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A new species of *Phyllophaga* Harris (Coleoptera: Scarabaeidae: Melolonthinae) from Puerto Rico

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Abstract. *Phyllophaga bobevlynorum* Schnepf, **new species** (Coleoptera: Scarabaeidae: Melolonthinae), is described from Puerto Rico. The species is illustrated and diagnosed, and a checklist of the species in Puerto Rico is given.

Key words. Rhizotrogini, *Cnemerachis*, West Indies, chafers, taxonomy, scarab beetles.

ZooBank registration. urn:lsid:zoobank.org:pub:BD7A4FE0-1245-41EA-A365-B86C4716FCFC

Introduction

The genus *Phyllophaga* Harris is extremely diverse, with over 850 species currently assigned to it, all occurring in the New World. As with almost all *Phyllophaga* in the West Indies, this new species belongs to the subgenus *Cnemerachis* Saylor, whose members have the outer surface of the metatibia with an incomplete carina. As discussed by Smith and Paulsen (2015), this subgenus is endemic to the West Indies and has a near 100% rate of endemism on islands or clusters of islands (Woodruff and Sanderson 2005; Evans and Smith 2009). There are currently 11 described species of *Phyllophaga* from Puerto Rico. One of these, *Phyllophaga apicalis* (Blanchard, 1851), also occurs in the Virgin Islands, and another, *Phyllophaga monana* (Moser, 1921), only occurs on Mona Island. Many additional species await description, one of which was collected by Robert Woodruff during an expedition to Puerto Rico in 1993 and is described herein, bringing the total species in Puerto Rico to 12.

Materials and Methods

Label data. Label information is given verbatim in quotes. A space+slash+space (/) indicates line breaks and space+double slash+space (//) indicates a different label. Labels are types on white paper unless otherwise indicated by information between brackets ([]).

Specimens examined. Specimens were examined with a Leica S6D microscope. Habitus photographs were taken on a Leica Z16 APO microscope using a JVC KY-F75U digital camera and stacked with Syncrosopy Automontage software, version 5.01.005. Images were compiled into plates using GIMP 2 software (version 2.10.12). A total of 23 specimens were examined and are deposited in the following collections:

CMNC Canadian Museum of Nature Collection, Ottawa, ON, Canada

FSCA Florida State Collection of Arthropods, Gainesville, FL, USA

KESC Kyle E. Schnepf Collection, Gainesville, FL, USA

RHTC Robert H. Turnbow Collection, Enterprise, AL, USA

Specimens were determined using original descriptions and reference material in the FSCA, as well as figures provided in Chalumeau (1980, 1983, 1985, 1990), Medrano-Cabral (2006), and Paulian (1947).

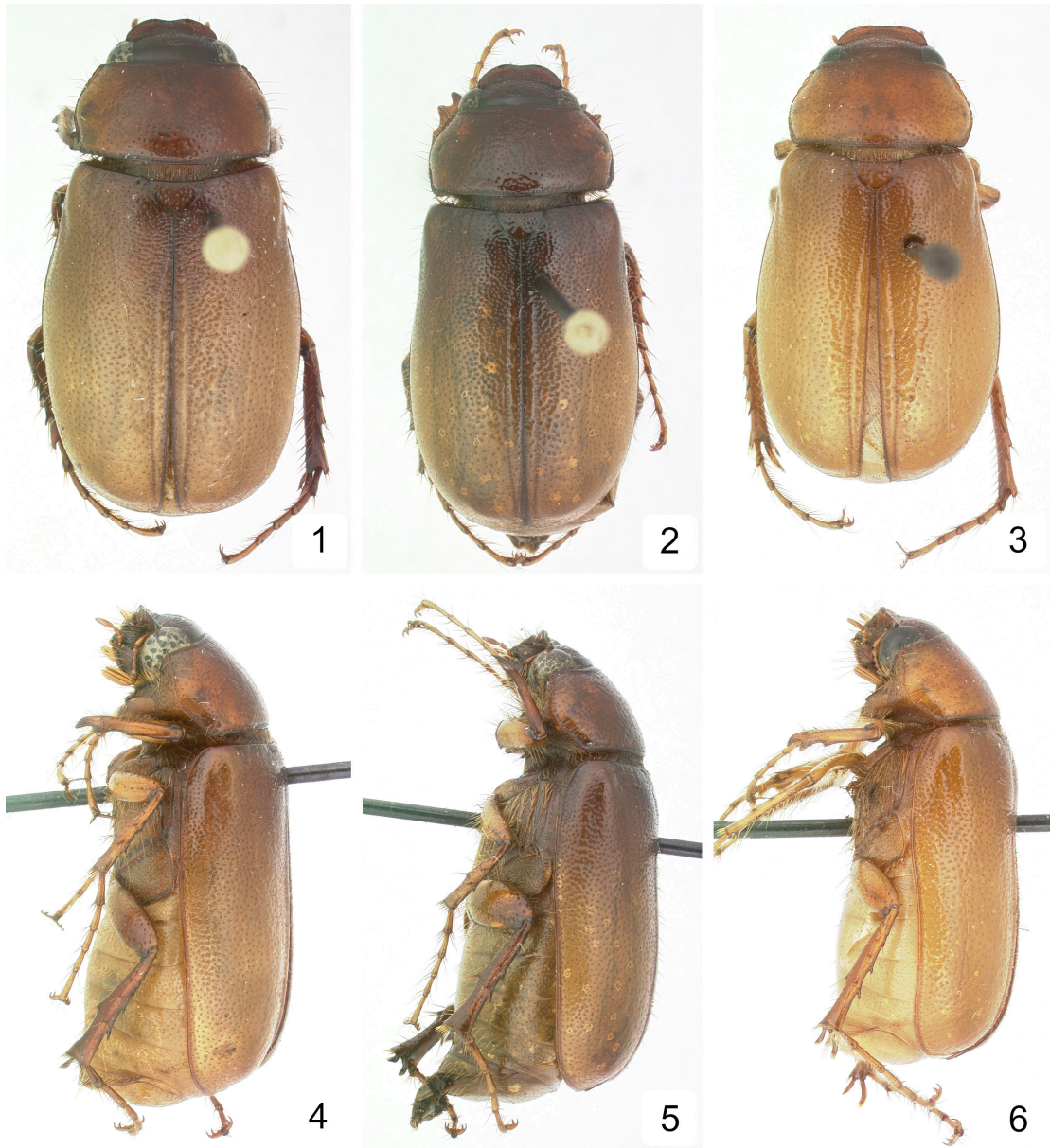
Results and Discussion

Phyllophaga (Cnemarachis) bobevelynorum Schnepf, new species

Figures 1, 2, 4, 5, 7–9, 11, 13, 15, 17, 19

Type material. Holotype ♂ (Fig. 1, 4, 9, 11, 13, 15, 17): “PUERTO RICO: Luquillo / N.F., El Verde Biol. / Sta. 7–11-IV-1993 / R.E. Woodruff / blacklight trap // [on red] HOLOTYPE / *Phyllophaga* / *bobevelynorum* / Schnepf, 2022” (FSCA).

Allotype ♀ (Fig. 2, 5, 7, 8): same data as holotype except “[on red] ALLOTYPE / *Phyllophaga* / *bobevelynorum* / Schnepf, 2022” (FSCA).



Figures 1–6. *Phyllophaga* habitus photographs. 1) Dorsal habitus of *P. bobevelynorum*, male holotype. 2) Dorsal habitus of *P. bobevelynorum*, female allotype. 3) Dorsal habitus of *P. adjuntas*, male holotype. 4) Lateral habitus of *P. bobevelynorum*, male holotype. 5) Lateral habitus of *P. bobevelynorum*, female allotype. 6) Lateral habitus of *P. adjuntas*, male holotype.

Paratypes: 17 with the same data as holotype (2 CMNC, 1 ♂, 1 ♀; 13 FSCA, 8 ♂, 5 ♀; 2 KESC, 1 ♂, 1 ♀); “PUERTO RICO: Caribbean / N.F., El Verde Field / Sta. bl trap, 27 May / 1994, R. Turnbow” (RHTC, 2 ♂); “PUERTO RICO: Carb- / bean N.F., El Verde / Field Sta., bl trap, 25 / May 1994, R. Turnbow” (RHTC, 1 ♂); “PUERTO RICO: Que- / brada Espiritu Santo / mv + bl, 26 May / 1994, R. Turnbow” (RHTC, 1 ♂).

All paratypes with an additional label “[on yellow] PARATYPE / *Phyllophaga* / *bobevelynorum* / Schnepf, 2022”.

Diagnosis. Head and pronotum dark reddish brown; base of elytra similarly colored but lightening posteriorly (Fig. 1, 4); head and pronotum glabrous, shiny, with moderately sized punctures fairly evenly spaced, well defined; clypeus distinctly but not deeply emarginate, apex moderately upturned (Fig. 1); frontoclypeal suture well defined and impressed; base of the elytra and elytral suture with sparse, erect setae; antennae with 9 antennomeres, antennal club slightly longer than scape.

Description. Holotype: Sex: male. Length: 16 mm; width across base of elytra: 7 mm, width at widest point of elytra: 9 mm. Dorsal surface shiny; head dark reddish brown; pronotum reddish brown, lighter laterally; base of elytra reddish brown, becoming lighter posteriorly (Fig. 1, 4). **Head:** Surface densely, coarsely punctate. Clypeus with apex reflexed, sinuate medially, densely punctate (Fig. 1); frontoclypeal suture well defined. Antennae with 9 antennomeres, club slightly longer than scape and about as long as pedicel and funicle combined. **Pronotum:** Glabrous; widest at middle; surface moderately punctate with well-defined punctures (Fig. 1). Lateral margins with erect setae, crenulate anteriorly, entire posteriorly. Posterior marginal bead well defined medially, becoming less distinct laterally. **Elytra:** Surface moderately to densely punctate, punctures denser basally and along suture, denser than those on pronotum (Fig. 1). Largely glabrous with some conspicuous erect setae basally and a few on disc, basal setae generally longer than discal setae. Striae poorly defined, obscure. **Legs:** Protibia with 3 teeth, 2nd tooth distinctly closer to apical tooth. Protarsomere 1 same length as apical protibial tooth. Meso- and metatibiae without medial carinae, with spines on lateral margin. Metatibial spurs unmodified, shorter spur $\frac{3}{4}$ length of longer spur; first metatarsomere intermediate in length between the two spurs. Claws symmetrical with medial triangular tooth, apex unmodified. **Venter:** Abdominal sternites shiny with scattered setae. Fifth abdominal sternite with small patch of darkened, sclerotized asperites medially, this patch appearing rough. Sixth abdominal ventrite with transverse carina, carina obsolete medially where a small longitudinal depression passes through it. **Pygidium:** Surface coarsely punctate with poorly defined punctures, these coalescing and giving a rugose appearance; glabrous, shiny; convex. **Male genitalia:** Symmetrical, parameres flattened anteriorly, elongate, parallel, creating a longitudinal opening for the median lobe (Fig. 13, 15). Median lobe elongate and curved downward at approximately 90 degrees; on either side of median lobe are two slender, acuminate chitinous processes that also curve downward (Fig. 9, 17).

Variation (n = 22). Male length: 14–16 mm, width across base of elytra: 6–7 mm; female length: 15–17 mm, width across base of elytra: 6–7 mm. Females (Fig. 2, 5) differ from males in having the abdominal segments more inflated; lacking asperites on the fifth abdominal sternite; sixth sternite with carina less pronounced and lacking medial depression; sixth sternite is more elongate and produced medially; pygidium is more elongate and less convex; protarsae are slightly shorter. Female genitalia are fairly standard for the genus, comprised of two sets of sclerotized plates with a series of 5–6 apical hairs each on the superior pair (Fig. 7–8).

Distribution. *Phyllophaga bobevelynorum* is currently known from the El Verde Field Station and a nearby locality in the El Yunque National Forest in northeastern Puerto Rico (Fig. 19).

Etymology. Before his passing, Robert (Bob) Woodruff came to me asking for assistance in naming a species after his late wife, Nina Evelyn Woodruff. Before we were able to start the project Dr. Woodruff passed away, so I am honoring them both by naming this species after the two of them.

Temporal data. All specimens were collected in April and May.

Remarks. This species can be distinguished from all other *Phyllophaga* occurring in Puerto Rico, except *Phyllophaga adjuntas* Saylor, by the anteriorly dark coloration fading posteriorly and differences in the genitalia. This species is most similar to *P. adjuntas* (Fig. 3, 6, 10, 12, 14, 16, 18) but differs externally by having the anterior tarsi slightly shorter and more robust. Although similar to *P. adjuntas* in being dark anteriorly and becoming lighter posteriorly, *P. bobevelynorum* is overall darker than *P. adjuntas*. The two can be easily distinguished using male genitalia.



Figures 7–12. *Phyllophaga* type specimens. 7) Genitalia of *P. bobelynorum*, female allotype, ventral view. 8) Genitalia of *P. bobelynorum*, female allotype, lateral view. 9) Sclerotized median lobe of genitalia of *P. bobelynorum*, male holotype, caudal view. 10) Sclerotized median lobe of genitalia of *P. adjunctas*, male holotype, caudal view. 11) Posterior tarsal claw of *P. bobelynorum*, male holotype. 12) *P. adjunctas*, holotype specimen labels.



Figures 13–18. *Phyllophaga* male genitalia, holotypes. 13) *P. bobvelynorum*, caudal view. 14) *P. adjuntas*, caudal view. 15) *P. bobvelynorum*, lateral view. 16) *P. adjuntas*, lateral view. 17) *P. bobvelynorum*, median lobe, lateral view. 18) *P. adjuntas*, median lobe, lateral view.

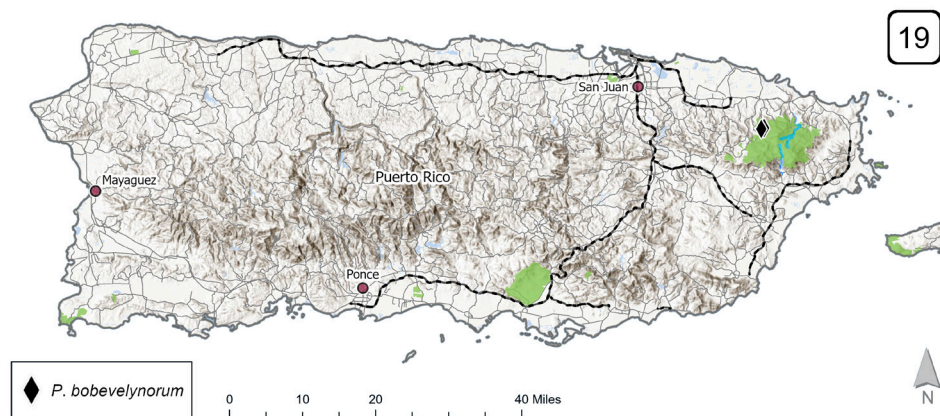


Figure 19. Distribution of *P. bobvelynorum* in Puerto Rico.

Checklist of the Species of *Phyllophaga* from Puerto Rico (synonyms are indented)

1. *Phyllophaga adjuntas* Saylor 1940: 312
2. *Phyllophaga apicalis* (Blanchard 1851: 131)
Phyllophaga insularis Smyth 1917b: 163
3. *Phyllophaga bovevelynorum* Schnepp, **new species**
4. *Phyllophaga crinitissima* More 1924: 105
5. *Phyllophaga denticulata* (Blanchard 1851: 137)
Phyllophaga citri Smyth 1917b: 159
Lachnosterna insulicola Moser 1918: 61
6. *Phyllophaga discalis* (Chapin 1935: 70)
7. *Phyllophaga guanicana* Smyth 1917b: 152
8. *Phyllophaga monana* (Moser 1921: 181)
9. *Phyllophaga plaei* (Blanchard 1851: 137)
Phyllophaga borinquensis Blackwelder 1944: 224
Phyllophaga portoricensis Smyth 1917b: 145
Lachnosterna portoricensis Moser 1918: 62
10. *Phyllophaga vandinei* Smyth 1917a: 68
Lachnosterna major Moser 1918: 59
11. *Phyllophaga wolcotti* Saylor 1940: 307
12. *Phyllophaga yunqueana* Chapin 1935: 70

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Literature Cited

- Blackwelder RE. 1944.** Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. United States National Museum Bulletin 185(2): 189–341.
- Blanchard CÉ. 1851.** Ordre des Coléoptères. p. 129–240. In: Milne-Edwards H, Blanchard CÉ, Lucas PH. Muséum d'Histoire Naturelle de Paris. Catalogue de la collection entomologique. Classe des Insectes. Gide and Baudry; Paris. 240 p.
- Chalumeau F. 1980.** Désignation de types de Scarabaeoides (Col.) néotropicaux et observations diverses. Nouvelle Revue de Entomologie 10: 79–96.
- Chalumeau F. 1983.** Les Coléoptères Scarabaeides des petites Antilles (Guadeloupe à Martinique) Taxonomie-ethologie-biogéographie. Editions Lechevalier S.A.R.L.; Paris. 293 p.
- Chalumeau F. 1985.** *Phyllophaga* Harris 1826 (Melolonthinae): Désignation de types et peuplement de Iles Sous-le-Vent (Antilles) (Coleoptera, Scarabaeidae). Nouvelle Revue Entomologique (N.S.) 2(1): 21–34.
- Chalumeau F. 1990.** *Phyllophaga* Harris 1826 des Antilles (Melolonthinae): espèce nouvelle, désignation de lectotypes et synonymies (Coleoptera, Scarabaeidae). Nouvelle Revue Entomologique (N.S.) [1989] 6(4): 333–340.
- Chapin EA. 1935.** New species of Scarabaeidae (Coleoptera) from Puerto Rico and the Virgin Islands. The Journal of the University of Puerto Rico 19(2): 67–71.
- Evans AV, Smith ABT. 2009.** An Electronic Checklist of the New World Chafers (Coleoptera: Scarabaeidae: Melolonthinae). Version 3. Available at <https://unsm-ento.unl.edu/SSSA/NW-Melo-v3.pdf> (Last accessed October 2021.)
- Medrano-Cabral S. 2006.** A taxonomic revision of the genus *Phyllophaga* Harris (Scarabaeidae: Melolonthinae) from Hispaniola, Puerto Rico and the Virgin Islands. MSc thesis, Montana State University, Bozeman, MT. Available at <https://scholarworks.montana.edu/xmlui/handle/1/1850> (Last accessed November 2021.)
- More JD. 1924.** *Phyllophaga crinitissima*. p. 101–105. In: Wolcott AB. Insectae Portoricensis. Journal of the Department of Agriculture of Puerto Rico [1923] 7: 1–312.

- Moser J. 1918.** Neue Arten der Gattungen *Lachnosterna* Hope und *Phytalus* Er. (Col.). Stettiner Entomologische Zeitung 79: 19–74.
- Moser J. 1921.** Neue Melolonthiden von Mittel- und Süd-Amerika. Stettiner Entomologische Zeitung 82: 48–73.
- Paulian R. 1947.** Scarabaeoidea. p. 17–84. In: Fleutiaux E, Legros C, Lepesme P, Paulian R. Fauna des empire Français. VII. Coléoptères des Antilles, Volume I. Muséum National d'Histoire Naturelle; Paris. 239 p.
- Saylor LW. 1940.** Ten new West Indian scarab beetles of the genus *Phyllophaga*, with two new names. Journal of the Washington Academy of Sciences 30(7): 305–314.
- Smith ABT, Paulsen MJ. 2015.** Ten new species of *Phyllophaga* Harris (Coleoptera: Scarabaeidae: Melolonthinae) from Cuba. The Coleopterists Bulletin 69(3): 435–452.
- Smyth EG. 1917a.** The white-grubs injuring sugar cane in Porto Rico. The Journal of the Department of Agriculture of Porto Rico 1(2): 47–92.
- Smyth EG. 1917b.** The white-grubs injuring the sugar cane in Porto Rico. The Journal of the Department of Agriculture of Porto Rico 1(3): 141–169.
- Woodruff RE, Sanderson MW. 2005 [2004].** Revision of the *Phyllophaga* of Hispaniola (Coleoptera: Scarabaeidae: Melolonthinae). Insecta Mundi 18: 1–154.

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