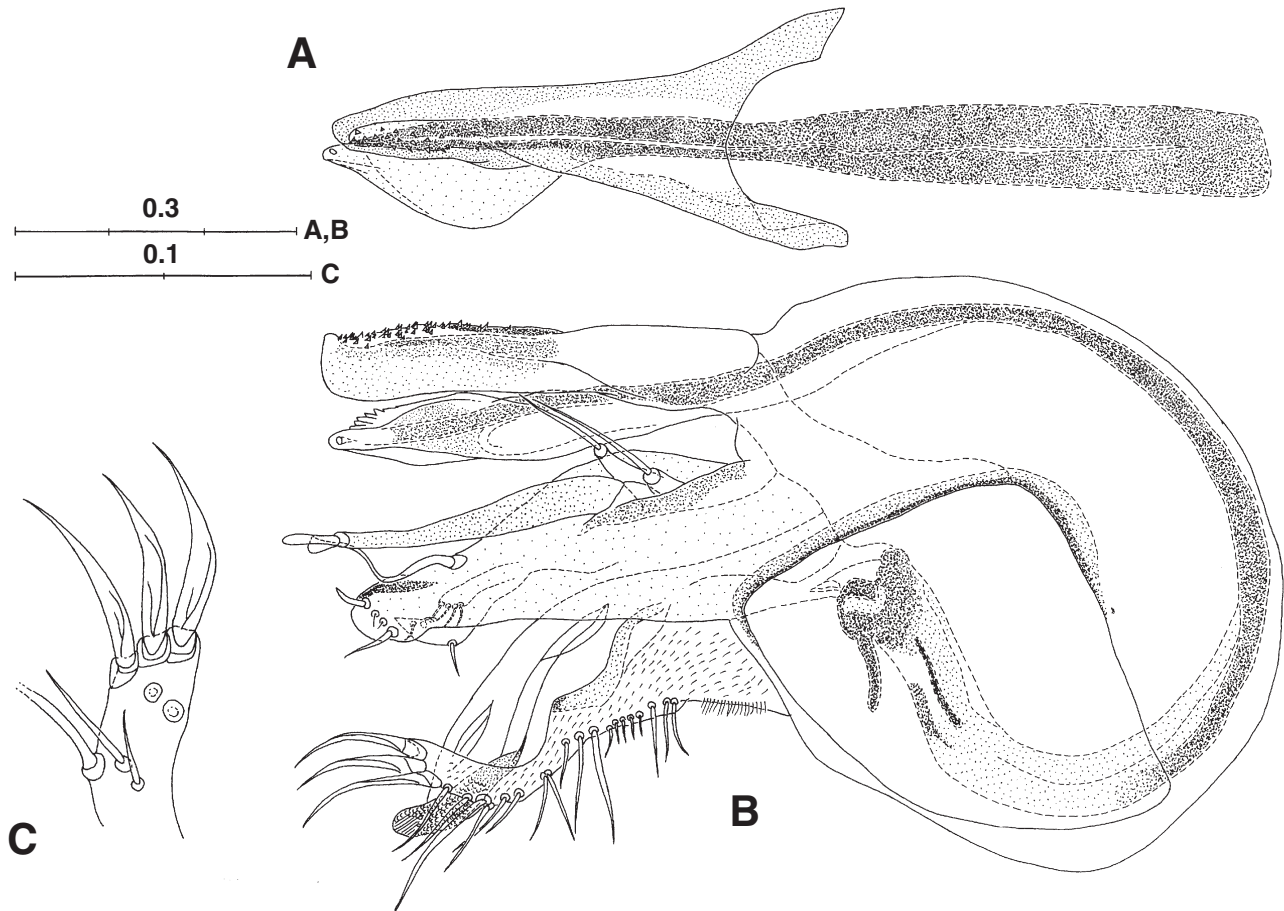


Figure 22. *Australachalcus longicornis* (Van Duzee) (male). A, hypandrium and aedeagus, ventral view; B, hypopygium; C, apex of cercus, dorsal view.

reddish yellow on ventral half on inner face; first flagellomere dark, paler on extreme base, elongate triangular, about $1.8\times$ as long as deep and $2\times$ as long as scape and pedicel combined. Arista $0.6\times$ as long as first three joints of antenna, distinctly subapical, with microscopic pubescence.

Thorax including metapleura blackish brown with scutellum dark reddish brown. Six ac, $2\times$ as long as distance between rows. One fairly strong sutural bristle present. About three small bristles present between ps, sutural and 1st and 2nd dc.

Abdomen blackish brown with olive-green shining, genital capsule dark brown. Tergites with strong marginal bristles. **Hypopygium** with apicoventrally spined hypandrium; aedeagus with recurrent apical process; midventral bristle of surstylus with apical flag; VEP not evident; DEP and postgonites evident; cercus moderately developed, rectangular with somewhat enlarged apex (Fig. 23).

Wing. Halter pale. Wing slightly infuscated, with R_{4+5} hardly curving, R_{4+5} and M_{1+2} hardly diverging towards

wing apex. Proximal section of vein CuA_1 $2.0\times$ as long as apical section; CuA_x ratio 1.6. Wing length 2.1 mm.

Legs pale yellow with mainly dark coxae and dorsally infuscated femora. Coxa I yellow, distinctly infuscated brownish anteriorly; coxa II and III brown. Trochanters whitish yellow; trochanters of leg II with long black bristles. Femur I and II slightly infuscated dorsally, femur III distinctly infuscated on dorsal half; femur I with erect ventral bristle at basal $1/6$, $1.5\times$ as long as femur is deep, basad of three small erect av bristles till middle of femur followed by small inclined bristles till apex; with one small ad and two moderately strong pv preapical bristles. Femur II with one strong (as long as femur depth) erect av bristle at extreme base, rest of basal half bare; with one row of strong (two basal bristles as long as femur depth) rather erect pv bristles, decreasing in length towards apex; with one strong ad, one av and two pv preapical bristles. Femur III with one row of rather strong inclined av bristles, weakest at middle (basal bristles longer than $0.5\times$ femur depth); with one weak ad, inserted in lower $1/3$, and one very strong av preapical

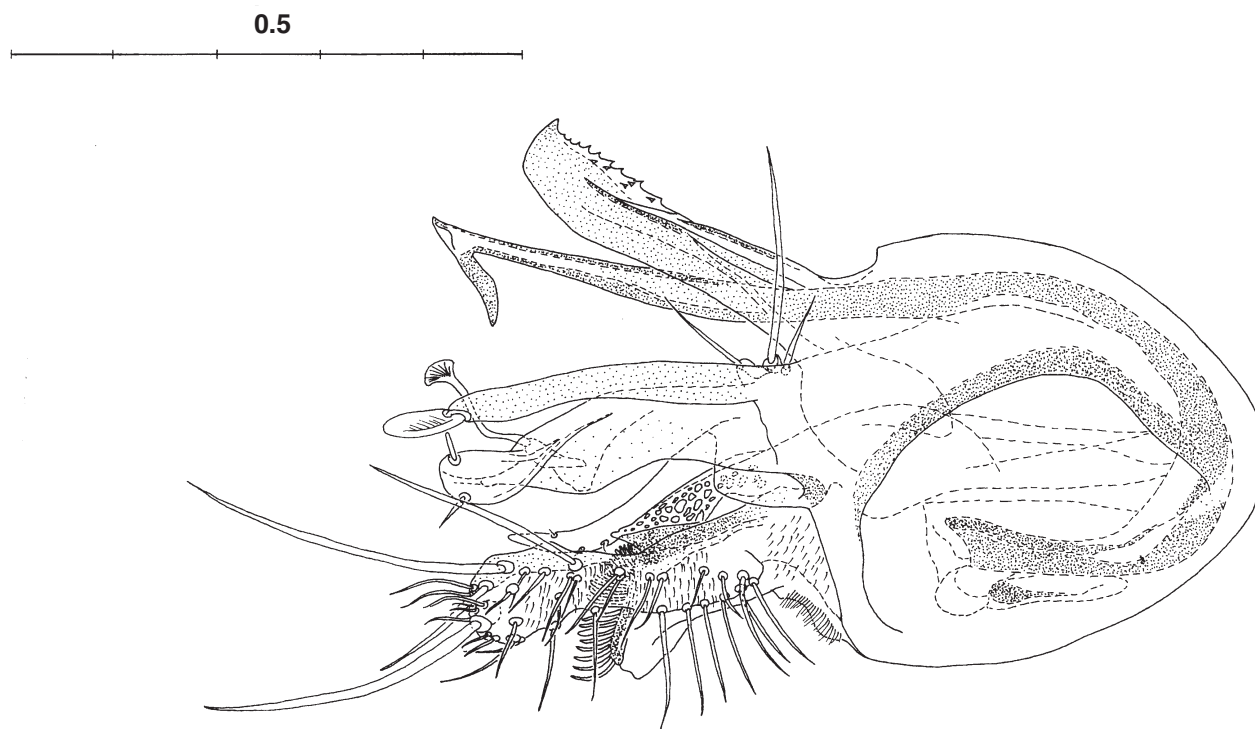


Figure 23. *Australachalcus pseudorobustus* sp. nov. (male). Hypopygium.

bristle. Tibia I and II whitish yellow, tibia III dark yellow; tibia I without dorsal bristles; tibia II with one small (1/10 of tibial length) ad and one small pd bristles, basal bristles forming ad-pd couple at basal 1/3; tibia III distinctly swollen, with two ad and two pd bristles; with dense pd and ventral pubescence, without distinct ventral setae. Tarsus I pale yellow with apex of 4th and with 5th tarsomere dark; tarsus II yellow, darker from 2nd tarsomere onwards with 5th tarsomere dark; tarsus III entirely brown. First tarsomere of leg III 0.8× as long as 2nd tarsomere. Body length 2.0 mm.

Female. Unknown.

Etymology. Refers to the resemblance of this species to the closely related *A. robustus* described below.

Holotype. 1♂, CHILE: Region del Maule, Prov. Curicó, Curicó, Estero La Jaula (*Nothofagus*), i.1964 (*L. Peña*) (CNC; D, hypopygium mounted).

AUSTRALACHALCUS ROBUSTUS SP. NOV. (FIG. 24)

Male. Small, stout species. *Head.* Face dark brown, 1.5× as wide as ocellus. Frons dark brown. Occiput distinctly concave dorsally, dark brown. Palp small (1/6 of eye), ovoid circular, small, dark brown. Antenna almost entirely dark with pedicel reddish yellow on ventral half on inner face; first flagellomere rounded

triangular with acute apex, 1.6× as long as wide and 1.6× as long as scape and pedicel combined. Arista as long as first three joints of antenna, distinctly subapical, with microscopic pubescence (Fig. 24C).

Thorax including metapleura blackish brown with olive-green reflection; humeri with minute yellow spot. Pleura and postnotum dark brown, postnotum with black frontolateral margin. 5–6 very strong ac, more than 2× as long as distance between rows. One small sutural bristle present. About three small bristles present between ps, sutural and 1st and 2nd dc.

Abdomen blackish with olive-green reflection, genital capsule brown. Tergites with very strong marginal bristles; 6th tergite small, 5th sternite with caudal incision. *Hypopygium* with apicoventrally spined hypandrium; aedeagus with recurrent apical process; midventral bristle of surstylus with apical flag; VEP evident; DEP not evident; postgonites dark; cercus rather small, reversed triangular, with strong apical bristles and apical fringe (Fig. 24B).

Wing. Halter pale. Wing very slightly darkened, with R_{4+5} slightly curved; R_{4+5} and M_{1+2} almost parallel at wing apex. Proximal section of vein CuA_1 1.9× as long as apical section; CuA_x ratio 1.6. Wing length 2.1 mm (Fig. 24A).

Legs mainly dark to brownish yellow, femora distinctly infuscated dorsally. Coxae dark brown, only

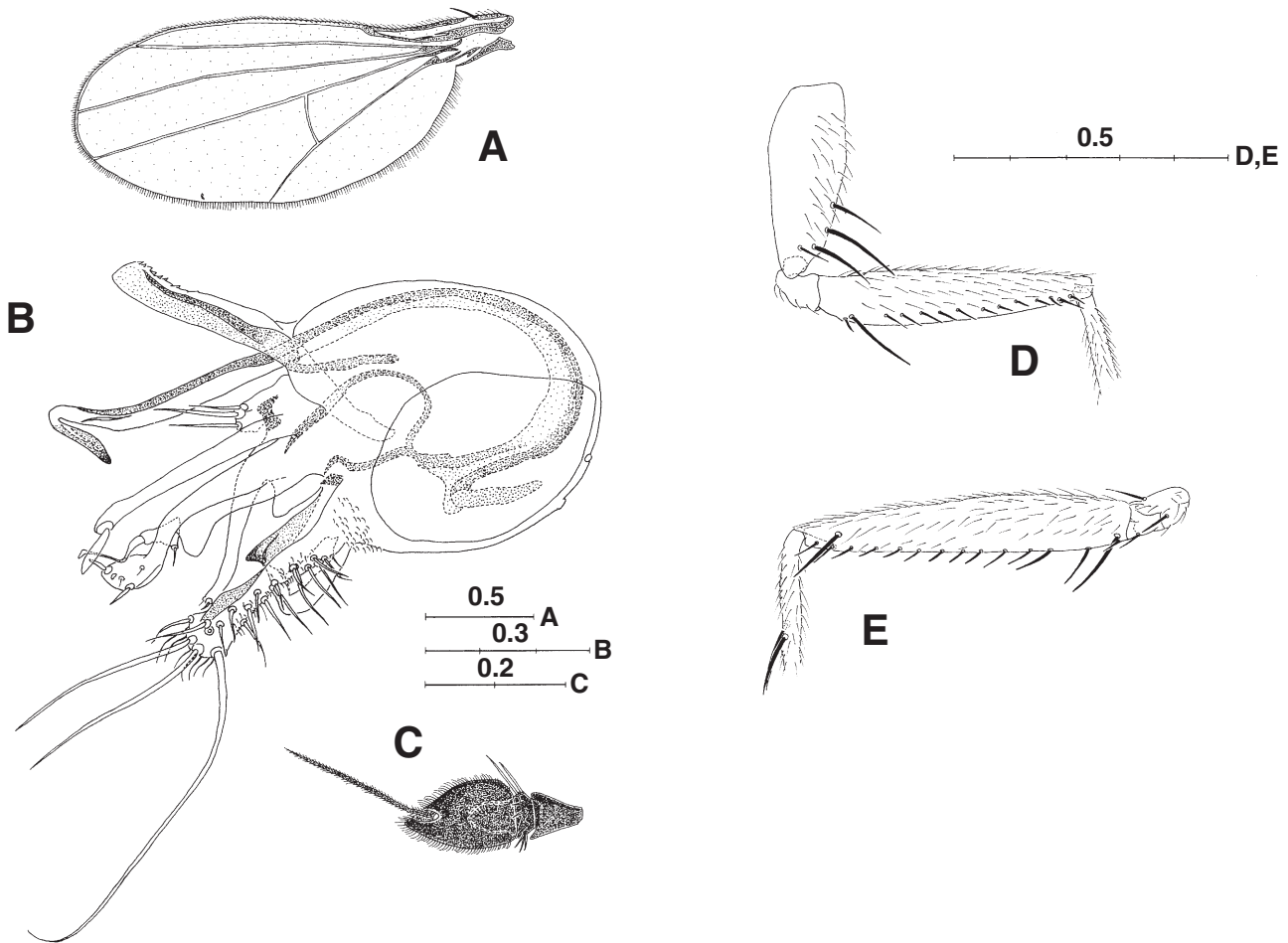


Figure 24. *Australachalcus robustus* sp. nov. (male). A, wing; B, hypopygium; C, antenna; D, coxa and femur I; E, femur II.

coxa I paler at extreme apex. Trochanters whitish yellow. Femur I brownish, darkened dorsally, with one very strong erect ventral bristle at basal 1/6, 1.5× as long as femur is deep, basad of 1–3 small, less erect av bristles on basal 1/3; with two strong pv preapical bristles (Fig. 24D). Femur II dark yellow, distinctly darkened on dorsal half; with one row of 5–6 very strong (basal bristles 1.5× femur depth) erect av bristles in basal half, then decreasing in length towards apex; with one strong ad and one small pv preapical bristles (Fig. 24E). Femur III pale yellow, distinctly infuscated on dorsal half, with one moderately strong ad, inserted in lower 1/3, and one very strong av preapical bristles. Tibia I pale yellow, without dorsal bristles and with dense dorsal and ventral pubescence; tibia II yellow with one very strong (more than 1/5 of tibial length) ad and one very strong pd bristles, basal bristles forming ad-pd couple at basal 1/4; tibia III brownish, gradually swollen towards apex, with one small ad and two small pd bristles; with dense pd and ventral pubescence. Tarsus I dark yellow with 4th and 5th tarsomeres darker; tarsus II darkened with 5th tarsomere dark; tarsus III entirely dark brown. First tarsomere of leg III 0.9× as long as 2nd tarsomere. Body length 1.7 mm.

Female. Unknown.

Etymology. Refers to the robust appearance (stout, compact body shape, relatively short legs) of this species.

Holotype. 1♂, CHILE: Region de los Lagos, Prov. Chiloé, Isla Chiloé, Dalcahue, 17–22.i.1962 (*L. Peña*) (CNC; D, hypopygium mounted).

Paratype. CHILE: 1♂, Region de la Araucania, Prov. Cautin, L. Villarica, 16–25.i.1965 (*L. Peña*) (CNC; M).

AUSTRALACHALCUS SETOSUS SP. NOV. (FIG. 25)

Male. Rather small, slender species. *Head.* Face pale brown, dusted, slightly wider than ocellus. Frons dark brown. Occiput convex ventrally, distinctly concave

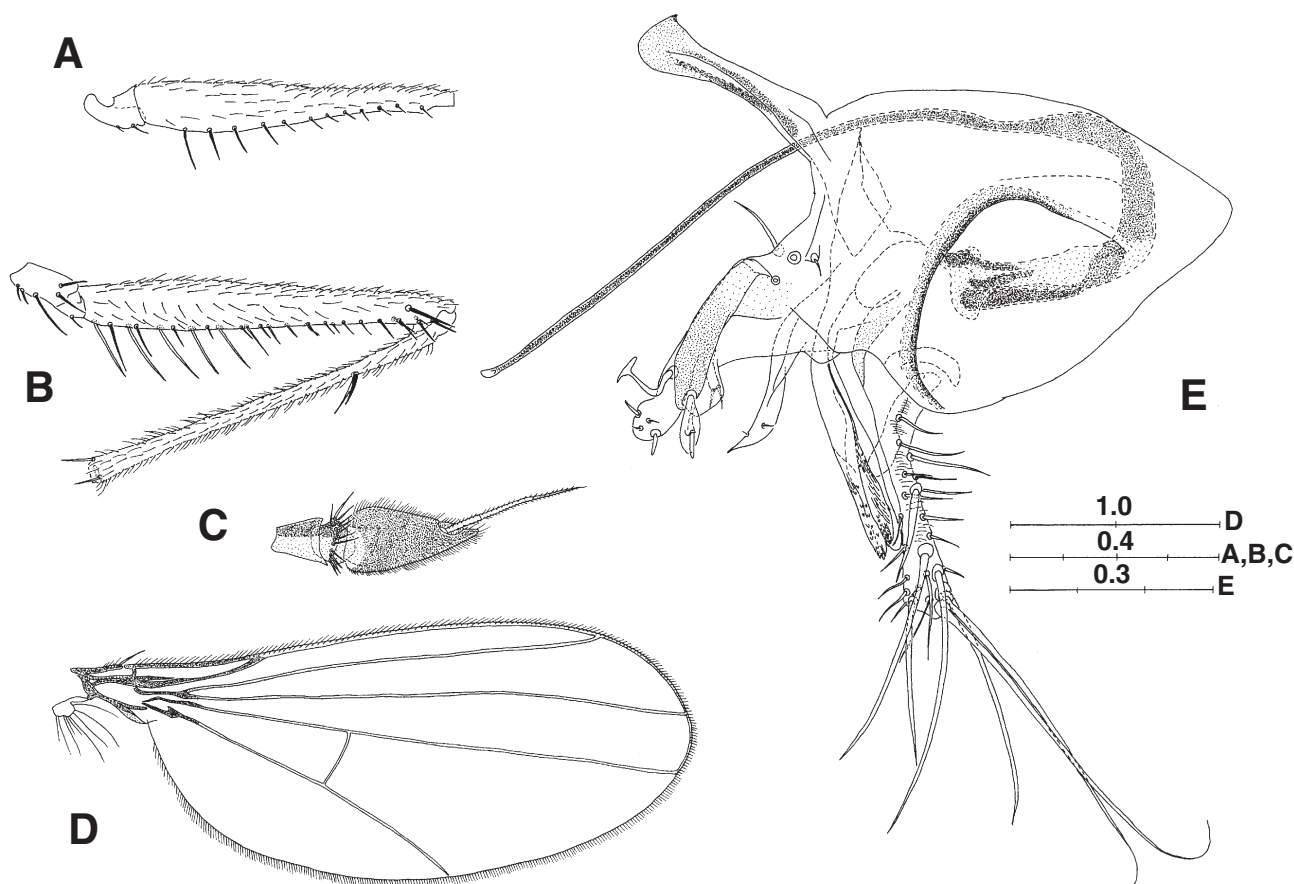


Figure 25. *Australachalcus setosus* sp. nov. (male). A, femur I; B, femur II; C, antenna; D, wing; E, hypopygium.

dorsally, dark brown, shining. Palp small (1/5 of eye), ovoid, whitish. Antenna with scape and pedicel mainly reddish yellow; scape distinctly infuscated dorsally and pedicel with narrow dark apical rim; first flagellomere mainly brown, elongate triangular, $2.2\times$ as long as deep and $1.9\times$ as long as scape and pedicel combined. Arista $0.7\times$ as long as first three antennal joints, distinctly subapical, practically bare (Fig. 25C).

Thorax. Mesonotum and scutellum brown with yellowish dusting; humeri, notopleural areas and lateral parts of scutellum yellowish. Pleura reddish brown. Postnotum contrasting yellowish with rather strong black frontolateral triangle. Metapleura entirely brown. 6–7 ac, more than $1.5\times$ as long as distance between rows. One small sutural bristle present, but without additional bristles.

Abdomen with tergites entirely brown, yellowish to greyish on 1st till 3rd laterally; with strong marginal bristles. Sternites greyish brown. Genital capsule dark brown, moderately developed, with dark aedeagus visible through posterior face. **Hypopygium** with simple hypandrium with raised apical rim; aedeagus dark, extremely thin and straight; epandrial setae

inserted at base of epandrial lobe; midventral bristle of surstylus with apical flag; VEP and DEP evident; postgonites slender, slightly darkened on apex; cercus moderately developed, club-shaped (Fig. 25E).

Wing. Halter infuscated. Wing slightly infuscated, with R_{4+5} hardly curved, R_{4+5} and M_{1+2} parallel. Proximal section of vein CuA_1 $1.3\times$ as long as apical section; CuA_x ratio 2.5. Wing length 2.3–3.0 mm ($n = 9$) (Fig. 25D).

Legs including coxae whitish yellow, with femur II slightly infuscated and femur III infuscated on dorsal half. Femur I with erect ventral bristle at basal 1/9, $0.7\times$ as long as femur is deep, basad of row of strong erect av bristles, decreasing in length towards apex; with three small erect pv bristles at extreme base and some inclined small pv bristles at apex; with one small av and two pv preapical bristles (Fig. 25A). Femur II with one row of erect av bristles, weakest at middle, only basal bristle as long as femur is deep, and one row of very strong erect pv bristles, decreasing in length towards apex; 4–5 basal pv bristles $1.4\times$ as long as femur is deep; with one strong ad and one small av preapical bristles (Fig. 25B). Femur III with one

rather weak ad, inserted in lower 1/3, and one strong av preapical bristle. Tibia I without dorsal bristles; tibia II with two small (1/11 of tibial length) ad and one small pd bristles, basal bristles forming ad-pd couple at basal 1/3; with ventral rows of indistinct slightly erect small spines. Tibia III brownish, slightly dilated at apex, with three very small ad, three very small pd bristles and 2–3 indistinct ventral setae. Tarsus I and II whitish yellow with 5th tarsomere dark; tarsus III entirely brownish. First tarsomere of leg III 0.8× as long as 2nd tarsomere. Body length 2.1–2.6 mm ($n = 9$).

Female. As in male, except for the following: face wider, about 2× as wide as ocellus. Palp 1/5 – 1/4 of eye, pale yellow with dark apical margin. Antenna with scape and pedicel pale yellow, infuscated dorsally; 1st flagellomere with basal half yellow, rounded triangular, 1.2× as long as deep and 1.3× as long as scape and pedicel combined; arista 1.5× as long as first three joints of antenna. Thorax pale brown. Abdomen with six pubescent segments; tergites brown with 1st and 2nd brownish yellow; anterior sternites brownish yellow, posterior ones pale brownish; 8th segment conical, with eight setae instead of dornen; cerci small. Tibia III with 2–3 ad and 3–4 pd bristles. Body length 2.2–2.8 mm, wing length 2.2–2.9 mm ($n = 7$).

Etymology. Refers to the strong av and pv bristles on femur II in this species.

Holotype. 1♂, CHILE: Region del Bernardo O'Higgins, Bosque de los Conservadores Graneros, 1100 m, 1–4.iii.1962 (*L. Peña*) (CNC; D).

Paratypes. CHILE: Region de Valparaiso, Prov. Quilota: 10♂, 39♀, Palma de Ocoa, Parque Nacional Campanas, hillside draw, 32°93'24S 71°07'81W, 215 m, 21.xi–6.xii.1997; 12♂, 75♀, 6–20.xii.1997; 54♀, 20.xii.1997–10.i.1998; 5♂, 5♀, 10–31.i.1998; 8♂, 10♀, 31.i–14.ii.1998; 1♂, 14.ii–7.iii.1998, all MT (*Barria & Irwin*) (INHS; W); Prov. San Felipe de Aconcagua: 3♂, Aconcagua, Valle Los Piuquenes, 7–12.ii.1964 (hypopygium and wing of 1♂ mounted; head of 1♂ lacking); Region del Maule, Prov. Curicó: 1♂, Curicó, El Coigual, 20–26.i.1964 (antenna, leg I and II, and hypopygium mounted) (all *L. Peña*) (CNC; D); Region metropolitana de Santiago, Prov. Santiago: 1♂, 1♀, Queb La Plata, 5 km W. La Rinconada de Maipo, cyn. bottom, 400 m, 24.xi–7.xii.1997, MT (*Barria & Irwin*) (INHS; W).

AUSTRALACHALCUS VARIABILIS SP. NOV.

(FIGS 26, 27)

Male. Rather small, slender species. *Head.* Face pale brown, moderately dusted, 1.5× as wide as ocellus.

Frons dark brown. Occiput convex ventrally, distinctly concave dorsally, dark brown, shining. Palp small (1/6 of eye), circular, dark brown. Antenna mainly dark with scape and pedicel usually largely dark but sometimes almost entirely yellow (see Fig. 26C); first flagellomere brown with basal 1/4 yellow, elongate triangular, 2.1× as long as deep and 1.9× as long as scape and pedicel combined. Arista 0.8× as long as first three joints of antenna, distinctly subapical, practically bare (Fig. 26C).

Thorax. Mesonotum and scutellum yellowish brown, with dusted lines along ac and dc. Pleura and postnotum brown, latter with very large black frontolateral triangle and narrow ventral black margin. Metapleura entirely pale brown. Seven ac, 1.5× as long as distance between rows. One minute sutural bristle present.

Abdomen with 2nd and 3rd abdominal tergites translucent whitish yellow, darker from apical half of 3rd to blackish brown on tergites 4–6; with strong marginal bristles and faint green reflection; 6th tergite half as long as 5th. Tergites with 1st to 3rd segment translucent brownish, darker from 4th onwards. Genital capsule moderately developed, blackish brown. *Hypopygium* with pseudo-spined hypandrium; aedeagus dark, very long and rather straight; midventral bristle of surstylus with apical flag; VEP evident; DEP not evident; postgonites slender and pale; cercus rather small, bean-shaped with strong marginal bristles (Figs 26D, 27).

Wing. Halter and wing slightly infuscated, latter with R_{4+5} curved, R_{4+5} and M_{1+2} slightly diverging towards wing apex. Proximal section of vein CuA_1 1.5× as long as apical section; CuA_x ratio 2.1. Wing length 2.3–2.7 mm ($n = 5$) (Fig. 26B).

Legs whitish yellow with darker tarsi. Coxa II and III reddish yellow. Femur I without erect ventral bristle and with two moderately strong pv preapical bristles. Femur II with one row of inclined av setae, weakest at middle, only basal bristle as long as femur is deep, and one row of very strong erect pv bristles, decreasing in length towards apex; basal pv bristle 1.7× as long as femur is deep; with one strong ad, one small av and one pv preapical bristles (Fig. 26A). Femur III distinctly infuscated on dorsal half with one rather weak ad, inserted in lower 1/3, and one strong av preapical bristle. Tibia I without dorsal bristles. Tibia II slightly dilated apically with one very small (1/12 of tibial length) ad and one very small pd bristles, basal bristles forming ad-pd couple at basal 1/3; with one ventral row of rather erect short spines on apical half; tibia III dilated towards apex, with two very small ad, three very small pd and four ventral setae. Tarsus I with 1st tarsomere yellow, 2nd to 4th darker yellow

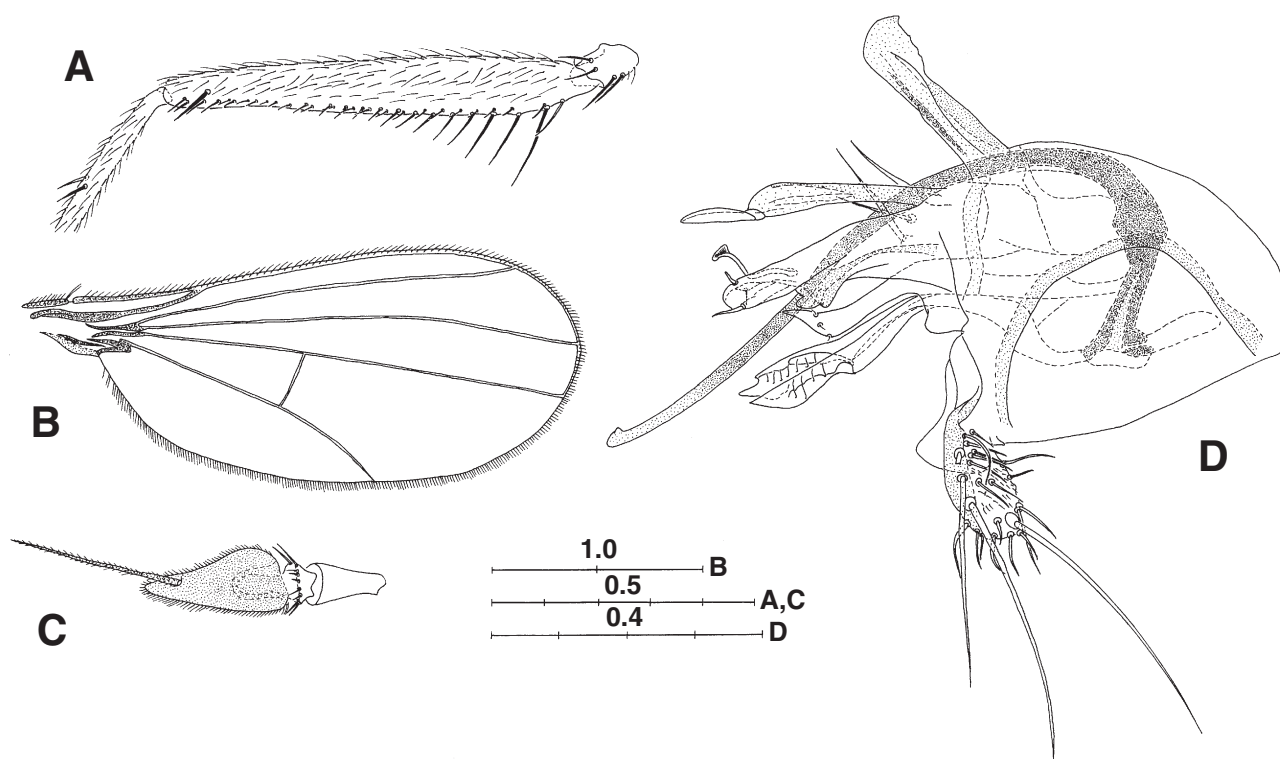


Figure 26. *Australachalcus variabilis* sp. nov. (male). A, femur II; B, wing; C, antenna; D, hypopygium.

and 5th dark; tarsus II dark yellow with apical half of 5th tarsomere dark; tarsus III entirely brownish yellow. First tarsomere of leg III 0.8× as long as 2nd tarsomere. Body length 2.1 mm.

Female. Unknown.

Etymology. Refers to the variable colour of body and antenna in this species.

Holotype. 1♂, CHILE: Region de la Araucania, Prov. Malleco, Rio Blanco, 1100–2000 m, ii.1964 (*L. Peña*) (CNC; D).

Paratypes. CHILE: Region de la Araucania, Prov. Malleco: 2♂, Rio Blanco, 1100–2000 m, ii.1964 (hypopygium of 1♂ mounted); Region del Maule, Prov. Curicó: 1♂, Curicó, Estero La Jaula (*Nothofagus*), i.1964 (wing and hypopygium mounted); Region metropolitana de Santiago, Prov. Santiago: 1♂, Cerro el Roble, 28–31.xii.1963 (wing, leg II, antenna & hypopygium mounted) (all *L. Peña*) (CNC; D).

UNIDENTIFIED AUSTRALACHALCUS SPECIMENS

Three collections house 101 unidentified *Australachalcus* females exclusively from Chile: Region Aisen, Prov. Aisen (CNC; D); Region de la Araucania, Prov. Cautin (USNM; D, and CNC; D), Prov.

Malleco (CNC; D); Region de los Lagos, Prov. Chiloé, Prov. Llanquihue (CNC; D, and USNM; D), Prov. Osorno (USNM; D), Prov. Valdivia; Region de Maule, Prov. Curicó, Prov. Talca; Region de Valparaiso, Prov. San Felipe de Aconcagua; Region del Bernardo O'Higgins; Region metropolitana de Santiago, Prov. Santiago (all CNC; D); Region del Biobio, Prov. Nuble (CAS; D).

DOUBTFUL SPECIES

Achalcus thoracicus (Philippi), 1865: 775 (*Chrysotus*) (not examined) **nomen dubium**

This species from Valdivia, Chile, was transferred to *Achalcus* by Robinson (1970). From the original description ['thorace pedibusque testaceis, abdomine fusco'], it might, indeed, be concluded that this species belongs to *Achalcus* or *Australachalcus*, but many species of *Sympycnus* – a very species-rich genus in Chile – also match the very inaccurate description. Attempts to examine the holotype proved fruitless as the specimen was not present in the collections of the Museo Nacional de Historia Natural, Santiago, Chile (M. Elgueta, pers. comm.) and is most probably lost. As *Achalcus thoracicus* is a name of doubtful application, it is consequently assigned here as **nomen dubium**.

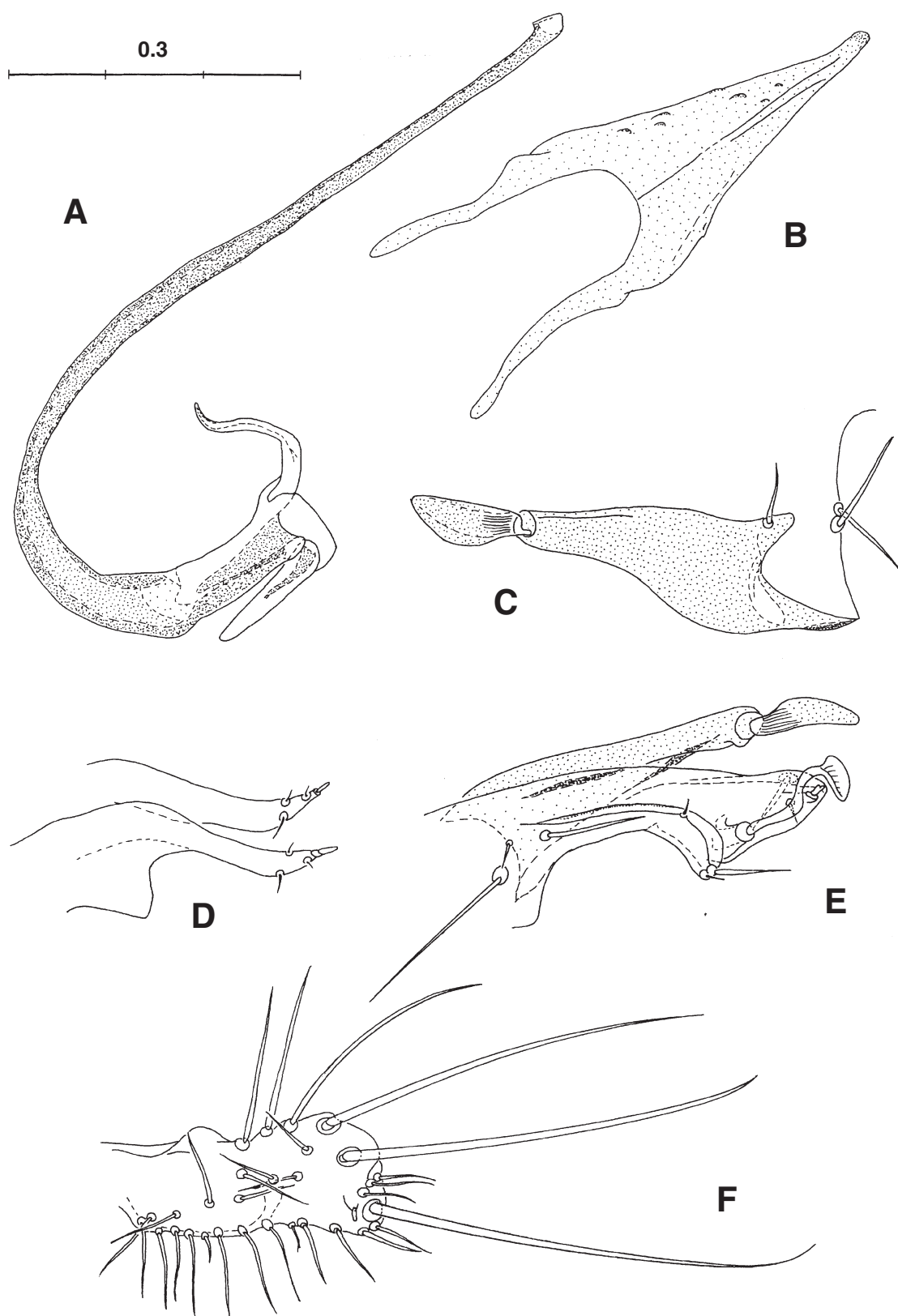


Figure 27. *Australachalcus variabilis* sp. nov. (male). Hypopygial appendages. A, aedeagus; B, hypandrium, ventral view; C, epandrial lobe; D, ventral process of epandrium; E, epandrial lobe (top) and surstylus (bottom); F, cercus.

Enlinia sordida (Aldrich), 1896: 339, pl. 11, figs 107, 107a (*Achalcus*) (not examined)

This species from St. Vincent is listed in *Enlinia* in Robinson (1970). I consider this placement correct on the basis of the minute body size (0.7 mm), the overall wing shape and venation, and distortion (Aldrich, 1896: plate xi, fig. 107) that are features commonly encountered in *Enlinia*, but not in *Achalcus*.

Micromorphus caudatus (Aldrich), 1902: 93 (*Achalcus*) (not examined)

This species from Grenada is listed in *Micromorphus* in Robinson (1970). Not a single feature in the original description can be considered typically achalcine and the minute size (1–1.1 mm) suggests that this species belongs to another genus.

Enlinia atrata (Van Duzee), 1930: 24 (*Achalcus*) (not examined)

This species described from Ancud, Chile, was transferred to *Enlinia* by Robinson (1970). In the original description Van Duzee (1930) unfortunately does not comment at all either on the chaetotaxy of the legs or on the thorax, details which might have provided useful information on its generic position. However, he mentions the very minute size (1.1 mm), the black body colour and its strong resemblance to *A. caudatus* (see above). Removal of this species from *Achalcus* would therefore appear to be justified.

OTHER SYSTEMATIC CHANGES

My earlier redescription of the Palaearctic *Achalcus melanotrichus* (Pollet, 1996b) provides strong evidence that this species clearly belongs to *Australachalcus*. Moreover, all New Zealand species match the generic description of *Australachalcus* (six dc, hypandrium with spined apex; epandrial setae inserted at base of epandrial lobe; midventral bristle of surstylus with apical flag). Even the female holotype of *A. luteipes* shows six dc in contrast to its original description.

Australachalcus melanotrichus (Mik), 1878: 19 **comb. nov.** [Europe]

Australachalcus chaetifemoratus (Parent), 1933: 362 **comb. nov.** [New Zealand] (holotype examined)

Australachalcus luteipes (Parent), 1933: 363 **comb. nov.** [New Zealand] (holotype examined)

Australachalcus medius (Parent), 1933: 364 **comb. nov.** [New Zealand] (holotype examined)

Australachalcus minor (Parent), 1933: 365 **comb. nov.** [New Zealand] (holotype examined)

Australachalcus minusculus (Parent), 1933: 364 **comb. nov.** [New Zealand] (holotype examined)

Australachalcus minutus (Parent), 1933: 366 **comb. nov.** [New Zealand] (holotype examined)

Australachalcus nigroscutatus (Parent), 1933: 363 **comb. nov.** [New Zealand] (holotype examined)

Australachalcus relictus (Parent), 1933: 365 **comb. nov.** [New Zealand] (holotype examined)

Australachalcus separatus (Parent), 1933: 366 **comb. nov.** [New Zealand] (holotype examined)

DISCUSSION

In both achalcine genera revised here most species can be assigned to distinct species groups that share a number of character states, some of which are interpreted as synapomorphies for the species group. Synapomorphies unique to the species group are indicated below as such; other species groups are defined by a combination of character states including synapomorphies that are found in more than one species group. In *Achalcus*, three groups can be separated on the basis of the following features (character states that are shared by all species of this genus are not repeated here):

- (i) *A. flavicollis* species group (*A. bimaculatus* Pollet, 1996, *A. britannicus* Pollet, 1996, *A. cinereus*, *A. flavicollis*, *A. nigropunctatus* Pollet & Brunhes, 1996, *A. phragmitidis* Pollet, 1996, *A. thalhammeri* Lichtwardt, 1913, *A. vaillanti*; *A. californicus* Pollet & Cumming, 1998, *A. dytei* Pollet & Cumming, 1998, *A. oregonensis* (Harmston & Miller, 1966), *A. similis* Pollet & Cumming, 1998, *A. utahensis* (Harmston & Miller, 1966), *A. bilineatus*, *A. tibialis*). Medium-sized, elegant species; at least thorax largely pale; 1st flagellomere triangular, acute; femur I with strong basoventral bristle, without other erect av bristles; aedeagus with slight subapical bend. This species group includes all Holarctic congeners. The basoventral bristle on femur I is present in all species, but the subapical dorsal bend of the aedeagus was found in only half of the European and four of the five Nearctic species. *Distribution*: Europe (from France to Central European Russia and Ukraine, and from Finland to northern Italy), Canada, United States, Costa Rica.
- (ii) *A. costaricensis* species group (*A. costaricensis*, *A. cyanocephalus*, *A. maculipennis*). Small, slender species with narrow wings; 1st flagellomere subcircular, sometimes with white arista; frons with distinct blue reflection (synapomorphy); 1st dc sometimes reduced; no distinct ventral bristles on femora; tibia III with rather strong ventral bristles; cercus small, triangular. *Distribution*: Costa Rica and northern South America (Colombia, Ecuador, Peru, Venezuela).
- (iii) *A. brevicornis* species group (*A. brevicornis*, *A. micromorphoides*, *A. niger*). Small to rather

small, stout species; body brownish black, sometimes with slight olive-green reflection; femur I without basoventral bristle; aedeagus with strong subapical dorsal bend; midventral bristle of surstylus sometimes with slight apical enlargement; cercus small, triangular. *Distribution*: Chile.

In *Australachalcus*, the following species groups can be recognized:

- (i) *A. albipalpus* species group (*A. albipalpus*, *A. brevinervis*, *A. longicornis*). Large, slender species; 1st flagellomere large, triangular; femur I with basoventral bristle basad of row of smaller erect AV bristles; apical section of vein CuA₁ short, CuA_x ratio ≤ 1 ; proximal section of CuA₁ at least 3× as long as apical section (synapomorphy); apex of hypandrium with strong spines on ventral face; midventral bristle of surstylus with distinct apical flag. *Distribution*: Chile.
- (ii) *A. cummingi* species group (*A. cummingi*, *A. setosus*, *A. variabilis*). Rather small, slender species; body yellowish brown to brown, with anterior abdominal tergites paler; 1st flagellomere triangular, with arista not as long as first three antennal joints; CuA_x ratio ≥ 2 ; femur II with strong basal av and/or pv bristles; tibia II sometimes with peculiar ventral pubescence; hypandrium with raised marginal edge; aedeagus slender and dark; epandrial lobe robust with large, flattened apical bristle (synapomorphy); midventral bristle on surstylus with distinct apical enlargement; cercus largest at apex. *Distribution*: Chile.
- (iii) *A. robustus* species group (*A. robustus*, *A. pseudorobustus*). Small, stout species; body blackish brown, with slight olive-green reflection; femur I with strong basoventral bristle; femur II with strong basal av and/or pv bristles; apex of hypandrium with strong spines on ventral face; aedeagus with dorsal recurrent apical process (synapomorphy). *Distribution*: Chile.
- (iv) *A. edwardsae* species group (*A. edwardsae*, *A. incisicornis*). Antennal shape deviating from congeners; coxa I with white, dense, short pubescence (synapomorphy); apex of hypandrium with strong spines on ventral face; surstylus simple or reduced, with most bristles near apex; cercus small, triangular, with strong apical bristles; dorsal process of epandrium not evident. *Distribution*: Chile.

The two remaining *Australachalcus* species, *A. acornis* and *A. browni*, do not fit any of the previous species groups and thus possibly represent separate species groups. The same holds true for

the Palaearctic *A. melanotrichus*, although a very closely related species has recently been detected in Japan (Pollet & Stark, unpubl. data). A phylogenetic analysis of the subfamily Achalcinae on the basis of the currently described species is considered premature and will be appropriate when the remaining available and undescribed *Achalcus* (Holarctic, Neotropics) and *Australachalcus* species (Japan, Neotropics, New Zealand) are taxonomically characterized. Achalcine species discovered in Australia possibly represent (an)other separate species group(s) (Pollet, 1996a).

Phylogenetic relationships between the above mentioned genera and presumed related genera like *Xanthina* (see Robinson, 2003), *Apterachalcus*, *Scepastopyga* and the enliniine *Enlinia* and *Harmstonia* will be treated in a separate paper. Diagnostic characters that separate *Enlinia* from Achalcinae are its minute size, the usually subglobular 1st flagellomere, the highly modified tarsus I of the male (MSSC) and the lack of preapical bristles in femora II and III. *Harmstonia* can readily be distinguished by the dorsal arista, the lack of ac bristles and the strong facial bristles in the female. According to Robinson (1970, 2003), *Xanthina* differs from '*Achalcus*' in lacking true preapical bristles on femora II and III, and in featuring palps that are often enlarged and ornate. Recent examinations of over 20 mostly undescribed *Xanthina* species from Central and South America, however, revealed the presence of these bristles in most, if not all, of the species. These ad or rather anterior preapicals are usually small and inserted near the ventral side of the femur, basad of a true ventral preapical bristle. Moreover, at this moment a clear-cut comparison between *Achalcus*, *Australachalcus* and *Xanthina* is even further complicated by the presence of at least two distinct lineages in the latter genus, one of which most probably represents a new genus (Pollet, unpubl. data). Nevertheless, most of the described *Xanthina* species have a stout body with a reddish yellow thorax and an abdomen that is usually infuscated dorsally. In contrast to *Achalcus* and *Australachalcus* species, the hypandrium and epandrial lobes in *Xanthina* males are highly asymmetrical.

This paper includes the first records of Neotropical *Achalcus* and *Australachalcus* species outside Chile. In the New World, *Australachalcus* is almost entirely confined to Chile with only *A. browni* recorded from Costa Rica. As this genus also shows a high species diversity in New Zealand, its general distribution seems typically Gondwanan (Pollet, 1998). In *Achalcus*, on the other hand, each of the three species groups shows a different geographical distribution with very little or no overlap. Whereas the *A. flavicollis* species group is primarily Holarctic and

further recorded from Costa Rica, representatives of the *A. costaricensis* species group seem to be concentrated in southern Central America (Costa Rica) and northern South America, especially the northern Andes (Colombia, Ecuador, Peru, Venezuela). Moreover, recently retrieved samples from Costa Rica and Colombia contain yet additional undescribed species of this species group. Species of the *A. brevicornis* species group have only been recorded from Chile and show the same general habitus as representatives of the sympatric *Australachalcus robustus* species group. In North America, *Achalcus* reaches its apparent highest species richness along the west coast (Pollet & Cumming, 1998) with no records available from Mexico or any other Mesoamerican country, although entomological collections in this part of the world possibly contain a considerable amount of unsorted Nearctic *Achalcus* material.

In contrast to Diaphorinae, Peloroedinae and Sympycninae (at higher altitudes in particular), and Medeterinae, *Achalcus* and *Australachalcus* species are only rarely collected with Malaise traps. In Costa Rica, of 3044 dolichopodid specimens collected with 18 Malaise traps at eight sites between sea level and 2800 m, only two belonged to *Achalcus*. In Colombia, of 990 dolichopodid specimens collected with eight Malaise traps at six sites (2–3170 m), not a single *Achalcus* specimen was found (Pollet, 2002). In favourable sites, however, some species (*Achalcus costaricensis*, *Australachalcus setosus*) are quite abundant.

Their apparent scarcity might be explained by: (i) a poor sampling of suitable habitats in Central and South America (see further); (ii) the inefficiency of Malaise traps as collecting devices, and/or (iii) very strict habitat requirements of the species which induce local endemism. In this context, only *Australachalcus albipalpus* seems to be rather widespread in Chile, whereas nine and five other species are only recorded from one and two different sites resp., and only *Achalcus maculipennis* is known from two countries (Peru, Ecuador). In Europe, most species are highly stenotopic and entirely restricted to marshlands, especially sedge fields and reed marshes. But even in these habitats, Malaise traps never yield large numbers of specimens (except for *A. cinereus*), whereas several species have been found quite abundantly in white pan traps (Pollet, 1992). Moreover, one species, *A. phragmitidis* Pollet, has thus far only been encountered in Belgium despite intensive surveys in neighbouring countries (Pollet, 1996b).

In Costa Rica, *Achalcus* and *Australachalcus* were collected only at higher altitudes, between 1600 m and 2350 m. This pattern has been observed in Colombian samples as well (Pollet, 2002) and is confirmed by the

few Colombian records treated here. In Chile, by contrast, these achalcines are found between 15 m and (possibly) 2000 m. Hardly anything is known about the habitat affinity of these and most other tropical invertebrates. At least four species (*Achalcus brevicornis*, *Australachalcus albipalpus*, *A. pseudorobustus*, *A. variabilis*) with 15 specimens and seven females of unidentified *Australachalcus* species, appear to have originated from *Nothofagus* forest, while six specimens of *A. brevicornis*, *A. maculipennis* and *Australachalcus edwardsae* were collected in secondary forest or old growth forest.

Most Chilean specimens were gathered during the southern summer between November and March. The most abundant species (in the samples), *Australachalcus setosus*, is active during the entire period with an apparent activity peak during December. However, *Achalcus micromorphoides* was collected in July (Huaquén, Coquimbo), and although the holotype of *Australachalcus albipalpus* was collected on 7 September 1902, all other 26 specimens of this species were found between January and March.

In Costa Rica, on the other hand, Achalcinae can be found throughout the year. The most common species, *A. costaricensis*, starts to become active during the early wet season (June) and reaches its highest level of activity in September–October. It remains active until the onset of the dry season in February.

ACKNOWLEDGEMENTS

I thank the following dipterologists or curators who kindly replied to my numerous requests for dipteran material: D. Bickel (AMS), B. Brown (Natural History Museum of Los Angeles County, Los Angeles, USA), J. Chainey & N. Wyatt (BMNH), J. Cumming (CNC), D. Furth and P. Hibbs Kerr (USNM), M. E. Irwin (INHS), U. Kallweit (SMTD), P. Hanson (Universidad de Costa Rica, San José, Costa Rica), K. J. Ribardo (CAS), N. Woodley (Systematic Entomology Laboratory, USDA c/o U. S. National Museum of Natural History, Washington DC, USA), and M. Zumbado (INBio). I am especially grateful to B. Brown, who initiated my interest in Costa Rican dolichopodids. Many thanks are also due to J. Longino (Evergreen State College, Olympia, USA) who kindly provided a National Geographic Grant to participate in the ALAS IV expedition in February 2003 (Barva transect, Braulio Carillo National Park, Costa Rica) and in this way facilitated my introduction to Neotropical forest ecosystems. I am much indebted to C. E. Dyte (Datchet, UK) for his kindness and for sharing his great expertise with me over the past 14 years. Finally, I would like to thank D. Bickel, who refereed a earlier draft of this paper and provided very useful comments. Mrs M. Leclercq (KBIN) resized the original drawings. This paper is a contri-

bution of both the Terrestrial Ecology Research Group of the Ghent University (UGent) and the Department of Entomology of the Royal Belgian Institute of Natural Sciences (KBIN).

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