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RESEARCH ARTICLE

AN ANNOTATED CHECKLIST OF THE COLEOPTERA OF THE SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER: THE CURCULIONOIDEA

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ABSTRACT

A three year inventory at the Smithsonian Environmental Research Center, Edgewater, Maryland resulted in 51 Curculionoidea species representing four families (Anthribidae- 3 species, Brentidae- 4 species, Curculionidae- 43 species, and Ithyceridae- 1 species).

Keywords: Biodiversity, insects, Maryland.

INTRODUCTION

It is difficult to generalize the Curculionoidea (weevils, snout beetles, etc.). Most weevil and snout beetles are easily identified by an extended "snout" (rostrum). A few groups within this superfamily, most notably the bark beetles, lack this feature. All but the primitive weevils have elbowed antennae, extending from the snout. Nearly all adult weevils and snout beetles feed on plants, though they vary greatly in their preferences for eating stems, leaves, seeds, roots, flowers, or fruits.

The Anthribidae (fungus weevils) comprise over 4,000 species and have a worldwide distribution. They are primitive weevils characterized by straight antennae, very broad flat rostrum, exposed pygidium, and pronotal pubescence that is directed anteriorly (Valentine, 2002). Like Nemonychidae, the adults possess a separate labrum and clypeus, unlike other Curculionoidea where these two parts of the head are fused together. Adults feed on the pollen of larval host plants

or, in fungivorous species, on the fungi in which the larvae develop (Valentine, 2002). The Maryland Biodiversity Project (MSP) (2020) reports seven species from Maryland.

The Brentidae (straight-snouted weevils and pear-shaped weevils) are represented by six subfamilies in North America one of which was found at SERC. The Apioninae are small pear-shaped weevils recognized by a long cylindrical trochanter with the femur attached at its apex. It contains approximately 140 species in North America (Anderson & Kissinger 2002). The Maryland Biodiversity Project (MSP) (2020) reports eight species from Maryland.

The Ithyceridae (New York Weevil) contains a single species recognized by its large size (12–18 mm), distinct pubescence, and straight antennae (Anderson, 2002a). This family is included in the Brentidae by some authors (Oberprieler et al., 2007). This family is not mentioned in the MBP database (2020).

The Curculionidae (true weevils, and snout, bark, and ambrosia beetles) are one of the most diverse beetle families in the world, following perhaps only the Staphylinidae (rove beetles) or Carabidae (ground beetles). More than 60,000 species have been described worldwide (Arnett et al., 2002). Eighteen subfamilies occur in the Nearctic. The Curculionidae are recognized by the combination of their elongate rostrum with mouthparts that are situated at the apex and by their geniculate antennae with a compact antennal club, however some subfamilies, especially Scolytinae and Platypodinae, have the rostrum reduced and not markedly produced anteriorly (Anderson, 2002b). The Maryland Biodiversity Project (MSP) (2020) reports 236 species from Maryland.

There has been little inventory work on middle Atlantic states Curculionoidea. Staines (1982) reported three species of Platypodinae (Curculionidae) from Maryland. Rabaglia (2003) reported 110 species of Scolytinae (Curculionidae) from Maryland and 64 species from Delaware (Rabaglia & Valenti, 2003). Brown (2008) reported 59 Curcurlionoidea species collected since 1901 from Plummers Island, Maryland (Montgomery County). Evans (2008) reported 30 Curculionoidea species from a 30 hour bioblitz at Potomac Gorge (Maryland and Virginia): Anthribidae- 3, Brentidae- 1, and Curculionidae- 24. Steury et al. (2020) reported 135 Curculionoidea from a 21 year inventory using nine collecting methods at George Washington Memorial Parkway (Fairfax County, Virginia).

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, 19-20 March 2020, and 26 August to 31 October 2020. Two Malaise traps were operated for 72 hour periods in May and June 2020. Voucher specimens are deposited in the SERC and the Department of Entomology Collection, Natural History Museum, Smithsonian Institution.

The classification used follows Anderson (2002 a, b), Anderson & Kissinger (2002), and Valentine (2002). Identifications were made by the senior author. The major references used were Blatchley & Leng (1916), Downie & Arnett (1996), Ciegler (2010), Kissinger (1968), and Valentine (1998). Generic revisions where used whenever available. When possible, identifications were confirmed by comparison with authoritatively identified material in the Entomology Collection, Smithsonian Institution.

RESULTS

Family Anthribidae

Anthribus nebulosus Forster preys on, and is a parasitoid of, scale insects (Hemiptera: Coccidae and Kermesidae). It occurs commonly in deciduous forests, spruce forests, orchards, and on ornamental trees infested with scale insects (Hoebeke & Wheeler, 1991). It has been recorded from various trees, including Colorado blue spruce (*Picea pungens* Engelm.), white spruce (*P. glauca* (Moench.) Voss)), Norway spruce (*P. abies* (L.) H. Karst) [Pinaceae], oak (*Quercus* s,pp.) American basswood (*Tilia americana* L., Malvaceae) (Hoebeke & Wheeler, 1991; Gønget, 2003), can be found generally on scale insect-infested plants. Adults have also been found on flowers of midland hawthorn (*Crataegus laevigata* (Poir.) DC, Roseaceae); they have been recorded to overwinter in bark cracks or in the empty ovisacs of scale insects (Gønget, 2003). This species is reported to eat a hole in the semisoft exoskeleton of a female scale insect and then lay an egg inside the brood chamber of the scale, closing the wound with a secretion (Howden, 1992). Oviposition begins in May shortly after oviposition by the scale insects. The adult beetle lays one egg in the ovisac of the female scale insect and there the larva develops. Pupation takes place in June-July inside the ovisac, and adults emerge a few weeks after and either feed on honeydew or the eggs and remains of other scale insects (Gønget, 2003). This species was intentionally introduced to the eastern United States in the late 1970's to control scale insects that were considered pest species,

though some authors speculate they were introduced as early as the late 19th century (Hoebeke & Wheeler, 1991). In Europe, 15 scale insect species have been recorded as prey of *A. nebulosus*, three of which are considered economically significant species in the United States: *Parthenolecanium corni* (Bouche), *Physokermes hemicryphus* Dalman (Coccidae), and *Eulecanium tiliae* Linnaeus (Kermesidae) (Hoebeke & Wheeler, 1991). Specimens were taken sweeping vegetation in Zone 5 on 23 April 2019 and in a Malaise trap along the woods margin opposite Sellman House from 1-3 May 2020.

Euparius marmoreus (Olivier) is generally associated with fungi and dead oaks (*Quercus* spp.) (Anderson, 1992). Specifically, it is associated with polypore fungi in the following genera: *Trametes, Megasporoporia, Trichaptum, Phlebia, Panis, Pereniporia* [Polyporaceae] (Valentine, 1998). Specific species include *Megaspoporia setulosa* (Henn.) Rajchenb., *Trichaptum biforme* (Fr.) Ryvarden, *Trichaotum abietinus* (Dicks.) Ryvarden, *Trichaptum sector* (Ehrenb.) Kreisel (family incerte sedis), *Phlebia hydnoides* Schwein. (Meruliaceae), *Panis rudis, Pereniporia medullapanis* (Jacq.) Donk, *Trametes hirsutus* (Wulfen) Lloyd, and *T. versicolor* (L.) Lloyd (Valentine, 1998; Bloem et al., 2002). In Wisconsin, it has been found in polypore fungi on fallen dead logs of big toothed aspen (*Populus grandidentata* Michaux., Salicaceae), on the underside of *Trametes hirsutes*, and in *Stereum*-infested dead oak branches (Janicki & Young, 2017). Two specimens were taken at black light at Mathais Lab on 20 March 2020.

Toxonotus cornutus (Say) has been found boring in persimmon (*Diospyrus* sp., Ebenaceae), and has been collected from *Prosopis* (Fabaceae) and oak seedlings (*Quercus*) (Valentine, 1998). A single specimen was taken at black light at Mathais Lab on 20 March 2020.

Family Brentidae
Subfamily Apioninae

Ichnopterapion virens (Herbst) is a pest of *Trifolium* sp. (Fabaceae), with adults feeding on the foliage while larvae mine the petioles, stems, root-crowns, and roots. This species was introduced from Europe. (Hoebeke et al., 2000). Specimens were taken sweeping vegetation on 23 April 2019 in Zone 6.

Neapion herculanum (Smith) has been taken on *Viburnum* (Caprifoliaceae) (Blatchley & Leng, 1916); larvae develop in the berries of *V. dentatum* L. (Kissinger, 1963). Specimens were taken sweeping vegetation in the meadow in front of Mathais Lab on 7 September 2019.

Trichapion patruele (Smith) has been collected on the flowers of *Stylophorum diphyllum* Michx. (Papaveraceae), on hazel (*Corylus* sp., Betulaceae), sweeping and beating vegetation (Blatchley & Leng, 1916); the host plant is *Apios americana* Medic. (Fabaceae), larvae develop in the flower buds and the adults causes a speckling of the leaves, numerous adults have been collected from *Strophostyles* (Fabaceae), (Kissinger, 1968). Specimens were taken by sweeping vegetation on 23 April 2019 at Frog Haven.

Trichapion rostrum (Say) larvae breed in the seeds of *Baptisia leucantha* T. & G. (Fabaceae) (Blatchley & Leng, 1916); larvae develop in the seed pods of *B. tinctoria* (L.) R. Br. (Kissinger,

1968). Specimens were taken sweeping vegetation on 6 June 2018 around the pond at the main parking lot near Mathais Lab.

Family Curculionidae
Subfamily Baridinae

Aulacobaris anthracina (Boheman) adults have been collected in flight intercept taps in marshy areas (Smith & Golladay, 2014). Specimens were taken sweeping vegetation on 16 May 2019 along Contees Wharf Road.

Aulacobaris lepidii (Germar) this species was introduced from Europe. It feeds on various Brassicaceae (Bouseman et al., 1978a, b). Specimens were taken sweeping vegetation on 30 April 2019 in Zone 6.

Baris interstitialis (Say) has been taken from the flowers of New Jersey tea, *Ceanothus americanus* L. (Rhamnaceae), and other plants, usually in the vicinity of ponds (Blatchley & Leng, 1916). Specimens were taken sweeping vegetation on 19 July 2018 along Contees Wharf Road.

Baris umbilicata (LeConte) has been taken by sweeping low, moist meadows (Blatchley & Leng, 1916). Specimens were taken sweeping vegetation on 23 August 2018 in forest plots in Zone 6.

Geraeus penicillus (Herbst) has been associated with the following plants- Asteraceae: *H. tenuifolia* (unable to verify the genus of this plant, there are three valid *H. tenuifolia* in the Asteraceae); Chenopodiaceae: feeding on sugar beet [*Beta vulgaris* L.]; Poaceae: root stem of *Oryza* sp.; *Panicum dichotomiflorum* Michx.; *Saccharum* sp.; "breeding in grass stems"; *Zea mays* L. (Poaceae) (Prena, 2009). Specimens were taken sweeping vegetation in the fields opposite Sellman House from 26 June 2019 and 14 September 2020.

Linogeraeus capillatus (LeConte) has been associated with *Agrostis stolonifera* L. (Luckmann & LeSar, 1959) and *Zea mays* (Poaceae) (Prena, 2009). Specimens were taken sweeping vegetation on 21 May at the intersection of Contees Wharf and Dock Roads.

Madarellus undulatus (Say) bores in woodbine (*Parthenocissus vitacea* (Knerr) Hitchc., Vitaceae); associated with grape (*Vitis*, Vitaceae), poison ivy (*Toxicodendron radicans* (L.) Kuntze, Anacardiaceae), and Virginia creeper (*Parthenocissus quinquefolia* (L.) Planch.) (Blatchley & Leng, 1916). A single specimen was taken in a Malaise trap in the field opposite Sellman House from 30 May-2 June 2020.

Odontocorynus salebrosus Casey adults have been collected by sweeping an old-field opening in a mixed forest area (Webster et al., 2012). Specimens were taken sweeping vegetation on 23 April 2019 in Zone 5 and on 26 August 2020 around the Reed Education Center.

Odontocorynus umbellae (Fabricius) adults often visit flowers of various plants (Prena, 2009). Specimens were taken sweeping vegetation on 4 June 2018 along Discovery Trail.

Pseudobaris nigrina (Say) has been swept from herbage in damp meadows (Ulke, 1902; Blatchley & Leng, 1916); is a pest of spearmint (*Mentha spicata* L., Laminaceae) in the northwestern United States (Baird et al., 1990). Specimens were taken sweeping vegetation 23 April 2019 at Frog Haven and in Zone 5.

Pseudobaris sobrina Blatchley has been found on stolons of *Lycopus virginicus* L. (Laminaceae) (Kissinger, 1963). Specimens were taken sweeping vegetation 16 May 2019 along Contees Wharf Road and on 19 June 2019 at Java House ruins.

Subfamily Ceutorhynchinae

Ceutorhynchus americanus Buchanan hosts include radish (*Raphanus raphanistrum sativus* (L.) Domin), horse-radish (*Armoracia rusticana* G. Gaertn., B. Mey. & Scherb.), *Lepidium* sp., mustard (*Brassica* sp.), and Chinese cabbage (*B. rapa pekinensis*) [Brassicaceae] (Anderson, 1997). Specimens were taken sweeping vegetation on 6 June 2018 around Frog Haven and at black light on 24 April 2019 at the field at the intersection of Contees Wharf and Dock Roads.

Ceutorhynchus bolteri Dietz has been collected on spotted water-hemlock, *Cicuta occidentalis* Greene (now *Cicuta maculata* L.) (Apiaceae) (Colonnelli 2004); in flight intercept traps, and swept from grasses, *Equisetum* (Equisetaceae) and *Solidago* (Asteraceae) (de Tonnancour et al., 2017). Specimens were taken sweeping vegetation on 25 April 2019 in the fields opposite Sellman House.

Ceutorhynchus omissus Fall is associated with various Brassicaceae (Anderson, 1993). Specimens were taken sweeping vegetation on 7 June 2018 around Java House ruins; in Malaise traps in the field opposite Sellman House from 1-3 May 2020 and 30 May-2 June 2020.

Ceutorhynchus rapae (Gyllenhal) hosts are several members of Brassicaceae (broccoli [*B. oleracea L.*], cabbage [*B. oleracea*], cauliflower [*B. oleracea*], and turnip [*B. rapa* L.]); occasionally on *Cannabis sativa* L. (Cannabaceae) (Colonnelli, 2004); and *Barbarea vulgaris* R. Br. [Brassicaceae] (Salsbury & Dinkins, 1979). Specimens were taken sweeping vegetation on 11 May 2018 in the fields behind Sellman House, on 6 June 2018 around Frog Haven, and in a Malaise trap in the field opposite Sellman House from 1-3 May 2020.

Rhinonocomimus latipes Korotyaev this Asian species was introduced into the United States as a biological control agent against mile-a-minute (*Persicaria perfoliata* [Polygonaceae]) in 2004. Feeding trials showed that the weevil is specific to *P. peroliata*. This species has established in the eastern United States and has begun to disperse (Hough-Goldstein et al, 2008; Frye et al., 2010; Lake et al., 2011). Specimens were taken sweeping vegetation on 30 April 2019 in Zone 6 and on 9 May 2019 around Sellman House.

Subfamily Conoderinae

Cylindrocopturus quercus (Say) adults and larvae of this species known to occur in the smaller, outer branches of *Ambrosia artemisiifolia* L. (Asteraceae) (Kissinger, 1963). Specimens were taken sweeping vegetation on 25 April 2019 in the fields around Sellman House.

Subfamily Cryptorhynchinae

Apteromechus ferratus (Say) larvae and pupae have been found within the bark of a recently (year or so) fallen branch of sassafras (*Sassafras albi*dum (Nuttall) Ness, Lauraceae), larvae appeared to mine mostly the bark of the branch without going deeply into the wood, pupation takes place in a cell in the bark (Kissinger, 1963); on many trees but not oaks (*Quercus*), common on *Persea borbonia* (L.) Spreng. (Lauraceae) (Ciegler, 2010). Specimens were taken sweeping vegetation on 25 April 2019 in the fields around Sellman House, on 19 June 2019 at the intersection of Contees Wharf and Dock Roads, on 26 June 2019 in the fields opposite Sellman House, and in Malaise traps in the field opposite Sellman House from 1-3 May 2020, 30 May-2 June 2020.

Cophes fallax (LeConte) has emerged from dead hickory (*Carya* sp.) limbs and breeds in the stems of *Cassia* (Fabaceae) (Blatchley & Leng, 1916). Specimens were taken at black light on 26 June 2019 in the field opposite Sellman House.

Subfamily Curculioninae

Anthonomus signatus (Say) adults have been taken by sifting and on flowers of red-bud, *Cercis canadensis* L. (Fabaceae), in the early spring; on flowers of blackberry (*Rubus*, Rosaceae) and *Vaccinium* (Ericaceae), and cutting off the pedicels of blackberry buds (Blatchley & Leng, 1916). The larvae bore into *Vaccinium* corolla (Blatchley & Leng, 1916). A single specimen was taken in a Malaise trap in the field opposite Sellman House from 10-13 May 2020.

Curculio confusor (Hamilton) breeds in acorns of *Quercus alba* L., *Q. michauxii* Nutt., *Q. muehlenbergii* Engelm. and rarely in other *Quercus* species of the white oak group (Gibson, 1969). Specimens were taken in Malaise traps in the field opposite Sellman House from 30 May-2 June 2020.

Mecinus pascuorum (Gyllenhal) this introduced species is associated with *Plantago lanceolata* L. (Plantaginaceae) (Anderson, 1973). Specimens were taken sweeping vegetation on 6 June 2018 around the pond at the intersection of Contees Wharf and Dock Roads and on 23 August 2018 in the forest plots of Zone 6.

Rhinusa tetra (Fabricius) this introduced species is associated with *Verbascum thapsus* L. (Scrophulariaceae) (Anderson, 1973). Specimens were taken by visual survey of *Verbascum thapsus* on 11 May 2019 in the meadow in front of Mathais Lab and on 16 May 2019 around Java House ruins.

Subfamily Doryophthorinae

Sphenophorus venatus (Say) the preferred host is *Cyperus esculentus* L., but this species is also found on *Scirpus validus*, *Cynodon dactylon* (L.) Pers. (Poaceae), *Triticum aestivum*, and *Phleum pratense* L. (Poaceae) (Vaurie, 1951). A single specimen was taken in a house dung baited pitfall trap near the water tower on 17-18 April 2019.

Subfamily Entiminae

Brachystylus sayi Alonso-Zarazaga (formerly *Brachystylus acutus* (Say)) adults feed on foliage of persimmon (*Diospyros*, Ebenaceae) and adults have been swept from hickory (*Carya*, Juglandaceae) (Blatchley & Leng, 1916). A single specimen was taken sweeping vegetation on 31 August 2020 along Squirrel Neck Trail.

Cyrtepistomus castaneus (Roelofs) this introduced, parthenogenetic species feeds on a wide variety of trees but prefers oak (*Quercus*) and chestnut (*Castanea*, Fagaceae) in Asia (Bright & Bouchard, 2008); it has been collected by sweeping in grassy areas (Salsbury & Dinkins, 1979). Specimens were taken sweeping vegetation on 11 May 2018 in the field behind Sellman House and on 9 July 2018 in the forest plots of Zone 6.

Pseudoedophyrs hilleri (Faust) this introduced species feeds on the foliage of a wide variety of woody plants (Bright & Bouchard, 2008). Specimens were taken sweeping vegetation on 9 July 2018 in the forest plots of Zone 6.

Pseudoneorhinus bifasciatus (Roelofs) this introduced species feeds on a wide variety of plants mostly in shady areas or along the woods edge (Staines & Staines, 1988). Specimens were taken sweeping vegetation on 24 May 2018 and 30 August 2020 along Contee Watershed Trail and on 7 May 2019 in the maintenance area.

Sitona obsoletus (Gmelin) adults of this introduced species feed on *Trifolium* sp., *Medicago sativa* L., and other legumes (Fabaceae) foliage while the larvae bore in the roots (Bright, 1994). A single specimen was taken sweeping vegetation on 9 September 2020 in the maintenance area.

Subfamily Hyperinae

Hypera nigrirostris (Fabricius) this introduced species main hosts are red clover (*Trifolium pretense* L.), white clover (*T. repens* L.) and alsike clover (*T. hybridum* L.) (Fabaceae), but it can also feed on pea (*Pisum sativum* L., Fabaceae), alfalfa (*Medicago sativa*, Fabaceae), and vetch (*Vicia*, Fabaceae). Adults chew holes in leaves and create hollows in stems, while the larvae target the buds and flowers (Weiss & Gillott, 1993). Specimens were taken sweeping vegetation on 7 May 2019 in the maintenance area and on 26 June 2019 in the fields opposite Sellman House.

Subfamily Lixinae

Lixus concavus Say breeds in stems of *Rumex* (Polygonaceae) (Salsbury & Dinkins, 1979); adults have been collected on *Carduus/Cirsium*, *Helianthus* (Asteraceae), (Ciegler, 2010). A single specimen was taken sweeping vegetation on 23 April 2019 in Zone 5.

Subfamily Molytinae

Chalcodermus collaris Horn larvae have been bred from the seed pods of partridge pea (*Cassia chamaechrista* L., Fabaceae) (Alsterlund, 1937). Specimens were taken sweeping vegetation on 26 June 2019 in the fields opposite Sellman House.

Conotrachelus carinifer Casey has been bred from *Quercus velutina* Lam., from *Quercus nigra* L. acorns, in acorns of *Q. velutina*, and taken in molasses trap (Schoof, 1942). Specimens were taken in Malaise traps in the field opposite Sellman House from 1-3 May 2020.

Conotrachelus fissunguis LeConte is often found on the flowers of various *Hibiscus* sp. (Malvaceae) (Blatchley & Leng 1916); larvae develop in the seed capsules (Schoof, 1942). Specimens were taken in *Hibiscus* sp. flowers on 12 August 2019 in the meadow in front of Mathais Lab.

Conotrachelus naso LeConte breeds in in the acorns of post oak (*Quercus stellata* Wangenh.), southern live oak (*Q. virginiana* Mill.), white oak (*Q. alba*), and chestnut oak (*Q. montana* Willd.) (Schoof, 1942). Schoof (1942) also reports the fruit of *Crataegus* (Rosaceae) but this is probably from a mislabeled specimen (Anderson, per. comm.). Specimens were taken in Malaise traps in the field opposite Sellman House from 1-3 May 2020 and 30 May-2 June 2020.

Conotrachelus nenuphar (Herbst) is a pest of fruits of many Rosaceae: plum (*Prunus*), cherry (*Prunus*), peach (*Prunus persica* (L.) Batcsh.), nectarine (*P. persica*), apple (*Malus domestica* Borkh.), wild crabapple (*Malus*), pear (*Pyrus*), and quince (*Cydonia oblonga* Mill.) (Schoof, 1942). Specimens were taken in Malaise traps in the field opposite Sellman House from 30 May-2 June 2020 and 12-15 June 2020.

Conotrachelus seniculus LeConte feeds on the roots of *Amaranthus* (Amaranthaceae) (Schoof, 1942). Specimens were taken in Malaise traps in the field opposite Sellman House from 1-3 May 2020 and 10-13 May 2020.

Subfamily Platypodinae

Euplatypus compositus (Say) breeds in many species of plants and adults come to lights (Blackman, 1922). Specimens were taken at black light on 12 August 2019 along Back Road.

Subfamily Scolytinae

Ambrosiodmus obliquus (LeConte) breeds in a wide variety plants (Wood, 1982). Specimens were taken at black light on 25 May 2019 at the intersection of Back Road and 11-6, on 27 May 2019 along Connector Trail between Fox Point Road and Java History Trail, on 12 August 2019 along Back Road, and sweeping vegetation on 25 April 2019 in the fields opposite Sellman House.

Corthylus columbianus Hopkins has been associated with species of *Acer*, *Castanea*, *Quercus*, and *Ulmus* (Wood, 1982). Specimens were taken at black light on 12 April 2019 at the intersection of Back Road and 11-6, a single specimen was taken sweeping vegetation on 14 September 2020 in the woods opposite Sellman House, and in Malaise traps in the field opposite Sellman House from 10-13 May 2020 and 30 May-2 June 2020.

Hylastes porculus Erichson has been associated with *Pinus* spp. (Wood, 1982). Specimens were taken sweeping vegetation on 5 June 2019 along Java History Trail and in Malaise traps in the field opposite Sellman House from 30 May-2 June 2020 and 12-15 June 2020.

Xyleborus affinis Eichhoff breeds in a wide variety of trees (Wood, 1982). Specimens were taken at black light on 12 August 2019 along Back Road.

Xyleborus ferrugineus (Fabricius) feeds on plants in more than 30 families (Wood, 1982). Specimens were taken at black light on 26 June 2019 in the fields opposite Sellman House and in Malaise traps in the field opposite Sellman House from 1-3 May 2020.

Family Ithyceridae

Ithycerus noveboracensis (Forster) is found in association with *Quercus macrocarpa* Michx. and *Carya glabra* Mill. (Juglandaceae) (Riley, 1871); on various plants of Fagaceae, Betulaceae, and Juglandaceae, in particular white oak (*Q. alba*) and American beech (*Fagus grandifolia* Ehrh., Fagaceae). Adults feed on new growth and other soft parts, such as leaf petioles and buds. They lay their eggs in the ground, and the grubs then eat the roots of the same plants (Sanborne, 1981). Specimens were taken sweeping vegetation on 23 April 2019 in Zone 5 and on 16 May 2019 along Contees Wharf Road.

DISCUSSION

The 51 Curculionoidea species is much lower than expected but indicates a fairly diverse fauna. Unfortunately, most of the species are common, widespread ones and were represented by fewer than five specimens. Whether this is due to sampling bias or a general decline in arthropod abundance is currently unknown. The actual fauna should be much larger and the results of this inventory should be considered preliminary.

Eleven species (21.6%) are introduced. Only one species, *Rhinonocomimus latipes*, was introduced purposefully. All of the others were accidentally introduced. Klimaszewski et al. (2010) provide an interesting and detailed discussion of the various accidental introduction pathways.

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