

## The Mycteridae, Boridae, Pythidae, Pyrochroidae, and Salpingidae (Coleoptera: Tenebrionoidea) of the Maritime Provinces of Canada

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### Abstract

The saproxylic beetles in the families Mycteridae, Boridae, Pythidae, Pyrochroidae, and Salpingidae of the Maritime Provinces of Canada are surveyed and new provincial records are reported. *Boros unicolor* Say is newly recorded in New Brunswick, Nova Scotia, and Atlantic Canada as a whole; *Pytho niger* Kirby and *Rhinosimus viridiaeneus* Randall are newly recorded in New Brunswick; *Neopyrochroa femoralis* (LeConte) is newly recorded in Nova Scotia; and *Priognathus monilicornis* (Randall), *Pedilus lugubris* (Say), *Dendroides canadensis* Latreille, and *Dendroides concolor* (Newman) are all newly recorded in Prince Edward Island. The distribution and bionomics of all 15 species known from the region are briefly summarized. The composition of the region's fauna is discussed, particularly in the context of saproxylic beetles and the effects of forest management practices on this group of insects.

**Keywords:** Coleoptera, Tenebrionoidea, Mycteridae, Boridae, Pythidae, Pyrochroidae, Salpingidae, Maritime Provinces, Canada, saproxylic, biodiversity, new records

### Introduction

The Mycteridae, Boridae, Pythidae, Pyrochroidae, and Salpingidae are five closely related families of saproxylic beetles in the Tenebrionoidea. Cumulatively they include 43 Canadian species as summarized by Campbell (1991a, 1991b, 1991c, 1991d, 1991e) and Bousquet (1991) excluding the Ischaliinae, Eurygeniinae, and Macratriinae, which have all been moved to the Anthicidae (Chandler 2002). Most of the groups are now comparatively well understood in North America as a result of recent treatments (Pollock 1991, Pollock 2002a, Pollock 2002b, Pollock 2002c, Pollock 2002d, Young 1975, Young 1983, Young 2002).

In the Maritime Provinces of Canada, however, they have not received a great deal of attention. Campbell (1991a, 1991b, 1991c, 1991d, 1991e) recorded nine species in New Brunswick, ten in Nova Scotia and none from Prince Edward Island. Majka & Pollock (2006) draw attention to the fact that many groups of saproxylic beetles have been hitherto little studied in the region, and contribute to a development of such an understanding in reporting new information on species of Tetratomidae, Melandryidae, Synchroidae, and Scruptiidae. The present work takes up this challenge and contributes to a better understanding of this important trophic group of Coleoptera. Nine provincial records are added, and other records of known species are reported which cumulatively add to our knowledge of the diversity and distribution of Mycteridae, Boridae, Pythidae, Pyrochroidae, and Salpingidae in the region.

### Methods and conventions

Abbreviations of collections referred to in the study are:

- ACPE Agriculture and Agri-food Canada, Charlottetown, Prince Edward Island.  
CBU Cape Breton University, Sydney, Nova Scotia.  
CGMC Christopher G. Majka Collection, Halifax, Nova Scotia.  
CNC Canadian National Collection, Ottawa, Ontario.  
DKYC Daniel K. Young Collection, University of Wisconsin, Madison, Wisconsin.  
NBM New Brunswick Museum, Saint John, New Brunswick.  
NSMC Nova Scotia Museum, Halifax, Nova Scotia.  
NSNR Nova Scotia Department of Natural Resources, Shubenacadie, Nova Scotia.  
UPEI University of Prince Edward Island, Charlottetown, Prince Edward Island.

Where the number of specimens is not specified it is assumed to be one.

### Results

Table 1 summarizes the records of specimens which were examined for this study; 325 in the Maritime Provinces in total. Nova Scotia has been much better investigated than New Brunswick or Prince Edward Island with 87% of records originating there. Specific accounts of the 15 species known in the region follow. New and noteworthy specimen records are reported and the distribution of the species in the region has been mapped.

### MYCTERIDAE

#### *Lacconotus punctatus* LeConte, 1862

**NOVA SCOTIA: Lunenburg Co.:** Bridgewater, 16 June 2004, flying adjacent to mixed forest, G.D. Selig, NSMC.

**TABLE 1.** The Mycteridae, Boridae, Pythidae, Pyrochroidae, and Salpingidae of the Maritime Provinces of Canada.

	County records			Regional distribution*
	NB	NS	PEI	
Number of counties	15	18	3	
<b>Myceteridae</b>				
Lacconotinae				
<i>Lacconotus punctatus</i> LeConte		1		NH, QC
<b>Boridae</b>				
<i>Boros unicolor</i> Say	1	2		ME, NH, QC
<i>Lecontia discicollis</i> (LeConte)	1			NH, QC
<b>Pythidae</b>				
<i>Pytho americanus</i> Kirby	2	5		ME, NH, QC, VT
<i>Pytho niger</i> Kirby	1	3	1	ME, NF, NH, QC, VT
<i>Pytho seidlitzi</i> Blair		1		ME, NH, QC
<i>Pytho strictus</i> LeConte	1			NH
<i>Priognathus monilicornis</i> (Randall)	4	10	1	ME, NF, NH, QC
<b>Pyrochroidae</b>				
Pedilinae				
<i>Pedilus lugubris</i> (Say)	3	5	1	ME, NH, QC, VT
<b>Pyrochroinae</b>				
<i>Neopyrochroa femoralis</i> (LeConte)		1		NH, QC
<i>Schizotus cervicalis</i> Newman	2	3		ME, NH, QC, VT
<i>Dendroides canadensis</i> Latreille	1	8	1	ME, NH, QC
<i>Dendroides concolor</i> (Newman)	3	11	1	ME, NF, NH, QC, VT
<b>Salpingidae</b>				
Salpinginae				
<i>Sphaeriestes virescens</i> (LeConte)	1	3		ME, NF, QC
<i>Rhinosimus viridiaeneus</i> Randall	1	12		ME, NF, NH, QC
Total number of county records	21	65	5	
Number of species	12	13	5	

\*Data compiled from Chandler (2001), Dearborn & Donahue (1993), Downie & Arnett (1996), Laplante et al. (1991), and Pollock (1991).

*Lacconotus punctatus* LeConte is newly recorded from Nova Scotia and discussed by Majka & Selig (in review). Otherwise recorded in Canada in Ontario and Québec; in the United States in New Hampshire (Chandler 2001), Ohio, Pennsylvania, and Michigan (Downie & Arnett 1996). Larvae of *Lacconotus* have been recorded under the bark of dead

fir (*Abies*) (Pinaceae), poplar (*Populus*) (Salicaceae), and oak (*Quercus*) (Fagaceae) (Lawrence 1991).

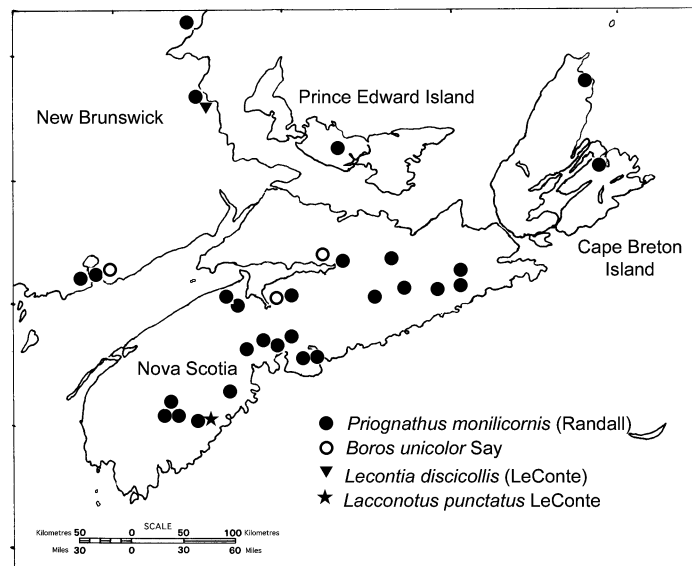
## BORIDAE

### *Boros unicolor* Say, 1827

**NEW BRUNSWICK: Saint John Co.:** Saint John, 19 July 1901, W. McIntosh, NBM.

**NOVA SCOTIA: Hants Co.:** Stanley, 26 May 1992, M. Leblanc, stove pipe trap, 2 specimens, NSNR.

Newly recorded in New Brunswick, Nova Scotia and Atlantic Canada as a whole (Fig. 1). In Canada recorded from Alberta west to Québec (Campbell 1991b). Widespread in North America, predominantly in the east. Larvae are found in the sub-cortical region of dead (often standing or leaning) pines (*Pinus* sp.) (Pinaceae) and other conifers (Young 1991a).



**FIGURE 1.** Distribution of *Priognathus monilicornis*, *Boros unicolor*, *Lecontia discicollis*, and *Lacconotus punctatus* in the Maritime Provinces of Canada.

### *Lecontia discicollis* (LeConte, 1850)

**NEW BRUNSWICK: Kent Co.:** Kouchibouguac National Park, 24 May 1977, G.A. Calderwood, 6 specimens, CNC; Kouchibouguac National Park, 24 May 1977, S.J. Miller, 3 specimens, CNC.

Widespread in Canada (Northwest Territories and British Columbia east to New

Brunswick), the United States, and northern Mexico (Campbell 1991b, Pollock 2002b). Larvae inhabit the subcortical region of conifers killed by fire and bark-beetle activity (Young et al. 1996).

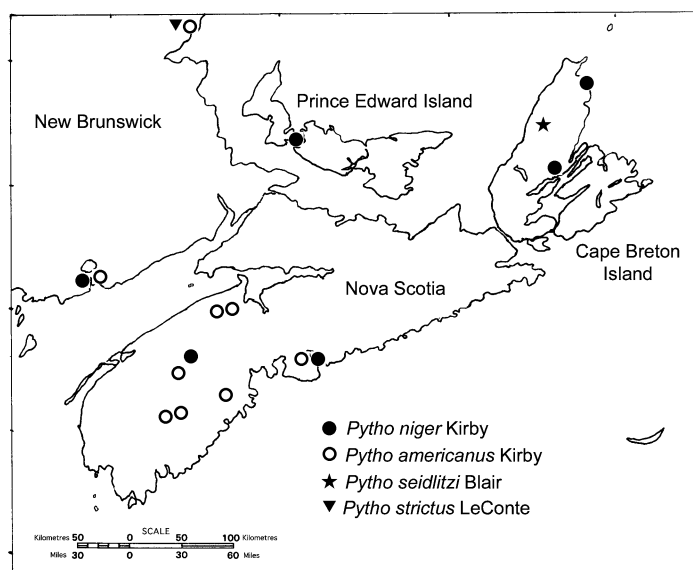
## PYTHIDAE

### *Pytho niger* Kirby, 1837

**NEW BRUNSWICK: Saint John Co.:** Saint John, 10 June 1900, W. McIntosh, NBM.

**PRINCE EDWARD ISLAND: Prince Co.:** 22 April 1980, L. Corbin, DKYC.

Newly recorded in New Brunswick: scattered distribution in the Maritime Provinces (Fig. 2). The specimen from Prince Edward Island was reported by Pollock (1991) but was not included in Campbell's (1991c) compilation; consequently it seems worthwhile to direct attention to the record. Found across the northern portion of North America from Alaska east to Labrador and Nova Scotia, south to Massachusetts, New York, Wisconsin, and Minnesota (Pollock 1991). Species of *Pytho* live under the bark of trees with a narrow range of decay (dead 4–10 years). Known hosts include *Pinus strobus* L., *P. banksiana* Lamb., *P. contorta* Dougl., *Picea mariana* (Mill.) B.S.P, and *Abies balsamea* (L.) Mill (Pinaceae) (Pollock 1991).



**FIGURE 2.** Distribution of *Pytho niger*, *P. americanus*, *P. seidlitzii*, and *P. strictus* in the Maritime Provinces of Canada.

***Pytho americanus* Kirby, 1837**

Broadly distributed throughout North America; in Canada recorded in every province except for Prince Edward Island, and not on the island of Newfoundland. In the Maritime Provinces primarily recorded in southern Nova Scotia and New Brunswick (Fig. 2). In the United States widely distributed in the east and west with fewer records in the Great Plains. Larvae found under bark, primarily of *Pinus* spp. and also *Picea mariana*, and *Tsuga heterophylla* (Raf.) Sarg. (Pinaceae) (Pollock 1991). In Nova Scotia found associated with *Pinus strobus*, *Tsuga canadensis* (L.) Carr., and *Picea rubens* Sarg. (Pinaceae).

***Pytho seidlitzii* Blair, 1925**

**NOVA SCOTIA: Inverness Co.:** Margaree Valley, 1 August 1980, R. Chénier, under bark of *Abies balsamea*, CNC.

Recorded across Canada in most provinces from the Northwest Territories and British Columbia to Nova Scotia; in the northern United States from Maine and New York west to Minnesota, and in the west in Washington, Oregon, Idaho, and Montana. Only one record from the Maritime Provinces (Fig. 2). Larvae are found under bark; host plants include a variety of species of *Pinus*, *Larix*, *Picea*, *Tsuga*, *Pseudotsuga*, and *Abies* (Pinaceae) (Pollock 1991).

***Pytho strictus* LeConte, 1866**

**NEW BRUNSWICK: Northumberland Co.:** Tabusintac, 20 June 1939, W.J. Brown, CNC.

In Canada known only from New Brunswick (Fig. 2). In the United States recorded from Maine, New Hampshire, New York, Pennsylvania, and Tennessee. The only known host is *Pinus strobus* (Pollock 1991).

***Priognathus monilicornis* (Randall, 1838)**

**PRINCE EDWARD ISLAND: Queens Co.:** St. Patricks, 13 July 2002, C.G. Majka, old field, CGMC; St. Patricks, 27 June 2003, C.G. Majka, coniferous forest, CGMC.

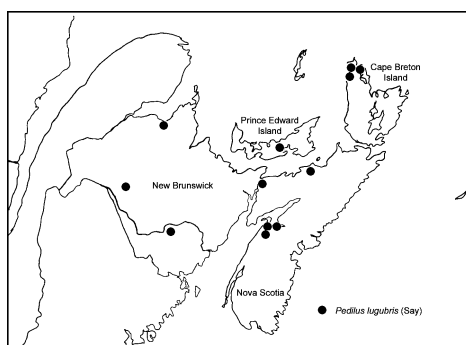
Newly recorded in Prince Edward Island: scattered distribution in the Maritime Provinces (Fig. 1). Found in Alaska and in Canada from the Yukon and British Columbia east to Newfoundland and Nova Scotia (Campbell 1991c). Transcontinental in areas of boreal forest. Larvae live in sapwood or red-rotten conifer logs (Pollock 2002c).

## PYROCHROIDAE

### *Pedilus lugubris* (Say, 1827)

**PRINCE EDWARD ISLAND: Queens Co.:** Harrington, 28 June 2004, C. Noronha, barley field, pitfall trap, ACPE.

Newly recorded on Prince Edward Island: scattered distribution in the Maritime Provinces (Fig. 3). In Canada recorded from Ontario east to Nova Scotia (Bousquet 1991); in the United States recorded from Maine, New Hampshire, Vermont, Massachusetts (Chandler 2001), and New York west to Illinois (Downie & Arnett 1996). Larvae are associated with cool, moist sub-cortical conditions between loosened bark and decaying wood of deciduous and coniferous trees; adults are common on shrubs and flowers (Young 2002).



**FIGURE 3.** Distribution of *Pedilus lugubris* in the Maritime Provinces of Canada.

### *Neopyrochroa femoralis* (LeConte, 1855)

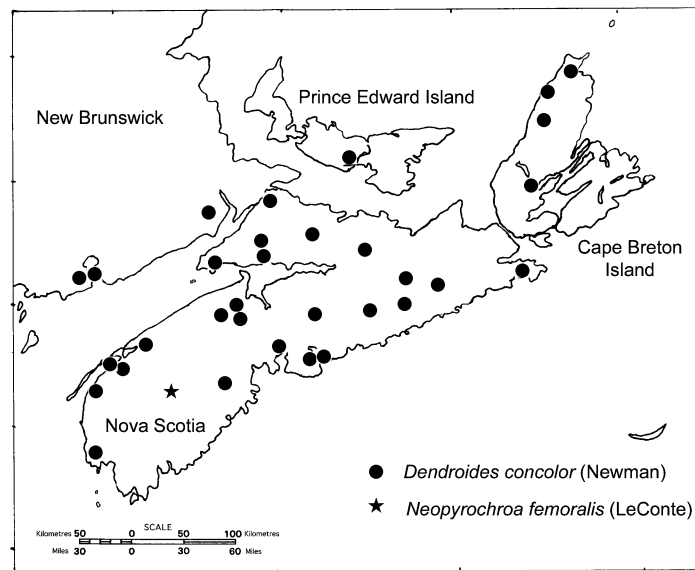
**NOVA SCOTIA: Queens Co.:** Lake Kejimkujik, Kejimkujik National Park, 13 July 1961, D.C. Ferguson, NSMC.

Newly recorded in Nova Scotia (Fig. 4). In Canada recorded from Ontario and Québec (Campbell 1991d); broadly distributed in the eastern and central United States from Maine to Georgia, west to Nebraska, Kansas, and Texas (Downie & Arnett 1996). Larvae are found beneath bark and in decomposing wood within standing dead deciduous and coniferous logs, particularly in riparian areas; adults are nocturnal (Young 2002).

### *Schizotus cervicalis* Newman, 1838

**NEW BRUNSWICK: Kent Co.:** Kouchibouguac National Park, 6 June 1977, J.R. Vockeroth, CNC; Kouchibouguac National Park, 13 June 1978, D.B. Lyons, CNC;

**Northumberland Co.:** Tabusintac, 20 June 1939, W.J. Brown, CNC. **NOVA SCOTIA:** **Cumberland Co.:** Wentworth, 21 May 1965, B. Wright, NSMC; **Guysborough Co.:** Malay Lake, 16–29 July 1997, D.J. Bishop, red spruce forest, NSMC. **Halifax Co.:** Grassy Lake, 15–30 June 1997, D.J. Bishop, red spruce forest, NSMC; Grassy Lake, 1–16 July 1997, D.J. Bishop, red spruce forest, NSMC; **Inverness Co.:** MacKenzies Mtn, 25 June 1983, Y. Bousquet, CNC; Lone Sheiling, 16 June 1983, 19 June 1983, 25 June 1983, 8–14 June 1983, Y. Bousquet, CNC; Lone Sheiling, 1 July 1983, maple forest, R. Vockeroth, CNC; Lone Sheiling, 27 May 1983, 11–13 June 1983, H. Goulet, CNC.



**FIGURE 4.** Distribution of *Dendroides canadensis* and *Schizotus cervicalis* in the Maritime Provinces of Canada.

Recorded across Canada from the Northwest Territories east to Nova Scotia with the exception of Saskatchewan (Campbell 1991d); scattered distribution in the Maritime Provinces (Fig. 5). In the United States from Maine south to Maryland and west to Illinois, Wisconsin, Minnesota, and South Dakota (Downie & Arnett 1996). Larvae are found in decaying woody sections of moss-covered logs in boreal-like areas (e.g. edges of bogs) (Young 2002).

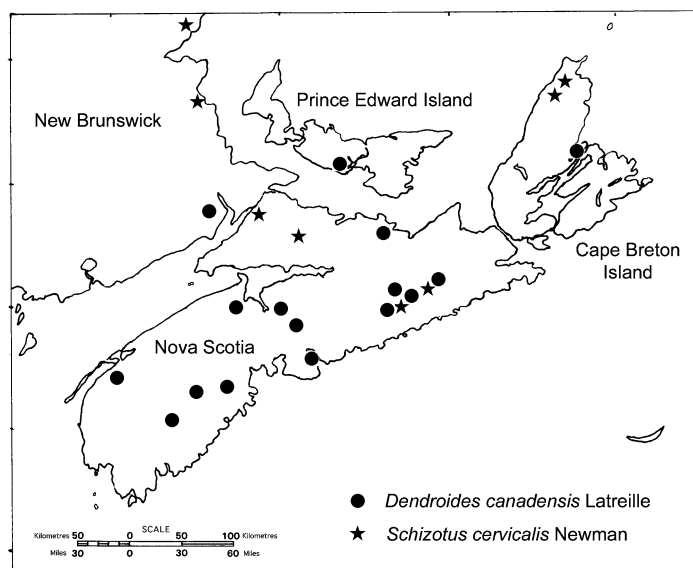
### *Dendroides canadensis* Latreille, 1810

**PRINCE EDWARD ISLAND: Queens Co.:** Cornwall, summer 1993, M.E.M. Smith, ACPE.

Newly recorded on Prince Edward Island: scattered distribution in the Maritime Provinces (Fig. 5). In Canada recorded from Manitoba east to Nova Scotia (Campbell



1991d); broadly distributed in the eastern United States from Maine south to Florida, west to Wisconsin, Illinois, and Alabama (Downie & Arnett 1996). Larvae are associated with exposed regions of dead logs of deciduous and coniferous trees; adults are nocturnal (Young 2002).



**FIGURE 5.** Distribution of *Dendroides concolor* and *Neopyrochroa femoralis* in the Maritime Provinces of Canada.

#### *Dendroides concolor* (Newman, 1838)

**PRINCE EDWARD ISLAND:** 1974-83, 3 specimens, UPEI; **Queens Co.:** Charlottetown, 30 June 1987, L.S. Thompson, ACPE.

Newly recorded on Prince Edward Island: scattered distribution in the Maritime Provinces (Fig. 4). In Canada recorded from Ontario east to Nova Scotia and Newfoundland (Campbell 1991d); broadly distributed in the eastern United States from Maine south to North Carolina and Tennessee, and west to Illinois, Wisconsin, and Minnesota (Downie & Arnett 1996). Larvae are associated with cool, moist sub-cortical conditions between loosened bark and decaying undersides of deciduous and coniferous logs adjacent to, or partly buried in soil; adults are nocturnal (Young 2002).

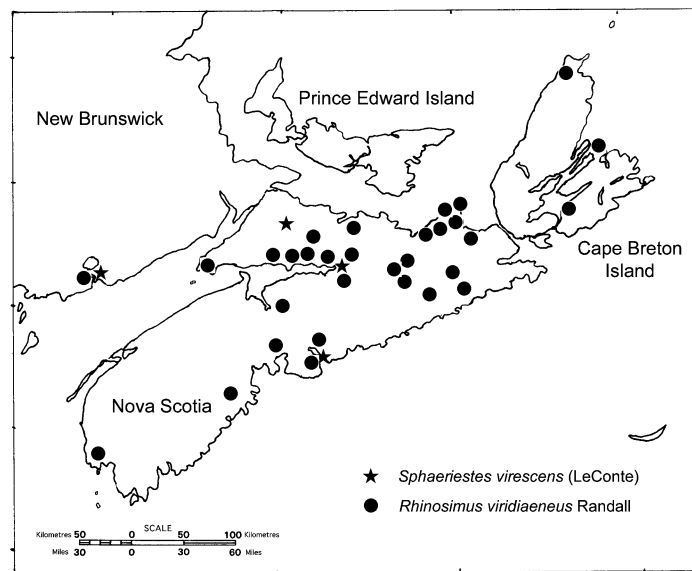
#### SALPINGIDAE

#### *Sphaeriestes virescens* (LeConte, 1850)

**NOVA SCOTIA: Colchester Co.:** Bible Hill, 8 July 2004, K.R. Aikens, pasture, CBU;

**Cumberland Co.:** Oxford, 26 July 1988, E. Georgeson, u/v light trap, NSNR; Oxford, 11 August 1988, E. Georgeson, u/v light trap, NSNR; Oxford, 12 August 1988, E. Georgeson, u/v light trap, NSNR; **Halifax Co.:** Halifax, June 1897, J.D. Evans, Evans (1899).

This species was recorded in Nova Scotia by Evans (1899), however, this record appears to have escaped the attention subsequent authors including Campbell (1991e). This record and others (above) establish its presence in Nova Scotia (Fig. 6). In Canada recorded from the Yukon and Northwest Territories east to New Brunswick, and in Newfoundland and Labrador (Campbell 1991e); in the United States known from Maine (Chandler 2001) south to New York, and west to Indiana, Michigan, and Minnesota (Downie & Arnett 1996). Associated with pine (*Pinus* spp.) (Downie & Arnett 1996); detailed bionomics are unknown.



**FIGURE 6.** Distribution of *Sphaeriestes virescens* and *Rhinosimus viridiaeneus* in the Maritime Provinces of Canada.

### *Rhinosimus viridiaeneus* Randall, 1838

**NEW BRUNSWICK: Saint John Co.:** Saint John, June 1900-07, W. McIntosh, NBM.

Newly recorded in New Brunswick: widely distributed in Nova Scotia (Fig. 6). Recorded from Alaska and British Columbia on the Pacific coast and then from Ontario east to Nova Scotia and Newfoundland (Campbell 1991e); in the United States known from Maine and New Hampshire (Chandler 2001), south to Virginia in the east, and in Washington, Oregon, and Idaho in the west (Downie & Arnett 1996). Associated with *Tilia* (Tiliaceae) and *Alnus* spp. (Betulaceae) (Downie & Arnett 1996). In British Columbia observed to feed on the inner bark of *Alnus rubra* Bong. (Young 1991b). In

Nova Scotia found in both deciduous and coniferous forests; sometimes on *Betula papyrifera* Marsh (Betulaceae).

## Discussion

As a result of these investigations *Boros unicolor* is newly recorded in New Brunswick, Nova Scotia, and Atlantic Canada as a whole; *Pytho niger* and *Rhinosimus viridiaeneus* are newly recorded in New Brunswick; *Neopyrochroa femoralis* is newly recorded in Nova Scotia; and *Priognathus monilicornis*, *Pedilus lugubris*, *Dendroides canadensis*, and *Dendroides concolor* are all newly recorded on Prince Edward Island.

Of the 15 species now known to occur in the region, five (33%) are recorded on Prince Edward Island and eight (53%) are recorded from Cape Breton Island. This may represent an island-associated diminution, a paucity of collecting, or a combination of both. Comparable numbers for the saproxylic species in the Tetratomidae, Melandryidae, Synchronidae, and Scaptiidae are 27% for Prince Edward Island and 32% Cape Breton Island (Majka & Pollock 2006). The low proportion of species on Prince Edward Island may also reflect the effects of deforestation and forest management on the island, which have been more extreme there than elsewhere in the region. Seventy percent of the island's forests were cleared during the twentieth century. Where land has not been completely cleared, the best trees have been removed for generations, leaving a generally impoverished forest, both in terms of genetic quality and of species diversity (Loo & Ives 2003). Only small relicts of the original vegetation of the island still exist.

It is also interesting to note that within the region *Pytho seidlitzii* has only been collected on Cape Breton Island. Cape Breton (particularly the highlands) has a climate and physiography that supports a taiga and boreal forest community distinct from those of mainland Nova Scotia (Davis & Browne 1996).

The fauna of the Maritime Provinces is consistent with that of the broader local region (including Maine, Newfoundland, New Hampshire, Québec, and Vermont). Most of the species found within the Maritimes are also broadly distributed in adjacent jurisdictions (Table 1) with the exception of:

- a) Only five species (*Pytho niger*, *Priognathus monilicornis*, *Dendroides concolor*, *Sphaeriestes virescens*, and *Rhinosimus viridiaeneus*) have been recorded in Newfoundland;
- b) Three species (*Lacconotus punctatus*, *Lecontia discicollis*, and *Neopyrochroa femoralis*) have not been recorded in Maine; and
- c) *Pytho strictus* has only been recorded in New Hampshire (in addition to New Brunswick).

Newfoundland is geographically, climatically, and physiographically distinct from the other portions of the northeast, while the species not recorded in Maine may simply have been overlooked in prior collection efforts. A much more comprehensive checklist of

Maine Coleoptera is in preparation (D. Dearborn pers. com.). Several additional species (*Mycterus scaber* Haldeman, *Neopyrochroa flabellata* (Fabricius), *Dendriodes testaceus* (LeConte), *Sphaeriestes tibialis* LeConte, and *Pedilus canaliculatus* (LeConte)) have been recorded from adjacent areas of Maine or Québec, some of which could be found in the Maritime Provinces and should be looked for, particularly in northern and western areas of New Brunswick.

Some of the species in this group; *Priognathus monilicornis*, *Pedilus lugubris*, *Dendroides canadensis*, *Dendroides concolor*, and *Rhinosimus viridiaeneus*, appear to be widely distributed and not uncommon within the region whereas others, such as *Boros unicolor*, *Lecontia discicollis*, *Lacconotus punctatus*, *Neopyrochroa femoralis*, *Pytho seidlitzii*, *Pytho strictus*, and *Sphaeriestes virescens*, have been recorded from only a small number (less than 10) of specimens at a limited number of sites. To give this apparent scarcity a context; in the course of this ongoing biodiversity research approximately 89,500 specimens of Coleoptera have been examined by the present author. Although saproxylic species have been less intensively collected than other groups, and consequently differentiating actual abundance from numerical representation in collected materials stemming from collection effort is difficult to do, nevertheless these very limited numbers may be an indication that some of these species are actually scarce.

Majka & Pollock (2006) draw attention to the apparent scarcity of a number of species of saproxylic beetles including *Eustrophopsis confinis* (LeConte) and *Holostrophus bifasciatus* (Say) (Tetratomidae), and *Scotochroa atra* LeConte and *Zilora hispida* LeConte (Melandryidae). All are known in eastern Canada from fewer than 10 specimens. They speculate that their apparent scarcity could be indicative of a diminution of habitat as a result of forest management practices. For instance, in Nova Scotia although 78% of the land base is forested, less than 1% of that land is comprised of old-growth forests, much in a highly fragmented condition (Loo and Ives 2003).

While some groups of saproxylic beetles whose habitat is ephemeral (i.e., phloeophagous species such as Scolytinae (Curculionidae), Buprestidae and Cerambycidae) have excellent dispersion abilities, other groups of saproxylics whose habitat is naturally long-lived are often poor dispersers (Grove 2002), a circumstance which might apply to species such as those in the Pyrochroidae. Hammond et al. (2004) points out that the high diversity of saproxylic arthropods depends on subtle variation in habitat, unlikely to be captured by present forest-management schemes, and furthermore that saproxylic species have been among the taxa that have been most sensitive to disturbance in the extensively managed forests of northern Europe.

Majka & Pollock (2006) and Majka et al. (2006) have initiated an examination of the biodiversity of saproxylic beetles in the Maritime Provinces which the present study contributes to. In the context of concerns summarized by Grove (2002) and Dudley & Vallauri (2004) of the impact of contemporary forest management practices on saproxylic insects, further research needs to be done in this region to determine the status of

saproxylic beetles, the impact that forest practices may have had on them, and measures which might lessen or ameliorate habitat fragmentation, the disappearance of old-growth forests, the diminution of coarse woody debris, and other parameters of forests of significance to this functional group of beetles.

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