



NOTE

The Oedemeridae (Coleoptera) of Atlantic Canada

Christopher G. Majka and David Langor

INTRODUCTION

The Oedemeridae (false blister beetles) is a family of saproxylic beetles found throughout the world. In North America there are 87 species in 17 genera (Kriska 2002). Campbell (1991) recorded 13 species in seven genera in Canada, including two species in Atlantic Canada (New Brunswick, Newfoundland and Labrador, Nova Scotia, and Prince Edward Island). Adults are pollen feeders and are found on foliage and flowers, under driftwood, or in moist to wet rotten logs (Kriska 2002). There are three subfamilies: larval Calopodinae are found in rotting logs, stumps, and wood; larval Oedemerinae are also found in rotting wood, in very moist environments; larval Nacerdinae are also found in wet rotting wood that is typically buried or submerged intermittently in fresh or salt water (Kriska 2002). They derive their common name not only from their superficial resemblance to some species of the Meloidae (the “true” blister beetles) but also because many species possess the blistering agent cantharidin. Since most adults are soft-bodied flower feeders it is thought that they employ this substance along with aposematic colouration to deter potential predators (Kriska 2002). The present study, based on an examination of specimens in collections in Atlantic Canada, surveys the Oedemeridae fauna of this region.

METHODS AND CONVENTIONS

Specimens of Oedemeridae originating from Atlantic Canada from a variety of collections were examined and identified. These collections yielded 302 specimens; 170 from Nova Scotia, 18 from New Brunswick, 14 from Prince Edward Island, 98 from Newfoundland and Labrador, and 2 from Saint-Pierre et Miquelon. Abbreviations of collections (largely following Evenhuis 2009) referred to in the accounts below are:

ACNL	Agriculture and Agri-Food Canada, St. John's, Newfoundland and Labrador, Canada
ACPE	Agriculture and Agri-Food Canada, Charlottetown, Prince Edward Island, Canada
DHWC	David H. Webster Collection, Kentville, Nova Scotia, Canada
GSC	Gary Selig Collection, Bridgewater, Nova Scotia, Canada
JOC	Jeffrey Ogden Collection, Truro, Nova Scotia, Canada
MTC	Martin Turgeon Collection, Saint-Basile, New Brunswick, Canada
MUN	Memorial University of Newfoundland Collection, St. John's, Newfoundland, Canada (currently on long term loan to the Canadian Forest Service, Edmonton, Alberta)
NBM	New Brunswick Museum, Saint John, New Brunswick, Canada
NSMC	Nova Scotia Museum, Halifax, Nova Scotia, Canada
NSNR	Nova Scotia Department of Natural Resources Insectary, Shubenacadie, Nova Scotia, Canada
STFX	Saint Francis Xavier University, Antigonish, Nova Scotia, Canada
UPEI	University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada

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Christopher G. Majka¹: Research Associate, Nova Scotia Museum, 1747 Summer Street, Halifax, Nova Scotia, Canada.

David Langor: Natural Resources Canada, Canadian Forest Service, Northern Forestry Centre, 5320 - 122 St. NW, Edmonton, Alberta, Canada.

¹Corresponding author (email c.majka@ns.sympatico.ca).

Abbreviations employed: FIT, flight-intercept trap.

IDENTIFICATION

A key to species of Oedemeridae in Atlantic Canada (modified from Kriska 2002 and Arnett 1951) is provided below.

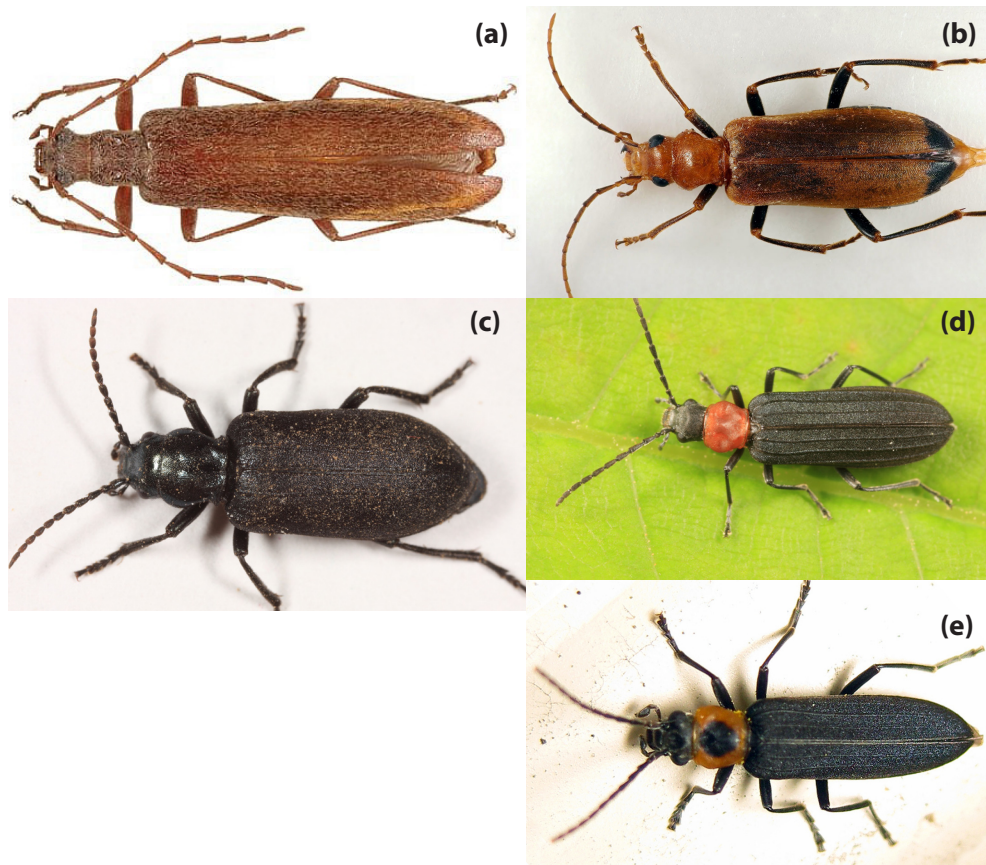
- 1. Antennae set in deep emargination of eyes (Calopodinae) (Fig. 1a).....*Calopus angustus*
- Antennae set in front of eyes; eyes emarginate or entire.....2

- 2(1). Prothoracic tibiae each with a single apical spur (Nacerdinae) (Fig. 1b).....
- *Nacerdes melanura*
- Prothoracic tibiae each with two apical spurs (Oedemerinae).....3

- 3(2). Body stout and entirely black (Ditylini) (Fig. 1c)..... *Ditylus caeruleus*
- Body slender, never entirely black (Asclerini).....4

- 4(3). Pronotum wholly red (Fig. 1d)..... *Asclera ruficollis*
- Pronotum with a large, central black spot (Fig. 1e).....*Asclera puncticollis*

Figure 1. Dorsal habitus photograph of (a) *Calopus angustus*, (b) *Nacerdes melanura*, (c) *Ditylus caeruleus*, (d) *Asclera ruficollis*, (e) *Asclera puncticollis*. **Photo credit:** Guy A. Hanley, Cyril Moore Science Center, Minot, North Dakota (a); Marcello Romano, Capaci, Italy (b); Tom Murray, Groton, Massachusetts (c, d); John Maxwell, Marlton, New Jersey (e).



RESULTS

As a result of an examination of specimens of Oedemeridae originating in Atlantic Canada, eight new jurisdictional (provincial/state) records are reported including three species, *Calopus angustus* LeConte, *Ditylus caeruleus* (Randall), and *Asclera puncticollis* (Say), that are newly recorded in the region (Table 1).

Table 1. The Oedemeridae fauna of Atlantic Canada.

	NB	NS	PE	NL	PM	Distribution in NE North America
Calopodinae						
<i>Calopus angustus</i> LeConte	1	1				ME, NB, NH, NS, ON, QC
Nacerdinae						
<i>Nacerdes melanura</i> (Linnaeus) †	1	1	1	1	1	MA, ME, NB, NF, NH, NS, ON, PE, PM, QC, RI
Oedemerinae						
Ditylini						
<i>Ditylus caeruleus</i> (Randall)	1	1		1		ME, NB, NF, NH, NS, NY, ON, QC
Asclerini						
<i>Asclera puncticollis</i> (Say)		1				ME, NH, NS, NY, ON, QC
<i>Asclera ruficollis</i> (Say)		1				CT, MA, ME, NH, NS, NY, ON, QC, RI
Total	3	5	1	2	1	

Notes: †, adventive Palearctic species; NB = New Brunswick; NS = Nova Scotia; PE = Prince Edward Island; NL = Newfoundland and Labrador; PM = Saint-Pierre et Miquelon. Distribution in northeastern North America: for the purposes of this treatment, northeastern North America is taken to consist of the following jurisdictions: NF = insular Newfoundland; LB = Labrador; QC = Québec; ON = Ontario; CT = Connecticut; MA = Massachusetts; ME = Maine; NH = New Hampshire; NY = New York; RI = Rhode Island; and VT = Vermont.

Calopodinae

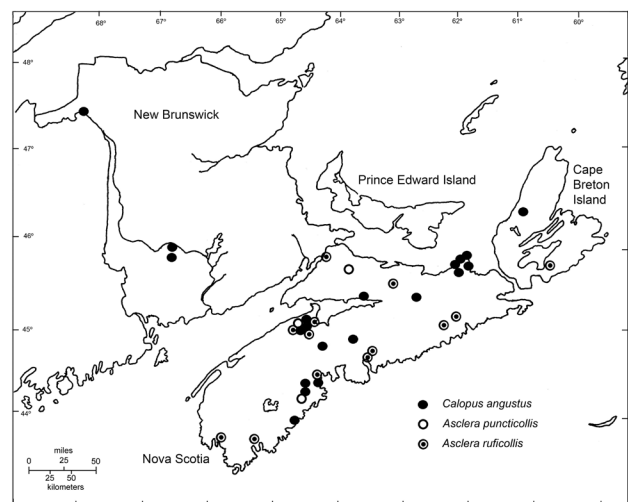
Calopus angustus LeConte, 1851

NEW BRUNSWICK: Madawaska County: East Iroquois River, 7 May 2000, M. Turgeon (2, MTC); **York County:** Charters Settlement, 5 April 1991, R.P. Webster (1, NBM); Fredericton, 5 May 19__, R.P. Webster (1, NBM). **NOVA SCOTIA: Antigonish County:** Beaver Mt., 19 May 1993, E. Georgeson, FIT (1, NSNR); Beaver Mt., 8 June 2005, J. Ogden, spruce beetle trap (1, NSNR); Cape George Point, 25 May 1995, 9 June 1994, 16 June 1994, M. Leblanc, funnel trap (3, NSNR); Crystal Cliffs, 5 May 2008, N. MacDonald, under bark (1, STFX); Eigg Mt., 25 May 1995, M. Leblanc, funnel trap (2, NSNR); Morar, 13 May 1993, 19 May 1993, M. Leblanc, funnel trap (6, NSNR); **Colchester County:** Masstown, 19 May 1993, M. Leblanc (1, JOC); **Hants County:** Leminster, 2-15 June 1997, D.J. Bishop, red spruce-hemlock forest, FIT (1, NSMC); Mount Uniake, 19 May 1955, D.C. Ferguson (1, NSMC); **Inverness County:** Margaree, 2 May 2000, I. Timmins (1, NSNR); **Kings County:** Cambridge, 7 May 2007, D.H. Webster, white pine forest (1, DHWC); Coldbrook, 7 June 2005, R. Williams, FIT (1, NSNR); Sheffield, 5 May 1984, Agriculture Canada,

light trap (1, NSMC); **Lunenburg County:** Bridgewater, 10-14 May 1965, B. Wright (1, NSMC); Martin River, 1 May 2006, A. White, FIT (1, NSNR); Pine Grove, 31 May 2004, P. Murphy, *Pissodes* trap (5, NSNR); **Pictou County:** Lorne, 2-15 June 1997, D.J. Bishop, mature red spruce-hemlock forest, FIT (1, NSMC); **Queens County:** Liverpool, 15 May 2002, P. Colp, *Pissodes* trap (1, NSNR).

Calopus angustus is newly recorded in Atlantic Canada from New Brunswick and Nova Scotia (Figure 1). Adults (n = 34) were collected between 5 April and 16 June. Numbers fluctuate over this time period; the data is insufficient to determine when peak activity may occur. Specimens in Nova Scotia were collected in red spruce (*Picea rubens* Sarg.), eastern hemlock (*Tsuga canadensis* (L.) Carr.) and white pine (*Pinus strobus* L.) (Pinaceae) forests. Burke (1906) found larvae, pupae, and adults in dead and living western cedar (*Thuja plicata* Don ex D. Don) (Cupressaceae) and alpine fir (*Abies balsamea lasiocarpa* (Hook)) (Pinaceae). Burke (1906) found that larvae entered living trees through small wounds and worked their way into the living tissues of the trees.

Figure 1. Distribution of *Calopus angustus*, *Asclera puncticollis*, and *Asclera ruficollis* in Atlantic Canada.



Nacerdinae

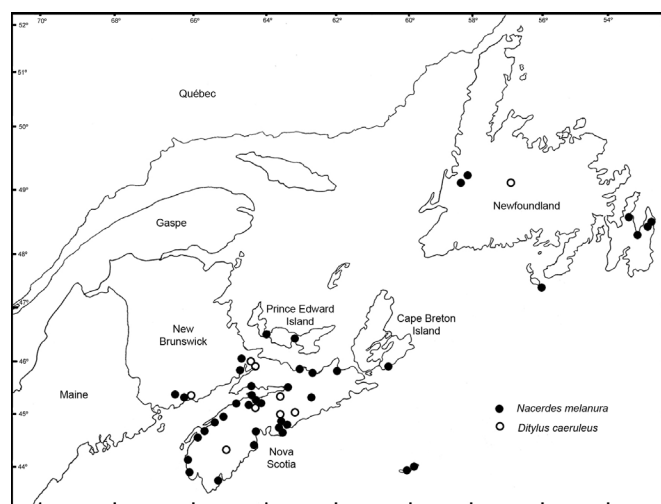
Nacerdes melanura (Linnaeus, 1758)

NEW BRUNSWICK: Saint John County: Saint John, 18 July 1901, 19 July 1901, July 190_, 7 February 1907, W. McIntosh (4, NBM). **NEWFOUNDLAND AND LABRADOR:** St. John's, 20 July 1960, R. Morris (1, ACNL). **PRINCE**

EDWARD ISLAND: Prince County: Summerside, 3 June 1977, L.S. Thompson (5, ACPE); **Queens County:** Charlottetown, 22 June 1981, G. Orłowsky, in flight (1, UPEI); Charlottetown, 30 June 1982, L.S. Thompson, in basement of building (6, ACPE); Charlottetown, 19 June 1985, L.S. Thompson, in building (1, ACPE); Charlottetown, mid-July 1998, M.E.M Smith, in building (1, ACPE). **SAINT-PIERRE ET MIQUELON, FRANCE:** Saint-Pierre, 8 August 1982, D. Abraham (2, MUN).

Nacerdes melanura is newly recorded in Prince Edward Island and Saint-Pierre et Miquelon, France. It was recorded from New Brunswick, Nova Scotia, and insular Newfoundland by Campbell (1991) (Figure 2). Adults (n = 204) were collected between 2 April and 23 September with numbers reaching a peak in during the last half of July and first half of August (Figure 3).

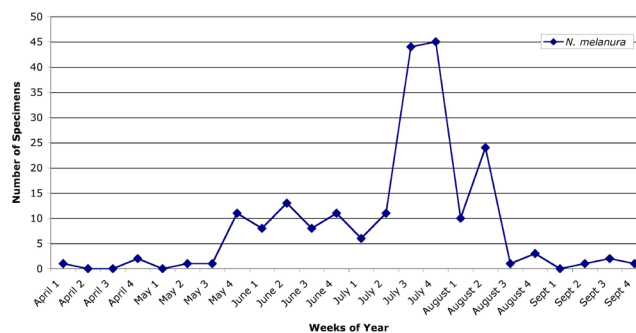
Figure 2. Distribution of *Nacerdes melanura* and *Ditylus caeruleus* in Atlantic Canada.



Known as the wharf borer, this adventive Palaearctic beetle is now cosmopolitan in distribution (Kriska 2002). It is widespread in North America in coastal areas and along major rivers from Texas to insular Newfoundland and on the Pacific coast from British Columbia south to California (Arnett 1991; Campbell 1991). The larvae feed on wet decomposing wood such as wharf pilings or driftwood and are capable of withstanding immersion by tides (Arnett 1951). In the Maritime Provinces many specimens have also been collected in basements of buildings where they feed on decomposing wooden sills. The earliest dates of detection are: New Brunswick – 1901; Nova Scotia – 1869 (Jones 1869); Prince Edward Island – 1977; Newfoundland and Labrador – 1960. The earliest

North American record is from Indiana in 1830 (Say 1830).

Figure 3. Phenology of adult *Nacerdes melanura* in Atlantic Canada. **NOTE:** The vertical axis represents the number of specimens; the horizontal axis indicates successive weeks of the year, from the first week of April to the fourth week of September.



Oedemerinae

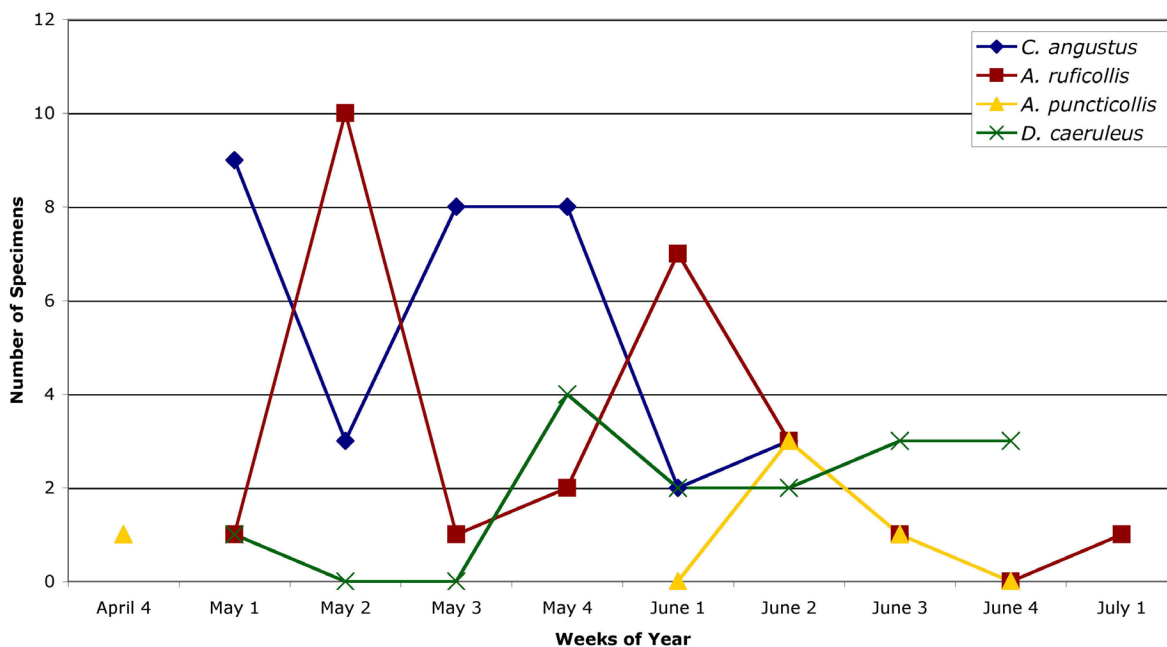
Ditylini

Ditylus caeruleus (Randall, 1838)

NEW BRUNSWICK: Saint John County: Saint John, 26 May 1901, 23 June 1901, W. McIntosh (4, NBM). **NEWFOUNDLAND AND LABRADOR:** Cox Lake near Badger, 26 June 1980, Brennan and Larson (1, MUN). **NOVA SCOTIA: Cumberland County:** Amherst, 20 June 1993, J. Ogden (1, JOC); Chignecto, 20 June 1993, 23 June 1993, E. Georgeson, light trap (2, NSNR); **Halifax County:** Elderbank, 6 June 1996, E. Georgeson, aerial net (1, NSNR); **Hants County:** Monte Vista, 17 June 1967, K.A. Neil (1, NSMC); South Maitland, Hayes Cave, 24 May 1978, B. Wright (1, NSMC); **Kings County:** Kentville, 2 June 2000, D.H. Webster, on *Robinia pseudoacacia* leaves (1, DHWC); **Queens County:** Caledonia, 6 May 2008, S. Sorowka, on rock (1, STFX).

Ditylus caeruleus is newly recorded in Atlantic Canada from New Brunswick, Nova Scotia, and insular Newfoundland (Figure 2). Adults (n = 13) were collected between 6 May and 26 June; the data is insufficient to determine when peak activity may occur. Young (1990) observed adults among shoreline beach drift. Larvae have been found in old, wet cedar logs and may take up to three years to mature. Adults have been observed on swamp ground, under wet logs, and on flowers of *Spiraea* sp. (Rosaceae) (Kriska 2002).

Figure 3. Phenology of adult Oedemeridae in Atlantic Canada. **NOTE:** The vertical axis represents the number of specimens; the horizontal axis indicates successive weeks of the year, from the fourth week of April to the first week of July.



Asclerini

Asclera puncticollis (Say, 1823)

NOVA SCOTIA: Cumberland County: Oxford, 15 June 2000, K. Black (1, JOC); **Kings County:** Kentville, 26 April 1996, D.H. Webster, mating on *Salix* sp. (2, DHWC); Kentville, 9 June 2002, D.H. Webster, on leaf (1, DHWC); **Lunenburg County:** Bridgewater, 19 June 1996, G.D. Selig (1, GSC).

Asclera puncticollis is newly recorded in Atlantic Canada from Nova Scotia (Figure 1). In Nova Scotia one pair was collected mating on willow (*Salix* sp.). Adults (n = 5) were collected between 26 April and 19 June; the data is insufficient to determine when peak activity may occur. Adults have been found on cherries and plums (*Prunus* spp.) (Rosaceae) and other spring flowers (Downie and Arnett 1996; Arnett 2005). In Manitoba larvae collected under the bark of box elder (*Acer negundo* L., Aceraceae) were reared to adult (D. Pollock, Eastern New Mexico University, personal communication).

Asclera ruficollis (Say, 1823)

Asclera ruficollis was recorded in Atlantic Canada from Nova Scotia by Campbell (1991) (Figure 1). Adults (n = 27) were collected between 4 May and 22 June. Numbers fluctuate over this time period; the data is insufficient to

determine when peak activity may occur. In Nova Scotia all the specimens for which there is habitat data have been collected in deciduous forests and adults have been found on willow (*Salix* sp.) (Salicaceae) catkins, and on pin cherry (*Prunus pennsylvanica* L.f.) (Rosaceae) and Scotch broom (*Cytisus scoparius* (L.) Link) (Fabaceae) flowers. Elsewhere adults have been reported on dog's tooth violet (*Erythronium americanum* Ker-Gawler) (Liliaceae), pussy willow (*Salix discolor* Muhl.), wild pear (*Amelanchier canadensis* (L.) Medik.), hawthorn (*Crataegus* spp.), choke cherry (*Prunus virginiana* L.) (Rosaceae), black haw (*Viburnum prunifolium* L.), hobble bush (*Viburnum alnifolium* Marsh.) (Caprifoliaceae), and *Thalictrum pubescens* Pursh (Ranunculaceae) (Lovell 1915; Arnett 1951; Downie and Arnett 1996).

DISCUSSION

As a result of the present investigation, the known oedemerid fauna of Atlantic Canada has been increased from two species to five and the number of jurisdictional (Provincial/State) records to twelve from four. The most abundant and widely distributed species is the adventive *N. melanura*, which appears to be found throughout the region (although records from northern New Brunswick are lacking) (Figure 2), particularly in coastal habitats. Although first recorded in region in 1869 (and in North America in

1830), it is probable that this species has been present for substantially longer given how abundant and widespread it is, particularly in coastal areas in eastern North America.

Calopus angustus appears to be widely distributed in New Brunswick and Nova Scotia (Figure 1). *Ditylus caeruleus* is widely distributed in southern New Brunswick and Nova Scotia, and its range extends to central Newfoundland (Figure 2). *Asclera ruficollis* is widely distributed in Nova Scotia, both on the mainland of the province and on Cape Breton Island (Figure 1), while the less frequently encountered *Asclera puncticollis* is newly recorded from several sites in central mainland Nova Scotia (Figure 1). Although neither species of *Asclera* have been recorded from New Brunswick, this is in all probability a result of insufficient collecting effort. Both species are found in both neighbouring jurisdictions of Québec and Maine (Table 1) and would be expected to occur in New Brunswick. The absence of native oedemerids in Prince Edward Island may be a result of its insular location, insufficient collecting effort, the extensive clearing and disturbance of forested habitats there (Majka 2010) or a combination of these factors.

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