INSECTA MUNDI A Journal of World Insect Systematics

0623

Descriptions of two new species of false click beetles (Coleoptera: Eucnemidae) from the Bahamas

Robert L. Otto
W4806 Chrissie Circle
Shawano, WI 54166

Date of issue: April 27, 2018

Center for Systematic Entomology, Inc., Gainesville, FL

Robert L. Otto
Descriptions of two new species of false click beetles (Coleoptera: Eucnemidae) from the Bahamas
Insecta Mundi 0623: 1–8
ZooBank Registered: urn:lsid:zoobank.org:pub:CE935673-87D8-4AAC-B23F-AD188523C4FF

Published in 2018 by
Center for Systematic Entomology, Inc.
P.O. Box 141874
Gainesville, FL 32614-1874 USA
http://centerforsystematicentomology.org/

Printed copies (ISSN 0749-6737) annually deposited in libraries
CSIRO, Canberra, ACT, Australia
Museu de Zoologia, São Paulo, Brazil
Agriculture and Agrifood Canada, Ottawa, ON, Canada
The Natural History Museum, London, UK
Muzeum i Instytut Zoologii PAN, Warsaw, Poland
National Taiwan University, Taipei, Taiwan
California Academy of Sciences, San Francisco, CA, USA
Florida Department of Agriculture and Consumer Services, Gainesville, FL, USA
Field Museum of Natural History, Chicago, IL, USA
National Museum of Natural History, Smithsonian Institution, Washington, DC, USA
Zoological Institute of Russian Academy of Sciences, Saint-Petersburg, Russia

Electronic copies (Online ISSN 1942-1354, CDROM ISSN 1942-1362) in PDF format
Printed CD or DVD mailed to all members at end of year. Archived digitally by Portico.
Florida Virtual Campus: http://purl.fcla.edu/fcla/insectamundi
University of Nebraska-Lincoln, Digital Commons: http://digitalcommons.unl.edu/insectamundi/
Goethe-Universität, Frankfurt am Main: http://nbn-resolving.de/urn/resolver.pl?urn:nbn:de:hebis:30:3-135240

Layout Editor for this article: Robert G. Forsyth

INSECTA MUNDI 0623: 1–8 2018

Descriptions of two new species of false click beetles (Coleoptera: Eucnemidae) from the Bahamas

Robert L. Otto
W4806 Chrissie Circle
Shawano, WI 54166
tar1672@yahoo.com

Abstract. Specimens of Eucnemidae collected in the Bahamas were re-evaluated following initial identifications completed in 2007. Two new species of false click beetle (Coleoptera: Eucnemidae) are described from several islands in the Bahamas. These new species are: *Golbachia rufa* **sp. nov.** and *Fornax bahamiensis* **sp. nov.** Diagnostic differences are noted for each species and compared with similar species found in both Cuba and the United States.

Key words. Andros I., Eleuthera I., Great Inagua I., *Golbachia*, *Fornax*.

Introduction

The Bahamas is an archipelagic sovereign state in the Atlantic Ocean which consists of more than 700 islands, inlets and cays. The archipelagos in a strict sense are situated southeast of Florida, U.S.A., north of the Greater Antilles archipelagos and northwest of Turks and Caicos Islands. The Bahamas, along with Turks and Caicos Islands collectively comprise the third archipelago of the West Indies region known as the Bahama Archipelago.

Origins of the archipelagos differ greatly from that of the Greater Antilles and the Lesser Antilles in the West Indies, based on its geologic history. The Bahamas archipelagos were formed by thick limestone deposits upwards of 10 km deep, dating back to the Jurassic Period (Acevedo-Rodriguez and Strong 2017). Acevedo-Rodriguez and Strong (2017) summarized the origins of the Lesser Antilles Archipelagos and the Greater Antilles Archipelagos, based on geologic history of the island formations for each of those groups in the region.

Surveys of Coleoptera have been conducted periodically on some of the islands in the Bahamas. Recent surveys conducted by Turnbow and Thomas (2008) in 2001, 2004 and 2006 on Andros Island and 2007 on Great Inagua Island, as well as examination of other Bahaman specimens and literature searches has resulted in the culmination of 996 species in 552 genera for 74 families that comprised their annotated checklist for the Bahamas. They acknowledged the study is preliminary, since the Bahamas is still poorly collected and its fauna is largely unknown.

The eucnemid fauna in the Bahamas has poor diversity, with only 10 species known. Based on these 10 species, 50% of the fauna are connected to the Nearctic region, with 20% being connected to the Caribbean fauna and 10% being undetermined in its connection to other nearby regions. The remaining 20% are currently endemic to the islands, that being *Golbachia rufa* **sp. nov.** and *Fornax bahamiensis* **sp. nov.**, following the re-evaluation of some of the material previously studied in 2007. Most of the known eucnemid specimens have been taken on Andros Island and Great Inagua Island, with a very small number of specimens taken on Eleuthera Island. Future surveys in the Bahamas, especially on unexplored islands, may yield a better understanding of the eucnemid fauna or the overall biodiversity of Coleoptera as a whole.

Materials and Methods

Habitus, antennal and other structural images were taken with a JVC KY-F75U digital camera attached to a Leica® Z16 APO dissecting microscope with apochromatic zoom objective and motor focus drive, using a Synchroscopy Auto-Montage® Pro System and software version 5.01.0005, resulting image stacks were processed using CombineZP®. All images were captured as TIFF files during the imaging

process. Each image was modified through Photoshop Elements 10® software on a Toshiba Satellite® C55 series laptop computer and all were collated into plates through the computer's paint program. Label data for all types are reported verbatim. Observed metadata are placed between parentheses and brackets for some labels.

Specimens studied are deposited in the following collections:
FSCA — Florida State Collection of Arthropods, Gainesville, FL
GERP — Global Eucnemid Research Project, UW-Madison, Dept. of Entomology, Madison, WI.

Systematics

Subfamily Melasinae Fleming, 1821

Tribe Dirhagini Reitter, 1911

Genus *Golbachia* Cobos, 1955

Diversity and distribution. Currently, the genus *Golbachia* consists of only three species. *Golbachia impressicollis* (Bonvouloir) is a widespread species distributed across the southeastern United States from Texas east to Florida, and north to North Carolina. *Golbachia tucumana* Cobos is distributed in Argentina and Brazil. *Golbachia wrighti* (Knull) is a precintive species in Florida, U.S.A. Many Central and South American species currently assigned to *Microrhagus* Dejean may also belong to this genus.

Diagnosis. Apical margin of frontoclypeal region evenly rounded and less than twice as wide as the distance between antennal sockets; notosternal antennal grooves usually present; male protarsomere I with complete sex combs, metacoxal plates medially 3.0–6.0 times wider than laterally; elytral epipleurae simple, evenly punctate basally; last visible ventrite either rounded or acute; tarsal claws simple; lateral surfaces of meso- and metatibiae with setae; male aedeagus dorsoventrally compressed, with indistinct, highly modified secondary lateral lobes; flagellum complex, tubular.

These diagnostic characteristics, especially the apical margin of the frontoclypeal region, will distinguish the group from other genera like *Microrhagus* Dejean, *Entomopthalmus* Bonvouloir and *Rhagomicrus* Fleutiaux within the tribe Dirhagini.

Golbachia rufa Otto, sp. nov.

Fig. 1–3

Diagnosis. Presence of sex patch on the last abdominal sternite will distinguish *G. rufa* from the Nearctic *G. wrighti*. Overall size and coloration will further distinguish the new species from *G. impressicollis*.

Type material. Male holotype: "BAHAMAS: Andros Is., Maidenhair Coppice, 11-VI-2004, M.C. Thomas, BLT" / "**EUCNEMIDAE:**, MELASINAE:, *Microrhagus*, *albofasciatus* (Fisher), Det. R.L. Otto, 2007" ('07' handwritten; folded) / "**HOLOTYPE:**, *Golbachia*, *rufa*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [red printed label]. Holotype deposited in FSCA.

Paratypes. 3 ♂♂: **BAHAMAS:** 1 ♂, "BAHAMAS: Eleuthera, Rainbow Bay, 1-VII-1988, R.W. and D.B. Wiley" / "Collection of the Global, Eucnemid Research Project, (Robert L. Otto) (green framed white label) / "**PARATYPE:**, *Golbachia*, *rufa*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [yellow printed label] (GERP); 1 ♂, "BAHAMAS: Andros Is., Forfar Field Sta., nr., Stafford Creek, 7-VI-2004, M.C. Thomas, BLT" / "*Microrhagus*, *albofasciatus*, (Fisher), Det. R.L. Otto, 2007" ('07' handwritten; folded) / "Collection of the Global, Eucnemid Research Project, (Robert L. Otto)" (green framed white label) / "**PARATYPE:**, *Golbachia*, *rufa*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [yellow printed label] (GERP); 1 ♂, "BAHAMAS: Andros Is., Maidenhair Coppice,

24–28-VII-2006, MCThomas, TRSmith, UV trap in interior coppice" / "**PARATYPE:**, *Golbachia*, *rufa*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [yellow printed label] (FSCA). Paratypes are deposited in FSCA and GERP.

Description. Male holotype: Length, 3.0 mm. Width, 1.0 mm. Body subcylindrical, elongate; uniformly reddish; antennae reddish; legs including tarsi reddish; head, pronotum and elytra clothed with short, recumbent yellowish setae (Fig. 1–2). **Head:** Surface somewhat dullish, subspherical with closely spaced punctures; frons convex with shallow, median fovea above frontoclypeal region; apical margin of frontoclypeal region rounded, less than 2 times wider than base; compound eyes enlarged, incised; mandibles stout, bidentate, densely punctate. **Antenna:** Serriform from antennomeres III–XI, attaining nearly 2/3 the length of the body; antennomeres III–X each sub-equal, longer than wide; antennomere XI slightly longer than X. **Pronotum:** Surface dullish, densely and closely punctate; quadrate, with well-developed, sharp hind angles; sides parallel-sided, slightly widest anteriorly; disc convex without shallow median groove or circular fovea; base sinuous, with short, shallow groove above scutellum; anterior lateral pronotal ridge short, concave and directed posteroventrally; posterior lateral pronotal ridge elongate, nearly reaching anterior end of pronotum. **Scutellum:** Short, sub-triangular, shallowly punctate and distally rounded. **Elytra:** Very shallow striae present, deepest at humeral region; interstices slightly elevated; surfaces shiny with dense, crowded punctures; apices with 4 rows of deep, circular cavities. **Legs:** First tarsomere as long as the combined lengths of the remaining four on meso- and metatarsi; tibiae rounded in cross section; metatarsomeres I–III simple; metatarsomere IV excavated; metatarsomere V elongate with simple claws. **Venter** (Fig. 3)**:** Closely punctate, with elongate, recumbent yellowish setae; hypomeron with notosternal antennal grooves, inner ridge caudally obliterated; metepisterna parallel-sided; metacoxal plates medially more than 3.0–6.0 times wider than laterally; large, round sex patch present on last abdominal sternite.

Variation. Three male paratypes were examined. Male paratypes measured 3.5 mm long and 1.0 mm wide. All paratypes are slightly longer than and just as wide as the holotype. Two paratypes have a shallower median depression above the frontoclypeal region. One paratype has a deeper median impression above the frontoclypeal region. There are no other exoskeletal differences between these paratypes and the holotype.

Distribution. The eucnemid species is known from two locales on the island of Andros and a single locale on the island of Eleuthera in the Bahamas.

Biology. Three specimens were taken from a black light trap on Andros Island. Developmental stages remain unknown.

Etymology. The specific epithet is derived from the general reddish coloration of the species' overall habitus.

Note. Identity of these eucnemids as a new species was concluded based on the comparison of these specimens against species description and illustrations of *G. wrighti* provided by Muona (2000) and *G. impressicollis* specimens in the GERP collection.

Subfamily Macraulacinae Fleutiaux, 1922

Tribe Macraulacini Fleutiaux, 1922

Genus *Fornax* Laporte, 1835

Diversity and distribution. There are more than 300 described species of *Fornax*. Many species are distributed largely in the tropical and subtropical regions around the globe. Greatest diversity of the group is concentrated in the African, Australasia, Indo-Malaya, Neotropical and Oceania regions. Six species are distributed in the Far East region of the Palearctic region, including Japan. Three known species and a number of undescribed species of *Fornax* are present in the Nearctic region.

Diagnosis. Apical margin of frontoclypeal region evenly rounded and more than twice as wide as the distance between antennal sockets; well-developed basally open lateral antennal grooves present; male prothoracic tarsomere I simple, with basal sex combs; metathoracic coxal plates medially more than 6.0 times wider than laterally; elytral epipleurae basally grooved; last visible ventrite either strongly produced, rounded or truncated; tarsal claws basally toothed; lateral surfaces of mesothoracic and metathoracic tibiae with setae and transverse rows of spine combs; male aedeagus dorsoventrally compressed, without secondary lateral lobes; median lobe simple, with moderately and narrowly bifurcate apices; lateral lobes simple, entire, flagellum simple.

These diagnostic characteristics, especially the basally grooved elytral epipleura, will distinguish the group from other genera like *Onichodon* Newman and *Dromaeolus* Kiesenwetter within the tribe Macraulacini.

***Fornax bahamiensis* Otto, sp. nov.**

Fig. 4–7

Diagnosis. The new eucnemid species is similar to *Dromaeolus ishiodontoides* Chevrolat, *Fornax ebeninus* Fleutiaux and *Fornax poeyi* Fisher, all from Cuba. Absence of interantennal carina above the frontoclypeal region will distinguish *F. bahamiensis* from *F. ebeninus* and *D. ishiodontoides*, present in both Cuban eucnemid species. Well-developed lateral antennal grooves on the hypomera will further distinguish the new species from *F. poeyi*, which is medially undefined in the latter species.

Type material. Male holotype: "BAHAMAS: Great Inagua, vic. Middle Point; blacklight, trap in mangrove forest, 15-VII-2007; Thomas, Turnbow & Smith" / "**HOLOTYPE:**, *Fornax*, *bahamiensis*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [red printed label]. Holotype is deposited in FSCA.

Paratypes. 10 ♂♂: **BAHAMAS:** 1 ♂, "BAHAMAS: Andros Is., Maidenhair Coppice, 11-VI-2004, M.C. Thomas, BLT" / "**EUCNEMIDAE:**, MACRAULACINAE:, *Fornax*, *poeyi* Fisher, Det. R.L. Otto, 2007" ("07" handwritten; folded) / "**PARATYPE:**, *Fornax*, *bahamiensis*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [yellow printed label] (FSCA); 1 ♂, "BAHAMAS: Andros Is., Forfar Field Sta., nr., Stafford Creeks 22–28-VII-, 2006 MCThomas, TRSmith, UV trap in coastal coppice" / "Collection of the Global, Eucnemid Research Project, (Robert L. Otto)" (green framed white label) / "*Fornax*, *poeyi* Fisher, Det. R.L. Otto, 2008" ("08" handwritten; folded) / "**PARATYPE:**, *Fornax*, *bahamiensis*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [yellow printed label] (GERP); 1 ♂, [same as holotype] / "EUCNEMIDAE:, MACRAULACINAE:, *Fornax*, *poeyi* Fisher, Det. R.L. Otto, 2008" (handwritten; folded) / "**PARATYPE:**, *Fornax*, *bahamiensis*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [yellow printed label] (FSCA); 4 ♂♂, [same as holotype] / "**PARATYPE:**, *Fornax*, *bahamiensis*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [yellow printed label] (FSCA); 3 ♂♂, [same as holotype] / "Collection of the Global, Eucnemid Research Project, (Robert L. Otto)" (green framed white label) / "**PARATYPE:**, *Fornax*, *bahamiensis*, Otto, det. R.L. Otto, 2017" (♂ handwritten behind species name on label) [yellow printed label] (GERP). Paratypes are deposited in FSCA and GERP.

Description. Male holotype: Length, 5.0 mm. Width, 1.5 mm. Body subcylindrical, elongate; uniformly reddish-brown; scape slightly darker, pedicel and antennomeres III–XI medium reddish-brown; legs including tarsi reddish-brown; head, pronotum and elytra clothed with short, recumbent yellowish setae (Fig. 4). **Head:** Surface densely and deeply punctate to rugose, somewhat shiny, subspherical; frons convex, without median carina or fovea above frontoclypeal region; apical margin of frontoclypeal region rounded, about 2 times wider than base; interantennal carina absent; mandibles stout, bidentate, densely punctate. **Antenna:** Filiform from antennomeres III–XI, attaining more than 1/2 the length of the body; antennomere III slightly longer than IV; antennomeres IV–X each sub-equal, longer than wide; antennomere XI slightly longer than X. **Pronotum:** Surface somewhat shiny, densely punctate to rugose; slightly longer than wide, with moderate, sharp hind angles; lateral sides parallel-sided at basal 3/4, arcuate anteriorly at apical 1/4; disc convex without shallow median groove or circular fovea;

base sinuous, with pair of circular depressions above scutellum. **Scutellum:** Elongate, sub-triangular, setose, shallowly punctate and distally rounded. **Elytra:** Distinctly, shallowly striate; interstices slightly elevated; surfaces shiny with dense, crowded punctures. **Legs:** First tarsomere as long as the combined lengths of the remaining four on meso- and metatarsi; tibiae rounded in cross section; metatarsomeres I–III simple; metatarsomere IV excavated, slightly emarginated; metatarsomere V elongate with simple claws. **Venter** (Fig. 5)**:** Closely punctate, with elongate, recumbent yellowish setae; hypomeron with basally open, wide, lateral antennal grooves; metepisterna parallel-sided; elytral epipleura grooved throughout, basally shiny, apically punctate; metacoxal plates medially more than 6.0 times wider than laterally. **Aedeagus (paratype)** (Fig. 6–7)**:** Elongate, dorsally flattened, sinuate; median lobe free, apically rounded; lateral lobes apically elongate, rounded, longer than median lobe; lateral lobe each with lateral tooth arising at apical 1/3; secondary lateral lobe absent; flagellum elongate, inflated, apically bilobed; basal piece elongate, apically truncated.

Variation. Ten male paratypes were examined. Male paratypes measured 3.5–5.0 mm long and 1.0–1.5 mm wide. Three of the ten paratypes are shorter and narrower than the holotype. Seven paratypes are as long as and as wide as the holotype. Several paratypes are redder than the remaining seven paratypes, which are reddish-brown in color. Lateral constriction of the pronotum near the middle is present in three of the 10 paratypes. One paratype has a slightly arcuate lateral side of the pronotum. Lateral sides of the pronotum in the other six are similar to that of the holotype. Grooved elytral epipleura lacks punctures in one paratype. One other specimen has a more punctate grooved epipleura compared with the remaining paratypes in the series and the holotype.

Distribution. The eucnemid species is known from eleven specimens taken from Andros Island and Great Inagua Island in the Bahamas.

Biology. All specimens were taken from a blacklight trap. Nine of the specimens were taken from a mangrove forest on Great Inagua Island. One of the specimens was taken from a coastal coppice on Andros Island. Developmental stages remain unknown.

Etymology. The specific epithet is derived from a combination of two words, 'Bahamas' and '-ensis', a Latin adjectival suffix meaning "pertaining to"; from which the new species has been taken.

Note. Identity of these eucnemid specimens as a new species were concluded based on the comparison of these specimens against translated, interpreted information of *D. ishiodontoides* provided in Bonvouloir (1871), *F. ebeninus* described by Fleutiaux (1897) as well as *F. poeyi* described by Fisher (1945).

A second *Fornax* species previously identified as *Fornax bicolor* (Melsheimer) is also present in the Bahamas. Identity of these specimens were re-evaluated during another study and determined that this small series of eucnemids belong to another undescribed species. That undescribed species is also present in Florida, U.S.A. A description of the new species will be a part of a study being conducted to review the genus *Fornax* present in the Nearctic region.

Acknowledgments

I would like to extend my thanks to Kyle Schnepp and Paul Skelley both of Gainesville, Florida for lending their specimens to my care during the course of my study, Daniel Young for blocking off time to allow me to operate the Auto-Montage equipment in the laboratory and both Blaine Mathison and Kyle Schnepp for reviewing and offering their input on the manuscript.

Literature Cited

Acevedo-Rodriguez, P., and M. T. Strong. 2017. Flora of the West Indies. Available at http://botany.si.edu/antilles/westindies/. (Last accessed 12 August, 2017.)

Bonvouloir, H. A. de. 1871. Monographie de la famillie de Eucnémides, 1st part. Annales de la Société Entomologique de France (Supplement) 40: 1–288 + pl. 1–21.

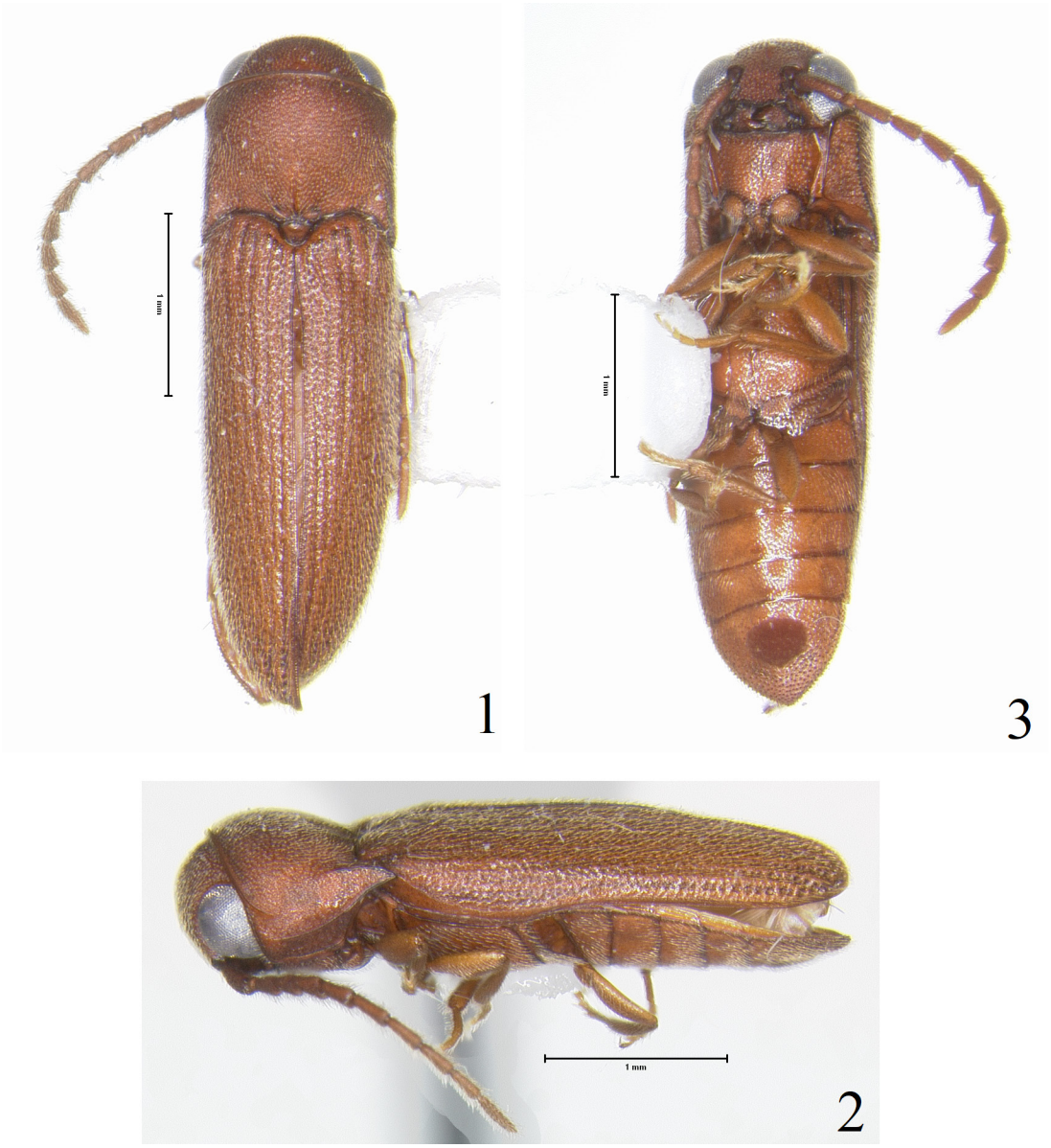
Fisher, W. S. 1945. New beetles of the family Eucnemididae from Central America and the West Indies. Proceedings of the United States National Museum 96: 3188: 79–93.

Fleutiaux, E. 1897. Liste des Eucnemidae du Musée Berlin et description des espèces nouvelles. Annales de la Société Entomologique de Belgique 41: 250–261.

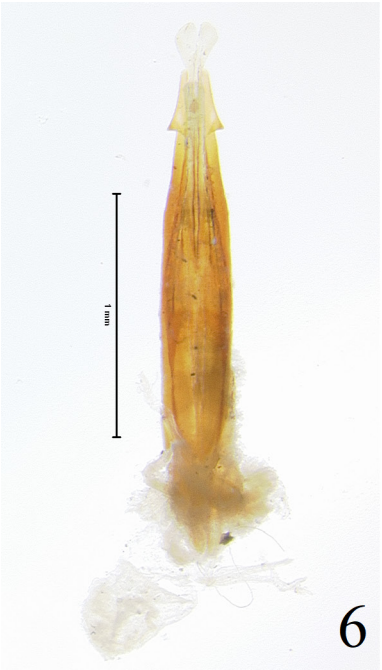
Muona, J. 2000. A revision of the Nearctic Eucnemidae. Acta Zoologica Fennica 212: 1–106.

Turnbow, R. H., Jr., and M. C. Thomas. 2008. An annotated checklist of the Coleoptera (Insecta) of the Bahamas. Insecta Mundi 0034: 1–64.

Received March 16, 2018; accepted March 22, 2018.
Review editor Gareth S. Powell.



Figures 1–3. *Golbachia rufa* **sp. nov. 1)** Male holotype (FSCA), dorsal habitus. **2)** Male holotype (FSCA), lateral habitus. **3)** Male holotype (FSCA), ventral habitus. (Scale = 1.0 mm).



Figures 4–7. *Fornax bahamiensis* **sp. nov. 4)** Male holotype (FSCA), dorsal habitus. **5)** Male holotype (FSCA), ventral habitus. **6)** Male aedeagus (FSCA), dorsal view. **7)** Male aedeagus (FSCA), lateral view. (Scale = 1.0 mm).