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NEW RECORDS OF THE FLATTIE SPIDER GENUS *SELENOPS* LATREILLE, 1819 (ARANEAE: SELENOPIDAE) FROM COLOMBIA

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Abstract: Two new records of the spider genus *Selenops* Latreille, 1819 from Colombia are presented: *S. arikok* Crews, 2011 from Barichara, Santander, and *S. geraldinae* Corronca, 1996 from Puerto López and Villavicencio, Meta. Additionally, new Colombian localities are provided for *S. cocheleti* Simon, 1880, from Pandi, Cundinamarca, and *S. mexicanus* Keyserling, 1880, from Mistrató, Risaralda. A distribution map including these new records and records previously published of *Selenops* from Colombia, is presented.
Key words: Araneae, Selenopidae, flattie crab spiders, wall crab spiders, distribution, faunistics, Colombia.

Nuevos reportes del género de arañas aplanadas *Selenops* Latreille, 1819 (Araneae: Selenopidae) de Colombia
Resumen: Se presentan dos nuevos registros de arañas del género *Selenops* Latreille, 1819 para Colombia: *S. arikok* Crews, 2011 de Barichara, Santander, y *S. geraldinae* Corronca, 1996 de Puerto López y Villavicencio, Meta. Adicionalmente, se presentan nuevas localidades colombianas para *S. cocheleti* Simon, 1880, de Pandi, Cundinamarca, y *S. mexicanus* Keyserling, 1880, de Mistrató, Risaralda. Se presenta un mapa de distribución incluyendo éstos nuevos reportes y otros previamente publicados de *Selenops* de Colombia.
Palabras clave: Araneae, Selenopidae, Arañas cangrejo aplanadas, arañas cangrejo de pared, distribución, faunística, Colombia.

Introduction

The spider family Selenopidae Simon, 1897, commonly known as flattie or wall crab spiders, contains ten genera and 256 species of Cosmotropical distribution, with its most diversity in the tropics (Corronca, 1996a, 1996b, 1996c, 1998a; Crews, 2011; Crews & Harvey, 2011; Kunt *et al.,* 2011; World Spider Catalog, 2015). The genus *Selenops*, described by Latreille (1819) and distributed worldwide throughout the tropics and subtropics, is the only genus of the family known from the Americas, with approximately 84 of the 128 species (World Spider Catalog, 2015).

The New World members of the genus have been recently revised, and different aspects of their biology, including ecology, faunistics, natural history, physiology, taxonomy and systematics, have been studied (Alayón-García, 1992, 2001, 2003, 2005; Birabén, 1953; Corronca, 1996a, 1996b, 1996c, 1996d, 1996e, 1997, 1998a, 1998b; Crews, 2011; Crews & Gillespie, 2010; Crews & Harvey, 2011; Crews *et al.*, 2008; Lins, 1980; Muma, 1953; Valdéz-Mondragón, 2007, 2010; Villanueva B. [not published data]). Although this spiders are common in certain localities and are relatively large, they are sparse in museum collections or in poor condition due to collecting methods (Corronca, 1998a; Crews, 2011).

Despite its natural distribution across the Americas, certain species of the genus have been shown to be easily transported artificially on tropical fruits shiploads, resulting in reports far away from its original natural range, such as: *Selenops aissus* Walckenaer, 1837 from a Banana storeroom (Ithaca, New York), *S. candidus* Muma, 1953 and *S. insularis* Keyserling, 1881 from bananas (New York), and finally *S. mexicanus* Keyserling, 1880 [as *S. galapagoensis* Banks, 1902] from one specimen taken at the Pacific Fruit and Produce Company (Seattle) (Muma, 1953). The last species were also collected on a palm shipped from Florida, via Mexico, in St. Maarten (Crews, 2011).

In Colombia, a total of three species are recorded. The genus was recorded for the first time by Mello-Leitão (1941), with the description of *S. isopodus* from Pamplona, Norte de Santander, and *S. aculeatus* from El Espinal, Tolima. Subsequently, Röewer (1955) changed the name of *S. aculeatus* to *S. columbianus* (*preoc.* Simon, 1901), and then the species was synonimized by Corronca (1996b) as junior synonym of *S. cocheleti* Simon, 1880, an species with a widespread distribution from Panama to Argentina (World Spider Catalog, 2015).

Posteriorly, Corronca (1998a) provided a new record of *S. galapagoensis* Banks, 1902 from Colombia, which was later synonimized as junior synonym of *S. mexicanus* Keyserling, 1880 by Crews (2011), adding new distributional data to a widespread species that have a natural distribution from Mexico to Colombia, and Ecuador (Galapagos islands) (World Spider Catalog, 2015). This three Selenopid species have been collected in Colombia, at intervened wet (*S. cocheleti, S. mexicanus*) and dry (*S. isopodus*) Andean forests, decidous forests (*S. cocheleti, S. mexicanus*), riparian forests (*S. cocheleti*), and tropical thorn forests (*S. isopodus*).

Therefore, the aim of the paper is to update the known distribution of Selenopids from Colombia. While examining material from the country, it was possible to identify new records of the genus *Selenops* from Colombia. *S. arikok* Crews, 2011 from Barichara (Santander) and *S. geraldinae* Corronca, 1996 from Villavicencio and Puerto López (Meta), are first time recorded from the country. Additionally, new faunistic records are presented for *S. cocheleti* Simon, 1880 from Pandi (Cundinamarca) and *S. mexicanus* Keyserling, 1880 from Mistrató (Risaralda).

Materials and methods

The material examined is deposited in the Instituto de Ciencias Naturales Arachnological Collection of the Universidad Nacional de Colombia (ICN-Ar), Bogotá, Colombia. The species are listed in alphabetical order. The multifocal photographs and measurements were taken with an AmScope MU300 digital camera, attached to an Advanced Optics JSZ-6 stereomicroscope, and then united by the free-code image-stacking software CombineZP (Hadley, 2010).

For visualization of female genitalia, the epigynal plate was dissected from the body and cleaned with 10% KOH. For visualization of the male genitalia, the left palp was dissected from the body. The information in square brackets was added to complement the label data. The map was prepared using the Geographic Information System (GIS) software program QGIS, version 2.10 "Pisa" (Sherman *et al.,* 2012). Records without coordinates on the label were approximated to municipalities via Google Earth. Institutions cited in the text are: BMNH=British Museum of Natural History, London, EME= Essig Museum of Entomology at the University of California, Berkeley, MNHN= Museum National d'Histoire Naturelle, Paris, MNRJ= Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro.

Abbreviations used in the text and figures are as follow: DRTA=dorsal branch of the RTA, MA=median apophysis of the male palp, RTA=retrolateral tibial apophysis of the male palp, VRTA=ventral branch of the RTA; coord.=coordinates, ltl=lateral lobe of the median field of the female epigyne, mf=median field of the female epigyne, masl=meters above sea level, sp=spermathecae. The measurements are in millimeters.

Results

A total of 26 museum specimens belonging to four species were examined, as follows: one female of *S. arikok* Crews, 2011, one female of *S. cocheleti* Simon, 1880, three females and 20 immatures of *S. geraldinae* Corronca, 1996, and finally one male of *S. mexicanus* Keyserling, 1880.

Selenops Latreille, 1819

Selenops Latreille, 1819: 579, type species: *Selenops radiatus* Latreille, 1819: 579.

Orops Benoit, 1968: 116, type species: *Selenops littoricola* Strand, 1913 (synonymized by Corronca, 1996e: 60).

NOTE: For further taxonomic information, see Corronca (1996b, 1998a) and Crews (2011).

DIAGNOSIS: Members of the genus can be diagnosed by their extremely dorsoventrally flattened bodies with laterigrade legs, and eyes in two rows, with six in the anterior row and two in the posterior row (Joqué & Dippenaar-Schoeman, 2006; Crews, 2011).

Selenops arikok Crews, 2011

Selenops arikok Crews, 2011: 16, figs. 1-2, 177, map 1.

Fig. 1, 5-6, 14.

TYPE LOCALITY: Female holotype from near Gran Tonel in valley Rooi Coashati, Arikok National Park, Aruba, in EME sel_068, not examined.

NOTE: For further taxonomic information and the complete description of the species, see Crews (2011: 16-18).

MATERIAL EXAMINED: Colombia, Santander, Barichara, [coord. 6.646931°N, 73.218205°W], alt. 1300 masl, 1 female, 26/III/2002, M. Portocarreño coll. (ICN-Ar 1735).

DIAGNOSIS: Only known from females. They can be distinguished from other *Selenops* species, including the most similar *S. curazao* Alayón-García, 2001 and *S. isopodus* Mello-Leitão, 1941, by the more quadrangular and hyaline median field that is not completely enclosed anteriorly and the form of the spermathecae (Fig. 1, 5-6; Crews, 2011; fig 1-2).

NATURAL HISTORY: The species has been collected under rocks, bark, and debris on the ground, both near and away from human dwellings (Crews, 2011).

DISTRIBUTION RECORDS AND REMARKS**:** Aruba island (Arikok National Park) and Colombia (Santander). New latitudinal and altitudinal record from Colombia (Fig. 14). The male of this species is unknown and with further studies, including material within its range of distribution, may require synonymization with *S. isopodus* (S. Crews *pers. obs.*).

The vegetation of the locality where the species was collected is a highly intervened Andean semi arid forest in the Lower River Basin Suarez region (Díaz-P. [not published data]).

REFERENCES: Crews (2011) and herein.

Selenops cocheleti Simon, 1880

Selenops cocheleti Simon, 1880: 235.

Fig. 2, 7-8, 14.

TYPE LOCALITY: Male lectotype and juvenile female paralectotype (designated by Corronca, 1998a: 131) from Paraguay [without exact locality], in MNHN N° 1143, not examined.

NOTE: For further taxonomic information and the complete description of the species, see Corronca (1998a: 131; 1998b: 135).

MATERIAL EXAMINED: Colombia, Cundinamarca, Pandi, Vereda Los Cauchos, [coord. 4.183930°N, 74.471870°W], alt. 1024 masl, 1 female, 29/IV/2002, J. Cepeda col. (ICN-Ar 5832).

DIAGNOSIS: Females of *Selenops cocheleti* can be recognized by the epigynal shape, with a triangular median projection in posterior margin at the median field, and by the form of the spermathecae (Fig. 2, 7-8); males can be recognized by the form of the tibial apophysis and the slender MA (Corronca, 1998a: fig 4-7).

NATURAL HISTORY: The species has been collected on walls inside houses and under bark of *Eucalyptus* sp. trees (Corronca, 1998a). For further information about the natural history and population dynamics of the species, see Villanueva B. (not published data).

DISTRIBUTION RECORDS AND REMARKS: Panamá to Argentina (Córdoba). In Colombia (Cundinamarca, Meta, Tolima, Valle del Cauca). New department record from Pandi, Cundinamarca (Fig. 14). Flórez & Sánchez (1995: 364) recorded this species from the Central Andes as *S. aculeatus.*

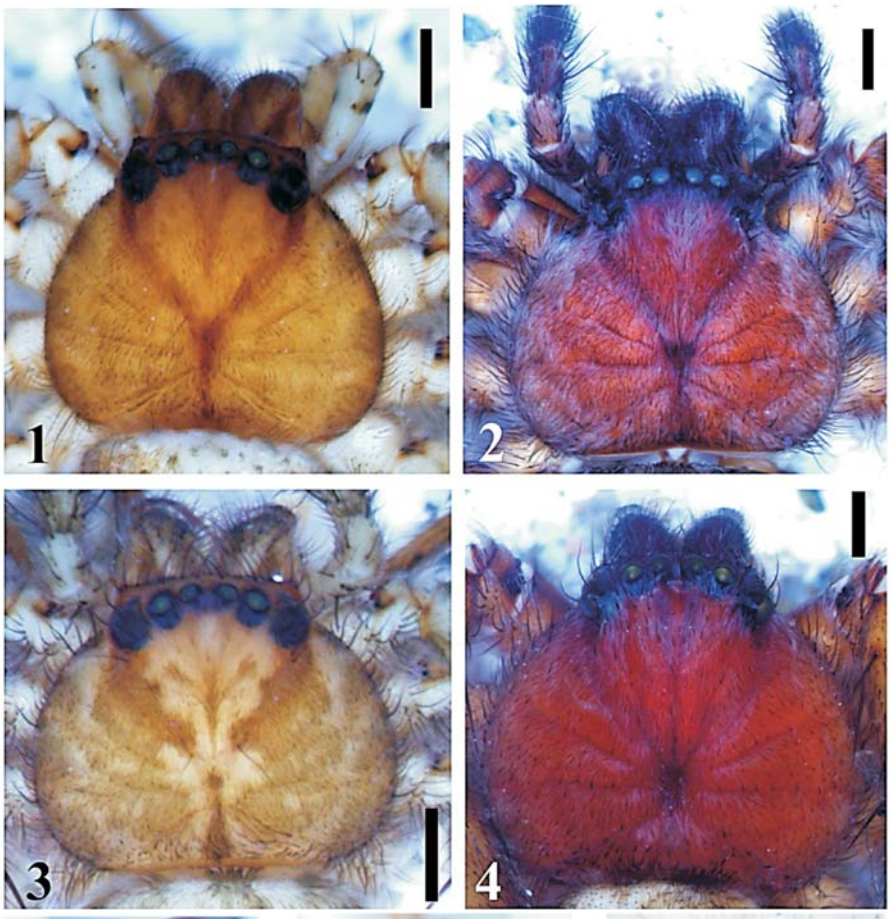
REFERENCES: Birabén (1953), Corronca (1996b, 1998a, 1998b), da Silva *et al.* (2010), Lins (1980), Mello-Leitão (1941, 1943), Röewer (1955), Simon (1880), Tullgren (1905), and herein.

Selenops geraldinae Corronca, 1996

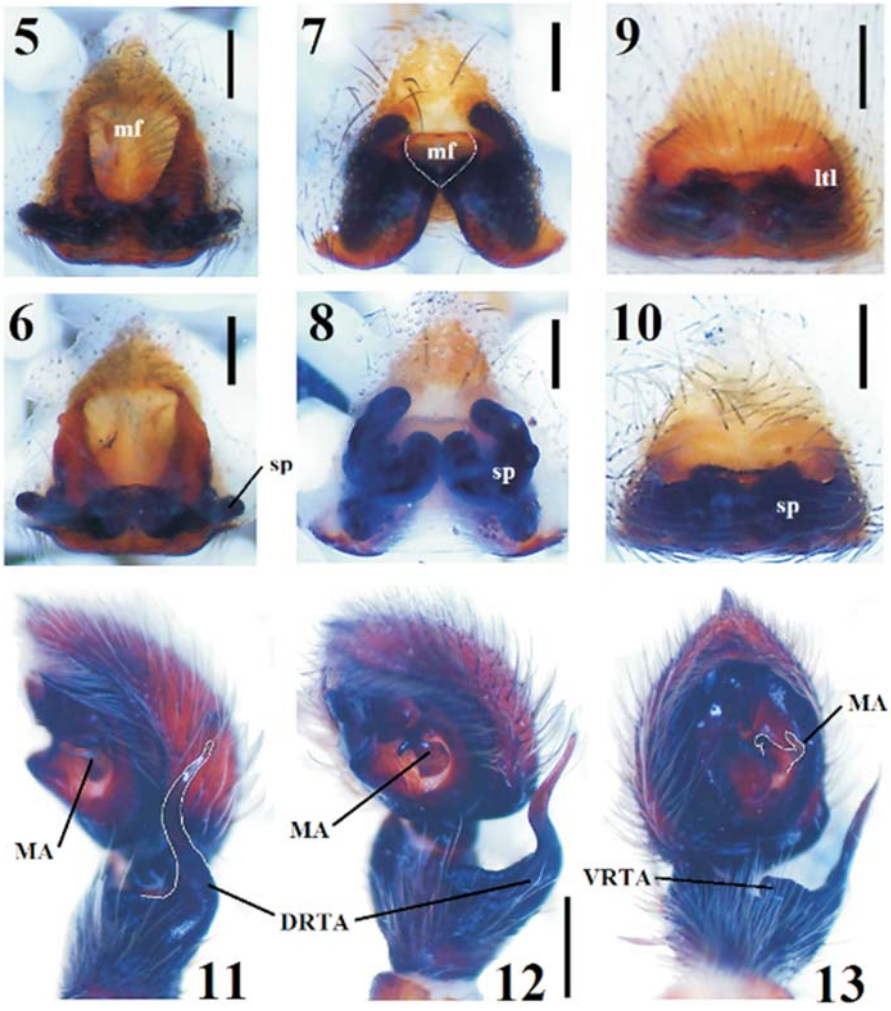
Selenops geraldinae Corronca, 1996c: 95, Fig. 9-10.

Fig. 3, 9-10, 14.

TYPE LOCALITY: Male holotype from Mara, Venezuela, in CAS 10-1113, not examined.



Figures 1-4. Carapaces of species of *Selenops* from Colombia, showing dorsal coloration patterns. **1**. *Selenops arikok* Crews, 2011. **2**. *Selenops cocheleti* Simon, 1880. **3**. *Selenops geraldinae* Corronca, 1996. **4**. *Selenops mexicanus* Keyserling, 1880. Scale: 1-4: 1,00 mm.



Figures 5-13. Copulatory organs of species of *Selenops* from Colombia. *S. arikok* Crews, 2011: **5-6**. Epygynum dorsal and ventral views, respectively. *S. cocheleti* Simon, 1880: **7-8**. Epygynum dorsal and ventral views, respectively. *S. geraldinae* Corronca, 1996: **9-10**. Epygynum dorsal and ventral views, respectively. *S. mexicanus* Keyserling, 1880: **11-13**. Left male palp, in retrolateral, retroventral and ventral views, respectively, showing the long, sinuous, DRTA. Scale: 5-8: 0,25 mm; 9-10: 0,20 mm; 11-13: 0,50 mm.

NOTE: For further taxonomic information and the complete description of the species, see Crews (2011: 20-23).
MATERIAL EXAMINED: Colombia, Meta, Puerto López, Hacienda Cafam Llanos [coord. 4.298055°N, 72.568611°W], alt. 600 masl, 1 female, 4 juveniles, 23/IX/2001, L. Benavides col. (ICN-Ar 875). Villavicencio, Puerto Colombia, Río Negro, [coord. 4.003926°N, 73.231581°W], alt. 230 masl, 2 females, 16 juveniles, IX/96 to VII-1997, M. Tamayo col. (ICN-Ar 1456).
DIAGNOSIS: Males of this species can be distinguished from congeners by the small, finger-like MA directed distally, located distally on the palpal bulb (Crews, 2011: fig. 7-8). Females of *S. geraldinae* can be separated from others by the large central, lateral extending depression of the epigynum, lateral lobes that come together medially and diverge laterally (Fig. 3, 9-10; Corronca, 1998a: 19-20; Crews, 2011: fig. 9-10).
NATURAL HISTORY: The species has been collected under abandoned rocks near human dwellings, bark of *Bursera* sp. and guava (Myrtaceae: *Psidium* sp.), and on palms at sea level, on bromeliads, both in wet and dry forests (Crews, 2011).
DISTRIBUTION RECORDS AND REMARKS: Colombia (Meta), Trinidad and Tobago (Gaspar Grande Island, Huevos Island, Monos Island, Chacachacare Island, St. George County) and Venezuela (Bolívar, Mara). New record from Colombia (Fig. 14).
REFERENCES: Corronca (1996c, 1998a), Crews (2011), and herein.

***Selenops mexicanus* Keyserling, 1880**
Selenops mexicanus Keyserling, 1880: 228, pl. 6,
Fig. 125. Fig. 4, 11-13, 14.
TYPE LOCALITY: Holotype male from Mexico, in BMNH, lost, not examined. Lectotype female (designated by Crews, 2011: 34), from Mexico [without exact locality], Keyserling collection, in BMNH 90.41.3158.3100, not examined.
NOTE: For further taxonomic information and a complete description of the species, see Crews (2011: 34-39).
MATERIAL EXAMINED: Colombia, Risaralda, Mistrató, San Anonio del Chami, La Gabriela, Quebrada Sutu [coord. 5.433401°N, 75.936301°W], alt. 1150 masl, 1 male, 6/IV/1992, M. Rocha col. (ICN-Ar 586).
DIAGNOSIS: Females of *S. mexicanus* can be diagnosed by its median field more sclerotized than in the other species, and internally, the ducts are branched, with one branch directed anteriorly. The spermathecae can be seen just anterior to the margin of the posterodorsal fold in most specimens. The posterodorsal fold is large and quadrangular, though may be slightly rounded (Crews, 2011: 29-30). Males of the species can be distinguished by the long, sinuous DRTA and a low VRTA, pointed at the tip. Embolus fairly short, located medially, not covered by another sclerite, and the form of the MA (Fig. 4, 11-13; Crews, 2011: 27-28).
NATURAL HISTORY: The species is very widespread, often found with other congeners. It has been collected under rocks, bark, concrete blocks, debris, on fence posts, in houses, on trees, and banana plants, in both wet or dry areas (Crews, 2011).
DISTRIBUTION RECORDS AND REMARKS: Widespread natural distribution, from northern Mexico to northern South America and Colombia (Risaralda, Valle del Cauca) and Ecuador (Galápagos Islands). Introduced in the United States of America and St. Maarten (Crews, 2011; Muma, 1953). New department record from Risaralda, Colombia (Fig. 14).
REFERENCES: Banks (1902, 1930), Corronca (1996b, 1998a), Crews (2011), F.O. Pickar-Cambridge (1900), Keyserling (1880), Kraus (1955), Muma (1953), Petrunkevitch (1925), and herein.

***Selenops isopodus* Mello-Leitão, 1941**
Selenops isopoda Mello-Leitão, 1941: 293.
Fig. 19. Fig. 14.
TYPE LOCALITY: Female holotype from Pamplona, [Norte de Santander, coord. 7.37110°N, 72.657704°W], Colombia, in MNRJ, lost, not examined.
NOTE: For further taxonomic information and the complete description of the species, see Corronca (1998a: 136). Males of the species are still unknown.
NOT MATERIAL EXAMINED.
DIAGNOSIS: Females can be recognized by the subrectangular median field occupying large part of the epigynum and by the form of the spermathecae (Corronca, 1998a: 25-26).
NATURAL HISTORY: Not information exist about the species, but the vegetation of the localities where the species has been collected are of a highly intervened Andean forest in the Pamplona region (Sánchez & Gelviz, 2004; Sánchez *et al.,* 2007), and a very dry ecosystem domined by a subxerophytic formation known as Tropical Thorn Forest (W. Galvis *pers. obs*).
DISTRIBUTION RECORDS AND REMARKS: Endemic to Colombia (Fig. 14). Flórez & Sánchez (1995: 364) recorded this species from Septentrional Andes as *S. isopoda.*
REFERENCES: Corronca (1998a), Mello-Leitão (1941), and herein.

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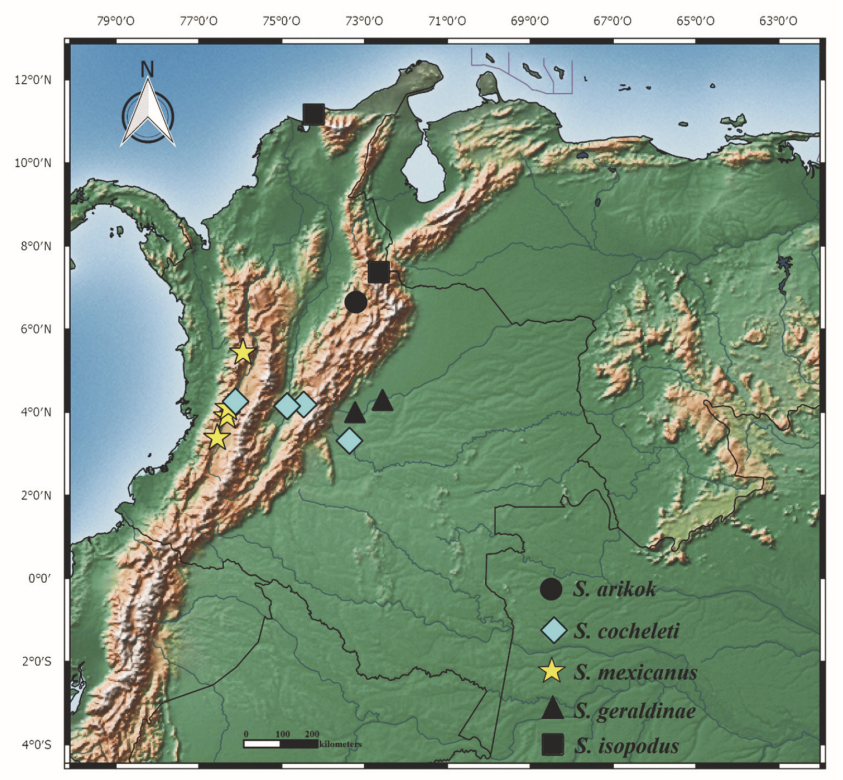


Figure 14. Distribution records of the species of *Selenops* from Colombia.

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