

NEW RECORDS AND NOTES ON PREVIOUSLY REPORTED SPECIES OF CERAMBYCIDAE (COLEOPTERA) FOR ONTARIO AND CANADA

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Abstract*Proc. ent. Soc. Ont.* 132: 3–13

Fourteen species of Cerambycidae are reported from Ontario for the first time, including seven new for Canada. Geographically, nine are from the extreme south of the province. Temporally, ten of them are supported by specimens collected only prior to 1970. Four species are included based on old specimens with incomplete collecting data. Concordance with contemporary published reports supports inclusion of these specimens. Finally, notes are included on eight species included on a recent checklist (McNamara 1991) for which no specimens were examined during this study and two species for which the origin of the Ontario specimens is doubtful.

Introduction

A first step to understanding a group is basic information on taxonomy, identification and distribution. The works of Linsley and Linsley and Chemsak (1961–1997) set out these basics for the Cerambycidae of North America. Building on this base, the recent field guide of Yanega (1996) makes it possible to identify virtually all species in eastern North America. Local and regional works can then function to fill in a more detailed picture of distribution. The recent checklist of Canadian beetles records 209 species of cerambycids from Ontario, based largely on the holdings of the Canadian National Collection of Insects, Arachnids and Nematodes and published reports (McNamara 1991). Laplante (1993) records one additional species, *Parelaphidion aspersum*, from Ontario. Checklists are also available for the neighbouring states of Ohio and Michigan and the province of Quebec (Knull 1946; Gosling 1973; Gosling and Gosling 1977; Laplante et al. 1991). These pieces in distributional and taxonomic puzzles, combined with the work on species of economic importance in forestry (e.g. Gardiner 1957, 1975) have resulted in the taxonomy and distribution of species of Ontario Cerambycidae being relatively well known. Recent interest in the potential for economic and ecological problems caused by introduced species, such as the brown spruce long-horned beetle (Forestry Canada 2000; Ontario Ministry of Natural Resources 2000a; Smith and Hurley 2000) and the Asian long-horned beetle (Ontario Ministry of Natural Resources 2000b), has resulted in more surveying of cerambycids in Ontario.

Examination of the Cerambycidae from Ontario in four major insect collections and three smaller ones between 1997 and 1999 revealed 14 previously unrecorded species from Ontario. Eight previously recorded species were not represented in these collections and a further two species are of questionable origin in the province.

Methods

All specimens of Cerambycidae collected in Ontario were examined in four major collections, University of Guelph, Guelph (UOG), Royal Ontario Museum, Toronto (ROM), Canadian National Collection of Insects, Arachnids and Nematodes, Agriculture and Agri-Food Canada, Ottawa (CNCI)

and Canadian Museum of Nature, Aylmer, Quebec (CMN) and in three minor collections (with respect to Ontario cerambycids), Algonquin Provincial Park Visitors Centre, Algonquin Park (APVC), Canadian Forestry Service — Fredericton, New Brunswick (CFSF) and the Nova Scotia Museum of Natural History, Halifax, Nova Scotia (NSMNH) between 1997 and 1999. Specimens residing in both the Cerambycidae section and in miscellaneous Coleoptera were examined. All specimens were identified using Yanega (1996) supplemented with Linsley (1962a, 1962b, 1963, 1964), Linsley and Chemsak (1972, 1976, 1984, 1995) and Chemsak (1996). Taxonomy and nomenclature follow Yanega (1996).

Label data were recorded for more than 7,500 of the more than 10,000 specimens examined. Old specimens with incomplete collecting information posed a dilemma: possibly exclude valuable specimens or include some specimens of dubious origin. The information on old labels and in old species lists must be used with caution (Lindroth 1969; Shapiro 1998). About 15%, or more than 1,100 specimens, included an indication they were from Ontario, some a location in the province, but lacked a date and often the name of the collector. All of these specimens are considered here. Another several hundred specimens were pinned in a similar fashion and associated with these minimally labeled specimens, but are not considered. Based on comparison of labels of known dates virtually all incompletely labeled specimens from Ontario are from pre-1920 and the vast majority from pre-1900. Many bear labels from Ridgeway, London, Guelph, Ottawa, Toronto or just Ontario. Many, but not all, include a person's name on the label. These names denote the collector in some instances, but may also signify the person in whose collection the specimen resided. The most frequent, in descending order of occurrence, were F.J.A. Morris Collection, W. Saunders, A.H. Kilman, E.B. Reed, A.W.B., E.J. Zavitz, W. Simpson, Wm Brodie Collection, J.M. Denton, OAC Class Collection, Entomological Society of Ontario, and Brimley Collection. I was able to cross-check a few of these specimens in the University of Guelph collection with an Accession Catalogue of the Entomological Society of Ontario for the years 1903 to 1906 to confirm they were indeed collected in Ontario. I have been able also to associate some of these minimally labeled specimens with published reports from the late 1800s (e.g. Reed 1869; Petit 1871; Harrington 1884; Kilman 1889). These associations indicate we should include these specimens in any consideration of the cerambycid fauna of Ontario.

In the list below, collection data are listed in the format: location, date, collector, notes and institution holding specimen. All records represent one specimen unless explicitly stated otherwise. Records are listed chronologically, with specimens lacking a date at the end.

Results and Discussion

I examined more than 10,000 specimens of Cerambycidae from Ontario representing 216 species. Fifteen of these were not included in McNamara (1991), including fourteen not previously reported for Ontario and seven not previously reported for Canada. Of these, four are represented only by old specimens with an indication they are from Ontario, but lacking specific date or locality data. In addition, of the 209 species listed in McNamara (1991) I did not encounter specimens of eight species and only specimens of dubious origin of two others.

Species new for Ontario

Lepturinae

Anthophylax viridis LeConte

Record: Hilton Twp, Tenby Bay, 04 June 1986, J.E. Swann, (ROM).

The type locality of this species is in Keweenaw County, on the northern peninsula of Michigan and this is the only record for the state (Gosling and Gosling 1977). It has been found in Quebec, Nova Scotia and New England (Laplante et al. 1991; McNamara 1991). My perusal of specimens in collections indicates it is more common in New Brunswick and Nova Scotia than Ontario. In Ontario it is likely to be more frequent in central regions, so the collection of the Canadian Forestry Service in Sault Ste. Marie, not seen in this study, may contain additional specimens. The hardwoods, such as birch (*Betula* spp.), beech (*Fagus grandifolia*) and maple (*Acer* spp.), used by the larvae (Linsley and Chemsak 1972) are widespread in central Ontario.

Cerambycinae

Anelaphus pumilus (Newman)

Records: Kent Co., Rondeau PP, 05–10 June 1965, I.M. Smith, black light, (ROM), 7 specimens. Kent Co., Rondeau PP, 19 June 1977, ROM Field Party, black light in forest, Gardiner Trail and Black Oak Trail, 770072, (ROM).

These two collections from Rondeau Provincial Park are the only records for Canada. Gosling (1973) reports it from three southern counties in Michigan and Knull (1946) lists it (as *Elaphidion pumilum*) in Ohio. The larvae feed on a variety of hardwoods (Linsley 1963), such as oak (*Quercus* spp.), and hickory (*Carya* spp.), typical of woodlands in southern Ontario (Hosie 1990). Historically American Chestnut (*Castanea dentata*) may have been an important host.

Obrium maculatum (Olivier)

Record: Ridgeway, no date, no collector, (UOG), 2 specimens.

These were the only Canadian specimens located. This species is listed for Canada in McNamara (1991) without reference to a specific province, and Linsley (1963) says that it occurs in southern Canada. Gosling (1973) recorded it only from Oakland Co. in southern Michigan, and Knull (1946) noted it from Ohio. Larvae feed on a variety of hardwoods, such as oak, hackberry (*Celtis occidentalis*), hickory, and mulberry (*Morus* spp.), which are common and widespread in southern Ontario (Hosie 1990). American Chestnut is also used by the larvae (Linsley 1963), and historically it occurred in southern Ontario (Hosie 1990).

Callidium antennatum Newman

Record: Ridgeway, no date, no collector, (UOG).

The eastern subspecies is *C. antennatum antennatum* Newman. The only Canadian reports are of the western subspecies, *C. antennatum hesperum* Casey from British Columbia (McNamara 1991). Linsley (1964) maps the range of the eastern subspecies as being east of the Appalachians, from New England south to South Carolina and then two outliers in Wyoming and South Dakota. Gosling (1973) and Knull (1946) provide a few reports from southern Michigan and Ohio to fill in some of the intervening area. Larvae feed under the bark of pines (*Pinus* spp.) (Linsley 1964).

Phymatodes maculicollis LeConte

Record: Alfred, 10 June 1984, M. Sanborne, det Laplante, (CMN).

Wickham (1897) included this species in his key to cerambycids of Ontario and Quebec, however no specimens of that vintage were located. The type locality is Isle Royale, Michigan and that remains the only location for the state (Gosling 1973). It has been recorded from Quebec and New Brunswick (Laplante et al. 1991; McNamara 1991), but the bulk of its range is west of Ontario (Linsley 1964), although it is only known from British Columbia and Yukon in western Canada (McNamara 1991). A potential host, balsam fir, *Abies balsamea*, occurs through much of the province (Linsley 1964; Hosie 1990).

Clytus marginicollis Castelnau and Gory

Records: Constance Bay, 27 August 1977, M. Sanborne, det Laplante, (CMN). Owen Sound, 11 June 1978, J.M. Cumming, (UOG).

This species is rarely encountered throughout its range from southern Canada to Florida (Linsley 1964). It occurs in Quebec, New Brunswick and Nova Scotia (Laplante et al. 1991; McNamara 1991) and was recently found in Michigan (Zablotny 1995). Morris (1919) reports collecting a specimen four miles north of Port Hope, Ontario in 1918. However, despite seeing many of his specimens, this one was not found. Zablotny (1995) collected Michigan's first in mid-May and stated that the species is one of the first cerambycids to be active in the spring. The two collections in Ontario suggest the flight season extends through the summer. The larvae feed on pine, with Virginia (*P. virginiana*) and longleaf (*P. palustris*) being mentioned specifically (Linsley 1964). These hard pines do not occur in Ontario. If we assume the larvae feed on hard pines, the most likely hosts in Ontario are Jack pine and red pine and the introduced Scots pine and Austrian pine (*P. banksiana*, *P. resinosa*, *P. sylvestris* and *P. nigra*). Pitch pine (*P. rigida*) is also a potential host, but its range in Ontario does not include either of the collection locations (Hosie 1990). Interestingly, Laplante (pers. comm.) has beaten this species from standing dead balsam fir and spruce logs in Quebec, suggesting that other hosts are used by this infrequently encountered species.

Xylotrechus convergens LeConte

Records: Peel Co., Port Credit, 16 July 1965, I.M and J.M Smith, (ROM), 2 specimens. Windsor, 1984, 04 July 1984, M.T. Kasserra, malaise, (UOG). [Port] Credit, no date, no collector, (ROM).

These are the only records for Canada. It is fascinating to see specimens from the same locality, one from prior to 1920 and others from 1965 and only one other for the province. Both Ohio and Michigan have only one report (Knull 1946; Gosling 1973), suggesting it is not a common insect in these states. Hawthorn (*Cretagus* spp.), which is widespread in southern Ontario (Hosie 1990), is the food plant of the larvae (Linsley 1964).

Lamiinae*Goes tigrinus* (DeGeer)

Records: Ridgeway, no date, no collector, (UOG). Ontario, no location, no date, OAC Class Collection, (UOG), 2 specimens. Ontario, no location, no date, no collector, (UOG). Ontario, no location, no date, no collector, (ROM).

Petit (1871) lists it in his collections from Grimsby and this may be one of the minimally labeled specimens either at the University of Guelph or the Royal Ontario Museum. However it may also be a misidentification since *G. debilis*, *G. pulcher*, and *G. pulverentulus* are not included in that report. All three are expected in that area. Gosling and Gosling (1977) and Knull (1946) provide a few records for Michigan and Ohio respectively. The larvae feed in living heartwood of hardwoods such as oak, walnut (*Juglans* spp.) and hickory (Linsley and Chemsak 1984), all widespread in southern Ontario.

Hebestola nebulosa Haldeman

Records: Pelham, 14 July 1923, W.A. Ross, (UOG). Durham Co., Kendal, 20 July 1967, J.C.E. Riotte, and L.L. Kohalmi, uv light, (ROM). Leeds Co., Chaffey's Locks, 17 July 1970, J.C.E. Riotte, uv light, (ROM).

It has been found in Quebec (Laplante 1989), in nine counties in Michigan, (Gosling and Gosling 1977, as *Cacoplia nebulosa*) and in Ohio (Knull 1946, as *Cacoplia nebulosa*). Larvae feed on oak, shadbush (*Amelanchier* spp.) and American Chestnut (Linsley and Chemsak 1984). The former two are, and the latter was, widespread in Ontario (Hosie 1990).

Previously reported from Ontario, no specimens seen

I found no specimens of the following eight species that are listed as occurring in Ontario by McNamara (1991). Listing here is one way of encouraging entomologists to report observations from Ontario.

Prioninae*Prionus imbricornis* (Linnaeus)

McNamara (1991) listed it only from Ontario in Canada, however I was unable to locate any specimens, possibly because the specimens were on long term loan from CNCI (Laplante pers. comm). Gosling (1973) does not include any records from Michigan and Knull (1946) states it may occur in Ohio. Chemsak (1996) lists the range as 'eastern North America to Montana and Texas'. The accompanying map includes a location north of Georgian Bay, possibly near Sudbury. Other locations close to Ontario on the distribution map include eastern Minnesota, central Ohio and southern Pennsylvania. The larvae feed on roots of oak, chestnut, plum (*Prunus* spp.) and even grape (*Vitis* spp.) (Linsley 1962a; Chemsak 1996).

Spondyliinae*Spondylis upiformis* Mannerheim

McNamara (1991) listed it from Ontario, however I was unable to locate any specimens from the province. This species is known in Canada from Quebec (Laplante et al. 1991) and there is one specimen, with limited label data, from Boisetown, New Brunswick in the ROM (pers. obs). Linsley (1962a) and Chemsak (1996) describe the range as 'coniferous forests from Alaska southeast to the Great Lakes region, south into Rocky Mountains and along the Pacific coast'. The closest locations to Ontario are two on the northern peninsula of Michigan (Gosling 1973; Chemsak 1996), two locations in Pennsylvania (Chemsak 1996) and one east of Quebec City (Laplante et al. 1991; Chemsak 1996). Gosling (1973) reports it from two counties in northern peninsula of Michigan, presumably the same two as Chemsak (1996).

Lepturinae*Strangalia famelica* Newman

There are two subspecies and it is the one that resides west of the Appalachians, *S. famelica solitaria* (Linsley and Chemsak 1976) that is recorded for Ontario (McNamara 1991). There were specimens from as close to Ontario as Detroit in some collections, yet none from Ontario. Since it is abundant in Ohio (Knull 1946) and southern Michigan (Gosling and Gosling 1977) and the larval food plants include many common flowering shrubs (e.g. *Rosa* spp., *Cornus* spp. and *Spirea* spp.) (Linsley and Chemsak 1976), it is surprising no specimens from Ontario were seen. I expect that focussed collecting will reveal populations in southwestern Ontario.

Typocerus zebra (Olivier)

The similar *T. sparsus* is often misidentified as *T. zebra* (Gosling and Gosling 1977). I saw more than a dozen *T. sparsus* and even a few *Strophiona nitens* that had been identified as *T. zebra*. Linsley and Chemsak (1976) include a location in Prince Edward County on the range map, with the next closest locations being in southern New Jersey and southern Ohio. Gosling and Gosling (1977) could not include it for Michigan and note that a previous record was a misidentified *T. sparsus*. Knull (1946) only specified one collection from Ohio. Given the history of misidentifications it is prudent to remove this species from the Ontario list until better evidence is provided.

Cerambycinae*Parelaphidion incertum* (Newman)

Specimens of *P. aspersum* have often been identified as *P. incertum* (Linsley 1963; Laplante 1993; Androw and Keeney 1999). Laplante (1993) clearly demonstrated that previous records in Canada of *P. incertum* were in fact *P. aspersum*. Laplante (1993) explained that the inclusion of *P. incertum* for Ontario and Quebec in McNamara (1991) was based on this misidentification.

Because *Parelaphidion aspersum* (Haldeman) was not included in McNamara's (1991) checklist, all specimens examined are documented here, including the specimens from CNCI that Laplante examined previously.

Parelaphidion aspersum (Haldeman)

Records: Ontario, no location, July 1878, H. Saunders, (UOG). Norfolk, 21 June 1933, J.A. Hall, (UOG). De Cew Falls, 1937, 28 July 1937, S.D. Hicks, (CNCI). De Cew Falls, 1939, 01 July 1939, S.D. Hicks, (CNCI). De Cew Falls, 1939, 22 July 1939, S.D. Hicks, (CNCI). Frontenac Co., Perth Road, 02 September 1971, P. Ward, at bait, (CNCI). Frontenac Co., Perth Road, 09 August 1971, P. Ward, and J. Edsall, (CNCI). Hamilton, 27 July 1982, M. Sanborne, (CNCI). St Catharines, no date, no collector, (CNCI). London, no date, W. Saunders, (UOG), 2 specimens. Edmonton, no date, no collector, (UOG). London, no date, E.B. Reed, (UOG), 2 specimens. Ridgeway, no date, no collector, (UOG).

Parelaphidion aspersum was only recently recognized in Ohio, based on a change in identification of what Knull (1946) called *Elaphidionoides incertum*, to *P. aspersum* (Androw and Keeney 1999). Gosling (1973) records it for eight southern counties in Michigan (as *Elaphidionoides aspersus*). Larvae feed in the outer bark of oak and hickory, especially chestnut oak, *Quercus prinus* and pignut hickory, *Carya glabra* (Linsley 1963). Both these species occur in the vicinity of the sites from Hamilton to Norfolk and along the Niagara peninsula. However, neither occurs in Frontenac Co., nor in the Outaouais of Quebec (Hosie 1990) where Laplante (1993) collected the beetle. Laplante (1993) collected adults on the trunk and branches of red oak (*Quercus rubra*). This oak has an extensive range in eastern Canada (Hosie 1990) and is likely the host in Ontario as well.

Xylotrechus integer (Haldeman)

This species is known from all three maritime provinces and Quebec (Laplante et al. 1991; McNamara 1991). Linsley (1964) describes the range as eastern Canada and northeastern US from New Brunswick to West Virginia. The type locality is in Pennsylvania (Linsley 1964). It is not recorded from Ohio and Michigan (Knull 1946; Gosling 1973). Ontario would be on the western edge of the range. Larvae feed on balsam fir and hemlock (*Tsuga canadensis*), both common and widespread in Ontario (Hosie 1990). No specimens from Ontario were seen during this study.

Tilloclytus geminatus (Haldeman)

Linsley (1964) includes Ontario in the description of the range. This may be the source of the inclusion of Ontario by McNamara (1991). The type locality is in Pennsylvania and the range includes parts of the northeastern US (Linsley 1964). Gosling (1973) included no records for Michigan and Knull (1946) states 'it will occur in Ohio'. Host plants include several components of the flora of Ontario, such as Mockernut Hickory (*Carya tomentosa*), white oak (*Quercus alba*), gums (*Nyssa* spp.) and eastern flowering dogwood (*Cornus florida*) (Hosie 1990). No specimens from Ontario were seen during this study.

Elytroleptus floridanus (LeConte)

Linsley (1962b) lists the range as the Atlantic coast from southern Canada to Florida. This may be the basis for inclusion in McNamara (1991). It was not recorded in Ohio and Michigan (Knull 1946; Gosling 1973). No specimens were seen during this study.

Previously recorded from Ontario, of questionable origin**Prioninae***Prionus fissicornis* Haldeman

Record: Sudbury, no date, no collector, (CNCI).

The above minimally labeled specimen is presumably the basis for inclusion for Ontario in McNamara (1991). This is the only record for Canada. It was not recorded for Ohio or Michigan (Knull 1946; Gosling 1973). The distribution maps in Linsley (1962a) and Chemsak (1996) show the range largely west of 100th meridian. The furthest east locations are in western Minnesota, central Iowa and western Missouri. I suspect this specimen was either mislabeled or transported to the area. Given the large gap between Sudbury and the normal range of this species and the limited data on the label, it seems prudent to delete this species from the Ontario list. It is also possible that this specimen is the source of the Ontario dot on the distribution map of *P. imbricornis* in Linsley (1962a) and Chemsak (1996).

Cerambycinae*Physocnemum andreae* (Haldeman)

Record: Grimsby, 04 June 1913, Brimley, (CNCI).

The above is one of three records for Canada, the others are from Quebec (Linsley 1964; Laplante 1989; McNamara 1991). Laplante (1989) argues that this species should be considered an accidental introduction, not part of the native cerambycid fauna. The same arguments apply to Ontario and, therefore, I think it should not be on the Ontario list. All other records of *P. andreae* are within the range of the larval host, bald cypress, *Taxodium distichum* (Linsley 1964; Brockman 1968). Neither the distribution of the host nor the remainder of the distribution of the beetle approaches Ontario.

Final comments

Old specimens with limited collecting data provide support for the addition of seven of 14 species to the list of Cerambycidae for Ontario. These old specimens provide the only support for four of these species. A valid question is: should the species supported only by old specimens with limited data be included on a list of Ontario Cerambycidae? I have been able to make associations between specimens and contemporary reports for species such as *G. tigrinus* and *S. cretata* (Reed 1869; Petit 1871), and I have been able to find other written records of the time mentioning collecting the species (e.g. Wickham 1897). The weight of evidence is that they should be included.

Eight of the 14 additions are from extreme southern Ontario, particularly along Lake Erie, and, to a lesser extent, the north shore of Lake Ontario. Most depend on Carolinian hardwood trees (e.g. hickory, oak and, historically, chestnut) that have a restricted distribution in southern Ontario. Another species, *Tetraopes melanurus*, also has a southern distribution differing only in having a herbaceous host plant, swamp milkweed. At least three of these species (*Obrium maculatum*, *G. tigrinus*, *D. alternatum*) have not been collected in the past 50 years, and all others are represented by only one to three collections over the same time period. Given changes in forest distribution, the paucity of specimens and the length of time between collections, some may

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