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A New Species of *Scaptolenus* LeConte (Coleoptera: Elateridae: Cebrioninae) from Sonora, México, with a Checklist of Species of northern México and the United States

Nueva especie de *Scaptolenus* LeConte (Coleoptera: Elateridae: Cebrioninae) para Sonora, México, con una lista de las especies del norte de México y los Estados Unidos

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RESUMEN

Se presenta la descripción de *Scaptolenus paltingi* una nueva especie proveniente de la Sierra Aconchi y Sierra la Púrica, Sonora, México. Esta especie es la primera del género registrada para Sonora y la segunda especie de las Islas del Cielo Madrenses Sonora-Arizona. Se proporciona una clave para las especies del grupo-*vagans* y una lista de las especies para Estados Unidos y el norte de México.

Palabras clave: Elateridae, *Scaptolenus*, México, Sonora, clave, lista de las especies.

ABSTRACT

Scaptolenus paltingi new species is described from the Sierra Aconchi and Sierra la Púrica, Sonora, Mexico. This species is the first of the genus reported from Sonora and only the second species from the Sonora-Arizona Madrean Sky Islands. A key to the *vagans*-group of species and a checklist of species the United States and northern Mexico are provided.

Key words: Elateridae, *Scaptolenus*, Mexico, Sonora, key, checklist.

INTRODUCTION

Scaptolenus LeConte is a morphologically distinctive genus of elateroid beetle composed of 35 described species restricted to southern North America from Oklahoma and Arizona to Panama (Chevrolat 1874, Champion 1896). Twenty-four of these species, including the one describe herein, are known only from locations in México. A key to the Mesoamerican species was provided by Champion (1896). A key to the species in the United States was given by Horn (1881) and then Fall (1932) described two additional species. Most of the species remain known only by their respective holotypes, or a very limited number of syntypes, and from their type localities. Here, a second species is described from the Madrean Sky Island Region and is the first reported from Sonora.

Scaptolenus species are readily recognizable in our beetle fauna. They have a characteristic `broad-shouldered' trapezoidal silhouette in dorsal aspect (Fig. 1), with the elytra gradually tapering apically and with divergent apices. This appearance is enhanced due to elytral distortions in dried specimens. In combination with fossorial prothoracic tibiae, elongated tarsi, long villose pubescence, serrate ♂ antennae with antennomeres 3-10 often expanded apically, a brachypterus ♀, and their flight occurrence immediately following intense summer rains, there is no other similar North American elateroid with this combination of morphology and behavior.

Fall (1932) described *S. fuscipennis* from Arizona, the only other species of *Scaptolenus* known from the Madrean Sky Island region of Sonora and southern Arizona (Brusca and Moore 2013 [see references therein]). Chevrolat (1874, p. 509) listed *S. californicus* from "Calif., Mexico", based on specimens from his and the collections of G.V. Mniszech and V.H. de Bonvouloir, but gave only "California" with the description (p. 524). Horn (1881) questioned the California attribution, regarding the species as from Mexico. Champion (1896) supported Horn's assessment. Presently, all other confirmed United States species (*S. estriatus* LeConte, *S. lecontei* Chevrolat, *S. ocreatus* Horn, and *S. socius* Fall) are known only from Texas and Oklahoma. A second species from Sonoran ranges in the Madrean Sky Island Region is described below. This new species is assigned to the *vagans*-group and a key is provided to these species. A checklist of the species from northern Mexico and the United States is given.

MATERIALS AND METHODS

Specimens described here were received under permit FAUT-0062 from the Instituto de Biologia-UNAM to T. Van Devender. These specimens were dissected and compared with published descriptions, and notes and photographs of primary types by me of most of the described species that were examined at the Natural History Museum, London, and the Museum of Comparative Zoology, Harvard University, Cambridge. Additional specimens were studied and photographed at the National Museum of Natural History, Washington, D.C. Images of primary types of species described by J.L. LeConte, G.H. Horn, and H.C. Fall are also available online at the Museum of Comparative Zoology (MCZ 2013).

Body length was measured from the frontal margin to the elytral apices, and width across the elytral humeri. Measurements for antennal segment and metatarsomere length ratios were taken along dorsal surfaces at 0.1 mm increments; calculated values presented are rounded. Morphological terms used are based on Lawrence et al. (2010).

Label data is presented as originally given, except for consistency some coordinates were converted to decimal format and dates are converted to d.m.y format. Specimens are or will be deposited as indicated by specimens cited in the collections of the Universidad Nacional Autónoma de México (UNAM), University of Arizona (UAIC), United States National Museum of Natural History (USNM), and the author (PJJC).

RESULTS

TAXONOMY

Scaptolenus paltingi new species

(Figs. 1-6)

Description. Holotype, ♂. Body 15.0-17.0 ($\bar{x}$=16.1, n=12) mm long, 6.0-6.5 ($\bar{x}$=6.1, n=12) mm wide; robust; elytra broad shouldered, tapering posteriorly, divergent apically; pronotum narrower than elytra; head narrower than pronotum.

Head porrect, brunneopiceous laterally on cranium and genae, or entirely. Punctation simple, setate, approximate. Maxillary palps with ultimate and penultimate segments subequal in length. Antennae dull flavous, narrowly serrate, with apices of antennomeres 4-10 strongly angulate to subacutely explanate ventrally; moderate in length, antennomere 9 reaching apex of pronotal hind angle; antennomere 2-11 length ratio 1.0:1.8:1.6 :1.4:1.4:1.3:1.3:1.3:1.2:1.3.

Pronotum 1.6X wider than long; anterior margin shallowly, arcuately lobate at midline; lateral margins rounded, lacking carina, broadly arcuate in dorsal aspect. Punctation as on head, moderately dense, separated by <0.5X own diameters. Hind angles strongly divergent, narrowly attenuate; posterior margin lobate anterad of scutellum, prescutellar emargination absent. Scutellar shield subtriangular, lateral margins shallowly arcuate; disc transversely impressed in anterior third. Elytra moderately densely punctured, punctures <0.5X own diameters, becoming sparser (1.0-1.2X own diameter) discally and apically; striae shallowly, narrowly sulcate posthumerally to before apex; interstriae shallowly convex, obsolete in basal 0.2X of elytral length, becoming stronger at midlength, flattening apically. Pubescence of short decumbent setae, except long hair-like setae at lateral margins.

Prosternum short and truncate anteriorly, strongly arched between coxae, densely villose with long, hair-like setae; horizontal posteriorly. Mesoventrite and metaventrite finely, sparsely punctured, each puncture with a long hair-like seta. Metaventrite with shallow cural impression anterolaterally, and an oblique subcarinate cural ridge from mesocoxal cavity to posterolateral area. Metacoxal lamina broad medially, narrowing laterally, with strong posterior angle. Metanepisternum triangular broadest anteriorly, narrowing to metacoxal angle. Metepimeron broadly triangular, narrowing anteriorly, broadly connected to metacoxa. Prothoracic legs with tibia explanate apically, ectal ridge with midlength angular tooth, apex with acute angular tooth laterally; apical spurs long, shallowly arcuate; apical margin with slender spines. Tarsi long, slender, tarsomeres elongate, subcylindrical, each ventrally with brush of short, stiff pubescence; metatarsomere length ratio 1.0:0.5:0.4:0.3:0.5.

Abdomen with five ventrites bearing truncate posterior margins; sternite 9 exposed in repose, appearing as a terminal and supernumerary ventrite. Ventrites finely, sparsely, shallowly punctured; each puncture bearing a long hair-like seta. Aedeagus (Figs. 2-3) simple, trilobed; phallobase broad, rectangularly notched basally an anteroventrally, and membranous dorsally, median lobe fusiform in dorsal aspect, dilated at midlength, apex curved ventrally; parameres obtusely angulate laterally at anterior quarter; subtruncate at apex, with ventral preapical setal cluster (Fig. 3).

Female unknown.

Material examined. ♂, holotype: MÉXICO, SONORA, Municipio de Aconchi, Rancho los Alisos, 9.4 km (by air) WSW of Aconchi, Sierra Aconchi, 29.79833°N 110.31972°W, 1301 m elev., 2 July 2013, T.R. Van Devender, J.D. Palting, A.L. Reina-G. (Specimen deposited at UNAM).

Paratypes: same data as holotype (1♂, PJJC; 1♂, UAC); same, riparian/oak woodland, MV/UV lights, 29.79833°N 110.31972°W, 1301 m elev., 5 July 2013 (2♂, PJJC; 1♂, UNAM; 1♂, USNM); and MÉXICO, SONORA, Rancho El Jarazo, 22.4 km (by air) N of Nacozari de García, Sierra la Púrica. 30.57556°N, 109.73250°W, 1595 m elev., 16 July 2013, T.R. Van Devender, J.D. Palting, A.L. Reina-G. Rocky canyon; oak woodland/sycamore riparian forest (4♂, UAC; 2♂, UNAM; 2♂, USNM).

Type locality: Sonora, Municipio de Aconchi, Rancho los Alisos, 9.4 km (by air) WSW of Aconchi, Sierra Aconchi, 29.79833°N 110.31972°W, 1301 m elevation.

Biological data. The specimens were collected from two locations in the Sierra Aconchi and Sierra la Púrica. In both cases they came to a light sheet illuminated by a full-spectrum mercury vapor lamp with an ultraviolet lamp immediately following heavy night-time rains. At the Rancho los Alisos site specimens arrived at the light sheet about 3:00 a.m. immediately following the cessation of a period of intense rain (J. Palting, *in litt*.). Although all specimens of this new species were collected at night Werner (1969) observed *S. fuscipennis* diurnally. In combination with numerous anecdotes this suggests that activity of *Scaptolenus* species is related to intensive rainfall and not photoperiod.

The Rancho El Jarazo site (Fig. 4) is part of Rancho los Alisos, but is located in the Sierra la Púrica about 84 km south of the Arizona border. This site is within oak (*Quercus* spp.) woodland and elevationally only slightly below the transition into Apache pine (*Pinus englemannii* Carr.) forest. There are house and fence remnants at the site, and the general area is heavily disturbed by cattle grazing. An abundance of alligator juniper (*Juniperus deppeana* Steud.) and pointleaf manzanita (*Arctostaphylos pungens* Kunth) is indicative of this disturbance and also suggests the occasional occurrence of wildfire. The adjacent stream area is canopied by Arizona sycamore (*Platanus wrightii* S. Watson) and Goodding's willow (*Salix gooddingii* C.R. Ball) gallery woodland. The nearby lower slopes of the Sierra la Púrica transition into desert grassland. The Sierra La Púrica is within the Reserva Forestal Nacional & Refugio de Fauna Silvestre Ajos-Bavispe.

The Rancho los Alisos site (Fig. 5) is about 170 km south

of the Arizona border and within the Sierra Aconchi, another Sky Island range southwest of the Sierra La Púrica. This site is geologically and vegetationally similar to the Rancho el Jarazo site, but the surrounding slopes have well-developed oak woodland. This part of the Sierra de Aconchi is within the Ejido de San Pedro de Aconchi.

Etymology. The species epithet is in recognition of efforts by John Palting, Tucson, Arizona, who collected much of the type series and has contributed extensively to the knowledge of Sonoran-Madrean biota in the Sky Island ranges of the greater Sonoran Region.

Comments. *Scaptolenus paltingi* keys to Chevrolat's (1874) "2e Division" (*S. vagans* Chevrolat) or the *vagans*-group (*S. vagans*, *S. acutangulus* Champion, *S. amplipennis* Chevrolat) of Champion (1896). *Scaptolenus lecontei* Chevrolat from Texas is assignable to this group. Except the latter, these species were described from Oaxaca, Veracruz, and "Mexico", respectively. The *vagans*-group has the apices of antennomeres 4-10 briefly and angularly extended ventrally, the pronotum is short (length = 1.9X width) and narrower that the elytral width, the penultimate and terminal segments of the maxillary palp subequal in length, and the elytra have shallowly convex intervals. The latter character was previously interpreted as the elytra sulcate, however examination shows that strial areas are on the same plane as the base of the elytra and the intervals are elevated.

Scaptolenus paltingi most resembles the holotype and only known specimen of *S. amplipennis* in general appearance. In addition to the differences of the antennae, the latter species has elytra with close punctation and convex intervals extending apically from the elytral bases; the pronotal hind angle is proportionately long, thin and narrow; the head, antennae, and palps are black; and the pronotum is dark castaneous and with dark pubescence. In contrast, *S. paltingi* has the elytra with sparse punctuation and costae extending apically from the elyral midlength; the pronotal hind angle is proportionately short and narrowly triangular; the head is entirely fuscus, or with frons and mentum flavocastaneous; and the pronotum is light castaneous with fuscus pubescence. *Scaptolenus californicus* Chevrolat (1874) differs from *S. paltingi* by its narrowly serrate antennae with the antennomeres lacking apicoventral extended angles and a proportionately longer pronotum.

A Key to the *vagans*-group of *Scaptolenus*
(based on Champion 1896)

1. Antennomeres 4-10 subparallel to slightly dilated apically . 2
   Antennomeres 4-10 distinctly dilated to subacute ventrally at apices; México . . . . . *S. amplipennis* Chevrolat
2. Elytra with distinctly elevated interstriae, giving a sulcate appearance to the striae; antennae longer, extending to elytral midlength 3
   Elytra with flat to shallowly elevated interstriae; antennae moderately elongate, extending to elytral basal 1/3; Oaxaca . . . . . *S. vagans* Chevrolat
3. Head, pronotum and scutellum black, contrasting with castaneous elytra 4
   Head black, pronotum and scutellum castaneous as elytra; Sonora . . . . . *S. paltingi* n.sp.
4. Lateral margin of hind angle continuous with lateral margin of pronotum; antenna infuscate; Texas .... *S. lecontei* Chevrolat
   Lateral margins of hind angle divergent from pronotum; Veracruz . . . . . *S. acutangulus* Champion

A Checklist of *Scaptolenus* Species of northern Mexico and the United States

Scaptolenus californicus Chevrolat, 1874: 524
Type locality: California
Distribution: México [not California!]
References: Horn 1881; Champion 1896; Dalla Torre 1911, 1913; Leng 1920: 166; Blackwelder 1944

Scaptolenus estriatus LeConte, 1874: 55
Type locality: TX
Distribution: USA: Texas
References: Chevrolat 1874; Horn 1881; Henshaw 1885; Champion 1896; Dalla Torre 1911, 1913; Leng 1920: 166; Fall 1932

Scaptolenus fulvus Chevrolat, 1874: 510
Type locality: Guanajuato
Distribution: México: Chihuahua, Guanajuato, Oaxaca
References: Champion 1896; Dalla Torre 1911, 1913; Blackwelder 1944

Scaptolenus fuscipennis Fall, 1932: 61
Type locality: Arizona, San Bernardino Ranch, Cochise Co., 3750 ft.
Distribution: USA: Arizona
References: Leng & Mutchler 1933; Werner 1969

Scaptolenus gehini Chevrolat, 1874: 523
Type locality: México
Distribution: México; Guatemala [not Texas!]
References: Champion 1896; Dalla Torre 1911, 1913; Leng 1920: 166; Blackwelder 1944

Scaptolenus lecontei Chevrolat, 1874: 510
Scaptolenus femoralis LeConte, 1853: 504 [homonym of *S. femoralis* Chevrolat 1835: fasc. 8, no. 200]
Scaptolenus lecontei (Sallé), of Chevrolat 1874: 510; Dalla Torre 1911: 12, 1913: 11; Leng 1920: 166 [incorrect attribution]
Type locality: Texas, San Antonio
Distribution: USA: Texas
References: Gemminger & Harold 1869; Chevrolat 1874; Horn 1881; Henshaw 1885; Champion 1896; Dalla Torre 1911, 1913; Leng 1920: 166; Fall 1932. Note: Chevrolat (1874) gave the replacement name *S. lecontei* to the *Scaptolenus femoralis* of LeConte (1853) from San

Antonio, Texas, a homonym of *S. femoralis* (Chevrolat 1835) from Orizaba, Mexico. LeConte's use of Chevrolat's name is based on a subsequent misidentification of the San Antonio specimens. The name was attributed to Sallé by Chevrolat, and subsequent catalogers.

Scaptolenus ocreatus Horn, 1881: 84
Scaptolenus ochreatus, of Turnbow & Wappes 1977: 346 [misspelling]
Type locality: Texas
Distribution: USA: Texas
References: Henshaw 1885; Champion 1896; Dalla Torre 1911, 1913; Leng 1920: 166; Fall 1932; Turnbow & Wappes 1977; Taber & Fleenor 2003

Scaptolenus palpalis Champion, 1896: 560
Type locality: Parras
Distribution: México: Coahuila
References: Dalla Torre 1911, 1913; Blackwelder 1944

Scaptolenus socius Fall, 1932: 60
Type locality: Texas, Alpine
Distribution: USA: Texas
References: Leng & Mutchler 1933

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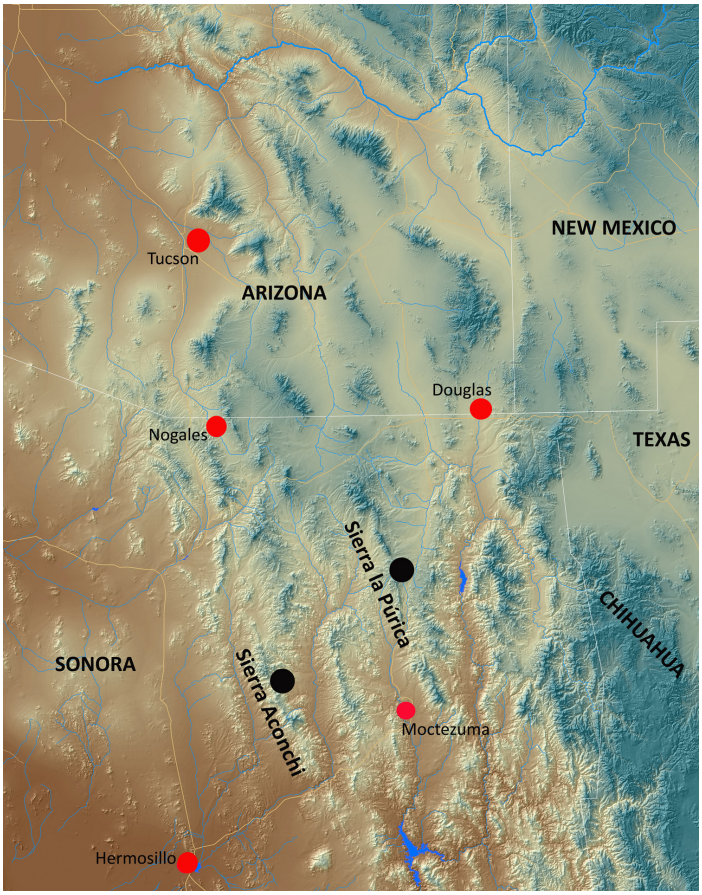
Figures 1-4. 1. *Scaptolenus paltingi* n.sp., adult, dorsal habitus. 2. *Scaptolenus paltingi*, aedeagus, dorsal aspect. 3. *Scaptolenus paltingi*, aedeagus, ventral aspect. 4. Collecting site at Rancho El Jarazo in the Sierra la Púrica. Photo by J. Palting.



Figures 5-6. 5. Collecting site at the Rancho los Alisos in the Sierra Aconchi. Photo by J. Palting. 6. Locality map showing the collecting localities for *Scaptolenus paltingi* in the Sierra Aconchi and Sierra la Púrica, Sonora, Mexico. Base map used with permission of Sky Jacobs, Tucson.