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# The Aderidae (Coleoptera) of the Maritime Provinces of Canada

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## ABSTRACT

The present paper surveys the ant-like leaf beetles (Coleoptera: Aderidae) of the Maritime Provinces of Canada. Three new provincial records are reported, including two species, *Zonantes pallidus* Werner and the adventive Palaearctic species, *Aderus populneus* (Panzer), which are newly recorded in the region from collections in Nova Scotia. *Vanonus wickhami* Casey is newly recorded on Prince Edward Island, the first record of an aderid from the province. Distribution maps, keys to the identification of species, and colour habitus photographs are provided. The bionomics of many Nearctic aderids remains poorly investigated. Eight other species of Aderidae have been recorded in the neighbouring jurisdictions of Québec and Maine.

## RÉSUMÉ

Cet article recense les Aderidae (Coleoptera: Aderidae) des Provinces maritimes du Canada. Trois additions à la faune provinciale sont rapportées, incluant deux espèces, *Zonantes pallidus* Werner et l'adventice paléarctique *Aderus populneus* (Panzer), qui sont nouvellement signalées dans la région à partir de collections en Nouvelle-Écosse. *Vanonus wickhami* Casey est nouvellement signalé à l'Île-du-Prince-Édouard, constituant le premier signalement d'un Aderidae dans cette province. Des cartes de distribution, des clés d'identification des espèces et des photographies couleurs de l'habitus sont fournies. Les bionomies de plusieurs Aderidae néarctiques demeurent faiblement documentées. Huit autres espèces furent signalées dans les juridictions voisines du Québec et du Maine.

## INTRODUCTION

The Aderidae, or ant-like leaf beetles, is a family of small beetles frequently found resting on the undersides of leaves of various deciduous shrubs and trees. Larvae are found in rotten wood, leaf litter, and under bark, however, little is known about the bionomics of most species (Chandler 2002). There are approximately 1,000 species known worldwide, 48 of which have been recorded in North America (Chandler 2002). Nine species have been found in Canada (Bousquet 1991). Werner (1990) revised the fauna of eastern North America. The western North American fauna remains poorly known, with many undescribed species (Chandler 2002). Bousquet (1991) reported only one species, *Vanonus wickhami* Casey, from two of the Maritime Provinces. The present study, based on the literature and an examination of specimens in various collections, surveys the Aderidae of the region.

## METHODS AND CONVENTIONS

The taxonomy and nomenclature employed in this study follows that of Chandler (2002). Specimens of Aderidae originating from Atlantic Canada were examined and identified. A total of 65 specimens, 60 from Nova Scotia, four from

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New Brunswick, and one from Prince Edward Island, were examined. Abbreviations of collections (largely following Evenhuis 2011) where specimens were located are:

| | |
|---|---|
| **CGMC** | Christopher G. Majka Collection, Halifax, 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) |
| **NSMC** | Nova Scotia Museum, Halifax, Nova Scotia, Canada |

## IDENTIFICATION

A key to known species of Aderidae found in Atlantic Canada adapted from Chandler (2002) is provided on page 69. For identification of other species of Aderidae found in northeastern North America, the keys to genera and species provided by Werner (1990) should be employed.

## RESULTS

After examination of the available specimens of Aderidae, three new provincial records are reported, including two species, *Zonantes pallidus* Werner and *Aderus populneus* (Panzer), which are newly recorded in the region from collections in Nova Scotia. *Vanonus wickhami* Casey is newly recorded on Prince Edward Island, the first record of an aderid from the province (Table 1). Specific details follow, including specimen data for new provincial records.

### Euglenesini

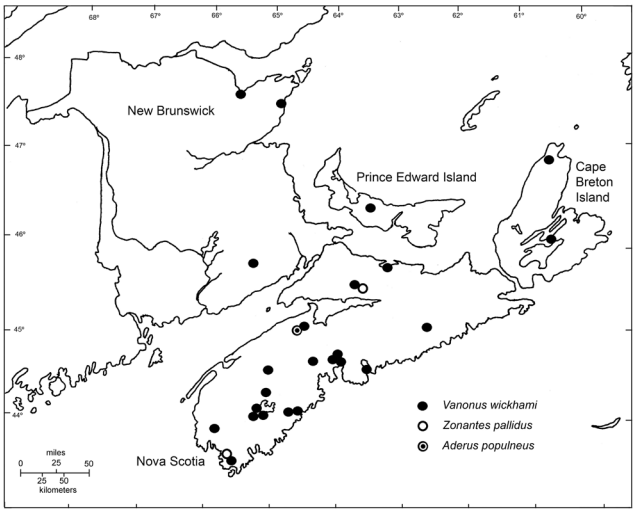
*Zonantes pallidus* Werner, 1990

**NOVA SCOTIA**: **Cumberland County**: Westchester-Londonderry, 20 July 1992, S. & J. Cook, forest road, car net (1, JCC; 1 CGM); **Yarmouth-Shelburne Counties**: Oak Park Rd., East Pubnico to Barrington Passage, 27 August 1992, J. & F. Cook, coastal scrub forest, car net (1, JCC).

*Zonantes pallidus* (Fig. 1) is newly recorded in Nova Scotia, and consequently in all of Atlantic Canada. Werner (1990) recorded it from Oklahoma, Texas, and Florida, north to Ontario and Québec. The type specimen was collected in a "low-land forest" (Werner 1990). The specimens collected in Nova Scotia were collected on a forest road and in a coastal scrub forest with a car net. Both collection sites were in forested localities on the mainland of Nova Scotia (Fig. 2). No other information on the bionomics of this species is available.

**Figure 1**. Dorsal habitus photograph of *Zonantes pallidus*. **Photo credit**: Perry Babin (Gonzales, Louisiana, USA).

**Figure 2.** Distribution of *Vanonus wickhami*, *Zonantes pallidus*, and *Aderus populneus* in the Maritime Provinces of Canada.




### Aderini

*Aderus populneus* (Panzer, 1796)

**NOVA SCOTIA**: **Kings County**: 27 July 2007, D.H. Webster, at light (1, DHWC).

*Aderus populneus* (Fig 3) is newly recorded in Nova Scotia, and consequently in the Maritime Provinces of Canada. This is an adventive Palaearctic species introduced to North America. It is widely distributed in Europe from the Iberian Peninsula, Italy and Greece (including all Mediterranean islands) north to Great Britain and Fennoscandia and east to the Baltic republics, Belarus, central Russia, and Romania (Nardi 2011). Its range also extends further to the east to Armenia, Azerbaijan, and Uzbekistan (Nardi 2007). The earliest North American records are from 1944 (Iowa) and the first Canadian records are from 1940 (Ontario) (Werner 1990). In North America the species is known from British Columbia, Manitoba,

**Table 1**. The Aderidae of the Maritime Provinces of Canada

| | NB | NS | PE | Distribution in NE America |
|---|---|---|---|---|
| Euglenesini | | | | |
| *Zonantes pallidus* Werner | | 1 | | ME, NH, NS, ON, QC, RI |
| Aderini | | | | |
| *Aderus populneus* (Panzer) † | | 1 | | NH, NS, ON, QC |
| *Vanonus wickhami* Casey | 1 | 1 | 1 | MA, ME, NB, NH, NS, ON, PE, QC |

**NOTE:** NB = New Brunswick; PE = Prince Edward Island; NS = Nova Scotia; †, adventive Palaearctic species.
Distribution in northeastern North America: ON = Ontario; QC = Québec; NF = insular Newfoundland; LB = Labrador; PM = Saint-Pierre et Miquelon; CT = Connecticut; MA = Massachusetts; ME = Maine; NH = New Hampshire; NY = New York; RI = Rhode Island; and VT = Vermont.

**Figure 3**. Dorsal habitus photograph of *Aderus populneus*. **Photo credit**: Christoph Benisch (www.kerbtier.de, Mannheim, Germany).

Ontario, and Québec in Canada, and California, District of Columbia, Idaho, Illinois, Indiana, Iowa, Maryland, New Hampshire, Ohio, Oregon, Pennsylvania, Utah, Washington, West Virginia, and Wisconsin in the USA (Werner 1990; Pollock 1998; Klimaszewski et al. 2010).

In Poland, *Aderus populneus* larvae have been found developing in dead wood of deciduous trees overgrown with fungi. Pupation takes place in late summer or in autumn. Adults live in the pupation chambers and hide under bark, or in rotten wood, where they overwinter. Adults eclose in May and are usually found in the evening on bushes and dead branches of trees (Burakowski et al. 1987). Nikitsky et al. (1996) wrote that larva develop in dead wood of deciduous trees inhabited by fungi mycelium in Russia. Birch (*Betula* spp., Betulaceae), aspen (*Populus tremula* L., (Salicaceae)) and pedunculate oak (*Quercus robur* L., (Fagaceae)) are preferred. Larva feed on deuteromycete or ascomycete fungi. Pupation takes place in late summer or in the autumn. Adults overwinter in wood, under bark, and in tree hollows. Adults (a single generation) are active from May and fly during the sunset hours. Nardi (2004) reported it from vegetable debris and under the bark of various species of trees (mainly deciduous) in Italy. Larvae develop in rotten wood, particularly in red wood-mould sections, where they feed on fungi. Alexander (2002, page 64) wrote "*larvae probably in decaying heartwood; associated with various broad-leaved trees. Overwintering adults have been found in decaying straw stacks, and at* Salix *catkins and hawthorn (*Crataegus*) blossoms in the spring. ... A high proportion of known localities are ancient wood pastures, including floodplain willow* Salix *pollard system*." Pollock (1998) collected this species with a UV light trap in Canada in a deciduous riverine forest consisting of maple (*Acer*), linden (*Tilia*), elm (*Ulmus*), and ash (*Fraxinus*).

### *Vanonus wickhami* Casey, 1895

**PRINCE EDWARD ISLAND: Queens County**: St. Patricks, 21 July 2001, C.G. Majka, mixed forest, along stream (1, CGMC).

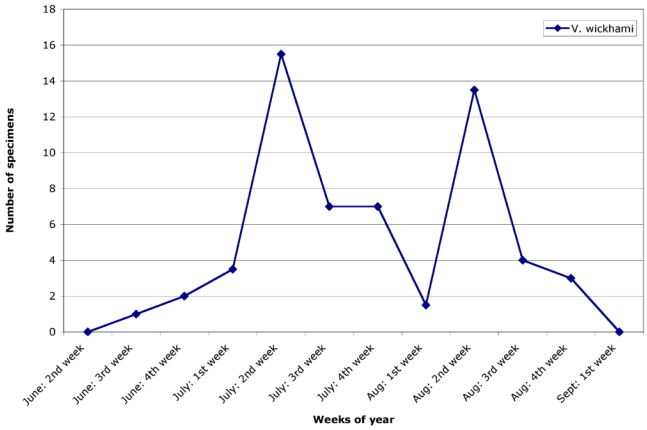
*Vanonus wickhami* (Fig. 4) is newly recorded from Prince Edward Island. It was reported from New Brunswick and Nova Scotia by Bousquet (1991). In North America Werner (1990) reported the species from New Brunswick, Nova Scotia, Ontario, and Québec in Canada, and Maine, Michigan, New Hampshire, and Wisconsin in the USA. In the Maritime Provinces it appears to be widely distributed throughout the region (Fig. 1).

Of the specimens collected in the Maritimes provinces and for which there is habitat information, 41 of 53 (77%) were collected in coniferous forests: red spruce (*Picea rubens* Sarg.), black spruce (*Picea mariana* (Mill.) BSP.), white pine (*Pinus strobus* L.), and eastern hemlock (*Tsuga canadensis* (L.) Carr.) (Pinaceae). Twelve of the 41 (29%) were swept from deciduous vegetation in these coniferous forests including white birch (*Betula papyrifera* Marshall, (Betulaceae)), meadow-sweet (*Spiraea alba* Duroi, (Rosaceae)), and sheep laurel (*Kalmia angustifolia* L., (Ericaceae)). Other specimens were collected in a mixed forest, a coastal scrub forest, at the edge of a salt marsh, and swept from ferns.

Adults have been collected between 21 June and 27 August (Fig. 5). The apparent bimodal distribution of numbers may simply reflect the relative small number of specimens (n = 61) that have been collected to date in the region, or if the species overwinters as adults, may reflect two annual cohorts.

**Figure 4**. Dorsal habitus photograph of *Vanonus wickhami*. **Photo credit**: Christopher Majka (Halifax, Nova Scotia, Canada).

**Figure 5**. Temporal distribution of *Vanonus wickhami* records from the Maritime Provinces of Canada.




## DISCUSSION

As a result of the present study, *Zonantes pallidus* and *Aderus populneus* are newly recorded in the Maritime Provinces from mainland Nova Scotia, and *Vanonus wickhami* is newly recorded on Prince Edward Island. The adventive *Aderus populneus* has only been recorded from one locality in the Annapolis Valley of Nova Scotia (Fig. 1). There has, however, been little investigation of the Aderidae in New Brunswick, and even in Nova Scotia, where the majority of specimens were collected, knowledge about this family remains incomplete.

In the neighbouring province of Québec, six other aderid species have been found including *Elonus basalis* (LeConte), *Elonus nebulosus* (LeConte), *Vanonus calvescens* Casey, *Vanonus piceus* (LeConte), *Vanonus vigilans* Casey, and *Zonantes fasciatus* (Melsheimer) while in the neighbouring state of Maine all these species (save *Vanonus piceus*) have also been found, as well as *Vanonus huronicus* Casey and *Zonantes subfasciatus* (LeConte) (Laplante et al. 1991; Majka et al. 2011). All of these species are potential candidates to occur in the Maritime Provinces, and should be looked for, particularly in western portions of New Brunswick adjacent to Maine and Québec.

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**Key to the Known Species of Aderidae Found in Atlantic Canada**

1. Body yellow; setae elongate, decumbent to suberect; lacking short appressed undersetae; tactile setae erect, often clearly visible along elytral flanks (*Zonantes*)..... *Zonantes pallidus*
– Body light to dark brown; setae short, no longer than undersetae and difficult to separate from appressed undersetae; lacking distinct tactile setae.....2

2(1). Antennomeres 2–3 short, similar in size, as long as wide; elytra paler in anterior half; metafemora simple, lacking ventral setal brush or elongate setose pit (*Aderus*) ..... *Aderus populneus*
– Antennomere 3 twice as long as 2; body entirely dark brown; metafemora with prominent setal brush or setose pit extending at least one-fifth of distance along ventral margins (*Vanonus*) ..... *Vanonus wickhami*