



The Cerylonidae (Coleoptera) of Atlantic Canada

Christopher G. Majka and David Langor

ABSTRACT

The Cerylonidae fauna of Atlantic Canada is surveyed. *Euxestus erithacus* (Chevrolat) is newly recorded in Canada from a specimen collected on the Avalon Peninsula of insular Newfoundland. *Cerylon castaneum* Say is newly recorded on Prince Edward Island and *Cerylon unicolor* (Ziegler) is newly recorded in Newfoundland and Labrador. A key to the identification of species found in the region is provided, as are distribution maps and colour habitus photographs. The distribution, seasonal abundance, and bionomics of all species are briefly discussed.

RÉSUMÉ

Les Cerylonidae du Canada Atlantique sont recensés. *Euxestus erithacus* (Chevrolat) est une nouvelle espèce signalée au Canada à partir d'un spécimen récolté sur la péninsule d'Avalon de l'île de Terre-Neuve. *Cerylon castaneum* Say est nouvellement signalé à l'Île-du-Prince-Édouard et *Cerylon unicolor* (Ziegler) est nouvellement signalé à Terre-Neuve et Labrador. Une clé d'identification des espèces retrouvées dans la région est fournie, de même que des cartes de distribution et des photographies couleurs de l'habitus. La distribution, la phénologie et la bionomie de toutes les espèces sont brièvement discutées.

INTRODUCTION

The Cerylonidae (minute bark beetles) is a family of saproxylic beetles found throughout the world that achieves its greatest diversity in the tropics. There are ten genera and 19 species in North America (Thomas 2002). Six genera and seven species have been recorded in Canada (Campbell 1991). Only two species, *Cerylon castaneum* Say, 1827 and *Cerylon unicolor* (Ziegler, 1845) were recorded from Atlantic Canada by Campbell (1991), the former in New Brunswick and Nova Scotia; the latter only in Nova Scotia. Adults and larvae of *Cerylon* spp. are found under bark and on polypores where they apparently feed on fungi (Lawrence and Stephan 1975; Thomas 2002). In the present paper we newly record the family from Prince Edward Island and insular Newfoundland in the province of Newfoundland and Labrador (Table 1).

IDENTIFICATION

The species found in Atlantic Canada can be differentiated with the following key adapted from Lawrence and Stephan (1975) and Thomas (2002):

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- 1. Frontoclypeal suture present, terminal maxillary palpomere at least twice as long as and more than half as wide as palpomere 3, which is shorter or subequal to palpomere 2; last abdominal ventrite not or very finely crenulate3
 - Frontoclypeal suture absent, terminal maxillary palpomere aciculate, shorter than and less than half as wide as palpomere 3, which is longer than palpomere 2; last abdominal ventrite always strongly crenulate (*Ceryloninae*) 2

- 2(1). Pronotal sides sub-parallel or slightly diverging for 60% of their lengths, markedly converging apically; body less elongate, length/width ratio usually less than 2.42; antennomere 3 more than 1.5 times as long as 4; clypeus shallowly emarginate in both sexes (Figs. 1a & 1b).....
 - *Cerylon unicolor* (Ziegler)
 - Pronotum with sides diverging for 80% of length; body more elongate, length/width ratio greater than 2.50; antennomere 3 less than 1.5 times as long as 4; clypeus of male deeply notched, that of female more shallowly emarginate (Figs. 2a & 2b)..... *Cerylon castaneum* Say

- 3(1). Procoxal cavities closed behind; length greater than 1.5 mm; body oval and highly convex, with smooth, even lateral edges and no antennal cavities (*Euxestinae*) (Fig. 3).....
 - *Euxestus erithacus* Chevrolat
 - Procoxal cavities open behind; length less than 1.5 mm; without other characters in combinationother subfamilies.

METHODS AND CONVENTIONS

Collection acronyms referred to in this study are:

- CFNL Canadian Forest Service, Corner Brook, Newfoundland and Labrador, Canada
- CGMC Christopher G. Majka Collection, Halifax, Nova Scotia, Canada
- MUN Memorial University of Newfoundland collection, St. John’s, Newfoundland and Labrador, Canada (currently on long term loan to the Canadian Forest Service, Edmonton, Alberta)

RESULTS

Euxestinae

Euxestus erithacus (Chevrolat, 1863)

Newfoundland and Labrador: Avalon Peninsula, Hwy 90, 4 km S. St. Josephs, 3 June 1981, D. Langor & D. Larson (1, MUN).

Euxestus erithacus in newly recorded in Canada from a collection in the Avalon Peninsula of insular Newfoundland at approximately 47.0873°N; 53.4745°W. The determination was confirmed by Michael Thomas (Florida State Collection of Arthropods). The site where this specimen was collected is adjacent to a boggy river margin. In North America it has only previously been

found in southern Florida (Thomas et al. 1995). It is otherwise a species known from the Greater Antillies (Cuba, Guadeloupe, Hispaniola, Jamaica, Puerto Rico) (Leng and Mutchler 1914; Peck and Thomas 1998; Perez-Gelabert 2008), the Leeward Islands (Montserrat) (Ivie et al. 2008), the Bahamas (New Providence) (Turnbow and Thomas 2008), Bermuda (Hilburn and Gordon 1989), and Mexico (Ford 1968; Hilburn and Gordon 1989). It has also been introduced to Hawaii (Oahu) (Anonymous 1953; Ford 1968), Samoa (Kami and Miller 1998), Midway Atoll (Nishida and Beardsley 2002), and Australia (A. Slipinski, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, personal communication) in the Pacific. It is “doubtfully” present in France and Madeira (Slipinski 2010) in Europe.

In terms of bionomics, Lawrence and Stephan (1975) reported it from bat guano in a cave in Jamaica; in Hawaii it was found under a rotting papaya trunk (*Carica papaya* L., (Caricaceae)), in rotten sugarcane stalks (*Saccharum* sp., (Poaceae)), and under breadfruit bark (*Arctocarpus altilis* (Parkinson) Fosberg, (Moraceae)) (Anonymous 1953; Ford 1968); in Florida it was collected in a hardwood hammock (Thomas et al. 1995); and in Bermuda it was collected in a house and on yellow alder (*Turnera ulmifolia* L., (Turneraceae)).

Table 1. The distribution of Cerylonidae in Atlantic Canada and the Northeastern USA

	NB	NS	PE	NL	NE North America
Euxestinae					
<i>Euxestus erithacus</i> (Chevrolat)				1	NL
Ceryloninae					
<i>Cerylon castaneum</i> Say	1	1	1		CT, ME, NB, NH, NS, NY, ON, PE, QC, RI
<i>Cerylon unicolor</i> (Ziegler)		1		1	ME, NF, NH, NS, NY, ON, QC, VT
Total	1	2	1	2	

NOTE: Regional distribution in northeastern North America: ON = Ontario; QC = Québec; NB = New Brunswick; NS = Nova Scotia; PE = Prince Edward Island; NL = Newfoundland & Labrador; PM = Saint-Pierre et Miquelon; CT = Connecticut; MA = Massachusetts; ME = Maine; NH = New Hampshire; NY =

Ceryloninae

Cerylon castaneum Say, 1827

PRINCE EDWARD ISLAND: Kings County: Woodville Mills, 23 July 2001, C.G. Majka, coniferous forest, *Picea rubens*, under bark (1, CGMC); **Queens County:** St. Patricks, 30 June 2003, C.G. Majka, mixed forest (1, CGMC).

Cerylon castaneum Say is newly recorded in Prince Edward Island. It was reported from New Brunswick and Nova Scotia by Campbell (1991). It is widely distributed in Nova Scotia and Prince Edward Island; there are only a few records from New Brunswick, in all probability due to limited collecting effort for this family there (Figure 4). A total of 111 specimens were examined: 78 of these were found in young to old growth red spruce (*Picea rubens* Sarg. (Pinaceae)) stands; five in old growth hemlock (*Tsuga canadensis* (L.) Carr. (Pinaceae)) stands on red maple (*Acer rubrum* L. (Sapindaceae)) snags; four in mixed old growth red spruce and hemlock stands; six in deciduous forests, and single specimens on sugar maple (*Acer saccharum* Marsh. (Sapindaceae)), white birch (*Betula papyrifera* Marshall (Betulaceae)), black spruce (*Picea mariana* (Mill.) BSP. (Pinaceae)), white pine (*Pinus strobus* L. (Pinaceae)), and poplar (*Populus* sp.). Ninety-five specimens (85%) were collected with flight intercept traps, an indication of the best collecting

technique for this species. Other specimens were found by searching manually under bark of dead branches or logs. Adults (n = 112) have been collected between 23 May and 7 September with numbers reaching a peak between the middle of June and the middle of July (Figure 5).

Specimens of *Cerylon castaneum* collected on polypores had basidiospores in their gut, while specimens collected under conifer bark contained fungal hyphae as well as spores (Lawrence and Stephan 1975). Lawrence and Stephan (1975) recorded specimens from under the bark of maple, beech, and spruce and on the following fungi: *Pleurotus* sp., *Fomes fomentarius* (Fr.) Kickx (Polyporaceae), *Phellinus ignarius* (Fr.) Quél. (Hymenochaetaceae), and *Bjerkandera adusta* (Fr.) Kar (Hapalopilaceae).

Cerylon unicolor (Ziegler, 1845)

NEWFOUNDLAND/LABRADOR: Newfoundland, Steady Brook, 27 May 1959 (1, CFNL).

Cerylon unicolor is newly recorded in Newfoundland and Labrador (Figure 4). It was reported from Nova Scotia by Campbell (1991). In Nova Scotia it has only been found in southwestern portion of the province and in northern Cape Breton (Figure 4.) Given the fact that it is known from both Maine and Quebec (Table 1) it is probable that it is present in New Brunswick. Twelve specimens from Nova Scotia were examined, six of which

Figure 1. Dorsal habitus photo of *Cerylon unicolor* (Length 1.8–2.4 mm). **Note** pronotal margins that are sub-parallel, and markedly converging apically (a) and drawing of the front of the head of male. **Note** the shallowly emarginate clypeus. **Photo credit and Illustration:** James Hammond, Northern Forestry Centre.

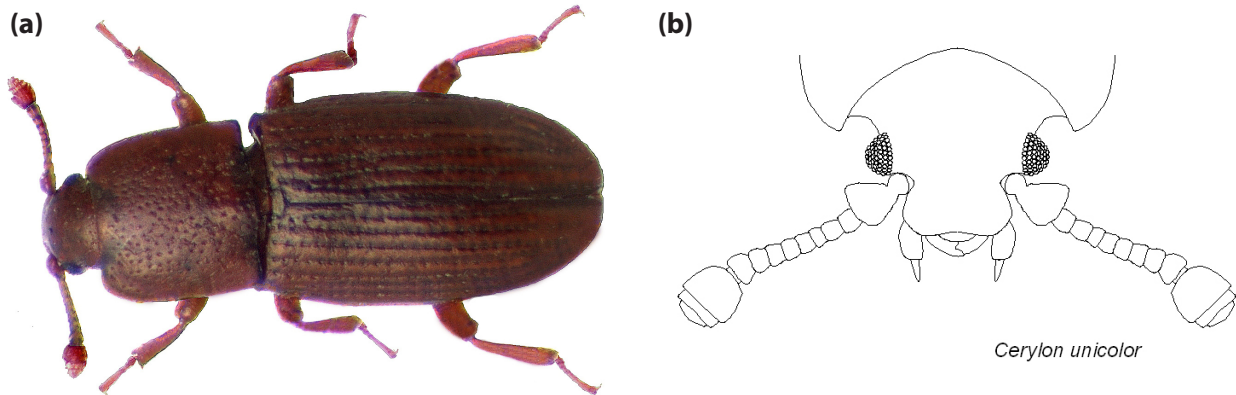


Figure 2. Dorsal habitus photo of *Cerylon castaneum*. **Note** the pronotal margins, which are divergent from the base to approximately 80% of the distance to the apex (a) and drawing of the front of the head of male. **Note** the deeply emarginate clypeus (b). **Photo credit and Illustration:** James Hammond, Northern Forestry Centre.

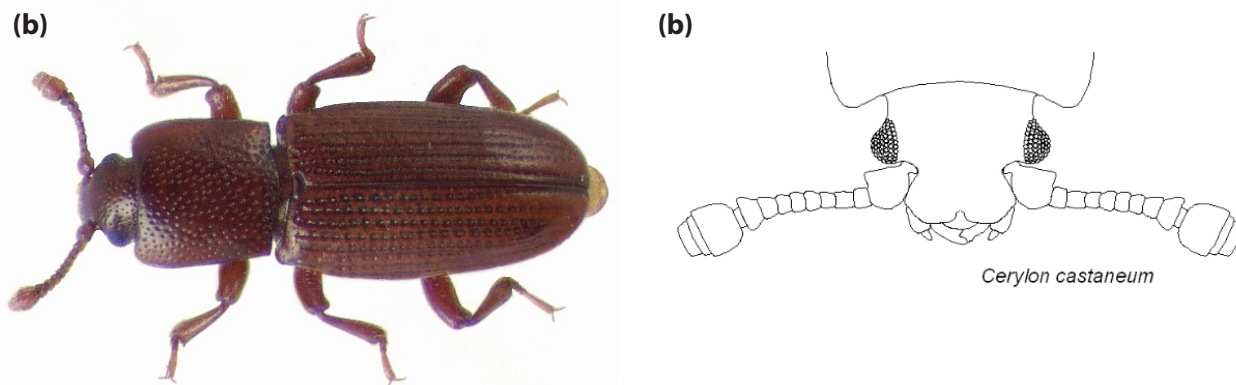


Figure 3. Dorsal habitus photo of *Euxestus erithacus*. **Note** oval outline of the body with even lateral edges. **Photo credit:** Christopher Majka, Nova Scotia Museum.



were collected in red spruce stands, primarily on red-belted polypore (*Fomitopsis officinalis* (Fr.) Bond. & Sing. (Fomitopsidaceae)), three in old growth hemlock stands, and three in mixed old growth hemlock, black spruce, and balsam fir (*Abies balsamea* (L.) Mill. (Pinaceae)) stands. Three specimens (25%) were collected with flight intercept traps; the balance was found by searching manually. Adults ($n = 15$) have been collected between 27 May and 4 August.

Lawrence and Stephan (1975) recorded specimens from under the bark of hickory, beech, tulip tree, spruce, pine, sycamore, poplar, sweetgum, willow, and hemlock, in rotten logs, leaf mold, at sap, and on fungi including *Phellinus gilvus* (Schw.) Pat. (Hymenochaetaceae) and *Bjerkandera adusta*.

DISCUSSION

The collection of *Euxestus erithacus* in Canada is a very surprising discovery. How could such a beetle, which

Figure 4. Distribution of *Cerylon castaneum*, *Cerylon unicolor*, and *Euxestus erithacus* in Atlantic Canada.

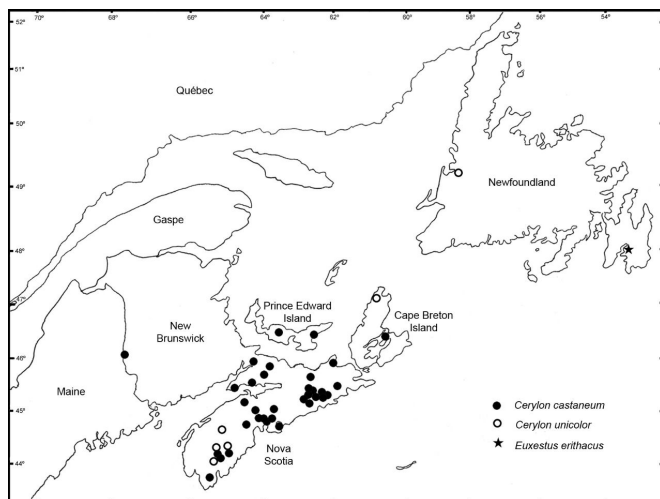
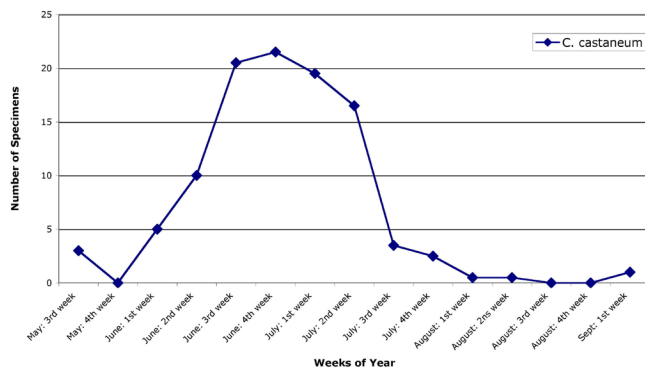


Figure 5. Seasonal abundance of *Cerylon castaneum* in Atlantic Canada. **Note:** The vertical axis represents the number of specimens; the horizontal axis indicates successive weeks of the year, from the third week of May to the first week of September.



occurs principally in the Greater Antillies, find its way to the Avalon Peninsula of Newfoundland? Could it survive in the climate of insular Newfoundland? Does this discovery represent a species that has somehow become established in the province, or simply an errant individual somehow conveyed to this site? Without further fieldwork it is not possible to answer this question, however, we offer some information with respect to the options.

The site where the *Euxestus erithacus* specimen was found is a natural one with no anthropogenic disturbance or nearby habitations or buildings from whence the specimen might have originated. The neighbouring fishing villages of St. Josephs (4 km distant) and St. Mary’s (23

km away) presently conduct no commercial activities that involve the movement of goods from the Greater Antilles. The nearest seaport where there is international traffic is St. John’s, 80 km distant (the town of Argentia, 40 km distant, has a ferry terminal linked to Nova Scotia). The small road through the site runs adjacent to the Avon Wilderness Reserve, and is used exclusively for local traffic between small towns. It is not a shipping route. Therefore, the possibility of an errant individual arriving at this site seems very remote, but cannot be discounted.

The possibility that *Euxestus erithacus* could survive the climate of insular Newfoundland seems equally remote, but also cannot be discounted. The long history of trade in cod, molasses, and rum between Newfoundland ports in those in the West Indies during the 18th and 19th centuries could have provided an historical opportunity for the introduction of sugar-cane associated as species such as *Euxestus erithacus* (Anonymous 1953; NLH 1997). Clearly further fieldwork is necessary to determine the status of this species in insular Newfoundland.

Although the diversity of Cerylonidae in Atlantic Canada is small, they are members of the region’s saproxylic beetle fauna. Further investigation in the region would be welcome to determine more about their distribution, abundance, bionomics, and their ecological role in the habitats they inhabit.

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