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## RESEARCH ARTICLE

# AN ANNOTATED CHECKLIST OF THE COLEOPTERA OF THE SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER: THE SCARABAEOIDEA

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## ABSTRACT

Forty-seven species of Scarabaeioidea are reported from two years of field work at the Smithsonian Environmental Research Center, Edgewater, Maryland. There were one Passalidae, three Geotrupidae, 41 Scarabaeidae, and two Trogidae.

**Keywords:** Biodiversity, insects, Maryland.

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## INTRODUCTION

The Scarabaeioidea contains about 35,000 described species (Ratcliffe, 2002). It consists of the families Geotrupidae Latreille (earth-boring dung beetles), Glaphyridae MacLeay (bumble bee scarab beetles), Glaresidae Kolbe (enigmatic scarab beetles), Hybosoridae Erichson (scavenging scarab beetles), inclusive of Ceratocanthidae White (pill scarab beetles), Lucanidae Latreille (stag beetles), Ochodaeidae Mulsant and Rey (sand-loving scarab beetles), Passalidae Leach, (bess beetles), Pleocomidae LeConte (rain beetles), Scarabaeidae Latreille (scarab beetles), and Trogidae MacLeay (hide beetles) (Bouchard et al., 2011).

The Passalidae is a family of beetles known variously as bessbugs, bess beetles, betsy beetles, patent leather beetles or horned passalus beetles. Nearly all of the approximately 500 species are tropical. They are subsocial beetles that live in groups within rotting logs or stumps. The beetles will excavate tunnel systems within rotting wood where the females then lay their eggs. They care for their young by preparing food for them and helping the larvae construct the pupal case. Both adults and larvae must consume adult feces which have been further digested by microflora for a

time. There are four species known from the United States (Schuster, 2002). Staines (1984[1986]) reports one species from Maryland.

The Geotrupidae are strong burrowers. For most species the term dung beetle is a misnomer. Most adults and larvae feed on fungi or appear not to feed. Where the biology is known, the adults invariably furnish the larval food. Most of the species dig nearly vertical burrows; at the bottom they construct one to four cells and provision them with food. The larval food for most species in the tribe Geotrupini consists of dead leaves and other surface litter; however, in two or three species of *Geotrupes* and at least one of *Mycotrupes*, the larval food consists of cow or horse dung. In the tribe Bolboceratini, adults feed on fungi, some are attracted to fermenting malt, and others seemingly do not feed. In the genera *Bolboceras*, *Bolbocerosoma*, and *Eucanthus*, larval food consists of very finely divided humus occurring near the ground surface. This is transported down the burrow and formed into a brood cell. Development is usually rapid, taking approximately 60 days from egg to adult. In many species, at least a few adults live for more than a year, so there is some overlapping of generations. In the case of *Bolboceras*, eggs, larvae, pupae, and adults have all been taken together in a series of branching burrows. As is true for the entire subfamily, after the initial provisioning, the adults do not tend the young. All the species in this subfamily, adults and at least some larvae (*Geotrupes*), are able to produce sound, but what role this serves, if any, remains unknown (Howden, 1955, 1964).

Geotrupidae contains 11 genera and 62 species and subspecies known for the U. S. (Howden, 1984). Staines (1984[1986]) reported 19 species from Maryland.

The Scarabaeidae are a biologically diverse family. Species feed on plants, carrion, dung, fungi, pollen, or are decaying wood feeders, are termite, ant, or vertebrate nest associates. In the Neotropics the dung and carrion species of the subfamily Scarabaeinae have been shown to be excellent indicator species assemblages of overall biodiversity (Favila & Halffter, 1997; Spector, 2006). The group has not been evaluated as an indicator species assemblage in temperate areas. A number of introduced *Onthophagus* are widespread in the United States and have become the dominant species where found (Hoebeke & Buecke, 1997). This would indicate a potential negative impact on the native species competing for dung, however, there has been no study documenting this.

Species can be collected in baited pitfall traps, in Malaise traps, in flight-intercept traps, at black light, by head lamping, under bark, in dung, in fungi, and by sweeping and beating foliage.

The 1700 North American species of Scarabaeidae are fairly well studied (Ratcliffe et al., 2002); a few genera need revision. Staines (1984[1986]), Glaser (1987), and Simons & Price (2019) record 215 species from Maryland.

The Trogidae, sometimes called hide beetles, have a distinctive warty or bumpy appearance. They are scavengers and are among the last species to visit and feed on carrion and are most often found on the dry remains of dead animals. Both adults and larvae eat feathers, fur, and skin. Some species are found in bird and mammal nests. Details of the life histories of many species are poorly known, since many are specialized to particular types of nests. They are often overlooked by predators and collectors due to their behaviors of covering their bodies with soil and becoming motionless when disturbed (Vaurie, 1955).

The family Trogidae, found worldwide, includes about 300 species contained in five genera; 37 species are found in the U.S. (Vaurie, 1955). Staines (1984[1986]) reported 19 species from Maryland.

## MATERIALS AND METHODS

The Smithsonian Environmental Research Center (SERC) [38°33'17.57"N; 76°33'14.29"W] consists of approximately 1,477 ha of hardwood-dominated forest, ponds, creeks, rivers, tidal marshes, and 19.3 km of protected shoreline along the Rhode River and upper Chesapeake Bay in Anne Arundel County, Maryland (SERC, 2018). Forests on the main campus of SERC can be broadly classified into three main types: (1) the majority (~85%) is a Tulip-poplar (*Liriodendron tulipifera* L., Magnoliaceae) association; (2) a moist lowland assemblage, comprised of American sycamore (*Platanus occidentalis* L., Platanaceae), ash (*Fraxinus* spp., Oleaceae), elms (*Ulmus* spp., Ulmaceae), river birch (*Betula nigra* L., Betulaceae), and other woody vegetation along freshwater streams; and (3) a somewhat xeric assemblage that fringes tidal marshes, consisting of chestnut oak (*Quercus prinus* L.), white oak (*Quercus alba* L., Fagaceae), black gum (*Nyssa sylvatica* Marshall, Nyssaceae), mountain laurel (*Kalmia latifolia* L., Ericaceae), blueberries (*Vaccinium* spp., Ericaceae) and other woody vegetation.

Like much of the eastern U.S., SERC's forest age and structure reflect historical agricultural activities and local history. SERC's main campus was mostly fallow from the end of the Civil War to approximately 1915, when it was used as a dairy farm with grazing pastures and fields for feed production until 1945. Thus, the majority of SERC's contemporary forests are from 70-150 years old (McMahon et al., 2010; Higman et al., 2016).

Freshwater inputs into the Rhode River are primarily from the North Fork Muddy Creek, South Fork Muddy Creek, and their lower order streams. These streams are associated with several swamps, beaver impoundments, and seasonal wetlands which range from small, tannin-rich, ephemeral wetlands, to larger and clear-water permanent ponds.

On the opposite side of the Rhode River the BiodiversiTREE plots are about 30 acres containing 24,000 trees of 16 species of ecologically important deciduous trees planted in 75 plots. These plots were established over 30 years ago (SERC, 2018). In the annotated species list this area is referred to as Zones 5 and 6.

The goal of this project was to inventory the Coleoptera of the SERC. Collecting techniques include visual survey followed by sweeping or beating the vegetation of the area. Other collecting techniques used were pitfall traps (both baited and unbaited), head lamping, black lighting, and checking lights around buildings on the main campus.

Field work was conducted from 11 May to 24 October 2018, 30 March to 23 October 2019, and 19-20 March 2020. Voucher specimens are deposited in the SERC and the Department of Entomology Collection, Natural History Museum, Smithsonian Institution.

## RESULTS

### Family Passalidae

*Odontotaenius disjunctus* (Illiger) was found in decaying logs (Staines, 1984[1986]). Specimens were taken under bark on 30 May 2018 along Java History Trail, on 4 June 2018 along the Discovery Trail, on 10 April 2019 on Hog Island and Fox Point, and at black light on 23 June 2018 at the Reed Education Center.

## Family Geotrupidae

*Eucanthus lazarus* (Fabricius) has been collected in pastures, at lights (Staines, 1984[1986]) and in flight intercept traps (Kriska & Young, 2002). Specimens were taken head lamping on 17 May 2019 along Connector Trail between Fox Point Road and Java History Trail.

*Geotrupes blackburnii* (Fabricius) adults dig burrows which they pack with dung or leaf litter for the larvae (Howden, 1955); collected from dung, carrion, decaying fungi, chicken feathers, salt trap, and at light (Staines 1984[1986]). Specimens were collected off raccoon roadkill on 30 April 2019 along Contees Wharf Road.

*Geotrupes horni* Blanchard has been collected in fungi, and adult burrows were found under fungi and cow dung (Howden, 1955); in dung, at light (Staines, 1984[1986]); hand collected in flight and in flight intercept traps (Kriska & Young, 2002). Specimens were collected in a horse dung baited pitfall trap on 16-17 April 2019 near the water tower.

## Family Scarabaeidae

*Aidophus parvus* (Horn) is a detritivore (Gordon, 1983). Specimens were collected in deer dung on 24 April 2019 in the field at the intersection of Contees Wharf and Dock Roads.

*Anomala marginata* (Fabricius) is found in pastures (Staines, 1984[1986]). Specimens were taken at black light on 27 June 2019 at Back Road opposite the NEON tower.

*Anomala orientalis* (Waterhouse) is an introduced species whose larvae feed on the roots of grasses and other plants (Staines, 1986). Specimens were taken at black light on 23 June 2018 at Reed Education Center.

*Ataenius abditus* (Haldeman) has been taken at light (Staines, 1984[1986]). Specimens were taken at black light on 26 June 2019 in the field opposite Sellman House.

*Ataenius figurator* Harold has been found at light, in sheep manure, and carrion (Harpootlian, 2001). Specimens were taken at black light on 20 May 2019 at Frog Haven.

*Ataenius spretulus* (Haldeman) has been taken in dung, fungi, on dead cicada, and at light (Staines, 1984[1986]); hand collected in flight from cultivated grasses (sports fields, golf courses, lawns) (Kriska & Young, 2002). Specimens were taken at black light on 26 July 2019 at Java Trail and boardwalk and 20 March 2020 near Mathias Lab.

*Ataenius strigatus* (Say) has been taken in dung and carrion (Staines, 1984[1986]); at light, in pitfall traps baited with human dung or pig dung, sifted from leaf litter, and hand collected in flight, at dusk over old fields (Kriska & Young, 2002). Specimens were taken at black light on 23 June 2018 at the Reed Education Center.

*Ateuchus histeroides* Weber has been collected in dung, fungi, dead fish, and at light; it is most common in wooded areas (Staines, 1984[1986]). Specimens were taken at black light on 25 May 2019 at the intersection of Back Road and 11-6.

*Blackburneus stercocorsus* (Melsheimer) has been collected in dung and at lights (Staines 1984[1986]); in pitfall traps baited with human or pig dung, and in leaf litter near a fallen tree in mesic hardwood forest (Kriska & Young, 2002). Specimens were taken at black light on 26 June 2019 in the field opposite Sellman House.

*Calamosternus granarius* (Linnaeus) has been collected in dung, fungi, grass, and at lights (Staines 1984[1986]); in pitfall traps baited with human or pig dung, in flight intercept traps, on a dead raccoon and a dead deer, and among beach debris on the shore of Lake Michigan (Kriska & Young, 2002). Specimens were taken at black light on 27 June 2019 at Back Road opposite the NEON tower.

*Cyclocephala borealis* Arrow has been collected on turf, pigweed, and at light (Staines, 1984[1986]). Specimens were taken at black light on 23 June 2018 at the Reed Education Center and on 26 June 2019 in the field opposite Sellman House.

*Dynastes tityus* Linnaeus feeds in decaying logs and is taken at light (Glaser, 1976). A single male was taken at black light on 12 August 2019 along Back Road.

*Dyscinetus morator* (Fabricius) has been taken at lights and remains in the area hiding under debris during the day (Woodruff, 1970), feeds on rice (*Oryza sativa* L., Poaceae) (Anonymous, 1953), pangola grass (*Digitaria decumbens* Stent., Poaceae) pastures (Anonymous 1956), caladium bulbs (*Caladium x hortulanum*, Araceae), cranberry (*Vaccinium macrocarpon* Ait., Ericaceae) (Woodruff, 1970), corn (*Zea mays* L., Poaceae) (Anonymous, 1980), carrot (*Daucus carota* L., Apiaceae), radish (*Raphanus sativus* L., Brassicaceae), lettuce (*Lactuca sativa* L., Asteraceae) (Foster et al., 1986), waterhyacinth (*Eichhornia crassipes* (Mart.) Solm, Pontederiaceae) and is associated with wet soils and marsh areas (Buckingham & Bennett, 1989). Specimens were taken at black light on 20 May at Frog Haven, on 25 May 2019 at the intersection of Back Road and 11-6, on 12 August 2019 along Back Road, and on 20 March 2020 near Mathias Lab.

*Euphoria herbacea* (Olivier) has been collected on flowers of several plants and on ripening fruit (Staines, 1984[1986]). Specimens were taken sweeping vegetation in the forest plots of Zone 5.

*Eupleurus subterraneus* (Linnaeus), an introduced species, is a generalist (Gordon, 1983). Specimens were taken at black light on 27 May 2019 on Connector Trail between Fox Point Road and Java History Trail.

*Germarostes aphodioides* (Illiger) has been collected under bark and at light (Staines, 1984[1986]). Specimens were taken at black light on 20 May 2019 at Frog Haven and on 25 May 2019 at the intersection of Back Road and 11-6.

*Labarrus pseudolividus* (Balthasar) has been collected at light, in sand, in sheep dung, and in carrion (Harpootlian, 2001). Specimens were taken at black light on 27 May 2019 along Connector Trail between Fox Point Road and Java History Trail.

*Maladera castanea* (Arrow), an introduced species, has been collected on the foliage of many plants and at lights (Staines, 1984[1986]). Specimens were taken at black light on 23 June 2018 at Reed Education Center, on 20 May 2019 at Frog Haven, on 25 May 2019 at the intersection of Back Road and 11-6, on 26 June 2019 in the field opposite Sellman House, and by head lamping on 26 June 2019 along Contees Wharf Road.

*Onthophagus hecate* (Panzer) has been collected in dung, fungi, carrion, rotten vegetables, malt traps, and at light (Staines, 1984[1986]); in pitfall traps baited with carrion or human or pig dung, and in flight intercept traps (Kriska & Young, 2002). Specimens were collected in horse dung baited pitfall traps on 16-17 April 2019 near the water tower and 11 May 2019 in the meadow in front of Mathais Lab, by sweeping vegetation on 23 April 2019 in Zone 5, on 9 May 2019 on a dead mole at Sellman House, and by sweeping vegetation on 1 May 2019 near Reed Education Center.

*Onthophagus taurus* (Schreber), an introduced species, has been collected in cow and horse dung (Harpootlian, 2001). Specimens were taken in deer dung on 7 May 2019 along Java Trail.

*Oscarinus rusicola* (Melsheimer) has been collected in dung and at light (Staines, 1984[1986]); in pitfall traps baited with human or pig dung, and in flight intercept traps (Kriska & Young, 2002). Specimens were taken in a horse dung baited pitfall trap on 11 May 2019 in the meadow in front of Mathias Lab and at light on 19 June 2019 around Mathias Lab.

*Oscarinus silvanicus* (Cartwright) has been collected in deer dung (Staines, 1984[1986]). Specimens were collected in deer dung on 24 April 2019 in the field at the intersection of Contees Wharf and Dock Roads.

*Pelidnota punctata* (Linnaeus) has been collected on grape vine (*Vitis*, Vitaceae) and at light (Staines, 1984[1986]); three adults were reared from pupae found in an unidentified, very decayed tree stump (Kriska & Young, 2002). Specimens were taken at black light on 27 June 2019 at Back Road opposite the NEON tower.

*Phanaeus vindex* MacLeay has been collected in cow dung (Staines, 1984[1986]); in pitfall traps baited with human or pig dung (Kriska & Young, 2002); in horse dung (Rentz & Price, 2016; in carrion and rotting fruit (Price et al., 2012). A single male was taken in deer dung on 16 May 2019 along Contees Wharf Road.

*Phyllophaga anxia* (LeConte) has been collected from the leaves of beech (*Fagus*), birch (*Betula*), dogwood (*Cornus*, Cornaceae), elm (*Ulmus*), walnut (*Juglans*, Juglandaceae), and willow (*Salix*, Salicaceae) (Luginbill & Painter, 1953); larvae were the only species found in Wisconsin cranberry beds (Katovich et al., 1998); at UV light and in turf grasses and irrigated silvicultural sites (balsam fir and white pine plantations) (Kriska & Young, 2002). Specimens were taken at black light 25

May 2019 at the intersection of Back Road and 11-6 and on 27 May 2019 on Connector Trail between Fox Point Road and Java History Trail.

*Phyllophaga fraterna* Harris has been collected from the leaves of beech (*Fagus*), dogwood (*Cornus*), elm (*Ulmus*), sycamore (*Platanus*), walnut (*Juglans*), and willow (*Salix*) (Luginbill & Painter, 1953). Specimens were collected by sweeping vegetation on 7 May 2019 along Java Trail and at black light on 20 May 2019 at Frog Haven.

*Phyllophaga futilis* (LeConte) has been collected from the leaves of beech (*Fagus*), birch (*Betula*), elm (*Ulmus*), maple (*Acer*, Aceraceae), mulberry (*Morus*, Moraceae), walnut (*Juglans*), and willow (*Salix*) (Luginbill & Painter, 1953); at light; adults are common in gardens and at porch lights (Kriska & Young, 2002). Specimens were taken at black light on 12 August 2019 along Back Road.

*Phyllophaga gracilis* (Burmeister) has been collected from the leaves of beech (*Fagus*), elm (*Ulmus*), sycamore (*Platanus*), walnut (*Juglans*), and willow (*Salix*) (Luginbill & Painter, 1953); at UV light and in flight intercept traps, in oak barrens and savanna habitat (Kriska & Young, 2002). Specimens were taken at black light on 12 August 2019 along Back Road.

*Phyllophaga hirsuta* (Knoch) has been collected from the leaves of beech (*Fagus*), dogwood (*Cornus*), maple (*Acer*), rose (*Rosa*, Rosaceae), and walnut (*Juglans*) (Luginbill & Painter, 1953). Specimens were taken at black light on 23 June 2018 at Reed Education Center.

*Phyllophaga hirticula* (Knoch) has been collected from the leaves of beech (*Fagus*), birch (*Betula*), elm (*Ulmus*), honeysuckle (*Lonicera*, Caprifoliaceae), magnolia (*Magnolia*, Magnoliaceae), rose (*Rosa*), and willow (*Salix*) (Luginbill & Painter, 1953); at light (Kriska & Young, 2002). Specimens were taken at black light on 23 June 2018 at Reed Education Center.

*Phyllophaga implicata* (Horn) has been collected from the leaves of beech (*Fagus*), dogwood (*Cornus*), elm (*Ulmus*), sycamore (*Platanus*), walnut (*Juglans*), and willow (*Salix*) (Luginbill & Painter, 1953); at light (Kriska & Young, 2002). Specimens were taken by sweeping vegetation on 30 April 2019 in Zone 6.

*Phyllophaga latifrons* (LeConte) has been collected from the leaves of beech (*Fagus*) and walnut (*Juglans*) and in Japanese beetle traps (Luginbill & Painter, 1953). Specimens were taken at black light on 23 June 2018 at Reed Education Center.

*Phyllophaga micans* (Knoch) has been collected from the leaves of beech (*Fagus*), birch (*Betula*), dogwood (*Cornus*), elm (*Ulmus*), maple (*Acer*), walnut (*Juglans*), and willow (*Salix*) (Luginbill & Painter, 1953). Specimens were taken at light on 11 May 2018 at Mathais Lab, and at black light on 20 May 2019 at Frog Haven, on 25 May at the intersection of Back Road and 11-6, on 27 May 2019 on Connector Trail between Fox Point Road and Java History Trail, and on 17 June 2019 along Java History Trail.



*Phyllophaga quercus* (Knoch) has been collected from the leaves of beech (*Fagus*), elm (*Ulmus*), magnolia (*Magnolia*), walnut (*Juglans*), and willow (*Salix*) (Luginbill & Painter, 1953). Specimens were taken at light on 26 September 2019 around Mathais Lab.

*Popillia japonica* Newman, an introduced species, feeds on the roots of plants as larvae and on foliage of numerous plants as adults (Staines, 1984[1986]). Specimens were taken by sweeping vegetation and by visual survey on 26 June 2018 in forest plots of Zone 6 and on 19 July 2018 along Contees Wharf Road.

*Serica carolina* Dawson has been collected in decaying logs, leaf mold, and at light (Staines, 1984[1986]). Specimens were taken beating vegetation on 7 June 2019 along Java History Trail.

*Serica intermixta* Blatchley has been taken at UV light, in flight intercept and unbaited Lindgren funnel traps, and under leaf litter in a sandy blow (Kriska & Young, 2002). Specimens were taken at black light on 27 May 2019 on Connector Trail between Fox Point Road and Java History Trail.

*Serica opposita* Dawson has an unknown biology. Specimens were taken at black light on 20 May 2019 at Frog Haven and on 25 May at the intersection of Back Road and 11-6.

*Serica* sp. A single female specimen was taken at black light on 27 May 2019 on Connector Trail between Fox Point Road and Java History Trail. Females of the genus *Serica* are not identifiable without associated males.

*Stenothorax badipes* (Melsheimer) has been collected on a red squirrel carcass and at light (Staines 1984[1986]); in a gray squirrel nest in a hollowed, fallen tree and in tree hole leaf litter in oak barrens and savanna (Kriska & Young, 2002). Specimens were taken at black light on 23 June 2018 at Reed Education Center.

*Tomarus gibbosus* (DeGeer) has been collected on plant roots and at light (Staines, 1984[1986]). Specimens were taken beating vegetation on 1 June 2019 near Reed Education Center.

*Tomarus relitcus* (Say) has been collected under rubbish and at lights (Staines, 1984[1986]). Specimens were taken at black light on 23 July 2019 along Contees Watershed Trail and on 26 July 2019 at Java History Trail and boardwalk.

*Valgus canaliculatus* (Olivier) feed on the nectar of flowers (Ritcher, 1958); have been collected from beech (*Fagus* sp.), buckthorn (*Ceanothus* sp., Rhamnaceae), dogwood (*Cornus* sp.), hawthorn (*Crataegus* sp., Rosaceae) (Blatchley, 1910), and mock orange trees (*Philadelphus* sp., Hydrangeaceae) (Ritcher, 1966). Adults have been observed on honeysuckle (*Lonicera* sp.), meadowsweet (*Spiraea* spp., Rosaceae), goat's beard (*Aruncus* sp., Rosaceae), blackberry (*Rubus* sp., Rosaceae), oswego tea (*Monarda didyma* L., Lamiaceae), oxeye daisy (*Chrysanthemum leucanthemum* L., Asteraceae), Queen Anne's lace (*Daucus carota* L., Apiaceae), wild hydrangea (*Hydrangea arborescens* L., Hydrangeaceae), yarrow (*Achillea millefolium* L., Asteraceae), hickory (*Carya* sp., Juglandaceae), oak and white oak (*Quercus* sp. and *Quercus alba* L.), southern magnolia (*Magnolia grandiflora* L.), and pine and loblolly pine (*Pinus* sp. and *Pinus taeda* L.,

Pinaceae) (Jameson & Swoboda, 2005). Specimens were taken from flowers on 5 June 2018 at the intersection of Contees Wharf and Dock Roads.

*Xyloryctes jamaicensis* (Drury) has been collected in leaf mold and at light (Staines, 1984[1986]); Stephan (1967) observed that adults feed and oviposit on or near the roots of white ash trees, *Fraxinus americana* L., usually in more sandy soil. A single specimen was taken at light on 26 September 2019 along Dock Road.

### **Family Trogidae**

*Trox aequalis* Say has been found in bird and mammal nests (Vaurie, 1955). A single specimen was taken at black light on 20 March 2020 near Mathias Lab.

*Trox hamatus* Robinson has been collected in carrion, in mammal nests, feathers, and at light (Vaurie, 1955); in flight intercept traps and pitfall traps baited with carrion or pig dung/malt/molasses (Kriska & Young, 2002). A single specimen was taken at black light on 27 May 2019 on Connector Trail between Fox Point Road and Java History Trail.

## **DISCUSSION**

Most inventory work on Maryland Scarabaeoidea has focused on the dung beetles (Price et al., 2012; Nemes & Price, 2015; Rentz & Price, 2016; Simons et al., 2018; Simons & Price, 2019). Our results of 14 dung associated species is comparable to the 19 species found in two sites in Wicomico and Worchester Counties (Price et al., 2012), 15 species on Assateague Island, Worchester County (Rentz & Price, 2016), and 22 species at seven sites on Maryland's eastern shore (Simons et al., 2018).

The only published inventory of Maryland Scarabaeoidea is Fritzler & Strazanac (2012) from Catoctin Mountain Park, Frederick County. They found five species of Geotrupidae, 17 of Scarabaeidae, and one Trogidae using pitfall traps.

One surprising result was the lack of any Lucanidae. Larvae of this small family are found in damp, decaying wood and the adults are attracted to lights (Milne, 1933; Hoffman, 1937; Mathieu, 1969). We did much work on decaying wood and black lighting in various parts of SERC but obtained none of the eight species known from Maryland (Staines, 1984[1986]).

Our results of 47 species show a healthy Scarabaeoidea fauna at SERC. The three Geotrupidae and two Trogidae are comparable to Fritzlar & Strazanac (2012). The increased number of Scarabaeidae reflect the varied collecting methods employed in the SERC survey.

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