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Alobevania, a new genus of neotropical ensign wasps (Hymenoptera: Evaniidae), with three new species: integrating taxonomy with the World Wide Web

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Abstract

Alobevania Kawada & Deans, **n. gen.**, and three new ensign wasps, *A. gattiae* Kawada & Deans, **n. sp.**, *A. tavaresi* Kawada & Deans, **n. sp.**, and *A. longisaeta* Kawada & Deans, **n. sp.** are described from specimens collected in the Neotropics. A key to species and discussion of how this previously undescribed lineage fits within Evaniidae are provided. This taxonomic effort is greatly enhanced by the integration of numerous Web resources: a) an ontology of Hymenoptera morphology, b) annotations and collections of images archived in Morphbank, c) descriptive species pages at Evanioidea Online, d) Web-based multi-entry and bifurcating diagnostic keys at Evanioidea Online, e) taxon pages at the Tree of Life Web Project, f) registration of taxa, authors, taxonomic references, and specimens at ZooBank and assignment of Life Science Identifiers (LSIDs), g) georeferencing of all specimen localities, with downloadable KML files, h) manuscript is marked up using TaxonX and is available through Plazi.

Key words: Evanioidea, cybertaxonomy, mx, *Evaniella*, Hymenoptera Ontology

Introduction

Rearing records indicate that ensign wasps (Hymenoptera: Evaniidae) develop as solitary predators of cockroach eggs (Dictyoptera) within oothecae (Deans 2005). Female evaniids are often collected while they search through leaf litter, tussocks, buildings, and other complex environments for cockroach egg cases in which to deposit their eggs. Despite fascinating morphological and behavioral adaptations, relative ease of capture, conspicuous mimicry complexes, and their potential for biological control of pestiferous cockroaches Evaniidae remains a relatively obscure group of insects. Recent efforts, however, addressing aspects of evaniid taxonomy (Deans *et al.* 2006; Deans 2005; Deans & Huben 2003), fossils (Engel 2006; Deans *et al.* 2004; Basibuyuk *et al.* 2002, 2000a, 2000b), rearing (Fox & Bressan-Nascimento 2006; Hwang & Chen 2004), host searching (Yeh *et al.* 2000; Yeh & Mu 1994), and species revision (Kawada & Azevedo 2007), represent a renaissance of evaniid research.

We describe herein a new genus of ensign wasp that is morphologically and phylogenetically distinct. Deans *et al.* (2006) included an examplar of this tiny ensign wasp ("*Evaniella* 039") in their evaluation of evaniid taxonomy. This exemplar never resolved with other *Evaniella* Bradley, 1905 (Deans *et al.* 2006 Fig. 6, reproduced, in part, here as Fig. 1) and exhibits fore and hind wings without jugal lobes, an anteroposteriorly flattened head, an anteroposteriorly compact mesosoma, and other characters not found in true *Evaniella* spp. Based on ARD's extensive research for a recently published catalog (Deans 2005) and his direct observations of all available type specimens for New World species we have determined that no previously described species belong in this new genus.

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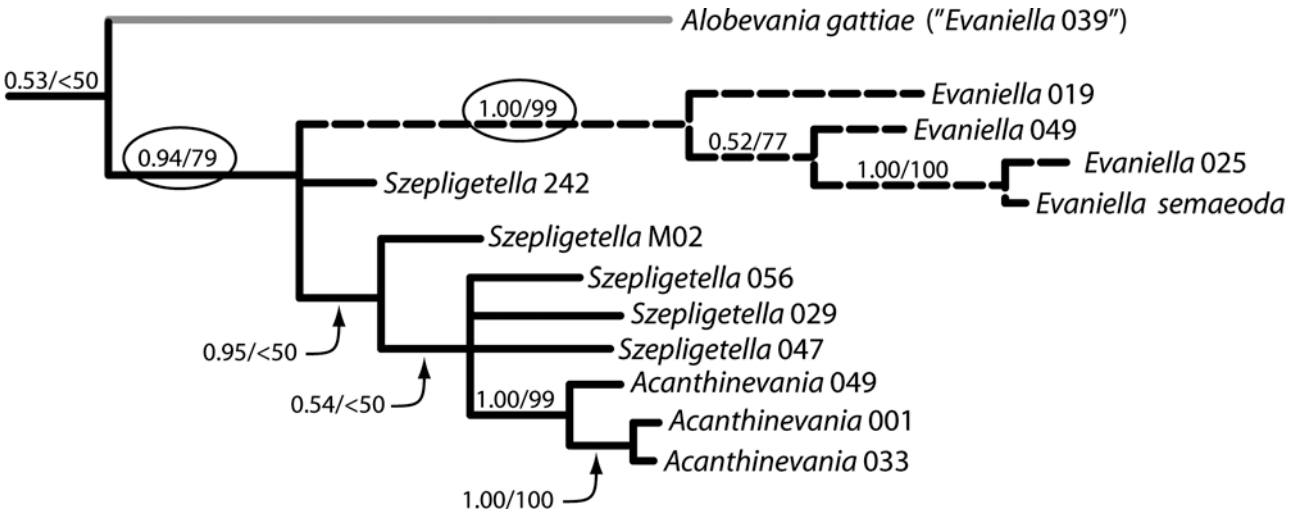


FIGURE 1. Partial phylogeny of Evaniidae from Deans *et al.* (2006; bootstrap values from their Fig. 3 and posterior probabilities from their Fig. 6) showing position of *Alobevania gattiae* (gray branch) outside of *Evaniella* (dashed branches) with relatively strong support (circled values). Numbers represent Bayesian posterior probabilities / parsimony bootstrap. *A. gattiae* lacks the 2c-2 helix/non-helix combination found in the other taxa belonging to this lineage (i.e., *Evaniella* Bradley, *Acanthinevania* Bradley, *Szepligetella* Bradley).

Methods and materials

Most of the specimens were collected in Malaise traps as part of two biodiversity studies: Arthropods of La Selva (Colwell & Longino, PIs; NSF DEB-9401069, DEB-9706976, DEB-0072702) and the Colombian Arthropod Project (Brown & Sharkey, PIs; NSF DEB 9972024). The remaining specimens were borrowed from museums or collected by ARD. Images were made using an EntoVision (GT Vision LLC, Hagerstown, MD, USA) image capture and stacking system. Taxonomic treatment was guided by Winston (1999) and Pyle *et al.* (2008). Our morphological vocabulary follows the Hymenoptera Ontology (HO; Deans *et al.* 2008; Deans *et al.* in prep). Museum codens are as follows:

AEIC	American Entomological Institute, 3005 SW 56th Avenue, Gainesville, FL 32608-5047, USA (Dave Wahl)
CNC	Canadian National Collection of Insects, Arachnids, and Nematodes, 960 Carling Avenue, Central Experimental Farm, Ottawa, Ontario, K1A 0C6, Canada (John Huber)
FSCA	Florida State Collection of Arthropods, 1911 SW 34th Street, Gainesville, FL 32608-1268, USA (Jim Wiley)
IAVH	Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Sede Principal, CALLE 28A # 15-09, PBX: 3202767, Bogotá D.C., Colombia (Mónica Ospina)
INBio	Instituto Nacional de Biodiversidad, Apdo. postal 22-3100, Santo Domingo de Heredia, Costa Rica (Jesús Ugalde Gómez)
NCSU	North Carolina State University Insect Museum, Department of Entomology, Box 7613, North Carolina State University, Raleigh, NC 27695-7613 USA (Andy Deans)
UFES	Universidade Federal do Espírito Santo, Av. Fernando Ferrari, Nº 514, Campus Universitário Alaor Queiroz de Araújo, Goiabeiras, Vitória, Espírito Santo, CEP 29075-910, Brazil (Celso O. Azevedo)

Web-enhancement

This manuscript unfolded as a collaboration between researchers separated by 7,300 km and by common language. We used tools available in Morphbank, mainly the ability to create image collections and the capability to annotate images, and the Wiki-like functionality of Google Documents (Google Inc., Mountain View, CA) to share observations and ideas. We managed our taxonomic concepts and descriptive language in mx (Yoder *et al.* 2008), which allowed us to create species pages with georeferenced collecting events (downloadable in Keyhole Markup Language (KML) format), electronic keys, and to check our text against the HO using intrinsic proofing and markup tools. Following examples found in Pyle *et al.* (2008) and Johnson *et al.* (2008), we solicited Life Science Identifiers (LSIDs) from Biodiversity Information Standards (TDWG) and ZooBank for appropriate objects (specimens, taxonomic names, taxonomic concepts, author names, taxonomic references, including this very manuscript, and repositories). Finally, we extended our Web presence by establishing taxon pages on the Tree of Life Web Project (ToL; Maddison et al. 2007). All of these links are embedded where appropriate and listed in the appendix. Persistent Uniform Resource Locators (PURLs) were used for Web sites under our control, so that URL changes would not break links. Our manuscript was marked up using the TaxonX schema and is available through Plazi (*e.g.*, see Fisher & Smith 2008).

***Alobevania* Kawada & Deans, n. gen.**

(Figs. 2–16)

Type species: *Alobevania gattiae* Kawada & Deans, **n. sp.**

Head: [Morphbank] Flat in lateral view. Face punctate and sparsely setose. Eye elliptical. Clypeus flat, protruding medially. Epistomal declivity of clypeus usually divergent, arched and short. Gena nitid. Mandible with 4–5 teeth, with 3–4 visible on anterior face of mandible. Area surrounding antennal socket (torulus) slightly raised but not shelf-like. Antenna inserted at or above midline of eye and covered with short setae. Scape long (equal or greater than half eye height). Pedicel usually longer than wide. Flagellum subdivided into 11 meres and articulated with pedicel above the mesosoma. Flagellomeres each longer than wide, widening progressively (female) or evenly wide (male) towards apex of the flagellum. First flagellomere shorter than remaining flagellomeres. Apical flagellomere longest. Subocular groove absent. Frons usually nitid and with few or no setae. Malar space at least 1.5 times greater than basal mandibular width. Gena wide, nitid (female) to punctate (male), and setose. Mandible with 4 teeth on anterior face and a fifth tooth posteroventrally (usually hidden in anterior view). Labial palp short, subdivided into 4 palpomeres. Maxillary palp long, subdivided into 5 palpomeres. Occipital carina present as fine ridge and complete dorsally.

Mesosoma: [Morphbank] Higher than long, taller than head, romboid, and usually inconspicuously punctate or nitid dorsally, slightly areolate ventrally. Pronotum obscure medially when viewed dorsally, but with thin shelf that expands laterally, usually with fine, irregular rugae laterally. Mesoscutum raised medially, convex, sitting over the pronotal shelf; lateral carina complete from anterior to posterior margin. Notaulus complete, widening posteriorly, convergent and joined at scutellar groove; parapsidal furrow inconspicuous as a fine line. Scutellar groove scrobiculate laterally. Metanotum scrobiculate, partially covered by scutellum anteriorly. Mesopleuron higher than wide, concave medially (where mid leg femur rests when pharate); anterodorsal corner scrobiculate; anteriorly nitid; posteriorly with an even scrobiculate line; anteroventral margin finely scrobiculate; usually mostly nitid ventrally. Epicnemial carina complete. Metapleuron usually with inconspicuous sculpture, mostly areolate, usually nitid ventrally. Mesosternal processes (articulation points with mid coxae) long, conjoined by a carina, and separated from each other by the length of one process. Metasternum with irregular carina raised medially. Metasternal processes (articulation points with hind coxae) long, conjoined by a carina, and separated from each other by half their length. Propodeum short, less than half the length of petiole, not raised to metanotum; dorsally areolate to rugulose; laterally nitid; propodeal area ventral

to petiole flat. Distance between mid and hind coxae less than distance between fore and mid coxae. Mid coxa usually rugulose. Hind coxae rugose. Hind leg usually faintly imbricate, and with short setae. Hind tibia and tarsus without conspicuous, prominent spines. Internal tibial spur length almost 2 times greater than external tibial spur. Distal edge of hind tibia with loosely defined cleaning brush. Tarsal claws each with terminal hook longer than subapical spine; subapical spine located medially on unguis.

Wings: [Morphbank] Fore wing usually with 6 (*A. longisaeta* with 7; *A. gattiae* rarely with 5) cells enclosed by tubular veins. 1st subdiscal cell usually open. 1st marginal cell digitiform. Apical margin of apex convex; posterior margin concave. Abscissa between r-rs and 1R1 vein almost straight. 2R1 vein greater than 1st marginal cell length. R-m vein absent or present. 2Mb, 3M, and 3CU veins absent or spectral. 1RS vein attached to Sc+R at stigmal vein. Hind wing without jugal lobe, usually with three hamuli. M+CU vein absent.

Metasoma: Elliptical (depending on preservation), laterally compressed. Petiole relatively short, arching dorsally; usually with irregular sculpture and some punctures.

Sexual Dimorphism: (Figs. 8–9) Female generally with less pronounced surface sculpturing and flatter, smaller compound eye. Female antenna thicker. Males generally darker in color, which consists of brown shades for both sexes.

Etymology: The new genus-group name is a combination of *a* (Greek meaning, "absence of"), *lobos* (Greek meaning, “lobe”) and *Evania* (type genus of the family). The gender is feminine.

Web resources: ZooBank LSID; Morphbank image collection; Evanioidea Online descriptive Web page; ToL taxon Web page.

Remarks: *Alobevania* can be distinguished from *Evaniella* by its minute size (2–3 mm in length vs. >3.0 mm in *Evaniella*), hind wing without jugal lobe (present in *Evaniella* and all other evaniid genera except some spp. in the Old World genus *Prosevania* Kieffer, 1911), the elliptical eye (closer to ovoid in most *Evaniella*), body with less sculpture overall, propodeum laterally nitid (areolate in *Evaniella*); fore wing with 6–7 enclosed cells (always 7 in *Evaniella*); first marginal cell digitiform (subquadrangular in *Evaniella*), 2R1 vein length greater than first marginal cell (2R1 vein length less than first marginal cell in *Evaniella*); and metasoma elliptical (ovoid in *Evaniella*).

This new genus, as with other genera in the family (see Deans & Huben 2003; Deans 2005; Deans *et al.* 2006; Kawada & Azevedo 2007) is sexually dimorphic. Female eyes are smaller and elliptical (larger, softly bulging and more spherical eyes in male), antenna progressively enlarged (all segments the same diameter in male), metasoma with ovipositor exserted (genitalia concealed in male) and both sexes with elliptical metasoma. Some Evaniidae fossils, as *Protoparevania* Deans, 2004 and *Eovernevania* Deans, 2004, share most of the synapomorphies that unite extant evaniids, except that they lack deeply separated jugal lobes in the fore and hind wings. Possession of separated jugal lobes appears in only one Cretaceous (Turonian) evaniid genus, *Newjersevania* Basibuyuk, Quicke, & Rasnitsyn, 2000 (seen only in the hind wing of one specimen) (Basibuyuk *et al.* 2000a). Lack of separated jugal lobes in *Alobevania* (and some *Prosevania*) is considered to be a secondary loss.

***Alobevania gattiae* Kawada & Deans, n. sp.**
(Figs. 2, 5, 8, 10, 13)

Male. Head: Lower face uniformly brown. Torulus slightly dorsal to midline of eye. No carina present between toruli; area of the frons dorsal to toruli slightly convex. Eye 0.75 times head height. Epistomal declivity of clypeus divergent. Gena nitid, always uniformly brown. Malar space punctulate, setose, 0.4 times eye height. Middle third of clypeus expanded ventrally as even, semicircular process. Vertex defined by slight, irregular sculpture. Scape and pedicel brown but usually lighter than flagellum. Flagellomeres 1–7 yellow to

brown; flagellomeres 8–11 dark brown. Mandible light brown-yellow medially, reddish on dorsal and ventral margins, with 4 reddish teeth on anterior face of mandible (5 teeth total).

Mesosoma: Propleuron rugulose. Mesopleuron rugose in dorso-anterior corner, regularly areolate along posterior edge (areolas nearly square); median concave area rugose, with rugae almost reaching dorso-anterior corner. Areas dorsal and ventral to the medial depression nitid. Mesoscutum and scutellum nitid, evenly brown and setose. Notaulus inconspicuously sinuous (often almost linear), posteriorly with dilation inconspicuous, convergent and joined at scutellar groove. Tegula brown to light brown, nearly spherical. Metapleuron nitid along anterior edge, irregularly areolate medially. Mesosternum nitid laterally, strongly rugulose (almost areolate in some specimens) medially. Metasternum strongly rugose. Lateral face of propodeum nitid anteriorly. Posterior face of propodeum, ventral to the petiole articulation, alveolate. Fore leg and mid leg mostly nitid except faintly imbricate or prelate ventrally, gradually fading from brown to light brown towards apices sculpture. Hind leg fading from brown to light brown apically.

FIGURES 2–4. *Alobevania* head, anterior view; scale bars = 0.25 mm. 2) *A. gattiae* (Morphbank), 3) *A. longisaeta* (Morphbank), 4) *A. tavaresi* (Morphbank).

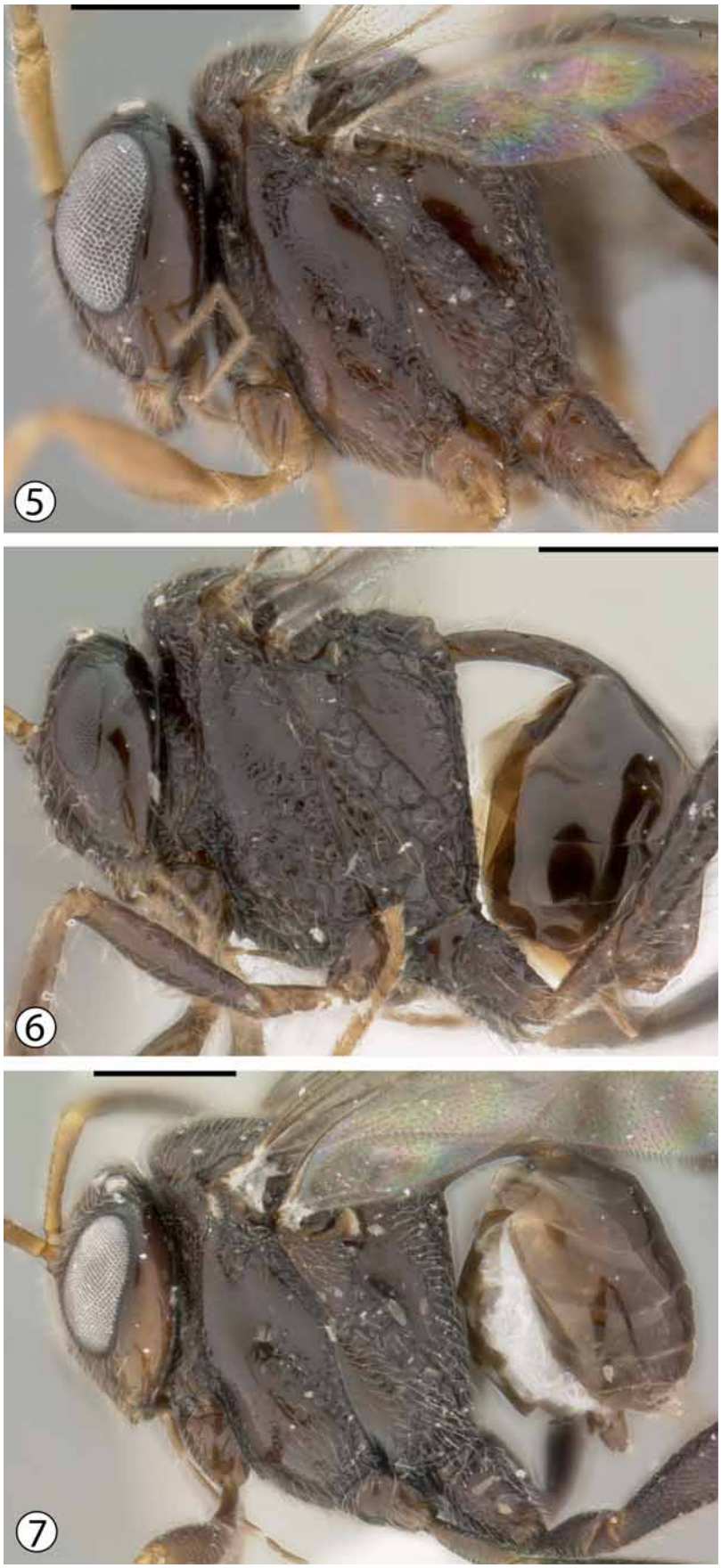
Wings: Fore wing with 6 cells enclosed by tubular veins. 1st subdiscal cell open, 2A and 2cu-a absent. 3CU vein spectral. Hind wing with three adjacent hamuli.

Metasoma: Gaster elliptical, much less than half the size of the mesosoma in lateral view. Petiole 4 times longer than medial width, as wide as high, arched dorsally; rugose laterally; slightly flared posteriorly (expanding in width and height).

Female description: As for male except: eye strongly elliptical, smaller (0.5 times head height), flatter. Flagellomeres brown (apical flagellomere light brown to yellow), widened progressively towards apex. Frons nitid and shiny. Notaulus sinuous, not widening posteriorly. Gaster half as large as mesosoma in lateral view. Ovipositor sheaths bare except for tuft of setae/sensilla at apex. Ovipositor short (about as long as petiole), straight, and usually concealed within metasoma.

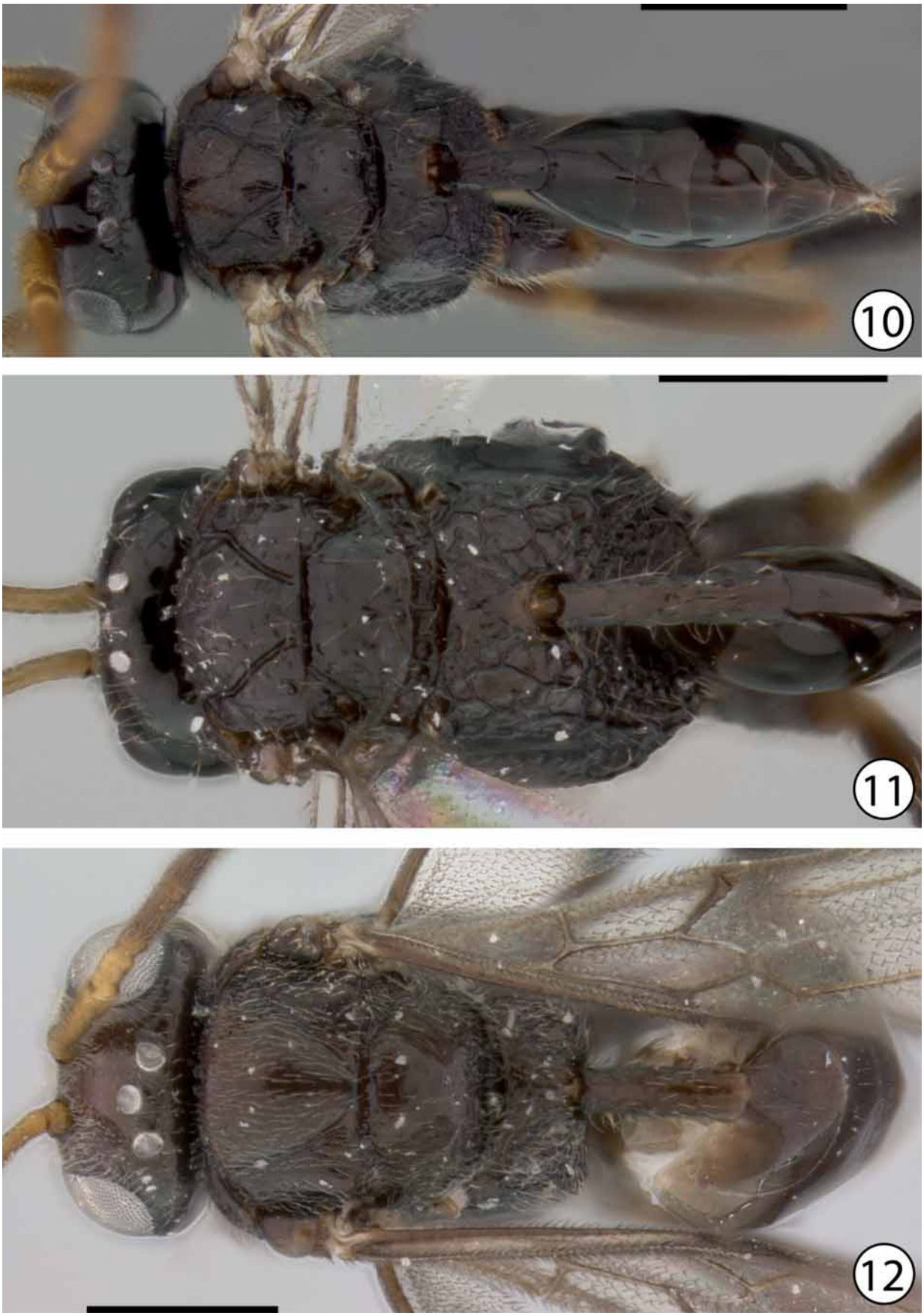
Holotype: male, COSTA RICA, Prov[incia de] Heredia, 11 Km ESE La Virgen, 10.35º N 84.05º W, 250–350 m elev[ation], 21.iii–06.iv.2004, INBio-OET-ALAS transect, 03/M/11/071, voucher DERV091g (INBio) [Morphbank].

Allotype: female, COSTA RICA, Prov[incia de] Heredia, 11 Km ESE La Virgen, 10.35º N 84.05º W, 250–350 m elev[ation], INBio-OET-ALAS transect, 03/M/06/086, 06–18.iv.2004, voucher DERV091h (INBio) [Morphbank].



FIGURES 5–7. *Alobevania* lateral mesosoma; scale bars = 0.5 mm. 5) *A. gattiae* (Morphbank), 6) *A. longisaeta* (Morphbank), 7) *A. tavaresi* (Morphbank).

FIGURES 8–9. *Alobevania* lateral habitus, showing sexual dimorphism; scale bars = 1.0 mm. 8) *A. gattiae* male (Morphbank), 9) *A. longisaeta* female (Morphbank).



FIGURES 10–12. *Alobevania* dorsal mesosoma and head; scale bars = 0.5 mm. 10) *A. gattiae* (Morphbank), 11) *A. longisaeta* (Morphbank), 12) *A. tavaresi* (Morphbank).

Paratypes: 1 female, BRAZIL, Jacareacanga, Pará, XI-68, Moacir Alvarenga, voucher DERV097f (AEIC) [Morphbank]. 2 females, BRAZIL: Utinga, Belém, XII.'66, S. J. Oliviera voucher DERV097g (AEIC) [Morphbank], DERV097h (AEIC) [Morphbank]. 1 male, BRAZIL: Manaus, June '72, Amaz[onas], F. M. Oliviera, voucher DERV097i (AEIC) [Morphbank]. 1 male, COSTA RICA: F. La Selva, 3 Km, S P[uer]to Viejo, 10º26'N 84º01'W, 26.vi.1985, H.A. Hespenheide [collector], voucher DERV091m (INBio) [Morphbank]. 1 male, COSTA RICA: 10 Km SE La Virgen, immediate vicinity of El Ceibo station, on west side of Rio Peje, 10.333º N 84.083º W, 450–550 m elev[ation], 24.ii–11.iii.2003, INBio-OET-ALAS transect, 05/M/10/030, voucher DERV091k (NCSU) [Morphbank]; 1 female at same locality, 05/M/01/021, voucher DERV091b (NCSU); 2 females at same locality, 05/TN/01/011, 12–23.iii.2003, vouchers DERV091e (NCSU), DERV091j (CNC); 2 females at same locality, 05/M/02/082, 08–20.iv.2003, vouchers DERV091i (INBio), DERV091f (INBio). 1 male at same locality, 23.iii.2003–8.iv.2003, voucher DERV091c (NCSU); 1 male, COSTA RICA: Heredia Prov., 11km ESE La Virgen, 10.35ºN, 84.05ºW, 22.ii.2004–9.iii.2004, OET-ALAS-INBio Malaise trap, voucher DERV091d (NCSU). 1 male, M. Antonio Natl. Pk. [=Manuel Antonio National Park] VIII.28.86 Masner, voucher DERV097a (AEIC) [Morphbank]. 1 male, COLOMBIA: Amazonas, PNN [Parque Nacional Naturale] Amayacu, Cabaña Lorena, 3.000º S 69.983º N, 210 m elev[ation], 27.viii.2001, M.2234, D. Campos [collector], voucher DERV092a (IAVH); 1 male, COLOMBIA: Amazonas, PNN [Parque Nacional Naturale] Amayacu, Matamata, 3.683º S 70.25º W, 150 m, 30.x–11.xi.2000, Malaise trap, A. Parente [collector], voucher DERV092c, (IAVH) [Morphbank]. 1 male at same locality, 2.iv.2001–16.iv.2001, D. Chota, Malaise trap, voucher DERV092b (NCSU). 1 male, ECUADOR: Sucumbios, Rio Napo, Sacha Lodge, 0º 30'S 76º 30'W, 220–230 m, 22.ii–4.iii.1994, M[alaise]T[rap], P. Hibbs col[lector], DERV091n (CNC) [Morpbank]. 1 male, ECUADOR: Coca, May 1965, Luis Peña, voucher DERV097d (AEIC) [Morphbank]. 1 male, ECUADOR: Napo & Coca Rivers, V.2–10.65, Luis Peña, voucher DERV097e (AEIC) [Morphbank]. 1 male, PERU: Quincemil, 750m nr. Marcapata, September, 1962, Luis Peña, voucher DERV097b (AEIC) [Morphbank]. 1 male, PERU: Junin, Satipo, I.19.84, Lars Huggert, voucher DERV097c (AEIC) [Morphbank].

Etymology: The specific epithet is a patronym honoring Andressa Gatti, colleague and defender of Mata Atlântica rain forest conservation.

Web resources: ZooBank LSID; Morphbank image collection; Evanioidea Online descriptive Web page; ToL taxon Web page.

Remarks: *Alobevania gattiae* has the widest biogeographic range of any *Alobevania*, with collecting events throughout the Amazon Basin and into southern Central America.

Alobevania tavaresi Kawada & Deans, n. sp.

(Figs. 4, 7, 12)

Male. Head: Lower face with pale area medially. Torulus above midline of eye. Thin, short carina between toruli, ending in the middle of the frons. Eye 0.4 times head height. Epistomal declivity of clypeus divergent. Gena nitid, sometimes lighter brown. Malar space 0.4 times eye height. Clypeal process evenly round but appearing pinched. Vertex obscurely punctuate. Scape and pedicel brown (lighter than flagellum). Flagellomeres 1–5 uniformly brown; flagellomeres 6–11 light brown to yellow ventrally. Mandible light brown, with reddish margins and 4 reddish teeth on anterior face of mandible (5 teeth total).

Mesosoma: Propleuron punctuate. Mesopleuron nitid medially (in concave area); Antero-dorsal corner of mesopleuron with rugulose patch. foveolate on ventral third; posterior edge with areolate trough. Mesoscutum and scutellum nitid to obscurely punctuate, evenly brown. Notaulus nearly linear to obscuring sinuous. Parapsidal furrow present as an obvious line. Tegula dark brown. Metapleuron rugulose dorsally, becoming areolate posteriorly (at the articulation with the propodeum); nitid anteriorly, with some punctures ventrally.

Mesosternum mostly nitid. Metasternum densely rugose. Posterior face of propodeum (ventral to the articulation with the petiole) alveolate; dorsal surface of the propodeum rugose. Legs fade to lighter brown towards apices. Mid and hind tibiae sometimes with light brown patches on posterior surfaces. Hind leg faintly imbricate, with short setae.

Wings: Fore wing with 6 cells enclosed by tubular veins. 2Mb and 3M vein spectral. 3CU vein nebulous. Hind wing with three adjacent hamuli.

Metasoma: Gaster elliptical, much less than half the size of the mesosoma in lateral view. Petiole arched dorsally, setose, 5 times longer than medial width, as tall as wide, flaring posteriorly; lateral surface rugulose; dorsal and ventral surfaces faintly rugulose.

Female description: As for male except: eye strongly elliptical, flatter, smaller (0.6 times head height). Mesopleuron foveolate-punctate ventrally. Notaulus sinuate. Tegula light brown. Petiole 4 times longer than medial width. Gaster only slightly smaller than mesosoma in lateral view. Ovipositor short, straight, concealed.

Holotype: male, VENEZUELA, Aragua, Parque Nacional H[enri] Pittier, Rancho Grande, env[irons], 1100m, 09.iv.1994, L. Masner col[lector], V94-SS, voucher DERV094a (CNC) [Morphbank].

Paratypes: 2 males, VENEZUELA, Aragua, Parque Nacional H[enri] Pittier, Rancho Grande, env[irons], 1100m, 09.iv.1994, L. Masner col[lector], V94-SS, voucher DERV096a (NCSU) [Morphbank], voucher DERV096b (CNC) [Morphbank]. 1 female, VENEZUELA: Aragua, Rancho Grande: 9.vii.1988–27.vii.1988, C. Porter & L. Stange, Malaise trap, voucher DERV100a (FSCA) [Morphbank]. 3 males, same locality, voucher DERV100b (FSCA) [Morphbank], voucher DERV100c (FSCA) [Morphbank] , voucher DERV100d (FSCA) [Morphbank]. 1 male, same locality, 5.vii.1988–8.vii.1988, voucher DERV100e (FSCA) [Morphbank]

Etymology: The specific epithet is a patronym honoring Marcelo T. Tavares, professor and researcher of Chalcididae at Universidade Federal do Espírito Santo, Brazil.

Web resources: ZooBank LSID; Morphbank image collection; Evanioidea Online descriptive Web page; ToL taxon Web page.

Remarks: *Alobevania tavaresi* has the most restrictive range of these three species, with collecting events coming from a single locality in Venezuela. This is also the largest species of *Alobevania*, with most specimens measuring up to 3.0 mm in length (head to metasoma).

***Alobevania longisaeta* Kawada & Deans, n. sp.**

(Figs. 4, 7, 11)

Male. Head: Lower face uniformly brown, setose medially, sparsely setose laterally. Torulus at midline of eye. Area between toruli without carina but raised as smooth, convex area. Eye 0.4 times head height. Epistomal declivity of clypeus short, diverging slightly. Gena nitid, denudate. Malar space 0.67 times eye height. Clypeal process evenly round, not pinched in appearance. Vertex defined by slight, irregular surface sculpture. Scape and pedicel light brown to yellow. Flagellomere evenly brown. Mandible light brown, with 3 reddish teeth on anterior face (4 teeth total).

Mesosoma: Less rhomboid and more rectangular; more strongly sculpted than other species and covered in long setae. Propleuron rugose. Ventral half of mesopleuron areolate, medially nitid (anterior half of concave area). Mesoscutum and scutellum faintly rugulose. Notaulus nearly linear (only very slightly sinuous). Parapsidal furrow present as obscure line. Tegula light brown. Metapleuron areolate. Mesosternum rugose laterally, irregularly areolate medially. Propodeum long, greater or equal than half length of petiole; dorsally without areolate to rugulose sculpture, laterally nitid; propodeal area ventral to petiole flat. Propodeum dorsally rugose; lateral and posterior faces of propodeum alveolate-areolate. Legs covered with long setae, uni-

formly brown except fore leg tibia and tarsus light brown. Hind coxae punctuate-rugulose. Hind and mid trochanters, femora, and tibiae punctuate-perlate.

Wings: Fore wing with 7 cells enclosed by tubular veins. 2Mb, 3M, and 3CU veins spectral. 1RS vein attached to Sc+R at stigmal vein. Hind wing with 4 hamuli; proximal hamulus separate from the others and more erect. One specimen (DERV099a) with teratological wing vein deformations (see Mani & Muzaffer (1944) for examples observed in *Evania appendigaster* (L.)).

Metasoma: Gaster elliptical, much less than half the size of the mesosoma in lateral view. Petiole >6 times longer than width, even wide along its length, rugose laterally, rugulose dorsally and ventrally, and with long setae.

Female description: As for male except: eye strongly elliptical, smaller, flatter. Gena nitid.Vertex not obviously distinguished by sculpture. Scape, pedicel light brown to yellow. Flagellum brown. Notauli sinuous. Mesopleuron ventrally alveolate, irregularly areolate medially (in median depression), nitid dorsal to the median depression; antero-dorsal corner of propodeum punctate. Propodeum laterally with large nitid to slightly rugulose areas; alveolate dorsal of those areas and on posterior face of the propodeum ventral to the articulation with the petiole. Petiole with irregular, parallel rugae dorsally. Ovipositor straight, as long as petiole (i.e., slightly longer than in *A. gattiae*) concealed within metasoma.

Holotype: female. BRAZIL, Paráná, Morretes, Parque Estadual do Pau Oco, 25º 37' 37.2"S 48º 53' 53.7"W, 10–13.iv.2002, M[alaise] T[rap] T3, M. T. Tavares & equipe col[lector], voucher DERV095a (UFES) [Morphbank].

Paratype: 1 female, BRAZIL: Rio de Janeiro, Teresópolis, Parque Nacional da Serra dos Órgãos, 22°26'S 42°56'W, YPT - vertical B2, 30.x–05.xi.2004, Peronti, A.L.B.G. & equipe col., voucher DERV097j (UFES). 1 male, BRAZIL: Minas Gerais, Serra do Caraça, S. Barbara, F. M. Oliveira, voucher DERV099a (AEIC) [Morphbank]. BRAZIL, Rio de Janeiro, Teresópolis, Sítio Davi, 22°26'S 42°56'W, 3–7.viii.2004, YPT-Vertical A1, ALBG Peronti & ML Silva col., voucher DERV099b (UFES). 1 femal e, BRAZIL: Espírito Santo, Santa Maria de Jetiba, Fazenda Paulo Seick, 20º02'S 40º41'W, 29.xi–6.xii.2002, MT, MT Tavares, CO Azevedo & eq. col., voucher DERV099c (UFES).

Etymology: The specific epithet is a combination of *longus* (Latin meaning, "long") and *saeta* (Latin meaning, “setae”).

Web resources: ZooBank LSID; Morphbank image collection; Evanioidea Online descriptive Web page; ToL taxon Web page.

Remarks: *Alobevania longisaeta* is found throughout the Atlantic forests of eastern Brazil.

Dichotomous Key to Species of *Alobevania*

1. Legs and soma covered in long setae; fore wing 1st subdiscal cell closed (Fig. 9); mandible with 3 teeth on anterior face (Fig. 3); petiole 6 times longer than wide, evenly wide from anterior end to posterior end (Fig. 11); collected in southeastern Brazil..... *Alobevania longisaeta* Kawada & Deans
- Legs and soma covered in short setae; fore wing 1st subdiscal cell open (Figs. 8, 13); mandible with 4 teeth on anterior face (Fig. 2); petiole 3–5 times longer than wide, gradually wider posteriorly (Figs. 10, 12); collected in Central or South America 2

2(1). Soma relatively small, ~2 mm from head to metasoma; face uniformly brown (Fig. 2); hind tibiae without yellow patches; collected in Central America or the Amazon basin .... *Alobevania gattiae* Kawada & Deans
- Soma relatively large, ~3 mm from head to metasoma; face (Fig. 4) with yellow to light brown patch medially; hind tibiae with yellow patches; collected in northern Venezuela..... ..... *Alobevania tavaresi* Kawada & Deans

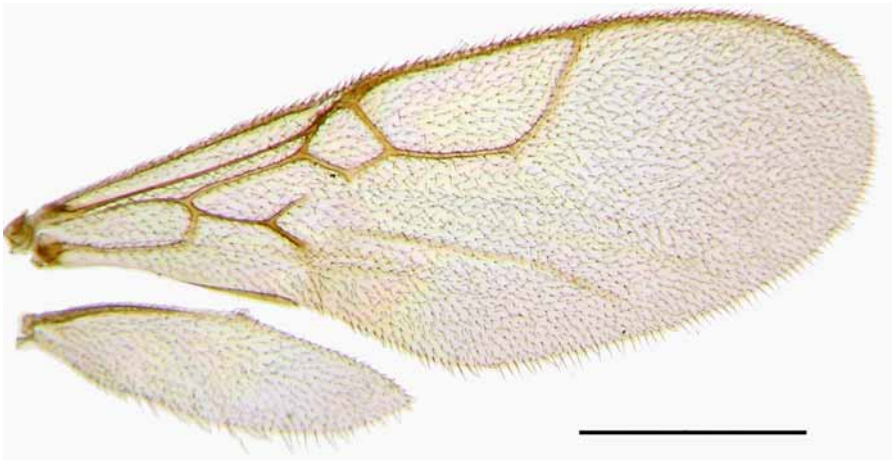


FIGURE 13. *Alobevania gattiae* wings; scale bar = 0.5 mm (Morphbank).

Acknowledgments

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Appendix. URLs for embedded links

Authors
Andrew R. Deans: urn:lsid:zoobank.org:author:7FE1A5BC-A6C3-4055-98EC-9B54A3A5A786
Ricardo Kawada: urn:lsid:zoobank.org:author:839A3861-8EFC-4F22-8721-070E6E48E051

Abstract
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LSID: urn:lsid:zoobank.org:specimen:36C9BB9C-3BE9-4ACF-A250-6E349852459C
Morphbank collection: http://morphbank.net/Show/?id=224603
DERV099b

LSID: urn:lsid:zoobank.org:specimen:FD52E09C-BAE8-403D-92B6-9399E385C7B4
DERV099c LSID:
urn:lsid:zoobank.org:specimen:69149D42-8B3E-417F-9D43-AC9DE70AA776
Alobevania longisaeta LSID: urn:lsid:zoobank.org:act:EE1D2D57-9B1C-45C1-8CC8-ECA62981D012
Morphbank collection: http://morphbank.net/Show/?id=221259
Alobevania longisaeta Web page: http://purl.oclc.org/NET/alobevanialongisaeta
Tree of Life Web Project (*Alobevania longisaeta*): http://tolweb.org/Alobevania_longisaeta

***Alobevania* key**
Evanioidea Online Alobevania key: http://purl.oclc.org/NET/evanioidea/alobevaniakey
Morphbank annotation: http://morphbank.net/Show/?id=225904
Morphbank annotation: http://morphbank.net/Show/?id=226323
Morphbank annotation: http://morphbank.net/Show/?id=226330
Alobevania longisaeta Web page: http://purl.oclc.org/NET/alobevanialongisaeta
Morphbank annotation: http://morphbank.net/Show/?id=225903
Morphbank annotation: http://morphbank.net/Show/?id=226325
Morphbank annotation: http://morphbank.net/Show/?id=226329
Morphbank annotation: http://morphbank.net/Show/?id=226837
Alobevania gattiae Web page: http://purl.oclc.org/NET/alobevaniagattiae
Morphbank annotation: http://morphbank.net/Show/?id=226836
Alobevania tavaresi Web page: http://purl.oclc.org/NET/alobevaniatavaresi

Figure legends
Morphbank image: http://morphbank.net/Show/?id=211896
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Morphbank image: http://morphbank.net/Show/?id=202733
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Morphbank image: http://morphbank.net/Show/?id=202702
Morphbank image: http://morphbank.net/Show/?id=135677
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Morphbank image: http://morphbank.net/Show/?id=202709
Morphbank image: http://morphbank.net/Show/?id=134079

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