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Saica Amyot & Serville, 1843 (Reduviidae, Emesinae, Saicini): taxonomic revision and phylogenetic analysis with morphological characters

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ABSTRACT
The Neotropical assassin bug genus *Saica* Amyot & Serville, 1843 (Reduviidae Latreille, 1807, Emesinae Amyot & Serville, 1843, Saicini Stål, 1859) includes thirteen valid species, nevertheless its biology and natural history is almost unknown. A taxonomic revision and a morphological phylogenetic analysis were carried out to test the species limits and to propose a hypothesis of evolutionary relationships. *Saica* is characterized by the tufts of strong setae on the mandibular plates and on the postocular region; the short pedicellus; the produced anterior margin of the proepisternal supracoxal lobe; the simple strong setae on the prolegs; the bifid posteromedial process of pygophore; and the vertical to subvertical posterior margin of the abdominal sternite VII in females. After this study, we propose fourteen valid species: *Saica apicalis* Osborn & Drake, 1915, *S. carayoni* Villiers, 1943, *S. cruentata* Bergroth, 1913, *S. elkinsi* Blinn, 1994, *S. erubescens* Champion, 1898, *S. fuscipes* Stål, 1862, *S. lativentris* Villiers, 1943, *S. meridionalis* Fracker & Bruner, 1924, *S. ochracea* Distant, 1902, *S. recurvata* (Fabricius, 1803), *S. rubripes* Champion, 1898, *S. subinermis* Hussey, 1953, *S. tibialis* Stål, 1862, and *S. tupackatari* n. sp. from Bolivia. The phylogenetic analyses recovered *Saica* as a monophyletic group with the following set of relationships: ((*S. ochracea* + *S. tupackatari* n. sp.) (*S. carayoni* (*S. recurvata* (*S. rubripes* ((*S. subinermis* (*S. apicalis* + *S. meridionalis*)) (*S. elkinsi* (*S. erubescens* (*S. lativentris* + *S. tibialis*)))))))).

KEY WORDS
Heteroptera,
Neotropical region,
phylogeny,
new species.

RÉSUMÉ
Saica *Amyot & Serville, 1843 (Reduviidae, Emesinae, Saicini) : révision taxonomique et analyse phylogénétique avec des caractères morphologiques.*
Le genre de punaise assassine néotropicale *Saica* Amyot & Serville, 1843 (Reduviidae Latreille, 1807, Emesinae Amyot & Serville, 1843, Saicini Stål, 1859) comprend treize espèces valides, mais sa biologie et son histoire naturelle sont très peu connues. Une révision taxonomique et une analyse phylogénétique morphologique ont été réalisées pour déterminer les limites des espèces et proposer une hypothèse sur les relations évolutives. *Saica* se caractérise par les touffes de fortes soies sur les plaques mandibulaires et sur la région postoculaire ; le pédicellus court ; le bord antérieur proéminent du lobe supracoxal proépisternal ; les fortes soies simples sur les pattes antérieures ; le processus postéromédial bifide du pygophore ; et le bord postérieur vertical à subvertical du sternite abdominal VII chez les femelles. Après cette étude, nous proposons quatorze espèces valides : *Saica apicalis* Osborn & Drake, 1915, *S. carayoni* Villiers, 1943, *S. cruentata* Bergroth, 1913, *S. elkinsi* Blinn, 1994, *S. erubescens* Champion, 1898, *S. fuscipes* Stål, 1862, *S. lativentris* Villiers, 1943, *S. meridionalis* Fracker & Bruner, 1924, *S. ochracea* Distant, 1902, *S. recurvata* (Fabricius, 1803), *S. rubripes* Champion, 1898, *S. subinermis* Hussey, 1953, *S. tibialis* Stål, 1862, and *S. tupackatari* n. sp. de Bolivie. Les analyses phylogénétiques ont retrouvé *Saica* monophylétique avec les relations suivantes : ((*S. ochracea* + *S. tupackatari* n. sp.) (*S. carayoni* (*S. recurvata* (*S. rubripes* ((*S. subinermis* (*S. apicalis* + *S. meridionalis*)) (*S. elkinsi* (*S. erubescens* (*S. lativentris* + *S. tibialis*)))))))).

MOTS CLÉS
Hétéroptères,
Région néotropicale,
phylogénie,
espèce nouvelle.

INTRODUCTION

Recent studies with molecular and morphological evidence changed the status of the formerly Saicinae Stål, 1859 to tribe level within the Emesinae Amyot & Serville, 1843 (Reduviidae Latreille, 1807), transferring the genus *Oncerotrachelus* Stål, 1868 to the new tribe Oncerotrachelini Standring, Forero & Weirauch, 2023 (Standring *et al.* 2023), and suggesting that the genus *Saicireta* Melo & Coscarón, 2005 could be outside Saicini Stål, 1859 (Castro-Huertas & Melo 2023). Nowadays, the tribe Saicini (Reduviidae, Emesinae) comprises 24 genera and 147 species worldwide (Castro-Huertas & Melo 2024).

Nine genera of Saicini are known from the Neotropical region, the genus *Saica* Amyot & Serville, 1843 being the most diverse with 13 described species: *Saica apicalis* Osborn & Drake, 1915; *S. carayoni* Villiers, 1943; *S. cruentata* Bergroth, 1913; *S. elkinsi* Blinn, 1994; *S. erubescens* Champion, 1898; *S. fuscipes* Stål, 1862; *S. lativentris* Villiers, 1943; *S. meridionalis* Fracker & Bruner, 1924; *S. ochracea* Distant, 1902; *S. recurvata* (Fabricius, 1803) (divided into nominate subspecies and *S. recurvata antillarum* McAtee and Malloch, 1923); *S. rubripes* Champion, 1898; *S. subinermis* Hussey, 1953; and *S. tibialis* Stål, 1862. The genus has been characterized by the acute to subacute process on the lower anterior angle of the prothorax, the pedicel about half the length of the scape, the bifid posteromedial process of the pygophore, and the vertical to subvertical posterior margin of the seventh abdominal sternite in females (Blinn 1990; Melo & Coscarón 2005). The phylogenetic hypothesis obtained by Castro-Huertas & Melo (2023) for the Saicinae recovered a clade composed by *Polytoxus* Spinola, 1840, *Pseudosaica* Blinn, 1990, *Micropolytoxus* Elkins, 1962 and *Saica*. All of these genera share the absence of spiniform processes on the prolegs, and the stout simple setae on the ventral surface of the procoxa. Within this clade, *Polytoxus* appears to be the sister-group of *Saica*, which is recovered as monophyletic and supported by the simple setae on the anterodorsal margin of the proepisternal supracoxal lobe. In this analysis, the monophyly of *Saica* is corroborated and supported by the bifid posteriormedial process of pygophore.

Even though the biology of *Saica* species is almost unknown, they seem to be nocturnal, as many specimens have been usually collected with light traps (Blinn 1994; Swanson 2020). Macropterous males and females, and micropterous females of *Saica elkinsi* were collected in a grass field (Blinn 1994), and similar habits have been recorded in other Saicini genera associated with Poaceae (Ishikawa & Yano 1999, 2002; Ishikawa & Okajima 2003). Recently, images of a species of *Saica* were published in the citizen science platform iNaturalist, showing the copulatory behavior known as side-by-side, with the male laterally to the female, locating the abdomen slightly turned to the side (Fig. 1A).

In this contribution, we provide a taxonomic revision of the species, documenting the male and female genitalia, providing distributional maps, and proposing a key to the species of the genus, including a new species from Bolivia. In addition, to test the evolutionary relationships among the species, we provide a phylogenetic hypothesis for the genus.

MATERIAL AND METHODS

Collections and specimens revised

Nineteen entomological collections, 79 specimens of *Saica*, and 25 Visayanocorini and Saicini specimens of the outgroup were examined for this study (Table 1). Specimens belong to the following institutions, which abbreviations are those suggested by Evenhuis (2017).

To generate the list of examined specimens, an automated excel spreadsheet (Automatex) was used (Brown 2013), and subsequently manually edited. Examined material data is presented in the following order: Countries, arranged from

north to south and east to west; and primary political divisions and specific localities alphabetically arranged. When citing the examined material, a backslash indicates a separate label.

High-resolution images of type specimens for the following species were made available by the pertinent curators and included in the plates: *S. carayoni*, male holotype (Fig. 2E, F), (MNHN); *S. elkinsi*, female paratype (Fig. 2G, H) (USNM); *S. fuscipes*, female holotype (Fig. 3A, B) (NHMW); *S. ochracea*, male holotype (Fig. 3G, H), and *S. rubripes*, male lectotype (here designated) (Fig. 4A, B) (BMNH); and *S. subinermis*, male holotype (UMMZ) (Fig. 4E, F). Other images of type material of *Saica* species are available as Appendix 4.

Genitalic dissections and terminology

Dissection and imaging of genital structures follow Forero & Weirauch (2012). Dissected structures were documented with a Canon EOS Rebel T7i digital camera, equipped with Helicon Remote software v3.9.11W, and stacked in Helicon Focus v8.1.0. The scopula was observed by scanning electron microscopy (SEM) (Fig. 1G), following in part the protocol used by Castro-Huertas *et al.* (2019); with a Zeiss Gemini SEM 360 at the Laboratorio de Microscopia Electrónica de Barrido of the Museo Argentino de Ciencias Naturales Bernardino Rivadavia (MACN, Buenos Aires, Argentina). Adobe Photoshop CS6 v13.1.2 was used to adjust image light levels and create composite image plates. Measurements were taken with an ocular micrometer or using MB-Ruler (http://www.markus-bader.de/MB-Ruler) for photographies. All measurements are given in millimeters (Table 2), except for Figure 1G, which scale is in microns (µm).

For external structures, we follow Weirauch & Forero (2007), Weirauch (2008a), and Schuh & Weirauch (2020). For labial segments, we follow Weirauch (2008b), in which the first visible labial segment is actually the second labial segment. For the cuticular processes we follow the concepts of Castro-Huertas *et al.* (2023); and for genitalia, we follow the terminology of Forero & Weirauch (2012) and Castro-Huertas & Forero (2014).

Structure of the taxonomic revision

All species of *Saica* are treated. We studied type material for all species whenever possible, although in many cases only photographs were available. Diagnosis and redescriptions are provided for all the species treated, giving accurate data on morphological characters that were used for the phylogenetic analysis (see below). Descriptions were constructed with DELTA and exported as natural language descriptions (Dallwitz *et al.* 1999).

Distributional maps

Locality label data from specimens and geographic distributional information from literature were georeferenced with the aid of Global Gazetteer v.2.3 (http://www.fallingrain.com/world/index.html) or Google Earth. Distribution maps were built with QGIS ver. 3.24.3 (QGIS 2023). For USA and Brazil, we have included the states where the species was registered.

Phylogenetic analysis

Taxon sampling

27 terminals were analyzed for the phylogenetic analysis: 12 species of *Saica* as the ingroup, excluding *S. cruentata* because we were not able to examine specimens of this species, and *S. fuscipes* with almost 50% missing data; and 14 species of other Saicini genera as the outgroup considering the recent phylogenetic hypothesis of Castro-Huertas & Melo (2023). We run analyses including *S. fuscipes*, which holotype specimen has the abdomen missing, and which original description lacks the genitalia, and recovered 15 different topologies with this species as a fluctuant taxon, after this result we chose to eliminate the species from the analysis. All trees were rooted with *Carayonia orientalis* Ishikawa & Okajima, 2004 (see Table 1). Male genitalia of *Saica elkinsi* was codified from the literature (Blinn 1994).

Data and analysis strategy

The matrix includes 107 morphological characters (98 binary and nine non-additive multistate), mainly based on the data matrix of Castro-Huertas & Melo (2023) but also including additional characters from thoracic spiniform processes, male and female genitalia and color pattern (Appendix 2). Characters were organized and coded using the software MESQUITE version 3.81 (Maddison & Maddison 2023). The description of character and character states follows Sereno (2007). In data matrix, codification (?) corresponds to missing data and (-) corresponds to inapplicable data. Uninformative characters were retained in the matrix because they helped to expand and revise the specific diagnosis. Inapplicable characters (38) were treated following Goloboff *et al.* (2021) (in some cases, the codification in the root was changed to follow this protocol, because "absent" must be codified as "0") (see character list and matrix with inapplicable characters coded in Appendices 2 and 3). The data matrix was analyzed with implied weighting (IW) using a concave function that weights characters against homoplasy (Goloboff 1993). As suggested by Goloboff (2022) for morphological data matrices, the *k*-value used for our analyses was chosen considering the *k*-value range between 8-12. We tested five *k*-values between 8 to 12 (8, 9, 10, 11, 12), which resulted in two topologies differing only in the relative position of two outgroup species (*Polytoxus annulipes*, *P. esakii*), and *Saica elkinsi* (see results below). Goloboff *et al.* (2008) suggest that there is not a unique concavity value, and that it is necessary to explore different *k*-values during the searching process. However, for morphological data matrices, *k*-values that penalize homoplasy less, might be more appropriate (Goloboff *et al.* 2008). Therefore, we used the topology recovered with a *k*-value of 12 for discussion. The analyses were conducted in TNT v. 1.5 (Goloboff & Catalano 2016) using parsimony as optimality criterion. A heuristic search was carried out holding a maximum of 10 001 trees in memory, with 1000 random addition replications, and 10 trees to hold per replication. The search strategy considered Tree Bisection and Reconnection (TBR), and is available as a script (Appendix 4). The consistency index (CI) and the retention index (RI) were calculated for each character. Nodal support

TABLE 1. — Examined material included in the phylogenetic analyses and institutions. Abbreviation and symbol: **USI**, unique specimen identifier; *, dissected specimens. Institutions acronyms: see Material and methods.

Species	Locality	Sex, USI, and collection
Visayanocorini		
Carayonia orientalis Ishikawa & Okajima, 2004	**Laos**. Viengtiang Prov., Vang Vieng, 1.II.2002, T. Kishimoto. leg **Thailand**. Mae Sa, 450 m alt., Mae Rim, Chiang Mai, 18.VIII.2001, light trap, T. Ishikawa	1 ♂ paratype, TUA (*) 1 ♀ paratype, TUA (*)
Saicini		
Buninotus niger Maldonado Capriles, 1981	**Panama**. Panama Province, Barro Colorado Is, 14.XI.2012, 9°9'17"N, 79°50'53"W, Light trap LT-ARM4-Nov 2012-A, Bobadilla, Rodríguez, Hernández, Pérez	1 ♂ BCI63328, STRI (*)
	Panama. Panama Province, Barro Colorado Is, 20.V.2012, 8°59'N, 79°33'W, Light trap LT-WHE1- MAY2012-A Bobadilla, Rodríguez, Hernández, Pérez	1 ♀, BCI53469, STRI (*)
Buninotus palikur Castro-Huertas, Melo & Forero, 2023	**French Guiana**. Guyane, Saül, 1.VII.2008, PL, SEAG réc.	1 ♀ holotype, MNHN
	French Guiana. Guyane, Kaw, PK 37.5, Malaise, 29.XII.2001, Cerda J. leg.	1 ♀ paratype, coll. JMB (*)
Caprilesia sikuani Castro-Huertas, Melo & Forero, 2023	**Colombia**. Meta, Remolinos, Centro Cafam Llanos, 55 km W de Puerto Gaitán, 165 m, 4.274963°N, 72.540814°W, 30.IV.2010, A. García *et al.*, Bosque Bavaria, pitfall	1 ♂, MPUJ_ENT 0010541, MPUJ (*)
Caprilesia napuruna Castro-Huertas, Melo & Forero, 2023	**Ecuador**. Napo, Sacha Wagra Lodge, Rio Hollin, 10 km from Archidona, 730 m, 0.96°S, 77.75°W, 29.XI.2009, D. Forero [EC09_L4] [fogging]	1 ♀, UCR_ENT 00002682, QCAZ (*)
Gallobelgicus nigrovittatus Ishikawa, 2003	**Thailand**. Chiang Dao, Pa Kia, 4-6.V.2000, Seidai Nagashima / bv beating from dead leaves	1 ♂ paratype, TUA (*)
Gallobelgicus heissi Rédei & Tsai, 2009	**Thailand**. Chiang Mai prov., 20 km SW of FANG, 19°49'57"N, 99°02'54"E, 11.I.2006, alt. 1450 m, lgt. Becar S. and Fouqué R.	1 ♂ NMPC (*)
Polytoxus annulipes Miyamoto & Lee, 1966	**Japan**. Komi, Iriomote Is., The Ryukyus, 4.VI.2003, T. Ishikawa leg.	1 ♂, TUA (*)
	Japan. Funaura, Iriomote-jima Is., The Ryukyus, 11.X.2004, T. Ishikawa	1 ♀, TUA (*)
Polytoxus armillatus Ishikawa, 1998	**Japan**. Chiba Perf. Sakura city, Inba-numa, 9.XI.1997, Koji Toyoda	1 ♂ 1 ♀ paratypes, TUA (*)
Polytoxus esakii Ishikawa & Yano, 1999	**Taiwan**. Shao-Tiengchi, Lan-Yu Is., 24.III.1998, M. Sakai leg.	1 ♂ 1 ♀ paratypes, TUA (*)
Polytoxus eumorphus Miller, 1941	**Japan**. Komi, Iriomotejima Is., The Ryukyus, 2.II.2002, T. Ishikawa leg.	1 ♂, TUA (*)
	Japan. Funaura, Iriomote-jima Is., The Ryukyus, 11.X.2004, T. Ishikawa	1 ♀, TUA (*)
Pseudosaica panamaensis Blinn, 1990	**Colombia**. Valle, Cali, 1000 m, domicilio, 17.I.1994, G. Guevara	1 ♂, MUSENUV (*)
	Argentina. Chaco, P.N. El Impenetrable, Estación de Campo El Teuco, -25.064561, -60.9464903, T. de luz, 10.XII.2021, Melo, M.C.	1 ♀, MLP (*)
Pseudosaica charrua Castro-Huertas, Melo & Forero, 2023	**Argentina**. Entre Ríos, De Concordia Federación, ene 1981, coll. Martínez	2 ♂, holotype and paratype, MLP (*)
Saica apicalis Osborn & Drake, 1915	**Colombia**. Nariño, Tumaco, C.I. El Mira, 1°32'59"N, 78°11'58"W, 16 m alt., captura manual, IV.2017, E. Vergara	1 ♂, UNAB (*)
	Colombia. Cundinamarca, Guayabetal, 4°13'40"N, 73°48'59"W, 1200 mts, 10.III.1996, F. Munevar	1 ♀, UNAB (*)
Saica carayoni Villiers, 1943	**Brazil**. São Paulo. Est. de São Paulo, Val. Du Rio Pardo, E. Gounelle	1 ♂, holotype, MNHN-EH-EH25369
Saica elkinsi Blinn, 1994	**United States**. Florida: Dunellon, 12.VI.1939, Oman	1 ♀, paratype, USNM
Saica erubescens Champion, 1898	**Panama**. Panama Oeste Province: Barro Colorado Is. 6-7.V.2019, 9°9'17"N, 79°50'53"W, light trap LT-ARM3-MAY2019-B, Bobadilla, Lopez, Perez, Ramirez	1 ♂, STRI, BCI169355 (*)
	Nicaragua. Rama, IX.1962	1 ♀, MACN
Saica lativentris Villiers, 1943	**Bolivia**. Beni: Pucara, 1.X.1993	1 ♂, coll. JMB (*)
Saica meridionalis Fracker & Bruner, 1924	**Colombia**. Santander, La Belleza, Ver. Los Naranjos, 21.III.1997, H. Marín. leg.	1 ♀, UNAB (*)
Saica ochracea Distant, 1902	**Ecuador**. Paramba: 3500 m, 1.IV.1997, Rosemberg, dry season / UCR_ENT00018447 / NHMUK01358906	1 ♂, holotype, BMNH, BMNH(E) 1688179
Saica recurvata (Fabricius, 1803)	**Panama**. Panama Province: Barro Colorado Is, 9°9'17"N, 79°50'53"W, 31.VIII.2011, Bobadilla, González, Osorio, Perez, light trap	1 ♂, STRI, BCI43621 (*)
	Panama. Panama Province: Barro Colorado Is, 9°9'17"N, 79°50'53"W, 25-26.V.2017, Arizala, Bobadilla, Lopez, Ramirez, Light trap	1 ♀, STRI, BCI154428 (*)
Saica rubripes Champion, 1898	**Panama.** Panama province, Barro Colorado Is, 30.IV.2015, 9°9'17"N, 79°50'53"W, beating, BE-BCI-APR2015-AB, M. Lucas	1 ♂, BCI 11833, MPUJ (*)
	Panama. Panama province, Barro Colorado Is, 1.III.2011, 9°9'17"N, 79°50'53"W, light trap LT-ARM1-MAR2011-A, Bobadilla, González, Osorio, Pérez	1 ♀, BCI 37066, STRI (*)

Table 1. — Continuation.

Species	Locality	Sex, USI, and collection
Saica subinermis Hussey, 1953	**Mexico.** Michoacán: 12 ml.s Tzitzio on Huetamo rd., 19°20'N, 100°50'W, 1050m, 10.VII.1947, T.H. Hubbell	1 ♂, holotype, UMMZ
Saica tibialis Stål, 1862	**Colombia.** Cundinamarca, Sasaima, Vda. Nariz Alta, Finca "El Tapaz", 4°58'N, 74°28'W, 1150 m, alt, captura con jama en arbusto, 21.VII.2012, L. Sánchez	1 ♂, UNAB (*)
	Colombia. La Sierra, 7.I.1996, García Parra leg.	1 ♀, UNAB (*)
Saica tupackatari n. sp.	**Bolivia.** [BOLIVIE]: Piste Camote-Apollo, 1000 m, 7.XI.2002, Bleuzen réc.	1 ♂, holotype, MNHN (*)
Tagalis dichroa Castro-Huertas & Forero, 2014	**Panama** Panama province, Barro Colorado Is., 17-18.V.2015, 9°9'17"N, 79°50'53"W, light trap, LT ARM3-MAY2015-A, A. Bobadilla *et al.*	1 ♂ BCI 1114426, MPUJ (*)
Tagalis seminigra Champion, 1898	**Peru.** Ucayali, Kirigueti (luz), VII.2004, J. Williams, 11°38'13"S, 73°07'08"W	1 ♂, MLP (*)
	Peru. Cuzco, Pagoreni (luz), VII.2004 Williams, 11°42'22"S, 72°54'07"W	1 ♀, MLP (*)

was calculated as GC frequencies, that were calculated using symmetric resampling with 1000 replicates and expressed as a percentage of the differences between the frequencies of the clades present and those which are contradicted (Goloboff *et al.* 2003).

Abbreviations

Institutions acronyms

BMNH	British Museum of Natural History, London;
IAVH-E	Entomology collection, Instituto Alexander von Humboldt, Villa de Leyva;
MACN	Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires;
MLP	Universidad Nacional de La Plata, Museo de la Plata, La Plata;
MNHN	Muséum national d'Histoire naturelle, Paris;
MPUJ	Colección Entomológica, Museo Javeriano de Historia Natural, Pontificia Universidad Javeriana, Bogotá;
MUSENUV	Museo de Entomología de la Universidad del Valle, Cali;
NHMD	Natural History Museum of Denmark, Copenhagen;
NHMW	Naturhistorisches Museum Wien, Vienna;
NHRS	Swedish Museum of Natural History, Stockholm;
NMPC	National Museum Natural History), Prague;
OSUC	C. A. Triplehorn Insect Collection, The Ohio State University, Columbus;
QCAZ	Pontificia Universidad Católica de Ecuador, Quito;
STRI	Smithsonian Tropical Research Institute, Panama;
TUA	Laboratory of Entomology, Faculty of Agriculture, Tokyo University of Agriculture, Tokyo;
UMMZ	University of Michigan, Museum of Zoology, Ann Arbor;
UNAB	Museo Entomológico Facultad de Agronomía, Universidad Nacional de Colombia, Bogotá;
USNM	National Museum of Natural History, Washington D.C.

Personal collection

Coll. JMB	Jean Michel Bérenger, Paris.

Genitalia

ao	anterior opening of pygophore;
apt	arms of articulatory apparatus;
bc	bursa copulatrix;
bpb	basal plate bridge;
br	transverse bridge of pygophore;
dps	dorsal phallotecal sclerite;
gap8	gonapophysis 8;
gcx8	gonocoxa 8;
gpl	gonoplac;
ese	elongate sclerites of endosoma;
go	genital opening;
mpp	medial process of pygophore;
pa	paramere;
pmr	posterior margins of ramus;
ps	paramere socket.

RESULTS

Family Reduviidae Latreille, 1807
Subfamily Emesinae Amyot & Serville, 1843
Tribe Saicini Stål, 1859

Genus *Saica* Amyot & Serville, 1843

Saica Amyot & Serville, 1843: 372. — Champion 1898: 176 [key for five species]. — McAtee & Malloch 1923: 250 [key for six species]. — Maldonado Capriles 1990: 478 [cat.]. — Castro-Huertas & Melo 2023 [Saicinae phylogenetic analyses].

Type species. — *Zelus recurvatus* Fabricius, 1803, by monotypy.

Emended diagnosis. — Head with a tuft of strong setae on the mandibular plates and on the postocular region ventrally (Fig. 1B); pedicel subequal to half the length of the scape; anterior margin of proepisternal supracoxal lobe produced as an acute to subacute process (Fig. 1B); thoracic spines always present of variable length, except on anterior lobe of pronotum (Fig. 1E); prolegs with simple strong setae; protibia conspicuously curved (Fig. 1F); scopula setae dense on ventral surface of all third tarsomeres (Fig. 1G); posteromedial process of pygophore bifid (Fig. 5A); and posterior margin of the abdominal sternite VII of females vertical to subvertical.

Distribution. — Species of *Saica* are widely distributed in the Neotropical region, ranging from Florida in United States to Corrientes Province in Argentina (Figs 7; 8). They are mostly found in the south of the Mesoamerican region and the North-Western

Andes, and in the Amazon basin. *Saica apicalis* has the southernmost record but also the widest distribution within the genus (Fig. 7). *Saica elkinsi* is the only species showing a Nearctic distribution, ranging from Illinois to Florida in eastern United States (Fig. 7). Some species show discontinuous distributional records probably by information gaps because of inadequate collecting, showing the necessity of research in this area.

REDESCRIPTION

Male

Macropterous

Coloration. Body coloration usually reddish, sometimes yellowish to brownish. Head (Fig. 1B): Uniformly reddish to brownish. Antennae with scape and pedicel reddish to brown. Labium with first and second labial segments usually concolorous, reddish to brownish, third segment usually yellowish. Thorax (Fig. 1E): Uniformly reddish to brownish, some species with darker regions; anterior and posterior lobes usually concolorous; spines of the humeral angles, meso- and metanotum with the apex reddish, yellowish, or brownish; supracoxal lobes with the posterior margins concolorous with the thorax or paler. Legs (Fig. 1F): Variable between species, meso- and metalegs usually similar to prolegs. Forewings (Fig. 1C, D): Semi-hyaline, yellowish to brownish, veins and pterostigma coloration variable between species. Abdomen: Reddish to brownish.

Vestiture. Body with sparse, fine, suberect setae. Head: Densely setose, ventral margin of maxillary plate and posteroventral eye margin with a tuft of strong setae. Scape and pedicel with dense, long setae, nearly twice as long as the diameter of the antennal segments; remaining segments with short setae. First and third labial segments with simple, short setae ventrally; second segment with a tuft of strong setae ventrally (Fig. 1B). Thorax: With sparse, fine, suberect setae. Legs: Procoxae with long setae; protrochanters with a pair of tufts of strong setae ventrally; profemora with a ventral row of strong setae, intermixed with dense decumbent setae, anterodorsal surface with a row of strong setae on medial and apical regions; protibiae with dense, suberect setae; scopula present on ventral surface of third tarsomere of all legs.

Structure. Head (Fig. 1B): Anteocular region nearly as long as postocular region, postocular region globose; interocular sulcus deep, almost straight; clypeus flat. Eyes hemispherical in dorsal view, dorsoventrally ovoid in lateral view. Labium (Fig. 1B): First segment stout; second segment swollen basally, about as long as third; third segment tapering towards apex. Thorax (Fig. 1E): Pronotum longer than wide. Anterior lobe subquadrate, disc rugose, anterior and posterior margins with a pair of lateral blunt protuberances each, anterior pair larger and closer to each other than posterior pair. Posterior lobe trapezoidal, about as long as anterior lobe; humeral angles projecting into spines, usually long (short in some species); transverse furrow deeply impressed. Mesoscutum with a broad base, medially depressed, laterally forming a ridge, apex truncate, tapering into a long, erect spine; scutellum with a posterior blunt process, apically entire or emarginate, and usually concave posteriorly; metanotum with a reclined long or short erect spine. Prosternum with a projected proepisternal process, apex pointed; stridulitrum narrow; prosternal process small; mesosternum longer than prosternum; metasternum slightly shorter than mesosternum. Legs: Procoxae cylindrical; protrochanters triangular; profemora stout; protibiae curved, slightly expanded apically (Fig. 1F), with a flat tibial comb on inner surface; tarsi three-segmented, basal segment the longest; apical segment globose; claws simple, slender and curved. Metalegs slightly longer than mesolegs; meso- and metacoxae ovoid; meso- and metatrochanters triangular; meso- and metafemora, and meso- and metatibiae long and slender; meso- and metatarsi similar to protarsi. Forewings with two or three closed cells, basal cell small, nearly triangular, with short prolongation of the R + M vein basally; discal cell trapezoidal and elongate. Abdomen: Elongate ovoid (Fig. 2C, D), lateral margins smooth. Segment 8 with the anterior margin slightly concave, posterior margin entire, spiracles not projected. Genitalia (Figs 5, 6): Pygophore ovoid in dorsal view, posteromedial process bifid (mpp) reclined at about 45° or nearly vertical, shape of ramus variable between species, posterior margin next to each ramus (pmr) flat or with a pair of blunt processes; genital opening (go) and anterior opening separated by a narrow transverse bridge (br); anterior opening (ao) anteriorly positioned to longitudinal axis of pygophore; area surrounding paramere socket (ps) with short setae. Paramere (pa) long and gently curving apically, slightly wider on the medial region, apical half slightly sharpening, long delicate setae homogeneously distributed on medial and apical surface, apex acute. Phallus (Fig. 6A-G): Arms of articulatory apparatus (apt) projecting towards lateral margins in dorsal view; with basal plate bridge (bpb) developed, and variable in length. Phallosoma with dorsal phallothecal sclerite (dps) symmetric, nearly triangular, curved dorsally, rounded to truncate apically, projected laterally or not. Endosoma with a symmetric sclerite ventrally, with elongate sclerites (ese) apically, and triangular short sclerites lateral or apically.

Female

Similar to males in most respects. Macropterous, but *S. elkinsi* with micropterous form.

Vestiture. Head: Scape and pedicel with dense, long setae, nearly one time as long as the diameter of the antennal segments. Genitalia: Tergite 8 nearly transversely rectangular, wider than long, posteromedial margin entire, medially with long, semierect setae; tergite 9 nearly oval to quadrangular, posteromedial margin entire, medially with long, semierect setae; gonocoxa 8 (gcx8) nearly rectangular to oval, medial posterior angle projecting into a process, anterior and posterior margins straight, lateral anterior prolongation short and wide, medial margin slightly projected; gonoplac (gpl) formed by two triangular fused sclerites, tapering apically, apex sharp, entire or with a blunt process, lateral external margins straight or slightly sinuose; gonapophysis 9 not sclerotized anteriorly; bursa copulatrix (bc) membranous and ovoid (Fig. 6H-M).

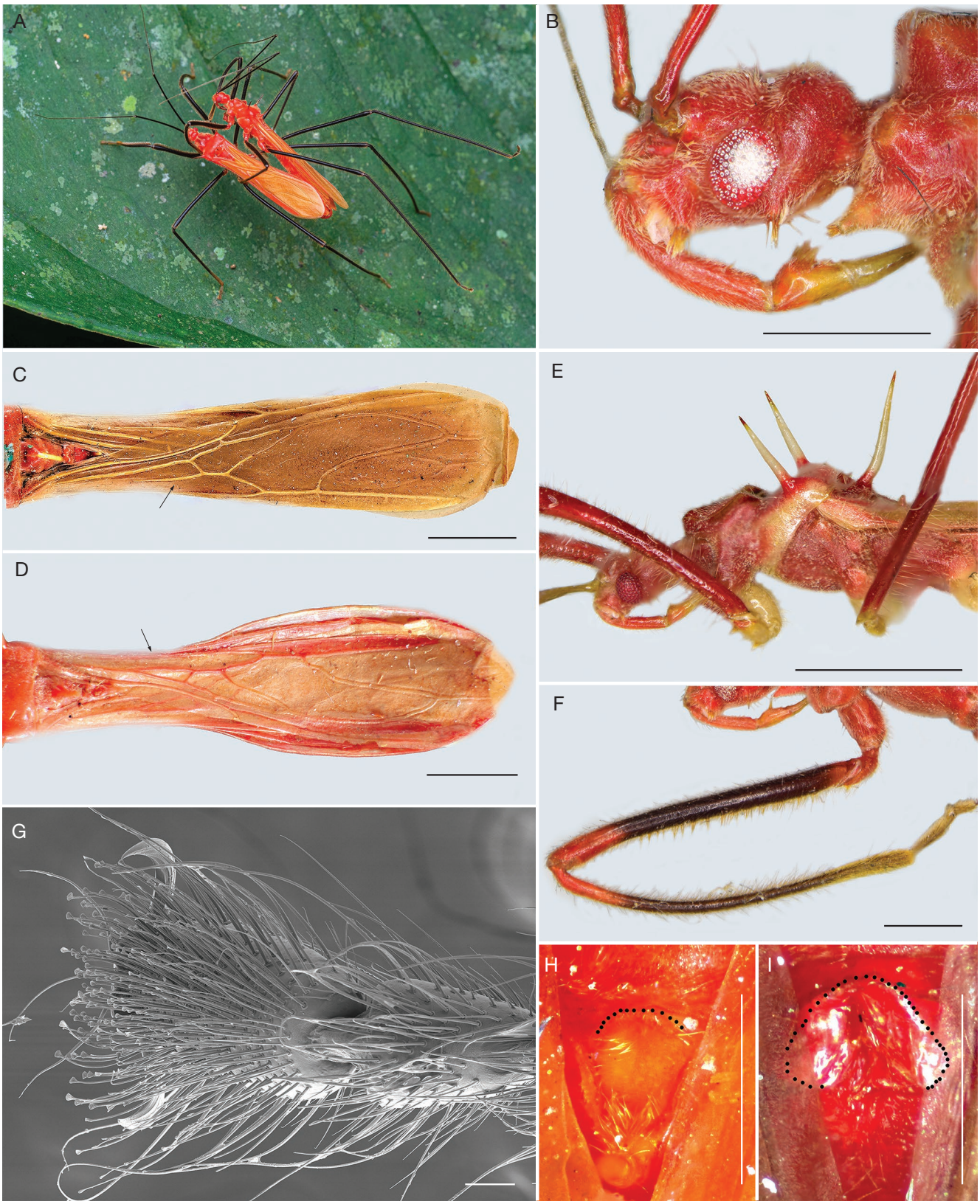

FIG. 1. — **A**, *Saica* sp. mating couple; **B**-**I**, *Saica* Amyot & Serville, 1843 character details: **B**, head, lateral view; **C**, *S. rubripes* Champion, 1898, forewing; **D**, *S. apicalis* Osborn & Drake, 1915: forewing; **E**, *S. tibialis* Stål, 1862 head and thorax, lateral view; **F**, **G**, *S. apicalis* Osborn & Drake, 1915 proleg, lateral view (**F**); scopula detail, mesotarsus (**G**); **H**, *S. rubripes*, scutellum process detail; **I**, *S. erubescens* Champion, 1898, scutellum process detail. Scale bars: B, F, 1 mm; C, D, E, 2 mm; H, I, 0.5 mm; G, 50 µm. Credits: A, ©NickyBay from https://www.inaturalist.org/observations/126475988

Key to the species of *Saica* Amyot & Serville, 1843 except for *Saica cruentata* Bergroth, 1913 (adapted from Champion 1898 & McAtee & Malloch 1923)

1. Macropterous 2
— Micropterous (female) ..... *S. elkinsi* Blinn, 1994

2. Forewing with three closed discal cells (Fig. 1D) 3
— Forewing with two closed discal cells (Fig. 1C) 4

3. Posterolateral margins of abdominal segment 7 of female with spiniform caudal projections (Fig. 3E) ..... *S. meridionalis* Fracker & Bruner, 1924
— Posterolateral margins of abdominal segment 7 of female flat ..... *S. apicalis* Osborn & Drake, 1915

4. Humeral angle spines nearly three times (or more) longer than the width of their base 5
— Humeral angle spines as long as the width of their base ..... *S. subinermis* Hussey, 1953

5. Body coloration pale brown to yellowish (Figs 2I-L), apex of outer discal cell usually shorter than pterostigma, abdomen slender and narrow basally ..... *S. erubescens* Champion, 1898
— Body coloration different, apex of outer discal cell extending as far as apex of pterostigma, abdomen less slender and not narrowed basally (except in *S. lativentris*) 6

6. Body coloration ochraceous to brown, membrane of forewing usually dark, posteromedial process of pygophore not elevated and medially concave 7
— Body coloration reddish, with some parts darker or paler but mostly red, membrane of forewing concolorous, posteromedial process of pygophore variable 8

7. Thorax ochraceous, anterior portion of posterior lobe and lateral margins of pronotum dark brown, legs uniformly dark brown except protibiae and protarsi orange (Fig. 3H), ramus of posteromedial process of pygophore of the same width along its length (Fig. 5E) ..... *S. ochracea* Distant, 1902
— Thorax entirely dark brown, legs uniformly reddish except tibiae and tarsi yellowish (Fig. 4G-H), ramus of the posteromedial process of pygophore tapering apically (Fig. 5J) ..... *S. tupackatari* n. sp.

8. Posterior process of scutellum with apex entire, semicircular in caudal view ..... *S. elkinsi* Blinn, 1994
— Posterior process of scutellum with apex conspicuously emarginated (Fig. 1I) 9

9. Posterior process of scutellum inverted scoop-shaped, and deeply emarginated (Fig. 1I) 10
— Posterior process of scutellum more or less arcuate laterally and notched but not conspicuously expanded (Fig. 1H) 11

10. Pro- and mesonotal spines with the apex yellowish, legs uniformly reddish brown, metanotal spine near as long as the width of its base; posterolateral margins of ramus (pmr) with a pair of conspicuous tubercles (Fig. 5G) ..... *S. rubripes* Champion, 1898
— Pro- and mesonotal spines with the apex reddish, legs uniformly reddish, metanotal spine nearly three times longer than the width of its base, posterolateral margin of ramus flat, without processes (Fig. 5B) ..... *S. carayoni* Villiers, 1943

11. Body coloration pale red, coxae, trochanters and tibiae (except basally), antennae, and forewings paler (Figs 4I-L); posteromedial process of pygophore medially forming an obtuse angle and ramus directed more laterad than upwards (Fig. 5I) ..... *S. tibialis* Stål, 1862
— Body coloration not as above, posteromedial process of pygophore medially concave and ramus different as above 12

12. Body coloration dark red; antennae, medial and apical region of femora, tibiae, and forewings dark brown with the pterostigma reddish ..... *S. fuscipes* Stål, 1862
— Body coloration red or pale red, forewings yellowish or paler 13

13. Body coloration pale reddish, pronotal spines usually with the apex reddish or brownish, veins of forewings yellowish, femora uniformly brownish (Figs 3I-L), posterior margins of ramus (pmr) with a pair of short blunt tubercles, posteromedial process of pygophore deeply concave medially (Fig. 5F), and nearly vertical in lateral view (Fig. 5N) ..... *S. recurvata* (Fabricius, 1803)
— Body coloration red, pronotal spines usually with the apex yellowish, veins of the forewing basally reddish, femora uniformly reddish (Fig. 3C), posterior margins of ramus flat, posteromedial process of pygophore angulated medially (Fig. 5D), at 45° position in lateral view (Fig. 5M) ..... *S. lativentris* Villiers, 1943

TABLE 2. — Measurements of *Saica* Amyot & Serville, 1843 species. All measurements are in mm. Abbreviations: **Wid.**, width; **Len.**, length; **scap.**, scapus; **ped.**, pedicel; **basif.**, basiflagellomere; **distif.**, distiflagellomere; **lb1**, labial visible segment 1; **lb2**, labial visible segment 2; **lb3**, labial visible segment 3; **cx**, coxa; **fem.**, femur; **tib**, tibia; **T. Len fw.**, total length to forewing; **T. Len. abd.**, total length to abdomen.

		Head									Prothorax		Proleg			T. Len. fw.	T. Len. abd.
		Wid.	Len.	scap.	ped.	basif.	distif.	Lb1	Lb2	Lb3	Wid.	Len.	cx	fem	tib		
Saica apicalis Osborn & Drake, 1915																	
male / N = 5	**Mean**	**1.06**	**1.40**	**5.34**	**2.82**	**3.08**	**1.40**	**0.88**	**0.45**	**0.43**	**1.78**	**2.22**	**0.92**	**4.28**	**4.84**	**12.64**	**12.22**
	SD.	0.05	0.16	0.71	0.29	0.45	0.29	0.04	0.03	0.06	0.40	0.26	0.13	0.82	0.74	1.19	1.37
	Range	0.10	0.40	1.90	0.60	1.10	0.70	0.12	0.08	0.16	0.80	0.60	0.30	2.00	1.90	2.80	3.20
	Min.	1.00	1.20	4.20	2.50	2.30	1.20	0.82	0.42	0.36	1.30	1.90	0.80	3.70	4.20	10.80	10.00
	Max.	1.10	1.60	6.10	3.10	3.40	1.90	0.94	0.50	0.52	2.10	2.50	1.10	5.70	6.10	13.60	13.20
female / N = 3	**Mean**	**1.13**	**1.47**	**4.70**	**2.50**	**2.60**	**1.20**	**0.97**	**0.45**	**0.37**	**2.03**	**2.33**	**0.83**	**4.30**	**4.70**	**13.40**	**13.00**
	SD.	0.06	0.06	0.17	0.40	0.53	0.10	0.09	0.04	0.04	0.12	0.06	0.06	0.50	0.46	1.47	1.39
	Range	0.10	0.10	0.30	0.80	1.00	0.20	0.18	0.08	0.08	0.20	0.10	0.10	1.00	0.90	2.60	2.50
	Min.	1.10	1.40	4.60	2.10	2.20	1.10	0.90	0.42	0.34	1.90	2.30	0.80	3.80	4.30	11.70	11.40
	Max.	1.20	1.50	4.90	2.90	3.20	1.30	1.08	0.50	0.42	2.10	2.40	0.90	4.80	5.20	14.30	13.90
Saica carayoni Villiers, 1943																	
male / N = 1		**1.34**	**1.60**	**5.56**	**2.65**	**3.66**	**1.68**	**1.35**	**0.54**	**0.37**	**2.33**	**2.64**	**0.74**	**4.85**	**6.15**	**15.58**	**15.00**
Saica elkinsi Blinn, 1994																	
female / N = 1		**0.85**	**1.09**	**2.78**	**1.12**	**1.58**	**1.14**	**0.67**	**0.34**	**0.17**	**1.34**	**1.52**	**0.63**	**2.67**	**2.77**	**8.64**	**8.70**
Saica erubescens Champion, 1898																	
male / N = 2	**Mean**	**0.75**	**1.05**	**4.10**	**1.80**	**2.20**	**1.10**	**0.56**	**0.31**	**0.23**	**1.25**	**1.55**	**0.55**	**2.60**	**2.80**	**8.75**	**8.45**
	SD.	0.07	0.21	0.00	0.00	0.00	0.00	0.08	0.01	0.01	0.07	0.07	0.07	0.14	0.00	0.35	0.35
	Range	0.10	0.30	0.00	0.00	0.00	0.00	0.12	0.02	0.02	0.10	0.10	0.10	0.20	0.00	0.50	0.50
	Min.	0.70	0.90	4.10	1.80	2.20	1.10	0.50	0.30	0.22	1.20	1.50	0.50	2.50	2.80	8.50	8.20
	Max.	0.80	1.20	4.10	1.80	2.20	1.10	0.62	0.32	0.24	1.30	1.60	0.60	2.70	2.80	9.00	8.70
Saica fuscipes Stål, 1862																	
female N = 1		**1.12**	**1.28**	**3.14**	**2.35**	**1.52**	**0.79**	**0.63**	**0.34**	**0.32**	**1.94**	**2.17**	**0.73**	**3.13**	**3.51**	**12.60**	**12.20**
Saica lativentris Villiers, 1943																	
male / N = 1		**1.00**	**1.40**	**5.90**	**3.30**	**2.40**	**1.30**	**0.86**	**0.38**	**0.42**	**2.10**	**2.40**	**0.70**	**4.10**	**4.90**	**12.80**	**12.20**
Saica meridionalis Fracker & Bruner, 1924																	
female / N = 4	**Mean**	**1.08**	**1.23**	**5.55**	**2.90**	**3.20**	**1.45**	**0.91**	**0.44**	**0.42**	**2.03**	**2.30**	**0.80**	**4.10**	**4.55**	**11.78**	**11.38**
	SD.	0.10	0.17	0.90	0.74	0.55	0.10	0.12	0.06	0.09	0.33	0.34	0.14	0.50	0.45	0.49	0.70
	Range	0.20	0.40	1.90	1.60	1.20	0.20	0.28	0.14	0.18	0.70	0.70	0.30	1.10	1.00	1.10	1.70
	Min.	1.00	1.00	5.00	2.40	2.80	1.40	0.80	0.36	0.30	1.80	2.10	0.60	3.70	4.20	11.40	10.50
	Max.	1.20	1.40	6.90	4.00	4.00	1.60	1.08	0.50	0.48	2.50	2.80	0.90	4.80	5.20	12.50	12.20
Saica ochracea Distant, 1902																	
male / N = 1		**1.17**	**1.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.95**	**0.45**	**0.00**	**2.51**	**2.58**	**0.80**	**4.12**	**4.16**	**13.38**	**13.17**
Saica recurvata (Fabricius, 1803)																	
male / N = 5	**Mean**	**1.32**	**1.48**	**7.24**	**3.88**	**4.38**	**1.88**	**1.00**	**0.50**	**0.36**	**2.08**	**2.34**	**0.84**	**4.86**	**5.56**	**14.28**	**13.72**
	SD.	0.08	0.16	0.48	0.24	0.38	0.15	0.10	0.04	0.09	0.13	0.05	0.11	0.49	0.29	1.22	1.41
	Range	0.20	0.40	1.20	0.60	0.90	0.40	0.26	0.10	0.22	0.30	0.10	0.30	1.20	0.50	3.30	3.90
	Min.	1.20	1.30	6.80	3.60	4.10	1.70	0.86	0.46	0.26	1.90	2.30	0.70	4.40	5.50	12.90	12.10
	Max.	1.40	1.70	8.00	4.20	5.00	2.10	1.12	0.56	0.48	2.20	2.40	1.00	5.60	6.00	16.20	16.00
female / N = 5	**Mean**	**1.26**	**1.54**	**7.14**	**3.72**	**4.42**	**1.86**	**1.06**	**0.55**	**0.45**	**2.26**	**2.62**	**0.82**	**5.12**	**5.80**	**15.06**	**14.54**
	SD.	0.05	0.11	0.56	0.18	0.45	0.11	0.06	0.10	0.08	0.15	0.08	0.13	0.47	0.45	0.71	0.58
	Range	0.10	0.30	1.20	0.40	1.20	0.30	0.14	0.26	0.22	0.40	0.20	0.30	1.10	1.10	1.60	1.30
	Min.	1.20	1.40	6.50	3.50	3.80	1.70	0.98	0.38	0.34	2.10	2.50	0.70	4.70	5.30	14.20	13.90
	Max.	1.30	1.70	7.70	3.90	5.00	2.00	1.12	0.64	0.56	2.50	2.70	1.00	5.80	6.40	15.80	15.20
Saica rubripes Champion, 1898																	
male / N = 2	**Mean**	**1.15**	**1.25**	**6.65**	**4.15**	**3.70**	**1.95**	**0.99**	**0.51**	**0.33**	**2.10**	**2.35**	**0.80**	**4.40**	**4.95**	**13.90**	**13.60**
	SD.	0.07	0.07	0.07	0.07	0.28	0.07	0.07	0.01	0.01	0.00	0.07	0.14	0.42	0.35	0.14	0.14
	Range	0.10	0.10	0.10	0.10	0.40	0.10	0.10	0.02	0.02	0.00	0.10	0.20	0.60	0.50	0.20	0.20
	Min.	1.10	1.20	6.60	4.10	3.50	1.90	0.94	0.50	0.32	2.10	2.30	0.70	4.10	4.70	13.80	13.50
	Max.	1.20	1.30	6.70	4.20	3.90	2.00	1.04	0.52	0.34	2.10	2.40	0.90	4.70	5.20	14.00	13.70
female / N = 2	**Mean**	**1.25**	**1.80**	**6.85**	**4.50**	**4.40**	**1.60**	**0.98**	**0.57**	**0.47**	**2.35**	**2.70**	**1.05**	**5.50**	**6.10**	**15.60**	**15.90**
	SD.	0.07	0.14	0.21	0.00	0.00	0.00	0.14	0.07	0.10	0.21	0.42	0.07	0.00	0.28	1.27	0.99
	Range	0.10	0.20	0.30	0.00	0.00	0.00	0.20	0.10	0.14	0.30	0.60	0.10	0.00	0.40	1.80	1.40
	Min.	1.20	1.70	6.70	4.50	4.40	1.60	0.88	0.52	0.40	2.20	2.40	1.00	5.50	5.90	14.70	15.20
	Max.	1.30	1.90	7.00	4.50	4.40	1.60	1.08	0.62	0.54	2.50	3.00	1.10	5.50	6.30	16.50	16.60
Saica subinermis Hussey, 1953																	
male / N = 1		**1.22**	**1.50**	**3.52**	**1.45**	**2.50**	**1.01**	**0.00**	**0.00**	**0.00**	**2.35**	**2.37**	**0.00**	**3.52**	**3.95**	**13.50**	**0.00**

Table 2. — Continuation.

		Head									Prothorax		Proleg			T. Len. fw.	T. Len. abd.
		Wid.	Len.	scap.	ped.	basif.	distif.	Lb1	Lb2	Lb3	Wid.	Len.	cx	fem	tib		
Saica tibialis Stål, 1862																	
male / N=3	**Mean**	**0.87**	**1.07**	**3.93**	**1.83**	**2.03**	**1.10**	**0.71**	**0.36**	**0.31**	**1.33**	**1.67**	**0.70**	**3.13**	**3.33**	**10.43**	**10.03**
	SD.	0.06	0.06	0.15	0.21	0.31	0.17	0.06	0.02	0.03	0.15	0.15	0.10	0.21	0.15	0.15	0.15
	Range	0.10	0.10	0.30	0.40	0.60	0.30	0.12	0.04	0.06	0.30	0.30	0.20	0.40	0.30	0.30	0.30
	Min.	0.80	1.00	3.80	1.60	1.70	1.00	0.66	0.34	0.28	1.20	1.50	0.60	2.90	3.20	10.30	9.90
	Max.	0.90	1.10	4.10	2.00	2.30	1.30	0.78	0.38	0.34	1.50	1.80	0.80	3.30	3.50	10.60	10.20
female / N=1		**1.00**	**1.10**	**4.10**	**1.60**	**1.70**	**1.00**	**0.68**	**0.30**	**0.32**	**1.50**	**2.20**	**0.70**	**3.20**	**3.30**	**10.90**	**10.70**
Saica tupackatari n. sp.																	
male / N=1		1.10	1.30	0.00	0.00	0.00	0.00	0.78	0.42	0.32	1.80	2.00	0.60	3.20	3.80	11.70	11.40

Saica apicalis Osborn & Drake, 1915
(Figs 2A-D; 5A, K; 6A, H; 7).

Saica apicalis Osborn & Drake, 1915: 530. — McAtee & Malloch 1923: 250 [key], 251 [cit.]. — Villiers 1943a: 199 [cit.]; 1943b: 322 [cat.]. — Wygodzinsky 1949: 63 [cat.]. — Elkins 1951: 411 [cit.]. — Froeschner 1988: 644 [cat.]. — Maldonado Capriles 1990: 478 [cat.]. — Blinn 1994: 65 [key], 66 [cit.]. — Gil-Santana & Marques 2005: 406 [taxonomy]. — Swanson 2020: 978 [cit.]. — Castro-Huertas & Melo 2023: 6 [phylogenetic analyses].

MATERIAL EXAMINED. — **Lectotype** (here designated). **Guatemala** • 1 ♂; Los Amates; 18-28.II.1905; OSUC 0179304 (high-resolution images).
Paralectotypes. **Guatemala** • 2 ♀; Los Amates; 18-28.II.1905; OSUC 0179305, OSUC 0179306; specimen with abdomen missing; OSUC 0179302 (high-resolution images).

OTHER MATERIAL EXAMINED. — **Panama** • 1 ♂; Chiriqui: Pto. Limones; 21.XI.1963; Duret; MACN • 1 ♀; Chiriqui, Pto. Armuelles; XI.1963; Duret; MACN • 1 ♂; Chorrera: PNAC, CII A Chileno; 29.V.2018; J. A. Ramirez; Netting; STRI / [BCI167421]. **Colombia** • 1 ♂; Choco: Riosucio, Zarabanda; 7°N, 77°E; 18 m; 1.I.1993; L.F. Mendoza; UNAB • 1 ♀; Cundinamarca, Guayabetal; 4°N, 73°E; 1200 m; 10.III.1996; F. Munevar; UNAB • 1 ♂; Tocaima; 3°N, 74°E; 400 m; 21.VI.1989; J.B.; UNAB • 1 ♂; Nariño: Tumaco, CI El Mira; 1°N, 78°E; 16 m; 1.IV.2017; E. Vergara; manual; UNAB • 1 ♂; Norte de Santander: La Silla; 10.III.1961; Duret; MACN • 1 ♂; Putumayo: Mocoa, Vda. Pueblo Viejo, Fca. Villa Locha; 1°N, 76°E; 690 m; 28.II.2016; AD Meneses; manual; UNAB / [Reduviidae_049] • 1 ♂; Santander: Barbosa Cite; 5°N, 73°E; 1700 m; 28.VIII.2004; E. Villarraga, jama; UNAB. **French Guiana** [**Guyane**] • 1 ♂; Piste Mt des singes: Kourou; 1.XI.1989; G. F.; JMB. **Brazil** • 1 ♂; Minas Gerais: Caratinga; 1.XII.1980; Martínez; MACN. **Ecuador** • 1 ♀; Los Ríos: Quevedo, Pichilingue; 1.V.1976; Martínez; MACN. **Argentina** • 1 ♂, 1 ♀; Corrientes: Ituzaingó; Res. Santa María; 26.IV.2003; M. Chayle; MLP.

DIAGNOSIS. — Forewing with three closed cells (Fig. 1D); coxae and trochanters reddish, femora dark brown with apex reddish, tibiae dark brown with base reddish (Fig. 2A-D); humeral angle spines of variable length, divergent, and apically acute (Fig. 2B, D); mesonotal spine short and acute; posteromedial process of pygophore concave medially, ramus long, angulated, and dorsally projected (Fig. 5A).

DISTRIBUTION. — Guatemala, Panama, French Guiana, Bolivia, Brazil (Bahia, Mato Grosso do Sul and Minas Geraes), and Argentina (McAtee & Malloch 1923; Villiers 1943b; Froeschner 1988; Maldonado Capriles 1990; Melo & Coscarón 2004; Gil-Santana & Marques 2005; Gil-Santana 2008; Melo *et al.* 2017). The record from Texas, United States by Elkins (1951) is based on one single specimen collected at light. Blinn (1994) suggested that this record could be an exotic species accidentally introduced or a mislabeling. Considering that it is a doubtful record, it is not included here. First records from Colombia and Ecuador (Fig. 7).

REDESCRIPTION
Male
Macropterous. Measurements in Table 2.

Coloration (**Fig.** 2A, B). Head: Reddish. Scape and pedicel dark brown, reddish on basal and apical portions; basi- and distiflagellomeres brown. First visible labial segment reddish, second and third visible labial segments yellowish. Thorax: Reddish, spines slightly yellowish at apex. Procoxal cavity, procoxa and protrochanter reddish, profemur dark brown with basal and apical portions reddish, protibia dark brown with basal portion reddish and apical part pale brown, protarsus yellowish; meso- and metalegs similar to proleg except for meso- and metatibiae dark brown with the base reddish. Forewing yellowish with veins and pterostigma reddish to yellowish. Abdomen: Reddish.

Structure. Thorax (Fig. 2B): Humeral angle spines of variable length but usually short, nearly one time longer than the width of their base. Mesonotal spine straight, nearly twice as long as its base. Protuberance of scutellum with apex slightly concave posteriorly, lateral margins slightly expanded in caudal view. Metanotal spine sinuous, 0.2 times the length of mesonotal spine. Forewing with three closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal segment 2 not conspicuously narrower than posterior segments. Genitalia (Figs 5A, K; 6A): Anterior region of the genital opening (go) narrow in dorsal view, posterior margin of pygophore flat. Posteromedial process of pygophore (mpp) not elevated basally and concaved medially. Ramus vertical and angulated, apical region narrowed with an apical acute projected process, nearly five or more times longer than its base. Phallus with dorsal phallothecal sclerite (dps) nearly triangular, apex truncated, subapical lateral margin slightly projected laterally, lateral projection shorter than dps apex (Fig. 6A).

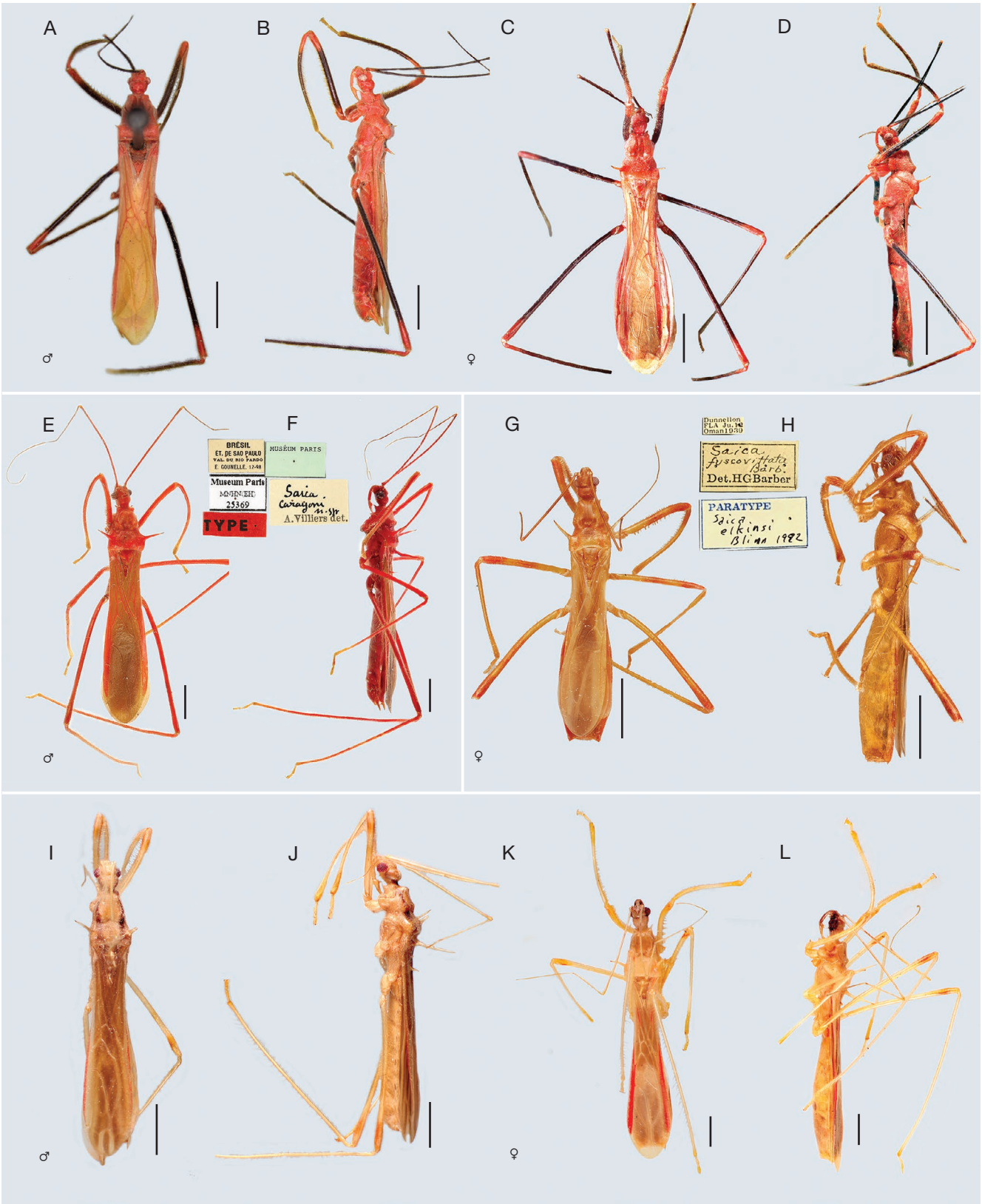

FIG. 2. — *Saica* Amyot & Serville, 1843 species, habitus: **A**-**D**, *S. apicalis* Osborn & Drake, 1915, male dorsal (**A**); male, lateral (**B**); female, dorsal (**C**); female, lateral (**D**); **E**-**F**, *S. carayoni* Villiers, 1943, male holotype, MNHN; dorsal (**E**); lateral (**F**); **G**, **H**, *S. elkinsi* Blinn, 1994, female paratype, USNM: dorsal (**G**); lateral (**H**); **I**-**L**, *S. erubescens* Champion, 1898; male dorsal (**I**); male, lateral (**J**); female, dorsal (**K**); female, lateral (**L**). Scale bars: 2 mm.

Female (Fig. 2C, D)
Macropterous. Similar to males in most respects, but humeral angles spines usually longer.

Structure. Abdomen: Posterolateral angles of tergite 7 flat. Genitalia: Tergite 9 nearly quadrangular. Gonoplac apex entire with external margins angulated (Fig. 6H).

Remarks
Saica apicalis shares with *S. meridionalis* the presence of three closed cells on the forewing; however, besides the body coloration differences, the females of *S. apicalis* lack the protruding processes on the lateral angle of the abdominal segment 7 that is present in *S. meridionalis*. *Saica apicalis* and *S. subinermis* share the comparatively shorter spines of the humeral angles of pronotum, but the general coloration pattern and the posteromedial process of pygophore are conspicuously different between them.

Osborn & Drake (1915) described *S. apicalis* on the basis of one male and four females, that are deposited in OSUC. However, they did not provide a designation of the holotype in their original description. High-resolution images were examined of four syntype specimens: one specimen with an absent abdomen labelled as "type," and one male and two female specimens labelled as "paratype'. We suspect that these labels were added posteriorly, probably by a curator, giving this, we designate the male as lectotype.

Saica carayoni Villiers, 1943
(Figs 2E, F; 5B; 7)

Saica carayoni Villiers, 1943a: 197; 1943b: 323 [cit.]. — Wygodzinsky 1949: 63 [cat.]. — Maldonado Capriles 1990: 478 [cat.]. — Gil-Santana & Marques 2005: 405 [cit.]. — Swanson 2020: 978 [cit.].

Material examined . — **Holotype**. **Brazil** • ♂; São Paulo: Est. de São Paulo, Val. Du Rio Pardo; E. Gounelle; MNHN-EH-EH25369 (high-resolution images, Fig. 2E, F).

Diagnosis. — Coloration red, with apex of thoracic spines yellow; antennae, coxae, trochanters and femora reddish (Fig. 2F); posterior margin of pygophore flat; posteromedial process of pygophore deeply concave medially, ramus curved and laterally projected (Fig. 5B).

Distribution. — Brazil (São Paulo) (Villiers 1943a, b) (Fig. 7).

Redescription
Male
Macropterous. Measurements in Table 2.

Coloration (Figs 2E, F). Head: Red. Scape and pedicel reddish, basi- and distiflagellomeres pale brown. First and second visible labial segments reddish, third visible labial segment yellowish. Thorax: Reddish. Proleg reddish, except apical portion of protibia and tarsus yellowish; meso- and metalegs similar to prolegs. Forewing pale brown with veins and pterostigma reddish. Abdomen: Reddish, medial region of the abdominal sternites pale brown.

Structure. Thorax (Fig. 2F): Humeral angle spines long, three times longer than their base. Mesonotal spine straight, three times longer than its base. Protuberance of scutellum with its apex slightly concave and conspicuously concave posteriorly, lateral margins conspicuously expanded in caudal view. Metanotal spine straight, 0.2 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal segment 2 not conspicuously narrower than posterior segments. Genitalia: Posterior margin of pygophore flat, and densely setose. Posteromedial process of pygophore (mpp) deeply concaved medially. Ramus curved and projected laterally, nearly twice as long as its base, apical region narrowed with an acute and projected apical process (Fig. 5B).

Remarks
Saica carayoni is known only by the holotype. This species is similar to *S. rubripes*, because both species have the basal process of the scutellum inverted scoop-shaped and deeply emarginated in caudal view. However *S. carayoni* shows the posterior margin of pygophore flat (*S. rubripes* has a pair of protruding processes); and the ramus of the posteromedial process of pygophore is longitudinally angulated (in *S. rubripes* is nearly straight).

Saica cruentata Bergroth, 1913

Saica cruentata Bergroth, 1913: 234. — Maldonado Capriles 1990: 478 [cat.]. — Swanson 2020: 978 [cit.].

Distribution. — French Guiana (Bergroth 1913) (Fig. 7).

Remarks
Only known from a female specimen. Bergroth (1913) suggested that *S. cruentata* could be related to *S. erubescens*, but that it can be distinguished by the different coloration pattern and scarce setation. The holotype was not found in any collection, and we consider it is lost. No other specimens assignable to the species were found in the collections studied.

Saica elkinsi Blinn, 1994
(Figs 2G-H; 7)

Saica elkinsi Blinn, 1994: 62 [key]. — Hagerty & McPherson 1999: 151 [dist.]. — Clem *et al.* 2019: 168, 170, 189 [dist.]. — Swanson 2020: 978 [cit.].

Material examined. — **Paratype**. **United States** • 1 ♀; Florida: Dunellon; 12.VI.1939; Oman (USNM) (high-resolution images, Fig. 2G-H).

Diagnosis. — Coloration uniformly pale reddish (Fig. 2G, H), basal process of scutellum with apex entire and semicircular in caudal view, macropterous and micropterous females recorded by Blinn (1994).

Distribution. — United States (Arkansas, Illinois, Louisiana, Mississippi, Missouri, North Carolina, Alabama, Virginia, Florida) (Blinn 1994; Hagerty & McPherson 1999; Clem *et al.* 2018) (Fig. 7).

REDESCRIPTION
Female
Micropterous or macropterous. Measurements in Table 2.

Coloration (Fig. 2G-H). Head: Pale reddish. Antenna reddish, except distiflagellomere pale brown. First and second labial segments reddish, third labial segment yellowish. Thorax: Reddish to orange, spines yellowish. Procoxal cavity, procoxa and protrochanter orange, profemur reddish with basal portion orange, protibia orange with apical portion reddish, protarsus orange; meso- and metalegs similar to proleg. Forewing yellowish with veins and pterostigma orange. Abdomen: Mostly orange, dorsally reddish.

Structure. Thorax (Fig. 2H): Humeral angle spines long, three times longer than their base. Mesonotal spine straight, three times as long as its base. Protuberance of the scutellum with apex entire and slightly concave posteriorly, lateral margins not expanded in caudal view. Metanotal spine straight, 0.2 times the length of the mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal segment 2 not conspicuously narrower than posterior segments; posterolateral angles of tergite 7 flat, without processes. Genitalia: Tergite 9 nearly quadrangular.

Male
Macropterous (based on original description and illustrations of Blinn [1994]). Similar to female in most respects. Genitalia: Posterior margin of pygophore flat. Posteromedial process of pygophore elevated basally and angulated medially. Ramus nearly straight and projected laterally, almost twice as long as its base, apical region narrowed with an apical acute and projected process.

REMARKS
Saica elkinsi is the northernmost species of the genus and the only one with micropterous females, a condition that can be useful to distinguish it.

Saica erubescens Champion, 1898
(Figs 2I-L; 5C, L; 6B, I; 7)

Saica erubescens Champion, 1898: 178 [key]. — McAtee & Malloch 1923: 250 [key]. — Maldonado Capriles 1990: 479 [cat.]. — Lucas *et al.* 2016: 557 [dist.]. — Swanson 2020: 974 [female descript.].

MATERIAL EXAMINED. — **Holotype**. **Panama** • ♂; Bugaba: Champion; BMNH [BMNH(E) 1688178] (high-resolution images).

OTHER MATERIAL EXAMINED. — **Panama** • 1 ♂; Panama Oeste Province: Barro Colorado Is.; 9°9'17"N, 79°50'53"W; 6-7.V.2019; light trap LT-ARM3-MAY2019-B; Bobadilla, Lopez, Perez, Ramirez; STRI; BCI169355. **Colombia** • 1 ♂; Santander: Carmen de Chucurí; 6°N, 73°E; 801 m; 25.II.2018; C. Neita E. Torres and M. I. Castro; Trampa de luz UV; IAVH-E; IAVH-E-206089. **Nicaragua** • 1 ♀; Rama; IX.1962; MACN.

DIAGNOSIS. — Recognized by the pale brown to yellowish coloration, with pterostigma, subapical region of femora, and humeral angles reddish (Fig. 2I-L); abdomen slender and narrowed basally, posteromedial process of pygophore elevated and angulated medially (Fig. 5C), and nearly vertical in lateral view with the apex slightly curved anteriorly (Fig. 5L).

DISTRIBUTION. — Guatemala, Costa Rica, Panama, and Ecuador (Champion 1898; McAtee & Malloch 1923; Maldonado Capriles 1990; Lucas *et al.* 2016; Swanson 2020). First records for Colombia and Nicaragua (Fig. 7).

REDESCRIPTION
Male
Macropterous. Measurements in Table 2.

Coloration (**Fig.** 2I-J). Head: Pale brown to yellowish. Antenna yellowish, pedicel with a pale brown medial band. First and second labial segments brown, third labial segment yellowish. Thorax: Pale brown to yellowish, pronotum laterally brown, spines yellowish. Procoxal cavity, procoxa, and protrochanter pale brown, profemur pale brown with apical portion reddish, protibia and protarsus yellowish; meso- and metalegs similar to proleg. Forewing yellowish with pterostigma reddish to pale brown. Abdomen: Pale brown.

Structure. Thorax (Fig. 2J): Humeral angle spines three or more times longer than their base. Mesonotal spine straight, three times as long as or longer than its base. Protuberance of the scutellum with the apex and posterior region entire, the lateral margins not expanded in caudal view. Metanotal spine straight, nearly 0.2 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell variable in length. Abdomen: Abdominal tergite 2 conspicuously narrower than posterior segments. Genitalia: Anterior region of genital opening wide in dorsal view, posterior margin of pygophore flat. Posteromedial process of pygophore (mpp) elevated basally and angulated medially (Fig. 5C). Ramus nearly straight and projected laterally, almost three times longer than its base, apical region narrowed with a rounded and slightly projected apical process. Dorsal phallothecal sclerite (dps) nearly triangular, apex truncated, subapical lateral margin not laterally projected (Fig. 6B).

Female (Fig. 2K-L)
Macropterous. Similar to male in most respects.

Structure. Abdomen: Posterolateral angles of tergite 7 with a pair of acute processes Genitalia: Tergite 9 nearly oval. Apex of the gonoplac with a blunt process, and the external margins sinuate (Fig. 6I).

REMARKS
Saica erubescens shows a unique coloration pattern as it is the paler species of the genus. The acute processes on the posterolateral angles of the abdominal segment 7 in the females is a characteristic shared with *S. meridionalis*, but *S. erubescens* can be easily recognized by the entirely yellowish to pale brown

coloration and the usually narrow basal abdominal region. The particular structure of the gonoplac, with a blunt process on the apex, is a character shared with *S. tibialis*, but these latter species is considerably different by its color pattern, reddish with whitish areas.

Saica fuscipes Stål, 1862
(Figs 3A, B; 7)

Saica fuscipes Stål, 1862: 441. — Champion 1898: 177 [key and remarks]. — Maldonado Capriles 1990: 479 [cat.]. — Swanson & Chordas III 2018: 399, 413 [dist.].

Material examined. — **Holotype**. **Mexico** • ♀; NHMW, REDV.721/1 (high-resolution images, Fig. 3A, B).

Diagnosis. — Coloration dark red, except for the dark brown antennae, most part of femora (except base), tibiae, and forewings; pterostigma brightly reddish (Fig. 3A, B).

Distribution. — Mexico, Belize, and Guatemala (Champion 1898; Maldonado Capriles 1990; Swanson & Chordas III 2018) (Fig. 7).

Redescription
Female
Macropterous. Measurements in Table 2.

Coloration (Fig. 3A, B). Head: Red. Scapus and pedicel dark brown, basi- and distiflagellomere yellowish. First and second labial segments reddish, third labial segment yellowish. Thorax: Red, base of mesonotal spine whitish. Procoxal cavity, procoxa and protrochanter reddish; profemur dark brown except for basal region reddish; protibia and protarsus dark brown; meso- and metalegs similar to proleg. Forewing brown, veins basally reddish, pterostigma brightly reddish.

Structure. Thorax (Fig. 3B): Humeral angle spines three times longer than their base. Mesonotal spine straight, three times longer than its base. Protuberance of the scutellum with apex entire, slightly concave posteriorly, lateral margins not expanded in caudal view. Metanotal spine straight, 0.2 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Missing in the holotype specimen examined.

Remarks
Saica fuscipes shows similarities with *S. recurvata* and *S. lativentris*, because the posterior process of scutellum is more or less arcuate laterally and notched but not conspicuously expanded, but the coloration pattern of this species is different from the others. The species was described from a female, and the male is currently unknown; unfortunately, the abdomen of the holotype is missing (Fig. 3B), making impossible to document and compare the female genitalic structures.

Saica lativentris Villiers, 1943
(Figs 3C, D; 5D, M; 6C; 7)

Saica lativentris Villiers, 1943a: 197. — Maldonado Capriles 1990: 479 [cat.]. — Swanson 2020: 978 [cit.].

Material examined. — **Lectotype** (here designated). **Brazil** • ♂; Ceará: Serra de Baturité; 1.I.1898; Noalhier; MNHN-EH-EH-25368 (high-resolution images).

Other material examined. — **Bolivia** • 1 ♂; Beni: Pucara; 1.X.1993; JMB.

Diagnosis. — Coloration reddish, pronotal spines usually with apex yellowish, veins of forewing reddish basally, femora uniformly reddish (Fig. 3C, D), posteromedial process of pygophore medially angulated (Fig. 5D), and nearly at 45° in lateral view (Fig. 5M).

Distribution. — Brazil (Ceará) (Maldonado Capriles 1990). First record for Bolivia (Fig. 7).

Redescription
Male
Macropterous. Measurements in Table 2.

Coloration (Fig. 3C, D). Head: Red. Antenna reddish, except for the pale brown distiflagellomere. First and second labial segments reddish, third labial segment yellowish. Thorax: Reddish, spines yellowish apically. Proleg reddish, except for apical portion of protibia and protarsus yellowish; meso- and metalegs similar to proleg. Forewing yellowish, with veins basally and pterostigma reddish. Abdomen: Reddish.

Structure. Thorax (Fig. 3D): Humeral angle spines three or more times longer than their base. Mesonotal spine straight, three times as long as or longer than its base. Protuberance of scutellum with apex and posteriorly entire, lateral margins not expanded in caudal view. Metanotal spine straight, 0.2 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal tergite 2 conspicuously narrower than posterior segments. Genitalia: Anterior region of the genital opening (go) of pygophore wide in dorsal view, posterior margin flat. Posteromedial process of pygophore (mpp) elevated basally and angulated medially (Fig. 5D). Ramus nearly straight and projected laterally, almost three times longer than its base, apical region narrowed, apex with a rounded and slightly projected apical process, nearly at 45° in lateral view (Fig. 5M). Dorsal phallothecal sclerite (dps) nearly triangular, apex rounded, subapical lateral margin slightly projected laterally, lateral projection shorter than the apex of the dps (Fig. 6C).

Female
Macropterous. The only feature described by Villiers (1943a) is the horizontal position of the "genital valves"; we were not able to study the female syntype nor any other female specimen of this species.

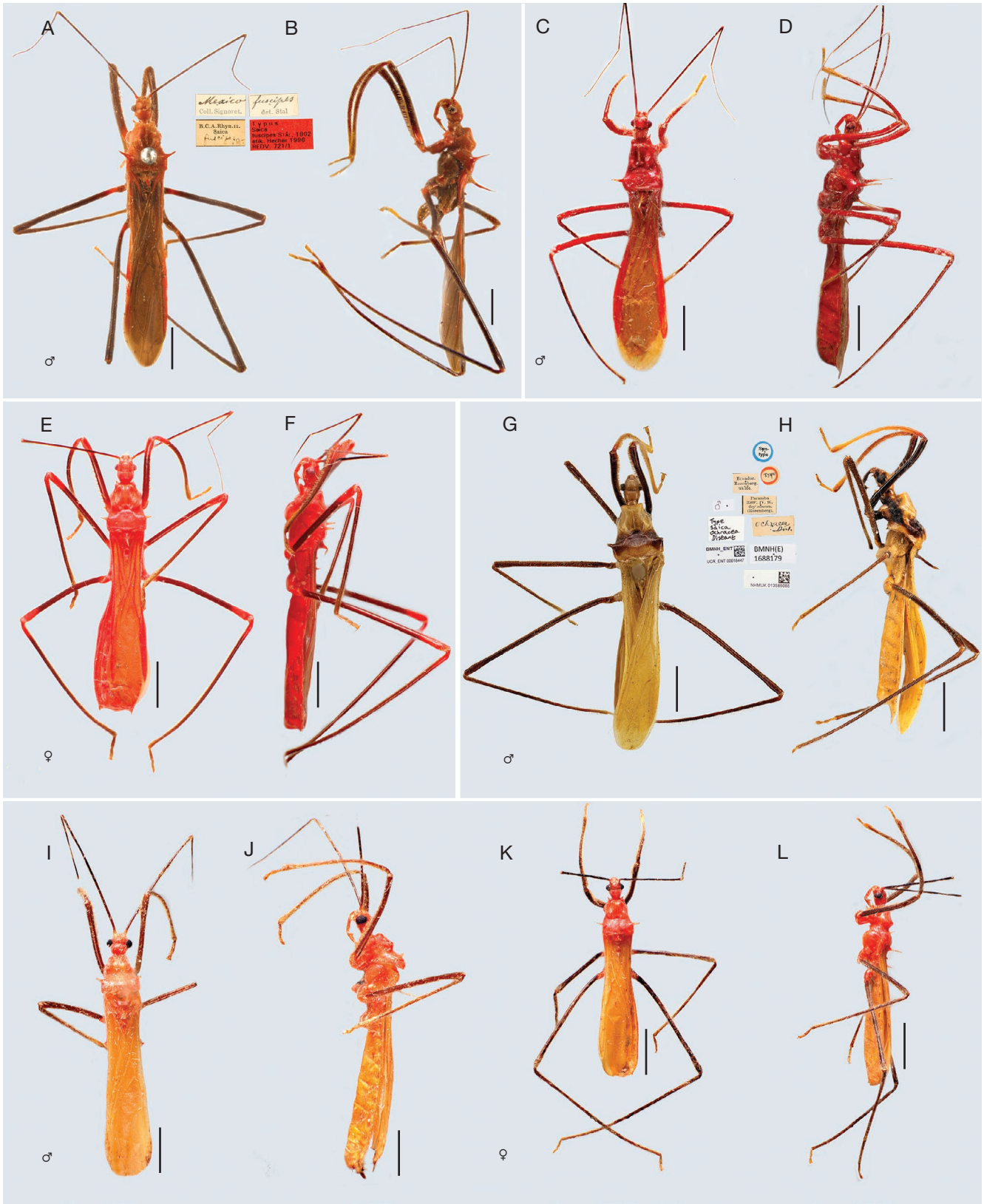

FIG. 3. — *Saica* Amyot & Serville, 1843 species, habitus: **A**, **B**, *S. fuscipes* Stål, 1862 female holotype, NHMW: dorsal (**A**); lateral (**B**); **C**, **D**, *S. lativentris* Villiers, 1943: male, dorsal (**C**); male, lateral (**D**); **E, F**, *S. meridionalis* Fracker & Bruner, 1924: female, dorsal (**E**); female, lateral (**F**); **G**, **H**, *S. ochracea* Distant, 1902, male holotype, BMNH: dorsal (**G**); lateral (**H**); **I, L,** *S. recurvata* (Fabricius, 1803) male dorsal (**I**); male, lateral (**J**); **K**, female, dorsal; **L**, female, lateral. Scale bars: 2 mm.

Remarks

Saica lativentris seems closely related to *S. tibialis* by the position of the posteromedial process of pygophore at 45° to the base, the basally reddish veins of the forewings, and the different coloration of the apex of the thoracic spines. Nevertheless, *S. lativentris* can be recognized by the conspicuously narrower base of the abdomen and the flat posterior margin of the pygophore.

Villiers (1943a) described the species on the basis of a male and a female, but without designation of holotype, here we selected the male syntype as lectotype.

Saica meridionalis Fracker & Bruner, 1924
(Figs 3E, F; 6J; 8)

Saica meridionalis Fracker & Bruner, 1924: 164 [descript.]. — Maldonado Capriles 1990: 479 [cat.]. — Gil-Santana & Marques 2005: 405 [cit.]. — Castro-Huertas & Melo 2023: 6 [phylogenetic analyses].

Material examined. — **Holotype**. **Brazil** • ♀; Amazonas: Manaos; 15.XI.1919; Flores; USNM 51735 (high-resolution image).

Other material examined. — **Colombia** • 1 ♀; Santander: La Belleza; Ver. Los Naranjos; 21.III.1997; H. Marin; UNAB. **Guyane** • 1 ♀; CSG Kourou; 16.X.2007; coll. JMB • 1 ♀; Delanglade: La Victoire; 5.VI.1997; B. Hermier; coll. JMB • 1 ♀; Mt des singes; 26.VIII.1996; Vesco J.P. réc.; coll. JMB.

Diagnosis. — Forewing with three closed cells, posterior margin of abdominal tergite 7 in females with a pair of caudolateral spiniform protruding processes (Fig. 3E), apex of the gonoplac rounded (Fig. 6J).

Distribution. — Brazil (Amazonas) (Maldonado Capriles 1990). First records for Colombia and French Guiana (Fig. 8).

Redescription

Female

Macropterous. Measurements in Table 2.

Coloration (Fig. 3E-F). Head: Reddish to brownish. Scapus dark brown with reddish on basal and apical regions. All labial segments reddish. Thorax: Reddish, apex of the spines slightly dark red to yellowish. Procoxal cavity red, procoxa and protrochanter reddish, profemur dark brown with basal and apical regions reddish, protibia dark brown with basal portion reddish and apical portion pale brown, protarsus yellowish; meso- and metalegs similar to proleg except by the meso- and metatibiae dark brown with the base reddish. Forewing yellowish with veins and pterostigma reddish to yellowish apically. Abdomen: Entirely reddish.

Structure. Thorax (Fig. 3F): Humeral angle spines nearly two or three times longer than their base. Mesonotal spine straight, three times longer than its base. Protuberance of scutellum with its apex slightly concave, conspicuously concave posteriorly, lateral margins slightly expanded in caudal view. Metanotal spine straight, nearly 0.5 times the length of mesonotal spine. Forewing with three closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal tergite 2 not conspicuously narrower than the other abdominal tergites. Posterolateral angles of tergite 7 with a pair of spines. Genitalia: Tergite 9 nearly oval. Apex of gonoplac entire, with external margins rounded (Fig. 6J).

Male

Macropterous. Male specimens were not examined here; but the original description referred to a male paratype as very similar to the female holotype [male genitalia not described or illustrated]. Forewing with three closed discal cells, membrane just reaching apex of abdomen in both sexes.

Remarks

Saica meridionalis is similar to *S. apicalis*, as both species have three closed cells on the forewing; nevertheless, *S. meridionalis* shows longer humeral angle spines, the females have the protruding processes on the posterolateral angles of the abdominal segment 7, and the apex of the gonoplac is rounded. Unfortunately, the posteromedial process of the pygophore was not described in the original description, and the male paratype was not found for this study.

Saica ochracea Distant, 1902
(Figs 3G-H; 5E; 8)

Saica ochracea Distant, 1902: 175. — Maldonado Capriles 1990: 479 [cat.].

Material examined. — **Holotype**. **Ecuador** • ♂; Paramba; 3500 m; 1.IV.1997; Rosenberg: dry season; UCR_ENT00018447; NHMUK01358906; BMNH(E) 1688179 (high-resolution images, Fig. 3G-H).

Diagnosis. — General body coloration ochraceous, with anterior portion of pronotal posterior lobe and lateral margins of pronotum dark brown; legs dark brown, with protibia and protarsus orange (Fig. 3G-H); apex of paramere conspicuously acute (Fig. 5E), and posteromedial process of pygophore deeply concave medially with ramus projecting laterally (Fig. 5E).

Distribution. — Ecuador (Distant 1902) (Fig. 8).

Redescription

Male

Macropterous. Measurements in Table 2.

Coloration (Fig. 3G-H). Head: Pale brown, darker laterally. Antenna and labium dark brown. Thorax: Pale brown, except for posterior lobe of the pronotum dark brown dorsally and laterally. Procoxal cavity pale brown; procoxa, protrochanter and profemur dark brown; protibia and protarsus orange; meso- and metalegs similar to proleg except for meso- and metatibiae dark brown. Forewing yellowish. Abdomen: yellowish.

Structure. Thorax (Fig. 3H): Humeral angle spines short, three times longer than their base. Mesonotal spine straight, three times longer than its base. Metanotal spine straight, 0.2 times the length of mesonotal spine. Forewing with two

closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal tergite 2 not conspicuously narrower than posterior segments. Genitalia: Posterior margin of pygophore flat. Posteromedial process of pygophore (mpp) not elevated basally and deeply concaved medially (Fig. 5E). Ramus longitudinally curved and projected laterally, longer than two times its base, apical region narrowed with an apical acute and projected process. Paramere apex acute (Fig. 5E).

REMARKS

Saica ochracea is similar to *S. tupackatari* n. sp. as both species are brownish, but *S. ochraceus* shows the anterior portion of the posterior lobe and lateral margins of the pronotum darker, the legs are uniformly dark brown except for the protibiae and protarsi orange, and the ramus of the posteromedial process of pygophore is apically wide. They also seem closely related by the length and shape of the metanotal spine that is sinuous and more than 0.5 longer than its base. Species only known from the male holotype.

Saica recurvata (Fabricius, 1803)
(Figs 3I-L; 5F, N; 6D, K; 8)

Zelus recurvatus Fabricius, 1803: 286.

Saica rubella – Amyot & Serville 1843: 372 [taxonomy]. — Champion 1898: 177 [key and remarks].

Saica recurvata antillarum – McAtee & Malloch 1923: 251 [key, n. subspecies]. — Fracker & Bruner 1924: 163 [cit.]. — Villiers 1943b: 323 [syn.]. **n. syn.**

Saica recurvata – Stål 1868: 129 [taxonomy]. — Wygodzinsky 1947: 424 [dist.]. — Maldonado Capriles 1990: 479 [cat.]. — Gil-Santana & Marques 2005: 406 [cit.]

MATERIAL EXAMINED. — **Lectotype** (here designated). **America Meridionali** • 1 ♀; [no country given]; Dom. Smidt; NHMD; ZMUC00103076 (high-resolution images).
Paralectotype • 1 ♂; [no locality label]; NHMD; ZMUC00103077 (high-resolution images).

OTHER MATERIAL EXAMINED. — **Panama** • 1 ♀; Panama Province: Barro Colorado Is; 9°9'17"N, 79°50'53"W; 25-26.V.2017; Arizala, Bobadilla, Lopez, Ramirez; light trap; STRI; BCI154428 • 1 ♂; 17.VI.2015; M. Lucas; beating; STRI; BCI112651 • 1 ♂; Bobadilla, González, Osorio, Perez; light trap; 31.VIII.2011; STRI; BCI43621 • 1 ♀; 1.III.2011; Bobadilla, González, Osorio, Perez, light trap; STRI; BCI37066 • 1 ♂; Bobadilla, González, Osorio, Perez; light trap; 3.V.2011; STRI; BCI40792. **Colombia** • 1 ♀; Risaralda: Pueblo Rico; Montezuma Ecolodge; 5.9 km WbN de Pueblo Rico Bosque húmedo; 5.23016°N, 76.0836°E; 1336 m; 12-15.IX.2017; D. Forero; MPUJ_ENT; MPUJ_ENT 0057282. **French Guiana [Guyane]** • 1 ♀; Mt des chevaux; 16.XII.2009; SEAG leg.; vitre; JMB • 1 ♂; Nourague; 19.II.2010; SEAG leg.; vitre; coll. JMB • 1 ♀; Patawa: PK 36; 26.II.1996; G. F.; coll. JMB • 1 ♀; Saul; 14.III.2011; SEAG rec; piège vire V1; coll. JMB. **Bolivia** • 1 ♂; Nigrillani: NOR-Yungas; 1.I.1950; Suilar; MACN • 1 ♀; Santa Cruz: Pcia. Ichilo; Buenavista; Tacú; 1.III.1951; Martínez; MLP.

DIAGNOSIS. — Body coloration pale reddish, with apex of pronotal spines usually reddish or brownish, veins of the forewing yellowish, and femora uniformly brownish (Fig. 3I-L). Posterior margin of pygophore with a pair of blunt processes; posteromedial process deeply concaved medially, ramus longitudinally curved and projecting laterally, apically wide (Fig. 5F), and nearly vertical in lateral view with the apex slightly curved (Fig. 5N).

DISTRIBUTION. — Mexico, Guatemala, Panama, St. Vincent, Grenada, Colombia, Suriname, Brazil (Amazonas, Mato Grosso), and Bolivia (Champion 1898; McAtee & Malloch 1923; Villiers 1943b; Wygodzinsky 1947, 1949; Maldonado Capriles 1990; Gil-Santana & Marques 2005). French Guiana (first record)(Fig. 8).

REDESCRIPTION

Male

Macropterous. Measurements in Table 2.

Coloration (**Fig.** 3I-J). Head: Reddish to orange. Antenna brown. First and second labial segments reddish, third labial segment yellowish. Thorax: Reddish to orange, spines yellowish with apex pale reddish. Procoxal cavity reddish; procoxa and protrochanter reddish, profemur dark brown; protibia brown; protarsus pale brown; meso- and metalegs similar to proleg. Forewing yellowish, veins concolorous to orange. Abdomen: Reddish.

Structure. Thorax (Fig. 3J): Humeral angle spines three times longer than their base. Mesonotal spine straight, three times longer than its base. Protuberance of scutellum with the apex entire, slightly concave posteriorly, lateral margins not expanded in caudal view. Metanotal spine sinuous, nearly 0.5 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal tergite 2 not conspicuously narrower than other abdominal tergites. Genitalia: Anterior region of genital opening (go) wide in dorsal view, posterior margin with a pair of blunt processes (Fig. 5F). Posteromedial process of pygophore (mpp) not elevated basally, but deeply concave medially. Ramus curved and projecting laterally, nearly three times longer than their base, apically wide and with a rounded and slightly projected apical process, nearly vertical in lateral view with apex slightly curved (Fig. 5N). Dorsal phallothecal sclerite (dps) nearly triangular, apex truncated, subapical lateral margin slightly projected laterally, lateral projection shorter than dps apex (Fig. 6D).

Female

Macropterous (Fig. 3K-L). Similar to male in most respects.

Structure. Abdomen: Posterolateral angles of tergite 7 flat. Genitalia: Tergite 9 nearly quadrangular. Apex of the gonoplac entire, with the external margins angulated (Fig. 6K).

REMARKS

Champion (1898) suggested that *S. recurvata* is similar to *S. fuscipes*, but both species can be easily separated by their color patterns, unfortunately the genital morphology of *S. fuscipes* could not be studied.

McAtee & Malloch (1923) described the subspecies *S. recurvata antillarum* based on specimens from the West Indies; and only considering the variation of the length of thoracic

spines (shorter in *S. recurvata antillarum*) for separating the subspecies. However, we observe that the length of thoracic spines is a variable character within the specific level in *Saica*, and without additional characters supporting this difference, it is unnecessary to keep the subspecies.

Fabricius (1803) described the species based on specimens from "America meridionalis". Two specimens are considered as the syntype material, but only one is labeled as the "type". Here, the designate the female bearing the "type" label as lectotype.

Saica rubripes Champion, 1898
(Figs 4A-D; 5G, O; 6E, L; 8)

Saica rubripes Champion, 1898: 177 — McAtee & Malloch 1923: 251 [key]. — Maldonado Capriles 1990: 479 [cat.]. — Swanson 2020: 978 [cit.]. — Castro-Huertas & Melo 2023: 6 [phylogenetic analyses].

MATERIAL EXAMINED. — **Lectotype** (here designed). **Panama** • Chiriqui: 1 ♂, 25-4000 ft, Champion; NHMUK013589071 / UCR_ENT00018427; BMNH; BMNH(E) 1688182 (Fig. 4A, B). **Paralectotypes**. **Panama** • V. de Chiriqui: 1 ♂, 25-4000 ft, Champion; BMNH; NHMUK013589072 • 1 ♀; idem; 25-4000 ft, Champion; BMNH; NHMUK015105198 • 1 ♀; idem; 2-3000 ft, Champion; BMNH; NHMUK015105199. **Colombia** [Columbia] • 1 ♀, NHMUK015105197 (high-resolution images).

OTHER MATERIAL EXAMINED. — **Panama** • 1 ♂; Chorrera: PNAC; Altos de Campana; 865 m; 27-31.V.2018; J. A. Ramirez, A. Santos; light trap; STRI; BCI167423 • 1 ♂; 865 m; 27-31.V.2018; J. A. Ramirez, A. Santos; netting; STRI; RED00266 • 1 ♂; Panama Province: Barro Colorado; 9°9'17"N, 79°50'53"W; 30.IV.2015; M. Lucas; beating; MPUJ_ENT; BCI111833 • 1 ♀; Veraguas prov.: Santa Fé; Cerro Mariposa; 8°30.735'N, 81°07.218'W; 800-1170 m; 30.V.2015; L. Sekerka and K. Stajerová igt.; individual collecting; NMPC. **Bolivia** • 1 ♀; Santa Cruz: Refugio Los Volcanes; Bermejo env.; 18°06'18"S, 63°35'5"W; 1-4.V.2012; O. Konvicka igt.; NMPC.

DIAGNOSIS. — Body coloration mostly reddish; posterolateral margin of pronotum reddish to slightly yellowish, spines yellowish; legs red to brown, except for protarsus pale brown; meso- and metalegs similar to proleg; forewing pale brown (Fig. 4A-D); process of scutellum conspicuously concave posteriorly and deeply emarginated; posterior margin of pygophore with a pair of conspicuous tubercles (Fig. 5G); posteromedial process of pygophore nearly vertical in lateral view (Fig. 5O).

DISTRIBUTION. — Cuba, Panama, and Colombia (Champion 1898; McAtee & Malloch 1923; Maldonado Capriles 1990). First record for Bolivia (Fig. 8).

REDESCRIPTION

Male

Macropterous. Measurements in Table 2.

Coloration (Fig. 4A, B). Head: Red. Scape and pedicel dark brown, basi- and distiflagellomeres yellowish. First labial segment mostly red, base brown; second segment red; third segment yellowish. Thorax: Red to dark orange, posterolateral margin of pronotum reddish to slightly yellowish, spines yellowish. Proleg red, except for protarsus pale brown; meso- and metalegs similar to proleg. Forewing pale brown to yellowish, veins concolorous. Abdomen: Red, posteromedial process of pygophore yellowish.

Structure. Thorax (Fig. 4B): Humeral angle spines nearly two or three times longer than their base. Mesonotal spine straight, three times longer than its base. Protuberance of scutellum with apex entire, conspicuously concave posteriorly, lateral margins conspicuously expanded in caudal view. Metanotal spine straight, nearly 0.2 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal tergite 2 not conspicuously narrower than posterior segments. Genitalia: Anterior region of genital opening (go) of pygophore narrow in dorsal view, posterior margin of ramus with a pair of pointed processes (Fig. 5G). Posteromedial process of pygophore (mpp) elevated basally and deeply concaved medially. Ramus curved and projecting laterally, nearly three times longer than its base, apically narrowed with an acute and projected apical process (Fig. 5G), nearly vertical in lateral view (Fig. 5O). Dorsal phallothecal sclerite (dps) nearly triangular with apex truncated, subapical lateral margin laterally projected, lateral projection shorter than dps apex (Fig. 6E).

Female

Macropterous (Fig. 4C, D). Similar to male in most respects.

Structure. Abdomen: Posterolateral angles of tergite 7 flat. Genitalia: Tergite 9 nearly quadrangular. Apex of gonoplac entire, with external margins rounded (Fig. 5L).

REMARKS

Champion (1898) suggested that *S. rubripes* could be related to *S. recurvata*, but the coloration pattern, and the thoracic spines structure, particularly the scutellum process allow for separating them. In addition, Champion (1898) observed differences in the arrangement of the setae in the profemur between *S. recurvata* and *S. rubripes*, but after examining a series of specimens, we do not find them.

The species was described by Champion based on seven specimens from Panama and Colombia, including males and females. Only five syntype specimens are deposited in the BMNH collection; here we designate a male from Panama as lectotype.

Saica subinermis Hussey, 1953
(Figs 4E-F; 5H; 8)

Saica subinermis Hussey, 1953: 64. — Maldonado Capriles 1990: 479 [cat.]. — Swanson 2020: 978 [cit.].

MATERIAL EXAMINED. — **Holotype**. **Mexico** • ♂; Michoacán: 12 ml.s Tzitzio on Huetamo rd.; 19°20'N, 100°50'W; 1050 m; 10.VII.1947; T. H. Hubbell / Holotype, *Saica subinermis* 1952, Hsy, Det. R. S. Hussey; UMMZ (high-resolution images, Fig. 4E, F).

DIAGNOSIS. — Body coloration reddish with basal half of femora and tibiae entirely orange (Fig. 4E, F); spines of humeral angles short (Fig. 4E); posteromedial process of pygophore medially concave with ramus laterally projected (Fig. 5H).

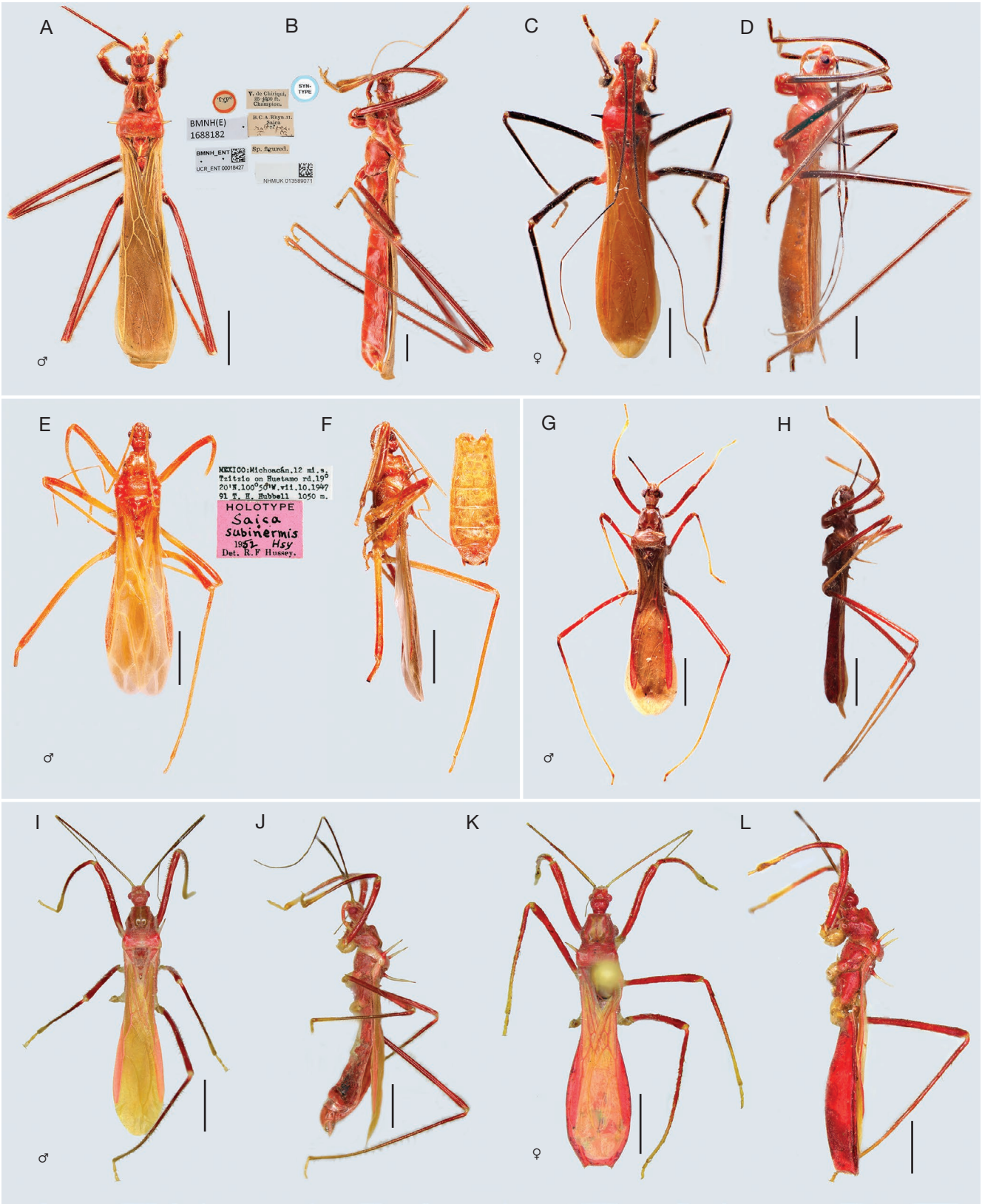

Fig. 4. — *Saica* Amyot & Serville, 1843 species, habitus: **A**-**D**, *S. rubripes* Champion, 1898: **A**, **B**, male holotype BMNH; dorsal (**A**); lateral (**B**); **C**, **D**, female; dorsal (**C**); lateral (**D**); **E**-**F**, *S. subinermis* Hussey, 1953, male holotype, UMMZ, dorsal (**E**); lateral (**F**); **G**-**J**, *S. tibialis* Stål, 1862: male, dorsal (**G**); male, lateral (**H**); female, dorsal (**I**); female (**J**), lateral; **K**, **L**, *S. tupackatari*, n. sp. male, dorsal: male, lateral (**L**). Scale bars: 2 mm. Credits: A, B, CC-BY-4.0 license.

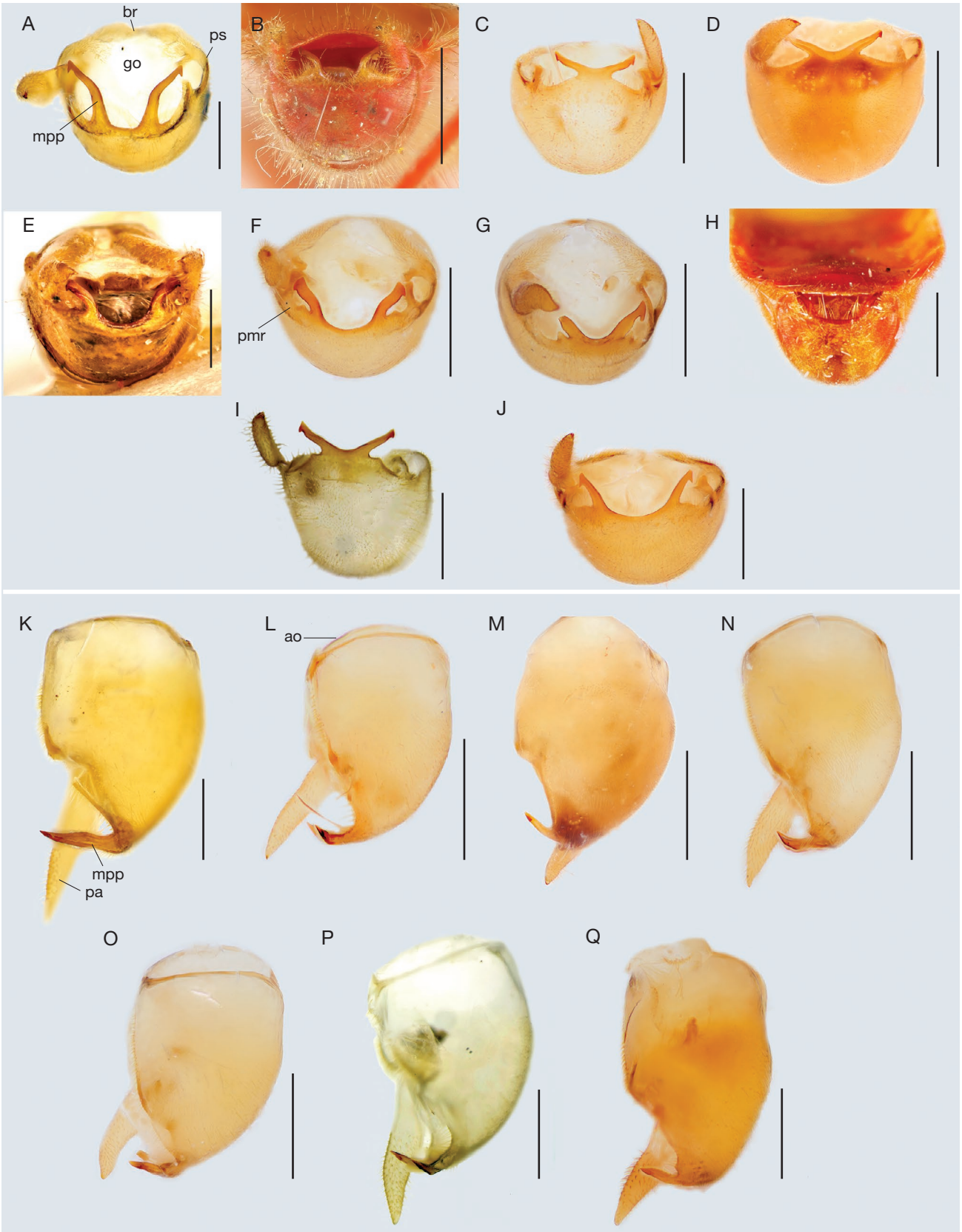

FIG. 5. — *Saica* Amyot & Serville, 1843, male genitalia, pygophore: caudal view (**A**-**J**): **A**, *S. apicalis* Osborn & Drake, 1915; **B**, *S. carayoni* Villiers, 1943; **C**, *S. erubescens* Champion, 1898; **D**, *S. lativentris* Villiers, 1943; **E**, *S. ochracea* Distant, 1902; **F**, *S. recurvata* (Fabricius, 1803); **G**, *S. rubripes* Champion, 1898; **H**, *S. subinermis* Hussey, 1953; **I**, *S. tibialis* Stål, 1862; **J**, *S. tupackatari* n. sp.; lateral view (**K**-**Q**): **K**, *S. apicalis*; **L**, *S. erubescens*; **M**, *S. lativentris*; **N**, *S. recurvata* (Fabricius, 1803); **O**, *S. rubripes* Champion, 1898; **P**, *S. tibialis* Stål, 1862; **Q**, *S. tupackatari* n. sp. Abbreviations: **ao**, anterior opening of pygophore; **br**, transverse bridge of pygophore; **go**, genital opening; **mpp**, medial process of pygophore; **pa**, paramere; **pmr**, posterior margin of ramus; **ps**, paramere socket. Scale bars: 0.5 mm.

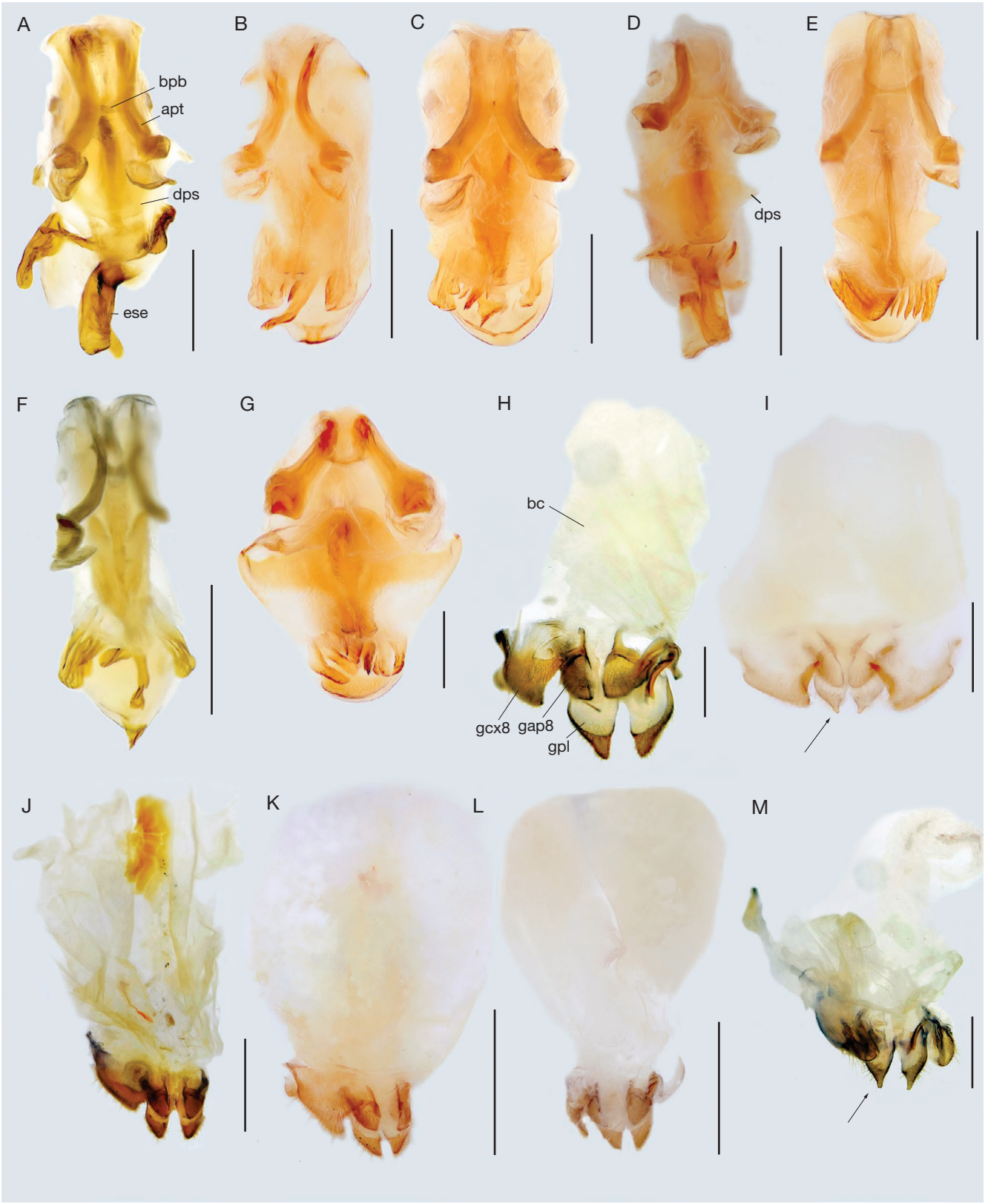

FIG. 6. — *Saica* Amyot & Serville, 1843, male and female genitalia, phallus, dorsal view (**A**-**G**): **A**, *S. apicalis* Osborn & Drake, 1915; **B**, *S. erubescens* Champion, 1898; **C**, *S. lativentris* Villiers, 1943; **D**, *S. recurvata* (Fabricius, 1803); **E**, *S. rubripes* Champion, 1898; **F**, *S. tibialis* Stål, 1862; **G**, *S. tupackatari* n. sp.; bursa copulatrix ventral view (**H**-**M**); **H**, *S. apicalis*; **I**, *S. erubescens* Champion, 1898; **J**, *S. meridionalis* Fracker & Bruner, 1924; **K**, *S. recurvata*; **L**, *S. rubripes* Champion, 1898; **M**, *S. tibialis* Stål, 1862. Abbreviations: **apt**, arms of articulatory apparatus; **bc**, bursa copulatrix; **bpb**, basal plate bridge; **dps**, dorsal phallotecal sclerite; **ese**, elongate sclerites of endosome; **gap8**, gonapophysis 8; **gcx8**, gonocoxa 8; **gpl**, gonoplac**.**

DISTRIBUTION. — Mexico (Hussey 1953) (Fig. 8).

REDESCRIPTION

Male

Macropterous. Measurements in Table 2.

Coloration (**Fig. 4E-F**). Head: Reddish. Antenna orange. Labium reddish. Thorax: Reddish, apex of meso- and metanotal spines yellowish. Procoxal cavity, procoxa and protrochanter orange; profemur basally orange, apically reddish; protibia orange, basally reddish, protarsus orange; meso- and metalegs similar to proleg. Forewing yellowish with veins orange, pterostigma reddish. Abdomen: Orange, pygophore slightly darker.

Structure. Thorax (Fig. 4F): Humeral angle spines short, as long as their base. Mesonotal spine sinuous, near twice as long as its base. Protuberance of scutellum with apex slightly concave posteriorly, lateral margins not expanded in caudal view. Metanotal spine sinuous, nearly 0.5 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal tergite 2 not conspicuously narrower than rest of abdomen. Genitalia: Posterior margin of ramus flat; posteromedial process of pygophore (mpp) deeply concaved medially (Fig. 5H); ramus angulated and projecting laterally, nearly twice as long as its base, apical region narrowed.

REMARKS

Saica subinermis is similar to *S. apicalis*, considering the short length of the thoracic spines of both species; but *S. subinermis* can be distinguished by the two closed cells on the forewing, the reddish pattern of the femora basally, the entirely orange tibiae, and laterally projected rami of pygophore. Species only known from the male holotype.

Saica tibialis Stål, 1862
(Figs 4I-L; 5I, P; 6F, M; 8)

Saica tibialis Stål, 1862: 441. — Champion 1898: 178 [key and remarks]. — McAtee & Malloch 1923: 250 [key]. — Maldonado Capriles 1990: 479 [cat.]. — Castro-Huertas & Melo 2023: 6 [phylogenetic analyses].

MATERIAL EXAMINED. — **Lectotype** (here designated). **Mexico** • ♀; Coll. Signoret; *tibialis* det. Stål; B.C.A. Rhyn. II, *Saica tibialis* ♀; Syntypus *Saica tibialis* Stål, 1862, etik. Hecher 1996; NHMW; REDV.723/1 (high-resolution images).
Paralectotype. **Mexico** • ♀; Signt; *tibialis* Stål; 197 53; NHRS-GULI000001761 (high-resolution images).

OTHER MATERIAL EXAMINED. — **Colombia** • 1 ♀; La Sierra; 7.I.1996; García Parra; UNAB • 1 ♂; Cundinamarca, Arbelaez; 4°16’37”N, 74°24’35”W; 1417 m; 22.X.1989; H. Parra; UNAB • 1 ♂; La Mesa; 22.IX.1992; D. Rodríguez; UNAB • 1 ♂; Sasaima, Vda. Nariz Alta, Finca El Tapaz; 4°58’N, 74°26’W; 1150 m; 21.VI.2012; L. Sánchez; jama en arbusto; UNAB • 1 ♀; Silvania; 15.XI.2009; Jhon Delgado; manual en hoja; UNAB • 1 ♂; W a Fusagasugá, Vda. Mesitas; cultivo de café; 6.XI.1997; J. Cuellar; UNAB; Meta: San Juan de Arama • 1 ♀; Ropain; 23.III.1997; UNAB • 1 ♂; Risaralda: Pueblo Rico; Montezuma Ecolodge; 5.9 km WbN de Pueblo Rico Bosque húmedo; 5.23016°N, 76.0836°E; 1336 m; 2-7.IX.2018; C. Cubillos, trampa de luz UV; MPUJ_ENT • 1 ♂; Valle del Cauca: Cali, Univalle; 3°22’46.3”N, 76°31’86.9”W; 970 m; 15.II.2005; Entomophilo, manual sobre *Pithecellobium* dulce; MUSENUV • 1 ♂; Dagua, Reserva Chicoral; 03°33’12.0”N, 76°35’49.2”W; 1982 m; Juan D. Kuri, manual; MUSENUV. **Argentina** • 1 ♀; Misiones, Piñalito; 1952; Viana; MACN.

DIAGNOSIS. — Coloration pale red with antennae, third visible labial segment, coxae, trochanters, apical region of tibiae, and forewings whitish (Fig. 4I-L); posteromedial process of pygophore elevated and medially angulated, rami laterally projected (Fig. 5I), nearly at 45°, and with apex slightly curved anteriorly (Fig. 5P); gonoplac with a blunt projection at apex (Fig. 6M).

DISTRIBUTION. — Mexico, Guatemala, Costa Rica, Panama, and Argentina (Champion 1898; McAtee & Malloch 1923; Maldonado Capriles 1990; Carpintero *et al.* 2006). First record for Colombia (Fig. 8).

REDESCRIPTION

Male

Macropterous. Measurements in Table 2.

Coloration (Fig. 4I-J). Head: Red, postocular tuff of setae yellowish to orange. Scape dark brown with a yellowish basal band; pedicel dark brown, basi- and distiflagellomeres pale brown. First labial segment red, second and third segments yellowish. Thorax: Red to dark orange, lateral margins and spines whitish with their base red and apex brown. Procoxal cavity red with posterior margins whitish; procoxa and protrochanter whitish, profemur red, protibia red with apical portion whitish, protarsus yellowish; meso- and metalegs similar to proleg. Forewing yellowish, base of veins and pterostigma reddish to orange. Abdomen: Red, except whitish medial region of sternites 3 to 5.

Structure. Thorax (Fig. 4J): Humeral angle spines long, three times longer than their base. Mesonotal spine straight, three times longer than its base. Protuberance of scutellum with apex and posteriorly entire, lateral margins not expanded in caudal view. Metanotal spine straight, nearly 0.2 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Genitalia: Anterior region of genital opening (go) wide in dorsal view, posterior margin flat. Posteromedial process of pygophore (mpp) elevated basally and angulated medially. Ramus almost straight and projected laterally, nearly three times longer than its base, apical region narrowed with an acute and projected apical process (Fig. 5I), nearly at 45°, with apex slightly curved anteriorly (Fig. 5P). Dorsal phallothecal sclerite (dps) nearly triangular, apex rounded, subapical lateral margin not projected (Fig. 6F).

Female

Macropterous (Fig. 4K-L). Similar to male in most respects

Coloration. Thorax: Entirely red.

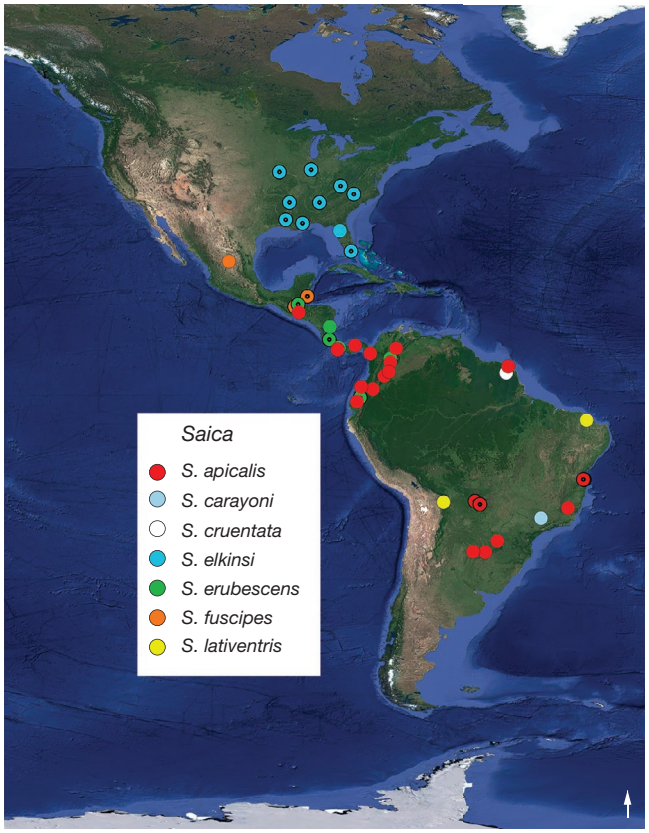

FIG. 7. — Distributional map of *Saica* Amyot & Serville, 1843 species. *Saica apicalis* Osborn & Drake, 1915, *S. carayoni* Villiers, 1943, *S. cruentata* Bergroth, 1913, *S. elkinsi* Blinn, 1994, *S. erubescens* Champion, 1898, *S. fuscipes* Stål, 1862, and *S. lativentris* Villiers, 1943. Empty circles, distributional information from examined material, circles with a dot, distributional information from the literature.

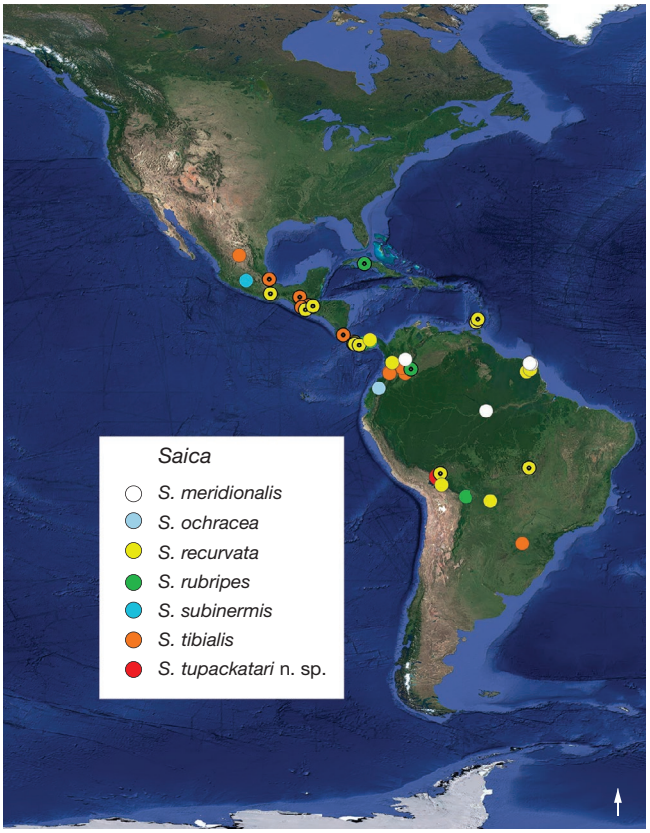

FIG. 8. — Distributional map of *Saica* Amyot & Serville, 1843 species. *Saica meridionalis* Fracker & Bruner, 1924, *S. ochracea* Distant, 1902, *S. recurvata* (Fabricius, 1803), *S. rubripes* Champion, 1898, *S. subinermis* Hussey, 1953, *S. tibialis* Stål, 1862, and *S. tupackatari* n. sp. Empty circles, distributional information from examined material, circles with a dot, distributional information from the literature.

Structure. Abdomen: Posterolateral angles of tergite 7 triangular and angulated. Genitalia: Tergite 9 nearly oval. Apex of gonoplac with a blunt process, with the external margins sinuate (Fig. 6M).

REMARKS

Saica tibialis is easily recognized by its unique coloration pattern. In addition, the structure of the posteromedial process of pygophore and the shape of the gonoplac are very useful taxonomic characters to separate this species. Champion (1898) suggested that *S. tibialis* could be allied to *S. erubescens*, considering probably the paler coloration of some regions of the body, and the similar posteromedial process of pygophore. However the coloration pattern is conspicuously different as well as the structure of the endosomal sclerites.

Stål (1862) described the species based on male and female specimens from Mexico. However, he did not indicate the number of specimens. Two female syntypes are deposited in the NHMW and NHRS collections, but the male specimen was not found in the collections where Stål material is deposited. Here, we selected the female from NHMW as lectotype.

Saica tupackatari n. sp.
(Figs 4G-H; 5J, Q; 6G; 8)

urn:lsid:zoobank.org:act:38B5DDCC-8C9F-4AD3-B1E0-B7D0ECBDE765

TYPE MATERIAL. — **Holotype. Bolivia [Bolivie]** • ♂; Piste Camote-Apollo; 1000 m; 7.XI.2002; Bleuzen réc. / *Saica tupackatari* Castro-Huertas & Melo 2024; MNHN.

ETYMOLOGY. — This new species is named after the Aymara leader "Tupác Katari" (Julián Apaza Nina) of the resistance indigenous movement against the Spain colony in Bolivia and Peru. Tupác means "shiny" in Quechua, and Katari means "snake" in Aimara. The name is treated as a noun in apposition.

DISTRIBUTION. — Bolivia (Fig. 8).

DIAGNOSIS. — Coloration mostly brown (Fig. 4G-H), apex of thoracic spines whitish, forewing yellowish with pterostigma red, legs mostly reddish with apical ¾ of tibiae and tarsi yellowish (Fig. 4H); posteromedial process of pygophore widely concave medially, ramus short and slightly projected laterally (Fig. 5J) and nearly vertical in lateral view (Fig. 5Q); lateral margins of the dorsal phallotecal sclerite conspicuously produced laterally, lateral projections longer than dps apex (Fig. 6G).

Description

Male

Macropterous. Measurements in Table 2.

Coloration (Fig. 4G-H). Head: Brown. Scape dark brown (rest of antennal segments missing). First and second labial segments brown, third labial segment yellowish. Thorax: Dark brown, apex of meso- and metanotal spines yellowish. Procoxal cavity, procoxa and protrochanter brown, profemur reddish, protibia yellowish with basal portion reddish, protarsus yellowish; meso- and metalegs similar to proleg. Forewing yellowish, base of veins and pterostigma reddish. Abdomen: Reddish.

Structure. Thorax (Fig. 4H): Humeral angle spines long, three times longer than their base. Mesonotal spine straight, three times longer than its base. Protuberance of scutellum with apex slightly concave, conspicuously concave posteriorly, lateral margins slightly expanded in caudal view. Metanotal spine sinuous, nearly 0.2 times the length of mesonotal spine. Forewing with two closed cells, apex of outer discal cell extending as far as apex of pterostigma. Abdomen: Abdominal tergite 2 not conspicuously narrower than posterior segments. Genitalia: Anterior region of genital opening (go) of pygophore narrow in dorsal view, posterior margin of pygophore flat. Posteromedial process of pygophore (mpp) not elevated basally and widely concaved medially. Ramus angulated and projected vertically, nearly three times longer than their base, apical region narrow with an acute and projected apical process (Fig. 5J), nearly vertical in lateral view (Fig. 5Q). Dorsal phallothecal sclerite (dps) nearly triangular, apex truncated, subapical lateral margin laterally projected, lateral projection longer than dps apex (Fig. 6G).

Remarks

Saica tupackatari n. sp. is the darkest species of the genus. Considering this, it looks similar to *S. ochracea*, but *S. tupackatari* n. sp. can be distinguished by the entirely dark brown thorax, and the uniformly reddish legs except the yellowish tibiae and tarsus, the acute ramus, and the conspicuously laterally projected dorsal phallotecal sclerite, a unique condition in the genus. The species is only known from the male holotype.

Cladistic analysis

The IW analyses resulted in two different topologies, corresponding to two ranges of *k*-values. The topologies are almost identical and recovered *Saica* as monophyletic and the clade *Pseudosaica* + *Polytoxus* as its sister group. A clade composed by *S. elkinsi*, *S. erubescens*, *S. tibialis*, and *S. lativentris* is recovered in all topologies but in the analyses with *k*-values from 8 to 10, *S. elkinsi* is recovered as sister species of *S. erubescens*, with one additional tree with a different relative position of *Polytoxus armillatus* and *P. esakii* in the *k*-values 9 and 10. In *k*-values 11 and 12, *S. elkinsi* is recovered as sister group of the clade (*S. erubescens* + (*S. tibialis* + *S. lativentris*)), with one additional tree with a different relative position of the same *Polytoxus* species that in the anterior analyses, in the *k*-value 11.

The most parsimonious tree obtained from the analysis with *k*-value=12 has a total fit of 7.44502 (CI = 50, RI = 72), recovering *Saica* as monophyletic (Fig. 9) and supported by one synapomorphy: the bifid posteromedial process of pygophore (#64-1), and three homoplastic characters: the thin simple setae on the gular region (#6-1), the near straight parameres (#73-1), and the projected lateral margin of the dorsal phallotecal sclerite (#83-1). *Pseudosaica* + *Polytoxus* clade is recovered as the sister group of *Saica*, and it is supported by nine synapomorphies: the simple setae on the ventral margin of the second visible labial segment arranged in a tuft (#10-1), the ventral surface of the procoxa with stout simple setae (#17-1) arranged in several tufts of setae (#18-1), the posterior margin of scutellum with a protuberance (35-1), the r-m crossvein of the forewing present (45-1), the procoxa nearly one time the length of the protrochanter (49-1), the protibia curved (50-1), the basal plate arms longer than the dorsal process of the basal plate (#76-1), and the basal plate extension as long as or longer than the basal plate (#79-1). Our results are congruent with the hypotheses of Castro-Huertas & Melo (2023) about the monophyly of *Saica*, but the sister-group hypothesis is not congruent because they recovered only *Polytoxus* as sister-group of *Saica*.

Our analyses recovered the clade *S. ochracea* + *S. tupackatari* n. sp. as the sister-group of remaining *Saica* species, but with low support. The internal relationships have a low support except for the clades G and H (Fig 74). The clade G is composed by (*S. subinermis* + (*S. apicalis* + *S. meridionalis*)) and it is supported by one synapomorphy: the posteromedial spine of mesonotum only twice as long as the base of the spine (#34-0). The clade (*S. meridionalis* + *S. apicalis*) is supported by two synapomorphies: the forewing with three closed cells (#44-1) and the M and CU veins basally fused (#47-1). The clade (*S. meridionalis* + *S. apicalis*) was also recovered by Castro-Huertas & Melo (2023) and was supported by the presence of three closed cells in the forewing (character 84-1) and the posterior process of the scutellum with the anterior margin emarginated (character 79-1).

The clade H is composed by (*S. elkinsi* (*S. erubenscens* (*S. lativentris* + *S. tibialis*))) and it is supported by a two synapomorphies from the posteromedial process of the pygophore: the elevated base (#67-1) and the angulated medial margin (#68-1). The clade *S. lativentris* + *S. tibialis* is supported by one synapomorphy: the bifid posteromedial process of pygophore in lateral view located nearly at 45° to the base (#65-0).

DISCUSSION

In this study, we present the first phylogenetic hypothesis for the genus *Saica* including all but two of the known species, based on a character matrix coded from the external morphology, the male and female genitalia, and color pattern. The result of this morphological cladistic analysis corroborates

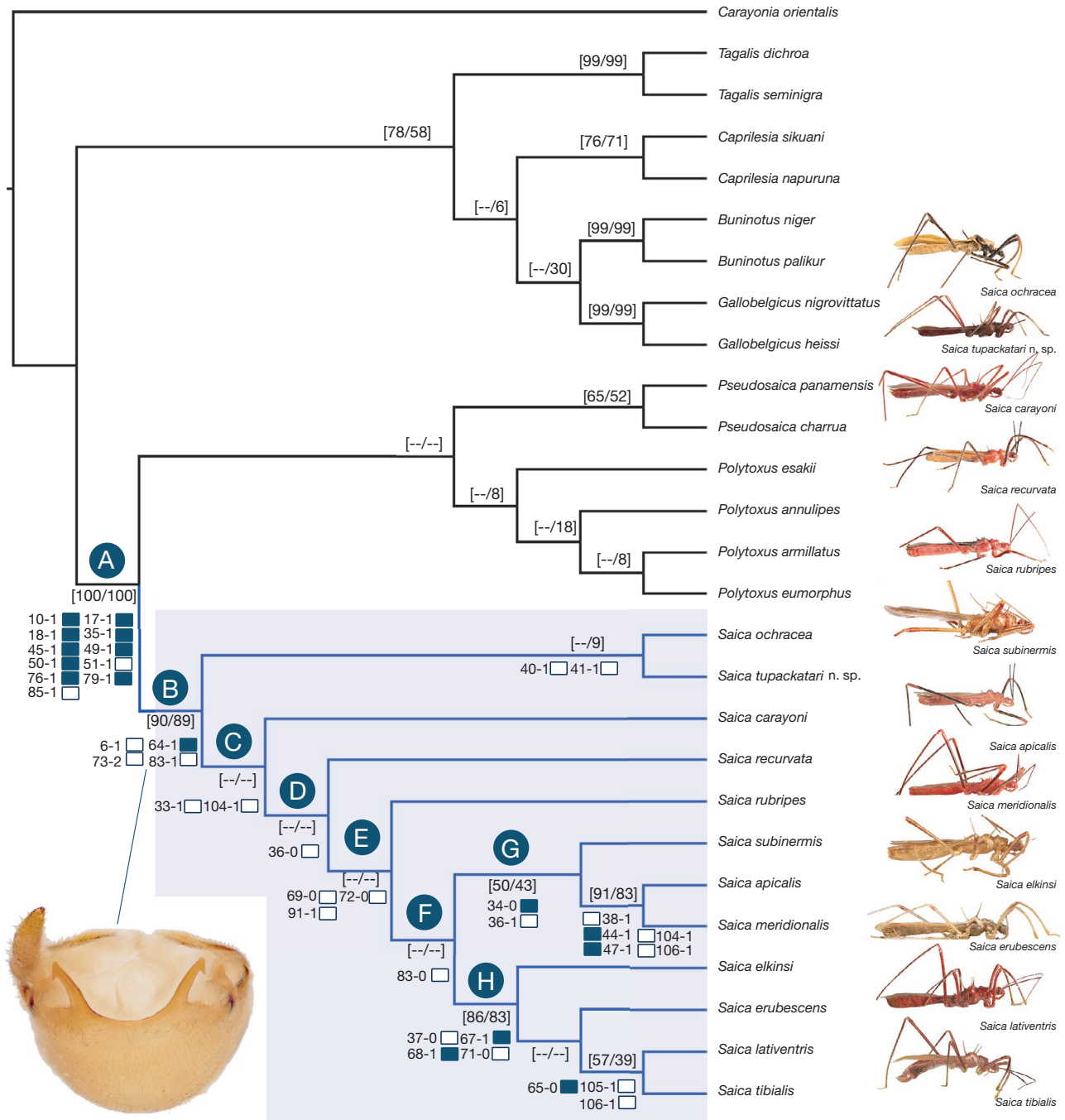

FIG. 9. — Phylogenetic hypothesis for *Saica* Amyot & Serville, 1843 species. The most parsimonious tree found with implied weighting using $k = 12$. On the tree, non-homoplasious changes are represented as full squares, and homoplasious changes as empty squares. Support values are shown between parentheses as GC frequencies.

the monophyly of *Saica* and contributes to analyze its relationship with other Saicini genera. In addition, we analyzed some character complexes with taxonomic importance under our phylogenetic hypothesis.

Coloration patterns are very important to distinguish *Saica* species. We identify three main general patterns: reddish species, paler species (pale brown to yellowish), and brownish species (ochraceous to brown), all three with variation in the coloration of the legs. Swanson (2020) discussed the coloration pattern in species related to *S. erubescens*, grouping them in function of legs coloration. He observed that: *S. ochracea*, *S. recurvata*, and *S. tibialis* show entirely brown legs;

S. apicalis, *S. fuscipes*, and *S. meridionalis* have brownish legs with the apical part of the femur and basal part of the tibiae reddish; *S. tibialis* shows reddish legs with whitish regions ("bicolorous legs"); and *S. carayoni*, *S. cruentata*, *S. elkinsi*, *S. lativentris*, *S. rubripes*, *S. subinermis*, and *S. erubescens* have pale or reddish legs. Despite the small number of specimens examined for some species, and that probably are not enough to analyze the intraspecific variability of color patterns, we included four characters of color pattern in our data matrix. They are highly homoplastic but yet informative for the clades (*S. apicalis* + *S. meridionalis*) and (*S. lativentris* + *S. tibialis*). Our phylogenetic analysis did not recover as an emerging result Swanson's hypothesis on coloration pattern nor any other pattern related to coloration.

Swanson (2020) also discussed the problematic association between males and females within *Saica* species, stating that the coloration patterns are potentially variable, moreover taking into account that the genital structures are not documented or described for most of the species. He suggested that some species that were described only from one sex could correspond to some other species, but that it is impossible to associate them only by coloration pattern, unfortunately, when describing the female of *S. erubescens* for the first time, he did not include a description or images of the genitalia to compare with other species. Here we describe and document the female genitalia of *S. erubescens*, and we found that the apex of the gonoplac possesses a blunt process, character shared with *S. tibialis*. Considering the plasticity of coloration patterns, and the usefulness of the male and female genitalia we urge that future studies should always document the genital structures and the variability of the coloration patterns.

We observed that the genitalia in *Saica* have taxonomic and phylogenetic importance, particularly the structure of the posteromedial bifid process, the posterior margin of pygophore, and the dorsal phallothecal sclerite in the males; and the structure of the gonoplac in the females (in *S. erubescens* and *S. tibialis*).

Humeral angle spines length was used as a relevant character to characterize *S. apicalis* and to establish the subspecies *S. recurvata antillarum*. Gil-Santana & Marques (2005) suggested that the length of humeral angle spines is a plastic condition and without taxonomic value to species level. We partially agree with them, as we observed variation in *S. apicalis* between "short" to "median" length spines, but never "very long spines" as those found in *S. tibialis*; for this reason, we consider that the length of the humeral angle spines combined with other characters could be a confident character to distinguish species. In the case of *S. recurvata antillarum* we did not find any additional character besides the length of humeral angle spines to support the subspecies designation, and we consider it as a synonym of *S. recurvata*.

The structure of the forewing veins is an important character in Saicini. The number of closed cells is one of the first dichotomies in *Saica's* taxonomic keys, and our analyses recovered this character supporting species groups. A pair of closed cells in the forewing is the most usual condition within *Saica* species, however the clade (*S. apicalis* + *S. meridionalis*) is supported by the presence of three closed cells.

In conclusion, *Saica* is a monophyletic genus supported by the bifid posteromedial process of the pygophore with fourteen valid species. Forewing venation, coloration pattern, thoracic spines length, and male and female genital structures show important characters to identify *Saica* species. Two species groups with strong support were recovered in our analyses: The clade including *S. subinermis*, *S. apicalis* and *S. meridionalis*, and the clade composed by *S. elkinsi*, *S. erubenscens*, *S. lativentris*, and *S. tibialis*. We believe that the examination of additional specimens and more information about the genital structure could contribute to a better resolution of the topology and a more robust hypothesis about the relationships between *Saica* species.

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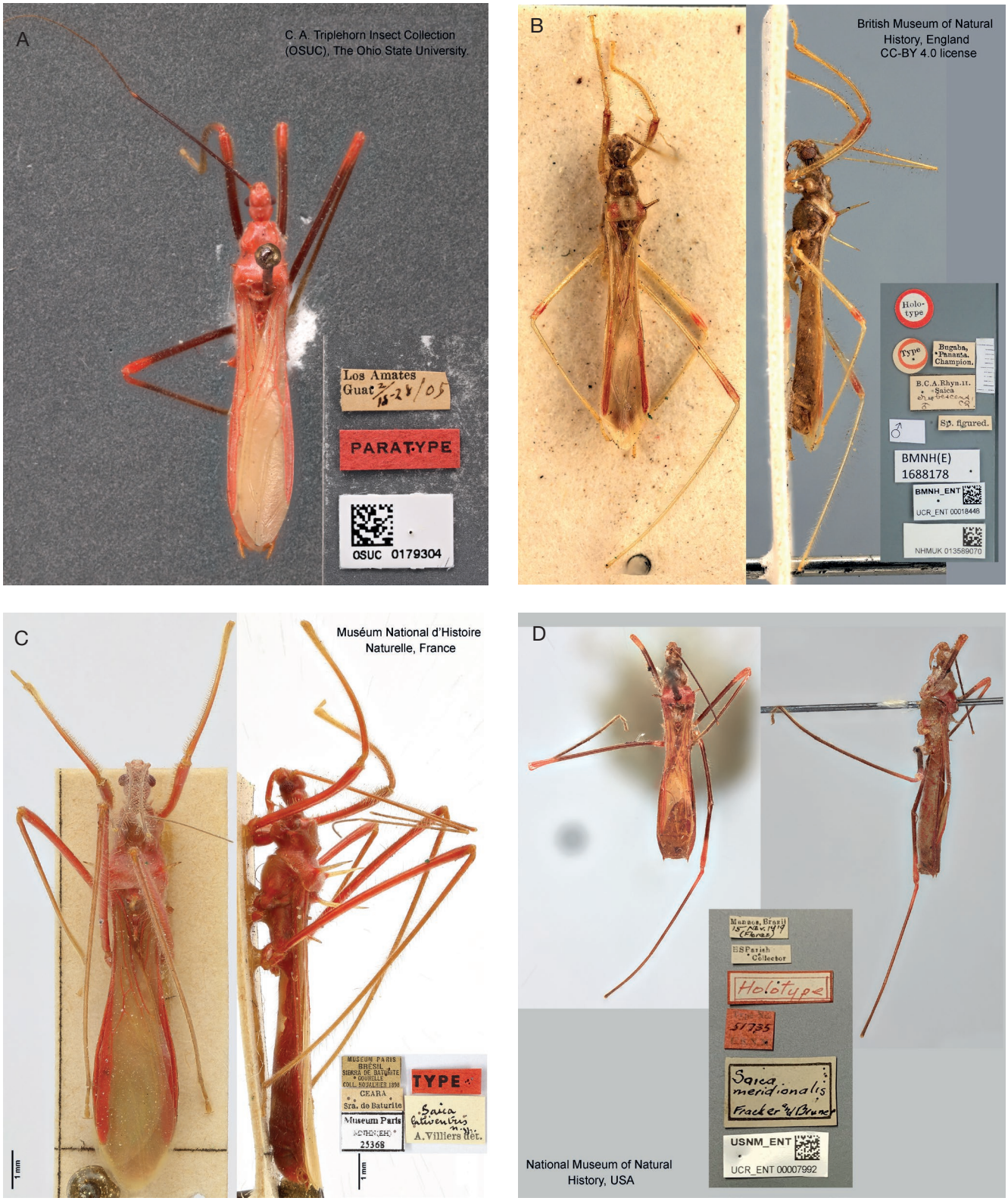
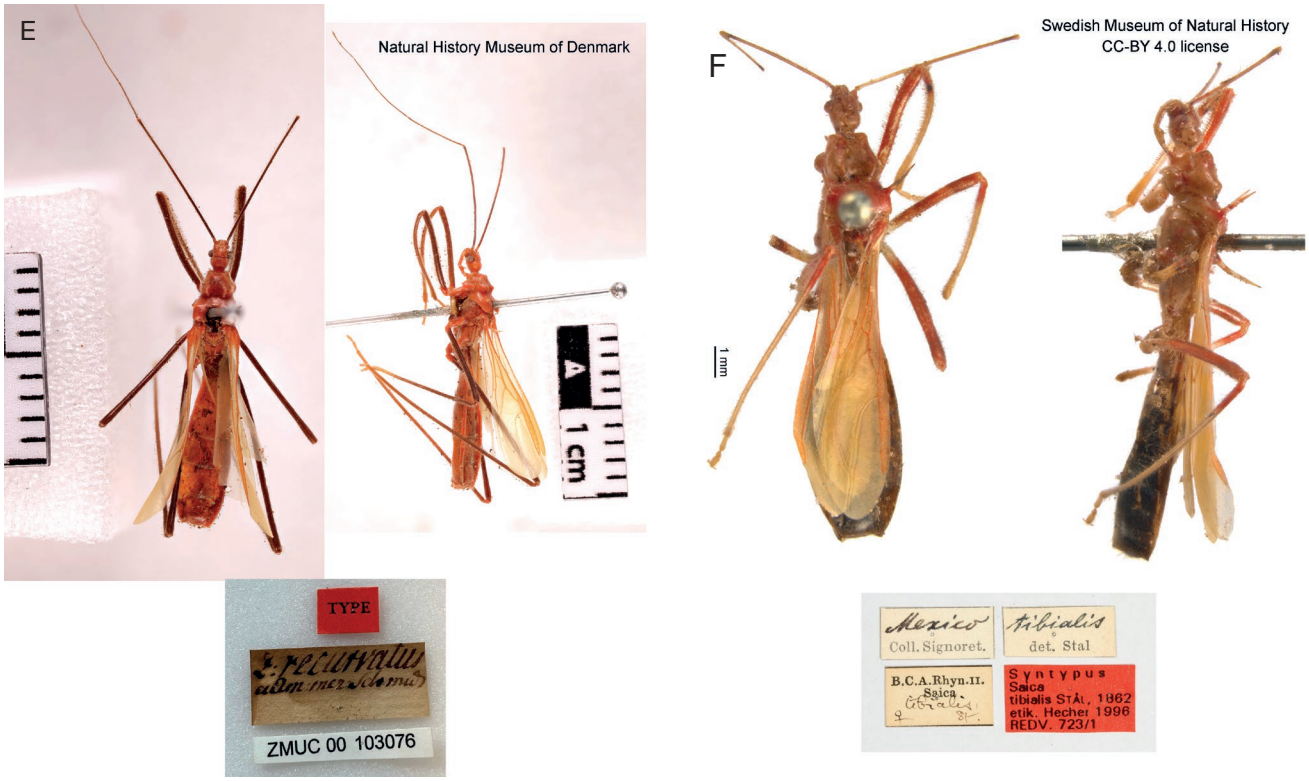
APPENDICES

APPENDIX 1. — Type material images: **A**, *Saica apicalis* (lectotype), C. A. Triplehorn Insect Collection (OSUC), The Ohio State University; **B**, *Saica erubescens* (holotype), British Museum of Natural History (BMNH), CC-BY-4.0 license; **C**, *Saica lativentris* (lectotype), Laurent Fauvre, Muséum national d'Histoire naturelle (MNHN); **D**, *Saica meridionalis* (holotype), Thomas Henry, National Museum of Natural History (USNM); **E**, *Saica recurvata* (lectotype), Lars Vilhelmsen, Natural History Museum of Denmark (NHMD); **F**, *Saica tibialis* (lectotype), Gunvi Lindberg, Swedish Museum of Natural History (NHRS), CC-BY 4.0 license.





Appendix 2. — Characters and characters state list modified from Castro-Huertas & Melo (2023). Abbreviations: **CI**, consistence index; **RI**, retention index.

VESTITURE. 1. Maxillary plate, ventral margin, setae structure: (0) spiniform; (1) simple. (CI=100/RI=100).
2. Maxillary plate, ventral margin, simple setae, arrangement: (0) disperse; (1) in a tuft. (CI=100/RI=100).
3. Postocular region, ventral margin, setae, structure: (0) spiniform; (1) simple. (CI=100/RI=100).
4. Postocular region, ventral margin, simple setae, arrangement: (0) sparse; (1) in a tuft. (CI=100/RI=100).
5. Gular region, setae structure: (0) spiniform; (1) simple. (CI=50/RI=80).
6. Gular region, simple setae, structure: (0) stout; (1) thin. (CI=33/RI=66).
7. Labium, first visible segment, ventral region, setae, structure: (0) simple; (1) spiniform. (CI=100/RI=100).
8. Labium, second visible segment, ventral region, setae, structure: (0) spiniform; (1) simple. (CI=50/RI=66).
9. Labium, second visible labial segment, ventral region, simple setae, structure: (0) stout; (1) thin. (CI=100/RI=100).
10. Labium, second visible labial segment, ventral region, simple setae, arrangement: (0) sparse; (1) in a tuft. (CI=100/RI=100).
11. Prosternum, proepisternal supracoxal lobe, anterodorsal margin, structure: (0) glabrous; (1) setose. (CI=100/RI=100).
12. Prosternum, proepisternal supracoxal lobe, anterodorsal margin, setae, structure: (0) spiniform; (1) simple. (CI=50/RI=87).
13. Prosternum, proepisternal supracoxal lobe, anterodorsal margin, simple setae, arrangement: (0) sparse; (1) in a tuft. (CI=100/RI=100).
14. Prosternum, proepisternal supracoxal lobe, anteroventral margin surface: (0) smooth; (1) setose. (CI=100/RI=100).
15. Procoxa, dorsolateral surface: (0) with only simple setae; (1) with simple and spiniform intermixed setae. (CI=50/RI=80).
16. Procoxa, ventral surface, structure: (0) with simple setae and spiniform setae; (1) with only simple setae. (CI=100/RI=100).
17. Procoxa, ventral surface, simple setae, structure: (0) thin; (1) stout. (CI=100/RI=100).
18. Procoxa, ventral surface, simple setae arrangement: (0) sparse; (1) in several tufts. (CI=100/RI=100).
19. Protrochanter, ventral surface, structure: (0) with simple and spiniform setae: (1) with only simple setae. (CI=100/RI=100).
20. Protrochanter, dorsolateral surface, simple setae, arrangement: (0) sparse; (1) in a tuft. (CI=100/RI=100).
21. Profemur, anterolateral dorsal surface, setae, structure: (0) simple; (1) spiniform. (CI=100/RI=100).
22. Profemur, ventral surface, setae, structure: (0) simple; (1) spiniform. (CI=100/RI=100).
23. Protibia, dorsolateral surface, setae, structure: (0) simple; (1) spiniform. (CI=100/RI=100).
STRUCTURE. 24. Head, lateral view, shape: (0) piriform; (1) oval elongate; (2) rounded. (CI=100/RI=100).
25. Labium, second visible segment, relative length to third visible labial segment: (0) nearly equal; (1) longer than. (CI=100/RI=100).
26. Labium, first visible segment, ventral region, structure: (0) flat; (1) expanded. (CI=100/RI=100).

27. Labium, second visible segment, ventral region, structure: (0) flat; (1) expanded. (CI=50/RI=50).
28. Pronotum, anterior lobe, posterior region, structure: (0) flat; (1) with processes. (CI=50/RI=50).
29. Pronotum, humeral angles, structure: (0) flat; (1) spined. (CI=50/RI=50).
30. Pronotum, humeral angle spines, relative length to the width of its base: (0) two times longer; (1) three times longer or more. (CI=25/RI=25).
31. Prosternum, proepisternal supracoxal lobe, anterior margin, structure: (0) not projected; (1) projected. (CI=33/RI=81).
32. Mesonotum, structure: (0) flat; (1) spined. (CI=100/RI=100).
33. Mesonotum, posteromedial spine, shape: (0) straight; (1) sinuous. (CI=20/RI=33).
34. Mesonotum, posteromedial spine, relative length to the base of the spine: (0) two times longer; (1) three times longer or more. (CI=50/RI=75).
35. Scutellum, posterior margin, projection, shape: (0) spine; (1) protuberance. (CI=100/RI=100).
36. Scutellum, posterior margin, protuberance, anterior margin structure: (0) entire; (1) emarginate. (CI=25/RI=62).
37. Scutellum, posterior margin, protuberance, caudal region structure: (0) entire; (1) concave. (CI=50/RI=75).
38. Scutellum, posterior margin protuberance, lateral margins, shape: (0) not expanded; (1) expanded. (CI=16/RI=16).
39. Metanotum, structure: (0) flat; (1) spined. (CI=100/RI=100).
40. Metanotum, spine, shape: (0) straight; (1) sinuous. (CI=12/RI=30).
41. Metanotum, spine, relative length to mesonotal spine: (0) 0.2 times longer; (1) 0.5 times longer; (2) 1.0 times or more longer. (CI=22/RI=36).
42. Forewing development: (0) brachypterous; (1) macropterous. (CI=100/RI=100).
43. Forewing, pterostigma, relative length to apex of discal cell: (0) not surpassing; (1) nearly equal or surpassing. (CI=25/RI=25).
44. Forewing, closed cells, amount: (0) two; (1) three; (2) one. (CI=50/RI=66).
45. Forewing, R and M fused, structure: (0) with r-m crossveins; (1) without r-m crossveins. (CI=100/RI=100).
46. Forewing, mcu-an1 (or cu-an1) crossvein, position: (0) from dorsal to ventral region; (1) from basal to apical region. (CI=100/RI=100).
47. Forewing, M and CU, basal region structure: (0) separated; (1) fused. (CI=100/RI=100).
48. Forewing, M and Cu fused, structure: (0) along all its length; (1) only basally. (CI=100/RI=100).
49. Procoxa, relative length with respect to the protrochanter: (0) nearly two times; (1) nearly one time. (CI=100/RI=100).
50. Protibia, shape: (0) nearly straight; (1) curved. (CI=50/RI=83).
51. Protarsus, second tarsomere, relative length to third tarsomere: (0) nearly equal; (1) shorter than. (CI=50/RI=75).
52. Protarsus, third tarsomere, shape: (0) slender; (1) dilated. (CI=50/RI=50).
53. Abdomen, female tergite 7, posterolateral angles structure: (0) flat; (1) with a pair of short spines. (CI=50/RI=0).
54. Abdominal sternite 8, anteromedial margin, structure: (0) emarginate; (1) straight. (CI=50/RI=0).
55. Abdominal sternite 8, posteromedial margin, structure: (0) straight; (1) emarginate. (CI=100/RI=100).
56. Pygophore, transverse bridge, width: (0) narrow; (1) wide. (CI=33/RI=71).
57. Pygophore, anterior opening, relative position to longitudinal axis of pygophore: (0) dorsally; (1) anteriorly. (CI=25/RI=25).
58. Pygophore, posterior opening, anterior region, width: (0) wide; (1) narrow. (CI=50/RI=0).
59. Pygophore, posterior opening, anterolateral margin, structure: (0) straight; (1) produced (pgo). (CI=100/RI=100).
60. Pygophore, posterior opening, posterolateral margin, structure: (0) straight; (1) produced (lpg). (CI=16/RI=0).
61. Pygophore, paramere socket, lateral margin, structure: (0) straight; (1) produced. (CI=100/RI=100).
62. Pygophore, paramere socket, dorso-medial surface: (0) flat; (1) with processes. (CI=100/RI=100).
63. Pygophore, posterior margin, structure: (0) flat; (1) with a pair of tubercles. (CI=50/RI=0).
64. Pygophore, posteromedial process, structure: (0) produced; (1) bifid. (CI=100/RI=100).
65. Pygophore, posteromedial process bifid, lateral view, position: (0) nearly 45° to the base; (1) nearly vertical. (CI=100/RI=100).
66. Pygophore, posteromedial process bifid, lateral view, apex structure: (0) straight; (1) curved. (CI=33/RI=0).
67. Pygophore, posteromedial process bifid, base, structure: (0) flat; (1) elevated. (CI=100/RI=100).
68. Pygophore, posteromedial process bifid, medial margin, structure: (0) concave; (1) angulate. (CI=100/RI=100).
69. Pygophore, posteromedial process bifid, medial margin concave, concavity structure: (0) not deeply rounded; (1) deeply rounded. (CI=100/RI=100).
70. Pygophore, posteromedial process bifid, ramus, relative length to the width: (0) nearly 2 times longer; (1) more than 3 times longer. (CI=100/RI=100).
71. Pygophore, posteromedial process bifid, ramus, longitudinal structure: (0) straight; (1) curve. (CI=50/RI=75).
72. Pygophore, posteromedial process bifid, ramus, width: (0) tapering to apex; (1) same width along its length. (CI=50/RI=50).
73. Paramere, body, shape: (0) slightly curved; (1) extremely curved; (2) near straight. (CI=50/RI=80).
74. Paramere, apex, shape: (0) rounded; (1) acute. (CI=50/RI=0).
75. Paramere, apex, structure: (0) flat; (1) with a protruding process. (CI=50/RI=66).
76. Articulatory apparatus, basal plate arms, relative length to the dorsal process of the basal plate: (0) as long as; (1) longer than. (CI=100/RI=100).
77. Articulatory apparatus, basal plate arms, basal plate bridge: (0) absent; (1) present. (CI=33/RI=50).
78. Articulatory apparatus, basal plate arms, basal plate bridge, relative width of the bpa: (0) narrower than; (1) as wide as. (CI=50/RI=80).
79. Articulatory apparatus, basal plate extension, relative length to the basal plate: (0) shorter than; (1) as long as or longer than. (CI=100/RI=100).
80. Articulatory apparatus, basal plate extension, shape: (0) nearly straight; (1) convergent in middle. (CI=100/RI=100).
81. Dorsal phallothecal sclerite, symmetry: (0) symmetrical; (1) asymmetrical. (CI=33/RI=66).

82. Dorsal phallothecal sclerite, anteromedial margin, structure: (0) entire; (1) produced. (CI=50/RI=66).
83. Dorsal phallotecal sclerite, lateral margin, structure: (0) flat; (1) laterally projected. (CI=33/RI=33).
84. Dorsal phallothecal sclerite, lateral view, structure: (0) flat; (1) dorsally curved. (CI=33/RI=33).
85. Phallosoma, ventral region, structure: (0) membranous; (1) with sclerotized processes. (CI=33/RI=33).
86. Phallosoma, ventral region, ventral processes, structure: (0) microtrichia; (1) ventral phallothecal sclerite (vps). (CI=100/RI=100).
87. Ventral phallothecal sclerite (vps), symmetry: (0) symmetrical; (1) asymmetrical. (CI=50/RI=80).
88. Endosoma, distal portion, structure: (0) with microtrichia; (1) membranous; (2) with sclerites. (CI=100/RI=100).
89. Endosoma, distal portion, sclerites, shape: (0) triangular; (1) elongate. (CI=50/RI=0).
90. Endosoma, distal portion, sclerites, symmetry: (0) symmetric; (1) asymmetric. (CI=50/RI=85).
91. Endosoma, distal portion, sclerites, apex structure: (0) acute; (1) rounded. (CI=33/RI=60).
92. Tergite 8, length: (0) wider as long; (1) near as long as wide; (2) longer than wide. (CI=100/RI=100).
93. Tergite 8, posteromedial margin, structure: (0) entire; (1) produced. (CI=100/RI=100).
94. Tergite 9, length: (0) longer than wide; (1) near as long as wide; (2) wider as long. (CI=66/RI=0).
95. Tergite 9, subapical posterior region, structure: (0) flat; (1) with a folding. (CI=100/RI=100).
96. Gonocoxa 8, shape: (0) near triangular; (1) near oval; (2) rectangular. (CI=66/RI=50).
97. Gonocoxa 8, anterior margin, sublateral region, structure: (0) produced; (1) entire. (CI=50/RI=83).
98. Gonocoxa 8, medial margin, structure: (0) entire; (1) produced. (CI=50/RI=80).
99. Gonoplac, structure: (0) composed by one sclerite; (1) composed by two separate sclerites. (CI=100/RI=100).
100. Gonoplac, pair of sclerites, apex, shape: (0) rounded; (1) tapering. (CI=50/RI=83). (CI=50/RI=83).
101. Gonoplac, pair of sclerites, apex structure: (0) flat; (1) with a blunt process. (CI=100/RI=100).
102. Gonoplac, pair of sclerites, lateroexternal margin, structure: (0) convex; (1) sinuate; (2) straight. (CI=66/RI=83).
103. Bursa copulatrix, ventral region, structure: (0) membranous; (1) with sclerites. (CI=100/RI=100).
COLORATION. 104. General color body: (0) brownish/blackish; (1) reddish. (CI=25/RI=72).
105. Thorax, spines, apex, color pattern relative to the thorax: (0) concolorous; (1) different color. (CI=11/RI=27).
106. Forewings, veins, basal region, color pattern relative to the veins: (0) concolorous; (1) different color. (CI=16/RI=28).
107. Legs, femora, apex, color pattern relative to the rest of femur: (0) concolorous; (1) different color. (CI=33/RI=60).

APPENDIX 3. — Morphological data matrix of *Saica* in txt format. Identical to the character list but characters start from "0".

```
xread
107 27
Carayonia_orientalis          10101001000--0010010000000000-00--0---0--1000000000000000000-0--------00000-0000000--0---0000000100000000
Buninotus_niger     0-0-10110010-110--0-111101111001000---110111000-01110100000100-0--------1110110000010--2100002121111010000
Buninotus_palikur   0-0-10110010-110--0-111101111001000---110111000-01110?????????????????????????????????????????00212111101110000
Caprilesia_sikuani  0-0-0-10--10-110--0-111201111001010---101100000-0001?001100000-0--------1000110000000--1---?????????????0000
Caprilesia_napuruna 0-0-0-10--10-110--0-111201111101010---101100000-00010?????????????????????????????????????????00201101000000100
Gallobelgicus_heissi          0-0-0-111010-100--0-111110011101110---1020------0011???0100001-0--------01100-0011001112110?????????????01-0
Gallobelgicus_nigrovittatus   0-0-0-111010-100--0-111110011101110---102100000-0011?000100001-0--------01100-0011001112110?????????????0100
Tagalis_dichroa     0-0-0-10--10-111000-111200100-01010---112110000-0000?011001000-0--------01000-0001010102101?????????????0100
Tagalis_seminigra   0-0-0-10--10-111000-111200100-01010---112110000-0000001001100-0--------01000-0001011102101102000000---00000
Polytoxus_annulipes 111110010110-0011111000200111111111110102110110-11110000100000-0--------2101111000011112010001011100000101
Polytoxus_armillatus          1111110101111001111100020011111101100010011O110-11110000100000-0--------0101111010011112110002011110000111 1
Polytoxus_esakii    1111100101111001111100020011111101101110011O110-11110000100100-0--------0101111010011112110002011110000100
Polytoxus_eumorphus 1111100101111001111100020011110101101111111O110-11110000100100-0--------0101111010011112110002011110000111 1
Pseudosaica_charrua 1111100101110001111100020011110101111110011O110-1111?001000110-0--------0101101010011102110?????????????1110
Pseudosaica_panamensis        1111110101110001111100020011110101111010110110-11110101100010-0--------0101101010011102010001010010000000
Saica_apicalis      1111110101111001111100020011101100111111011110111111000111010001100001102101101100011102101002010011020 1111
Saica_carayoni      1111110101111001111100020011111111111111100110100-1111?????????????011000101121O?????????????????????????????1110
Saica_elkinsi_      1111110101111001111100020011111101100010011O100-11110?????????01??11-000210?????????????????0020?????????1000
Saica_erubescens    1111110101111001111100020011111101100010010O100-11111001100000011111-000210110110001110210100201001111100001
Saica_lativentris_  1111110101111001111100020011111101100010011O100-1111?001100000010011-000210110110011110210 1?????????????1110
Saica_meridionalis  1111110101111001111100020011111100111100111101111111?????????????????????????????????????????????0020100110201101
Saica_ochracea_     1111110101111001111100020011111101111011110100-1111?????????????011000101121 1?????????????????????????????0000
Saica_recurvata_    1111110101111001111100020011111111110101111O100-11110001100000111100101121011011001111021000020100110201100
Saica_rubripes      1111110101111001111100020011111111111011100110100-11110001100000111000010210110110011110210100201001102010 0
Saica_subinermis_   1111110101111001111100020011101110110112110100-1111?????????????01??000010210?????????????????????????????1000
Saica_tibialis      1111110101111001111100020011111101100010111O100-11110001100000010111-000210110110001110210000201001111011110
Saica_tupackatari_sp._nov.    1111110101111001111100020011111101111011111O100-1111?001110000011000100021011010001111021 00?????????????0010
;
cnames
{0 sup_VESTITURE._Maxillary_plate,_ventral_margin,_setae_structure spiniform simple;
          {1 sub_Maxillary_plate,_ventral_margin,_simple_setae,_arrangement disperse in_a_tuft;
{2 sup_Postocular_region,_ventral_margin,_setae,_structure spiniform simple;
          {3 sub_Postocular_region,_ventral_margin,_simple_setae,_arrangement sparse in_a_tuft;
{4 sup_Gular_region,_setae_structure spiniform simple;
          {5 sub_Gular_region,_simple_setae,_structure stout thin;
{6 Labium,_first_visible_segment,_ventral_region,_setae,_structure simple spiniform;
{7 sup_Labium,_second_visible_segment,_ventral_region,_setae,_structure spiniform simple;
          {8 sub_Labium,_second_visible_labial_segment,_ventral_region,_simple_setae,_structure stout thin;
          {9 sub_Labium,_second_visible_labial_segment,_ventral_region,_simple_setae,_arrangement sparse in_a_tuft;
{10 sup_Prosternum,_proepisternal_supracoxal_lobe,_anterodorsal_margin,_structure glabrous setose;
          {11 sub_Prosternum,_proepisternal_supracoxal_lobe,_anterodorsal_margin,_setae,_structure spiniform simple;
          {12 sub_Prosternum,_proepisternal_supracoxal_lobe,_anterodorsal_margin,_simple_setae,_arrangement sparse in_a_tuft;
{13 Prosternum,_proepisternal_supracoxal_lobe,_anteroventral_margin_surface smooth setose;
{14 Procoxa,_dorsolateral_surface with_only_simple_setae with_simple_and_spiniform_intermixed_setae;
{15 sup_Procoxa,_ventral_surface,_structure with_simple_setae_and_spiniform_setae with_only_simple_setae;
```

```
        {16 sub_Procoxa,_ventral_surface,_simple_setae,_structure
thin stout;
        {17   sub_Procoxa,_ventral_surface,_simple_setae_arrange-
ment sparse in_several_tufts;
{18 Protrochanter,_ventral_surface,_structure with_simple_and_spin-
iform_setae with_only_simple_setae;
{19  Protrochanter,_dorsolateral_surface,_simple_setae,_arrangement
sparse in_a_tuft;
{20 Profemur,_anterolateral_dorsal_surface,_setae,_structure simple
spiniform;
{21 Profemur,_ventral_surface,_setae,_structure simple spiniform;
{22 Protibia,_dorsolateral_surface,_setae,_structure simple spini-
form;
{23  STRUCTURE._Head,_lateral_view,_shape  piriform  oval_elongate
rounded;
{24  Labium,_second_visible_segment,_relative_length_to_third_visi-
ble_labial_segment nearly_equal longer_than;
{25 Labium,_first_visible_segment,_ventral_region,_structure flat ex-
panded;
{26  Labium,_second_visible_segment,_ventral_region,_structure  flat
expanded;
{27 Pronotum,_anterior_lobe,_posterior_region,_structure flat with_
processes;
{28 sup_Pronotum,_humeral_angles,_structure flat spined;
        {29  sub_Pronotum,_humeral_angle_spines,_relative_length_
to_the_width_of_its_base  two_times_longer  three_times_longer_or_
more;
{30    Prosternum,_proepisternal_supracoxal_lobe,_anterior_margin,_
structure not_projected projected;
{31 sup_Mesonotum,_structure flat spined;
        {32  sub_Mesonotum,_posteromedial_spine,_shape  straight
sinuous;
        {33  sub_Mesonotum,_posteromedial_spine,_relative_length_
to_the_base_of_the_spine  two_times_longer  three_times_longer_or_
more;
{34 sup_Scutellum,_posterior_margin,_projection,_shape spine protu-
berance;
        {35  sub_Scutellum,_posterior_margin,_protuberance,_ante-
rior_margin_structure entire emarginate;
        {36   sub_Scutellum,_posterior_margin,_protuberance,_cau-
dal_region_structure entire concave;
        {37  sub_Scutellum,_posterior_margin_protuberance,_later-
al_margins,_shape not_expanded expanded;
{38 sup_Metanotum,_structure flat spined;
        {39 sub_Metanotum,_spine,_shape straight sinuous;
        {40   sub_Metanotum,_spine,_relative_length_to_mesonotal_
spine 0.2_times_longer 0.5_times_longer 1.0_times_o_more_longer;
{41 sup_Forewing_development brachypterous macropterous;
        {42   sub_Forewing,_pterostigma,_relative_length_to_apex_
of_discal_cell not_surpassing nearly_equal_or_surpassing;
        {43 sub_Forewing,_closed_cells,_amount two three one;
        {44    sub_Forewing,_R_and_M_fused,_structure    with_r-m_
crossveins without_r-m_crossveins;
        {45 sub_Forewing,_mcu-an1_(or_cu-an1)_crossvein,_position
from_dorsal_to_ventral_region from_basal_to_apical_region;
        {46  sub_Forewing,_M_and_CU,_basal_region_structure  sepa-
rated fused;
                {47     sub_Forewing,_M_and_Cu_fused,_structure
along_all_its_length only_basally;
{48      Procoxa,_relative_length_with_respect_to_the_protrochanter
nearly_two_times nearly_one_time;
{49 Protibia,_shape nearly_straight curved;
{50 Protarsus,_second_tarsomere,_relative_length_to_third_tarsomere
nearly_equal shorter_than;
{51 Protarsus,_third_tarsomere,_shape slender dilated;
{52 Abdomen,_female_tergite_7,_posterolateral_angles_structure flat
with_a_pair_of_short_spines;
{53 Abdominal_sternite_8,_anteromedial_margin,_structure emarginate
straight;
{54 Abdominal_sternite_8,_posteromedial_margin,_structure straight
emarginate;
{55 Pygophore,_transverse_bridge,_width narrow wide;
{56 Pygophore,_anterior_opening,_relative_position_to_longitudinal_
axis_of_pygophore dorsally anteriorly;
{57 Pygophore,_posterior_opening,_anterior_region,_width wide nar-
row;
{58   Pygophore,_posterior_opening,_anterolateral_margin,_structure
straight produced_(pgo);
{59  Pygophore,_posterior_opening,_posterolateral_margin,_structure
straight produced_(lpg);
{60 Pygophore,_paramere_socket,_lateral_margin,_structure straight
produced;
{61 Pygophore,_paramere_socket,_dorso-medial_surface flat with_pro-
cesses;
{62  Pygophore,_posterior_margin,_structure  flat  with_a_pair_of_tu-
bercles;
{63 sup_Pygophore,_posteromedial_process,_structure produced bifid;
        {64   sub_Pygophore,_posteromedial_process_bifid,_lateral_
view,_position nearly_45°_to_the_base nearly_vertical;
        {65   sub_Pygophore,_posteromedial_process_bifid,_lateral_
view,_apex_structure straigth curved;
        {66     sub_Pygophore,_posteromedial_process_bifid,_base,_
structure flat elevated;
        {67    sub_Pygophore,_posteromedial_process_bifid,_medial_
margin,_structure concave angulate;
        {68      sub_Pygophore,_posteromedial_process_bifid,_medi-
al_margin_concave,_concavity_structure  not_deeply_rounded  deeply_
rounded;
        {69    sub_Pygophore,_posteromedial_process_bifid,_ramus,_
relative_length_to_the_width  nearly_2_times_longer  more_than_3_
times_longer;
        {70    sub_Pygophore,_posteromedial_process_bifid,_ramus,_
longitudinal_structure straight curve;
        {71    sub_Pygophore,_posteromedial_process_bifid,_ramus,_
width tapering_to_apex same_width_along_its_length;
{72  Paramere,_body,_shape  slightly_curved  extremely_curved  near_
straight;
{73 Paramere,_apex,_shape rounded acute;
{74 Paramere,_apex,_structure flat with_a_protruding_process;
{75   Articulatory_apparatus,_basal_plate_arms,_relative_length_to_
the_dorsal_process_of_the_basal_plate as_long_as_ longer_than_;
{76    Articulatory_apparatus,_basal_plate_arms,_basal_plate_bridge
absent present;
{77  Articulatory_apparatus,_basal_plate_arms,_basal_plate_bridge,_
relative_width_of_the_bpa narrower_than as_wide_as;
{78 Articulatory_apparatus,_basal_plate_extension,_relative_length_
to_the_basal_plate shorter_than as_long_as_or_longer_than;
{79  Articulatory_apparatus,_basal_plate_extension,_shape  nearly_
straight convergent_in_middle;
{80 Dorsal_phallothecal_sclerite,_symmetry symmetrical asymmetri-
cal;
{81    Dorsal_phallothecal_sclerite,_anteromedial_margin,_structure
entire produced;
{82 Dorsal_phallotecal_sclerite,_lateral_margin,_structure flat lat-
erally_projected;
{83 Dorsal_phallothecal_sclerite,_lateral_view,_structure flat dor-
sally_curved;
{84  Phallosoma,_ventral_region,_structure  membranous  with_sclero-
tized_processes;
{85    sup_Phallosoma,_ventral_region,_ventral_processes,_structure
microtrichia ventral_phallothecal_sclerite_(vps);
        {86     sub_Ventral_phallothecal_sclerite_(vps),_symmetry
symmetrical asymmetrical;
{87 sup_Endosoma,_distal_portion,_structure with_microtrichia mem-
branous with_sclerites;
        {88 sub_Endosoma,_distal_portion,_sclerites,_shape trian-
gular elongate;
        {89     sub_Endosoma,_distal_portion,_sclerites,_symmetry
symmetric asymmetric;
        {90  sub_Endosoma,_distal_portion,_sclerites,_apex_struc-
ture acute rounded;
{91  Tergite_8,_length  wider_as_long  near_as_long_as_wide  longer_
than_wide;
{92 Tergite_8,_posteromedial_margin,_structure entire produced;
{93  Tergite_9,_length  longer_than_wide  near_as_long_as_wide  wid-
er_as_long;
{94  Tergite_9,_subapical_posterior_region,_structure  flat  with_a_
folding;
{95 Gonocoxa_8,_shape near_triangular near_oval rectangular;
{96 Gonocoxa_8,_anterior_margin,_sublateral_region,_structure pro-
duced entire;
{97 Gonocoxa_8,_medial_margin,_structure entire produced;
{98  sup_Gonoplac,_structure  composed_by_one_sclerite  composed_by_
two_separate_sclerites;
        {99 sub_Gonoplac,_pair_of_sclerites,_apex,_shape rounded
tapering;
        {100 sub_Gonoplac,_pair_of_sclerites,_apex_structure flat
with_a_blunt_process;
        {101 sub_Gonoplac,_pair_of_sclerites,_lateroexternal_mar-
gin,_structure convex sinuate straight;
{102  Bursa_copulatrix,_ventral_region,_structure  membranous  with_
sclerites;
{103 COLORATION._General_color_body brownish/blackish reddish;
{104     Thorax,_spines,_apex,_color_pattern_relative_to_the_thorax
concolorous different_color;
{105 Forewings,_veins,_basal_region,_color_pattern_relative_to_the_
veins concolorous diferent_color;
{106  Legs,_femora,_apex,_color_pattern_realtive_to_the_rest_of_fe-
mur concolorous diferent_color;
;
proc /;

comments 0;
```

APPENDIX 4. — Script with a search strategy used and *k*-value = 12.

```
macro=;
lquote [ ;
hold 10000 ;
log saiscript ;
taxname = ;
piwe=12 ;
rseed10000; hold10000;
mult=replic 1000 tbr;
bbreak = tbr ;
tsave/;
ttags );
export - saica.tre
proc/;
```