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Remarks on the genus *Raptrix* Terra 1995 (Mantodea, Acontiothespinae) with a description of two new species

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Abstract

The species of the genus *Raptrix* Terra are revised. Of the 3 known species, only *R. perspicua* (F.) is recognized as valid. *A. westwoodi* Saussure & Zehntner, previously treated as synonym of *R. perspicua*, is returned to species status. *R. occidentalis* and *R. intermedia* are new species. As regards their specific differentiation, a parapatric speciation mechanism is supposed.

Key words

taxonomy, new taxa, biogeography

Introduction

The Neotropical genus *Raptrix* is composed of several species of rather small Acontistini. Three species were previously recognized: *R. fusca* (Olivier) from French Guyana, Suriname, Brazil and Bolivia; *R. fuscata* (Stoll) from Suriname and *R. perspicua* (F.) from Colombia, Ecuador, French Guyana, and Brazil. They are known only from a few specimens, with some represented only by one sex. The species definitions of older authors lack detail. Taxonomically these species have had little treatment; initially they were keyed and catalogued as belonging to the genus *Acontista* by Giglio-Tos (1927) and Beier (1935); subsequently Terra (1995) transferred them to a new genus, *Raptrix*, that he instituted. *R. fusca* and *R. fuscata*, as will be discussed later, must be considered synonyms of *R. perspicua;* therefore we can assign to the genus *Raptrix* the species *R perspicua* and 2 species new to science as described below.

Materials and methods

This work is based on the holotype of *R. perspicua* and on 88 specimens from the following collections: Academy of Natural Sciences of Philadelphia (ANSP); Carnegie Museum of Natural History, Pittsburgh (CMNH); Department of Animal Biology of Catania (DBUC); Muséum National d'Histoire Naturelle de Paris (MNHN); Muséum d'Histoire Naturelle de la Ville de Géneve (MHNG); Natural History Museum London (NHML); Pontificia Universidad del Ecuador, Departamento de Biologia y Museo, Quito (QCAZ); Universidad Nacional Agraria "La Molina", Museo de Entomologia, Lima (UNALM); Zoologische Staatssammlung München (ZSM); Museum für Naturkunde der Humboldt-Universität zu Berlin (ZMB).

Drawings were made using a Leica MZ8 stereomicroscope and camera lucida. Anatomical terminology follows Snodgrass (1935), except that for the copulatory apparatus: it follows La Greca (1954). The measurements were made using a Leitz stereomicroscope.

Genus *Raptrix* Terra
Raptrix Terra, 1995
Type species. *Mantis perspicua* Fabricius 1787.

The genus *Raptrix* has the following diagnostic features: body about 20 to 30 mm in length, tegument brown with scattered dark spots. Head longer than wide; parietal sutures very deep, delimiting a tripartite area of which the middle region is more prominent (Fig. 1); frontal shield with middle dimple; pronotum short (Fig. 2); supracoxal dilatation distinct. Anterior femora robust; 5 small external spines, 13 to 15 internal spines and 3 discoidal spines (Fig. 3). Tibiae with 15 to 16 short inclined external spines; 14 to 15 internal spines. Wings of males hyaline, extending well beyond apex of abdomen, with dark oblique band sometimes absent. Wings of females do not reach apex of abdomen: mesothoracic wings opaque with an oblique, dark band at center of discoidal area; metathoracic wings brown with small hyaline concentric ivory windows. Ventral phallomere elongated (Fig. 4c), with elongated basal process (bp) and short distal process (dp). Left phallomere well sclerotized (Fig. 4a,b); phalloid apophysis (pa) membranous, covered irregularly by sparse spines; ventral lamina (vl) wide with an elongated apical process (ap) and a very distinct anterior process (anp).

Raptrix perspicua (Fabricius 1787)

Mantis perspicua Fabricius 1787.
Mantis fusca Olivier,1792 (n. syn.).
Mantis fuscata Stoll, 1813 (n. syn.).
Mantis truncata, Lichtenstein 1802; Stoll 1813.
Mantis multistriata, Serville, 1839; Saussure, 1869.
Acontista westwoodi Saussure & Zehntner, 1894 (*partim*: Brazil).
Acontista fusca, Giglio-Tos 1927 (*partim*: Guyana, Suriname, Brazil).
Acontista elegans, Saussure 1869.
Acontista perspicua, Saussure 1871; Chopard 1912; Chopard 1916; Giglio- Tos 1927 (*partim*: Guyana, Brazil).
Acontista truncata, Saussure 1871, 1872; Westwood 1889; Saussure & Zehntner 1894; Giglio-Tos 1898.
Acontista fuscata, Kirby 1904.
Acontiothespis perspicua, Werner 1922.
Acontiothespis fusca, La Greca 1939.
Raptrix perspicua, Terra 1995 (*partim*: French Guyana, Brazil); Ehrmann 2002 (*partim*: Brazil, Guyana, Suriname, Venezuela).
Raptrix fusca, Terra 1995 (*partim*: French Guyana, Suriname, Brazil); Ehrmann 2002 (*partim*: French Guyana, Guyana, Suriname, north Brazil, Venezuela).
Raptrix fuscata, Terra 1995; Ehrmann 2002.

Material examined.—**Venezuela**: 1♂, Las Claritas, Guayana, 15/VIII/1988, leg. N. Flauger (ZMB).
Suriname: 1♂, Powakka, 25/IX/1966, leg. M.H. de la Fuente (CMNH).
French Guyana:2 ♂♂, Kaw, 3/XII/1983, leg. Norton. S. Adams (CMNH); 2 ♂♂, Pied Saut (Oyapok River), XII/1917, leg. S. M. Klages (ANSP); 1 ♂ n.d. leg. Verdier (MNHN); 3 ♂♂, Saul, 29-31/X/1969, leg. Balachowsky-Gruner (MNHN); 1 ♂, 11/IX/1969, M. Alikene (Riviere Camopi), leg. Balachowsky-Gruner (MNHN); 2 ♂♂, Belizon, V/2001, leg. V. Giuglaris (coll. Lombardo); 20 ♂♂, Kaw, VII/2001, leg. V. Giuglaris (coll. Lombardo); 3 ♀♀, Cayenne (MHNG).
Brazil: 15 ♂♂, Tucuruì (Para), I/1979, leg. M. Alvarenga (CMNH); 1 ♀, Santarem (Para), VII/1919, leg. S. M. Klages (ANSP); 1♀, Tonantins, VIII/1923, leg. S. M. Klages (ANSP).

Diagnosis.— Male slender, body 25 to 26 mm in length; wings hyaline with 2 dark bands: one in middle discoidal area, second in preapical position. Female more robust than male; body 28 to 29 mm in length; mesothoracic wings opaque; metathoracic wings hyaline-chestnut with concentric small ivory windows.

Re-description male.—**Head:** 1.54 × as wide as pronotum supracoxal dilatation; ochre with dark streaks. Vertex arcuate; front concave; parietal sutures very deep, delimiting tripartite central area moderately prominent (Fig. 1a); eyes kidney-shaped; ocelli big, on large ochraceous base. Frontal shield transverse, pentagonal; upper margin sinuous; discoidal area with middle dimple. Antennae short, scapus and flagellum ochre. Palpi ochre; last article with dark band sometimes reduced or completely cancelled.
Thorax: Pronotum short, 4.15 × as long as its minimum width (Fig. 2a), ochre with dark streaks. Supracoxal dilatation distinct, lateral margins narrowed to about half of the metazona. Metazona 1.6 × as long as prozona. Anterior legs well developed and robust. Anterior coxae ochre, prismatic with a quadrangular section, margins smooth, internal surface ochre. Apical lobes divergent, with external one larger. Internal surface of trochanter dark. Femora (Fig. 3a) enlarged, 1.02 × as long as pronotum; internal surface ochre with 2 irregular dark spots, of which the distal is often reduced or absent, a dark spot is found on both sides of the solcus of the claw; 5 small external spines, ochre with black apex, 13 internal spines of which the larger ones are either ochre with black apex, or all dark; a dark spot is found at the base. Tibiae ochre, 15 to 16 short inclined external spines, 14 to 15 internal spines all ochre with dark apex. Middle femora 1.41 × as long as pronotum; ochre in color, with 3 transverse dark strips. Metatarsi shorter than all other articles together. Wings well developed, extending well beyond abdominal apex. Tegminae hyaline, about 4.2 × as long as their maximum width; costal area opaque and dark-brown; discoidal area hyaline and transparent, with median oblique brown strip with irregular outline; preapical area with small brown spot, absent in some specimens from Para. Stigma rounded, shiny brown. Metathoracic wings hyaline, costal area opaque brown; discoidal area hyaline and transparent with opaque dark spot at the apex; anal area hyaline with narrow dark strip on posterior margin, sometimes not distinct.
Abdomen: Cylindrical, tergites shiny black, sternites ochre. Cerci not exceeding subgenital plate, 9 to 10 articles all cylindrical, wider than long, except the last which is conical. Supranal plate small with distal margin arcuate; subgenital plate asymmetrical, trapezoidal and with an incised apex.
External male genitalia: Ventral phallomere elongated, distal process short with acute apex (Fig. 6); anterior process very elongated, with apex turned posteriorly. Left phallomere well sclerotized (Figs 5a, 7); phalloid apophysis membranous, covered by sparse irregular spines. Ventral lamina wide, at 45° to dorsal lamina; apical process elongated; anterior process short, well sclerotized, turned posteriorly with internal dentate margin.

Re-description female.—**Head**: 1.36× as wide as the supracoxal dilatation, ochre with dark streaks. Vertex arcuate; front tripartite, of which central part is more prominent (Fig. 1b). Frontal shield transverse; upper margin sinuous; disc with wide middle dimple. Labial and maxillary palpi same as the male.
Thorax: Pronotum short (Fig. 2b) with smooth lateral margins, 3.5× as long as its minimum width; generally ochre with dark streaks. Supracoxal dilatation distinct, lateral margins rounded, gradually narrowing in first half. Posterior margin of metazona with 2 flattened middle tubercles. Anterior coxae as those of male but more robust. Anterior femora more robust than those of male, 1.10× as long as pronotum; external surface generally brown with small ochre spot; internal surface ochre with 2 brown strips on upper margin (Fig. 3e) or dark (Fig. 3f); solcus of claw dark; 5 external ochre spines with black apex; 3 ochre discoidal spines of which the third is black; 14 internal spines of which the large ones are black with ochre apex. Ratio length to width 2.93. Anterior tibiae with 17 short inclined external spines all ochre; 15 internal ochre spines. Middle femora ochre with 3 dark-brown curves, 0.65× as long as the pronotum. Wings less developed than male, not exceeding apex of abdomen. Tegminae opaque brown, 2.76× as long as their maximum width; acute apex; costal area more reduced in first 2/3 its length; discoidal area with two oblique dark bands; stigma longer than broad, chestnut in color. Metathoracic wings hyaline brown except narrow preapical light band on external margin of radial and costal area.
Abdomen: Rhomboidal, supranal plate small with acute distal margin.

Distribution.— *R. perspicua* is found in Venezuela, Guyana, Suriname, French Guyana and northeast Brazil.

Remarks.— *R. perspicua*, *R. fusca* and *R. fuscata* were distinguished only for some of the following chromatic characteristics: the large internal spines of the anterior femora, dark in *R. perspicua* and *R. fuscata*, ochre with a black apex in *R. fusca*; discoidal area of the tegmina with 2 black oblique bands in *R. fuscata* and *R. fusca*, bands absent in *R. perspicua*. The examination of the type of *R. perspicua* together with a large series of 54 specimens of both sexes from French Guyana and Suriname (typical areas for these 3 species), undoubtedly conspecific, since they do not show conflicting differences: the male genitalia have the same morphology (Figs 6, 7). These populations have all the chromatic models utilized in the past for the identification of the 3 species (plate I). Thus they cannot be maintained as separate and *R. fusca* and *R. fuscata* are to be considered synonyms for *R. perspicua*.

Raptrix intermedia n. sp.

Holotype.—♂: **BRAZIL**: Sinop (Mato Grosso) X/1976, leg. Alvarenga (CMNH).

Paratypes.— Same data and locality as holotype 7♂♂(CMNH).

Diagnosis.— Male slender, body 26 to 27 mm in length, morphologically similar to *R. perspicua* and with the same chromatic model, from which it differs above all for: the absence of an internal dark spot on the claw solcus; the different morphology of the external copulatory apparatus illustrated above. Female unknown.

Description male.—**Head:** 1.52 × as wide as pronotum supracoxal dilatation, ochre with dark streaks. Vertex arcuate; front tripartite of which the middle is moderately prominent (Fig. 1g); eyes kidney-shaped; ocelli big, with a dark band on a large ochraceous base. Frontal shield transverse, pentagonal; upper margin sinuous; discoidal area with middle dimple. Antennae short with scapus and flagellum ochre. Palpi ochre except the last segment which is dark.
Thorax: Pronotum about 4.05 × as long as its minimum width, ochre in color with dark streaks (Fig. 2g). Supracoxal dilatation sufficiently distinct, lateral margins gradually narrowing, extending well beyond half the length of the metazona. Metazona 1.6 × as long as prozona. Anterior legs well developed and robust. Anterior coxae ochre, prismatic with quadrangular section; lateral margins smooth; internal surface ochre; apical lobes divergent, with external one larger. Trochanter dark on internal surface. Femora enlarged, 1.03 × as long as pronotum; internal surface ochre with a dark spot about 1/3 distance from the base, a second dark spot is found on both sides of solcus of the claw; 5 small external ochre spines with black apex, 13 internal spines, of which the large ones are ochre or dark (Fig. 3b). Tibiae ochre; 16 to 17 short inclined external spines, 14 to 15 internal spines, all ochre with dark apex. Middle femora 1.40 × as long as pronotum; ochre in color, with 3 transverse dark stripes; internal surface with longitudinal sulcus adjoining tibia. Metatarsi shorter than all other articles together. Wings well developed, extending well beyond abdominal apex. Tegminae hyaline, about 4.5 × as long as their maximum width; costal area opaque dark-brown; discoidal area hyaline, transparent with a middle oblique brown stripe with irregular outline; preapical area with a small brown spot. Stigma rounded, shiny brown. Metathoracic wings hyaline, costal area opaque brown; discoidal area hyaline, transparent with opaque dark spot at apex; anal area hyaline and with a narrow dark strip on the posterior margin, sometimes not well distinct.
Abdomen: Cylindrical, tergites shiny black, sternites ochre. Cerci not exceeding subgenital-plate, 9 to 10 articles all cylindrical, wider than long, except the last which is conical. Supranal plate small, wider than long, with distal margin arcuate; subgenital plate asymmetrical, trapezoidal with very incised apex.
External male genitalia: Ventral phallomere (Fig. 8) more elongated than in *R. perspicua* with distal process long, narrow, well sclerotized; anterior process elongated hook-like. Left phallomere (Figs 5c, 9) well sclerotized; phalloid apophysis membranous with sparse irregular spines; ventral lamina large, quadrangular in shape, apical process smooth, small and turned posteriorly; dorsal lamina 0.5 × as wide as total width of phallomere; anterior process more narrow and longer than in *R. perspicua*, with numerous spines on internal margin.

Distribution.— *Raptrix intermedia* n. sp. is found in Mato Grosso (central-west Brazil).

Raptrix westwoodi (Saussure & Zehntner 1894)
Acontista westwoodi Saussure & Zehntner 1894.
Acontista perspicua, Giglio-Tos 1927 (*partim*: Colombia); Beier 1935 (*partim*: Colombia).
Raptrix perspicua, Terra 1995 (*partim*: Costa Rica, Colombia); Ehrman 2002 (*partim*: Costa Rica, Colombia).

Material examined.—
COSTA RICA: 1 ♂, Rancho Quemado, 200 m, Peninsula de Osa (Prov. Puntarenas), IV/1992, leg. K. Flores (coll. Lombardo).
COLOMBIA: 1 ♂ and 2 ♀♀ (MHNG).

Diagnosis.— Body 26 to 27 mm in length in males and 30 mm in female; morphologically similar to *R. perspicua* and with same chromatic model; differs in the following features: absence of dark band on discoidal area in males; protuberance of vertex more developed in females; hyaline band on external margin of discoidal and anal areas in females; distinctive morphology of external copulatory apparatus.

Description male.—**Head:** 1.54 × as wide as pronotum supracoxal dilatation, ochre with dark streaks (Fig. 1c). Vertex arcuate and on same line joining eyes; front tripartite with middle area very prominent; eyes kidney-shaped; ocelli big with dark strip, on large ochraceous base. Frontal shield transverse, pentagonal, upper margin sinuous; discoidal area with middle dimple. Antennae short with scapus and flagellum ochre. Palpi ochre.
Thorax: Pronotum short, about 4 × as long as its minimum width, ochre with dark streaks (Fig. 2c). Supracoxal dilatation distinct, lateral margins narrowed in first half of metazona. Metazona 1.66 × as long as prozona; posterior margin with two flattened tubercles. Anterior legs well developed and robust. Anterior coxae ochre, prismatic with quadrangular section; lateral margins smooth; internal surface uniformly ochre or with small central dark spot. Apical lobes divergent, with external one larger. Trochanter internally dark. Femora enlarged, 1.02 × as long as pronotum, triangular in shape; internal surface either all ochre or with dark spot at about 1/3 from base; solcus of claw with small dark spot; 5 small external ochre spines with black apices, 13 internal ochre spines of which the large ones are either ochre with black apex, or all dark (Fig. 3c). Tibiae ochre; 15 to 16 short inclined external spines, 14 to 15 internal spines all ochre with dark apex. Middle femora 1.41 × as long as pronotum; ochre in color, with 3 transversal dark stripes; internal surface with longitudinal sulcus adjoining tibia. Metatarsi shorter than all other articles together. Wings well developed, extending well beyond abdominal apex. Tegminae hyaline, about 4.06 × as long as their maximum width; costal area opaque-brown; discoidal area hyaline, transparent with or without a brown median stripe. Stigma shiny brown, rounded. Metathoracic wings hyaline, costal area opaque brown; discoidal area hyaline, transparent with an opaque dark spot at apex; anal area hyaline with narrow dark stripe on posterior margin, sometimes not distinct.
Abdomen: Cylindrical, tergites shiny black, sternites ochre. Cerci not exceeding subgenital-plate; 9 to 10 articles all cylindrical, wider than long, except the last which is conical. Supranal plate small with distal margin arcuate; subgenital plate asymmetrical, trapezoidal not incised to apex.

External male genitalia: Ventral phallomere (Fig. 10b,d) shorter than in *R. perspicua*, distal process short with acute apex; anterior process elongated. Left phallomere well sclerotized (Figs 5b, 10a-c); phalloid apophysys membranous with numerous irregularly short spines; ventral lamina with smooth apical process; anterior process short, stocky with irregular anterior margin and 2 robust marginal teeth. Dorsal lamina narrow not well developed, about 0.5 × as wide as total width of phallomere.

Description female.—
Head: 1.29 × as wide as supracoxal dilatation, ochre with dark streaks. Vertex arcuate, higher (than male) imaginary line joining apex of eyes; frons with tripartite area, of which the central is very prominent (Fig. 1d). Frontal shield transverse; upper margin sinuous; disc with wide central dimple; labial and maxillary palpi as those of male.
Thorax: Pronotum short (Fig. 2d); lateral margins smooth, 3.17 × as long as its minimum width, generally ochre. Supracoxal dilatation very distinct, lateral margins narrowed to about 1/3 of metazona. Metazona 1.40 × as long as prozona; posterior margin with 2 flattened tubercles. Anterior coxae ochre; lateral margins granulated; internal surface with central dark spot; posterior surface with series of small swellings. Anterior femora more robust than in the male, 1.15 × as long as pronotum; external surface generally brown with small ochre spot; internal surface brown with middle ochre spot; solcus of claw with dark spot; 5 external spines with black apices; 3 discoidal spines; 13 internal ochre spines with dark apices (Fig. 3g). Ratio length to width 3.20. Anterior tibiae ochre; 17 short inclined external spines all ochre; 15 internal spines all ochre. Middle femora 0.70 × pronotum length, ochre with 3 dark-brown curves. Middle tibiae as long as those of male. Wings not exceeding apex of abdomen. Tegmina opaque, generally brown; 2.58 × as long as their maximum width; apically acute; costal area apically more narrow; discoidal area with 2 oblique, dark bands; stigma longer than broad, shiny chestnut in color. Metathoracic wings hyaline brown, except a narrow preapical band on external margin of radial and costal area.
Abdomen: Rhomboidal; supranal plate small with acute distal margin.

Remarks.— *A. westwoodi*, described by Saussure & Zehntner (1894) based upon a female from Colombia and a male from Brazil, has been considered a synonym for *R. perspicua*; examination of the holotype female of *R. westwoodi* shows remarkable differences that distinguish it clearly from *R. perspicua*. These differences are: protuberance of vertex more developed in female of *R. westwoodi* (Figs 1b,d) and the presence of a hyaline band on the external margin of the discoidal and anal areas of the wings in the female of *R. westwoodi*. Thus it is necessary to re-evaluate *R. westwoodi* as a valid species, assigning to it only the female from Colombia: we believe that the male from Brazil must remain as a synonym of *R. perspicua*. Furthermore we assign to this species (*R. westwoodi*) two males from Colombia and Costa Rica because they exhibit no significant morphological differences with from the female holotype.

Distribution.— *R. westwoodi* is found in Costa Rica and Colombia

Raptrix occidentalis n. sp.

Acontista perspicua, Giglio-Tos 1927 (*partim*: Ecuador); Beier, 1935 (partim: Ecuador);
Acontista fusca, Giglio-Tos, 1927 (*partim*: Bolivia); Beier, 1935 (*partim*: Bolivia);
Raptrix perspicua, Terra, 1995 (*partim*: Ecuador);
Raptrix fusca, Terra, 1995 (*partim*: Bolivia); Ehrmann, 2002 (*partim*: Bolivia).

Material examined.—

Holotype.—♂: **ECUADOR:** Napo, Yasunì, 250m, 6/II/1997, leg. L. Tinpe (QCAZ).

Paratype.—♀: **PERU:** Rio Yubineto, Dept. Loreto, 1/VII-1/VIII/1978, leg. M. Descamps (MNHN).

Other Material examined.—
ECUADOR: 2♂♂, Napo, Puce, 400m, 23/IX/1995, leg. F. Salazar (coll. Lombardo); 1♂, Napo, Yasunì, 250m, 9/II/1997, leg. I. Tapia (QCAZ); 1♂, Napo, Yasunì, 250m, 10/II/1997, leg. D. Andrade (coll. Lombardo); 2♂♂, Napo, Yasunì, 250m, 2/VI/1997, leg. G. Onore (QCAZ); 1♂, Napo, Yasunì, 250m, 4/XII/1997, leg. G. Onore (QCAZ); 1♂, Napo, Rio Payamino, 300m, 25/VI/1997, leg. F. Salazar (coll. Lombardo).
PERU: 1♂, La Convencion (Cuzco), 25/IV/1998, leg. R. Acosta (UNALM); 1♂, La Convencion (Cuzco), 15/X/1998, leg. R. Acosta (UNALM).
BOLIVIA: 1♂, Tropica, Region Chapare, 400 m, 8/X/1948, leg. Zischka (ZSM); 2♂♂, Tropica, Region Chapare, 400 m, 25/VIII/1949, leg. Zischka (ZSM); 2♂♂, Tropica, Region Chapare, 400 m, 10/IX/1949, leg. Zischka (ZSM); 2♂♂, Tropica, Region Chapare, 400 m, 1/X/1950, leg. Zischka (ZSM); 2♂♂, Guanay, Region Chapare, X/1995 (coll. Lombardo).

Diagnosis.— Body 26 to 30 mm in length in males, 30 mm in females; morphologically similar to *R. perspicua* but generally more melanic, from which it differs by: a more elongated pronotum, abdominal tergites shiny black in females; the distinctive morphology of the external copulatory apparatus.

Description male.—
Head: 1.52 × as wide as pronotum supracoxal dilatation (Fig. 1e), ochre with dark streaks. Vertex arcuated; frons tripartite with middle area moderately prominent; eyes kidney-shaped; ocelli large on large ochraceous base. Frontal shield transverse, pentagonal; upper margin sinuous; discoidal area with middle dimple. Antennae short with scapus and flagellum ochre. Palpi generally ochre with the last article black.
Thorax: Pronotum short, about 4 × as long as its minimum width (Fig. 2e), ochre in color with dark streaks. Supracoxal dilatation distinct, lateral margins narrowed in first half of metazona. Metazona 1.65 × as long as prozone, posterior margin with 2 flattened tubercles. Anterior legs robust. Anterior coxae generally ochre streaked with brown, prismatic with quadrangular section, lateral margins smooth; internal surface with dark distal spot. Apical lobes divergent, with external one larger. Trochanter with internal surface dark. Femora enlarged, 1.03 × as long as pronotum; internal surface generally ochre, with 3 black bands (Fig. 3d); solcus of claw black; 5 small external spines ochre with black apex; 13 internal spines, of which the large ones are black except in some specimens from Bolivia where they are ochre or dark. Tibiae ochre; 14 to 16 short inclined external ochre spines, 14 to 15 internal ochre spines with dark apex. Middle femora 1.41 × as long as pronotum; ochre in color, with 3 dark transversal strips; internal surface with longitudinal sulcus

adjoining its respective tibia. Metatarsi shorter than all other articles together. Wings well developed, extending well beyond abdominal apex. Tegminae hyaline, about 4.3 × as long as their maximum width; costal area opaque, brown; discoidal area with a brown median strip with irregular outline; preapical area with a small brown spot, absent in some specimens from Para. Stigma rounded, shiny brown. Metathoracic wings hyaline, costal area opaque brown; discoidal area hyaline, transparent with opaque dark spot at apex; anal area hyaline and with narrow dark strip on posterior margin, sometimes not very distinct.

Abdomen: Cylindrical, tergites shiny black, sternites ochre. Cerci not exceeding subgenital-plate, they have 9 to 10 articles all cylindrical, wider than long, except the last which is conical. Supranal plate small with distal margin arcuate; subgenital plate asymmetrical, trapezoidal with incised apex.

External male genitalia: Ventral phallomere longer than wide (Fig. 11); distal process short with acute apex; anterior process smaller and more slender than in *R. perspicua*. Left phallomere well sclerotized (Figs 5d, 12); phalloid apophysis membranous with numerous irregular spines; ventral lamina large, trapezoidal; apical process elongated, smooth; anterior process very long, 0.5 × as long as length of ventral lamina, with numerous spines; posteriorly to anterior process is a round or subcircular lobe covered by small spines; dorsal lamina large.

Description female.—

Head: 1.33 × as wide as supracoxal dilatation, generally ochre with sparse small dark spots. Vertex arcuate, above imaginary line joining apex of eyes; front tripartite, of which central area is more developed(Fig. 1f). Frontal shield transverse with sinuous upper margin, disc with a wide central dimple; labial and maxillary palpi as those of male.

Thorax: Pronotum short (Fig. 2f); lateral margins smooth, 3.62× as long as their minimum width; generally ochre with dark streaks. Supracoxal dilatation wide, with rounded margins very reduced in the first 1/3 of metazona. Metazona 1.45 × as long as prozona; posterior margin with 2 middle flattened tubercles. Anterior coxae similar to those of male but more robust, internal surface with a middle black spot. Trochanter dark-brown. Anterior femora more robust than those of male, 1.10 × as long as pronotum (Fig. 3h); external surface generally brown with small ochre spot; internal surface ochre with 2 black stripes; 5 external spines with black apices; 3 discoidal spines, of which the third is black; 14 internal ochre spines with black apices. Ratio length to width 3.23. Anterior tibiae with 16 external short inclined ochre spines; 15 internal ochre spines with black apices. Middle femora ochre with 3 dark-brown curves, 0.64 × the length of the pronotum. Wings less developed than those of male, not exceeding apex of abdomen. Tegmina 2.76 × as long as their maximum width, opaque, generally brown. Costal area more reduced in first 2/3 of its length; discoidal area with 2 oblique dark bands; stigma longer than broad, shiny chestnut in color. Metathoracic wings hyaline brown, radial and costal area with light pre-apical band.

Abdomen: Rhomboidal; supranal plate small with acute distal margin.

Distribution.— R. occidentalis is found in Ecuador, Peru and Bolivia.

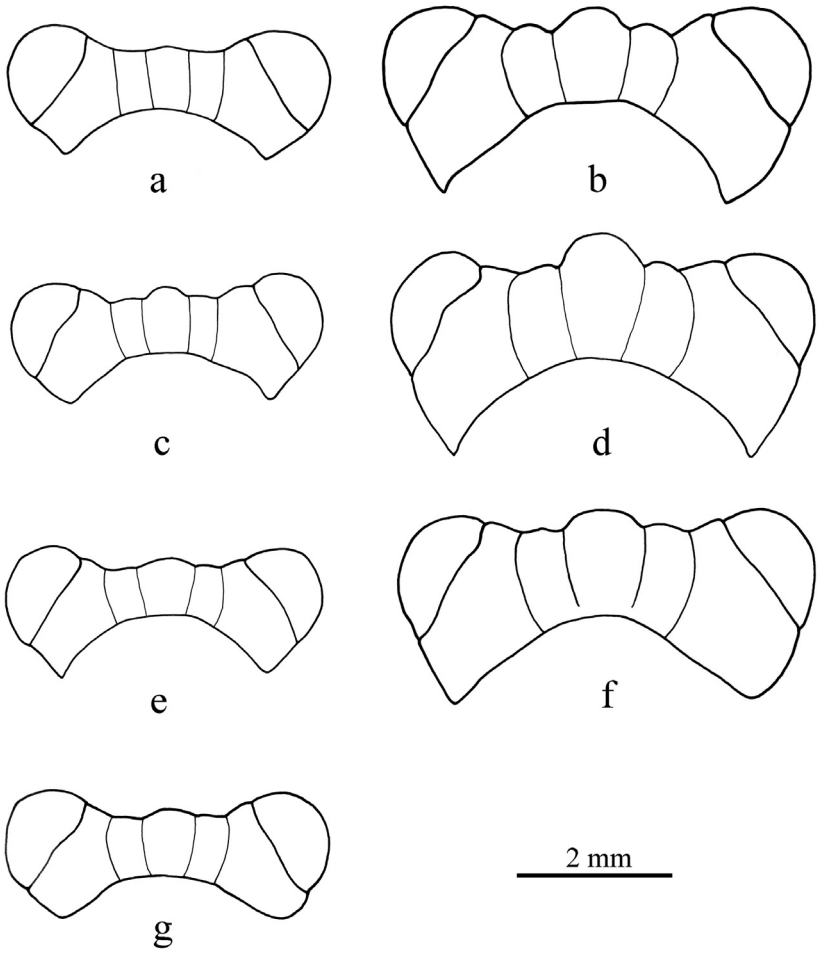

Fig. 1. Head: a,b, *Raptrix perspicua*, male and female; c,d, *R. westwoodi*, male and female; e,f, *R. occidentalis* n. sp., male and female; g, *R. intermedia* n. sp., male.

Conclusion

The genus *Raptrix* is distributed in the Neotropics from Costa Rica to Bolivia, throughout Venezuela, the Amazon basin and Guyanas and extends as far as central-west Brazil (Table I). In this large area the 4 species of the genus have a parapatric distribution, occupying contiguous areas without any overlapping (Fig. 13). *R. perpiscua* is found in Venezuela, Guyana, Suriname, French Guyana and northeast Brazil; *R. intermedia* is found in Mato Grosso (central-west Brazil); *R. westwoodi* is found in Costa Rica and Colombia; *R. occidentalis* is found in Ecuador, Peru and Bolivia. This model of distribution, together with the gradual variation of the length of the anterior process of the left phallomere (Fig. 13), leads us to suppose that the differentiation of these 4 species arose from the breaking up of a cline of the ancestral species. This mechanism is called "area effect" by Balletto (1995) and corresponds to a parapatric speciation mechanism (Bush 1975).

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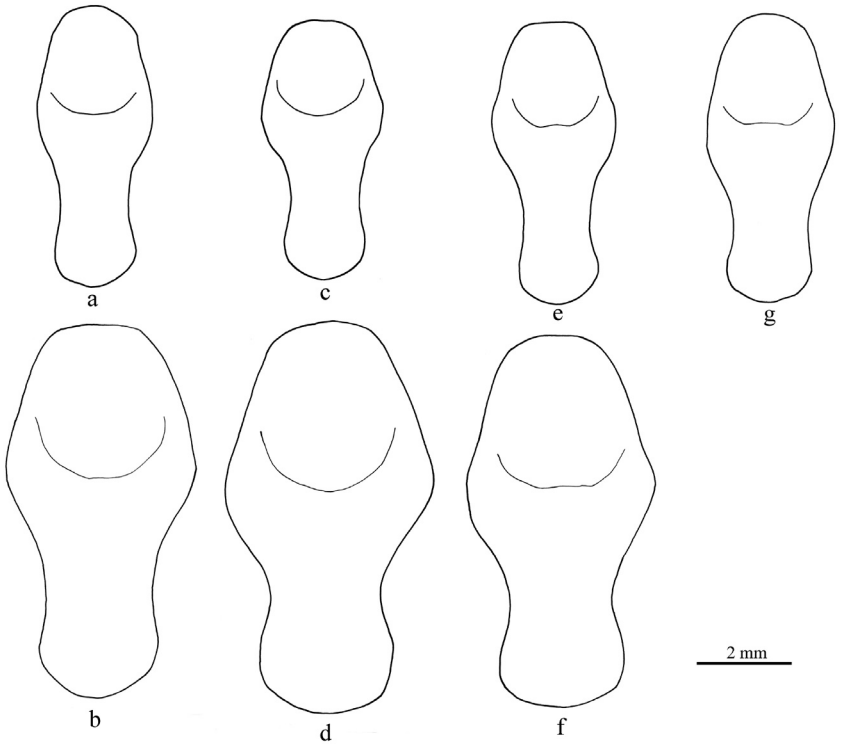

Fig. 2. Pronotum: a,b, *Raptrix perspicua*, male and female; c,d, *R. westwoodi*, male and female; e,f, *R. occidentalis* n. sp., male and female; g, *R. intermedia* n. sp., male.

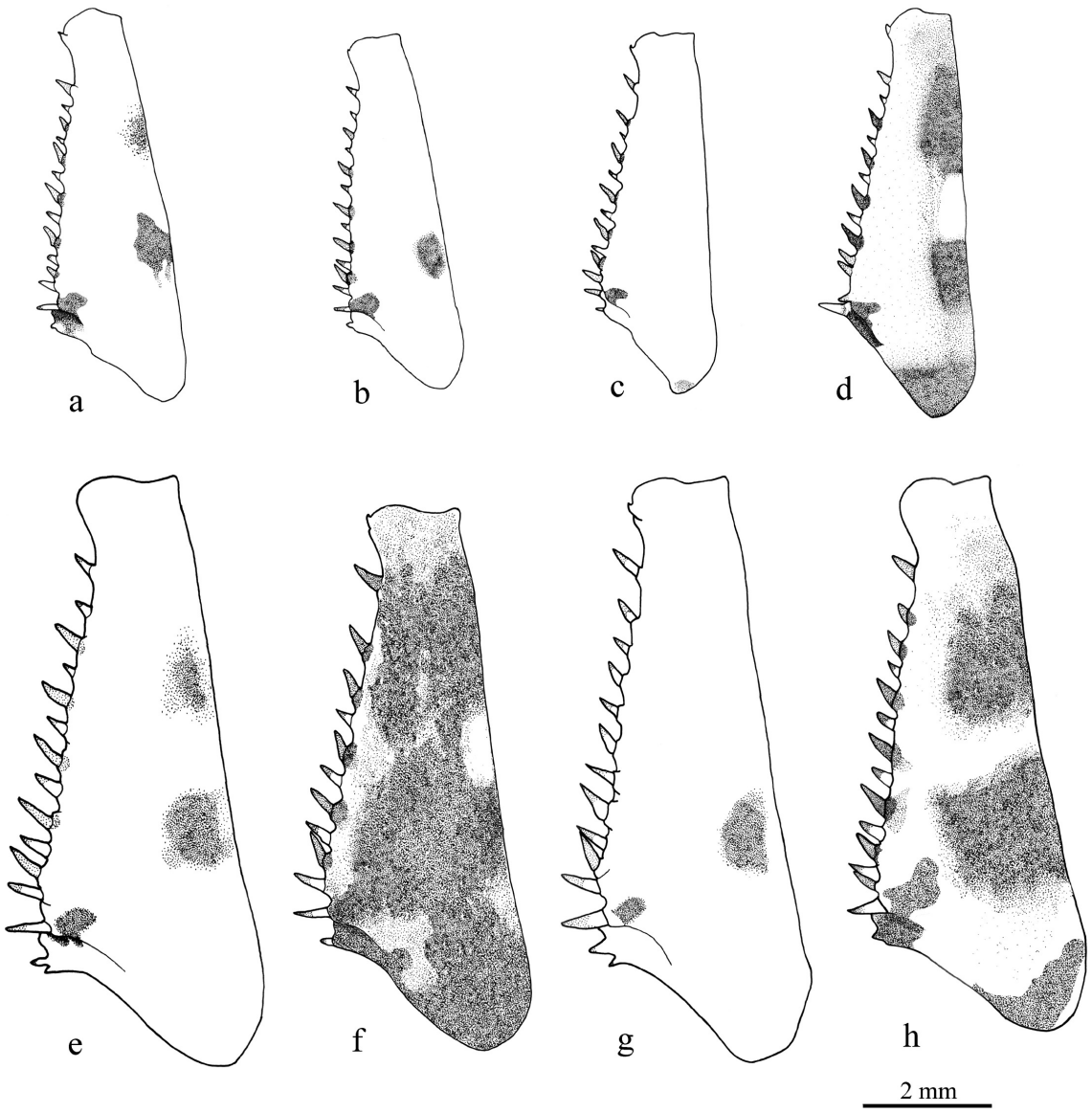

Fig. 3. Anterior femora: *Raptrix perspicua*, a, male and e,f, female (e, clear form; f, dark form); b, *R. intermedia* n. sp., male; c,g, *R. westwoodi*, male and female; d,h, *R. occidentalis* n. sp., male and female.

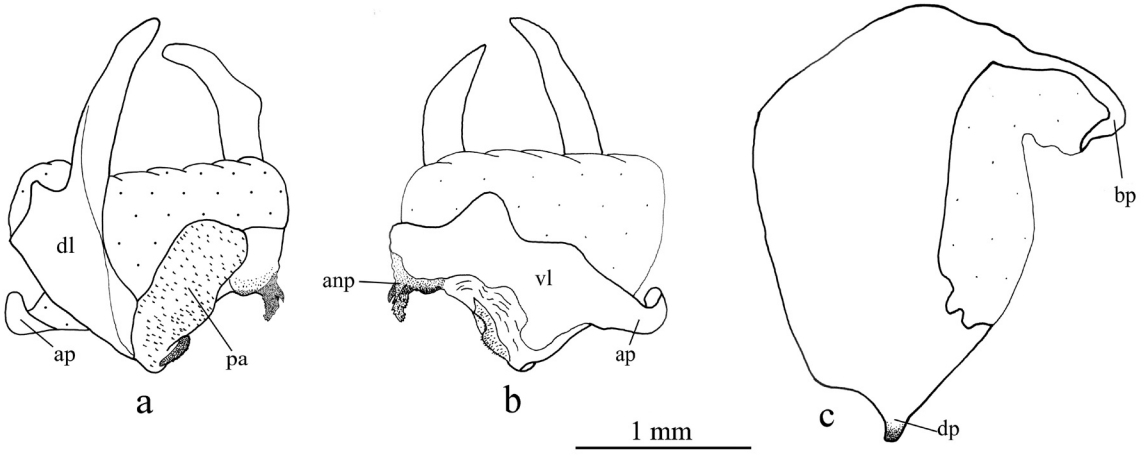

Fig. 4. External male genitalia of *Raptrix*: a,b, left phallomere (a, dorsal view; b, ventral view); c, ventral phallomere. anp, anterior process; ap, apical process; bp, basal process; dl, dorsal lamina; dp, distal process; pa, phalloid apophisys; vl, ventral lamina.

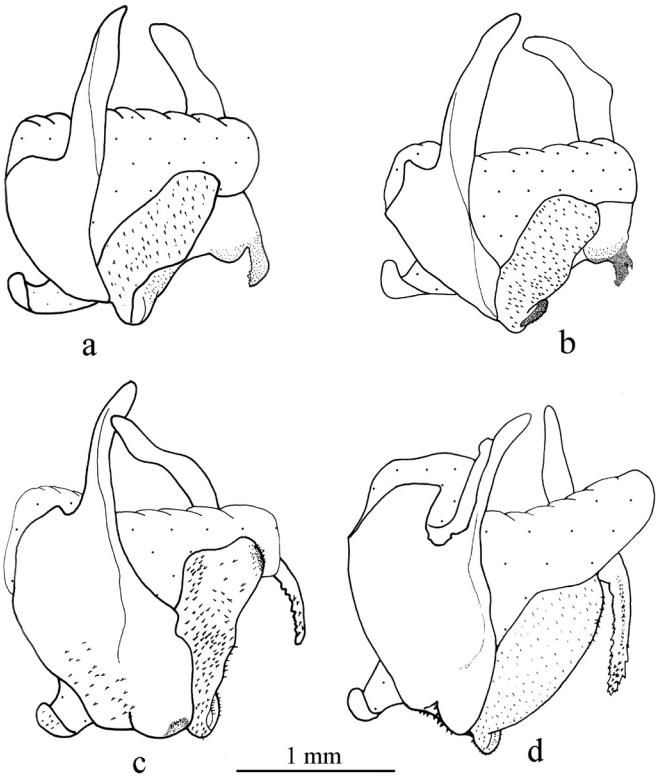

Fig. 5. Dorsal view of left phallomere: a, *Raptrix perspicua*; b, *R. westwoodi*; c, *R. intermedia* n. sp.; d, *R. occidentalis* n. sp.

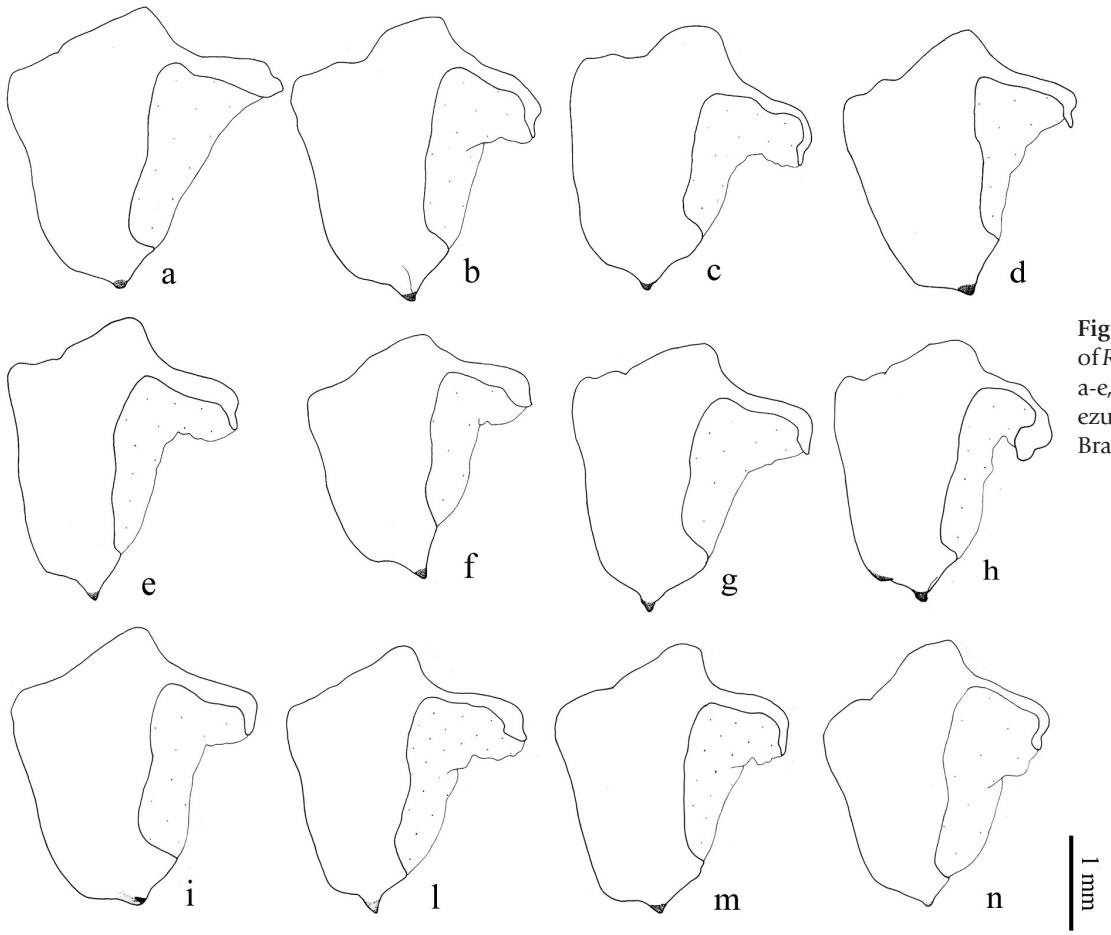

Fig. 6: Ventral phallomere of *R. perspicua* (dorsal view): a-e, French Guyana; f, Venezuela; g-n, Para (northeast Brazil).

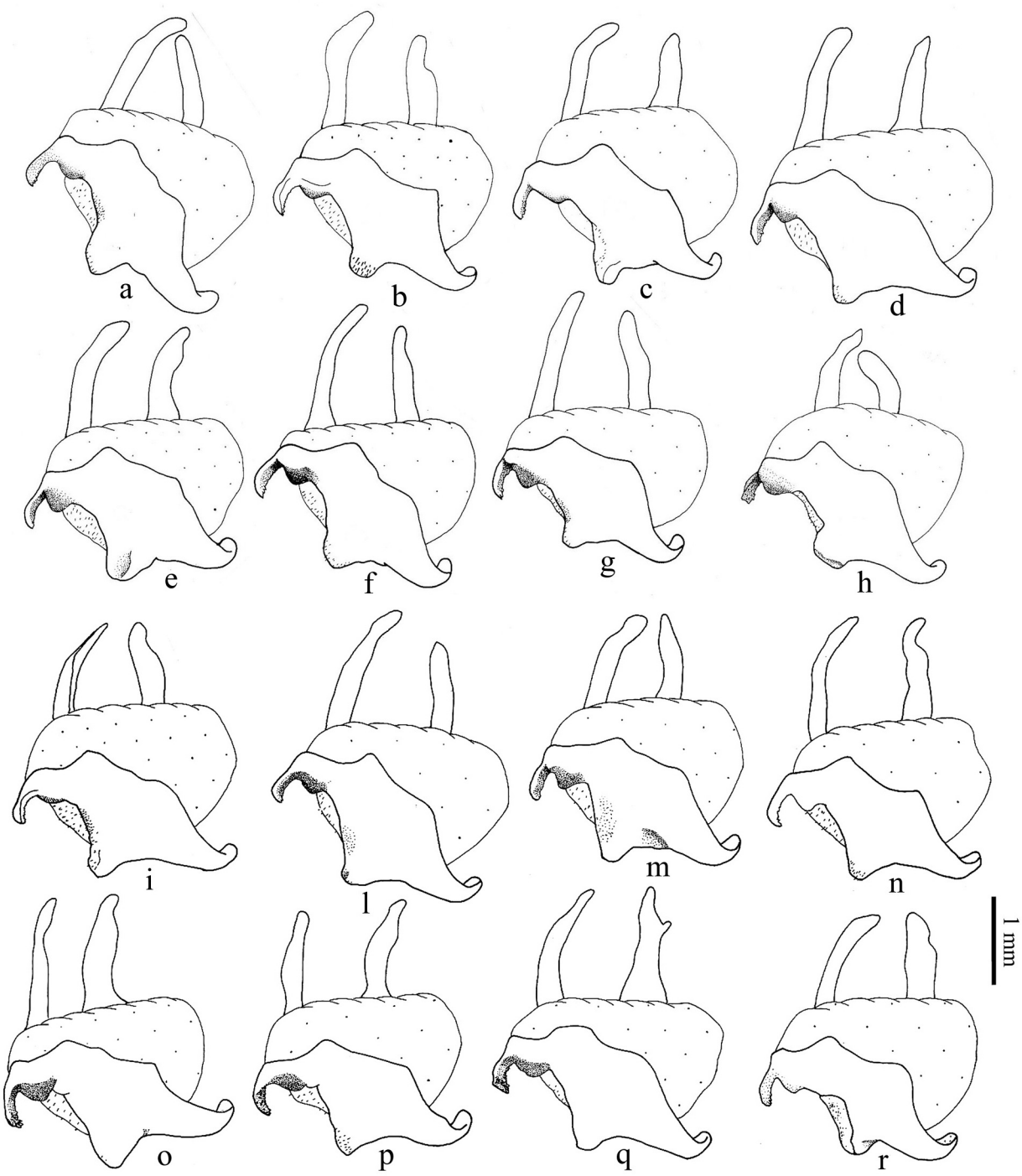

Fig. 7. Left phallomere of *R. perspicua* (ventral view): a-g, French Guyana; h, Venezuela; i-q, Para (north-east Brazil); r, Suriname .

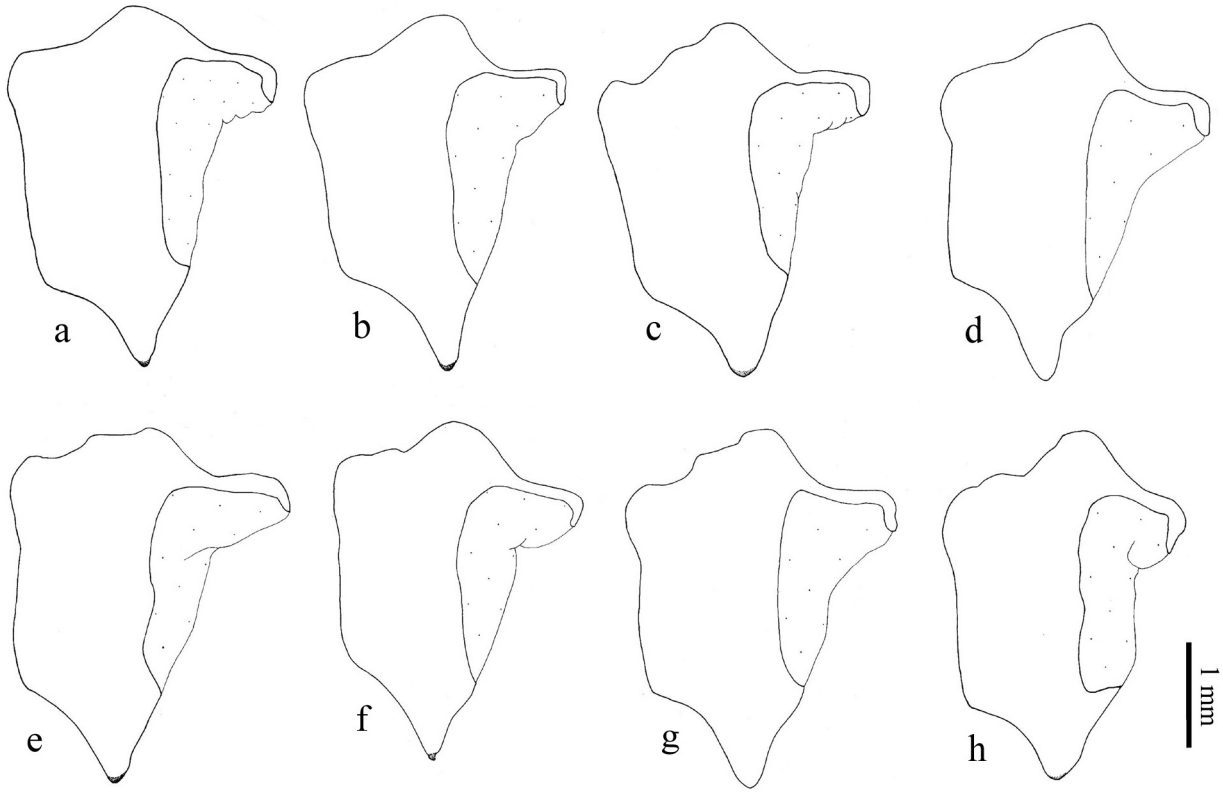

Fig. 8. Ventral phallomere of *R. intermedia* (dorsal view).

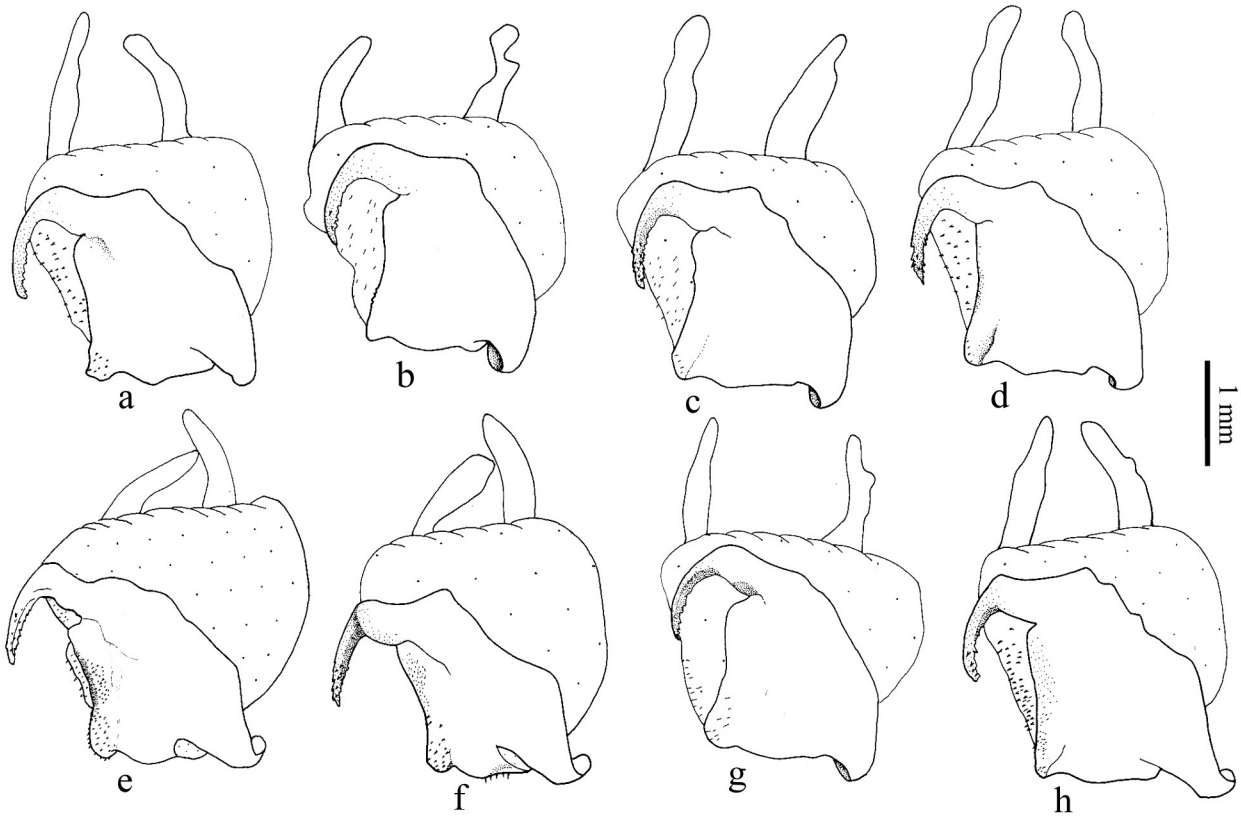

Fig. 9. Left phallomere of *R. intermedia* (ventral view).

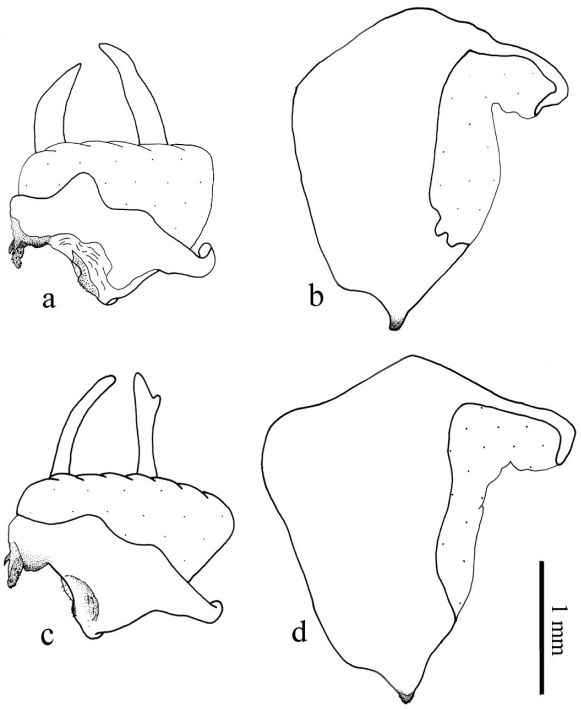

Fig. 10. Left and ventral phallomere of *R. westwoodi*: a,b, Costa Rica; c,d, Colombia.

Table I. Distribution of the species of the genus *Raptrix* by country.

	Costa Rica	Colombia	Venezuela	Guyana	Suriname	F. Guyana	Brazil	Bolivia	Peru	Ecuador
R. westwoodi	+	+								
R. perspicua			+	+	+	+	+			
R. intermedia n.sp							+			
R. occidentalis n. sp.								+	+	+

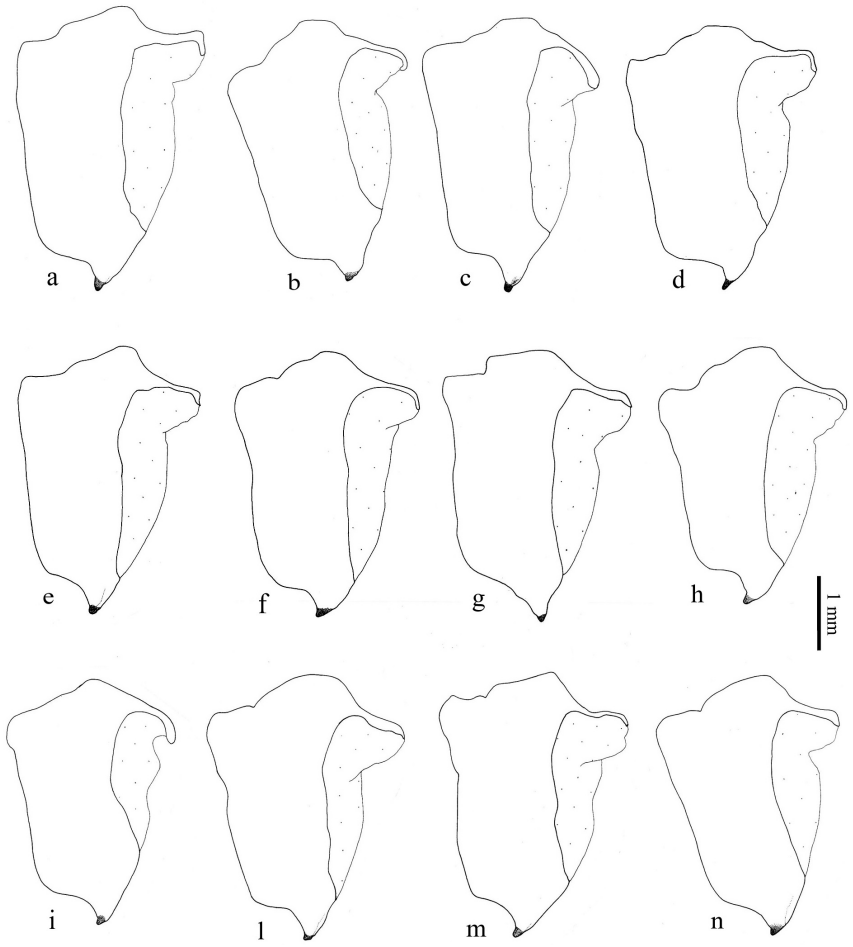

Fig. 11. Ventral phallomere of *R. occidentalis* (dorsal view): a-f, Ecuador; g-h, Peru; i-n, Bolivia.

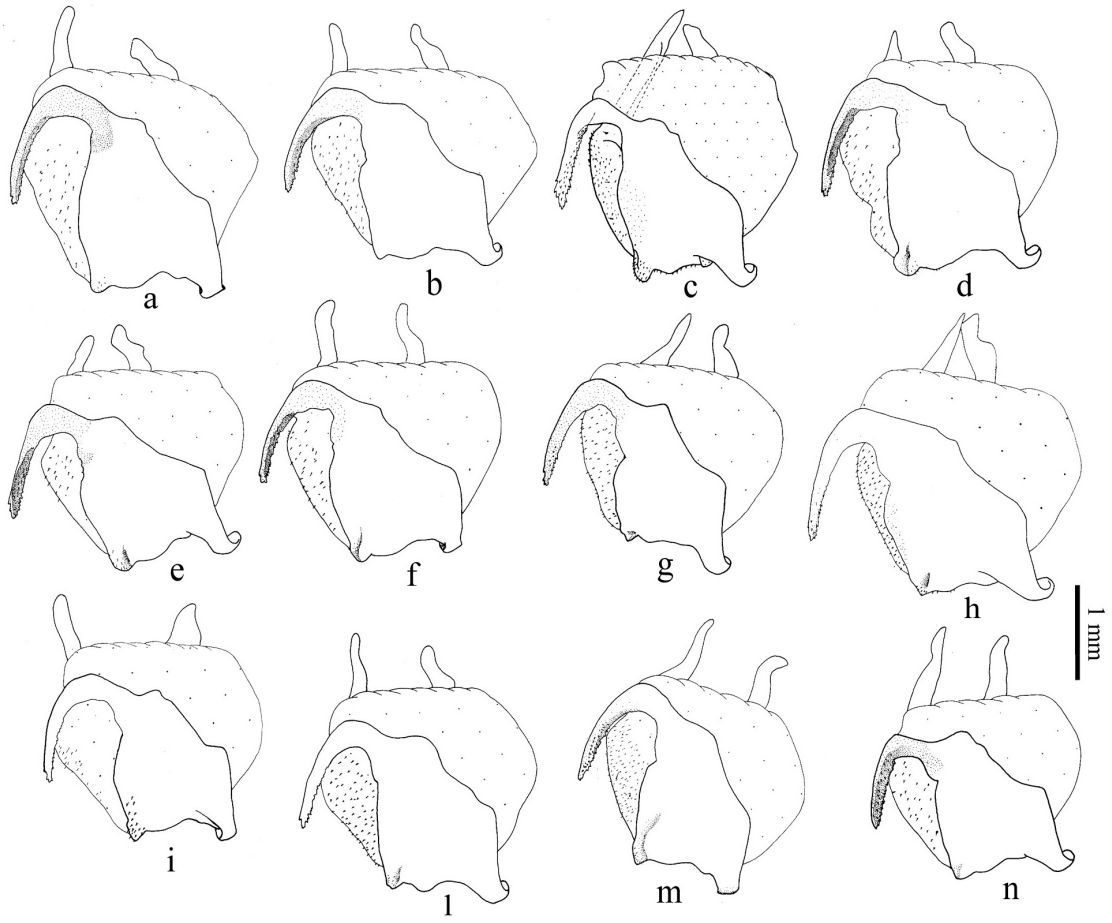

Fig. 12. Left phallomere of *R. occidentalis* (ventral view): a-f, Ecuador; g-h, Peru; i-n, Bolivia.

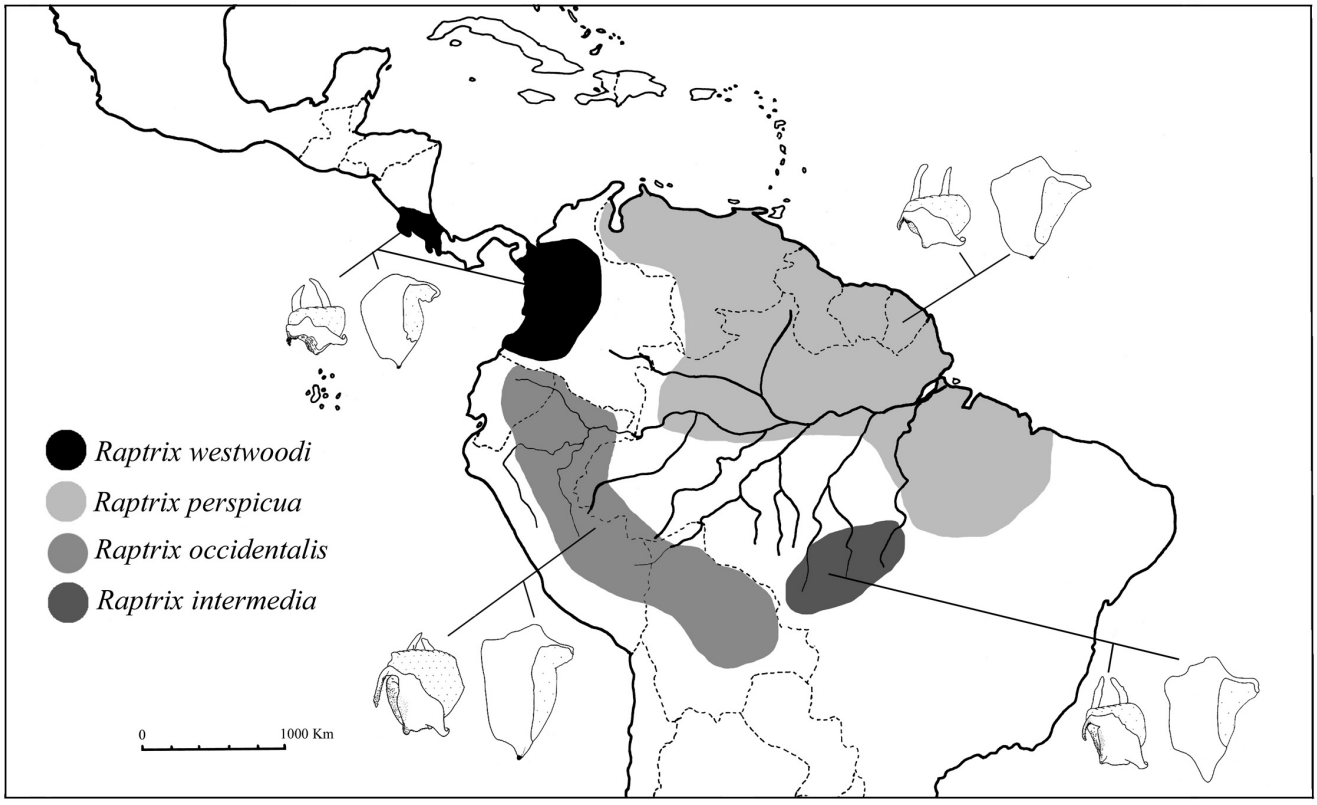

Fig. 13. Area of distribution of the species of *Raptrix*.

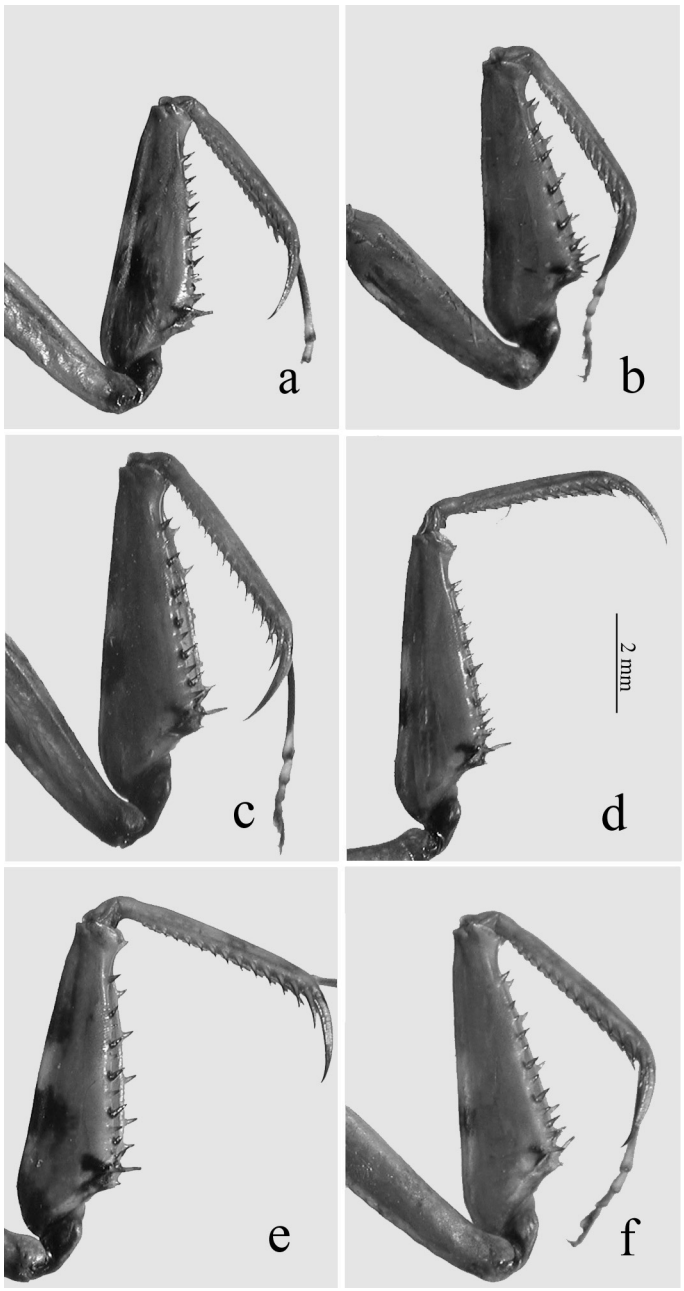

Plate I. *Raptrix perspicua*, different chromatic model of the large internal spines of anterior femora: a, Venezuela; b, Suriname; c,d, French Guyana; e,f, Para (north-east Brazil).