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## A contribution to the genus *Silis* Charpentier, 1825, in Ecuador (Coleoptera, Cantharidae)

by Robert Constantin

**Abstract.** To date, the genus *Silis* Charpentier, 1825 has been represented by only 8 species in Ecuador. Nine species are here described as new for that country: *Silis angelensis* sp.nov. (prov. Carchi), *S. drummondi* sp.nov. (prov. Sucumbiós), *S. elongatipennis* sp.nov. (prov. Morona-Santiago), *S. explanicollis* sp.nov. (prov. Zamora-Chinchipe), *S. gilletti* sp.nov. (prov. Pichincha, Imbabura, Santo Domingo de las Tsáchilas), *S. moreti* sp.nov. (prov. Cañar), *S. otongae* sp.nov. (prov. Cotopaxi, Pichincha), *S. sabanillae* sp.nov. (prov. Zamora-Chinchipe), and *S. spinithorax* sp.nov. (prov. Zamora-Chinchipe). *Discodon trinotatum* Pic, 1934 and *Discodon haenschi* Pic, 1927 are transferred to the genus *Silis*. *Silis haenschi* (Pic, 1927), preoccupied, is renamed *Silis richardhaenschi*, nomen novum. *Silis lojaensis* Pic, 1934 is a synonym of *Silis foveolata* Kirsch, 1864, syn.nov. *Silis metallicipennis* var. *immaculaticollis* Pic, 1934, is a synonym of *Silis metallicipennis* Pic, 1934. *Silis ohausi* Pic, 1911 is transferred to the genus *Polemius* LeConte, 1851. Additional descriptions and data are provided for *Grandesilis canelosensis* Pic, 1955, *Silis banosensis* Pic, 1916, *S. basiincrassata* Wittmer, 1969, *S. chimborazona* Gorham, 1891, *S. foveolata* Kirsch, 1864, *S. metallicipennis* Pic, 1934, *S. peruviana* Pic, 1906, *S. richardhaenschi*, nom.nov., and *S. trinotata* (Pic, 1934). The characters of the genera of Silinae observed in Ecuador are discussed, the presence in Ecuador of *Silis* belonging to the subgenus *Hapalocrosilis* Pic, 1916, is confirmed, and a key is provided for the genera present in Ecuador. A key to the species of *Silis* is provided, as are illustrations of the habitus, together with details of the pronotum and male genitalia, and distribution maps.

**Key words.** Coleoptera – Cantharidae – Silinae – *Silis* – new species – Ecuador

### Introduction

The genus *Silis* Charpentier, 1825 is widely distributed in the Palaearctic, Nearctic and Neotropical regions. According to DELKESKAMP (1977), over a hundred and fifty species have been described from Central and South America by a succession of taxonomists, among them Theodor Kirsch, Henry S. Gorham, George C. Champion, Maurice Pic and Walter Wittmer. Previous to this paper, eight species known as *Silis*, and one as *Grandesilis* Pic, 1955 were known from the Republic of Ecuador. Two species described in the neighbouring genus *Discodon* Gorham, 1881 are here transferred to *Silis*, while two taxa are revealed to be synonyms of previously described species. My own field trips in Ecuador, from 2006 onwards, brought to light new material, including new species and males of four species hitherto known from a single female. Moreover, rich collections of *Silis* were made available for study in the museums of Basel, London, Paris, Quito and Stuttgart.

### Material

**The origin of Cantharid specimens in museum collections.** The first Cantharidae collected in Ecuador may have been brought back by Humboldt & Bonpland from the expedition they undertook together in 1795–1798 (*Chauliognathus luctuosus* Latreille, 1806). During the 19th century, collections of beetles played only a small part



in the results of the travels of general naturalists, and very few Cantharidae were submitted to taxonomists. Worthy of note among the most successful are the expeditions to Columbia undertaken by Karl Moritz, Alexander Lindig and Eduard Steinheil, whose material was studied by W. Erichson and T. Kirsch respectively.

At the turn of the 20th century, important collections were made by Marc Hue de Mathan (1843–?) who prospected in the Oriente of Ecuador between 1892 and 1895 for the private collection of René Oberthür, a renowned French printer and coleopterist as well as by Théophile Gaujon, a priest and teacher at the seminary of Loja (1884–1890), Richard Haensch (?–1910) in Ecuador in 1899/1900, and Friedrich Ohaus (1864–1946) whose material from Pucay has been described by Maurice Pic. See also MORET (2005b).

In the later 20th century, Walter Wittmer assembled the world's largest collection of Neotropical Cantharidae, now at the Naturhistorische Museum Basel. He also collected in person, mainly in Argentina, Bolivia, Chile, and Peru, and was friends with the Chilean entomologist Luis Peña (he undertook a long and productive survey in Ecuador in 1965), as well as being acquainted with several American and Canadian scientists: Boyce A. Drummond (lepidopterological research in 1974 at the Limoncocha research station, near Coca), Stewart & Jarmila Peck (hostal Tinalandia and Rio Palenque research station in 1975), and Henry F. & Anne Howden. The collections at Basel also contain specimens gathered in the Oriente by Borys Malkin, J. Sedlacek and Jan Strnad.

Pierre Moret, from 1984 onwards, collected several Cantharidae during his entomological field trips to the páramos, and discovered brachelytrous and apterous representatives at higher elevations.

The German entomologists Christoph Häüser, Daniel Bartsch (SMNS, Stuttgart) and Jürgen Schmidl (Universität Erlangen) made rich collections at the Germano-Ecuadorian “Estación Científica San Francisco”, located 8 km west of Sabanilla (Zamora-Chinchi), at the northern border of the “Parque Nacional Podocarpus”.

Dr Conrad Gillett (BMNH) collected at the Bellavista research station, north of Quito. Other specimens were kindly presented by my colleagues A. Kudrna Jr., Hans Mühle and Julien Touroult.

Worthy of particular note is the recent work of Prof. Giovanni Onore, his staff and students, who have put together the entomological collections of the Pontificia Universidad Católica del Ecuador, and collected all over Ecuador, mounting and labelling over 1100 specimens of Cantharidae. Study of this material, with the kind help of Florenzio Maza and Fernanda Salazar, has begun at Quito.

Abbreviations for the institutions in which the material studied (inclusive of types) is deposited:

BMNH	.....	British Museum of Natural History, London, Great Britain
MNHN	.....	Muséum national d'Histoire naturelle, Paris, France
MTD	.....	Museum für Tierkunde, Dresden, Germany
NHMB	.....	Naturhistorisches Museum, Basel, Switzerland
QCAZ	.....	Pontificia Universidad Católica del Ecuador, Museo de Zoología, Quito, Ecuador
SMNS	.....	Staatliches Museum für Naturkunde, Stuttgart, Germany
CCo	.....	Robert Constantin collection, Saint-Lô, France
CMo	.....	Pierre Moret collection, Toulouse, France

## Methods

Techniques have already appeared in a prior contribution to the genus *Plectonotum* (CONSTANTIN, 2008). Preparing specimens for taxonomic research requires meticulous attention. Stored in fluid or already mounted on an individual card, the specimen is softened by immersion in hot water, then the abdomen is separated with needles or cut away with ophthalmic micro-scissors. The greatest care is needed to separate the male genitalia, due to the peculiar binding between the 9th segment (or genital segment) and the aedeagus, with atrophy of the connective membrane. The safest results were obtained by dissecting the abdomen on the ventral side in a drop of water, separation of the 8th sternite, and careful dissection of the tegmen from the enveloping basal and lateral parts of the 9th segment. After separation, the aedeagus, abdomen and specimen are glued on the same card. Ideally, the mounting card should be large enough to protect the fragile antennae and legs. In description, the terminology of the abdominal and genital parts follows MAGIS (1968) and BRANCUCCI (1980). Measurements were obtained with a micrometer eye-piece. Illustrations were produced with a camera lucida. Habitus photographs include focus stack assemblage. Distribution maps were compiled with Carto-Fauna-Flora applications.

### Abbreviations for measurement indices and label reporting:

AL	.....	antennal length
EL	.....	elytra length from humerus to apex
EW	.....	elytra combined width at base
HW	.....	head width
IOW	.....	interocular width
PL	.....	pronotum length
PW	.....	pronotum width
TL	.....	total length
hw.	.....	handwritten by

## Silinae in Ecuador

Four subfamilies of Cantharidae have been observed in Ecuador: Silinae, Dysmorphocerinae, Malthininae and Chauliognathinae. A key to the Neotropical subfamilies has been proposed by CONSTANTIN (2008) and a key to the Nearctic genera by RAMSDALE (2002).

Definition of the genera of the Neotropical Silinae has not had the benefit of recent revision. The most judicious analysis was carried out by CHAMPION (1915), although limited to Central America. A provisional key to the genera is provided here, but generic revision and redefinition of the Neotropical Silinae (over 400 taxa published) would bring new divisions to light.



Silinae genera and subgenera known from Ecuador:

*Silis* Charpentier, 1825

*Polemius* Leconte, 1851

*Discodon* Gorham, 1881

*Parasilis* Gorham, 1885

*Silis* (*Hapalocrosilis*) Pic, 1916

*Discodon* (*Falsopolemius*) Pic, 1928

*Grandesilis* Pic, 1955

### Remarks on the genus *Grandesilis* Pic, 1955

**Type species:** *Grandesilis canelosensis* Pic, 1955; designated by monotypy.

**Notes.** The genus *Grandesilis* Pic, 1955, was created with reference to two male characters: lateral margin of pronotum deeply notched, and anterior part of the pronotum having the appearance of an enlarged lobe (Pic 1955b). Considering the wide variability of the pronotum throughout Neotropical *Silis*, in several of which the notches are even deeper, as well as the shape of the male and female tarsal claws and the organization of the final abdominal segments, *Grandesilis* is very near to *Silis*. The generic status of *Grandesilis* is supported by a quite different aedeagus, tegmen ventrally protruding without delimited apophyses (a pattern also observed in the minute *Parasilis* and several *Discodon*) and a peculiar pronotum, the anterior margin of which is explanate and reflexed, without prominent lobes, spines or folds.

### Remarks on the genus *Polemius* LeConte, 1851

**Type species:** *Polemius laticornis* (Say, 1825); designated by DELKESKAMP (1977).

**Notes.** The separation of *Polemius* and *Silis*, if clear in the Nearctic region, is less obvious in the Neotropical species, where *Silis* without prothoracic spines are observed. Both display similar characters of the tarsal claws, i.e. anterior protarsal claw lobed at base, and none apically bifid.

As a provisional definition, according to the specific attributions made by Gorham, Champion and Pic, the Neotropical species of *Polemius* display:

- pronotum widest near the anterior margin
- pronotum without spines or basal fold (♂)
- lateral margin of the pronotum notched in the apical half (♂)
- elytral pubescence velvety
- internal claw of mesotarsi and metatarsi often basally somewhat dilated (♂)

The species of *Silis* without prothoracic spines may be recognized by:

- pronotum widest in middle or near its base
- anterior margin of pronotum laterally prolonged into two lobes (subgen. *Silis*)
- lateral margin of pronotum often reflexed, notched near the base, or with two notches (♂)
- elytral pubescence tending to incomplete, recumbent or semi-erect

***Polemius ohausi* Pic, 1911 comb.nov.**

*Silis ohausi* Pic, 1911: 128.

**Notes.** Examination of the type material of the Ecuadorian *Silis ohausi* Pic, 1911, together with recent museum material, reveals its membership of the genus *Polemius*. Further morphological analysis is required.

**Remarks on the *Silis* subgenus *Hapalocrosilis* Pic, 1916**

**Type species:** *Silis impressa* Pic, 1916b; designated by monotypy.

**Notes.** The validity of the subgenus was reassessed by WITTMER (1992), who assigned additional species from Haiti and the Dominican Republic. Examination of the type material of the Ecuadorian *Silis haenschi* Pic, 1909, together with additional recent material, confirms its membership of the subgenus *Hapalocrosilis*. Several other close specimens from Ecuador have been revealed as new and will enlarge this subgenus. Their description is pending upon additional specimens. Worthy of note is the peculiar attraction of these minute Cantharidae (4–6 mm) to UV light traps, and to a lesser degree to normal domestic light.

**Remarks on the morphology of the male genitalia in *Silis***

Wide diversity has been observed in the male genitalia of *Silis*. The most striking feature is the presence of an appendage, here termed the “dorsal stylus” (see Fig. 49). The dorsal stylus articulates basally with the basal part of the tegmen, and is probably derived from the tegmen. In several species it may act, together with the ventral apophyses, as a pair of tweezers during mating. Those ventral apophyses have been observed only in a number of *Silis*, but not in neighbouring genera.

As in most of the Silinae, the tegmen is not basally sclerotized, this part being bound to the base of the 9th abdominal segment. The median lobe was found to be atrophied, reduced to an apically open envelope, at the base of the internal sac (Fig. 53). The internal sac usually bears one or several paired spines, and its apical part may take the form of a tube (Fig. 58).



### A key to the Ecuadorian genera and subgenera of Silinae

1. Antennae filiform. Elytra elongate, parallel, elytral punctation strong, dense and arranged in rows. Anterior claw of male protarsi bifid at tip.  
..... ***Parasilis* Gorham**
- Antennae not filiform. Elytral punctation thin or rugulose, not arranged in rows. Anterior claw of male protarsi with a basal lobe, simple at tip.  
..... 2.
2. Antennae enlarged and flattened. Pronotum narrow, trapezoidal. Elytra with three indistinct costae. Pronotal and elytral pubescence recumbent, velvety, complete. Anterior claw of mesotarsi and metatarsi apically bifid. .... ***Discodon* subgen. *Falsopolemius* Pic**
- Antennae slender, not flattened. Pronotum wider. Elytra without costae.  
..... 3.
3. Pronotum transverse. Anterior margin often laterally lobed. Lateral margin often reflexed. ♂: Lateral margin basally deeply notched or featuring long spines and folds. Anterior claw of protarsi basally lobed, mesotarsal and metatarsal claws simple. ♀: Mandibles either elongate, slender or basally expanded, angled, apically slender. Pronotum strongly transverse. Lateral margin reflexed. .... ***Silis* Charpentier**
- Pronotum less transverse. Anterior margin arcuate. Lateral margin notched at mid-length or on the front of the basal angle; no spines or folds. .... 4.
4. Pronotum broadest in mid-section or basally. Lateral margin notched in the middle. ♂: Anterior claw of mesotarsi and metatarsi apically bifid.  
..... ***Discodon* Gorham**
- Pronotum less transverse, broadest near the anterior margin. Lateral margin more apically notched, before mid-point ♂: Anterior claw of mesotarsi and metatarsi simple. .... 5.
5. Size medium or small, under 12 mm. .... 6.
- Length over 12 mm. Elongate, testaceous. .... ***Grandesilis* Pic**
6. Antennae elongate, slender. Lateral margin of pronotum blunt. Elytral pubescence velvety, complete. Mandibles not angled. ....  
..... ***Polemius* Leconte**
- Antennae stout or slender. Lateral margin of pronotum sharp. Elytral pubescence semi-erect, incomplete. ♂ Lateral margin of pronotum often with minute glandular tuberosity. ♀ Frons plicate, a sagittal crest delimiting two slight depressions. Mandibles strongly angled. ....  
..... ***Silis* subgen. *Hapalocrosilis* Pic**

**Genus *Silis* Charpentier, 1825**

**Type species:** *Cantharis nitidula* Fabricius, 1792; designated by GREEN (1966).

**Key to the Ecuadorian species of *Silis* and *Grandesilis* (males)**

- 1 Larger species, over 11 mm. Elytra testaceous yellow. .... 2.
- Smaller species or different colour pattern. .... 4.
- 2 Basal angle of pronotum with long spines. Antennae elongate, antennomeres III–V dilated, ventrally hollowed (Fig. 5). ....  
..... ***S. basiincrassata* Wittmer**
- Basal angle of pronotum without spines. Antennae thin. .... 3.
- 3 Anterior margin of pronotum explanate, reflexed, wider than basal margin (Fig. 15). .... ***Grandesilis canelosensis* Pic**
- Basal angle of pronotum triangular, extended. Basal margin wider than anterior margin (Figs 3, 30). .... ***S. sabanillae* sp.nov.**
- 4 Elytra metallic blue or bluish-green. .... 5.
- Elytra black, brown or testaceous yellow. .... 6.
- 5 Elytra blue, lustrous, bare. .... ***S. richardhaenschi* nom.nov.**
- Elytra greenish-blue, partly violaceous, a narrow sutural strip of yellowish setae (Fig. 1). .... ***S. gilletti* sp.nov.**
- 6 Brachelytrous. Elytra yellow with basal, piceous macula (Fig. 2). ....  
..... ***S. moreti* sp.nov.**
- Elytra fully developed. .... 7.
- 7 Elytra testaceous yellow. .... 8.
- Elytra piceous. .... 11.
- 8 Size over 6.5 mm. .... 9.
- Size under 6.5 mm. Lateral margin of pronotum emarginate, with basal spines. .... 10.
- 9 Lateral margin of pronotum sinuate, incised, without basal spines (Fig. 35). .... ***S. trinotata* Pic**
- Lateral margin of pronotum elongate, with a median tooth delimited by two notches. Mesofemora inflated. Mesotibiae curved (Fig. 19). ....  
..... ***S. otongae* sp.nov.**
- 10 Legs yellow (Fig. 4) .... ***S. drummondi* sp.nov.**
- Legs piceous .... ***S. peruviana* Pic, 1906**



- 11 Basal angles of pronotum without spines. .... 12.
- Basal angles of pronotum with spines. .... 13.
- 12 Pronotum piceous. Basal angles extended and reflexed (Fig. 29). ....  
..... *S. explanicollis* sp.nov.
- Pronotum red with an anterior, black macula. Basal angles shortly  
expanded (Fig. 31). .... *S. metallicipennis* Pic
- 13 Elytra short, just twice as long as combined width. Elytral margin  
expanded and reflexed. Pronotum with a broad, shallow depression at  
centre (Fig. 17). .... *S. foveolata* Kirsch
- Elytra more elongate. .... 14.
- 14 Elongate species. Anterior margin of pronotum laterally extended with  
prominent lobes. Over 6.5 mm. .... 15.
- Shorter species. Anterior margin of pronotum with reduced lobes or not  
lobed. .... 17.
- 15 Elytra more elongate, 3.7× longer than wide. Body black (Fig. 42). .....  
..... *S. elongatipennis* sp.nov.
- Elytra shorter, three times as long as wide. Pronotum black or red in  
part. Elytral colour pattern variable, black or partly testaceous yellow. ...  
..... 16.
- 16 Aedeagus with twin terminal branches of the dorsal stylus elongate,  
slender, apically sinuate and dilated. Basal fold of pronotum apically  
narrowed (Fig. 59). .... *S. chimborazona* Gorham
- Aedeagus with terminal branches of the dorsal stylus short, stout,  
apically bidentate. Basal fold of pronotum triangular, wider (Fig. 61). ...  
..... *S. banosensis* Pic
- 17 Anterior margin of pronotum with reduced lateral lobes. Pronotum red  
with two small, distant, piceous maculae. Elytra black (Fig. 44). ....  
..... *S. angelensis* sp.nov.
- Anterior margin of pronotum without lateral lobes. Elytra piceous with  
orange edging on sutural and lateral margins (Fig. 21). ....  
..... *S. spinithorax* sp.nov.

Taxonomic remarks on the Ecuadorian *Silis* and *Grandesilis**Grandesilis canelosensis* Pic, 1955

(Figs 15, 16, 53, 64)

**Type material examined.** The Pic collection (MNHN) preserves 2 syntypes, 1 ♂ 1 ♀, labelled “Equateur orient. de Baños à Canelos, M. de Mathan, IX–X.1894” (printed) / type/*Grandesilis canelosensis* n. sp. (both hw. Pic).

**Other material examined.** ECUADOR, NAPO, Archidona, 77°48'09"W-0°54'13"S, 610 m, 21.V.2005, 1 ♀, F. Espinosa (QCAZ); Sc Reventador, 77°40'W-0°05'S, 10.I.1998, J. C. Santos, 1 ♀ (QCAZ); Rio Hollin, 1200 m, 6.XII.1991, 1 ♀, R. Marin (QCAZ).

**Additional description.** ♂: length 14 mm. Testaceous. Antennae infusate from third antennomere. Head wide. Eyes large, bulging. Epistoma wide, shallowly depressed before antennal socket. Mandibles slender, arcuate. Maxillary palpi elongate, final palpomere  $0.64 \times 0.18$  mm. Pronotum thinly punctate, dull. Anterior margin rounded, reflexed. Lateral lobes short, not prominent. Lateral margin without spines or folds. A shallow median furrow between two convexities. Basal margin feebly arcuate. Elytra elongate, parallel. Anterior claw of protarsi feebly lobed. Elytral pubescence of short, recumbent yellow setae and sparser, longer, semi-erect yellow setae. Tergite VIII apically truncate, apical border emarginate. Sternite VIII divided into two rectangular lobes, rounded at apex. Aedeagus: Tegmen ventrally protruding at apex, without distinct apophyses. Dorsal stylus divided into two long, slender, distant, apically curved apophyses. Internal sac with two long spines.

Dimensions of the ♂ syntype: AL = 12 mm; HW = 2.5 mm; IOW = 1.25 mm; PL = 2.1 mm; PW = 2.2 mm; EL = 10.8 mm; EW = 3.1 mm.

♀: length 15 mm. Mandibles slender, not angled. Sternite VIII short, mucronate. Dimensions of the ♀ syntype: AL = 12 mm; HW = 2.5 mm; IOW = 1.53 mm; PL = 2.23 mm; PW = 2.4 mm; EL = 12 mm; EW = 3.7 mm.

*Silis banosensis* Pic, 1916

(Figs 33, 34, 61, 65)

**Type material examined.** The Pic collection (MNHN) preserves a single ?♀ of *Silis banosensis* labelled “Baños (Ecuad.) R. Haensch” (printed)/“*banosensis* Pic” (hw. Pic).

**Other material examined.** ECUADOR: TUNGURAHUA, 30 km SE of Ambato, Baños, 13.II.2002, 1 ♂ 1 ♀, A. Kudrna jr. (CCo); Baños, Runtun, 3500 m, XI.1968, 3 ♀ (SMNS); Baños, Mortilones, X.1968, 2 ♂ 1 ♀ (SMNS); Baños 5 km SW, Pandoa, 20.XI.1968, 1°25'S-78°24'W, 1 ♀ (SMNS); Baños, 11.XII.2004, A. Santillán (QCAZ); Baños, V–VI.2005, C.Granja, G. Onore, J. Salvador & A. Terán (QCAZ); Rio Cristal, 8.III.2006, C. Carpio (QCAZ); AZUAY, Tarqui, 18 km S Cuenca, 3°01'S-79°02'W, 2800 m, 8.III.1965, 1 ♂? 1 ♀, Luis Peña (NHMB); Sur Cuenca, 2400 m, 9.IV.1965, 1 ♀, L. Peña (NHMB); La Tinajilla, [pass 50 km S Cuenca], 3100 m, 20.III.1965, 8 ♂ 4 ♀, L. Peña (NHMB); 50 km S Cuenca, pass la Tinajilla, 3°09'S-79°01'W, 3187 m, 27.XI.2009, 2 ♂ 1 ♀, R. Constantin (CCo); 37 km N Oña, La Reina de la Paz, 3°10'S-79°0'W, 3246m, 27.XI.2009, 1 ♂, R. Constantin (CCo).

**Additional description and variability.** The status of *Silis banosensis* as a valid species has been assessed by examination of both sexes at Baños. The colour pattern varies. Specimens from Baños are black with red pronotum, only marked by two minute black spots on the disk. The Tinajilla specimens are black. The single specimen from Oña has a yellow strip on the elytra from the humeri to near the apex. The specific distinguishing character is found in the aedeagus: dorsal stylus basally fused, apically as two broad,



diverging blades. Some variations also exist in the dorsal stylus, with specimens from Baños having the apex dorsally sinuate and those from Tinajilla having the ventral margin dentate.

***Silis basiincrassata* Wittmer, 1969**

(Figs 5, 27, 28, 50, 65)

*Silis basiincrassata* Wittmer, 1969: 132, nomen novum for *Silis impressipennis* Pic, 1955 (praeocc.).

**Type material examined.** The Pic collection (MNHN) preserves 2 syntypes: 1 ♂ et 1 ♀, labelled “Equateur Or. de Baños à Canelós, M. de Mathan, IX–X.1894” (printed)/*Silis impressipennis* n. sp. (hw. Pic).

**Other material examined.** ECUADOR: PICHINCHA, Endesa, 0°20'N–79°20'W, 1000 m, 26.VI.2002, 1 ♂, D. Trujillo (QCAZ); NAPO, Reventador, I.1989, I.B. 3, 1 ♂, leg. V.NNe (QCAZ)

**Additional description.** ♂: length 12 mm. Testaceous. Antennae, legs from apical half of femora piceous black. Frons slightly depressed. Epistoma short, depressed before the antennal sockets. Mandibles slender, arcuate. Maxillary palpi elongate, the last palpomere 3× longer than wide. Eyes small, bulging. Antennae slender, antennomeres III–V dilated, 2× longer than wide, hollowed on dorsal face. Pronotum feebly transverse, lustrous. Anterior margin of pronotum rounded in the middle, narrowing in triangular fashion laterally. Lateral lobes not prominent, reaching the mid-point of the lateral margin. Two folds on the lateral margin, obliquely oriented and ventrally expanded. Disk flattened. Basal margin rounded. Elytra widened in the apical half. Anterior claw of protarsi strongly lobed. Tergite VIII without prominent tubercles. Tergite IX developed, apically dilated. Sternite VIII divided into two rectangular lobes, their apical margins concave. Aedeagus: ventral apophyses of tegmen apically hooked. Dorsal stylus basally fused, apically slender and sinuate. Two large apophyses in the internal sac.

Dimensions of the ♂ syntype: AL = 7 mm; HW = 2.2 mm; IOW = 1.05 mm; PL = 2.2 mm; PW = 2.63 mm; EL = 7.6 mm; EW = 2.4 mm.

♀: length 12.2 mm. Mandibles elongate, not angled. Sternite VIII rectangular, divided into two lobes until base, apical margin sinuate. Dimensions of the ♀ syntype: AL missing; HW = 2.02 mm; IOW = 1.22 mm; PL = 2.06 mm; PW = 2.66 mm; EL = 7.8 mm; EW = 2.5 mm.

***Silis chimborazona* Gorham, 1891**

(Figs 14, 39, 59, 65)

**Type material examined.** The Pic collection (MNHN) preserves the ♂ holotype (by monotypy) of *Silis chimborazona* labelled “Chimborazo, Ecuador 15000', Ed. Whympfer / *Silis chimborazona* “.

**Other material examined.** ECUADOR: CHIMBORAZO, carretera Ambato – Riobamba km 32, pajonal, 3500 m, 24.VII.1985, 1 ♂, P. Moret (CCo); Pisayambo El Tambo, 3700 m, 15.XI.1985, 1 ♂, P. Moret (CCo); Lago Pisayambo, pajonal, 3500 m, 30.XI.1985, 1 ♂, P. Moret (CMo); COTOPAXI, Otonga forest reserve, 1950 m, 3–5.VII.2001, 1 ♂, P. Moret (CCo); Iliniza, sitio la Virgen, sendero Yagual, 0°40'S–78°41'W, 14.VI.2003, 1 ♂, A. Calvo (QCAZ); El Boliche, 3500 m, 30.IX.1999, 1 ♂, B. Yangari (QCAZ); SANTO DOMINGO DE LAS TSÁCHILAS, Palmeras – Rio Guadalito, 1800 m, 24.X.1992, 1 ♂, S. Valarezo (QCAZ); PICHINCHA, Nono – Dandajabi, 2500 m, 15.XII.1975, 1 ♂, Hans Mühle (CCo); LOJA, 14 km E Loja, 3°59'S–79°09'W, 2713 m, 18.XI.2006, 1 ♀ (in need of confirmation with male), R. Constantin (CCo).

**Additional description and variability.** *Silis chimborazona* is easily recognized by the colour pattern: the holotype and specimens from Pisayambo are black; pronotum orange,



anterior margin and a large spot near the base black. This pattern varies: specimens from Lago Pisayambo have a yellow elytral strip from the humeri to near centre. More northerly, at Otonga and Nono, specimens are black. A single male from Rio Guadalito displays red-orange on centre of head, pronotum and elytra except for black edging on suture. The most reliable character is the shape of the dorsal stylus: elongate, slender, and apically bifurcate, thinly hooked, although with some variations.

***Silis foveolata* Kirsch, 1865**

(Figs 9, 18, 19, 55, 64)

*Silis lojaensis* Pic, 1934 **syn.nov.**

**Type material examined.** The collection of the Museum of Zoology, Dresden (MTD) preserves a single ♂ syntype of *Silis foveolata* Kirsch, with the printed labels “Bogota, coll. Kirsch / Staatl. Museum für Tierkunde, Dresden / Typus”. The Pic collection (MNHN) preserves a single ♀ syntype of *Silis lojaensis* Pic, labelled “Loja”(unknown writing) / “*Silis lojaensis* n. sp.” (hw. Pic). Length 6.5 mm. This single female is identical to the series of both sexes collected at Vilcabamba. *Silis lojaensis* is thus considered as a synonym of *Silis foveolata*.

**Other material examined.** ECUADOR: LOJA, Vilcabamba 9 km S, road to Quinara, 4°19'S-79°13'W, 1650 m, 27.XI.2008, 1 ♂ 1 ♀, R. Constantin (CCo); CHIMBORAZO: Pallatanga 20 km S, Multitud, 2°05'S-78°58'W, 1165 m, 10.V.2009, 10 ♂ 18 ♀, R. Constantin (CCo); STO DOMINGO DE LAS TSÁCHILAS: Sto Domingo km 8.6 vía Esmeraldas, III.1997, M. Neira & M. P. Lugo (QCAZ); Sto Domingo, Hacienda El Cortijo km 8.5 vía La Con, VIII.1997, M. Neira & M. P. Lugo (QCAZ); idem, Hacienda Martitha km 18 vía Chone, III.1997, M. Neira & M. P. Lugo (QCAZ); ESMERALDAS, San Mateo, 15 km S Esmeraldas, 0°53'N-78°38'W, 22.VII.1956, 1 ♂ 1 ♀, W. Forster (NHMB). COLOMBIA: S. Antonio (? , several localities possible), 1 ♂ 1 ♀ (MNHN); CESÁR, Curumani, 9°12'N-73°32'W, 22.VII.1968, 17 ♂ 12 ♀, B. Malkin (NHMB); ANTIOQUIA, Medellín, La Estrella, 1650–1720 m, 22.I.1974–28.II.1976, 6 ♂ 2 ♀, P. A. Schneble (SMNS); Manizales, 2000 m, 25.VIII.78, 3 ♂, P. A. Schneble (SMNS); TOLIMA, Ibagué, 6 ♀, Fr. Claver (MNHN); VALLE DEL CAUCA, Cartago, 4 ♂, F. Bernard (MNHN); Rio Pance, 10 miles SW Cali, 1000 m, 14.VII.1970, 1 ♂, H. & A. Howden (NHMB). VENEZUELA, Merida, 2 ♂ 3 ♀ (MNHN). PERÚ: PIURA, Sullana, Hacienda Mallares, 4°52'S-80°46'W, 10.VI.1957, 1 ♂, W. Markl (NHMB).

**Additional description.** ♂: length 4.3–5 mm. Body black. Pronotum orange-red, a narrow median black strip from anterior to basal margin. Elytra fuliginous black, lateral margins yellow. Head narrow. Eyes small, convex. Mandibles slender, elongate, arcuate. Final palpomere 1.7× longer than wide. Pronotum transverse, anterior margin feebly arcuate. Lateral lobes not prominent, extending to the base as a small, triangular expansion. Lateral margin apically folded in a flat, horizontal, wide, triangular expansion. Centre of disk shallowly excavate until base. Elytra short, lateral margin explanate and reflexed from beyond the humeri to near the apex. Elytral pubescence thin, yellow, the setae of the internal quarter backwardly directed, the setae of the external half directed obliquely backwards. Tergite VIII reduced, without prominent tubercles. Sternite VIII divided into two triangular lobes. Aedeagus: Tegmen dorsally expanded into a large “roof” (Fig. 55 therefore appears in latero-ventral view), ventral apophyses of tegmen shortened, wide and sinuate. Dorsal stylus bifurcate, small, arcuate and apically convergent.

Dimensions of a medium-sized specimen ♂: TL = 4.7 mm; AL = 3.14 mm; HW = 1.07 mm; IOW = 0.67 mm; PL = 1 mm; PW = 1.57 mm; EL = 3.4 mm; EW = 1.55 mm.

♀: length 5.1–5.9 mm. Mandibles elongate, not angled; Tergite VIII with minute tubercles at apical corners. Sternite VIII trapezoidal, apically feebly emarginate.



Dimensions of the ♀ syntype of *Silis lojaensis*: TL = 6.2 mm; AL = 3.14 mm; HW = 1.32 mm; IOW = 0.9 mm; PL = 1.09 mm; PW = 1.71 mm; EL = 4.7 mm; EW = 1.9 mm.

**Natural history.** The Vilcabamba specimens were beaten from high, thorny, flowering shrubs. The abundant adults at Pallatanga, freshly emerged (some immature), were observed on young trees near the river bank. In contrast with *Silis chimborazona* and allied species, which live at high altitude in the páramos and have a tendency to endemism, *Silis foveolata* is widespread at lower levels, often on river banks in the valleys. This species has the widest distribution, from North Peru to West Venezuela.

### ***Silis metallicipennis* Pic, 1934**

(Figs 31, 32, 48, 64)

*Silis metallicipennis* var. *immaculaticollis* Pic, 1934 **syn.nov.**

**Type material examined.** The Pic collection (MNHN) preserves 1 ♂ syntype labelled “Loja / *Silis metallicipennis* n. sp. (both hw. Pic)”, 2 ♀ syntypes with the same data, 1 ♀ syntype labelled “Loja / var. *immaculaticollis* Pic (hw. Pic)”, and an additional ♂ specimen from Loja, not in the type series. *Silis metallicipennis* var. *immaculaticollis* Pic is morphologically identical to the nominal form and a synonym of it.

**Other material examined.** ECUADOR: LOJA, Vilcabamba 28 km S, 8 km S of Yangana, 4°22'43"S-79°10'W, 2094–2140 m, 20–21.XI.2007, 3 ♂ 3 ♀; *idem*, 29–30.IV.2009, 6 ♂ 4 ♀, all R. Constantin leg. (specimens deposited at NHMB and QCAZ, remainder in CCo).

**Additional description.** ♂. Length 5.8–6.8 mm. Testaceous-orange. Antennae, tips of mandibles, apical half of pronotum extending basally in the middle, narrow strip on dorsal side of femora, tibiae, tarsi piceous black. Anterior margin of pronotum laterally lobed and deeply notched in the middle. Basal angles shortly explanate. Elytra fuliginous black with carbonaceous hue, rugulose-punctate. Recumbent, dense, yellow setae on head, pronotum and elytra. Tergite VIII narrowing toward apex, tubercles distant. Tergite IX prominent and apically emarginate. Sternite VIII divided into two rectangular lobes. Aedeagus: ventral apophyses of tegmen elongate and sinuate, dorsal stylus elongate, angled and apically hooked.

♀. Length 6.9–8 mm. Basal angle of pronotum explanate and reflexed. Apical margin of sternite VIII divided along apical third.

Dimensions of a pair collected in copula. ♂: TL = 6.8 mm; AL = 5.5 mm; HW = 1.35 mm; IOW = 0.89 mm; PL = 1.15 mm; PW = 1.64 mm; EL = 5 mm; EW = 1.87 mm. ♀: TL = 7.4 mm; AL = 5 mm; HW = 1.35 mm; IOW = 0.99 mm; PL = 1.35 mm; PW = 1.88 mm; EL = 5.6 mm; EW = 2.24 mm.

**Natural history.** *Silis metallicipennis* was collected on small bushes, often just over the water drainage gutter along the road from Yangana to Zumba. A wide diversity of vegetation and insects may be observed there at the borders of mountain forest and meadow, already the home of *Melyrodes lojaensis* Constantin, 2008.

### ***Silis peruviana* Pic, 1906**

(Figs 9, 10, 37, 38, 56, 64)

**Type material examined.** The Pic collection (MNHN) preserves 1 ♂ syntype labelled “Callanga (Perou) /white square/type/ peruviana Pic” (all hw. Pic)” and a second identical ♂ specimen, mounted on a similar card, labelled “white square /*Silis* sp.” (not hw. Pic, probably J. Bourgeois). The specimens from Ecuador and Guyana, compared with the two syntypes, have identical aedeagi and pronotal spines.



**Other material examined.** ECUADOR, NAPO, Cosanga 8 km S, mirador de la Virgen, 0°37'S-77°50'W, 2200 m, 5–6.XII.2007, 2 ♂ 7 ♀, R. Constantin (NHMB, CCo); Cosanga 3 km S, 0°35'S-77°50'W, 2022 m, 5.XII.2007, 2 ♂ 1 ♀, R. Constantin (CCo); Baeza 5 km S, 0°28'S-77°52'W, 1837 m, 22.XI.2006, 1 ♀, R. Constantin (CCo); El Chaco, 1600 m, 6.V.1995, 1 ♀, R. Parades (QCAZ); Cosanga, H. Sierra Azul, 00°41'S-77°55'W, 2200 m, 18–19.XI.2001, G. Buirón S. (QCAZ); Sumaco, 00°28'S-77°35'W, 1598 m, 29.XI.2006, 1 ♀, V. Aguire (QCAZ). FRENCH GUYANE, Réserve des Nouragues, Saut Pararé, 4°01'N-52°41'W, alt. 120 m, 18.VIII.2009, 1 ♂, leg. P. H. Dalens, S. Brülé & E. Poirier (CCo).

**Additional description and variability.** ♂. Length 5.7–6.4 mm. Orange-yellow. Head black. Clypeus and mandibles yellow. Last two antennomeres, pronotum, elytra (see variability), major part of femora orange-yellow. Major part of the antennae, palpi, apex of femora, tibiae, tarsi piceous black. Mesosternum, metasternum, abdomen brown.

Head small, as long as wide, narrowed toward the base. Frons lustrous, not depressed. Eyes small, convex. Maxillary palpi elongate, final palpomere 2.5× longer than wide. Pronotum transverse, 1.34× wider than long. Anterior margin largely rounded, sinuate near feeble but prominent anterior angle. Lateral margin with an elongate, arcuate, backwardly-directed median projection and a second prominent, acute, basal expansion before the basal angle. Basal margin regularly curved. Elytra parallel, 2.8× longer than wide together, moderately and densely punctured. Thin, semi-erect, yellow pubescence directed backwards. Anterior claw of the protarsi thin, basally expanded, the lobe small. Tibiae straight. Tubercles of tergite VIII reduced, only very slightly prominent. Sternite VIII divided into two triangular lobes, their apices rounded. Aedeagus: basal piece with a dorsal projection and a curved, apically emarginate ventral blade. Dorsal stylus peculiar for its anvil-like, dilated apex. Internal sac with considerable ventral sclerotization. Dimensions of a medium-sized male: TL = 5.8 mm; AL = 4.9 mm; HW = 1.05 mm; IOW = 0.59 mm; PL = 0.95 mm; PW = 1.28 mm; EL = 4.4 mm; EW = 1.5 mm.

♀. Length 6.1–6.6 mm. Differs from the male in the shorter antennae, the elongate, more curved mandibles, and the more transverse pronotum without projections. Lateral margin of the pronotum widely reflexed. Sternite VIII triangular, the apical margin medially emarginate, the centre shallowly excavate. Dimensions of a medium-sized female: TL = 6.5 mm; AL = 4.4 mm; HW = 1.18 mm; IOW = 0.82 mm; PL = 1.08 mm; PW = 1.64 mm; EL = 5.2 mm; EW = 1.84 mm.

This species displays some variability of colour pattern. The two syntypes from Peru, Callanga, have piceous black body, orange pronotum and brown-black elytra. The series at Cosanga have orange-yellow elytra and femora. The Guyana specimen is orange with basal and apical black marks on the elytra.

**Differential diagnosis.** *Silis peruviana* belongs to a Neotropical *Silis*-group in which the males possess a series of long spines and processes at the basal angle. The dispositions of the spines are unique, as are the characters of the aedeagus.

**Natural history.** The type-locality, Callanga in Peru, in the province of Cuzco [12°49'S-71°34'W], is located in the headwaters of the Rio Piñi-Piñi where Gustav Garlepp collected intensively around 1890, and was covered with high Amazonian primary forest (GADE, 1999). In Ecuador, the specimens were collected at the limit of the mountain forest, beating shrubs and the saplings. The station known as Mirador de la Virgen de los Catamayos, near Cosanga, was host to a highly diverse settlement of Cantharidae



species, among which *Plectonotum reticulatum* and *P. onorei* have recently been described (CONSTANTIN, 2008). In Guyana, the Nouragues Reserve is a well preserved primary forest and the specimen was obtained with a large interception trap.

***Silis richardhaenschi* Constantin, 2009 nom.nov.** (Figs 12, 26, 24, 52, 64)

*Discodon haenschi* Pic, 1927: 46.

**Type material examined.** The Pic collection (MNHN) preserves a single ♀ syntype, labelled “Banos (Ecuad.) R. Haensch (printed) / type / Discodon Haenschi n. sp. (both hw. Pic)”.

**Other material examined.** ECUADOR: AZUAY, 5 km east of Gualaceo, 2°58'S-78°41'W, 3190 m, 19.XI.2006, 3 ♂ 4 ♀, R. Constantin (CCo); *idem*, 28.XI.2007, 1 ♂ 1 ♀ (CCo); *idem*, 25.IV.2009, 1 ♂ 1 ♀ (CCo); SUCUMBIÓS (?several localities possible), San Rafael [0°05'S-77°34'W?], 1 ♂, Campos leg. (NHMB); NAPO, Baeza, 0°27'36"S-77°53'06"W, 1450 m, 12.V.2005, 1 ♀, D. Morales (QCAZ).

**Nomenclatural change.** Described as *Discodon haenschi* Pic, 1927, the single ♀ syntype is identical to the series with both sexes collected at Gualaceo: the male specimens have simple claws, not bifid, and belong to the genus *Silis*; the characters of the pronotum, segment IX and the aedeagus also confirm this. Due to homonymy with *Silis haenschi* Pic 1909, a transfer from *Discodon* to *Silis* requires a change of name. In accordance with ICZN rules, *Discodon haenschi* Pic 1927 is here renamed to *Silis richardhaenschi* nom.nov.

**Additional description.** ♂: length 8.5–9.5 mm. Lustrous black. Elytra lustrous, blue with mirror-like metallic cyan-blue reflection. Frons depressed. Mandibles elongate, arcuate. Antennae rather stout. Anterior margin of pronotum arcuate, lateral lobes prominent. Lateral margin notched in middle. Basal angles roundly expanded. Disk convex. Elytra bare, their punctation indistinct, very thin and shallow. Anterior claw of protarsi with a strong, basal lobe. Tubercles of tergite VIII on apical protuberance. Sternite VIII divided into two lobes, apically rounded, internally emarginate near the tip. Aedeagus: ventral apophyses of tegmen elongate, slender. Apical part of dorsal stylus sinuate. Dimensions of a medium-sized ♂: TL = 9 mm; AL = 7.4 mm; HW = 1.63 mm; IOW = 1.12 mm; PL = 1.58 mm; PW = 2.07 mm; EL = 7 mm; EW = 2.43 mm.

♀: length 8.8–10 mm. Mandibles elongate, not angled. Sternite VIII (Fig.12) short, triangular, a deep, median excavation on apical half. Dimensions of a medium-sized ♀: TL = 10 mm; AL = 6.9 mm; HW = 1.69 mm; IOW = 1.25 mm; PL = 1.64 mm; PW = 2.47 mm; EL = 7.9 mm; EW = 2.8 mm.

**Etymology.** The species is dedicated to the German entomologist Richard Haensch who, according to HORN, KAHLE, FRIESE & GAEDICKE (1990), surveyed with Edm. Schmidt in Brazil and Ecuador around 1899–1900 and later became established as an insect trader in Berlin.

**Natural history.** *Silis richardhaenschi* was observed on a steep slope of the cordillera, in a meadow surrounded by high, dense, bushy hedges. The first collection at Gualaceo was made beating the hedges at twilight.

***Silis trinotata* Pic, 1934 comb.nov.**

(Figs 35, 36, 47, 64)

*Discodon trinotatum* Pic, 1934: 134.

**Type material examined.** The Pic collection (MNHN) preserves a single ♀ syntype, labelled “Loja”(unknown hw.)/”*Discodon trinotatum* n. sp.” (hw. Pic). The peculiar colour of the pronotum, and the strong elytral punctuation of the single ♀, are fully identical to a series of 5 ♂ collected in the same region.

**Other material examined.** ECUADOR: LOJA, Saraguro 3 km SW, 3°39'S-79°14'W, 2930 m, 17.XI.2006, 1 ♂, R. Constantin; Loja 25 km N, 3°49'S-79°17'W, 2768 m, 19.XI.2007, 3 ♂, R. Constantin; Vilcabamba 25 km S, 4°25'S-79°08'W, 2430 m, 29.XI.2008, 1 ♂, R. Constantin. (preserved in NHMB, CCo);

**Additional description.** ♂. Length 6.6–7.8 mm. Testaceous-orange. Antennae, vertex, a narrow medial strip on pronotum, tarsi black. Lateral lobes of pronotum small, basal angles explanate. Elytra rugulose-punctate, the punctures 1.5× wider than their intervals. Elytra dilated in the median third. Elytral pubescence a combination of thin, semi-erect yellow setae and sparser, longer, erect black setae. Anterior claw of protarsi strongly lobed at base. Sternite VIII divided until base into two apically rounded lobes. Aedeagus: Ventral apophyses of tegmen short, bisinuate, their tips rounded. Dorsal stylus basally fused, angled in the middle, apical part strongly hooked.

Dimensions of a medium-sized ♂: TL = 6.8 mm; AL = 5.4 mm; HW = 1.35 mm; IOW = 0.89 mm; PL = 1.15 mm; PW = 1.68 mm; EL = 5 mm; EW = 1.68 mm

♀. Mandible rather short, not angled. Sternite VIII short, feebly convex in centre, apical margin sinuate, emarginate in mid-section. Dimensions of the ♀ syntype: TL = 8.2 mm; AL = 5.3 mm; HW = 1.46 mm; IOW = 1.05 mm; PL = 1.36 mm; PW = 2.04 mm; EL = 6 mm; EW = 2.14 mm.

**Natural history.** The specimen was observed on the herbaceous vegetation of a wet meadow, near to forest remnants at Saraguro. Sampling took place at Loja and Vilcabamba at the edge of the mountain forest, at a wet site with shrubby vegetation.

**Description of the new species*****Silis angelensis* sp.nov.**

(Figs 44, 60, 65)

**Type material.** Holotype ♂: ECUADOR, CARCHI, El Angel, 500 m South of Garcia Moreno, 0°33'05"N-77°56'42"W, 3008 m, 7.XII.2007, R. Constantin (CCo). Holotype preserved in author's collection (CCo).

**Description.** Body black. Mandibles rufescent. Pronotum testaceous-red except for two small, distant, infuscate patches on the disk.

Head lustrous. Frons not depressed. Mandibles relatively short, regularly arcuate. Maxillary palpi medium-sized. Antennae elongate, antennomeres III–VII stout. Pronotum transverse, 1.5× wider than long. Anterior margin medially flattened, the lateral lobes small, well-detached. Lateral margin with a short, straight, backwardly-directed spine, and a short fold without projections. Anterior claw of the fore-tarsi feebly dilated at base. Elytra elongate, 3× longer than wide together, somewhat narrowed on the apical half, lustrous, rugulose-punctate. Thin costa between the centre of the humeral callus and the centre of the apical third. Elytral pubescence semi-erect, whitish. Tergite



VIII deeply and narrowly emarginate on the apical margin. Sternite divided into two lobes, each narrowing towards the apex, upwardly curved, their tips close to the pygidial tubercles. Aedeagus: tegmen similar to *Silis chimborazona*, dorsal stylus basally fused, Y-shaped, basal part short, apical part beyond the bifurcation sinuate, enlarged and dorsally excavate.

Dimensions: AL = 4.6 mm; HW = 1.12 mm; IOW = 0.79 mm; PL = 0.89 mm; PW = 1.32 mm; EL = 4.7 mm; EW = 1.5 mm.

**Etymology.** The specific epithet refers to the proximity of the city of El Angel

**Differential diagnosis.** Very near *Silis chimborazona* from which it differs in smaller size, reduced spines and folds of prothorax, narrow elytra, constricted lobes of sternite VIII and the form of the aedeagus.

**Natural history.** This unique specimen was obtained by beating dense, shrubby vegetation near a wet site isolated in a landscape devoted to agriculture.

***Silis drummondi* sp.nov.**

(Figs 4, 40, 41, 57, 64)

**Type material.** Holotype ♂: ECUADOR, SUCUMBIÓS, Limoncocha on Rio Napo, elev. 300 m, black light trap, 15.XI.1974, leg. Boyce A. Drummond, (NHMB). 5 paratypes (4 ♂ 1 ♀), same data. Holotype in NHMB, paratypes in NHMB et CCo.

**Description.** Holotype ♂. Length 6.1 mm. Orange-yellow. Head beyond antennae, first nine antennomeres, tibiae, tarsi chestnut brown.

Head transverse. Frons lustrous, slightly depressed. Eyes convex, bulging. Temples reduced, narrowing towards the base. Mandibles elongate, slender, regularly curved. Maxillary palpi elongate, final palpomere 3× longer than wide. Antennae elongate, slender, without bare patches.

Pronotum transverse, 1.55× wider than long. Anterior margin regularly arcuate, lateral lobes not particularly prominent. Lateral margin with an anterior, long, acute, curved spine and a thin sagittal fold before the basal angle. Basal margin arcuate. Elytra parallel, moderately elongate, 2.5× longer than wide together, shallowly rugulose-punctate, the punctures as wide as their intervals. Elytral pubescence of thin, yellow setae. Anterior claw of the protarsi basally dilated, the lobe narrow. Tergite VIII deeply excavate at mid-apex, tubercles reduced. Sternite VIII divided into two rectangular lobes, the external angle of the apical margin pointed. Aedeagus: tegmen with a curved, apically emarginate, ventral blade. Dorsal stylus fused. Internal sac with elongate, medial apophyses and two long, lateral spines.

Dimensions: AL = 5.9 mm; HW = 1.38 mm; IOW = 0.66 mm; PL = 1.09 mm; PW = 1.68 mm; EL = 4.4 mm; EW = 1.74 mm. Other ♂ paratypes: length 5.8–6.3 mm.

♀. Differs in shorter antennae; pronotum more transverse, without lateral spines or fold; apical margin of sternite VIII bisinuate, medially emarginate.

Dimensions: TL = 6.9 mm; AL = 5.2 mm; HW = 1.36 mm; IOW = 0.78 mm; PL = 1.14 mm; PW = 1.94 mm; EL = 5.5 mm; EW = 2.1 mm

**Etymology.** Dedicated to its discoverer, the American entomologist Dr. Boyce A. Drummond, who performed extended field work at Limoncocha Research Station near

Coca in the Oriente del Ecuador, and submitted “Comparative ecology and mimetic relationships of Ithomiine butterflies in eastern Ecuador” for his dissertation in 1976.

**Differential diagnosis.** *Silis drummondi* is very similar to *S. peruviana* Pic, but distinct in the pronotal spines of the male and quite different genitalia.

**Natural history.** Collected in the tropical forest, attracted by light traps.

***Silis elongatipennis* sp.nov.**

(Figs 6, 7, 8, 42, 43, 63, 65)

**Type material.** Holotype ♂: ECUADOR, MORONA-SANTIAGO, Lago Atillo 4 km E, paramos bush Asteraceae, 2°11'S-78°28'W, 3078 m, 29.XI.2007, 1.XII.2007, R. Constantin. 20 paratypes (14 ♂ 6 ♀), same data. Holotype and ♀ paratype deposited at NHMB, paratypes in QCAZ, MNHN, BMHN and CCo.

**Description.** Holotype ♂. Length 7.5 mm. Body black, only the apex of the mandibles testaceous.

Head wide, lustrous. Frons depressed. Eyes small, interocular distance  $2.8\times$  wider than ocular length. Mandibles and maxillary palpi short. Antennae elongate, slender. Temples developed, narrowed toward the base. Pronotum transverse,  $1.35\times$  wider than long. Anterior margin feebly medially convex, the lateral lobes backwardly projecting. Lateral margin with an elongate, straight, obliquely-oriented apophysis, reaching the humeri, and a developed fold, extended ventrally in front of the basal angle. Basal margin arcuate. Elytra rather elongate,  $3.7\times$  longer than wide together, rugulose-punctate. Elytral pubescence of whitish setae, longer near the suture and lateral margin. Apical tubercles of tergite VIII prominent, laterally inserted, separated by a deeply emarginate apical margin. Sternite VIII divided into two lobes, each forming a sinuate lamina, narrowing toward the apex, converging at mid-length and diverging near tip. Aedeagus peculiar for its elongate, parallel, ventral apophyses; dorsal stylus with thick, short basal part, then divided into two lateral projections and a short dorsal appendage.

Dimensions: AL = 7.1 mm; HW = 1.25 mm; IOW = 0.82 mm; PL = 1 mm; PW = 1.33 mm; EL = 6.1 mm; EW = 1.64 mm. Others ♂ paratypes: Length 7.1–7.9 mm.

♀. Differs in smaller eyes, wider frons, shorter antennae. Mandibles basally stout, angled before middle, apical part elongate. Pronotum without spines, lateral margin anteriorly expanded. Tubercles of tergite VIII prominent. Sternite VIII triangular, divided in the final three-quarters into two triangular lobes, with the margin of the split reflexed.

Dimensions of a ♀ paratype: TL = 7.3 mm; AL = 4.3 mm; HW = 1.32 mm; IOW = 0.92 mm; PL = 1.08 mm; PW = 1.58 mm; EL = 5.4 mm; EW = 1.68 mm. Others ♀ paratypes: Length 6.9–7.6 mm.

**Etymology.** The specific epithet refers to the peculiar elongate elytra.

**Differential diagnosis.** Very near to *Silis chimborazona* Gorham, from which it differs in the consistent black coloration, the peculiar elongate elytra, the elongate and acute lobes of sternite VIII, the aedeagus with an additional dorsal projection on the dorsal stylus.

**Natural history.** *Silis elongatipennis* was collected on the eastern slope of the cordillera, at the upper limit of the mountain forest, beating Asteraceae shrubs; it also occurred on *Chusquea* spp. bamboo.



***Silis explanicollis* sp.nov.**

(Figs 29, 49, 64)

**Type material.** Holotype ♂: ECUADOR, ZAMORA-CHINCHIPE, 30 km west of Zamora, paramos 1 km east of the pass, coordinate (WGS84): 3°59'16"S-79°06'52"W, 2534 m, 26.XI.2007, R. Constantin. Holotype preserved in author's collection (CCo).

**Description.** Holotype ♂: Length 7.9 mm. Body brown. Anterior part of frons, mandibles, coxae, major part of the femora except for their apical region orange-yellow. Dorsal face of the apex of the femora, tibiae and tarsi black. Head, pronotum and elytra covered with short, thin, yellow pubescence.

Head wide, eyes small and convex, frons slightly concave, lustrous; punctation very thin. Mandibles thin, elongate, regularly arcuate. Maxillary palpi not very long, final palpomere 2× longer than wide. Temples short and convex, narrowing feebly toward the bases. Antennae elongate, antennomeres cylindrical, thin, without evidence of sensorial furrows or lustrous patches. Pronotum regularly arcuate on the anterior margin, lateral lobes directed outwards. Lateral margin deeply notched somewhat before middle, basal angle with a wide, triangular, reflexed expansion. Two bumps on the base of the disc. Elytra elongate, 3× longer than wide together, parallel, without marginal reflexion, very thinly punctate. Fore-tibia straight. Anterior claw of front tarsus strongly lobed at base, the inner side of the claw slightly crenulate. Mesotibia arcuate, the inner side of the apex shortly dentate. Tergite VIII with two tubercles. Sternite VIII divided into two rectangular lobes. Aedeagus: tegmen with two long, ventral, sinuate apophyses. Dorsal stylus modified into a wide covering, a curved, apically-constricted blade. Internal sac with two long needles and a medial, apically dilated apophysis.

Dimensions: AL = 6.6 mm; HW = 1.48 mm; IOW = 1.02 mm; PL = 1.37 mm; apical PW = 1.75 mm; basal PW = 1.95 mm; EL = 5.7 mm; EW = 1.96 mm.

**Etymology.** The specific epithet is related to the peculiar expansion of the basal angle of the pronotum

**Differential diagnosis.** Near *Silis metallicipennis* Pic, it differs in colour pattern – dull reddish-brown without metallic reflection. Further, lateral margin of the pronotum more widely explanate and different form of the aedeagus.

**Natural history.** Collected by the road, on low foliage of small bushes, mainly Asteraceae, at the upper limit of the mountain forest.

***Silis gilletti* sp.nov.**

(Figs 1, 11, 25, 26, 51, 64)

**Type material:** Holotype ♂ and 2 paratypes ♀, ECUADOR, PICHINCHA, Bellavista Cloud Forest Reserve, 2200–2300 m, 0°00, 948'S-78°40, 824'W, tropical forest, general collecting, 24–28.VII.2007, ?coll. CPDT Gillett, BMNH{E} 2007-85; 1 paratype ♀, IMBABURA, Los Cedros, 1350 m, 0°18.500'N-78°46.780'W, 20–30.IX.2006, R. Cárdenas, ex: E3, QCAZ id.67776; 1 paratype ♀, SANTO DOMINGO DE LAS TSÁCHILAS, Chiriboga [30 km W Quito, 00°15'S-78°44'W], 2800 m, 23.IV.1958, W. Weyrauch (NHMB); 2 paratypes, 1 ♂ 1 ♀, SANTO DOMINGO DE LAS TSÁCHILAS, Estación Científica Rio Guajalito, 1800m, 0°13'53"S-78°40'10"W, 10.VI.2006, J. Garcia, QCAZ id.13709, 13710; 1 paratype ♂, SANTO DOMINGO DE LAS TSÁCHILAS, La Union del Toachi, carretera de Chiriboga km 21, 1476 m, 0°18'22"S-78°52'09"W, 13.V.2009, R. Constantin (CCo). Holotype preserved at BMNH, paratypes in BMNH, NHMB, QCAZ and CCo.

**Description.** Holotype ♂. Length 6.7 mm. Body black. Head and pronotum lustrous black, with faint blue metallic reflection. Elytra lustrous, dark blue, with greenish-blue metallic reflection, turning to violaceous reflection on a large central strip. Pubescence of whitish setae along the pronotal and elytral margins. A striking, narrow strip of dense, complete, flavous yellow setae along the suture, not reaching scutellum or apex.

Head transverse. Frons feebly depressed. Eyes small. Temples narrowing towards base. Maxillary palpi medium-sized, final palpomere 2× longer than wide. Antennae elongate, slender, without sensorial patches. Pronotum transverse, 1.4× wider than long. Anterior margin medially rectilinear, laterally rounded, the lateral lobes small, projecting. Basal part of the lateral margin with three notches delimiting a short indentation, a larger intermediate angle and an expanded basal angle. Basal margin slightly sinuate. Elytra 3× longer than wide together, very shallowly punctured. Yellow sutural setae directed inwards and backwards. Whitish marginal setae directed outwards and backwards. Protibiae flattened and apically enlarged. Anterior claw of protarsi basally lobed. Tergite VIII with close tubercles delimiting a wide apical emargination. Sternite VIII divided into two rectangular lobes, their apical margin deeply incised and hooked at the inner angle. Aedeagus peculiar for the reduction of the basal piece and medium-sized, slender, curved ventral apophyses. Dorsal stylus resembling twin curved blades, dilated and apically truncate, their tips with two concave facets connecting the tips of the ventral apophyses.

Dimensions: AL = 5.8 mm; HW = 1.28 mm; IOW = 0.92 mm; PL = 1.08 mm; PW = 1.51 mm; EL = 5 mm; EW = 1.7 mm. Others ♂ paratypes: Length 6.5–8.1 mm.

♀. Differs in shorter antennae, wider pronotum (PW/PL 1.46–1.56). Sternite VIII: apical margin triangularly expanded and depressed by two oblique, shallow furrows around its centre.

Dimensions of a ♀ paratype: Length = 7.6 mm; AL = 5.5 mm; HW = 1.38 mm; IOW = 0.89 mm; PL = 1.32 mm; apical and basal PW = 2.06 mm; EL = 6.1 mm; EW = 2.23 mm. Other ♀ paratypes: Length 6.9–7.8 mm.

**Etymology.** Respectfully dedicated to Dr. Conrad Gillett, entomologist at the British Museum and Imperial College, London, and a renowned Scarabaeidae expert.

**Differential diagnosis.** A medium-sized 6.5–8-mm metallic-blue species, near to *Silis richardhaenschi*, from which it differs in general coloration, greenish-blue rather than dark blue, the vestiture of white and yellow setae along the elytral suture and margin, different sculpture of the male pronotum and the form of the aedeagus.

**Natural history.** Adults were observed in tropical forest west of Quito, mainly at the edges of clearings, collected by beating saplings.

***Silis moreti* sp.nov.**

(Figs 2, 45, 62, 65)

**Type material.** Holotype ♂: ECUADOR, CAÑAR, Nudo de Azuay, Cerro Ansahuaico, 4400 m, 14.VIII.1988, 1 ♂, P. Moret. Holotype deposited at MNHN, Paris, in the collection of Neotropical *Silis*.



**Description.** Holotype ♂. Length 7.1 mm. Head and pronotum lustrous, black. Antennae, legs, abdomen dull, piceous black. Elytra yellow, a wide black strip along the suture from the base to near the apex.

Head wider than long, temples convex and strongly narrowing toward the base. Maxillary palpi medium-sized, final palpomere  $1.8\times$  longer than wide. Mandibles relatively short, arcuate. Antennae stout, rather short, reaching the apex of the elytra. Pronotum transverse,  $1.34\times$  wider than long. Anterior margin shortly lobed at the sides. Inner appendage of the basal corner reduced to a small callus. Outer appendage without projections, separated from the inner by an elongate gutter. Elytra strongly reduced,  $1.28\times$  longer than combined width, dull, covered with short, whitish setae covering only the first tergite and the base of the second. Wingless. All tibiae relatively short and arcuate. Anterior claw of the front tarsus basally lobed. Tergite VIII: tubercles reduced. Sternite VIII divided into two triangular lobes, apically rounded. Aedeagus: dorsal stylus Y-shaped, basally fused, its apical branches short, hooked at the apex.

Dimensions: AL = 3.7 mm; HW = 1.14 mm; IOW = 0.76 mm; PL = 0.92 mm; apical and basal PW = 1.24 mm; EL = 1.65 mm; EW = 1.29 mm.

**Etymology.** Respectfully dedicated to its discoverer, the French entomologist Pierre Moret, a renowned taxonomist and biologist specialising in the Carabidae of the Ecuadorian páramos.

**Differential diagnosis.** Very near to *Silis chimborazona* Gorham, from which it differs in shorter antennae, reduction of the lateral projections of the pronotum, strong reduction of the elytra and a different form of the aedeagus.

**Natural history.** The place where *S. moreti* was found is part of the upper superpáramo (SKLENÁR & BALSLEV, 2005), a vegetation belt characterised by short-stem grasses, prostrate subshrubs and herbs, acaulescent rosettes and cushion plants. The vegetation is poor and patchy, confined to a few favourable habitats. The holotype was collected beneath a stone in one of these preserved biotopes (MORET 2005a: 224, colour plate 8a).

*Silis moreti* is the first specimen collected in the Andean páramos at such great altitude. The reductions observed are similar to those of the rare species of Cantharidae observed at the highest elevations in the Alps and the Himalayas.

### *Silis otongae* sp.nov.

(Figs 19, 20, 46, 65)

**Type material.** Holotype ♂. ECUADOR, COTOPAXI, San Francisco de las Pampas,  $0^{\circ}25'S-78^{\circ}55'W$ , 4–8.VII.2002, F. Baidessin, QCAZ id.8807; 1 paratype ♂, COTOPAXI, Otonga, 2000 m,  $0^{\circ}25'S-79^{\circ}00'W$ , 21.VII.1997, L. Tapia & P. Ponce, ex Monte B4, QCAZ id.8808; 1 paratype ♀, COTOPAXI, Las Pampas, Otonga, 1700 m,  $0^{\circ}25'S-79^{\circ}00'W$ , 17.V.1997, ex *Croton* spp., G. Onore, QCAZ id.8809; 1 paratype ♀, COTOPAXI, Las Pampas,  $0^{\circ}25'16''S-78^{\circ}57'04''W$ , 10.IX.1997, malaise trap, G. Onore, QCAZ id.8811; 1 paratype ♂, PICHINCHA, Nanegalito, 1600 m,  $0^{\circ}04'N-78^{\circ}40'50''W$ , 10.VII.1998, F. Palomeque, QCAZ id.8810; 1 paratype ♀, PICHINCHA, Nanegalito, 14.I.1996, A. Barragan, QCAZ id.8800; 1 paratype ♀, PICHINCHA, Nanegalito, 1500 m,  $0^{\circ}08'N-78^{\circ}41'W$ , 27.V.2005, D. Serrano, QCAZ id.8871. Holotype and 4 paratypes preserved at QCAZ, Quito; 2 paratypes preserved in author's collection (CCo).

**Description.** Holotype. Length 9.6 mm. Body black. Antennae piceous, Pronotum reddish brown, the margins orange-yellow. Scutellum and elytra testaceous-yellow. Legs

orange-yellow except the apex of the pro-, meso- and metafemora, the pro-, meso-, and apex of the metatibiae, and tarsi, all piceous black. Abdomen piceous.

Head smaller than the pronotum. Eyes bulging. Frons slightly depressed, narrowing towards the base. Antennae long, slender, antennomeres not canaliculate. Pronotum 1.2× wider than long, lustrous, with yellow pubescence short and scarce. Anterior margin rounded, lateral lobes reduced. Lateral margin notched in the middle, a short, dentiform process beyond centre and an acute triangular projection at the basal angle. Anterior, lateral and basal margins narrowly reflexed. Elytra elongate, parallel, 3× longer than wide together, thinly punctured, covered with short, dense, yellow setae. Anterior claw of protarsi lobed at base. Mesocoxae prolonged backwards by a triangular projection. Mesofemora arcuate, inflated. Mesotibiae arcuate, expanded in the apical quarter and inwardly hooked at the tip. Apical margin of tergite VIII excavate, the tubercles prominent and forming the base of a curved expansion. Sternite VIII divided into two rectangular lobes, their apical margin emarginate. Aedeagus peculiar for the reduction of the basal part of the tegmen, the development of sinuate ventral apophyses, and a cylindrical, apically twin-hooked, dorsal stylus.

Dimensions: AL = 7.1 mm; HW = 1.73 mm; IOW = 0.86 mm; PL = 1.62 mm; PW = 1.95 mm; EL = 7.6 mm; EW = 2.5 mm. Other paratypes: Length = 9.4–9.6 mm.

♀. Differs from the male in shorter antennae, more transverse pronotum, apical margin of sternite VIII with a shallow pit near the apical margin and coming to a point around mid-section

Dimensions of a ♀ paratype: TL = 9.4 mm; AL = 5.5 mm; HW = 1.58 mm; IOW = 0.92 mm; PL = 1.51 mm; PW = 2.18 mm; EL = 7.3 mm; EW = 2.6 mm. Other paratypes: Length = 8.4–9.4 mm.

**Etymology.** The specific name is related to the type locality, the Otonga forest reserve, part of the community of San Francisco de las Pampas. This remarkable patch of Ecuadorian cloud forest has benefited from various types of protection provided by the extended activities of the Otonga Foundation.

**Differential diagnosis.** A species near to *Silis sabanillae* sp.nov., differing from other *Silis* in the peculiar denticulation of the pronotal margin, the modified intermediate legs, and different form of the aedeagus.

**Natural history.** No data available, apart the emergence of the males at the beginning of July. The peculiar evolution of the intermediate legs may be related to adults positioning themselves vertically on stems, though the biology remains unknown.

### *Silis sabanillae* sp.nov.

(Figs 3, 30, 54, 65)

**Type material.** Holotype ♂: ECUADOR: ZAMORA-CHINCHIPE, Rio San Francisco, Estación científica San Francisco, 1850 m, 3°58'S-79°04'W, L.F., 1–8.XII.1999, D. Bartsch & C. Häuser; 1 paratype ♂, *idem*, 1–4.XII.1999; 1 paratype ♂, *idem*, 10–11.XII.1999; 1 paratype ♂, *idem*, 1750–1900 m, 3.XII.1999. Holotype and 2 paratypes preserved at SMNS (Stuttgart), one paratype in author's collection (CCo).

**Description.** Holotype ♂. Length 12.4 mm. Testaceous-yellow. Femora castaneous. Antennae and tibiae light testaceous-yellow.



Head lustrous. Eyes prominent, bulging. Frons concave between the antennae. Maxillary palpi elongate, final palpomere  $3\times$  longer than wide. Antennae elongate, slender, antennomeres III–IV the widest,  $2.8\times$  longer than wide, following antennomeres progressively thinner toward the apex. Pronotum  $1.13\times$  wider than long, lustrous, impunctate, barely covered with short, sparse, yellowish pubescence. Anterior margin narrowly rounded, the lateral lobes small, not prominent. Lateral margin notched in the middle by obtuse emargination. Basal angles right. Basal margin bisinuate. Elytra elongate, parallel,  $3\times$  longer than wide together, covered with thin, dense, yellow pubescence. Anterior claw of the protarsi triangularly expanded. Protibiae and mesotibiae arcuate. Apex of the mesotibiae directed inwards. Tergite VIII with two prominent tubercles. Sternite VIII divided into two triangular lobes, indented at their inner margin. Aedeagus: tegmen with two dorsal processes and two slender, sinuate, ventral apophyses; dorsal stylus subcylindrical, twin-pointed at tip.

Dimensions: AL = 9.1 mm; HW = 2.05 mm; IOW = 1 mm; PL = 1.98 mm; PW = 2.24 mm; EL = 9.4 mm; EW = 3.2 mm. Other paratypes: Length = 12.2–12.6 mm.

**Etymology.** The specific name is related to Sabanilla, a mountain village near the San Francisco Scientific Station.

**Differential diagnosis.** Near *Silis basiincrassata* Wittmer in dimensions and colour pattern, but distinct in the simple male antennae and in pronotum without spines.

**Natural history.** The four males of the type-series were attracted to UV-light traps at the edge of the mountain forest, at the “Estación científica San Francisco” on the northern border of the Podocarpus national park.

### *Silis spinithorax* sp.nov.

(Figs 21, 22, 58, 65)

**Type material.** Holotype ♂ and 1 paratype ♀: ECUADOR, ZAMORA-CHINCHIPE, 15 km west of Zamora, woody slope, wet place,  $3^{\circ}59'19''\text{S}$ – $79^{\circ}01'10''\text{W}$  [WGS84], 1600 m, 26.XI.2007, R. Constantin (CCo). Both preserved in author's collection (CCo).

**Description.** Holotype ♂. Length 5.6 mm. Head black, epistome rufescent. Mandibles, maxillary palpi orange yellow. Pronotum, scutellum, femora, basal half of tibiae orange. Antennae, final maxillary palpomere, knees, apical half of tibiae and tarsi piceous. Elytra fuliginous black, a narrow orange border on the suture and the central half of the lateral margins. Mesosternum, metasternum and abdomen piceous.

Head short, strongly narrowing toward the base. Frons lustrous, depressed beyond antennal sockets. Mandibles elongate, slender, arcuate. Maxillary palpi medium-sized, final palpomere  $2\times$  longer than wide. Antennae slender. Pronotum transverse,  $1.4\times$  wider than long, lustrous, sparse pubescence of yellow setae on lateral parts. Anterior margin regularly arcuate, lateral lobes not prominent. Lateral margin with an elongate, straight, acute apophysis posteriorly directed, and a short, laterally excavate fold. Basal margin arcuate. Elytra slightly enlarged in the apical third, lustrous, rugulose-punctate, the punctures as wide as their intervals. Elytral pubescence of short, thin, fulvous setae. Anterior claw of the protarsi with an angular tooth at the base. Tergite VIII: apical margin triangularly excavate, tubercles not prominent. Sternite VIII divided into two

lobes, apical margin regularly rounded. Aedeagus: tegmen forming a dorsal ring with a small dorsal appendage, forked at the tip and two distant, parallel, ventral apophyses. Dorsal stylus forming a long curve. Internal sac with a median stylus and two elongate, curved needles.

Dimensions: AL = 5.9 mm; HW = 1.12 mm; IOW = 0.59 mm; PL = 0.87 mm; PW = 1.41 mm; EL = 4.6 mm; EW = 1.64 mm.

♀. Differs in shorter antennae, transverse pronotum without spines. Mandibles elongate, similar to the male. Pronotum flattened, lateral margin explanate, slightly reflexed. Sternite VIII triangular, apical margin rounded, feebly emarginate.

Dimensions: AL = 5 mm; HW = 1.38 mm; IOW = 0.66 mm; PL = 1.09 mm; PW = 1.68 mm; EL = 4.4 mm; EW = 1.74 mm. Other paratypes: Length = 5.8–6.3 mm.

**Etymology.** The specific epithet refers to the thin, slender projections at the basal angles of the pronotum.

**Differential diagnosis.** *Silis spinithorax* is near to *S. peruviana* Pic, 1906, and also to the related *Silis major* Pic, 1906 (syntype labelled from Peru, Rio Mixiollo), *S. pilifera* Pic, 1910 (syntype labelled from Peru, Chachapoyas), and *S. venezuelensis* Pic, 1927 (syntype labelled from Venezuela, Caracas). The type material of the mentioned species have been examined at MNHN. *Silis spinithorax* displays a neighbouring although different disposition of the thoracic spines and differs strongly in the characters of the aedeagus.

**Natural history.** The type pair was collected along the road to Zamora, among low vegetation in a wet place where a streamlet forms a minute waterfall. Not observed during two following visits, either at the same place or nearby.

### Conclusions

The *Silis* of Ecuador are distinctive for the characters of pronotum, and clearly separated by the forms of the aedeagi. Most of them live in the páramos at high altitude, and are species rich. They appear as uncommon, observed as only scarce specimens, differing in their rarity from other Cantharidae such as *Discodon*, *Plectonotum* or *Chauliognathus*. As a consequence, their distribution is mostly unknown, limited to few localities. The adults prefer the wettest places, such as streamlets, waterfalls and wet meadows.

Classification within the neotropical *Silis* and allied genera needs further morphological studies and the present contribution is but a first step to more specific identification of them.

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### Resumen

Ocho especies del género *Silis* Charpentier, 1825, eran conocidas del Ecuador antes de este trabajo. Se añaden aquí nueve especies nuevas procedentes del Ecuador : *Silis angelensis* sp.nov. (prov. Carchi), *S. drummondi* sp.nov. (prov. Sucumbiós), *S. elongatipennis* sp.nov. (prov. Morona-Santiago), *S. explanicollis* sp.nov. (prov. Zamora-Chinchipe), *S. gilletti* sp.nov. (prov. Pichincha, Imbabura, Santo Domingo de las Tsáchilas ), *S. moreti* sp.nov. (prov. Cañar), *S. otongae* sp.nov. (prov. Cotopaxi, Pichincha), *S. sabanillae* sp.nov. (prov. Zamora-Chinchipe), *S. spinithorax* sp.nov. (prov. Zamora-Chinchipe). *Discodon trinotatum* Pic, 1934 y *Discodon haenschi* Pic, 1927 están transferidos al género *Silis*, nueva comb. *Silis haenschi* (Pic, 1927), preocupado, recibe el nuevo nombre de *Silis richardhaenschi*, nomen novum. *Silis lojaensis* Pic, 1934 es sinónimo de *Silis foveolata* Kirsch, 1864, syn.nov. y *Silis metallicipennis* var. *immaculaticollis* Pic, 1934, sinónimo de *Silis metallicipennis* Pic, 1934. *Silis ohausi* Pic, 1911 está transferido al género *Polemus* LeConte, 1851, comb.nov. Se proponen descripciones adicionales y nuevos datos de captura para *Grandesilis canelosensis* Pic, 1955, *Silis banosensis* Pic, 1916, *S. basiincrassata* Wittmer, 1969, *S. chimborazona* Gorham, 1891, *S. foveolata* Kirsch, 1864, *S. metallicipennis* Pic, 1934, *S. peruviana* Pic, 1906, *S. richardhaenschi*, nom.nov., *S. trinotata* (Pic, 1934). Las características de los géneros de Silinae presentes en el Ecuador están discutidas, la presencia en el Ecuador de *Silis* pertenecientes al subgénero *Hapalocrosilis* Pic, 1916, es confirmada, y se propone una clave para identificar los géneros de Silinae presentes en el Ecuador. Se propone una clave dicotómica para identificar las especies de *Silis*, con las fotografías de los adultos y detalles de los pronotos, así como la ilustración de los caracteres de las genitalia masculinas. Se incluyen mapas de distribución en Ecuador.

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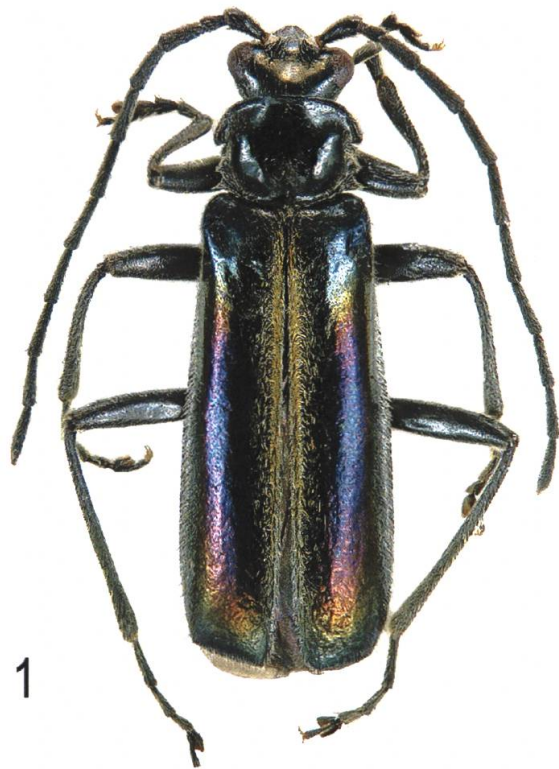
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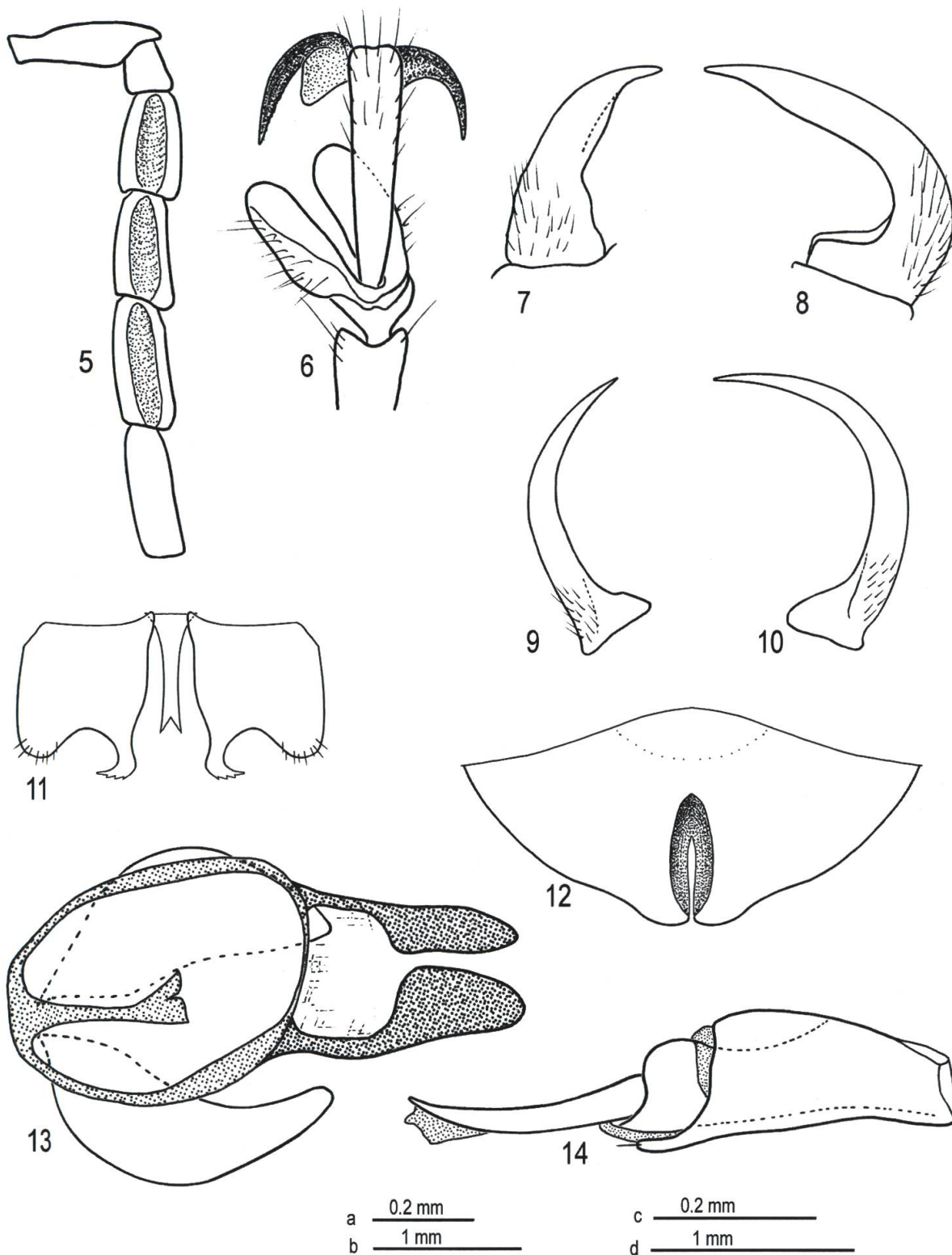


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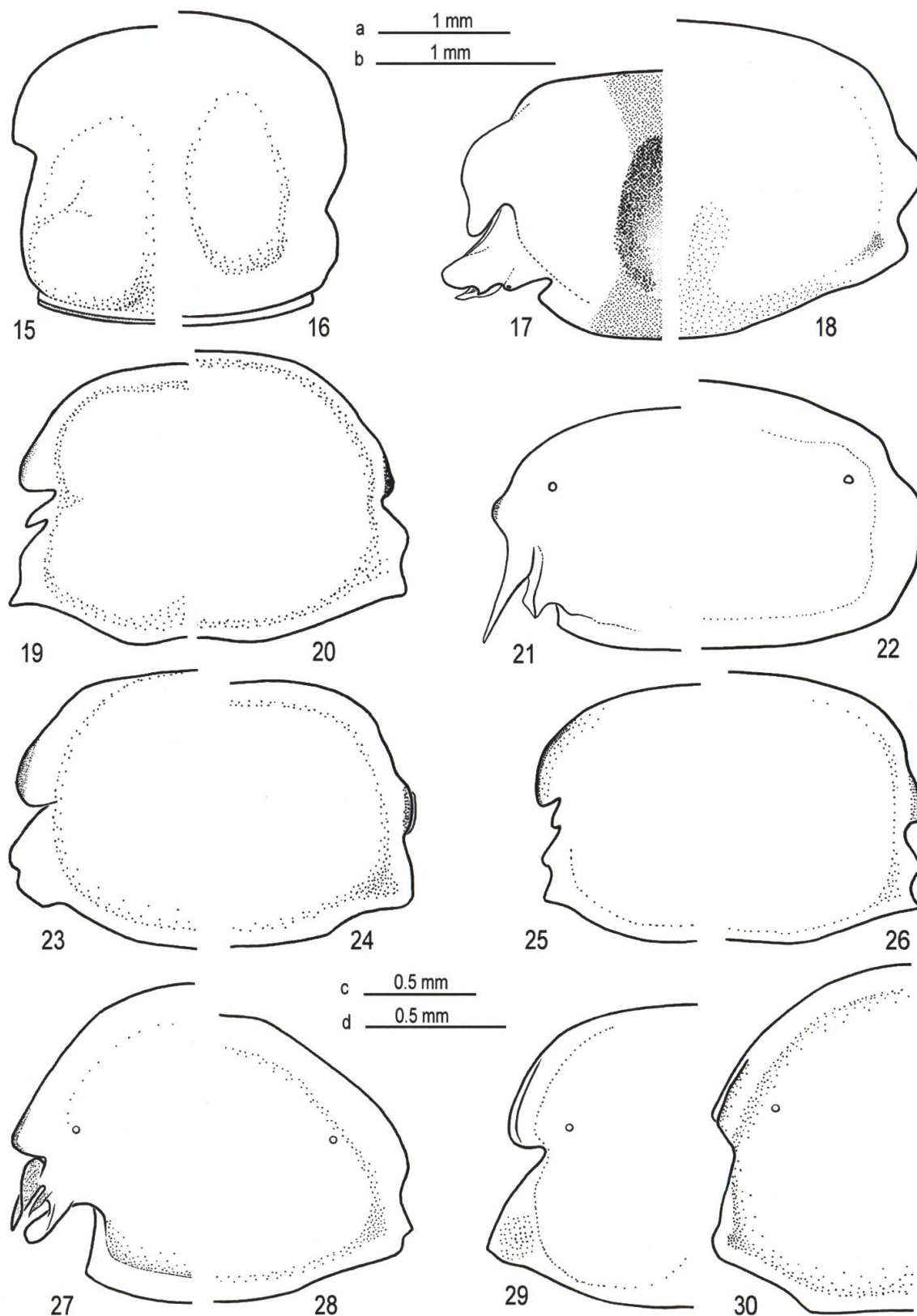
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Figs 1–4. Male *Silis* habitus: 1, *Silis gilletti* sp.nov.; 2, *Silis moreti* sp.nov.; 3, *Silis sabanillae* sp.nov.; 4, *Silis drummondi* sp.nov.

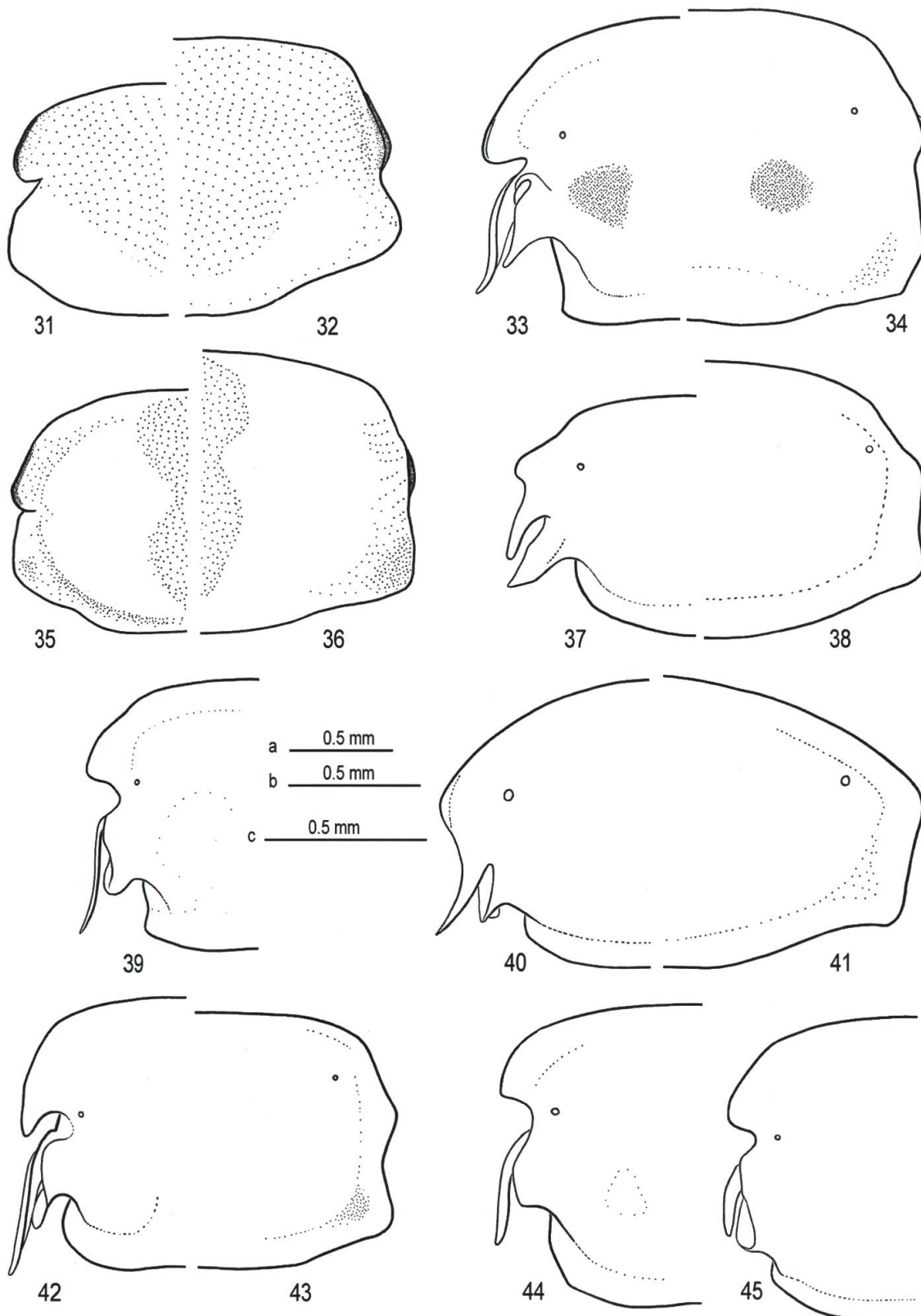


**Figs 5–14.** 5, *Silis basiincrassata* Wittmer: male right antennomeres I–VI, dorsal view. 6–8, *S. elongatipennis* sp.nov.: 6, male front right tarsus, dorsal view; 7, male left mandible, dorsal view; 8, female right mandible. 9–10, *S. peruviana* Pic, 1906: 9, male left mandible, dorsal view; 10, female right mandible. 11, *S. gilletti* sp.nov.: male sternite VIII, ventral view. 12, *S. richardhaenschi* nom.nov.: female sternite VIII, ventral view. 13, *S. foveolata* Kirsch: male segment IX, latero-dorsal view, tergite VIII removed. 14, *S. chimborazona* Gorham: male median lobe, side view. (Scale a: 7–10, 13, 14; b: 5; c: 6; d: 11, 12.)



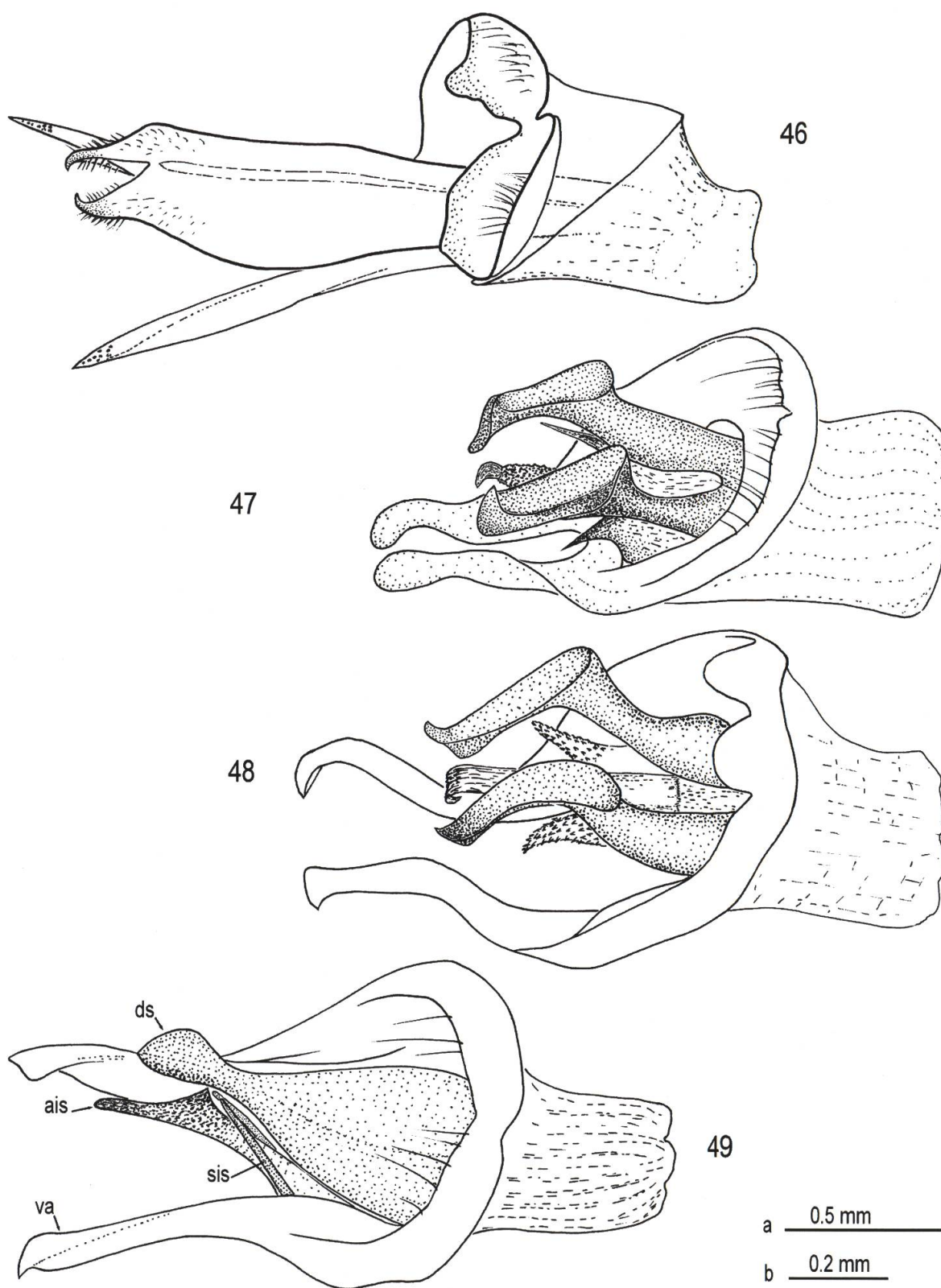


**Figs 15–30.** 15, 16, *Grandesilis canelosensis* Pic. 17, 18, *Silis foveolata* Kirsch. 19, 20, *S. otongae* sp.nov. 21, 22, *S. spinithorax* sp.nov. 23, 24, *S. richardhaenschi* nomen nov. 25, 26, *S. gilletti* sp.nov. 27, 28, *S. basiincrassata* Wittmer. 29, *S. explanicollis* sp.nov. 30, *S. sabanillae* sp.nov. 15, 17, 19, 21, 23, 25, 27, 29, 30, male pronotum, left halves; 16, 18, 20, 22, 24, 26, 28, female pronotum, right halves, dorsal view (Scale a: 15–16, 27–28; b: 19–20, 23–24; c: 25–26, 29–30; d: 17–18, 21–22.)

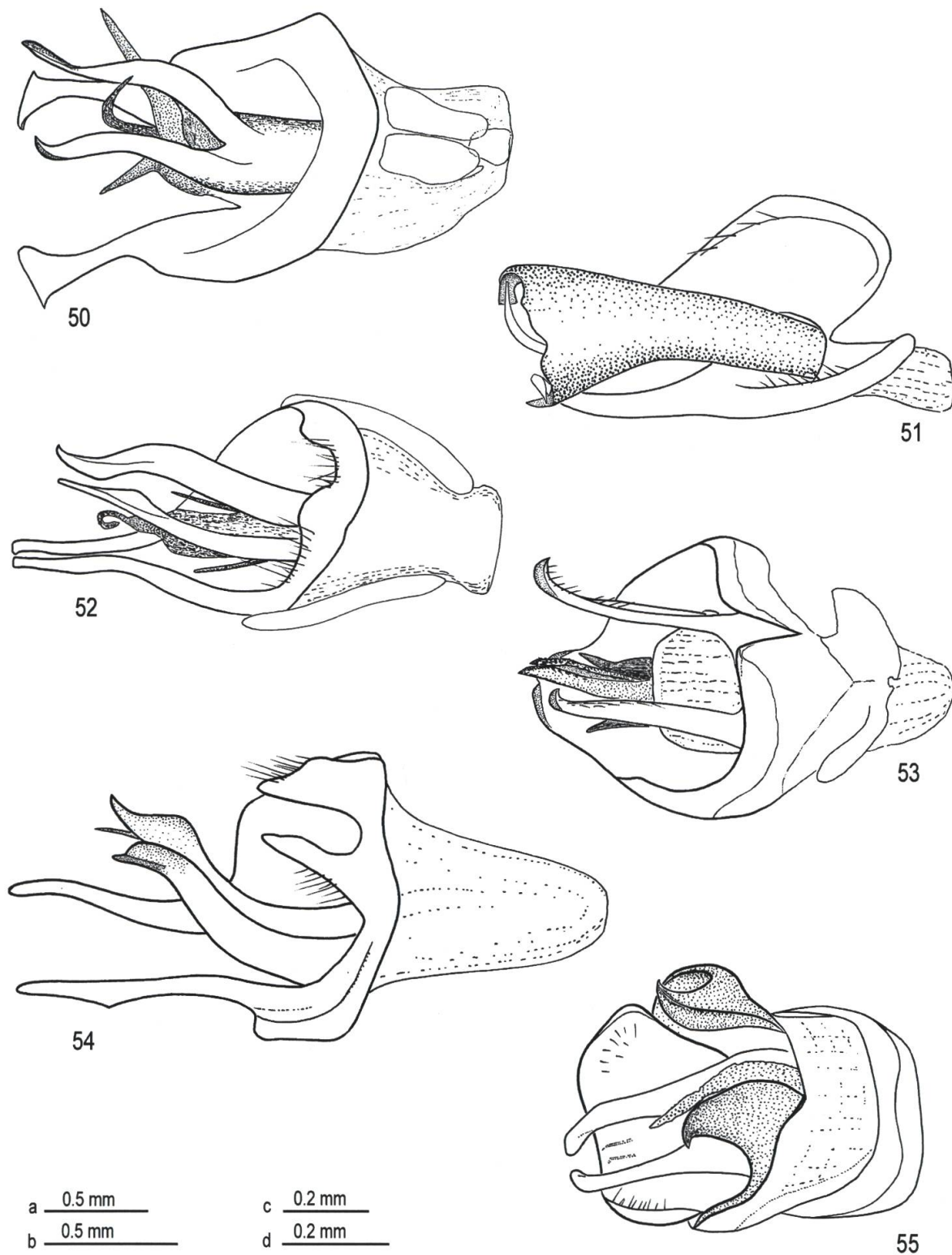


**Figs 31–45.** 31, 32, *Silis metallicipennis* Pic. 33, 34, *S. banosensis* Pic. 35, 36, *S. trinotata* (Pic). 37, 38, *S. peruviana* Pic. 39, *S. chimborazona* Gorham. 40, 41, *S. drummondi* sp.nov. 42, 43, *S. elongatipennis* sp.nov. 44 *S. angelensis* sp.nov., 45 *S. moreti* sp.nov.; 31, 33, 35, 37, 39, 40, 42, 44, 45, male pronotum, left halves; 32, 34, 36, 38, 41, 43, female pronotum, right halves, dorsal view (Scale a: 31–32, 35–36; b: 37–43; c: 44–45.)



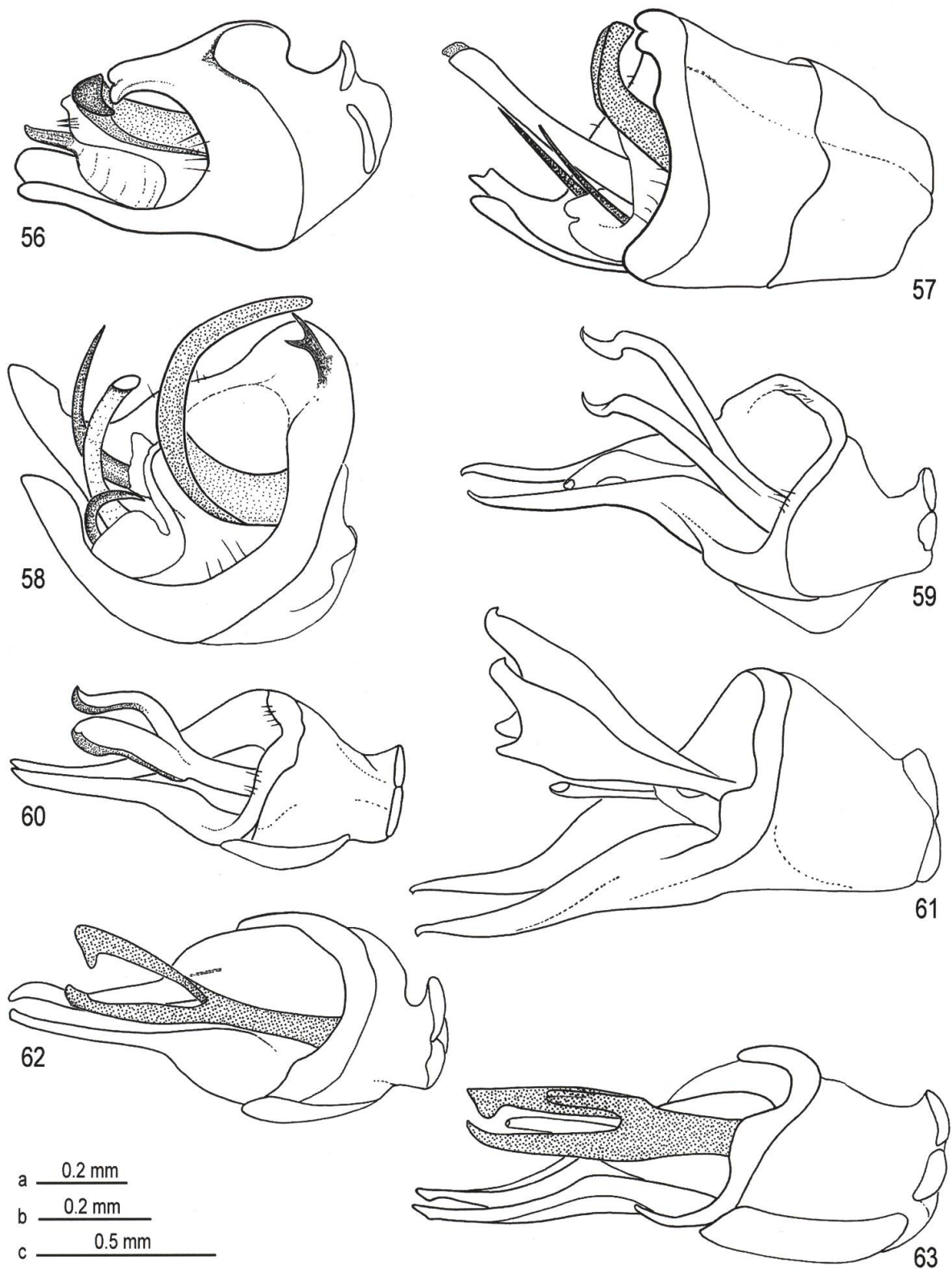


**Figs 46–49.** Aedeagi of *Silis*, latero-dorsal view: 46, *Silis otongae* sp.nov.; 47, *S. trinotata* (Pic); 48, *S. metallicipennis* Pic; 49, *S. explanicollis* sp.nov. (ais, apex of internal sac; ds, dorsal stylus; sis, spines of internal sac; va, ventral apophyse. Scale a: 46; b: 47–49.)

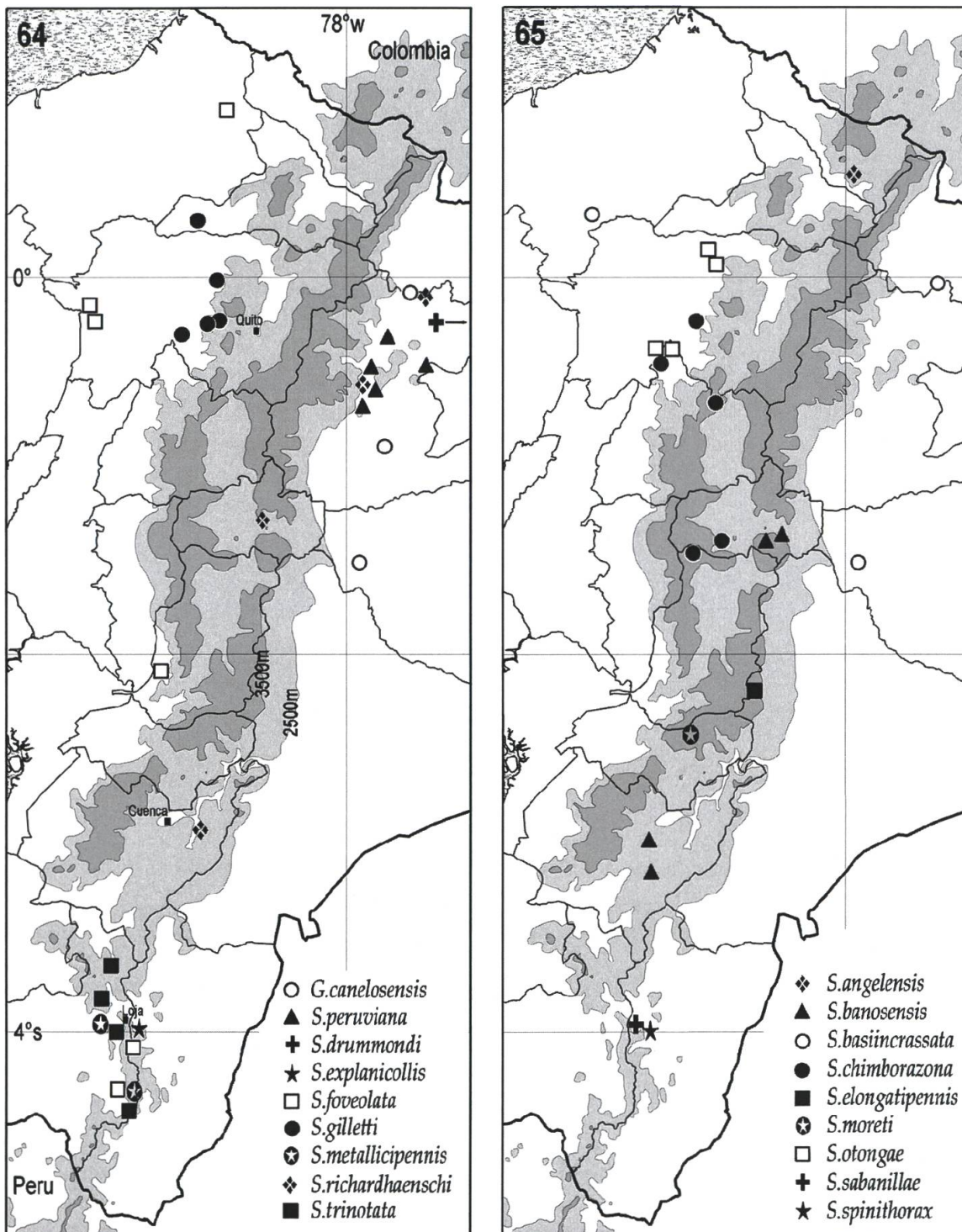


**Figs 50–54.** Aedeagi of *Silis* and *Grandesilis*, latero-dorsal view: 50, *Silis basiincrassata* Wittmer; 51, *S. gilletti* sp.nov.; 52, *S. richardhaenschi* nom.nov.; 53, *Grandesilis canelosensis* Pic; 54, *Silis sabanillae* sp.nov. **Fig. 55.** Aedeagus of *Silis foveolata* Kirsch, latero-ventral view (Scale a: 50, 54; b: 52–53; c: 51; d: 55.)





**Figs 56–63.** Aedeagi of *Silis*, latero-dorsal view: 56, *Silis peruviana* Pic; 57, *S. drummondi* sp.nov.; 58, *S. spinithorax* sp.nov.; 59, *S. chimborazona* Gorham; 60, *S. angelensis* sp.nov.; 61, *S. banosensis* Pic; 62, *S. moreti* sp.nov.; 63, *S. elongatipennis* sp.nov. (Scale a: 57; b: 56, 58; c: 59–63.)

Figs 64–65. Map of distribution of *Silis* spp. and *Grandesilis* in Ecuador.



