



Eucinetidae (Coleoptera) of the Maritime Provinces of Canada

Christopher G. Majka

ABSTRACT

Four species of Eucinetidae (plate-thigh beetles) are recorded for the Maritime Provinces of Canada. *Eucinetus haemorrhoidalis* is newly recorded in Prince Edward Island, the first record of this family in the province; *Eucinetus morio* LeConte is newly recorded in New Brunswick; and *Nycteus punctulatus* (LeConte) is newly recorded in Nova Scotia, and in the Maritime Provinces as a whole. A key to species is provided, as are colour habitus photographs of all the species found in the region. The composition of the eucinetid fauna of the region, and its place within the saproxylic beetle fauna, are briefly discussed.

RÉSUMÉ

Quatre espèces d'Eucinetidae ont été signalées dans les provinces Maritimes du Canada. L'*Eucinetus haemorrhoidalis* est une nouvelle espèce relevée sur l'Île-du-Prince-Édouard, la première mention de cette famille dans la province; l'*Eucinetus morio* LeConte est une nouvelle espèce signalée au Nouveau-Brunswick; le *Nycteus punctulatus* (LeConte) est une nouvelle espèce signalée en Nouvelle-Écosse ainsi que dans l'ensemble des Maritimes. Une clé des espèces ainsi que des photographies en couleurs de l'habitus de toutes les espèces présentes dans la région sont présentées. La composition de la faune eucinétiée de la région et sa place parmi la faune de coléoptères saproxyliques sont brièvement examinées.

INTRODUCTION

The Eucinetidae (plate-thigh beetles) are a family in the superfamily Scirtoidea. The common name refers to one of the distinctive features of the family; greatly expanded metacoxal plates that cover most of the first visible abdominal segment, beneath which the hind legs can be retracted. Worldwide, only 37 species in eight genera are known. Of these, eleven species in four genera (*Eucinetus* Germar, *Euscaphurus* Casey, *Nycteus* Latreille and *Tohlezkus* Vit) are found in North America (Young 2002). Of these, seven species in two genera (*Eucinetus* and *Nyctetus*) are known in Canada (Campbell 1991). They are found in detritus or under fungus-covered bark of trees where the larvae feed on a variety of fungi, including spores of slime molds and the fruiting bodies of basidiomycete fungi in the Agaricaceae, Bolitaceae, and Coniophoraceae (Young 1982; Wheeler and Hobeke 1984).

In Atlantic Canada, comparatively little attention has been paid to this family of beetles although Campbell (1991) reported two species (*Eucinetus haemorrhoidalis* (Germar) and *Nycteus testaceus* LeConte) from New Brunswick, and two (*Eucinetus haemorrhoidalis* and *Eucinetus morio* LeConte) from Nova Scotia. In the present treatment I add an additional species to the region's faunal list, and report three new provincial records, including the first record of a species from this family from Prince Edward Island.

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Christopher G. Majka: Research Associate, Nova Scotia Museum, 1747 Summer Street, Halifax, Nova Scotia, Canada, B3H 3A6.

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

IDENTIFICATION

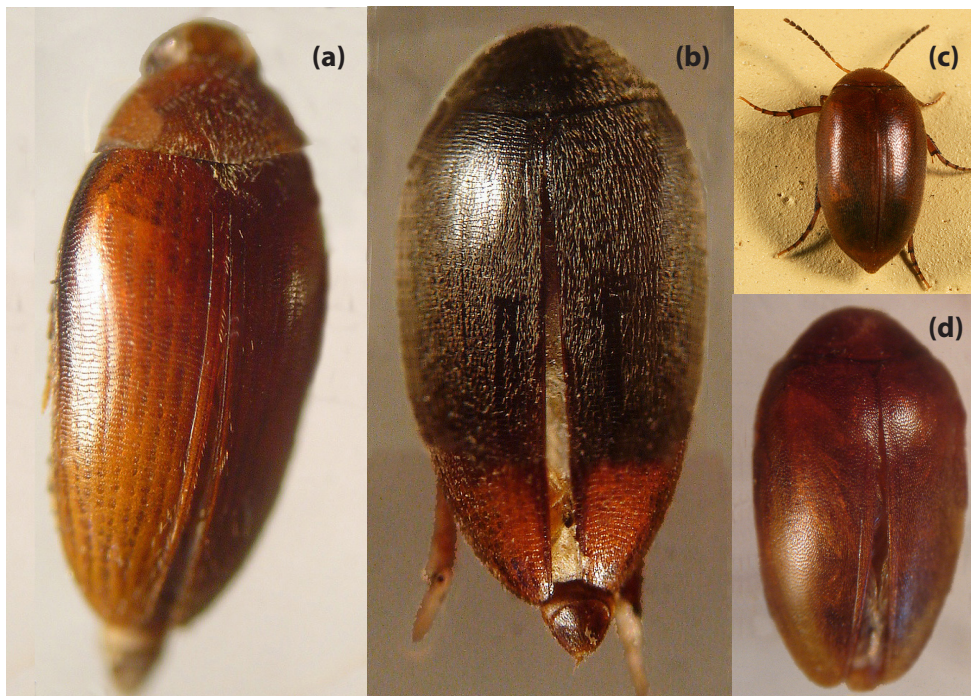
Below is a key to the species of Eucinetidae found in Atlantic Canada adapted from Downie and Arnett (1996) and Young (2002).

- 1. Elytra distinctly substrate, with transverse, strigose wrinkles – *Eucinetus* 2
- Elytra densely punctate, lacking transverse, strigose wrinkles – *Nycteus* 3

- 2. Hind tibia with two spurs; elytra unicoloured, black, piceous, or reddish brown (Fig. 1a)
 *Eucinetus morio* LeConte, 1853
- Hind tibia with a single spur; elytra black with tips reddish (Fig. 1b).....
 *Eucinetus haemorrhoidalis* (Germar, 1818)

- 3. Punctures of pronotum and elytra rather coarse (Fig. 1c)
 *Nycteus testaceus* (LeConte, 1866)
- Punctures of elytra fine, those of head and pronotum even finer (Fig. 1d)
 *Nycteus punctulatus* (LeConte, 1875)

Fig. 1. Dorsal habitus of *Eucinetus morio* LeConte (a); *Eucinetus haemorrhoidalis* (Germar) (b); *Nycteus testaceus* (LeConte) (c); *Nycteus punctulatus* (LeConte) (d). Photo credits: Christopher Majka, Nova Scotia Museum, Halifax, NS (a, b, d); Tom Murray, Groton, Massachusetts (c).



METHODS AND CONVENTIONS

In the context of biodiversity studies on Coleoptera, a number of collections in the Maritime Provinces of Canada (New Brunswick, Nova Scotia, and Prince Edward Island) were examined for specimens of Eucinetidae. These collections yielded 50 specimens. Abbreviations (following Evenhuis 2009) of collections referred to in this study are: Abbreviations employed: FIT, flight intercept trap.

ACPE	Agriculture and Agri-Food Canada, Charlottetown, Prince Edward Island, Canada
CBU	Cape Breton University, Sydney, Nova Scotia, Canada
CNC	Canadian National Collection of Insects, Arachnids, and Nematodes, Ottawa, Ontario, Canada
DHWC	David H. Webster Collection, Kentville, Nova Scotia, Canada
JCC	Joyce Cook Collection (now at the New Brunswick Museum, Saint John, New Brunswick, Canada)
JRC	Justin Renkema Collection, Dalhousie University, Halifax, Nova Scotia, Canada
NSMC	Nova Scotia Museum, Halifax, Nova Scotia, Canada
NSNR	Nova Scotia Department of Natural Resources Insectary, Shubenacadie, Nova Scotia, Canada
SMU	Saint Mary's University, Halifax, Nova Scotia, Canada
UMNB	Université de Moncton, Moncton, New Brunswick, Canada

RESULTS

As a result of these investigations, three species of eucinetids were found in the Maritime Provinces (Table 1). *Eucinetus haemorrhoidalis* is newly recorded in Prince Edward Island, the first record of this family in the province; *Eucinetus morio* LeConte is newly recorded in New Brunswick; and *Nycteus punctulatus* (LeConte) is newly recorded in Nova Scotia, and in the Maritime Provinces as a whole. Pending verification, the status of *Nycteus testaceus* in the region should be regarded as hypothetical. Details of species records follow below:

Eucinetidae Lacordaire, 1857

Eucinetus morio LeConte, 1853

NEW BRUNSWICK: Westmorland Co.: Moncton, 13.VII.1987, P. Maltais (1, UMNB). **NOVA SCOTIA: Antigonish Co.:** Cape George, 8.VIII.1996, M. LeBlanc (1, NSNR); Eigg Mountain, 30.VI.1994, M. LeBlanc (1, NSNR); Morar, 7.VII.1993, M. LeBlanc (1, NSNR); **Colchester Co.:** Debert, 2.VI.1998, E. Georgeson (1, NSNR); Debert,

6.VI.1995, E. Georgeson (1, NSNR); Debert, 10.VI.1996, J. Ogden (1, NSNR); Five Islands Park, 21.VI.2004, J. Ogden, FIT (1, NSNR); North River, 15.VI.2005, J. Ogden, FIT (2, NSNR); North River, 7.VI.2005, J. Ogden, FIT (1, NSNR); Shubenacadie, 4.VIII.2004, D. MacDonald, FIT (1, NSNR); **Guysborough Co.:** Malay Lake, 16-29.VII.1997, D.J. Bishop, red spruce, FIT (1, NSMC); **Halifax Co.:** Halifax, 18.IV.1979, J. Ripley (1, NSMC); Pockwock Lake, 1-16.VII.1997, D.J. Bishop, mature red spruce, FIT (1, NSMC); Pogwa Lake, 1-16.VII.1997, D.J. Bishop, red spruce, FIT (1, NSMC); **Pictou Co.:** Trafalgar, 15.VII.1998, J. Ogden (1, NSNR); **Queens Co.:** Kejimikujik National Park, 28.VII-11.VIII.1994, B. Wright, deciduous forest (1, NSMC); **Victoria Co.:** Cape Breton Highlands, 22.VI.2005, J. Ogden, FIT (2, NSNR); **Yarmouth Co.:** Moses Lake, 8 km N Argyle, 17-22.VII.1993, J. & T. Cook, mixed forest, FIT (1, JCC); Wellington, 15-24.VII.1993, J. & T. Cook, mixed coastal forest (1, JCC).

Eucinetus morio is newly recorded in New Brunswick. In Nova Scotia there are records from coniferous, deciduous, coastal, and mixed forests. Downie and Arnett (1996) recorded it in fungi on decaying oak stumps while Weiss and West (1921) recorded it from the slime mold *Trichia* (Trichiaceae). Chandler (1991) found it in an area where the slime mold *Stemonitis axifera* (Bull.) Macbr. (Myxomycetes: Stemonitidaceae) was common, a species which has been noted as a host by Lawrence and Newton (1980).

Eucinetus haemorrhoidalis (Germar, 1818)

NEW BRUNSWICK: Kent Co.: Kouchibouguac National Park, 30.VIII.1977, S.J. Miller (1, CNC); Kouchibouguac National Park, 10.VI.1978, D.B. Lyons (1, CNC); **Northumberland Co.:** Tabusintac, 20.VI.1938, W.J. Brown (1, CNC). **NOVA SCOTIA: Colchester Co.:** Bible Hill, 1.VIII.2007, C.W. D'Orsay, pasture, sweep (1, CBU); Bible Hill, 15.VI.2007, C.W. D'Orsay, pasture, sweep (3, CBU); **Cape Breton Co.:** Sydney: CBU, 31.VIII.1999, S. P. Roach (1, CBU); **Cumberland Co.:** Little River, 9.VII.2004, D. MacDonald, spruce beetle trap (1, NSNR); Tatamagouche Park, 3.IX.2004, D. MacDonald, spruce beetle trap (1, NSNR); **Halifax Co.:** York Redoubt, 31.VII.2003, C. Staicer, jack pine forest, pitfall trap (1, NSMC); **Hants Co.:** Upper Rawdon, 26.VIII.2008, J. Renkema, highbush blueberry field, pitfall trap (1, JRC); **Pictou Co.:** Green Hill, 25.VIII.2004, D. MacDonald, spruce beetle trap (1, NSNR). **PRINCE EDWARD ISLAND: Queens Co.:** Harrington, 16.IX.2004, C. Noronha, barley field, pitfall trap (1, ACPE).

Eucinetus haemorrhoidalis is newly recorded in Prince

Table 1. Eucinetidae fauna of the Maritime Provinces of Canada

	NB	PEI	mNS	CB	Distribution in NE North America
<i>Eucinetus haemorrhoidalis</i> (Germar)	1	1	1	1	MA, ME, NB, NH, NS, ON, PE, QC
<i>Eucinetus morio</i> LeConte	1		1	1	MA, ME, NB, NH, NS, ON, QC
<i>Nycteus punctulatus</i> (LeConte)			1		MA, NB, NH, NS, ON, QC
<i>Nycteus testaceus</i> (LeConte)		?			ME, NB, NH, ON, QC

NOTE: NB = New Brunswick; PE = Prince Edward Island; mNS = mainland Nova Scotia; CB = Cape Breton Island.

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

Edward Island, the first record of this family in the province. In the Maritime Provinces there are records from pastures, barley fields, highbush blueberry fields, and a jack pine forest. In Europe it has been observed in fungal growths under stumps and logs (particularly *Pinus* and *Quercus* spp.), in rotting plant remains on sandy soil, in fungus-infested roots of *Euphorbia*, in *Polyporus* spp. (Basidiomycetes: Polyporaceae) fungi on birch trees, and under stones (Klausnitzer 1971, 1975; Lawrence and Newton 1980).

There exists some uncertainty with respect to the zoogeographic status of this species. In the Old World it has a wide distribution from France and Italy, east across the central and northern regions of continental Europe, to Russia, across Siberia, east to Korea (Kim and Ahn 2008; Audisio 2009). In North America it is also widely distributed in northern portions of the continent from the Northwest Territories and British Columbia, east to Nova Scotia (Campbell 1991). Although Campbell (1991) listed it as an adventive Palaearctic species, the wide Canadian distribution could also be indicative of a native species with a Holarctic distribution. Further research is required to resolve this question.

Nycteus punctulatus (LeConte, 1875)

NOVA SCOTIA: **Cumberland Co.:** Spencer's Island, 16.VI.1995, C. Corkum, old coniferous forest, FIT (1, NSMC); Westchester-Londonderry, 20.VII.1992, S. & J. Peck, forest road, car net (3, JCC); **Guysborough Co.:**

Trafalgar, Liscomb Sanctuary, 19.VII.1992, S. & J. Peck, car net (2, JCC); **Halifax Co.:** Burnside, 29.VII.2003, C. Cormier, in forest on decomposing pig (1, SMU); **Hants Co.:** Leminister, 1-16.VII.1997, D.J. Bishop, red spruce/hemlock, FIT (1, NSMC); Upper Rawdon, 26.VIII.2008, J. Renkema, highbush blueberry field, pitfall trap (1, DAL); **Kings Co.:** Cambridge, 5.IX.2006, D.H. Webster, on *Pinus strobus* L. (Pinaceae) slabwood (1, DHWC); **Lunenburg Co.:** Bridgewater, 1-16.VII.1965, B. Wright (1, NSMC); Bridgewater, 1-16.VII.1965, B. Wright, under red oak, pitfall trap (1, NSMC); **Yarmouth Co.:** Wellington, 23-29.VIII.1992, J. Cook, mixed forest, FIT (3, JCC); Wellington, 12-20.VIII.1991, J. Cook, coastal forest, FIT (1, JCC); Wellington, 25.VI-J3.VII.1995, J. & F. Cook, mixed forest (1, JCC).

Nycteus punctulatus is newly recorded in Nova Scotia and in the Maritime Provinces as a whole. There are records from a variety of habitats including coniferous, mixed, and coastal forests, under red oak, in highbush blueberry fields, and associated with carrion. Bruns (1984) reported adult *Nycteus punctulatus* feeding on *Paragyrodon sphaerosporus* (Peck) Sing. (Agricales: Bolitaceae). Larvae were also found on this fungus, as well as on the gills of *Paxillus involutus* (Batsch. ex. Fr.) Fr. (Agricales: Paxillaceae).

Nycteus testaceus (LeConte, 1866)

Nycteus testaceus was reported from New Brunswick by Campbell (1991). It is unclear what the source of this

record is. There are no specimens of this species at the CNC, or in any of the regional collections in the Maritime Provinces. It is not recorded from New Brunswick in Horn (1880), Leng (1920), Downie and Arnett (1996), Vit (1999), or Young (2002), the regional or taxonomic treatments that have dealt with this family. *Nycteus testaceus* has, however, been recorded in both Maine (Chandler 2001) and Québec (Laplante et al. 1991) and could plausibly occur in New Brunswick. Pending verification, its status in New Brunswick should be regarded as hypothetical.

DISCUSSION

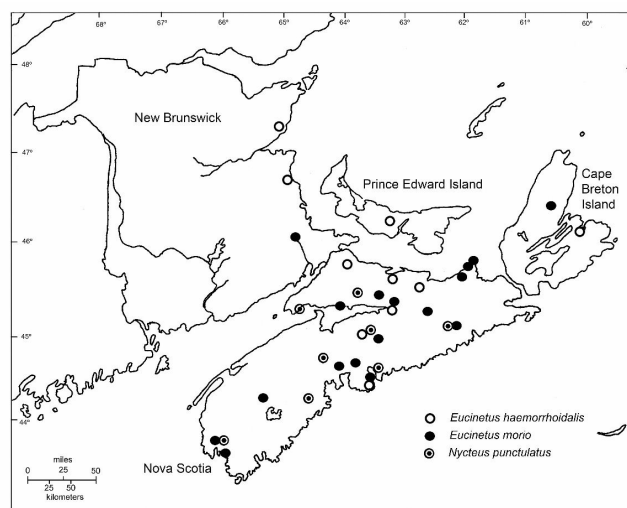
Although the collecting effort for plate-thigh beetles in the Maritime Provinces has been modest, some distributional patterns are apparent. *Eucinetus haemorrhoidalis*, *Eucinetus morio*, and *Nycteus punctulatus* appear to well distributed in Nova Scotia, although *Eucinetus haemorrhoidalis* has not been recorded in the southern portion of the province and *Nycteus punctulatus* has not been recorded on Cape Breton Island (Fig. 2). There are records of *Eucinetus haemorrhoidalis* and *Eucinetus morio*, in New Brunswick, however, there is little information on their distribution in the province. The status of *Nycteus testaceus* in the region is hypothetical. *Eucinetus haemorrhoidalis* is the only species recorded on Prince Edward Island. In terms of other species in the region, *Nycteus oviformis* (LeConte, 1866) has been recorded in New Hampshire (Chandler 2001) and consequently might also occur in the Maritime Provinces.

The Eucinetidae are a component of the saproxylic insect fauna, feeding on fungi and Myxomycetes associated with decaying wood in forested environments. Over the past several years a number of studies (Kehler et al. 2004; Dollin et al. 2008; Bishop et al. 2009) have investigated the saproxylic beetle fauna of Nova Scotia. Majka (2009) surveyed several studies of forest beetles in Nova Scotia and found that saproxylic species comprised 63–79% of forest Coleoptera, an indication of the scale and relative importance of this fauna. Developing an understanding of the diversity, distribution, abundance, and biology of species such as eucinetids contributes to an understanding of the complex processes of wood decay and forest ecology.

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Fig. 2. Distribution of species of Eucinetidae in the Maritime Provinces of Canada.



Breton University), Delancey Bishop, Joyce Cook (Carleton University), Justin Renkema (Dalhousie University), Giulio Cuccodoro (Muséum d'histoire naturelle de la Ville de Genève), Jeff Ogden (Nova Scotia Department of Natural Resources), Chantelle Cormier (Saint Mary's University), Gaétan Moreau (Université de Moncton), Donald Chandler (University of New Hampshire), and David Webster (Kentville, NS) for providing specimens and information that contributed to this study. Thanks to Tom Murray (Groton, MA), for providing a photograph of *Nycteus testaceus*. This work has been assisted by the Board of Governors of the Nova Scotia Museum.

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