

The Longhorned Beetles (Insecta: Coleoptera: Cerambycidae) of the George Washington Memorial Parkway

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ABSTRACT

Eighty species in 60 genera of cerambycid beetles were documented during a 17-year field survey of a national park (George Washington Memorial Parkway) that spans parts of Fairfax County, Virginia and Montgomery County, Maryland. Twelve species are documented for the first time from Virginia. The study increases the number of longhorned beetles known from the Potomac River Gorge to 101 species. Malaise traps and hand picking (from vegetation or at building lights) were the most successful capture methods employed during the survey. Periods of adult activity, based on dates of capture, are given for each species. Relative abundance is noted for each species based on the number of captures. Notes on plant foraging associations are noted for some species. Two species are considered adventive to North America.

Key words: Cerambycidae, Coleoptera, longhorned beetles, Maryland, national park, new state records, Potomac River Gorge, Virginia.

INTRODUCTION

The Cerambycidae, commonly known as longhorned beetles because of the length of their antennae, represent a large insect family of more than 20,000 described species, including 1,100 in North America north of Mexico and 344 in the northeastern United States (Yanega, 1996). They occur on all continents except Antarctica. Larvae of most cerambycids bore into trunks or branches of dead or dying trees and feed on decaying plant tissues between the bark and sapwood or within the sapwood creating a characteristic maze of feeding chambers. Some larvae feed on branches, roots, or stems of herbaceous species or even fruits or seeds of living plants. Adults of most species are large (up to 170 mm in length in some South American species) and can be easily observed in the field, but some are as small as 2 mm. Diurnal adults

that feed on flower pollen are usually boldly colored and patterned, often with a bee-like golden-yellow pubescence. Nocturnal species are more likely glabrous and uniformly dark, while bicolored species (often black and red) are thought to mimic other beetles which are distasteful. Others have cryptic, bark-like coloration. Some longhorned beetles can stridulate by rubbing the pronotum against adjacent posterior body parts. Nearly all cerambycids have antennae that arise from protuberances between and often deeply dividing the eyes and have tarsi with four visible segments. Many features are sexually dimorphic. Currently three species of longhorned beetles — *Anthophylax hoffmani* Beutenmüller, *Dryobius sexnotatus* Linsley, and *Stenocorus schaumii* (LeConte) — are listed as rare in Virginia (Roble, 2013). *Dryobius sexnotatus* was collected near the study site in the Potomac River Gorge (Plummers Island, Maryland) in 1920 (Staines,

2008). There are no federally listed threatened or endangered longhorned beetles in the eastern United States.

STUDY SITE

The study site includes lands managed by the National Park Service as units of the George Washington Memorial Parkway (GWMP) in Fairfax County, Virginia, and Montgomery County, Maryland. Park sites in Virginia that received the greatest inventory effort included Dyke Marsh Wildlife Refuge, Great Falls Park, and Turkey Run Park. These sites total approximately 757 ha, including 506 ha of predominantly deciduous upland forest, 73 ha of deciduous swamp forest, and 22 ha of cattail marsh. A few additional records were added from smaller GWMP sites such as Collingwood Picnic Area, Fort Hunt Park, and Little Hunting Creek. The only Maryland site surveyed was the 5 ha Glen Echo Park, which has only 3 ha of forest cover. Despite its small size, the bright lights of Glen Echo Park proved attractive to many longhorned beetles. Glen Echo, Great Falls, and Turkey Run Parks fall within the Piedmont physiographic province, whereas all other collection sites are on the Coastal Plain. All sites are situated along the shore of the Potomac River, and Glen Echo, Great Falls, and Turkey Run Parks border the Potomac River Gorge, an area known for high species richness of plants and animals (Cohn, 2004; Evans, 2008), including plant communities found nowhere else on Earth (Steury et al., 2008).

METHODS

The number of cerambycid species recorded from GWMP has grown since the first inventory targeting this family documented 22 species in Great Falls and Turkey Run Parks on three days (23-25 June 2006) during the Potomac Gorge Bioblitz (Evans, 2008). The current list of 80 species is the result of 17 years (1998-2014) of sporadic survey effort targeting arthropods using the following collecting techniques: Malaise traps set at Dyke Marsh (five years), and Great Falls and Turkey Run Parks (three years); pitfall traps set at Dyke Marsh (five years) and at Little Hunting Creek and Great Falls and Turkey Run Parks (three years); Lindgren funnel traps set at Dyke Marsh, Great Falls Park, Little Hunting Creek, and Turkey Run Park (two years); blacklighting with sheets at Great Falls and Turkey Run Parks (three years); and beating sheets, building lights (especially at Glen Echo), and hand picking from vegetation at all sites occasionally over the full length of the study. Specimens were pinned and

labeled and deposited in the collections maintained at the George Washington Memorial Parkway, Turkey Run Park Headquarters in McLean, Virginia. New Virginia records were determined by consulting the personal database of T. C. MacRae which is compiled from existing literature on North American Cerambycidae. Plant associations were noted for some specimens collected by hand. Collectors contributing specimens to the GWMP cerambycid collection include: E. M. Barrows, J. W. Brown, A. V. Evans, O. S. Flint, Jr., E. T. Oberg, D. R. Smith, W. E. Steiner, B. W. Steury, I. W. Steury, and N. E. Woodley.

RESULTS AND DISCUSSION

Eighty species, in 60 genera and five subfamilies, of cerambycid beetles were found. Twelve species (see list of species) are documented in the literature for the first time from Virginia. Malaise traps, which captured 55 species (33 unique), and hand picking (34 species, 16 unique) were the most successful capture methods employed during the survey. Fourteen species were found to be common, 11 uncommon, and 55 rare. Great Falls Park was the most species-rich site with 45 species (18 unique), followed by Turkey Run Park (37 species, 7 unique), Dyke Marsh (32, 13), and Glen Echo Park (18, 4). Two species, *Hylotrupes bajulus* (Linnaeus) and *Phymatodes testaceus* (Linnaeus), are considered adventive to North America. No state-listed species were found.

The GWMP tally of 80 cerambycid species is 16 greater than the total number recorded from the 3.6 ha Plimmers Island, Maryland, located in the Potomac River Gorge, from which 413 specimens were collected over a 110-year period and only 25 of these after 1927 (Hoffman et al., 2002; Staines, 2008). Only 32 species recorded during this study have also been found on Plimmers Island. Twenty-four species found at sites within the Potomac River Gorge during this study are not known from Plimmers Island and were not recorded during the 2006 Potomac Gorge Bioblitz. These additions increase the number of cerambycids documented from the Potomac River Gorge to 101 species, which is 39.9% of the number documented from Maryland (Staines, 1987; Glaser, 1992).

LIST OF SPECIES

Nomenclature and subfamilial taxonomic order follow Bezark & Monné (2013). Taxa are listed alphabetically by genus within subfamilies. Twelve species not previously documented in the literature from Virginia are marked with an exclamation point (!) and their first year of capture noted. Twenty-four

species previously unrecorded from the Potomac River Gorge are marked with an asterisk (*). Species are designated as rare (R) if 1-5 specimens were collected or observed, uncommon (U) for 6-12 specimens, and common (C) if more than 12 specimens were found. Collecting sites are abbreviated as follows: Collingwood Picnic Area (CP), Dyke Marsh Wildlife Preserve (DM), Fort Hunt Park (FH), Glen Echo Park (GE), Great Falls Park (GF), Little Hunting Creek (LH), and Turkey Run Park (TR). The earliest and latest dates of collection are given for each species using three letter acronyms for the month. For trap sets over multiple weeks (rarely more than 14 days) the first day of the set is used as the earliest date and the last day of the set for the latest date. Collection methods are listed using the following abbreviations: black UV light (bl), beating sheet (bs), hand picking (hp), Lindgren funnel (lf), Malaise trap (mt), and pitfall trap (pf). For species not previously documented in the literature from Virginia the known ranges and larval host plants are given following Yanega (1996) and Lingafelter (2007). If adults were handpicked from flowers the plant association is given when known.

Subfamily Prioninae

Orthosoma brunneum (Forster) – C; CP, DM, GF, TR; 29 Jun-4 Aug; hp, lf, mt.

Prionus imbricornis (Linnaeus) – R; GF; 23 Jun-30 Jul; bl, mt.

Prionus laticollis (Drury) – R; TR; 2 Aug; hp. At light on building.

Subfamily Aseminae

Asemum striatum (Linnaeus) – R; LH; 28 Apr-18 May; pf.

Subfamily Lepturinae

Analeptura lineola (Say) – C; DM, GF, TR; 21 May-21 Jul; mt.

**Bellamira scalaris* (Say) – R; DM, TR; 10 May-18 Jul; mt.

**Brachyleptura rubrica* (Say) – R; GF; 27 Jun; collection method unknown.

*!*Centrodera decolorata* (Harris) – R; TR; 27 May 2006; bl. Larvae feed on the heartwood of living and dead hardwoods. This northeastern species has been

recorded south to Georgia and west to Iowa.

**Gaurotes cyanipennis* (Say) – R; GF; 21 May-18 Jun; mt.

Judolia cordifera (Olivier) – R; DM; 14-24 Jun; mt. The larval host of this species is reported as *Castanea* (chestnut). However, most lepturines will breed in well-decayed wood of many species, and thus, show little host fidelity. With the near extinction of *Castanea dentata* (Marsh.) Borkh. (American chestnut), to *Cryphonectria parasitica* (Murrill) Barr (chestnut blight fungus), *J. cordifera* is primarily restricted to a single native North American *Castanea* species, *C. pumila* (L.) P. Mill. (chinkapin). *Castanea pumila* is not known to grow anywhere near Dyke Marsh, however *Castanea mollissima* Blume. (Chinese chestnut) has been planted near Dyke Marsh at Belle Haven Marina and has been naturalized along the shore of the Potomac River just south of Dyke Marsh at Riverside Park (Steury, 2011). The exotic Chinese chestnut, another unknown species, or simply well decayed wood may now serve as a primary host for *J. cordifera*. This beetle is quite common in the Ozarks despite the rarity of *Castanea* hosts (MacRae, 1994; Yatskievych, 2013).

**Leptura plebeja* Randall – R; GF; 21 May-30 Jun; mt.

Metacmaeops vittata (Swederus) – C; GF, TR; 21 May-21 July; hp, mt. Adults collected on flowers of *Aruncus dioicus* (Walter) Fernald (goat's beard, also known as bride's feathers).

**Necydalis mellita* (Say) – R; GF; 1 Jun; hp. Collected on the leaf of a shrub in Great Falls Swamp.

*!*Neoalosterna capitata* (Newman) – R; GF; 10-30 Apr; mt. Larvae feed on *Betula* spp. (birch), while adults have been found on a variety of flowers. Yanega (1996) lists the flight period of this beetle as May to July in eastern North America. During this survey it was captured in a Malaise trap open from 10-30 April 2009, suggesting an earlier flight period in Virginia. The species has been recorded from southeastern Canada south to Georgia and west to Iowa, Missouri, and Mississippi.

**Rhagium inquisitor* (Linnaeus) – R; GF; 14 Apr; hp. Collected under bark of dead tree.

Strangalepta abbreviata (Germar) – R; GF, TR; 19-30 Jun; hp, mt. Collected on flowers of *Saururus cernuus* L. (lizard's-tail).

Strangalia acuminata (Olivier) – U; DM, 23 May-7 Jul; mt. The elytra of our six specimens are tannish-brown with black edges as is typical of northern populations rather than the all black elytra found at more southern latitudes.

Strangalia bicolor (Swederus) – R; GF; 19-30 Apr; mt.

Strangalia famelica famelica Newman – R; GF; 24 Jun; hp. Collected on flowers of lizard's-tail.

Strangalia luteicornis (Fabricius) – C; DM, GF, TR; 28 May-20 Jul; hp, mt. Collected on flowers of lizard's-tail.

**Strophiona nitens* (Forster) – R; GF; 19-30 Apr; mt.

*!*Trachysida mutabilis* (Newman) – R; TR; 7-21 Jul 2006; mt. Larvae breed in a variety of deciduous hardwoods, while adults are most often found on flowers of woody shrubs. The species is widespread across eastern North America and has been recorded west to British Columbia, North Dakota, Missouri, and Mississippi.

**Trigonarthris proxima* (Say) – R; GF; 1 Jun; hp.

Typocerus acuticauda acuticauda Casey – R; GF; 17-24 Jun; hp. Adults collected on flowers of lizard's-tail. Larval feeding habits are unknown.

Typocerus velutinus (Olivier) – C; DM, GF, TR; 3 Jun-26 Jul; mt.

Subfamily Cerambycinae

Anelaphus parallelus (Newman) – R; DM, GE, TR; 18 Apr-18 Jun; hp, mt.

Anelaphus pumilus (Newman) – R; GE; 9 Jun; hp.

Anelaphus villosus (Fabricius) – R; DM, GE, TR; 17 May-21 Jul; hp, mt.

*!*Clytus ruricola* (Olivier) – C; DM, GF, TR; 21 May-21 Jul, [1998]; mt. Larvae feed in a variety of decaying deciduous hardwoods. The species has been recorded broadly in northeastern North America south to Georgia and west to Saskatchewan, North Dakota, and Iowa.

Curius dentatus Newman – U; DM; 24 Jun-9 Aug; mt. This species is at the northern limit of its known range in Fairfax County, Virginia (Perry, 1974).

**Cyrtophorus verrucosus* (Olivier) – C; DM, GF, LH, TR; 10 Apr-18 Jun; pf, mt.

Eburia quadrigeminata (Say) – R; GE; 9-30 Jul; hp.

Elaphidion mucronatum (Say) – C; DM, GE, GF, TR; 6 Jun-26 Jul; bl, bs, hp, mt.

*!*Enaphalodes rufulus* (Haldeman) – R; GF; 30 Jun 2007; bl. Larvae feed within the sapwood of living *Quercus* spp. (oaks) and sometimes *Acer* spp. (maple). The species has been recorded from southeastern Canada to Florida and west to Iowa, Oklahoma, and Arizona.

Eudercus picipes (Fabricius) – R; GF; 19-30 Jun; mt.

Eudercus pini (Olivier) – R; DM; 3 Apr-23 May; mt.

Eudercus reichei LeConte – R; DM; 4-18 May; mt.

Hylotrupes bajulus (Linnaeus) – R; CP; 22 Sep; hp. This species is native to the Atlas Mountains of northern Africa. It was introduced to the U. S. over 200 years ago and now ranks second after subterranean termites in damage inflicted by insects to buildings (Cannon & Robinson, 1982).

*!*Molorchus bimaculatus bimaculatus* Say – U; DM, GF; 14-28 Apr, [1998]; hp, mt. Larvae mine beneath bark of dead branches of numerous hardwoods, especially maple and birch. The species occurs broadly across North America and is divided into several subspecies, with the nominate form recorded in the eastern part of the continent south to Florida and west to Saskatchewan, Oklahoma, and New Mexico.

Neoclytus acuminatus acuminatus (Fabricius) – C; DM, GE, GF, TR; 9 May-29 Aug, 21 Nov; hp, mt. Adult collected on standing dead *Acer saccharum* Marsh. (sugar maple).

*!*Neoclytus caprea* (Say) – R; DM; 11-25 Apr 1999; mt. Larvae of this species prefer sapwood of *Fraxinus* spp. (ash) but will sometimes use oak or *Carya* spp. (hickory). This lovely longhorned beetle could be at risk as the non-native buprestid beetle, *Agrilus planipennis* Fairmaire (emerald ash borer), continues to kill ash trees across the northeastern United States. It has been recorded broadly across eastern North America south to Georgia and as far west as Wyoming, Utah, and Arizona.

!*Obrium maculatum* (Olivier) – U; DM; 23 May-9 Aug, [1998]; mt. Larvae feed on numerous hardwoods, especially oak and hickory, and shrubs. The species has been recorded from the northeastern U. S. south to Florida, west to Iowa, Oklahoma, and Texas, and further south into Mexico and Central America.

*!*Phymatodes amoenus* (Say) – U; DM, GF; 11 Apr-20 May, [1998]; mt. Larvae mine in dead vines of *Vitus* spp. (grape). The species occurs in eastern North America south to Florida and west to Minnesota, Missouri, and Mississippi.

*!*Phymatodes testaceus* (Linnaeus) – R; CP, GE; 18 May-26 Jun, [2007]; hp. Larvae feed in and under the bark of hardwoods and pines. Adult color varies; one specimen possessed tan colored elytra, the other four had dark elytra with bluish reflections. Native to Europe, this introduced species is now found broadly across forested regions of North America.

Psyrassa unicolor (Randall) – R; GE; 15 Jul; hp.

Purpuricenus humeralis (Fabricius) – R; DM; 14-24 Jun; mt.

Smodicum cucujiforme (Say) – R; GE, GF; 15 Jun-12 Jul; bl, hp.

Stenosphenus notatus (Olivier) – R; GF; 24 Apr; hp.

Tessaropa tenuipes (Halderman) – R; DM; 10 May-16 Jun; mt.

Tilloclytus geminatus (Haldeman) – R; DM; 3 Apr-28 May; mt.

Tylonotus bimaculatus Haldeman – R; GF, TR; 18-23 Jun; bl. The preferred native larval host plant is ash, a declining species in northeastern North America. *Tylonotus bimaculatus* will also use non-native *Ligustrum* spp. (privets) and other native hardwoods.

Xylotrechus colonus (Fabricius) – C; DM, GF, LH, TR; 28 Apr-17 Aug; bl, lf, hp, mt, pf.

Subfamily Lamiinae

Aegomorphus modestus (Gyllenhal) – R; GF; 16-30 Jul; mt.

Astylopsis macula (Say) – U; GF, TR; 24 Jun-17 Aug; bs, mt.

**Astylopsis sexguttata* (Say) – R; DM, TR; 2-20 Jul; mt.

Astyleiopus variegatus (Haldeman) – R; GE, TR; 9 Jun-24 Sep; hp, pf.

!*Cyrtinus pygmaeus* (Haldeman) – R; DM; 28 May-19 Jul, [1998]; mt. Larvae feed on dry branches of numerous hardwoods, especially oak. This tiniest of North American cerambycids has been recorded from Ontario south to Georgia and west to Missouri and Texas.

Dectes texanus LeConte – R; DM; 1 Aug; mt.

Ecyrus dasycerus dasycerus (Say) – R; GE, GF, TR; 24 Jun-26 Jul; bs, hp, mt.

Eupogonius pauper LeConte – U; GF, TR; 21 May-24 Jun; bl, bs, mt.

Eupogonius subarmatus (LeConte) – R; TR; 24 Jun; hp.

**Goes pulverulentus* (Halderman) – R; GE; 14 Jul; hp.

**Goes tigrinus* (DeGeer) – R; GF; 20 Jun; bl.

Graphisurus despectus (LeConte) – U; GE, GF, TR; 24 Jun-21 Jul; bs, hp, mt.

Graphisurus fasciatus (DeGeer) – U; GE, GF, TR; 10 Jun-7 Sep; bf, bl, hp, mt.

**Hippopsis lemniscata* (Fabricius) – C; DM, GF; 19 Jun-17 Aug; mt.

Hyperplatys aspersa (Say) – C; DM, GF, TR; 21 May-26 Jul; mt.

Lepturges confluens (Haldeman) – C; GE, GF, TR; 9 Jun-21 Jul; bl, bs, hp, mt.

Monochamus titillator (Fabricius) – R; FH; 23 Jun; hp. Found dead in parking lot.

Oberea perspicillata Haldeman – U; DM, GE, GF, TR; 6 Jun-21 Jul; hp, mt.

**Oberea praelonga* Casey – R; TR; 19-30 Jun; mt.

Oberea tripunctata (Swederus) – R; GE, TR; 22 Jun-21 Jul; hp, mt.

Psenocerus supernotatus (Say) – C; DM, TR; 19 Apr-21 Jul; mt.

**Saperda lateralis* Fabricius – R; TR; 19-30 Jun; mt.

*!*Saperda puncticollis* Say – R; TR; 19-30 Jun 2009; mt. The larvae of this species feed on dead and dying *Parthenocissus quinquefolia* (L.) Planch. (Virginia creeper), grape, and *Toxicodendron radicans* (L.) Kuntze (poison ivy). The species has been recorded from southeastern Canada south to Georgia and west to Minnesota, Kansas, and Arkansas.

Styloleptus biustus biustus (LeConte) – R; DM; 24 Jun-7 Jul; mt.

**Tetraopes tetrophthalmus* (Forster) – R; GE, GF, TR; 22 May-31 Jul; hp. Adults collected on *Asclepias syriaca* L. (common milkweed).

Urgleptes querci (Fitch) – R; GF, TR; 24 Jun-30 Jul; bs, mt.

Urgleptes signatus (LeConte) – U; GF, TR; 21 May-17 Jul; bs, mt.

Urgleptes facetus (Say) – R; GF; 24 Jun; bs.

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