



Fifteen new species of *Chilicola* (Hymenoptera: Apoidea; Colletidae)

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Abstract

Fifteen new species of the xeromelissine bee genus *Chilicola* are described. Most are either outliers not obviously belonging to currently known subgenera or expand our concepts of previously described subgenera. Species that do not readily fall into presently recognized subgenera are: *Chilicola obesifrons* Packer, **n. sp.** and the closely related *C. catamarcense* Packer, **n. sp.**; *C. unicarinata* Packer, **n. sp.** and the closely related *C. chubutense* Packer, **n. sp.**, and three comparatively isolated species: *C. biguttata* Packer, **n. sp.**, *C. tregualemu* Packer, **n. sp.**, and *C. setosicornis* Packer, **n. sp.**. Species that fall within previously described subgenera are: *C. (Chilioediscelis) aenigma* Packer, **n. sp.**, *C. (Prosopoides) granulosa* Packer, **n. sp.**, *C. (Pseudiscelis) nanula* Packer, **n. sp.**, *C. (Stenoediscelis) denisii* Packer, **n. sp.**, *C. tricarinata* Packer, **n. sp.**, *C. tricarinatoides* Packer, **n. sp.**, and *C. clavillo* Packer, **n. sp.** The last three species belong to “*Oediscelisca*”, a subgenus subsumed within *Oediscelis* by Michener (1995) but requiring re-evaluation. *Chilicola nanula* and *C. aenigma* expand the scope of their respective subgenera. A fifteenth species, *C. liliana* Packer, **n. sp.**, is not placed to subgenus due to a lack of males. Toro and Moldenke’s (1979) subgenus *Stenoediscelis* is returned from synonymy and new characters justifying this resurrection are provided.

Key words: Bees, Apoidea, Colletidae, Xeromelissinae, *Chilicola*, Argentina, Bolivia, Chile, taxonomy, new species, stem nests

Resumen

Se describen 15 especies nuevas de abejas xeromelissinas del género *Chilicola*. Inusualmente, muchas especies no pertenecieron a los subgéneros conocidos ni expandieron nuestros conceptos de los subgéneros descritos anteriormente. Las especies que no cumplieron con las características de los subgéneros reconocidos fueron: *Chilicola obesifrons* Packer, n. sp. y la cercanamente relacionada *C. catamarcense* Packer, n. sp.; *C. unicarinata* Packer, n. sp. y la cercanamente relacionada *C. chubutense* Packer, n. sp., así como tres especies comparativamente aisladas: *C. biguttata* Packer, n. sp., *C. tregualemu* Packer, n. sp. y *C. setosicornis* Packer, n. sp. Las siguientes especies pertenecieron a los subgéneros conocidos: *C. (Chilioediscelis) aenigma* Packer, n. sp., *C. (Prosopoides) granulosa* Packer, n. sp., *C. (Pseudiscelis) nanula* Packer, n. sp., *C. (Stenoediscelis) denisii* Packer, n. sp., *C. tricarinata* Packer, n. sp., *C. tricarinatoides* Packer, n. sp. y *C. clavillo* Packer, n. sp. La últimas tres pertenecieron a “*Oediscelisca*”, un grupo subsumido por Michener (1995) dentro de *Oediscelis*, aunque esto necesita una re-evaluación. *Chilicola nanula* y *C. aenigma* ampliaron el alcance de sus respectivos subgéneros. *C. liliana* Packer, n. sp. no se asignó a ningún subgénero, debido a la ausencia de machos. El subgénero *Stenoediscelis*, de Toro y Moldenke (1979) es devuelto de su sinonimia y se proveen caracteres nuevos que justifican su resurrección.

Palabras clave. Abejas, Apoidea, Colletidae, Xeromelissinae, *Chilicola*, Argentina, Bolivia, Chile, especies nuevas, nidos en interior palitos

Introduction

Chilicola are very small to moderate-sized hylaeiform bees lacking yellow markings on the meso- and metasoma. Like the entire subfamily Xeromelissinae, *Chilicola* is found only in South and Central America as far north as Mexico (Toro and Michener 1975; Michener 1995), and in the Lesser Antilles (Michener, 2000) but fossils are also known from Dominican amber (Michener and Poinar 1996; Engel 1999).

The genus *Chilicola* can be readily identified on the basis of the standard colletid character of having an apically concave or bilobed glossa along with the females having a sternal corbicula in which posteromedially directed long scopal hairs surround a central bare space that is broader anteriorly than posteriorly. The only exception to this latter character are females of the subgenus *Chilioediscelis*, but these can be readily identified by the combination of robust and strongly curved hind tibial spurs and hind tarsal claws with inner tooth absent or considerably reduced.

Leading up to a taxonomic revision of the entire subfamily, almost all described species (for a catalogue, see Moure and Urban 2002, and for recent additions see Michener 2002; González and Michener 2004; Packer 2004, 2005; Hinojosa-Díaz and Michener, 2005; Gibbs and Packer 2006) have been surveyed, including large numbers of additional specimens from numerous museums. Among the unidentified material and from the senior author's collecting, a very large number of new species has been discovered (Fig. 1), and it is clear that we are far from having discovered all species of xeromelissine bee.

The purpose of this paper is to describe some, mostly rather unusual, new species of this genus so their names are available for phylogenetic analyses that are in preparation. The species described are those that: i) do not readily fit into the current classification, ii) enlarge our understanding of supraspecific taxa or iii) are taxa for which DNA-sequence data have been obtained. Some of the species described here are very distinctive and in some cases are representatives of fairly species rich groups that will probably require recognition as subgenera. If they prove to be monophyletic higher level taxa, these new subgenera will be described pending completion of the phylogenetic studies. Those species described to make names available for DNA-based analyses do not always include representatives of both sexes, whereas those being used in morphological phylogenetic analyses only include species for which both sexes are available.

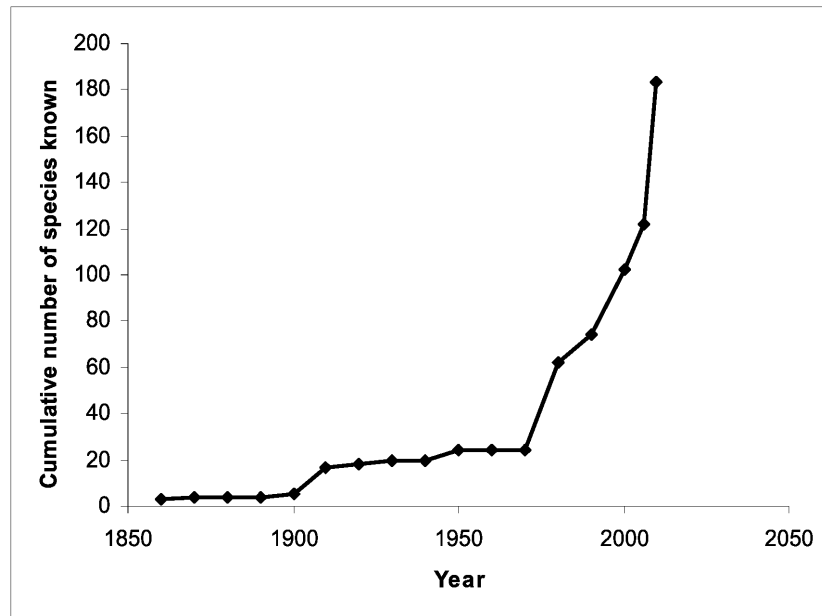


FIGURE 1. Time series for descriptions of valid species of Xeromelissinae. The increase between 1970 and 1980 was largely the result of Toro and Moldenke (1979), the penultimate increase (2000–2006) includes the species described herein plus those by Michener (2002), González and Michener (2002), Packer (2004, 2005), Toro and Packer (2002). The increase from 2006 to 2010 includes the total number of undescribed species known to us, though each collecting trip to Chile or Argentina results in more previously not collected species being discovered. Species known only from fossils are not included.

Methods

Mouthparts and male and female terminalia were dissected from relaxed specimens and cleared in 5% KOH solution before being stored in glycerine. In some cases, whole specimens were treated in this manner.

Terminology for structures follows Michener (2000, 2002) and for surface sculpture generally follows Harris (1979); in almost all instances, microsculpture is imbricate, though differing considerably among body parts and/or taxa in strength. Standard abbreviations are used as follows: particular metasomal terga or sterna and antennal flagellomeres are denoted by T, S or F respectively, followed by a number denoting which one is referred to; IOC — interocellar distance, OOC — ocellocular distance, UOD — upper interocular distance, LOD — lower interocular distance, MOD — median ocellus diameter (measured transversely), LOL longitudinal diameter of lateral ocellus, d — puncture diameter, i — interspace between adjacent punctures; the last two abbreviations are used together to give an indication of the relative density of punctures.

With the exception of body size characteristics, which are given in millimeters, relative dimensions of structures are given in graticule units under the particular magnification/ocular micrometer combination used. They are provided solely to give an indication of relative sizes for shape comparisons, rather than absolute sizes.

Morphological terminology follows Michener (2000, 2002), that for the sting apparatus follows Packer (2003). Terms not of widespread use in bee taxonomy are as follows:

Basal depth of the mandible: This term seems more appropriate than basal width of the mandible, as it refers to the structure as seen in lateral view. It is used in terms of the ratio of basal depth of the mandible to the length of the malar space.

Depth of femur (or tibia): Similar to the previous, this refers to the dorsal to lateral extent of the structure.

Length of lateral ocellus (abbreviated to LOL): This is used for ease of characterising lengths of the vertex and pronotum, all three features being most easily measured with the specimen in the same orientation.

Genal beard: This refers to the long, dense pubescence arising from the gena in males of many species of *Chilicola*.

Dorsolateral area of the propodeum: This is the strongly curved area between dorsal and lateral faces of the propodeum. It is always lateral of the propodeal sulcus and usually bears long hairs, sometimes giving an appearance of a weak propodeal corbicula, well known and more fully developed in *Andrena*. The pubescence, sculpture and extent of this area vary among species in *Chilicola*.

Propodeal sulcus: This occurs at the juncture of the dorsal area of the propodeum [metapostnotum of Brothers (1976)] and its lateral surface. It is variously developed in different taxa, often in the form of a series of deep pits but generally is weaker in females.

Sternal corbicula: A corbicula is a “bare area surrounded by hairs that serves for pollen transportation” (Michener 2000, p. 48). Such structures are well known on the hind tibia of the corbiculate Apinae and, as just noted, the propodeum of *Andrena*. Gibbs and Packer (2006) recently recognized that there is a bare area surrounded by posteromesally directed scopal hairs on the S2 of females of all species of the genus *Chilicola*. The bare area is broadest anteriorly. The sole exception to this is the subgenus *Chilioediscelis*, which entirely lacks the corbicular structure. The presence of a sternal corbicula is a synapomorphy of the genus *Chilicola*, but its absence in *Chilicola* (*Chilioediscelis*) seems to be the result of a secondary loss in this subgenus (Packer, unpublished data).

Gradular marks: Dissections of male S2–S6 reveal that the gradulus is considerably reduced on all sterna, except S2, in most species of *Chilicola*. The reduction may be complete (no trace of any gradulus present at all) or be extreme such that the gradulus is represented solely by a small circular mark on either side. Intermediate conditions occur. As sternal graduli probably function as a means of preventing extraneous material from getting to the intersegmental membranes (Prentice 1998) and these reduced structures are clearly incapable of this function, a new term is required for them. They are here referred to as gradular marks and are generally only obvious in cleared material.

Apical lunule of S5: This is a specialized area on the apicomedian margin of the S5 of females, being composed of short dense hairs surrounded by a series of apicomediaally directed longer sparser hairs. Its function is unknown, but it varies in shape. The apical lunule is a synapomorphy for the subfamilies Euryglossinae, Hylaeinae and Xeromelissinae.

The lobes of the male S7 are often paired in Xeromelissinae and, when paired, it is usually easy to distinguish a laterally directed more ventral one from a usually more posteriorly oriented dorsal one, these are referred to as ventral and dorsal lobes respectively. In situations when only one pair of lobes is found, homology with one of the two pairs is usually relatively easily established using standard methods of appearance and relative location, especially in comparison to the situation in related species. The number of lobes is not as easy to establish as might be thought. Many species have one large lobe with the second reduced to a small ridge, often bearing a small thorn-like projection. In the latter instance, species are described as having just one lobe but the remnants of the other one are described.

Mouthpart characters are described for females only. This is because male mouthparts, although generally very similar to those of females, are sometimes less discriminating among males than females and, in the nature of the premental fovea for example, less distinctive.

When not obvious, or when the terms are used differently in the literature, the landmarks used for measurement data are as follows: head length is measured from the top of the vertex to the apex of the clypeus medially; the length of the supraclypeal area is measured from the apex of its raised portion dorsally to the epistomal suture medially, its width is measured ventrally along the epistomal suture; the genal area is measured as its greatest length parallel to the posterior margin of the compound eye in lateral view; the length of the mesosoma is measured from the anterior declivous surface of the pronotal collar to its articulation with the

metasoma; the length of the pronotal collar is from the posterior margin of the collar medially to the posterior margin of the anterior declivity; the hind femur is measured from the articulation of the trochanter to the articulation of the tibia. In some species the femur is sufficiently swollen that it extends dorsobasally from the articulation with the trochanter, but would give a greater length if measured from its basalmost extent. The depth of the hind tibia is given as its greatest depth at right angles to its long axis unless this depth is at the extreme apex, in which case its depth is measured along the same axis as the apex; the length and width of the apical lunule of the female S5 is measured from where the minute punctures are replaced by larger ones.

The sequence of characters in the descriptions attempts to deal with features that can be seen from particular viewpoints as a group and in a sequence that is easy to use. This should facilitate comparison of specimens with the description while minimizing manipulation.

Characteristics that are unique to a species within a subgenus are given in italics. Some species do not fit into previously named subgenera, and new subgenera are being described for them, based upon results of phylogenetic analyses (Packer, in press). Unique characteristics for such species are italicized when they are unique to the new species in the group as currently understood by us.

Figures were drawn with the aid of a cross-hatched eyepiece graticule. Photographs of surface sculpture were taken using a Sylvania 27W, 120V “energy saving” bulb. This light source provides excellent light distribution and reflectance for assessing surface sculpture characteristics.

Material for this study has been obtained from the following institutions whose collections have been investigated intensively for bees of the subfamily Xeromelissinae: Natural History Museum, University of Kansas, Lawrence, Kansas (SEM); American Museum of Natural History, New York (AMNH); Smithsonian Institution, Washington, DC (USNM); California Academy of Sciences, San Francisco, California (CASC); Bohart Museum, Berkeley, California (BHB); Cornell University, Ithaca, New York (CUIC); Central Texas Melittological Institute, Austin, Texas (CTMI); USDA Bee Lab, Logan, Utah (LOG); Instituto Miguel Lillo, Tucuman, Argentina (IML); Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina (MACN); Universidade de São Paulo, Ribeirão Preto, Brazil (RPSP); Universidade Federal de Minas Gerais, Belo Horizonte, Brazil; (DZMG); Universidade Catolica de Valparaiso, Valparaiso, Chile (UCV); British Museum of Natural History (BMNH); Canadian National Collection, Ottawa, Canada (CNC); the Laurence Packer Bee Collection, York University, Toronto, Canada (PYU). There is a substantial collection of Xeromelissinae in Moure’s collection at Curitiba, Brazil, but none of these specimens has been made available despite repeated requests. Additional specimens of all of the species described herein for which J. L. Neff has collected material are to be found in this collection (J. L. Neff, pers. comm.).

Type specimens will be returned to the institutions as listed under the “material studied” sections. In instances where there are few or no specimens of a particular sex available other than the holo- or allotypes, these will be retained for further study prior to being returned to the type holding institution.

Species Descriptions

Chilicola obesifrons Packer, n. sp.

(Figs. 2, 3A–M)

Diagnosis. *Chilicola obesifrons* and its close relatives (all of which are undescribed, but include this and the following species) are among the smallest bees in the genus. As a group, they can be differentiated from any of the named subgenera of *Chilicola* on the basis of the shape of the pronotum, the collar of which is moderately long, not strongly convergent anteriorly but angulate at the anterolateral corners (Fig. 3E). A new subgenus is being described for this group of species (Packer, in press). Other unusual characteristics are the lack of an emargination on the inner margin of the eye (Figs. 2, 3A and C) (shared only with some species of the sub-

genus (*Prosopoides*) and the comparatively coarse punctation of the thoracic dorsum (Fig. 3F). The frons is at least slightly expanded around the median ocellus and just mesad of the upper portion of the compound eye (Figs. 2, 3A and C) in all of the species in the group with the exception of the next species to be described (*C. catamarcense* Packer, **n. sp.**). These expanded areas are comparatively impunctate but bear strongly imbricate microsculpture appearing almost granular, some species of the subgenus *Prosopoides* also share this condition. The membranous lobes of S7 are unique (Fig. 3H) in form, colouration and setation among related species, including the subgenus *Prosopoides*. These other taxa have much more robust lobes that usually bear long and/or thick, capitate setae.

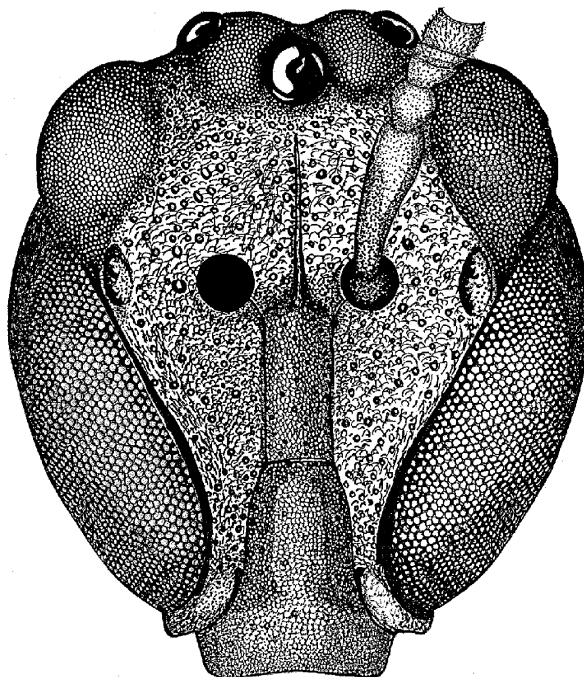
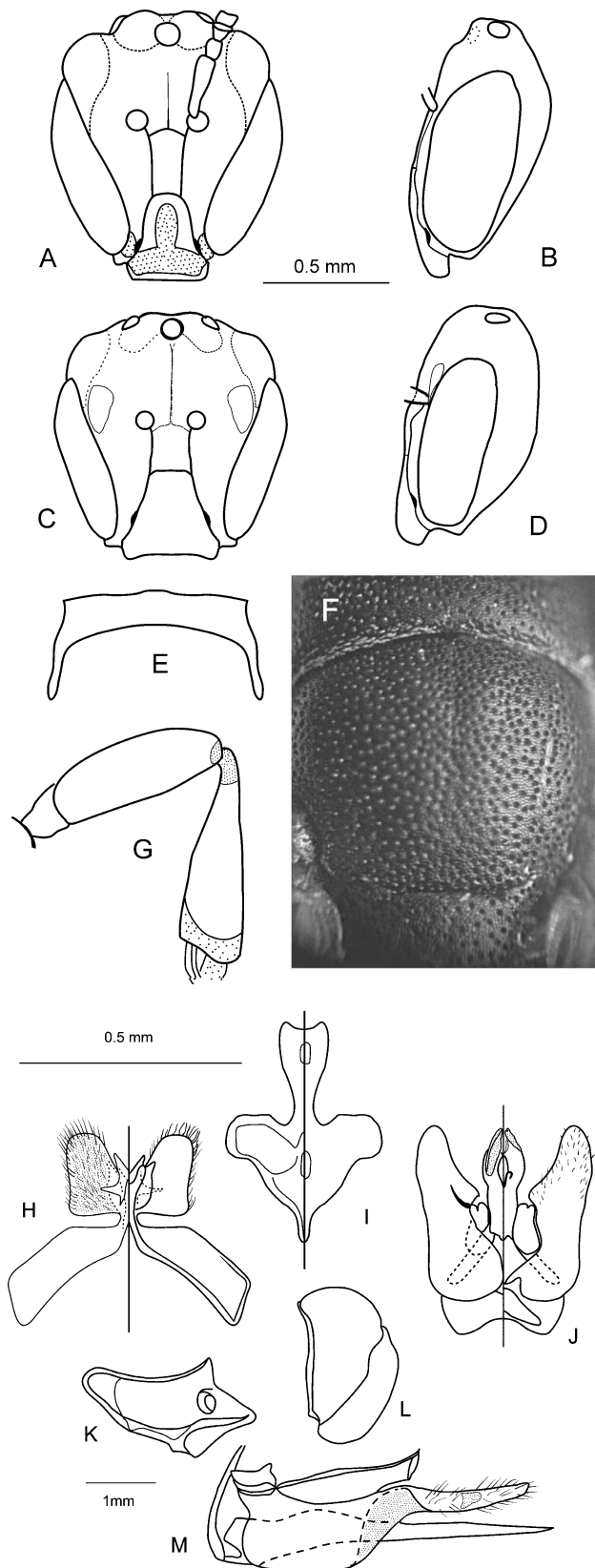


FIGURE 2. Facial view of *Chilicola obesifrons* Packer, **n. sp.**, male.

Chilicola obesifrons can be differentiated from other members of its group by the following characters: the head of both sexes in profile has the median ocellus entirely hidden by frontal swellings and the vertex is flat around the lateral ocellus (Figs. 3B and D). This feature combined with the anterolateral corners of pronotum approximately right-angled serve to identify the male (Fig. 3E). For the female, the comparatively small mesoscutal punctures, with space for approximately 12 between the median and parapsidal lines, separate this species from others with a swollen frons and flat vertex. Other species with the median ocellus hidden in profile either have males with the head angularly produced in front of the lateral ocellus in profile (an undescribed species known only from the male from Neuquen, Argentina) or anterolateral corners of pronotum acutely angled (a Bolivian species) and females with larger mesoscutal punctures such that at most 9 would fit in the space between admedian and parapsidal lines (both an additional northern Argentinian species and the Bolivian one).

Description. Male: Body length 3.2mm, forewing length 2.0mm, head width 0.8mm.

Colouration: Black, with following parts yellow: labrum, mandible (except apex red-brown), most of clypeus, spot on lower paraocular area, anterior mark on scape. Pedicel and flagellum orange. Legs with yellow-orange as follows: anterior surface of foretibia, outer surface of forebasitarsus, apical rings on all femora; basal and apical rings on all tibiae. Tarsi pale brown. Tegula and apical impressed areas of metasomal terga pale amber. Wing veins orange-brown.



FIGURES 3A–M. *Chilicola obesifrons* Packer, **n. sp.** Male head: A. frontal view, B. lateral view. Female head: C. frontal view, D. lateral view. E. pronotum of male. F. surface sculpture of pronotum, mesoscutum and scutellum of female. G. Hind leg of male. H–J. Terminalia of male: H. S7, I. S8, J. genital capsule. Dorsal views are to the left, ventral to the right. K–M. Sting apparatus of female: K. hemitergite 7, L. hemitergite 8, M. first and second valvifers with sting shaft. Stippling in A and G shows areas of pale colouration, in H it refers to dark colouration on a translucent background, in J and M it indicates membranous regions; dotted lines in A and C show outline of swollen, impunctate areas.

Surface Sculpture: Microsculpture strongly imbricate almost throughout. Labrum deeply, coarsely and densely punctate ($i < d$) on shining background. Clypeus dull with sparse, irregular and obscure punctures, $i = 1-4d$. Supraclypeal and lower paraocular areas somewhat shiny with punctures more distinct and somewhat more dense, $i = 1-3d$. Frons with larger, denser punctures, $i \sim d$, with impunctate swellings around median ocellus and laterad of lateral ocellus. Vertex with transverse wrinkles among punctures. Hypostomal area irregularly punctate, $i = 1-4d$. Pronotum, mesoscutum and scutellum (Fig. 3F) dull with dense punctures that are large for size of insect, $i \leq d$; sparser on scutellum, $i \sim d$; metanotum duller than mesoscutum, punctures $i \leq d$. Mesopleuron somewhat shiny, irregularly punctate, $i < 1-3d$. Dorsal surface of propodeum with disk slightly depressed, weakly rugosoreticulate on either side of median carina, dorsolateral area roughened. Metasomal terga with weak microsculpture, sparse shallow obscure punctures, anterior portions of terga not differently sculptured from disks, apical impressed areas impunctate with very weak microsculpture.

Pubescence: White, short and sparse, not especially plumose; lacking long erect hairs on hypostomal area. Without apicolateral hair patches on metasomal terga. No areas of specialized pubescence on metasomal sterna or legs.

Structure: Head: Longer than broad, length to width 62:53 (Fig. 3A). Labrum 2X as broad as long, apex almost straight. Mandible short and broad, length:basal depth $\sim 2:1$. Clypeus with length and breadth subequal, lower one third extending beyond lower ocular tangent, lacking median longitudinal groove; epistomal suture expanded below anterior tentorial pit almost to laterally reflexed portion of suture, pit not separated from suture (Fig. 3A). Subantennal suture curved inward from near origin on antennal socket, otherwise straight; supraclypeal area (Fig. 3A) long and narrow, length to breadth $< 2:1$, weakly produced and poorly demarcated from frons above. Frons greatly swollen around median ocellus and mesad of upper inner margin of eye such that median ocellus not visible in profile; *swellings causing head to be flat dorsally in profile* (Fig. 3B). Frontal line distinct to median ocellus. Facial fovea broadly oval, shiny and shallow (Fig. 2). Inner margin of compound eye not emarginate (Fig. 3A) making UOD difficult to assess, but eyes strongly convergent below (Fig. 3A); OOC subequal to IOC. Lateral ocellus separated from compound eye by more than 2X its diameter. Vertex slightly longer than lateral ocellus, abruptly rounded onto occipital region. Upper ocular tangent passing well below lower margin of median ocellus by more than MOD. Scape 3X longer than greatest breadth, much longer than pedicel (Fig. 3A) and F1-F3 combined; F1 broader than long, F2 4X broader than long (Fig. 2); middle flagellomeres with length and breadth subequal; F11 slightly longer than F10; flagellum gradually increasing in breadth from F1 to F11; flagellomeres lacking unusual patterns of setation or structural modifications. Genal area approximately one third as long as eye (Fig. 3B). Malar space linear such that presence or absence of malar suture undetectable.

Mesosoma: Elongate, length more than 2X its greatest depth (17:7). Pronotal collar long, slightly more than $\frac{1}{2}$ as long as scape and approximately 1.5 LOL, laterally weakly concave, anterolateral corners forming right angle (Fig. 3E). Episternal groove complete, sharply curved anteriorly below. Scrobal groove weakly defined posterior to scrobe. Propodeum elongate, dorsal surface as long as posterior depth and subequal to length of scutellum (scutellum:metanotum:propodeum 24:15:25); propodeal sulcus marked by shallow pits becoming more distinct posteriorly. Hind leg not strongly modified; trochanter lacking modifications; femur 3X as long as greatest depth, convex ventrally; tibia gradually expanding from base to apex, somewhat more strongly so in basal half, length 3.5X greatest depth, lacking angles, carinae or ridges (Fig. 3G); hind tibial spurs long and not strongly curved or sclerotised; hind basitarsus 6X longer than greatest depth, parallel sided; hind tarsal claws bifid. Basal vein evenly curved; distal stigmal perpendicular crossing near apex of second submarginal cell, stigma shorter than length of marginal cell on wing margin, stigmal margin in marginal cell convex; first recurrent vein and first submarginal crossvein approximately interstitial on Rs+M.

Metasoma: Length and apical width of T1 subequal. T2 and T3 with weak basal depressions; apical impressed area approximately 0.33X length of tergum. Metasomal sterna unmodified except S1 slightly swollen at apex, gradulus of S2 with long posteriorly directed lateral portion, gradulus missing on S3-S6.

Terminalia: S7 with one pair of lateral lobes, ventral lobe broad, membranous, dusky pigmented except for basal and apical extremities; dorsal lobe reduced to narrow lamella with acute dorsolaterally oriented angulation (Fig. 3H). S8 with apical process elongate; widest at apex; emarginate apically (Fig. 3I). Ventroapical process of gonobase broad with comparatively long lateral projections. Volsella kidney-shaped; gonostylus not clearly demarcated from rest of gonoforceps. Gonoforceps with medioventral lobe approximately right-angled. Penis valve with pair of subapical membranous lobes, both oriented dorsally (Fig. 3J).

Female: Body length 3.3mm, wing length 2.0mm, head width 0.8mm.

Colouration: As in male except as follows: Labrum, mandible and anterior surface of flagellum orange. Clypeus and lower paraocular area lacking pale markings. Legs with marking darker orange; rings on femora and tibiae narrower. Metasomal sterna dark brown. Wing veins pale amber.

Surface Sculpture: As for male except as follows: Somewhat less dull throughout due to slightly weaker microsculpture. Spacing of punctures on supraclypeal area less regular, $i=1-5d$. Scutellum with space for approximately 12 punctures between admedian and parapsidal line. Metanotum no duller than scutellum. Mesopleural punctures finer. Lateral sulcus of propodeum very weak.

Pubescence: As in male except as follows: Comparatively sparse scopa on hind leg, with hairs on femur and tibia $\leq 3MOD$. Metasomal scopal hairs with short branches on anterior side of rhachis, well developed corbicula on S2, $\leq 5MOD$; scopal hairs on S3 $\leq 4MOD$; apical row of hairs on S4 $\leq 3MOD$;

Structure: Maxillary palpus unmodified, somewhat less than 0.5X as long as prementum. Prementum 4X longer than greatest width; premental fovea large, carinate laterally. Lacinia an elongate triangle, more than 3X as long as greatest breadth. Lorum weakly sclerotised except towards apex, 0.33X as long as cardo. Rest of body as in male except for usual secondary sexual characteristics and as follows: Facial fovea larger (Fig. 3C). Frons less strongly swollen around median ocellus and dorsally along inner margin of eye, *median ocellus not visible in profile, area around it somewhat flattened* (as in Figs. 3C and D), region between medial and lateral swellings concave. Supraclypeal area shorter than in male (Fig. 3C). Gena more than 0.5X as long as width of compound eye (Fig. 3D). Apical lunule of S5 forming approximately equilateral triangle.

Sting apparatus: Hemitergite 7 (Fig. 3K) with lateral portion of marginal ridge thick almost to apex with obtuse angle at base of lateral process; lateral lamella approximately triangular, medial portion of marginal ridge concave; spiracle closer to lateral portion of marginal ridge than to apex of lamina spiracularis, set in shallow depression; apodeme poorly developed; posterior margin of lamina spiracularis obtusely excised. Hemitergite 8 (Fig. 3H) with anterior ridge strongly developed to apex, straight except slightly produced anteriorly at apex; margin of plate and junction of apodeme and plate both slightly sinuate. First valvifer comparatively long and parallel-sided with short dorsal and ventral processes. Second valvifer with apodemal ridge slightly convex, apical process weakly developed, pars articularis narrowly rounded, incisura postarticularis moderately broad, portion of plate basal to gonostylus membranous, gonostylus somewhat parallel-sided. Sting shaft with basal bulb $2/3$ as long as stylet, ventral surface slightly concave; processus muscularis and processus medianus not strongly developed (Fig. 3M). Furcula with ventral arms narrow apically considerably broadened near basal one third, in lateral view strongly reminiscent of a cheese knife with ventral margin of dorsal arm strongly convex.

Material studied. Holotype male and allotype female, ARGENTINA, *Catamarca*, 17km N. of Andalgalá, 14–15.ii.2003, L. Packer, pan traps; all paratypes are also from *Catamarca* province and are as follows: 25km N. of Andalgalá, 14.ii.03 L. Packer, six females (one in glycerin); 20km N. of Andalgalá, 27°29'477"S, 066°23'006"W, 1736m, 14.ii.03, L. Packer, three females; Los Nacimientos de Abajo, 16–31.i.1969 Willink, Torán & Stange, malaise trap, [Entomofauna Subandina], one female; 6km N. of Belén, 1240m, 16–31.i.1969 Willink, Torán & Stange, malaise trap, [Entomofauna Subandina], one female; Punta Balasto, i.1997, Arriagada, one female; San Fernando, 7.iii.1990, Rozen and Roig, on *Sclerophyllax gilliesii* (Sclerophyllaceae), six females. The holotype and allotype will be housed at MACN pending completion of revisionary studies of the group; the Willink, Torán, Stange females are at IML, Arriagada's and Rozen and Roig's specimens are at the AMNH, the remaining paratype females are at PYU.

Etymology. The specific epithet refers to the large swellings around the median ocellus and just mesad of the upper portion of the eye.

Comments. The type series collected by the senior author was found on the roadside between Andalgala and Capillitas in an area that was substantially moister than were the surrounding areas. The two specimens collected by Duckworth have the propodeal sulcus more strongly developed than in the others and approach several undescribed species in the group in this regard.

Two females from Sumalao, Salta Province, Argentina (AMNH), collected by Fritz in January 1996 may be attributable to this species.

***Chilicola catamarcense* Packer, n. sp.**

(Figs. 4A–H)

Diagnosis: See above account for species group characteristics. Both sexes can be differentiated from all other species of *Chilicola* by the elongate pronotum with angulate anterolateral corners combined with the almost complete lack of frontal swellings. Additionally, male *C. catamarcense* can be differentiated from other species in the group by the following combination of characters: hind tibia attaining almost maximal depth near midlength (Fig. 4F), length approximately 1.1X intertegular span and space for approximately 10 or more punctures between admedian and parapsidal lines.

Description. Male: Body length 3.0mm, forewing length 2.3mm, head width 0.9mm.

Colouration: As for *C. obesifrons* n. sp. but wing veins paler, pale straw with stigma cream-coloured along margin with marginal cell.

Surface Sculpture: As in *C. obesifrons* with following exceptions. Punctures smaller throughout, denser on lower paraocular area i~d, those of upper paraocular area extending onto areas around median ocellus and mesad of upper inner eye margin. Hypostomal and genal areas weakly punctate on strongly microsculptured but shiny background. Punctures of mesoscutum somewhat finer (Fig. 4E), of scutellum somewhat denser i≤d. Punctures of mesopleuron more regularly spaced i~d.

Pubescence: As for *C. obesifrons*.

Structure: As in *C. obesifrons* except as follows: Head shorter (Fig. 4A), length to width 60:55. *Frons* very slightly swollen around median ocellus and mesad of upper inner margin of eye; median ocellus clearly visible in profile (Figs. 4B). Supraclypeal area shorter (Fig. 4A), slightly over 1.5X as long as apical breadth (26:16). Scape slightly longer than pedicel and first three flagellomeres combined, 3X as long as apical depth. Hind tibia approximately 3X as long as apical depth, abruptly expanded from base to near midlength, subparallel for apical half (Fig. 4F). Hind basitarsus 5.5X as long as greatest depth, parallel sided. Propodeal sulcus only developed on posterior surface and extreme posterior of dorsal surface of propodeum.

Terminalia: Figs 4G and H. As in *C. obesifrons* except ventral medial lobe more obtuse and membranous lobes to penis valve somewhat longer.

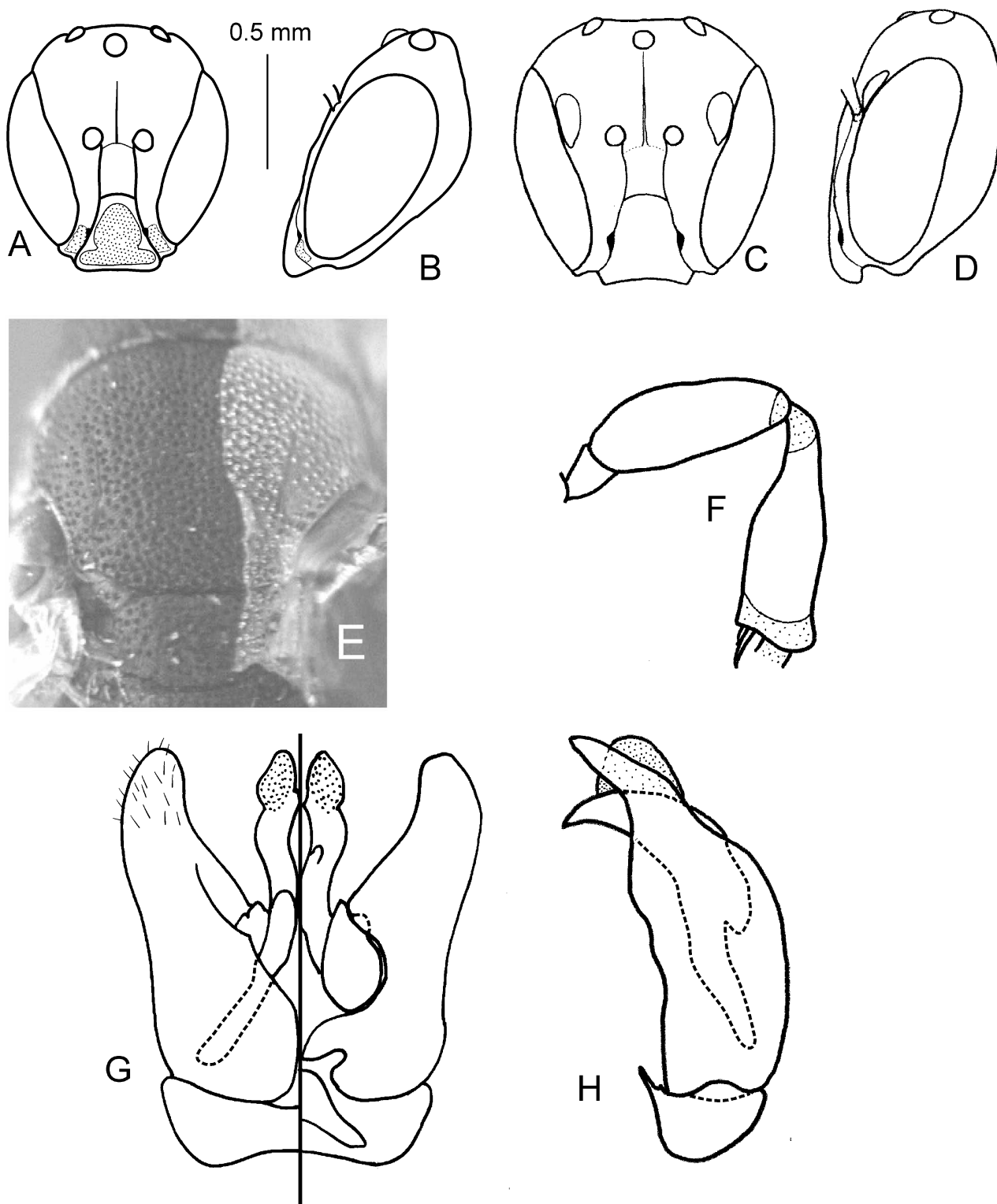
Female: Body length 3.2mm, forewing length 2.5mm, head width 0.9mm.

Colouration: as for *C. obesifrons*; wing veins dark amber.

Surface Sculpture: As in female of *C. obesifrons* except as follows: Microsculpture more strongly developed and surface less shiny. Upper paraocular area with sparse, weak punctures, i=1–3d, encroaching the slightly swollen areas of frons. Supraclypeal area with very few punctures. Metanotum dull, punctures i<d. Propodeal sulcus practically imperceptible throughout.

Pubescence: As in female of *C. obesifrons*.

Structure: As for *C. obesifrons* except as follows: Carina surrounding premental fovea weakening in apical 0.33. Head length to width 62:55 (Fig. 4C). *Frons* weakly swollen around median ocellus and mesad of upper inner margin of eye, outline of median ocellus just visible in profile; area between medial and lateral swellings flat. Gena almost 0.5X as long as maximum breadth of compound eye (Fig. 4D).



FIGURES 4A–H. *Chilicola catamarcense* Packer, **n. sp.** Male head: A. frontal view, B. lateral view. Female head: C. frontal view, D. lateral view. E. surface sculpture of mesoscutum and scutellum of male. F. Hind leg of male. G–H. Male genitalia: G dorsal view to left and ventral view to the right, H. lateral view. Stippling in A and F indicates pale colouration, in G and H membranous regions.

Material studied. Holotype male, allotype female, one male and four female paratypes: ARGENTINA, *Catamarca*, Andalgalá, 25.x.1972, G.E. Bohart, other paratypes all from ARGENTINA, *Catamarca*, as fol-

lows: same data as holo- and allotype except 4.xi.1972, one male; Cuesta de la Chilca (base), 7.xi.1972, J.L. Neff, ex *Prosopis chilensis* (Fabaceae), one male; Andalgala-Colpes Rd., 90km marker, 24.x.1972, ex *Zizyphus mistol* (Rhamnaceae), one male; 15km S of Colpes, 27.x.1972, G.E. Bohart, two males; Andalgala, 4.xi.1972. G.E. Bohart, one male; Andalgala, Desert Scrub Site, IBP Program, J.L. Neff, one male and one female (headless). With the exception of one male and one female paratype (PYU), Bohart's series, including the holo- and allotypes, is at Logan and Neff's specimens are at CTMI. Some specimens bear a label *Chiliclope foveata*, Moure ms., an unpublished manuscript name.

Etymology. The specific epithet refers to the Argentinian Province from which all specimens were collected.

Comments. Found in the same general area as *C. obesifrons* but after the winter, rather than summer, rains; thus, the two seem allochronically separated and are clearly morphologically distinct.

***Chilicola unicarinata* Packer, n. sp.**

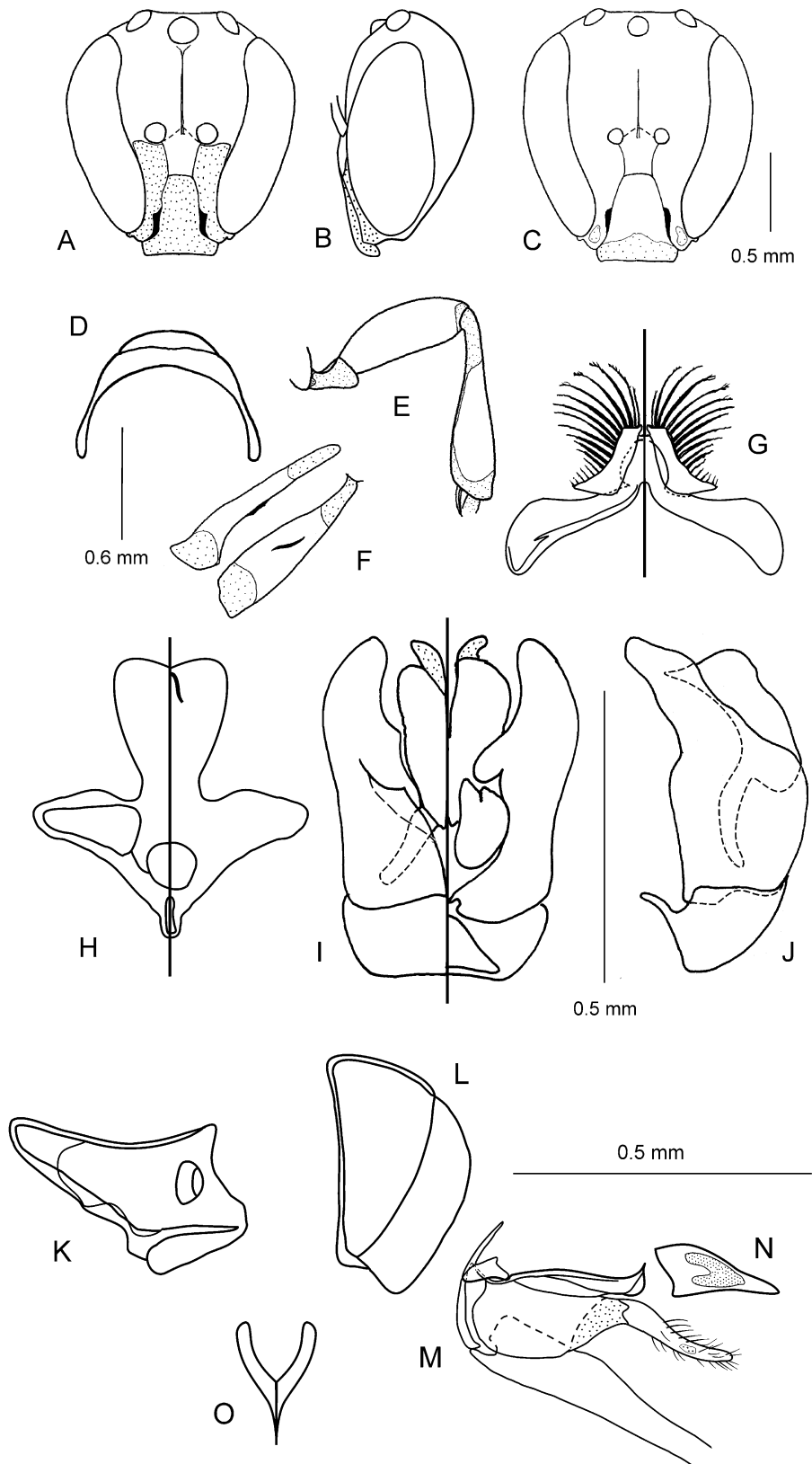
(Figs. 5A–O)

Diagnosis: As with the previous species pair, phylogenetic analyses (Packer, in press) suggest that a new subgenus is required for this and the following species. This group has the following combination of characteristics that is unique among the Xeromelissinae. In the males, the form of the hind tibia, which is very narrow in dorsal view, somewhat expanded laterally towards the apex and with a single oblique carina on the inner surface (Fig. 5F); the numerous long hairs on the ventral lobes of S7 (Fig. 5G), the deep cleft in the penis valves from which the large membranous lobes arise and the crenulate lateral margins of the penis valves (Fig. 5I). The short distance between lateral ocellus and compound eye, less than the diameter of lateral ocellus (Figs. 5A and B), is found uncommonly elsewhere in the subfamily; the lack of long hairs on the lateral surface and dorsolateral area of the propodeum is also unusual. For females, the restriction of branches on the scopal hairs of S2 to the apex of the hairs is rarely found elsewhere among *Chilicola* species and with the orange markings on the lower paraocular area form a unique combination.

Males of *C. unicarinata* can be differentiated from those of *C. chubutense* Packer, **n. sp.**, described below, by the more extensive pale colouration on the legs, the carina on the inner surface of the hind tibia approximately centrally positioned along the length of the tibia (Fig. 5F) as opposed to being more basal in *C. chubutense* and the presence of only one membranous lobe to the penis valve (Fig. 5I) whereas the latter species has two (Fig. 6F). In addition to the next described species, there are several additional species from northern Argentina and Bolivia that are considered to belong to a new subgenus of *Chilicola*. Except for colouration characteristics of the females and minor details of the male genitalia, these bees appear difficult to distinguish from *C. unicarinata* and additional study is required. The entirely orange legs of the females of *C. unicarinata* are diagnostic, other species have at least some dark patterning on several leg segments.

Description. Male: Body length 4.4mm, wing length 3.3mm, head width 1.0mm.

Colouration: Blackish brown, with following parts yellow: mandible (except apex red), clypeus, paraocular area to antennal socket (Fig. 5A), anterior surface of scape and pedicel, broad apical ring on forefemur, foretibia except for brown spot on posterior surface, apical ring on midfemur, basal and apical rings on mid tibia, narrow apical ring on hind femur, narrow basal and apical rings and complete ventral longitudinal line and incomplete dorsal longitudinal line on hind tibia, all tarsi except hind basitarsus (whitish) and pretarsi. Following parts orange: Anterior surface of flagellum, all trochanters and all pretarsi. Posterior surface of antenna red-brown. T1, T2 and T6 brown, T3 dark brown, T4 and 5 blackish. Tegula translucent colourless. Wing veins pale testaceous. Apical impressed areas of all terga translucent straw.



FIGURES 5A–O. *Chilicola unicarinata* Packer, **n. sp.** Male head: A. frontal view, B. lateral view. Female head: C. frontal view. D. pronotum of male. E. Hind leg of male. F. hind tibia of male showing carina, dorsal view to left, inner view on right. G–J. Terminalia of male: G. S7, H. S8, I. genital capsule, Dorsal views are to the left, ventral view to the right. J. lateral view of genitalia. K–O. Sting apparatus of female: K. hemitergite 7, L. hemitergite 8, M. furcula, N. First and second valvifer with gonostylus, O. ventral view of gonostylus. Stippled areas in A, B E and F indicate yellow, in C they represent orange; in I, N and O stippled areas represent membrane.

Surface Sculpture: Labrum deeply and moderately densely punctate ($i \sim d$) on shiny background. Clypeus, supraclypeal area and lower paraocular area with irregular, very weak punctures ($i=1-3d$) and entirely dull due to microsculpture; supraclypeal area somewhat shinier. Frons densely, finely and shallowly punctate ($i \leq d$); interspaces moderately shiny. Vertex obscurely punctate. Hypostomal and genal areas shiny, punctures largely effaced. Pronotal collar, mesoscutum and scutellum moderately shiny with fine, shallow punctures ($i=1-2d$). Metanotum shiny with sparser punctures except denser on anterior and posterior margins. Mesopleuron sparsely punctate ($i=2-5d$), microsculpture stronger, surface moderately dull. Dorsal surface of propodeum weakly and irregularly reticulostriate, reticulations almost reaching apex; lateral surface very weakly rugulose; dorsolateral area narrowly wrinkled, wrinkles subvertically oriented. Metasomal terga with few very shallow and obscure punctures, surface shiny, microsculpture weak; apical impressed areas with very weak microsculpture.

Pubescence: Whitish, generally short, sparse and not especially plumose, hairs on lower surface of thorax longer (1MOD). Genal beard present, longer basally (2MOD) than apically (0.5MOD). Metasomal terga with few short hairs, lacking apicolateral hair patches. Metasomal sterna with patches of erect hairs laterally on S2–S5, those on S2 sparse and short (at most 0.5MOD in length), those on S3–S5 short anteriorly, increasing in length posteriorly, longest hairs (1MOD) on posterior of S4.

Structure: Head: Longer than broad (62:57) (Fig. 5A). Labrum 2X as broad as median length; apical margin slightly convex. Mandible less than 2X as long as basal depth (19:11). Clypeus slightly longer than broad (21:20) (Fig. 5A), lower approximately one quarter extending beyond lower ocular tangent, weakly protuberant in profile, with weak broad median longitudinal depression; lateral margin of clypeus almost straight dorsal to anterior tentorial pit, abruptly bent laterad beneath pit (Fig. 5B); anterior tentorial pit situated in elongate depression slightly laterad of epistomal suture separated from it by less than pit diameter. Subantennal sutures strongly convergent below (Fig. 5A); supraclypeal area sharply defined above, length to apical breadth 13:7 (Fig. 5A). Frons without swellings or depression to house scape. Frontal line weak, but entire. Facial fovea absent. Eyes emarginate, strongly converging below (Fig. 5A) (UOD:LOD 37:20). Lateral ocelli much closer to compound eye than each other (OOC:IOC 13:35) and OOC less than LOL, 9:13. Vertex slightly longer behind lateral ocellus than LOL (9:8). Head not strongly developed above summit of eye, upper ocular tangent crosses lower tangent of median ocellus. Occipital margin sharp but not carinate. Scape 3.5X as long as apical breadth, shorter than pedicel + F1 + F2 combined; F1 shorter than F2, 12:15; all flagellomeres cylindrical, longer than broad, (for F8, 20:18), F10 and F11 subequal in length; flagellomeres lacking modifications in structure or setation; flagellum slightly broader towards apex. Malar space linear such that presence or absence of malar suture undetectable. Gena slightly greater than 0.5X width of eye in lateral view (12:22) (Fig. 5B).

Mesosoma: Elongate, length to greatest depth: 106:55. Pronotal collar short (Fig. 5D), medial length 0.75 LOL, anterolateral margins rounded. Episternal groove distinct and complete; scrobal groove weakly developed posterior to scrobe, absent anteriorly. Propodeum slightly longer than scutellum (ratio of scutellum:metanotum:dorsal surface of propodeum 17:9:18) slightly shorter than its posterior depth (20); propodeal sulcus shallow but distinct, weakly pitted. Hind trochanter slightly swollen apically, lacking spines, teeth or angulations (Fig. 5E). Hind femur weakly expanded with ventral surface slightly sinuate, length to greatest depth 70:24 (Fig. 5E). Hind tibia laterally compressed, but with apical one sixth abruptly, but not very strongly expanded, length to apical depth 85:21, *inner surface with strong oblique internal carina for middle 1/5th of tibia, distance from base of tibia to base of carina equal to distance from apex of carina to apex of tibia* (Figs. 5E and F); apex of tibia attaining base of trochanter when folded; hind tibial spurs unmodified. Hind basitarsus 6X longer than greatest depth, parallel sided. Hind tarsal claws bifid. Basal vein evenly curved; distal stigmal perpendicular traversing second submarginal cell near middle; stigma shorter than length of marginal cell on wing margin (28:34); stigmal margin in marginal cell angularly convex; first recurrent vein interstitial with first submarginal crossvein on vein Rs+M.

Metasoma: Subpetiolate, T1 longer than apical breadth (40:34). Apical impressed areas of terga ~1/4 as long as tergum. S1–S6 unmodified; gradulus of S2 with long posteriorly directed lateral portion, S3 with very small lateral gradular mark, S4–S6 lacking gradular marks.

Terminalia: S7 with one pair of well developed lateral lobes; dorsal lobe, narrowly rectangular but expanded laterad anteriorly; bearing very long, thick, apically branched hairs on posterior and lateral margins; remnants of second (ventral) lobe restricted to short longitudinal lamella (Fig. 5G). S8 with apical process large, truncate and broadest apically (Fig. 5H). Apicoventral process of gonobase narrow, apex comparatively deeply emarginate. Volsella U-shaped; outer margin deeply concave before apex. Gonoforceps with strongly reflexed angulate mesal margin, ventromedial lobe long and rounded, oriented anteromesad; gonostylus not clearly demarcated from gonocoxite. Penis valve extremely broad towards apex, bearing one long, broadly-based membranous lobe on outer surface, merging imperceptibly with rest of penis valve, arising within deep and broad groove and curved laterad (Figs. 5I and J).

Female: Body length 4.6mm, forewing length 3.1mm, head width 1.0mm.

Colouration: Black, with following parts orange: labrum, apical half of mandible, antenna (except for brownish markings on scape, pedicel and F1), all trochanters, femora, tibiae and tarsi (femora and tibia sometimes suffused with reddish-brown). Base of mandible yellowish. Following parts orange-brown: posterior surface of F8–F11, part of posterior surface of scape, most of clypeus and lower paraocular area below anterior tentorial pit.

Surface Sculpture: As in male but with punctures generally somewhat finer and microsculpture more distinct. Clypeus dull to apex. Dorsal surface of propodeum with irregular reticulations not attaining posterior margin.

Pubescence: As in male but hairs on ventral surface of thorax shorter and finer. Scopal hairs of hind tibia not plumose. Metasomal terga lacking apical marginal hair patches. Scopa of S2 forming corbicula of long (up to 3MOD) but sparse, hairs either lacking branches or with few short branches apically on anterior surface of rhachis.

Structure: Maxillary palpus 0.5X as long as prementum (13:26). Prementum 5X as long as greatest breadth; fovea covering most of ventral surface, margins carinate. Lacinia triangular, 3X as long as greatest breadth. Lorum membranous except for two small longitudinal apical straps. Rest of body as in male except for usual sexual differences and as follows: Labrum with apical margin somewhat more angularly produced medially, very slightly concave either side of middle. Head longer than wide (75:64) (Fig. 5C). Clypeus with length and breadth subequal, extending below lower ocular tangent for less than one third of its length (Fig. 5C); UOD:LOD 40:27. Lateral ocelli much closer to compound eye than each other (Fig. 5C), OOC:IOC 6:18 and closer to eye than in male; ratio of OOC to LOL 12:14. Occipital margin rounded. Ratio of length of gena to eye 16:22. Propodeal sulcus extremely weak. Apical lunule of S5 almost an equilateral triangle.

Sting apparatus: As in Figs. 5K–O. Hemitergite 7 with lateral portion of marginal ridge thickened from apodemal region to lateral process; lateral process short and broad; lateral lamella rounded anteriorly narrowing posteriorly; medial portion of marginal ridge concave; spiracle close to posterior margin of lamina spiracularis, equidistant from lateral and medial portions of marginal ridge; posterior margin of lamina spiracularis concave medially (Fig. 5K). Hemitergite 8 with anterior ridge very slightly concave continuing as medial ridge to junction with plate, plate parallel-sided (Fig. 5L). First valvifer with dorsal process much shorter than ventral one, ventral margin concave. Second valvifer with apodemal ridge sinuate, apical process moderately developed, its lower margin strongly convex such that apical cleft is narrower apically than at mid-length; area of plate basal to gonostylus membranous; rostral process almost parallel-sided; pars articularis weakly expanded to acute apex; incisura postarticularis broadest at base abruptly narrowing to basal third and then approximately parallel-sided to apex (Fig. 5M); gonostylus narrow in lateral view but strongly converging to apex from broad base in ventral view (Fig. 5N). Sting shaft with ventral surface almost straight, processus muscularis and processus medianus poorly developed (Fig. M). Furcula with ventral arms comparatively straight and parallel-sided, unevenly curved in lateral view (Fig. O).

Material studied. Holotype male, allotype female, three male and three female paratypes: ARGENTINA, *Catamarca*; Andalgala, 1510km marker on Andalgala-Belen Highway, 18.x.1973; J.L. Neff, ex *Prosopis chilensis* (Fabaceae). Additional paratypes as follows: same locality as holotype but 15.x.1973 ex *P. nigra*, one male; remaining paratypes all from ARGENTINA: *Catamarca*: Andalgala, 25.x.1972, G.E. Bohart, ex *Prosopis alba*, two males; Punta Balasto, 30km from Santa Maria, 24.xi.1966, Willink coll. two males; Colpes, upper bajada, 19.x.1973, J.L. Neff, ex *P. nigra*, one female. All specimens in CTMI except for two male and two female paratypes in PYU, the two males from Punta Ballasto, which are at IML and one male and one female paratype at MACN.

Etymology. The specific epithet refers to the single oblique carina on the hind tibia of the male.

Comments. Some females of this species possess labels stating *Pseudiscelis sufferugineus* or *Pseudiscelis sufferuginia*, and one male bears the label *Oediscelis xanthopoda*. These are Moure manuscript names. This species is not a member of either of the subgenera suggested by Moure's attributions (Packer, unpublished data).

***Chilicola chubutense* Packer, n. sp.**

(Figs. 6A–F)

Diagnosis: Extremely similar to the previous species, but with forefemur and hind tibia almost entirely dark, pubescence on metasomal sterna longer, the carina on the inner surface of the hind tibia more basal in position (Fig. 6C) and penis valves with two membranous lobes (Fig. 6F). Thus, the combination of forefemur dark except for narrow apical ring; hind tibia entirely dark, laterally compressed except at extreme apex (Fig. 6B) with single carina on inner surface (with base of carina much closer to base of tibia than the apex of the carina is to the apex of the tibia) (Fig. 6C), two membranous lobes on the penis valves (Fig. 6F) plus S2–S5 with posteromedially directed patches of suberect pubescence approximately 1.5MOD in length is sufficient to separate this species from all other *Chilicola* known to us. Details of S7 are also unique (Fig. 6D). The female is unknown.

Description. Male: body length 4.2mm, wing length 3.0mm, head width 1.1mm.

Colouration: As for *C. unicarinata* except facial markings paler, anterior yellow stripe on scape narrow, spot on pedicel small, hind tibia entirely dark except at extreme base and narrowly at extreme apex; tegula transparent, posterior 0.33X and anterior spot cream; wing veins amber except for costa and 2nd abscissa of M+Cu brown and stigma testaceous.

Surface sculpture: As for *C. unicarinata* except punctures deeper, more distinct and slightly denser throughout, except on metasoma; dorsolateral area of propodeum more coarsely rugose.

Pubescence: As for *C. unicarinata* except S2–S5 with longer posteromedially directed hairs, longest laterally ~1.5MOD, shorter medially 0.75MOD, longest hairs subequal in length on all sterna, sparser on S5.

Structure: As for *C. unicarinata* except as follows:

Head: Clypeus longer than broad (11:10) (Fig. 6A), with weak broad incomplete median longitudinal depression. Supraclypeal area broader, length to breadth 17:10. Flagellomeres slightly shorter, for F8, length:breadth 9:8.

Mesosoma: Dorsal surface of propodeum shorter than scutellum, ratio of scutellum:metanotum:propodeum 37:20:33. Hind femur slightly narrower, length to depth of femur 10:3 (Fig. 6B). *Hind tibia with oblique carina on inner surface more basal in position than in previous species, distance from base of tibia to base of carina almost 2X distance from apex of carina to apex of tibia* (Fig. 6C). Basal vein curved near middle; stigma shorter in relation to marginal cell, ratio 53:76, stigmal margin on marginal cell more evenly convex.

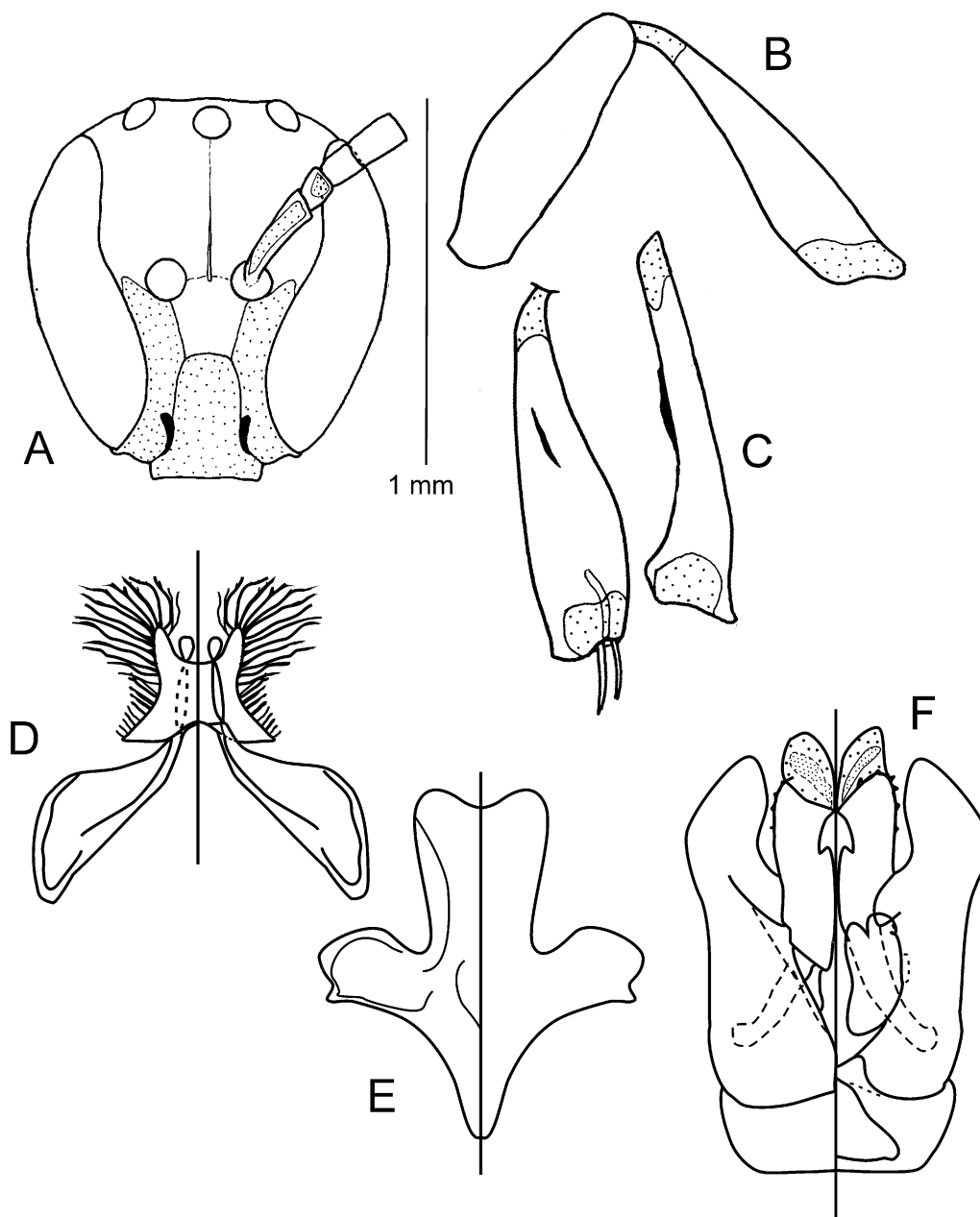
Metasoma: As in *C. unicarinata*.

Terminalia: S7 with one pair of well developed lateral lobes; dorsal lobes subparallel to one another, hairs finer than in previous species; remnant of ventral lobe as short as in *C. unicarinata* but extending posteriorly

as short, twisted extension (Fig. 6D). S8 with lateral lobes shorter and broader and apical lobe broader than in *C. unicarinata* (Fig. 6E). Penis valve with one membranous lobe longer than in previous species (Fig. 6F).

Material studied. Holotype male and one paratype: ARGENTINA, *Chubut*, 8km S, of Rada Tilly, 45°59'043S, 72°36'322W, 30m, 24.xi.2003, L. Packer; the paratype bears an additional blue label: VOUCHER SPECIMEN DNA EXTRACTION E.A.B. Almeida #67 extraction date: 7/2004. The holotype is at MACN; what remains of the paratype is at PYU.

Comments. The only known specimens of this species were collected in scrub habitat close to the edge of a small pond just to the west of the coastal highway. The paratype was used for DNA extraction and is missing most of the mesosoma.



FIGURES 6A–F. *Chilicola chubutense* Packer, n. sp., male. A. frontal view of the head. B. Hind leg. C. hind tibia showing carina, inner view on left, dorsal view on right. D. S7. E. S8. F. genital capsule. Dorsal views are at the left. Stippling in A–C indicates pale colouration, in F membranous areas.

***Chilicola (Pseudiscelis) nanula* Packer, n. sp.**
(Figs. 7A–O)

Diagnosis: This species is a member of the subgenus *Pseudiscelis* based upon the comparatively long pronotum (Fig. 7F) combined with the absence of a facial fovea (Figs. 7B and D) and also the hitherto unnoticed synapomorphy for the subgenus of a seven segmented maxillary palpus (Fig. 7E).

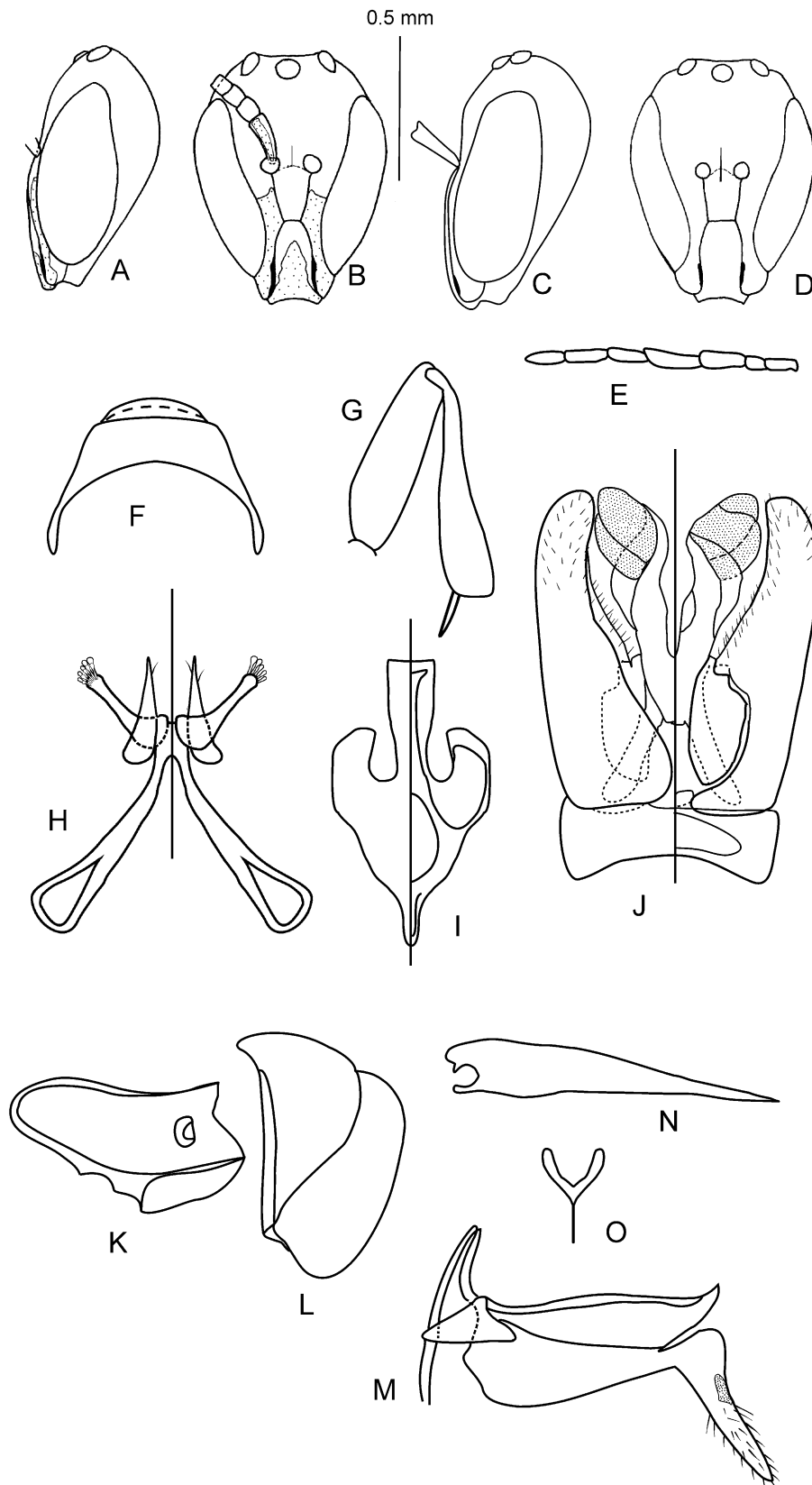
The small body size (head length less than one millimeter) and malar space with length and breadth subequal (Fig. 7A) are diagnostic for the new species within the subgenus *Pseudiscelis* except for two additional undescribed species, one of which is sometimes sympatric, the other from Bolivia. The antenna of the second small Argentinian species reaches the metanotum when curved back over the dorsum and is approximately 1.25X as long as the entire mesosoma, the pronotal lobe is entirely yellowish and the clypeus entirely yellow. In contrast, the antenna of *C. nanula* barely reaches the base of the scutellum and is less than 1.15X the length of the mesosoma, the pronotal lobe is entirely dark (sometimes edged with testaceous) and the clypeus is narrowly dark laterally, broadly so (broader than the maximum width of the scape) dorsally such that the pale marking on the clypeus extends only two thirds as far up the face (or less) as does the pale marking on the paraocular area. Females of the two species can be differentiated by the dark pronotal lobe and lower face of *C. nanula*, whereas the other species has at least the posterior half of the pronotal lobe orange with a yellowish posterior rim, a yellow marking laterad of the groove below the anterior tentorial pit and orange markings on the lower margin of the clypeus and on the malar area. Males of *C. nanula* can be differentiated from those of the Bolivian one by its shorter head, only 1.3X as long as wide, versus almost 1.5X as long as wide in the Bolivian species. *S7* differs between the two species: in *C. nanula* the capitate setae at the apex of the posterolaterally oriented dorsal lobe do not reach the apex of the fine setae at the end of the posteriorly oriented ventral lobe, whereas in the Bolivian species the capitate setae are longer and reach the apex of the setae on the ventral lobe. It is not yet possible to differentiate the females of *C. nanula* and the Bolivian species.

Description. Male: body length 3.2mm, forewing length 2.3mm, head width 0.7mm.

Colouration: Black, legs and metasoma brown. Following parts yellow: mandible (apex testaceous), labrum, clypeus (except for band adjacent to epistomal suture, band broader dorsally), lower paraocular area to beneath antennal socket separated from socket by one socket diameter, ventral surface of scape and pedicel, apical one-third of forefemur, anterior and dorsal surfaces of foretibia and foretarsus, basal ring on mid- and hindtibia, mid- and hindtarsomeres (darkening somewhat towards pretarsus). Following parts yellow-orange: ventral surface of antennal flagellum and apical rings to mid and hind tibiae. Dorsal surface of flagellum orange-brown. Tegula amber. Wing veins pale brown. Apical impressed areas of metasomal terga amber.

Surface Sculpture: Body surface moderately dull due to microsculpture, shinier on scutellum, sides of thorax and metasomal terga. Labrum moderately densely punctate, $i < d$. Face below antennae with sparse punctures ($i \sim 2-3d$); upper paraocular area and frons with larger, deeper, denser but irregular punctures ($i = 0.5-2d$). Vertex behind ocelli transversely microstriate with few punctures. Genal area shallowly and irregularly punctate ($i = 1-5d$) on weakly, longitudinally microstriate background. Pronotum irregularly punctate ($i = 0.5-2d$), punctures larger than elsewhere. Mesoscutum distinctly punctate ($i \sim d$); scutellum and metanotum with slightly sparser punctures. Mesopleuron irregularly punctate, $i = 1-3d$. Dorsal surface of propodeum rugose on disc with strong median longitudinal carina attaining posterior margin, lateral portion of dorsal surface minutely but deeply roughened, lateral surface of propodeum weakly rugulose, dorsolateral area strongly rugose. Metasomal terga somewhat shiny with shallow microsculpture; T1 punctures very shallow and sparse; remaining terga with minute sparse punctures; apical impressed areas with very weak microsculpture.

Pubescence: White, short, sparse and fine throughout ($\leq 0.5OD$) with few longer hairs on gena ($\leq 1.5OD$) not forming beard. No posterolateral hair patches on metasomal terga. No specialized areas on metasomal sterna, which are glabrous except for short, sparse, suberect hairs on posterior 0.33X and transverse subapical row of somewhat longer hairs ($\sim 0.5OD$), somewhat longer on *S5* ($\sim 1MOD$).



FIGURES 7A–O. *Chilicola nanula* Packer, **n. sp.** Head of male: A. lateral view, B. frontal view. Head of female: C. lateral view, D. frontal view. E. maxillary palpus of female. Male: F. pronotum. G. hind leg. H. S7. I. S8. J. genital capsule. Dorsal views are at the left. K–O. Sting apparatus of female: K. hemitergite 7, L. hemitergite 8, M. First and second valvifer with gonostylus, N. sting shaft. O. furcula. Stippling in A and B indicates pale colouration, in J and M it indicates membranous areas.

Structure: Head: (Figs. 7A and B) Longer than broad 60:45. Labrum transverse, oval, length to breadth 7:11. Mandible length to basal depth 20:11. Clypeus elongate, length to breadth 20:13 (Fig. 7B), extending below lower ocular tangent for one-third of its length, with very weak longitudinal medial depression. Epistomal suture expanded from above anterior tentorial pit almost to apex, anterior tentorial pit adjacent to suture. Subantennal sutures slightly convex outwardly; supraclypeal area 2X as long as apical breadth, well defined above ending just below midpoint of antennal socket. Frontal line distinctly raised for more than lower one-third of distance between upper margin of antennal socket to median ocellus, otherwise indistinct. Frons lacking swellings or depressions. Facial fovea absent. Inner eye margins weakly emarginate, eyes strongly convergent below (Fig. 7B); UOD:LOD 27:13. OOC 1.3X diameter of lateral ocellus; OOC:IOC 13:25. In frontal view, vertex strongly convex between eye and lateral ocelli, flat between lateral ocelli, expanded above compound eye. Upper orbital tangent below ventral tangent of median ocellus by <MOD. Scape 3X as long as greatest breadth, equal in length to pedicel and first two flagellomeres combined; pedicel longer than broad 10:7; F1 longer than broad (Fig. 7B); F2 and F3 with length and breadth subequal; remaining flagellomeres with length and breadth subequal except F11 1.5X as long as broad; flagellum gradually increasing in breadth from base to apex; flagellomeres lacking unusual patterns of setation or structural modifications. Face not protuberant in profile. Vertex in profile with shallow transverse depression just in front of occipital margin, occipital margin strongly carinate. Malar space shorter than basal depth of mandible (10:8), malar suture distinct. Ratio of gena:eye 12:20, eye broadened below middle (Fig. 7A and B).

Mesosoma: Elongate, length to greatest depth 15:7. Pronotum elongate (Fig. 7F), collar 1.5X as long as LOL, rounded anterolaterally. Episternal groove well developed below scrobe; scrobal groove absent anterior to scrobe, weak and oriented posterodorsally behind. Propodeum longer than scutellum, ratio of length of scutellum: metanotum: propodeum 22:11:29. Propodeal sulcus shallow anteriorly, formed of well defined transverse pits on posterior surface of propodeum. Hind femur not expanded, length 3X greatest depth, ventral surface convex (Fig. 7G). Hind tibia very narrow in basal half, somewhat expanded towards apex, almost 5X as long as apical depth (Fig. 7G); hind tibial spurs unmodified. Hind basitarsus more than 6X as long as greatest depth, subparallel. Hind tibial claws bifurcate. Basal vein weakly curved; ratio of length of stigma to marginal cell beyond stigma 20:28; stigma in marginal cell strongly convex; distal stigmal perpendicular near middle of second submarginal cell; 1st submarginal cross-vein interstitial or slightly apical to first recurrent vein.

Metasoma: T1 longer than broad 35:28. Apical impressed portions of terga 0.25X as long as terga, longer on T3 0.33X length of tergum. Sterna unmodified; S2 gradulus with long posteriorly directed lateral portion; graduli lacking on S3–S6;

Terminalia. S7 (Fig. 7H) with two lateral lobes, apical lobe posteriorly directed, narrow, acutely pointed, membranous and bearing several long setae; basal lobe elongate, cylindrical, somewhat posteriorly directed, slightly broader at base, apex with cluster of ventrally directed, thick peg-like capitate setae. S8 (Fig. 7I) with apical process long, parallel-sided, truncate at apex. Gonobase with short, broadly concave ventral process. Volsella U-shaped with apex of cuspis somewhat less than right angle, lateral surface concave subapically. Gonostylus narrow and elongate, poorly differentiated from gonocoxite. Penis valve with two membranous lobes directed dorsolaterally (Fig. 7J).

Female: body length 3.2mm, wing length 2.1mm, head width 0.7mm.

Colouration: Black-brown with malar space, apex of clypeus and lower paraocular area dark testaceous. Rest as in male but with pale markings on legs somewhat darker and more restricted in size.

Surface Sculpture: As for male except somewhat less dull throughout due to slightly weaker microsculpture; punctures smaller, shallower and somewhat sparser throughout.

Pubescence: Sparse and short. Scopal hairs on hind tibia 1.5MOD, scopa on S2 forming corbicula of long hairs \leq 3.5 MOD, with short branches on anterior surface.

Structure: Maxillary palpus 7-segmented (Fig. 7E) with 2nd segment shortest, segments 5–7 of equal length, 4th segment longest, entire palpus 0.625X as long as prementum. Mouthparts elongate, prementum

almost 6X as long as greatest breadth, fovea almost entirely covering ventral surface, lateral margins strongly carinate. Lacinia an elongate, narrow, hairless strap, more than 10X as long as greatest width. Lorum barely 2X as long as wide. Rest as for male except for normal sexual differences and as follows: Lower paraocular area broader, somewhat swollen laterally. Dorsal surface of propodeum subequal in length to scutellum, ratio of scutellum:metanotum:propodeum 26:12:30. Propodeal sulcus indistinct. Apical lunule of S5 semicircular.

Sting apparatus: Hemitergite 7 elongate (Fig. 7K), 2.3X as long as broad; medial portion of marginal ridge strongly concave; base of lateral process broad; spiracle approximately equidistant from lateral, medial and posterior margins of lamina spiracularis, posteriorly oriented; posterior margin of lamina spiracularis concave. Hemitergite 8 (Fig. 7L) with apodeme much broader than plate, anterior margin bent anteriorly at lateral extremity, anterior ridge slightly concave, margin between apodeme and plate sinuate. First valvifer (Fig. 7M) with ventral arm much longer than dorsal one. Gonostylus short, bearing short setae (Fig. 7M). Sting shaft long and narrow, ventral margin straight (Fig. 7N). Furcula with ventral arms broad; dorsal arm as long as ventral arms, elongate oval in lateral view (Fig. 7O).

Material studied. Holotype male and allotype female: ARGENTINA, *La Rioja*, Departamento Rosario V., Penaloza, Sierra de Arganaraz, El Rocillo, 31°2066 S, 66°7126 W, 2370 ft., 22.x.1997, M.E. Irwin, F.D. Parker and S. Roig; paratypes as follows: same data as holotype and allotype, seven males, three females; same locality and date but malaise trap, three male, four females; same data but pan trap, six males; same locality and collectors but 11.x.1997, two males; same data except 1km. W. of El Rocillo, 31°2071 S, 66°7140 W, 2350 ft., 11–22.x.1997, M.E. Irwin, F.D. Parker and S. Roig, three males, eight females; same data but “E. base”, 31°2066 S, 66°7126 W, 2370 ft., 11.x.1997, two females; *La Rioja*, Departamento General Lavalle, Piedra Pintada, 29°4261 S, 67°8134 W, malaise trap, M.E. Irwin, F.D. Parker and S. Roig, one female; *La Rioja*, Departamento Chilecito, 5km E. of Piedra Pintada, 29°3598 S, 67°7857 W, 2600ft, 12–15.x.1997, M.E. Irwin, F.D. Parker and S. Roig, one female; *Catamarca*, Andalgalá 25.x.1972, G.E. Bohart, thirteen males, five females, all females and eight of the males collected from flowers of *Prosopis alba* (Fabaceae), same data but 4.xi.1972, two males and three females, all from *P. alba*; *Catamarca*, 35km W. of Andalgalá, 24.x.1972, G.E. Bohart, one female; *Catamarca*, 15km SE of Andalgalá, 25.x.1972, G.E. Bohart, fifteen males, all but one from *Acacia furcatispina* (Mimosaceae); *Catamarca*, 15km S. of Colpes, 27.x.1972, G.E. Bohart, three males, ex *P. alba*; *Catamarca*, Andalgalá desert scrub site, J.L. Neff, three females, same data thirty-three females; *Catamarca*, Andalgalá, 11.ii.1972, ex *Larrea cunifolia* (Zygophyllaceae), W.D. Duckworth; *Mendoza*, Departamento Levalle, 20km N. of Parque Telteca, 32°2916 S, 67°3878 W, 23.x.1997, M.E. Irwin, F.D. Parker and S. Roig, one female. The Irwin *et al.*, material except the holotype and allotype and Bohart’s material, are housed at Logan except for 3 males and three females at PYU; one male and one female at each of AMNH and SEM, holotype and allotype and two paratypes of each sex at MACN; Duckworth’s specimen is at the USNM, Neff’s material is at CTMI.

Etymology. The specific epithet refers to the small size of this species.

Comments. Historically, the subgenus *Pseudiscelis* has been defined on the basis of the deep and elongate epistomal groove beneath the anterior tentorial pit, extension of the vertex above the eyes (Figs. 7A–D), elongate pronotum (Fig. 7F), absence of facial fovea and elongate malar area. All of these features except the last two are shared with the subgenus *Prosopoides*. The elongate malar area can no longer be considered as a characteristic of the subgenus, however, as there are numerous undescribed species some of which, such as *C. nanula* have a comparatively short malar space. The new species and all specimens referable to this subgenus, share the previously undetected feature of a 7-segmented maxillary palpus (Fig. 7E), which is found in no other groups of *Chilicola*.

This comparatively widespread species greatly expands our current understanding of the subgenus *Pseudiscelis*. *Chilicola nanula* stands at the opposite morphological extreme from the only other currently described species within the subgenus, *C. rostrata* (Friese), which has a greatly enlarged malar space. There is an unknown number of additional species in the subgenus as now understood, all from Argentina with the

exception of one species from Bolivia commented upon above. With the exception of one large species from Salta Province (mentioned as being undescribed in Michener 2000), they generally are intermediate in both size and length of the malar space between *C. rostrata* and *C. nanula*.

Some specimens of this species bear labels stating *Pseudiscelis nana*, which is a Moure manuscript name.

***Chilicola (Prosopoides) granulosa* Packer, n. sp.**

(Figs. 8A–M)

Diagnosis: This species is clearly a member of the subgenus *Prosopoides* as indicated by the combination of an elongate head and pronotum, no supra-antennal depression, an elongate groove below the anterior tentorial pit and well-defined facial fovea (Figs. 8A–C). It differs from the two described species in the subgenus by its denser, stronger microsculpture, weaker punctation, stronger swellings on the frons (similar to those of *C. obesifrons* described above, but not hiding the median ocellus as the more medial swellings are located lower on the face) and the elongate facial fovea, 4X longer than wide (Figs. 8A and C), the facial fovea also has a carinate margin that rises above the surrounding frons (Fig. 8A), whereas those of the other species are not so margined. There are additional new species to be described in this subgenus, including some from Brazil, which have yet to be seen by the authors: the apparently unique features described above may prove not to be diagnostic once all other taxa have been studied.

Description. Male: body length 3.5mm, wing length 2.4mm, head width 0.7mm.

Colouration: Black-brown with following parts yellow: Labrum medially (yellow-brown laterally), mandible (extreme base brown, apex red), elongate mark on clypeus, oval spot on lower paraocular area circumscribed mesally by elongate tentorial pit (Fig. 8A), anterior surface of scape and pedicel, apicodorsal spot on forefemur, dorsal and anterior surfaces of foretibia, apicodorsal spot on midfemur, basal spot on midtibia. Following parts orange: anterior surface of F1–F9 (rest of flagellum brown), foretarsus, spot on pronotal lobe, apical ring to midtibia, basal ring to hind tibia. Mid- and hindtibia brown. Tegula translucent amber. Wing veins dark brown.

Surface Sculpture: Microsculpture dense and strong on head and dorsal surface of mesosoma, appearing granular tending to rugulose on vertex and pronotum, weaker on genal area, mesopleuron and scutellum, which are somewhat shiny. Labrum with scattered punctures on dull microsculptured background. Swollen area between lateral ocellus and compound eye regularly imbricate and impunctate; vertex rugose; elsewhere on head and mesosoma punctures very shallow and difficult to discern especially in areas of stronger microsculpture. Punctures moderately dense on anterior portion of mesoscutum and on scutellum (i~d), sparser and more irregular on mesopleuron (i>d). Dorsal surface of propodeum with few rugae, strong median carina and posteriorly converging lateral carinae, lateral surface shining, dorsolateral portion coarsely rugose. Metasomal terga with very shallow, sparse punctures on shiny but clearly microreticulate background; apical impressed areas smooth.

Pubescence: White; very sparse and very short, fine. Areas of specialized vestiture on gena, metasomal terga and sterna lacking. Transverse row of hairs at base of submarginal zones on S2 to S6, interrupted medially on S2.

Structure: Head: (Figs. 8A and B) Longer than broad 67:45. Labrum with apex gently convex with strong lateral protuberance (Fig. 8D). Mandible 2X as long as basal depth. Clypeus longer than broad (Fig. 8A), 40:32, extending below lower ocular tangent for slightly less than 0.5X its length. Epistomal suture gently sinuate, reflexed at right angle apically; anterior tentorial pit with elongate shining narrow ventral groove. Sub-antennal sutures weakly sinuate; supraclypeal area (Fig. 8A) almost 3X longer than apical width (length:breadth 20:7), strongly protuberant between antennal bases, produced laterad such that small portion of medial margin of antennal socket hidden in frontal view. Frontal line distinctly raised for lower one half of distance between upper margin of antennal socket and median ocellus, otherwise flush with surface of frons

forming shiny line. Frons slightly swollen around median ocellus, strongly swollen between lateral ocellus and compound eye, produced immediately mesad of compound eye. Facial fovea deep and distinct, 4X longer than wide and *with raised margin*. Compound eye weakly emarginate (Fig. 8A) such that UOD difficult to define, strongly convergent below UOD:LOD 36:20. Head produced above compound eyes (Fig. 8A), upper ocular tangent below lower margin of median ocellus by a distance subequal to ocellar diameter. OOC:IOC 16:12, area between ocelli expanded such that median ocellus is more anteriorly oriented and lateral ocelli more laterally oriented than normal, with eyelid-like cuticular extension over dorsal portion of median ocellus and medial portion of lateral ocellus. Scape 3X as long as greatest width, length slightly less than pedicel plus F1 plus F2; pedicel and all flagellomeres longer than broad on ventral surface, F1 only slightly so; F11 relatively longest, length to breadth 10:7; flagellum slightly broadened towards apex; flagellomeres lacking unusual patterns of setation or structural modifications. Vertex flat in profile, as long as LOL. Malar space subequal to basal depth of mandible, malar suture distinct (Fig. 8B). Ratio of gena to eye 8:18.

Mesosoma: Slightly more than 2X as long as greatest depth, 85:39. Pronotum elongate, ratio of medial length of collar to anterior width 12:34, collar 3MOD in length; with short weak medial depression posteriorly (Fig. 8E). Episternal suture strong below scrobal groove, strongly curved anteriorly below; scrobal groove absent anterior to scrobe, weakly developed posteriorly. Propodeum subequal in length to scutellum, ratio of scutellum:metanotum:propodeum 13:7:14; propodeal sulcus imperceptible; posterior surface of propodeum separated from lateral and dorsal surfaces by irregular, but strong, carina. Hind trochanter unmodified (Fig. 8F). Hind femur slightly expanded, dorsal and ventral surfaces convex, length to greatest depth 53:18 (Fig. 8F). Hind tibia slightly expanded towards apex, length to apical depth 73:20 (Fig. 8F). Hind tibial spurs unmodified. Hind basitarsus less than 6X as long as greatest depth, parallel sided. Hind tarsal claws bifid. Basal vein weakly curved; marginal cell short, ratio of length of stigma to free portion of marginal cell 20:25; stigmal margin in marginal cell angularly convex; distal stigmal perpendicular goes through second submarginal cell at or just beyond midlength; 1st recurrent vein basal to first submarginal cross-vein.

Metasoma: T1 with length and apical breadth subequal. Apical impressed areas of terga 0.25X length of entire tergum. Sterna unmodified; gradulus of S2 with long posteriorly directed lateral portion, graduli lacking on S3–S6.

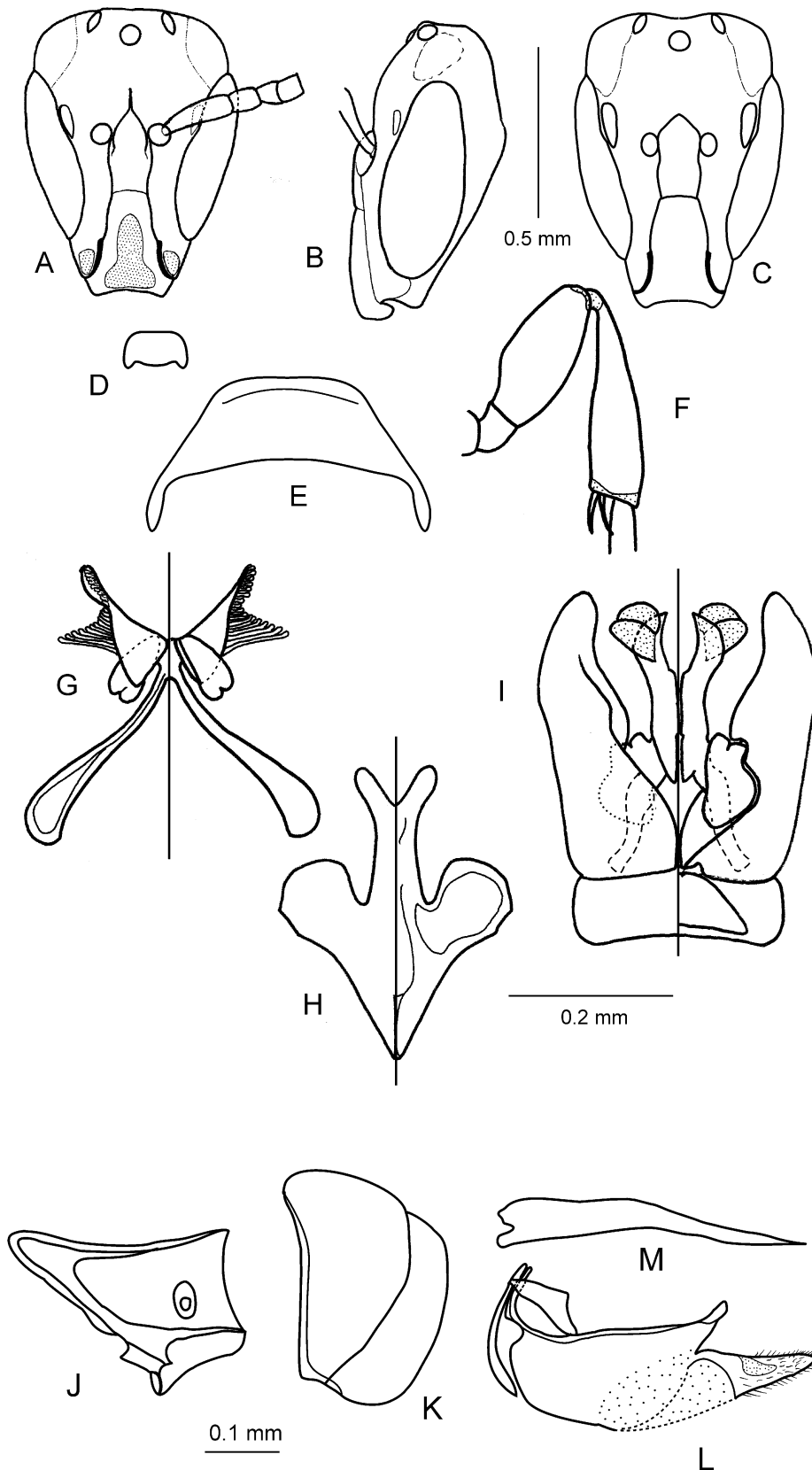
Terminalia: S7 (Fig. 8G) with two membranous lobes; dorsal lobe triangular, broadly attached to disk at base, posterolaterally directed, with fan of robust, peg-like capitate setae laterally, these much longer anteriorly than posteriorly; ventral process short, anterolaterally directed, apex narrowly incised. S8 (Fig. 8H) with apical process long and narrow, apex deeply concave forming a rounded Y. Gonobase with broadly concave apicoventral process. Volsella V-shaped, angularly excised at base of cuspis, apex of digitus acute. Gonostylus not differentiated from gonocoxite. Penis valve with single large membranous lobe recurved medially (Fig. 8I).

Female: Body length 4.0mm, wing length 2.7mm, head width 0.8mm.

Colouration: Black with anterior surface of antennal flagellum pale brown, rest of antenna, legs and metasoma dark brown except anterior and dorsal surfaces of foretibia yellow-brown.

Surface Sculpture: Sculpture less coarse than in male, microsculpture more even; labrum densely and deeply punctate; punctures small, more distinct especially on mesoscutum (i=1–4d) and scutellum (i=1–3d).

Pubescence: As in male except as follows: Hind femur with weak scopa, hairs $\leq 1.3\text{MOD}$, hind tibia with some slightly longer hairs 1.5MOD. Scopa of S2 corbiculate, hairs long $\leq 3\text{MOD}$ with short posteriorly directed branches.



FIGURES 8A–M. *Chilicola granulosa* Packer, **n. sp.** Head of male: A. frontal view, B. lateral view. C. frontal view of female head. Male: D. labrum. E. pronotum. F. Hind leg. G–I. Male terminalia. G. S7. H. S8. I. genital capsule. Dorsal views are to the left. J–L. Sting apparatus of female: J. hemitergite 7, K. hemitergite 8, L. First and second valvifer with gonostylus. M. sting shaft. Stippling in A indicates pale colouration, elsewhere it indicates membranous regions.

Structure: Maxillary palpus elongate, 0.6X as long as prementum; prementum elongate, less than 0.17X as broad as long, premental fovea almost covering ventral surface, strongly carinate laterally. Lacinia triangular, 5X longer than greatest breadth. Lorum weakly sclerotised, 0.167X as long as cardo. Rest of body as in male except for usual secondary sexual characteristics and as follows: Area between lateral ocellus and compound eye less strongly expanded, OOC shorter as a result (OOC:IOC 15:14). Clypeus extending below lower ocular tangent for 0.4X its length (10:25) (Fig. 8C). Supraclypeal area expanded more laterally, larger portion of medial margin of antennal socket hidden in frontal view. Raised portion of frontal line shorter, raised for lower one-third of distance between upper margin of antennal socket and median ocellus. Malar space slightly shorter than basal width of mandible. Median depression of pronotum stronger. Apical lunule of S5 almost an equilateral triangle.

Sting apparatus: Hemitergite 7 (Fig. 8J) broad posteriorly converging to very narrow and elongate apodemal region, lateral process short and broad complex in structure with short anterior and longer posterior angulations, medial portion of marginal ridge somewhat concave, spiracle much closer to lateral than medial ridge, posterior margin of lamina spiracularis evenly and gently concave. Hemitergite 8 (Fig. 8K) with apodeme particularly deep much larger than disk, apodemal margin straight but strongly inflected anteriorly for apical 0.25. First valvifer with dorsal arm very short forming right angle. Second valvifer with strong apical process, apicoventral region mostly membranous, gonostylus short and deep with very short setae (Fig. 8L). Sting shaft strongly bent ventrad at mid length (Fig. 8M). Furcula with ventral arms very broad.

Material studied. Holotype male, allotype female, two male and ten female paratypes: BOLIVIA, *Santa Cruz*, 11km N. Boyuibe, 20°23'75"S, 63°22'25" W, 2900 feet, 5.iii.1999, M. Irwin and F.D. Parker, malaise trap; additional paratypes as follows: same data except 6.iii.1999, two males and one female; *Santa Cruz*, 24km S. Carriri, 20°18'81"S, 63°28'5" W, 3550 feet, 5.iii.1999, M. Irwin and F. D. Parker, malaise trap one male and two female paratypes; *Santa Cruz*, 20km S. Carriri, 4.iii.1999, 20°10'57"S, 63°28'74"W, M.E. Irwin and F. D. Parker, malaise trap, one female. All specimens are at Logan except for two male and two female paratypes in senior author's collection at York University and one individual of each sex at MACN.

Etymology. The specific epithet refers to the strongly imbricate sculpture on much of the body of this species, appearing granular in many places, especially on the head.

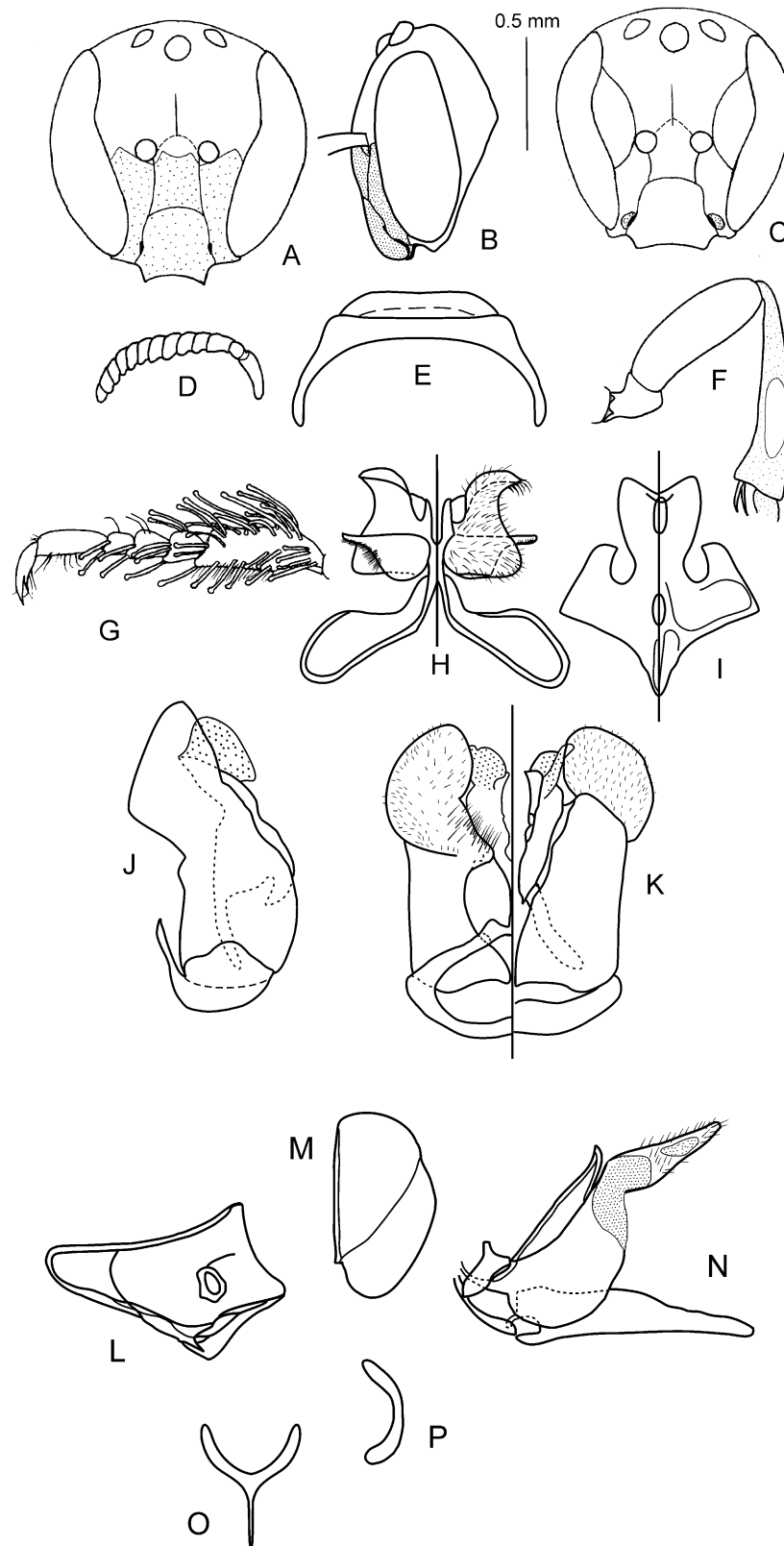
Comments. The new species expands the range of the subgenus from Argentina, Paraguay and Brazil into Bolivia.

***Chilicola biguttata* Packer, n. sp.**

(Figs. 9A–O)

Diagnosis: This is a highly distinctive species that appears to warrant subgeneric status (Packer in press). The large areas of yellow on the face (clypeus, lower portion of supraclypeus, lower paraocular area to antennal socket, mandible) combined with the black labrum (with small yellow spot in one specimen) is alone sufficient to separate males from all other species of *Chilicola*: all others with considerable yellow on the lower face also have a yellow labrum. The broad unflattened gonostylus of the male is also unique (Figs. 9J and K). *Chilicola (Anoediscelis) pedunculata* Michener also has the gonostyli broader than the adjacent gonocoxite but has them strongly flattened and is very different from *C. biguttata* in many ways. The form of the facial fovea (Fig. 9C), small yellow spot on the lower paraocular area and the capitata to blunt, unbranched metasomal scopal hairs of the female are unusual and readily permit separation of this new species from any other *Chilicola*.

Description. Male: Length 5.1mm, wing length 3.7mm, head width 1.3mm.



FIGURES 9A–O. *Chilicola biguttata* Packer, **n. sp.** Head of male: A. frontal view, B. lateral view. C. frontal view of female head. Male: D. male antenna. E. pronotum. F. Male hind leg. G. Female foretarsus. H–K. Male terminalia. H. S7. I. S8. J. genital capsule lateral view, K. same. Dorsal views are to the left. L–P. Sting apparatus of female: L. hemitergite 7, M. hemitergite 8, N. First and second valvifer with gonostylus and sting shaft (latter broken in specimen), O–P. Furcula in dorsal and lateral views respectively. Stippling in A–C and F indicates pale colouration, elsewhere it indicates membranous regions.

Colouration: Black, with following parts yellow: mandible (except apex, red-brown), clypeus, *supraclypeal area up to just below mid level of antennal socket*, paraocular area to just above mid level of antennal socket, hind tibia except for brown spot on inner and outer surfaces, hind basitarsus. Following parts pale orange: apical ring on forefemur, foretibia (except for brown spot on posterior surface), apical ring on midfemur, basal and apical rings on mid tibia, narrow apical ring on hind femur, all tarsi. Following parts dark brown: antennae, rest of legs and apical impressed regions of metasomal terga. Tegula translucent with anterior and posterior yellow spots. Wing veins brown, basal portions of costa, M+Cu and V orange-brown.

Surface Sculpture: Labrum shining, punctures deep, distinct and moderately dense (i~d). Clypeus dull with punctures irregular (i=1–3d). Supraclypeus dull, punctures somewhat denser, i=1–2d. Lower paraocular area shinier, punctures more distinct (i=1–3d). Frons with dense punctures (i~0.5d) appearing almost rugulose. Vertex more finely punctate (i<d). Genal area with punctures and microsculpture increasingly weak anterolaterally, shiny with longitudinal microstriation, punctures effaced. Pronotal collar with shallow but distinct punctures (i~d). Mesoscutum somewhat shiny with small but deep and dense punctures (i<d). Scutellum, metanotum and mesopleuron with punctures slightly larger and sparser than on mesoscutum and microsculpture weaker, surface shinier. Dorsal surface of propodeum with few, strong, radiating striae; lateral surface shiny, weakly microsculptured, impunctate; dorsolateral area coarsely rugose. Metasomal terga with few small, shallow and obscure punctures; surface moderately shiny despite strong microsculpture; apical impressed areas with very weak microsculpture.

Pubescence: Whitish, short, sparse and weakly plumose, hairs especially short on mesoscutum (<0.5 MOD), longest on head just above antennae (2MOD). Genal beard moderately strongly developed (2MOD posteriorly, 0.5MOD anteriorly). Lateral surface of propodeum with short (0.5MOD), sparse hairs; those of dorsolateral area slightly longer (~0.75MOD) and denser. Metasomal terga with extremely short hairs on more anterior segments, becoming somewhat longer posteriorly, lacking posterolateral patches. Metasomal sterna lacking patches of erect hair, almost entirely glabrous.

Structure: Head: Slightly shorter than broad (86:88) (Fig. 9A). Labrum almost 2X as broad as long (9:17); apical margin very weakly angulate medially. Mandible short and deep, length to basal depth 21:14. Clypeus slightly broader than long (29:26) (Fig. 9A), lower one quarter extending beyond lower ocular tangent, slightly protuberant in profile, with weak median longitudinal groove in upper half; lateral margin gently sinuate (Fig. 9B). Epistomal suture beneath anterior tentorial pit expanded into a groove such that pit appears comma-shaped. Supraclypeal area strongly protruberant dorsally, length to breadth 22:16. Subantennal suture very slightly concave outwardly. Frons without marked swellings or depressions. Frontal line strongly raised for approximately lower half of distance between dorsal margin of supraclypeal area and median ocellus. Facial fovea absent. Eyes emarginate, converging below (Fig. 9A) (UOD:LOD 51:33). Lateral ocelli closer to eye than each other (Fig. 9A); OOC:IOC 10:19. OOC 1.3X LOL. Vertex behind lateral ocellus subequal to LOL, evenly convex in anterior view. Head not strongly developed above summits of eyes (Fig. 9A), upper ocular tangent passing through middle of median ocellus. Occipital margin sharp but not strongly carinate. Scape slightly longer than pedicel + F1 + F2 combined; F1 shorter than F2 and F3 combined on longer surface (11:13); all flagellomeres other than F1 and F11 shorter than broad (for F8 8:11) and expanded apically on anterior surface giving undulating appearance in profile; F11 similar in length to F10; flagellum becoming markedly deeper but less distinctly broader from base to apex (Fig. 9D). Malar space linear making presence or absence of malar suture undetectable. Gena slightly greater than 0.5X width of eye in lateral view (16:30) (Fig. 9B). Apical portion of genal area upwardly curved mesad.

Mesosoma: Less than 2X as long as greatest depth, 125:70. Pronotal collar short, medial length subequal to LOL, anterolateral margins rounded. Episternal groove distinct and complete; scrobal groove evident only posterior to scrobe. Propodeum less than 1.5X as long as metanotum (16:11), shorter than scutellum (22) and its own posterior depth (20); propodeal sulcus shallow, shiny, traversed by numerous striae. Hind leg unmodified, lacking swellings, angles or carinae; femur almost 3X as long as greatest depth 90:35, ventral surface

convex; tibia gradually expanding towards apex length, 4X apical depth, apical one half weakly concave ventrally, attaining mid length of trochanter when folded (Fig. 9F); tibial spurs not strongly sclerotised or curved; basitarsus slightly more than 4X as long as greatest depth, which is near base, gradually narrowing to apex; tarsal claws bifurcate. Basal vein evenly curved; distal stigmal perpendicular traversing second submarginal cell near middle or closer to base; stigma shorter than length of marginal cell on wing margin (35:45); stigma in marginal cell strongly convex towards apex; first recurrent vein slightly apical to first submarginal cross-vein on vein Rs+M.

Metasoma: T1 shorter than broad (55:60). Apical impressed areas approximately one quarter as long as entire tergum. S1–S6 without modifications except S1 weakly concave with subapical obtuse angle; sternal gradulus of S2 with long posteriorly directed lateral portion, S3–S5 with tiny circular gradular marks;

Terminalia: S7 with two pairs of lateral lobes; ventral lobe broad and membranous with outer margin concave and posterior margin curved dorsally; dorsal lobe elongate, laterally oriented, narrowing abruptly at midlength from broad base (Fig. 9H). S8 with apical process very large, emarginate apically, broadest subapically (Fig. 9I). Gonobase with foramen very large, apicoventral process broadly concave. Volsella U-shaped with outer margin concave before apex. Inner margin of gonocoxite undulate, lacking marked angulation; ventrobasal lobe slightly less than right angular, directed mesad. *Gonostylus very broad, clearly demarcated from gonocoxite and not flattened or markedly concave beneath*. Penis valve with two large membranous lobes, inner one dorsolaterally oriented, outer one partially folded over inner one (Figs. 9J and K).

Female: Body length 4.6mm, forewing length 3.1mm, head width 1.3mm.

Colouration: Black, with yellow spot on lower paraocular area just below anterior tentorial pit (Fig. 9C) and basal yellow spot on all tibiae; tarsi brown; tegula brown with outer margin colourless.

Surface Sculpture: As in male but with more strongly imbricate microsculpture on face; punctures on lower face shallower, those of frons sparser and more distinct (i~d), punctures of vertex less distinct than those of frons; pronotum with punctures obscure; mesoscutum with punctures shallower.

Pubescence: As in male but hairs above antennae shorter (1MOD). Most hairs on foretarsi thick and strongly capitate, lacking branches, 1.25 MOD, (Fig. 9G). Hind femur with scopal hairs with branches towards apex on anterior surface only, < 1.5 MOD. Hind tibia with scopal hairs unbranched but not capitate, ~ 2MOD. Terga lacking posterolateral hair patches. *Scopa on S2 with comparatively sparse capitate or blunt hairs* ≤ 3.5MOD, scopa in form of corbicula.

Structure: Maxillary palpus unmodified, 0.5X as long as prementum. Prementum 1/5th as long as greatest breadth; fovea very large, almost entirely covering ventral surface, margin carinate. Lacinia broadly triangular, 0.33X as long as greatest breadth. Lorum elongate, 0.4X as long as cardo, parallel-sided. Rest of body as in male except for usual sexual differences and as follows: Head slightly longer than broad (85:82) (Fig. 9C). Length and breadth of clypeus subequal (28:27); UOD:LOD 50:36. OOC:IOC 9:20. Occipital margin rounded. Facial fovea large, broad and shallow, extending ventrally almost to upper tangent of antennal socket, dull, covered in somewhat plumose, woolly, laterally directed hairs 0.75MOD. Ratio of width of gena to eye 15:27. Propodeal sulcus weakly impressed. Apical lunule of S5 more than 2X as broad as long.

Sting apparatus: As in Figs. 9L–O. Hemitergite 7 with lateral portion of marginal ridge somewhat thickened between apodemal region and close to apex, with slight obtuse angle close to base of lateral process; lateral process short and acute; lateral lamella originating slightly anterior to lateral process; medial portion of marginal ridge gently concave; spiracle separated from evenly concave posterior margin of lamina spiracularis, closer to lateral than medial portion of marginal ridge, set in depression in lamina spiracularis (Fig. 9L). Hemitergite 8 with anterior ridge straight and strong to close to apex, apodeme larger than plate, carina separating apodeme and plate straight (Fig. 9M). First valvifer with dorsal process narrow but similar in length to ventral process (Fig. 9M). Second valvifer with apodemal ridge straight, apical process poorly developed, pars articularis rounded, incisura postarticularis strongly narrowed towards pars articularis, region basal to gonostylus membranous, gonostylus converging towards apex from broad base. Sting shaft almost straight

ventrally, processus muscularis not developed, processus medianus very long (Fig. 9N). Furcula with ventral arms broadest close to apex, crescentic in lateral view (Fig. 9O and P).

Material studied. Holotype male: ARGENTINA, *Catamarca*; Andalgalá, km marker 1510 on Andalgalá-Belen road; 15.x.1973, J.L. Neff, ex *Prosopis chilensis* (Fabaceae); allotype female same data except 18.x.1973; paratype male same data except 29.x.1973 and ex *Nicotiana noctiflora* (Solanaceae); other paratypes as follows: *Catamarca*, Andalgalá desert site, no date data, J.L. Neff, one male, one female; *Catamarca*; Cuesta de la Chilca (base), 7.xi.1972, J.L. Neff, ex *Prosopis chilensis*, one female; *Catamarca*, Punta Balasto, 30km from Santa María, 24.xi.1966, Willink coll. one female; *Catamarca*, San Fernando, 11.xi.1991, J.G. Rozen, L. Pena & A. Ugarte one male; *La Rioja*; Dept. Rosario V., Penaloza, Sierra de Arganaraz, El Rocillo, 22.x.1997, M.E. Irwin, F.D. Parker, S. Roig, S31.2066, W66.7126, 2370ft, one female; *San Juan*, Dept. Caucete, 23km SW Bermejo, 23.x.1997, S31 7472W67 8752, M.E. Irwin, F.D. Parker, S. Roig, one male; *Santiago del Estero*; Departamento Matará, Desvío 511, x.1928, M. Gómez. The holotype and allotype are housed at CTMI, the Cuesta de la Chilca paratypes are at PYU, the Punta Balasto one is at IML, the two collected by Irwin *et al.*, are at Logan and the oldest collected specimen is at MACN. The locality for this latter specimen almost certainly refers to a temporary detour on a highway, rather than actually listing a site that can be found on contemporary maps: the Spanish word for “detour” used on road signs is “desvío”.

Etymology. The specific epithet refers to the two yellow spots on the face of females.

Comments. The yellow spots on the face of the female are found very rarely in other species of *Chilicola*; they are comparatively small and obscure in some females of *C. (Oroediscelis) brzoskai* Michener and an as yet unidentified species of *Oediscelis* from southern Chile. Orange markings on the lower paraocular area are more common, but are associated with a generally testaceous-orange colouration on the lower face as found, for example, in *C. unicarinata* described above. One paratype male has a small yellow medial spot on the base of the labrum.

This is an apparently widespread, but scarce species.

Some specimens bear a label stating *Oediscelis bimaculata*, another Moure manuscript name.

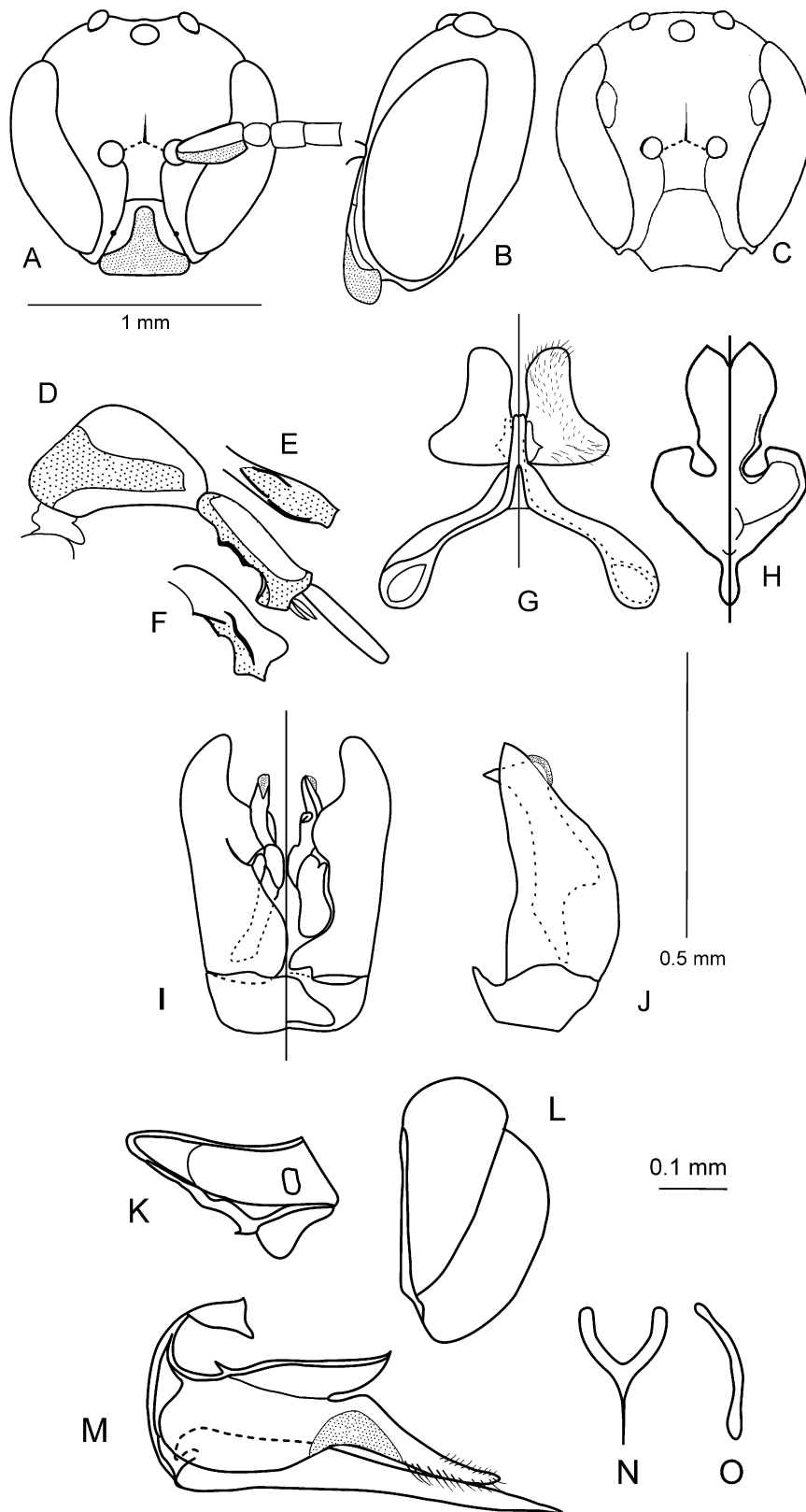
***Chilicola tricarinata* Packer, n. sp.**

(Figs. 10A–O)

Diagnosis: This species keys out to *Oediscelis* in Michener (2000) being more narrowly related to the group lacking a process on the first metasomal sternum in the male, this group previously having been placed in a separate subgenus, *Oediscelisca*, by Moure (1946), a subgenus that should be resurrected (Packer, in press).

Within the described species of this group, *Chilicola tricarinata* is most similar to *C. dalmeidai* Moure, from which it differs primarily in the narrower hind tibia in the male (Fig. 10D). In comparison to the large number of other new species in the “*Oediscelisca*” group available to us, the form of the hind tibia of the male is diagnostic for this species except for an additional species from southern Argentina that is described below. This latter species has the hind leg almost entirely blackish-brown, with only a small yellow spot on the outer surface of the hind femur and the extreme apex and ventral margin of the tibia yellow and the punctures on the frons are not crowded and sharp-edged as they are in *C. tricarinata* but separated by approximately their own diameter, the interspaces being quite shiny in contrast to the entirely dull frons in *C. tricarinata*. It is often not possible to differentiate females in this group (L. Packer, unpublished data).

Description. Male: Body length 5.0mm, forewing length 3.3mm, head width 1.05mm.



FIGURES 10A–O. *Chilicola tricarinata* Packer, n. sp. Head of male: A. frontal view, B. lateral view. C. frontal view of female head. Male: D. hind leg outer view. E. hind tibia ventral view, F. hind tibia inner view. G–J. Male terminalia. G. S7. H. S8. I. genital capsule, J. same lateral view. Dorsal views are at the left. K–O. Sting apparatus of female: K. hemitergite 7, L. hemitergite 8, M. First and second valvifer with gonostylus and sting shaft, N and O, furcula in ventral and lateral views respectively. Stippling in A, B and D–F indicates pale colouration, elsewhere it indicates membranous regions.

Colouration: Black with following parts yellow: labrum, mandible (except apex red), clypeus, apical half of anterior surface of scape (orange basally), spot on pronotal lobe and ventral-most portion of apical swelling of hind tibia. Following parts orange-tan: anterior surface of pedicel and flagellum, anterior surface of fore and mid femora and tibiae, stripe on anterior surface of hind femur, broad at base and extending almost to apex; most of ventral surface of hind tibia. All tarsi dark brown. Tegula pale amber with large yellow anterior spot. Wing veins dark brown. Apical impressed areas of metasomal terga pale amber. Metasomal sterna brown, S4–S6 suffused with pale brown.

Surface sculpture: Microsculpture moderately dense giving dull appearance except on face below antenna, genal area, legs and apical halves of metasomal terga. Labrum shiny with irregular punctation, $i=1-4d$. Clypeus particularly shiny. Punctation on clypeus, supraclypeal area and lower paraocular area irregular, $i=1-3d$. Frons with punctures crowded, edges sharp. Vertex rugulose. Gena with weak striae and shallow obscure punctures. Pronotum and mesoscutum densely punctate, $i < d$; scutellum less regularly punctate $i \leq d$. Dorsal surface of propodeum rugoso-reticulate, lateral surface with only strong microsculpture below, dorso-lateral area rugose. Mesopleuron densely punctate $i \sim d$. T1 densely punctate, $i \sim d$; basal depressed areas of T2–T5 strongly transversely microstriate very dull, with punctures $i \sim 2d$; anterior portions of disks of terga densely punctate, $i \leq d$, punctures becoming more widely and irregularly spaced posteriorly, $i=1-3d$; apical impressed areas impunctate and smooth.

Pubescence: Whitish, somewhat yellowed on mesoscutum. Hairs woolly except for longer erect ones on frons and dorsal surface of thorax, those around antennae and on lower paraocular areas recumbent, partially obscuring surface $\sim 0.5\text{MOD}$. Hairs of genal beard 2MOD posteriorly gradually shorter anteriorly to 0.5MOD . Erect hairs on frons and lateral portions of scutellum and metanotum long $\leq 2\text{MOD}$. T1–T3 with apicolateral hair patches, becoming sparser and less well defined from T1 to T3. S2 with moderately long erect dense pubescence slightly longer laterally, 1.2MOD , than medially, 1MOD ; S3 with shorter erect pubescence slightly longer anteriorly than posteriorly, 0.5MOD decreasing to 0.3MOD ; few short erect hairs on S4 and S5.

Structure: Head: (Figs. 10A and B) As broad as long (73:73). Labrum almost $3X$ as broad as long, apical margin weakly convex. Mandible more than $2X$ as long as basal depth (38:16). Clypeus broader than long (45:40), extending for one quarter of its length below lower ocular tangent, lacking median longitudinal groove; anterior tentorial pit punctiform. Supraclypeal area well defined above, $1.5X$ as long as apical width. Face lacking swellings, depressions and foveae. Eyes emarginate, strongly convergent below UOD:LOD (47:26) (Fig. 10A). IOC less than $2X$ OOC, (21:36); lateral ocellus separated from compound eye by more than its diameter. Upper ocular tangent traverses median ocellus below middle. Scape almost $3X$ as long as pedicel (17:6) (Fig. 10A), only $2X$ as long as greatest depth; pedicel almost spherical; F2 longer than F1 (22:18) and longer than wide (22:14) (Fig. 10A); F8 longer than broad (13:9); F10 and F11 subequal in length, flagellomeres lacking unusual patterns of setation or structural modifications. Vertex strongly depressed before carinate margin with occipital region. Malar space linear such that presence or absence of malar suture indetectable. Gena much shorter than width of compound eye (11:28) (Fig. 10B).

Mesosoma: Less than $2X$ as long as greatest depth, 105:56. Pronotum short, length of collar medially $0.1X$ as long as anterior width of pronotum (5:47) and $0.8X$ as long as LOL. Episternal groove complete. Dorsal area of propodeum as long as scutellum and almost $2X$ as long as metanotum, length of scutellum:metanotum:propodeum 18:10:18; propodeal sulcus formed of somewhat transverse pits. Hind leg as in Figs. 10D–F, trochanter with postero-medial process broadly oval in lateral view, narrowly triangular from ventral perspective; femur considerably expanded, less than $2X$ as long as greatest depth (52:27), ventral surface somewhat concave (Fig. 10D); ventral margin of tibia abruptly expanded for apical one quarter length, slightly less deep than $0.33X$ length (30:92), basal angulation on ventral surface strong with elongate carina narrowly separated apically from very strong carina on inner ventral margin, elongate carina on outer surface of ventral margin for middle third of tibia (Figs. 10D–F); hind tibial spurs unmodified; hind basitarsus $6X$ as long as greatest

depth subparallel; hind tarsal claws bifid. Basal vein comparatively strongly but evenly curved; distal stigmal perpendicular crosses second submarginal cell at middle, stigma 0.8X as long as marginal cell on wing margin, stigmal margin on marginal cell convex apically; first recurrent and first submarginal cross veins interstitial on Rs+M.

Metasoma: Subpetiolate, T1 longer than wide (53:39). Sterna unmodified; sternal gradulus on S2 with long posteriorly directed lateral portion, that on S3 broadly interrupted medially, reduced to tiny lateral marks on S4–S5, absent on S6.

Terminalia: S7 with one pair of lateral lobes, ventral lobe large membranous and kidney shaped bearing numerous short setae; dorsal lobe reduced to minute laterally directed acute process (Fig. 10G). S8 with apical process very large, membranous, broadest subapically, apex angularly excised (Fig. 10H). Gonobase with ventral process broad and emarginate medially. Volsella narrow, outer surface broadly concave, apex of digitus forming angle of approximately 60°. Gonostylus not demarcated from gonocoxite, broad, apex rounded and directed somewhat mesad. Penis valve narrow with one very small membranous lobe (Figs. 10I and J).

Female: Body length 4.5mm, wing length 3.2mm, head width 1.0mm.

Colouration: Body entirely blackish-brown except as follows: Labrum and anterior surface of F2–F10 brown. Tegula dusky translucent. Much of mandible, basal two thirds of anterior surface of fore tibia and large basal spot on midtibia orange. Basal spot on mandible yellow.

Surface Sculpture: Microsculpture weaker than in male except on clypeus; punctures smaller and sparser than in male, on clypeus and lower paraocular area i~2d, on supraclypeal area i~3d, on frons i≤d, vertex with weak transverse microstriations and weak punctures; dorsal surface of thorax with i~d, mesopleuron with i=1–2d, metasomal terga with anterior portions weakly transversely microreticulate, disks of terga with minute punctures, i=1–2d, sparser on more posterior terga.

Pubescence: Shorter and less woolly than in male, recumbent hairs on face restricted to area laterad and immediately beneath antennal sockets, not obscuring surface. Hind leg with weak scopa, hairs ~1.5MOD on trochanter, femur and tibia. Scopa of S2 corbiculate, hairs long 3MOD, with anteriorly directed branches decreasing in length towards apex.

Structure: As in male except for usual secondary sexual differences and as follows: Mouthparts not dissected in sole specimen, premental fovea almost completely covering ventral surface, margins strongly carinate. Compound eyes less convergent below, UOD:LOD 42:29 (Fig. 10C). Vertex flat in profile. Facial fovea present at emargination of compound eye shallow, 2X as long as greatest breadth (12:6) (Fig. 10C). Propodeal sulcus narrower and shallower than in male. Apical lunule of S5 more than 2X as long as apical breadth.

Sting apparatus: Hemitergite 7 (Fig. 10K) elongate more than 2X as long as greatest breadth excepting lateral lamella, apodemal region elongate and narrow, medial portion of marginal ridge somewhat concave, spiracle slightly closer to lateral than medial margin, lateral process short with anteriorly and posteriorly directed apical angulations, anterior one longer, lateral lamella 0.7X as long as greatest breadth of hemitergite, posterior margin of lamina spiracularis straight. Hemitergite 8 with apodeme broad, anterior ridge straight (Fig. 10L). First valvifer with dorsal surface almost straight, ventral surface slightly sinuate, ventral process slightly longer than dorsal one. Second valvifer with apodemal ridge somewhat sinuate; apical process acute; spinous process very long, more than 2X basal width; gonostyli gradually narrowed posteriorly. Sting shaft very slightly concave ventrally (Fig. 10M). Furcula with ventral arms moderately broad, parallel-sided; dorsal and ventral arms subequal in length; very narrow in lateral view (Figs. 10N and O).

Material Studied. Holotype male, allotype female and five paratype males (one in glycerin) ARGENTINA: *Catamarca*: 25km N. of Andalgala, 14.ii.03 L. Packer; additional material: *Catamarca*: 20km N. of Andalgala, 27°29'477"S 066°23'006"W, 1736m, 14.ii.03 L. Packer, four paratype males. All specimens are at PYU except for male holotype, female allotype and one paratype male at MACN and one male paratype in each of: IML and CTMI.

Etymology. The specific epithet refers to the ventral surface of the hind tibia, which bears three strong carinae.

Comments. This species, the following one (*C. tricarinatoides*) and numerous undescribed species appear to form a monophyletic group with *C. friesei* Ducke and *C. dalmeidai* Moure, which were originally placed in a new subgenus, *Oediscelisca*, by Moure (1946), but subsequently sunk by Michener (1995) within *Chilicola* (*Oediscelis*). Although this group of species shares male hind leg modifications with *C. (Oediscelis)*, other features, such as the punctiform anterior tentorial pit, and details of the male genitalia, indicate that *C. (Oediscelisca)* group may be quite distantly related to *C. (Oediscelis)*. Moure's subgeneric name for these bees should be reinstated (Packer, unpublished data).

***Chilicola tricarinatoides* Packer, n. sp.**

(Figs. 11A–C)

Diagnosis: This species can be differentiated from all other *Chilicola* by the form of the hind tibia and the punctures on the frons separated by somewhat less than their diameters, as opposed to being crowded and sharp edged as they are in related species. Females are unknown. Otherwise, this species is very similar to *C. tricarinata* from which it can be differentiated based upon the characteristics listed in the diagnosis for that species.

Description. Male: Body length 4.3mm, forewing length 3.0mm, head width 1.0mm.

Colouration: Black with following parts yellow: Labrum, mandible (except apex red), large inverted T-shaped mark on clypeus, apical half of anterior surface of scape, spot on pronotal lobe, basal spot on tegula and ventral-most portion of apical swelling of hind tibia. Following parts orange or orange-testaceous: Anterior surface of pedicel and flagellum, apical ring on foretrochanter, anterior surface of fore and mid femora except for dark basal ring; fore and midtibia except for most of outer surface, spot on apex of hind coxa, most of ventral surface of hind trochanter, oval spot on outer surface of hind femur, ventral portion of apical expanded region and narrow apical ring and externoventral margin of hind tibia. All tarsi dusky brown. Wing veins red brown. Tegula clear transparent. Apical impressed areas of metasomal terga pale amber. Metasomal sterna brown. S6 suffused with testaceous.

Surface sculpture: As for *C. tricarinata* except as follows: Microsculpture sparser making surface somewhat shinier except clypeus duller. Punctuation somewhat denser and less regular on clypeus, supraclypeal area and lower paraocular area, $i=0.5-2.5d$. Frons with punctures separated by somewhat less than their diameters. Vertex rugulose. Genal area with weak striae and shallow obscure punctures. Pronotum, mesoscutum and scutellum irregularly punctate $i=0.2-2d$. Dorsal surface of propodeum rugoso-reticulate, lateral surface with only strong microsculpture below, dorsolateral area rugose. Mesopleuron irregularly punctate, $i=1-3d$. T1–T2 densely punctate $i\sim d$; punctures smaller, more irregular and shallower on more apical terga; basal depressed portions of T2–T3 transversely microstriate; apical impressed areas impunctate.

Pubescence: As in *C. tricarinata* except as follows: Genal beard shorter, 1.5MOD posteriorly; T1–T3 with apicolateral hair patches sparse; S2 with sparser and shorter erect pubescence $<1\text{MOD}$; remaining sterna lacking specialized pubescence although with subapical transverse row $\leq 0.75\text{MOD}$ on S3–S5.

Structure: Head (Fig. 11A): As in *C. tricarinata* except as follows: Clypeus shorter, length to breadth (38:45). Supraclypeal area less than 1.5X as long as apical width (27:20). IOC 2X OOC (34:17). Scape narrower, length to apical breadth 33:13; flagellomeres broader, length to breadth of F8 16:10. Gena longer in comparison to compound eye (20:48).

Mesosoma: As in *C. tricarinata* except as follows: Hind basitarsus 5X as long as greatest depth. Dorsal area of propodeum shorter, propodeum:metanotum:scutellum, 22:18:30; propodeal sulcus broader, pits clearly transverse throughout. Stigmal margin on marginal cell angularly convex.

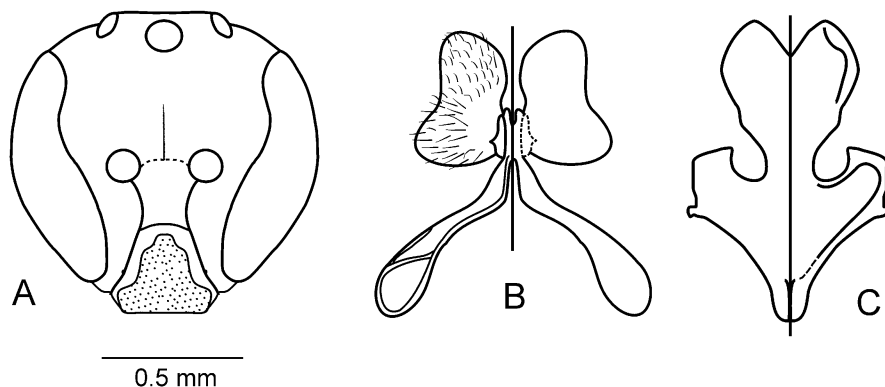
Metasoma: Subpetiolate, T1 proportionately longer than in *C. tricarinata* (90:65).

Terminalia: S7 as in *C. tricarinata* except membranous lobe with apicolateral margin broadly rounded with longer setae and anterior laterally directed hair bearing area more extensive (Fig. 11B). S8 with apical

process comparatively broader and shorter than in *C. tricarinata*, more strongly broadened towards apex (Fig. 11C). Genital capsule as in *C. tricarinata* except: gonobase with ventral process somewhat longer and penis valve with membranous lobe slightly larger.

Material studied. Holotype and eight male paratypes (one in glycerin), ARGENTINA: *Chubut*, 8km S. of Rada Tilly, 45°59'043S, 72°36'322W, 30m, 24.xi.2003, L. Packer. The holotype and 3 paratypes are at MACN, the remainder at PYU. One paratype bears a blue label stating: VOUCHER SPECIMEN DNA EXTRACTION E.A.B.Almeida #62.

Comments. This species was collected at the same locality as *C. chubutense* described above.



FIGURES 11A–C. *Chilicola tricarinatoides* Packer, n. sp. Male. A. Head in frontal view. B. S7, C. S8. Stippling represents pale colouration.

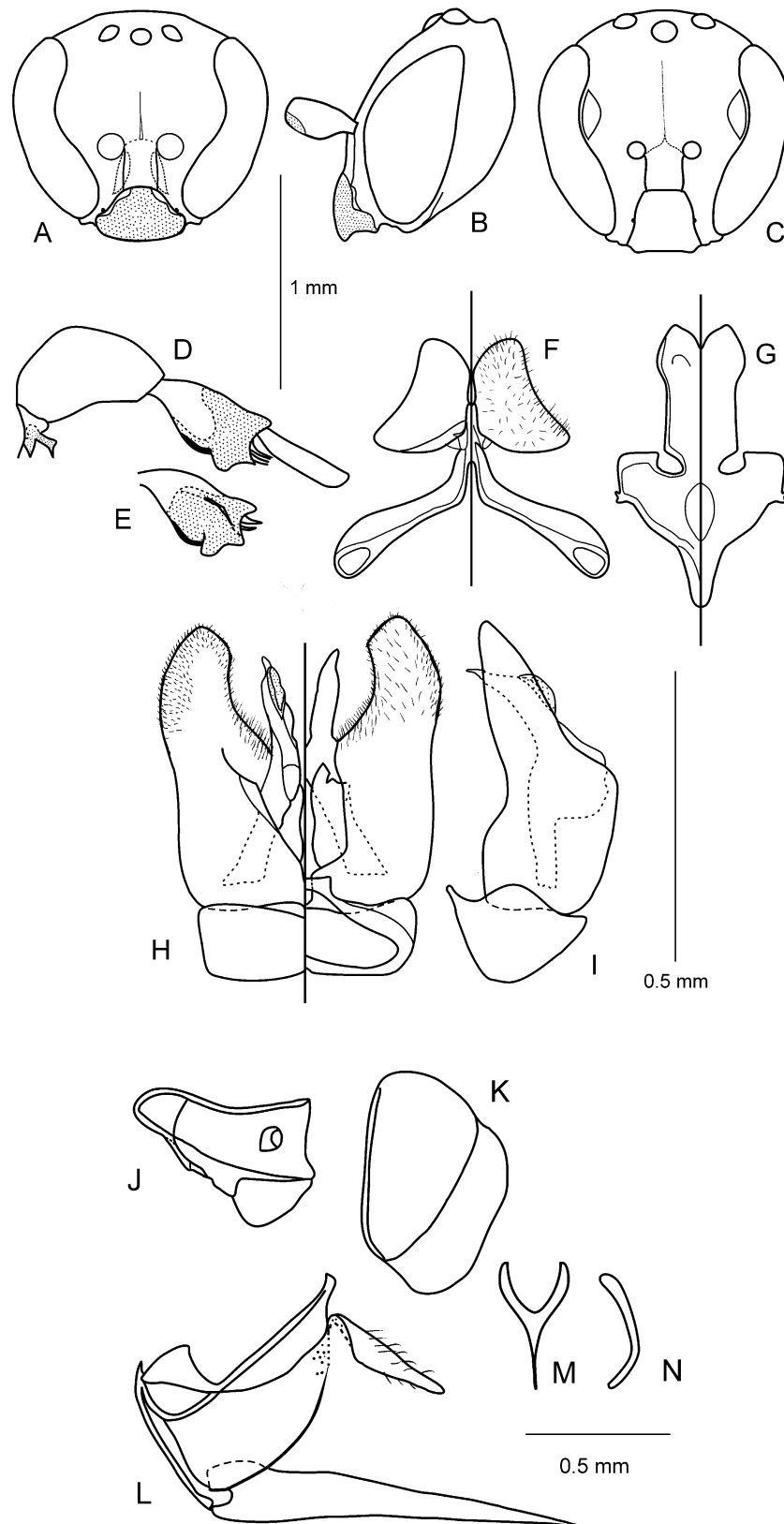
***Chilicola clavillo* Packer, n. sp.**

(Figs. 12A–N)

Diagnosis: A member of the same group of species as *C. tricarinata*, *C. clavillo* can be differentiated from all other members of *Chilicola*, including numerous undescribed species of the “*Oediscelisca*” group by the form of the hind tibia of the male (Figs. 12D and E). The tibia is almost triangular in lateral view, with the apical depth being 0.4X the length of the tibia, and is blackish brown basally and lemon yellow for the apical 0.5 — 0.7. Also there is a semicircular transverse concavity on the ventral surface but the orientation of this is such that in lateral view only a small indentation is visible. No other *Chilicola* with a punctiform anterior tentorial pit has such an expanded hind tibia, and the colouration and details of its shape are unique in the genus. *Chilicola (Oediscelis) vernalis* Philippi and *C. (Oediscelis) lonco* Toro and Moldenke have yellow and black expanded hind tibiae in males, but the shape of their tibiae is very different from those of *C. clavillo* and both have an elongate anterior tentorial pit. The legs of the female are entirely lacking in any pale colouration. All other females in Moure’s *Oediscelisca* known to us have at least some yellowish markings on the apices of the tibia and generally have a large proportion of the dorsal surface of the foretibia pale.

Description. Male: 6.5mm long, forewing length 4mm, head width 1.25mm.

Colouration: Black with following parts bright yellow: labrum, mandible (except apex reddish), clypeus, apical half of anterior surface of scape and pedicel, apical mark on fore trochanter, apical two-thirds of fore femur, inner surface of fore tibia, apical half of inner surface of middle femur, spot at apex of inner surface of middle tibia, apico-ventral mark on hind coxa, base of ventral process of hind trochanter, *entire expanded portion of inner surface of hind tibia and apical half of outer surface* (Figs. 12D and E). Flagellum orange anteriorly, red-brown posteriorly. Tegula and wing veins dark brown. Apical impressed areas of metasomal terga translucent dusky brown. Metasomal sterna dark brown.



FIGURES 12A–N. *Chilicola clavillo* Packer, **n. sp.** Head of male: A. frontal view, B. lateral view. C. frontal view of female head. Male: D. hind leg outer view, E. hind tibia inner view. F–I. Male terminalia. F. S7. G. S8. H. genital capsule, dorsal views are at the left, I genital capsule lateral view. J–M. Sting apparatus of female: J. hemitergite 7, K. hemitergite 8, L. First and second valvifer with gonostylus and sting shaft. M and N, furcula, dorsal and lateral views. Stippling in A, B, D and E indicates pale colouration, elsewhere it indicates membranous regions; the outlined area in A denotes margin of depressed areas.

Surface Sculpture: Microsculpture not strong, body surface generally moderately shiny except where covered by very dense punctures, legs and metasomal terga particularly shiny. Labrum and clypeus irregularly punctate, $i=1-3d$. Lower paraocular area densely punctate, $i\sim d$. Supraclypeal area very weakly punctured; frons above antennae with punctures crowded, edges sharp. Vertex rugose. Mesoscutum with dense punctures, $i\sim 0.5d$; scutellum densely punctate, $i<d$; mesopleuron and metanotum with irregular punctures, $i=1-3d$, surface dull due to dense microsculpture. Metasomal terga moderately dull with strong microsculpture; T1 with $i<d$, T2 and T3 with $i\geq d$; T2 and T3 with weakly transversely striate basal depressions; apical impressed areas of terga impunctate and lacking microsculpture.

Pubescence: White, pale yellow below antennae; mostly fine. Clypeus with long, procumbent hairs $\geq 2MOD$. Hairs above antennae erect, not plumose and not hiding surface, mostly short, $\sim 1MOD$ but with some longer hairs. Pubescence on genal area and mesosoma slightly woolly. Hind femur with ventral surface moderately densely pubescent with hairs on medial margin longest, $1.3MOD$. Metasomal terga lacking well defined apicolateral hair patches. S2 with numerous long hairs, $2MOD$; S3 with long erect hairs laterally $3MOD$, shorter medially; S4 and S5 with at least some hairs $> 2MOD$.

Structure: Head (Figs. 12A and B): Broader than long (86:80). Labrum 3X broader than long, apex straight. Mandible 2X as long as basal depth. Clypeus broader than long (54:40), extending below lower ocular tangent by approximately 0.125X of its length, lacking median longitudinal groove. Epistomal suture weakly sinuate; anterior tentorial pit punctiform. *Supraclypeal area marked on each side by broad, shallow, elongate, shiny depression* (Fig. 12A), subantennal sutures divergent below, length and apical breadth of supraclypeal area subequal, basal breadth of area 0.7X apical breadth. Frons lacking supra-antennal depressions. Facial fovea absent. Upper paraocular area slightly produced at apex of emargination of compound eye. Inner eye margins strongly emarginate, strongly convergent below (Fig. 12A), UOD:LOD 54:29. IOC and OOC subequal (16:15). OOC almost 2X LOL. Scape almost 4X as long as pedicel (23:6), swollen, 2X as long as greatest width, less than 2X as long as greatest depth, depth:length 24:40 (Fig. 12B); F2 more than 2X as long as wide (17:8); F8 almost 2X as long as wide (17:9); F11 noticeably shorter and narrower than F10 [11:18 on shorter side, 13:17 on longer side in the holotype (but note that this character appears somewhat variable, see comments below)]. Occiput strongly depressed before carinate margin with occiput. Malar space linear such that presence or absence of malar suture indetectable. Gena 0.5X as long as width of eye (15:30) (Fig. 12B).

Mesosoma: Almost 2X as long as greatest depth, 125:65. Pronotum short, collar 0.7LOL. Episternal groove complete; scrobal groove present posterior to scrobe, absent anteriorly. Propodeal area almost as long as scutellum, much longer than metanotum, scutellum:metanotum:propodeum 40:19:35; propodeal sulcus narrower than that of *C. tricarinata*, pits quadrate. Hind leg with *trochanter with posteromedial process long (1MOD) and narrow, parallel sided in both ventral and lateral views with apex curved ventrad, and with shorter posteroventrally oriented conical process arising laterad to base of posteromedial process* (Fig. 12D). Hind femur swollen, length to depth 100:73, ventral surface strongly concave (Fig. 12D). Hind tibia broadly expanded apically length to apical depth 10:6, extending beyond insertion of basitarsus, *ventral margin biconvex with basal convexity carinate, basal angulation weak with weak but clearly defined ridge dorsally on inner surface of apical half* (Figs. 12D and E). Hind basitarsus less than 4X as long as greatest depth, which is past midlength, ventral margin concave, strongly narrowed for apical 0.125X (Fig. 12D). Basal vein moderately strongly curved, most strongly so in basal half; distal stigmal perpendicular crosses second submarginal cell at middle; stigma 0.7X as long as anterior length of marginal cell; stigmal margin in marginal cell convex, most strongly so towards apex; first recurrent and first submarginal cross veins interstitial on Rs+M.

Metasoma: Subpetiolate, T1 1.3X as long as apical width (61:45). Sterna unmodified, gradulus on S2 with long posteriorly directed lateral portions, that on S3 broadly interrupted medially, reduced to tiny lateral marks on S4–S5, absent on S6;

Terminalia: S7 with one pair of long membranous lobes similar to those of *C. tricarinata* but longer anteriorly, less concave laterally and more broadly rounded apically (Fig. 12F). S8 with very long membranous

apical process, only weakly expanded towards apex, apical margin acutely emarginate (Fig. 12G). Genitalia as in Figs. 12H and I. Gonostylus not clearly demarcated from gonocoxite. Volsella elongate with outer surface broadly concave. Penis valve with pair of closely appressed lobes, appearing as one, short with long attachment to valve.

Female. Body length 4.7mm, forewing length 3.3mm, head width 1.2mm.

Colouration: Blackish-brown, *completely lacking pale markings* except for anterior surface of F3–F10 dusky orange. Wing veins dark brown.

Surface Sculpture: Punctures on frons very dense, $i \ll d$; punctures of T1 dense, $i = 1-2d$. Metanotum with shallow punctures on dull background. Mesopleural punctures sparse, $i = 2-3d$; dorsal surface of *propodeum* with weak, irregular, longitudinal striae not reaching apex, surface flat.

Pubescence: As in *C. tricarinata*.

Structure: As in *C. tricarinata* except as follows, head (Fig. 12C) wider than long (77:74). IOC only somewhat larger than OOC, 16:13. Eyes more convergent below (Fig. 12C), UOD:LOD 48:31. Facial fovea large and dull, ovate with upper and lower extremities somewhat pointed and approximating inner margin of eye. Propodeum almost as long as scutellum (19:21), propodeal sulcus indistinct. Apical lunule of S5 subtriangular, 0.75X as long as apical breadth.

Sting apparatus: Hemitergite 7 (Fig. 12J) not as elongate as in *C. tricarinata*, approximately 2X as long as greatest breadth excluding lateral lamella, apodemal region short, medial portion of marginal ridge concave, spiracle equidistant from lateral and medial margins, lateral process short and broad and lacking angulations, lateral lamella 0.75X as long as greatest breadth of hemitergite, posterior margin of lamina spiracularis angularly concave. Hemitergite 8 with apodeme broad, anterior ridge straight, body of plate somewhat narrowing mesad, posterior margin weakly sinuate (Fig. 12K). First valvifer with ventral process long, dorsal one almost right angular (Fig. 12L). Second valvifer with apodemal ridge straight; apical process truncate; spinous process short; gonostyli gradually narrowed posteriorly, hairs on dorsal surface longer than ventral ones. Sting shaft very slightly concave ventrally (Fig. 12L). Furcula with ventral arms narrower than in *C. tricarinata*; dorsal and ventral arms subequal in length; narrow in lateral view (Figs. 12M and N).

Material examined. Holotype male and allotype female: ARGENTINA: *Catamarca*: Cuesta del Clavillo, 20.x.1972, J.L. Neff, collected from a white-flowered shrub of the family Asteraceae (CTMI); paratypes: *Salta*, El Maray, 2200m, i.1996, M. Fritz, five males; same locality and collector, ii.1994, one male; *Salta*. El Alisal, i.1994, M. Fritz, one male; same data except ii. 1997, one male; *Tucuman*: Tafi del Valle, 2100m, 2-3.xii. 1979, C & M Vardy, one male; BOLIVIA, *Cochabamba*, Peña Colorada, 1800 m, 21.ii.1976. L.E. Peña. The holotype and allotype are at CTMI, Fritz and Peña's specimens are at the AMNH — except one paratype at MACN, Vardy's specimen is at the BMNH.

Etymology. The species is named after the locality for the holo- and allotype specimens.

Comments. As suggested by the extensive list of characters italicized in the description above, this is a distinctive species readily separated from others in Moure's *Oediscelisca* group by the form of the hind trochanter and tibia in the males and the completely dark legs of the female. The apical flagellomere is variable in length, being somewhat longer (though still shorter and slightly narrower than the preceding flagellomeres) in the males from Salta Province in Argentina and the sole specimen from Bolivia.

***Chilicola (Stenoediscelis) denisii* Packer, n. sp.**
(Figs. 13A–H)

Diagnosis: On the basis of numerous characteristics this species is clearly a member of Toro and Moldenke's subgenus *Stenoediscelis*, subsumed within *Anoediscelis* by Michener (1995), but deserving of subgeneric status based upon phylogenetic analysis (Packer, in press). Synapomorphies for *Stenoediscelis* include, for both

sexes, the previously unnoticed notched parascutal carina (Fig. 13D); in the male, the form of the hind tibia and basitarsus, both of which are slightly outwardly concave (Fig. 13E), and the terminalia with a particularly characteristic S7 (Fig. 13F); and in the female the subapical mandibular tooth, which is as long as, or almost as long as, the apical tooth and the presence of a medial angulation basal to the subapical tooth (Packer, in press).

Males of *Chilicola denisii* can be differentiated from the two described species of *Stenoediscelis*, *C. inermis* (Friese) and *C. mailen* Toro and Moldenke, on the basis of its almost entirely dark hind tibia. Two additional undescribed species are known from the same geographic region as the type locality for *C. denisii* in Patagonian Argentina. One can be differentiated from *C. denisii* on the basis of size; it is less than 3.5mm in length whereas *C. denisii* is 4.5–5.0mm, as well as having narrow pale rings on the base and apex of the hind tibia. The remaining species is as large as *C. denisii* and like it has an entirely dark hind tibia, but has the ventral surface of the hind femur angulate at the base so that it attains its maximum depth in its basal quarter. The hind femur of *C. denisii* is not swollen basally and attains its maximum depth near midlength (Fig. 13E).

Females of the new species can be differentiated from *C. inermis* and *C. mailen* by their generally sparse and irregular mesoscutal punctation, with $i=1-5d$ as opposed to $i=1-2d$. The smaller of the undescribed species noted above also has irregular and sparser punctation but can be differentiated readily on the basis of size as noted.

Description. Male: body length 5.0mm, forewing length 3.0mm, head width 0.9mm.

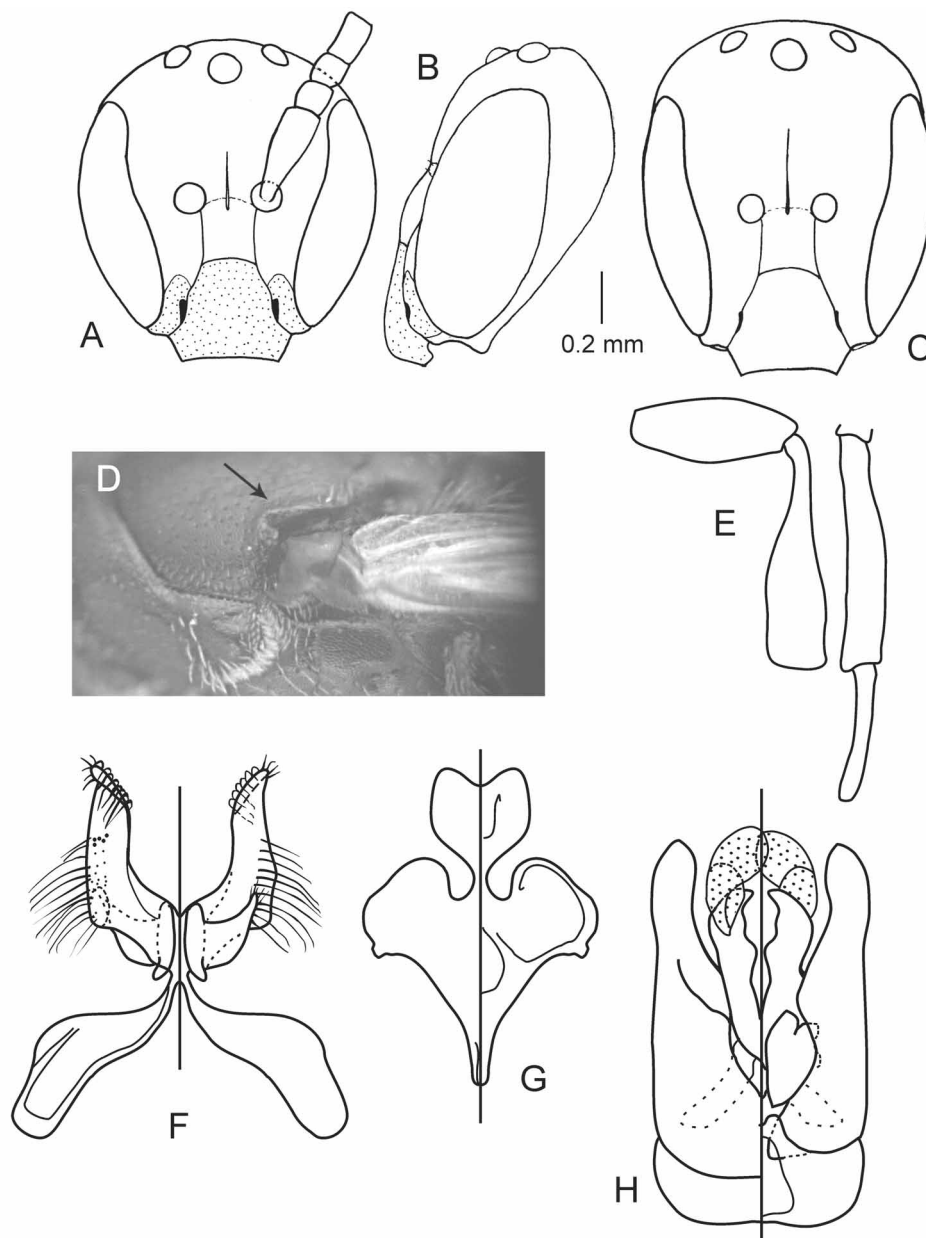
Colouration: Black, with following parts yellow: Labrum, mandible (except apex red-brown), all of clypeus, lower paraocular area extending to half distance between anterior tentorial pit and upper margin of clypeus. Following parts orange or yellow-orange: Pedicel and flagellum, apical spot on fore- and midfemur, anterodorsal surface of foretibia, foretarsus, basal and apical rings on midtibia. Following parts testaceous: Mid- and hindtarsi and apical ring on hindfemur. Posterior surface of flagellum brown. Tegula translucent dusky brown. Wing veins dark brown, tending to testaceous towards base. Apical impressed areas of metasomal terga translucent dusky brown.

Surface Sculpture: Labrum coarsely and irregularly punctate ($i \leq d$) on moderately shiny background. Clypeus shiny apically, with weak microsculpture elsewhere, with irregular weak punctures, $i=2-5d$. Yellow portion of lower paraocular area with few punctures, dark portion and upper paraocular area with distinct dense punctures $i \sim d$. Frons with punctures $i=1-3d$. Vertex weakly rugulose. Genal area with small punctures, $i=1-2d$. Pronotum with shallow dense punctures, $i \leq d$. Mesoscutum, scutellum and metanotum shiny despite dense microsculpture. Mesoscutum with punctures irregular $i=1-4d$, denser along anterior and posterior margins; scutellum with denser, more distinct punctures; metanotum with shallow irregular punctures. Mesepisternum shiny, above scrobe with few minute punctures, rest of mesopleuron weakly and irregularly punctate, $i < 2-4d$. Disk of dorsal surface of propodeum rugulose, remainder and lateral surface impunctate, dorsolateral area weakly roughened. T1 with obscure shallow punctures, $i > d$, becoming sparser on more posterior terga, apical impressed areas impunctate with weaker microsculpture.

Pubescence: White, short and sparse, not especially plumose; longest on genal area (2MOD), of intermediate length on legs and ventral surface of mesosoma. Without apico-lateral hair patches on metasomal terga and no specialized hair patches on metasomal sterna.

Structure: Head: Longer than broad, length to width 13:12 (Fig. 13A). Labrum 2X as broad as long, apical margin slightly produced medially. Mandible length:basal depth $\sim 2:1$. Clypeus shorter than broad 38:45, lower one quarter extending beyond lower ocular tangent, lacking median longitudinal groove (Fig. 13A). Epistomal suture expanded below anterior tentorial pit into elongate comma, pit adjacent to suture. Subantennal sutures weakly concave outwardly. Supraclypeal area somewhat protuberant dorsally, flat below, length:breadth 25:21. Frons lacking swellings or depressions. Frontal line raised for lower 0.4X distance between supraclypeal area and median ocellus, replaced by narrow depression for remaining 0.6X. Facial fovea present but extremely weakly developed as comparatively shiny area with weak wrinkling in surface

above and below. Inner margin of compound eye weakly emarginate, strongly convergent below (Fig. 13A), UOD:LOD 77:48. OOC:IOC 22:28. Lateral ocellus separated from compound eye by slightly less than 2X its diameter. Vertex rounded in frontal view, slightly longer than LOL in dorsal view. Upper ocular tangent approximately 0.6MOD below lower margin of median ocellus. Scape slightly shorter than pedicel+F1+F2 combined, almost 3X as long as broad; F1 slightly broader than long; F2–F10 almost 2X as long as broad; F11 0.75X as long as F10; flagellum not markedly increasing in breadth from F1 to F11; flagellomeres lacking unusual patterns of setation or structural modifications. Genal area narrower than compound eye (28:40) (Fig. 13B). Malar space linear such that presence or absence of malar suture indetectable.



FIGURES 13A–H. *Chicicola denisii* Packer, n. sp. Head of male: A. frontal view, B. lateral view. C. frontal view of female head. Male: D. Lateral view of portion of thorax to show notch in parascutal carina (arrow), E. Hind leg outer view of femur and tibia on left, dorsal view of tibia and basitarsus on right. F–H. Male terminalia. F. S7. G. S8. H. genital capsule, dorsal views are at the left.

Mesosoma: Elongate, approximately 2X as long as greatest depth. Pronotal collar short, subequal to LOL. Mesoscutum with parascutal carina notched (Fig. 13D). Episternal groove complete; scrobal groove weakly

defined posterior to scrobe, absent anteriorly. Propodeum elongate, dorsal surface as long as posterior depth and subequal to length of scutellum (scutellum:metanotum:propodeum 30:15:23), propodeal sulcus absent, area outside of dorsal triangle of propodeum swollen, and dorsal and posterior surfaces at angle of 135° to each other. Hind trochanter unmodified. Hind femur 2.5X as long as greatest depth, convex ventrally. Hind tibia laterally compressed, narrow basally, gradually expanding to apical third, somewhat parallel sided to apex, length to greatest depth 90:23, attaining base of trochanter when folded, lacking angles or carinae (Fig. 13E). Hind tibial spurs somewhat short but not robust, strongly curved or sclerotised. Hind basitarsus very slightly concave outwardly and slightly downcurved, 5.5X as long as greatest depth (Fig. 13E). Hind tarsal claws bifid. Basal vein weakly curved near base; distal stigmal perpendicular crossing near middle of second submarginal cell; stigma shorter than length of marginal cell on wing margin; stigmal margin on marginal cell angularly convex; first recurrent vein apical to first submarginal cross vein.

Metasoma: Length and apical width of T1 subequal; T2 and T3 with weak basal depressions; apical impressed area approximately 0.25X length of tergum. Metasomal sterna unmodified except S1 concave subapically in profile.

Terminalia: S7 with ventral lobe L-shaped and posteriorly directed, bearing row of long hairs in basal half of outer surface and a few short hairs at extreme apex, dorsal lobe short and flat (Fig. 13F). S8 with apical lobe narrowly joined to rest of sternum, apex concave. Gonobase with lateral projection of ventroapical process broadly rounded (Fig. 13G). Volsella with outer margin angularly and deeply concave before apex. Gonoforceps elongate, gonostylus poorly demarcated from gonocoxite, elongate and narrow. Penis valve with two long membranous lobes, medial one dorsally oriented, lateral one bent inwardly at right angles over medial lobe (Fig. 13H).

Female: Body length 4.5mm, wing length 2.6mm, head width 1.0mm.

Colouration: Entirely dark brown-black except anterior surface of F4–F10 pale orange and apical impressed areas of metasomal terga amber.

Surface Sculpture: As in male except as follows: Labrum with large dense punctures, $i < d$. Clypeus with punctures more distinct, $i = 1-4d$. Lower paraocular area regularly punctate, $i = d$; upper paraocular area with shiny almost impunctate area. Frons more regularly punctate, $i = 2d$. Vertex with weak transverse wrinkles. Genal area with distinct punctures anteriorly, $i \sim d$. Hypostomal area shiny lacking microsculpture with few minute punctures. Mesoscutum with punctures irregular, $i = 1-5d$. Metanotum with punctures more distinct and regular than in male, $i \sim d$;

Pubescence: Longest hairs on frons $\leq 1.5\text{MOD}$; on genal area, $< 2\text{MOD}$; on lateral surface of thorax 1MOD . Hind trochanter, femur and tibia with sparse scopal hairs $< 2\text{MOD}$. Metasomal terga lacking apicolateral hair patches. S2 with long scopal hairs forming corbicula, $\leq 4\text{MOD}$, with widely spaced, short branches on anterior surface.

Structure: As in male except for usual secondary sexual characteristics and as follows (mouthparts and sting apparatus not dissected in sole female specimen): Head longer, length to width 13:11 (Fig. 13C). Labrum 2.5X as wide as long, with circular apicomedial ridge, bearing tuft of setae. Mandible with subapical tooth as long as apical one and with mesal angulation basal to subapical tooth. Frons lacking swellings or depressions. Frontal line raised for lower 0.6X distance between supraclypeal area and median ocellus. Facial fovea absent but represented by shiny almost impunctate area. OOC:IOC 24:26. Upper ocular tangent approximately 1MOD below lower margin of median ocellus. Gena shorter than width of compound eye (30:36). T1 broader, length to width 60:85. S5 with apical lunule 0.75X as long as apical width.

Material studied. Holotype male: ARGENTINA, *Santa Cruz*, 20km E. of Los Antiguos, 46°36'59"S 071°21'47"W 17.xi.2003, pan trap, L. Packer; allotype female: same except 0.5km E. of Los Antiguos, 46°33'50"S 071°35'50"W, 237m, 17–19.xi.2003, pan trap, L. Packer. Both known specimens will be housed at MACN. The holotype bears a blue label that states: VOUCHER SPECIMEN DNA EXTRACTION E.A.B. Almeida #58 extraction date: 7/2004.

Etymology. This species is named, with gratitude and affection, after the senior author's father, who ensured that the senior author was not afraid of insects as a child.

Comments. The genitalia of this species are very similar to those of *C. inermis* and particularly, *C. mailen*, but the outer margin of the ventral lobe of S7 is straighter and the whole lobe more L-shaped, whereas in the other two species the outer margin is rounded and the whole lobe more lunate. In *C. inermis* the ventral lobe of S7 is also more gradually narrowed to the apex and the basal bare area longer than in the other two species.

***Chilicola liliana* Packer, n. sp.**

(Figs. 14A–G)

Diagnosis: This species is known only from females and species groupings in *Chilicola* are normally based largely upon male characters. Nonetheless, it seems most similar to *C. olmue* Toro and Moldenke and *C. minor* (Philippi) two Chilean species moved from Toro and Moldenke's subgenus *Heteroediscelis* to *Anoediscelis* by Michener (1995). The following combination of characteristics allies this species to *C. minor* and *C. olmue*: mandible with subapical tooth shorter than apical tooth, maxillary palpus 6-segmented, anterior tentorial pit elongate and comma-shaped, facial fovea absent (although area above antennal sockets somewhat depressed), pronotal collar short, distal stigmal perpendicular crossing second submarginal cell near middle, hind tibial spurs unmodified, dorsal surface of propodeum much shorter than scutellum, scopal hairs with short branches on anterior of rhachis. All of these characters appear plesiomorphic except for the elongate anterior tentorial pit (Fig. 14A, Packer, unpublished data), but as this is found in many subgenera of *Chilicola*, it is not possible to associate this new species with named subgenera. It can be differentiated from *C. minor* and *C. olmue* by its shorter head only slightly longer than broad (62:58) whereas both other species have heads that are almost 1.2X longer than wide (68:57). The next species described, *C. trequalemu*, also appears related to *C. minor* and *C. olmue* but is approximately 1.1X larger than *C. liliana* with compound eyes more strongly convergent below and with stronger punctation and propodeal sculpture (see below). In the absence of males, this species is considered unassigned to subgenus.

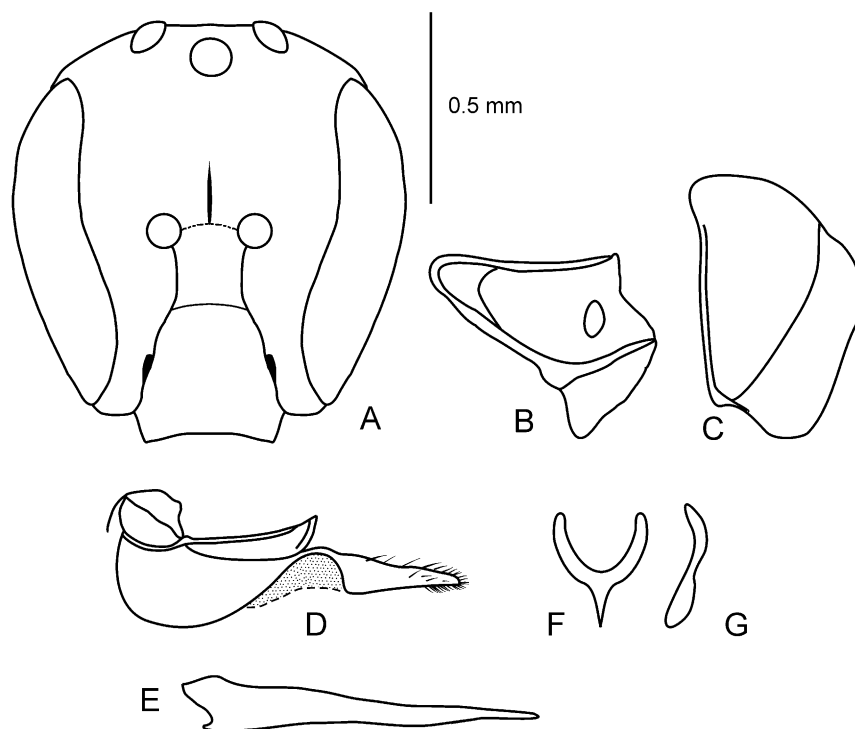
Description. Female: Length 3.7mm, wing length 2.5mm, head width 1.0mm.

Colouration: Entirely dark brown except for apex of mandible (reddish), extreme apex of fore- and mid-femora and extreme base of fore- and midtibiae orange. Tegula and wing veins dark brown. Apical impressed area of metasomal terga translucent. See comments section for variation in colour among individuals.

Pubescence: White, fine, mostly short, few long hairs (2MOD) on frons and genal area, 1.5MOD on lateral surface of mesosoma and tibial scopa. Apicolateral patches of short plumose hairs on T1 and T2. Corbicula of S2 with long hairs, 3MOD, with numerous short branches anteriorly on rhachis. S5 with apical lunule broadly U-shaped, 0.7X as long as broad.

Surface Sculpture: Microsculpture moderately dense, surface dull, shinier on lateral surface of mesosoma and metasomal terga. Punctures small and generally well defined on clypeus and lower paraocular with slightly larger punctures, i=1–2d, on clypeus; i~d on lower paraocular area. Supraclypeal area with punctures difficult to discern against roughened surface. Frons with punctures denser below, i~d; sparser laterally and in front of ocelli, i=1–3d. Vertex with obscure irregular punctures. Genal area with minute obscure sparse punctures. Pronotal collar with punctures dense laterally, i~d, obscure medially. Mesoscutum with i=1–2d except somewhat denser anteriorly and posteriorly. Scutellum with irregular punctures, i=1–4d. Metanotum with small dense punctures, i~d. Mesopleuron with small irregular punctures, i=1–5d. Dorsal surface of propodeum with irregular longitudinal striae on weakly rugulose background, striae not reaching posterior margin; rest of propodeum almost impunctate shiny with weak microsculpture; dorsolateral area narrowly roughened. Metasomal terga with very obscure and sparse punctures.

Structure: Head: Slightly longer than broad, length to width 62:58 (Fig. 14A). Maxillary palpus unmodified 0.6X as long as prementum. Prementum with fovea large, carinate laterally. Lacinia an elongate triangle, 3X as long as greatest width. Lorum more than 0.33X as long as cardo. Labrum more than 2X as broad as long (33:14), apex very slightly produced medially. Mandible short and broad, length:basal depth ~2:1, subapical tooth long but not reaching apex of mandible. Clypeus slightly broader than long, length to breadth 41:43, lower one quarter extending beyond lower ocular tangent, lacking median longitudinal groove. Epistomal suture expanded below anterior tentorial pit forming elongate comma, pit not separated from suture. Subantennal sutures slightly convergent below, supraclypeal area slightly longer than broad (20:18). Frons above antennae depressed. Frontal line distinct for lower 0.4X length between supraclypeal area and median ocellus. Facial fovea absent. Inner margin of compound eye emarginate, eyes convergent below UOD:LOD 74:52. OOC shorter than IOC 25:20. Vertex subequal to length of lateral ocellus, abruptly rounded onto occipital region. Upper ocular tangent crossing lower tangent of median ocellus. Genal area less than one 0.5X as broad as compound eye (17:40). Malar space linear such that presence or absence of malar suture indetectable.



FIGURES 14A–G. *Chilicola liliana* Packer, **n. sp.** Female. A. Head in frontal view. B–G sting apparatus: B. Hemitergite 7, C. hemitergite 8, D. first and second valvifer, E. sting shaft, F and G. furcula dorsal and lateral views respectively.

Mesosoma: Elongate, distance from anterior of pronotal collar to articulation of metasoma approximately 2X its greatest depth. Pronotal collar short, 1.3LOL. Episternal groove complete; scrobal groove weakly defined posterior to scrobe, absent anteriorly. Propodeum with dorsal surface short, not much longer than metanotum (scutellum:metanotum:propodeum 30:14:16); propodeal sulcus absent. Hind tibial spurs long and not strongly curved or strongly sclerotised. Hind tarsal claws bifid. Basal vein very weakly curved; distal stigmal perpendicular crossing near middle of second submarginal cell; stigma shorter than length of marginal cell on wing margin; stigmal margin on marginal cell very weakly convex; first recurrent vein and first submarginal crossvein approximately interstitial on Rs+M.

Metasoma: T1 shorter than wide (85:110). Apical impressed areas poorly defined, approximately 0.25X length of tergum.

Sting apparatus: As in Figs. 14B–G. Hemitergite 7 with lateral portion of marginal ridge somewhat thickened, considerably so close to base of lateral process; lateral process short and acute; lateral lamella long;

medial portion of marginal ridge weakly concave; spiracle separated from posterior margin of lamina spiracularis by approximately its own diameter, closer to lateral than medial portion of marginal ridge; posterior margin of lamina spiracularis angularly concave (Fig. 14B). Hemitergite 8 with anterior ridge weakly convex for basal 0.75, somewhat anteriorly produced for apical 0.25; apodeme larger than plate (Fig. 14C). First valvifer with dorsal process shorter than ventral process, dorsal margin sinuate. Second valvifer with apodemal ridge straight, region basal to gonostylus membranous, gonostylus converging towards apex from broad base (Fig. 14D). Ventral margin of sting shaft straight for basal half, then somewhat swollen before narrowing to apex (Fig. 14E). Furcula with ventral arms parallel-sided, dorsal arm short, in lateral view ventral arm slightly convex dorsally, dorsal arm laterally compressed deeper than ventral arm (Figs. 14F and G).

Material studied. Holotype female and three female paratypes: ARGENTINA: *Santa Cruz*, ~56km S. of Perito Moreno, 19.xi.2003, L. Packer; ten additional female paratypes, same data except 23.xi.2003; ARGENTINA: *Chubut*, Estacion Agroforestal del Instituto Nacional de Tecnología Agropecuaria (INTA), Trevelin, Site 1, 43°07'651"S, 071° 33'723"W, 30.i.2006, M.E. Hollmann ex. *Trifolium repens* (Fabaceae), one female; same data except site 3, 43°06'871" 071°35'410", 6.xii.2006, A–I. Gravel, one female; same as previous except 1.ii.2006, two females; same except 17.i.2006, one female; same except site 4, 43°06'025"S 071°33'155"W, 26.i.2006, one female. The holotype female and four paratypes are at MACN, Hollmann's specimen is at INTA, the remaining paratypes are at PYU. One paratype bears a blue label that states: VOUCHER SPECIMEN DNA EXTRACTION E.A.B. Almeida #60 extraction date: 7/2004.

Etymology. This species is named, with gratitude and affection, after the senior author's mother.

Comments. There is some variation in colour among the type series. Some females have the basal portion of the mandible yellow and some have a small irregular orange mark on the clypeus.

Most of the specimens from Santa Cruz were collected along the banks of a tiny stream from flowers of *Taraxacum* (Asteraceae).

***Chilicola tregualemu* Packer, n. sp.**

(Figs. 15A–O)

Diagnosis. This species appears related to a group of three other Chilean species: *C. minor*, *C. olmue* and *C. orophila* Toro and Moldenke, based upon the spinose male hind trochanter (Figs. 15D and E) (simple in *C. orophila*), somewhat expanded ventral apex of the male hind tibia (Fig. 15E) and the general form of the male S7 (Fig. 15G). It can be differentiated from all three species by its larger size, entirely dark legs, more complex armature of the hind trochanter and genitalia of the male. No other Chilean species of *Chilicola* is as uniformly darkly coloured as this species: females of two of the aforementioned species have at least small pale spots at the extreme base of the fore- and midtibia (females are unknown for *C. orophila*).

Description. Male: Length 6.5mm, forewing length 3.5mm, head width 1.3mm.

Colouration: entirely brownish-black except for narrow transverse apical dark orange mark on clypeus. Tegula brown. Wing veins dark brown, membrane amber.

Surface Sculpture: Generally dull through combination of dense punctation and microsculpture. Labrum shining with discrete punctures, $i < d$, except sparser medially towards base. Clypeus shining for apical $1/6^{\text{th}}$, microsculpture increasingly deep towards base, punctures irregular $i = 0.1 - 2d$. Punctures slightly larger and with $i \leq d$ on lower paraocular area. Supraclypeal area with finer more regular punctures, $i \sim d$. Face above antennae with small crowded sharp-edged punctures. Vertex densely and finely roughened, punctures difficult to discern. Genal area with weak moderately dense punctures against longitudinally microstriate background. Pronotum with dense small punctures, $i < d$. Mesoscutum with small dense punctures, crowded for anterior one third and along posterior margin, $i \sim 0.5d$ on disk; scutellum with $i < d$ somewhat shiny between punctures; metanotum with small, crowded, sharp edged punctures. Mesopleuron irregularly punctate, area above scrobal

groove almost impunctate, below groove $i=0.5-2d$. Dorsal surface of propodeum densely rugose, posterior and lateral surfaces microreticulate with sparse, shallow punctures, dorsolateral area with elongate punctures, $i \leq d$. Metasomal terga dull, with strong microsculpture and dense shallow irregular punctures, $i \leq d$.

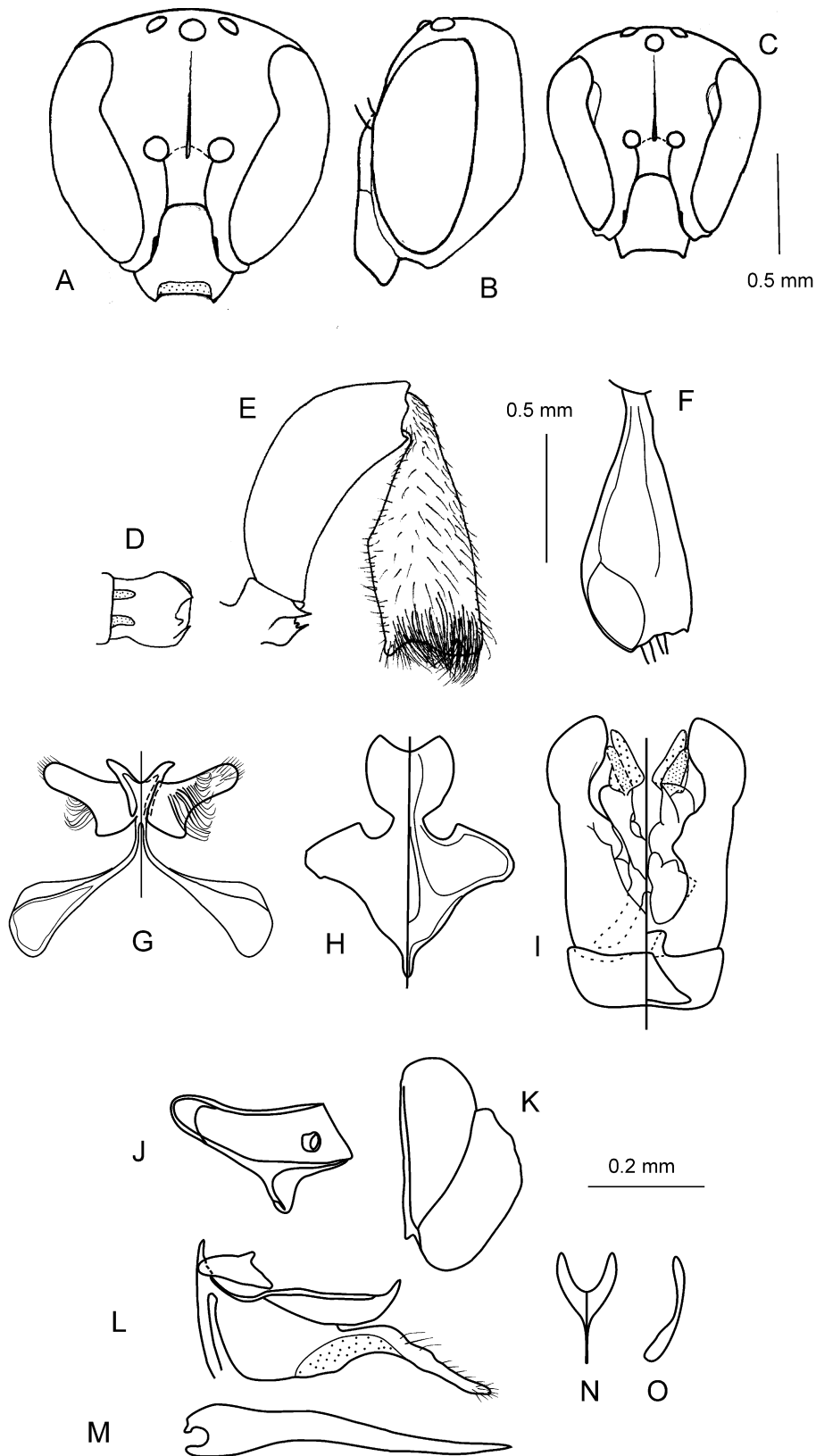
Pubescence: Brown on face and thoracic dorsum, white elsewhere. Face with short erect brown pubescence, $\leq 1\text{MOD}$, longer on vertex $\sim 1.5\text{MOD}$. Genal beard 0.5MOD anteriorly, 2MOD posteriorly. Dorsal surface of thorax with sparse long hairs 1MOD . Posterior margin of mesoscutellum, metanotum and mesopleuron and lateral surface of propodeum with denser longer hairs, $\geq 2\text{MOD}$. Outer surface of hind tibia with dense patch of long apically directed hairs, more ventral ones curved dorsally 2MOD (Fig. 15E). Metasomal terga lacking apicolateral hair patches. Sterna glabrous.

Structure: Head: Round, length equal to breadth (Fig. 15A). Labrum $3X$ broader than long. Clypeus shorter than broad (52:60), apical 0.4 extending beyond lower ocular tangent, with weak medial depression (Fig. 15A). Epistomal suture expanded below anterior tentorial pit forming elongate comma, pit not separated from suture. Subantennal sutures slightly convergent below, outwardly concave. Supraclypeal area well-defined dorsally, length to breadth 20:15. Frontal line strongly carinate for lower half of distance between supraclypeal area and median ocellus. Facial fovea absent (Fig. 15A). Inner margin of compound eye emarginate; eyes strongly convergent below (Fig. 15A), UOD:LOD 52:30. IOC more than OOC (16:12). Upper ocular tangent just below lower margin of median ocellus. Vertex weakly convex in frontal view; length 1LOL; margin with occipital region sharp but not carinate. Antenna very long and thin, scape $3X$ as long as apical width and $3X$ as long as pedicel; pedicel shorter than broad; F1 $1.5X$ as long as wide (25:18); remaining flagellomeres slightly longer (30:19) except F11 24:18; antenna lacking unusual setation or structural modifications. Malar space linear such that presence or absence of malar suture undetectable. Gena less than $0.5X$ as wide as eye (16:34) (Fig. 15B).

Mesosoma: Less than $2X$ as long as greatest depth, 13:7. Pronotal collar with dorsal surface moderately long, 1.5MOD medially. Episternal groove well developed; scrobal groove well developed posteriorly, absent anteriorly. Dorsal area of propodeum intermediate in length between metanotum and scutellum, ratio of scutellum:metanotum:dorsal surface of propodeum 40:18:24; propodeal sulcus barely detectable. *Hind trochanter with three apicoventral angles, outer one triangular, middle one a minute tooth, inner one a mesally oriented narrow spine* (Figs. 15D and E). Hind femur somewhat expanded, less than one third as deep as long (40:110), ventral surface gently concave (Fig. 15E). Hind tibia strongly expanded for basal two-thirds from narrow base, greatest depth more than one third length (23:60), *apical one third produced into broad, flattened pad*, apex slightly produced beyond base of unmodified tibial spurs (Figs. 15E and F). Hind basitarsus deepest near base, narrowing towards apex, length to greatest depth 4:1. Hind tarsal claws bifid. Basal vein weakly curved; stigma in marginal cell weakly convex, ratio of its length to marginal cell apical to stigma 60:100; distal stigmal perpendicular crossing second submarginal cell basal to middle; first recurrent vein interstitial with first submarginal crossvein.

Metasoma: T1 as long as wide; apical impressed areas $0.25X$ as long as tergum. Sterna lacking unusual projections, S2 with lateral portion of gradulus short, S3–S5 with small circular lateral gradular marks.

Terminalia: S7 with one pair of well developed lateral lobes; rudiment of ventral lobe a slight extension of apex of disc of sternum; dorsal lobe sclerotised and apicolaterally directed, bearing transverse row of long bristles, anterolaterally directed basally becoming laterally oriented towards apex, (Fig. 15G). S8 with apical process broadly rounded at sides, posterior margin concave (Fig. 15H). Gonobase with ventroapical process long and narrow, apically shallowly concave. Volsella with angulate lateral margin. Gonocoxite elongate, parallel-sided. Gonostylus well demarcated from gonocoxite, strongly convex on outer surface, concave on inner surface, narrowed towards base; ventromedial lobe slightly more than right angular, sinuate. Penis valve with two membranous lobes, outer one somewhat curved around inner one, inner one elongate and narrow (Fig. 15I).



FIGURES 15A–O. *Chilicola tregualemu* Packer, **n. sp.** Head of male: A. frontal view, B. lateral view. C. frontal view of female head. Male: D. Hind trochanter, ventral view. E. Hind leg trochanter, femur and tibia, outer view. F. Hind tibia, oblique ventral view. G–I. Male terminalia. G. S7. H. S8. I. genital capsule. Dorsal views are to the left. J–O. Sting apparatus of female: J. hemitergite 7, K. hemitergite 8, L. First and second valvifers. M. sting shaft. N and O. Furcula dorsal and lateral views respectively. Stippling in A indicates dark orange colouration, elsewhere it indicates membranous regions.

Female: As in male except for usual secondary sexual characteristics and as follows: Length 4.8mm, wing length 3.5mm, head width 1.1mm.

Colouration: Entirely dark brown except for apex of mandible (reddish); tegula and apical impressed area of metasomal terga translucent testaceous.

Surface Sculpture: Labrum with large, irregular punctures $i < d$ on shiny background. Clypeus and supra-clypeal area with larger shallow irregular punctures $i = 0.1-2d$. Frons with punctures dense to crowded below, sparser in front of ocelli, $i \sim d$. Vertex with weak transverse striae and shallow punctures. Genal and hypostomal areas with sparse obscure punctures. Pronotal collar with shallow punctures, $i \sim d$. Mesoscutum with small but dense punctures, $i \leq d$, almost crowded posteriorly; scutellum regularly punctate, $i \sim d$. Mesopleuron with small irregular punctures, $i = 2-5d$, denser on upper half of hypoepimeral area, $i = 0.5-2d$. Dorsal surface of propodeum strigate apically, rugulose basally; rest of propodeum almost impunctate shiny with weak microsculpture; dorsolateral area narrowly weakly roughened. Metasomal terga with very obscure and sparse punctures.

Pubescence: White except on frons and vertex pale fuscous and on apical metasomal terga pale brown, fine; mostly short, a few long hairs 2MOD on frons and genal area, 1.5MOD on lateral surface of mesosoma and hind tibial scopa. Dorsolateral area of propodeum with narrow area of hairs, 1MOD. Apicolateral patches of short plumose hairs on T1 and T2. Corbicula of S2 with long hairs, 3MOD, with numerous short branches anteriorly. S5 with apical lunule broadly U-shaped, 0.8X as long as broad.

Structure: Head: Longer than broad, length to width 75:68 (Fig. 15C). Maxillary palpus with segments increasing in length and decreasing in breadth from first to last, 0.75X as long as prementum. Prementum 0.2X as broad as long, with fovea covering most of ventral surface, margins strongly carinate. Lacinia an elongate triangle, more than 4X as long as greatest breadth. Lorum well sclerotised, approximately 0.33X as long as cardo. Labrum 2.5X as broad as long (38:15), apical margin almost straight. Mandible 2.5X as long as basal depth, subapical tooth long. Clypeus slightly longer than broad (52:50), slightly more than lower one quarter extending beyond lower ocular tangent, lacking median longitudinal groove (Fig. 15C). Supraclypeal area as broad as long (Fig. 15C). Frons above antenna very weakly depressed; frontal line distinct, but less strongly carinate, for lower half of length between supraclypeal area and median ocellus. Facial fovea absent but represented by shiny area; inner margin of compound eye emarginate (Fig. 15C) less strongly convergent below UOD:LOD 87:56. OOC equal to IOC. Vertex longer than length of lateral ocellus, 17:14, abruptly rounded onto occipital region.

Mesosoma: Elongate, ratio of distance from anterior of pronotal collar to articulation of metasoma to greatest depth of mesosoma 100:55. Pronotal collar short, almost entirely declivous medially. Stigma shorter than length of marginal cell on wing margin (50:68); first recurrent vein and first submarginal crossvein approximately interstitial.

Metasoma: T1 shorter than wide (80:115); apical impressed areas poorly defined, approximately 0.25X length of tergum.

Sting apparatus: Lateral portion of marginal ridge of hemitergite 7 thick, well sclerotised evenly curved from apodeme to apex; lateral process short and narrow with apical spine; spiracle somewhat closer to lateral than medial portion of marginal ridge; posterior margin of lamina spiracularis straight (Fig. 15J). Hemitergite 8 with apodemal ridge straight, apodeme and plate approximately equal in size, medial portion of plate sinuate (Fig. 15K). First valvifer with dorsal process short and narrow, ventral process elongate. Second valvifer with incisura postarticularis narrowed medially, somewhat expanded basally and apically (Fig. 15L). Sting shaft curved ventrad (Fig. 15M). Furcula with ventral arms broad, especially towards junction with dorsal arm, narrower than dorsal arm in lateral view (Figs. N and O).

Material Studied. Holotype male and allotype female. CHILE; Maule; Tregualemu, 30km W. of Cauquenes, 27.i.1979. L. E. Peña. The types belong to the AMNH.

Etymology. This species is named after the type locality.

Comments. The locality is a small coastal town in a poorly collected part of Chile where there remain a few areas of comparatively undisturbed habitat (A. Ugarte, pers. comm., 2004). This species, belongs to a group that also includes *C. minor*, *C. olmue* and *C. orophila*. These species were originally placed in *Heteroediscelis* by Toro and Moldenke (1979). This subgenus was divided among *Anoediscelis* and *Oediscelis* by Michener (1995) with the three species mentioned above moved to the former. These three, plus *C. tregualemu* do not fit in any named subgenus and phylogenetic analysis suggests that a new subgeneric name is required for this group (Packer, in press). Among the previously known related species, *C. tregualemu* has a male S7 and setation of the hind tibia very similar to that of *C. olmue* and the dense mesoscutal punctation of *C. minor*.

***Chilicola setosicornis* Packer, n. sp.**

(Figs. 16A–O)

Diagnosis. This is a somewhat isolated species, perhaps most closely related to Toro and Moldenke's *Heteroediscelis* (Packer, in press). It can be most readily separated from all other *Chilicola* in the male, by the long setae towards the apices of the apical flagellomeres (Fig. 16A). The form of the hind trochanter is also unique (Fig. 16D and E). Females differ from other *Chilicola* with apical hair patches on the metasomal terga and unmodified hind tibial spurs by the comparatively deep depressions dorsal of the antennal socket, which seem to house the scape. Only one other species matches this description, and *Chilicola neffi* Toro and Moldenke, has deeper and narrower frontal depressions but the females can be instantly differentiated by the maroon coloured metasoma of *C. neffi*, as well as by the latter species' smaller size and location in coastal Chile rather than montane northwest Argentina.

Description. Male: Length 6.0mm, forewing length 4.0mm, head width 1.4mm.

Colouration: Black-brown with following parts yellow: Basal portion of labrum (rest dark brown), mandible (apex dark brown), clypeus except adjacent to epistomal suture, mark on lower paraocular area up to level of ventral margin of supraclypeal area, apicoventral spot on hind tibia. Following parts orange: Ventral surface of antennal flagellum, dorsal and anterior surfaces of foretibia, forebasitarsus, forepretarsus, S2 and S3 orange anterior to submarginal zone and all of S6. Wing veins and tegula dark brown. T1 and T2 dark brown, narrowly orange anterior to translucent amber apical impressed areas.

Surface Sculpture: Labrum shining with dense punctures basally (i~d) sparsely punctate apically (i=2–3d). Clypeus with punctures small and dense apically (i~d), sparser towards base. Supraclypeal and lower and upper paraocular areas with strongly imbricate microsculpture, appearing almost granular and with small, sparse, irregularly spaced punctures (i =1–5d). Upper paraocular area with larger punctures. Frons with punctures crowded and sharp edged, very variable in size; area immediately below lateral ocelli with few, large punctures. Vertex behind ocelli rugose, laterally with dense punctures. Genal area with weak, elongate punctures on longitudinally microstriate background, shiny. Pronotum and metanotum roughly and densely punctate (i≤d). Mesoscutum and scutellum dull due to dense microsculpture. Mesoscutum densely and irregularly punctate, i<d medially, crowded around parapsidal lines and along extreme anterior margin, sparser elsewhere (i=1–1.5d). Scutellum with i~d. Dorsal surface of propodeum finely rugoso-reticulate, posterior and lateral surfaces weakly wrinkled, dorsolateral areas slightly more strongly roughened. Mesopleuron irregularly punctate, i=1–3d. Metasomal terga dull, with strong microsculpture and dense punctures, i≤d, sparser on T4–T6; basal impressed areas of T2 and T3 transversely microstriate.

Pubescence: White except for long erect pubescence on head, mesosoma and metasomal terga very pale yellowish; somewhat woolly. Face with erect pubescence, ≤ 1MOD below antennae, ≤ 2.5MOD above. Genal beard well developed, 0.5MOD anteriorly, 1.5MOD posteriorly. F5–F10 with apicoventral patch of elongate setae increasingly numerous on more apical flagellomeres (Fig. 16A). Dorsal surface of thorax with sparse long hairs, 1–1.5MOD; mesopleuron and lateral surface of propodeum with denser, long hairs (1.5MOD).

Ventral surface of hind femur with short sparse hairs mesobasally and with few longer hairs on dorsal surface. T2 and T3 with entire broad basal hair bands filling basal depressions, T1–T4 with medially interrupted apical hair bands. S2 with dense pubescence, 0.5MOD medially, 1.0MOD laterally; S3 with lateral hair patches 1MOD.

Structure: Head: Longer than broad, length to breadth 49:45 (Fig. 16A). Labrum 4X as broad as long, apex only slightly convex. Clypeus broader than long (35:30), apical one fourth extending beyond lower ocular tangent, lacking median groove, somewhat flattened dorsally (Fig. 16A). Epistomal suture broadly expanded mesad of and below anterior tentorial pit to 3X width of pit, pit separated from epistomal suture by one pit diameter. Subantennal sutures convergent below. Supraclypeal area well-defined dorsally, slightly longer than apical breadth (17:14). Frons with depression mesad of inner margin of eye above antennae, areabetween median ocellus and supraclypeal area also weakly depressed. Frontal line carinate for lower 0.7 of distance between antennal socket and median ocellus. Facial fovea absent; inner margin of compound eye weakly emarginate. Eyes convergent below (Fig. 16A), UOD:LOD 55:40. IOC slightly more than OOC, 19:17. Head slightly developed above compound eyes, upper ocular tangent tangential to lower margin of median ocellus. Vertex strongly convex in anterior view, flat in profile, 1LOL; occipital margin sharp but not carinate. Antenna very long and thin, scape 3X as long as apical width and 3X as long as pedicel, pedicel longer than greatest width (10:7); F1 shorter than F2 (20:28); F2–F9 up to 4X longer than broad, dorsal surface slightly concave, increasingly so on more apical flagellomeres; F10 shorter, 0.75X as long as F8, with apical half slightly expanded; F11 reduced, oval, one quarter as long as F8. Malar space linear such that presence or absence of malar suture indetectable. Gena narrower than eye (22:28).

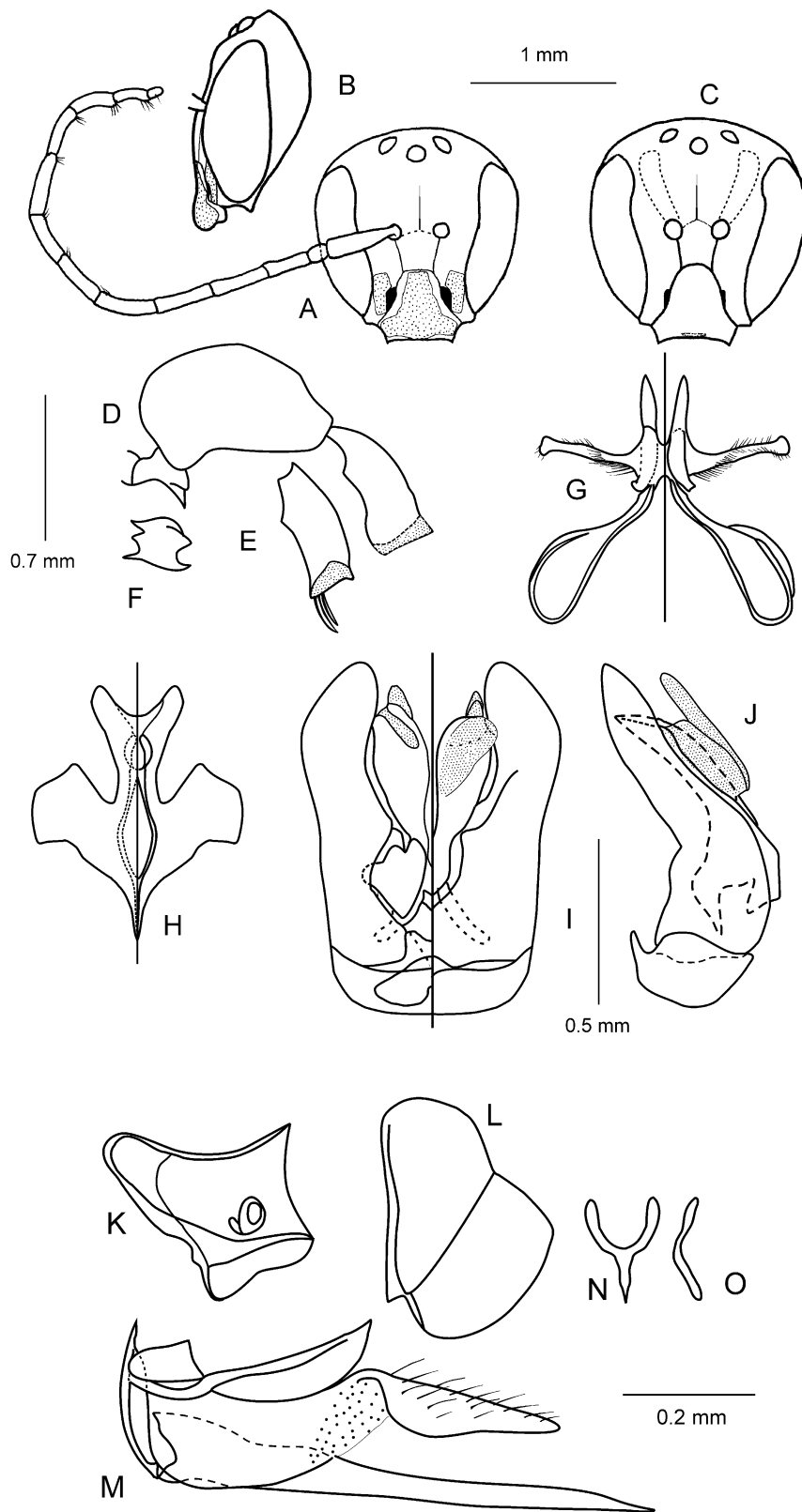
Mesosoma: Elongate, length to greatest depth 2:1. Pronotal collar moderate in length 1LOL. Episternal groove well developed, scrobal groove strong, and finely pitted behind scrobe, absent anteriorly. Dorsal area of propodeum subequal in length to scutellum (ratio of scutellum:metanotum:dorsal surface of propodeum 19:10:20); propodeal sulcus shallow, shiny, abruptly narrowed towards posterior margin of dorsal surface, well defined posteriorly. *Hind trochanter with two apicoventral angles joined by carinate ridge, outer angle acutely pointed, 2X as long as inner one, which is broadly rounded* (Figs. 16D and F). Hind femur broadly expanded, ventral surface strongly convex, length to depth 63:37 (Fig. 16D). Hind tibia expanded, ventral surface with transverse swelling at basal third that is narrowed to short point mesally, length to apical depth 56:23 (Fig. 16E). Hind tibial spurs unmodified. Hind basitarsus less than 4X as long as greatest depth, deepest near base, narrowing to apex. Hind tarsal claws bifid. Basal vein almost straight; stigma very slightly convex in marginal cell, ratio of its length to marginal cell apical to stigma 39:53; distal stigmal perpendicular crossing first submarginal crossvein; first recurrent vein interstitial with first submarginal crossvein.

Metasoma: T1 slightly longer than wide (58:54); T2–T4 strongly depressed basally; apical impressed areas of terga short, 0.2X as long as entire tegum. Sterna unmodified, gradulus of S2 with long posteriorly directed lateral portions, S3–S6 with large U-shaped gradular mark on each side, open posteriorly.

Terminalia: S7 with two pairs of lateral lobes; ventral lobe narrow and apically directed; dorsal lobe laterally oriented, abruptly narrowed at basal 0.25, with tuft of long setae near base and row of shorter setae to apex (Fig. 16G). S8 with apical process broadest subapically, posterior margin concave (Fig. 16H). Genitalia as in Figs. 16I and J. Gonobase short, with apicoventral process broadly concave. Volsella short and triangular, digitus small and digitus and cuspis angulate posteriorly. Gonostylus weakly demarcated from gonocoxites. Penis valve with two membranous lobes, inner one with very long attachment to valve, outer one apparently arising between inner and outer crests of penis valve near apex, curled around inner lobe.

Female. As in male except for normal secondary sexual characteristics and as follows: Length 5.9mm, forewing length 4.0mm, head width 1.35mm.

Colouration: Black with ventral surface of F3–F9 dusky orange. Wing veins and tegula brown. Marginal zones of terga translucent orange-brown basally, colourless apically.



FIGURES 16A–O. *Chilicola setosicornis* Packer, **n. sp.** Head of male: A. frontal view, B. lateral view. C. frontal view of female head. Male: D. Hind trochanter, femur and tibia, outer view. E. Hind tibia, oblique inner view. F. Hind trochanter, ventral view. G–J. Male terminalia. G. S7. H. S8. I. genital capsule Dorsal views are at the left. J. lateral view. K–O. Sting apparatus of female: K. hemitergite 7, L. hemitergite 8, M and N. Furcula dorsal and lateral view respectively. O. First and second valvifer with sting shaft. Stippling in A, B, D and E indicates pale colouration, elsewhere it indicates membranous regions. Sting apparatus of female.

Surface Sculpture: Microsculpture strong throughout; face with shallow, moderately sparse punctures, $i \sim 2d$; larger and somewhat denser on upper paraocular area and vertex, $i \leq d$. Vertex with punctures irregular in size and spacing. Pronotum with shallow dense punctures, $i < d$. Mesoscutum and scutellum with fine, shallow, dense punctures, $i = 1-2d$; finer and denser along anterior and posterior margins of mesoscutum and anterior portion of scutellum. Punctures of anterior margin of metanotum crowded, $i \sim d$ elsewhere. Mesopleuron sparsely punctate, $i = 2-4d$. Dorsal surface of propodeum finely reticulate, reticulations not reaching posterior margin, which is shiny like the lateral and posterior surfaces, dorsolateral areas shallowly punctate. Metasomal terga with very fine, weak punctures, $i \geq d$.

Pubescence: Hairs short and sparse, except on gena, frons, mesopleuron and lateral surface of propodeum 1-2MOD. Scopal hairs of hind tibia 2MOD. Sparse basal hair bands on T2 and T3 and apicolaterally on T2-T4. Scopa of S2 corbiculate, hairs long 2.5MOD, with branches only on anterior surface, scopal hairs of S3 somewhat shorter 2MOD.

Structure: Maxillary palpus with segments increasing in length and decreasing in breadth from first to last, 0.7X as long as prementum. Prementum 0.4X as broad as long, with fovea covering most of ventral surface, margins strongly carinate. Lacinia an elongate triangle, 4X as long as greatest breadth. Lorum poorly sclerotised, less than 0.33X as long as cardo. Clypeus with transverse apical depression for middle half of its width, extending one third below lower ocular tangent. Compound eyes less convergent below (Fig. 16C), UOD:LOD 52:40. IOC:OOC 17:14. Frons swollen midway between lateral ocelli and antennae, swellings delimiting medial margin of supra-antennal depression. Dorsal surface of propodeum shorter, ratio of length to scutellum, 18:22. Apical lunule of S5 broadly U-shaped, 2X as broad as long.

Sting apparatus: As in Fig. 16K-O. Lateral portion of marginal ridge of hemitergite 7 with two obtuse angles, one where margin of apodemal region meets ridge, second one just anterior to origin of lateral process; apodemes to spiracular atrium large (Fig. 16K). Hemitergite 8 with plate and apodeme subequal in size, anterior ridge of apodeme slightly sinuate, junction between plate and apodeme straight (Fig. 16L). First valvifer with dorsal and ventral processes equal in length. Second valvifer with pars articularis acutely angled, incisura postarticularis narrow and parallel-sided. Base of sting shaft with processus medianus moderately developed ventrally (Fig. 16M). Furcula with ventral arms somewhat narrow, widely spaced forming broad U; dorsal arm comparatively broad, abruptly narrowing to apex; sinuate and narrow in side view (Figs. 16N and O).

Material studied. Holotype male, allotype female, one male and four female paratypes: ARGENTINA: *Salta*, Cuesta de Obispo, 1km E. of Piedra de Molina, 25°11'152"S 065°51'236"W, 3340m, 20.iv.2003, L. Packer; one female paratype, *Salta*, Cuesta Obispo, iii.1997, Fritz. All specimens except the one collected by Fritz were found as adults in hollow stems of an unidentified shrub except both males and one female that emerged later the same year from nests obtained at the site. The holotype, allotype and one female paratype are at MACN, the remaining paratypes are at PYU except Fritz's specimen, which is at AMNH.

Etymology. The specific epithet refers to the setation on the more apical antennal flagella of the male.

Comments. This species generally agrees with that section of Toro and Moldenke's subgenus *Heteroediscelis* that was subsequently sunk within *Oediscelis* by Michener, (1995), (i.e. those species possessing a highly modified hind femur and tibia in the males). It can be differentiated from these species by the long antennal flagellomeres and form of the hind tibia, which is considerably expanded, but unlike *Heteroediscelis* with an expanded hind tibia, it lacks an incision just before the apex. The antennae are more reminiscent of *C. (Oediscelis) vernalis* Philippi and *C. (O.) lonco* Toro & Moldenke, although these latter two species lack the setation. It would seem to be somewhat isolated morphologically.

This is another interesting new species of *Chilicola* discovered in and primarily known from specimens obtained from nests. Other examples of species known only from nests include several species of the subgenus *Oroediscelis* (Michener 2000; L. Packer unpublished data), *C. venticola* Packer (Packer 2004), *C. (Anoediscelis) paramo* González and Michener (González and Michener 2004) and also an undescribed species with affinities to *C. inermis* and *C. mailen*, known from a single gynandromorph collected by the senior author at

the same locality and in stems of the same shrub that yielded the type series of *C. setosicornis*. Undescribed species in the subgenera *Oroediscelis* and *Anoediscelis* were also found in the same stems.

***Chilicola (Chilioediscelis) aenigma* Packer, n. sp.**

(Figs. 17A–R)

Diagnosis: The strongly curved apical spurs to the hind tibia (Figs. 17F and G) combined with the very small tooth on the hind pretarsal claw are suggestive of the subgenus *Chilioediscelis* (Toro and Moldenke 1979; Michener 2000). However, this species possesses the episternal groove below the level of the scrobe, the absence of which has generally been taken as diagnostic for the subgenus. Thus, this species seems intermediate between the subgenera *Chilicola* and *Chilioediscelis*. Two additional characters place it among the latter: the lack of a true corbicula on S2 in females (within *Chilicola* this reversal is a synapomorphy of the subgenus *Chilioediscelis*) and the absence of an apical spine on the female S6 [this is an additional synapomorphy for the subgenus *Chilicola* (Gibbs and Packer 2006)]. Both sexes can be readily differentiated from all *Chilicola* with robust hind tibial spurs by the length of the malar space (Figs. 17A and D), which is longer than the basal depth of the mandible in *C. aenigma* but shorter in all other *Chilioediscelis* and *Chilicola s. str.* species. The comparatively unmodified hind legs of the male (Fig. 17F), which are somewhat swollen but lacking marked protuberances or carinae and similar in shape to those of the female (Fig. 17G), as well as the transverse swellings on S3–S5 are unique for *Chilioediscelis* and related subgenera and the male pygidial plate-like area on T7, apical protuberances on S6 and form of the terminalia are unique among all Xeromelissinae.

Description. Male: Length 4.9mm, forewing length 3.2mm, head width 1.3mm.

Colouration: Black with following parts pale yellow: labrum, mandible (except apex dark red-brown), clypeus except laterodorsal extreme, lower paraocular area up to lower margin of antennal socket mesally up to middle of supraclypeal area laterally, transverse line at apex of hypostomal area, anterior spot on tegula, dorsobasal spot on fore- and midtibiae, midbasitarsus ventrally. Following parts orange: apical two-thirds of forefemur except dorsal surface (apical one-third), foretibia except for large brown blotch posteriorly, foretarsus, apical ring to mid- and hindfemur, basal and apical rings to mid- and hindtibiae, ventral surface of midtibia, midtarsus. Tegula pale amber. Metasoma brown-black. Terga and sterna with apical impressed areas amber. Apical lobes of S6 orange-brown. Wing veins brown except base of M+Cu orange.

Surface Sculpture: Microsculpture strongly imbricate, punctures small and shallow throughout, particularly obscure on frons, pronotum and metanotum; somewhat larger on clypeus and lower paraocular area. Labrum mostly shiny, sparsely punctate laterally, densely ($i \leq d$) medially. Clypeus irregularly punctate, $i=1-4d$, punctures elongate. Supraclypeal area with punctures somewhat less irregular, $i=1-3d$. Lower paraocular area with more even punctuation, $i=1-2d$. Frons with few punctures. Vertex more densely punctate, $i > d$. Genal area with elongate weak irregular punctures, $i=1-3d$ on longitudinally microstriate background. Pronotal collar, mesoscutum and scutellum finely and moderately densely punctate, $i=1-2d$, punctures not noticeably denser anteriorly on mesoscutum or sparser on disk of scutellum. Metanotum with dense microsculpture, dull, lacking punctures. Mesopleuron with larger denser punctures, $i \sim d$. Dorsal surface of propodeum with sparse irregular striae not attaining posterior margin; lateral surface shiny; dorsolateral area weakly but densely punctate, $i < d$. Metasomal terga with strong microsculpture and dense but shallow and indistinct punctures, $i \sim d$. Apical impressed areas with microsculpture slightly weaker than on discs.

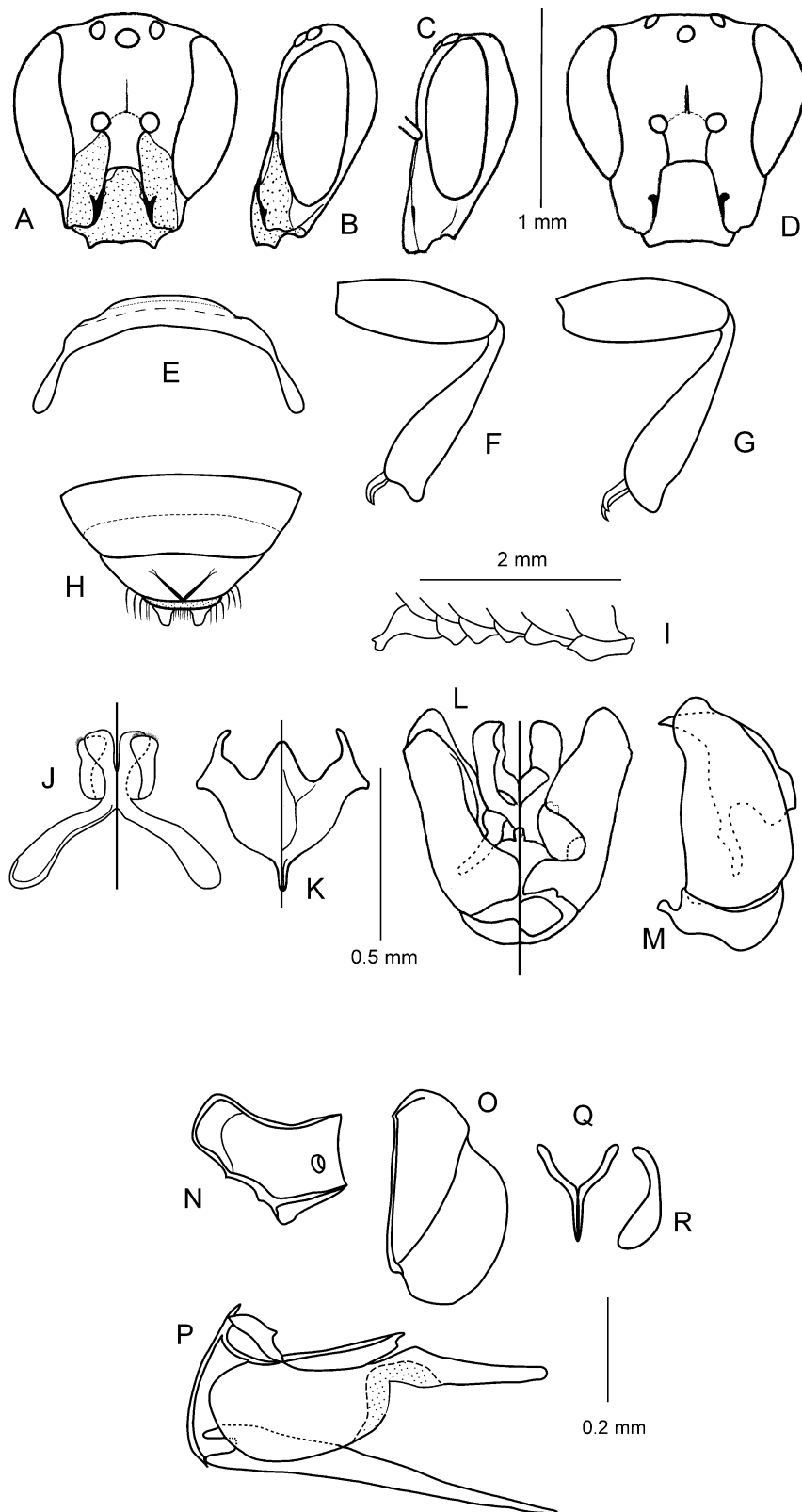
Pubescence: Whitish, long and somewhat woolly throughout. Head and thorax with sparse erect pubescence, $\leq 2MOD$, longest hairs on frons somewhat yellowed. Genal beard sparse. Lateral portion of propodeum with minute hairs, dorsolateral portion with long hairs, $\leq 2MOD$. T1–T5 with broad apicolateral hair patches of somewhat woolly, subappressed pubescence; T4–T6 and S6 with sparse, erect long hairs, $\leq 2MOD$. S3–S5 with sparse subapical row of short, erect hairs, $0.5MOD$, just anterior to similar but posteriorly directed hair row.

Structure: Head: Longer than broad (92:86) (Fig. 17A). Labrum short, transverse (length to breadth 9:28), apex slightly convex. Mandible 2.5X as long as basal depth. Clypeus broader than long, 65:52; apical two-thirds extending beyond lower ocular tangent, with very weak longitudinal groove (Fig. 17A). Epistomal suture straight to ventral margin of depression around anterior tentorial pit and then abruptly curved laterad; epistomal suture expanded below anterior tentorial pit and extending somewhat dorsolaterad onto paraocular area, pit separated from suture by almost 2X its diameter (Fig. 17A). Subantennal sutures outwardly concave, upper end on lower tangent of antennal socket. Supraclypeal area almost 2X as long as greatest breadth (22:12) (Fig. 17A). Frons flat, lacking swellings or depression dorsad of antennal sockets. Facial fovea absent. Frontal line slightly raised for lower half of distance between supraclypeal area and median ocellus. Inner margin of compound eye emarginate; eyes convergent below, UOD:LOD 50:40. Interocellar area slightly raised above adjacent vertex, vertex otherwise very slightly convex and short, 0.75 LOL. IOC greater than OOC, 16:10. Upper ocular tangent goes through lateral ocellus below middle. Occipital margin rounded. Antenna not unusually elongate; scape 3X as long as greatest breadth, as long as pedicel and F1 and F2 combined; F2 shortest, ratio of pedicel:F1:F2:F3 7:6:5:7; flagellum somewhat broadening apically, lacking modifications of setal pattern or structure. Face somewhat protuberant. *Malar space slightly longer than basal width of mandible, 12:11* (Fig. 17B). Malar suture well defined. Gena narrow, width:eye, 11:25 (Fig. 17B).

Mesosoma: Mesosoma slightly more than 1.5 times as long as greatest depth, 105:65. Pronotal collar almost entirely declivous medially, medial length 0.3LOL, anterior surface turning somewhat abruptly into lateral surface but anterolateral margin not angulate or protuberant (Fig. 17E). Episternal groove present below scrobal groove; scrobal groove weak but entire. Dorsal area of propodeum less than 0.5X as long as scutellum (12:25), not much longer than metanotum (10); propodeal sulcus narrow and very shallow, undetectable on posterior surface. *Hind leg lacking conspicuous swellings and carinae* (Fig. 13F), *similar to that of female* (Fig. 13G); *trochanter unmodified; femur slightly less than 3X as long as maximum depth, ventral surface convex; tibia somewhat swollen, 4X as long as greatest depth* (Fig. 17F); tibial spurs robust and strongly curved; basitarsus 5 times longer than greatest depth, subparallel; hind tarsal claws not bifurcate, with small inner tooth. Basal vein weakly curved; ratio of length of stigma to marginal cell on wing margin 28:40; stigmal margin in marginal cell almost straight; distal stigmal perpendicular crossing second submarginal cell close to base; both recurrent veins reach Rs+M in second submarginal cell.

Metasoma: T1 shorter than broad (65:79). Apical impressed areas of T2–T6 elongate, from 0.33X to ½ as long as terga, *slightly upturned at apex; T7 with pygidial plate in form of raised triangular area* (Fig. 17H). S1 sinuate in lateral view, lacking process; gradulus of S2 with posteriorly directed lateral portion very short; S3–S6 with strong medial portion to gradulus, posterior lateral extensions lacking; *S3–S5 depressed behind graduli with transverse protuberances broadly interrupted medially, those on S2 very weak; S6 with closely approximated short apical lobes, in apical view lobes almost as long as distance that separates them* (Fig. 17I).

Terminalia: S7 with one pair of lateral lobes, broadly attached to rest of sternum, apically comparatively strongly sclerotised, *expanded ventrally as quadrate protuberances* (Fig. 17J). S8 apical process short, broad at base, *gradually converging to rounded apex, lateral processes broad, terminating in narrow posteriorly directed process that extends somewhat past apex of apical process* (Fig. 17K). Gonobase short with *very broadly concave ventral process appearing as pair of posterolaterally directed angulations*. Volsella somewhat transversely oriented with cuspis at angle to main body of structure and longitudinally oriented, digitus with teeth restricted to apex, which is curved laterad, basal area of volsella somewhat produced ventrally. Gonocoxite with inner margin sinuate; ventrobasal lobe forming rounded right angle; gonostylus very short, poorly demarcated from gonocoxite. Penis valve lacking membranous lobes (Figs. 17L and M).



FIGURES 17A–R. *Chicicola aenigma* Packer, n. sp. Head of male: A. frontal view, B. lateral view. Head of female: C. lateral view, D. frontal view. E. male pronotum. F. Male hind femur and tibia. G. Female hind femur and tibia. H. Male T6, T7 and apex of S6. I. Lateral view of male metasomal venter. J–M. Male terminalia. J. S7. K. S8. L. genital capsule, dorsal views are at the left. M. Genital capsule, lateral view. N–R. Sting apparatus of female: N. hemitergite 7, O. hemitergite 8, P–Q. Furcula, dorsal and lateral views respectively. R. First and second valvifer with sting shaft. Stippling in A and B indicates pale colouration, in R a membranous region.

Female. As in male except for usual secondary sexual characteristics and as follows: Length 4.7mm, forewing length 3.4mm, head width 1.3mm.

Colouration: Black with ventral surface of F3–F9 dusky yellow. Apex of mandible red-brown. Wing veins brown. *Apical impressed areas of metasomal terga and medial portions of T2–T4 orange-red.*

Surface Sculpture: Punctures slightly deeper, denser and more distinct than in male except on mesopleuron and metasomal terga, weaker and sparser than in male. Dorsal surface of propodeum with striae tending to rugae, slightly longer and more numerous than in male.

Pubescence: Hairs on frons and dorsal surface of thorax pale brown. Femoral and tibial scopa weakly developed, that of femur with some hairs strongly bent and up to 2MOD, those of tibia ≤ 1.5 MOD. Scopa of S2 with long hairs (≤ 3 MOD) lacking corbicular structure, hairs curved mesad, with very few long branches; scopa of S3 and S4 shorter (1.5MOD);

Structure: Maxillary palpus elongate, $2/3$ as long as prementum. Prementum with fovea comparatively short, less than 0.5X as long as prementum, carinate margin strongly oriented mesad leaving smoothly rounded lateral margin approximately $1/6$ as wide as prementum. Mandible 2X as long as basal depth (23:11). Lacinia 4X as long as greatest breadth, triangular. Lorum elongate, well sclerotised, almost 0.5X as long as cardo. Rest of body as in male except as follows: Head slightly longer than broad (92:90) (Fig. 17D). Labrum very broadly V-shaped apically, length:breadth 25:35. Clypeus broader than long (50:30) (Fig. 17D) with broad weak longitudinal medial depression. *Malar area much longer than basal width of mandible (15:11)* (Fig. 17C). Eyes convergent below, UOD:LOD 54:49 (Fig. 17D). Flagellum gradually increasing in breadth from basal to apical flagellomere, all flagellomeres shorter than wide except for first and last, $F1 = F2 + F3$ in length. Pronotal collar slightly more extensive than in male, 0.5MOD medially. Apical margins of terga not upturned. Apical lunule of S5 short, 4X broader than long.

Sting apparatus: Hemitergite 7 broad, apodemal region not much narrowed in comparison to area posterior to lateral process; medial portion of marginal ridge strongly concave; spiracle somewhat closer to lateral than medial portion of marginal ridge, spiracular atrium no larger than distance between it and lateral portion of marginal ridge; lateral process shorter than width of marginal ridge, lateral lamella 2X as long as lateral process anteriorly but for most of its length not considerably wider than adjacent marginal ridge; two angulations between lateral process and apodemal extremity; posterior margin of lamina spiracularis very slightly and gently concave (Fig. 17N). Hemitergite 8 with anterior ridge straight except for slight anterior inflection at apex, disk and apodeme approximately equal in size (Fig. 17O). First valvifer with dorsal margin convex and ventral one largely concave, ventral process longer than dorsal one and broad. Second valvifer with apodemal ridge straight, apical process slightly concave ventrally, apodeme narrow. Sting shaft almost straight ventrally (Fig. 17P). Furcula with dorsal arm parallel-sided and narrow, ventral arm wide in lateral view (Figs. 17Q and R).

Material studied. Holotype male, allotype female and two male and five female paratypes (one of each sex in glycerin): ARGENTINA, *Santa Cruz*, 25km S. of Los Antiguos, 46°42'654"S 071°40'422"W, 653m. 22.xi.03, L. Packer. One paratype male in bad condition, *Santa Cruz*, 20km E. of Los Antiguos, 46° 36'595"S 071°21'472"W, 237m, 20.xi.03, L. Packer, pan trap. The holotype, allotype and one female paratype are at MACN, the remaining paratypes are at PYU.

Etymology. The name refers to the unmodified hind legs of the male that are unique among *Chilicola* with strongly curved hind tibial spurs (*Chilicola* and *Chilioediscelis*) and also among related subgenera such as *Oediscelis* and *Oroediscelis*.

Comments. All specimens except the last paratype male were collected at *Adesmia* (Fabaceae) flowers by the side of a small stream that is a tributary to the Rio Jineimeni, which forms the border between Argentina and Chile in this part of Patagonia. The banks to the stream and embankment to the road provided a small amount of respite from the strong, cold winds that precluded bee activity almost everywhere else in the area on the day the type series was collected.

This is a highly distinctive member of the genus as indicated in the diagnosis and description above. Nonetheless, based upon the reduced hind tibial claw tooth and lack of sternal corbicula in the female, it would certainly appear to be a member of the subgenus *Chilioediscelis*.

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NOTE ADDED IN PROOF

As a result of recent collecting in Argentina and Chile, some additional specimens of the new species described herein have been found. They are listed here as additional paratypes. The Chilean specimen remains in the author's collection, the Argentinean material is shared between the author's collection and MACN.

Chilicola denisii Packer, **n. sp.** ARGENTINA, *Santa Cruz*, E. of Los Antiguos, 4637'044"S 07116'133W, 19.x.06-18.xi.06, A.I. and M. Gravel, pan traps, 2 males and 6 females.

Chilicola tregualemu Packer **n. sp.** CHILE, Region VII, NW of Cauquenes, 35°50'181"S 072°29'991"W, 580ft, 15-26.xii.2006, roadside, pan trap, one male.

Chilicola aenigma Packer **n. sp.** ARGENTINA, *Santa Cruz*, 13km S. of Los Antiguos, 46°37'940"S 071°38'090"W, 19.x.06-18.xi.06, A.I. and M. Gravel, vane trap, 1 male 1 female; ARGENTINA, *Santa Cruz*, 25km S. of Los Antiguos, 46°42'647"S 071°40'461"W, 18.xi.06-24.xii.06, A.I. & M. Gravel and L. Packer, pan trap, one female; ARGENTINA, *Santa Cruz*, E. of Los Antiguos, 46°37'044"S 071°16'133"W, 19.x.06-18.xi.06, A.I. and M. Gravel, pan, bottle and vane traps, 2 males and 2 females. The increased number of females demonstrates that there is variation in the extent of orange colouration on the metasomal terga of females. This is most reduced in the individual 25km S. of Los Antiguos in which the orange is restricted to comparatively narrow subapical bands.