

***BRACHYGLUTA ABDOMINALIS* (AUBÉ) (COLEOPTERA:
STAPHYLINIDAE) NEWLY RECORDED IN CANADA, WITH NOTES
ON OTHER BEACH-DRIFT BEETLES**

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Abstract. – *Brachygluta abdominalis* (Aubé) is reported for the first time in Canada from collections in New Brunswick and Nova Scotia. *Leptacinus intermedius* Donisthorpe, *Atheta novaescotiae* Klimaszewski and Majka, *Hypocaccus fraternus* (Say), and *Sapintus pusillus* (LaFerté-Sénéctère) are newly reported from New Brunswick. Beach-drift Coleoptera are discussed, as is the potential vulnerability of this community within an environment that has been much diminished and disturbed by anthropogenic activities.

Key words: Coleoptera, Staphylinidae, Pselaphinae, *Brachygluta abdominalis*, salt marsh, sand dune, littoral environment, Bay of Fundy

Since 2002, one of us (CGM) has been investigating the beetle fauna of salt-marsh, sand-dune, beach-drift, and other shoreline environments at Mary's Point in the Shepody National Wildlife Area, Albert County, New Brunswick, Canada (45° 43' N, 64° 39' W) located along the upper reaches of Chignecto Bay. This survey yielded the first Canadian record of the pselaphine staphylinid, *Brachygluta abdominalis* (Aubé, 1833). We also report this species from Nova Scotia based on museum specimens and give the first records from New Brunswick of *Hypocaccus fraternus* (Say) (Histeridae), *Atheta novaescotiae* Klimaszewski and Majka, *Leptacinus intermedius* Donisthorpe (Staphylinidae), and *Sapintus pusillus* (LaFerté-Sénéctère) (Anthicidae).

Brachygluta abdominalis (Aubé) has been recorded from the eastern seaboard of the United States from Georgia to Maine

(Chandler 1997). It has not hitherto been recorded from Canada.

Members of the genus *Brachygluta* are found under leaf litter or stones, or in mosses and grass clumps along streams, ponds, or marshes (Chandler 2001). *Brachygluta abdominalis* has been collected from grass and deciduous leaf litters at margins of salt marshes, under beach drift, and at ultraviolet light (Chandler 1997). The genera *Brachygluta* Thomson, *Briaraxis* Brendel, *Nisaxis* Casey, and *Reichenbachia* Leach (all members of the subtribe Brachglutina) are unique amongst North American Pselaphinae for having species that occur in tidal zones.

RESULTS

On 9 August 2002 C. Majka collected a specimen of *B. abdominalis* at Mary's Pt. in leaf litter in a small brackish marsh behind

a sand dune on the seacoast. Subsequently on 23 August 2003 and 12 August 2004, C. Majka again collected *B. abdominalis* at this site, this time beneath beach drift at the upper end of the littoral zone along a sand beach. The organic matter in this zone is comprised primarily of dead *Ascophyllum nodosum* (L.) Le Jolis and *Fucus vesiculosus* L. that accumulates in a zone between the dry, sandy areas inhabited by the amphipod *Talorchestia longicornis* (Say), found higher up in the littoral zone, and the wetter seaweed-dominated drift material inhabited by the amphipod *Orchestia gammarella* Pallas, found lower in the littoral zone.

Other beach-drift Coleoptera associated with *B. abdominalis* in this area included *Aleochara litoralis* (Mäklin), *Atheta novaescotiae* Klimaszewski and Majka, *Leptacinus intermedius* Donisthorpe, *Cafius bistriatus* Erichson, *Atheta acadensis* Klimaszewski and Majka (Staphylinidae); *Enochrus reflexipennis* (Zimmerman), *Cercyon litoralis* (Gyllenhal) (Hydrophilidae); *Hypocaccus fraternus* (Say) (Histeridae); *Monotoma producta* LeConte (Monotomidae); *Sapintus pusillus* (LaFerté-Sénéctère), *Amblyderus pallens* (LeConte) (Anthicidae); and *Rypobius marinus* LeConte (Corylophidae) [specimens in the C.G. Majka collection, Halifax, Nova Scotia, Canada].

Subsequent examination of material in other collections revealed two additional specimens of *B. abdominalis* collected on 24 June 1994 in Amherst, Cumberland County, Nova Scotia (45° 49' N, 64° 16' W) at the edge of a salt marsh by Jeffrey Ogden (Nova Scotia Department of Natural Resources Insectary, Shubenacadie, Nova Scotia). This site is on the upper reaches of the Cumberland Basin. Records from Maine include specimens from Howland, Penobscot County (20 May 1978, R. Tracy, University of Maine, Bangor, Maine); Spruce Head, Knox County (16 July 1955, R.S. Howard, Field Museum of Natural History, Chicago, Illinois); Popham Beach, Sagadahoc County (23 March, 1983,

R.E. Nelson, edge of salt marsh, Colby College, Waterville, Maine), and Schoodic Peninsula, Acadia National Park, Hancock County (25 July, 2005, D.S. Chandler, salt marsh, Acadia National Park collection, Bar Harbour, Maine).

DISCUSSION

These records from New Brunswick and Nova Scotia establish the presence of *B. abdominalis* in Canada. Collection sites from Maine, New Brunswick, and Nova Scotia are shown in **Figure 1**, indicating a primarily coastal distribution. The Howland site, seemingly anomalously inland from the Maine coast, is in fact on the Penobscot River which experiences tidal influences for a significant distance along its course. Other potentially suitable sites along the Gulf of Maine, Bay of Fundy, Chignecto Bay, Cumberland Basin, and Minas Basin should be investigated to determine the northern range of this species. *Atheta novaescotiae*, *Leptacinus intermedius*, *Hypocaccus fraternus*, and *Sapintus pusillus* are all herein newly reported from New Brunswick (Bousquet 1991; Klimaszewski et al. 2006). *Rypobius marinus* LeConte has recently been newly reported in Canada from this site (Majka and Cline 2006). The recently described *Atheta acadensis* (Klimaszewski and Majka in press) has only been found in the Bay of Fundy and on Prince Edward Island. Such accounts indicate that much remains to be learned about the basic biodiversity of such ecological communities in the Bay of Fundy – Gulf of Maine region.

Marine environments such as mud flats, salt marshes, sandy shores and dune areas, shingle beaches, and rocky shores support characteristic, although somewhat overlapping beetle communities (Doyen 1976, Moore and Legner 1976). One microhabitat within this larger complex is the beach-drift environment. This complex of beetles occupies a narrowly defined niche and exploits a particular trophic resource in the manner of a guild niche

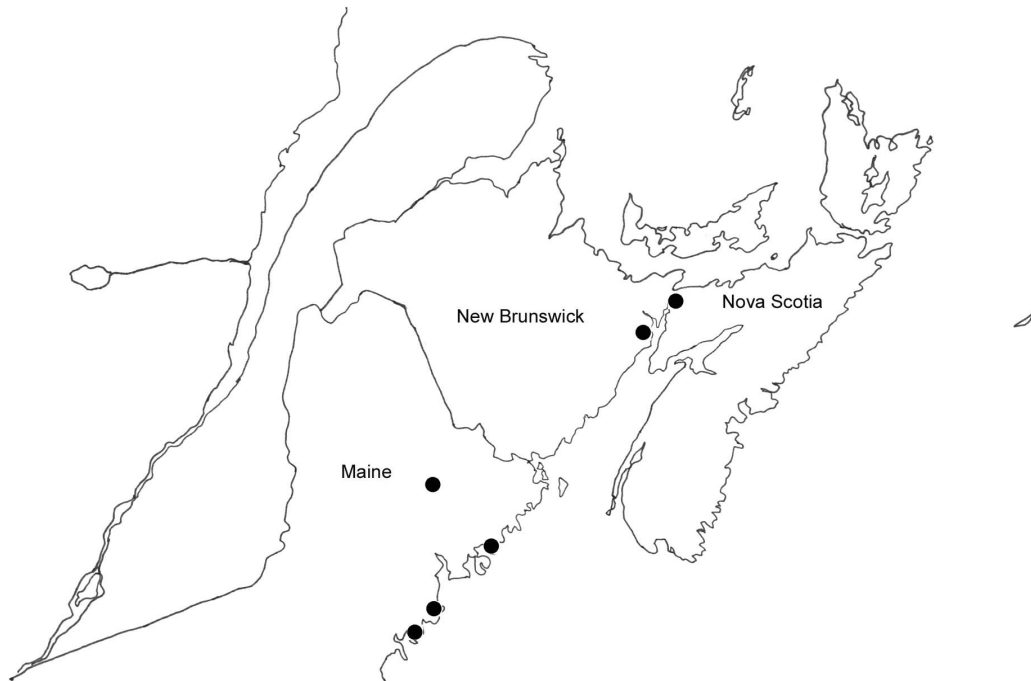


Fig. 1. Distribution of *Brachygluta abdominalis* in Maine, New Brunswick, and Nova Scotia.

(Terborgh and Robinson 1986) or trophic guild (Yodzis 1982). Doyen (1976) pointed out that littoral and marine Coleoptera are found almost exclusively in temperate and subarctic regions. They are almost entirely lacking in the tropics for reasons that remain obscure.

Beach-drift Coleoptera inhabit an environment that has been much diminished, and is vulnerable to disturbance. Of the estimated 35,700 hectares of salt marshes present in the Bay of Fundy at the time of European colonization, only 5,000-6,000 (~16%) still exist. Fifty-seven percent of large and medium-sized rivers that flow into the Bay of Fundy have dams, causeways, and other forms of tidal restrictions and coastal wetlands have experienced various other forms of environmental degradation (Percy 1996a, b, 1999, 2000). Rantwell (1972) emphasized that coastal sand dunes are a diminishing resource throughout Europe and North America saying, "Not only is their generation limited by what is believed to be a diminishing bank of offshore sand supplies, but their rate of destruction under

development of various kinds ... almost certainly (exceeds) their rate of formation." Tyrrell (2005) pointed out that on some beaches large quantities of seaweed and other detritus are removed from the wrack line to "clean up" beaches for recreation or tourism. Such information indicates the potential vulnerability of salt marsh and sand dune beetle communities whose ecology, composition, and extant is poorly known and understood.

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QC) (Aleocharine), and Andrew Cline (United States Department of Agriculture, Sacramento, CA) (Corylophidae) verified determinations. Alfred Wheeler (Clemson University, Clemson, SC) and Donald Chandler reviewed the manuscript and made many constructive suggestions. The first author thanks his colleagues at the Nova Scotia Museum, Calum Ewing and Andrew Hebda, for continuing support and encouragement. This work has been assisted by a research grant from the Nova Scotia Museum of Natural History.

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