

***Chilemutilla*, a new genus of Mutillidae (Hymenoptera) from Chile, and the description of the first wingless mutillid male from South America**

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ABSTRACT

Chilemutilla Cambra and Quintero (Sphaerophthalminae), a new genus of nocturnal Mutillidae is described and illustrated based on the following six new species from northern Chile: *C. aielloae* n. sp., male; *C. aptera* n. sp., male; *C. atacama* n. sp., male; *C. gauldi* n. sp., male; *C. incognita* n.sp., female; and *C. snellingi* n. sp., male. *Chilemutilla aptera* is the first wingless mutillid male described from South America. In addition, we have prepared the first generic key for nocturnal sphaerophthalmine males from South America.

KEY WORDS: Nocturnal Mutillidae, wingless males, Neotropical, taxonomy

INTRODUCTION

Association of sexes is difficult in the Mutillidae because of the extreme sexual dimorphism: all known females are wingless, and though most males are macropterous, a few have reduced wings (brachypterous) or lack wings (apterous). Wingless males are known in four of the seven subfamilies of Mutillidae (sensu Brothers 1975, Brothers and Finnamore 1993). The following nine African and Palearctic genera have apterous males (Cetkovic and Nonveiller 1992): Ticoplinae: *Smicromyrmilla* (36% of species); Myrmillinae: *Bisigilla* (66%), *Labidomilla* (33%), *Myrmilla* (40%), *Odontotilla* (100%), *Omotilla* (100%); Sphaerophthalminae: Dasytibrini: *Apterotilla* (100%), *Brachymutilla* (100%), *Stenomutilla* (6%). In the Mutillinae, Arnold (1946) described a wingless male of *Gynandrotilla* from Southern Rhodesia, and Lelej (1993) recognized the first wingless male in the Trogaspidiini: *Indratilla* (100%), from Sri Lanka. In the New World, wingless or brachypterous males are very rare and are known only from the following six North American species, all belonging to the Sphaerophthalminae: *Morsyma ashmeadii* (Fox, 1899), monotypic, wingless; *Myrmilloides grandiceps* (Blake, 1872), monotypic, brachypterous; *Stethophotopsis maculata* Pitts, 2000, brachypterous (Pitts and McHugh 2000); *Sphaerophthalma brachyptera* Schuster, 1945, winged and brachypterous; *Dasymutilla waco* (Blake, 1871) and *Dasymutilla hector* (Blake, 1871), winged but very rarely brachypterous (Mickel 1936).

Here we describe a new genus comprising six new species of nocturnal Mutillidae from Chile, including the first wingless mutillid male from South America. In addition, we have prepared the first generic key for nocturnal sphaerophthalmine males from South America.

All type specimens are deposited in Museo de Invertebrados G. B. Fairchild, University of Panama (MIUP). Morphological details (except wings) were studied using a scanning electron microscope ZEISS, model EVO 40 XVP; wings

were photographed with a digital camera. The following abbreviations: T, S, SMC, DC, SDC are used as for tergum, sternum, submarginal cell, discal cell and subdiscal cell, respectively.

CHILEMUTILLA Cambra and Quintero, new genus

Type species.— *Chilemutilla aielloae* n. sp.

Male diagnosis.— Clypeus anterior margin projecting medially (Figs. 1-2); four sharp teeth on the apical margin of metasomal sternum seven (S7= hypopygium) (Fig. 5); S2 with short felt lines; paramere broad in lateral view (Figs. 11-15); wings present (Figs. 6-9) or absent, when present the pterostigma covering most of the marginal cell space, vein m-cu joined to SMC1, DC narrow, short SDC, submarginal cell2 present as an areolet or absent.

Generic characters of winged male.— Body covered with simple setae, except for some metasomal fringes which have plumose pubescence (40X). **Head:** slightly narrower than mesosoma, almost rounded behind eyes in dorsal view (Figs. 1-2); eyes large, rounded, and strongly convex; ocelli large (Figs. 1-2); antennal scrobes not carinate above; genal carina absent; clypeus anterior margin projecting medially (Figs. 1-2); gena and hypostoma without teeth or tubercles; proboscidal fossa with carina reaching base of mandible; apex of mandible bidentate (Fig. 2), the ventral margin with a strong tooth or excision; antennal tubercle without lamellate projection; scape with a single, weak, carina beneath; flagellomere one about same length as flagellomere two; maxillary palpus 6-segmented; labial palpus 4-segmented, the second segment almost as long as wide. **Mesosoma:** pronotum humeral angles rounded, not carinate (Fig. 3); notauli present; mesopleura without protuberance; mesosternum simple, without tubercles, ridges, spines, or tooth-like processes; scutellum evenly convex; coxae and trochanters without spines or carinae; tibial spurs 1-2-2; posterior tibia slender, not flattened; tibiae without dorsal row of spines; metasternum without a lamellate projection between metacoxae, with only a short acute process anterior to metacoxae; wing marginal cell almost totally covered by large pterostigma (Figs. 6-9); SMC1 present, SMC2 present only as a small areolet (Fig. 8) or absent, SMC3 absent, DC narrow (Fig. 8); SDC short, 1.0-1.3X as long as wide (Fig. 8). **Metasoma:** segment one elongated and petiolate, not merging with T2; T2 with elongate felt line, about 0.6X lateral length of T2; S2 with short felt line, about 0.1-0.2X lateral length of S2; T7 posterior margin convex; S7 (hypopygium) posterior margin with four teeth or spines (Fig. 5), the lateral margins ecarinate; paramere broad in lateral view, inner edge very setose (Figs. 11-15); volsella with cuspis and digitus nearly of same length; digitus apex rounded and glabrous; cuspis truncate, with long apical setae (Fig. 16); penis valve without setae, with large apical tooth, without preapical tooth (Fig. 17-21).

Generic characters of wingless male.— It differs from the winged male only in the following: head slightly broader than mesosoma, ocelli small, notauli absent.

Female diagnosis. Head nearly rounded; genal carina absent; mesosoma pyriform (Fig. 4); metasoma with definite constriction between first two segments; pygidial area defined laterally by carinae.

Generic characters of female.— Body covered with simple setae, except for some metasomal fringes which have plumose pubescence. **Head:** slightly broader than mesosoma, almost rounded behind eyes in dorsal view; antennal scrobes not carinate above; genal carina absent; clypeus anterior margin almost straight, not projecting medially; gena and hypostoma without teeth or tubercles; proboscidal fossa with carina reaching base of mandible; apex of mandible bidentate, the subapical tooth very small or obsolete, the ventral margin with distinctive basal tooth; antennal tubercle without a lamellate projection; scape without carina; pedicel as long as flagellomere one; flagellomere one slightly larger than flagellomere two; maxillary palpus 6-segmented; labial palpus 4-segmented, the second segment almost as long as wide. **Mesosoma:** pyriform, in dorsal view widest across pronotal spiracles, narrowest at propodeum (Fig. 4); pronotum humeral angles rounded, not carinate; scutellar scale absent; pleura partly smooth and shining; metasternum without a lamellate projection between metacoxae, with only a short acute process anterior to metacoxae. **Metasoma:** segment one short, with definite constriction between first and second segment; T2 with elongate felt line on each side nearly 0.4X lateral length of T2; S2 without felt line; pygidial area defined laterally by carinae.

Comments.— Males vary in total length from 4 to 6.5 mm (average = 5.6), and the only female known is but 3.2 mm long. The following are three autapomorphies of males of *Chilemutilla*: four teeth on apical margin of S7, pterostigma covering most of the marginal cell, and narrow SDC. These autapomorphies are absent from males of any other nocturnal American mutillid genera and probably also are absent from males of all diurnal genera of New World Mutillidae. The female of *Chilemutilla* shares the following common characters with the closely related *Sphaerophalma* (*Photopsis*): head nearly rounded; mesosoma pyriform; metasoma petiolate, with a distinct constriction between the first two segments; plumose setae present, and pygidial area laterally defined by carinae. Females of *Chilemutilla* differ from those of *S. (Photopsis)* in the antennal scrobes: distinctly carinate above in *S. (Photopsis)* (according to Manley and Pitts' key 2002), not carinate in *Chilemutilla*. Females of the other two nocturnal South American Sphaerophalmina genera, *Scaptodactyla* and *Limaytilla*, differ from females of *Chilemutilla* by the presence of a lamellate projection on the antennal tubercle and by having the first metasomal segment sessile with the second, whereas females of *Chilemutilla* lack a lamellate projection on the antennal tubercle and the metasoma presents a distinct constriction between first and second segments. Females of the nocturnal South American Pseudomethocina genus *Patquiatilla*, differ from females of *Chilemutilla* by having the first metasomal segment sessile with the second, presence of felt lines on S2 and a transverse row of spines on posterodorsal margin of propodeum.

Distribution.— Chile, between 26°S - 70°W (Zona 3, Región de Atacama) and 34°50'S - 71°W (Zona 7, Región del Maule).

Etymology.— From the country of the type specimens, plus the suffix *mutilla* used in many generic names of Mutillidae.

Key for males of *Chilemutilla* Cambra and Quintero

- 1 Wingless; ocelli small, distance between inner eye margins and lateral ocelli 4.5X greatest diameter of latter; notauli absent *aptera* n. sp.
 — Fully winged; ocelli large, distance between inner eye margins and lateral ocelli 1.2-2.1X greatest diameter of latter; notauli present **2**
- 2 Pterostigma very large, length 4.5X as maximum width (Fig. 8); clypeus anterior margin truncate, projecting medially (Fig. 2); T3-T5 almost totally smooth, with very small punctures; mesonotum with sparse punctures; distance between inner eye margins and lateral ocelli 1.2X greatest diameter of latter; SM2 present as areolet (Fig. 8); paramere apex pointed, ventral margin with short setae (Fig. 15) *snellingi* n. sp.
 — Pterostigma length no more than 3.5X as maximum width (Figs. 6, 7, 9); clypeus anterior margin projecting rounded or acute medially (Fig. 1); T3-T5 with abundant and closely-spaced punctures; mesonotum with closely-spaced punctures (except *gaudi*); distance between inner eye margins and lateral ocelli 1.8-2.1X greatest diameter of latter; areolet present or absent; paramere apex rounded or pointed, ventral margin with long setae (Figs. 11-14) **3**
- 3 Mesonotum with sparse punctures, with distinctive smooth areas between them; posterior coxae with few punctures ventrally, mostly smooth; T1 with small closely-spaced punctures; paramere with pointed apex (Fig. 11) ... *gaudi* n. sp.
 — Mesonotum with closely-spaced punctures, almost without distinctive smooth areas between them; posterior coxae with many ventral, closely-spaced punctures; T1 with large, closely-spaced punctures, some confluent; paramere with rounded apex (Fig. 12, 14) **4**
- 4 Head with medium-sized punctures (Fig. 1); pterostigma length 2.5X as maximum width (Fig. 7); paramere anterior and ventral margin slightly curved, without broad and rounded apex (Fig. 12) *aielloae* n. sp.
 — Head almost impunctate and smooth (as Fig. 2), with very small and sparse punctures; pterostigma length 3.5X as maximum width (Fig. 6); paramere anterior and ventral margins straight, with broad and rounded apex (Fig. 14) *atacama* n. sp.

Chilemutilla aielloae Cambra and Quintero, n. sp.

Figs. 1, 7, 12, 16, 17

Description of holotype male.— **Color:** head, mesosoma, metasomal segment one and seven brownish-orange, other metasomal segments mostly dark brown to black, legs (mostly) and tibial spurs pale-yellow. Body covered with simple white setae except for metasomal fringes of segments two to five which have white plumose pubescence, few plumose setae in segments four and five. **Head:** with medium-sized punctures (Fig. 1); ocelli large, distance between inner eye margins and lateral ocelli 2X greatest diameter of latter. **Mesosoma:** pronotum, mesopleura and propodeum reticulate, with propodeal reticulations distinctly larger than those of pronotum or mesopleura; mesonotum with large, closely-spaced punctures, almost without smooth areas between them; metapleura almost totally unsculptured; tegula impunctate; pterostigma length 2.5X maximum width (Fig. 7); SMC2 absent; posterior coxae with many closely-spaced ventral punctures. **Metasoma:** T1 with large, closely-spaced punctures, some confluent; T2 and S2 discal area with medium-sized, sparse punctures, with distinctive smooth areas between them; apical fringe of segment two, T3 to T5 and S3 to S5 with small, abundant and closely-spaced punctures; T6-T7 and S6 weakly sculptured, almost smooth; S7 punctures slightly larger than those of S3; paramere as Fig. 12; penis

valve as Fig. 17. Body length: 6.5 mm.

Female: unknown.

Material examined.— Holotype male: **CHILE**: Coquimbo Province, Samo Alto, 13 Oct 1997, A. Ugarte. Paratypes: same data as holotype, 3 males.

Etymology.— Named in honor of Annette Aiello, Smithsonian Tropical Research Institute, for providing many years of helpful suggestions to improve our manuscripts and for her valuable contributions to the knowledge of the Lepidoptera of Panama.

Chilemutilla aptera Cambra and Quintero, n. sp.

Fig. 3, 13, 18

Description of holotype male.— **Color**: head and mesosoma brownish-orange, metasomal segments dark red to black, legs mostly and tibial spurs brownish. Body covered with simple white setae except, metasomal fringes of segments two to five with white plumose pubescence, few plumose setae in segments four and five. **Head**: with medium-sized punctures, sparse; ocelli small, distance between inner eye margins and lateral ocelli equal 4.5X greatest diameter of latter. **Mesosoma** (Fig. 3): pronotum, mesopleura and propodeum reticulate, with propodeal reticulations slightly larger than those of pronotum or mesopleura; mesonotum with large, closely-spaced punctures, without smooth areas between them; metapleura almost totally unsculptured; tegulae impunctate; wingless; posterior coxae with few ventral punctures. **Metasoma**: T1 with large, closely-spaced punctures, some confluent; T2 and S2 discal areas with medium-sized, sparse punctures, with distinctive smooth areas between them; apical fringe of segment two, T3 to T5 and S3 to S5 with small, abundant and closely-spaced punctures; T6 - T7 and S6 weakly sculptured, almost smooth; S7 punctures slightly larger than those of S3; paramere as Fig. 13; anterior third of penis valve as Fig. 18. Body length: 4.0 mm.

Female: unknown.

Material examined.— Holotype male: **CHILE**: Atacama Province, Copiapo, Bahia Inglesa, [Camping] Rocas Negras, 18 Jan 1998, A. Ugarte [attracted to lights between 2200 and 2400 hrs, over sandy dunes, about 30 m from the sea]. Paratypes: same data as holotype, 8 males.

Comments.— *Chilemutilla aptera* represents the first wingless mutillid male from South America. In a separate publication we are describing the first wingless male of a new species in the genus *Limaytilla* Casal (the first time the genus is recorded for Chile), based on one specimen with the same collecting data as the type specimens of *C. aptera*.

At the same site at which *C. aptera* was captured, male specimens of two additional *Chilemutilla* species were collected: *C. atacama* and *C. snellingi*. The male genitalia of these three *Chilemutilla* species are distinctly different, thus the male genitalia is quite useful for diagnosis and recognition of these *Chilemutilla* species (Figs. 13, 14, 15). These male genitalic differences indicate that *C. aptera* does not represent a polymorphic male of any of the two other *Chilemutilla* species present in Bahia Inglesa, but rather is a distinct species.

Etymology.— From the latin *apterus*, in reference to the wingless males.

Chilemutilla atacama Cambra and Quintero, n. sp.

Figs. 5, 6, 14, 19

Description of holotype male.— **Color:** head, mesosoma, metasomal segment one, six and seven brownish-orange; other metasomal segments mostly dark brown to black; legs mostly pale-yellow and tibial spurs pale-yellow. Body covered with simple white setae except metasomal fringes of segments two to five with white plumose pubescence, few plumose setae in metasomal segments four and five. **Head:** almost totally impunctate and smooth, with very small and sparse punctures; ocelli large, distance between inner eye margins and lateral ocelli 1.8X greatest diameter of latter. **Mesosoma:** pronotum, mesopleura and propodeum reticulate, propodeal reticulations distinctly larger than those of pronotum and mesopleura; mesonotum with large, closely-spaced punctures, almost without smooth areas between them; metapleura almost totally unsculptured; tegula impunctate; pterostigma length 3.5X maximum width (Fig. 6); SMC2 reduced to an areolet; posterior coxae with many closely-spaced, ventral punctures. **Metasoma:** T1 with large closely-spaced punctures, some confluent; T2 and S2 discal area with medium-sized, sparse punctures, with distinctive smooth areas between them; apical fringe of segment two, T3 to T5 and S3 to S6 with small, abundant, closely-spaced punctures; T6-T7 weakly sculptured, almost smooth; S7 punctures (Fig. 5) slightly larger than those of S3; paramere as Fig. 14; anterior third of penis valve as Fig. 19. Body length: 5.5 mm.

Female: unknown.

Material examined.— Holotype male: **CHILE:** Atacama Province, Copiapo, Quebrada La Pino, 18 Jan 1998, A. Ugarte. Paratypes: **CHILE:** same data as holotype, 1 male; Atacama Province, Copiapo, Bahía Inglesa, [Camping] Rocas Negras, 18 Jan 1998, A. Ugarte, 1 male.

Etymology.— This species is named after the Province in Chile where the type material was collected.

Chilemutilla gauldi Cambra and Quintero, n. sp.

Figs. 9, 10, 11, 20

Description of holotype male.— **Color:** head and mesosoma brownish-orange, metasomal segment one and seven pale-yellow, others metasomal segments mostly black, legs (mostly) and tibial spurs pale-yellow. Body covered with simple white setae except, metasomal fringes of T2 and T3 which have sparse white plumose pubescence. **Head:** with medium-sized punctures, sparse; ocelli large, distance between inner eye margins and lateral ocelli 2.1X greatest diameter of latter. **Mesosoma:** pronotum, mesopleura and propodeum reticulate, propodeal reticulations distinctly larger than those of pronotum or mesopleura; mesonotum with medium-sized and sparse punctures, with distinctive smooth areas between them; metapleura almost totally unsculptured; tegula impunctate; pterostigma length 2.5X as maximum width (Fig. 9); SMC2 absent; posterior coxae with few punctures ventrally, mostly smooth. **Metasoma:** T1 with small, closely-spaced punctures; T2 and S2 discal area with medium-sized, sparse punctures, with distinctive smooth areas between them; apical fringe of segment two, T3 to T6 and S3 to S6 with small, abundant, closely-spaced punctures; T7 weakly sculptured, almost smooth; S7 punctures slightly larger than those of S3; parameres as Figs.

10-11; anterior third of penis valve as Fig. 20. Body length: 5.5 mm.

Female: unknown.

Material examined.— Holotype male: **CHILE**: Curico Province, Hueca huecan, 15 km E Curico, 20 Dec 1997, A. Ugarte. Paratypes: **CHILE**: same data as holotype, 1 male; Coquimbo Province, Samo Alto, 13 Oct 1997, A. Ugarte, 1 male.

Etymology.— Named in honor of Ian D. Gauld, BMNH, for his many valuable contributions to our knowledge of Neotropical Hymenoptera.

Chilemutilla incognita Cambra and Quintero, n. sp.

Fig. 4

Description of holotype female.— **Color**: vertex and metasomal segment two fuscous; frons, gena, hypostoma, mesosoma, S2 and metasomal segments three to six brownish-red, antenna and legs mostly and tibial spurs pale-yellow. Body covered mostly with simple white setae; metasomal fringes of segments two to five with dense white plumose pubescence. **Head**: with medium-sized punctures, sparse. **Mesosoma**: dorsum deeply sculptured, with confluent punctures (Fig. 4); mesopleura mostly smooth; metapleura and lateral face of propodeum smooth. **Metasoma**: segment two with sparse, medium-sized punctures; segment three with small, closely-spaced punctures; segments four to five smooth; T6 weakly granulate, almost smooth. Body length: 3.2 mm.

Male: unknown.

Material examined.— Holotype female: **CHILE**: Atacama Province, Copiapo, Bahía Inglesa, [Camping] Rocas Negras, 18 Jan 1998, A. Ugarte [attracted to lights between 2200 and 2400 hrs, over sandy dunes, about 30 m from the sea]. Paratypes: same data as holotype, 2 females.

Comments.— Sex association of *C. incognita* females is not possible at present because male specimens of three other *Chilemutilla* species were collected in the same place and time. Of those three, *Chilemutilla aptera* was the most common male collected at the same time in this area (nine specimens), and is similar to *C. incognita* in morphology, head sculpture and size. Thus we suspect it might represent the opposite sex of *C. incognita*.

Etymology.— From the latin *incognitus*, in reference to the unknown male.

Chilemutilla snellingi Cambra and Quintero, n. sp.

Figs. 2, 8, 15, 21

Description of holotype male.— **Color**: head, mesosoma, metasomal segment one, six and seven brownish-orange, other metasomal segments mostly dark brown to black, legs (mostly) and tibial spurs pale-yellow. Body covered with simple white setae except, metasomal fringes of T2 - T3 and S2 with sparse white plumose pubescence. **Head**: almost totally impunctate and smooth (Fig. 2), with very small and sparse punctures; ocelli large, distance between inner eye margins and lateral ocelli 1.2X greatest diameter of latter. **Mesosoma**: pronotum, mesopleura and propodeum reticulate, those of propodeum distinctly larger than those of pronotum or mesopleura; mesonotum with sparse punctures, with distinctive smooth areas between them; metapleura almost totally unsculptured; tegula impunctate; pterostigma length 4.5X maximum width (Fig. 8); SMC2 reduced to

an areolet (Fig. 8); posterior coxae with many, closely-spaced, ventral punctures. **Metasoma:** T1 with medium-sized punctures, metasomal segments two to seven almost totally impunctate and smooth, with very small and sparse punctures; paramere as Fig. 15; anterior third of penis valve as Fig. 21. Body length: 6.5 mm. Female: unknown.

Material examined.— Holotype male: **CHILE:** Atacama Province, Copiapo, Bahía Inglesa, [Camping] Rocas Negras, 18 Jan 1998, A. Ugarte. Paratypes: **CHILE:** Atacama Province, Copiapo, Quebrada La Pino, 18 Jan 1998, A. Ugarte, 2 males; Parque Nacional Pan de Azúcar, Chañaral, 14 Feb 1998, A. Ugarte, 1 male.

Etymology.— Named in honor of Roy Snelling, for providing loans of mutillids and for his contributions to our knowledge of Hymenoptera.

The males of four other nocturnal genera present exclusively in South America (*Scaptodactyla*, *Limaytilla*, *Patquiatilla*, *Chilephotopsis*) were previously compared by Cambra and Quintero (2006). The genus *Sphaerophthalma* s.l., that also includes nocturnal species, was not included in that comparison because it is present in North, Central and South America.

The following generic key will aid in recognition of males of six genera of nocturnal Sphaerophthalmini mutillids present in South America:

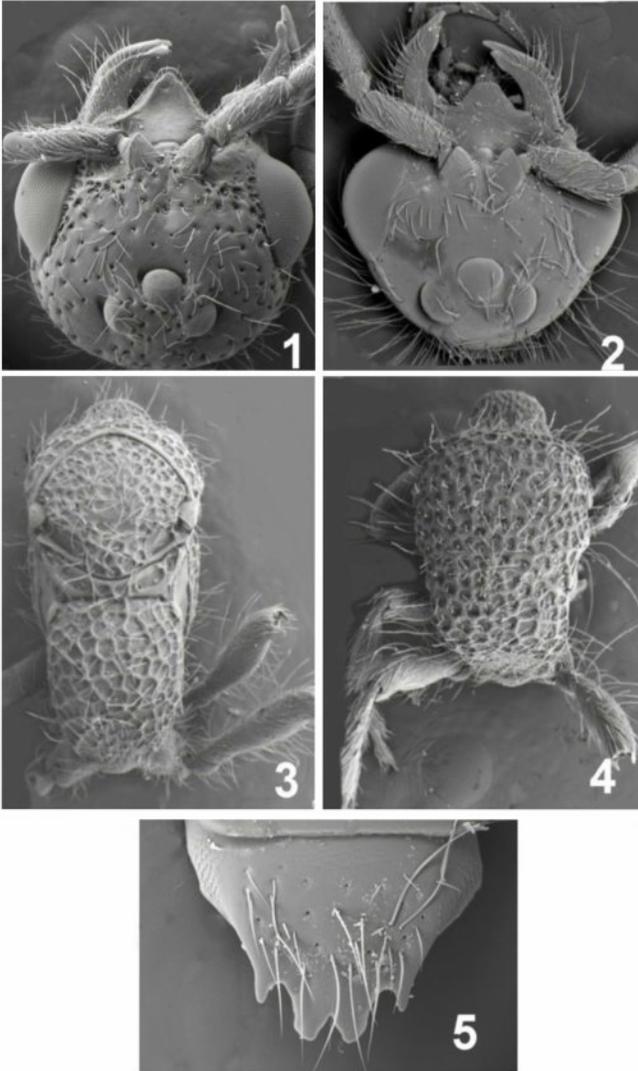
- 1 First metasomal segment sessile, evenly merging with T2; propodeum smooth with five large areas enclosed by ridges; Argentina *Patquiatilla* Casal
- First metasomal segment petiolate, not merging with T2; propodeum reticulate . 2
- 2 T7 apical margin deeply, medially emarginate; paramere broad at the base, then arcuate and abruptly narrowing in the apical half; setae simple; Chile *Chilephotopsis* Cambra and Quintero
- T7 apical margin without a medial emargination; paramere not as above; body usually with some plumose setae; usually winged 3
- 3 S7 apical margin deeply, medially emarginate; mandibles with posteroventral tooth near base; S2 with felt lines; Peru, Chile, Argentina *Limaytilla* Casal
- S7 apical margin convex, without a median emargination, straight or with four teeth; mandibles with or without posteroventral tooth near base; S2 with or without felt lines 4
- 4 S7 apical margin with four teeth; paramere broad in lateral view; wings, when present, with vein m-cu joined to SMC1; SMC2 present as an areolet or absent; SDC 1.0-1.3X as long as wide; S2 with short felt lines; Chile *Chilemutilla* Cambra and Quintero
- S7 apical margin straight or convex, without modifications; paramere apical half not broad in lateral view; wings, when present, with vein m-cu not joined to SMC1; SMC2 present and distinctive, SDC 2X or more as long as wide; S2 with or without felt lines 5
- 5 Clypeus with anterior margin projecting and acute or rounded medially; antennal tubercle with an arcuate medioapical ridge in anterior view; S2 without felt lines; mandibles without posteroventral tooth; nocturnal; Argentina *Scaptodactyla* Burmeister
- Clypeus with anterior margin transverse; antennal tubercle without ridge; S2 with or without felt lines; mandibles with or without posteroventral tooth; North, Central and South America; diurnal or nocturnal *Sphaerophthalma* s.l. Blake

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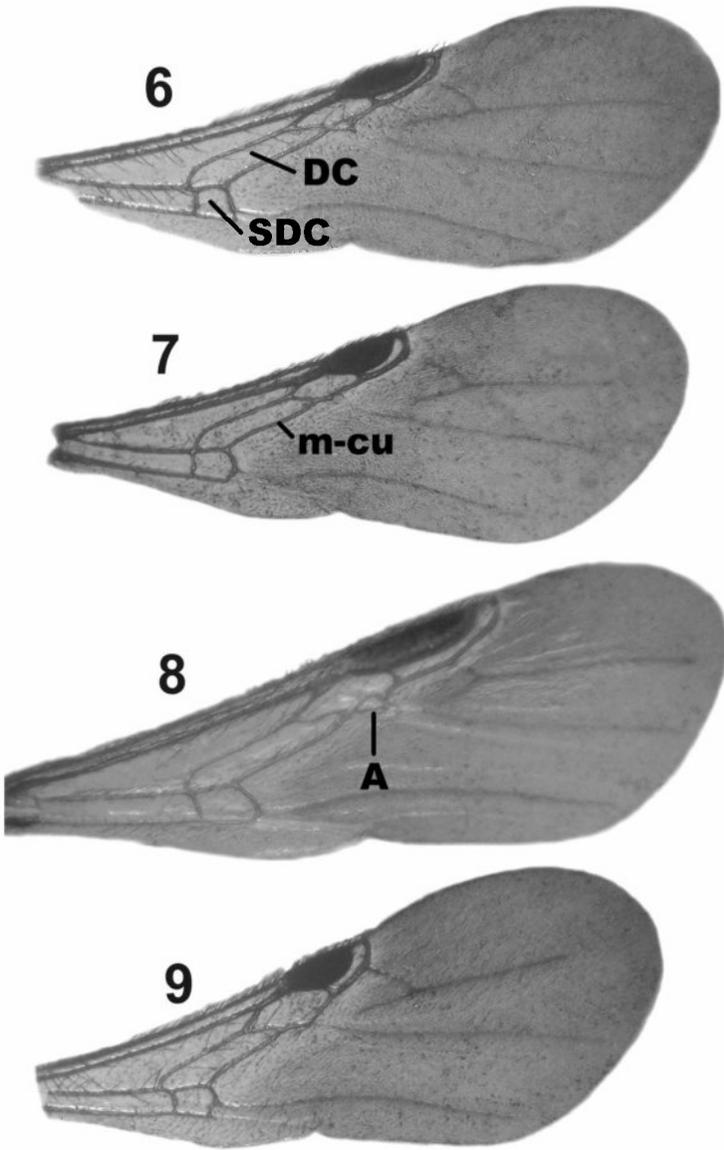
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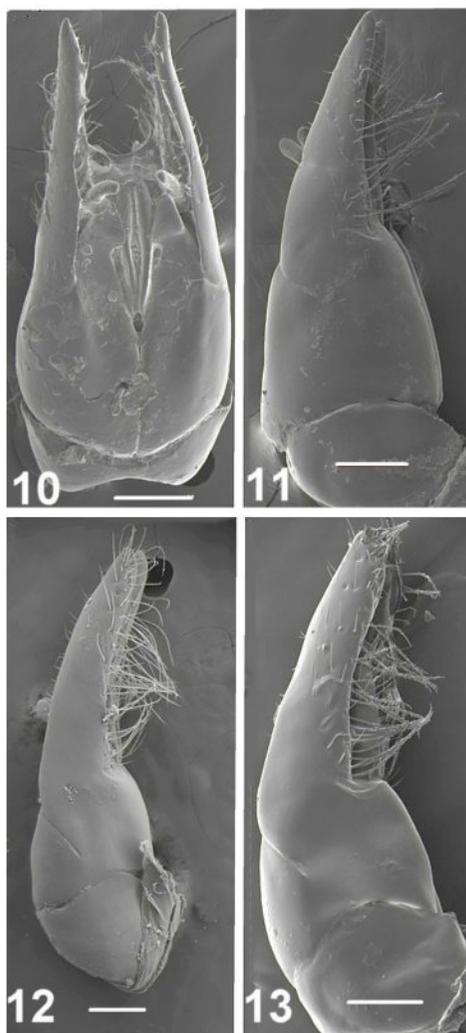
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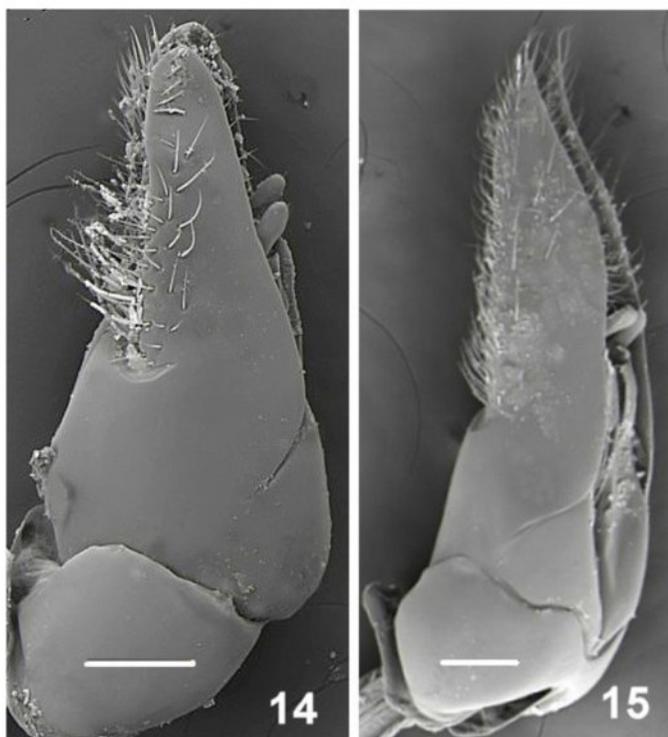
Figs 1-5. *Chilemutilla*, dorsal view. 1-2, Heads: 1, *aielloae*; 2, *snellingi*. 2-4. Mesosoma: 3, *aptera*; 4, *incognita*. 5, *atacama*, hypopygium.



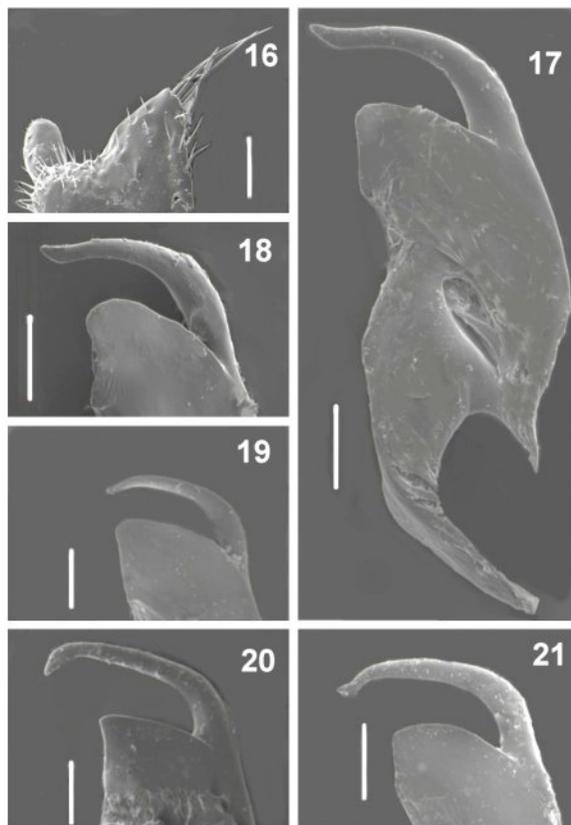
Figures 6-9. *Chilemutilla*, anterior wings. 6, *atacama*; 7, *aielloae*; 8, *snellingi*; 9, *gauldi*.



Figures 10-13. *Chilemutilla*, male genitalia. 10, *gauldi* dorsal view; 11, *gauldi*, lateral view; 12, *aielloae*, lateral view; 13, *aptera*, lateral view. Line = 100 micra.



Figures 14-15. *Chilemutilla*, male genitalia, lateral view. 14, *atacama*, 15, *snellingi*. Line = 100 μ



Figures 16-21. *Chilemutilla*, male genitalia, lateral view. 16-17, penis valve; 16, *aielloae*, 17, *volsella*. 18-21, anterior third of penis valve. 18, *aptera*; 19, *atacama*; 20, *gauldi*; 21, *snellingi*. Line = 50 micra.