

**An updated key to the species of *Exaerete*,  
with the description of a new species from Bolivia  
(Hymenoptera: Apidae)**

**Michael S. ENGEL & Benjamin BEMBÉ**

**Abstract**

A new species of the cleptoparasitic orchid bee genus *Exaerete* HOFFMANNSEGG (Euglossini) is described and figured from Bolivia. *Exaerete (Exaerete) tricola* sp. n., is superficially similar to *E. trochanterica* (FRIESE), *E. salsai* NEMÉSIO, and the recently described *E. fallaciosa* ENGEL. A revised key and a hierarchical checklist to the species of *Exaerete* are provided.

**Introduction**

The bee genus *Exaerete* HOFFMANNSEGG, 1817 is one of only two cleptoparasitic groups of orchid bees (Euglossini) (MICHENER 2007; ENGEL & RASMUSSEN in press). The genus includes impressive, large, brilliantly metallic bees who are cuckoos in the nests of the genera *Eufriesea* COCKERELL and *Eulaema* LEPELETIER. Species are distributed from northern Mexico to northern Argentina, but not present in the Caribbean with the exception of occurrences from Trinidad & Tobago (KIMSEY 1979; MICHENER 2007).

Most of the nine described species are documented from comparatively narrow geographical ranges, while three species as currently circumscribed – *E. dentata* (LINNAEUS), *E. smaragdina* (GUÉRIN-MÉNEVILLE), and *E. frontalis* (GUÉRIN-MÉNEVILLE) – are widespread. In the last decade the number of recognized species has risen by a third (ENGEL 2018), and it has been posited that additional species will eventually be recognized among the variation otherwise classified under the aforementioned three more widespread and common species (ENGEL 2018). Herein we add to the growing number of species in the genus by characterizing a new species from Bolivia. The new species belongs to the *trochanterica* species group (Table 1), the most species-rich lineage of *Exaerete*. Species of this group are remarkably similar and often confused with one another. Nonetheless, subtle differences do exist that permit their distinction. We provide a revised key to the species of the genus as an aid to assist in the identification of this group.

**Material and methods**

The new material reported herein is deposited in the Zoologische Staatssammlung München (Munich, Germany), while comparative material of similar species of *Exaerete* was studied from the collections of the Division of Entomology, University of Kansas Natural History Museum (Lawrence, Kansas, USA) and the Division of Invertebrate Zoology, American Museum of Natural History (New York, USA).

Morphological terminology employed for the description and key is adapted from that of MICHENER (2007) and ENGEL (2001), while the format of the description follows that of ENGEL (2018). Photographs were taken with a Canon 7D digital camera illuminated by a synchronized Xenon flash system. Measurements of the holotype were taken with an ocular micrometer on an Olympus SZX12 stereomicroscope.

**Systematics**

**Genus *Exaerete* HOFFMANNSEGG, 1817, Subgenus *Exaerete* HOFFMANNSEGG, 1817**

***Exaerete (Exaerete) tricola* sp. n.** (Figs. 1–6, 9, 11–13, 15–18)

**Holotype.** ♂, Bolivia, [Cochabamba Department: Carrasco Province] Sacta, S 17°05'55.5; W 64°46'52.2 [239 m elevation], leg. S. Abrahamczyk, 22/11/2007 [22 November 2007] (deposited in the Zoologische Staatssammlung München, Munich, Germany).



**Figs 1-2:** Holotype male of *Exaerete tricola* sp. n. **1:** Lateral habitus. **2:** Dorsal habitus.

**Diagnosis.** The new species is most similar to *E. trochanterica* (FRIESE), and its geographic occurrence most closely approximates that species, but also shares interesting similarities to *E. salsai* NEMÉSIO and *E. fallaciosa* ENGEL, both also members of the *trochanterica* species group (Table 1). Among species of the *trochanterica* group, only *E. tricola* sp. n. and *E. trochanterica* lack the deep medioapical emargination in the discal extension of metasomal sternum VII (note that *E. trochanterica* figured by KIMSEY 1979, is actually *E. kimseyae* OLIVEIRA, while the species figured by ANJOS-SILVA & REBÊLO 2006, as *E. guaykuru* is *E. trochanterica*: refer to synonymic table in ENGEL 2018). Instead, in both species the discal extension is rectangular, with the apical margin truncate and at most having a faint, minute medial incision and the lateral margins roughly parallel (Fig. 15). In all other species of the group the discal extension has a distinctly bilobed appearance owing to a prominent, deep, medial emargination and the sides range from parallel (*E. kimseyae*) to slightly sloped (*E. fallaciosa*) to more strongly sloped with the apical lobes somewhat acutely rounded (*E. salsai*) (NEMÉSIO 2011; ENGEL 2018). In *E. kimseyae* and *E. fallaciosa* the apices of the lobes are rather obtusely truncate (*vide* ENGEL 2018). The new species, like others in the group, may also be distinguished from *E. kimseyae* by the absence of a distinct impunctate area on the outer border of the tegula (present in *E. kimseyae*). (This work together with NEMÉSIO 2011 and ENGEL 2018 contain photos of the most important characteristics of all five species of the *trochanterica* species group.)

From *E. trochanterica*, *E. tricola* sp. n. can be most easily recognized by the following differences: long, erect setae of postgena black (white in *E. trochanterica*); labral orbicular elevation rounded, with faint mediolongitudinal depression (distinct depression in *E. trochanterica*); long, erect, prominent setae of outer surface of protibia black (as in *E. fallaciosus*, white in *E. trochanterica*); proximal posterior triangular area of mesobasitarsus sparsely punctate, smooth and shining (Fig. 12); erect setae on mesoscutum black (Fig. 11, white in *E. trochanterica*, best viewed in profile); punctures of mesoscutum larger and more numerous, particularly anteriorly; punctures of axilla coarser (cf. Figs. 9 vs. 10); dorsal-facing surface of first metasomal tergum with small, dense punctures extending nearly to angled margin with anterior-facing surface (Fig. 13) (small punctures nearly contiguous and running to margin in *E. trochanterica*, such punctures more sparse anteriorly and forming smooth, impunctate area medially in *E. fallaciosus*, Fig. 14); discal extension of metasomal sternum VII prominent, rectangular, truncate apically, without deep medioapical emargination (as in *E. trochanterica*, bilobed in *E. fallaciosus*, weakly bilobed in *E. salsai*), lateral margins of extension roughly parallel (sloping and converging apically in *E. salsai*), without angle at lateral margins of disc along apodemal arms (as in *E. trochanterica*, such an angle present in *E. fallaciosus*), with proximal line of setae interrupted medially across proximal portion of disc (as in *E. trochanterica*, nearly continuous in *E. fallaciosus*).

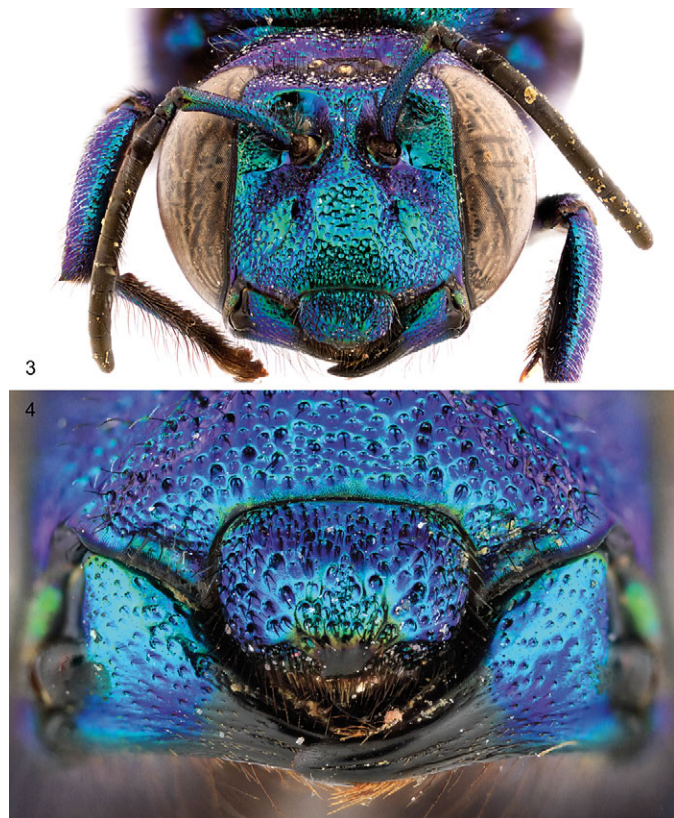
**Biology.** The Holotype was attracted to a methyl salicylate bait. The species of the *trochanterica* species group are all infrequently caught with fragrances in bait experiments and are therefore exceptionally rare in collections. The new species is probably also such an uncommon species. The observations of Helmut HEIDER, who has baited Euglossini for six years in and around Villa Tunari about 60 km west of the type locality of *E. tricola* sp. n., attest to this reality. His collections only contained specimens of *E. dentata* and *E. smaragdina* (BEMBÉ & HEIDER 2005), and no representatives of the *trochanterica* species group.

#### Description.

♂: Total body length approximately 25.5 mm; forewing length 21.1 mm. Integument largely brilliant metallic blue and green (Figs. 1–2), with blue dominating in many places (e.g., Fig. 3), and with prominent purplish highlights (Figs. 1–2), except apical half of mandible and

labral medioapical orbicular elevation argely black, antenna dark brown to black with strong metallic blue highlights on scape and somewhat on pedicel (Fig. 3). Wing membranes darkly infumate, veins dark brown to black.

Head length (measured from peak of vertex to clypeal apex in facial view) 5.5 mm, width 6.5 mm; frons without medial elevation or tubercle, low in profile; upper interorbital distance 2.9 mm, lower interorbital distance 4.0 mm; labrum with apical orbicular elevation rounded, not fringed by setae, orbicular elevation with faint mediolongitudinal depression (prominent depression in *E. trochanterica*); mandible bidentate. Interregal distance 4.8 mm; hypopimeral area lacking prominent knob. Mesotibial velvet patch cove-



**Figs 3-4:** Holotype male of *Exaerete tricola* sp. n.

**3:** Facial view.

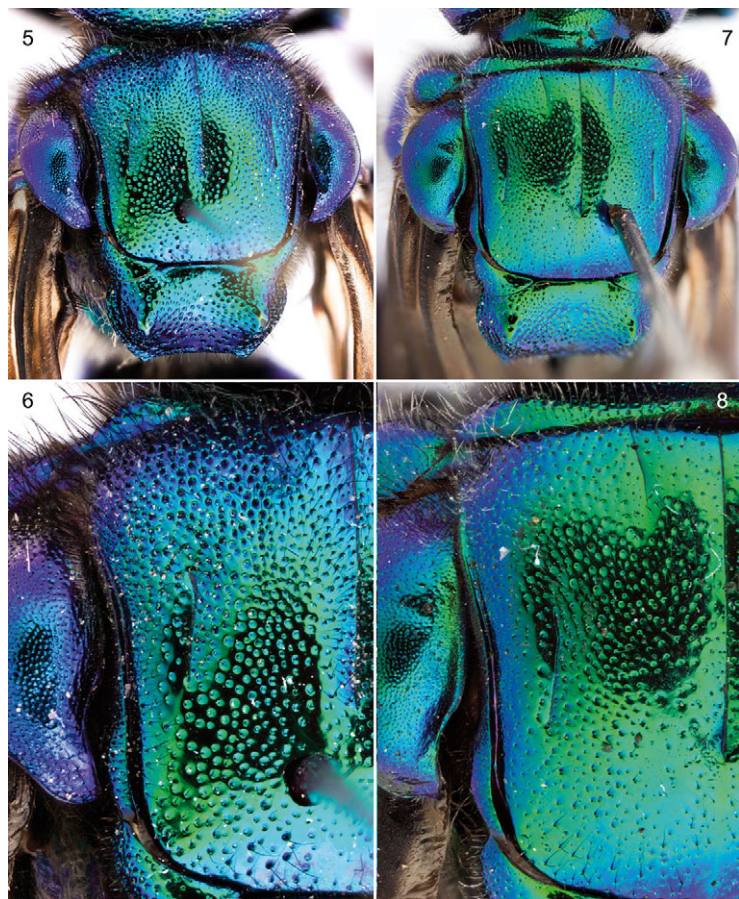
**4:** Detail of labrum, mandibles and apical portion of clypeus.



ring virtually entire outer surface, comprising dense, silvery microtrichia; proximal-anterior setal tuft elongate triangular, broadest proximally, proximal width encompassing entire velvet patch, length of setal tuft greater than mesotibial velvet patch mid-width and slightly more than one-third velvet patch length, surface within tuft coarsely and contiguous punctured. Metafemur with prominent knob on lower and outer margins at about one-third metafemoral length, ventral apex of knob without mediolongitudinal depression, with numerous denticles along outer lower margin apicad submedial knob and several denticles along inner lower margin in apical third of metafemur; metatibia with row of denticles along lower inner margin, outer surface with metatibial slit extending to apical margin. Forewing with basal vein straight, basad 1cu-a by twice vein width; 1Rs slightly longer than prestigma; pterostigma about as long as prestigma, margin inside marginal cell sloping; r-rs slightly longer than 2Rs, about one-half length 3Rs; posterior border of second submarginal cell longer than that of first submarginal cell; anterior border of second marginal cell slightly longer than anterior margin of third submarginal cell; 1rs-m not angulate; 1m-cu meeting second submarginal cell slightly distad midlength; 2rs-m distad 2m-cu by  $4\times$  vein width; 2m-cu forming continuous arc with 3Cu (not angulate at juncture of 2m-cu and 3Cu); hind wing with dense row of numerous hamuli along anterior wing margin. Metasomal sterna VII and VIII and genital capsule as in figures 15–18.

Labrum with small, coarse punctures separated by less than a puncture width, punctures smaller along basal margin, medioapically with broad, rounded, somewhat raised, impunctate orbicular elevation with faint mediolongitudinal depression on surface (Fig. 4), integument between punctures shining and smooth except faintly imbricate on impunctate orbicular elevation. Clypeus with punctures similar to larger punctures of labrum, separated by less than a puncture width, clypeal disc centrally with rounded depression, integument smooth and shining. Supraclypeal area with punctures smaller than those of clypeus, separated by less than a puncture width, nearly contiguous in most places, integument smooth and shining; face with punctures like those of clypeus generally separated by less than a puncture width except more spaced near

antennal toruli, in ocellular area, and on vertex posterior to lateral ocellus; vertex and gena with punctures similar to those of face except separated by  $0.25\text{--}1\times$  a puncture width on vertex and on upper and posterior portions of gena, punctures on lower anterior portion of gena smaller and denser, nearly contiguous in places; postgena with punctures similar to those of lower posterior gena except coarser. Pronotum with coarse, contiguous punctures on dorsalfacing surface bordering mesoscutum except medially where punctures become minute and more widely spaced, integument between



**Figs 5–8:** Mesosomal dorsa of males of *Exaerete tricoso* sp. n. and *E. trochanterica* (FRIESE).  
**5:** Mesosomal dorsum of *E. tricoso* sp. n.  
**6:** Detail of mesoscutum of *E. tricoso* sp. n.  
**7:** Mesosomal dorsum of *E. trochanterica*.  
**8:** Detail of mesoscutum of *E. trochanterica*.

smooth and shining; majority of lateral-facing surface with minute, nearly contiguous punctures, punctures on pronotal lobe smaller than on dorsal-facing surface of pronotum, separated by less than a puncture width. Mesoscutum with median line distinct, extending from anterior border to slightly beyond midlength; notauli thin, somewhat faint, extending from anterior border to about one-sixth length; parapsidal lines thin but more distinctly impressed than notauli, slightly less than one-third length of median line; punctures small, separated by  $0.5\text{--}2\times$  a puncture width centrally, punctures becoming larger toward parapsidal lines and separated by  $0.25\text{--}1\times$  a puncture width, punctures somewhat sparser outside of parapsidal lines (Fig. 6), otherwise punctures becoming coarser and denser anteriorly, particularly in anterolateral region toward border with pronotum, punctures separated by less than a puncture width, nearly contiguous in places, punctures between notauli and median line slightly sparser than anterolateral area (particularly sparse in *E. trochanterica*), punctures around posterior half of median line separated by about  $0.5\text{--}2\times$  a puncture width (separated by  $1\text{--}3\times$  a puncture width in *E. trochanterica*), posteriorly punctures like those outside parapsidal lines or sparser, separated by  $1\text{--}2.5\times$  a puncture width, integument between punctures smooth and shining; mesoscutal lateral rims carinate and narrowly impunctate. Tegula with minute, nearly contiguous punctures centrally, becoming more spaced toward margins, those toward anterior margin becoming larger, sparser, and faint in area of black setae anteriorly, and weaker, larger, more drawn out, and more spaced on posterior regular extension, integument between punctures, where evident, smooth and shining (Figs. 5, 6). Mesoscutellum with distinct sublateral tubercles, lateral margins convex, posterior margin linear between weakly pointed posterolateral angles (Fig. 9); punctures separated by a puncture width or slightly less centrally, anteromedially punctures more widely spaced, nearly impunctate along border with mesoscutum, posteromedially punctures slightly larger and sparser, with distinct impunctate patches (Fig. 9) (separated by a puncture width or less in *E. fallaciosa*), punctures nearly contiguous in band along margins, integument between punctures shining and smooth; ventral-facing surface overhanging metanotum smooth and impunctate. Axilla with punctures separated by less than a puncture width laterally (separated by  $0.5\text{--}1.5\times$  a puncture width laterally in *E. trochanterica*), becoming sparser and somewhat smaller mesally, integument

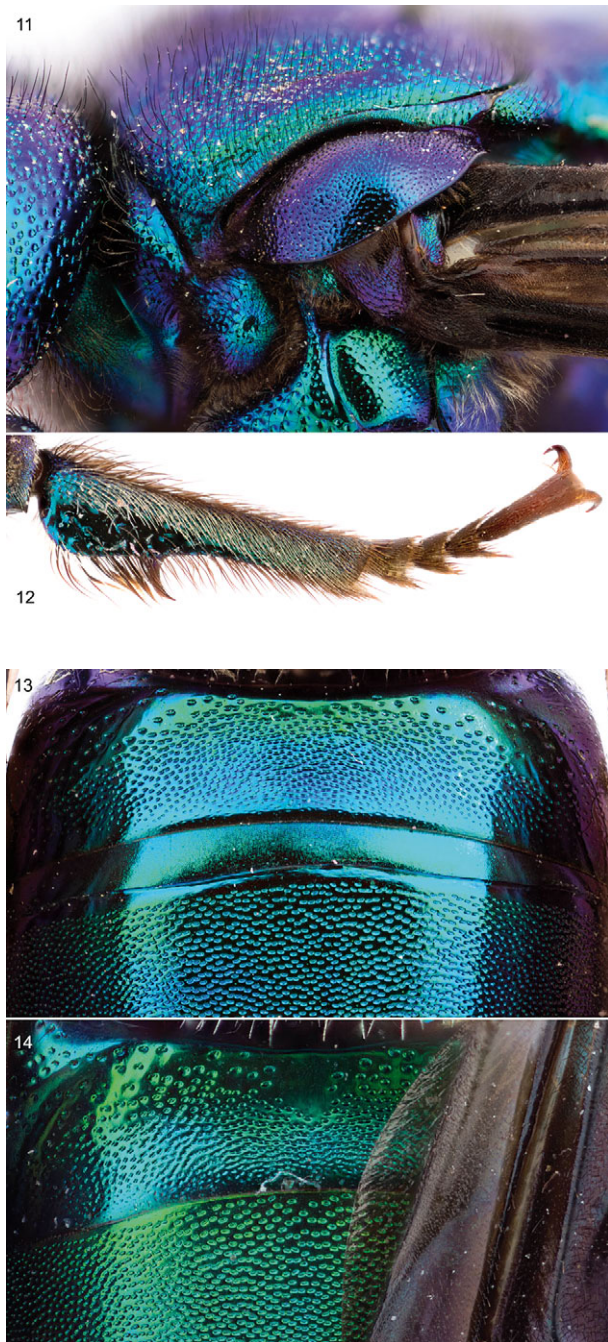
between punctures shining and smooth. Metanotum declivitous, minutely imbricate and with faint, minute punctures at least basally. Mesepisternum with large punctures separated by less than a puncture width, nearly contiguous in some places, punctures more drawn out and weaker posteriorly along border with metepisternum, punctures becoming more widely spaced ventrally, integument between punctures smooth and shining; hypoepipimeral area with small to minute punctures separated by  $0.5\text{--}1.5\times$  a puncture width, punctures more spaced along borders, particularly medioventral lip, integument between puncture smooth and shining; metepisternum with small punctures separated by  $0.5\text{--}1\times$  a puncture width dorsally separated from minute, nearly contiguous punctures ventrally by a large,



**Figs 9-10:** Mesoscutella of males of *Exaerete tricosia* sp. n. and *E. trochanterica* (FRIESE).

**9:** Mesoscutellum of *E. tricosia* sp. n.  
**10:** Mesoscutellum of *E. trochanterica*





**Figs 11–12:** Male of *Exaerete tricola* sp. n. **11:** Lateral view of tegula (note absence of prominent impunctate patch) and mesoscutum (note erect, black setae). **12:** Outer view of mesotarsus. **Figs 13–14:** Metasomal terga of males of *Exaerete tricola* sp. n. and *E. fallaciosa* ENGEL. **13:** Dorsal-facing surface of tergum I and proximal portion of tergum II of *E. tricola* sp. n. **14:** Dorsal-facing surface of tergum I (note prominent impunctate area medially) and proximal portion of tergum II of *E. fallaciosa*.

medial impunctate area, integument between punctures smooth and shining. Basal area of propodeum with punctures nearly contiguous, those mesally slightly larger and coarser than elsewhere, becoming sparser and eventually impunctate on extreme anterolateral area; lateral surface of propodeum concave, with small contiguous punctures becoming more spaced centrally and around propodeal spiracle as well as posterior upper border, punctures posteriorly larger than those anteroventrally, integument between punctures smooth and shining. Profemur and protibia with coarse punctures on outer surfaces, punctures separated by less than a puncture width, integument between punctures smooth and shining, inner surfaces with punctures sparser, ventral surfaces virtually impunctate and imbricate; mesofemur with punctures separated by a puncture width or less, with punctures becoming weaker and sparser ventrally on anterior and posterior surfaces; mesotibia with inner surface largely impunctate, anterior edge bordering outer mesotibial velvet patch with minute punctures, integument between punctures smooth and shining, posterior edge bordering mesotibial velvet patch irregularly and coarsely nodulose, nodules well separated, integument otherwise smooth and shining; outer surface of mesobasitarsus with small, nearly contiguous punctures except proximal-posterior triangular area of smooth, shining integument, area largely impunctate except at setal bases; metafemur with punctures separated by  $0.5\text{--}1.5\times$  a puncture width dorsally, punctures gradually become sparser on outer anterior and proximal surfaces, integument between punctures smooth and shining; metatibia outer surface with small punctures separated by  $0.5\text{--}1\times$  a puncture width, becoming sparser elsewhere, particularly impunctate on dorsal surface surrounding longitudinal slit, integument between punctures smooth and shining; outer surface of metabasitarsus impunctate except with sparse, faint, coarse punctures at setal bases, integument between punctures faintly and finely imbricate. Metasoma with concave, anterior-facing surface of tergum I smooth and impunctate, dorsal-facing surface of tergum I with

anterolateral areas with punctures sparsely scattered, separated by 1–5× a puncture width except largely impunctate anteriorly, anteromedially with small punctures separated by 0.5–1× a puncture width and extending to ridge with anterior-facing surface (Fig. 13) (with distinct anteromedially impunctate area in *E. fallaciosa*: Fig. 14), integument between punctures smooth and shining, punctures of remainder of tergum gradually smaller and slightly denser on disc until contiguous or nearly so centrally, not arranged in irregular arched lines (present in *E. fallaciosa*), posterior border narrowly impunctate; remaining terga with minute nearly contiguous to contiguous punctures similar to those on central disc of tergum I, slightly more spaced on tergum II than on succeeding terga, posterior tergal margins narrowly impunctate, impunctate zones broader laterally and medially lacking on terga V and VI, integument otherwise smooth and shining; punctures of tergum VII coarser than those on preceding terga, becoming more widely spaced centrally, integument smooth and shining except in basal fifth imbricate, surface with medial depression. Sternum I impunctate and faintly and finely imbricate; sterna II–V with small punctures sparse basally and becoming more closely spaced apically except for mediolongitudinal impunctate area separating paramedial fields of punctures, punctures not reaching apical margins, integument otherwise finely imbricate; sternum VI imbricate and impunctate.

Pubescence generally sparse and black to fuscous except around antennal base greyish white; pubescence of mesosoma largely fuscous to black intermixed with greyish white, albeit whitish setae become more dominant posteriorly except largely yellowish on propodeum; setae of legs largely fuscous to black intermixed with greyish white in places; procoxa with longitudinal patch of dense, black setae near outer lateral margin; elongate, wavy posterior setae of protibia largely black with some greyish white setae intermixed. Metasoma with setae sparse, black on terga and more prominent on apicalmost terga, black on sterna albeit more white on more proximal sterna.

♀: *Latet.*

**Etymology.** The specific epithet is taken from the Latin, *tricosus*, meaning, “full of tricks”, and references the deceptively similar identity of this species among other related *Exaerete*.

**Remarks.** Specimens of the *trochanterica* species group are rather uncommon in collections and it is therefore difficult to assess what degree of phenotypic variation may exist within each of the known species, particularly as we lack series across numerous potential geographical regions within putative ranges. Nonetheless, genitalic differences among the species of this group are distinctive and, based on known variations in other groups of the genus (as well as elsewhere among *Euglossini*), there is no reason to believe that such unique forms are indicative of good species. Accordingly, based on examination of the available series hitherto known, the combination of traits outlined above for the present new species are



**Figs 15–18:** Male terminalia of *Exaerete tricosus* sp. n. **15:** Sternum VII. **16:** Sternum VIII. **17:** Dorsal view of genital capsule. **18:** Lateral view of genital capsule.

equally comparable to the suite of characters that successfully distinguish other *Exaerete*. It is greatly hoped that continued sampling throughout South America will provide abundant new material from which to further corroborate circumscriptions of the species presently recognized in the genus, as well as permit the evaluation of putative variation in otherwise wide-ranging species that may well hide unrecognized cryptic taxa (e.g., ENGEL 2018).

**Table 1:** Hierarchical checklist of species in the genus *Exaerete* HOFFMANNSEGG (Euglossini).

Genus <i>Exaerete</i> HOFFMANNSEGG, 1817	
<b>Subgenus <i>Exaerete</i> HOFFMANNSEGG, 1817</b>	<b>Subgenus <i>Hybomelissa</i> ENGEL, 2018</b>
<i>dentata</i> species-group	<i>Exaerete smaragdina</i> (GUÉRIN-MÉNEVILLE, 1844)
<i>Exaerete azteca</i> MOURE, 1964	<i>Exaerete frontalis</i> (GUÉRIN-MÉNEVILLE, 1844)
<i>Exaerete dentata</i> (LINNAEUS, 1758)	<i>Exaerete lepeletieri</i> OLIVEIRA & NEMÉSIO, 2003
<i>trochanterica</i> species-group	
<i>Exaerete fallaciosa</i> ENGEL, 2018	
<i>Exaerete kimseyae</i> OLIVEIRA, 2011	
<i>Exaerete salsai</i> NEMÉSIO, 2011	
<i>Exaerete tricola</i> <b>sp. n.</b>	
<i>Exaerete trochanterica</i> (FRIESE, 1900)	

### Key to species of *Exaerete* (males)

The following key is updated and revised from that presented by ENGEL (2018); refer to images in ENGEL (2018) for particular characters and character states not figured herein.

- 1 Hypoepimeral knob present and prominent; labial palpus with two palpomeres (subgenus *Hybomelissa* ENGEL) ..... 2
- Hypoepimeral knob absent; labial palpus with four palpomeres (subgenus *Exaerete* HOFFMANNSEGG, *s.str.*) ..... 4
- 2(1) Frons with median tubercle, albeit slight in *E. lepeletieri*; mesoscutellum with posterior margin convex or straight; clypeus irregularly rounded, with or without basal prominence in profile; metafemur basally depressed, armed with emarginate crest, a large tooth or elongate denticles; apical margin of sternum VII trilobed; apex of sternum VIII with broad medioapical point ..... 3
- Frons without median tubercle; mesoscutellum with posterior margin convex; clypeus slightly and continuously rounded in profile; metafemur not depressed basally, lower inner margin unarmed; apical margin of sternum VII truncate; apex of sternum VIII evenly rounded ..... *E. smaragdina* (GUÉRIN-MÉNEVILLE)
- 3(2) Mesoscutellum with two sublateral tubercles, without median elevation between sublateral tubercles, posterior margin convex; clypeus irregularly rounded in profile, without basal prominence; apical margin of sternum VII with median lobe most prominent, lateral lobes minute ..... *E. frontalis* (GUÉRIN-MÉNEVILLE)
- Mesoscutellum with two sublateral tubercles and weak median elevation between them; clypeus with weak basal prominence in profile; apical margin of sternum VII with lateral lobes prominent, median lobe short ..... *E. lepeletieri* OLIVEIRA & NEMÉSIO
- 4(1) Frons with median elevation present; posterior margin of mesoscutellum concave or entirely linear; metatibial glandular slit not reaching apical margin of metatibia; clypeus with longitudinal ridges, sometimes weakly so ..... 5
- Frons without median elevation; posterior margin of mesoscutellum entirely linear or linear between weak apicolateral angles; metatibial glandular slit reaching apical margin of metatibia; clypeus without longitudinal ridges ..... 6



- 5(4) Frons with strong median elevation; posterior margin of mesoscutellum concave; mesoscutellum with sublateral tubercles distinct; metatibial spur arising from acute angle; sternum VII with posterior transverse row of setae on disc, marginal setae long and in patches (lateral and medial); gonostylus apically acutely rounded; apical dorsal gonocoxal lobe evenly rounded ..... *E. dentata* (LINNAEUS)
- Frons with weak median elevation; posterior margin of mesoscutellum linear; mesoscutellum with sublateral tubercles weaker and broader; metatibial spur arising from obtuse angle; sternum VII without posterior transverse row of setae on disc, marginal setae short and uninterrupted; gonostylus apically broadly rounded; apical dorsal gonocoxal lobe produced ..... *E. azteca* MOURE
- 6(4) Posterior margin of mesoscutellum linear between apicolateral angles; tegula without impunctate area along outer border ..... 7
- Posterior margin of mesoscutellum entirely linear; tegula with distinctive impunctate area along outer border ..... *E. kimseyae* OLIVEIRA
- 7(6) Integument bright blue, bluish green, or green; sternum VII with extension of disc broadly truncate apically, rectangularly set off from lateral margin with borders roughly parallel ..... 8
- Integument dark blue green; sternum VII with extension of disk laterally sloped toward lateral margin (*i.e.*, sides converging apically) ..... *E. salsai* NEMÉSIO
- 8(7) Punctures in area bordering parapsidal line sparser on outer side than inner side; dorsal-facing surface of tergum I without prominent medial impunctate area anteriorly near border with anterior-facing surface; sternum VII with apical margin truncate with no or only slight medial emargination (not bilobed); sternum VII with proximal line of setae interrupted medially across proximal portion of disc ..... 9
- Punctures in area bordering parapsidal line similar on both sides; dorsal-facing surface of tergum I with prominent medial impunctate area anteriorly near border with anterior-facing surface; sternum VII with deep medioapical emargination, giving bilobed appearance; sternum VII with proximal line of setae nearly continuous across proximal portion of disc ..... *E. fallaciosa* ENGEL
- 9(8) Long erect setae of postgena white; long, erect, prominent setae of outer surface of protibia white; erect setae on mesoscutum white; punctures of mesoscutum anteriorly between notauli and median line shallow and separated by 1–4× a puncture width; punctures of axilla separated by 0.5–1.5× a puncture width laterally ..... *E. trochanterica* (FRIESE)
- Long erect setae of postgena black; long, erect, prominent setae of outer surface of protibia black; erect setae on mesoscutum black; punctures of mesoscutum anteriorly between notauli and median line coarse and separated by 0.5–1.5× a puncture width; punctures of axilla separated by less than a puncture width laterally ..... *E. tricola* **sp. n.**

### Acknowledgements

We thank Stefan ABRAHAMCZYK for providing the material and for the exact method of operation, since after 13 years he was able to tell us which fragrance the bee was caught on. In addition, we are grateful to Claus RASMUSSEN for his helpful comments on an earlier version of the manuscript. This is a contribution of the Division of Entomology, University of Kansas Natural History Museum.

### Zusammenfassung

Eine neue Art aus der cleptoparasitischen Prachtbienen-gattung *Exaerete* HOFFMANNSEGG (Euglossini) aus Bolivien wird beschrieben und detailliert abgebildet. *Exaerete* (*Exaerete*) *tricola* **sp. n.** zeigt oberflächlich betrachtet große Ähnlichkeit mit *E. trochanterica* (FRIESE), *E. salsai* NEMÉSIO und der kürzlich beschriebenen *E. fallaciosa* ENGEL. Ein überarbeiteter Bestimmungsschlüssel und eine Checkliste für alle zehn Arten von *Exaerete* wird vorgestellt.

## References

- ANJOS-SILVA, E.J., DOS, & J.M.M. REBÊLO 2006: A new species of *Exaerete* HOFFMANNSEGG (Hymenoptera: Apidae: Euglossini) from Brazil. – *Zootaxa* **1105**: 27-35.
- BEMBÉ, B., & H. HEIDER 2005: Prachtbienenfunde aus Villa Tunari, Cochabamba, Bolivien (Hymenoptera: Apidae, Euglossini). – *Entomologische Zeitschrift* **115**: 271-276.
- ENGEL, M.S. 2001: A monograph of the Baltic amber bees and evolution of the Apoidea (Hymenoptera). – *Bulletin of the American Museum of Natural History* **259**: 1-192.
- ENGEL, M.S. 2018: A new species of the cleptoparasitic orchid bee genus *Exaerete* from northern Venezuela (Hymenoptera: Apidae). – *Entomologist's Monthly Magazine* **154**(3): 161-175.
- ENGEL, M.S., & C. RASMUSSEN. In press: Corbiculate bees. In: STARR, C.K. (Ed.): *Encyclopedia of Social Insects*. – Springer Nature, Cham.
- FRIESE, H. 1900: Neue exotische Schmarotzerbienen. – *Entomologische Nachrichten* **26**(5): 65-67.
- GUÉRIN-MÉNEVILLE, F.E. 1844: *Iconographie du règne animal de G. Cuvier, ou représentation d'après nature de l'une des espèces les plus remarquables et souvent non encore figurées, de chaque genre d'animaux. Avec un texte descriptif mis au courant de la science. Ouvrage pouvant servir d'atlas à tous les traités de zoologie [Insectes]*. – Baillière, Paris, 576 pp.
- HOFFMANNSEGG, C.J.C., VON. 1817: *Entomologische Bemerkungen bei Gelegenheit der Abhandlungen über amerikanische Insekten*. – *Zoologisches Magazin, Wiedemann [Kiel]* **1**: 8-56.
- KIMSEY, L.S. 1979: An illustrated key to the genus *Exaerete* with descriptions of male genitalia and biology (Hymenoptera: Euglossini, Apidae). – *Journal of the Kansas Entomological Society* **52**(4): 735-746.
- LINNAEUS, C. 1758: *Systema Naturae per regna tria natura, secundum classes, ordines, genera, species, cum characteribus, differentiis synonymis, locis [Editio decima, reformata]*. – Laurentii Salvii, Holmiae [Stockholm], 824 pp.
- MICHENER, C.D. 2007: *The Bees of the World* [2<sup>nd</sup> Edition]. – Johns Hopkins University Press, Baltimore, xvi+[i]+953 pp., +20 pls.
- MOURE, J.S. 1964: A key to the parasitic euglossine bees and a new species of *Exaerete* from Mexico (Hymenoptera-Apoidea). – *Revista de Biología Tropical* **12**(1): 15-18.
- NEMÉSIO, A. 2011: *Exaerete salsai* sp. n. (Hymenoptera: Apidae): A new orchid bee from eastern Brazil. – *Zootaxa* **2967**: 12-20.
- OLIVEIRA, M.L., DE. 2011: Notas taxonômicas sobre *Exaerete* (Hymenoptera: Apidae: Euglossina), com a descrição de uma nova espécie. – *Biota Neotropica* **11**(1): 129-132.
- OLIVEIRA, M.L., DE, & A. NEMÉSIO 2003: *Exaerete lepeletieri* (Hymenoptera: Apidae: Apini: Euglossina): A new cleptoparasitic bee from Amazonia. – *Lundiana* **4**(2): 117-120.

## Addresses of the authors

Prof. Michael S. ENGEL  
Division of Entomology, Natural History Museum,  
and Department of Ecology & Evolutionary Biology  
1501 Crestline Drive – Suite 140  
University of Kansas, Lawrence  
Kansas 66045-4415, USA  
&  
Division of Invertebrate Zoology  
American Museum of Natural History  
Central Park West at 79<sup>th</sup> Street, New York  
New York 10024-5192, USA  
msengel@ku.edu

Dr. Benjamin BEMBÉ  
Institut für Evolutionsbiologie und  
Morphologie  
Universität Witten/Herdecke  
Alfred-Herrhausen-Straße 50  
58448 Witten, Germany.  
Benjamin.Bembe@uni-wh.de

# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Mitteilungen der Münchner Entomologischen Gesellschaft](#)

Jahr/Year: 2020

Band/Volume: [110](#)

Autor(en)/Author(s): Engel Michael S., Bembe Benjamin

Artikel/Article: [An updated key to the species of Exaerete, with the description of a new species from Bolivia \(Hymenoptera: Apidae\) 97-106](#)