

RESEARCH

Description of a New Species of the Genus *Psectrosciara* and a New Record of *Parascatopse sonorensis* (Diptera: Scatopsidae) From Florida

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ABSTRACT. *Psectrosciara floridensis* sp. nov. belonging to the *scatopsiformis* group is described and illustrated. This species is closely related to *Psectrosciara scatopsiformis* Enderlein, 1912, *Psectrosciara californica* (Cole, 1912), *Psectrosciara brevipennis* Cook, 1958, and *Psectrosciara serrata* Cook, 1958. A new record of *Parascatopse sonorensis* Cook is reported from the state of Florida.

Key Words: Scatopsidae, *Parascatopse*, *Psectrosciara*, Florida, new species

The Scatopsidae, or minute black scavenger flies, are quite a small family with around 350 described species in 33 genera in the world (Haenni 1997). The family is worldwide in distribution, and immature stages are found in decaying plant or animal material, humid wood holes, cactus, phytotelmata, etc. (Amorim 2009).

The family is divided into four subfamilies, Aspistinae Rondani, 1840, Ectaeiinae Enderlein, 1936, Psectrosciariinae Cook, 1963, and Scatopsinae Newman, 1834 (Cook 1981). Psectrosciariinae Cook comprises two tribes, Anapausini Amorim, 1994 and Psectrosciariini Cook, 1963 (Amorim 1994). This last tribe is characterized by a single genus, *Psectrosciara* Kieffer, 1911, including about 25 described species from diverse geographic regions (Haenni 1990). Regarding the Nearctic region, *Psectrosciara* is represented by 10 species (Cook 1981). The genus *Psectrosciara* is easy distinguishable from the other members of Scatopsidae by the elongated, strongly laterally compressed body; wing with macrosetae on the posterior veins and membrane; base of vein M_1 and false vein absent and vein R_{4+5} joining costal vein gradually, in a smooth, gentle curve (Cook 1958). Two species groups have been characterized; the *brunnescens* group and the *scatopsiformis* group (with five species known in Nearctic region) (Cook 1958). The *scatopsiformis* group is mainly characterized by very stout, short, spine-like setae in tibiae and tarsi; tergum and sternum of segment 7 with posteriorly paired lobes; spermatheca elongate; male genitalia elongated, laterally compressed hypandrium, epandrium sometimes apparent, parameres mesally fused, and gonocoxites short and distally fused to the elongated gonostyles (Amorim and Haenni 1992).

Since our previous report of the Scatopsidae from Florida (Hribar and Huerta 2012), we examined several additional specimens, resulting in the finding of two additional species, one *Parascatopse* and one *Psectrosciara*. The latter, an undescribed new species belonging to the *scatopsiformis* group, is described below.

Materials and Methods

Adult specimens were collected with BG Sentinel (Biogents AG, Regensburg, Germany) and truck traps, preserved in 70% ethanol, and subsequently cleared, dissected, and mounted on microscope slides. The specimens were examined, measured, and illustrated with a binocular compound microscope with the aid of a camera lucida. Measurements are given in millimeters.

Photomicrographs were taken with an Infinity digital camera (Lumenera Corporation, Ottawa, Canada) attached to an Olympus

microscope (Olympus Corporation, Tokyo, Japan), later edited using Adobe Photoshop (Adobe Systems, San Jose, USA). Definitions of the taxonomic characters follow Haenni (1997) and Amorim (2009). All specimens are deposited in the Collection of Arthropods with Medical Importance (CAIM), Mexico City, Distrito Federal, Mexico, and in Florida State Collection of Arthropods (FSCA), Florida.

Nomenclature

This article and the nomenclatural act it contains have been registered in Zoobank (www.zoobank.com), the official register of the International Commission on Zoological Nomenclature. The LSID (Life Science Identifier) number of the publication is urn:lsid:zoobank.org:pub:A4F8DB2B-175F-4550-AF75-AC73B9DC7327

Genus *Parascatopse* Cook, 1955

Parascatopse Cook, 1955: 362. Type species: *Parascatopse wirthi* Cook, 1955 (orig. des.).

Parascatopse sonorensis Cook (Fig. 1)

P. sonorensis Cook, 1955. *Annals of the Entomological Society of America*, 48: 363. Cook, 1965: 239. (Catalog of the Diptera of America North of Mexico).

Comments: This species was previously known only from California (Cook 1955: 363). It differs from other Nearctic species mainly by characters of male genitalia (Fig. 1). We examined only one male. The apparent shape of tergite and sternite 7 seem different from the drawings of Cook (1955), but this is probably due to an artifact of mounting the specimen. However, we consider our specimen consistent with the characteristics of the male genitalia.

We provide here the first record from Florida.

New Record: Florida, Monroe Co., Vaca Key, 25 II 2011, L. Hribar, Coll., ex: BG Sentinel Trap, 1 male; same data except 9 XII 2009, 1 female. (FSCA.)

Genus *Psectrosciara* Kieffer, 1911

Psectrosciara Kieffer, in Enderlein, 1911: 192 (also Kieffer 1912: 192). Type-species: *Psectrosciara mahensis* Kieffer, 1912 (orig. des.) = *Psectrosciara brunnipes* (Brunetti). Ref. Cook, 1958 (rev.), Amorim, 1994 (classification).

Psectrosciara floridensis sp. nov.

(LSID: urn:lsid:zoobank.org:act:BC8915D1-1B5D-4C59-B52D-095F47A050FA) (Figs. 2–10)

Type Material. Holotype: 1 ♂ USA. Florida, Monroe Co., Lower Sugarloaf Key, 18 VI 2013, C. Pruszyński, coll., ex: truck trap (FSCA).



Fig. 1. *P. sonorensis* Cook. Male genitalia, ventral view. Scale bar = 0.1 mm.



Fig. 4. *Ps. floridensis* sp. nov. Male, paratype. Thorax, lateral view. Scale bar = 0.1 mm.

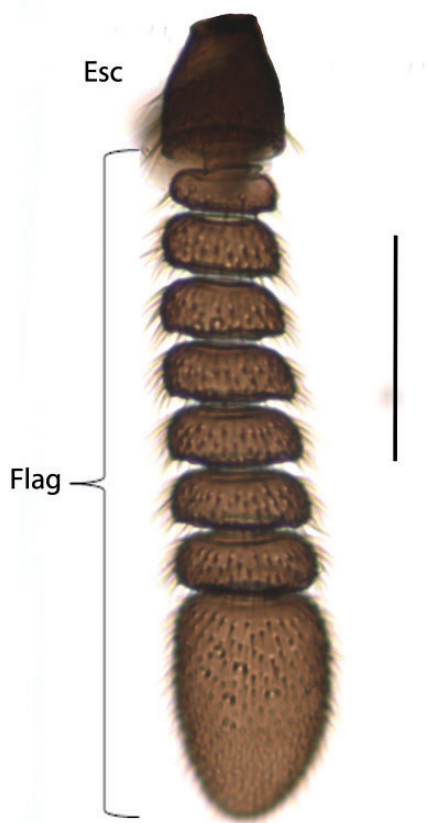


Fig. 2. *Ps. floridensis* sp. nov. Male, paratype. Antenna, lateral view. Scale bar = 0.1 mm. Esc, scape; Flag, flagellum.

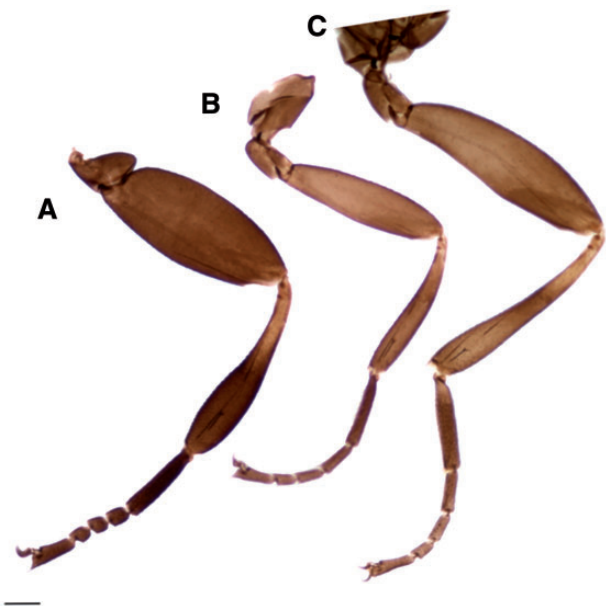


Fig. 5. *Ps. floridensis* sp. nov. Male, paratype. Legs, lateral view. (A) Foreleg. (B) Middle leg. (C) Hind leg. Scale bar = 0.1 mm.

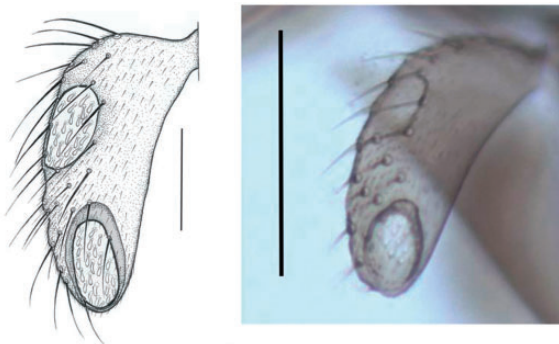


Fig. 3. *Ps. floridensis* sp. nov. Male, paratype. Palpus, lateral view. Scale bar = 0.04 mm (right); 0.1 mm (left).



Fig. 6. *Ps. floridensis* sp. nov. Male, paratype. Wing. Scale bar = 0.1 mm.

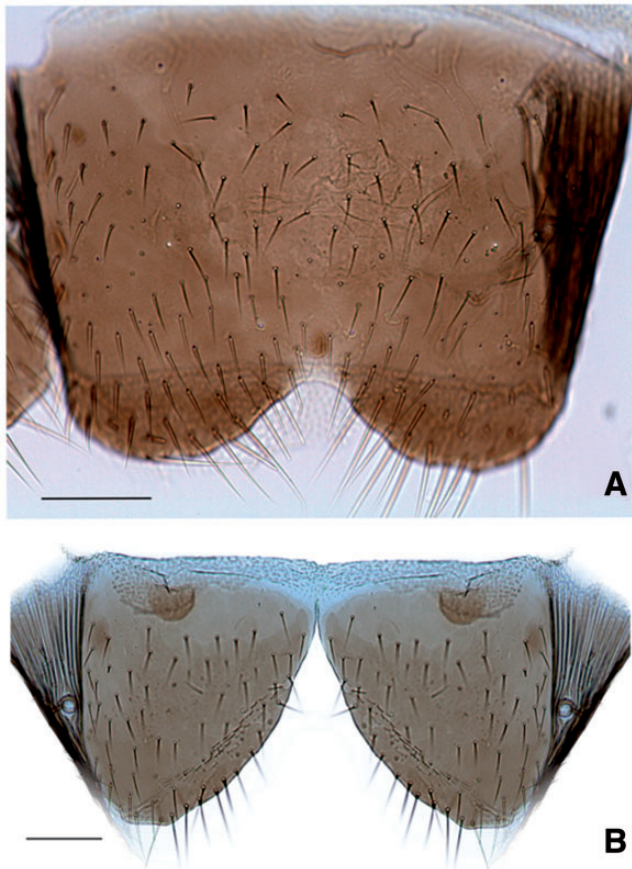


Fig. 7. *Ps. floridensis* sp. nov. Male, paratype. Abdominal segment 7. (A) Tergite. (B) Sternite. Scale bar = 0.1 mm.

Paratypes, 5 ♂♂, same data as holotype, (3 in FSCA, 2 in CAIM); 1 ♂ same data except L. Sugarloaf Key, 19 VI 2012, L. Hribar and C. Pruszyński, colls., truck trap; 1 ♀ same data except 19 V 2013; 1 ♀ same data, except 22 IV 2013 (CAIM).

Diagnosis. This species belongs to the *scatopsiformis* group, it can be distinguished by the characters of the male genitalia, particularly the spoon-shaped (Fig. 8), curved and apically rounded gonostylus; and the flattened, spear-shaped epandrium.

Male. Body length approximately 4.0 mm. Head: dark brown, longer than wide; eyes large, holoptic, with short hairs between facets; ommatidia with similar dimensions; two lateral ocelli, equal in size; small medial ocellus. Antenna uniformly brown, shorter than head (Fig. 2); scape square; pedicel subcylindrical; flagellum with eight flagellomeres, flagellomeres I–VII wider than long, flagellomere VIII elongated; scattered setae on each flagellomere; flagellomeres covered with microtrichia and sensilla, flagellum length, 0.7 mm; frontoclypeus setose; occiput pilose, with a pair of lateral sensilla; small internal sclerite at base of labella; palpus brown, elongated (Fig. 3), as long as labella (length 0.11 mm), setose, with two sensory pits, one apical and the other near the middle of the segment; cardo-stipes setose; labellum light brown.

Thorax: (Fig. 4). Dark brown; longer than wide, compressed laterally; scutum rather sparsely covered with short setae; pleura dark brown; antepronotum and proepimeron setose; anterior spiracular sclerite setose, longer than wide, small spiracle, located posterolaterally; pleural sclerites setose; posterior spiracular sclerite with six setae.

Legs: (Fig. 5A–C) with same pattern as other species of *scatopsiformis* group. Coxae dark brown; femora and tibiae similar in length; fore femur dark brown, mid and hind femora brownish; tibiae with subbasal pale brown rings; fore femur strongly inflated; fore tibia club-shaped; apex of tibiae and tarsal segments with stout setae; tarsomere I of all legs longer than the following segments; tarsomere IV on all legs shorter than other segments; claws pointed; empodium well developed.

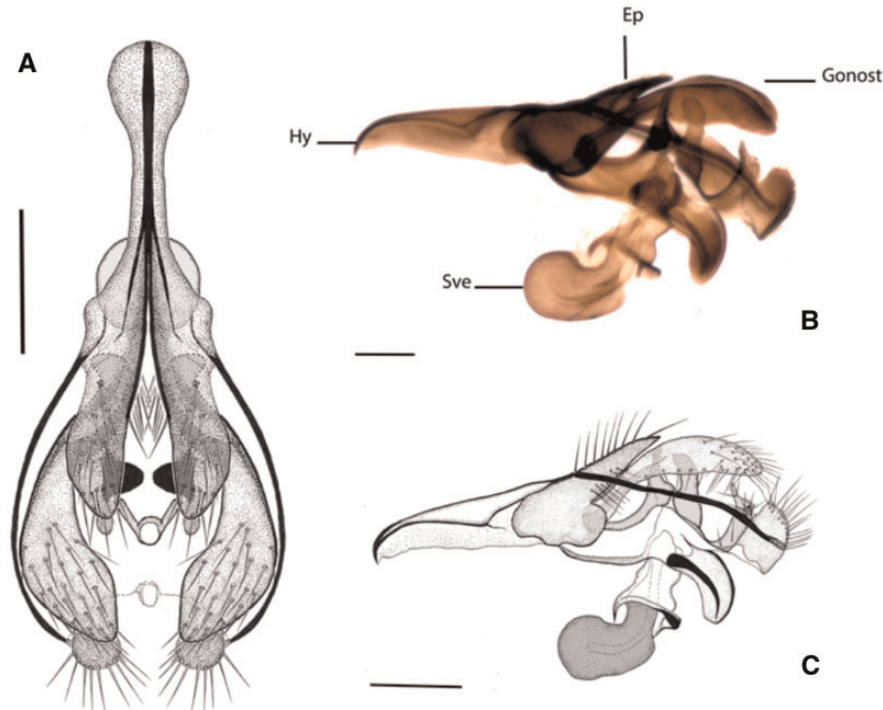


Fig. 8. *Ps. floridensis* sp. nov. Male, holotype. Male genitalia. (A) Dorsal view. (B and C) Lateral view. Scale bar = 0.16 mm. Gonost, gonostyle; Ep, epandrium; Hy, hypandrium; Sve, seminal vesicle.

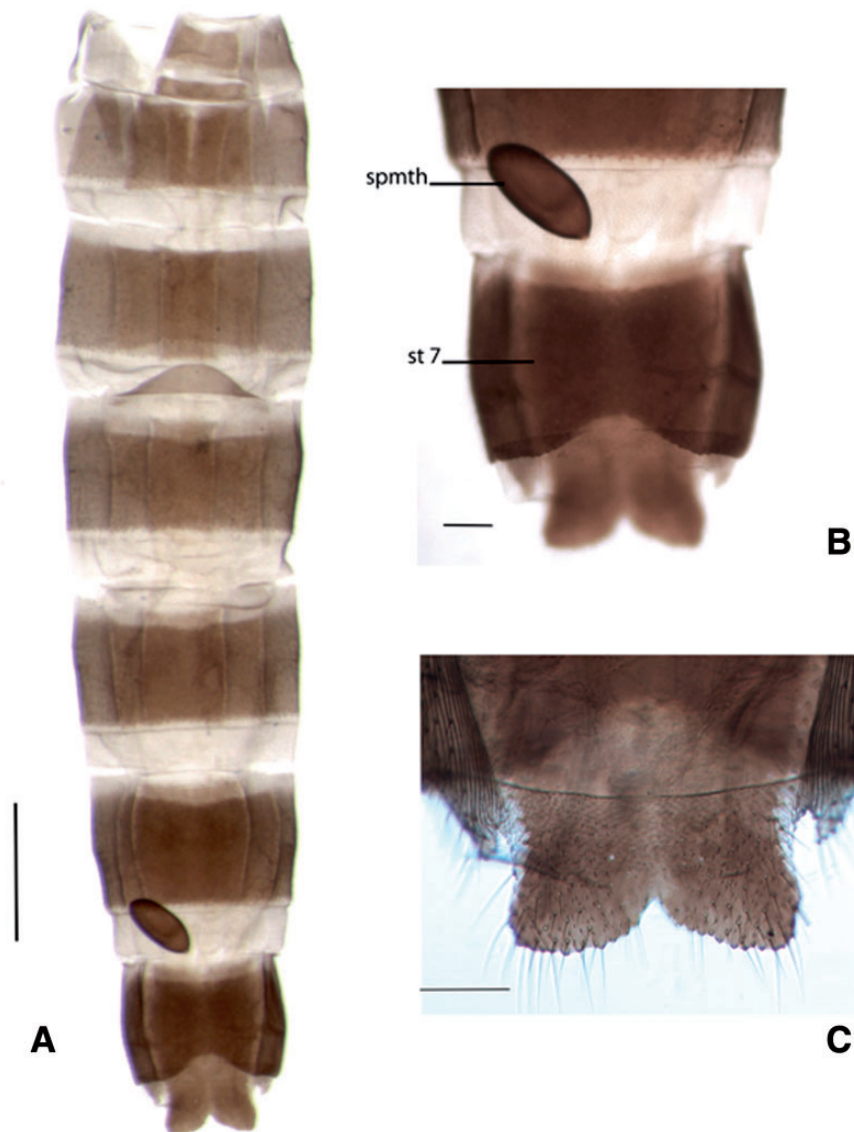


Fig. 9. *Ps. floridensis* sp. nov. Female, paratype. Abdomen. (A) Abdominal segments, ventral view. (B) Sternite 7, ventral view. (C) Tergite 7, detail of posterior margin. Scale bar = 0.5 mm (A); 0.1 mm (B and C). spmth, spermatheca; st, sternite.

Wing: (Fig. 6) anterior veins brown, bearing dense rows of macrosetae; C, R1, and R4+5 with an irregularly arranged row of short setae dorsally; Sc short; macrosetae present on all veins and on membrane, especially abundant on the posterior half of wing; ratio wing length/section costal 1, 2.43; WL/C2, 3.06; WL/C3, 3.16; C1+C2/WL, 0.73; cross-vein R-M short. Basal portion of M₁ absent; base of M traceable. Wing length, 2.38 mm, width, 0.95 mm; C extending 0.73 of wing length. Halter bearing diminutive setae on knob, stem bare.

Abdomen: Dark brown; tergite 7 (Fig. 7A), longer than wide, with a rounded, undulated posterior emargination; length, 0.20 mm, width, 0.18 mm; sternite 7 (Fig. 7B) slightly longer than wide, entirely divided into two lobes narrowly jointed at level of basal unsclerotized region, length, 0.32 mm, width, 0.30 mm.

Male terminalia: elongated (Figs. 8A–C), length, 0.7 mm, width, 0.30 mm; epandrium setose, flattened, spear-shaped; gonostyles spoon-shaped, setose, flattened, curved and apically rounded.

Female: Similar to male, with usual gender differences. Body length approximately 3.5 mm. Head dark brown, longer than wide; eyes large, with short hairs between facets; ommatidia with similar dimensions; two lateral ocelli, equal in size; small median ocellus. Antenna missing;

occiput pilose, with a pair of lateral sensilla; palpus brown, elongated, of similar length as labella, setose, length 0.12 mm.

Thorax: dark brown, longer than wide, compressed laterally; scutum rather sparsely covered with short setae; pleura dark brown; anteprepronotum and proepimeron setose; anterior spiracular sclerite setose, longer than wide, small spiracle located posterolaterally; pleural sclerites setose; posterior spiracular sclerite with 4 setae.

Legs: As in previous description of male.

Wing: Otherwise, as in male, anterior veins brown; C, R1 and R4+5 with an irregularly arranged row of short setae dorsally; Sc short; macrosetae present on all veins and on membrane, especially abundant on the posterior half of wing; ratio wing length/section costal 1, 2.58; WL/C2, 2.93; WL/C3, 3.52; C1+C2/WL, 0.72; cross-vein R-M short. Basal portion of M₁ absent; base of M traceable. Wing length, 2.20 mm, width, 0.90 mm; C extending 0.72 of wing length.

Abdomen: (Fig. 9A–C). Dark brown; intersegmental membrane of the sternites 3 and 4 with a median membranous lobe (Fig. 10A). Sternite 7 (Fig. 9A and B), subrectangular, setose, with posterior emargination, without slender finger-like appendages; tergite 7 elongated, longer than wide, with paired posterior lobes (Fig. 9C).

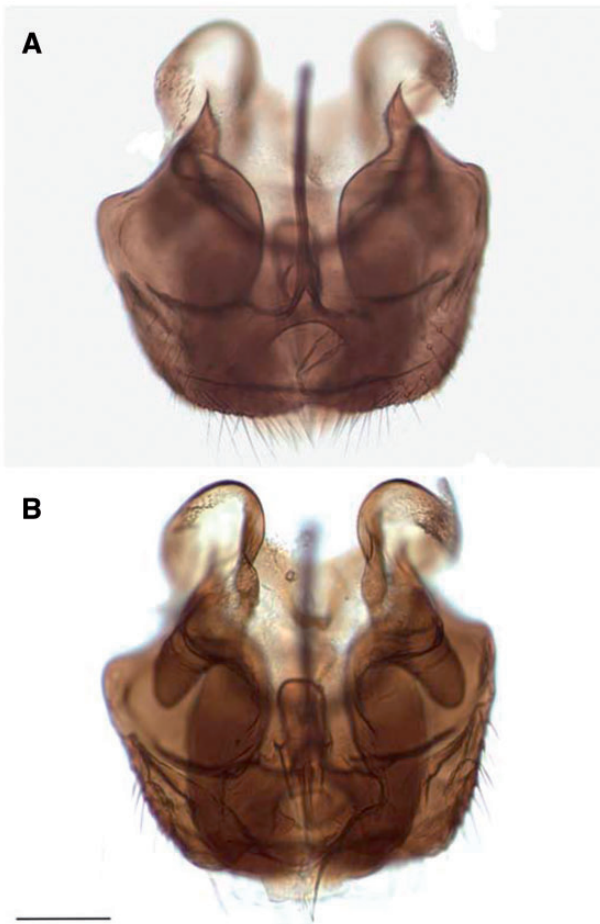


Fig. 10. *Ps. floridensis* sp. nov. Female, paratype. Female genitalia, ventral view. Scale bar = 0.1 mm.

Female terminalia (Fig. 10): tergite 8+9 with anterior emargination U-shaped; genital furca Y-shaped (Fig. 10A), genital chamber opening as Fig. 10B; elongate spermatheca (Fig. 9A and B), length 0.27 mm.

Discussion. This new species is included in the *scatopsiformis* group as defined by Cook (1958) and appears closely related to *Psectrosiara scatopsiformis* Enderlein, 1912, *Psectrosiara californica* (Cole, 1912), *Psectrosiara brevipennis* Cook, 1958, and *Psectrosiara serrata* Cook, 1958. As already mentioned by Cook (1958) and Amorim (1982), the homologies of male genitalia are very unclear and *Psectrosiara* is probably one of the most difficult genera of the Scatopsidae in this respect. The male genitalia of *Ps. floridensis* may be distinguished from closed related species by its spear-shaped epandrium and spoon-shaped, curved and apically rounded gonostyli. However, other species of *scatopsiformis* group have development of the epandrium, namely *Psectrosiara dissita* Amorim & Haenni, 1992 (Palearctic Region) and *Psectrosiara rossii* Cook, 1958 (Neotropical Region), whereas the remaining species recognized from the New World have very short and weakly sclerotized epandria (Amorim and Haenni 1992). An initial hypothesis of the relationships of the *scatopsiformis* group is proposed by Amorim and Haenni (1992).

The male genitalia of *Ps. brevipennis* Cook and *Ps. floridensis* are very similar; however, in the first species, the wing is very short

(1.13–1.20 mm), not projecting beyond the apex of the abdomen and vein M_1 is only present near wing margin; the new species differs in these aspects. The female may be distinguished from *Ps. scatopsiformis* and *Ps. serrata* by the lack of slender finger-like appendages articulating tergite 7, whereas in *Ps. californica*, a pair of processes is present posteriorly; the posterior emargination of tergite 7 of *Ps. floridensis* distinguishes it from other related species.

Distribution. Nearctic. USA (Florida).

Etymology. We name this species in reference to the state of Florida.

Acknowledgments

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