

# The Cryptophagidae of Canada and the northern United States of America

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## Abstract

This review of Cryptophagidae of Canada and the Northern United States (US) covers 142 species among the following genera: *Caenoscelis* (6 species), *Antherophagus* (4), *Cryptophagus* (33), *Henoticus* (4), *Henotiderus* (2), *Micrambe* (1), *Myrmedophila* (1), *Pteryngium* (1), *Salebius* (2), *Telmatophilus* (2), *Hypocoprur* (1), *Atomaria* (81), *Curelius* (1), *Ephistemus* (2) and *Tisactia* (1). All species are described morphologically and descriptions include high-definition photographs, geographic distribution data and maps as well as data on seasonal occurrence, habitats and the number of specimens examined. Some already described species that have not yet been recorded in Canada, but that have been found in bordering states with similar habitats, are also included in this publication. An interactive identification key is provided to identify all known species in Canada and Alaska together with a descriptive page for each species.

This publication includes many taxonomic changes, mainly new synonymies. Among Cryptophaginae, the following are considered as new synonyms: *Caenoscelis ovipennis* Casey, *C. macra* Casey and *C. elongata* Casey = *C. basalis* Casey; *Caenoscelis obscura* Casey and *C. subfuscata* Casey = *C. cryptophaga* Reitter; *C. ochreosa* Casey = *C. ferruginea* (C.R. Sahlberg); *Caenoscelis angusticollis* Casey and *C. shastanica* Casey = *C. parallela* Casey; *C. macilenta* Casey = *C. subdeplanata* Brisout de Barneville; *Cryptophagus pilosus sensu auctorum* = *C. punctipennis* Brisout de Barneville, the true *C. pilosus* being a *nomen dubium*. *Henoticus mycetoecus* is now a synonym of *H. pilifer* Reitter. *Salebius lictor* Casey and *S. montanus* Casey = *S. octodentatus* (Mäklin).

Most new synonymies are within the genus *Atomaria* and are as follows: *Atomaria (Anchicera) nebulosa* Casey = *At. (Anc.) apicalis* Erichson; *At. (Anc.) divisa* Casey = *At. (Anc.) distincta* Casey; *At. (Anc.) gonodera* Casey, *At. (Anc.) riparia* Casey, *At. (Anc.) subalutacea* Casey, *At. (Anc.) incerta* Casey and *At. (Anc.) crypta* Casey = *At. (Anc.) fuscata* Schöenherr; *At. (Anc.) ebenina* Casey = *At. (Anc.) morio* Kolenati; *At. (Anc.) fallax* Casey = *At. (Anc.) pusilla* (Paykull); *At. (Anc.) nanula* Casey = *At. (Anc.) turgida* Erichson; *At. (At.) luculenta* (Casey), *At. (At.) lucida* (Casey) and *At. (At.) lucens* Grouvelle = *At. (At.) nigrirostris* Stephens; *At. (At.) strandi* Johnson = *At. (At.) coloradensis* (Casey); *At. (At.) parvicollis* (Casey) and *A. parva* Schenkling = *At. (At.) nigricollis* (Casey); *At. (At.) ochronitens* (Casey) = *At. (At.) stricticollis* (Casey); *At. (At.) subangulata* (C. Sahlberg) = *At. (At.) subdentata* (Casey); *At. (At.) melas* (Casey) = *At. (At.) tenebrosa* (Casey); *At. (At.) cribripennis* (Casey) and *At. (At.) castanea* (Casey) = *At. (At.) undulata* (Casey). *At. (At.) lepidula* Mäklin is now considered a *nomen dubium*, the holotype being lost. Finally, *Ephistemus perminutus* Casey is a synonym of *Curelius japonicus* Reitter. One species is restored as a valid species: *Atomaria (At.) lineola* (Notman), formally synonymized by Johnson (2007) as *At. (At.) wollastoni*. *A. carinula* (Casey) was named by Ganglbauer in 1889 and is assigned to a new name: *A. neocarinula* Pelletier.

This publication includes the descriptions of 22 new species, mostly belonging to the genus *Atomaria* (provinces or states of types in parentheses): *Henoticus varidentatus* Pelletier (QC), *Atomaria (Anchicera) arcuaticollis* Pelletier (QC, AK), *At. (Anc.) hudsonica* Pelletier (MB), *At. (Anc.) neomunda* Pelletier (QC, AK), *At. (Anc.) nigrirostrisoides* Pelletier (QC, AK), *At. (Anc.) nigritaria* Pelletier (MB, QC), *At. (Anc.) ocularia* Pelletier (AB), *At. (Anc.) parallellicollis* Pelletier (QC), *At. (Anc.) salicicola* Pelletier (AB), *At. (At.) albertana* Pelletier (AB), *At. (At.) calidaria* Pelletier (AB), *At. (At.) californica* Pelletier (CA), *At. (At.) cribricollis* Pelletier (OR, AB, AK), *At. (At.) impressicollis* Pelletier (AB, BC, YT), *At. (At.) lyricollis* Pelletier (MB), *At. (At.) ontariensis* Pelletier (ON), *At. (At.) orbicollis* Pelletier (QC, ON), *At. (At.) pinicola* Pelletier (NB, QC, BC), *At. (At.) pseudotsugae* Pelletier (BC), *At. (At.) puelloides* Pelletier (GA), *At. (At.) thujaplicatae* Pelletier (BC) and *At. (At.) visoni* Pelletier (AB, BC).

Two genera are recorded for the first time in Canada: *Micrambe* Thomson, with *Micrambe ulicis* (Stephens) (QC) (also recorded for the first time in North America) and *Tisactia* Casey, with *Tisactia subglabra* Casey (QC, ON).

Including all new species except for the two known only from California and Georgia, 62 species are recorded for the first time in Canada or Alaska. In addition to the new species mentioned above, these species are: *Cryptophagus croceus* Zimm. (NS, QC, ON, MB, SK, AB), *C. denticulatus* Heer (QC, ON, MB, AB, BC), *C. lycoperdi* (Scop.) (QC), *C. valens* Csy. (QC, ON, MB, SK, BC), *Henoticus pilifer* Reitter (QC, ON, BC), *Hypocoprur latridioides* Motsch. (SK, AB), *Atomaria (Anchicera) atra* (Hrbst.) (NB, QC), *A. basalis* Eric. (NB, QC, MB, BC, NT, YT, AK), *A. brevicollis* Csy. (NB, QC, ON, MB, SK, AB, BC, NT), *A. gilvipennis* Csy. (NS, QC, ON), *A. inepta* Eric. (QC, BC, NT, AK), *A. mesomela* Hrbst. (BC), *A. morio* Kolen. (NB, QC, ON, SK, AB), *A. munda* Eric. (NB, QC, BC, AK), *A. oblongula* Csy. (NF, NS, NB, QC, ON, MB, SK, AB, BC, NT, AK), *A. ornata* Heer (BC), *A. peltata* Kraatz (BC, AK), *A. postpallens* Csy. (AB, BC, NT, AK), *A.*



*sodermani* Sjöb. (QC, NT), *A. turgida* Eric. (NB, QC, ON, MB, SK, AB, BC, NT, YT, AK), *Atomaria* (*Atomaria*) *affinis* R.F. Sahl. (NS, NB, QC, AB, BC, AK), *A. alpina* Heer (NS, NB, QC, ON, AB, BC), *A. coloradensis* (Csy.) (NB, QC, AB, BC, YT, AK), *A. constricta* (Csy.) (NB, QC, AB, BC), *A. crassula* (Csy.) (NB, QC), *A. dispersa* (Csy.) (NB, QC, ON, AB, BC, AK), *A. elongatula* Eric. (QC, AB, BC), *A. fimetarii* (F.) (NS, NB, QC, ON, MB, SK, AB, BC, NT), *A. impressa* Eric. (NB, QC, ON, AB), *A. macra* (Csy.) (NB, QC, AB, BC, AK), *A. neocarlinula* (Pell.) (AB), *A. nigricollis* (Csy.) (ON, MB, AB, BC, YT, AK), *A. parviceps* Notm. (QC, ON, AB), *A. patens* (Csy.) (NB, QC, ON), *A. puella* (Csy.) (AB), *A. pumilio* (Csy.) (NB, QC, ON, MB, SK, BC), *A. tenebrosa* (Csy.) (NB, QC, ON, AB, AK), *A. umbrina* (Gyll.) (NB, QC, ON, BC), *A. undulata* (Csy.) (NB, QC, ON, AB, BC, AK) and *A. versa* Grouv. (AK).

Excluding all the species mentioned previously, there is at least one new provincial or Alaska state record for the following 61 species: *Caenoscelis basalis* Csy. (NB, MB), *C. ferruginea* (C.R. Sahl.) (NS), *C. parallela* Csy. (AB), *C. subdeplanata* Bris. de Barn. (NB, BC), *Antherophagus convexulus* LeC. (SK, AB, AK), *A. ochraceus* Melsh. (NT), *A. pallidivestis* Csy. (NB, QC, ON, AB), *A. suturalis* Mäkl. (SK, AB), *Cryptophagus bidentatus* Mäkl. (QC, ON, MB, AB, YT), *C. cellaris* (Scop.) (QC, YT), *C. confertus* Csy. (ON, MB, YT), *C. corticinus* Thoms. (MB, AB, YT), *C. dentatus* (Hrbst.) (QC, ON, MB, YT), *C. difficilis* Csy. (NB, ON, MB, NT, YT, AK), *C. distinguendus* (QC, ON, SK, AB), *C. fallax* Balf.-Br. (QC, ON), *C. hebes* Csy. (YT), *C. histicus* Csy. (QC, ON, SK, AB), *C. lapponicus* Gyll. (QC, ON, AB, NT, YT, AK), *C. laticollis* Lucas (MB), *C. mainensis* Csy. (QC, ON), *C. obsoletus* Reit. (QC, MB, SK, AB, YT), *C. peregrinus* Wdrf. & Cmb. (AB), *C. quadrihamatus* Mäkl. (QC, ON, MB, SK, AB, BC, YT), *C. saginatus* Sturm (PE, NB, QC), *C. scanicus* (QC, ON, BC, YT), *C. scutellatus* Newm. (QC, MB, AB), *C. setulosus* Sturm (AB, NT), *C. stromus* Wdrf. & Cmb. (AB, AK), *C. subfumatus* Kraatz (NB, MB), *C. tuberculosus* Mäkl. (QC, ON, MB), *C. varus* Wdrf. & Cmb. (QC, ON, MB), *Henoticus serratus* (AB), *Henotiderus lorna* (Hatch) (AB), *Myrmedophila americana* (LeC.) (ON), *Pteryngium crenulatum* (Eric.) (ON, AB, AK), *Salebius octodentatus* (Mäkl.) (AB), *Atomaria* (*Anchicera*) *aleutica* Csy. (MB, SK, AB, BC, NT, YT), *A. apicalis* Eric. (ON, SK, AB, BC, NT, YT, AK), *A. distincta* Csy. (ON, AB), *A. ehippiata* Zimm. (AK), *A. fulvipennis* Mann. (QC, ON, MB, SK, AB, BC, NT, YT), *A. fuscata* Schnrr. (AB, BC, NT, YT, AK), *A. kamtschatica* Motsch. (MB, AB, NT, YT), *A. laetula* LeC. (SK), *A. lederi* Johns. (NB, QC, ON, AB, BC), *A. lewisi* Reit. (MB, SK, AB, BC, AK), *A. nubipennis* Csy. (AB, AK), *A. pusilla* (Payk.) (ON), *A. testacea* Steph. (SK, BC), *Atomaria* (*Atomaria*) *atrata* Reit. (QC, ON, AB, AK), *A. capitata* (Csy.) (NB, QC, AB, AK), *A. lineola* (Notman) (ON, MB, SK, AB, BC), *A. longipennis* (Csy.) (QC, AB, AK), *A. nigrirostris* Steph. (NB, ON, SK, AB, BC, YT), *A. planulata* Mäkl. (QC, AB, YT), *A. quadricollis* (Csy.) (QC, ON, AB), *A. stricticollis* (Csy.) (QC, AB, YT), *A. subdentata* (Csy.) (NB, QC, ON, MB, SK, AB, AK), *A. vespertina* Mäkl. (QC, ON, MB, AB) and *Ephistemus globulus* (NF, LB, NS, QC).

By state or province, these new records total 2 for Newfoundland and Labrador, 1 for Prince-Edward Island, 9 for Nova Scotia, 31 for New Brunswick, 66 for Quebec, 50 for Ontario, 33 for Manitoba, 24 for Saskatchewan, 69 for Alberta, 41 for British Columbia, 17 for the Northwest Territories and Nunavut, 24 for Yukon, and 35 for Alaska.

The following 27 species are considered Holarctic, being naturally distributed in northern Europe, Asia and North America, through Alaska: *Caenoscelis ferruginea*, *Cryptophagus acutangulus*, *C. bidentatus*, *C. confertus*, *C. corticinus*, *C. lapponicus*, *C. quadrihamatus*, *C. tuberculosus*, *Henoticus serratus*, *Henotiderus centromaculatus*, *Salebius octodentatus*, *Atomaria* (*Anchicera*) *apicalis*, *A. (Anc.) basalis*, *A. (Anc.) fulvipennis*, *A. (Anc.) fuscata*, *A. (Anc.) kamtschatica*, *A. (Anc.) peltata*, *A. (Anc.) sodermani*, *A. (Anc.) turgida*, *A. (Atomaria) affinis*, *A. (At.) atrata*, *A. (At.) elongatula*, *A. (At.) fimetarii*, *A. (At.) nigrirostris*, *A. (At.) subdentata*, *A. (At.) vespertina* and *Hypocopus latridioides*.

Cryptophagidae contains up to 34 adventive species accidentally introduced by human activity, many of which live indoors, but also includes some that have successfully colonized natural habitats: *Caenoscelis subdeplanata*, *Cryptophagus cellaris*, *C. dentatus*, *C. denticulatus*, *C. distinguendus*, *C. fallax*, *C. laticollis*, *C. lycoperdi*, *C. obsoletus*, *C. punctipennis*, *C. saginatus*, *C. scanicus*, *C. scutellatus*, *C. setulosus*, *C. subfumatus*, *Henoticus pilifer*, *Micrambe ulicis*, *Pteryngium crenulatum*, *Telmatophilus typhae*, *Atomaria* (*Anchicera*) *atra*, *A. (Anc.) lederi*, *A. (Anc.) lewisi*, *A. (Anc.) mesomela*, *A. (Anc.) morio*, *A. (Anc.) munda*, *A. (Anc.) ornata*, *A. (Anc.) pusilla*, *A. (Anc.) testacea*, *A. (Atomaria) alpina*, *A. (At.) impressa*, *A. (At.) linearis*, *A. (At.) umbrina*, *Curelius japonicus* and *Ephistemus globulus*.

## Résumé

Cette révision des Cryptophagidés du Canada et du nord des États-Unis couvre 142 espèces parmi les genres suivants : *Caenoscelis* (6 espèces), *Antherophagus* (4), *Cryptophagus* (33), *Henoticus* (4), *Henotiderus* (2), *Micrambe* (1), *Myrmedophila* (1), *Pteryngium* (1), *Salebius* (2), *Telmatophilus* (2), *Hypocopus* (1), *Atomaria* (81), *Curelius* (1), *Ephistemus* (2) et *Tisactia* (1). Toutes ces espèces sont décrites morphologiquement et les descriptions incluent, pour chaque espèce, des photographies à haute définition, des données de répartition géographique avec carte de distribution, ainsi que des données sur l'occurrence saisonnière, les habitats et le nombre de spécimens observés. Quelques espèces n'ayant pas encore été récoltées au Canada, mais vivant dans des habitats similaires aux États-Unis, ont également été incluses dans cette publication. Une clé virtuelle d'identification permet d'identifier toutes les espèces connues au Canada et en Alaska, avec un lien vers leur page descriptive.



Cette publication inclut de nombreux changements taxonomiques, surtout au niveau synonymique. Les espèces suivantes ont été synonymisées: *Caenoscelis ovipennis* Casey, *C. macra* Casey and *C. elongata* Casey = *C. basalis* Casey; *Caenoscelis obscura* Casey and *C. subfuscata* Casey = *C. cryptophaga* Reitter; *C. ochreosa* Casey = *C. ferruginea* (C.R. Sahlberg); *Caenoscelis angusticollis* Casey and *C. shastanica* Casey = *C. parallela* Casey; *C. macilentia* Casey = *C. subdeplanata* Brisout de Barneville; *Cryptophagus pilosus sensu auctorum* = *C. punctipennis* Brisout de Barneville, le véritable *C. pilosus* ayant une identité incertaine. *Henoticus mycetoeus* est maintenant un synonyme de *H. pilifer* Reitter. *Salebius lictor* Casey et *S. montanus* Casey = *S. octodentatus* (Mäklin).

La plupart de la nouvelle synonymie se trouve dans le genre *Atomaria* et inclut les espèces suivantes : *Atomaria* (*Anchicera*) *nebulosa* Casey = *At. (Anc.) apicalis* Erichson; *At. (Anc.) divisa* Casey = *At. (Anc.) distincta* Casey; *At. (Anc.) gonodera* Casey, *At. (Anc.) riparia* Casey, *At. (Anc.) subalutacea* Casey, *At. (Anc.) incerta* Casey et *At. (Anc.) crypta* Casey = *At. (Anc.) fuscata* Schöenherr; *At. (Anc.) ebenina* Casey = *At. (Anc.) morio* Kolenati; *At. (Anc.) fallax* Casey = *At. (Anc.) pusilla* (Paykull); *At. (Anc.) nanula* Casey = *At. (Anc.) inepta* Casey; *At. (At.) luculenta* (Casey), *At. (At.) lucida* (Casey) et *At. (At.) lucens* Grouvelle = *At. (At.) nigrirostris* Stephens; *At. (At.) strandi* Johnson = *At. (At.) coloradensis* (Casey); *At. (At.) parvicollis* (Casey) et *A. parva* Schenkling = *At. (At.) nigricollis* (Casey); *At. (At.) ochronitens* (Casey) = *At. (At.) stricticollis* (Casey); *At. (At.) subangulata* (C. Sahlberg) = *At. (At.) subdentata* (Casey); *At. (At.) melas* (Casey) = *At. (At.) tenebrosa* (Casey); *At. (At.) cribripennis* (Casey) and *At. (At.) castanea* (Casey) = *At. (At.) undulata* (Casey). *At. (At.) lepidula* Mäklin est maintenant considéré comme un *nomem dubium*, l'holotype ayant été perdu. Finalement, *Ephistemus perminutus* Casey est un synonyme de *Curelius japonicus* Reitter. L'analyse génétique a permis de restaurer 2 espèces valides que Johnson (2007) avait synonymisées comme étant *At. (At.) wollastoni*: *Atomaria* (*At.*) *pumilio* et *At. (At.) lineola* (Notman). *A. carinula* (Casey) a été auparavant nommé par Ganglbauer en 1889 et un nouveau nom lui a été assigné: *A. neocarinula* Pelletier.

Cette publication comprend la description de 22 nouvelles espèces, appartenant surtout au genre *Atomaria* (les provinces et les États sont inclus entre parenthèses): *Henoticus varidentatus* Pelletier (QC), *Atomaria* (*Anchicera*) *arcuaticollis* Pelletier (QC, AK), *At. (Anc.) hudsonica* Pelletier (MB), *At. (Anc.) neomunda* Pelletier (QC, AK), *At. (Anc.) nigrirostrisoides* Pelletier (QC, AK), *At. (Anc.) nigritaria* Pelletier (MB, QC), *At. (Anc.) ocularia* Pelletier (AB), *At. (Anc.) parallellicollis* Pelletier (QC), *At. (Anc.) salicicola* Pelletier (AB), *At. (At.) albertana* Pelletier (AB), *At. (At.) calidaria* Pelletier (AB), *At. (At.) californica* Pelletier (CA), *At. (At.) cribricollis* Pelletier (OR, AB, AK), *At. (At.) impressicollis* Pelletier (AB, BC, YT), *At. (At.) lyricollis* Pelletier (MB), *At. (At.) ontariensis* Pelletier (ON), *At. (At.) orbicollis* Pelletier (QC, ON), *At. (At.) pinicola* Pelletier (NB, QC, BC), *At. (At.) pseudotsugae* Pelletier (BC), *At. (At.) puelloides* Pelletier (GA), *At. (At.) thujaplicatae* Pelletier (BC) and *At. (At.) visoni* Pelletier (AB, BC).

Deux nouveaux genres ont été récoltés pour la première fois au Canada : *Micrambe* Thomson, incluant *Micrambe ulicis* (Stephens) (QC) (aussi enregistré pour la première fois en Amérique du Nord) et *Tisactia* Casey, incluant *Tisactia subglabra* Casey (QC, ON).

En incluant toutes les nouvelles espèces, 60 espèces sont mentionnées pour la première fois au Canada ou en Alaska. En voici la liste, excluant les deux mentionnées au paragraphe précédent : *Cryptophagus croceus* Zimm. (NS, QC, ON, MB, SK, AB), *C. denticulatus* Heer (QC, ON, MB, AB, BC), *C. lycoperdi* (Scop.) (QC), *C. valens* Csy. (QC, ON, MB, SK, BC), *Henoticus pilifer* Reitter (QC, ON, BC), *Hypocopus latridioides* Motsch. (SK, AB), *Atomaria* (*Anchicera*) *atra* (Hrbst.) (NB, QC), *A. basalis* Eric. (NB, QC, MB, BC, NT, YT, AK), *A. brevicollis* Csy. (NB, QC, ON, MB, SK, AB, BC, NT), *A. gilvipennis* Csy. (NS, QC, ON), *A. inepta* Eric. (QC, BC, NT, AK), *A. mesomela* Hrbst. (BC), *A. morio* Kolen. (NB, QC, ON, SK, AB), *A. munda* Eric. (NB, QC, BC, AK), *A. oblongula* Csy. (NF, NS, NB, QC, ON, MB, SK, AB, BC, NT, AK), *A. ornata* Heer (BC), *A. peltata* Kraatz (BC, AK), *A. postpallens* Csy. (AB, BC, NT, AK), *A. sodermani* Sjöb. (QC, NT), *A. turgida* Eric. (NB, QC, ON, MB, SK, AB, BC, NT, YT, AK), *Atomaria* (*Atomaria*) *affinis* R.F. Sahl. (NS, NB, QC, AB, BC, AK), *A. alpina* Heer (NS, NB, QC, ON, AB, BC), *A. coloradensis* (Csy.) (NB, QC, AB, BC, YT, AK), *A. constricta* (Csy.) (NB, QC, AB, BC), *A. crassula* (Csy.) (NB, QC), *A. dispersa* (Csy.) (NB, QC, ON, AB, BC, AK), *A. elongatula* Eric. (QC, AB, BC), *A. fimetarii* (F.) (NS, NB, QC, ON, MB, SK, AB, BC, NT), *A. forticornis* (Csy.) (NB, QC, BC), *A. impressa* Eric. (NB, QC, ON, AB), *A. macra* (Csy.) (NB, QC, AB, BC, AK), *A. neocarinula* (Pell.), *A. nigricollis* (Csy.) (ON, MB, AB, BC, YT, AK), *A. parviceps* (Notm.) (QC, ON, AB), *A. patens* (Csy.) (NB, QC, ON), *A. puella* (Csy.) (AB), *A. pumilio* (Csy.) (NB, QC, ON, MB, SK, BC), *A. tenebrosa* (Csy.) (NB, QC, ON, AB, AK), *A. umbrina* (Gyll.) (NB, QC, ON, BC), *A. undulata* (Csy.) (NB, QC, ON, AB, BC, AK) et *A. versa* Grouv. (AK).

En plus des espèces mentionnées précédemment, voici la liste des 61 espèces mentionnées pour la première fois dans une province canadienne ou en Alaska: *Caenoscelis basalis* Csy. (NB, MB), *C. ferruginea* (C.R. Sahl.) (NS), *C. parallela* Csy. (AB), *C. subdeplanata* Bris. de Barn. (NB, BC), *Antherophagus convexus* LeC. (SK, AB, AK), *A. ochraceus* Melsh. (NT), *A. pallidivestis* Csy. (NB, QC, ON, AB), *A. suturalis* Mäkl. (SK, AB), *Cryptophagus bidentatus* Mäkl. (QC, ON, MB, AB, YT), *C. cellaris* (Scop.) (QC, YT), *C. confertus* Csy. (ON, MB, YT), *C. corticinus* Thoms. (MB, AB, YT), *C. dentatus* (Hrbst.) (QC, ON, MB, YT), *C. difficilis* Csy. (NB, ON, MB, NT, YT, AK), *C. distinguendus* (QC, ON, SK, AB), *C. fallax* Balf.-Br. (QC, ON), *C. hebes* Csy. (YT), *C. histricus* Csy. (QC, ON, SK, AB), *C. lapponicus* Gyll. (QC, ON, AB, NT, YT, AK), *C. laticollis* Lucas (MB), *C. mainensis* Csy. (QC, ON), *C. obsoletus* Reit. (QC, MB, SK, AB, YT), *C. peregrinus* Wdrf. & Cmbs. (AB), *C. quadrihamatus* Mäkl. (QC, ON, MB, SK, AB, BC, YT), *C. saginatus* Sturm (PE, NB, QC), *C. scanicus* (QC, ON, BC, YT), *C. scutellatus* Newm. (QC, MB, AB), *C. setulosus* Sturm (AB, NT), *C. stromus* Wdrf. & Cmbs. (AB, AK), *C. subfumatus* Kraatz (NB, MB), *C. tuberculosus* Mäkl. (QC, ON, MB), *C. varus*

Wdrf. & Cmb. (QC, ON, MB), *Henoticus serratus* (AB), *Henotiderus lorna* (Hatch) (AB), *Myrmedophila americana* (LeC.) (ON), *Pteryngium crenulatum* (Eric.) (ON, AB, AK), *Salebius octodentatus* (Mäkl.) (AB), *Atomaria* (*Anchicera*) *aleutica* Csy. (MB, SK, AB, BC, NT, YT), *A. apicalis* Eric. (ON, SK, AB, BC, NT, YT, AK), *A. distincta* Csy. (ON, AB), *A. ephippiata* Zimm. (AK), *A. fulvipennis* Mann. (QC, ON, MB, SK, AB, BC, NT, YT), *A. fuscata* Schnrr. (AB, BC, NT, YT, AK), *A. kamtschatica* Motsch. (MB, AB, NT, YT), *A. laetula* LeC. (SK), *A. lederi* Johns. (NB, QC, ON, AB, BC), *A. lewisi* Reit. (MB, SK, AB, BC, AK), *A. nubipennis* Csy. (AB, AK), *A. pusilla* (Payk.) (ON), *A. testacea* Steph. (SK, BC), *Atomaria* (*Atomaria*) *atrata* Reit. (QC, ON, AB, AK), *A. capitata* (Csy.) (NB, QC, AB, AK), *A. lineola* (Notman) (ON, MB, SK, AB, BC), *A. longipennis* (Csy.) (QC, AB, AK), *A. nigrirostris* Steph. (NB, ON, SK, AB, BC, YT), *A. planulata* Mäkl. (QC, AB, YT), *A. quadricollis* (Csy.) (QC, ON, AB), *A. stricticollis* (Csy.) (QC, AB, YT), *A. subdentata* (Csy.) (NB, QC, ON, MB, SK, AB, AK), *A. vespertina* Mäkl. (QC, ON, MB, AB) et *Ephistemus globulus* (NF, LB, NS, QC).

Pour résumer, nous comptons 2 nouvelles mentions pour Terre-Neuve et Labrador, 9 nouvelles mentions pour la Nouvelle-Écosse, 31 pour le Nouveau-Brunswick, 66 pour le Québec, 50 pour l'Ontario, 33 pour le Manitoba, 24 pour la Saskatchewan, 69 pour l'Alberta, 41 pour la Colombie Britannique, 17 pour les Territoires du Nord-Ouest et le Nunavut, 25 pour le Yukon et 35 pour l'Alaska.

Selon les données de distribution et d'abondance, les 27 espèces suivantes sont considérées comme holarctique, ayant une répartition géographique naturelle dans le nord de l'Europe, de l'Asie et de l'Amérique du Nord, en passant par l'Alaska : *Caenoscelis ferruginea*, *Cryptophagus acutangulus*, *C. bidentatus*, *C. confertus*, *C. corticinus*, *C. lapponicus*, *C. quadrihamatus*, *C. tuberculosus*, *Henoticus serratus*, *Henotiderus centromaculatus*, *Salebius octodentatus*, *Atomaria* (*Anchicera*) *apicalis*, *A. (Anc.) basalis*, *A. (Anc.) fulvipennis*, *A. (Anc.) fuscata*, *A. (Anc.) kamtschatica*, *A. (Anc.) peltata*, *A. (Anc.) sodermanni*, *A. (Anc.) turgida*, *A. (Atomaria) affinis*, *A. (At.) atrata*, *A. (At.) elongatula*, *A. (At.) fimetarii*, *A. (At.) nigrirostris*, *A. (At.) subdentata*, *A. (At.) vespertina* et *Hypocopus latridioides*.

Les Cryptophagidés comprennent un grand nombre d'espèces adventices, introduites accidentellement par l'activité humaine. Plusieurs d'entre elles vivent à l'intérieur des bâtiments, mais d'autres ont colonisé avec succès les habitats naturels, dont les 34 espèces suivantes : *Caenoscelis subdeplanata*, *Cryptophagus cellaris*, *C. dentatus*, *C. denticulatus*, *C. distinguendus*, *C. fallax*, *C. laticollis*, *C. lycoperdi*, *C. obsoletus*, *C. punctipennis*, *C. saginatus*, *C. scanicus*, *C. scutellatus*, *C. setulosus*, *C. subfumatus*, *Henoticus pilifer*, *Micrambe ulicis*, *Pteryngium crenulatum*, *Telmatophilus typhae*, *Atomaria* (*Anchicera*) *atra*, *A. (Anc.) lederi*, *A. (Anc.) lewisi*, *A. (Anc.) mesomela*, *A. (Anc.) morio*, *A. (Anc.) munda*, *A. (Anc.) ornata*, *A. (Anc.) pusilla*, *A. (Anc.) testacea*, *A. (Atomaria) alpina*, *A. (At.) impressa*, *A. (At.) linearis*, *A. (At.) umbrina*, *Curelius japonicus* et *Ephistemus globulus*.

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## Introduction

Cryptophagidae, also known as hairy fungus beetles, are common beetles often found as adults in the leaf litter, under the bark of trees, logs and stumps. They are easily distinguished by their small size (usually less than 3.5 mm), oval or elongate-oval body, often reddish to yellowish brown, sometimes dark brown to black, usually covered with silky hairs, antennae with a loose 3-segmented club and basal insertions visible from a dorsal view (White 1983), pronotum usually with well-developed lateral carinae, abdominal ventrite 1 longer than the each of the other ventrites, epipleuron distinct in its basal half, and elytra with confused punctuation (Leschen and Skelley 2002). They are very secretive beetles, hence the name “Cryptophagidae”, which loosely translated means “feeding in hidden places”. About 165 species belonging to 16 genera have been recorded so far in North America. All genera are included in this publication except *Sternodea*, which is found in Florida and does not have any described Nearctic species, and *Amydropa*, with only one described species from Baja California (Leschen and Skelley 2002). Bousquet et al. (2013) listed 73 species in Canada, including 18 Holarctic and 10 introduced species.

The taxonomy of Cryptophagidae is moderately known

in Canada and the northern United States of America. *Cryptophagus*, the nominal genus, was described by Herbst in 1792 with *C. scanicus* (Linnaeus) as the type species. *Cryptophagus cellaris* and *C. lycoperdi*, both described by Scopoli in 1763 and introduced into North America, were among the first species of the family to be named. During the 19th century, most studies of Cryptophagidae were carried out in Europe, mainly by Erichson in 1846 and Mäklin in 1852-1853. In North America, very few species were described prior to 1900 (LeConte 1869). Casey (1900) made a major contribution to the family; however, the majority of species that he described in his later revision (Casey 1924) have been synonymized. Although he described 114 species in his publications, 66 species fell into synonymy, including 24 species of *Cryptophagus* Herbst and 21 species of *Atomaria* Stephan.

No major revision was published on Nearctic species until Woodroffe and Coombs (1961) on *Cryptophagus*. This excellent and well-illustrated publication has been helpful to link the Palearctic and Nearctic fauna and to separate distinct species based on their geographic variation, which can be significant in that genus. Four of Casey's species were synonymized in the highly variable *C. croceus* Zimmermann. Ten introduced species and two



Holarctic species were recorded for the first time in North America. They described five new Nearctic species, including the common *C. varus* Woodroffe & Coombs.

Hatch (1962) revised the family in the Pacific Northwest, stabilizing the names of many species in that region. Bousquet (1989) reviewed the North American genera of Cryptophaginae. *Myrmedophila* Bousquet was extracted from *Cryptophagus* as a newly described genus. Poole and Gentili (1996) list all known Nearctic Cryptophagidae. Leschen (1996) revised the genera of the entire family with cladistic phylogenetic analysis. *Anchicera* Thomson was definitively united with *Atomaria* as a subgenus, and *Glyptophorus* Park was united with *Henoticus* Thomson. Downie and Arnett (1996) provided identification keys and diagnoses of all species known in northeastern North America. Among the 56 species of Cryptophagidae recorded, 36 species are still valid, mostly in the Cryptophaginae. Lyubarsky (2012) described three species of *Atomaria* from the eastern Palearctic but none of these species fit the description of any Nearctic species.

Cryptophagidae are distributed worldwide. *Cryptophagus*, *Henoticus*, *Caenoscelis* Thomson and *Atomaria* are widely distributed in North America. *Antherophagus* Dejean, *Henotiderus* Reitter, *Myrmedophila* and *Telmatophilus* Heer have a northern and a western distribution. *Salebius* Casey and *Hypocopus* Motschulski have been collected so far only in western North America. *Pteryngium* Reitter appears to be Holarctic. *Curelius* and *Ephistemus* have been introduced from Europe or Asia.

Cryptophagidae are found in a wide variety of habitats. *Cryptophagus*, *Henoticus* and *Atomaria* are mostly forest dwellers and are often collected in soil litter and under bark. *Henotiderus* prefers trees, under the bark, whereas *Myrmedophila* and *Hypocopus* prefer ant nests (Leschen & Skelley, 2002). Many specialized species of *Atomaria* live in animal burrows, beaver lodges, or in ant and bird nests. *Antherophagus* adults are found on flowers, feeding on pollen, whereas the larvae of some species live inside bumblebee nests and beehives where they feed on honey. *Telmatophilus* are common in aquatic habitats, where they feed on *Spargania* and *Typha* (Leschen & Skelley, 2002). Many species of *Cryptophagus* and *Atomaria* (*Anchicera*) are found indoors where they feed on stored food products (Bousquet, 1990), or on fungi and mold found within the walls or in basements where humidity is high. Any water problems, often caused by leaking pipes, will usually attract fungi and mold that will attack wood structures and that will in turn attract many silky fungus beetles, mostly in remote areas. Because of their small size and their secretive behavior, they usually remain undetected.

Species in the genera *Telmatophilus*, *Hypocopus* and

*Tisactia* Casey seem to be more active in spring, from April to June, but most species of other genera are most active from June to mid-August. Many species have an extended period of activity that can include fall and winter, remaining active under the snow cover and at the base of tree trunks. Indoors, most species are active year round. Many species that are mostly collected in late spring and summer in Canada are mostly active during winter in the southeastern United States of America.

## Materials and Methods

This publication covers all 142 described species that can be found in Canada and the northern United States of America. Types of most species described by Casey (1900) (except for species of *Cryptophagus*) were examined and photographed by GP, and are redescribed according to the current standards. A list of types and other material examined (with their original name) from various institutions, including synonymies (names in bold are still valid today) and new combinations is provided in the supplemental materials. Types of most species described by Casey (1900) (except for species of *Cryptophagus*) were examined and photographed by GP, and are redescribed according to the current standards. Unfortunately, it was not possible to examine holotypes of Palearctic species held in European collections. Our concept of Holarctic species follows Woodroffe & Coombs (1961) for *Cryptophagus* and Johnson (1992) for *Atomaria* and some species of *Cryptophagus* that were renamed since Woodroffe & Coombs (1961).

Also, collaborations were made with Richard Leschen and Colin Johnson, two world specialists of the family working on a world checklist. They compiled the Palearctic checklist, including all known species from Europe, Asia and North Africa, (Johnson et al. 2007 – including an unpublished 2014 update). This list gives a broad view of the family, including all species that could potentially be found in North America. From that list, we selected all species with an extensive distribution that could potentially be introduced into North America, and all northern species that could potentially be present in northern Canada and Alaska (Supplemental Materials).

The present publication is available in PDF format along with an online interactive identification key. For each species, a detailed description and image of the habitus, sometimes an image taken in the field, habitat data, some ecological data and a distribution map are provided. Photographs of habitus or morphological structures were taken using a Nikon digital camera DMX1200F through a binocular Nikon SMZ. All photos were processed through a Proscan II system by Prior Scientific (<https://www.prior.com/>), which stacks all images taken at different layers into one focused image. Each part (head, thorax, elytra, antennae, legs)

of all species was photographed individually, in order to improve the resolution, and then joined together using Adobe Photoshop Element software. Images of the following Palearctic species, either introduced or Holarctic, were provided by Lech Borowiec from the University of Wrocław (see Supplemental Materials for additional related material examined):

*Caenoscelis subdeplanata* Brisout de Barneville

*Cryptophagus dentatus* (Herbst)

*Cryptophagus laticollis* Lucas

*Cryptophagus lycoperdi* (Scopoli)

*Cryptophagus scutellatus* Newman

*Henoticus serratus* Gyllenhal

*Telmatophilus typhae* Fallén

*Atomaria (Anchicera) apicalis* Erichson

*Atomaria (Anchicera) fuscata* (Schönherr)

*Atomaria (Anchicera) lewisi* Reitter

*Atomaria (Anchicera) mesomela* (Herbst)

*Atomaria (Anchicera) pusilla* (Paykull)

*Atomaria (Anchicera) testacea* Stephens

*Atomaria (Atomaria) elongatula* Erichson

*Atomaria (Atomaria) fimetarii* (Fabricius)

*Atomaria (Atomaria) linearis* Stephens

*Ephistemus globulus* (Paykull)

Most specimens from the Canadian National Collection in Ottawa were examined. Many specimens from Quebec came from biodiversity projects led by Christian Hébert at the Laurentian Forestry Centre. Claude Chantal, who holds the largest private beetle collection in Quebec, provided a substantial number of specimens from Quebec for study. The Northern Forestry Centre in Alberta (Dave Langor, James Hammond), the University of British Columbia (Karen Needham), the University of Georgia (Richard Hoebeke) and University of Alaska (Derek Sikes) also provided us with numerous specimens. Steve Marshall from the University of Guelph provided a few specimens and some ecological data from Ontario. Reggie Webster also provided a few specimens from New Brunswick.

The genera of Cryptophagidae are well defined taxonomically, thanks to Leschen (1996). Johnson (1992) has developed a useful key to identify most species from central Europe; however, no existing key can help identify all species found in Canada, especially those of the genus *Atomaria*. We simplified the key of Woodroffe and Coombs (1961) on *Cryptophagus*, and it should help easily identify nearly all specimens found in Canada and the USA. We hope that this publication will help students, amateurs, technicians and professional entomologists to

easily identify most species.

This review was prepared because of the increased interest and research activities (mainly biodiversity projects) related to cryptophagids. We believe that many species can be good ecological indicators for old growth forests as these forests may be subject to more extensive decaying processes involving fungi, the main food source of cryptophagids. Do these beetles, by their activities, limit the growth of mycelium and protect the trees by limiting the spread of tree diseases or, on the contrary, disperse the spores of the fungi and accelerate the decaying process of the forest? The answers to those questions are unknown for the moment but increasing the knowledge of this family and knowing which species can be found in which types of forest, at which stage of maturity or decay, will help to provide some answers in the future.

### Interactive keys for species determination

The interactive key was created to facilitate the determination of all species of Cryptophagidae in Canada, Alaska and northern mainland USA (south to Maryland west to Oregon), covering all habitats that can be found in Canada. This key includes all known Nearctic *Atomaria*. However, a few doubtful species of *Atomaria* introduced from Europe and previously recorded in North America, but not seen in our material, are not included in this work. This includes the following species:

*Atomaria (Atomaria) diluta* Erichson

*Atomaria (Atomaria) nigriventris* Stephens

*Atomaria lepidula* was described by Mäklin from Alaska; however, the holotype, stored in the Finnish Museum of Natural History, examined and returned by Colin Johnson in 1971, has been lost. According to its original (very short) description in Latin, this species belongs to the subgenus *Anchicera*, is a uniform reddish brown and is very large in size for the genus (2.4 mm). No specimen with these characters was seen in our material so this name will be considered a *nomem dubium*.

The interactive key uses external morphological characters that are very useful to identify all species. The most useful diagnostic characters include antennae, mainly the first segment's (A1) shape and length relative to the second, club A9-A10 shape (subquadrate, slightly to strongly transverse), sometimes the shape of A4-A8, pronotum shape and proportions, elytra shape, proportions and pilosity, and sometimes colour pattern.

Genitalia, which are useful to confirm the identification of species in many beetle families, are not very useful for Cryptophagidae; however, DNA barcoding has been by far a better method to separate species without the risk of destroying specimens (needing only to remove one leg). The DNA barcoding method will be explained in a later

section.

### Descriptive plates of species

In order to facilitate the identification of the species, all diagnostic characters are in **bold**, including all major sections of the description: length (L), head, antennae, pronotum, elytra. After the description, each species is compared with the most closely related one or any other species which can be confused.

Both sexes are described together. Species of Cryptophaginae only have slight sexual dimorphism in the tarsal formula, being 5-5-4 in male and 5-5-5 in female. In a few species, such as *Caenoscelis antennata*, sexes can be also separated by their antennal structure. However, only the presence of tenant setae in claws of males can separate the sexes of Atomariinae for all species. Total length of the species is measured from the tip of the clypeus to the tip of the elytra or abdomen.

Each part of the beetle is described in the following sequence: **head** (including eyes, mandibles, palpi, clypeus, antennae), **thorax** (pronotum, sterna, legs, elytra), and **abdomen** (sternites), describing colouration first, then morphometry and other structural characters. **Eyes/head width ratio** is calculated by dividing the distance between the internal eye orbits at the level of maximum head width (FW: frons width) by head width from dorsal view (HW) and subtracting the result from 1:  $1-(FW/HW)$ . The **clypeus** is quadrate, without any significant difference between genera or species. **Antennae** (A) are described in detail, including the shape and relative length of each article compared to the following one (A1-A8) and the relative width of club articles (A9-A11). Antennal description is important to separate species groups and sometimes species.

**Pronotum** colour, width/length ratio, margin shapes, surface porosity, punctures and pubescence are noted. **Width/length ratios** of pronotum are measured from maximum width and length at the middle. This ratio can vary from subquadrate (1:1) to twice as wide as long (2:1), with only one species being elongate (*Hypocoprus latridioides*). **Lateral margins** can be arcuate, sinuate, straight, subparallel, dentate, crenulate or with a callosity at anterior angles. **Pronotum shape and width/length proportion** are crucial for the diagnosis of most species. Pronotum is usually glossy, subglossy or rarely opaque (with distinct microsculpture) with strong, moderate or sparse punctures. Pilosity is usually moderately long and sparse but sometimes more dense. Colouration of the sterna (including prosternum, meso- and metaventricle), scutellum and legs is mentioned.

**Elytra** colour, length/width ratio and elytra/pronotum length ratio are recorded. Elytra often have sides entirely arcuate or straight and divergent at the anterior half or more, rarely subparallel but usually arcuate and

convergent at apical half or less. Surface is usually glossy and pilosity is dense, moderate or sparse, long or short, erect, suberect, appressed or prostrate, sometimes both. Abdominal sternite colour is noted. All males have internal genitalia and there is no external dimorphism feature on the abdominal ventrites.

**Colour** is not very useful to separate most species. Many species have a uniform reddish brown body. Many others have a dark brown head and pronotum combined with yellowish brown elytra. A few species are entirely dark brown to black or entirely yellowish brown. A few species have a contrasting black pattern on paler elytra. Some species such as *Atomaria fuscata* Schönherr can be very variable in colour, being entirely reddish brown to dark brown. All colour variations are mentioned in the text for each part of the body when necessary. Antennal structure, pronotum and elytra shape have been used to separate most species. Color is mostly used as a confirmation character when there is not much variation within a species except in distinctly patterned species.

**Similar species** related to the one described are mentioned with all the characters that can help to differentiate between them, starting with the most similar species. All the characters discussed above are usually mentioned in the key.

**Distributions** are given from eastern Canada to the northwest, including Alaska, down to the southeast and the southwest, including the range outside the geographic scope of this work, both for species occurring in Canada and for species that have not yet been recorded in Canada but that occur in the USA. All distribution maps indicate ecozones (Figure 1), as defined below; however, for the sake of simplicity, some ecozones were grouped together in order to correspond to most species' distributions.

**Arctic zone**, northern Canada from coast to coast (including most Arctic Ocean islands) and Alaska, covered mostly by tundra.

**Taïga zone**, also called Subarctic and sometimes Hudsonian zone, bordering south of the Arctic zone, from coast to coast, covered mostly by open black spruce forests growing sparsely on lichen.

**Boreal zone**, also called Canadian zone, mostly covered by dense black spruce forests, mostly dominated by balsam fir in the south, extending nearly coast to coast.

**Mixedwood Plains zone**, also called Transition zone, mostly covered by deciduous forests dominated by maple and beech, but also by mixed forests with white pine and red oak in more humid areas along the St. Lawrence River and in the Maritime Provinces and states. This area is mostly covered by agricultural lands and many prairie species expand their distribution eastward in that region.

**Northern Appalachians zone**, includes the Atlantic Maritime zone of Canada, a mountain chain extending from eastern Quebec and southern New Brunswick to



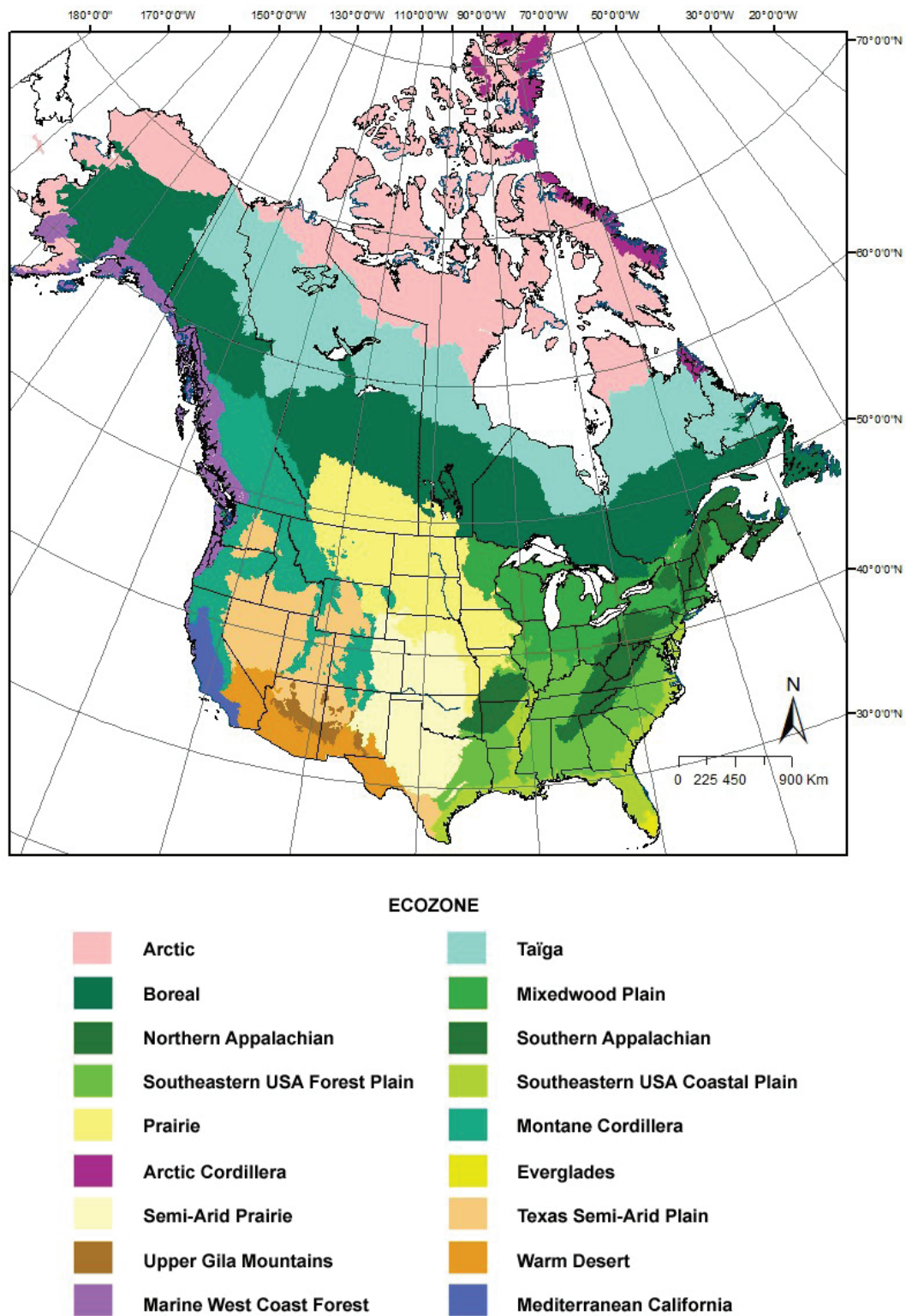


Figure 1. Nearctic ecozones.

western Massachusetts, Connecticut, and the Adirondack Mountains of New York; a southern extension of the Boreal zone, dominated by spruce-fir and maple-beech forests.

**Southern Appalachians zone**, also called Alleghanian zone, a mountain chain extending from Pennsylvania to north Georgia and Alabama, including the Ozark Mountains of Missouri and Arkansas; a southern extension of the Northern Appalachian and Transition zones, covered by maple-beech forests, but with a higher proportion of pine and oak-hickory forests. Spruce-fir forests can be found on the highest mountains.

**Southeastern USA Forest Plain zone**, also called Carolinian zone, extending south of the Transition and the Alleghanian zones, from New Jersey down to northern Florida and west to Illinois, Arkansas and Texas, dominated by pine and oak-hickory forests.

**Southeastern USA Coastal Plain zone**, also called Louisianian zone, including the Texas-Louisiana Coastal Plain, bordering the Atlantic Ocean and the Gulf of Mexico seashore south of the Carolinian zone, from New Jersey down to Florida west to the Mississippi Valley and Texas, dominated by vast pine forests and by evergreen hardwood forests dominated by oak.

**Temperate Prairie zone**, excluding the South Central Semi-Arid Prairie zone, west of the Boreal, Mixed Wood Forest and Southeastern USA Forest Plain zones, from southern Manitoba west to Alberta and south to Missouri, Kansas, Nebraska, and Wyoming, dominated by grasslands and meadows.

**Western Cordillera zone**, including the cordillera of the western US, from western Alberta to British Columbia, south to Colorado, New Mexico, Utah, Idaho and California; dominated by Ponderosa and lodgepole pines, it is a very diversified area that contains many endemic species, and also extended range of a many northern species.

**Marine West Coast Forest zone**, a narrow strip along the Pacific Coast from southern Alaska and British Columbia south to northern California; dominated by large conifers such as Douglas-fir, Sitka spruce, western cedar and western white pine.

Other ecozones are recorded, but are only represented by a smaller number of species or have not been adequately sampled.

The distribution pattern of a species does not follow political borders. Our ecozone map system has been especially designed to give a more relevant idea of the likely distribution of a species. When a species is present only in the eastern and the western part of an ecozone, especially in a relatively undisturbed ecozone like the Boreal zone, the probability is very high that it will be eventually collected in between. The main reason why many species have not been reported from

northern Ontario, Manitoba and Saskatchewan is because these areas have not been as intensively sampled as in Quebec or Alberta. However, if two specimens have been collected in two distant localities belonging to two different ecozones, the probability that one of these is an accidental introduction is much higher. In that case, we cannot argue for a real continuous distribution.

We include an index of commonness of a species. This mainly reflects the number of specimens seen in collection, which does not necessarily translate to reality in the field, especially for species living in very remote areas or in specialized habitats:

- Very common: more than 300 specimens seen;
- Common: between 100 and 300 specimens;
- Fairly common: between 50 and 100 specimens;
- Uncommon: between 10 and 50 specimens;
- Rare: fewer than 10 specimens.

Table 1 represents a list of all species of Cryptophagidae found in Canada and the northern USA together with their respective ecozones. The results of this table show that the most well diversified ecozones for Cryptophagidae are the Boreal (100 species), Western Cordillera (97 species), Mixedwood Plain (81 species) and Northern Appalachian (76 species). Of course, these ecozones were intensively sampled by three different Canadian Forestry Service centers.

Seasonality is also recorded, mentioning at first the wider time distribution pattern based on extremes of collecting dates, followed by the usual period of adult activity including their peak for common species, all shown in a bar graph. However, for species represented by less than 20 specimens, no bar graph is shown.

Habitats and host trees or plants, when known, are also noted for each species. Most collectors before 1980 did not record any ecological data for most specimens. Since 1992, when biodiversity started being considered in CFS research studies, habitats of many species have begun to be known. Most species living in spruce, mixed fir-birch, and maple forests are now well known. Other species living in grasslands, open shrubby fields and orchards are also relatively well known. However, although some species have been recorded in these habitats, oak and pine forests still need to be more deeply investigated, including freshwater and coastal marshes and bogs. Today, habitats are known for about 85% of the species. Finally, the geographic distribution of the species and the presence of better-known species in the same locality collected on the same date can help us to determine the probable habitats of a determined species, though that information will need to be verified by further research. Except otherwise noted, most habitat data were recorded from specimen labels. Finally, the number of specimens examined is given to indicate the relative abundance of the species in the collections.

**Table 1: Checklist of Cryptophagidae of Canada and Alaska**

This list follows Bousquet et al (2013) with each column representing a state or a province. It includes also all the North American synonymies. All species written in red are new records for Canada. All provinces or states in red are new provincial or state records. For ecozones, shaded cells represent ecozones where the species is well represented, corresponding to its normal distribution while cells in white are where the species is rather scarcely distributed, outside of its normal range. AK – Alaska; YT – Yukon Territory; NT – Northwest Territories (including Nunavut); BC – British Columbia; AB – Alberta; SK – Saskatchewan; MB – Manitoba; ON – Ontario; QC – Quebec; NB – New Brunswick; NS – Nova Scotia; PE – Prince Edward Island; LB – Labrador; NF – Newfoundland. A – Arctic Zone; T – Taiga Zone; B – Boreal Zone; MW – Marine West Coast Forest Zone; WC – Western Cordillera Zone; P – Temperate Prairie Zone; NA – Northern Appalachian Zone; MP – Mixedwood Plain Zone; SA – Southern Appalachian Zone; SE – Southeastern USA Coastal Plain Zone. \* indicate Holarctic species. † indicate adventive species.

|  | Province |    |    |    |    |    |    |    |    |    |    |    |   |    | Ecozone |    |    |    |    |    |    |    |    |    |
|--|----------|----|----|----|----|----|----|----|----|----|----|----|---|----|---------|----|----|----|----|----|----|----|----|----|
| Subfamily CRYPTOPHAGINAE Kirby, 1826                 |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| Tribe Caenoscelini Casey, 1900                       |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| Genus <i>CAENOSCELIS</i> C.G. Thomson, 1863          |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. antennalis</i> (Casey, 1924)                   | –        | –  | –  | BC | AB | SK | MB | ON | QC | –  | NS | –  | – | –  | B       |    | WC | P  | NA | MP |    |    |    |    |
| <i>C. basalis</i> Casey, 1900                        | –        | –  | –  | –  | –  | –  | MB | ON | QC | NB | NS | –  | – | NF | B       |    | WC | P  | NA | MP | SA | SE |    |    |
| <i>C. ovipennis</i> Casey, 1900 <b>syn. nov.</b>     |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. macra</i> Casey, 1900 <b>syn. nov.</b>         |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. elongata</i> Casey, 1900 <b>syn. nov.</b>      |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. cryptophaga</i> Reitter, 1875                  | –        | –  | –  | –  | –  | –  | –  | ON | QC | –  | NS | –  | – | –  | B       |    |    |    | NA | MP | SA | SE |    |    |
| <i>C. obscura</i> Casey, 1899? <b>syn. nov.</b>      |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. subfuscata</i> Casey, 1900 <b>syn. nov.</b>    |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. ferruginea</i> (C.R. Sahlberg, 1820)*          | AK       | YT | NT | BC | AB | SK | MB | ON | QC | –  | NS | –  | – | –  | T       | B  | MW | WC | P  | NA | MP |    | SE |    |
| <i>C. testacea</i> (Zimmermann), 1869                |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. ochreosa</i> Casey, 1900 <b>syn. nov.</b>      |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. parallela</i> Casey, 1900                      | AK       | –  | –  | BC | AB | –  | MB | –  | –  | –  | –  | –  | – | –  | B       | MW | WC |    | P  |    |    |    |    |    |
| <i>C. angusticollis</i> Casey, 1900 <b>syn. nov.</b> |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. shastanica</i> Casey, 1900 <b>syn. nov.</b>    |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>C. subdeplanata</i> Brisout de Barneville, 1882*  | –        | –  | –  | BC | AB | –  | MB | ON | QC | NB | –  | –  | – | –  | B       | MW | WC | P  |    | NA | MP | SA | SE |    |
| <i>C. macilenta</i> Casey, 1900 <b>syn. nov.</b>     |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| Tribe Cryptophagini Kirby, 1826                      |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| Genus <i>ANTHEROPHAGUS</i> Dejean, 1821              |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>A. convexus</i> LeConte, 1863                     | AK       | –  | –  | –  | AB | SK | –  | ON | QC | NB | NS | –  | – | –  | B       | MW |    | P  |    | NA | MP | SA |    |    |
| <i>A. ochraceus</i> Melsheimer, 1844                 | –        | –  | NT | BC | AB | SK | MB | ON | QC | NB | NS | PE | – | NF | T       | B  | MW | WC | P  |    | NA | MP | SA | SE |
| <i>A. subnitidus</i> Grouvelle, 1911                 |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |
| <i>A. oregonus</i> Casey, 1924                       |          |    |    |    |    |    |    |    |    |    |    |    |   |    |         |    |    |    |    |    |    |    |    |    |



|   | Province |    |    |    |    |    |    |    |    |    |    |    |    |    | Ecozone |   |    |    |    |    |    |    |    |    |
|---|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|---------|---|----|----|----|----|----|----|----|----|
| <i>A. pallidivestis</i> Casey, 1900                 | –        | –  | –  | BC | AB | –  | –  | ON | QC | NB | –  | –  | –  | –  |         | B | MW | WC | P  | NA |    |    |    |    |
| <i>A. suturalis</i> Mäklin, 1853                    | AK       | –  | –  | BC | AB | SK | –  | –  | –  | –  | –  | –  | –  | –  | T       | B | MW | WC |    |    |    |    |    |    |
| Genus <i>CRYPTOPHAGUS</i> Herbst, 1792 <sup>1</sup> |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. acutangulus</i> Gyllenhal, 1827*              | AK       | –  | –  | BC | AB | SK | MB | ON | QC | NB | NS | –  | –  | NF |         | B | MW | WC | P  | NA | MP |    |    |    |
| <i>C. prominens</i> Casey, 1924                     |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. restrictus</i> Casey, 1924                    |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. bidentatus</i> Mäklin, 1853*                  | AK       | YT | –  | BC | AB | –  | MB | ON | QC | –  | –  | –  | –  | –  | A       | T | B  | MW | WC | P  |    |    |    |    |
| <i>C. punctatissimus</i> Mäklin, 1853               |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. cellaris</i> (Scopoli, 1763)†                 | –        | YT | –  | BC | AB | SK | MB | ON | QC | –  | –  | –  | –  | –  | A       | T | B  | MW | WC | P  | NA | MP |    |    |
| <i>C. rupimontis</i> Casey, 1924                    |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. angustatus</i> Casey, 1924                    |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. confertus</i> Casey, 1900*                    | AK       | YT | NT | BC | AB | SK | MB | ON | QC | –  | NS | PE | –  | –  | A       | T | B  | MW | WC | P  | NA |    |    |    |
| <i>C. archangelicus</i> Sahlberg, 1926              |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. corticinus</i> C.G. Thomson, 1863*            | AK       | YT | –  | BC | AB | SK | MB | ON | QC | –  | –  | –  | –  | –  | A       | T | B  |    | WC |    | NA | MP |    |    |
| <i>C. depressulus</i> Casey, 1900                   |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. croceus</i> Zimmermann, 1869                  | –        | –  | –  | –  | AB | SK | MB | ON | QC | –  | NS | –  | –  | –  |         | B |    | WC | P  | NA | MP | SA | SE |    |
| <i>C. crinitus</i> Zimmermann, 1869                 |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. fungicola</i> Zimmermann, 1869                |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. nodifer</i> Casey, 1900                       |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. amputatus</i> Casey, 1900                     |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. laticlavus</i> Casey, 1900                    |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. densicollis</i> Casey, 1924                   |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. dentatus</i> (Herbst, 1793)†                  | AK       | YT | –  | BC | –  | –  | MB | ON | QC | –  | –  | –  | –  | –  |         | T | B  |    | WC |    | NA | MP | SA | SE |
| <i>Corticaria fumata</i> Marsham, 1802              |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>Cryptophagus quadridentatus</i> Mannerheim, 1843 |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. denticulatus</i> Heer, 1841†                  | –        | –  | –  | BC | AB | –  | MB | ON | QC | –  | –  | –  | –  | –  |         |   |    | WC | P  |    |    | MP |    | SE |
| <i>C. difficilis</i> Casey, 1900                    | AK       | YT | NT | BC | AB | SK | MB | ON | QC | NB | –  | –  | LB | NF |         | T | B  |    | WC | P  | NA | MP |    | SE |
| <i>C. contractus</i> Casey, 1924                    |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. dilutus</i> Reitter, 1874                     | –        | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |   |    |    |    |    |    |    |    |    |
| <i>C. distinguendus</i> Sturm, 1845†                | –        | –  | –  | BC | AB | SK | –  | ON | QC | –  | –  | –  | –  | –  |         | T | B  |    | WC | P  | NA | MP |    | SE |
| <i>C. keeni</i> Casey, 1924                         |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>C. fallax</i> Balfour–Browne, 1953†              | –        | –  | –  | –  | –  | –  | –  | ON | QC | NB | NS | PE | –  | –  |         | B |    |    |    |    | NA | MP |    |    |

<sup>1</sup>Key to Nearctic species: Woodroffe and Coombs (1961)

|   | Province |    |    |    |    |    |    |    |    |    |    |    |    |    | Ecozone |    |    |    |    |    |    |    |    |
|---|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|---------|----|----|----|----|----|----|----|----|
| <i>C. hebes</i> Casey, 1900                         | AK       | YT | –  | BC | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | B       | MW | WC |    |    |    |    |    |    |
| <i>C. lyraticollis</i> Casey, 1900                  |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. otiosus</i> Casey, 1900                       |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. histricus</i> Casey, 1900                     | –        | –  | –  | BC | AB | SK | –  | ON | QC | –  | –  | –  | LB | –  | B       |    | WC | NA | MP | SA | SE |    |    |
| <i>C. lapponicus</i> Gyllenhal, 1827*               | AK       | YT | NT | BC | AB | –  | –  | ON | QC | –  | –  | –  | –  | –  | A       | T  | B  | MW | WC | NA | MP |    |    |
| <i>C. validus</i> Kraatz, 1856                      |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. laticollis</i> Lucas, 1846†                   | –        | –  | –  | BC | AB | SK | MB | –  | –  | –  | NS | –  | –  | –  |         | MW | WC | P  |    | MP | SE |    |    |
| <i>C. affinis</i> Sturm, 1845 - Homo.               |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. inscitus</i> Casey, 1900                      |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. cribricollis</i> Casey, 1900                  |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. lycoperdi</i> (Scopoli) 1763†                 | –        | –  | –  | –  | –  | –  | –  | –  | QC | –  | –  | –  | –  | –  |         |    |    |    |    | MP |    |    |    |
| <i>C. mainensis</i> Casey, 1924                     | –        | –  | –  | –  | –  | –  | –  | ON | QC | NB | NS | –  | –  | NF | B       |    |    | NA | MP |    |    |    |    |
| <i>C. maximus</i> Blake, 1928                       | –        | –  | –  | BC | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |    | WC |    |    |    |    |    |    |
| <i>C. obsoletus</i> Reitter, 1879†                  | –        | YT | –  | –  | AB | SK | MB | ON | QC | –  | –  | –  | –  | –  | T       | B  | WC | P  |    | MP |    |    |    |
| <i>C. peregrinus</i> Woodroffe & Coombs, 1961       | –        | –  | –  | BC | AB | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |    | MW | WC |    |    |    |    |    |
| <i>C. porrectus</i> Casey, 1900                     | AK       | –  | –  | BC | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  |         | B  | WC |    |    |    |    |    |    |
| <i>C. punctipennis</i> Brisout de Barneville, 1863† | –        | –  | –  | BC | –  | SK | MB | ON | QC | NB | –  | –  | –  | –  | B       |    | WC | NA | MP |    |    |    |    |
| <i>C. pilosus</i> sensus auctorum syn. nov.         |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. parvinoda</i> Casey, 1900                     |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. infuscatus</i> Casey, 1900                    |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. plectrum</i> Casey, 1900                      |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. cicatricosus</i> Casey, 1900                  |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. quadrihamatus</i> Mäklin, 1853*               | AK       | YT | –  | BC | AB | SK | MB | ON | QC | –  | –  | –  | –  | –  | T       | B  |    | WC | P  | NA |    |    |    |
| <i>C. plagiatu</i> s Poppius, 1900                  |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. saginatus</i> Sturm, 1845†                    | AK       | –  | –  | BC | –  | SK | –  | ON | QC | NB | –  | PE | –  | –  |         | B  | MW | WC |    | NA | MP |    |    |
| <i>C. scanicus</i> (Linnaeus, 1758)†                | –        | YT | –  | BC | –  | –  | –  | ON | QC | –  | –  | –  | NF | –  | T       | B  | MW | WC |    |    | MP |    |    |
| <i>C. scutellatus</i> Newman, 1834†                 | –        | –  | –  | –  | AB | –  | MB | ON | QC | –  | –  | –  | –  | –  |         | B  | MW |    | P  | NA | MP |    |    |
| <i>C. setulosus</i> Sturm, 1845†                    | –        | –  | NT | BC | AB | SK | –  | ON | QC | –  | –  | –  | LB | NF | T       | B  |    | WC | P  | NA | MP | SA | SE |
| <i>C. antennatus</i> Casey, 1900                    |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. grossulus</i> Casey, 1924                     |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>C. stromus</i> Woodroffe & Coombs, 1961          | AK       | –  | –  | –  | AB | SK | MB | –  | –  | –  | –  | –  | –  | –  |         |    | MW | WC | P  |    |    |    |    |
| <i>C. subfumatus</i> Kraatz, 1856†                  | –        | –  | –  | BC | AB | SK | MB | ON | QC | NB | –  | –  | –  | –  | B       |    |    | WC | P  | NA | MP |    | SE |

|  | Province |    |    |    |    |    |    |    |    |    |    |   |   |    | Ecozone |   |    |    |   |    |    |    |    |
|--|----------|----|----|----|----|----|----|----|----|----|----|---|---|----|---------|---|----|----|---|----|----|----|----|
| <i>C. tuberculosus</i> Mäklin, 1852*               | AK       | –  | –  | BC | AB | SK | MB | ON | QC | –  | NS | – | – | NF | T       | B | MW | WC | P |    | MP |    |    |
| <i>C. debilis</i> LeConte, 1858                    |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>C. brevipilis</i> Casey, 1900                   |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>C. lepidus</i> Casey, 1900                      |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>C. boulderanus</i> Casey, 1924                  |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>C. instabilis</i> Bruce, 1936                   |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>C. valens</i> Casey, 1900                       | –        | –  | –  | BC | –  | SK | MB | ON | QC | –  | –  | – | – | –  |         | B |    | WC | P | NA | MP | SA | SE |
| <i>C. varus</i> Woodroffe & Coombs, 1961           | –        | –  | –  | BC | AB | SK | MB | ON | QC | –  | –  | – | – | –  |         | B | MW | WC | P | NA | MP |    |    |
| Genus <i>HENOTICUS</i> C.G. Thomson, 1868          |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>Glyptophorus</i> Park, 1929                     |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>H. californicus</i> (Mannerheim, 1843)          | –        | –  | –  | BC | –  | –  | –  | –  | –  | –  | –  | – | – | –  |         |   | MW | WC |   |    |    |    |    |
| <i>Cryptophagus inconspicua</i> LeConte, 1863      |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>Henoticus loberinus</i> Sharp, 1900             |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>H. germanicus</i> Reitter, 1906                 |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>H. pilifer</i> (Reitter, 1888)†                 | –        | –  | –  | BC | –  | –  | –  | ON | QC | –  | –  | – | – | –  |         |   | MW |    |   | NA | MP | SA | SE |
| <i>H. mycetoecus</i> (Park, 1929) <b>syn. nov.</b> |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>H. serratus</i> (Gyllenhal, 1808)‡              | AK       | –  | –  | BC | AB | SK | MB | ON | QC | NB | NS | – | – | NF | T       | B | MW | WC | P | NA | MP | SA | SE |
| <i>Paramecosoma denticulata</i> LeConte, 1850      |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>H. varidentatus</i> Pelletier, n. sp.           | –        | –  | –  | –  | –  | –  | –  | –  | QC | –  | –  | – | – | –  |         |   |    |    |   |    | MP |    |    |
| Genus <i>HENOTIDERUS</i> Reitter, 1877             |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>Crosimus</i> Casey, 1900                        |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>Henoticoides</i> Hatch, 1962                    |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>H. centromaculatus</i> Reitter, 1877*           | AK       | –  | NT | –  | AB | SK | –  | ON | QC | NB | NS | – | – | –  |         | B |    | WC | P | NA | MP | SA | SE |
| <i>Crosimus hirtus</i> (Casey, 1900)               |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>C. obesulus</i> (Casey, 1900)                   |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>Henoticoides parsonsi</i> Johnson, 1972         |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>H. lorna</i> (Hatch, 1962)                      | AK       | –  | –  | BC | AB | –  | –  | –  | –  | –  | –  | – | – | –  |         | B | MW | WC |   |    |    |    |    |
| Genus <i>MICRAMBE</i> Thomson, 1863                |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>M. ulicis</i> (Stephens, 1830)†                 | –        | –  | –  | –  | –  | –  | –  | –  | QC | –  | –  | – | – | –  |         | B |    |    |   |    |    |    |    |
| Genus <i>MYRMEDOPHILA</i> Bousquet, 1989           |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |
| <i>M. americana</i> (LeConte, 1879)                | AK       | YT | –  | BC | AB | SK | MB | ON | QC | NB | –  | – | – | –  |         | B |    | WC | P | NA |    |    |    |
| <i>Cryptophagus blumi</i> Blaisdell, 1937          |          |    |    |    |    |    |    |    |    |    |    |   |   |    |         |   |    |    |   |    |    |    |    |



| Province   |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   | Ecozone |    |    |    |    |    |    |
|--|----|----|----|----|----|----|----|----|----|----|----|----|---|----|---|---------|----|----|----|----|----|----|
| Genus <i>PTERYNGIUM</i> Reitter, 1887  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>P. crenulatum</i> (Erichson, 1846)†   | AK | –  | –  | BC | AB | –  | –  | ON | QC | NB | NS | –  | – | –  |   | B       | MW | WC |    | NA | MP |    |
| <i>Pteryngium crenatum</i> of authors, not (Gyllenhal, 1808) nor (Fabricius, 1798) |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>P. malacum</i> Casey, 1900  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| Genus <i>SALEBIUS</i> Casey, 1900  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>S. minax</i> Casey, 1900  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | – | –  |   |         |    |    |    |    |    |    |
| <i>S. octodentatus</i> (Mäklin, 1852)*   | AK | –  | –  | BC | AB | –  | –  | –  | –  | –  | –  | –  | – | –  |   |         | MW | WC |    |    |    |    |
| <i>S. lictor</i> Casey, 1900 <b>syn. nov.</b>                                      |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>S. montanus</i> Casey, 1900 <b>syn. nov.</b>                                    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>S. sexdentatus</i> Casey, 1900  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>S. tarsalis</i> Casey, 1900   |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| Genus <i>TELMATOPHILUS</i> Heer, 1841  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>T. americanus</i> LeConte, 1863   | –  | –  | –  | BC | AB | SK | MB | ON | QC | NB | NS | –  | – | NF |   | B       |    | WC | P  | NA | MP |    |
| <i>T. typhae</i> (Fallén, 1802)†   | –  | –  | –  | –  | –  | –  | –  | –  | QC | NB | NS | PE | – | –  |   | B       |    |    |    | NA | MP |    |
| <i>C. schonherrii</i> Gyllenhal, 1808  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| ( <i>Cryptophagus</i> )  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>T. bicolor</i> Reitter, 1913  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| Subfamily ATOMARIINAE LeConte, 1861  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| Tribe Hypocopiini Reitter, 1879  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| Genus <i>HYPOCOPRUS</i> Motschulski, 1839  |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>H. latridioides</i> Motschulski, 1839   | –  | –  | –  | –  | AB | SK | –  | –  | –  | –  | –  | –  | – | –  |   |         |    |    | P  |    |    |    |
| <i>H. formicetorum</i> Motschulsky, 1839   |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>H. tenuis</i> Casey, 1900   |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| Tribe Atomariini LeConte, 1861   |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| Genus <i>ATOMARIA</i> Stephens, 1829   |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| (Subgenus <i>Anchicera</i> C.G. Thomson, 1863)                                     |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>A. aleutica</i> Casey, 1900   | AK | YT | NT | BC | AB | SK | MB | –  | –  | –  | –  | –  | – | –  | A | T       | B  | MW | WC | P  |    |    |
| <i>A. apicalis</i> Erichson, 1846*   | AK | YT | NT | BC | AB | SK | MB | ON | QC | NB | NS | –  | – | NF |   | T       | B  |    | WC | P  | NA | MP |
| <i>A. ovalis</i> Casey, 1900   |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>A. nebulosa</i> Casey, 1924 <b>syn. nov.</b>                                    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |         |    |    |    |    |    |    |
| <i>A. arcuaticollis</i> Pelletier, n. sp.  | –  | –  | –  | –  | –  | –  | –  | –  | QC | –  | –  | –  | – | –  |   |         | B  |    |    |    | NA |    |
| <i>A. atra</i> (Herbst, 1793)†   | –  | –  | –  | –  | –  | –  | –  | –  | QC | NB | –  | –  | – | –  |   |         |    |    |    |    | NA | MP |
| <i>A. basalis</i> Erichson, 1846*  | AK | YT | NT | BC | –  | –  | MB | –  | QC | NB | –  | –  | – | –  |   | T       | B  |    | WC |    | NA |    |

|  | Province |    |    |    |    |    |    |    |    |    |    |    |    |    | Ecozone |   |    |    |    |    |    |    |    |    |
|--|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|---------|---|----|----|----|----|----|----|----|----|
| <i>A. brevicollis</i> Casey, 1900                  | –        | –  | NT | BC | AB | SK | MB | ON | QC | NB | –  | –  | –  | –  | T       | B | MW | WC | P  | NA | MP |    |    |    |
| <i>A. distincta</i> Casey, 1900                    | –        | –  | –  | –  | AB | –  | –  | ON | QC | NB | NS | –  | –  | –  |         | B |    |    | P  | NA | MP | SA |    |    |
| <i>A. divisa</i> Casey, 1900 <b>syn. nov.</b>      |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. caseyi</i> (Grouvelle), 1916                 |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. ephippiata</i> Zimmermann, 1869              | AK       | –  | NT | BC | AB | SK | MB | ON | QC | NB | NS | PE | LB | NF |         | T | B  | MW | WC | P  | NA | MP | SA | SE |
| <i>A. fulvipennis</i> Mannerheim, 1846*            | AK       | YT | NT | BC | AB | SK | MB | ON | QC | –  | –  | –  | –  | –  | A       | T | B  | MW | WC | P  |    |    |    |    |
| <i>A. fuscata</i> Schöenherr, 1808*                | AK       | YT | NT | BC | AB | SK | MB | ON | QC | NB | NS | PE | LB | NF |         | T | B  | MW | WC | P  | NA | MP | SA | SE |
| <i>A. ochracea</i> Zimmermann, 1869                |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. saginata</i> Casey, 1900                     |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. pennsylvanica</i> Casey, 1900                |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. gonodera</i> Casey, 1900 <b>syn. nov.</b>    |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. riparia</i> Casey, 1900 <b>syn. nov.</b>     |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. subalutacea</i> Casey, 1900 <b>syn. nov.</b> |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. incerta</i> Casey, 1900 <b>syn. nov.</b>     |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. crypta</i> Casey, 1900 <b>syn. nov.</b>      |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. gilvipennis</i> Casey, 1900                  | –        | –  | –  | –  | –  | –  | –  | ON | QC | –  | NS | –  | –  | –  |         | T | B  |    |    |    | NA | MP | SA |    |
| <i>A. hudsonica</i> Pelletier, n. sp.              | –        | –  | –  | –  | –  | –  | MB | –  | –  | –  | –  | –  | –  | –  |         | T |    |    |    |    |    |    |    |    |
| <i>A. inepta</i> Casey, 1900                       | AK       | –  | NT | BC | –  | –  | –  | –  | QC | –  | –  | –  | –  | –  |         | T | B  | MW | WC |    | NA | MP |    |    |
| <i>A. kamschatica</i> Motschulsky, 1845*           | AK       | YT | NT | BC | AB | –  | MB | –  | –  | –  | –  | –  | –  | –  | A       | T | B  | MW | WC | P  |    |    |    |    |
| <i>A. laetula</i> LeConte, 1857                    | –        | –  | –  | BC | –  | SK | –  | –  | –  | –  | –  | –  | –  | –  |         |   |    |    | WC | P  |    |    |    |    |
| <i>A. lederi</i> Johnson, 1970†                    | –        | –  | –  | BC | AB | –  | –  | ON | QC | NB | NS | –  | –  | –  |         |   | B  | MW | WC | P  | NA | MP |    |    |
| <i>A. lewisi</i> Reitter, 1877†                    | AK       | –  | –  | BC | AB | SK | MB | ON | QC | NB | NS | –  | –  | –  |         |   | B  | MW | WC | P  | NA | MP | SA | SE |
| <i>curtula</i> Casey, 1900                         |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. mesomela</i> (Herbst, 1792)†                 | –        | –  | –  | BC | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |   |    | MW |    |    |    |    |    |    |
| <i>A. morio</i> Kolenati, 1846†                    | –        | –  | –  | –  | AB | SK | –  | ON | QC | –  | NS | –  | –  | –  |         |   |    |    | WC | P  | NA | MP |    |    |
| <i>ebenina</i> Casey, 1924 <b>syn. nov.</b>        |          |    |    |    |    |    |    |    |    |    |    |    |    |    |         |   |    |    |    |    |    |    |    |    |
| <i>A. munda</i> Erichson, 1846†                    | AK       | –  | –  | BC | –  | –  | –  | –  | QC | NB | –  | –  | –  | –  |         |   | B  | MW | WC | P  | NA | MP |    | SE |
| <i>A. neomunda</i> Pelletier, n. sp.               | AK       | –  | –  | –  | –  | –  | –  | –  | QC | –  | –  | –  | –  | –  |         |   | B  |    |    |    |    |    |    |    |
| <i>A. nigrirostrisoides</i> Pelletier, n. sp.      | AK       | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |   | B  |    |    |    |    |    |    |    |
| <i>A. nigritaria</i> Pelletier, n. sp.             | –        | –  | –  | –  | –  | –  | MB | –  | QC | –  | –  | –  | –  | –  |         |   |    |    |    | P  |    | MP |    |    |
| <i>A. nubipennis</i> Casey, 1900                   | AK       | –  | –  | BC | AB | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |   |    | MW | WC | P  |    |    |    |    |
| <i>A. oblongula</i> Casey, 1900                    | AK       | –  | NT | BC | AB | SK | MB | ON | QC | NB | NS | –  | –  | NF |         | T | B  |    | WC | P  | NA | MP |    |    |

|   | Province |    |    |    |    |    |    |    |    |    |    |   |   | Ecozone |    |    |    |    |    |    |
|---|----------|----|----|----|----|----|----|----|----|----|----|---|---|---------|----|----|----|----|----|----|
| <i>A. ocularia</i> Pelletier, n. sp.      | –        | –  | –  | –  | AB | –  | –  | –  | –  | –  | –  | – | – |         | P  |    |    |    |    |    |
| <i>A. ornata</i> Heer, 1841†              | –        | –  | –  | BC | –  | –  | –  | –  | –  | –  | –  | – | – |         | WC |    |    |    |    |    |
| <i>A. parallelcolis</i> Pelletier, n. sp. | –        | –  | –  | –  | –  | –  | –  | –  | QC | –  | –  | – | – | B       |    |    |    |    |    |    |
| <i>A. peltata</i> Kraatz, 1853*           | AK       | –  | –  | BC | –  | –  | –  | –  | –  | –  | –  | – | – | B       |    |    |    |    |    |    |
| <i>A. postpallens</i> Casey, 1900         | AK       | –  | NT | BC | AB | –  | –  | –  | –  | –  | –  | – | – | T       | MW | WC | P  |    |    |    |
| <i>A. pusilla</i> (Paykull, 1798)†        | AK       | –  | –  | BC | –  | –  | –  | ON | QC | NB | NS | – | – | B       | MW | WC |    | NA | MP |    |
| <i>A. fallax</i> Casey, 1900 syn. nov.    |          |    |    |    |    |    |    |    |    |    |    |   |   |         |    |    |    |    |    |    |
| <i>A. salicicola</i> Pelletier, n. sp.    | –        | –  | –  | –  | AB | SK | –  | –  | –  | –  | –  | – | – |         | WC |    |    |    |    |    |
| <i>A. sodermanni</i> Sjöberg, 1947*       | –        | –  | NT | –  | –  | –  | –  | –  | QC | –  | –  | – | – | T       |    |    |    |    | MP |    |
| <i>A. testacea</i> Stephens, 1830†        | –        | –  | –  | BC | –  | SK | –  | –  | QC | NB | NS | – | – |         | MW |    | P  | NA | MP |    |
| <i>Silpha ruficornis</i> Marsham, 1802    |          |    |    |    |    |    |    |    |    |    |    |   |   |         |    |    |    |    |    |    |
| <i>A. turgida</i> Erichson, 1846*         | AK       | YT | NT | BC | AB | SK | MB | ON | QC | NB | –  | – | – | T       | B  | MW | WC | P  | NA | MP |
| <i>A. nanula</i> Casey, 1900 syn. nov.    |          |    |    |    |    |    |    |    |    |    |    |   |   |         |    |    |    |    |    |    |
| (Subgenus <i>Atomaria</i> Stephens, 1829) |          |    |    |    |    |    |    |    |    |    |    |   |   |         |    |    |    |    |    |    |
| <i>Agathengis</i> Gozis, 1886             |          |    |    |    |    |    |    |    |    |    |    |   |   |         |    |    |    |    |    |    |
| <i>A. affinis</i> R.F. Sahlberg, 1834*    | AK       | –  | –  | BC | AB | –  | –  | –  | QC | NB | NS | – | – | B       |    | WC | P  | NA | MP |    |
| <i>A. albertana</i> Pelletier, n. sp.     | –        | –  | –  | –  | AB | –  | –  | –  | –  | –  | –  | – | – | B       |    |    |    |    |    |    |
| <i>A. alpina</i> Heer, 1841†              | –        | –  | –  | BC | AB | –  | –  | ON | QC | NB | NS | – | – | B       | MW | WC | P  | NA | MP |    |
| <i>A. atrata</i> Reitter, 1875*           | AK       | –  | –  | BC | AB | –  | –  | ON | QC | –  | –  | – | – | B       | MW |    | P  |    | MP |    |
| <i>melanica</i> Hatch, 1962               |          |    |    |    |    |    |    |    |    |    |    |   |   |         |    |    |    |    |    |    |
| <i>A. calidaria</i> Pelletier, n. sp.     | –        | –  | –  | –  | AB | –  | –  | –  | –  | –  | –  | – | – |         | WC |    |    |    |    |    |
| <i>A. californica</i> Pelletier, n. sp.   | –        | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | – | – |         | WC |    |    |    |    |    |
| <i>A. capitata</i> (Casey, 1900)          | AK       | –  | –  | BC | AB | –  | –  | –  | QC | NB | –  | – | – | B       | MW | WC |    | NA |    |    |
| <i>A. coloradensis</i> (Casey, 1900)      | AK       | YT | –  | BC | AB | –  | –  | –  | QC | NB | –  | – | – | B       |    | WC |    |    | MP | SA |
| <i>A. strandi</i> Johnson, 1967 syn. nov. |          |    |    |    |    |    |    |    |    |    |    |   |   |         |    |    |    |    |    |    |
| <i>A. constricta</i> (Casey, 1900)        | –        | –  | –  | BC | AB | –  | –  | –  | QC | NB | –  | – | – | B       |    | WC | P  | NA | MP | SA |
| <i>A. crassula</i> (Casey, 1900)          | –        | –  | –  | –  | –  | –  | –  | –  | QC | NB | –  | – | – | B       |    |    |    | NA | MP | SA |
| <i>A. cribricollis</i> Pelletier, n. sp.  | AK       | –  | –  | –  | AB | –  | –  | –  | –  | –  | –  | – | – | B       |    | WC |    |    |    |    |
| <i>A. dispersa</i> (Casey, 1900)          | AK       | –  | –  | BC | AB | –  | –  | ON | QC | NB | –  | – | – | T       | B  | MW | WC |    | NA |    |
| <i>A. elongatula</i> Erichson, 1846*      | AK       | –  | –  | –  | AB | –  | –  | –  | QC | –  | –  | – | – | B       | MW |    |    |    | MP |    |
| <i>A. fimetarii</i> (Fabricius, 1792)*    | AK       | –  | NT | BC | AB | SK | MB | ON | QC | NB | NS | – | – | T       | B  |    | WC | P  | NA | MP |
| <i>A. forticornis</i> (Casey, 1900)       | –        | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | – | – |         |    |    |    |    |    |    |

|  | Province |    |   |    |    |    |    |    |    |    |    |    |    |    | Ecozone |    |    |    |    |    |    |    |    |
|--|----------|----|---|----|----|----|----|----|----|----|----|----|----|----|---------|----|----|----|----|----|----|----|----|
| <i>A. impressa</i> Erichson, 1846†   | –        | –  | – | –  | AB | –  | –  | ON | QC | NB | –  | –  | –  | –  | B       |    |    | NA | MP |    |    |    |    |
| <i>A. impressicollis</i> Pelletier, n. sp.   | AK       | YT | – | BC | AB | –  | –  | –  | –  | –  | –  | –  | –  | –  | B       |    | WC |    |    |    |    |    |    |
| <i>A. linearis</i> Stephens, 1830†   | –        | –  | – | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |    | WC |    |    |    |    |    |    |
| <i>A. lineola</i> (Notman, 1920)   | –        | –  | – | BC | AB | SK | MB | ON | QC | NB | NS | –  | LB | NF | B       |    | WC | NA | MP | SA |    |    |    |
| <i>A. wollastoni</i> of authors, not Sharp, 1867   |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. longipennis</i> (Casey, 1900)  | AK       | –  | – | BC | AB | –  | –  | –  | QC | –  | –  | –  | –  | –  | B       | MW | WC | NA |    |    |    |    |    |
| <i>A. lyricollis</i> Pelletier, n. sp.   | –        | –  | – | –  | –  | –  | MB | –  | –  | –  | –  | –  | –  | –  | B       |    |    |    |    |    |    |    |    |
| <i>A. macra</i> (Casey, 1900)  | AK       | –  | – | BC | AB | –  | –  | –  | QC | NB | –  | –  | –  | –  | B       | MW | WC | NA | MP | SA |    |    |    |
| <i>A. neocarinula</i> Pelletier  | –        | –  | – | –  | AB | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |    |    | P  | MP |    |    |    |    |
| <i>A. carinula</i> (Casey, 1900), preoccupied by <i>A. carinula</i> Rey, 1889                  |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. nigricollis</i> (Casey, 1900)  | AK       | YT | – | BC | AB | –  | MB | ON | –  | –  | –  | –  | –  | –  | T       | B  | MW | WC |    |    |    |    |    |
| <i>A. parvicollis</i> (Casey, 1900), preoccupied by <i>A. parvicollis</i> Rey <b>syn. nov.</b> |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. parva</i> Schenkling, 1923 <b>syn. nov.</b>  |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. nigrirostris</i> Stephens, 1830*   | AK       | YT | – | BC | AB | SK | –  | ON | QC | NB | NS | PE | LB | NF |         | B  | MW | WC | P  | NA | MP | SA | SE |
| <i>A. fuscicollis</i> Mannerheim, 1852   |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. subnitens</i> (Casey, 1900)  |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. luculenta</i> (Casey, 1900) <b>syn. nov.</b>   |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. lucida</i> (Casey, 1900), preoccupied by <i>A. lucida</i> Reitter, 1889 <b>syn. nov.</b> |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. lucens</i> Grouvelle <b>syn. nov.</b>  |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |
| <i>A. ontariensis</i> Pelletier, n. sp.  | –        | –  | – | –  | –  | –  | –  | ON | –  | –  | –  | –  | –  | –  |         |    |    |    |    | MP |    |    |    |
| <i>A. orbicollis</i> Pelletier, n. sp.   | –        | –  | – | –  | –  | –  | –  | ON | QC | –  | –  | –  | –  | –  | B       |    |    |    |    | MP |    |    |    |
| <i>A. parviceps</i> Notman, 1921   | –        | –  | – | –  | AB | –  | –  | ON | QC | –  | –  | –  | –  | –  | B       |    | WC | NA | MP |    |    |    |    |
| <i>A. patens</i> (Casey, 1900)   | –        | –  | – | –  | –  | –  | –  | ON | QC | NB | –  | –  | –  | –  | B       |    |    | NA | MP | SA |    |    |    |
| <i>A. pinicola</i> Pelletier, n. sp.   | –        | –  | – | BC | –  | –  | –  | –  | QC | NB | –  | –  | –  | –  | B       |    | WC | NA | MP |    |    |    |    |
| <i>A. planulata</i> Mäklin, 1853   | AK       | YT | – | BC | AB | –  | –  | –  | QC | –  | –  | –  | –  | –  | T       | B  | MW | WC |    |    |    |    |    |
| <i>A. pseudotsugae</i> Pelletier, n. sp.   | –        | –  | – | BC | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |    | MW |    |    |    |    |    |    |
| <i>A. puella</i> (Casey, 1900)   | –        | –  | – | –  | AB | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |    | WC | P  |    |    |    |    |    |
| <i>A. puelloides</i> Pelletier   | –        | –  | – | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  |         |    |    |    |    | SA | SE |    |    |
| <i>A. pumilio</i> (Casey, 1900)  | –        | –  | – | BC | –  | SK | MB | ON | QC | NB | –  | –  | –  | –  | B       | MW | WC | P  | NA | MP | SA | SE |    |
| <i>A. quadricollis</i> (Casey, 1900)   | –        | –  | – | BC | AB | –  | –  | ON | QC | –  | –  | –  | –  | –  | B       | MW | WC |    | NA |    |    |    |    |
| <i>A. stricticollis</i> (Casey, 1900)  | –        | YT | – | BC | AB | –  | –  | –  | QC | –  | –  | –  | –  | –  | B       | MW | WC | P  |    |    |    |    |    |
| <i>A. ochronitens</i> (Casey, 1900) <b>syn. nov.</b>   |          |    |   |    |    |    |    |    |    |    |    |    |    |    |         |    |    |    |    |    |    |    |    |



|  | Province |   |   |    |    |    |    |    |    |    |    |   |    | Ecozone |    |    |   |    |    |
|--|----------|---|---|----|----|----|----|----|----|----|----|---|----|---------|----|----|---|----|----|
| <i>A. subdentata</i> (Casey, 1900)*                                      | AK       | – | – | BC | AB | SK | MB | ON | QC | NB | –  | – | –  | B       | MW | WC | P | NA | MP |
| <i>A. subangulata</i> J. Sahlberg, 1926 <b>syn. nov.</b>                 |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    | WC |   |    |    |
| <i>A. subrecta</i> (Casey, 1900)   | –        | – | – | –  | –  | –  | –  | –  | –  | –  | –  | – | –  |         |    | WC |   |    |    |
| <i>A. tenebrosa</i> (Casey, 1900)  | AK       | – | – | –  | AB | –  | –  | ON | QC | NB | –  | – | –  | B       |    | WC |   | NA | MP |
| <i>A. melas</i> (Casey, 1900) <b>syn. nov.</b>                           |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>A. thujaplicatae</i> Pelletier, n. sp.                                | –        | – | – | BC | –  | –  | –  | –  | –  | –  | –  | – | –  |         | MW |    |   |    |    |
| <i>A. umbrina</i> (Gyllenhal, 1827)†                                     | –        | – | – | BC | –  | –  | –  | ON | QC | NB | –  | – | –  | B       |    | WC |   | NA | MP |
| <i>A. undulata</i> (Casey, 1900)   | AK       | – | – | BC | AB | –  | –  | ON | QC | NB | –  | – | –  | B       | MW | WC |   | NA | MP |
| <i>A. cribripennis</i> (Casey, 1900) <b>syn. nov.</b>                    |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>A. castanea</i> (Casey, 1900) <b>syn. nov.</b>                        |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>A. versa</i> Grouvelle, 1916  | AK       | – | – | –  | –  | –  | –  | –  | –  | –  | –  | – | –  | B       |    | WC |   |    |    |
| <i>A. soror</i> (Casey, 1900), preoccupied by <i>A. soror</i> Gauglbauer |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>A. vespertina</i> Mäklin, 1853*                                       | AK       | – | – | BC | AB | –  | MB | ON | QC | –  | –  | – | –  | B       | MW |    |   | NA |    |
| <i>A. visoni</i> Pelletier, n. sp.                                       | –        | – | – | BC | AB | –  | –  | –  | –  | –  | –  | – | –  |         | MW | WC |   |    |    |
| <i>Atomaria</i> nomem dubium   |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>A. lepidula</i> Mäklin, 1852  | AK       |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| Genus <i>CURELIUS</i> Casey, 1900  |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>Curelius japonicus</i> (Paykull, 1798)†                               | –        | – | – | –  | –  | –  | –  | –  | –  | –  | –  | – | –  |         |    |    |   |    | SE |
| <i>Ephistemus perminutus</i> Casey, 1924 <b>syn. nov.</b>                |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>E. punctatus</i> Blatchley, 1925                                      |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| Genus <i>EPHISTEMUS</i> Stephens, 1829                                   |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>E. cactophilus</i> Schwarz, 1899                                      | –        | – | – | –  | –  | –  | –  | –  | –  | –  | –  | – | –  |         |    |    |   |    |    |
| <i>E. globulus</i> (Paykull, 1798)†                                      | –        | – | – | BC | –  | –  | –  | ON | QC | –  | NS | – | LB | NF      | MW | WC |   | NA | MP |
| <i>E. apicalis</i> LeConte, 1863   |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| Genus <i>TISACTIA</i> Casey 1900   |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    |    |
| <i>T. subglabra</i> Casey, 1900  | –        | – | – | –  | –  | –  | –  | ON | QC | –  | –  | – | –  |         |    |    |   | MP | SA |
|  |          |   |   |    |    |    |    |    |    |    |    |   |    |         |    |    |   |    | SE |

### DNA Barcoding and neighbour-joining trees

The DNA barcoding methodology used in this publication was designed by Dr. Paul Hebert from the University of Guelph (Ratnasingham and Hebert 2013) and is explained in detail in Milton et al. (2013).

We submitted 76 specimens of Cryptophagidae to the Canadian Centre for DNA Barcoding at the University of Guelph. Most of these belonged to the genera *Cryptophagus* and *Atomaria*, including 12 paratypes of 8 recently described species, to confirm their identity as distinct species. The Search Data tool was used to search all DNA-barcoded specimens of Cryptophagidae in public records and our project's databases. In order to build the genetic sequence barcoding, we selected specimens containing sequences from the mitochondrial gene COI-5P with the following criteria:

- Collected in Canada and the US between 1998 and 2018.
- For Holarctic or adventive species, European specimens available to compare DNA barcoding with Nearctic specimens.
- Specimens with images that can be identified at the species level included in the BOLD database.
- Minimum sequence length of 500 bp, giving priority to Full Length Barcode specimens of 640 bp or more.
- Barcode-compliant specimens.

The resulting list of specimens was classified from the longest sequence (658 bp) to the shortest (500 bp). Specimens can be clustered together and identified with a Barcode Index Number (BIN), which shows a high concordance with species identification. Many specimens wrongly identified in the BOLD database have been corrected and up to 92 species have a valid DNA barcoding corresponding to 65% of Cryptophagidae species of this project. At the bottom of the descriptive page of each species having a BIN, there is a link leading to the BOLD database BIN page.

We produce dendrograms with the Taxon ID tree engine using the nucleotide as a coding marker, the Kimura 2 Parameter model and the BOLD aligner that seems to be more relevant to discriminate species within large genera and to discriminate genera within Cryptophagidae. A dendrogram of clustered species can be seen in the Taxon ID Tree 1 (Supplementary Materials) for representatives of most genera of Cryptophagidae, Taxon ID Tree 2 (Supplementary Materials) for *Cryptophagus* and Taxon ID Tree 3 (Supplementary Materials) for *Atomaria*.

The DNA barcoding sequence from the mitochondrial gene COI-5P shows that this method can separated correctly 91% of morphologically distinctive species, including 75% for *Cryptophagus* and 94% for *Atomaria*. This reflect the highly intraspecific variability found within *Cryptophagus* compared with *Atomaria*.

Taxon ID tree 1 separated most genera well. All *Atomaria* are grouped together and *Curelius* is distinctly outside of *Atomaria*. All *Cryptophagus* are grouped together with *Myrmedophila* and *Henoticus* at both ends. *Myrmedophila* seems to be a synonym of *Cryptophagus*, following Woodroffe & Coombs (1961) concept, according to the ID tree; however, the DNA sequence was incomplete, with COI-5P of 463 bp, much less than the usual 658 bp. Surprisingly, *Salebius* is incorporated within *Cryptophagus* though it is a distinct genus. *Antherophagus*, *Pteryngium*, *Caenoscelis*, *Henotiderus* and *Telmatophilus* are well separated at the opposite end of the tree.

Taxon ID tree 2 shows a visually easily Nearctic identified species (*C. mainensis*) in the upper part, followed by three introduced species with toothed laterally prominent callosities without dorsal rim (*C. distinguendus* to *C. scutellatus*), followed by a species with callosities strongly produced anteriorly (*C. tuberculosis*), three species with elytra arcuate throughout and pubescence mostly suberect (from *C. setulosus* to *C. valens*), 6 mostly Palaearctic species with elytra mostly oblong and pubescence appressed, followed by very common Nearctic species (*C. croceus* and *C. difficilis*) and finally three common Holarctic northern transcontinental species (from *C. lapponicus* to *C. bidentatus*). The tree has shown (not illustrated) that many specimens identified as *C. jakowlewi* in Europe were in fact *C. confertus*. Of the 2 specimens seen by the first author and identified by Colin Johnson as *C. jakowlewi*, one was *C. confertus* and the other *C. bidentatus*. Esser (1994) showed clearly that all three species were distinct. The true *C. jakowlewi* has not been collected in North America and *C. confertus* remains a valid Holarctic species. Among species having two BIN numbers, we can mention *C. tuberculosis*, *C. setulosus*, *C. dentatus* and *C. difficilis*, all very common and widespread species.

Taxon ID tree 3 shows that most *Atomaria* species are well discriminated by the analysis, with all *Anchicera* (from *A. mesomela* to *A. neomunda*) being on one side and all *Atomaria s. str.* (*A. nigrirostris* to *A. subdentata*) being on the opposite side. We can see also some distinct groups. In *Anchicera*, some are more distinct as species with pronotum arcuate at middle and strong contrast black pattern at basal half of elytra (*A. mesomela*, *A. distincta*); antennae with A9-A10 transverse (from *A. peltata* to *A. apicalis*), within that group, dark species with pronotum borders entirely visible from dorsal view (*A. nigritaria*, *A. peltata*), and pronotum with sides subparallel at basal 0.5 (*A. turgida*, *A. apicalis*); the *A. fuscata* complex species group (from *A. hudsonica* to *A. ocularia*), antennae with A9-A10 subquadrate and pronotum border entirely visible from dorsal view (from *A. kamtschatica* to *A. arcuaticollis*) and pronotum with double-sided borders

(from *A. ornata* to *A. neomunda*). In *Atomaria* s. str., we can see at first species with pronotum having strong basal groove (*A. nigrirostris*, *A. impressicollis*), with A9-A10 transverse and pronotum with sides not sinuate (*A. tenebrosa*, *A. patens*), A9 subquadrate and A10 transverse (*A. pumilio*, *A. wollastoni*), elytra with pubescence suberect (*A. umbrina*), pronotum subquadrate and elytra elongate with sides subparallel (*A. linearis*), A9 and A10 nearly subquadrate (*A. vespertina*, *A. nigricollis*) and A1 short and stout (from *A. macra* to *A. subdentata*). The tree also shows that the European concept of *A. fuscata* might be in fact three distinct species (one not included in this tree) that were synonymized probably by Johnson but this need to be verified. In the present publication, *A. fuscata* corresponds to the wide Johnson concept of the species (Johnson 1992). It would be very useful to look to all distinct Palearctic BIN species to see the external morphological characters that can separate them. It might prove that *A. fuscata* (= *A. saginata*) and *A. ochracea* are distinct species.

The analysis also shows that the *A. wollastoni* complex is in fact three species: *A. wollastoni* which is Palaearctic, *A. pumilio* and *A. lineola*, both being Nearctic, previously considered as synonyms of *A. wollastoni*. The tree also shows that *A. pulchra* was previously confused with *A. vespertina*. The analysis confirms the validity of 7 new species described in this publication (all with Pelletier as the author): *A. arcuaticollis*, *A. neomunda*, *A. nigritaria*, *A. albertana*, *A. impressicollis*, *A. pinicola* and *A. puelloides*. Three new species were discovered and described because of their distinct BINs (all with Pelletier as the author): *A. ocularia*, *A. salicicola* and *A. calidaria*, all from Alberta.

## Taxonomy

### Family CRYPTOPHAGIDAE Kirby 1837

(Mostly from Leschen & Skelley (2002))

**Description:** Length 0.8 to 5.2 mm, **mostly between 1.2 and 3.0 mm. Body robust, oval or elongate-oval**, moderately flattened or convex, rarely round; body colour often reddish brown, dark brown with elytra yellowish brown, rarely entirely dark brown to black, **usually with moderately long to short, erect to decumbent silky pubescence**; glandular ducts present in various parts of the body, probably for the secretion of fluids that impermeabilize the body against the high humidity found in their secretive habitat. **Head** partially retracted into thorax, longer than wide, usually without antennal groove; eyes usually entire, finely faceted; ocelli absent; genae carinate and projecting ventrally between eye and mentum; clypeus usually subquadrate; mandible with

well developed mola, incisor apex and prostheca; maxilla with brushlike galea and lacinia, probably for collecting spores; labium with mentum wider than long; maxillary palpi 3-segmented; labial palpi 2-segmented. **Antennae** moderately long, **usually with a 3-segmented club**.

**Pronotum** with distinct lateral carina (except in *Hypocoprus*); posterior margin usually narrower than anterior margin of elytra, often with depressions at the base; hypopleuron usually without antennal grooves; prosternal process well developed. **Scutellum** well developed and visible. Mesocoxal cavities closed laterally by metaventrete; metaventrete usually elongate. **Legs** moderately short and slender in most species; procoxae spherical and separate; trochanter about 25% length of femur; tibia usually with 2 apical spines; tarsi usually 5-5-5 or 5-5-4 in male Cryptophaginae.

**Elytra** usually completely covering the abdomen, **without impressed striae; punctuation confused**, usually not forming distinct rows, (except underneath in many *Atomaria* species) and apex with double suture; epipleuron usually distinct in anterior half, never reaching the apex.

**Abdomen** with 5 freely articulate ventrites; first ventrite longer than the second ventrite; intercoxal process moderately broad. **Male genitalia** usually bilaterally symmetrical in most species.

**Habitat.** Most species live in concealed wet habitats with decaying vegetation containing fungi. They are very common in leaf litter, humid soil and the bark of old trees on mold and fleshy fungi where they are microphagous, feeding on the mycelium, hyphae, conidia or spores. A few others are saprophagous. Many species, mostly introduced from Europe, can be found in stored food products, but feed only on mold. Some specialized species are usually collected in bird nests, ant nests and mammal burrows. Four species are found in the nests of bees and wasps. They are probably scavengers. Two species are associated with aquatic plants.

**Seasonality.** They emerge in the spring or summer and some adults can be active up to late fall. It is interesting to note that the Southeastern US species we found in Canada are more active between November and April. It shows that temperature and humidity are very important to stimulate the activity of those species. They are predominantly active during the evening and at night.

**Collecting methods.** Many species living in leaf litter can be collected in great numbers by sifting the litter and using a berlese or with light or pitfall traps. Those living in tree bark can be collected with a Lindgren funnel or with flight interception traps. A few species may be swept or beaten from the foliage. Other specialized species can be collected by hand. Rarely, a few species can be collected on carrion.

### Similar species in other families often confused with Cryptophagidae

Most species often confused with Cryptophagidae belong to Erotylidae in the following small subfamilies (Figure 2):

#### Cryptophilinae Toramini

*Toramus pulchellus* (LeConte): Very similar to some *Atomaria* (*Anchicera*) but pronotum opaque with pair of depressions at base and elytra with pilosity minute and sparse.

#### Cryptophilinae Cryptophilini

*Cryptophilus integer* (Heer): Similar to few *Atomaria* but pronotum as wide as elytra at base with side borders visible throughout and two disconnected foveae at base.

*Cryptophilus seriatus* Casey: Very similar to some *Henoticus* but pronotum widest slightly in front of middle with serrulation smaller and two disconnected foveae at base and elytra with punctation in dense rows.

#### Loberinae

*Loberus* species: Pronotum deeply impressed at basal middle and elytra with seven well-spaced rows of punctures.

#### Cerylonidae Euxestinae

*Hypodacne punctata* LeConte: Superficial similarity with *Ephistemus* and *Tisactia* but antennal club with antennomeres not loose and elytra without distinct pilosity.

### Diagnoses and summaries for Cryptophaginae

#### Subfamily CRYPTOPHAGINAE

**Frontoclypeal suture absent**; pronotum with lateral carina present; meso-metaventral articulation with a double knob; **tarsal formula** 5-5-5 in female and **5-5-4 in male**; male genitalia with speculum gastrale with long anterior strut, parameres mostly separate.

#### Tribe CRYPTOPHAGINI

**Antennae remotely separate at base, inserted under sides of frons**; labial palpi 2-segmented with basal palpomere subequal to apical palpomere; **pronotum** with lateral margin often serrate, dentate, with or without a callosity at anterior corners, **without sublateral carinae and with distinct basal pits or grooves**.

#### *Antherophagus* Dejean 1821

**Pronotum with sides entire, without callosities at front corners and without lateral tooth at middle**; head with a distinct clypeal notch in male. Widely distributed. Associated with flowers and bee or bumblebee nests. Fairly common. Four species in North America, all found in Canada.

#### *Cryptophagus* Herbst, 1792

**Pronotum with distinct callosities at front corners and a distinct tooth near middle of sides; pilosity of elytra long**, appressed, recurved or suberect. Widely distributed. Associated with forest leaf litter, rotting wood, also in food products stored in wet areas with high moisture, sometimes in ant nests or animal burrows. Very common. 38 species in North America, with 32 species in Canada, including 11 Nearctic, 7 Holarctic and 14 adventive, the majority of the latter group uncommon in natural habitats.

#### *Henoticus* Thomson, 1868

Body not dorsoventrally compressed; **pronotum with sides distinctly serrate**, without sublateral lines, **serratures strong and recurved, with base deeply bifoveate, foveae connected by wide groove along basal margin**; mesoventral process equal in width to mesocoxa; anterior lateral angle of metaventrite with a pubescent pit; elytra reddish to yellowish brown, rarely black, with sparse to moderately dense pubescence; legs with tarsomeres not strongly lobed beneath. Widely distributed. Associated with forest leaf litter, rotting wood, fungi and food products stored in wet areas with high moisture. Common. Four species in North America, all present in Canada, including two Nearctic, one Holarctic and one adventive.

#### *Henotiderus* Reitter, 1877

Body not dorsoventrally compressed; **pronotum with sides distinctly serrate, with sublateral lines, serratures strong and recurved, with base deeply bifoveate**, foveae not connected by wide groove along basal margin. Mostly transcontinental in Canada and northern US. Associated with fungi under bark of rotting wood. Fairly common. Two species in North America, both in Canada; one Nearctic and one Holarctic.

#### *Micrambe* Thomson, 1863

**Pronotum sides with callosity covering anterior half** (most Palearctic species have a shorter callosity covering anterior third or less), **middle tooth lacking**. One record in North America (in Quebec, Canada). Associated with Black Spruce trunk burned with fire. Rare. One species introduced from Europe: *Micrambe ulicis*. **First record of the genus in North America.**

#### *Myrmedophila* Bousquet, 1989

**Pronotum with distinct callosities at front corners and a distinct tooth near middle of sides, sides with posterior half subparallel; pronotum and elytra with pilosity very short, appressed, setae shorter than distance between punctures**. Transcontinental in Canada and northern US. Associated with ant nests



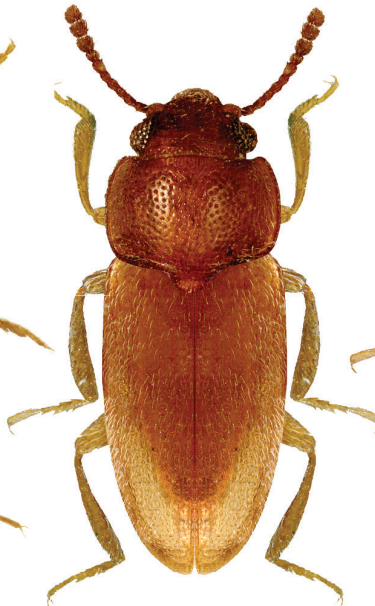
**SPECIES IN OTHER FAMILIES SIMILAR TO CRYPTOPHAGIDAE**

**TORAMUS**



***pulchellus***

**CRYPTOPHILUS**



***integer***

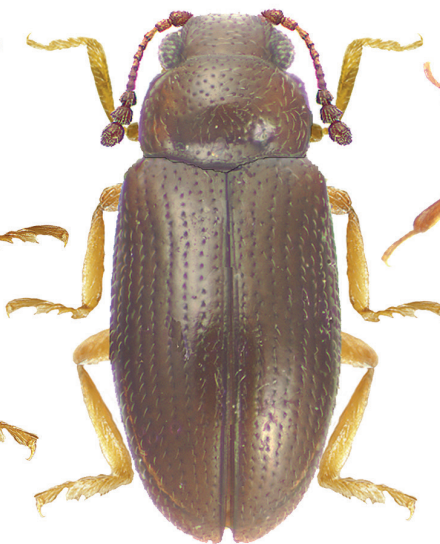


***seriatus***

**LOBERUS**



***impressus***



***subglaber***

**HYPODACNE**



***punctata***

Figure 2. Species in other families similar to Cryptophagidae.

of genus *Formica*. Uncommon. One native species in North America, occurring in Canada: *Myrmedophila americana*.

***Pteryngium* Reitter, 1887**

**Body dorsoventrally compressed; pronotum with sides distinctly serrate**, without sublateral lines, **serratures minute and not recurved, base with two small basal disconnected foveae**; mesosternal process greater in width than mesocoxa; anterior lateral angle of metaventricle with a slight depression; elytra reddish to yellowish brown; legs with tarsomeres not strongly lobed beneath. In transcontinental Canada, Alaska and northern US. Associated mainly with conifer forests, sometimes in hardwood forests, in fungi and polypores. Uncommon. One Holarctic species in North America, in Canada: *Pteryngium crenulatum*.

***Salebis* Casey, 1900**

**Pronotum with smooth sides consisting of three distinct lobes**. In western North America, from Alaska south to California. Associated with conifer forests, in trees under bark. Fairly common. Two species in North America, one occurring in Canada; one native and one Holarctic.

***Telmatophilus* Heer, 1841**

**Body entirely dark brown to black, densely clothed with silvery pubescence; pronotum with sides distinctly serrate**, without sublateral lines, **serratures minute and not recurved; legs with tarsomeres 2 and 3 strongly lobed beneath**. In transcontinental Canada and northern US. Associated with aquatic plants of genera *Spargania* and *Typha*. Fairly common. Two species in North America, both in Canada; one native and one adventive.

**Tribe CAENOSCELINI**

***Caenoscelis* Thomson**

**Antennae closed together at base, inserted in frons**; labial palpi 2-segmented, with basal palpomere wider than apical palpomere; **pronotum with lateral margin smooth, with sublateral carinae, and without distinct basal pits or grooves**; ventrite V of abdomen with modified setae. Widely distributed, but more common in transcontinental Canada, northern and western USA, extending south in the Appalachian Mountains. Very common. Mostly in forest leaf litter. Six species in North America, all found in Canada, including four natives and two Holarctic species.

**Subfamily ATOMARIINAE**

**Frontoclypeal suture present**; labial palpi 2-segmented with basal palpomere wider than apical palpomere; meso-metasternal articulation with lateral processes; **tarsal formula 5-5-5** in both sexes; male genitalia broad, parameres fused.

**Tribe HYPOCOPRIINI**

***Hypocopus* Motschulsky 1839**

**Pronotum nearly cylindrical, longer than wide, with lateral carina lacking; elytra very elongate, about 1.75x as long as wide, not covering the last tergite**. In northwestern Canada. Associated with ant nests of genus *Formica*. Uncommon. One species in North America, found in Canada, Holarctic: *Hypocopus latridioides*.

**Tribe ATOMARIINI Le Conte**

**Pronotum with lateral carina present**; elytra variable, usually 1.7x as long as wide or less, covering the last tergite. Glandular ducts present on various parts of the body.

***Atomaria* Stephens 1829**

**Head distinctly visible anterior to the pronotum**. Pronotum usually widest from anterior 30 to 85% (except for 2 species). **Elytra with sides forming a discontinuous line with the pronotum, distinctly punctate and hairy**. Widely distributed. Associated with forest leaf litter, rotting wood, also in food products stored in wet areas with high moisture, sometimes in ant nests or animal burrows. Very common. 80 species in North America, with 75 species in Canada, including 52 Nearctic, 14 Holarctic and 14 adventive, many of the latter group being well established in natural habitats. To facilitate the understanding of this complex genus, all species were separated into different species groups, detailed as follows. This genus is divided into two major subgenera:

**Subgenus *Anchicera* Thomson 1863**

**Elytra with sides arcuate throughout**, usually about 1.35-1.5x as long as wide, often with uniform colouration (70% of the species), sometimes patterned (30%); antennae with A1 short and stout (95%), club with A9-A10 subquadrate (61%) or transverse (39%). Pronotum usually with a single side border (90% of the species), with sides distinctly converging posteriorly (84%) or subparallel (16%). Widely distributed. Very common. 35 species in North America, with 34 species in Canada, including 18 Nearctic, 8 Holarctic and 9 adventive. This subgenus can be divided into seven species groups:

1. *Anchicera ornata* sp. gr.: **Pronotum with double-side borders along most of its length.**

- In transcontinental Canada and northern US. Uncommon. Three species, all adventive.
2. *Anchicera pusilla* sp. gr.: Pronotum with sides distinctly converging posteriorly; **antennal club with A9-A10 transverse**. Widely distributed. Very common. Six species, with two newly described Nearctic, two Holarctic and two adventives.
  3. *Anchicera kamtschatica* sp. gr.: Pronotum with sides distinctly converging posteriorly, **with both side borders completely visible from dorsal view**; antennal club with A9-A10 subquadrate. In transcontinental Canada and Alaska. Common. Four species, with three Nearctic including two newly described species and one Holarctic.
  4. *Anchicera atra* sp. gr.: Pronotum with sides distinctly converging posteriorly, with both side borders visible within posterior 50% only from dorsal view; **antennal club with A9 subquadrate, A10 subquadrate or transverse; elytra unicolor, without distinctive pattern**. Widely distributed. Very common. Nine species, with six Nearctic including three newly described species, two Holarctic and one adventive.
  5. *Anchicera mesomela* sp. gr.: Pronotum with sides distinctly converging posteriorly, with both side borders visible within posterior 50% only from dorsal view; antennal club with A9-A10 subquadrate; **elytra bicolor, with distinctive pattern**. Widely distributed. Very common. Five species, with three Nearctic, one Holarctic and one adventive.
  6. *Anchicera testacea* sp. gr.: **Pronotum with sides distinctly subparallel at posterior 0.5; antennal club with A9-A10 transverse**. Widely distributed. Common. Five species, with one Nearctic, two Holarctic and two adventives.
  7. *Anchicera nubipennis* sp. gr.: **Pronotum with sides distinctly subparallel at posterior 0.5; antennal club with A9-A10 subquadrate**. Mostly found in western North America. Uncommon. Three species, all Nearctic, including one newly described species.

#### Subgenus *Atomaria* Stephens 1829

**Elytra with sides mostly straight, at least at basal 35%**, slightly convergent at basal 35-60% to nearly parallel at basal 65%, usually with uniform colouration (91% of the species) and pubescence decumbent or appressed (88%); antennae with A1 elongated and recurved (70%) or short and stout (30%), club with A9-A10 usually transverse (71%) or subquadrate (29%); pronotum with sides distinctly converging posteriorly (84%) or subparallel (16%). Widely distributed. Very

common. 45 species in North America, with 42 species in Canada, including 34 Nearctic, 6 Holarctic and 5 adventive. This subgenus can be divided into 10 species groups:

1. *Atomaria fimetarii* sp. gr.: **Antennae with A11 distinctly narrower than A10; body cylindrical, very convex, pronotum stout, as broad as elytra**. In transcontinental Canada and northern US. Uncommon. One Holarctic species: *A. fimetarii*.
2. *Atomaria nigrirostris* sp. gr.: **Pronotum with sharply defined basal transverse groove restricted to middle third**, sometimes extending to sides. Widely distributed. Mostly uncommon, except the very common *A. nigrirostris*. Many species specialized in animal burrows or nests. Six species: four Nearctic including two newly described species, one Holarctic and one adventive.
3. *Atomaria umbrina* sp. gr.: **Antennae with A6-A10 strongly transverse**. In transcontinental Canada. Uncommon. Two species, including one newly described Nearctic species and one adventive species: *A. umbrina*.
4. *Atomaria puella* sp. gr.: **Elytra with pubescence sparse and suberected**. In central and western North America; one species in southeastern US. Uncommon. Apparently specialized in ant nests. Three species, all Nearctic, including one newly described species in Georgia.
5. *Atomaria linearis* sp. gr.: **Body elongate, pronotum subquadrate, about 1.15x as wide as long, elytra about 1.8x as long as wide**. In western US. Rare. Pest species associated with sugar beets. One adventive species introduced into California: *A. linearis*.
6. *Atomaria elongatula* sp. gr.: **Antennae with A1 short, about 1.3x as long as its apical width, and about 1.2-1.5x as long as A2**. Mostly in transcontinental Canada, Alaska, northern and western US, extending south in the Appalachian Mountains. Fairly common. Mostly under the bark of trees, possibly many species specialized in bird nests. Nine species: with seven Nearctic including four newly described species, and two Holarctic.
7. *Atomaria crassula* sp. gr.: **Antennae with A1 elongated and recurved, about 1.5x as long as its apical width and more than 1.5x as long as A2; club with A9-A10 subquadrate**. Mostly in transcontinental Canada, Alaska, northern and western US. Fairly common. Mostly under bark of conifers trees. Three species, all Nearctic.
8. *Atomaria vespertina* sp. gr.: **Antennae with**



A1 elongated and recurved, about 1.5x as long as its apical width and more than 1.5x as long as A2, **club with A9 subquadrate to slightly transverse and A10 slightly to distinctly transverse**. Mostly in transcontinental Canada, Alaska, northern and western US, extending south in the Appalachian Mountains. Uncommon, except the common *A. lineola*. Mostly under bark of conifer and hardwood trees. Five species: three Nearctic, including one newly described species, one Holarctic and one adventive.

9. *Atomaria alpina* sp. gr.: Antennae with A1 elongated and recurved, about 1.5x as long as its apical width and more than 1.5x as long as A2, **club with A9-A10 distinctly transverse; pronotum with sides arcuate at anterior 50-70%, widest posterior to middle, not sinuate at middle**. Mostly in transcontinental Canada, Alaska, northern and western US, extending south in the Appalachian Mountains. Uncommon. Mostly under bark of conifer and hardwood trees. Six species: five Nearctic, including two newly described species and one adventive.
10. *Atomaria affinis* sp. gr.: Antennae with A1 elongated and recurved, about 1.5x as long as its apical width, more than 1.5x as long as A2, **club with A9-A10 distinctly transverse; pronotum with sides sinuate at middle**. Mostly in transcontinental Canada, Alaska, northern and western US extending south in the Appalachian Mountains. Fairly common. Mostly under bark of trees of conifers and hardwood. Ten species:

nine Nearctic, including two newly described species, and one Holarctic.

#### *Curelius* Stephens, 1829

**Head mostly concealed under the pronotum; pronotum widest at base; elytra with sides forming a continuous line with the pronotum; body yellowish red, about 1.65-1.75x as long as wide, with punctuations small but distinct**. In southeastern US, not yet recorded in Canada. In hardwood trees, mainly oak forests. Very common. One introduced species: *Curelius japonicus*.

#### *Ephistemus* Stephens, 1829

**Head mostly concealed under the pronotum; pronotum widest at base; elytra with sides forming a continuous line with the pronotum; body reddish to dark brown or black, often paler apically, broadly oval, about 1.5-1.6x as long as wide, with punctuation minute, almost indistinct**. Widely distributed. Indoor or outdoor species, often associated with lawns, one species associated with cactus. Fairly common. One Nearctic species in southwestern US and one adventive species: *Ephistemus globulus*.

#### *Tisactia* Casey, 1900

**Head mostly concealed under the pronotum; pronotum widest at base; elytra with sides forming a continuous line with the pronotum; body oblong-oval, about 1.8x as long as wide, with punctuations small but distinct**. In southeastern Canada and eastern US. Rare. One Nearctic species: *Tisactia subglabra*.



Fig. 1: *H. latridioides*

Fig. 2



Fig. 3

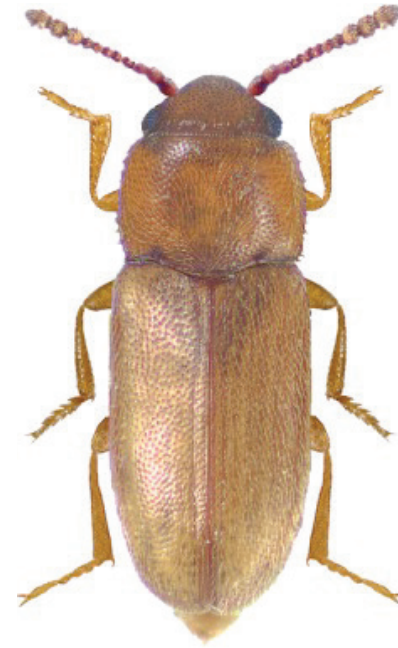


Fig. 4

1) Pronotum nearly cylindrical, longer than wide with lateral carina lacking (Fig. 1); elytra very elongate, about 1.75x as long as wide, not covering the last tergite, giving a *Monotoma* appearance. Prairies zone. Associated with ant nests.

1') Pronotum usually wider than long with lateral carina present (Figs. 2-4), rarely subquadrate. Elytra usually less than 1.7x as long as wide, covering the last tergite. Widely distributed.

*Hypocopus latridioides* Motschulsky (Hypocoprini)

2

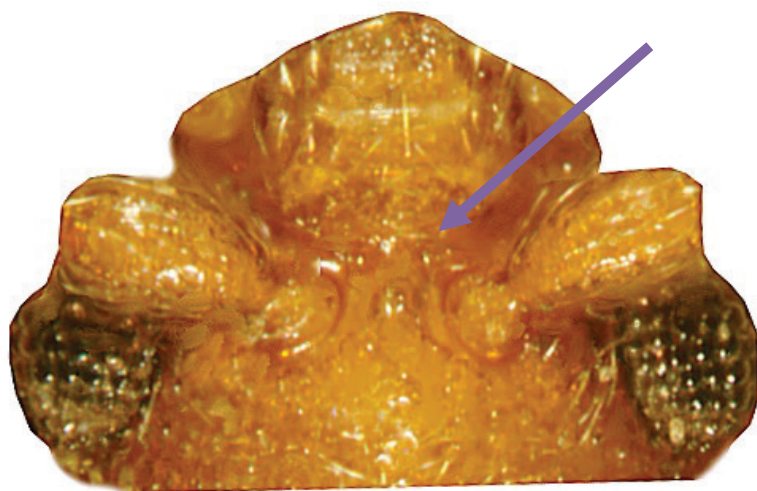


Fig. 5.

2) Frontoclypeal suture present (Fig. 5).

Atomariinae ...57

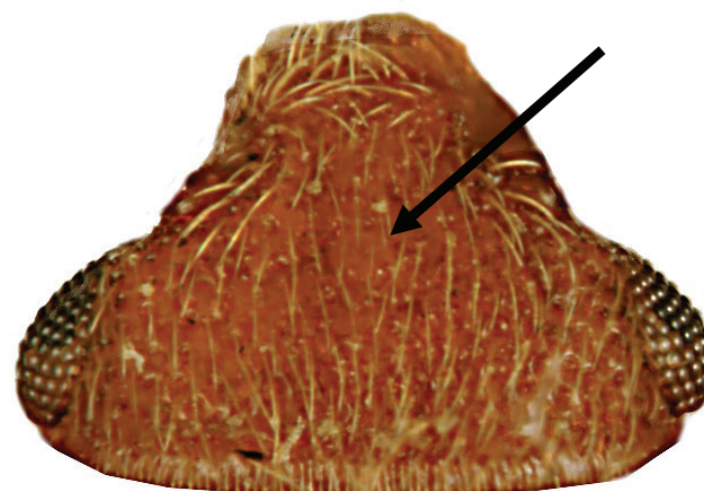


Fig. 6

2') Frontoclypeal suture lacking (Fig. 6).

Cryptophaginae ...3

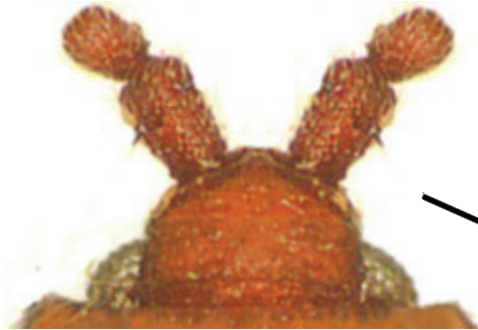


Fig. 7:

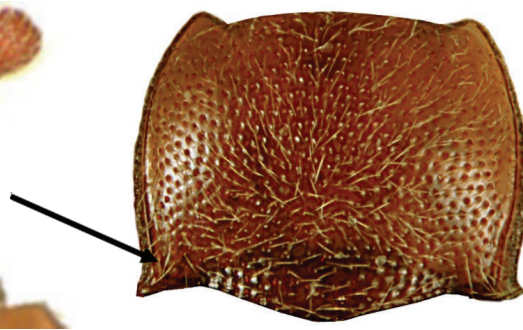


Fig. 8

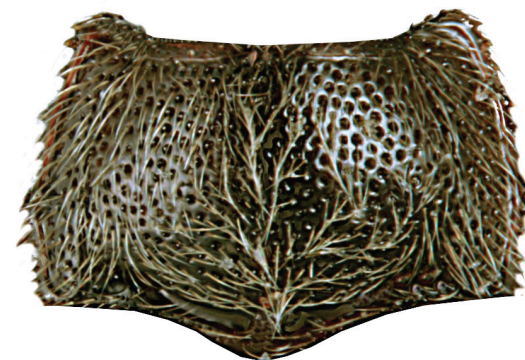


Fig. 9



Fig. 10

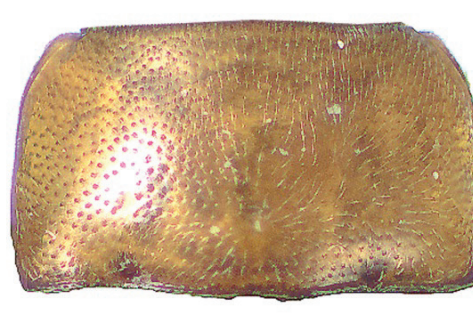


Fig. 11



Fig. 12

3) Antennae close together at base, inserted on frons (Fig. 7). Pronotum with lateral margins smooth, with sublateral carinae (arrow) and basal pits or groove lacking (Fig. 8).

*Caenoscelis* (Caenoscelini) ...53

3') Antennae remotely separated at base, inserted under sides of front (Fig. 10). Pronotum with lateral margins often serrate (Fig. 9) or dentate (Fig. 12), sometime smooth (Fig. 11), without sublateral carinae and with basal pits or groove.

(Cryptophagini) ...4





Fig. 13: *S. octodentatus*

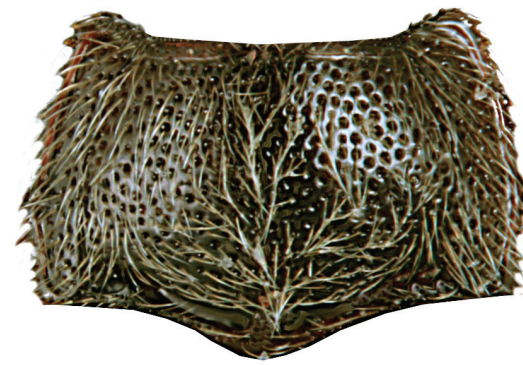


Fig. 14



Fig. 15



Fig. 16

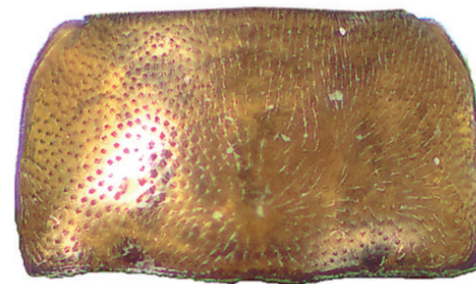


Fig. 17

4) Pronotum with sides smooth consisting of three lobes (Fig. 13). Western North America.

(\* See also *Salebius minax* from California in descriptive page)

4') Pronotum with sides trisinate (Fig. 14), biundulate (Fig. 15), sinuate, arcuate (Figs. 16), or straight (Figs. 17).

*Salebius octodentatus* (Mäklin)

5





Fig. 18



Fig. 19



Fig. 20

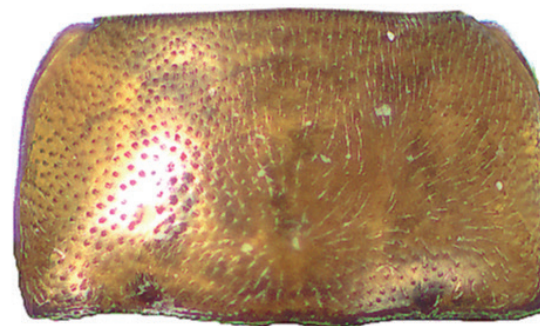


Fig. 21

5) Pronotum with sides distinctly serrate (Figs. 18-19).

5') Pronotum with sides biundulate (Figs. 20), or entire (Fig. 21).



Fig. 22



Fig. 23



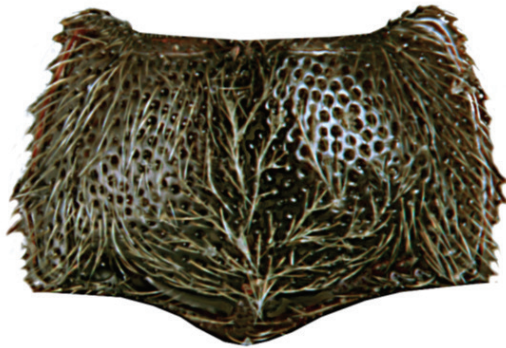
Fig. 24

6) Pronotum with sublater line (Figs. 22).

6') Pronotum without sublater line (Figs. 23-24).

Henotiderus ...7

8

Fig. 25: *H. centromaculatus*Fig. 26: *H. lorna*Fig. 27: *H. centromaculatus*Fig. 28: *H. lorna*

7) Pronotum black, sides trisinate, with serrulation irregular, being more spaced anteriorly (Fig. 25); elytra reddish brown, usually with transverse line at basal 0.35, middle spot at sides and apical spot black. (Fig. 27). Transcontinental Canada, Alaska and northern USA.

*Henotiderus centromaculatus* Reitter

7') Pronotum reddish brown, sides convex with regular serrulations throughout (Fig. 26); elytra uniform yellowish brown (Fig. 28). Western North America.

*Henotiderus lorna* (Hatch)





Fig. 29: *Telmatophilus*



Fig. 30



Fig. 31: *Telmatophilus*



Fig. 32

8) Body entirely dark brown to black, densely clothed with silvery pubescence (Fig. 29). Legs with tarsomeres 2 and 3 strongly lobed beneath (Fig. 31).

8') Elytra reddish to yellowish brown, with sparser pubescence, rarely black (Fig. 30). Legs with tarsomeres not lobed beneath (Fig. 32).

*Telmatophilus* ...9

10



Fig. 33



Fig. 35: *T. americanus*



Fig. 37: *T. americanus*

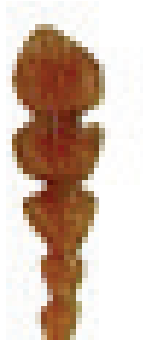


Fig. 34.



Fig. 36: *T. typhae*



Fig. 38: *T. typhae*

9) Antennae with A10 about 1.7x wider than A9 (Fig. 33). Pronotum with sides rather straight and slightly angulate at middle (Fig. 35). Elytra with sides straight in basal 0.55 (Figs. 37). Length: 2.4-3.0 mm.

*Telmatophilus americanus* LeConte

9') Antennae with A10 about 1.3x wider than A9 (Fig. 34). Pronotum with sides strongly arcuate (Fig. 36). Elytra with sides arcuate throughout, widest at middle (Figs. 38). Length: 1.7-2.2 mm.

*Telmatophilus typhae* (Fallen)



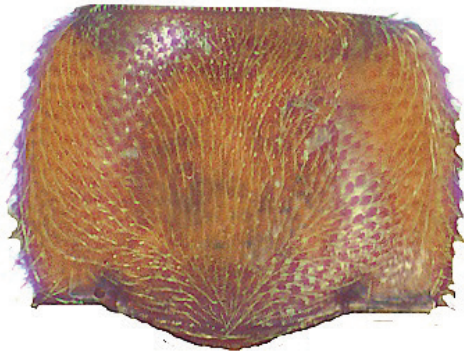


Fig. 39: *P. crenulatum*



Fig. 40: *Henoticus*



Fig. 41: *P. crenulatum*



Fig. 42: *Henoticus*

10) Pronotum with sides slightly arcuate, serratures minute and not recurved; base with two small basal disconnected foveae (Fig. 39). Elytra flat, reddish to yellowish brown, with sides straight and subparallel in basal 0.6 (Fig. 41).

*Pteryngium crenulatum* Erichson

10') Pronotum with sides strongly arcuate, serratures strong, recurved and similar in size; base deeply bifoveate, foveae connected by wide groove along basal margin (Fig. 40). Elytra with sides widest at or near middle (Fig. 42).

*Henoticus* ...11



Fig. 43: *H. californicus*

11) Pronotum with sides sinuate, widest at posterior 0.4, lateral serrulation smaller and denser at posterior 0.5 than at anterior 0.5 (Fig. 43). Western North America. Rare.

*Henoticus californicus* (Mannerheim)



Fig. 44

11') Pronotum with sides arcuate, widest at or near middle, serrulation otherwise (Fig. 44). Widely distributed in southern Canada and northern USA.

12



Fig. 45: *H. varidentatus*

12) Pronotum with sides not uniformly serrate throughout, with 7 teeth, punctures small and sparse, their distance usually wider than their average diameter (Fig. 45). Length: 1.4 mm. Eastern Canada. Rare.

*Henoticus varidentatus* Pelletier n.sp.



Fig. 46

12') Pronotum uniformly serrate throughout, with 9-10 teeth, punctures larger, their distance usually subequal to their diameter (Fig. 46). Transcontinental Canada, Alaska and eastern USA. Length: 1.7-2.3 mm.

13





Fig. 47: *H. pilifer*

13) Elytra with sides entirely arcuate, pilosity predominantly suberect, longer and sparser (Fig. 47). Eastern Canada and USA. Mainly in hardwood forests. Fairly common.

*Henoticus pilifer* Reitter



Fig. 48: *H. serratus*

13') Elytra with sides straight and convergent in basal 0.5, pilosity predominantly appressed, shorter and denser (Fig. 48). Transcontinental Canada and USA. Mainly in conifer forests. Common.

*Henoticus serratus* (Gyllenhal)

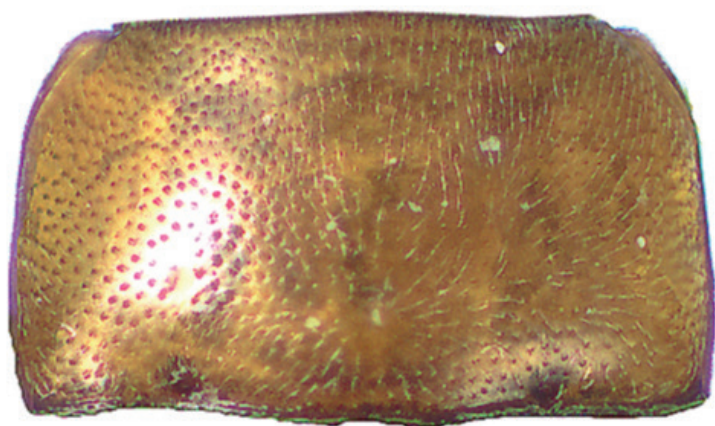


Fig. 49: *Antherophagus*



Fig. 50

14) Pronotum without callosities at front corners (Fig. 49).

14') Pronotum with distinct callosities at front corners (Fig. 50).

*Antherophagus* ...15

18



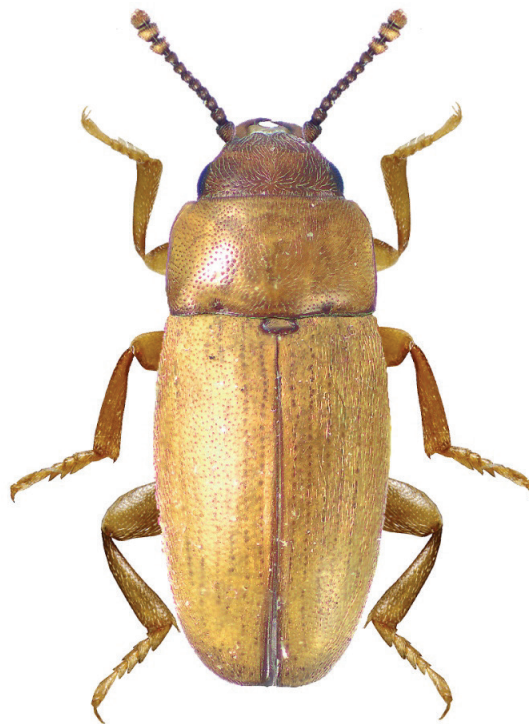
Fig. 51: *A. suturalis*

Fig. 52

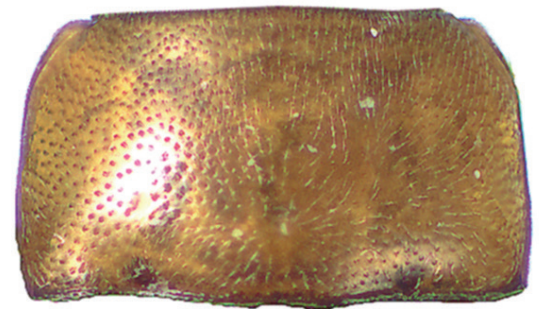
Fig. 53: *A. suturalis*.

Fig. 54

15) Head and pronotum dark reddish to dark brown, elytra slightly paler laterally, at apex and along suture in posterior 75% (Fig. 51). Pronotum with sides slightly convex, widest at middle (Fig. 53). Western North America (Alaska to California).

15') Body brownish yellow throughout (Fig. 52). Pronotum with sides straight, subparallel or divergent, widest at posterior 0.25-0.35 (Fig. 54).

*Antherophagus suturalis* Mäklin

16

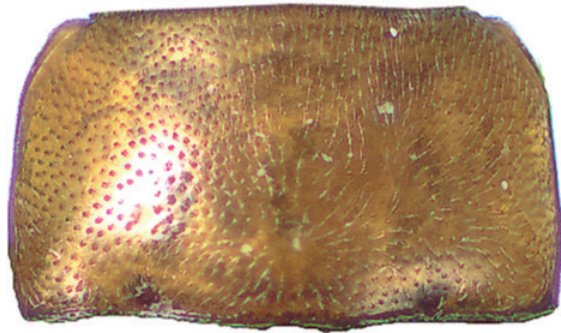


Fig. 55: *A. convexulus*.



Fig. 56

16) Pronotum with sides straight, mostly subparallel in posterior 0.75 (Fig. 55). Elytra with pubescence shorter and decumbent, rows of punctures distinctly visible (Fig. 57). Transcontinental Canada and eastern USA.

*Antherophagus convexulus* LeConte



Fig. 57: *A. convexulus*

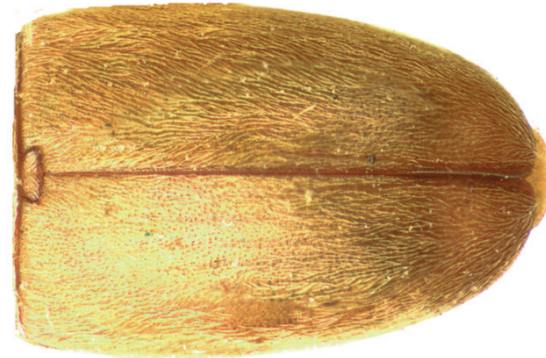


Fig. 58

16') Pronotum with sides arcuate, widest at posterior 0.35 (Fig. 56). Elytra with pubescence longer and denser, rows of punctures not visible (Fig. 58).

17



Fig. 59: *A. ochraceus*Fig. 60: *A. pallidivestis*Fig. 61: *A. ochraceus*Fig. 62: *A. pallidivestis*

17) Head with eyes very small, covering about 33% of the side, temple about 50% as long as eye diameter (Fig. 59). Elytra with dense golden yellow pubescence (Fig. 61). Widely distributed.

*Antherophagus ochraceus* Melsheimer

17') Head with eyes large, covering about 45% of the side, temple about 15% as long as eye diameter (Fig. 60). Elytra with dense silvery or whitish pubescence (Fig. 62). Transcontinental Canada and western USA. Uncommon.

*Antherophagus pallidivestis* Casey



Fig. 63: *Micrambe ulicis*



Fig. 64

18) Pronotum sides with callosity covering anterior half, middle tooth lacking (Fig. 63). Quebec. Rare.

18') Pronotum sides with callosity not covering more than anterior 0.33 and a distinct tooth near middle of sides (Fig. 64).

*Micrambe ulicis* (Stephens)

19



Fig. 65: *M. americana*Fig. 66: *Cryptophagus*

19) Pronotum sides with posterior 0.5 subparallel (Fig. 65). Pronotum and elytra with pilosity very short, appressed, setae shorter than distance between punctures (Figs. 65, 67). Transcontinental Canada and Alaska.

*Myrmedophila americana* (LeConte)

Fig. 67: *M. americana*Fig. 68: *Cryptophagus*

19') Pronotum sides with posterior 0.5 convergent (Fig. 66). Pronotum and elytra with pilosity longer, decumbent or suberect, setae longer than distance between punctures (Figs. 66, 68).

*Cryptophagus* ...20



Fig. 69



Fig. 71



Fig. 70



Fig. 72

20) Pronotum callosity ending with a distinct tooth (Figs. 69-70).

20') Pronotum callosity without a distinct tooth (Figs. 71-72).





Fig. 73

21) Pronotum with callosities strongly produced laterally, wider or subequal across callosities than across lateral teeth, sides from callosity to lateral tooth strongly concave (Fig. 73).

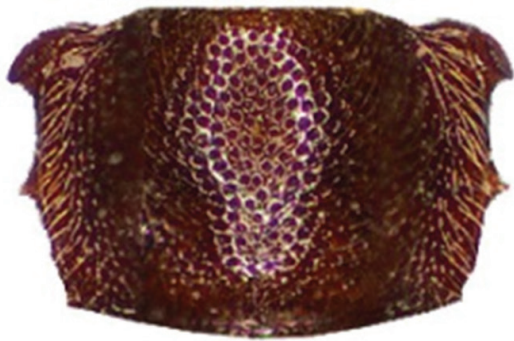
22



Fig. 74

21') Pronotum with callosities less produced laterally, usually widest across lateral teeth or below, sides from callosity to lateral tooth variable (Fig. 74).

23

Fig. 75: *C. acutangulus*Fig. 76: *C. peregrinus*.Fig. 77: *C. acutangulus*Fig. 78: *C. peregrinus*

22) Antennae with A9 length subequal to A10. Pronotum wider across callosities than across lateral teeth (Fig. 75). Elytra with pubescence single, appressed (Fig. 77). Widely distributed. Mostly indoor species except in the Prairies and Alaska. Common.

*Cryptophagus acutangulus* Gyllenhal

22') Antennae with A9 distinctly shorter than A10. Pronotum width subequal across callosities and across lateral teeth (Fig. 76). Elytra with pubescence double, appressed and suberect (Fig. 78). Western North America west of the Rockies. Uncommon.

*Cryptophagus peregrinus* Woodroffe and Coombs





Fig. 79

23) Pronotum callosity without dorsal rim, its width distinctly narrower than its distance to the lateral tooth, its tooth acute (Fig. 79).

24



Fig. 80

23') Pronotum callosity with a dorsal rim, its width to its distance to the lateral tooth variable, often subequal, its tooth triangular (Fig. 80).

30



Fig. 81: *C. obsoletus*

24) Pronotum widest posterior to middle with callosities strongly produced anteriorly (Fig. 81). Transcontinental Canada and western USA. Uncommon.

*Cryptophagus obsoletus* Reitter



Fig. 82

24') Pronotum widest at or near middle, with callosities not produced anteriorly (Fig. 82).

25



Fig. 83: *C. varus*

25) Pronotum sparsely punctate, punctures usually separated by more than their diameter, callosity not produced laterally, sides strongly sinuate, concave from callosity to lateral tooth, strongly convex from tooth to posterior margin (Fig. 83). Mainly central and western North America. Very common.

*Cryptophagus varus* Woodroffe and Coombs



Fig. 84

25') Pronotum densely punctate, punctures usually separated by less than their diameter, callosity produced laterally, sides not strongly sinuate (Fig. 84).

26



Fig. 85: *C. distinguendus*

Fig. 86

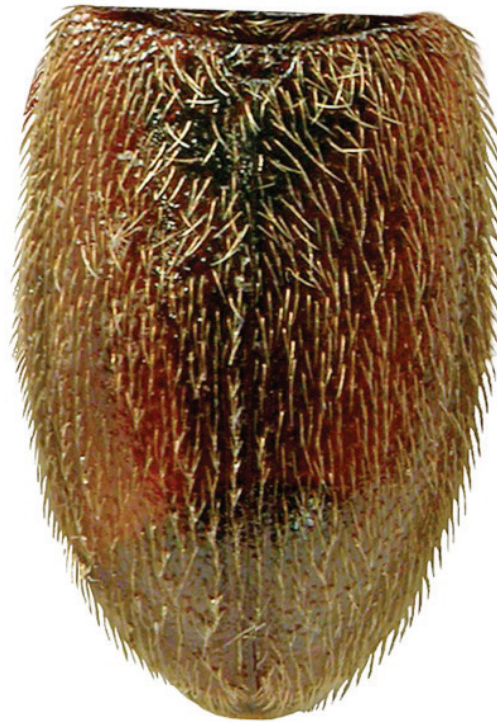
Fig. 87: *C. distinguendus*

Fig. 88

26) Pronotum moderately punctate, punctures separated by about their diameter (Fig. 85). Elytra moderately punctate, punctures separated by about their diameter (Fig. 87). Head and pronotum dark brown to black, distinctly darker than elytra. Mainly indoor, rare in natural habitat.

*Cryptophagus distinguendus* Sturm

26') Pronotum densely punctate, punctures separated by less than their diameter (Fig. 86). Elytra finely punctate, punctures separated by more than their diameter (Fig. 88). Body more or less uniform in color.

27



Fig. 89: *C. porrectus*

Fig. 90

27) Pronotum with sides slightly sinuate, slightly concave from callosity to lateral tooth, convex from tooth to posterior margin (Fig. 89). Elytra dark brown, with pilosity more elongate and sparse (Fig. 91). Western North America west of the Rockies. Rare.

*Cryptophagus porrectus* Casey

Fig. 91: *C. porrectus*

Fig. 92

27') Pronotum with sides not sinuate, straight from lateral tooth to posterior margin (Fig. 90). Elytra bicolor, reddish or yellowish brown, pilosity variable (Fig. 92).

28

Fig. 93: *C. quadrihamatus*

Fig. 94

Fig. 95: *C. quadrihamatus*

Fig. 96

28) Pronotum black, sides strongly concave from callosity to lateral tooth, posterior corners angulate (Fig. 93). Elytra bicolor, reddish brown with variable black marking, in North America usually reddish brown with black triangular apex (Fig. 95). Transcontinental Canada and Alaska.

28') Pronotum reddish brown, sides straight from callosity to lateral tooth and from tooth to posterior margin (Fig. 94). Body reddish to yellowish brown (Fig. 96). Widely distributed.

*Cryptophagus quadrihamatus* Mäklin

29



Fig. 97: *C. difficilis*Fig. 98: *C. punctipennis*Fig. 99: *C. difficilis*Fig. 100: *C. punctipennis*

29) Antennomeres 4-7 trapezoidal (Fig. 97). Elytra reddish to dark brown, with sides arcuate throughout and longer sparser suberect pilosity (Fig. 99). Widely distributed and very common.

*Cryptophagus difficilis* Casey

29') Antennomeres 4-7 shorter, subquadrate (Fig. 98). Elytra yellowish brown, with sides subparallel in basal 0.5 and shorter appressed denser pilosity predominant (Fig. 100). Introduced in eastern and western North America. Fairly common.

*Cryptophagus punctipennis* Brisout de Barneville



Fig. 101

30) Elytra with two types of pilosities, appressed and suberect (Fig. 101).



Fig. 102

30') Elytra with one type of pilosities, appressed (Fig. 102).





Fig. 103: *C. lycoperdi*



Fig. 104



Fig. 105: *C. lycoperdi*



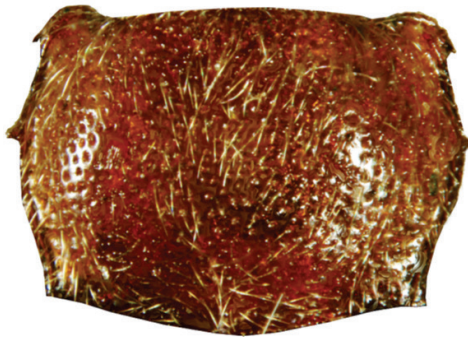
Fig. 106

31) Front tibiae with outer apical angle produced into a strong tooth (Fig. 103). Pronotum with lateral teeth at middle (Fig. 105). Introduced indoor species in Eastern Canada. Very rare.

*Cryptophagus lycoperdi* (Scopoli)

31') Front tibiae with outer apical angle narrowly arcuate, without tooth (Fig. 104). Pronotum with lateral teeth in front of the middle (Fig. 106).

32

Fig. 107: *C. stromus*Fig. 108: *C. dilutus*Fig. 109: *C. stromus*Fig. 110: *C. dilutus*

32) Pronotum about 1.3-1.4x as wide as long, produced anteriorly, with callosity width narrower than its distance to the lateral tooth, sides straight from callosity to lateral tooth and punctures moderately dense, separated by about their own average diameter (Fig. 107). Elytra reddish brown, elongate oval, with sides arcuate throughout (Fig. 109). Central and western North America.

*Cryptophagus stromus* Woodroffe and Coombs

32') Pronotum about 1.5-1.6x as wide as long, not produced anteriorly, with callosity width subequal to its distance to the lateral tooth and punctures very dense, separated by less than their own average diameter (Fig. 108). Elytra brownish yellow, sides straight at anterior 0.55 (Fig. 110). Not recorded yet in Canada. Rare.

*Cryptophagus dilutus* Reitter



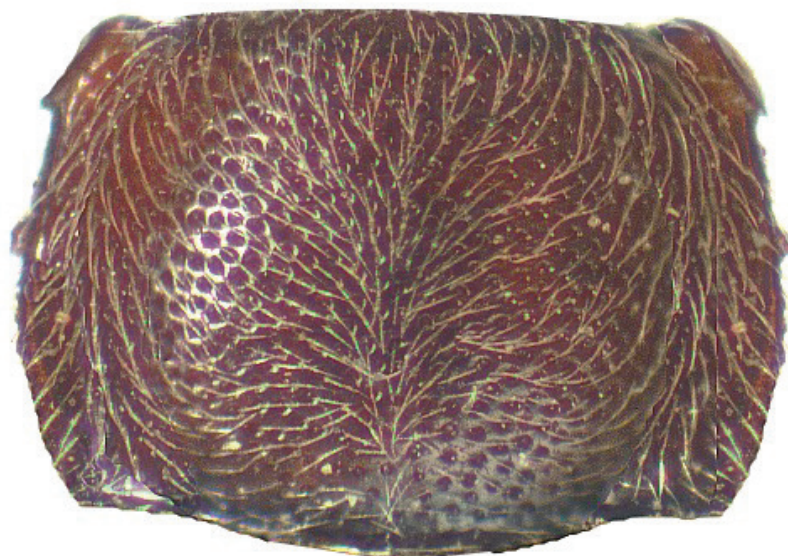


Fig. 111

33) Pronotum with lateral teeth in front of the middle (Fig. 111).

34

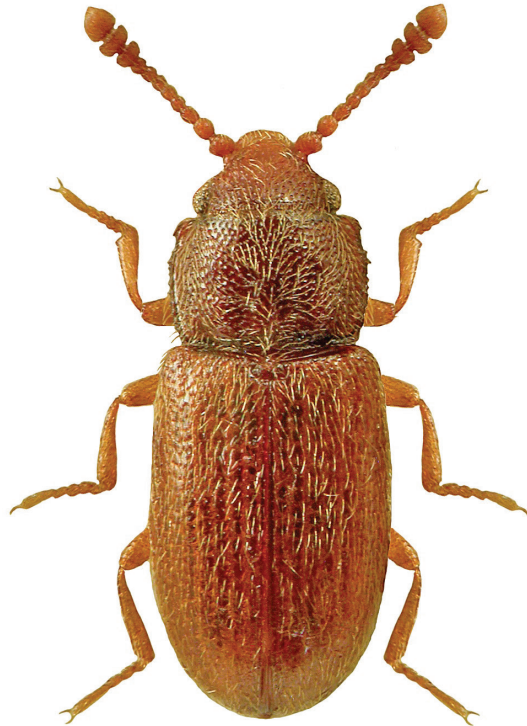


Fig. 112

33') Pronotum with lateral teeth at or near the middle (Fig. 112).

36





*Cryptophagus scutellatus*

Fig. 113: *C. scutellatus*



*Cryptophagus corticinus*

Fig. 114



*Cryptophagus quadrihamatus*

Fig. 115

34) Length: 1.5-1.8 mm. Body uniform reddish brown (Fig. 113). Introduced, mostly indoor species. Uncommon.

*Cryptophagus scutellatus* Newman

34') Length: 2.0-2.8 mm. Body bicolor, reddish brown mixed with dark brown to black (Figs. 114-115). Transcontinental Canada, Alaska and northern USA.

35

Fig. 116: *C. corticinus*Fig. 117: *C. quadrihamatus*Fig. 118: *C. corticinus*Fig. 119: *C. quadrihamatus*

35) Pronotum with sides straight from callosity to lateral tooth, strongly convex from lateral tooth to posterior margin (Fig. 116). Elytra elongate, about 1.65-1.8x as long as wide, with sides straight in basal 0.6 (Fig. 118). Fairly common.

*Cryptophagus corticinus* Thomson

35') Pronotum with sides strongly concave from callosity to lateral tooth, straight to slightly sinuate from lateral tooth to posterior margin (Fig. 117). Elytra oval, with sides arcuate throughout, about 1.48-1.6x as long as wide (Fig. 119). Fairly common.

*Cryptophagus quadrihamatus* Mäklin



Fig. 120: *C. fallax*

Fig. 121

Fig. 122: *C. fallax*

Fig. 123

36) Pronotum about 1.25-1.35x as wide as long, sides straight to slightly concave and subparallel from callosity to lateral tooth (Fig. 120). Elytra oval, with sides arcuate throughout (Fig. 122). Eastern Canada. Rare. Adventive.

36') Pronotum about 1.4-1.5x as wide as long, sides concave from callosity to lateral tooth (Fig. 121). Elytra with sides straight, divergent in basal 0.5 (Fig. 123). Northern transcontinental Canada, Alaska and northern USA. Common.

*Cryptophagus fallax* Balfour-Browne

37





Fig. 124: *C. confertus*

37) Pronotum with sides strongly concave from callosity to lateral tooth, nearly as wide at callosity than at lateral tooth (Fig. 124). Common.

*Cryptophagus confertus* Casey



Fig. 125: *C. bidentatus*

37') Pronotum with sides slightly concave from callosity to lateral tooth, distinctly narrower at callosity than at lateral tooth (Fig. 125). Fairly common.

*Cryptophagus bidentatus* Mäklin



Fig. 126:

38) Pronotum with callosities strongly produced anteriorly, but not laterally, sides straight from callosity to lateral tooth, convex from lateral tooth to posterior margin (Fig. 126).



Fig. 127

38') Pronotum with callosities otherwise, usually not produced anteriorly, sides variable but usually different (except for one species) (Fig. 127).



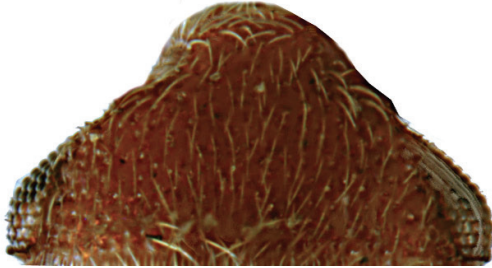


Fig. 128: *C. subfumatus*



Fig. 129: *C. subfumatus*

39) Eyes subconical (Fig. 128). Pronotum widest at middle, callosity width usually longer than its distance to the lateral tooth (Fig. 129). Widely distributed. Fairly common. Adventive.

*Cryptophagus subfumatus* Kraatz



Fig. 130: *C. tuberculosus*



Fig. 131: *C. tuberculosus*

39') Eyes hemispherical (Fig. 130). Pronotum widest posterior to middle, callosity width subequal to its distance to the lateral tooth (Fig. 131). In conifer forests. Mainly western North America. Very common but uncommon to rare east of the Rockies.

*Cryptophagus tuberculosus* Mäklin





Fig. 132

40) Elytra with one types of pilosities, appressed (Fig. 132).



Fig. 133

40') Elytra with two type of pilosities, appressed and suberect (Fig. 133).



Fig. 134

41) Elytra elongate with sides straight, subparallel in basal 0.5-0.6 (Fig. 134).



Fig. 135

41') Elytra oval with sides arcuate or straight, distinctly convergent in basal 0.5 (Fig. 135).

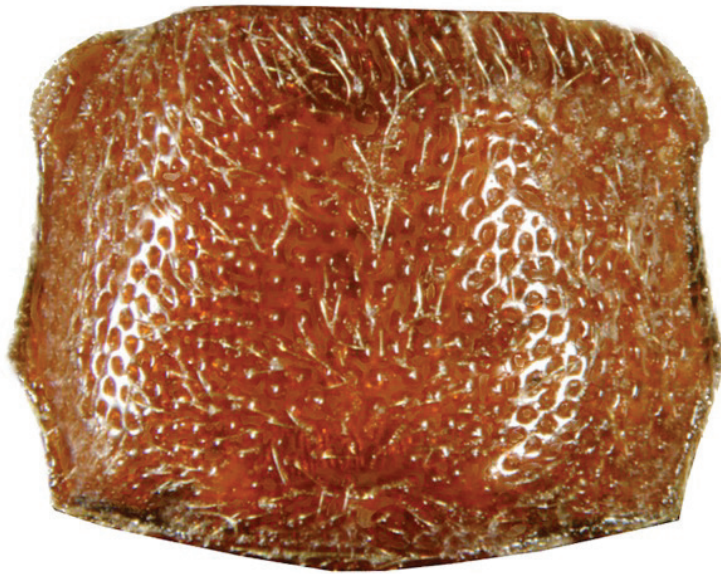


Fig. 136: *C. maximus*

42) Very large species, length 3.2-4.5 mm. Pronotum widest at posterior 0.3, lateral tooth represented by a strong thickening, sides concave between thickening and posterior margin (Fig. 136). British Columbia. Very rare.

*Cryptophagus maximus* Blake



Fig. 137

42') Length 2.0-3.0 mm. Pronotum widest anterior to middle to posterior 0.45, lateral tooth normal, sides straight to strongly convex from lateral tooth to posterior margin (Fig. 137).

43



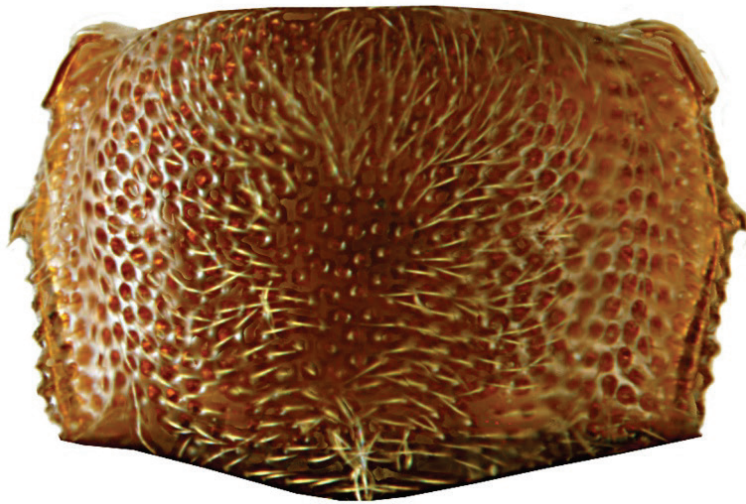


Fig. 138: *C. dentatus*

43) Pronotum widest anterior of middle, callosity width subequal to less than its distance to the lateral tooth, not projecting anteriorly, sides straight from callosity to lateral tooth and straight from lateral tooth to posterior margin (Fig. 138). Introduced and widely distributed but uncommon in Canada.

*Cryptophagus dentatus* (Herbst)

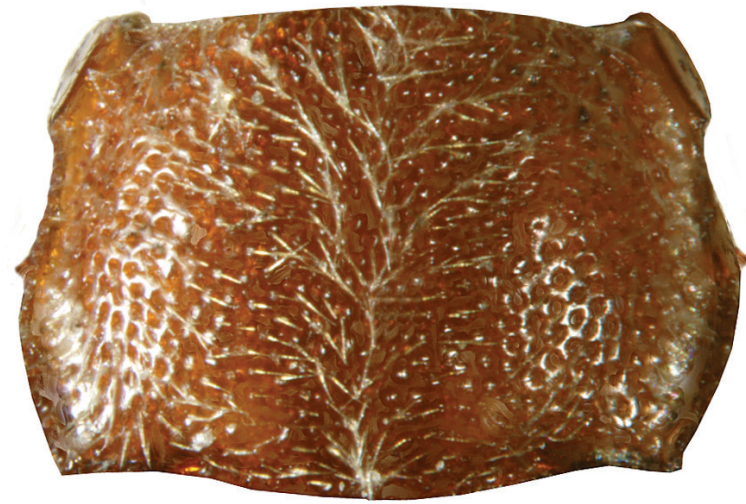


Fig. 139: *C. hebes*

43') Pronotum widest slightly posterior to middle, callosity width subequal or larger than its distance to the lateral tooth, strongly projecting anteriorly, sides slightly concave from callosity to lateral tooth and strongly convex from lateral tooth to posterior margin (Fig. 139). Western North America. Uncommon.

*Cryptophagus hebes* Mäklin



Fig. 140: *C. saginatus*

44) Pronotum widest anterior to middle, callosity not prominent laterally, sides convex throughout (Fig. 140). Introduced indoor species. Fairly common.

*Cryptophagus saginatus* Sturm



Fig. 141

44') Pronotum widest at or posterior to middle, callosity prominent laterally forming an obtus angle, sides not convex throughout (Fig. 141).

45



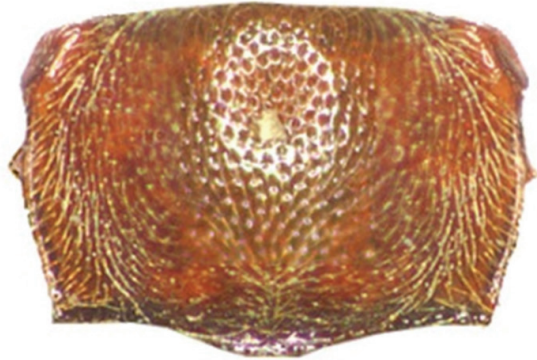


Fig. 142: *C. scanicus*



Fig. 143: *C. lapponicus*



Fig. 144: *C. scanicus*



Fig. 145: *C. lapponicus*

45) Pronotum with sides strongly concave from callosity to lateral tooth, widest at middle (Fig. 142). Elytra with punctures moderately dense, separated by about their diameter (Fig. 144). Probably adventive. Uncommon.

*Cryptophagus scanicus* (Linnaeus)

45') Pronotum with sides straight from callosity to lateral tooth, widest posterior to middle (Fig. 143). Elytra with punctures fine, separated by more than their average diameter (Fig. 145). Northern transcontinental Canada and Alaska. Common.

*Cryptophagus lapponicus* Gyllenhal



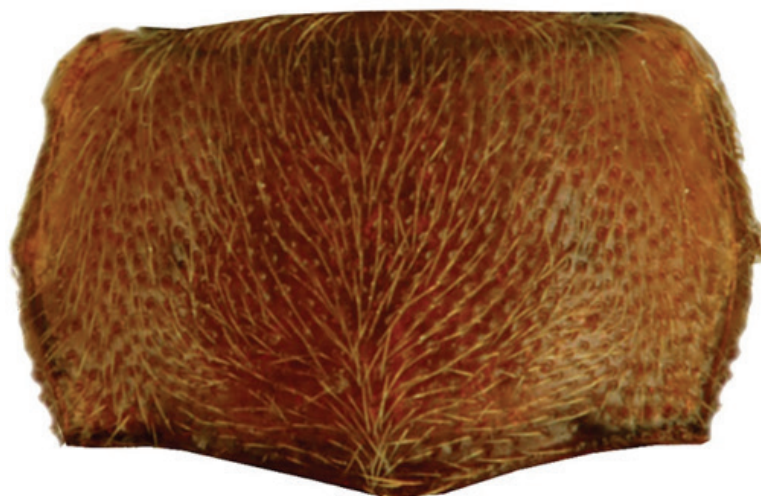


Fig. 146

46) Pronotum with callosities not prominent laterally, usually not forming an obtuse angle with the side. (Fig. 146).

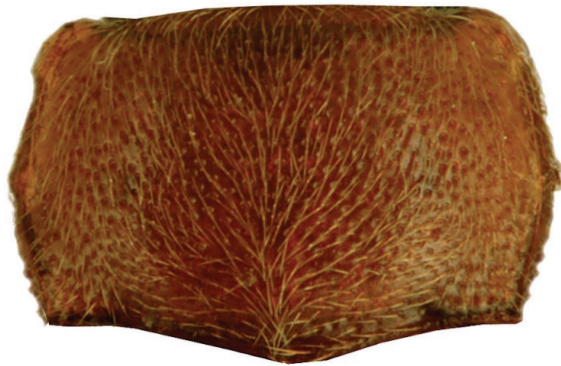
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Fig. 147

46') Pronotum with callosities prominent laterally, forming an obtuse angle with the side. (Fig. 147).

48

Fig. 148: *C. valens*Fig. 149: *C. histricus*Fig. 150: *C. valens*Fig. 151: *C. histricus*

47) Pronotum about 1.45-1.6x as wide as long, sides straight to slightly convex from lateral tooth to posterior margin (Fig. 148). Elytra elongate, about 1.50-1.65x as long as wide with pubescence shorter and recurved (Fig. 150).

*Cryptophagus valens* Casey

47') Pronotum about 1.35-1.45x as wide as long, sides sinuate from lateral tooth to posterior margin (Fig. 149). Elytra stouter, about 1.4-1.55x as long as wide with pubescence longer and suberect (Fig. 151).

*Cryptophagus histricus* Casey





Fig. 152

48) Elytra elongate with sides straight, subparallel in basal 0.5-0.6 (Fig. 152).

49



Fig. 153

48') Elytra oval with sides arcuate or straight, distinctly convergent in basal 0.5 (Fig. 153).

50





Fig. 154: *C. cellaris*



Fig. 156: *C. cellaris*

49) Eyes hemispherical (Fig. 154). Pronotum with callosity width less than its distance to the lateral tooth, sides divergent from callosity to lateral tooth, straight from tooth to posterior margin (Fig. 156). Introduced indoor species. Common.

*Cryptophagus cellaris* (Scopoli)



Fig. 155: *C. laticollis*



Fig. 157: *C. laticollis*

49') Eyes subconical (Fig. 155). Pronotum with callosity width subequal to its distance to the lateral tooth, sides subparallel from callosity to lateral tooth, strongly convex from tooth to posterior margin (Fig. 157). Introduced. Uncommon.

*Cryptophagus laticollis* Lucas



Fig. 158: *C. mainensis*

50) Length: 1.5-1.7 mm. Pronotum with callosity width more than 1.3x as wide as its distance to the lateral tooth (Fig. 158), sides from callosity to lateral tooth strongly concave, from tooth to posterior margin straight. Uncommon.

*Cryptophagus mainensis* Casey



Fig. 159

50') Length: 2.0-3.0 mm. Pronotum with callosity width narrower, less than 1.3x as wide as its distance to the lateral tooth (Fig. 159), sides from callosity to lateral tooth straight, from tooth to posterior margin convex to sinuate. Very common.

51





Fig. 160: *C. setulosus*

51) Pronotum with sides from callosity to lateral tooth slightly divergent, from tooth to posterior margin straight to slightly convex, lateral tooth located at middle of sides (Fig. 160). Mostly eastern Canada and USA. Mainly in conifer forests. Common.

*Cryptophagus setulosus* Sturm



Fig. 161

51') Pronotum with callosity usually projecting anteriorly, sides from callosity to lateral tooth subparallel, from lateral tooth to posterior margin sinuate, lateral tooth usually in front of middle (Fig. 161).

52





Fig. 162: *C. croceus*

52) Pronotum with callosity usually projecting anteriorly (Fig. 162). Southeastern Canada and eastern USA. Mainly in hardwood forests. Very common.

*Cryptophagus croceus* Zimmermann



Fig. 163: *C. denticulatus*

52') Pronotum with callosity not projecting anteriorly (Fig. 163). Introduced in eastern and western Canada and USA. Uncommon.

*Cryptophagus denticulatus* Heer

Fig. 164: *C. subdeplanata*

53) Pronotum with posterior 0.5 of sides mostly straight, subparallel, hind angle about 90° (Fig. 164). Mostly transcontinental Canada and northern USA. Fairly common.

*Caenoscelis subdeplanata* Brisout de Barneville



Fig. 165

53') Pronotum with sides mostly arcuate throughout, widest at middle, hind angle obtuse, about 105° (Fig. 165).

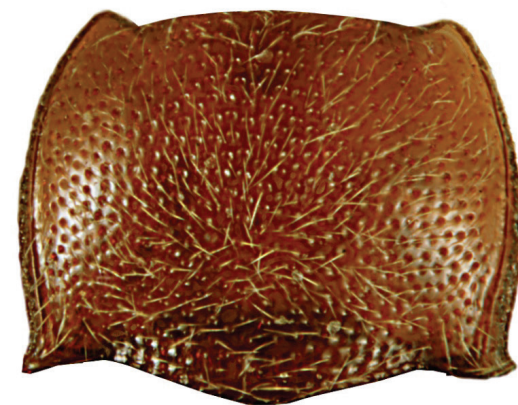


Fig. 166

53'') Pronotum with sides sinuate, widest at or anterior to middle, hind angle acute, about 75° (Fig. 166).

54

56



Fig. 167: *C. ferruginea*



Fig. 168

54) Pronotum strongly transverse, about 1.3-1.4x as wide as long (Fig. 167). Mostly transcontinental Canada and northern USA. Very common.

54') Pronotum subquadrate to slightly transverse, about 1.1-1.3x as long as wide (Fig. 168).

*Caenoscelis ferruginea* (C. R. Salhberg)

55



Fig. 169: *C. antennalis*Fig. 170: *C. parallela*Fig. 171 : *C. antennalis*Fig. 172 : *C. parallela*

Fig. 173

Fig. 174

55) Pronotum arcuate throughout, hind angle obtuse, about 105° (Fig. 169). Elytra arcuate throughout (Fig. 171). Antennae of male with A2-A5 stout, contrastingly wider than A6-A8 (Fig. 173). Canada and northern USA.

*Caenoscelis antennalis* (Casey)

55') Pronotum with posterior 0.15 of sides straight, subparallel, hind angle about 90° (Fig. 170). Elytra with basal 0.5 of sides mostly subparallel (Fig. 172). Antennae of male with A2-A5 not contrastingly wider than A6-A8 (Fig. 174). Western North America. Fairly common.

*Caenoscelis parallela* Casey



Fig. 175: *C. basalis*

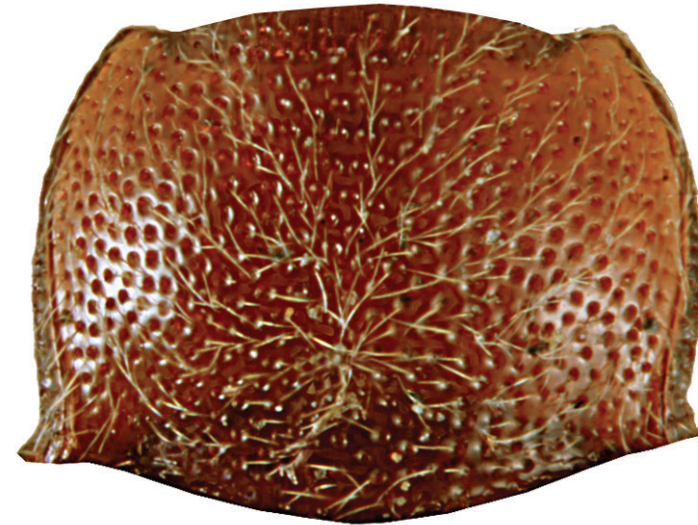


Fig. 176: *C. cryptophaga*

Fig. 177: *C. basalis*



Fig. 178: *C. cryptophaga*



56) Pronotum broadest at middle, strongly impressed basally, basal punctures closed (Fig. 175). Antennae with A5 and A7 subquadrate (Fig. 177). Widely distributed. Very common.

*Caenoscelis basalis* Casey

56') Pronotum broadest at anterior 0.4, slightly impressed basally (Fig. 176), basal punctures sparser. Antennae with A5 and A7 trapezoidal (Fig. 178). Southeastern Canada and eastern USA. Uncommon.

*Caenoscelis cryptophaga* Reitter



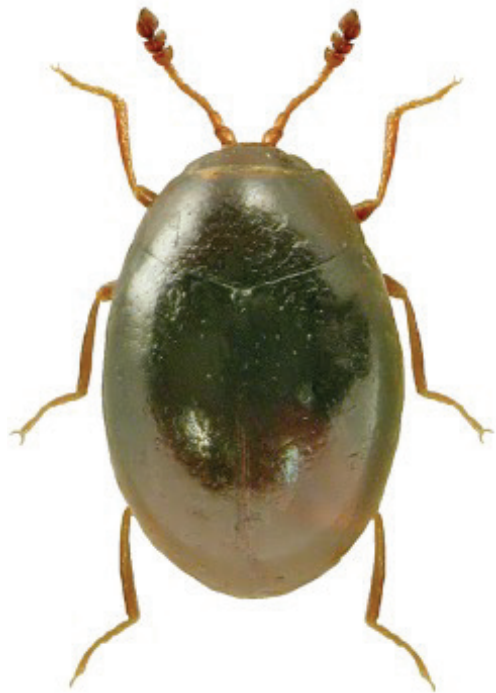


Fig. 179

57) Head nearly concealed under the pronotum. Pronotum widest at base. Elytra with sides forming a continuous line with the pronotum, body looking oval from dorsal view, nearly glabrous to minutely punctate (Fig. 179).

58



Fig. 180



Fig. 181

57') Head distinctly visible anterior to the pronotum. Pronotum usually widest from anterior 0.3 to 0.85 (except for 2 species). Elytra with sides forming a discontinuous line with the pronotum, distinctly punctate and hairy (Fig. 180-181).

*Atomaria* ...60





Fig. 182: *T. subglabra*

58) Body oblong-oval, about 1.8x as long as wide with punctures small but distinct (Fig. 182). Southeastern Canada and eastern USA. Uncommon.

*Tisactia subglabra* Casey

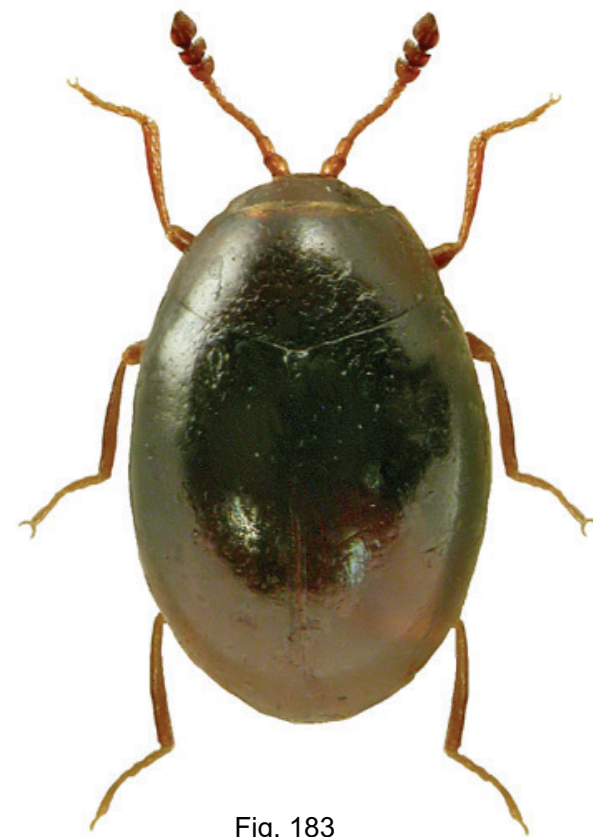


Fig. 183

58') Body broadly oval, about 1.4-1.6x as long as wide with punctures small to minute, almost indistinct (Fig. 183).

59

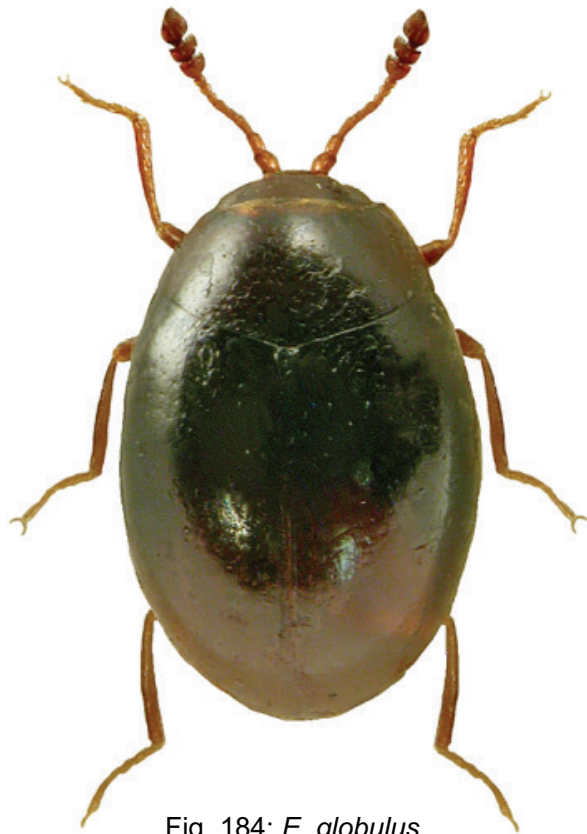


Fig. 184: *E. globulus*

59) Body dark brown to black, often paler apically, about 1.45-1.55x as long as wide with punctures minute, almost indistinct (Fig. 184). Widely distributed. Introduced species. Fairly common.

\*See also *E. cactophilus* from Southwestern USA

*Ephistemus globulus* (Paykull)



Fig. 185: *C. japonicus*

59') Body yellowish red, about 1.65-1.75x as long as wide with punctures small but distinct (Fig. 185). Southeastern USA, not in Canada.

*Curelius japonicus* (Reitter)

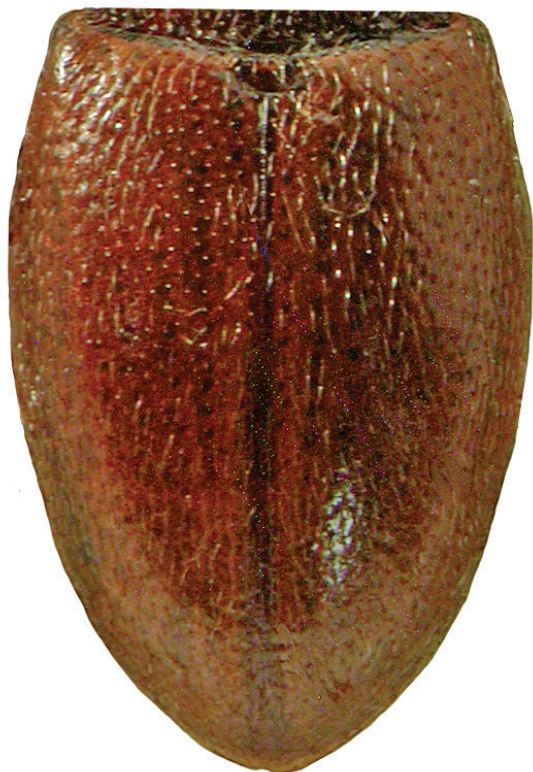


Fig. 186

60) Elytra with sides arcuate throughout, usually about 1.35-1.5x as long as wide (Fig. 186).

*Atomaria (Anchicera) ...61*



Fig. 187

60') Elytra with sides mostly straight, slightly convergent to subparallel at basal 0.35 (Fig. 187) to 0.65 (Fig. 188), usually about 1.5-1.8x as long as wide.

*Atomaria (Atomaria) ...94*



Fig. 188





Fig. 189



Fig. 190

61) Pronotum with a double side border along most of its length, sometime concealed at anterior 0.3 (Fig. 189).

62

61') Pronotum with a single side border (Fig. 190).

63

*Atomaria (Anchicera) morio*

Fig. 191

62) Pronotum with sides arcuate throughout widest posterior to middle, without strong basal impression. Body mostly dark brown to black (Fig. 191). Uncommon.

*Atomaria morio* Kolenati

*Atomaria munda*

Fig. 192

62') Pronotum orange with sides angulate, widest at middle, with strong basal impression. Elytra uniform yellowish brown (Fig. 192). Northern transcontinental Canada, Alaska and northern USA. Uncommon.

*Atomaria munda* Erichson

*Atomaria ornata*

Fig. 193

62'') Pronotum with sides angulate, widest anterior to middle, with strong basal impression. Elytra black with humeral and posterior 30% reddish to yellowish brown (Fig. 193). Introduced in British Columbia and Alberta. Rare.

*Atomaria ornata* Heer



Fig. 194

63) Pronotum with sides distinctly converging posteriorly (Fig. 194).

64



Fig. 195

63') Pronotum with sides mostly subparallel or slightly divergent posteriorly (Fig. 195).

87



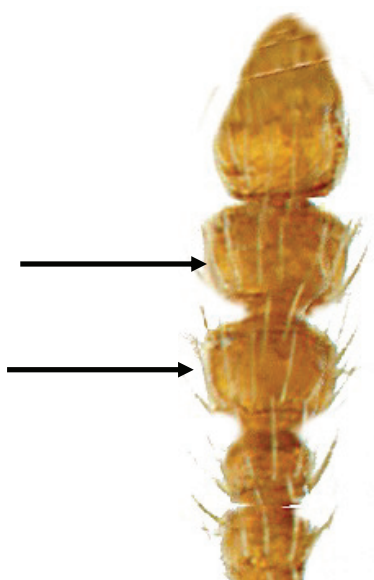


Fig. 196

64) Antennae with club broad and abrupt, A9-A10 strongly transverse (Fig. 196).

65

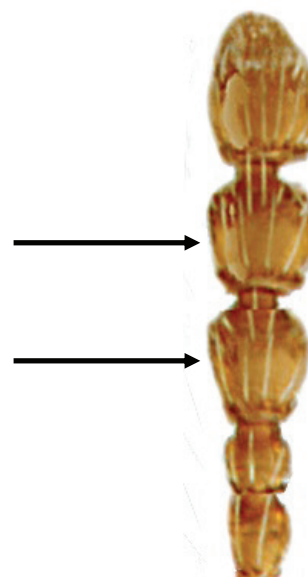


Fig. 197

64') Antennae with club narrow and more gradual, A9-A10 subquadrate (Fig. 197), A10 sometime slightly transverse.

70



Fig. 198

Fig. 200: *A. lewisi*

Fig. 199



Fig. 201

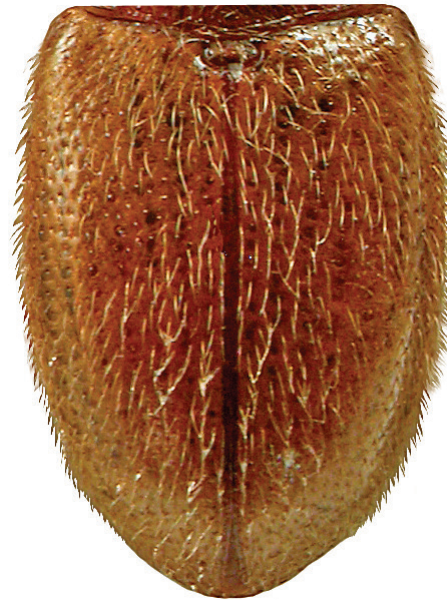
Fig. 202: *A. lewisi*

Fig. 203

65) Antennae with A1 arcuate, widened apically and elongate, about 1.5-2.0x as long as wide, about 1.6x or more as long as A2 (Fig. 198). Pronotum reddish brown, angulate at middle with punctures large and dense (Fig. 200). Elytra with pubescence longer and semi-erect (Fig. 202). Widespread. Very common.

*Atomaria lewisi* Reitter

65') Antennae with A1 straight, not widened apically, about 1.3x as long as A2 (Fig. 199). Pronotum with sides arcuate throughout (Fig. 201) or angulate and dark brown to black. Elytra with pubescence short and appressed (Fig. 203).

66



Fig. 204: *A. neomunda*



Fig. 205

66) Pronotum with both sides border completely visible along their entire length from dorsal view and double-sided borders in posterior 0.5 (Fig. 204). Northern transcontinental Canada and Alaska. Rare.

*Atomaria neomunda* Pelletier n.sp.

66') Pronotum with both sides border visible only in posterior 0.5 from dorsal view (Fig. 205).

67



Fig. 206: *A. pusilla*

Fig. 207

67) Length: 1.0-1.2 mm. Pronotum reddish brown with sides arcuate throughout, distinct transverse submarginal line near posterior margin and punctures small and sparse (Fig. 206). Elytra reddish to yellowish brown with sides slightly arcuate in anterior 0.65 (Fig. 208). Widespread indoor species.

*Atomaria pusilla* (Paykull)

Fig. 208: *A. pusilla*

Fig. 209

67') Length: 1.3-1.8 mm. Pronotum dark brown to black, with sides straight anteriorly and posteriorly, forming an angle at or before middle (Fig. 207). Elytra reddish to dark brown, more distinctly arcuate (Fig. 209).

69



Fig. 210

Fig. 212: *A. sodermani*

Fig. 211

Fig. 213: *A. peltata*

68) Length: 1.2-1.4 mm. Legs reddish to yellowish brown (Fig. 210). Pronotum widest at middle with punctures large and dense (Fig. 212). Elytra stouter, about 1.35-1.45x as long as wide (Fig. 214). Transcontinental Canada. Rare.

*Atomaria sodermani* Sjöberg

Fig. 214: *A. sodermani*Fig. 215 : *A. peltata*

68') Length: 1.5-1.8 mm. Legs reddish to dark brown (Fig. 211). Pronotum widest slightly in front of middle, with punctures moderately large and sparse (Fig. 213). Elytra longer, about 1.45-1.55x as long as wide (Fig. 215). British Columbia and Alaska. Rare.

*Atomaria peltata* Kraatz





Fig. 216

69) Pronotum with both side borders completely visible from dorsal view (Fig. 216). Mainly arctic or northern transcontinental Canada and Alaska.

70



Fig. 217

69') Pronotum with both side borders visible within posterior 0.5 only (Fig. 217). Widely distributed.

74



Fig. 218: *A. kamtschatica*

Fig. 219

Fig. 220: *A. kamtschatica*

Fig. 221

70) Pronotum with sides straight and subparallel from anterior 0.3 to 0.7 (Fig. 218). Elytra bicolor, usually dark brown to black with apical 20 to 40% and sometime up to basal 20% diffusely reddish brown (Fig. 220).

70') Pronotum with sides arcuate throughout (Fig. 219) or angulate in front of middle. Elytra uniform reddish brown or black (Fig. 221).

*Atomaria kamtschatica* Motschulsky

71



Fig. 222: *A. hudsonica*



Fig. 223

71) Pronotum with sides angulate in front of middle, widest at anterior 0.35 to 0.4 (Fig. 222).

*Atomaria hudsonica* Pelletier, n.sp.

71') Pronotum with sides arcuate, widest at or near middle (Fig. 223).

72



Fig. 224: *A. arcuaticollis*

Fig. 225

72) Pronotum brownish yellow, sides with posterior 0.4 mostly straight (Fig. 224). Elytra brownish yellow, stout, about 1.2-1.4x as long as wide (Fig. 226). Transcontinental Canada and Alaska. Rare.

*Atomaria arcuaticollis* Pelletier, n.sp.

Fig. 226: *A. arcuaticollis*

Fig. 227

72') Pronotum brown, with sides entirely arcuate (Fig. 225). Elytra reddish to yellowish brown, narrower, about 1.35-1.45x as long as wide (Fig. 227). Northern Canada and Alaska. Uncommon.

73





Fig. 228: *A. nigritaria*



Fig. 229: *A. aleutica*



Fig. 230: *A. nigritaria*



Fig. 231: *A. aleutica*

73) Pronotum black with moderately large and dense punctures (Fig. 228). Elytra black, elongate, about 1.5-1.6x as long as wide (Fig. 230). Southern Canada. Rare.

*Atomaria nigritaria* Pelletier, n.sp.

73') Pronotum brown with small and sparse punctures (Fig. 229). Elytra reddish to yellowish brown, stouter, about 1.35-1.45x as long as wide (Fig. 231). Northern Canada and Alaska. Uncommon.

*Atomaria aleutica* Casey

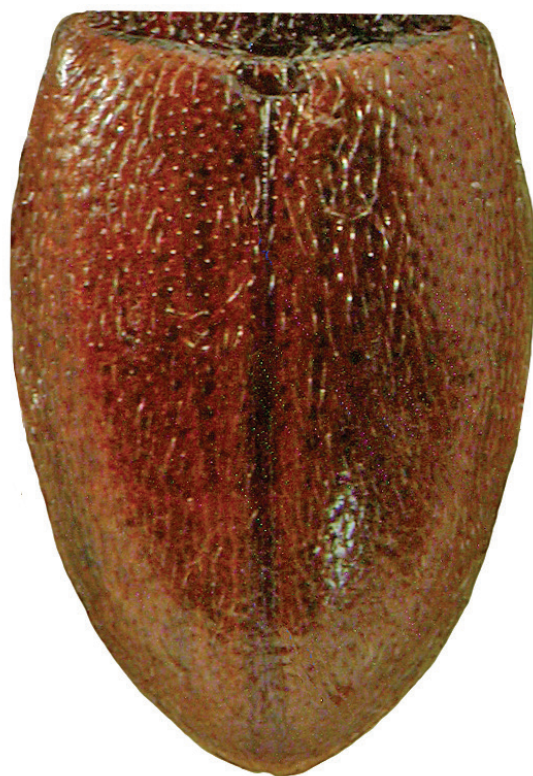


Fig. 232

74) Elytra unicolor, without distinctive pattern (Fig. 232).

75



Fig. 233

74') Elytra bicolor, with distinctive pattern (Fig. 233-234).

82



Fig. 234



Fig. 235. *A. nigrirostrisoides*

75) Pronotum with sides arcuate throughout, widest at posterior third, with very small punctures, distance between them much larger than the diameter of the puncture (Fig. 235). Transcontinental Canada and Alaska. Rare.

*Atomaria nigrirostrisoides* Pelletier



Fig. 236



Fig. 237

75') Pronotum with sides not arcuate throughout, mostly straight in posterior half, widest from middle to anterior third, with moderate (fig. 236) to large and dense punctures (Fig. 237), distance between them subequal to smaller than their average diameter.

76





Fig. 238



Fig. 239

76) Pronotum with sides arcuate, not forming a distinct angle at or in front of middle (Fig. 238).

77

76') Pronotum with sides straight, forming a distinct angle in front of middle (Fig. 239).

80



Fig. 240

77) Pronotum widest in front of middle, with hind margin narrowly bordered throughout, finely punctured, distance between them much larger than the diameter of the puncture (Fig. 240).



Fig. 241

77') Pronotum widest at middle, with hind margin broadly bordered at middle 35% only, moderately closely punctured, distance between them subequal to their average diameter (Fig. 241).



Fig. 242: *A. atra*

78) Body dark brown to black, often paler at apex of elytra (Fig. 242). Introduced in Eastern Canada.

*Atomaria atra* (Herbst)



Fig. 243: *A. salicicola*

78') Body reddish to yellowish brown (Fig. 243). Locally common in the Prairie zone (Alberta).

*Atomaria salicicola* Pelletier





Fig. 244: *A. ocularia*

79) Head with eyes very large, covering about 40% head width in dorsal view. Pronotum opaque, with distinct elongate microsculpture (Fig. 244). Temperate Prairie zone. Rare.

*Atomaria ocularia* Pelletier n.sp.



Fig. 245: *A. fuscata*

79') Head with eyes moderately large, covering about 30% head width in dorsal view. Pronotum glossy, without microsculpture (Fig. 245). Widely distributed and very common.

*Atomaria fuscata* Schönherr



Fig. 246



Fig. 247



Fig. 248

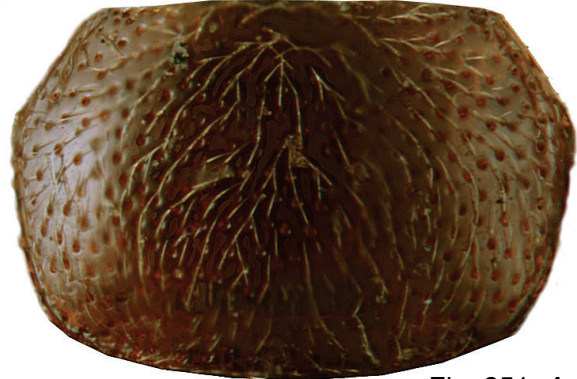


Fig. 249

80) Pronotum wider, about 1.45-1.6x as wide as long (Fig. 246). Elytra longer, about 1.5x or more as long as wide, about 2.8x as long as pronotum at middle (Fig. 248).

80') Pronotum narrower, about 1.35-1.5x as wide as long (Fig. 247). Elytra stouter, about 1.45x as long as wide or less, about 2.3x as long as pronotum at middle (Fig. 249).



Fig. 250: *A. oblongula*Fig. 251: *A. brevicollis*Fig. 252: *A. oblongula*Fig. 253: *A. brevicollis*

81) Pronotum reddish brown, with no basal impression (Fig. 250). Elytra reddish brown, widest at basal 0.35 (Fig. 252). Transcontinental Canada, Alaska, northern and western USA. Common.

*Atomaria oblongula* Casey

81') Pronotum dark brown, with deep basal impression (Fig. 251). Elytra yellowish brown, widest at or near middle (Fig. 253). Transcontinental Canada and western USA. Fairly common.

*Atomaria brevicollis* Casey





Fig. 254



Fig. 255



Fig. 256: *A. gilvipennis*



Fig. 257: *A. fulvipennis*

82) Antennae with A7 fusiform and A10 slightly transverse (Fig. 254). Legs yellowish brown (Fig. 256). Pronotum with small and sparse punctures (Fig. 258).

*Atomaria gilvipennis* Casey



Fig. 258: *A. gilvipennis*

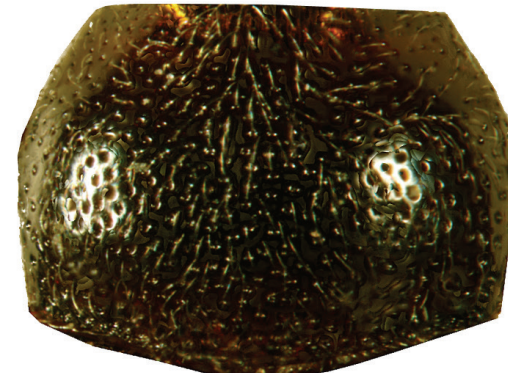


Fig. 259: *A. fulvipennis*

82') Antennae with A7 trapezoidal and A10 subquadrate (Fig. 255). Legs dark brown (Fig. 257). Pronotum with larger and denser punctures (Fig. 259).

*Atomaria fulvipennis* Mannerheim



Fig. 260

83) Elytra reddish brown with basal 10-50% black (Fig. 260).

84



Fig. 261

83') Elytra reddish to yellowish brown with two black oval oblique spot from anterior 30% at sides to 60% at suture (Fig. 261).

86

Fig. 262: *A. mesomela*

Fig. 263

Fig. 264: *A. mesomela*

Fig. 265

Fig. 266: *A. mesomela*

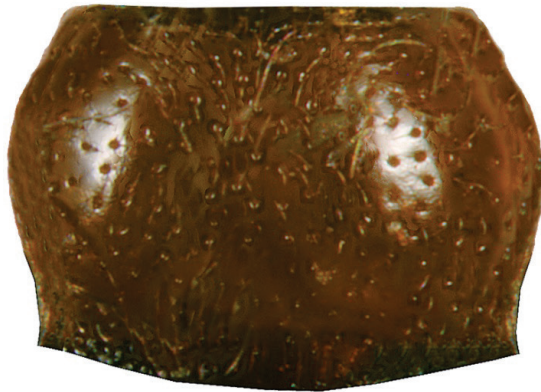
84) Legs yellowish brown with last tarsal segment black (Fig. 262). Pronotum with sides arcuate throughout (Fig. 264). Elytra usually with basal 40% at sides and 25% at suture black (Fig. 266). British Columbia. Rare.

*Atomaria mesomela* (Herbst)

84') Legs entirely yellowish brown (Fig. 263). Pronotum with sides straight at anterior 40% and posterior 40% (Fig. 265). Elytra usually patterned differently.

85



Fig. 267: *A. distincta*Fig. 268: *A. basalis*Fig. 269: *A. distincta*Fig. 270: *A. basalis*

85) Pronotum reddish brown, sides strongly arcuate at middle (Fig. 267). Elytra with anterior half black, contrasting with yellowish brown posterior half (Fig. 269). Mainly in eastern Canada and USA. Fairly common.

*Atomaria distincta* Casey

85') Pronotum black, rather angulate near middle (Fig. 268). Elytra predominantly yellowish brown, black covering from scutellar area to anterior 35% (Fig. 270). Transcontinental Canada and Alaska. Uncommon.

*Atomaria basalis* Erichson

Fig. 271: *A. ehippiata*Fig. 272: *A. laetula*Fig. 273: *A. ehippiata*Fig. 274: *A. laetula*

86) Pronotum black, sides strongly arcuate at middle (Fig. 271). Elytra with black oblique oval spot more contrasting with the yellowish brown background (Fig. 273). Widely distributed and very common.

*Atomaria ehippiata* Zimmermann

86') Pronotum reddish brown, rather angulate at middle (Fig. 272). Elytra with black spot more diffuse, covering from scutellar area to posterior 35% (Fig. 274). Mostly western Canada and USA. Rare.

*Atomaria laetula* LeConte



Fig. 275



Fig. 276



Fig. 277

87) Antennae with club broad and abrupt, A9-A10 strongly transverse (Fig. 275).

88

87') Antennae with club narrow and more gradual, A9-A10 subquadrate (Fig. 276) or A10 transverse (Fig. 277).

92





Fig. 278: *A. testacea*

88) Pronotum narrow, about 1.2-1.35x as wide as long with punctures moderately large and dense (Fig. 278). Separately introduced in eastern and western Canada and USA. Fairly common.

*Atomaria testacea* Stephens



Fig. 279

88') Pronotum wider, about 1.35-1.5x as wide as long or more with punctures variable (Fig. 279).

89

Fig. 280: *A. apicalis*

Fig. 281

Fig. 282: *A. apicalis*

Fig. 283

89) Pronotum with sides arcuate at anterior half, straight and divergent to subparallel at posterior 0.6, widest at base, punctures small (Fig. 280). Elytra stouter, about 1.2-1.35x as long as wide (Fig. 282). Transcontinental Canada, Alaska and northern USA. Very common.

*Atomaria apicalis* Erichson

89') Pronotum with sides straight at anterior 0.3-0.5, forming an obtuse angle in front of middle, punctures moderate to large (Fig. 281). Elytra more elongate, about 1.3-1.45X as long as wide. (Fig. 283).

90





Fig. 284



Fig. 285

Fig. 286: *A. lederi*

Fig. 287

90) Antennae with A5 trapezoidal and A7 subquadrate (Fig. 284). Pronotum moderately punctate, distance between punctures subequal to their average diameter, posterior corners obtuse, hind angle  $105^\circ$  (Fig. 286). Separately introduced in eastern and western Canada. Uncommon.

90') Antennae with A6-A8 transverse (Fig. 285). Pronotum densely punctate, distance between punctures shorter than their average diameter, posterior corners arcuate, angulate or square (Fig. 287). Transcontinental Canada, Alaska, northern and western USA.

*Atomaria lederi* Johnson

91





Fig. 288: *A. turgida*



Fig. 289: *A. inepta*

91) Pronotum with posterior corners angulate, hind angle 85-90° (Fig. 288). Elytra with sides strongly arcuate, about 1.25-1.35x as long as wide, 2.2-2.65x as long as pronotum (Fig. 290). Uncommon.

*Atomaria turgida* Erichson



Fig. 290: *A. turgida*



Fig. 291: *A. inepta*

91') Pronotum with posterior corners narrowly arcuate (Fig. 289). Elytra with sides slightly arcuate, about 1.30-1.45x as long as wide, 2.6-2.8x as long as pronotum (Fig. 291). Common.

*Atomaria inepta* Casey

Fig. 292. *A. parallelicollis*

Fig. 293

92) Antennae with A1 elongate, arcuate, about 2.2X as long as wide, about 1.8x or more as long as A2 (Fig. 292). Pronotum narrow, about 1.25-1.3x as long as wide, punctures large and dense, distance between them less than their average diameter (Fig. 294). Eastern Canada. Rare.

*Atomaria parallelicollis* Pelletier n.sp.

Fig. 294. *A. parallelicollis*

Fig. 295

92') Antennae with A1 short, stout, about 1.5X as long as wide, about 1.3x or less as long as A2 (Fig. 293). Pronotum wide, strongly transverse, about 1.4-1.5x as long as wide, punctures small and sparser, distance between them more than their average diameter (Fig. 295). Uncommon.

93



Fig. 296

93) Pronotum orange brown, about 1.35x as wide as long, punctures moderate. Elytra dark brown, with anterior 20% and posterior 35% diffusely reddish brown (Fig. 296). Western North America.

*Atomaria nubipennis* Casey



Fig. 297

93') Pronotum dark brown to black, about 1.45-1.5x as wide as long, punctures small. Elytra dark brown with apical 35% diffusely paler (Fig. 297). Western North America.

*Atomaria postpallens* Casey



Fig. 298

93'') Pronotum black, about 1.3-1.4x as wide as long, punctures small. Elytra reddish brown, often with 2 triangular spots, one at base and another inverted apically (Fig. 298). Transcontinental Canada and Alaska.

*Atomaria fulvipennis* Mannerheim (dark form)





Fig. 299



Fig. 300

Fig. 301: *A. fimetarii*

Fig. 302



Fig. 303

94) Antennae with A11 distinctly narrower than A10 (Fig. 299). Body cylindrical, very convex, pronotum stout, as broad as elytra. Elytra about 2.3-2.4x as long as pronotum (Fig. 301). Transcontinental Canada. Uncommon.

94') Antennae with A11 about as wide as A10 (Fig. 300). Body not cylindrical, pronotum usually transverse, about 1.25x as wide as long or more, elytra usually more than 2.5x as long as pronotum (Fig. 302-303).

*Atomaria fimetarii* (Fabricius)

95



Fig. 304

95) Pronotum with sharply defined basal transverse groove restricted to middle 35% (Fig. 304).

96



Fig. 305

95') Pronotum without transverse groove restricted to middle 35%, sometime with a less defined basal impression mostly covering base (Fig. 305).

101





Fig. 306: *A. impressa*



Fig. 307



Fig. 308: *A. impressa*



Fig. 309

96) Pronotum narrower than elytra base (Fig. 306), basal impression glossy, without carinae or punctures at middle but delimited at sides (Fig. 308). Rare.

96') Pronotum about as broad as elytra base (Fig. 307), basal impression with short carinae or oval punctures at middle (Fig. 309).

*Atomaria impressa* Erichson

97





Fig. 310

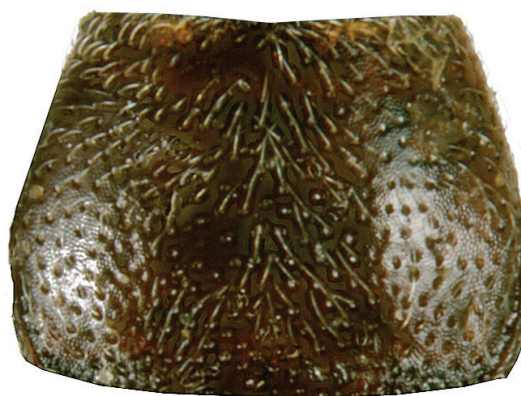


Fig. 311



Fig. 312

97) Pronotum with sides arcuate at anterior 0.65 (Fig. 310).

98

97') Pronotum with sides straight (Fig. 311) or sinuate (Fig. 312) at anterior 0.65.

100



Fig. 313

Fig. 314

Fig. 315: *A. visoni*

Fig. 316

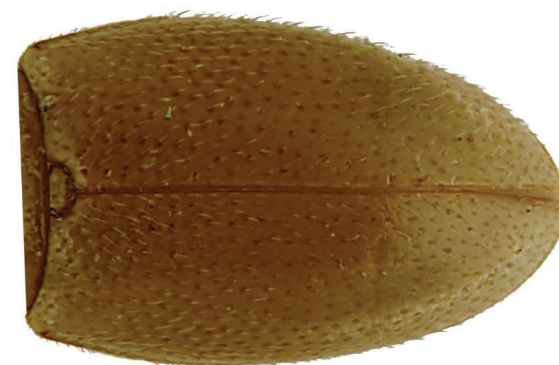
Fig. 317: *A. visoni*

Fig. 318

98) Antennae A1 about 1.6x as long as A2 (Fig. 313). Pronotum reddish to yellowish brown with narrow transverse basal groove without punctures (Fig. 315). Elytra yellowish brown (Fig. 317).

98') Antennae A1 twice as long as A2 (Fig. 314). Pronotum dark brown to black with broad transverse basal groove covered by deep punctures (Fig. 316). Elytra reddish to dark brown (Fig. 318).

*Atomaria visoni* Pelletier

99



Fig. 319

Fig. 320

Fig. 321: *A. nigrirostris*Fig. 322: *A. impressicollis*Fig. 323: *A. nigrirostris*Fig. 324: *A. impressicollis*

99) Antennae uniform yellowish brown (Fig. 319). Pronotum with sides arcuate throughout (Fig. 321). Elytra reddish to dark brown, with a small tooth at humeral corners (Fig. 323). Very common and widely distributed.

*Atomaria nigrirostris* Stephen

99') Antennae reddish brown with dark club (Fig. 320). Pronotum sides with anterior and posterior 0.4 more straight, obtusely angulate posterior to middle (Fig. 322). Elytra without a small tooth at humeral corners (Fig. 324). Northwest North America. Uncommon to rare.

*Atomaria impressicollis* Pelletier





Fig. 325: *A. capitata*



Fig. 326: *A. neocarinula*



Fig. 327: *A. capitata*



Fig. 328: *A. neocarinula*

100) Pronotum distinctly reticulate, with sides straight at anterior half (Fig. 325). Elytra dark brown to black, not distinctly patterned (Fig. 327). Mainly Northwestern Canada and Alaska. Uncommon.

*Atomaria capitata* (Casey)

100') Pronotum with sides sinuate at anterior half (Fig. 326). Elytra bicolor, reddish brown patterned with diffused blackish spot. (Fig. 328). Rare.

*Atomaria neocarinula* Pelletier



Fig. 329

101) Antennae with A4, A6-A10 strongly transverse (Fig. 329).

102



Fig. 330

101') Antennae variable but never with A7 strongly transverse, either subquadrate (Fig. 330) or trapezoidal (Fig.331).



Fig. 331

103

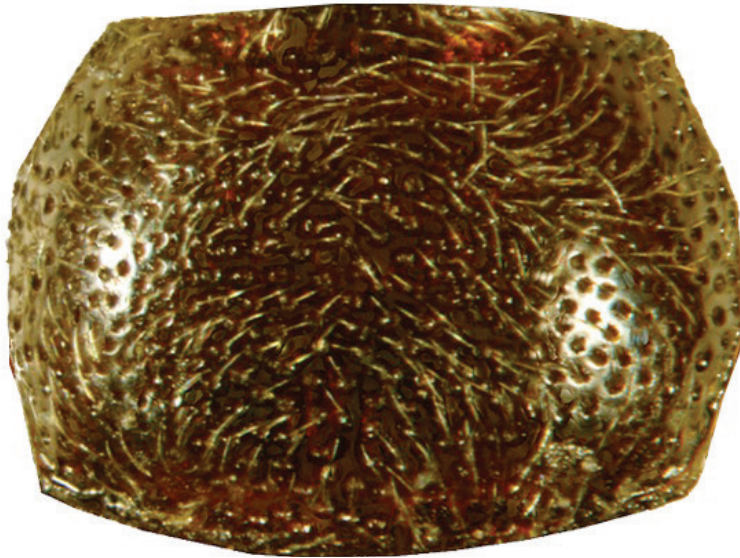


Fig. 332: *A. umbrina*

102) Pronotum with sides straight and subparallel at middle third (Fig. 332). Elytra with pilosity suberect. Transcontinental Canada. Uncommon. Introduced.

*Atomaria umbrina* Gyllenhal

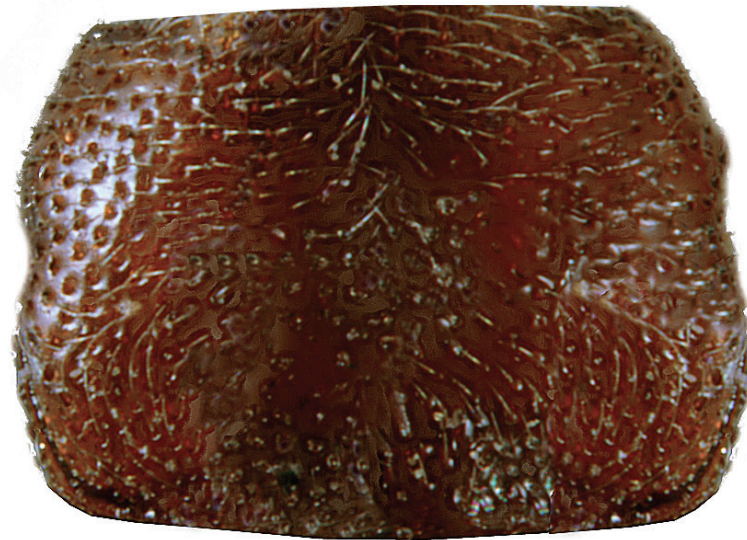


Fig. 333: *A. thujaplicatae*

102') Pronotum with sides strongly sinuate at middle third, about as wide at anterior third than at posterior third (Fig. 333). Elytra with pilosity appressed. British Columbia. Rare.

*Atomaria thujaplicatae* Pelletier





Fig. 334

103) Elytra with pubescence sparse and suberected (Fig. 334).

104



Fig. 335

103') Elytra with pubescence denser and appressed (Fig. 335).

106



Fig. 336

Fig. 337



Fig. 338: *A. puelloides*



Fig. 339



Fig. 340

104) Antennae with club reddish to yellowish brown (Fig. 336). Pronotum with sides distinctly sinuate at middle (Fig. 338). Southeastern USA (Georgia).

104') Antennae with club dark brown (Fig. 337). Pronotum with sides straight and subparallel at middle (Fig. 339) or arcuate in anterior 0.75 (Fig. 340). Western North America.

*Atomaria puelloides* Pelletier n.sp.

105



Fig. 341



Fig. 342

Fig. 343: *A. puella*Fig. 344: *A. versa*

105) Antennae with A8 transverse (Fig. 341). Pronotum reddish brown, sparsely punctate, distance between punctures wider than their average diameter, sides straight and subparallel in middle third (Fig. 343). Uncommon.

*Atomaria puella* (Casey)

105') Antennae with A8 subquadrate (Fig. 342). Pronotum dark brown to black, moderately punctate, distance between punctures subequal to their average diameter, arcuate, widest at posterior 0.25 (Fig. 344). Rare.

*Atomaria versa* Grouvelle





Fig. 345. *A. linearis*



Fig. 346



Fig. 347

106) Body elongate, pronotum subquadrate, about 1.15x as wide as long and elytra about 1.8x as long as wide (Fig. 345). Not recorded in Canada.

106') Body shorter, pronotum transverse, about 1.25x as wide as long or more, elytra usually less than 1.75x as long as wide (Figs. 346-347).

*Atomaria linearis* Stephens

107

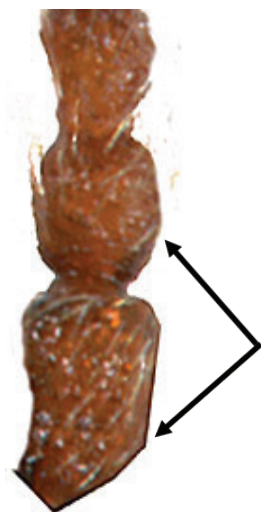


Fig. 348



Fig. 349

107) Antennae with A1 short, about 1.3x as long as its apical width, about 1.2-1.5x as long as A2 (Fig. 348).

108

107') Antennae with A1 long, arcuate, about 1.5x or more as long as its apical width, about 1.5-2x as long as A2 (Fig. 349).

114



Fig. 350



Fig. 351



Fig. 352

|  |  |   |
|--|--|---|
| 108) Pronotum with sides distinctly sinuate in anterior 0.75 (Fig. 350). Rare. | 108') Pronotum with sides arcuate throughout (Fig. 351). | 108'') Pronotum with sides distinctly angulate and widest at posterior 0.35-0.4 (Fig. 352). Transcontinental Canada and northern USA. |
| <u>109</u>   | <u>110</u>   | <u>112</u>  |





Fig. 353



Fig. 354



Fig. 355: *A. albertana*



Fig. 356: *A. ontariensis*

109) Antennae dark brown (Fig. 353). Elytra with rows of large punctures underneath (Fig. 355). Northern Alberta.

*Atomaria albertana* Pelletier n.sp.

109') Antennae reddish brown with club yellowish brown (Fig. 354). Elytra without rows of large punctures underneath (Fig. 356). Southern Ontario.

*Atomaria ontariensis* Pelletier n.sp.



Fig. 357: *A. orbicollis*



Fig. 358

110) Pronotum narrow, about 1.15-1.3x as wide as long, punctures small and sparse (Fig. 357). Southeastern Canada. Uncommon.

110') Pronotum wider, about 1.3-1.4x or more as wide as long, punctures larger and denser (Fig. 358).

*Atomaria orbicollis* Pelletier n.sp.

111



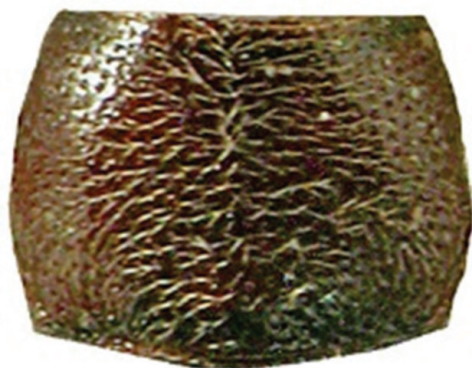
Fig. 359: *A. elongatula*

Fig. 360

Fig. 361: *A. elongatula*

Fig. 362

111) Length: 1.5-1.7 mm. Pronotum dark brown, widest at or near middle, punctures moderately large and dense (Fig. 359). Elytra about 1.5-1.6x as long as wide (Fig. 361), about 2.4-2.6x as long as pronotum. Transcontinental Canada and Alaska. Uncommon.

111') Length: 1.8-1.9mm. Pronotum reddish brown, narrower, widest at posterior 0.3 (Fig. 360). Elytra about 1.6-1.7x as long as wide (Fig. 362), about 2.65-2.85x as long as pronotum. Eastern Canada and USA. Uncommon.

*Atomaria elongatula* Erichson

112



Fig. 363: *A. forticornis*Fig. 364: *A. parviceps*Fig. 365: *A. forticornis*Fig. 366: *A. parviceps*

112) Pronotum with posterior 0.3 of sides strongly arcuate (Fig. 363). Elytra about 1.7-1.8x as long as wide (Fig. 365), with sides mostly subparallel and with distinct rows of punctures underneath. Mountains of southwestern USA. Rare.

*Atomaria forticornis* (Casey)

112') Pronotum with posterior 0.3 of sides straight to slightly arcuate (Fig. 364). Elytra about 1.6-1.7x as long as wide (Fig. 366), with sides distinctly divergent at basal 0.5 and without distinct rows of punctures underneath. Eastern Canada and USA. Uncommon.

*Atomaria parviceps* Notman

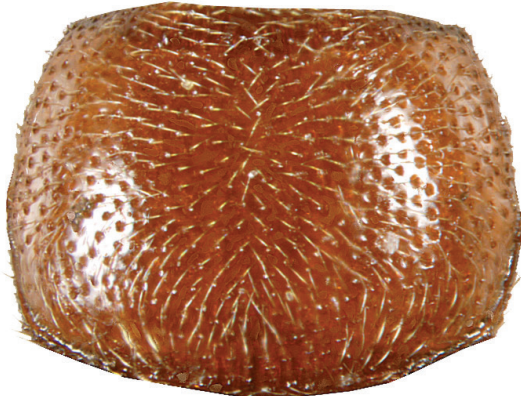
Fig. 367: *A. subdentata*

Fig. 368

Fig. 369: *A. subdentata*

Fig. 370

113) Pronotum dark brown, with sides straight in anterior half and a distinct tooth at posterior 0.35 (Fig. 367). Elytra yellowish brown, distinctly paler than pronotum (Fig. 369). Fairly common.

113') Pronotum reddish brown with sides slightly arcuate at anterior half (Fig. 368). Elytra reddish to yellowish brown, not distinctly paler than pronotum (Fig. 370).

*Atomaria subdentata* (Casey)

114





Fig. 371: *A. pinicola*

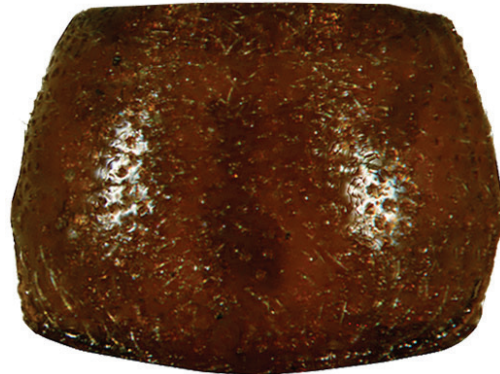


Fig. 372: *A. macra*



Fig. 373: *A. pinicola*



Fig. 374: *A. macra*

114) Pronotum widest at posterior 0.25 (Fig. 371). Elytra narrower, about 1.65-1.8x as long as wide, sides mainly subparallel (Fig. 373). Uncommon.

*Atomaria pinicola* Pelletier n. sp.

114') Pronotum widest at posterior 0.35 (Fig. 372). Elytra about 1.55-1.65x as long as wide, sides distinctly divergent, widest at posterior 0.4. (Fig. 374). Common.

*Atomaria macra* (Casey)





Fig. 375



Fig. 376



Fig. 377

|   |  |   |
|---|--|---|
| 115) Antennae with A9-A10 subquadrate (Fig. 375). | 115') Antennae with A9 subquadrate to slightly transverse and A10 transverse (Fig. 376). | 115'') Antennae with A9-A10 strongly transverse (Fig. 377). |
| <u>116</u>  | <u>118</u>   | <u>122</u>  |



Fig. 378: *A. coloradensis*



Fig. 379

116) Pronotum straight and subparallel at middle third (Fig. 378). Transcontinental Canada, Alaska and northern USA.

116') Pronotum with sides arcuate at anterior 0.35 and sinuate at middle (Fig. 379).

*Atomaria coloradensis* (Casey)

117

Fig. 380: *A. crassula*Fig. 381: *A. nigricollis*

117) Pronotum with punctures moderate, distance between them subequal to their average diameter (Fig. 380). Elytra stouter, about 1.45-1.55x as long as wide (Fig. 382). Eastern North America. Uncommon.

*Atomaria crassula* (Casey)

Fig. 382: *A. crassula*Fig. 383: *A. nigricollis*

117') Pronotum with punctures large, distance between them smaller than their average diameter (Fig. 381). Elytra more elongate, about 1.55-1.7x as long as wide (Fig. 383). Northern transcontinental Canada and western USA. Rare.

*Atomaria nigricollis* (Casey)





Fig. 384: *A. californica*

118) Pronotum with sides strongly sinuate at middle, nearly as wide at anterior 0.33 than at posterior 0.33 (Fig. 384). California. Rare.

*Atomaria californica* Pelletier



Fig. 385



Fig. 386

118') Pronotum with sides arcuate (Fig. 385) or mostly straight and subparallel (Fig. 386). Northern USA and Canada.

119



Fig. 387: *A. pumilio*



Fig. 388



Fig. 389: *A. pumilio*



Fig. 390

119) Pronotum arcuate throughout, widest at middle (Fig. 387). Elytra elongate, about 1.65-1.8x as long as wide, widest at middle (Fig. 389). Fairly common.

119') Pronotum with sides straight and subparallel at middle 0.35 (Fig. 388). Elytra stouter, about 1.55-1.65x as long as wide, widest in front of middle (Fig. 390).

*Atomaria pumilio* (Casey)

120





Fig. 391: *A. vespertina*

120) Pronotum with large and dense punctures, posterior corners arcuate (Fig. 391). Alaska and northern transcontinental Canada.

*Atomaria vespertina* Mäklin



Fig. 392



Fig. 393

120') Pronotum with small and sparse punctures, posterior corners obtuse (Fig. 392-393). Canada and northern USA.

121





Fig. 394: *A. atrata*



Fig. 395: *A. lineola*



Fig. 396: *A. atrata*



Fig. 397: *A. lineola*

121) Pronotum black, narrower than elytra (Fig. 394). Elytra black, about 1.4-1.55x as long as wide, widest at anterior 0.35-0.4 (Fig. 396).

*Atomaria atrata* Reitter

121') Pronotum reddish to dark brown, about as broad as elytra (Fig. 395). Elytra reddish to yellowish brown, about 1.55-1.65x as long as wide, widest at anterior 0.4-0.45 (Fig. 397). Very common.

*Atomaria lineola* (Notman)



Fig. 398: *A. lyricollis*



Fig. 399



Fig. 400

|  |   |  |
|--|---|--|
| 122) Pronotum with sides strongly sinuate at posterior 0.35 and subparallel at posterior 0.15 (Fig. 398). Prairie. Rare. | 122') Pronotum with sides arcuate or subparallel at anterior 0.3-0.7, not sinuate at middle (Fig. 399). | 122'') Pronotum with sides sinuate at middle (Fig. 400). |
| <u>Atomaria lyricollis</u> Pelletier   | <u>123</u>  | <u>127</u>   |





Fig. 401



Fig. 402



Fig. 403



Fig. 404

123) Pronotum with sides straight and subparallel from anterior 0.35 to 0.85 (Fig. 401). Elytra reddish to yellowish brown, elongate, about 1.6-1.75x as long as wide, widest posterior to middle (Fig. 403).

124

123') Pronotum with sides arcuate throughout, widest at posterior 0.25 to 0.35 (Fig. 402). Elytra dark brown to black, shorter, about 1.5-1.65x as long as wide, widest at middle (Fig. 404).

126



Fig. 405 *A. calidaria*

Fig. 406



Fig. 407



Fig. 408

124) Pronotum black (Fig. 405). Elytra yellowish brown, contrasting with pronotum, about 1.6x as long as wide, with sides divergent, widest posterior to middle (Fig. 407). Alberta. Rare.

124') Pronotum reddish brown (Fig. 406). Elytra reddish brown, as pronotum, about 1.65-1.8x as long as wide, with sides mostly subparallel (Fig. 408).

*Atomaria calidaria* Pelletier

125

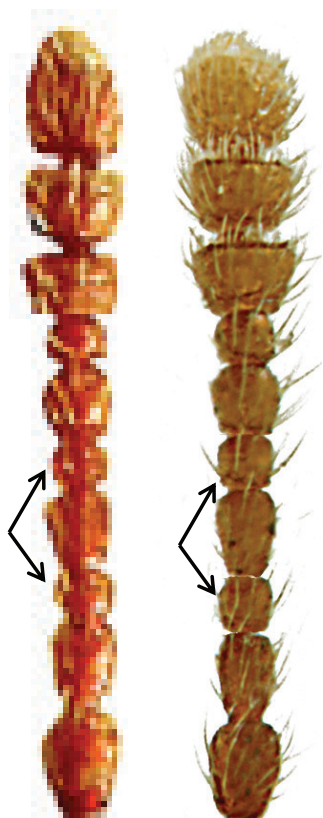
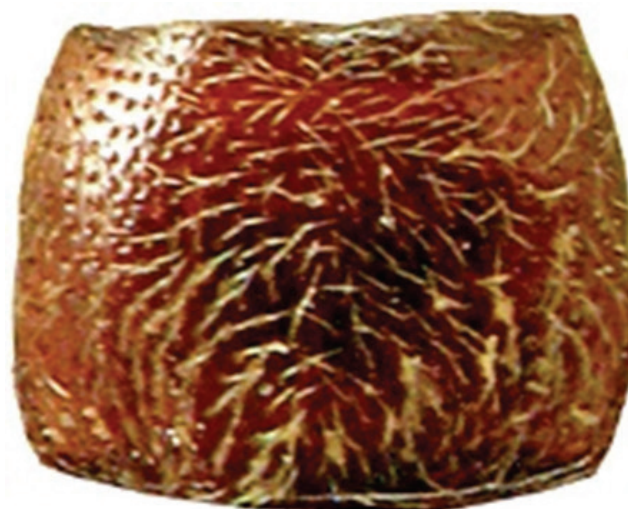


Fig. 409

Fig. 410

125) Antennae with A4 and A6 transverse (Fig. 409). Pronotum glossy, wider, about 1.28-1.35x as wide as long (Fig. 411).

*Atomaria alpina* Heer

Fig. 411: *A. alpina*Fig. 412: *A. planulata*

125') Antennae with A4 and A6 subquadrate (Fig. 410). Pronotum reticulate, opaque, nearly subquadrate, about 1.2-1.3x as wide as long (Fig. 412).

*Atomaria planulata* Mäklin



Fig. 413: *A. patens*Fig. 414: *A. tenebrosa*Fig. 415: *A. patens*Fig. 416: *A. tenebrosa*

126) Pronotum widest at posterior 0.35, punctures small and sparse, distance between them larger than their average diameter (Fig. 413). Elytra shorter, about 1.5-1.6x as long as wide, with punctures small and sparse (Fig. 415).

*Atomaria patens* (Casey)

126') Pronotum widest at posterior 0.25, punctures large and dense, distance between them shorter than their diameter (Fig. 414). Elytra longer, about 1.6-1.7x as long as wide, with punctures moderate and denser (Fig. 416).

*Atomaria tenebrosa* (Casey)





Fig. 417: *A. affinis*

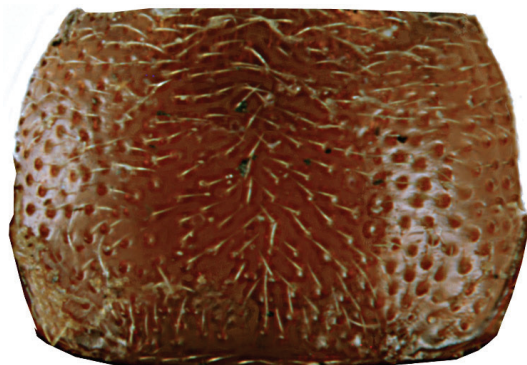


Fig. 418



Fig. 419: *A. affinis*



Fig. 420

127) Pronotum with sides arcuate at posterior 0.3 (Fig. 417). Elytra bicolor, reddish brown with a broad blackish median transverse band (Fig. 419).

127') Pronotum with sides straight at posterior 0.3 (Fig. 418). Elytra uniform reddish to yellowish brown, without distinct median band (Fig. 420).

*Atomaria affinis* Sahlberg

128



Fig. 421

128) Pronotum with sides strongly sinuate, usually with distinct angle or narrowly arcuate in posterior 0.25-0.35 (Fig. 421).

129



Fig. 422

128') Pronotum with sides slightly sinuate, narrowly arcuate in posterior 0.25-0.35 (Fig. 422).

131



Fig. 423: *A. quadricollis*

129) Pronotum slightly transverse, reticulate, opaque, about 1.2-1.3x as wide as long, with punctures small and sparse, distance between them larger than their average diameter (Fig. 423). Transcontinental Canada and northern USA. Uncommon.

*Atomaria quadricollis* (Casey)

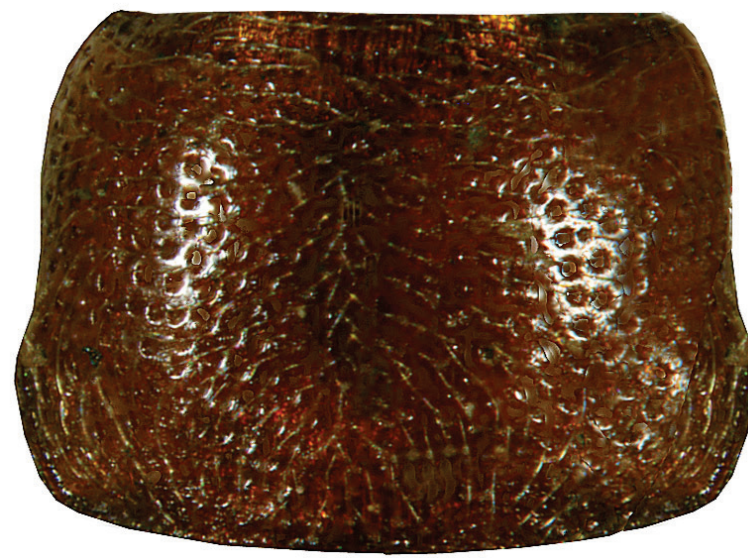
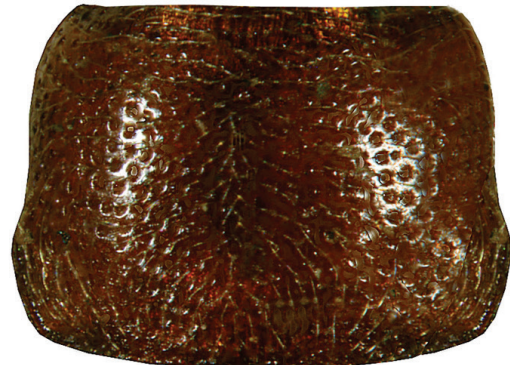


Fig. 424

129') Pronotum more transverse, about 1.3-1.45x as wide as long, glossy, with punctures moderate and denser, distance between them subequal to smaller than their average diameter (Fig. 424). Western North America.

130



Fig. 425: *A. stricticollis*Fig. 426: *A. subrecta*Fig. 427 : *A. stricticollis*Fig. 428: *A. subrecta*

130) Pronotum with sides distinctly angulate at posterior 0.35, punctures moderate, their distance subequal to their average diameter (Fig. 425). Elytra yellowish brown with punctures small and sparse (Fig. 427).

*Atomaria stricticollis* (Casey)

130') Pronotum with sides narrowly arcuate at posterior 0.25, punctures larger, their distance smaller than their average diameter (Fig. 426). Elytra reddish brown with punctures moderate and more dense (Fig. 428).

*Atomaria subrecta* (Casey)



Fig. 429

131) Pronotum with anterior 0.35 subequal in width to posterior 0.35 (Fig. 429).

132



Fig. 430

131') Pronotum with anterior 0.35 narrower in width to posterior 0.35 (Fig. 430).

133





Fig. 431: *A. undulata*



Fig. 432: *A. cribricollis*

132) Pronotum reddish brown, with punctures moderately large and dense, distance between them subequal to the their average diameter (Fig. 431). Transcontinental Canada, Alaska and northern USA. Common.

*Atomaria undulata* (Casey)

132') Pronotum dark brown to black, with punctures very large and dense (distance between them smaller than the diameter of the punctures (Fig. 432). Western USA and Canada. Uncommon.

*Atomaria cribricollis* Pelletier n. sp.





Fig. 433: *A. pseudotsugae*



Fig. 434



Fig. 435: *A. pseudotsugae*



Fig. 436

133) Pronotum with double side borders in posterior 0.35 (Fig. 433). Elytra stouter, about 1.5x as long as wide (Fig. 435). British Columbia. Rare.

133') Pronotum with single side border throughout (Fig. 434). Elytra longer, about 1.55-1.8x as long as wide (Fig. 436).

*Atomaria pseudotsugae* Pelletier n.sp.

134



Fig. 437: *A. longipennis*



Fig. 438



Fig. 439: *A. longipennis*



Fig. 440

134) Pronotum about 1.38-1.5x as wide as long (Fig. 437). Elytra elongate, about 1.7-1.95x as long as wide (Fig. 439). Mostly western North America. Uncommon.

134') Pronotum about 1.28-1.35x as wide as long (Fig. 438). Elytra stouter, about 1.5-1.7x as long as wide (Fig. 440).

*Atomaria longipennis* (Casey)

135



Fig. 441: *A. dispersa*Fig. 452: *A. constricta*

135) Pronotum arcuate in posterior 0.4, punctures small and sparse, their distance larger than their average diameter (Fig. 441). Elytra about 1.62-1.7x as long as wide (Fig. 443). Transcontinental Canada and Alaska.

*Atomaria dispersa* (Casey)

Fig. 443: *A. dispersa*Fig. 444: *A. constricta*

135') Pronotum straight in posterior 0.35, punctures moderate to large, their distance at least subequal to their average diameter (Fig. 442). Elytra about 1.55-1.62x as long as wide (Fig. 444). Widespread but uncommon.

*Atomaria constricta* (Casey)



## *Antherophagus convexulus* LeConte

**Length** 3.0-3.5 mm. **Head** reddish brown with clypeus and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; A1 stout, slightly elongate, about 1.2x as long as wide, about 2.5x as long as A2; A2-A3 transverse, A2 about 1.25x as long as A3, A3 about 1.33x as long as A4; A4-A6 subequal, strongly transverse, about 0.75x as long as A7; A7-A8 subequal, transverse; A9-A10 strongly transverse; A11 slightly elongate. **Pronotum reddish brown; strongly transverse, about 1.6x (1.55-1.7x) as wide as long; sides mostly straight, subparallel, slightly convergent in anterior 0.25 and slightly convergent in posterior 0.15, hind angles about 92°; glossy, punctures small and moderately dense (distance between them slightly larger than their average diameter), pubescence moderately short and sparse, radiating anteriorly and laterally from posterior 20% at middle. Scutellum yellowish brown. Sternum yellowish brown. Legs yellowish brown. Elytra yellowish brown, about 1.45x (1.4-1.48x) as long as wide, about 2.75x (2.65-2.8x) as long as pronotum, sides straight and slightly convergent in anterior 0.25, slightly arcuate in posterior 0.75, widest at basal 0.25; surface opaque, each with 8 rows of punctures and minute sparse punctures in interspace, pubescence shorter and decumbent. Abdominal ventrites yellowish brown.**

**Similar species:** *Antherophagus ochraceus* is larger, length between 4 and 5 mm and pronotum with sides arcuate, widest at posterior 0.35. *A. pallidivestis* has body covered with pale silvery grey pubescence and pronotum with sides straight, convergent in anterior 0.65, widest at posterior 0.35.

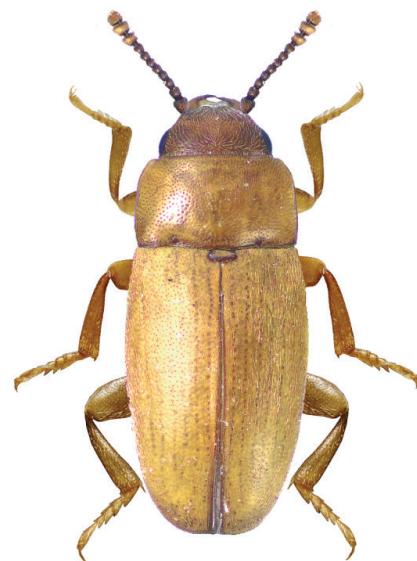
**Distribution:** Nova Scotia west to Alberta and Alaska, mostly in the eastern Boreal, Mixedwood Plain, and Northern Appalachian zones, also in Southern Appalachian and Marine West Coast Forest zones. **First record in Saskatchewan, Alberta, and Alaska.** Fairly common.

**Seasonality:** From the first week of June to the first week of September, mostly between the third week of June and the second week of July, peaking in the first week of July.

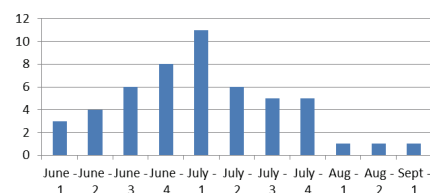
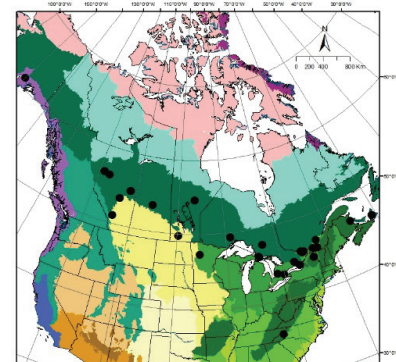
**Habitats:** Fairly common at edges of trembling aspen and black spruce forests near shores or fields, also in mature red oak forests (Webster et al., 2012). One specimen collected on *Picea mariana*, also on flowers of *Spiraea alba*.

**Number of specimens examined:** 51.

**DNA Barcode Index Number (BIN):** BOLD:AAP7084



*Antherophagus convexulus*



## *Antherophagus ochraceus* Melsheimer

(Syn.: *A. subnitidus* Grouvelle, 1911; *A. oregonus* Casey, 1924)

**Length 4.0-5.0 mm. Body entirely pale yellowish brown with dense golden yellow pubescence. Eyes very small, about 15% width of head, covering about 15% of sides with temple width about 50% of eye diameter in dorsal view. Antennae reddish brown with club yellowish brown; A1 stout, subquadrate, about 2.25x as long as A2; A2-A3 subequal, trapezoidal, about 1.25x as long as A4; A4-A7 subequal, subquadrate, about 1.33x as long as A8; A8 transverse; A9 subquadrate; A10 strongly transverse; A11 slightly elongate. Pronotum strongly transverse, about 1.7x (1.63-1.75x) as wide as long; sides arcuate and convergent in anterior 0.5, nearly straight at middle, arcuate and convergent in posterior 0.35, widest at posterior 0.35, hind corner about 110°; glossy, punctures moderately large and very dense (distance between them smaller than their average diameter), pubescence moderately long and very dense, radiating anteriorly and laterally from posterior 20% at middle. Elytra about 1.4x (1.32-1.45x) as long as wide, about 2.5x (2.2-2.8x) as long as pronotum, sides straight, slightly convergent in anterior 0.35 and slightly arcuate in posterior 0.65; surface opaque, each with 8 diffuse rows of punctures and small dense punctures in interspace, pubescence very dense.**

**Similar species:** The largest Cryptophagidae in Canada, quite distinctive with its large size and entirely pale yellowish brown body with golden pubescence. All other *Antherophagus* species are smaller, length usually less than 3.8 mm. *A. pallidivestis* has body covered with pale silvery grey pubescence and eyes larger, covering 50% of side with temple length about 15% eye diameter. *A. convexulus* has pronotum with sides mostly straight and subparallel.

**Distribution:** Newfoundland west to British Columbia, south to Georgia, New Mexico, and California, mostly in the eastern Boreal, Mixedwood Plain, Northern Appalachian, Temperate Prairie, Western Cordillera, and Marine West Coast Forest zones, also in the Taiga, Southeastern USA Forest Plain, and Cold Desert zones.

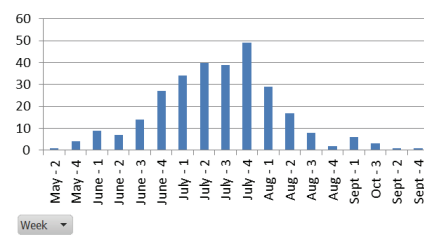
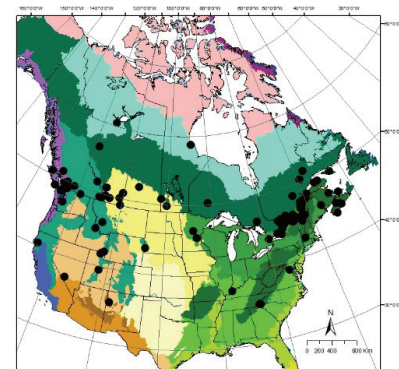
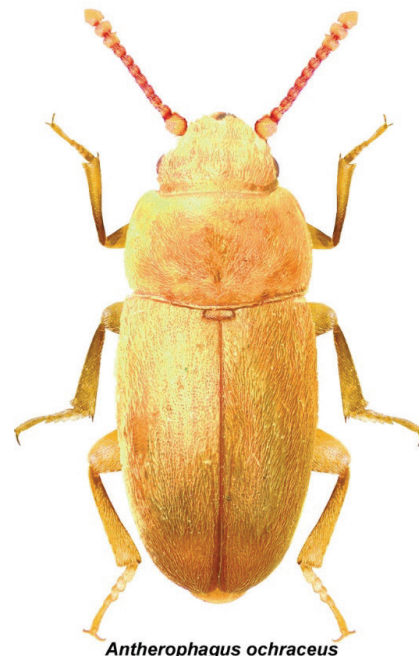
**First record in Northwest Territories.** Common.

**Seasonality:** From the second week of May to the last week of September, mostly from the last week of June to the second week of August, peaking in the last week of July.

**Habitats:** Grasslands, open fields with forbs, thickets, and shrubs, burnt lands, burned black spruce forests regenerated with fireweeds, blueberries, or other Ericaceae (*Kalmia*, *Ledon*, *Rhododendron*) after 20 to 80 years, partially cut black spruce forests; trembling aspen and balsam poplar forests on stumps and logs (Hammond et al., 2001). Often collected in beehives.

**Number of specimens examined:** 245.

**DNA Barcode Index Number (BIN):** [BOLD:ACB0233](#)



## *Antherophagus pallidivestis* Casey

**Length** 3.0–4.1 mm. **Body** entirely pale brownish yellow with **dense pale silvery grey pubescence**. **Eyes** small, about 15% width of head, **covering about 50% of sides with temple about 15% of eye diameter in dorsal view**. **Antennae** reddish to dark brown except A1 yellowish brown; A1 stout, subquadrate, about 2x as long as A2; A2 transverse, about 1.4x as long as A3; A3–A7 subequal, strongly transverse, about 0.8x as long as A8; A8 transverse; A9 subquadrate; A10 strongly transverse; A11 subquadrate and subconical. **Pronotum** strongly transverse, about 1.65x (1.6–1.7x) as wide as long; **sides entirely arcuate widest at posterior 0.4, hind angle about 100°; opaque, punctures moderately large and very dense** (distance between them smaller than their average diameter), pubescence moderately long and dense, radiating anteriorly and laterally from posterior 20% at middle. **Elytra** about 1.45x (1.42–1.5x) as long as wide, about 2.6x (2.55–2.65x) as long as pronotum, sides straight, subparallel and widest at anterior 0.35, slightly convergent and arcuate in posterior 0.65; surface opaque, rows of punctures almost invisible and minute dense punctures.

**Similar species:** *Antherophagus ochraceus* is larger, length 4–5 mm and has body covered with dense golden pubescence. *A. convexulus* has body with sparser pale yellowish pubescence and pronotum with sides mostly straight, subparallel and punctation sparser, giving a glossier appearance.

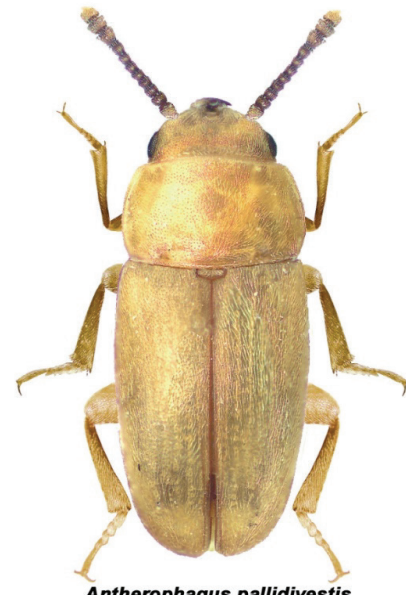
**Distribution:** Newfoundland west to British Columbia, south to Utah and Colorado, mostly in the Northern Appalachian, Western Cordillera, and Marine West Coast Forest zones, also in the eastern Boreal and Cold Desert zones. **First record in Newfoundland, New Brunswick, Quebec, Ontario, and Alberta.** Because of the large gap in distribution, it is possibly adventive in eastern Canada. Uncommon.

**Seasonality:** From the last week of May to the third week of September, peaking the last week of July.

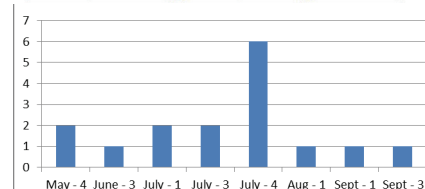
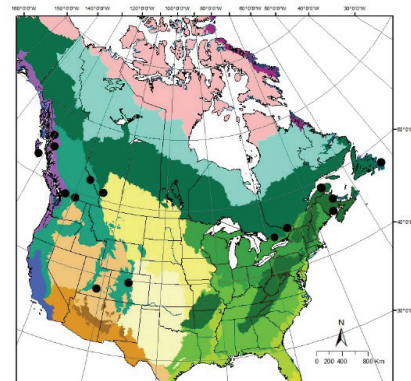
**Habitats:** Grasslands.

**Number of specimens examined:** 17.

**DNA Barcode Index Number (BIN):** BOLD:AAP7084



*Antherophagus pallidivestis*





## *Antherophagus suturalis* Mäklin

**Length** 3.5-3.9 mm. **Body covered with very short sparse silvery pubescence.** **Head reddish to dark brown** with clypeus and mandibles reddish brown; palpi yellowish brown. **Eyes** very small, about 15% width of head in dorsal view. **Antennae** reddish brown with club yellowish brown; A1 stout, slightly transverse, about 1.6x as long as A2; A2-A3 subequal, transverse, about 1.4x as long as A4; A4-A7 subequal, strongly transverse, about 1.15x as long as A8; A8 transverse; A9-A10 strongly transverse; A11 slightly elongate and subconical. **Pronotum dark reddish to dark brown**, strongly transverse, about 1.6x (1.55-1.65x) as wide as long; **sides arcuate in anterior 0.25-0.3, straight and slightly convergent in posterior 0.67-0.75**, hind angle about 90-95°; glossy, punctures moderately small and dense (distance between them subequal to their average diameter), pubescence very short and sparse. **Elytra reddish to darker brown, with area along suture and sometime apex pale brown**, about 1.4x (1.33-1.46x) as long as wide, about 2.75x (2.7-2.85x) as long as pronotum, sides straight and slightly convergent in anterior 0.3, slightly arcuate in posterior 0.7, widest at basal 0.3; surface glossy, rows of punctures almost invisible, punctures small and sparse.

**Similar species:** *A. convexulus* has pronotum reddish brown and elytra yellowish brown with pale yellowish pubescence.

**Distribution:** Saskatchewan west to Alaska, British Columbia, south to Utah, mostly in the Boreal and Western Cordillera zones, also in the Marine West Coast Forest and the Temperate Prairie zones. **First record for Saskatchewan and Alberta.** Uncommon.

**Seasonality:** From the second week of June to the last week of August, mostly between the first and the third week of July.

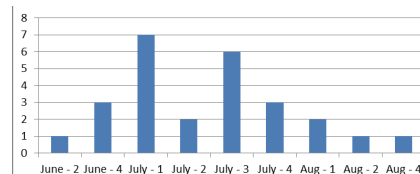
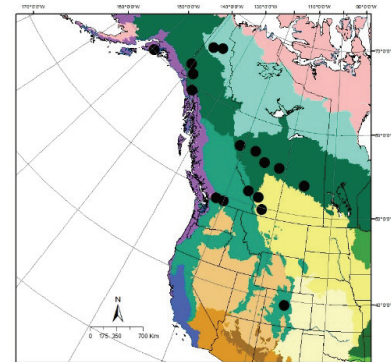
**Habitats:** Poorly known. On beach in driftwood and on snow fields.

**Number of specimens examined:** 26.

**DNA Barcode Index Number (BIN):** [BOLD:ACB0233](#)



*Antherophagus suturalis*



## *Cryptophagus acutangulus* Gyllenhal

(Syn.: *C. prominens* Casey, 1924; *C. restrictus* Casey, 1924)

**Length** 1.9–2.8 mm. **Head** dark reddish brown to dark brown; clypeus, mandibles and palpi reddish brown; eyes hemispherical, about 30% width of head. **Antennae** reddish to dark brown; A1 slightly elongate, nearly subquadrate, about 1.4x as long as A2; A2–A3 subequal, A2 trapezoidal, A3 elongate, fusiform, about 1.4x as long as A4; A4–A7 trapezoidal, A4–A5 subequal, about 1.2x as long as A6, A6–A7 subequal, about 1.25x as long as A8; A8 subquadrate; A9 slightly transverse, **A10 strongly transverse, width subequal to A9**; A11 slightly elongate, subconical. **Pronotum** reddish to dark brown; strongly transverse, about 1.5x (1.45–1.55x) as wide as long; **callosity covering 16–22% of the side, strongly produced laterally, covered by a dorsal rim, pronotum widest at callosities; sides strongly concave between callosity and tooth, straight and converging from tooth to base**, hind angles about 115°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and sparse. Scutellum reddish to dark brown. Prosternum and mesoventrite reddish brown, metaventrite reddish to yellowish brown. Legs yellowish brown. **Elytra yellowish brown, elongate, about 1.55x (1.45–1.6x) as long as wide, about 3x (2.9–3.1x) as long as pronotum, sides straight, nearly subparallel in basal 0.6, then slightly arcuate to apex**; surface glossy with moderately small punctures, pubescence dense and appressed. Abdominal ventrites yellowish brown.

**Similar species:** This species is very distinctive with the strongly produced callosity of its pronotum and cannot be confused with any Nearctic species. *Cryptophagus peregrinus* has pronotum as wide at callosities as at middle teeth and elytra with pubescence sparser and double, mostly suberect.

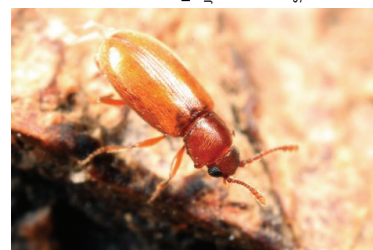
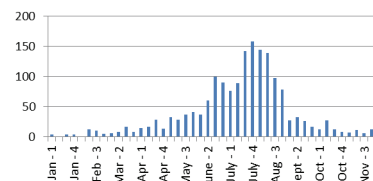
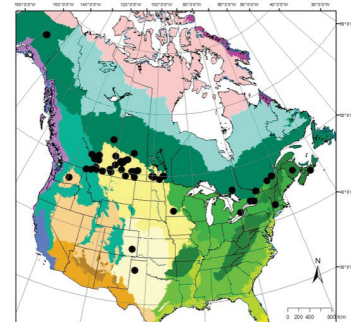
**Distribution:** Widely distributed indoors. In nature, mostly from Manitoba to British Columbia north to Alaska in the Temperate Prairie, Boreal, and Western Cordillera zones. Common. **Seasonality:** In nature, from the second week of May to the last week of June; indoor, active throughout the year, mostly from the second week of June to the last week of August, peaking on the last week of July.

**Habitat:** Mostly in stored grain, grain elevators and flour mills, also in house basements, firewood, sometimes kitchens (Bousquet, 1991). In nature, in white birch and trembling aspen forests, Ponderosa pine forests, Douglas-fir forests, and mixed forests (Webster et al. 2012). Collected on *Pseudotsuga menziesii*. Woodroffe & Coombs (1961) mentioned peach orchard and, as host plants, *Solidago*, *Salix*, and *Pinus ponderosa*.

**Number of specimens examined:** 178.

**Remarks:** This species probably originated from the Temperate Prairie zone and now, it is widespread worldwide, mostly through grain elevators, flour mills and international grain shipping.

**DNA Barcode Index Number (BIN):** BOLD:AAO0110



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## *Cryptophagus bidentatus* Mäklin

(Syn.: *C. punctatissimus* Mäklin, 1853)

**Length** 2.0-2.5 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown; A1 subquadrate, about 1.2x as long as A2; A2-A3 subequal, A2 elongate oval, A3 fusiform, about 1.5x as long as A4; A4-A5 subequal, trapezoidal, about 1.25x as long as A6; A6-A8 subequal, A6-A7 trapezoidal, A8 subquadrate; A9-A10 strongly transverse and A11 slightly elongate, subconical. **Pronotum** reddish brown; transverse, about 1.5x (1.45-1.55x) as wide as long; **callosity moderate, covering 20-25% of the side, slightly prominent laterally**, not projecting anteriorly, **width subequal to smaller to its distance to the tooth**, with moderate dorsal rim forming a right angle posteriorly; **pronotum widest at middle**; **sides angled at middle tooth, rather straight to slightly concave between callosity and tooth, straight to slightly convex and convergent from tooth to base**, hind angles about 105-110°; glossy, punctures very strong and dense (almost touching), pubescence moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra** reddish brown, **elongate, about 1.6x (1.5-1.7x) as long as wide**, about 2.75x (2.6-2.85x) as long as pronotum, sides straight, slightly convergent in basal 0.55, then arcuate to apex; surface glossy with moderately strong punctures, pubescence single, appressed, moderately fine and dense. Abdominal ventrites reddish brown.

**Similar species:** *Cryptophagus confertus* has a pronotum with thicker callosities, sides more sinuate, concave between callosity and tooth, width subequal at callosities and at middle teeth. *C. corticinus* has elytra more elongate, about 3x as long as pronotum, with sides more parallel. *C. scutellatus*, *C. dentatus* and *C. corticinus* have pronotum with lateral teeth in front of middle of sides.

**Distribution:** Transcontinental Canada and northern USA, from Quebec west to Alaska and British Columbia south to Colorado, mostly in the Tundra, Taiga, Boreal, Western Cordillera, and Marine West Coast zones. **First record in Quebec, Ontario, Manitoba, Alberta and Yukon Territories.** Common. **Holarctic.**

**Seasonality:** From the second week of April to the first week of October, mostly between the second week of June and the last week of July, peaking from the third week of June to the first week of July.

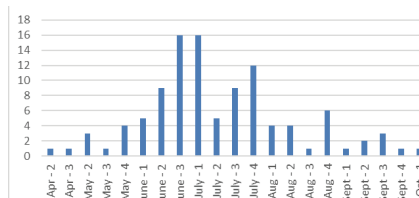
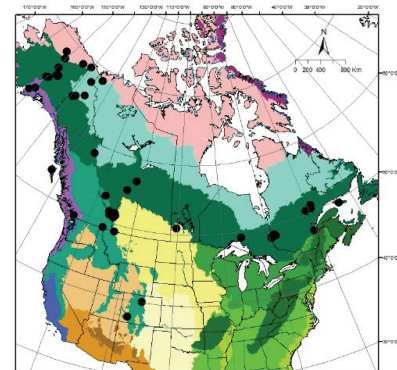
**Habitat:** Black spruce forests with partial cutting or damaged with girdling, mixed black and white spruce forests, white cedar forests with balsam fir, white spruce forests, white spruce forests mixed with white birch, willows and alders; Engelmann spruce forests, subalpine fir forests (Woodroffe & Coombs, 1961); white birch and trembling aspen forests, black spruce bogs, willow stands, and alpine tundra.

**Number of specimens examined:** 105, including a syntype from Finland.

**DNA Barcode Index Number (BIN):** BOLD:ACZ1265



*Cryptophagus bidentatus*





## *Cryptophagus cellaris* (Scopoli)

(Syn.: *C. rupimontis* Casey, 1924; *C. angustatus* Casey, 1924)

**Length** 2.0-3.0 mm. **Head** dark reddish brown to dark brown; clypeus, mandibles and palpi reddish brown; eyes about 20% width of head. **Antennae** reddish to dark brown with club yellowish brown; A1 nearly subquadrate, about 1.4x as long as A2; A2 slightly elongate, trapezoidal, about 0.8x as long as A3, A3 elongate fusiform, about 1.4x as long as A4; A4-A8 trapezoidal, A4 about 0.8x as long as A5, A5 about 1.5x as long as A6, A6-A8 subequal; A9 and A10 transverse; A11 slightly elongate, subconical. **Pronotum** reddish to dark brown; transverse, about 1.4x as wide as long; **callosity** small, covering 20% of the side, slightly prominent laterally, not projecting anteriorly, width about 70% its distance to the tooth, with moderate to weak dorsal rim; pronotum widest at middle; **sides** rather straight between callosity and tooth, straight and convergent from tooth to base, hind angles about 105°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum reddish to dark brown. Prosternum and mesoventrite reddish brown, metaventricle reddish to yellowish brown. Legs yellowish brown. **Elytra** yellowish brown, elongate, about 1.55x as long as wide, about 2.8x as long as pronotum, **sides** straight, nearly subparallel in basal 0.55, then arcuate to apex; surface glossy with moderately small punctures, pubescence dense and appressed. Abdominal ventrites yellowish brown.

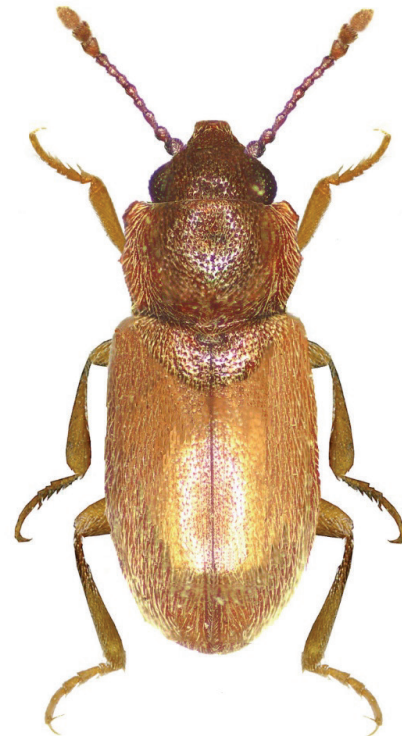
**Similar species:** *Cryptophagus mainensis* has pronotum with very large callosity nearly 1.4x-2x as wide as its distance to the tooth. *C. valens* and *C. histicus* have pronotum with callosity not prominent and elytra with sides evenly arcuate throughout. *C. laticollis* has pronotum with callosity width larger than its distance to the lateral tooth, sides strongly convex between tooth and posterior margin. *C. setulosus* has pronotum with callosity wider than its distance to the tooth, sides convex between tooth and posterior margin. *C. tuberculosus* has pronotum with lateral tooth located behind middle of sides and callosity prominent anteriorly but not laterally. *C. croceus* has pronotum with callosity subequal to slightly smaller than its distance to lateral tooth, sides sinuate from tooth to the posterior margin.

**Distribution:** Widespread nearly worldwide following urbanisation and commerce. **First record in Yukon Territories.** Fairly common. **Adventive from Europe.**

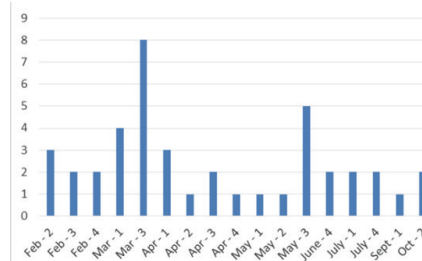
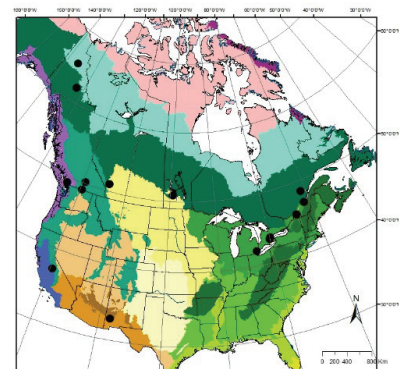
**Seasonality:** From the second week of February to the second week of October, probably active throughout the year indoor.

**Habitat:** Fairly common indoors, in stored products, often associated with wheat, flour, soybean meal, beans (Bousquet, 1991); oats, barley, rice, bran, bread, linseed, dried fruit (Klimaszewski et al., 2015) and in wine cellars.

**Number of specimens examined:** 47.



*Cryptophagus cellaris*



# *Cryptophagus confertus* Casey

(Syn.: *C. archangelicus* Sahlberg, 1926 )

**Length** 2.0-2.8 mm. **Head** dark reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown; A1-A3 subequal, A1 subquadrate, A2 elongate oval, A3 fusiform, about 1.67x as long as A4; A4-A5 subequal, trapezoidal, about 1.25x as long as A6; A6-A8 subequal, subquadrate; A9-A10 strongly transverse and A11 slightly elongate, strongly diagonally truncate. **Pronotum** reddish brown; transverse, about 1.45x (1.4-1.5x) as wide as long; **callosity** large, covering 25% of the side, prominent laterally, slightly projecting anteriorly, **width subequal to its distance to the tooth**, with moderate dorsal rim often forming a tooth; **pronotum widest and subequal at callosities and middle teeth**; **sides strongly concave between callosity and tooth, straight or slightly sinuate and convergent from tooth to base**, hind angles about 105°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum yellowish brown. Sternum reddish brown. Legs reddish brown. **Elytra** reddish to yellowish brown, elongate, about 1.6x (1.45-1.7x) as long as wide, about 2.8x (2.5-3.2x) as long as pronotum, sides straight, nearly subparallel to slightly convergent in basal 0.45, then arcuate to apex; surface glossy with moderately strong punctures, pubescence single, appressed and moderately dense. Abdominal ventrites reddish brown.

**Similar species:** *Cryptophagus bidentatus* has a pronotum with callosities less thick, sides less sinuate, straight between callosity and tooth, pronotum width wider at middle teeth than at callosities. *C. corticinus* has more elongate elytra, about 3x as long as pronotum with sides more parallel. *C. scutellatus*, *C. dentatus* and *C. corticinus* have pronotum with lateral teeth in front of middle of sides.

**Distribution:** Transcontinental Canada and northern USA, from Nova Scotia to Alaska and British Columbia, mostly in the Taiga, Boreal, Northern Appalachian, Western Cordillera, and Marine West Coast Forest zones, also in the tundra and Temperate Prairie zones. **First record for Ontario, Manitoba, and Yukon Territories.** Common. **Holarctic.**

**Seasonality:** From the second week of April to the second week of October, mostly between the second week of June and the second week of July, peaking in the last week of June.

**Habitat:** Black spruce forests damaged with girdling or partially cut, mostly on tree trunks under bark; also in balsam fir forests with white spruce and yellow birch, white cedar forests with balsam fir, white birch and trembling aspen forests, black spruce bogs, willow stands, tundra on *Alnus* and *Salix* litter, and in piles of leaves stored by rodents.

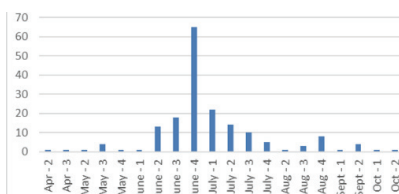
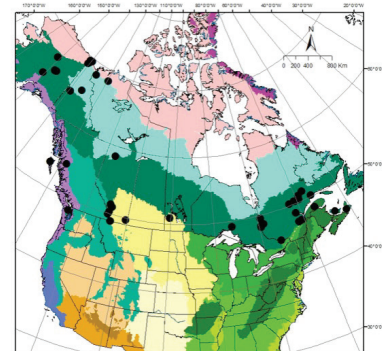
**Number of specimens examined:** 215.

**Remarks:** Though having a similar distribution and living in similar habitat as *C. bidentatus*, *C. confertus* seems to be predominant on the eastern Boreal zone, while *C. bidentatus* is predominant in the western Boreal zone. This species was, until recently, confused with *C. jakowlewi* in Europe, but both are now considered distinct species (Esser, 2018). *C. jakowlewi* has not been collected in North America.

**DNA Barcode Index Number (BIN):** BOLD:AAG5059



*Cryptophagus confertus*



## *Cryptophagus corticinus* Thomson

(Syn.: *C. depressulus* Casey, 1900 )

**Length** 2.1-2.8 mm. **Head** dark reddish brown to dark brown; clypeus, mandibles and palpi reddish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; A1 trapezoidal, nearly subquadrate, about 1.5x as long as A2; A2 slightly elongate, oval, about 1.15x as long as A3; A3 fusiform, about 1.4x as long as A4; A4-A5 and A7 subequal, trapezoidal, about 1.33x as long as A6; A6 subquadrate, about 0.75x as long as A7; A8 slightly transverse; A9-A10 strongly transverse; A11 subquadrate, asymmetrically conical. **Pronotum** reddish to dark brown; transverse, about 1.5x (1.45-1.55x) as wide as long; **callosity moderate, covering 15-20% of the side, slightly prominent laterally**, not projecting anteriorly, **width subequal to its distance to the tooth**, with moderate dorsal rim often forming a small tooth; **lateral tooth usually slightly in front of middle; pronotum sides straight between callosity and tooth, strongly convex and convergent from tooth to base, widest at posterior 0.35** hind angles about 120°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum reddish black. Prosternum and mesoventrite dark reddish brown, metaventrite reddish brown. Legs dark brown. **Elytra dark brown to black**, sometimes reddish brown, often with antero-lateral corner reddish brown, **elongate, about 1.7x (1.65-1.75x) as long as wide**, about 3x (2.9x-3.15x) as long as pronotum, sides straight, nearly subparallel to slightly convergent in basal 0.6, then arcuate to apex; surface glossy with moderately strong punctures, pubescence moderately dense and appressed. Abdominal ventrites dark reddish brown.

**Similar species:** *Cryptophagus quadrihamatus* has pronotum with sides strongly angulate at tooth, concave in front of lateral tooth and straight between tooth and posterior margin. *C. dentatus* has pronotum with sides straight between tooth and posterior margin, widest at teeth. *C. scutellatus* is smaller, length between 1.5 and 1.8 mm, and pronotum with callosity very small, sides strongly concave between callosity and tooth. *C. bidentatus* and *C. confertus* have pronotum widest at middle, elytra less elongate, about 2.6-2.85x as long as pronotum, with sides more convergent at basal 0.45.

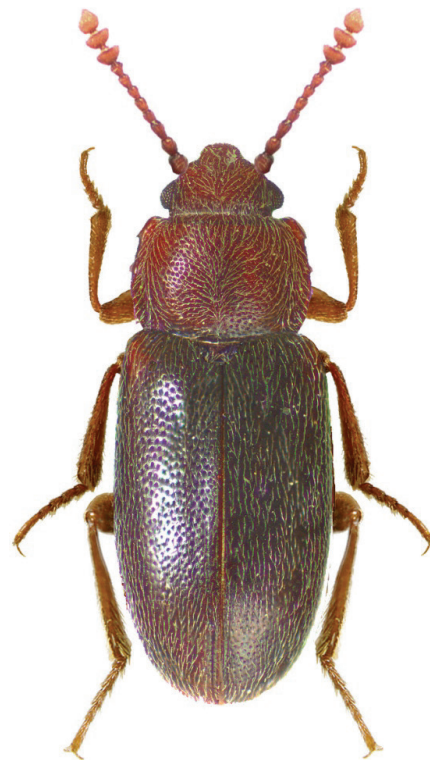
**Distribution:** Transcontinental Canada and northern USA from Quebec west to Alaska and British Columbia, mostly in the Boreal, Mixedwood Plain, and Western Cordillera zones, also in the Tundra, Taiga and Northern Appalachian zones. **New record in Manitoba, Alberta, and Yukon.** Fairly common. **Holarctic.**

**Seasonality:** From the third week of April to the third week of September, distributed rather evenly.

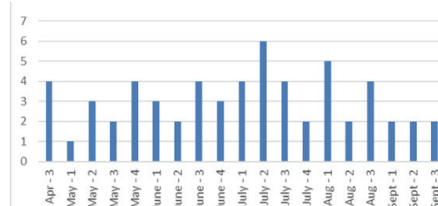
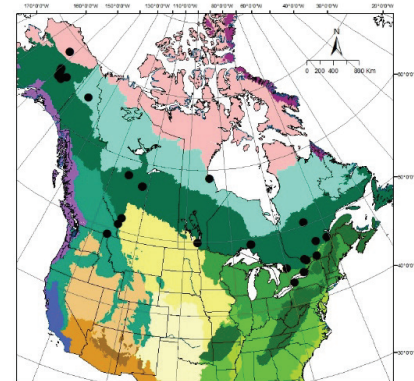
**Habitat:** Black and white spruce forests near bog edge or tamarack meadow, white birch forests with white and black spruce, white birch and trembling aspen forests; also in red maple forests mixed with poplar (Webster et al., 2016); burnt lands, willow stands, beach and arctic tundra.

**Number of specimens examined:** 59.

**DNA Barcode Index Number (BIN):** BOLD:ACR6031



*Cryptophagus corticinus*





## *Cryptophagus croceus* Zimmermann

(Syn.: *C. crinitus* Zimmermann, 1869; *C. fungicola* Zimmermann, 1869; *C. nodifer* Casey, 1900; *C. amputatus* Casey, 1900; *C. laticlavus* Casey, 1900; *C. densicollis* Casey, 1924)

**Length** 2.1-2.6 mm. **Head** reddish brown; clypeus, mandibles and palpi reddish brown; eyes moderate, slightly conical, about 30% width of head. **Antennae** reddish brown; A1 trapezoidal, nearly subquadrate, about 1.2x as long as A2; A2 slightly elongate, about 0.75x as long as A3; A3 elongate fusiform, about 1.2x as long as A4; A4-A5 subequal, trapezoidal, about 1.33x as long as A6; A6-A8 subquadrate; A9-A10 strongly transverse; A11 subquadrate, asymmetrically conical. **Pronotum** reddish brown; transverse, about 1.55x (1.45-1.65x) as wide as long; **callosity moderate, covering 20-25% of the side, not or slightly prominent laterally**, not or slightly projecting anteriorly, **width subequal to slightly smaller to its distance to the tooth, with moderate dorsal rim not forming a tooth**; lateral tooth at or slightly in front of middle; **pronotum sides straight and slightly convergent between callosity and tooth, slightly sinuate and convergent from tooth to base**, hind angles about 120°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra** reddish brown, slightly elongate, about 1.55x (1.45-1.65x) as long as wide, about 2.75x (2.6-2.95x) as long as pronotum, sides slightly convergent in basal 0.55, then arcuate to apex; surface glossy with moderately strong punctures (distance between them smaller than their average diameter), pubescence of two types, appressed and suberect, moderately dense. Abdominal ventrites reddish brown.

**Similar species:** *Cryptophagus tuberculatus* has pronotum widest posterior to middle, with callosity distinctly projecting anteriorly and sides usually convex between lateral tooth and posterior margin. *C. lapponicus* and *C. saginatus* have pronotum with callosity not prominent anteriorly, *lapponicus* with sides straight and *saginatus* with sides convex between tooth and posterior margin. *C. scanicus* has pronotum with sides strongly concave between callosity and tooth, straight between tooth and posterior margin. *C. subfumatus* has pronotum with callosity wider than its distance to the lateral tooth, sides convex between tooth and posterior margin and elytra yellowish brown. *C. hebes* has pronotum with sides strongly sinuate, concave between callosity and tooth, strongly convex between tooth and posterior margin. *C. maximus* is larger, length over 3 mm

**Distribution:** Eastern and central North America, from Nova Scotia west to Alberta, south to Florida and Texas, mostly in the Mixedwood Plain, Southern Appalachian, Southeastern USA Forest Plain and Southeast USA Coastal zones, also in the eastern Boreal, Temperate Prairie, Western Cordillera and Hot Desert Zones. **First record for Canada in Nova Scotia, Quebec, Ontario, Manitoba, Saskatchewan and Alberta.**

**Seasonality:** In Canada, from the second week of May to the last week of September, peaking on the third week of June and the first week of August. Records from October to April are from southeastern USA.

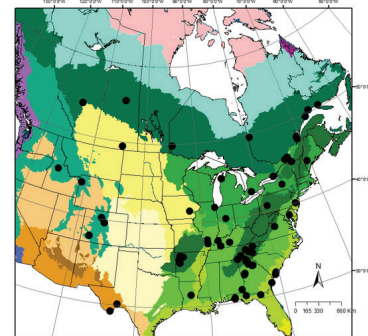
**Habitat:** Very common in hardwood forests, mostly with oaks, beeches and walnuts (Woodroffe & Coombs, 1961). In Canada, uncommon in clear cutting or burned spruce forests with regeneration of thickets and shrubs. Also in stored grain and peanuts.

**Number of specimens examined:** 237.

**DNA Barcode Index Number (BIN):** BOLD:ADZ6867



*Cryptophagus densicollis* Casey  
Holotype



## *Cryptophagus dentatus* (Herbst)

(Syn.: *Corticaria fumata* Marsham, 1802; *Cryptophagus quadridentatus* Mannerheim, 1843)

**Length** 2.0-3.0 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes small, about 25% width of head. **Antennae** reddish brown; A1 trapezoidal, nearly subquadrate, about 1.15x as long as A2; A2 trapezoidal, about 1.15x as long as A3; A3 elongate fusiform, about 1.33x as long as A4; A4-A7 subquadrate, A4 about 0.8x as long as A5, A5-A7 subequal, about 1.1x as long as A8; A8 transverse; A9-A10 strongly transverse; A11 subquadrate, asymmetrically conical. **Pronotum** reddish brown; **transverse, about 1.45x (1.4-1.55x) as wide as long; callosity moderate, covering 25% of the side, moderately prominent laterally, not projecting anteriorly, width subequal to its distance to the tooth, with moderate dorsal rim not forming a tooth, obtuse-angled posteriorly; lateral tooth slightly in front of middle; pronotum sides straight between callosity and tooth, slightly angled at tooth, straight and slightly convergent from tooth to base, widest at tooth, hind angles about 105°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum dark reddish brown. Sternum reddish brown. Legs reddish to yellowish brown. Elytra reddish brown, about 1.6x (1.45-1.7x) as long as wide, about 2.8x (2.6-2.95x) as long as pronotum, sides straight, nearly subparallel to slightly convergent in basal 0.6, then arcuate to apex; surface glossy with moderately fine punctures, pubescence moderately sparse and appressed. Abdominal ventrites reddish brown.**

**Similar species:** *Cryptophagus corticinus* has pronotum with sides strongly convex between tooth and posterior margin, widest at posterior 0.35. *C. scutellatus* is smaller, length between 1.5 and 1.8 mm and pronotum with callosity very small and sides strongly concave between callosity and tooth. *C. bidentatus* and *C. confertus* have pronotum with lateral tooth at or near middle. *C. quadrihamatus* has pronotum with callosities forming a tooth, sides concave between callosity and lateral tooth and elytra often bicolor with blackish area.

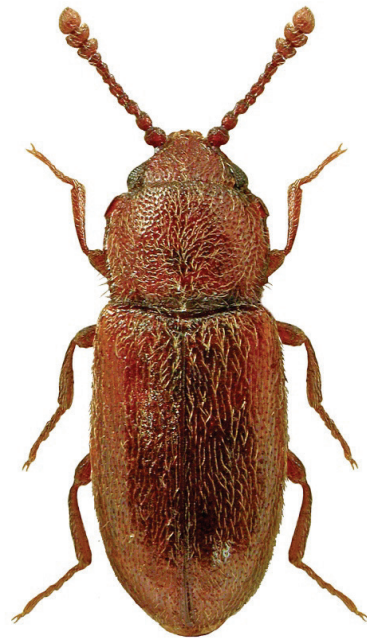
**Distribution:** Mostly southeastern Canada and eastern USA from Quebec to Manitoba south to Georgia, mostly in the Appalachian, Mixedwood Plain, and Southeastern USA Forest Plain zones. Isolated record in Alaska and British Columbia. **First record in Quebec, Ontario, Manitoba, and Yukon Territories.** Uncommon in Canada.

**Seasonality:** From the last week of January to the second week of November, peaking on the second and the third week of March in southeastern USA.

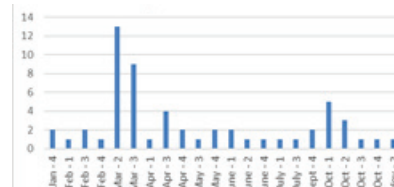
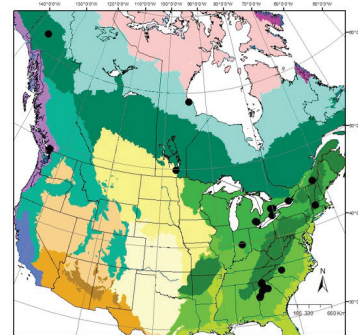
**Habitat:** In Canada, mostly indoors, on stored food products like dried beans (Bousquet 1990). In nature, uncommon in Scotch pine plantations, on shores in and under flotsam, in trembling aspen and black spruce forests on carrion (Yukon), and on American chestnut (*Castanea dentata*) under bark.

**Number of specimens examined:** 59.

**DNA Barcode Index Number (BIN):** BOLD:AAR4761 (Nearctic);  
BOLD:ABA9954 (Palearctic)



*Cryptophagus dentatus*



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## *Cryptophagus denticulatus* Heer

**Length** 2.0-2.8 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes moderate, slightly conical, about 25% width of head. **Antennae** reddish brown; A1 subquadrate, about 1.2x as long as A2; A2-A3 subequal, A2 trapezoidal, A3 elongate fusiform, about 1.33x as long as A4; A4-A5 subequal, trapezoidal, about 1.5x as long as A6; A6 and A8 subequal, transverse, about 0.67x as long as A7; A7 subquadrate; A9-A10 strongly transverse; A11 subquadrate, broadly arcuate at apex. **Pronotum** reddish brown; transverse, about 1.45x (1.4-1.5x) as wide as long; **callosity moderate, covering 20-25% of the side, slightly prominent laterally, not projecting anteriorly, width subequal to its distance to the lateral tooth, with moderate dorsal rim not forming a tooth; lateral tooth in front of middle of side; pronotum sides straight and subparallel between callosity and tooth, slightly sinuate and convergent from tooth to base, hind angles about 90-100°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense.** Scutellum reddish brown. Sternum reddish brown. Legs reddish to yellowish brown. **Elytra reddish brown, slightly elongate, about 1.55x (1.5-1.6x) as long as wide, about 2.6x (2.5-2.7x) as long as pronotum, sides slightly arcuate in basal 0.5, then arcuate to apex; surface glossy with small punctures (distance between them larger than their average diameter), pubescence of two types, appressed and suberect, moderately dense. Abdominal ventrites yellowish brown.**

**Similar species:** *Cryptophagus croceus* has callosities often prominent anteriorly and elytra with punctures larger, their distance subequal to their average diameter. *C. saginatus* has pronotum with callosities not prominent laterally and with sides convex between tooth and posterior margin. *C. lapponicus* has pronotum widest posterior to middle at lateral teeth, with side straight between tooth and posterior margin. *C. hebes* has pronotum with sides strongly sinuate, concave between callosity and tooth, strongly convex between tooth and posterior margin.

**Distribution:** From Quebec to British Columbia south to Georgia and Illinois, in the eastern Boreal, Western Cordillera, Mixedwood Plain, and Southeastern USA Forest Plain zones. **First record for North America in Quebec, Ontario, Manitoba, Alberta, and British Columbia, Canada; also in USA in Georgia and Illinois.** Uncommon. **Adventive.**

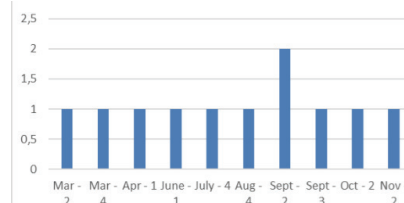
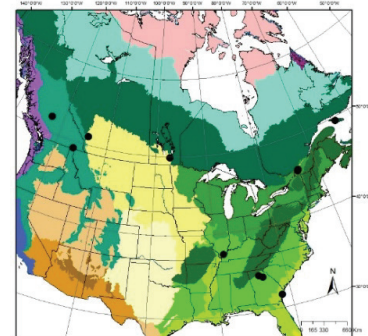
**Seasonality:** From the second week of March to the second week of November.

**Habitat:** In Canada, mostly indoors, probably in stored food products.

**Number of specimens examined:** 12.



*Cryptophagus denticulatus*





## *Cryptophagus difficilis* Casey

(Syn.: *C. contractus* Casey, 1924 )

**Length** 2.1-2.8 mm. **Head** dark reddish brown; clypeus, mandibles and palpi reddish brown; eyes about 30% width of head. **Antennae** dark reddish brown; A1 subquadrate, trapezoidal, about 1.15x as long as A2; A2 slightly elongate, about 0.85x as long as A3; A3 elongate fusiform, about 1.15x as long as A4; A4-A8 subequal, trapezoidal; A9-A10 strongly transverse; A11 subquadrate, subconical. **Pronotum** reddish brown; transverse, about 1.45x (1.35-1.55x) as wide as long; **callosity moderate, covering 15-20% of the side, slightly prominent laterally**, not projecting anteriorly, **width smaller to its distance to the tooth, without dorsal rim, with a distinct tooth; pronotum sides concave between callosity and tooth, angled at tooth, sinuate from tooth to base, widest at middle at lateral tooth**, hind angles about 90 to 105°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum dark reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra reddish brown, about 1.45x (1.4-1.55x) as long as wide**, about 2.4x (2.3-2.5x) as long as pronotum, **sides arcuate throughout, widest at middle**; surface glossy with moderately fine punctures, pubescence moderately sparse and semi-erect. Abdominal ventrites reddish to yellowish brown.

**Similar species:** *Cryptophagus punctipennis* has antennae with A4-A7 subquadrate, pronotum with sides rather straight between callosity and lateral tooth and elytra yellowish brown, sides straight and subparallel in basal 0.5 with shorter appressed pubescence predominant. *C. dilutus* has pronotum with larger callosity, width subequal to its distance to the lateral tooth and elytra yellowish brown. *C. stromus* has pronotum narrower, about 1.35-1.4x as wide as long, with sparse punctures, separated by their own diameter. *C. lycoperdi* has front tibiae with a strong tooth at apex externally.

**Distribution:** Widely distributed from Newfoundland west to Alaska and British Columbia, south to Florida and California, in most zones except Cold Desert, Hot Desert and Gila mountains zones. **Very common.** This is the dominant species of the genus in the Boreal zone. **First record for New Brunswick, Ontario, Manitoba, Northwest and Yukon Territories, and Alaska.**

**Seasonality:** From the first week of January to the last week of November, in Canada, mostly from the third week of July to the last week of August, peaking in the two first weeks of August.

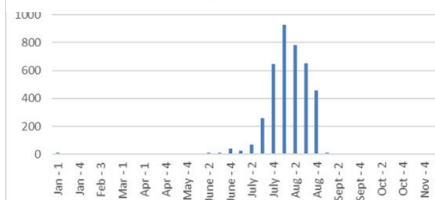
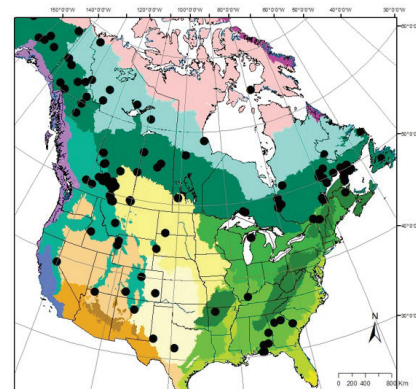
**Habitat:** Balsam fir forests, mostly in moss and mushrooms, balsam fir forests mixed with birch, many years after clearcutting, old deteriorated or intact forests, black spruce forests partially cut, burnt land with regeneration of thickets, white cedar forests, lodgepole pine forests; jack pine forests (Webster et al., 2016), to summarize most types of conifer forests. Uncommon in trembling aspen forests. Collected on *Picea mariana*, *Abies balsamea*, *Pinus contorta* and *P. taeda*.

**Number of specimens examined:** 3959.

**DNA Barcode Index Number (BIN):** BOLD:ACI5415



*Cryptophagus difficilis*



## ***Cryptophagus dilutus* Reitter**

(Syn.: *C. hexagonalis* Tournier, 1872)

**Length** 2.1-2.7 mm. **Head** dark reddish brown; clypeus, mandibles and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; A1-A3 subequal, A1 subquadrate, A2 elongate oval, A3 fusiform, about 1.67x as long as A4; A4-A5 subequal, slightly elongate, about 1.25x as long as A6; A6-A8 subequal, subquadrate; A9-A10 transverse and A11 slightly elongate, strongly diagonally truncate. **Pronotum** reddish brown; transverse, about 1.45x as wide as long; **callosity moderately large, covering about 25% of the side, prominent laterally**, not projecting anteriorly, **width subequal to its distance to the tooth**, with moderate dorsal rim often forming a tooth; pronotum widest in front of middle at lateral tooth; sides straight between callosity and lateral tooth, straight and convergent from tooth to base, hind angles about 105°; glossy, punctures strong and dense (separate by at 10-25% their diameter), pubescence moderately long and dense. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, elongate, about 1.7x as long as wide, about 3.0x as long as pronotum**, sides straight, nearly subparallel to slightly convergent in basal 0.45, then arcuate to apex; surface glossy with moderately strong punctures, pubescence double, sparse and suberect. Abdominal ventrites yellowish brown.

**Similar species:** *Cryptophagus lycoperdi* has front tibiae with a strong tooth at apex externally. *C. stromus*, *C. difficilis* and *C. punctipennis* have pronotum with small callosity, narrower than its distance to the lateral tooth. *C. scanicus* has pronotum with sides strongly concave between callosity and tooth, and elytra without suberect pubescence.

**Distribution:** New York, California. Not recorded in Canada. Rare. **Adventive from Europe.**

**Seasonality:** No record yet, probably throughout the year as many indoor species.

**Habitat:** Indoor, in stored food products.

**Number of specimens examined:** 1.



*Cryptophagus dilutus*

## *Cryptophagus distinguendus* Sturm

(Syn.: *C. keeni* Casey, 1924 )

**Length** 1.6-2.2 mm. **Head** dark brown to black; clypeus and mandibles reddish brown, palpi yellowish brown; eyes about 30% width of head. **Antennae** dark reddish brown, club yellowish brown; A1 subquadrate, about 1.15x as long as A2; A2 trapezoidal, about 0.85x as long as A3; A3 elongate fusiform, about 1.5x as long as A4; A4-A8 trapezoidal, A4-A5 subequal, about 1.2x as long as A6, A6-A8 subequal; A9-A10 strongly transverse; A11 subquadrate, subconical. **Pronotum** reddish to dark brown; transverse, about 1.45x (1.4-1.5x) as wide as long; **callosity small, covering 15% of the side, slightly prominent laterally**, slightly projecting anteriorly, **width smaller to its distance to the lateral tooth, without dorsal rim, with a distinct tooth; sides straight between callosity and tooth, angled at tooth, straight to convex, rarely sinuate from tooth to base, widest at middle at lateral tooth**, hind angles about 100 to 105°; glossy, punctures moderately sparse (distance between them smaller to subequal than their average diameter), pubescence moderately long and sparse. Scutellum dark brown. Sternum reddish brown. Legs yellowish brown. **Elytra** yellowish brown with dark diffuse mark at middle of base, contrasting with dark pronotum, about 1.65x (1.6-1.7x) as long as wide, about 2.5x as long as pronotum, **sides slightly arcuate, widest at middle**; surface glossy with moderately fine punctures, pubescence moderately sparse and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Cryptophagus obsoletus* has a pronotum with callosity strongly projecting anteriorly and lateral tooth located behind middle of side. *C. punctipennis* has pronotum with callosity larger, covering about 20% of the side and body more uniform reddish to yellowish brown. *C. varus* has pronotum strongly sinuate, concave from callosity to lateral tooth and convex between tooth and posterior margin.

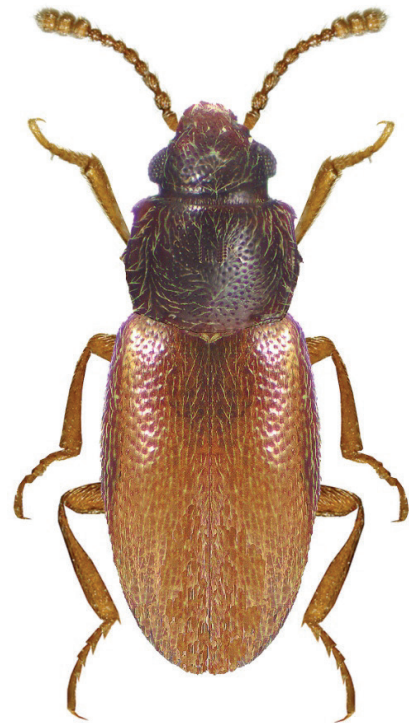
**Distribution:** Quebec, west to British Columbia, south to New York, Illinois, Iowa, and California, in the Northern Appalachian, Mixedwood Plain, Temperate Prairie, Western Cordillera and Mediterranean Californian zones. **First record in Quebec, Ontario, Saskatchewan, and Alberta.** Rare. **Adventive from Europe.**

**Seasonality:** From the third week of January to the last week of November, probably throughout the year.

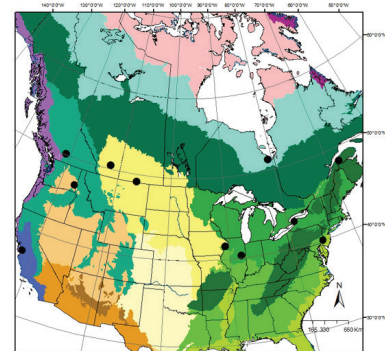
**Habitat:** Indoors, associated with stored food products, in grain elevators, granaries, mills, bakeries, bird, mammal, and ant nests, haystacks, vegetable refuse, dried fruits, and fungi (Klimaszewski et al., 2015).

**Number of specimens examined:** 7.

**DNA Barcode Index Number (BIN):** BOLD:AAQ1233



*Cryptophagus distinguendus*





## *Cryptophagus fallax* Balfour-Browne

**Length** 2.2-3.3 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with last antennomere of club yellowish brown; A1 trapezoidal, nearly subquadrate, about 1.15x as long as A2; A2 subquadrate, about 0.75x as long as A3; A3 elongate, fusiform, about 1.5x as long as A4; A4-A5 subequal, slightly elongate, about 1.1x as long as A6; A6-A8 subequal, subquadrate; A9-A10 strongly transverse; A11 subquadrate, asymmetrically subconical. **Pronotum** reddish brown; transverse, **about 1.35x (1.3-1.4x) as wide as long, distinctly narrower than elytra width; callosity small, covering 20% of the side, moderately prominent laterally, not projecting anteriorly, width subequal to slightly smaller to its distance to the lateral tooth, with dorsal rim not forming a tooth, obtuse-angled posteriorly; lateral tooth at middle; pronotum sides concave between callosity and tooth, slightly angled at tooth, straight and slightly convergent from tooth to base, widest at middle, hind angles about 100°; glossy, punctures strong and moderate (distance between them subequal their average diameter), pubescence moderately long and dense. Scutellum dark reddish brown. Prosternum and mesoventrite reddish brown; metaventrite yellowish brown. Legs yellowish brown. Elytra yellowish brown, about 1.65x (1.6-1.7x) as long as wide, about 3x as long as pronotum, sides slightly arcuate throughout, widest at middle; surface glossy with moderately fine punctures, pubescence moderately sparse and appressed. Abdominal ventrites yellowish brown.**

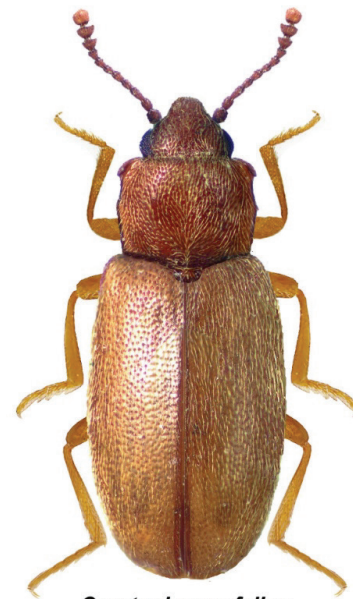
**Similar species:** All species with appressed pubescence of elytra and face of callosity standing out from lateral margin of pronotum (*C. scutellatus*, *C. corticinus*, *C. bidentatus* and *C. confertus*) have pronotum subequal or slightly narrower than elytral width.

**Distribution:** Nova Scotia west to Ontario south to Maine, in the Boreal, Northern Appalachian, and Mixedwood Plain zones. **First record in Quebec and Ontario. Rare. Adventive from Europe.**

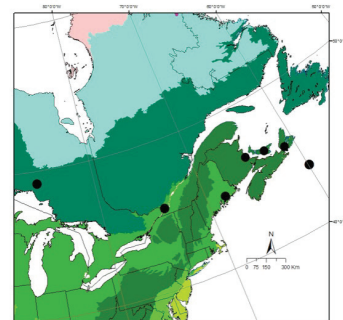
**Seasonality:** From the last week of April to the second week of July.

**Habitat:** Apparently associated with beehives, also in buildings on stored food products and in nest of Ipswich Sparrow (Klimaszewski et al., 2015).

**Number of specimens examined:** 4.



*Cryptophagus fallax*



## ***Cryptophagus hebes* Casey**

(Syn.: *C. lyraticollis* Casey, 1900; *C. otiosus* Casey, 1900)

**Length 1.8-2.5 mm.** **Head** reddish brown; mandibles and palpi yellowish brown; eyes hemispherical with fine facets, about 25% width of head. **Antenna fossae very large and deep.** **Antennae** reddish brown with club yellowish brown; A1 subquadrate, about 0.75x as long as A2; A2-A5 elongate, fusiform, A2-A3 subequal, about 1.33x as long as A4, A4-A5 subequal, about 1.33x as long as A6; A6-A7 slightly elongate, trapezoidal, about 1.33x as long as A8; A8 subquadrate; A9-A10 transverse; A11 slightly elongate, asymmetrically subconical. **Pronotum** reddish brown; transverse, about 1.45x as wide as long; **callosity moderate, covering about 25% of the side, slightly prominent laterally, projecting strongly anteriorly, width subequal to its distance to the lateral tooth, with moderate dorsal rim and no distinct angle posteriorly; lateral tooth posterior to middle; pronotum sides strongly sinuate, slightly concave between callosity and tooth, strongly convex from tooth to base, widest posterior to tooth**, hind angles about 125°; glossy, punctures moderately large and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra yellowish brown**, about 1.6x as long as wide, about 2.8x as long as pronotum, **sides straight, parallel or slightly convergent in basal 0.5**, then arcuate to the apex; surface glossy with moderately small punctures, pubescence single, yellowish, sparse and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Cryptophagus maximus* is larger, length over 3 mm. *C. saginatus*, *C. subfumatus*, and *C. tuberculosus* have pronotum not or slightly sinuate, straight to slightly convex from callosity to tooth, convex from tooth to posterior margin. *C. lapponicus* has pronotum with sides straight from tooth to posterior margin.

**Distribution:** Alaska, Yukon south to California, in the western Boreal, Marine West Coast Forest, Western Cordillera, and Mediterranean California zones. **First record in Yukon Territories.** Uncommon.

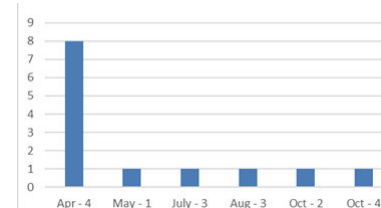
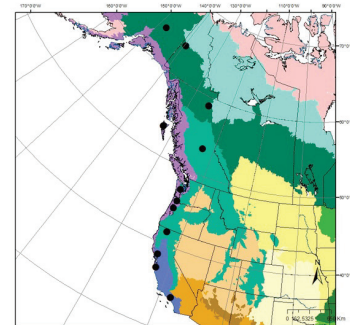
**Seasonality:** From the last week of April to the last week of October, peaking in the last week of April.

**Habitat:** Mammal nests, especially in pack rat or wood rat nests (*Neotoma*), also on *Sequoia* seeds.

**Number of specimens examined:** 14.



***Cryptophagus hebes***



## *Cryptophagus histricus* Casey

**Length** 2.5-3.0 mm. **Head** reddish brown including clypeus, mandibles and palpi; **eyes moderate, hemispherical to slightly conical, about 25% width of head.** **Antennae** reddish brown; A1-A2 subequal, A1 trapezoidal, nearly subquadrate, A2 slightly elongate, about 0.85x as long as A3; A3 elongate fusiform, about 1.6x as long as A4; A4 slightly elongate, about 0.7x as long as A5; A5 fusiform, about 1.4x as long as A6; A6-A8 subequal, A6-A7 trapezoidal, A8 subquadrate; A9-A10 strongly transverse; A11 elongate, asymmetrically subconical. **Pronotum** reddish brown; strongly transverse, about 1.5x (1.39-1.6x) as wide as long; **callosity** moderate, covering 20% of the side, **not prominent laterally** or usually anteriorly, **width slightly smaller to its distance to the tooth, without dorsal rim or tooth; lateral tooth very small, usually at middle; pronotum sides nearly straight and slightly convergent between callosity and tooth, slightly sinuate and convergent from tooth to base, widest at middle,** hind angles about 90-95°; glossy, punctures strong and dense, almost touching, pubescence moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish to yellowish brown. **Elytra** reddish brown, slightly elongate, about 1.45 (1.4-1.55x) as long as wide, about 2.45x (2.3-2.55x) as long as pronotum, sides arcuate throughout, widest at basal 0.45; surface glossy with moderately fine punctures, **pubescence double, moderately dense, appressed and suberect.** **Abdominal ventrites** reddish brown.

**Similar species:** *Cryptophagus valens* has eyes very small, hemispherical, about 15% width of head and pronotum with callosity distinctive with anterior border. *C. laticollis* has pronotum with callosity subequal to its distance to the tooth, sides slightly concave and subparallel between callosity and tooth, strongly convex between tooth and posterior margin, and elytra with sides straight, subparallel in basal 0.5-0.6. *C. setulosus* has pronotum with callosity wider than its distance to the lateral tooth. *C. croceus* has pronotum with callosity often projecting anteriorly, wider than its distance to lateral tooth, sides subparallel between callosity and tooth.

**Distribution:** Labrador west to British Columbia, south to Georgia, Arkansas and Colorado, in the Boreal, Northern Appalachian, Mixedwood Plain, and Western Cordillera zones, also in Taiga and Southeastern USA Forest Plain zones. **First record for Quebec, Ontario, Saskatchewan, and Alberta.** Fairly common.

**Seasonality:** From the third week of February to the last week of October, mostly from the last week of June to the second week of August, peaking on the third week of July.

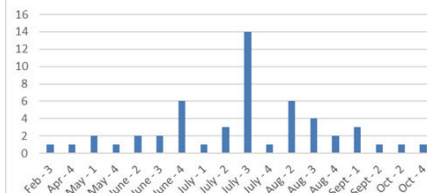
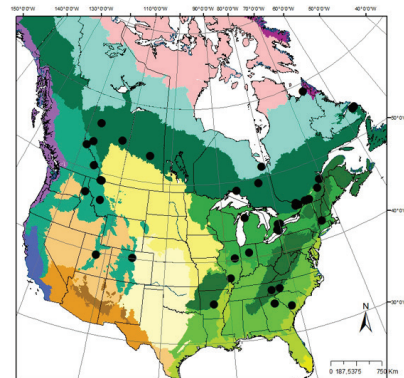
**Habitat:** Burned spruce forests and burned land 20 years after clearcutting, regenerated with lichen, fireweeds, blueberries, *Kalmia* and *Rhododendron*, spruce and tamarack scrubs, sometimes in willow stands, aspen groves, and prairies, on moss. Associated with bumblebee nests (*Bombus rufocinctus*).

**Number of specimens examined:** 52, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ABX4786



*Cryptophagus histricus*  
Casey - Paratype





# *Cryptophagus lapponicus* Gyllenhal

(Syn.: *C. validus* Kraatz, 1856 )

**Length** 2.5-3.0 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes hemispherical, about 20-25% width of head. **Antennae** reddish to dark brown with club yellowish brown; A1 nearly subquadrate, about 1.5x as long as A2; A2-A3 subequal, trapezoidal, about 1.3x as long as A4; A4, A5 and A7 subequal, A4 trapezoidal, A5 and A7 subquadrate, about 1.25x as long as A6; A6 and A8 subequal, transverse; A9 and A10 strongly transverse; A11 subquadrate, subconical. **Pronotum** reddish brown; strongly transverse, about 1.55x (1.45-1.6x) as wide as long; **callosity moderately large, covering about 30% of the side, slightly prominent laterally**, not projecting anteriorly, **width subequal to its distance to the lateral tooth**, with weak to moderate dorsal rim forming an obtuse angle posteriorly; **pronotum widest posterior to middle at very small lateral tooth**; **sides straight from callosity to tooth, angulate at middle, straight from tooth to base**, hind angles about 110°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra reddish brown, about 1.5x (1.4-1.6x) as long as wide**, about 2.8x (2.7-2.9x) as long as pronotum, sides straight to slightly arcuate in basal 0.55, then strongly arcuate to apex; surface glossy with moderately small punctures, pubescence single, moderate, sparse and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Cryptophagus saginatus* has pronotum with lateral tooth located in front of middle of side, callosity not prominent laterally. *C. scanicus* has pronotum with sides strongly concave between callosity and lateral tooth, tooth located at middle of side. *C. subfumatus* and *C. tuberculosus* have pronotum with callosity strongly projecting anteriorly. *C. croceus* has pronotum with sides subparallel at anterior half and lateral tooth located at or in front of middle. *C. hebes* has pronotum with sides strongly sinuate, concave between callosity and tooth, strongly convex between tooth and posterior margin. *C. maximus* is larger, length over 3 mm.

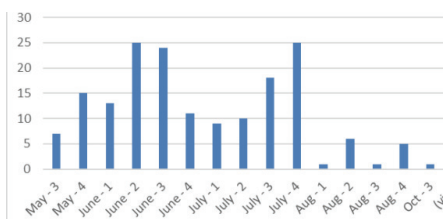
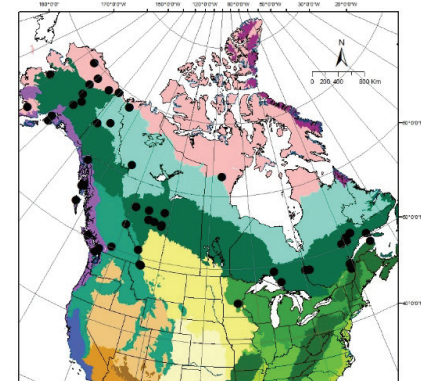
**Distribution:** Quebec west to Yukon and Alaska, south to Minnesota, and Washington in the Tundra, Taiga, Boreal, Western Cordillera, and Marine West Coast Forest zones, also in the Northern Appalachian and Mixedwood Plain zones. **First record in Quebec, Ontario, Alberta, Northwest Territories, Yukon, and Alaska.** Common. **Holarctic.**

**Seasonality:** From the third week of May to the third week of October, mostly from the last week of May to the last week of July, peaking twice, in second to third week of June, and last week of July.

**Habitat:** Prefers black spruce forests, intact, partially cut or damaged with girdling, also old deteriorated balsam fir forests or mixed with white spruce, burned spruce forests, burned lands, white spruce forests, white cedar forests, whitebark and ponderosa pine forests, mixed spruce and white birch forests, aspen forests, sparse grasses near shore with dwarf willow, spruce bogs, alder, and willow stands.

**Number of specimens examined:** 175.

**DNA Barcode Index Number (BIN):** [BOLD:ACM3695](#)



## *Cryptophagus laticollis* Lucas

(Syn.: *C. affinis* Sturm, 1845 - Homo.; *C. inscitus* Casey, 1900; *C. cribricollis* Casey, 1900)

**Length** 1.7-2.4 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes small, conical, flat anteriorly, about 20% width of head. **Antennae** reddish brown; A1-A3 subequal, A1 globular, A2 elongate, oval, A3 elongate fusiform, about 1.55x as long as A4; A4-A5 subequal, slightly elongate, about 1.2x as long as A6; A6-A8 subequal, subquadrate; A9 slightly transverse; A10 strongly transverse; A11 subquadrate, asymmetrically subconical. **Pronotum** reddish brown; strongly transverse, about 1.45x (1.4-1.5x) as wide as long; **callosity large, covering 30% of the side, slightly prominent laterally**, not anteriorly, **width larger to its distance to the lateral tooth, with dorsal rim forming an angle posteriorly**; lateral tooth small, usually at middle; sides subparallel, slightly concave between callosity and tooth, strongly convex and convergent from tooth to base, widest at middle, hind angles about 115°; glossy, punctures strong and dense (distance between them less than their average diameter), pubescence moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra reddish brown, slightly elongate, about 1.5x as long as wide**, about 2.5x as long as pronotum, sides straight, subparallel at basal 0.5, then arcuate to apex; surface glossy with moderately fine punctures, pubescence double, moderately dense and suberect. Abdominal ventrites yellowish brown.

**Similar species:** *Cryptophagus valens* and *C. histicus* have pronotum with callosity narrower than its distance to the lateral tooth and sides slightly arcuate throughout. *C. cellaris* has pronotum with sides forming a distinct angle at lateral tooth, straight between callosity and tooth and between tooth and posterior margin. *C. setulosus* has pronotum with callosity wider than its distance to the lateral tooth. *C. croceus* has pronotum with sides straight and subparallel between callosity and tooth, sinuate from tooth to the posterior margin. *C. mainensis* has pronotum with very large callosity nearly 1.4x-2x as wide as its distance to the tooth. *C. tuberculosus* has pronotum with lateral tooth located behind middle of sides and callosity prominent anteriorly.

**Distribution:** Manitoba west to British Columbia, south to Indiana, Arkansas and California (an isolated record in Nova Scotia), mostly in the Marine West Coast Forest zone, also in the Mixedwood Plain, Southeastern USA Forest Plain, Temperate Prairie, Western Cordillera, and Mediterranean Californian zones. **First record in Manitoba.** Uncommon. **Adventive from Europe.**

**Seasonality:** From the third week of April to the second week of September, probably throughout the year.

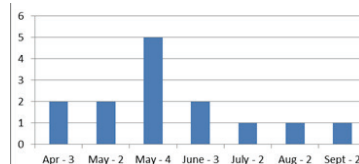
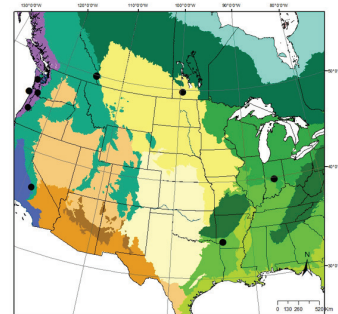
**Habitat:** Indoors, on stored food products, vegetable refuse, raisin stores, reared from mash, lotus and willow blossom (Woodroffe and Coombs, 1961).

**Number of specimens examined:** 14.

**DNA Barcode Index Number (BIN):** BOLD:ACG1329



*Cryptophagus laticollis*



## *Cryptophagus lycoperdi* (Scopoli)

**Length** 2.5-3.5 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes subconical, flat anteriorly, about 25% width of head. **Antennae** reddish brown; A1 globular, about as wide as long, about 1.2x as long as A2; A2 slightly elongate, trapezoidal, about 1.1x as long as A3; A3 subfusiform, about 1.4x as long as A4; A4-A7 subequal, trapezoidal, about 1.25x as long as A8; A8 transverse; A9-A10 transverse; A11 subquadrate, asymmetrically conical. **Pronotum** reddish brown, transverse, about 1.53x (1.44-1.62x) as wide as long; **callosity** small, covering 15% of the side, prominent laterally, not anteriorly, width smaller to its distance to the lateral tooth, with dorsal rim forming a tooth; lateral tooth small at middle; sides straight and convergent between callosity and tooth, straight and convergent from tooth to base, widest at middle, hind angles about 120°; glossy, punctures strong and dense (distance between them less than their average diameter), pubescence yellowish brown, moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown with **front tibia strongly angulate externally at apex, forming a tooth**. **Elytra** reddish brown, slightly elongate, about 1.5x (1.45-1.6x) as long as wide, about 2.6x (2.3-2.8x) as long as pronotum, **sides straight, subparallel in basal 0.55**, then arcuate to apex; surface glossy with moderately fine punctures, pubescence moderately dense and suberect. Abdominal ventrites yellowish brown.

**Similar species:** All other *Cryptophagus* have front tibia neither strongly angulate externally, nor forming a tooth.

**Distribution:** Quebec (Montreal) and New York. **First record for Canada in Quebec.** Rare. **Adventive from Europe.**

**Seasonality:** Collected on the second week of June and the second week of September.

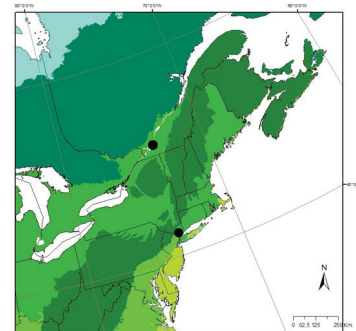
**Habitat:** Indoors in fungi.

**Number of specimens examined:** 7.

**DNA Barcode Index Number (BIN):** BOLD:AAH0289



*Cryptophagus lycoperdi*



© J. Dvorak



## *Cryptophagus mainensis* Casey

**Length** 1.5-1.7 mm. **Head** dark brown; clypeus, mandibles and palpi reddish brown; eyes hemispherical, about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1-A2 subequal, A1 subquadrate, about 1.15x as long as wide, A2 trapezoidal, about 1.1x as long as A3; A3 fusiform, about 1.33x as long as A4; A4, A6 and A8 subequal, subquadrate, about 0.85x as long as A5, A5 elongate, about 1.15x as long as A6; A7 trapezoidal; A9 slightly transverse; **A10 strongly transverse, wider than A9**; A11 subquadrate, hemispherical. **Pronotum** dark reddish brown, **strongly transverse, about 1.6x (1.55-1.65x) as wide as long**; **callosity very large, covering 35% of the side, prominent laterally, not anteriorly, width 1.4-2.0x or more wider to its distance to the lateral tooth, with strong dorsal rim not forming a tooth**; lateral tooth large at middle; pronotum sides **strongly concave between callosity and tooth, straight and convergent from tooth to base**, widest at subequal callosity and middle tooth, hind angles about 120°; glossy, punctures strong and dense (distance between them less than their average diameter), pubescence silvery gray, moderately long and sparse. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra reddish brown**, about 1.4x (1.35-1.45x) as long as wide, about 2.55x (2.5-2.65x) as long as pronotum, **sides arcuate throughout**, widest at basal 0.35; surface glossy with moderately large punctures, pubescence moderately dense and suberect. Abdominal ventrites reddish brown.

**Similar species:** Most *Cryptophagus* with callosity without distinct tooth have small callosity covering less than 25% of side, width narrower than its distance to the lateral tooth. *C. setulosus* has pronotum with callosity about slightly wider than its distance to lateral tooth, sides slightly concave between callosity and tooth.

**Distribution:** Nova Scotia west to Ontario south to New York and Pennsylvania, in the eastern Boreal, Northern Appalachian and Mixedwood Plain zones. Uncommon.

**Seasonality:** From the second week of April to the last week of September, peaking in the third week of July.

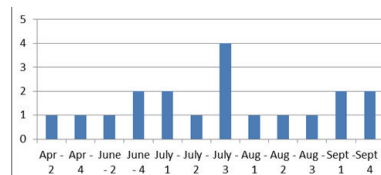
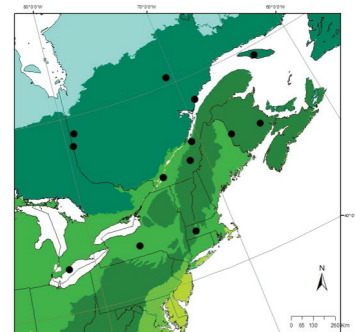
**Habitat:** Balsam fir forests, often mixed with white birch or white spruce, black spruce forest damaged with girdling, and sugar maple forests damaged with ice storm. It was collected by Webster et al. (2012) in mixed hardwood forests with beech, sugar maple and white ash, and in red oak forests. It was also reported in red spruce and hemlock forests (Majka & Langor, 2010) and spruce forests from wind disturbance origin (DeLancey et al., 2009). Collected on the birch polypore (*Piptoporus betulinus*).

**Number of specimens examined:** 14.

**DNA Barcode Index Number (BIN):** BOLD:ACN7941



*Cryptophagus mainensis*



## *Cryptophagus maximus* Blake

**Length 3.2-4.5 mm.** **Head** reddish brown; mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 trapezoidal, about as wide as long, about 1.4x as long as A2; A2-A3 subequal, A2 slightly elongate, A3 elongate, fusiform, about 1.67x as long as A4; A4-A6 subequal, A4 trapezoidal, A5-A6 subquadrate, about 1.25x as long as A7; A7-A8 subequal, transverse; A9-A10 strongly transverse; A11 subquadrate, symmetrically subconical. **Pronotum** reddish brown; transverse, **about 1.35x (1.3-1.4x) as wide as long; callosity moderately large, covering about 25% of the side, prominent laterally**, not projecting anteriorly, width about 75% its distance to the tooth, with strong dorsal rim forming an obtuse angle posteriorly; no lateral tooth but a callous thickening of the lateral margin at posterior 0.3; pronotum sides sinuate, slightly concave between callosity and thickening, convex at thickening than slightly concave from thickening to base, widest at posterior 0.3, hind angles about 90°; glossy, punctures moderately large and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra brown, about 1.65x (1.55-1.7x) as long as wide, about 2.5x (2.2-2.8x) as long as pronotum, sides straight and parallel to slightly convergent in basal 0.55, then arcuate to the apex; surface glossy with moderately large punctures, pubescence yellowish, short, sparse and appressed.** Abdominal ventrites reddish brown.

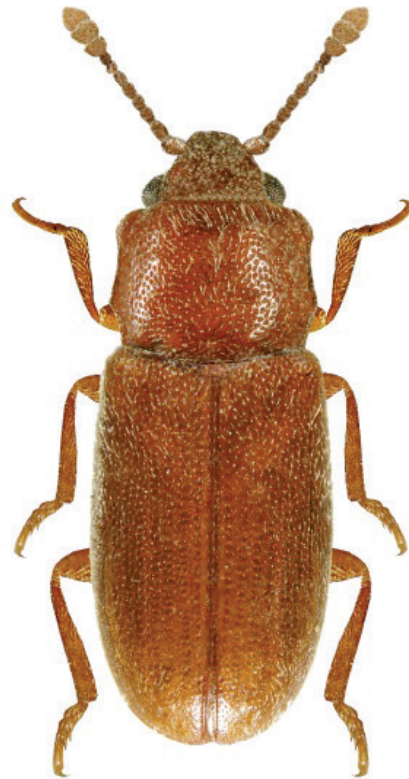
**Similar species:** All species with appressed pubescence and pronotum with callosities not projecting anteriorly (*Cryptophagus hebes*, *C. saginatus*, *C. scanicus*, and *C. lapponicus*) are smaller, length usually less than 3 mm and pronotum with distinct lateral teeth.

**Distribution:** British Columbia south to Utah and California, in the Western Cordillera zone. Very rare.

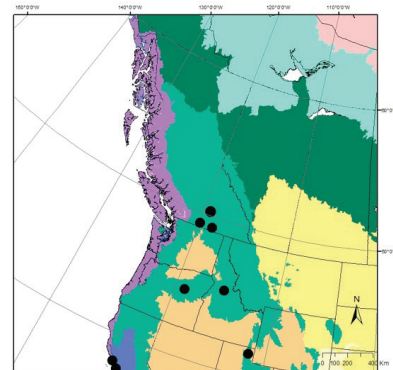
**Seasonality:** One specimen collected on the third week of April.

**Habitat:** Ponderosa and western white pine forests, Douglas fir and subalpine fir forests, also in trembling aspen forests (Woodroffe & Coombs, 1961). Collected on *Abies lasiocarpa*, *Pinus monticola*, *Pinus ponderosa*, *Pseudotsuga taxifolia* and *Populus tremuloides*. Live under bark on *Cryptoporus volvatus*, on alpine fir conks (*Echinodontium tinctorium*) and in cones of conifers.

**Number of specimens examined:** 1.



*Cryptophagus maximus*



## *Cryptophagus obsoletus* Reitter

**Length** 2.2-2.8 mm. **Head** dark brown; clypeus, reddish brown; mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with last antennomere of club yellowish brown; A1-A2 subequal, A1 trapezoidal, A2 fusiform, about 1.15x as long as A3; A3 elongate fusiform, about 1.4x as long as A4; A4-A5 subequal, subquadrate, about 1.33x as long as A6; A6-A8 subequal, slightly transverse; A9-A10 strongly transverse; A11 subquadrate and subconical. **Pronotum** dark reddish brown; transverse, about 1.5x (1.45-1.55x) as wide as long; **callosity moderately small, covering 20% of the side, slightly prominent laterally, strongly projecting anteriorly, width distinctly smaller than its distance to the lateral tooth, with a narrow dorsal rim projecting to a small tooth, obtuse-angled posteriorly; lateral tooth usually posterior to middle; pronotum sides subparallel, straight between callosity and tooth, convex and slightly convergent from tooth to base, widest at tooth, hind angles about 130°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. Elytra yellowish brown, about 1.5x (1.35-1.6x) as long as wide, about 2.8x (2.6-3.0x) as long as pronotum, sides straight and parallel in basal 0.6, then arcuate to the apex; surface glossy with moderately large punctures, pubescence moderately dense and appressed. Abdominal ventrites yellowish brown.**

**Similar species:** *Cryptophagus tuberculosus* has pronotum with callosity not projecting to a distinct tooth and elytra with sides distinctly convergent in basal 0.55. *C. croceus* has pronotum lacking tooth at callosities, with sides sinuate between lateral tooth and posterior margin. Both species have reddish brown elytra.

**Distribution:** Quebec west to Alberta and Alaska, south to New York, Illinois, and Colorado, mostly in the Temperate Prairie and Mixedwood Plain zones, also in the Taiga, Boreal, and Semi-Arid Prairie zones. **First record in Quebec, Manitoba, Saskatchewan, Alberta, and Yukon Territories.** Uncommon. **Adventive from Europe.**

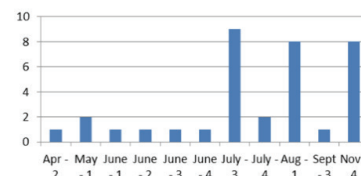
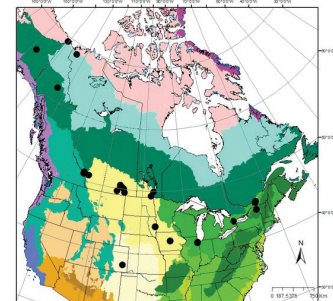
**Seasonality:** From the second week of April to the last week of November, probably active throughout the year.

**Habitat:** Mostly indoors in stored food products, in grain stores (Woodroffe and Coombs, 1961) and in flour mills. Rare in nature, mostly in northwestern Canada and Alaska, it can be found in spruce and white birch forests, in black spruce bogs and in alder and willow stands in litter.

**Number of specimens examined:** 36.



*Cryptophagus obsoletus*





## *Cryptophagus peregrinus* Woodroffe & Coombs

**Length** 2.4-2.8 mm. **Head** dark reddish brown; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** dark reddish brown; A1-A3 subequal, A1 subquadrate, A2 trapezoidal, A3 fusiform, about 1.15x as long as A4; A4-A5 subequal, trapezoidal, about 1.4x as long as A6; A6 subquadrate, about 0.85x as long as A7; A7 trapezoidal, about 1.4x as long as A8; A8 transverse; A9 transverse, **A10 strongly transverse, much wider than A9**; A11 subquadrate, asymmetrically subconical. **Pronotum** reddish brown; transverse, about 1.45x (1.4-1.5x) as wide as long; **callosity moderately small, covering 15-20% of the side, strongly prominent laterally**, not projecting anteriorly, width smaller to its distance to the lateral tooth, without dorsal rim, with a strong tooth; pronotum sides strongly concave between callosity and tooth, angulate at tooth which is located at or behind middle, straight from tooth to base, widest at subequal callosities and middle teeth, hind angles about 110°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum dark reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra yellowish brown, about 1.65x (1.55-1.7x) as long as wide**, about 2.65x (2.5-2.8x) as long as pronotum, **sides straight and convergent in basal 0.5, widest at middle**, then arcuate to the apex; surface glossy with very fine punctures, pubescence sparse, double, appressed and semi-erect. Abdominal ventrites reddish to yellowish brown.

**Similar species:** *Cryptophagus acutangulus* has pronotum with callosity strongly produced laterally, pronotum widest at callosities. *C. lycoperdi* has front tibiae with a strong tooth at apex externally and pronotum with callosities smaller with tooth not acute. *C. stromus* has pronotum with lateral tooth located in front of middle and elytra with sides convex throughout. *C. difficilis* and *C. punctipennis* have pronotum widest at middle, at lateral teeth.

**Distribution:** British Columbia, south to Utah and California, in the Western Cordillera zone, also in the Marine West Coast Forest zone. **First record in Alberta.** Uncommon.

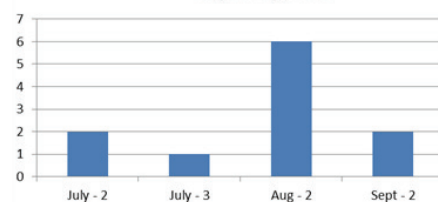
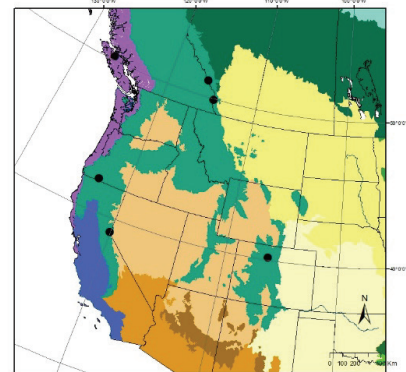
**Seasonality:** From the second week of July to the second week of September, peaking on the second week of August.

**Habitat:** In Ponderosa pine forests, subalpine and Shasta fir forests, up to 3000 m. This species has been collected on *Pinus ponderosa*, *Abies lasiocarpa* (Woodroffe & Coombs, 1961), *Abies magnifica* duff and inside *Dryocoetes affaber* galleries.

**Number of specimens examined:** 11.



*Cryptophagus peregrinus*



## *Cryptophagus porrectus* Casey

**Length** 2.0-2.5 mm. **Head** dark reddish brown; mandibles and palpi dark reddish brown; eyes about 30% width of head. **Antennae** reddish to dark brown with last segment of club yellowish brown; A1 subquadrate, about 1.1x as long as A2; A2-A3 subequal, elongate, A2 oval, A3 fusiform, about 1.67x as long as A4; A4-A7 subquadrate, A4-A5 subequal, about 1.67x as long as A6, A6-A7 subequal, about 1.33x as long as A8; A8 transverse; A9-A10 strongly transverse; A11 slightly elongate, asymmetrically subconical. **Pronotum dark reddish brown to dark brown**; transverse, about 1.4x (1.35-1.5x) as wide as long; **callosity small, covering about 15% of the side, slightly prominent laterally**, not projecting anteriorly, **width about 60% its distance to the tooth, projecting posteriorly to a small tooth**; **lateral tooth usually at or slightly posterior to middle**; pronotum sides sinuate, slightly concave between callosity and tooth, slightly convex and convergent from tooth to base, widest at lateral teeth, hind angles about 110°; glossy, punctures moderately large and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum dark brown to black. Sternum dark reddish brown. Legs reddish to dark brown. **Elytra dark brown, about 1.65x as long as wide**, about 3x as long as pronotum, **sides convex throughout**; surface glossy with moderately small punctures, pubescence double, moderately sparse, appressed and suberect. Abdominal ventrites dark reddish brown.

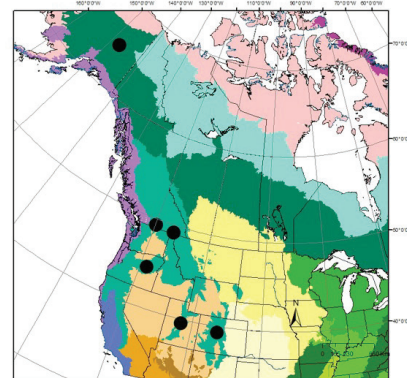
**Similar species:** *Cryptophagus corticinus* has pronotum widest in front of middle and elytra with sides straight and subparallel in basal 0.6. *C. punctipennis* has pronotum with sides rather straight between callosity and tooth, and elytra yellowish brown, with sides subparallel in basal 0.5. *C. dilutus* has pronotum with larger callosity, width subequal to its distance to the lateral tooth, and elytra yellowish brown. *C. stromus* has pronotum narrower, about 1.3x as wide as long, widest in front of middle, sides strongly sinuate from lateral tooth to posterior margin, with sparse punctures, separated by their own diameter. *C. lycoperdi* has front tibiae with a strong tooth at apex externally.

**Distribution:** Alaska, British Columbia, south to Colorado and Oregon, in the Boreal and Western Cordillera zones. Rare.

**Seasonality:** From the second week of May to the third week of July.

**Habitats:** Trembling aspen mixed with white birch forests. Collected on *Populus tremuloides*.

**Number of specimens examined:** 4, including the holotype.



# *Cryptophagus punctipennis* Brisout de Barneville

(Syn.: *C. pilosus* sensus auctorum **syn. nov.**; *C. parvinoda* Casey, 1900; *C. infuscatus* Casey, 1900; *C. plectrum* Casey, 1900; *C. cicatricosus* Casey, 1900)

**Length** 2.0-3.2 mm. **Head** reddish brown; mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 broad, trapezoidal, about 1.33x as long as A2; A2 oval, about 0.85x as long as A3; A3 elongate, fusiform, about 1.67x as long as A4; A4-A8 subequal, trapezoidal; A9-A10 strongly transverse; A11 subquadrate, subconical. **Pronotum** reddish brown; **strongly transverse**, about 1.55x (1.5-1.6x) as wide as long; **callosity moderate**, covering 25% of the side, moderately prominent laterally, not projecting anteriorly, width smaller to its distance to the tooth, with no dorsal rim, projecting to a distinct tooth, obtuse-angled posteriorly; lateral teeth at middle; sides straight and convergent between callosity and tooth, angulate at tooth, straight and convergent from tooth to base, widest at middle, hind angles about 105°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long and dense. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown, hind tibiae sometimes dark brown. **Elytra yellowish brown**, about 1.65x as long as wide, about 2.9x as long as pronotum, sides straight and parallel in basal 0.5, then arcuate to the apex; surface glossy with moderately small punctures, pubescence yellowish, moderately dense and usually appressed, sometimes double with few suberect hairs. Abdominal ventrites yellowish brown.

**Similar species:** *Cryptophagus distinguendus* has pronotum with callosities smaller, covering about 15% of the side and head and pronotum distinctly darker than elytra. *C. obsoletus* has a pronotum with callosity strongly projecting anteriorly and lateral tooth located behind middle of side. *C. varus* has pronotum strongly sinuate, concave from callosity to lateral tooth and convex between tooth and posterior margin.

**Distribution:** New Brunswick west to British Columbia, south to New Jersey, Indiana, Illinois, Utah, Arizona, and California, in the eastern Boreal, Mixedwood Plain, and Western Cordillera zones, also in the Northern Appalachian and Cold Desert zones. Uncommon. **Adventive from Europe.**

**Seasonality:** From the first week of March to the last week of November, probably throughout the year indoor.

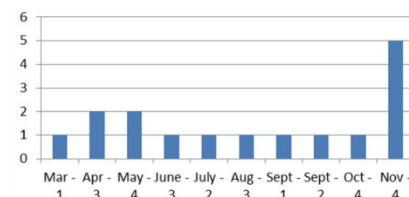
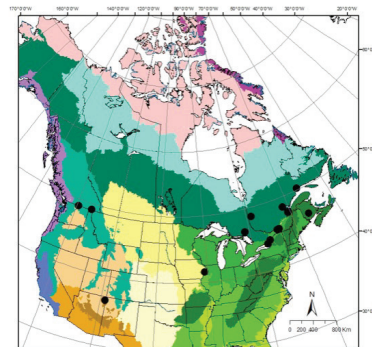
**Habitat:** Mostly indoors, in stored food products, grain elevators, vegetable refuse, cabbages, potatoes (Woodroffe & Coombs, 1961) and turnips (Webster & al., 2012). Rare in natural habitats but can be found in black spruce forests and burnt lands, with regeneration of *Vaccinium*.

**Number of specimens examined:** 19.

**DNA Barcode Index Number (BIN):** BOLD:ACC4728



*Cryptophagus punctipennis*



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# *Cryptophagus quadrihamatus* Mäklin

(Syn.: *C. plagiat* Poppius, 1900)

**Length** 2.0-2.5 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown; A1-A2 subequal, A1 nearly subquadrate, A2 trapezoidal, about 0.9x as long as A3; A3 fusiform, about 1.6x as long as A4; A4, A6 and A7 subequal, trapezoidal, about 0.85x as long as A5; A5 slightly elongate, fusiform, about 0.85x as long as A6; A8 subquadrate; A9-A10 transverse and A11 slightly elongate, strongly diagonally truncate. **Pronotum dark brown to black**; transverse, about 1.45x (1.4-1.5x) as wide as long; **callosity moderately small, covering 15-20% of the side, prominent laterally**, but not anteriorly, width smaller than its distance to the lateral tooth, with moderate dorsal rim forming a strong tooth; sides strongly concave between callosity and tooth, straight and convergent from tooth to base, widest slightly in front of middle of side at lateral teeth; hind angles about 110°; glossy, punctures moderately small and sparse (distance between them subequal to their average diameter), pubescence moderately long and sparse. Scutellum dark brown. Sternum dark reddish brown. Legs brown. **Elytra** dark brown to black, with diffuse oblique reddish brown marks at front and hind corners in Europe, **mostly reddish brown with apex black in North America, elongate, about 1.55x (1.45-1.6x) as long as wide**, about 2.8x (2.6-3.0x) as long as pronotum, sides straight, nearly subparallel to slightly convergent in basal 0.45, then arcuate to apex; surface glossy with moderately fine and sparse punctures, pubescence single, moderately dense and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Cryptophagus corticinus* has pronotum with sides more sinuate, straight in front of lateral tooth and strongly arcuate between tooth and base. All other similar species with callosity standing out from lateral margin of pronotum have uniform reddish to yellowish brown elytra.

**Distribution:** Quebec west to Alaska and British Columbia, mostly in the Boreal zone, also in the Taiga, Northern Appalachian, Temperate Prairie, Western Cordillera and Marine West Coast Forest zones. **First record for Canada, in Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Yukon Territories.** Fairly common. **Holarctic.**

**Seasonality:** From the first week of May to the last week of October, mostly between the second week of May to the first week of June.

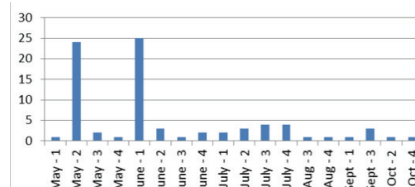
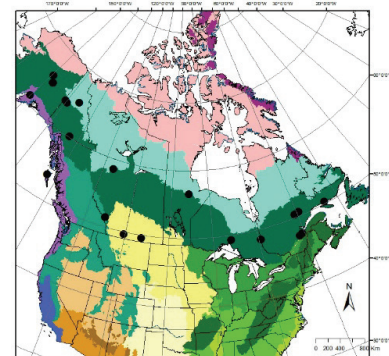
**Habitats:** Mostly in old black spruce forests, sometimes partially cut, also in balsam fir forests mixed with white birch, pine forests, trembling aspen forests mixed with white birch, white spruce forests mixed with white birch and willow stands, in pine and spruce cones and in nests of deer mice (*Peromyscus maniculatus*).

**Number of specimens examined:** 80.

**DNA Barcode Index Number (BIN):** BOLD:ACD9453



*Cryptophagus quadrihamatus*



## *Cryptophagus saginatus* Sturm

**Length** 2.2-2.8 mm. **Head** reddish brown including mandibles and palpi; eyes about 25% width of head. **Antennae** reddish brown with last antennomere of club yellowish brown; A1-A2 subequal, A1 subquadrate, A2 trapezoidal, about 1.4x as long as A3; A3 elongated fusiform, about 1.2x as long as A4; A4 and A6-A8 subequal, subquadrate, about 1.2x as long as A5; A5 trapezoidal, about 0.7x as long as A6; A9-A10 strongly transverse; A11 subquadrate, subconical. **Pronotum** reddish brown; transverse, about 1.5x (1.4-1.6x) as wide as long; **callosity very small, indistinct, covering 15% of the side, not prominent laterally, not projecting anteriorly, width much smaller to its distance to the tooth, without or with a very weak dorsal rim not projecting to a small tooth; sides slightly concave between callosity and tooth, angulate at tooth, straight to slightly convex from tooth to base, widest in front of middle at small lateral teeth, hind angles about 105°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. Elytra reddish to yellowish brown, about 1.5x (1.4-1.6x) as long as wide, about 2.6x (2.45-2.8x) as long as pronotum, sides straight and convergent in basal 0.4, then arcuate to the apex; surface glossy with small punctures, pubescence single, yellowish, appressed and moderately dense. Abdominal ventrites reddish brown.**

**Similar species:** *Cryptophagus maximus* is larger, length over 3 mm and pronotum with sides widest posterior to middle. *C. hebes* has pronotum with sides strongly sinuate, concave between callosity and lateral tooth, strongly convex between tooth and posterior margin, with callosity projecting strongly anteriorly. *C. scanicus* has pronotum with sides concave between callosity and lateral tooth, straight between tooth and posterior margin and elytra usually bicolor, black with humeral area reddish. *C. lapponicus* has pronotum with lateral tooth located behind middle. *C. croceus* has pronotum with sides subparallel at anterior half, callosity subequal to its distance to lateral tooth.

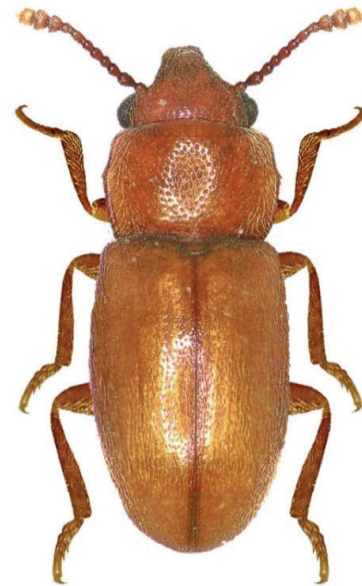
**Distribution:** Prince-Edouard Island, New Brunswick, and Quebec, west to British Columbia, south to New Jersey, Iowa, Illinois, and California, mostly in the Mixedwood Plain and Northern Appalachian zones, also in the Boreal, Western Cordillera, and the Marine West Coast Forest zones. **First record in Prince Edward Island, New Brunswick and Quebec.** Fairly common. **Adventive from Europe.**

**Seasonality:** From the second week of February to the third week of November, probably throughout the year indoor.

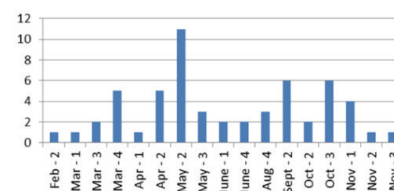
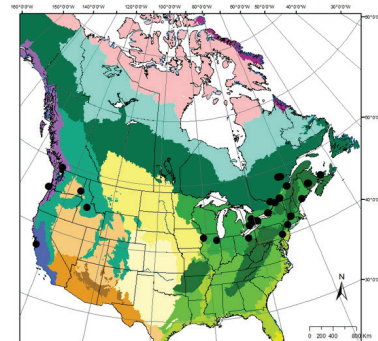
**Habitats:** Mostly indoors, in basements, in stored food products, vegetable refuse, grain elevators, on cellar window and also, reared on carrots (Woodroffe & Coombs, 1961); on soybean and meal (Klimaszewski et al., 2015). Uncommon in hardwood forests with oaks and white pine forests.

**Number of specimens examined:** 58.

**DNA Barcode Index Number (BIN):** BOLD:ABA1607



*Cryptophagus saginatus*



© F. Koehler

## *Cryptophagus scanicus* (Linnaeus)

**Length** 2.0-2.8 mm. **Head** reddish to dark brown including mandibles; palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown; A1-A3 subequal, A1 subquadrate, A2 trapezoidal, A3 fusiform, about 1.67x as long as A4; A4, A6-A8 subequal, subquadrate, about 0.8x as long as A5; A5 elongate, trapezoidal, about 1.25x as long as A6; A9-A10 transverse; A11 subquadrate, subconical. **Pronotum** reddish brown, transverse, about 1.5-1.6x as wide as long; **callosity covering 20% of the side, prominent laterally**, but not projecting anteriorly, **width subequal to its distance to the lateral tooth, with weak dorsal rim not forming a tooth; lateral tooth in front of middle; sides strongly concave between callosity and tooth, angulate at tooth, straight and convergent from tooth to base, widest in front of middle at teeth**, hind angles about 110°; glossy, punctures strong and dense (distance between them less than their average diameter), pubescence yellowish, moderately long and dense. Scutellum dark brown to black. Sternum dark brown. Legs reddish to dark brown. **Elytra reddish to dark brown to black with anterolateral corner reddish brown, about 1.45x as long as wide**, about 2.5x as long as pronotum, sides straight and convergent in basal 0.4, then arcuate to the apex; surface glossy with moderately large punctures, pubescence silvery, moderately dense and appressed. Abdominal ventrites dark brown.

**Similar species:** *Cryptophagus maximus* is larger, length over 3 mm and pronotum widest posterior to middle. *C. hebes* has pronotum with sides strongly sinuate, strongly convex between lateral tooth and posterior margin, with callosity strongly projecting anteriorly. *C. saginatus* has pronotum with callosity not prominent, nearly without dorsal rim, sides straight to slightly concave between callosity and tooth, slightly convex between tooth and posterior margin. *C. subfumatus* has pronotum with callosity strongly prominent anteriorly, wider than its distance to the lateral tooth. *C. lapponicus* and *C. tuberculosus* have pronotum with lateral tooth located behind middle of sides, callosity narrower than its distance to the lateral tooth in *tuberculosus*. *C. croceus* has pronotum with sides subparallel at anterior half, callosity subequal to smaller than its distance to lateral tooth.

**Distribution:** Newfoundland and Quebec west to Yukon, British Columbia, and Washington, mostly in the Boreal and Western Cordillera zones, also in the Taiga and the Mixedwood Plain zones. **First record in Quebec, Ontario, British Columbia and Yukon Territories.** Uncommon. Possibly Holarctic.

**Seasonality:** Mostly from the last week of July to the last week of August, an isolated record on the last week of March.

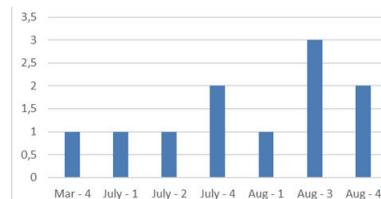
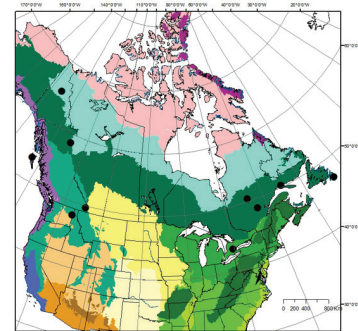
**Habitats:** Hardwood forests with bur oak and silver maple forests with green ash near seasonally flooded marsh (Webster et al., 2016). Also in **stored food products**.

**Number of specimens examined:** 12.

**DNA Barcode Index Number (BIN):** BOLD:ACA8620



*Cryptophagus scanicus*



© A. de Wilde



## *Cryptophagus scutellatus* Newman

**Length 1.5-1.8 mm.** Head reddish brown including mandibles and palpi; eyes moderately small, about 20% width of head. **Antennae** reddish brown; A1 trapezoidal, about 1.1x as long as A2; A2 oval, about 1.25x as long as A3; A3 fusiform, about 1.33x as long as A4; A4-A8 subequal, oval; A9-A10 strongly transverse; A11 subquadrate, asymmetrically conical. **Pronotum** reddish brown, transverse, about 1.45x (1.4-1.5x) as wide as long; **callosity small, covering 15% of the side, slightly prominent laterally, but not anteriorly, width subequal to its distance to the lateral tooth, with weak dorsal rim right-angled posteriorly; lateral tooth well in front of middle, at anterior 0.3-0.4; sides strongly concave between callosity and tooth, convex and slightly convergent from tooth to base**, widest at teeth, hind angles about 115°; glossy, punctures large and dense (distance between them less than their average diameter), pubescence yellowish, moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra reddish brown, about 1.5x (1.4-1.6x) as long as wide**, about 2.5x (2.45-2.6x) as long as pronotum, sides straight and slightly convergent in basal 0.5, then arcuate to the apex; surface glossy with moderately small punctures, pubescence moderately sparse and appressed. Abdominal ventrites reddish brown.

**Similar species:** All similar species (*Cryptophagus dentatus* and *C. corticinus*) with callosity standing out from lateral margin of pronotum and lateral tooth in front of middle of side are larger, length about 2 mm or more.

**Distribution:** From New Brunswick west to Alberta, south to Connecticut, Pennsylvania and California, mostly in the Mixedwood Plain and the Temperate Prairie zones, also in the Boreal, Northern Appalachian, Marine West Coast Forest, and the Mediterranean California zones. **First record in Quebec, Manitoba, and Alberta.** Uncommon. **Adventive from Europe.**

**Seasonality:** From the second week of March to the third week of December, probably throughout the year indoor.

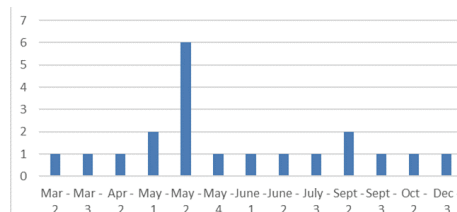
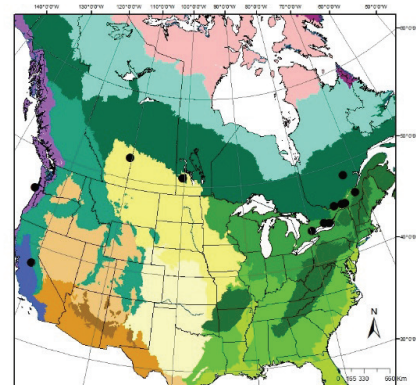
**Habitats:** Mostly indoors, associated with stored food products and in grain elevators. Webster et al. (2016) recorded it in jack pine forest, old cedar and spruce forests with balsam poplar and trembling aspen, old eastern hemlock forests with yellow birch and mixed forests.

**Number of specimens examined:** 20.

**DNA Barcode Index Number (BIN):** BOLD:ACJ7856



*Cryptophagus scutellatus*



## *Cryptophagus setulosus* Sturm

(Syn.: *C. antennatus* Casey, 1900; *C. grossulus* Casey, 1924)

**Length** 2.0-3.0 mm. **Head** reddish brown; clypeus, mandibles and palpi reddish brown; eyes hemispherical to slightly conical, about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 trapezoidal, nearly subquadrate, about 1.25x as long as A2; A2 slightly elongate, about 0.8x as long as A3; A3-A8 elongate, A3 fusiform, about 1.5x as long as A4, A4-A8 subequal, trapezoidal; A9-A10 strongly transverse; A11 subquadrate, asymmetrically subconical. **Pronotum** reddish brown; **strongly transverse, about 1.55x (1.5-1.6x) as wide as long; callosity large, covering 30-35% of the side, prominent laterally**, not or slightly projecting anteriorly, **width longer to its distance to the tooth, with strong dorsal rim not forming a tooth; lateral tooth usually at middle; pronotum sides straight to slightly concave between callosity and tooth, straight to slightly convex and convergent from tooth to base, widest at middle**, hind angles about 110°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish to yellowish brown. **Elytra reddish brown, about 1.5x (1.4-1.6x) as long as wide, about 2.7x (2.4-2.9x) as long as pronotum, sides arcuate throughout, widest at middle; surface glossy with moderately strong punctures, some apparently forming rows underneath surface, pubescence moderately dense, double, appressed and suberect. Abdominal ventrites reddish brown.**

**Similar species:** *Cryptophagus croceus* has pronotum with callosity subequal or shorter than its distance to the lateral tooth and with sides sinuate from tooth to the posterior margin. *C. valens* and *C. histricus* have pronotum with callosity not prominent laterally, narrower than its distance to the lateral tooth and sides slightly arcuate throughout. *C. laticollis* has pronotum with sides slightly concave and subparallel from callosity to lateral tooth, strongly convex from tooth to posterior margin.

**Distribution:** From Newfoundland, Labrador, Quebec west to Northwest Territories and British Columbia, south to Georgia, Missouri, Nebraska, Iowa, and Montana, mostly in the Eastern Boreal zone, also in the Mixedwood Plain, Northern and Southern Appalachian, Southeastern USA Forest Plain, Temperate Prairie and Western Cordillera zones. **First record in Alberta and Northwest Territories.** Common. **Adventive from Europe** but successfully colonise natural habitats.

**Seasonality:** From the first week of January to the first week of November, mostly from the third week of June to the last week of August.

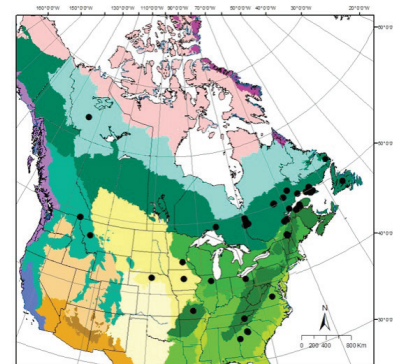
**Habitats:** Very common in balsam fir forests, often mixed with white or yellow birch, damaged with spruce budworm epidemics or partially cut, black spruce forests burned after 80 years or partially cut, burnt lands regenerated with *Vaccinium*, *Kalmia* and *Rhododendron*, also in balsam fir plantations, white cedar forests and willow oak forests; usually in leaf litter and fungi. In Europe, mostly in nests of bees and wasps (Woodroffe & Coombs, 1961).

**Number of specimens examined:** 312.

**DNA Barcode Index Number (BIN):** **BOLD:AAG5057** (Nearctic);  
**BOLD:AAJ6373** (Palearctic)



*Cryptophagus setulosus*



## *Cryptophagus stromus* Woodroffe & Coombs

**Length** 2.2-2.7 mm. **Head** reddish brown; palpi yellowish brown; eyes hemispherical, about 30% width of head. **Antennae** reddish brown with last segment of club yellowish brown; A1 quadrate, about 1.15x as long as A2; A2 trapezoidal, about 0.55x as long as A3; A3 elongate, fusiform, about 1.3x as long as A4; A4-A8 elongate, fusiform, A4-A5 subequal, about 1.15x as long as A6, A6-A8 subequal; A9-A10 strongly transverse; A11 elongate, symmetrically subconical. **Pronotum** reddish brown; **transverse**, about 1.37x (1.3-1.43x) as wide as long; **callosity** small, covering about 15% of the side, slightly prominent laterally, not or slightly projected anteriorly, width about 50% its distance to the tooth, with small dorsal rim projecting posteriorly to a distinct tooth; lateral tooth anterior to middle; pronotum sides straight from callosity to tooth, angular at tooth, sinuate and slightly convergent from tooth to base, widest at teeth, hind angles about 100°; glossy, punctures moderately small and sparse (separated by about their diameter), pubescence yellowish, moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra** yellowish brown, about 1.6x (1.5-1.7x) as long as wide, about 2.6x (2.4-2.8x) as long as pronotum, **sides arcuate throughout**, widest at basal 0.35; surface glossy with moderately small punctures, pubescence double, yellowish, long, moderately sparse, appressed, and suberect. Abdominal ventrites yellowish brown.

**Similar species:** *Cryptophagus lycoperdi* has front tibiae with a strong tooth at apex externally. *C. dilutus* has pronotum with larger callosity, width subequal to its distance to the lateral tooth, sides concave between callosity and tooth. *C. porrectus* has pronotum with punctation very dense and elytra dark brown. *C. difficilis* has pronotum wider, about 1.45x as wide as long and elytra shorter, about 1.4-1.5x as long as wide. *C. punctipennis* has pronotum widest at middle and elytra with sides straight and more subparallel in anterior 0.5.

**Distribution:** Manitoba west to British Columbia, south to New Mexico, Arizona, and California, mostly in the Temperate Prairie and Semi-Arid Prairie zones, also in the Marine West Coast Forest, Western Cordillera and Cold Desert zones. **First record for Alberta and Alaska.** Uncommon.

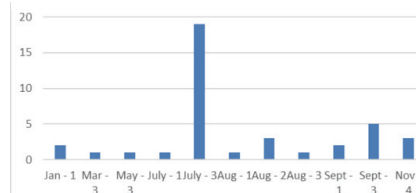
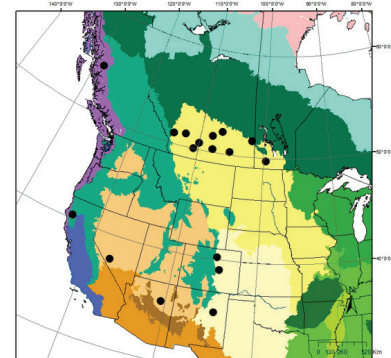
**Seasonality:** From the first week of January to the last week of November, peaking in the third week of July.

**Habitats:** Unknown. According to locality data, in grasslands, possibly associated with rodent burrows or ant nests.

**Number of specimens examined:** 39.



*Cryptophagus stromus*





## *Cryptophagus subfumatus* Kraatz

**Length** 2.0-3.0 mm. **Head** reddish brown including mandibles and palpi; eyes small, about 15% width of head. **Antennae** reddish brown with last antennomere yellowish brown; A1 trapezoidal, about 1.4x as long as A2; A2-A3 subequal, slightly elongate, trapezoidal, about 1.25x as long as A4; A4-A6 subequal, subquadrate, about 1.67x as long as A7; A7-A8 transverse; A9-A10 strongly transverse; A11 slightly elongate, symmetrically conical. **Pronotum** reddish brown; strongly transverse, about 1.55x (1.45-1.6x) as wide as long; callosity large, covering 30% of the side, not prominent laterally, projecting anteriorly, width subequal to slightly smaller to its distance to the tooth, with a strong dorsal rim not projecting to a small tooth; lateral tooth minute, usually at middle of the side; pronotum sides straight between callosity and tooth, convex at tooth, convex and convergent from tooth to base, widest at middle, hind angles about 115-120°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence yellowish, short and dense, appressed. Scutellum reddish to yellowish brown. Sternum reddish brown. Legs reddish to yellowish brown. **Elytra** reddish to yellowish brown, about 1.52x (1.45-1.6x) as long as wide, about 2.75x (2.65-2.85x) as long as pronotum, sides straight and subparallel in basal 0.5, then arcuate to the apex; surface glossy with moderately large punctures, (distance between them subequal to their average diameter), pubescence usually single, yellowish, moderately dense and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Cryptophagus scanicus* has pronotum with callosity not projecting anteriorly, sides strongly concave between callosity and lateral tooth, straight between lateral tooth and posterior margin. *C. lapponicus* and *C. tuberculosus* has pronotum with lateral tooth located behind middle of sides, callosity narrower than its distance to the lateral tooth in *tuberculosus*. *C. croceus* has pronotum with sides subparallel at anterior half, sinuate from lateral tooth to posterior margin, tooth usually in front of middle and elytra with sides arcuate throughout. *C. hebes* has pronotum with sides strongly sinuate, concave between callosity and tooth, callosity narrower than its distance to the lateral tooth. *C. saginatus* has pronotum with callosity not prominent, not projecting anteriorly. *C. maximus* is larger, length over 3 mm and pronotum widest posterior to middle.

**Distribution:** New Brunswick west to Yukon and British Columbia, south to Florida, Alabama, Arkansas, New Mexico, Arizona, and California, mostly in the Boreal, Northern Appalachian, Mixedwood Plain, Temperate Prairie, Western Cordillera and the Mediterranean California zones, also in the Southeastern USA Forest Plain, Southeast USA Coastal Plain and Hot Desert zones. **First record in New Brunswick and Manitoba.** Fairly common. **Adventive from Europe.**

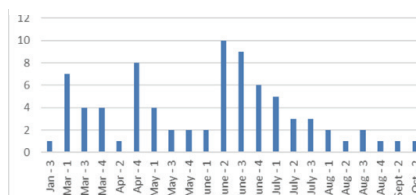
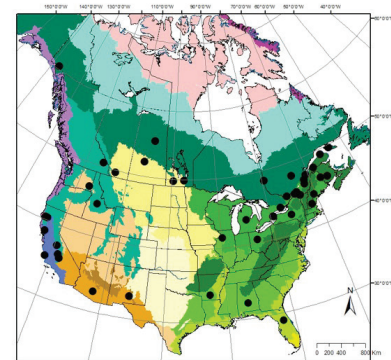
**Seasonality:** From the third week of January to the second week of October, probably throughout the year indoor.

**Habitats:** Mostly indoors, associated with stored food products, dried fruits, grain elevators, cellars, beehives and rotten carrots (Woodroffe & Coombs, 1961). Uncommon in natural habitats, like balsam fir forests, sometimes mixed with white spruce, red spruce forests mixed with red maple and balsam fir and burnt lands regenerated with blueberries.

**Number of specimens examined:** 79.



*Cryptophagus subfumatus*



## *Cryptophagus tuberculosus* Mäklin

(Syn.: *C. debilis* LeConte, 1858; *C. brevipilis* Casey, 1900; *C. lepidus* Casey, 1900; *C. boulderanus* Casey, 1924; *C. instabilis* Bruce, 1936)

**Length** 2.0-2.8 mm. **Head** reddish brown with palpi yellowish brown; eyes hemispherical, about 20% width of head. **Antennae** reddish brown with club yellowish brown; A1 subquadrate, about 0.85x as long as A2; A2-A3 subequal, elongate fusiform, about 1.4x as long as A4; A4-A8 slightly elongate, trapezoidal, A4-A5 subequal, about 1.1x as long as A6, A6-A8 subequal; A9-A10 strongly transverse; A11 subquadrate, symmetrically subconical. **Pronotum** reddish brown; transverse, about 1.58x (1.5-1.65x) as wide as long; **callosity** moderately small, covering about 20% of the side, not prominent laterally, slightly to strongly projecting anteriorly, width about 67% its distance to the lateral tooth, with weak to moderate dorsal rim not forming an angle posteriorly; pronotum widest usually posterior to middle at small lateral teeth; sides straight to slightly concave from callosity to tooth, weakly to strongly convex from tooth to base, hind angles variable, from 95 to 115°; glossy, punctures strong and dense (separate by less than their diameter), pubescence yellowish, moderately short and dense. Scutellum yellowish brown. Sternum yellowish brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.55x (1.45-1.65x) as long as wide, about 2.85x (2.75-3.0x) as long as pronotum, with sides straight, nearly subparallel to convergent in basal 0.5-0.6, then arcuate to apex; surface glossy with moderately small punctures, pubescence usually single, moderately sparse and appressed, sometimes double, longer and suberect. Abdominal ventrites yellowish brown.

**Similar species:** *Cryptophagus croceus* has pronotum usually widest anterior to middle, with sides usually subparallel from callosity to lateral tooth and sinuate from tooth to posterior margin. *C. lapponicus*, *C. saginatus* and *C. scanicus* have pronotum with callosity not projecting anteriorly. *C. subfumatus* has pronotum with callosity wider than its distance to the lateral tooth. *C. hebes* has pronotum with sides strongly sinuate, concave between callosity and tooth. *C. maximus* is larger, length over 3 mm, with callosity not projecting anteriorly.

**Distribution:** Newfoundland, Quebec west to Alaska and British Columbia, south to New Mexico and California, mostly in the western Boreal, Western Cordillera, Marine West Coast Forest, Cold Desert, Gila Mountains, and Hot Desert zones, also in Mixedwood Plain and Temperate Prairie zones. **New record for Quebec, Ontario and Manitoba.** Very common in western North America, rare in the east. **Holarctic.**

**Seasonality:** From the first week of January to the first week of December, mostly from the second week of June to the last week of August, peaking in the second week of July.

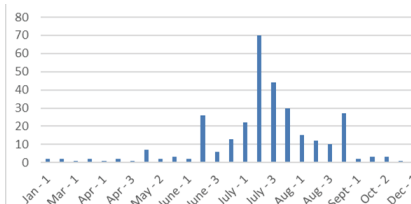
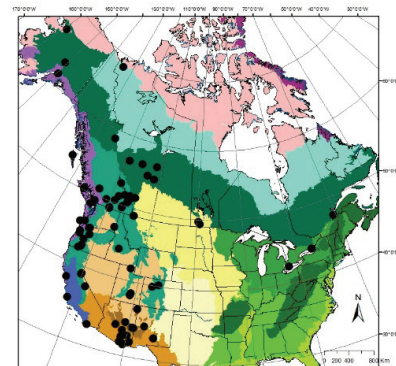
**Habitats:** Black and Engelmann spruce forests, Ponderosa, lodgepole and western white pine forests, subalpine and Shasta fir forests, also in trembling aspen forests, white birch mixed with alder stands, even in barns. Usually on conifer tree bark, in *Dryocoetes affaber* galleries, in woodrat (*Neotoma*) nests, in wasp nests (*Vespula pennsylvanica*); also in dried fruits, mash and grain elevators (Woodroffe and Coombs, 1961). Collected in recently dead girdled *Populus tremuloides* (Jacobs et al., 2006).

**Number of specimens examined:** 312.

**DNA Barcode Index Number (BIN):** BOLD:AAN5981 (Nearctic);  
BOLD:ABX2315 (Palearctic)



*Cryptophagus tuberculosus*



## *Cryptophagus valens* Casey

**Length** 2.5-3.0 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; **eyes very small**, hemispherical, **about 15% width of head**. **Antennae** reddish to dark brown with last segment yellowish brown; A1-A3 subequal, A1 nearly subquadrate, A2 elongate oval, A3 fusiform, about 1.4x as long as A4; A4-A5 subequal, slightly elongate, trapezoidal, about 1.1x as long as A6; A6-A7 subequal, trapezoidal, about 1.2x as long as A8; A8 subquadrate; A9-A10 strongly transverse; A11 slightly elongate, subconical. **Pronotum** reddish brown; transverse, about 1.5x (1.4-1.6x) as wide as long; **callosity small, covering 16-20% of the side, not prominent laterally**, not projecting anteriorly, **width about 67% its distance to the lateral tooth**, with weak dorsal rim; pronotum widest at middle at lateral teeth; **sides rather straight between callosity and tooth, slightly arcuate and convergent from tooth to base**, hind angles about 105-110°; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown**, about 1.55x (1.45-1.65x) as long as wide, about 2.8x (2.65-3.0x) as long as pronotum, sides straight, nearly subparallel in basal 0.55, then strongly arcuate to apex; surface glossy with moderately small sparse punctures, pubescence double, short, appressed and suberect. Abdominal ventrites yellowish brown.

**Similar species:** *Cryptophagus histicus* has eyes prominent with large facets, pronotum with sides sinuate from tooth to posterior margin and elytra with pubescence longer and suberect. *C. laticollis* has pronotum with callosity subequal to its distance to the tooth, sides slightly concave and subparallel between callosity and tooth. *C. setulosus* has pronotum with callosity prominent laterally and wider than its distance to the lateral tooth. *C. croceus* has pronotum with sides subparallel from callosity to lateral tooth, sinuate from tooth to the posterior margin, usually widest in front of middle. *C. mainensis* has pronotum with very large callosity about 1.4-2.0x as wide as its distance to the tooth. *C. tuberculosus* has pronotum with lateral tooth located behind middle of side and callosity prominent anteriorly.

**Distribution:** Nova Scotia west to Saskatchewan, south to Georgia and Illinois, with an isolated record in British Columbia, mostly in the Mixedwood Plain, Southern Appalachian, and Southeastern USA Forest Plain zones, also in the Temperate Prairie, and Southeast USA Coastal Plain zones. **First record for Canada, in Quebec, Ontario, Manitoba, Saskatchewan and British Columbia.** Common.

**Seasonality:** From the second week of February to the second week of December, mostly from the last week of September to the third week of October.

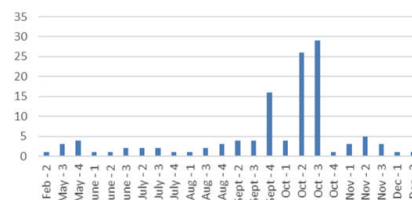
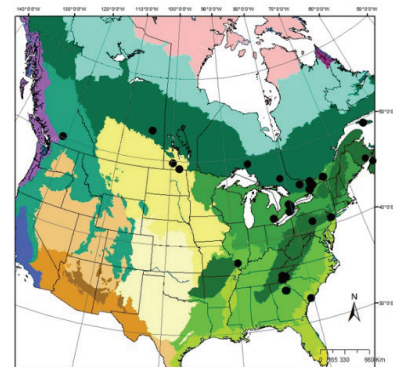
**Habitats:** Hardwood forests and mixed forest edges.

**Number of specimens examined:** 122, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ABY0110



*Cryptophagus valens*





## *Cryptophagus varus* Woodroffe & Coombs

**Length** 2.0-2.6 mm. **Head** reddish brown; mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with last segment of club yellowish brown; A1 subquadrate to slightly elongate, about 1.1x as long as A2; A2-A3 subequal, A2 elongate oval, A3 fusiform, about 1.67x as long as A4; A4-A5 subequal, trapezoidal, about 1.67x as long as A6; A6-A8 subquadrate; A9-A10 strongly transverse; A11 slightly elongate, asymmetrically subconical. **Pronotum** reddish brown; transverse, about 1.4x (1.35-1.45x) as wide as long; **callosity** small, covering about 15% of the side, not prominent laterally nor anteriorly, width about 50% its distance to the tooth, without dorsal rim, projecting posteriorly to a small tooth; lateral tooth usually at or posterior to middle; pronotum sides sinuate, concave between callosity and tooth, strongly convex and convergent from tooth to base, widest slightly posterior to teeth, hind angles about 120°; glossy, punctures moderately small and dense (distance between them subequal to their average diameter), pubescence moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** reddish to yellowish brown, about 1.65x (1.6-1.7x) as long as wide, about 2.85x (2.75-3.0x) as long as pronotum, sides straight and slightly convergent in basal 0.5, then arcuate to the apex; surface glossy with moderately small punctures, pubescence greyish, moderately sparse and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Cryptophagus obsoletus* has a pronotum with sides straight between callosity and tooth, which is located behind middle of side and punctation large and dense. *C. distinguendus* and *C. punctipennis* have pronotum with sides straight from callosity to tooth, angulate at tooth and straight from tooth to posterior margin.

**Distribution:** Quebec west to British Columbia, south to Texas and California, mostly in the Temperate Prairie, Semi-Arid Prairie, Cold Desert and Hot Desert zones, also in the Boreal, Western Cordillera, Marine West Coast Forest and Mediterranean California zones. **First record in Quebec, Ontario and Manitoba.** Very common. **The dominant species in the Prairie zones.**

**Seasonality:** From the first week of March to the first week of December, peaking in the last week of July and the first of August.

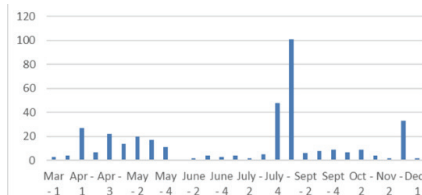
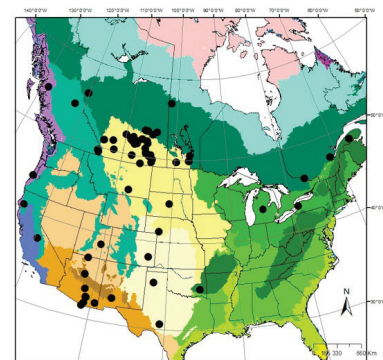
**Habitats:** Grasslands, deserts and rocky slopes above timberline, in nests of woodrats (*Neotoma*), in burrows of Northern Pocket Gopher (*Thomomys talpoides*), in grain elevators, on mouldy wheat and in stored food products.

**Number of specimens examined:** 375.

**DNA Barcode Index Number (BIN):** **BOLD:ACU6317**



*Cryptophagus varus*



## *Henoticus californicus* (Mannerheim)

(Syn.: *Cryptophagus inconspicua* LeConte, 1863; *Henoticus loberinus* Sharp, 1900; *H. germanicus* Reitter, 1906)

**Length** 2.0-2.2 mm. **Head** reddish brown including mandibles and palpi reddish; eyes small, width about 20% width of head. **Antennae** reddish brown, A1-A3 subequal, A1 subquadrate, A2 oval, A3 fusiform, about 1.5x as long as A4; A4-A8 subequal, subquadrate; A9-A10 strongly transverse, A11 slightly elongate, diagonally truncate. **Pronotum reddish brown, with sides arcuate, serrate, with 10-12 serrulations (S), anterior S1-S5 more widely spaced than posterior denser S6-S10, S11-S12 obsolete toward the sharply obtuse hind angles, widest at posterior 0.33; strongly transverse, about 1.5-1.55x as wide as long, sides slightly concave in anterior 0.5, strongly convex at posterior 0.5; basal margin with 2 small basal fovea connected by a deeply narrow transverse impression; punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long, dense and mostly appressed. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. Elytra yellowish brown, about 1.4-1.45x as long as wide, about 2.4x as long as pronotum, sides arcuate throughout; surface glossy with moderately small punctures and longer sparser suberect pubescence. Abdominal ventrites reddish brown.**

**Similar species:** *Henoticus serratus* and *H. pilifer* have pronotum widest at middle, with regularly spaced serrulations. *H. varidentatus* is smaller (L=1.4 mm) and has pronotum with 6 irregularly spaced serrulations.

**Distribution:** British Columbia, south to California, mostly in the Marine West Coast Forest zone, also in the Western Cordillera zone. Very rare. Introduced in Europe and in many parts of the world.

**Seasonality:** One specimen collected the last week of September; seems to be a late season species, which might explain its scarcity.

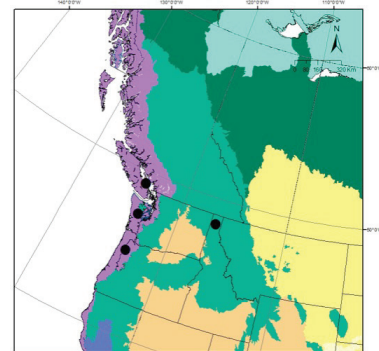
**Habitats:** Conifer forests, in cones; also in stored food products and moldy peas.

**Number of specimens examined:** 1.

**Remark:** There is a possibility that this species was introduced by boat in California from Central or South America before its description by Mannerheim in 1843. It seems to be more common outside North America.



*Henoticus californicus*



## *Henoticus pilifer* Reitter

(Syn.: *Glyptophorus mycetoecus* Park, 1929 **syn. nov.**)

**Length** 2.0-2.3 mm. **Head** reddish brown including mandibles and palpi reddish; eyes small, width about 25% width of head. **Antennae** reddish brown, A1-A3 subequal, A1 subquadrate, A2 trapezoidal, A3 fusiform, about 1.5x as long as A4; A4-A5 subequal, trapezoidal, about 1.33x as long as A6; A6-A8 subequal, subquadrate; A9-A10 strongly transverse, A11 slightly elongate, diagonally truncate. **Pronotum** reddish brown, **with sides arcuate, serrate, with 8-10 regularly-spaced serrulations** which become obsolete toward the sharply obtuse hind angles, **widest near middle; transverse, about 1.45x (1.37-1.50x) as wide as long; basal margin with 2 small basal fovea connected by a deeply impressed transverse impression**; punctures strong and dense (distance between them smaller than their average diameter), pubescence very long, moderately dense and mostly recurved. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra** reddish brown, **about 1.4x (1.35-1.46x) as long as wide, about 2.55x (2.35-2.75x) as long as pronotum, sides arcuate throughout**; surface glossy with moderately small punctures and **longer sparser suberect pubescence**. **Abdominal ventrites** reddish brown.

**Similar species:** *Henoticus serratus* has elytra with sides straight, slightly convergent in anterior 0.5 and pubescence shorter, denser and mostly recurved. *H. varidentatus* is much smaller, less than 1.5 mm, and has pronotum with sides having 6 irregularly spaced serrulations. *H. californicus* has pronotum with sides having denser serrulations in posterior 50%, pronotum widest at posterior third.

**Distribution:** Quebec west to Ontario, south to Georgia, Illinois and Iowa, mostly in the Mixedwood Plain and the Appalachian zones, also in the Boreal and Southeastern USA Forest Plain zones. **First record for North America in Canada (Quebec, Ontario and British Columbia).** Uncommon. **Adventive from northeastern Asia**, probably China; also recorded in Europe (Belgium) by Jens Esser in 2013.

**Seasonality:** From the first week of March to the second week of September, mostly between the last week of May and the second week of July.

**Habitats:** Oak and hemlock forests, also in black spruce forests.

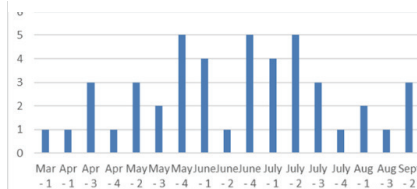
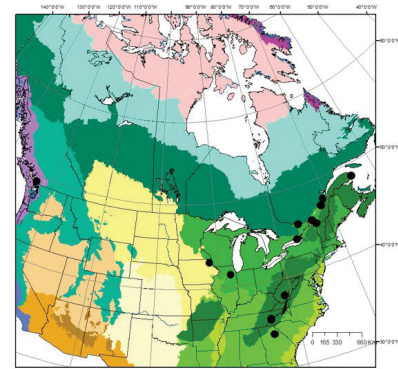
**Number of specimens examined:** 47.

**Remarks:** In North America, this species was previously described as *Glyptophorus mycetoecus*, transferred by Bousquet (1988) to genus *Henoticus*, synonymized by Colin Johnson as *H. serratus*. Shape and pubescence of the elytra separate *H. mycetoecus* from *H. serratus*. A specimen of *H. pilifer* discovered in the Canadian National Collection shows identical characters to *H. mycetoecus*.

**DNA Barcode Index Number (BIN):** BOLD:ACK1696



*Henoticus pilifer*





## *Henoticus serratus* (Gyllenhal)

(Syn.: *Paramecosoma denticulata* LeConte, 1850)

**Length** 1.7-2.3 mm. **Head** dark brown to black, clypeus, mandibles and palpi reddish brown; eyes larger, width about 30% width of head. **Antennae** reddish brown; A1-A3 subequal, A1 subquadrate, A2 trapezoidal, A3 fusiform, about 1.5x as long as A4; A4-A5 subequal, trapezoidal, about 1.33x as long as A6; A6-A8 subequal, subquadrate; A9-A10 strongly transverse, A11 slightly elongate, diagonally truncate. **Pronotum** reddish to dark brown to black, with sides arcuate, serrate, with 8-10 regularly-spaced serrulations which become obsolete toward the sharply obtuse hind angles, widest near middle; transverse, about 1.45x (1.35-1.55x) as wide as long; basal margin with 2 small basal fovea connected by a deeply impressed transverse impression; punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately long, dense and mostly recurved. Scutellum reddish brown to black. Sternum reddish brown to black. Legs reddish brown. **Elytra** reddish to dark brown to black, about 1.45x (1.35-1.55x) as long as wide, about 2.65x (2.35-2.9x) as long as pronotum, sides straight and convergent in anterior 0.5, then arcuate to apex; surface glossy with moderately large punctures and silvery recurved pubescence. Abdominal ventrites reddish to dark brown.

**Similar species:** *Henoticus pilifer* has eyes smaller, width about 25% width of head, elytra with sides arcuate throughout and pubescence longer, sparser and suberect. *H. varidentatus* has pronotum with sides having 6 irregularly spaced serrulations. *H. californicus* has pronotum with sides having denser serrulations on posterior 50%, pronotum widest at posterior third.

**Distribution:** From Newfoundland west to Alaska and British Columbia, south to Georgia and Colorado, mostly in the Boreal, Mixedwood Plain, Northern Appalachian, and Western Cordillera zones, also in the Taiga, Southern Appalachian, Southeastern USA Forest Plain, and Marine West Coast Forest zones. **First record for Alberta.** Common. **Holarctic.**

**Seasonality:** From the first week of April to the first week of October, mostly between the first week of June and the third week of July.

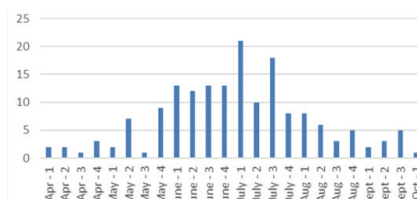
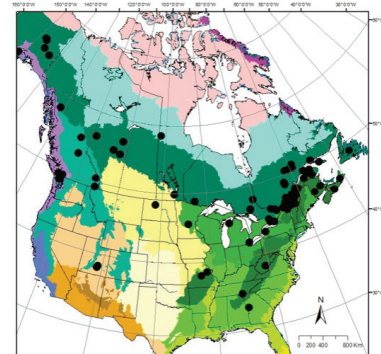
**Habitats:** Balsam fir forests, black spruce forests, burnt lands with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, white spruce forests and white birch and trembling aspen forests. Also in red spruce forests, red oak forests (Majka and Langor, 2010; Webster et al., 2012); white pine forests partially burned, jack pine forests, balsam fir plantations, maple forests, edges of ponds, mostly in leaf litter, fungi, under bark of dead or dying trees (Bousquet, 1990) and under rubbish in gravel pit. Collected on *Fomitopsis pinicola* and *Fomes fomentarius* (Hagvar, 1999); sometimes in stored food products and dried fruits.

**Number of specimens examined:** 174.

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*Henoticus serratus*



## *Henoticus varidentatus* Pelletier n. sp.

**Length 1.4 mm.** **Head** reddish brown, mandibles and palpi brownish yellow; eyes width about 30-35% width of head. **Antennae** reddish brown, A1-A3 subequal, A1 subquadrate, A2 trapezoidal, A3 fusiform, about 1.33x as long as A4; **A4-A5 subequal, subquadrate, about 1.5x as long as A6; A6-A8 subequal, transverse; A9-A10 strongly transverse, A11 slightly elongate, diagonally truncate.** **Pronotum** reddish brown, **with sides arcuate, serrate, with 6 irregularly-spaced serrulations widest near middle; transverse, about 1.5x as wide as long; basal margin with 2 small basal fovea connected by a deeply broad transverse impression;** punctures moderately large and dense (distance between them subequal to their average diameter), pubescence short, sparse and mostly appressed. Scutellum reddish brown. Sternum orange brown. Legs yellowish brown. **Elytra yellowish brown, darker brown at apex, about 1.45x as long as wide, about 2.3x as long as pronotum, sides arcuate throughout;** surface glossy with moderately small punctures and **longer sparser suberect pubescence, longer hairs forming 5 rows.** Abdominal ventrites orange brown.

**Similar species:** *Henoticus pilifer* and *H. serratus* are larger (L=1.7-2.3 mm) and have pronotum with sides having 8-10 regularly spaced serrulations. *H. serratus* has elytra with sides straight, slightly convergent at anterior 50% and pubescence shorter, denser and mostly recurved. *H. californicus* has pronotum with sides having denser serrulations on posterior 50%, pronotum widest at posterior third.

**Holotype:** Canada, Quebec, Lévis MRC, Saint-Étienne-de-Lauzon, 4.X.1975, Claude Chantal, (CNC, No. 24565).

**Distribution:** Quebec, in the Mixedwood Plain zone.

**Habitats:** Unknown.

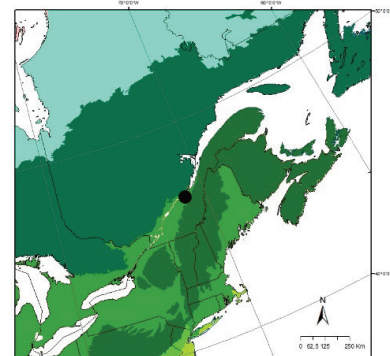
**Number of specimens examined:** 1.

**Remarks:** Seems to be a very late season species which might explain why it was previously never collected.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:53578031-2C78-45F1-8CBA-D8C181A07048](https://zoobank.org/act:53578031-2C78-45F1-8CBA-D8C181A07048)



*Henoticus varidentatus* Pelletier  
Holotype



## *Henotiderus centromaculatus* Reitter

(Syn.: *Crosimus hirtus* (Casey, 1900); *C. obesulus* (Casey, 1900); *Henoticoides parsonsi* Johnson, 1972)

**Length** 1.5-2.0 mm. **Head** dark brown to black with clypeus, mandibles and palpi reddish brown; eyes small, strongly hemispherical, width about 25% width of head. **Antennae** reddish brown, A1 subquadrate, about 1.33x as long as A2; A2 trapezoidal, about 1.2x as long as A3; A3 fusiform, about 1.25x as long as A4; A4-A5 subequal, trapezoidal, about 1.33x as long as A6; A6-A8 subequal, subquadrate; A9-A10 strongly transverse, A11 transverse, diagonally truncate. **Pronotum dark brown to black with sublateral lines, front corners strongly projected anteriorly, with sides trisinate, with 10-12 irregularly-spaced serrulations** which become obsolete toward the sharply obtuse hind angles, **widest at posterior 0.4; strongly transverse, about 1.75x (1.7-1.85x) as wide as long; basal margin with a deep broad transverse impression; punctures strong and dense** (distance between them smaller than their average diameter), pubescence long, moderately dense and mostly recurved. Scutellum dark brown. Sternum dark brown. Legs reddish brown. **Elytra reddish brown, usually with a transverse line crossing suture or a central spot at anterior 0.35, middle spot at sides and apical spot black, about 1.35x (1.3-1.4x) as long as wide, about 3.0x (2.85-3.25x) as long as pronotum, sides arcuate throughout; surface glossy with small punctures mixed with moderately large sparse punctures and longer suberect mixed with recurved pubescence.** Abdominal ventrites dark brown.

**Similar species:** *Henotiderus lorna* has pronotum reddish brown with regular serrulations throughout and elytra uniform reddish brown.

**Distribution:** Nova Scotia and Quebec west to Alaska and Alberta, south to Georgia, Alabama, Mississippi and Iowa, in the Boreal, Mixedwood Plain, Appalachian and Southeastern USA Forest Plain zones, rare in the Western Cordillera zone on the eastern slope of the Rockies. Common. **Holarctic.**

**Seasonality:** From the last week of February to the last week of September, mostly from the last week of May to the last week of July, peaking from the second week of June to the third week of July.

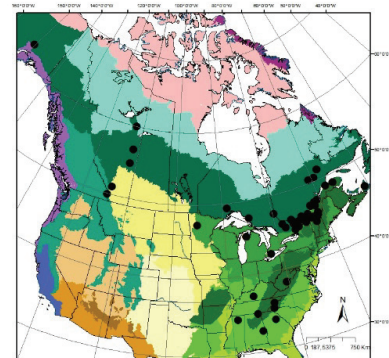
**Habitats:** Black spruce forests, partially cut, trees sometimes damaged with girdling, balsam fir forests, yellow birch forests mixed with firs, and sugar maple forests. Also whitebark pine forests, sweetgum forests, oak forests, red pine plantations and burnt lands with regeneration of *Vaccinium*. Usually collected in fungi and polypores on trunk such as *Piptoporus betulinus*. Also in fungi, on soil, litter and logs.

**Number of specimens examined:** 98.

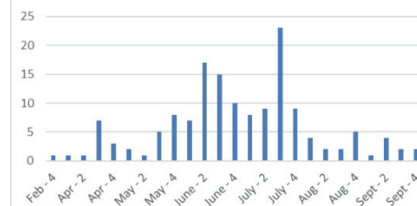
**DNA Barcode Index Number (BIN):** BOLD:ACM2551



*Henotiderus centromaculatus*



*H. centromaculatus*





## *Henotiderus lorna* (Hatch)

**Length** 1.9-2.2 mm. **Head** reddish brown including mandibles and palpi; eyes strongly hemispherical, width about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 subquadrate, about 1.15x as long as A2; A2-A3 subequal, A2 trapezoidal, A3 fusiform, about 1.5x as long as A4; A4-A8 trapezoidal, A4-A5 subequal, about 1.15x as long as A6, A6-A8 subequal; A9 slightly transverse; A10 strongly transverse, A11 subquadrate, diagonally truncate. **Pronotum reddish brown with sublateral lines**, front corners slightly projected anteriorly, **with sides arcuate, with about 10 regularly-spaced serrulations, no distinct serrulations at posterior 0.2, widest at posterior 0.45; strongly transverse, about 1.6x (1.5-1.75x) as wide as long; basal margin with a deep round fovea connected by a narrow transverse impression**; punctures small and dense (distance between them subequal to their average diameter), pubescence long, moderately dense and mostly appressed. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra entirely reddish brown**, about 1.35x (1.3-1.4x) as long as wide, about 2.75x (2.55-2.95x) as long as pronotum, **sides arcuate throughout**; surface glossy with small punctures mixed with moderately large and sparse punctures; **shorter recurved pubescence mixed with 6 rows of longer suberect pubescence**. Abdominal ventrites reddish brown.

**Similar species:** *Henotiderus centromaculatus* has pronotum dark brown to black with sides trisinuate and elytra reddish brown, usually with a transverse line crossing suture or a central spot at anterior 35%, middle spot at sides and apical spot black.

**Distribution:** Alberta west to British Columbia and Alaska, south to Oregon, mostly in the Western Cordillera and Marine West Coast Forest zones, rare in the Boreal zone. **First record for Alberta.** Fairly common.

**Seasonality:** From the last week of February to the third week of September, peaking in the third week of July.

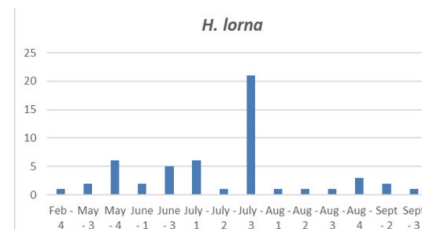
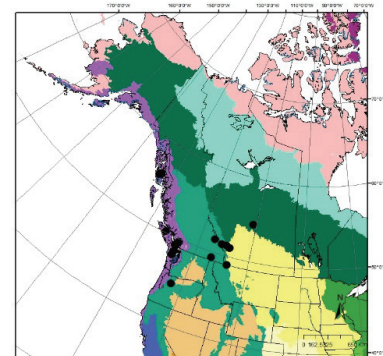
**Habitats:** Douglas fir forests and western white pine forests, usually in leaf litter.

**Number of specimens examined:** 53.

**DNA Barcode Index Number (BIN):** **BOLD:ACB0023**



*Henotiderus lorna*



## *Micrambe ulicis* (Stephens)

**Length** 1.9-2.1 mm. Body entirely uniform reddish brown. **Head** with eyes hemispherical, about 25% width of head. **Antennae** with A1 subquadrate, about 1.15x as long as A2; A2 trapezoidal, about 0.85x as long as A3; A3 fusiform, about 1.75x as long as A4; A4-A5 subequal, subquadrate, about 1.33x as long as A6; A6-A8 subequal, transverse; A9-A10 strongly transverse; A11 slightly elongate, subconical. **Pronotum** transverse, about 1.4-1.45x as wide as long; **callosity** very large, covering 50% of the side, prominent laterally, not anteriorly, with strong dorsal rim not forming a tooth; without lateral tooth; pronotum sides convex throughout, widest at middle, hind angles about 105°; glossy, punctures strong and dense (distance between them less than their average diameter), pubescence yellowish, moderately dense and appressed. **Elytra** about 1.5x as long as wide, about 2.7x as long as pronotum, sides straight and slightly convergent in anterior 0.5, widest at middle, then arcuate through apex; surface glossy with moderately large punctures, pubescence yellowish, short, sparse and appressed.

**Distribution:** Quebec, Lac St-Jean. **First record of the genus and the species in North America.** Rare. **Adventive from Europe.**

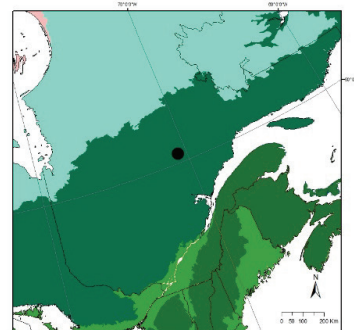
**Seasonality:** 29.VII-13.VIII.2009.

**Habitat:** Black spruce forest, within a girdled *Picea mariana*.

**Number of specimens examined:** 1.



*Micrambe ulicis*



## *Myrmedophila americana* (LeConte)

(Syn.: *Cryptophagus blumi* Blaisdell, 1937)

**Length** 2.1-2.4 mm. **Body** glossy, entirely covered with minute sparse (nearly invisible) pubescence. **Head** reddish to dark brown; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 stout, transverse, about 1.4x as long as A2; A2-A3 subequal, A2 transverse, A3 trapezoidal, about 1.25x as long as A4; **A4-A8 subequal, strongly transverse**; A9-A10 strongly transverse, A9 distinctly narrower than A10, and A11 slightly elongate, strongly diagonally truncate. **Pronotum** reddish to dark reddish brown; transverse, about 1.35x as wide as long, widest at lateral teeth; **callosity small, covering 15% of the side, prominent laterally**, not anteriorly, width smaller than its distance to the lateral tooth, without dorsal rim or tooth; **sides nearly subparallel throughout, straight between callosity and tooth and straight from tooth to base**, lateral tooth at middle of side; hind angles about 90-95°; glossy, punctures moderately large and sparse (distance between them subequal to their average diameter), pubescence minute. Scutellum reddish to dark brown. Sternum reddish brown. Legs reddish brown. **Elytra** reddish brown, **about 1.35x as long as wide**, about 2.4x as long as pronotum, sides arcuate throughout, widest at middle; surface glossy with moderately fine and sparse punctures, pubescence minute, confuse, with rows of underneath large punctures. Abdominal ventrites reddish brown.

**Distribution:** New Brunswick west to Alaska and Alberta, mostly in the Boreal and Temperate Prairie zones, also in the Mixedwood Plain and eastern slope of Western Cordillera zones. **First record in Ontario.** Fairly common.

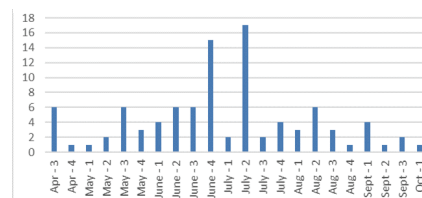
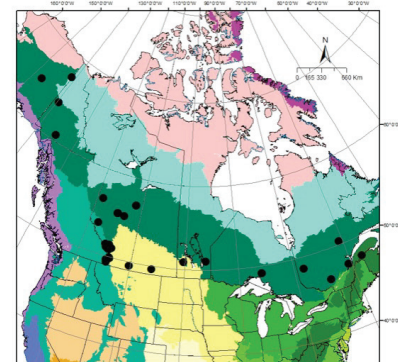
**Seasonality:** From the third week of April to the first week of October, mostly between the second week of June and the second week of July, peaking from the last week of June to the second week of July.

**Habitats:** Black spruce forests, balsam fir forests, burnt lands regenerated with *Vaccinium*, *Kalmia* and *Rhododendron*, jack pine forests, Douglas fir forests and white birch forests mixed with trembling aspen, usually under bark of trees within carpenter ant nests. Also in grasslands inside *Formica* ant nests.

**Number of specimens examined:** 96.



*Myrmedophila americana*





## *Pteryngium crenulatum* Erichson

(Syn.: *Pteryngium crenatum* of authors, not (Gyllenhal, 1808) nor (Fabricius, 1798); *P. malacum* Casey, 1900)

**Length** 1.7-2.1 mm. **Body dorsoventrally compressed.** **Head** reddish brown with palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; A1 subquadrate, about 1.1x as long as A2; A2-A3 trapezoidal, A2 about 1.5x as long as A3, A3 about 1.15x as long as A4; A4-A5 subequal, oval, about 1.5x as long as A6; A6-A8 subequal, transverse; A9-A10 strongly transverse; A11 slightly elongated, subconical. **Pronotum** reddish brown; transverse, about 1.4x (1.3-1.5x) as wide as long; **sides slightly evenly arcuate, finely uniformly serrulate**, hind angles dentate; **two disconnected basal foveae**; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.65x (1.6-1.72x) as long as wide**, about 2.5x (2.35-2.75x) as long as pronotum, sides straight and subparallel in basal 0.65, then arcuate to the apex; surface glossy with moderately large and dense punctures, pubescence yellowish, moderately dense and appressed. Abdominal ventrites yellowish brown.

**Similar species:** All *Henoticus* species have pronotum more arcuate with larger serrulations on sides and basal foveae interconnected.

**Distribution:** Nova Scotia west to Alaska and British Columbia, south to New Hampshire, Indiana and Oregon, mostly in the Boreal and Marine West Coast Forest zones, also in the Mixedwood Plain, Northern Appalachian and Western Cordillera zones. **First record for Ontario, Alberta and Alaska.** Fairly common. **Adventive from Europe.**

**Seasonality:** Collected from the third week of May to the third week of September, mostly between the first week of July and the second week of August.

**Habitats:** Black spruce forests partially cut, also on white cedar forests with balsam firs; usually on tree trunks in polypores such as *Fomitopsis pinicola* (Hagvar, 1999).

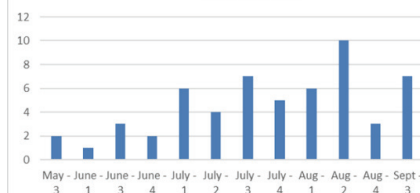
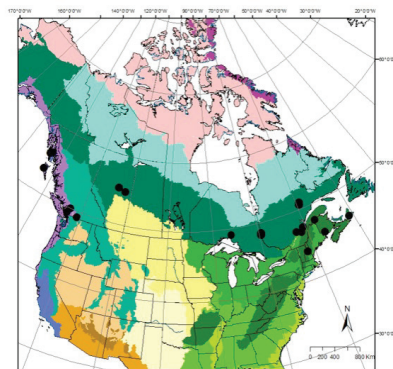
**Number of specimens examined:** 57.

**Remark:** Esser (2017) showed that *P. crenatum* (F.) proved to be a junior synonym of *Cryptophagus dentatus* (Herbst, 1793). However, we consider *P. malacum* as the same species as the Palaearctic one *P. crenulatum*.

**DNA Barcode Index Number (BIN):** BOLD:AAO1914



*Pteryngium malacum*  
Holotype



## ***Salebius minax* Casey**

**Length** 2.7 mm. **Body** mostly uniform reddish to dark reddish brown, palpi and legs yellowish brown. **Head** dark reddish brown with palpi yellowish brown, eyes about 30% width of head, **diameter about 60% as long as head**. Antennae with A1 subquadrate, about 1.15x as long as A2; A2-A3 subequal, A2 trapezoidal, A3 fusiform, about 1.4x as long as A4; A4-A7 subequal, trapezoidal, about 1.67x as long as A8; A8 subquadrate; A9-A10 strongly transverse; A11 slightly elongate, asymmetrically subconical. **Pronotum transverse, about 1.45x as wide as long; sides with three prominent broader lobes**, the first at anterior corner, the second at anterior 0.33, the third at posterior 0.33, **widest at these last lobes, distance between lobes subequal to lobe width at base**, hind angles about 105-110°; glossy, punctures strong and dense (distance between them less than their average diameter), pubescence yellowish, moderately long, dense and appressed. **Elytra about 1.65x as long as wide**, about 3.2x as long as pronotum, sides straight and slightly convergent at anterior 0.55, then arcuate through the apex; surface glossy with moderately large punctures (distance between them subequal to their average diameter), pubescence yellowish, moderately long, dense and recurved.

**Distribution:** California. Not recorded in Canada.

**Seasonality:** Unknown.

**Habitat:** Unknown.

**Number of specimens examined:** 1, the holotype.



***Salebius minax* Casey  
Holotype**

## *Salebius octodentatus* (Mäklin)

(Syn: *S. lictor* Casey, 1900 **syn. nov.**; *S. montanus* Casey **syn. nov.**, 1900; *S. sexdentatus* Casey, 1900; *S. tarsalis* Casey, 1900)

**Length** 2.0-2.9 mm. Body mostly uniform reddish to dark reddish brown, palpi and legs yellowish brown. **Head** dark reddish brown with palpi yellowish brown, **eyes** about 25% width of head, **diameter about 50% as long as head**. **Antennae** with A1 transverse, about 1.15x as long as A2; A2 trapezoidal, about 0.85x as long as A3; A3 fusiform, about 1.75x as long as A4; A4-A5 trapezoidal, A4 about 0.8x as long as A5, A5 about 1.25x as long as A6; A6-A8 subequal, subquadrate; A9-A10 strongly transverse; A11 slightly elongate, diagonally truncate. **Pronotum transverse, about 1.45x (1.35-1.5x) as wide as long; sides with three prominent lobes**, the first at anterior corner, the second at anterior 0.33, the third at posterior 0.33, **widest at these last lobes, distance between lobes larger than lobe width at base**, hind angles about 105-110°; glossy, punctures strong and dense (distance between them less than their average diameter), pubescence yellowish, moderately long, dense and appressed. **Elytra about 1.65x (1.6-1.75x) as long as wide**, about 2.9x (2.75-3.0x) as long as pronotum, sides straight and slightly convergent in anterior 0.55, then arcuate through the apex; surface glossy with moderately large punctures (distance between them subequal to their average diameter), pubescence yellowish, moderately short, dense and appressed.

**Distribution:** Alberta west to Alaska and British Columbia, south to Oregon, mostly in the Western Cordillera and Marine West Coast Forest zones. **First record in Alberta.** Uncommon. **Holarctic.**

**Seasonality:** From the third week of March to the third week of September.

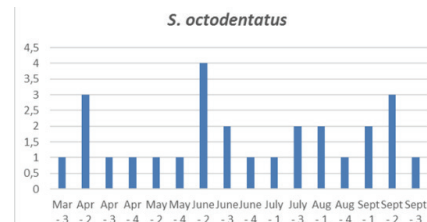
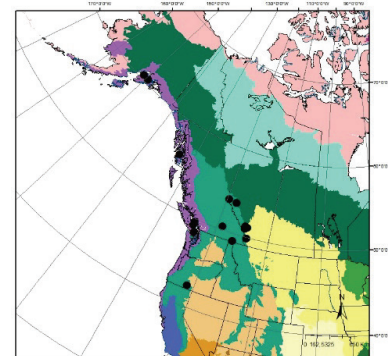
**Habitat:** Douglas fir forests, lodgepole pine forests and white spruce forests, mostly on tree trunks and bark. Also in stored food products, damp sack of grass seeds (Hatch, 1962).

**Number of specimens examined:** 30.

**DNA Barcode Index Number (BIN):** BOLD:ACS1559



*Salebius octodentatus*





## *Telmatophilus americanus* LeConte

**Length 2.4-3.0 mm. Body entirely dark brown to black with dense silvery pubescence. Head with palpi dark brown; eyes about 25% width of head. Antennae reddish brown with club dark brown; A1 subquadrate, about 0.85x as long as A2; A2-A3 subequal, A2 trapezoidal, A3 fusiform, about 1.15x as long as A4; A4-A8 elongate, fusiform, A4-A5 subequal, about 1.15x as long as A6, A6-A8 subequal; A9 elongate fusiform, A10 transverse, about 1.7x wider than A9; A11 slightly elongate, shortly lanceolate. Pronotum slightly transverse, about 1.35x (1.25-1.45x) as wide as long, with sides rather straight and slightly angulate at middle with dense small serrulations, basal margin finely beaded; punctures small and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Legs reddish brown. Elytra black, with fine dense gray pubescence, about 1.65x (1.55-1.7x) as long as wide, about 2.8x (2.65-2.95x) as long as pronotum, with sides straight and slightly convergent in basal 0.55, then arcuate to apex; punctures small and moderately dense.**

**Similar species:** *Telmatophilus typhae* has a smaller size (1.7-2.1 mm), antennae with A9 slightly transverse, A10 about 1.3x as wide as A9, pronotum with sides strongly arcuate and elytra with sides strongly arcuate throughout.

**Distribution:** Newfoundland west to British Columbia, south to New Jersey, Indiana, Iowa and Colorado, in the Boreal, Northern Appalachian, Mixedwood Plain and Temperate Prairie zones, also in the Western Cordillera zone. Very common.

**Seasonality:** From the first week of April to the second week of November, mostly from the last week of May to the last week of July.

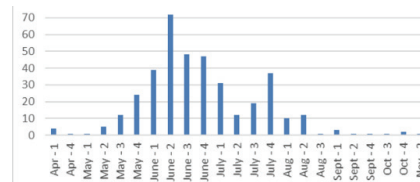
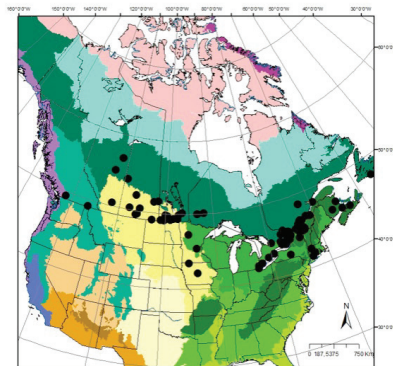
**Habitat:** Marshes and along shores of ponds and lakes, sometimes beaches and soya fields, rarely forests. Associated with *Spargania virginica* (Leschen and Skelley, 2002) and *S. eurycarpa*.

**Number of specimens examined:** 384.

**DNA Barcode Index Number (BIN):** BOLD:AAU6955



*Telmatophilus americanus*



## *Telmatophilus typhae* (Fallen)

(Syn.: *Cryptophagus schonherrii* Gyllenhal, 1808; *T. bicolor* Reitter, 1913)

**Length 1.7-2.2 mm. Body entirely dark brown to black with dense silvery pubescence. Head** with palpi dark brown; eyes about 25-30% width of head. **Antennae** reddish brown with club dark brown, A1-A3 subequal, A1 subquadrate, A2 trapezoidal, A3 fusiform, about 1.15x as long as A4; A4-A5 subequal, trapezoidal, about 1.15x as long as A6; A6-A8 subequal, subquadrate; **A9 slightly transverse, A10 strongly transverse, about 1.3x wider than A9; A11 subquadrate, asymmetrically conical. Pronotum strongly transverse, about 1.45x (1.35-1.55x) as wide as long, with sides arcuate throughout, widest at middle with small dense serrulations, basal margin finely beaded; punctures small and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Legs reddish brown. Elytra black, with fine dense silvery pubescence, about 1.7x (1.65-1.75x) as long as wide, about 3.0x (2.8-3.2x) as long as pronotum, with sides arcuate throughout; punctures small and moderately dense.**

**Similar species:** *Telmatophilus americanus* has a larger size (2.4-3.0 mm), antennae with A9 elongate fusiform, A10 about 1.7x as wide as A9, pronotum with sides rather straight and slightly angulate at middle and elytra straight and slightly convergent in basal 0.55.

**Distribution:** Nova Scotia, Prince Edward Island west to Quebec, mostly in the Mixedwood Plain and the Northern Appalachian zones, also in the Boreal zone. Common in the Maritime Provinces, uncommon elsewhere but spreading rapidly westward and southward. **Adventive from Europe.**

**Seasonality:** From the first week of May to the second week of July, mostly from the last week of May to the third week of June.

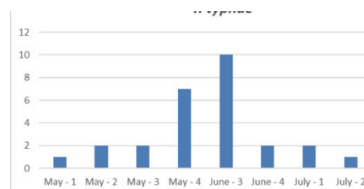
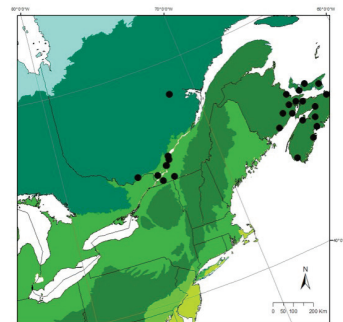
**Habitat:** Marshes. Associated with *Typha* spp.

**Number of specimens examined:** 27.

**DNA Barcode Index Number (BIN):** BOLD:AAK0930



*Telmatophilus typhae*



© S. Marshall

## *Caenoscelis antennalis* (Casey)

**Length** 2.1-2.6 mm. **Head** reddish brown; including mandibles and palpi; eyes hemispherical, about 20-25% width of head in both sexes. **Antennae** reddish to dark brown, strongly dimorphic; in female, A1 slightly elongate, straight, about 1.6x as long as A2; A2-A3 subquadrate, A2 about 1.15x as long as A3, A3 about 1.15x as long as A4; A4-A8 transverse, A4-A5 subequal, about 1.25x as long as A6; A6-A7 subequal, about 1.15x as long as A8; A9-A10 transverse, A9 about 0.67x as long as A10; A11 slightly elongate, asymmetrically subconical. **In male**, antennae is similar except **A2 subquadrate, A3 transverse, A4-A5 broader than A1-A3 and A6-A8, A4 strongly transverse and A5 trapezoidal. Pronotum** reddish brown; **subquadrate in male, slightly transverse, about 1.15x (1.1-1.2x) as wide as long in female**, with sublateral carinae; **sides arcuate throughout sometimes angulate at middle in male, widest at middle with hind corners about 90-95°**; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum reddish brown. Legs reddish brown. **Elytra** reddish to yellowish brown, about 1.65x (1.55-1.75x) as long as wide, about 2.45x (2.4-2.5x) as long as pronotum, sides arcuate throughout, widest at basal 0.4; surface glossy with moderately small punctures, pubescence moderately long, appressed with few suberect hairs. Abdominal ventrites reddish brown.

**Similar species:** *Caenoscelis parallela* has pronotum with posterior 0.15 of sides straight, subparallel, hind angle about 90°, elytra with basal 0.5 of sides mostly subparallel and antennae of male with A4-A5 not contrastingly wider than A6-A8. *C. ferruginea* has pronotum more transverse, about 1.35x (1.3-1.4x) as wide as long. *C. basalis* and *C. cryptophaga* have pronotum with sides sinuate and hind angle acute, about 75°. *C. subdeplanata* has pronotum with posterior 0.5 of sides mostly straight, subparallel.

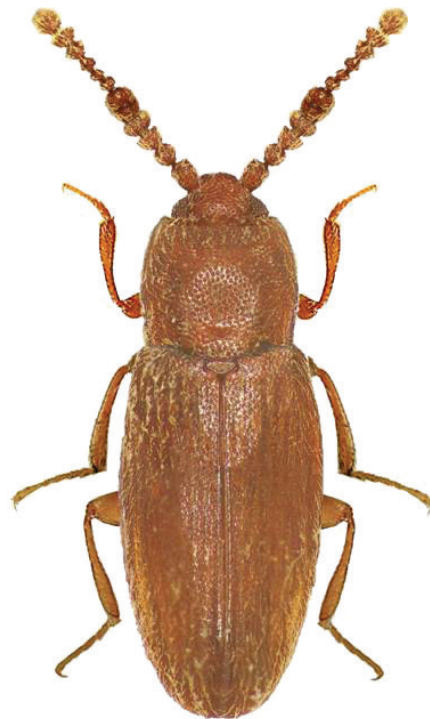
**Distribution:** Nova Scotia west to Alberta, south to Michigan and Idaho, mostly in the Boreal, Mixedwood Plain, and Temperate Prairie zones, also in the eastern slope of Western Cordillera. Common.

**Seasonality:** From the last week of March to the last week of October, peaking on the third and the last week of April. Apparently, an early season species

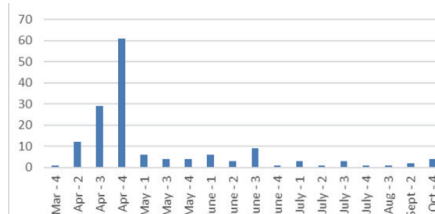
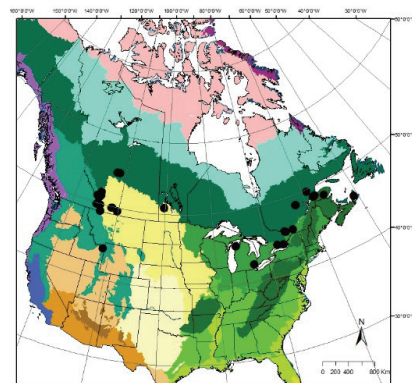
**Habitats:** Balsam fir forests, trembling aspen forests and maple forests, on woodpiles, mushrooms, fungus under logs, leaf litter, under garden rubbish and under old grass in gravel pit. Significant indicator species in late successional white spruce dominated forests (Jacobs et al., 2006).

**Number of specimens examined:** 157.

**DNA Barcode Index Number (BIN):** BOLD:ACI9203



*Caenoscelis antennalis* (Casey)





## *Caenoscelis basalis* Casey

(Syn.: *C. elongata* Casey, 1900 **syn. nov.**; *C. macra* Casey, 1900 **syn. nov.**; *C. ovipennis* Casey, 1900 **syn. nov.**)

**Length** 1.9-2.1 mm. **Head** reddish brown; including mandibles and palpi; eyes hemispherical, about 25% width of head. **Antennae** reddish to dark brown; A1 elongate, arcuate, about 1.4x as long as A2; A2-A3 subequal, A2 elongate trapezoidal, A3 fusiform, about 1.85x as long as A4; A4, A6 and A8 subequal, subquadrate, about 0.6x as long as A5; A5 and A7 subequal, trapezoidal, about 1.6x as long as A6; A9 slightly transverse, A10 strongly transverse; A11 elongate, arcuate at apex. **Pronotum** reddish brown; transverse, about 1.35x (1.3-1.4x) as wide as long, with sublateral carinae; **sides sinuate, widest at middle with hind corners angulate, about 70-75°; sides arcuate in anterior 0.85 then concave to posterior margin; disk broadly impressed basally with punctures large and dense**, glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** reddish brown, about 1.65x (1.55-1.75x) as long as wide, about 2.8x (2.7-2.9x) as long as pronotum, sides arcuate throughout, widest at basal 0.4; surface glossy with moderately large punctures, pubescence moderately long, appressed with few suberect hairs. Abdominal ventrites reddish brown.

**Similar species:** *Caenoscelis cryptophaga* has pronotum broadest at anterior 40%, slightly impressed basally with basal punctures sparser and antennae with A5 and A7 subquadrate. *C. ferruginea* has pronotum with sides arcuate throughout, widest at middle. *C. parallela* has pronotum with posterior 15% of sides straight, subparallel, hind angle about 90° and elytra with basal 50% of sides straight and mostly subparallel. *C. subdeplanata* has pronotum with posterior 50% of sides mostly straight, subparallel, hind angle about 90°.

**Distribution:** Nova Scotia west to British Columbia, south to Georgia and Louisiana, mostly in the Boreal, Mixedwood Plain, Appalachian, and Southeastern USA Forest Plain zones, also in the Temperate Prairie and Western Cordillera zones. **First record for New Brunswick and Manitoba.** Very common.

**Seasonality:** From the first week of January to the third week of November, mostly from the last week of July to the second week of August.

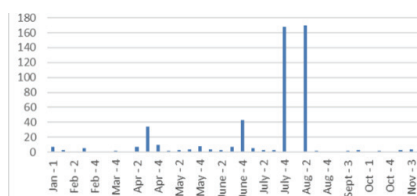
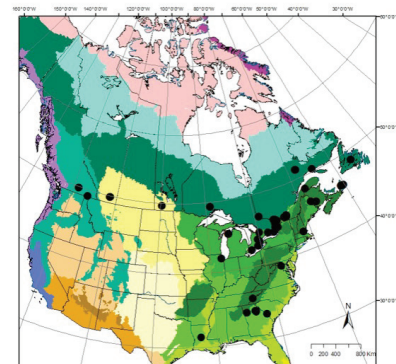
**Habitats:** Black spruce forests partially cut, balsam fir forests mixed with white birch, hardwood forests, trembling aspen forests; also in white pine forests, old silver maple forests with green ash and seasonally flood marsh (Webster et al., 2016); mostly in leaf litter, in woodpiles under bark, logs and fungi; less common under old grass in gravel pit, beaver dam among sticks and debris, and residential lawn (Webster et al., 2016).

**Number of specimens examined:** 521.

**DNA Barcode Index Number (BIN):** BOLD:ACP9373



*Caenoscelis basalis* Casey



Male genitalia

## *Caenoscelis cryptophaga* Reitter

(Syn.: *C. obscura* Casey, 1899? **syn. nov.**; *C. subfuscata* Casey, 1900 **syn. nov.**)

**Length** 2.1-2.5 mm. **Head** reddish brown; including mandibles and palpi; eyes hemispherical, about 35% width of head. **Antennae** reddish brown; A1 elongate, straight, about 1.5x as long as A2; A2 elongate trapezoidal, about 1.15x as long as A3; A3 fusiform, about 2.3x as long as A4; **A4, A6 and A8 subequal, transverse, about 0.75x as long as A5; A5 and A7 subequal, subquadrate, about 1.33x as long as A6; A9-A10 strongly transverse; A11 subquadrate, asymmetrically subconical.** **Pronotum** reddish brown; transverse, about 1.35x (1.3-1.4x) as wide as long, with sublateral carinae; **sides sinuate, widest in front of middle with hind corners angulate, about 70-75°; sides arcuate in anterior 0.85 then concave to posterior margin; disk slightly impressed basally with punctures moderate and sparse, glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense.** Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** reddish brown, about 1.6x as long as wide, about 2.9x as long as pronotum, sides arcuate throughout, widest at basal 35%; surface glossy with moderately large punctures (distance between them subequal to their average diameter), pubescence moderately long, appressed with few semi-erect hairs. Abdominal ventrites reddish brown.

**Similar species:** *Caenoscelis basalis* has pronotum broadest at middle, strongly impressed basally, basal punctures closed and antennae with A5 and A7 trapezoidal. *C. ferruginea* has pronotum with sides arcuate throughout, widest at middle. *C. parallela* has pronotum with posterior 0.15 of sides straight, subparallel, hind angle about 90° and elytra with basal 0.5 of sides straight and mostly subparallel. *C. subdeplanata* has pronotum with posterior 0.5 of sides mostly straight, subparallel, hind angle about 90°.

**Distribution:** Nova Scotia, Quebec and Ontario, south to Georgia and Kentucky, mostly in the Mixedwood Plain zone, also in the eastern Boreal, Appalachian and Southeastern USA Forest Plain zones. Uncommon.

**Seasonality:** From the first week of January to the second week of December, mostly from the first week to the third week of June.

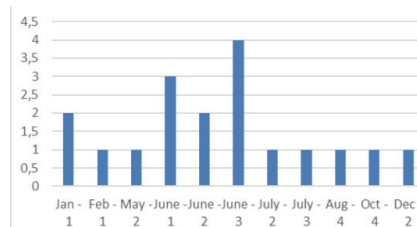
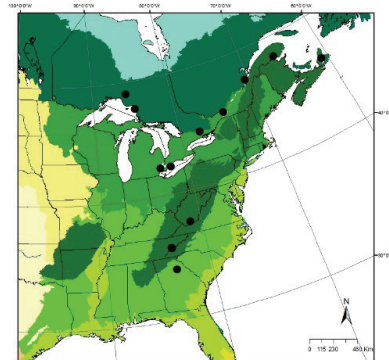
**Habitats:** Oak forests, beech forests and rarely, black spruce forests, in leaf litter.

**Number of specimens examined:** 19.

**DNA Barcode Index Number (BIN):** BOLD:ACK3946



*Caenoscelis cryptophaga*



## *Caenoscelis ferruginea* (C.R. Sahlberg)

(Syn.: *C. testacea* (Zimmermann), 1869; *C. ochreosa* Casey, 1900 **syn. nov.**)

**Length** 1.7–2.3 mm. **Head** reddish brown; including mandibles and palpi; eyes hemispherical, about 25–30% width of head. **Antennae** reddish brown; A1 elongate, slightly arcuate, about 1.8x as long as A2; A2–A3 trapezoidal, A2 about 1.15x as long as A3, A3 about 1.5x as long as A4; A4 and A6 subequal, transverse, about 0.8x as long as A5; A5 and A7 subequal, subquadrate, about 1.25x as long as A6; A8 transverse; A9–A10 transverse; A11 slightly elongate, asymmetrically arcuate at apex. **Pronotum** reddish brown; transverse, about 1.35x (1.30–1.40x) as wide as long, with sublateral carinae; **sides arcuate, widest at middle with hind corners slightly obtuse, about 95°**; glossy, punctures moderately strong and dense (distance between them subequal to their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum yellowish brown. Legs yellowish brown. **Elytra yellowish brown**, about 1.65x (1.55–1.7x) as long as wide, about 2.8x (2.7–2.95x) as long as pronotum, sides arcuate throughout, widest at or near middle; surface glossy with moderately small punctures (distance between them subequal to their average diameter), pubescence moderately long, appressed with many suberect hairs. Abdominal ventrites yellowish brown.

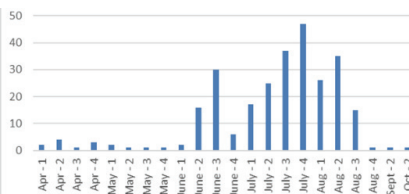
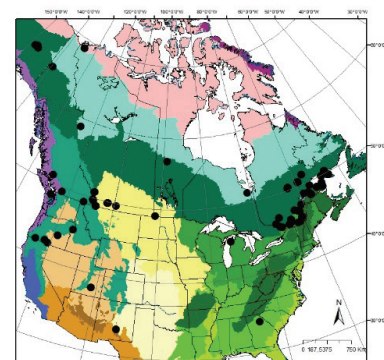
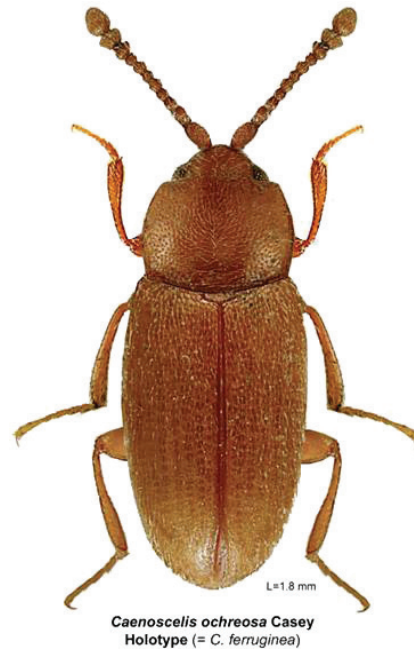
**Similar species:** *Caenoscelis antennalis* and *C. parallela* have pronotum subquadrate to slightly transverse, about 1.1–1.3x as wide as long. *C. subdeplanata* has pronotum with sides straight in posterior 0.5, nearly subparallel to slightly convergent. *C. basalis* and *C. cryptophaga* has pronotum with sides sinuate, with posterior corners acute.

**Distribution:** Quebec west to Alaska and British Columbia, south to Georgia, New Mexico, Utah and Oregon, mostly in the Boreal, Mixedwood Plain, Northern Appalachian, Temperate Prairie, Western Cordillera and Marine West Coast Forest zones, also in the Taiga, Southeastern USA Forest Plain, Cold Desert and Hot Desert zones. Very common. **Holarctic.**

**Seasonality:** From the first week of April to the second week of October, mostly from the second week of June to the third week of August, peaking in the third and the last week of July.

**Habitats:** Very common in pure balsam fir forests, or mixed with white or yellow birch, common in black spruce forests partially cut or burned, mixed white and black spruce forests, burned lands with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, spruce forests mixed with poplar, white birch mixed with trembling aspen forests, also in sugar maple forests damaged with ice storm, whitebark pine forests, alder and poplar stands, black spruce bogs, mostly in leaf litter, also in *Alnus* litter, *Amelanchier* duff and woodpiles.

**Number of specimens examined:** 275.





## *Caenoscelis parallela* Casey

(Syn.: *C. angusticollis* Casey, 1900 **syn. nov.**; *C. shastanica* Casey, 1900 **syn. nov.**)

**Length** 2.1-2.2 mm. **Head** reddish brown, including mandibles and palpi; eyes hemispherical, about 35-40% width of head. **Antennae** reddish brown; A1 elongate, straight, about 1.33x as long as A2; A2 elongate trapezoidal, about 1.3x as long as A3; A3 trapezoidal, about 1.75x as long as A4; A4 transverse, about 0.8x as long as A5; A5 subquadrate, about 1.67x as long as A6; A6 and A8 subequal, transverse, about 0.75x as long as A7; A7 subquadrate; A9 subquadrate to slightly transverse, about 0.8x as long as A10; A10 strongly transverse; A11 elongate, asymmetrically subconical. **Pronotum** reddish brown; slightly transverse, **about 1.25x (1.15-1.3x) as wide as long**, with sublateral carinae; **sides arcuate at anterior 0.85, widest at middle, posterior 0.15 straight and subparallel, with hind corners about 90-95°**; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown**, about 1.65x (1.55-1.7x) as long as wide, about 2.7x (2.55-2.9x) as long as pronotum, **sides arcuate in anterior 0.15, nearly straight and subparallel from anterior 0.15 to 0.5**, then arcuate through apex; surface glossy with small punctures (distance between them larger than their average diameter), pubescence short, appressed. Abdominal ventrites reddish brown.

**Similar species:** *Caenoscelis antennalis* has antennae with A1-A5 very stout in male and elytra distinctly arcuate throughout. *C. ferruginea* has pronotum with sides about 1.3-1.4x as wide as long with hind angle obtuse and elytra distinctly arcuate throughout. *C. subdeplanata* has pronotum with sides straight in posterior 0.5, usually about 1.3-1.45x as wide as long. *C. basalis* and *C. cryptophaga* have pronotum with sides sinuate, about 1.3-1.4x as wide as long.

**Distribution:** Alberta west to Alaska and British Columbia, south to Oregon, mostly in the western Boreal and Western Cordillera zones, also in the Temperate Prairie and Marine West Coast Forest zones. **First record for Alberta.** Fairly common.

**Seasonality:** From the first week of April to the third week of September, peaking on the first week of June.

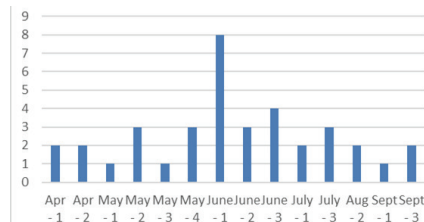
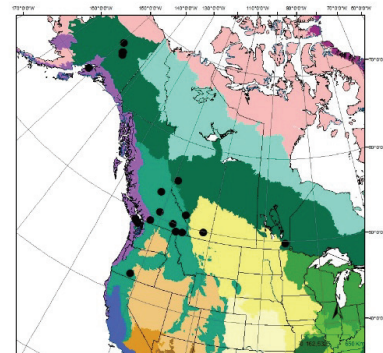
**Habitats:** White birch forests mixed with trembling aspen or white spruce, white spruce forests, sometimes mixed with white birch and willow, also in black cottonwood forests, Douglas fir forests, mostly on tree trunks in bark, also on cordwood, Douglas fir cones and soil and leaf litter.

**Number of specimens examined:** 42, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ACU6740



*Caenoscelis parallela*



## *Caenoscelis subdeplanata* Brisout de Barneville

(Syn.: *C. macilenta* Casey, 1900 syn. nov.)

**Length** 1.8-2.0 mm. **Head** reddish brown; including mandibles and palpi; eyes hemispherical, about 35-40% width of head. **Antennae** reddish brown; A1 elongate, straight, about 1.25x as long as A2; A2 elongate fusiform, about 1.33x as long as A3; A3 trapezoidal, about 2x as long as A4; A4, A6 and A8 subequal, transverse, about 0.75x as long as A5; A5 and A7 subequal, subquadrate, about 1.33x as long as A6; A9 subquadrate, about 0.8x as long as A10; A10 strongly transverse; A11 slightly elongate, asymmetrically subconical. **Pronotum** reddish brown; transverse, about 1.35x (1.3-1.45x) as wide as long, with sublateral carinae; **sides arcuate at basal 0.5, widest at middle, straight and subparallel to slightly convergent at posterior 0.5, with hind corners about 90-95°**; glossy, punctures strong and dense (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown**, about 1.65x (1.55-1.75x) as long as wide, about 2.8x (2.6-3.0x) as long as pronotum, **sides arcuate in anterior 0.15, nearly straight and subparallel from anterior 0.15 to 0.5, then arcuate through apex**; surface glossy with moderately large punctures (distance between them subequal to their average diameter) in anterior 0.5, smaller and sparser in posterior 0.5, pubescence short, appressed. Abdominal ventrites reddish brown.

**Similar species:** *Caenoscelis basalis* and *C. cryptophaga* have pronotum with sides sinuate and hind angle acute. *C. antennalis*, *C. parallela* and *C. ferruginea* have pronotum with sides mostly arcuate throughout, being less than 1.3x as wide as long in *antennalis* and *parallela*.

**Distribution:** New Brunswick west to British Columbia, south to Georgia and Oregon, mostly in the Mixedwood Plain and Northern Appalachian zones, also in the Temperate Prairie, Boreal, Western Cordillera, Southern Appalachian, Southeastern USA Forest Plain, and Cold Desert zones. **First record in British Columbia.** Fairly common. **Adventive from Europe.**

**Seasonality:** From the first week of January to the second week of September, mostly from the second week of June to the third week of July, peaking on the third week of July.

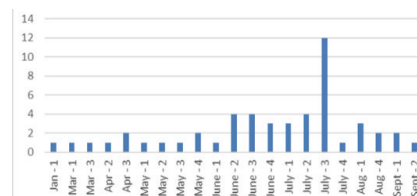
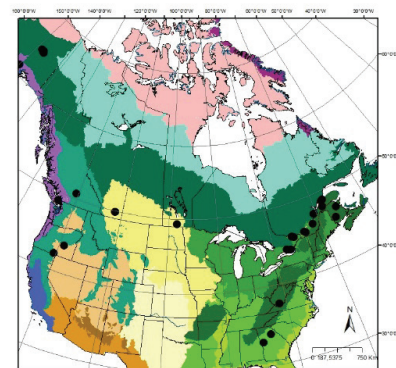
**Habitats:** Black spruce bogs, burned spruce forests with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, muskeg, also in sugar maple forests, often mixed with beech, jack pine forests, white spruce and balsam fir forests (Webster et al., 2016), white birch mixed with trembling aspen forests, birch forests mixed with alder and white spruce, usually in leaf litter or in tree trunks, rarely indoors, inside house.

**Number of specimens examined:** 52.

**DNA Barcode Index Number (BIN):** BOLD:AAP7042



*Caenoscelis subdeplanata*



## *Hypocoprpus latridioides* Motschulsky

(Syn.: *H. formicetorum* Motschulsky, 1839; *H. tenuis* Casey, 1900)

**Length** 1.3-1.5 mm. General body shape elongate, similar to *Monotoma* (Monotomidae). **Head** dark brown; mandibles reddish brown and palpi yellowish brown; eyes small, about 15% width of head; **temple elongate and slightly arcuate, subequal to eye in dorsal view**. **Antennae** reddish brown with club dark brown; A1 stout, slightly elongate, about 1.25x as long as A2; A2-A3 trapezoidal, A2 about 1.6x as long as A3, A3 about 1.25x as long as A4; A4 subequal to A6, subquadrate, about 0.8x as long as A5; A5 transverse, broader than A4, about 1.25x as long as A6; A7-A8 subequal, transverse; A9-A10 transverse and A11 elongate, subconical. **Pronotum** dark brown; **slightly elongate, about 1.2x as long as wide; sides straight, mostly subparallel from anterior 0.2 to posterior 0.3, then slightly convergent to base, hind corners arcuate; opaque, punctures large and dense** (distance between them smaller than their average diameter), pubescence moderately short and dense. Scutellum dark brown. Sternum dark reddish brown. Legs reddish to yellowish brown. **Elytra** dark reddish brown, **very elongate, about 1.8-1.9x as long as wide**, about 2.0-2.5x as long as pronotum, sides slightly arcuate throughout, widest at middle; surface opaque with small punctures (distance between them larger than their average diameter). **Last tergite visible from above**. Abdominal ventrites reddish brown.

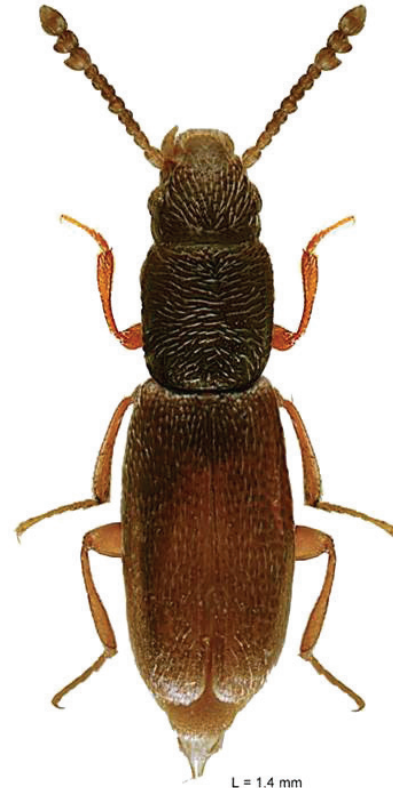
**Similar species:** Very distinct species. Can be more easily confused with *Monotoma longicollis* (Monotomidae) but this species has antennae with a single-segmented club, temple short and acute and pronotum with sides crenulate.

**Distribution:** Saskatchewan and Alberta, in the Temperate Prairie zone. **New record for Canada, in Saskatchewan and Alberta.** Uncommon. **Possibly Holarctic.**

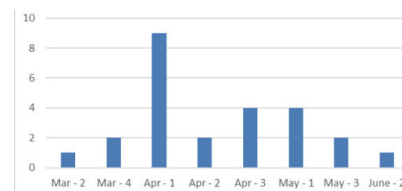
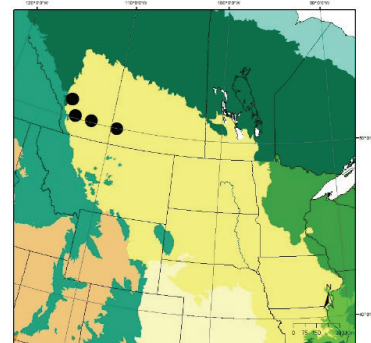
**Seasonality:** From the second week of March to the second week of June, peaking on the first week of April. Apparently a spring species.

**Habitat:** Grasslands, within nests of *Formica* sp.

**Number of specimens examined:** 25.



*Hypocoprpus tenuis* Casey





## *Atomaria (Anchicera) aleutica* Casey

**Length** 1.5 mm. **Head** dark brown to black; mandibles reddish brown and palpi yellowish brown; eyes about 30-35% width of head. **Antennae** reddish brown, last antennomere yellowish brown; A1-A3 elongate, A1 trapezoidal, about 1.5x as long as wide, subequal to A2; A2-A3 fusiform, A2 about 1.1x as long as A3, A3 about 2x as long as A4; A4 subequal to A6, subquadrate, about 0.67x as long as A5; A5 fusiform, about 1.5x as long as A6; A6 about 0.7x as long as A7; A7 subquadrate, about 1.67x as long as A8; A8 transverse; A9-A10 subquadrate and A11 elongate, subconical. **Pronotum dark brown to black; transverse, about 1.35x (1.3-1.4x) as wide as long; sides arcuate throughout, widest at middle, lateral border margins visible throughout from dorsal view, hind angles about 108°; glossy, punctures small and sparse** (distance between them larger their average diameter), pubescence moderately long and dense. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra reddish brown, about 1.4x (1.35-1.45x) as long as wide, about 2.37x (2.3-2.47x) as long as pronotum, sides arcuate throughout, widest at basal 0.45; surface glossy with moderately small punctures** (distance between them subequal to their average diameter) and **pubescence small and suberect**. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria nigritaria* has body entirely black, pronotum with moderately large and dense punctures and elytra elongate, about 1.50-1.65x as long as wide. *A. hudsonica* has pronotum with sides angulate in front of middle, widest at anterior 0.35-0.4. *A. kamtschatica* has pronotum with sides straight and subparallel from anterior 0.3 to 0.7 and elytra bicolor, usually dark brown to black with apical 20 to 40% and sometimes up to apical 80% diffusely reddish brown. *A. arcuaticollis* has antennal club with A9-A10 strongly transverse and body entirely yellowish brown.

**Distribution:** Manitoba west to Alaska and British Columbia, mostly in the Tundra, Taiga, western Boreal, and Temperate Prairie zones; also in the Western Cordillera and northern Marine West Coast Forest zones. **First record for Canada, in Manitoba, Saskatchewan, Alberta, British Columbia, Northwest Territories and Yukon.** Fairly common.

**Seasonality:** From the first week of April to the last week of November, mostly from the last week of May to the second week of July, peaking on the second week of June.

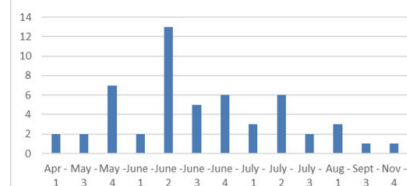
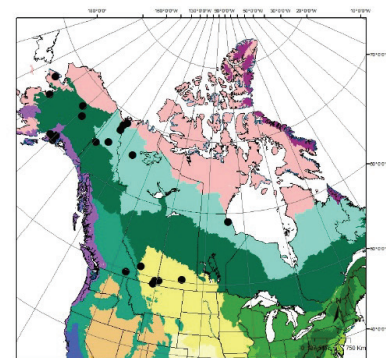
**Habitat:** Willow stands near river, in leaf litter, tundra, mountain prairies and grasslands.

**Number of specimens examined:** 54, including holotype.

**DNA Barcode Index Number (BIN):** BOLD:ACX4792



*Atomaria (Anchicera) aleutica* - Holotype



## *Atomaria (Anchicera) apicalis* Erichson

(Syn.: *A. ovalis* Casey 1900; *A. nebulosa* Casey, 1924 **syn. nov.**)

**Length** 1.3-1.6 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi yellowish brown; eyes about 35% width of head. **Antennae** dark reddish brown with club (A9-A11) dark brown; A1-A3 elongate; A1 with sides arcuate, about 1.3x as long as wide, subequal to A2; A2 fusiform, about 1.8x as long as A3; A3 trapezoidal, about 1.7x as long as A4; A4, A6 and A7 subequal, subquadrate, about 0.75x as long as A5; A5 slightly elongate, about 1.33x as long as A6; A8 transverse; A9-A10 transverse and A11 slightly elongate. **Pronotum** reddish to dark brown; **transverse, about 1.48x (1.4-1.55x) as wide as long; sides slightly arcuate and convergent in anterior 0.4, straight, subparallel to slightly divergent in posterior half, hind angles about 85-90°; glossy, punctures moderately small and sparse** (distance between them larger than their average diameter), pubescence moderately long and dense. Scutellum reddish to dark brown. Sternum reddish brown. Legs yellowish brown. **Elytra reddish to dark brown, gradually paler apically**, about 1.27x (1.2-1.35x) as long as wide, about 2.5x (2.45-2.55x) as long as pronotum, sides arcuate throughout, widest at basal 0.35; surface glossy with small punctures, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria testacea* has A1 widening apically, pronotum less transverse, about 1.2-1.3x as wide as long, with larger and denser punctures and elytra darker brown, more distinctly paler apically. *A. turgida*, *A. inepta* and *A. lederi* have pronotum with sides straight at anterior 0.3 to 0.5, forming an obtuse angle at posterior 0.15 to 0.30, punctures moderate to large. *A. lederi* and *A. inepta* have elytra more elongate, about 1.3-1.45x as long as wide.

**Distribution:** From Newfoundland west to Alaska and British Columbia, south to Maine, New York, Iowa, and Oregon, mostly in the Boreal, Northern Appalachian, Mixedwood Plain, Temperate Prairie and Western Cordillera zones; also in the taiga zone. **First record in Ontario, Saskatchewan, Alberta, British Columbia, Northwest Territories, Yukon and Alaska.** Common. **Holarctic.**

**Seasonality:** From the last week of February to the last week of November, mostly from the last week of May to the last week of August.

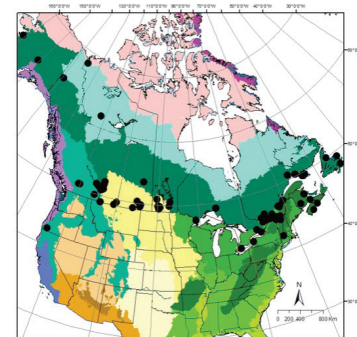
**Habitat:** Balsam fir forests and white spruce forests; prairie meadow edge, lawns, in grass clipping, compost (Hatch, 1962); also in red pine plantations, bogs, aspen ridges near dumpsite, in moose dropping, grouse dung, bark of *Populus* logs, *Dryocoetes affaber* galleries; carrion, rotting fungi, and flood debris (Klimaszewski et al., 2015).

**Number of specimens examined:** 217.

**DNA Barcode Index Number (BIN):** BOLD:ABX9407



*Atomaria apicalis*



## *Atomaria (Anchicera) arcuaticollis* Pelletier n. sp.

**Length** 1.5–1.9 mm. **Body** reddish yellow throughout. Eyes small, about 20% width of head. **Antennae** with A1 stout, slightly elongate with sides subparallel, about 1.3x as long as wide, about 1.4x as long as A2; A2–A3 and A5 subequal, A2 elongate, A3 and A5 fusiform, about 2x as long as A4; A4 subequal to A6, subquadrate, about 0.5x as long as A5; A7 trapezoidal, about 2x as long as A8; A8 transverse; A9–A10 subequal, subquadrate; A11 slightly elongate, apex arcuate. **Pronotum** with a double side border at posterior half, transverse, about 1.4x (1.35–1.45x) as wide as long; lateral border margins visible throughout, arcuate in anterior 0.6, straight and convergent to posterior 0.1, straight and subparallel to posterior margin, widest at middle, hind angles about 90°; basal impression deep, complete along posterior border, crossed by short carinae; glossy, punctures moderately small and sparse (distance between them larger than their average diameter), pubescence moderately short and appressed. **Elytra** stout, about 1.3x (1.2–1.4x) as long as wide, about 2.4x (2.3–2.5x) as long as pronotum, sides arcuate throughout, widest at basal 0.4; surface glossy with moderately large confused punctures, pubescence short and sparse. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria aleutica* has pronotum dark brown with sides arcuate throughout and elytra reddish to yellowish brown. *A. nigritaria* has pronotum black with moderately large and dense punctures and elytra black, more elongate, about 1.5–1.6x as long as wide. *A. hudsonica* has pronotum with sides angulate in front of middle, widest at anterior 0.35–0.4. *A. morio* has usually a dark brown to black coloration, antennae with A9–A10 strongly transverse and pronotum with double side borders throughout.

**Holotype:** Canada, Quebec, Rimouski Co., Lac Patapedia, 24–31.VII.2001, light trap, balsam fir forest partially cut after spruce budworm infestation and regenerated after 20 years, C. Hébert (CNC, Acc. No. 24566).

**Paratype:** Canada, Quebec, Rimouski Co., Lac Patapedia, 24–31.VII.2001, light trap, balsam fir forest partially cut after spruce budworm infestation and regenerated after 20 years, C. Hébert: 3 (IRM). Charlevoix Co., Parc des Grands-Jardins, Petite-Rivière-Malbaie, 27.V–3.VI.2003, interception trap, black spruce forest, C. Hébert: 8 (IRM, CNC).

**Distribution:** Quebec, in the Boreal and the Northern Appalachian zones. Uncommon.

**Seasonality:** From the last week of May to the last week of July.

**Habitat:** Black spruce forests and balsam fir forests in regeneration.

**Number of specimens examined:** 12.

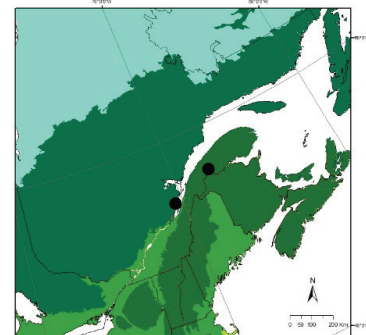
**Etymology:** *arcuaticollis*, referring to the curved lateral sides of the pronotum in dorsal view, an unusual character state within the subgenus.

**DNA Barcode Index Number (BIN):** BOLD:ACX4792

**ZooBank LSID:** urn:lsid:zoobank.org:act:B22735D2-68F8-47C4-AB11-90979084A21F



*Atomaria (Anchicera) arcuaticollis*  
Pelletier - Holotype





## *Atomaria (Anchicera) atra* (Herbst)

**Length** 1.6-1.8 mm. **Head** black; clypeus, mandibles and palpi dark reddish brown; eyes small, about 25% width of head. **Antennae** dark brown; A1 slightly elongate, about 1.4x as long as wide, subequal to A2; A2-A3 and A5 fusiform, subequal, about 2x as long as A4; A4 subequal to A6, subquadrate, about 0.5x as long as A5; A7 trapezoidal, about 2x as long as A8; A8 transverse; A9-A10 subquadrate and A11 slightly elongate. **Pronotum** black; transverse, about 1.4x (1.35-1.45x) as wide as long; sides straight, strongly convergent and widest at anterior 0.4, strongly arcuate in front of middle, straight and slightly convergent to posterior margin, hind angles about 95°; glossy, hind margin narrowly bordered throughout, punctures small and sparse (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Prosternum dark reddish brown; meso- and metaventrite dark brown. Legs dark reddish brown. **Elytra** dark brown, about 1.43x (1.35-1.5x) as long as wide, about 2.7x (2.6-2.8x) as long as pronotum, sides strongly arcuate throughout, widest at basal 0.4; surface glossy with moderately large punctures (distance between them subequal to larger than their average diameter), pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria fuscata* has pronotum widest at middle, with hind margin broadly bordered at middle 35% only and moderately close punctures, distance between them subequal to their average diameter. *A. oblongula*, *A. brevicollis*, *A. gilvipennis* and *A. fulvipennis* have pronotum with sides forming a distinct angle in front of middle and elytra usually uniformly reddish to yellowish brown. *A. nigritaria* has pronotum with sides evenly arcuate throughout, with their border edge entirely visible from dorsal view, and punctures moderately large and dense.

**Distribution:** New Brunswick west to Quebec, in the Northern Appalachian and the Mixedwood Plain zones. **First record for North America and Canada in New Brunswick and Quebec.** Rare. **Adventive from Europe.**

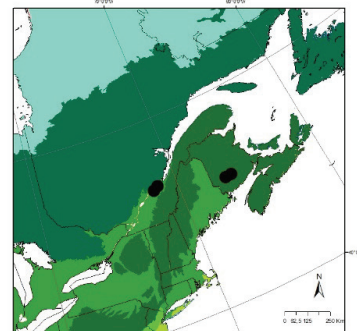
**Seasonality:** From the third week of April to the second week of October.

**Habitat:** Sugar maple forests and beaver dams. Collected on *Acer saccharum*.

**Number of specimens examined:** 8.



*Atomaria (Anchicera) atra*



## *Atomaria (Anchicera) basalis* Erichson

**Length** 1.5-1.7 mm. **Head** dark reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head in female, 35% in male. Antennae reddish brown; A1-A5 elongate; A1 stout with sides straight and subparallel, about 1.33x as long as wide, about 1.1x as long as A2; A2-A3 fusiform, A2 about 1.2x as long as A3, A3 about 1.5x as long as A4; A4 trapezoidal, about 0.8x as long as A5; A5 subequal to A7, A5 fusiform, about 1.5x as long as A6, A7 trapezoidal; A6 subequal to A8, subquadrate, about 0.67x as long as A7; A9 and A10 subquadrate; A11 slightly elongate. **Pronotum black with strong impression at base which narrowed laterally; transverse, about 1.45x (1.4-1.5x) as wide as long; sides straight, strongly convergent in anterior half, slightly convergent in posterior half, widest and arcuate at middle, hind angles about 95°; glossy, punctures moderately large and dense** (distance between them subequal to their average diameter), pubescence short and sparse. Scutellum black. Sternum dark brown to black. Legs reddish brown with tibiae darker brown. **Elytra reddish brown, suffused with black from scutellar area to anterior 30%, about 1.4x (1.35-1.45x) as long as wide, about 2.6x (2.5-2.7x) as long as pronotum, sides arcuate throughout, widest at basal 0.45; surface glossy with moderately small confused punctures, apparently forming rows underneath, pubescence short and appressed.** Abdominal ventrites dark brown.

**Similar species:** *Atomaria distincta* has pronotum reddish brown with sides strongly sinuate, widest at anterior 0.35 and elytra abruptly reddish to yellowish brown in apical 40 to 50%. *Atomaria mesomela* has legs yellowish brown with last tarsomere black, pronotum with sides arcuate throughout and elytra usually with anterior 40% at sides and 25% at suture black.

**Distribution:** New Brunswick and Quebec west to Yukon, Alaska, and British Columbia. **First record for North America in New Brunswick, Quebec, Manitoba, British Columbia, Northwest Territories, Yukon and Alaska.** Uncommon. **Holarctic** but possibly adventive in eastern Canada.

**Seasonality:** From the first week of May to the first week of August, peaking on the first week of June.

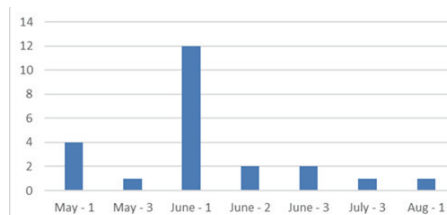
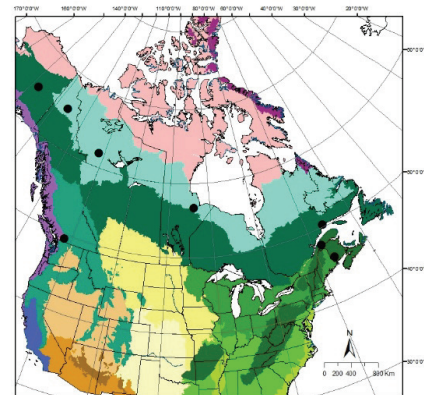
**Habitat:** Lake margin with emerging sedges and grasses and in sedge marshes. Collected on *Carex*, *Poa palustris* and on a dead *Acer rubrum*.

**Number of specimens examined:** 23.

**DNA Barcode Index Number (BIN):** BOLD:AAP9128



*Atomaria (Anchicera) basalis*



## *Atomaria (Anchicera) brevicollis* Casey

**Length** 1.5-1.8 mm. **Head** dark brown; eyes small, about 25% width of head. **Antennae** reddish brown with club dark brown; A1-A3 elongate; A1 about 1.3x as long as wide, about 1.3x as long as A2; A2-A3 fusiform, subequal, about 1.6x as long as A4; A4 trapezoidal, about 0.75x as long as A5; A5 fusiform, about 1.6x as long as A6; A6 and A8, subequal, subquadrate, about 0.65x as long as A7; A7 trapezoidal, about 1.4x as long as A8; A9 and A10 subquadrate; A11 elongate. **Pronotum** dark brown with posterior margin reddish brown, basal impression deep, extending laterally to posterior corners; strongly transverse, about 1.47x (1.4-1.55x) as wide as long; sides straight and strongly convergent in anterior 0.4, angulate and widest at anterior 0.4, convergent and crenulate to posterior margin, hind corners broadly arcuate, about 110°; glossy, punctures large and dense (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Sternum reddish brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.45x (1.35-1.55x) as long as wide, widest at middle, about 2.6x (2.5-2.75x) as long as pronotum, sides arcuate throughout; surface glossy with moderately small punctures. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria oblongula* has pronotum reddish brown with no basal impression and elytra reddish brown, widest at basal 0.35. *A. fulvipennis* have pronotum narrower, about 1.30-1.4x as wide as long, with punctures small and sparse and elytra stouter, about 2.45-2.6x as long as pronotum at middle. *A. gilvipennis* has also pronotum with punctures small and sparse. *A. fuscata*, *A. salicicola* and *A. ocularia* have pronotum with sides arcuate, not forming a distinct angle at or in front of middle.

**Distribution:** New Brunswick and Quebec west to Northwest Territories, south to California, mostly in the Temperate Prairie zone; also in the taiga, Boreal, Mixedwood Plain and Western Cordillera zones. **First record for Canada in New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and Northwest Territories.** Uncommon. Possibly adventive in eastern Canada with agriculture expansion.

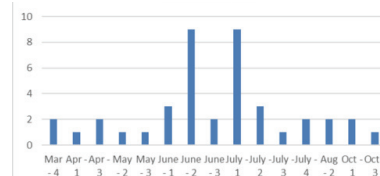
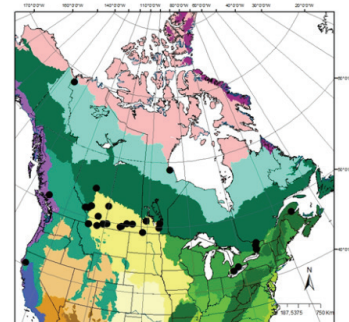
**Seasonality:** From the last week of March to the third week of October, mostly from the second week of June to the first week of July.

**Habitat:** Grasslands, marshes, bogs and alvars.

**Number of specimens examined:** 42, including holotype.



*Atomaria (Anchicera) brevicollis*  
Holotype





## *Atomaria (Anchicera) distincta* Casey

(Syn.: *A. divisa* Casey, 1900 **syn. nov.**; *A. caseyi* (Grouvelle), 1916)

**Length** 1.4-1.5 mm. **Head** dark brown to black; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** yellowish brown; A1-A8 elongate; A1 swollen, trapezoidal, about 1.15x as long as wide, subequal to A2; A2-A3 fusiform, A2 about 1.1x as long as A3, A3 about 1.8x as long as A4; A4 subequal to A6 and A8, trapezoidal, about 0.75x as long as A5; A5 subequal to A7, fusiform, about 1.33x as long as A6; A9 subquadrate; A10 slightly transverse and A11 slightly elongate, asymmetrically subconical. **Pronotum reddish brown**; transverse, about 1.4x (1.35-1.45x) as wide as long; **sides arcuate to strongly sinuate, widest at anterior 0.4, hind angles about 85-90°**; glossy, punctures small and sparse (distance between them larger than their average diameter), pubescence short and appressed. Scutellum black. Prosternum orange; meso- and metaventrite dark brown to black. Legs yellowish brown. **Elytra black, abruptly reddish to yellowish brown in apical 40-50%**, about 1.4x (1.35-1.45x) as long as wide, about 2.55x (2.4-2.7x) as long as pronotum, sides arcuate throughout, widest at basal 0.35; surface glossy with small punctures and pubescence appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria mesomela* has pronotum black with sides arcuate throughout and elytra black in anterior 25% medially to 40% laterally, more elongate, about 1.5x as long as wide. *A. ephippiata* has a black pronotum with sides arcuate and elytra at anterior 30% including most of the suture reddish brown.

**Distribution:** From Nova Scotia west to Alberta, south to New York, District of Columbia and Michigan. **First record for Ontario and Alberta.** Common.

**Seasonality:** From the third week of March to the first week of December, mostly in the spring from the third week of April to the first week of June, and in the fall, from the second week of October to the second week of November.

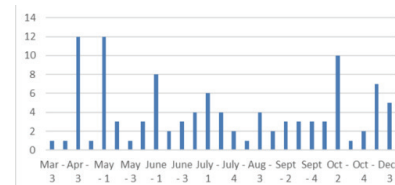
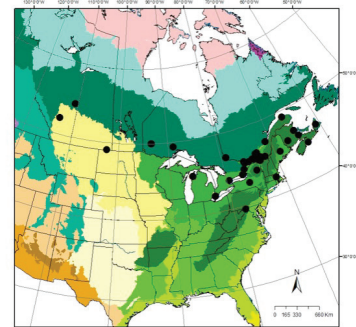
**Habitat:** Marsh edge, river flood on shore debris, sugar maple forests and red pine plantations.

**Number of specimens examined:** 108.

**DNA Barcode Index Number (BIN):** BOLD:ADY1805



*Atomaria (Anchicera) distincta*



## *Atomaria (Anchicera) ehippiata* Zimmermann

**Length** 1.5-1.6 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish brown; eyes about 30% width of head in female, 35% in male. **Antennae** reddish brown; A1-A4 elongate; A1-A3 subequal, A1 strongly arcuate in its internal side, about 1.4x as long as wide, A2 elongate with sides parallel, A3 fusiform, about 2.2x as long as A4; A4 subequal to A6 and A8, subquadrate, about 0.5x as long as A5; A5 subequal to A7, fusiform, about 2x as long as A6; A9 and A10 subquadrate; A11 slightly elongate. **Pronotum** dark brown to black; transverse, about 1.4x (1.35-1.45x) as wide as long; **sides strongly arcuate, widest at middle**, hind angles about 95°; glossy, punctures small and sparse (distance between them larger than their average diameter), pubescence short and sparse. Scutellum black. Sternum black. Legs yellowish brown. **Elytra** reddish brown in basal 25% on sides to half at suture, yellowish brown in apical 30% at suture to 45% at sides, with a large black oblique crossbar at middle, usually narrowly reaching the suture, about 1.4x (1.35-1.45x) as long as wide, about 2.5x (2.25-2.7x) as long as pronotum, sides arcuate, widest at basal 0.45; surface glossy with small and sparse punctures, pubescence short and appressed. Abdominal ventrites dark brown.

**Similar species:** *Atomaria laetula* has pronotum reddish brown, rather angulate at middle and elytra with black spot more diffuse, covering from scutellar area to posterior 35%. *A. distincta* has pronotum reddish brown and basal 40-50% of elytra entirely black. *A. mesomela* has elytra black in anterior 25% medially to 40% laterally.

**Distribution:** Newfoundland and Nova Scotia west to Alaska and British Columbia, south to New York, Kentucky, Colorado, and Nevada, in the taiga, Boreal, Northern Appalachian, Mixedwood Plain, Temperate Prairie and Western Cordillera zones; also in the Southeastern USA Plain Forest and Marine West Coast Forest zones. **First record in Alaska.** Very common.

**Seasonality:** From the first week of January to the third week of December, mostly from the third week of April to the last week of July, peaking from the last week of May to the first week of July.

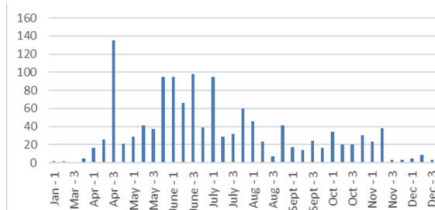
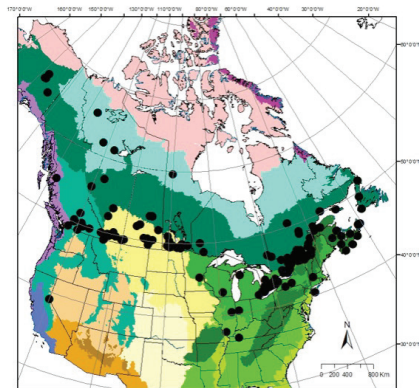
**Habitat:** Prefers disturbed semi-opened area like balsam fir forests damaged by Spruce Budworm, usually partially cut, balsam fir plantations, meadows, grasslands, wineries, mainly in leaf litter, grass piles, under rubbish; also in burned spruce forests, burned lands with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*; trembling aspen and balsam poplar forests on stumps, logs and snags (Hammond et al., 2001); sugar maple forests damaged by ice storm, white-bark pine forests, beaver ponds, alvars, bogs, beaches and gardens, on flowers of *Medicago sativa* and probably many other species.

**Number of specimens examined:** 1303.

**DNA Barcode Index Number (BIN):** BOLD:AAP7030



*Atomaria (Anchicera) ehippiata*



## *Atomaria (Anchicera) fulvipennis* Mannerheim

**Length** 1.6-1.7 mm. **Head** dark brown to black; mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** yellowish brown with club dark brown; A1-A3 elongate, A1-A2 subequal, A1 trapezoidal, about 1.3x as long as wide, A2-A3 fusiform, A2 about 1.15x as long as A3, A3 about 1.5x as long as A4; A4 subequal to A6, subquadrate, about 0.67x as long as A5; A5 fusiform; A7 trapezoidal, about 2x as long as A8; A8 transverse; A9-A10 subquadrate and A11 elongate, subconical. **Pronotum** dark brown to black; transverse, moderately impressed basally, about 1.35x (1.3-1.4x) as wide as long; sides straight, strongly convergent in anterior 0.35-0.4, subparallel to slightly convergent in posterior 0.6-0.65, widest and obtusely angulate at anterior 0.35, hind angles about 100°; glossy, punctures moderately small and sparse (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum black. Sternum reddish brown. **Legs** dark brown with base of tibiae and tarsi yellowish brown. **Elytra** yellowish brown, sometimes diffusely dark brown up to basal 70%, about 1.4x (1.35-1.45x) as long as wide, about 2.45x (2.35-2.55x) as long as pronotum, sides arcuate throughout, widest at basal 0.4; surface glossy with small punctures, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria gilvipennis* has antennae with A7 fusiform and A10 slightly transverse, legs yellowish brown and a more southern distribution. *A. oblongula* and *A. brevicollis* have pronotum wider, about 1.45-1.6x as wide as long, with punctures large and dense, elytra longer, about 2.55-2.8x as long as pronotum at middle. *A. fuscata*, *A. salicicola* and *A. ocularia* have pronotum with sides arcuate, not forming a distinct angle at or in front of middle.

**Distribution:** Quebec west to Alaska and British Columbia, mostly in the Taiga, Boreal, Temperate Prairie and Marine West Coast Forest zones; also in the Tundra and Northern Appalachian zones. **First record in Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Northwest Territories and Yukon.** Fairly common. **Holarctic.**

**Seasonality:** From the last week of April to the third week of December, mostly from the last week of May to the last week of June.

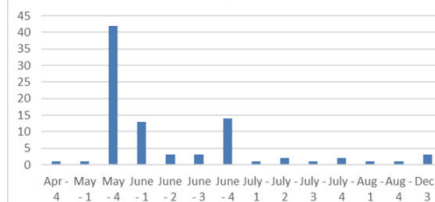
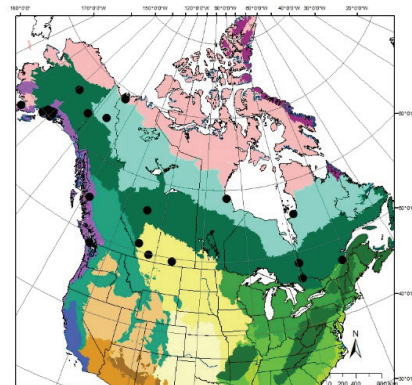
**Habitat:** White cedar forests with balsam fir and alder marshes with crowberries, mostly on blue lichens; also in tundra and grasslands.

**Number of specimens examined:** 88.

**DNA Barcode Index Number (BIN):** BOLD:ABW9276



*Atomaria (Anchicera) fulvipennis*





## *Atomaria (Anchicera) fuscata* Schönherr

(Syn.: *A. ochracea* Zimmermann, 1869; *A. saginata* Casey, 1900; *A. pennsylvanica* Casey, 1900; *A. gonodera* Casey, 1900 **syn. nov.**; *A. riparia* Casey, 1900 **syn. nov.**; *A. subalutacea* Casey, 1900 **syn. nov.**; *A. incerta* Casey, 1900 **syn. nov.**; *A. crypta* Casey, 1900 **syn. nov.**)

**Length** 1.3–1.7 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** dark brown; A1–A3 elongate, A1 swollen, about 1.35x as long as wide, about 1.15x as long as A2, A2–A3 subequal, fusiform, about 1.7x as long as A4; A4 subequal to A6 and A8, subquadrate, about 0.6x as long as A5; A5 subequal to A7, trapezoidal, about 1.4x as long as A6; A9 subquadrate, A10 transverse and A11 slightly elongate. **Pronotum** dark reddish brown to dark brown; transverse, about 1.5x (1.4–1.6x) as wide as long; sides straight to slightly concave and strongly convergent in anterior 0.4, strongly arcuate and widest at middle, straight to slightly arcuate and convergent in posterior 0.4, hind angles about 95°; glossy, **punctures moderately large and dense** (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Prosternum reddish brown; meso- and metaventrite dark brown. Legs reddish to dark brown. **Elytra** reddish to dark brown, sometimes gradually paler apically, about 1.4x (1.35–1.45x) as long as wide, about 2.6x (2.4–2.8x) as long as pronotum, sides strongly arcuate throughout, widest at basal 0.35; surface glossy with **moderately large punctures**, pubescence short and appressed. Abdominal ventrites dark brown.

**Similar species:** *Atomaria ocularia* has very large eyes, covering about 40% head width in dorsal view and pronotum opaque, with distinct microsculpture. *A. atra* and *A. salicicola* have pronotum widest in front of middle, with hind margin narrowly bordered throughout, punctures small and sparse, distance between them much larger than their average diameter. *A. nigrirostrisoides* has pronotum with sides arcuate throughout, widest at posterior third, with very small punctures, distance between them much larger than their average diameter. *A. gilvipennis*, *A. fulvipennis*, *A. oblongula* and *A. brevicollis* have pronotum with sides forming a distinct angle in front of middle.

**Distribution:** Newfoundland west to Alaska and British Columbia, south to Georgia, Indiana, Arkansas, Colorado, and Oregon, in the Taiga, Boreal, Appalachian, Mixedwood Plain, Temperate Prairie and Western Cordillera zones. **First record for Alberta, British Columbia, Northwest Territories, Yukon and Alaska.** Very common. **Holarctic.**

**Seasonality:** From the third week of April to the second week of October, mostly from the first week of May to the last week of August, throughout the year indoor.

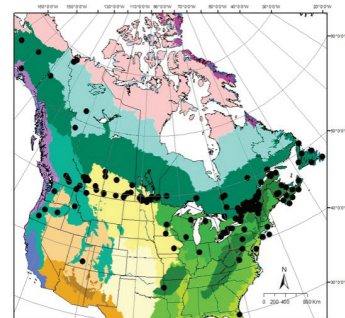
**Habitat:** Balsam fir and red pine plantations, open fields with grasses and forbs; meadows, lawns, in grass clipping, compost (Hatch, 1962); wineries, marsh forests, lake and river shores; also in maple and beech forests, balsam fir forests with yellow birch, black spruce forests, white cedar forests with balsam fir, red oak forests, white pine forests, trembling aspen forests, bogs, beaver ponds, sandy barrier sea beaches and house backyards, usually in leaf litter, flood debris, moss, also on *Pinus strobus* duffs, under bark of *Populus trichocarpa*, under garden rubbish and old grasses. Collected on *Typha*, *Fragaria virginiana* and *Juglans cinerea*.

**Number of specimens examined:** 985.

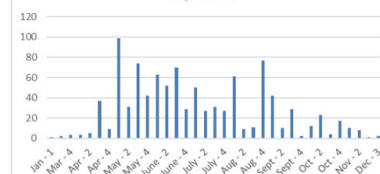
**DNA Barcode Index Number (BIN):** BOLD:AAG5060 (Nearctic);  
BOLD:ABZ4729 (Palearctic)



*Atomaria fuscata*



*A. fuscata*



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## *Atomaria (Anchicera) gilvipennis* Casey

**Length** 1.7 mm. **Head** dark brown to black; mandibles and palpi yellowish brown; eyes about 25-30% width of head. **Antennae** reddish brown with club yellowish brown; A1-A3 elongate, A1 rectangular, about 1.6x as long as wide, about 1.33x as long as A2; A2-A3 fusiform, A2 about 1.2x as long as A3, A3 about 1.67x as long as A4; A4 subequal to A6, trapezoidal, about 0.6x as long as A5; **A5 and A7 fusiform**, A5 about 1.67x as long as A6, A7 about 2x as long as A8; A8 subquadrate; **A9 subquadrate**, **A10 slightly transverse** and A11 elongate, subconical. **Pronotum dark brown to black; transverse, about 1.45x (1.35-1.55x) as wide as long; sides straight, strongly convergent in anterior 0.35-0.4, slightly convergent in posterior 0.6-0.65, widest and obtusely angulate at anterior 0.35**, hind angles about 100°; glossy, punctures moderately small and sparse (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs reddish brown with base of tibiae and tarsi yellowish brown. **Elytra yellowish brown, about 1.35x (1.3-1.4x) as long as wide, about 2.7x (2.55-2.8x) as long as pronotum**, sides arcuate throughout, widest at basal 0.4; surface glossy with small punctures, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria fulvipennis* has antennae with A7 trapezoidal and A10 subquadrate, legs dark brown and a more northern distribution. *A. oblongula* and *A. brevicollis* have pronotum with punctures large and dense. *A. fuscata*, *A. salicicola*, and *A. ocellaria* have pronotum with sides arcuate, not forming a distinct angle at or in front of middle.

**Distribution:** Nova Scotia west to Ontario, south to Michigan and Arkansas, mostly in the Mixedwood Plain and Northern Appalachian zones; also in the taiga, eastern Boreal and Southern Appalachian zones. **First record for Canada, in Nova Scotia, Quebec and Ontario.** Common.

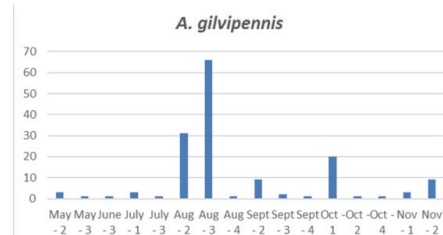
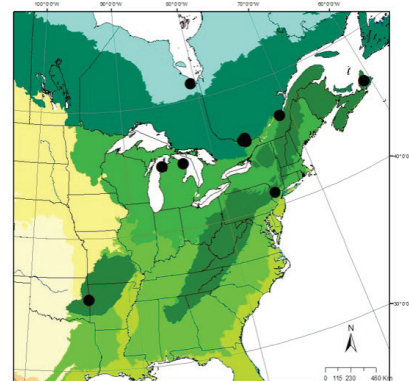
**Seasonality:** From the second week of May to the second week of November, peaking on the second and the third week of August.

**Habitat:** Mostly specialized in beaver ponds inside beaver lodges, alder marshes, lake shore on flood debris, under old grasses and leaves; also in maple forests in leaf litter.

**Number of specimens examined:** 154, including the holotype.



*Atomaria (Anchicera) gilvipennis*  
Holotype



## *Atomaria (Anchicera) hudsonica* Pelletier n. sp.

**Length** 1.5 mm. **Head** dark brown to black; mandibles reddish brown and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club dark brown; A1-A3 elongate, A1 trapezoidal, about 1.3x as long as wide, about 1.2x as long as A2; A2-A3 subequal, fusiform, about 2.5x as long as A4; A4 subequal to A6, subquadrate, about 0.67x as long as A5; A5 fusiform, about 1.5x as long as A6; A7 trapezoidal, about 1.5x as long as A8; A8 subquadrate; A9-A10 subquadrate and A11 elongate, subconical. **Pronotum** dark brown to black with lateral border visible throughout from dorsal view; transverse, about 1.4x (1.35-1.45x) as wide as long; sides straight, strongly convergent, angulate and widest at anterior 0.35, slightly convergent in posterior 0.65, hind angles about 100°; glossy, punctures moderately small and dense (distance between them subequal to their average diameter), **surface slightly reticulate**, pubescence moderately short and dense. Scutellum dark brown. Sternum reddish brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.45x (1.4-1.5x) as long as wide, about 2.45x (2.3-2.55x) as long as pronotum, sides arcuate throughout, widest at basal 0.4; surface glossy with moderately small punctures (distance between them larger than their average diameter), pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria nigritaria* and *A. aleutica* have pronotum with sides arcuate throughout, widest at or near middle. *A. arcuaticollis* has pronotum widest at or near middle and body entirely brownish yellow. *A. kamtschatica* has pronotum with sides straight and subparallel from anterior 0.3-0.7 and elytra bicolor, usually dark brown to black with apical 20 to 40% and sometimes up to 80% diffusely reddish brown.

**Holotype:** Canada, Manitoba, Churchill, 14.VI.1937, W.J. Brown (CNC, Acc. No. 24567).

**Paratype:** Same data as holotype: 10; 16-17.VI.1937, W.J. Brown: 2 (CNC, IRM).

**Distribution:** Manitoba, in the Taiga zone. Uncommon.

**Seasonality:** Collected in the second and the third week of June.

**Habitat:** Unknown.

**Number of specimens examined:** 13.

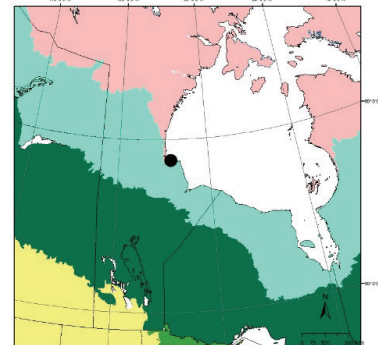
**Etymology:** *hudsonica* an adjective meaning hudsonian, in reference to the area where all the specimens of the type series were collected (Hudson Bay).

**DNA Barcode Index Number (BIN):** [BOLD:AAG9569](#)

**ZooBank LSID:** [urn:lsid:zoobank.org:act:7D0B995B-ACE2-47AD-B4CE-14EBE0E839C8](http://urn:lsid:zoobank.org:act:7D0B995B-ACE2-47AD-B4CE-14EBE0E839C8)



*Atomaria (Anchicera) hudsonica*  
Pelletier - Holotype





## *Atomaria (Anchicera) inepta* Casey

**Length** 1.3-1.4 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi reddish to yellowish brown; eyes about 30% width of head. **Antennae** reddish brown with club yellowish brown; A1 short and straight, about 1.2x as long as wide, about 1.1x as long as A2; A2-A3 fusiform, A2 about 1.25x as long as A3, A3 about 2x as long as A4; A4-A8 transverse, A4 about 0.8x as long as A5; A5 about 1.2x as long as A6; A6 and A8 subequal, about 0.8x as long as A7; A9-A10 transverse; A11 slightly elongate, symmetrically subconical. **Pronotum reddish brown; strongly transverse, about 1.55x (1.5-1.6x) as wide as long; sides straight, strongly convergent in anterior 0.3, subparallel to posterior 0.15, then narrowly arcuate to posterior margin, hind corners about 95°; glossy, punctures moderately large and dense** (distance between them smaller than their average diameter), pubescence moderately long and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra reddish brown**, sometime diffusely darker at middle in anterior 0.6, about 1.35x (1.3-1.45x) as long as wide, about 2.7x (2.6-2.8x) as long as pronotum, **sides slightly arcuate throughout**, widest at basal 0.4; surface glossy with small and sparse punctures, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria turgida* has pronotum narrower, about 1.35-1.45x as wide as long and elytra with sides strongly arcuate. *A. lederi* has antennae with A5 trapezoidal, A7 subquadrate and pronotum moderately punctate, distance between punctures subequal to their average diameter, hind angle 105°. *A. apicalis* has pronotum with less pronounced middle angulation on sides and punctures small and sparse. *A. testacea* has pronotum dark brown to black, narrower, about 1.25-1.35x as wide as long with punctures large and dense. Other species having pronotum with sides mostly subparallel in posterior half have antennae with A9-A10 subquadrate.

**Distribution:** Quebec west to Alaska and British Columbia, south to Washington and California, mostly in the Boreal, Western Cordillera and Marine West Coast Forest zones; also in the Taiga and Northern Appalachian zones. **First record for Canada in Quebec, British Columbia, Northwest Territories, and Alaska.** Common.

**Seasonality:** From the first week of January to the second week of November, mostly from the second week of June to the first week of July, peaking in the last week of June.

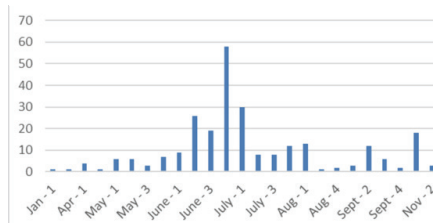
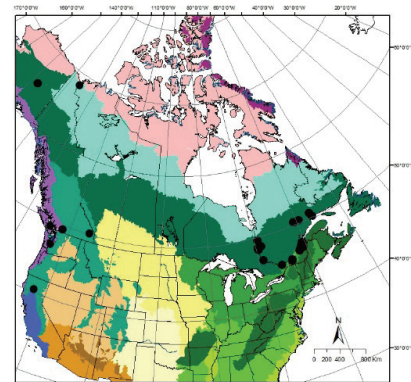
**Habitat:** Mostly in black spruce forests, intact or damaged by girdling; also in balsam fir forests mixed with white spruce, white cedar forests with balsam fir, mixed forests and trembling aspen forests.

**Number of specimens examined:** 150.

**DNA Barcode Index Number (BIN):** BOLD:ACV9743



*Atomaria (Anchicera) inepta*  
Holotype



## *Atomaria (Anchicera) kamtschatica* Motschulsky

**Length** 1.5-1.8 mm. **Head** reddish to dark brown; mandibles reddish brown and palpi yellowish brown; eyes about 25-30% width of head. **Antennae** brown with club yellowish brown; A1-A3 elongate, A1 slightly elongate, about 1.6x as long as wide, about 1.15x as long as A2; A2 trapezoidal, about 1.4x as long as A3; A3 and A5 subequal, fusiform, about 1.67x as long as A4; A4 subequal to A6 and A8, subquadrate, about 0.6x as long as A5; A7 trapezoidal, about 1.33x as long as A8; A9-A10 subquadrate and A11 elongate, subconical. **Pronotum** dark brown to black with lateral border visible throughout from dorsal view; transverse, about 1.35x (1.29-1.41x) as wide as long; sides straight, convergent in anterior 0.25, subparallel in middle half, then convergent in posterior 0.25, hind angles about 100°; glossy, punctures small and sparse (distance between them larger than their average diameter), surface glossy, pubescence moderately short and sparse. Scutellum dark brown. Sternum reddish brown. Legs yellowish brown. **Elytra** bicolor, usually dark brown to black with apical 20 to 40% and sometimes up to 80% diffusely reddish brown, about 1.35x (1.25-1.45x) as long as wide, about 2.25x (2.15-2.35x) as long as pronotum, sides arcuate throughout, widest at basal 0.35; surface glossy with small punctures (distance between them larger than their average diameter). Abdominal ventrites reddish brown.

**Similar species:** *Atomaria nigritaria* and *A. aleutica* has pronotum with sides arcuate throughout, widest at or near middle. *A. arcuaticollis* has pronotum widest at or near middle and body entirely brownish yellow. *A. hudsonica* has pronotum with sides angulate in front of middle, widest at anterior 0.35-0.4 and elytra uniform reddish to yellowish brown.

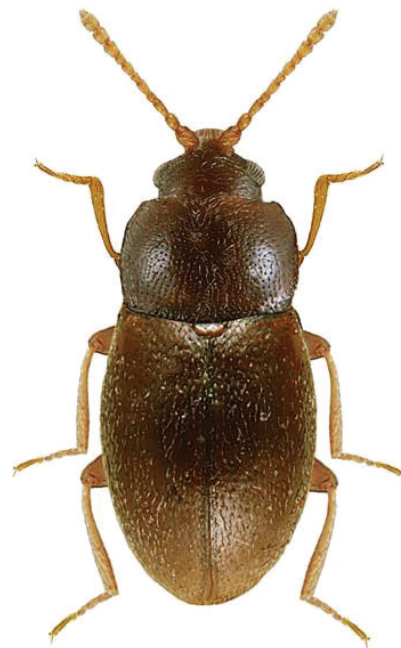
**Distribution:** Manitoba west to Alaska and Alberta, south to Wyoming, mostly in the Taiga, Boreal, Temperate Prairie and on the east slope of Western Cordillera zones. **First record in Manitoba, Alberta, Northwest Territories and Yukon.** Fairly common. **Holarctic.**

**Seasonality:** From the last week of April to the first week of August, peaking on the first two weeks of June and in the two last weeks of July.

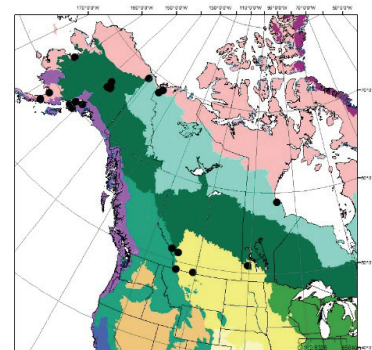
**Habitat:** White birch and trembling aspen forests, aspen forest edge, flood plain of river with willows, alder stands, open low shrubs in crowberries, creeksides, and open beach confluence, mostly in leaf litter; also on mill debris, grouse dung and under boards and driftwood.

**Number of specimens examined:** 80.

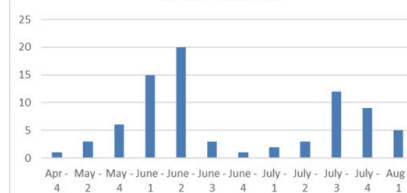
**DNA Barcode Index Number (BIN):** BOLD:ACP7517



*Atomaria (Anchicera) kamtschatica*



*A. kamtschatica*



## *Atomaria (Anchicera) laetula* LeConte

**Length** 1.2-1.5 mm. **Head** dark orange brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** yellowish brown with club reddish brown; A1-A3 elongate; A1-A2 subequal, A1 trapezoidal, about 1.1x as long as wide; A2-A3 fusiform, A2 about 1.3x as long as A3, A3 about 1.2x as long as A4; A4 subequal to A6 and A8, subquadrate, about 0.5x as long as A5; A5 subequal to A7, fusiform, about 2x as long as A6; A9 and A10 subquadrate; A11 slightly elongate, subconical. **Pronotum orange; transverse, about 1.45x (1.4-1.5x) as wide as long; sides straight and convergent in anterior 0.4, straight and slightly convergent in posterior 0.6, widest and slightly arcuate at anterior 0.4, hind angles about 95°; glossy, punctures small and sparse (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum orange. Sternum reddish brown. Legs yellowish brown. Elytra yellowish brown to orange in basal 20% at sides to 30% at suture, yellowish brown in apical 45% at sides to 25% at suture, with a wide black oblique crossbar at middle, reaching the suture, about 1.4x (1.35-1.45x) as long as wide, about 2.4x as long as pronotum, sides arcuate throughout, widest at basal 0.4; surface glossy with small punctures. Abdominal ventrites yellowish brown.**

**Similar species:** *Atomaria ephippiata* has a black arcuate pronotum widest at middle and elytra with a narrower oval oblique crossbar at middle. *A. distincta* has pronotum with sides arcuate to strongly sinuate and basal 40 to 50% of elytra entirely black. *A. mesomela* has pronotum with sides arcuate throughout, and elytra black in anterior 25% medially to 40% at sides.

**Distribution:** Saskatchewan west to British Columbia, south to California, in the Temperate Prairie and Western Cordillera zones.

**First record in Saskatchewan.** Uncommon. Possibly adventive in Saskatchewan.

**Seasonality:** Collected in the third week of October and the second week of December.

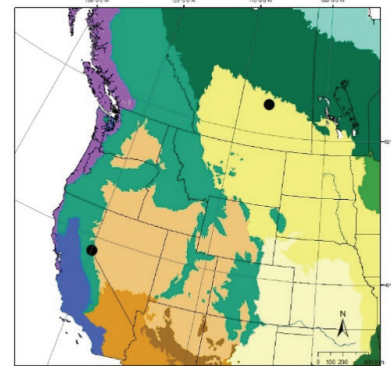
**Habitat:** Unknown.

**Number of specimens examined:** 23, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ADY4363



*Atomaria (Anchicera) laetula*





## *Atomaria (Anchicera) lederi* Johnson

**Length** 1.3-1.6 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi reddish to yellowish brown; eyes about 25-30% width of head. **Antennae** reddish brown with club yellowish brown; A1 short and straight, about 1.2x as long as wide, about 1.1x as long as A2; A2-A3 fusiform, A2 about 1.25x as long as A3, A3 about 2x as long as A4; A4 subquadrate, about 0.8x as long as A5; A5 and A7 subequal, trapezoidal, about 1.5x as long as A6; A6 and A8, subequal, transverse; **A9-A10 transverse**; A11 slightly elongate, asymmetrically subconical. **Pronotum reddish brown; transverse, about 1.4x (1.3-1.5x) as wide as long; sides straight and strongly convergent in anterior 0.3, slightly divergent to subparallel in middle 0.4, slightly convergent in posterior 0.3, hind angles about 95°; glossy, punctures moderately large and dense** (distance between them subequal to their average diameter), pubescence moderately long and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.35x (1.28-1.45x) as long as wide, about 2.6x (2.45-2.7x) as long as pronotum, sides slightly arcuate throughout, widest at basal 0.4; surface glossy with small and sparse punctures, pubescence short and appressed.** Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria turgida* and *A. inepta* have antennae with A6-A8 transverse, pronotum densely punctate, distance between punctures shorter than their average diameter. *A. apicalis* has pronotum with sides arcuate in anterior half, straight and subparallel to divergent in posterior 0.6, widest at base, punctures small and elytra stouter, about 1.2-1.3x as long as wide. *A. testacea* has pronotum narrower, about 1.20-1.35x as wide as long, with punctures large and dense.

**Distribution:** Nova Scotia west to Ontario and from Alberta to British Columbia, south to California, in the Mixedwood Plain, Northern Appalachian, Temperate Prairie, eastern slope of Western Cordillera, and Marine West Coast Forest zones. **First record for Quebec, Ontario, Alberta, and British Columbia.** Fairly common. **Adventive from Asia,** apparently introduced separately in Nova Scotia and British Columbia.

**Seasonality:** From the first week of April to the second week of November, mostly from the last week of May to the first week of August.

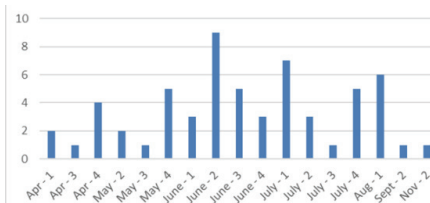
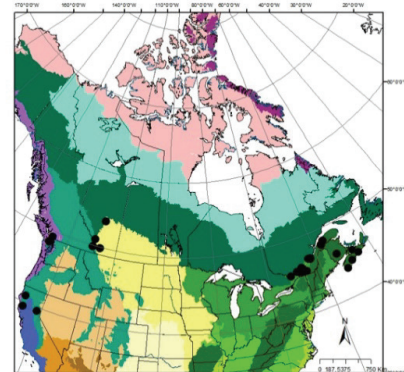
**Habitat:** White spruce and balsam fir forests, red spruce and red spruce-hemlock forests (Majka et al., 2010); preferring spruce forests from clearcut than from naturally disturbed origin (DeLancey et al., 2009); also mixed forests with trembling aspen, old jack pine forests, old red oak forests, old balsam poplar forests, and red spruce forests mixed with red maple and balsam fir (Webster et al., 2016). Collected on *Abies lasiocarpa* and *Betula alleghaniensis*.

**Number of specimens examined:** 73, including 2 paratypes.

**DNA Barcode Index Number (BIN):** **BOLD:ACL6930**



*Atomaria (Anchicera) lederi*



## *Atomaria (Anchicera) lewisi* Reitter

(Syn.: *A. curtula* Casey, 1900)

**Length** 1.3–1.6 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** reddish brown; A1–A5 elongate; **A1 large and arcuate, about 1.5–2x as long as wide, about 1.5x as long as A2**; A2–A3 fusiform, A2 about 1.2x as long as A3; A3 about 1.65x as long as A4; A4–A5 trapezoidal, A4 about 0.75x as long as A5, A5 about 1.6x as long as A6; A6 subquadrate, about 0.7x as long as A7; A7 trapezoidal, about 1.7x as long as A8; A8 transverse; A9–A10 transverse and A11 slightly elongate. **Pronotum reddish brown; transverse, about 1.4x (1.35–1.45x) as wide as long; sides straight, strongly convergent in anterior half, and convergent to posterior margin, widest and strongly angulate at middle**, hind angles about 95°; **glossy, punctures moderately large and dense** (distance between them smaller than their average diameter), pubescence moderately long and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra reddish brown**, sometimes gradually yellowish brown apically, about 1.35x (1.3–1.4x) as long as wide, about 2.5x (2.4–2.6x) as long as pronotum, sides slightly arcuate throughout, widest at basal 0.45; surface glossy with moderately large punctures, apparently forming rows underneath and **pubescence suberect**. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria neomunda* has pronotum with sides border completely visible along their entire length and double side borders in posterior half from dorsal view. *A. pusilla* has a smaller size, length 1.0–1.2 mm, A1 short and straight, about 1.2x as long as wide and elytra more elongate, about 1.5x as long as wide with sides less arcuate. *A. sodermani* and *A. peltata* have antennae with A1 straight, not widened apically, about 1.3x as long as A2 and pronotum dark brown to black. All other similar looking species have antennae with club narrow and more gradual, A9–A10 usually subquadrate.

**Distribution:** Widely distributed in North America, south of the 55° parallel, in all zones except the Tundra, Taiga, and Gila Mountains zones. **First record for Manitoba, Saskatchewan, Alberta, British Columbia, and Alaska.** Very common. **Adventive from Europe.** Worldwide.

**Seasonality:** Throughout the year indoor, from the first week of April to the second week of October, mostly from the last week of May to the first of August, peaking on the second week of June.

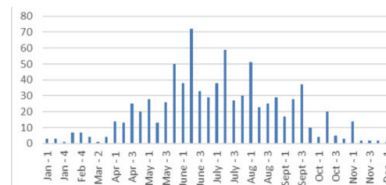
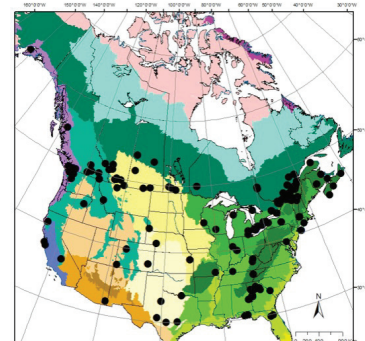
**Habitat:** Mixed forests, hardwood forests, trembling aspen forests and oak forests; also in burned lands with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, balsam fir plantations, wineries, white cedar forests with balsam fir, bogs and residential lawns on *Poa annua* and *Pyracantha coccinea*; mostly in leaf litter and grass piles; also in **stored food products** like rice, inside burned logs, under garden rubbish and on *Crataegus* (Klimaszewski et al., 2015).

**Number of specimens examined:** 823.

**DNA Barcode Index Number:** BOLD:AAM7626



*Atomaria lewisi*



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## *Atomaria (Anchicera) mesomela* (Herbst)

**Length** 1.5-1.7 mm. **Head** black with two small reddish brown spot on vertex; clypeus and mandibles reddish brown; palpi yellowish brown; eyes about 30% width of head. **Antennae** reddish brown with club dark brown; A1-A5 elongate; A1 stout with sides straight and subparallel, about 1.33x as long as wide, about 1.1x as long as A2; A2-A3 fusiform, A2 about 1.2x as long as A3, A3 about 1.5x as long as A4; A4 trapezoidal, about 0.8x as long as A5; A5 subequal to A7, A5 fusiform, about 1.5x as long as A6, A7 trapezoidal; A6 subequal to A8, subquadrate, about 0.67x as long as A7; A9 and A10 subquadrate; A11 slightly elongate. **Pronotum** dark reddish brown to black with diffused impression at base which widen laterally; transverse, about 1.45x as wide as long; sides arcuate throughout, widest at middle, hind angles about 95°; glossy, punctures moderately large and sparse (distance between them subequal to their average diameter), pubescence short and sparse. Scutellum black. Sternum dark brown to black. **Legs** reddish to yellowish brown with last tarsomere black. **Elytra** black in anterior 25% medially to 40% at sides, abruptly reddish to yellowish brown posteriorly, about 1.5x as long as wide, about 2.5x as long as pronotum, sides slightly arcuate throughout, widest at basal 0.4; surface glossy with moderately small confused punctures, apparently forming rows underneath, pubescence short and appressed. Abdominal ventrites dark brown.

**Similar species:** *Atomaria basalis* has pronotum rather angulate at middle, with sides straight in anterior 0.4 and posterior 0.4 and legs entirely yellowish brown. *A. distincta* has pronotum reddish brown with sides widest at anterior 0.35 and elytra abruptly reddish to yellowish brown in apical 40-50%, less elongate, about 1.35-1.45x as long as wide.

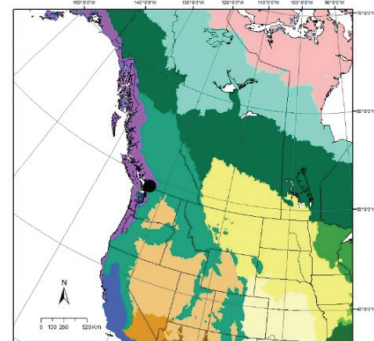
**Distribution:** British Columbia. **First record for Canada in British Columbia.** Rare. **Adventive from Asia.**

**Seasonality:** One specimen collected on the last week of July.

**Habitat:** Unknown, probably indoor.

**Number of specimens examined:** 1.

**DNA Barcode Index Number (BIN):** BOLD:AAP9130





## *Atomaria (Anchicera) morio* Kolenati

(Syn.: *A. ebenina* Casey, 1924 **syn. nov.**)

**Length** 1.5-2.0 mm. **Head** black; clypeus, mandibles and palpi dark reddish brown; eyes about 30% width of head. **Antennae** dark reddish brown with club (A9-A11) brown; A1-A3 elongate; A1-A2 subequal, A1 stout with sides arcuate, about 1.3x as long as wide, A2 fusiform, about 1.25x as long as A3; A3 subequal to A5, fusiform, about 1.3x as long as A4; A4 subequal to A6, subquadrate, about 0.75x as long as A5; A7 slightly elongate, trapezoidal, about 1.4x as long as A8; A8 transverse; A9-A10 strongly transverse and A11 subquadrate, subconical. **Pronotum** black with double side borders visible in lateral view; transverse, about 1.45x as wide as long; sides arcuate throughout, strongly convergent in anterior 0.6, slightly convergent in posterior 0.4, widest at posterior 0.4, hind angles about 92°; glossy, punctures moderately small and sparse (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum black. Sternum black. Legs brown. **Elytra** black, about 1.45x as long as wide, about 2.5x as long as pronotum, sides slightly arcuate throughout, widest at basal 0.35; surface glossy with small confused punctures, pubescence very short and appressed. Abdominal ventrites dark brown.

**Similar species:** *Atomaria munda* has pronotum orange to reddish brown, sides with distinct angulation at middle and deep transverse depression at base, and elytra yellowish brown. *A. ornata* has pronotum with sides straight, distinctly angulate and widest at anterior 0.4, and elytra bicolor, black with contrasting reddish brown basal and yellowish brown apical area. All other uniform dark brown to black species of *Atomaria (Anchicera)* have pronotum without double side borders.

**Distribution:** From Nova Scotia west to Alberta, south to Rhode Island, in the Northern Appalachian, Mixedwood Plain and Temperate Prairie zones; also in the Boreal and the eastern slope of Western Cordillera zones. **First record for North America and Canada in Nova Scotia, Quebec, Ontario, Saskatchewan and Alberta.** Uncommon. **Adventive from Europe.**

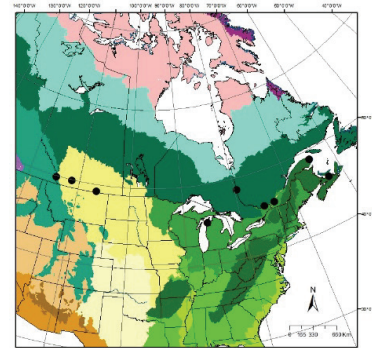
**Seasonality:** From the last week of May to the second week of December, peaking on the third week of June.

**Habitat:** Grasslands and shrubby field; also white cedar forests with balsam fir.

**Number of specimens examined:** 12.



*Atomaria (Anchicera) morio*



## *Atomaria (Anchicera) munda* Erichson

**Length** 1.4–1.8 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes small, about 15–20% width of head. **Antennae** reddish brown; A1–A3 elongate; A1–A2 subequal, A1 stout with sides arcuate, about 1.3x as long as wide, A2–A3 fusiform, A2 about 1.25x as long as A3, A3 about 2x as long as A4; A4 subequal to A6 and A8, transverse, about 0.6x as long as A5; A5 subequal to A7, trapezoidal, about 1.67x as long as A6; A9–A10 strongly transverse and A11 subquadrate, apex hemispherical. **Pronotum** reddish brown with double side borders along its posterior 0.75 in lateral view and a strong dark impression at base; transverse, about 1.35x (1.29–1.44x) as wide as long; sides straight, strongly convergent in anterior half, distinctly convergent in posterior half, widest and angulate at middle, hind angles about 115°; glossy, punctures moderately large and dense (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.45x (1.4–1.55x) as long as wide, about 2.55x (2.5–2.6x) as long as pronotum, sides slightly arcuate throughout, widest at basal 0.4; surface glossy with small confused punctures, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria morio* has pronotum with sides arcuate throughout, widest behind middle, without strong basal impression and body usually entirely black. *A. ornata* has pronotum with sides straight, distinctly angulate and widest at anterior 0.4 and elytra bicolor, black with contrasting reddish brown basal and yellowish brown apical area. *A. neomunda* has pronotum with double sided borders in posterior half only.

**Distribution:** Quebec west to British Columbia, south to Georgia and California, in the Boreal, Northern Appalachian, Western Cordillera and Marine West Coast Forest zones; also in the Mixedwood Plain, Southeast USA Forest Plain, Temperate Prairie and Mediterranean California zones. **First record for North America, USA and Canada in Quebec, Alberta and British Columbia.** Uncommon. **Adventive from Europe.**

**Seasonality:** From the third week of March to the second week of September, mostly from the third week of May to the third week of June.

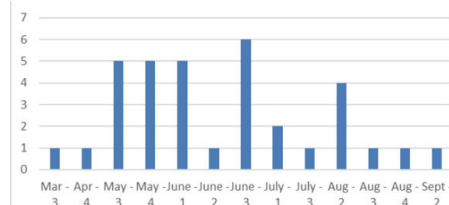
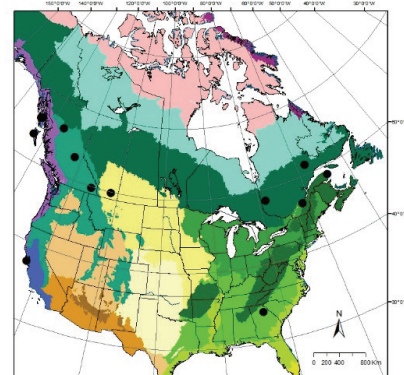
**Habitat:** Mostly semi-opened area like clearcut or thinned second-growth forests and black spruce forests partially cut; also in western cedar forests and mixed forests, in moss under deciduous shrubs or inside galleries of *Dryocoetes affaber*.

**Number of specimens examined:** 34.

**DNA Barcode Index Number (BIN):** BOLD:ACI5424



*Atomaria munda*



## *Atomaria (Anchicera) neomunda* Pelletier n. sp.

**Length** 1.6 mm. **Head** dark brown; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** dark reddish brown with club reddish brown; A1-A3 elongate, A1-A2 subequal, A1 about 1.5x as long as wide, A2 fusiform, about 1.5x as long as A3, A3 and A5 trapezoidal, subequal, about 1.6x as long as A4; A4 subquadrate, about 0.6x as long as A5; A6 and A8, subequal, transverse, about 0.67x as long as A7; A7 subquadrate, about 1.5x as long as A8; **A9-A10 strongly transverse** and A11 short, apex asymmetrically conical. **Pronotum reddish brown with double side borders in posterior half, side borders visible throughout in dorsal view; transverse, about 1.42x (1.35-1.5) as wide as long; sides straight and convergent in anterior half, angulate and widest at middle, straight and slightly convergent to posterior margin, hind angles about 95°; glossy, punctures moderately large and dense** (distance between them subequal to their average diameter), pubescence very short and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra reddish to yellowish brown, about 1.42x (1.35-1.5x) as long as wide, about 2.55x (2.5-2.6x) as long as pronotum, sides slightly arcuate throughout, widest at basal 0.4-0.45; surface glossy with small confused punctures, rows of internal large punctures underneath.** Abdominal ventrites reddish brown.

**Similar species:** *Atomaria munda* has pronotum with a double side borders along its entire length. *A. lewisi* has antennae with A1 arcuate, widened apically and elongate, about 1.5-2.0x as long as wide, about 1.6x or more as long as A2, pronotum with punctures large and dense and elytra with pubescence longer and suberect. *A. sodermanni* and *A. peltata* have pronotum with both side borders visible only in posterior half from dorsal view. Other species with both sides border completely visible along their entire length have antennae with A9-A10 usually subquadrate.

**Holotype:** Canada, Quebec, Minganie Co., Onistagané, 9-24.VII.2001, C. Chantal (CNC, Acc. No. 24568).

**Paratype:** Canada, Quebec, Charlevoix Co., Parc des Grands-Jardins, Petite-Rivière-Malbaie, 10-17.VI.2003, black spruce forest, window trunk trap, C. Hébert: 11 (IRM, CNC); **USA, Alaska:** Fairbanks, North Star Co., Fairbanks, 20.V-3.VI.2007, white birch mixed with trembling aspen forest, interception trap, D.S. Sikes: 1 (UAM); Chena Hot Spring, alt. 250 m, 18.VII.1997, mixed vegetation, roadside, D.M. Collet: 1 (UAM).

**Distribution:** Quebec west to Alaska, in the Boreal zone. Uncommon.

**Seasonality:** From the last week of May to the third week of July, peaking on the second week of June.

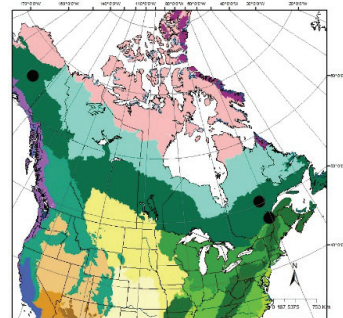
**Habitat:** Black spruce forests and white birch mixed with trembling aspen, mostly on tree trunks.

**Number of specimens examined:** 13.

**Etymology:** *neomunda* = similar to *munda*, another *Atomaria* species

**DNA Barcode Index Number (BIN):** [BOLD:ADY4966](#)

**ZooBank LSID:** [urn:lsid:zoobank.org:act:7835A483-8196-430E-8F8B-31873F23EFD9](http://urn:lsid:zoobank.org:act:7835A483-8196-430E-8F8B-31873F23EFD9)





## *Atomaria (Anchicera) nigrirostrisoides* Pelletier n. sp.

**Length** 1.6 mm. **Head** dark brown to black; clypeus, mandibles and palpi yellowish brown; eyes small, about 25% width of head. **Antennae** reddish brown; A1-A2 subequal, A1 stout, nearly subquadrate, about 1.2x as long as wide, A2-A3 elongate, fusiform, A2 about 1.33x as long as A3, A3 about 1.5x as long as A4; A4 subequal to A6 and A8, subquadrate, about 0.75x as long as A5; A5 and A7 subequal, trapezoidal, about 1.33x as long as A6; A9 subquadrate; A10 transverse; A11 slightly elongate, asymmetrically conical. **Pronotum** dark reddish to dark brown, reddish brown along anterior and posterior margins; **transverse, about 1.35x as wide as long; sides arcuate throughout, strongly convergent in anterior 0.67, widest at posterior 0.33, than slightly convergent to hind margin, hind angles about 95°**; glossy, **slight impression along posterior margin**, punctures small (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum dark reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra mostly dark brown, with suture, basal and sides reddish brown, about 1.3x as long as wide, about 2.2x as long as pronotum, front corner obtuse, sides arcuate throughout to the apex**; surface glossy with moderately large punctures (distance between them subequal to their average diameter), confused, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria nigrirostris*, *A. impressicollis* and *A. visoni* have antennae with A1 elongate, arcuate, at least 1.5x as long as A2, A9-A10 distinctly transverse, pronotum with more deeper impression in basal middle and elytra with sides mostly straight in anterior 0.35. The shape of the pronotum of *A. nigrirostrisoides* is very distinctive among *Anchicera* species.

**Holotype:** USA, Alaska, Fairbanks Co., 25 miles from South Delta Junction, in the Boreal zone, 7.X.2009, in a mixed birch, alder and spruce forest with a Berlese funnel trap, Derek Sikes (CNC, Acc. No. 24585).

**Paratype:** Canada, Labrador, Misty Lake, 53° 22' N, 65° 44' O, 24 VII-7.VIII.2018, black spruce forest, leaf litter, pitfall trap, A. Terrigeol: 1.

**Distribution:** Transcontinental Canada and Alaska, in the Boreal zone.

**Seasonality:** From the last week of July to the first week of October.

**Habitats:** Mixed birch, alder and spruce forest.

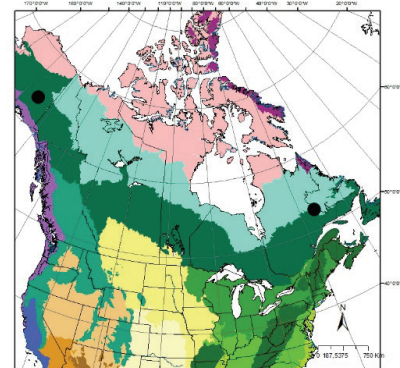
**Number of specimens examined:** 2.

**Etymology:** The name *nigrirostrisoides* means « false *nigrirostris* » because the shape of the pronotum of that species look very similar to the common *A. nigrirostris*. Curiously, both species belong to different subgenera.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:DA71BBF8-70D0-4C79-813D-F07373088471](https://zoobank.org/act:DA71BBF8-70D0-4C79-813D-F07373088471)



*Atomaria (Anchicera) nigrirostrisoides*  
Pelletier - Holotype



## *Atomaria (Anchicera) nigritaria* Pelletier n. sp.

**Length** 1.2-1.3 mm. **Body entirely black**; eyes small, about 25% width of head. **Antennae** dark brown with A1 reddish brown; A1-A3 elongate, A1 swollen, about 1.5x as long as wide, about 1.5x as long as A2; A2-A3 subequal, fusiform, about 1.6x as long as A4; A4 subequal to A6 and A8, **A4 and A6 oval**, A8 subquadrate, about 0.7x as long as A5; A5 elongate, rectangular, about 1.4x as long as A6; A7 oval, about 1.2x as long as A8; A9-A10 subequal, subquadrate and A11 slightly elongate, subconical. **Pronotum black; transverse, about 1.4x (1.35-1.5x) as wide as long; sides arcuate throughout, widest at middle, hind angles about 95°, with marginal bead completely visible throughout their entire length in dorsal view; glossy, punctures large and dense** (distance between them smaller than their average diameter), pubescence moderately short and sparse. **Elytra about 1.55x (1.45-1.65x) as long as wide**, about 2.7x (2.5-2.85x) as long as pronotum, sides strongly arcuate throughout, widest at basal 0.35; surface glossy with moderately large punctures (distance between them subequal to their average diameter) and pubescence short, dense and appressed.

**Similar species:** Most dark brown to black *Anchicera* including *Atomaria fuscata* have pronotum with side straight in anterior and posterior 0.4, narrowly arcuate at middle, or posterior half straight and subparallel or slightly convergent and elytra usually less than 1.5x as long as wide. *A. morio*, another blackish species with arcuate pronotum, has pronotum with double side borders, widest at posterior 0.4.

**Holotype:** Canada, Manitoba, Winnipeg, 6.VII.1979, E.J. Kiteley (CNC, Acc. No. 24569).

**Paratype:** Canada, Marguerite-D'Youville Co., Varenne, 28.X.2004, C. Chantal: 1 (IRM).

**Distribution:** Quebec and Manitoba, in the Mixedwood Plain and Temperate Prairie zones. Rare.

**Seasonality:** From the first week of July to the last week of October.

**Habitat:** Unknown.

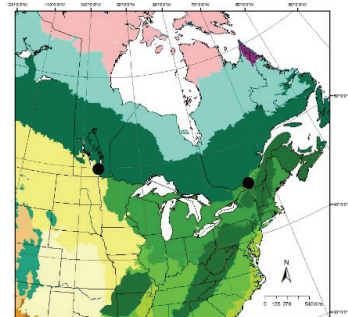
**Number of specimens examined:** 2.

**DNA Barcode Index Number (BIN):** BOLD:ACV1309

**ZooBank LSID:** urn:lsid:zoobank.org:act:3EDFBF9E-B49E-4DAC-AC15-EF980A212E58



*Atomaria (Anchicera) nigritaria* Pelletier  
Holotype



## *Atomaria (Anchicera) nubipennis* Casey

**Length** 1.7 mm. **Head** dark brown; clypeus reddish brown; mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1-A3 elongate, A1 straight, about 1.4x as long as wide, about 1.1x as long as A2; A2-A3 fusiform, A2 about 1.2x as long as A3, A3 about 1.4x as long as A4; A4-A7 trapezoidal, A4 about 0.85x as long as A5; A5 subequal to A7, about 1.33x as long as A6; A8 subquadrate; A9-A10 subquadrate; A11 slightly elongate. **Pronotum** reddish orange; **transverse, about 1.35x (1.3-1.4x) as wide as long; sides straight, strongly convergent in anterior half, subparallel in posterior half, hind angles about 90-92°; glossy, punctures moderately large and dense** (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum brown. Prosternum and mesoventrite reddish brown; metaventrite dark brown. Legs reddish brown. **Elytra** reddish brown in basal 10-15%, suffused with dark brown from basal 15% to 75%, yellowish brown posteriorly, about 1.4x (1.3-1.5x) as long as wide, about 2.5x (2.3-2.7x) as long as pronotum, sides arcuate throughout, widest at basal 0.3; surface glossy with small punctures, pubescence short, sparse and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria postpallens* has pronotum dark brown to black, about 1.4-1.5x as wide as long, with punctures small and elytra dark brown with apical 35% diffusely paler. *A. fulvipennis* has pronotum black, about 1.35x as wide as long with punctures small, and elytra reddish brown, with 2 triangular spots, one at base and another inverted apically. All other *Anchicera* having pronotum with sides subparallel have antennae with A9-A10 transverse.

**Distribution:** From Alberta west to British Columbia, south to Utah and California, mostly in the Western Cordillera zone; also in the Temperate Prairie, Marine West Coast Forest and the Mediterranean California zones. **First record in Alberta and Alaska.** Uncommon.

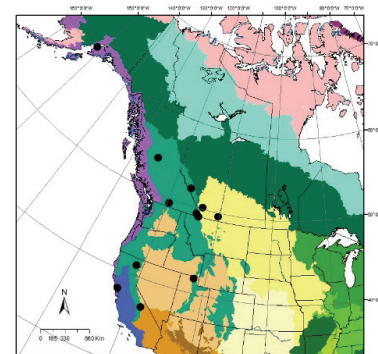
**Seasonality:** From the third week of April to the third week of November.

**Habitat:** Associated with *Neotoma* nests in grasslands and in conifer forests.

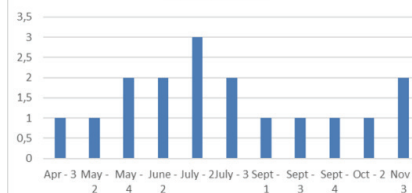
**Number of specimens examined:** 18, including the holotype.



*Atomaria (Anchicera) nubipennis*  
Holotype



*A. nubipennis*





## *Atomaria (Anchicera) oblongula* Casey

**Length** 1.5–1.6 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi reddish brown; eyes about 30% width of head. **Antennae** reddish brown with club yellowish brown; A1–A3 elongate; A1 about 1.2x as long as wide, about 1.2x as long as A2; A2–A3 fusiform, A2 about 1.25x as long as A3, A3 about 1.6x as long as A4; A4 trapezoidal, about 0.85x as long as A5; A5 and A7 subequal, trapezoidal, about 1.2x as long as A6; A6 and A8, subequal, subquadrate, about 0.85x as long as A7; A9 subquadrate, A10 slightly transverse and A11 slightly elongate. **Pronotum** reddish brown; strongly transverse, about 1.55x (1.45–1.65x) as wide as long; sides straight, strongly convergent in anterior 0.4, angulate and widest at anterior 0.4, convergent to posterior margin, hind angles about 95°; glossy, punctures large and dense (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** reddish brown, about 1.45x (1.35–1.55x) as long as wide, about 2.7x (2.55–2.8x) as long as pronotum, sides slightly arcuate throughout, widest at basal 0.35; surface glossy with moderately small punctures. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria brevicollis* has pronotum dark brown, with deep basal impression and elytra yellowish brown, about 1.5x–1.6x as long as wide, widest at or near middle. *A. fulvipennis* and *A. gilvipennis* have pronotum with punctures small and sparse and elytra stouter, about 1.45x as long as wide or less. *A. fuscata* has pronotum with sides arcuate, not forming a distinct angle at middle.

**Distribution:** Newfoundland, Nova Scotia west to Alaska and British Columbia, south to Indiana, Kansas, Arizona, and Oregon, in the Taiga, Boreal, Northern Appalachian, Mixedwood Plain, Temperate Prairie and Western Cordillera zones; also in the Gila Mountain zone. **First record for Canada in Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Northwest Territories, and Alaska.** Common.

**Seasonality:** From the first week of January to the last week of November, mostly from the first week of May to the third week of September, peaking in the second week of June.

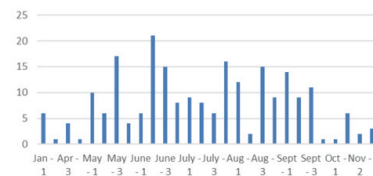
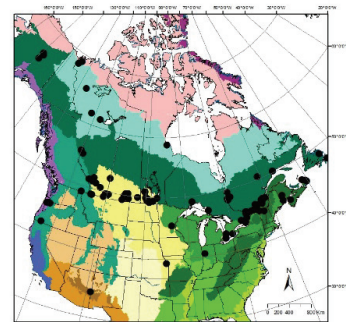
**Habitat:** Marshes, willow stands, bogs, lake and river shores, shrubby fields on *Rubus* canes, grasslands, meadows and alvar; also in black spruce forests, trembling aspen forests, white cedar forests with balsam fir, maple and elm flood plains, lodgepole pine forests, mixed oak and pine forests and white birch mixed with white spruce forests.

**Number of specimens examined:** 224, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ABA9946



*Atomaria (Anchicera) oblongula*  
Holotype



## *Atomaria (Anchicera) ocularia* Pelletier n. sp.

**Length** 1.5-1.6 mm. **Head** entirely reddish brown; **eyes large**, about 40% width of head. **Antennae** reddish brown with club yellowish brown; A1-A2 subequal, A1 swollen, slightly elongate, about 1.15x as long as wide, A2 fusiform, about 1.15x as long as A3; A3 fusiform, about 1.5x as long as A4; A4 and A6 subequal, subquadrate, about 0.8x as long as A5; A5 subequal to A7, trapezoidal, about 1.25x as long as A6; A8 transverse; A9 subquadrate, A10 slightly transverse and A11 slightly elongate. **Pronotum reddish brown; transverse, about 1.33x as wide as long; sides straight and convergent in anterior 0.35, strongly arcuate at middle, straight to slightly arcuate and convergent in posterior 0.4, hind angles about 95°; reticulate, opaque, punctures moderately large and dense** (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra brown**, gradually paler apically, about 1.45x as long as wide, about 2.6x as long as pronotum, sides slightly arcuate throughout, widest at basal 0.45; surface glossy **with small punctures**, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria fuscata* has head with eyes smaller, about 25% width of head, pronotum entirely glossy, without microsculpture, elytra also glossy with sides strongly arcuate throughout. *A. atra* has pronotum widest in front of middle, with hind margin narrowly bordered throughout, finely punctured, distance between them much larger than their average diameter. *A. nigrirostrisoides* has pronotum with sides arcuate throughout, widest at posterior third, with very small punctures, distance between them much larger than their average diameter.

**Holotype:** Canada, Alberta, Elk Island National Park, Astontin Lake, 20-27.VII.2012, emergent white birch, willow and trembling aspen forest, alt.: 719 m, Stephanie Church: ♂ (CNC, Acc. No. 24570).

**Seasonality:** One specimen collected in the last week of July.

**Habitat:** Emergent white birch, willow and trembling aspen forest.

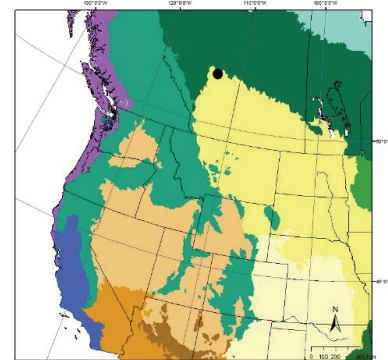
**Number of specimens examined:** 1.

**DNA Barcode Index Number (BIN):** BOLD:ACC1689

**ZooBank LSID:** urn:lsid:zoobank.org:act:98B6AD53-C421-4347-8670-C50254964E90



*Atomaria (Anchicera) ocularia*  
Pelletier - Holotype



## *Atomaria (Anchicera) ornata* Heer

**Length** 1.5-2.0 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** yellowish brown; A1-A3 elongate; A1 stout with medial side arcuate, about 1.3x as long as wide, subequal to A2; A2-A3 fusiform, A2 about 1.2x as long as A3, A3 about 2.2x as long as A4; A4 subquadrate, about 0.6x as long as A5; A5 and A7 subequal, trapezoidal, about 2x as long as A6; A6 and A8 transverse, about 0.5x as long as A7; **A9-A10 strongly transverse** and A11 slightly elongate, asymmetrically subconical. **Pronotum reddish brown with double side borders at posterior 0.75 visible in lateral view; strongly transverse, about 1.45x (1.4-1.5x) as wide as long; sides straight, strongly convergent in anterior 0.4, slightly convergent in posterior 0.6, widest and narrowly arcuate at anterior 0.4, hind angles about 95°; slightly reticulate, punctures moderately small and sparse** (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra black, with narrow basal area, humeral and apical 30% reddish to yellowish brown, about 1.4x (1.3-1.5x) as long as wide, about 2.5x (2.4-2.6x) as long as pronotum, sides arcuate throughout, widest at basal 0.4; surface glossy with small confused punctures, pubescence short and appressed.** Abdominal ventrites dark brown.

**Similar species:** *Atomaria morio* has body entirely black and pronotum with sides arcuate throughout, widest behind middle, without strong basal impression. *A. munda* has pronotum orange with sides angulate, widest at middle, with strong basal impression and elytra uniform yellowish brown. All other *Atomaria (Anchicera)* with bicolor elytra have pronotum without double side borders.

**Distribution:** British Columbia, in the Western Cordillera zone. **First record for North America and Canada in British Columbia.** Rare. **Adventive from Europe.**

**Seasonality:** From the second week of June to the last week of July.

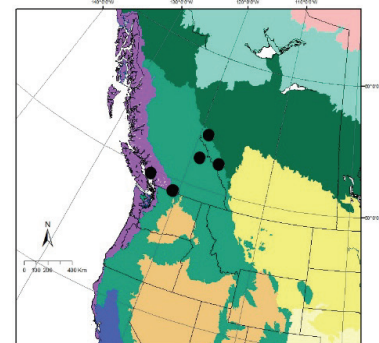
**Habitat:** Birch and spruce forests with lot of falling logs, lodgepole pine forests.

**Number of specimens examined:** 5.

**DNA Barcode Index Number (BIN):** BOLD:ACG2051



*Atomaria ornata*





## *Atomaria (Anchicera) parallellicollis* Pelletier n.sp.

**Length** 1.8 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish brown; eyes small, about 20-25% width of head. **Antennae** reddish brown; **A1** very long, arcuate, about 2.2x as long as wide, about 1.85x as long as **A2**; **A2** trapezoidal, about 1.1 as long as **A3**; **A3** and **A5** subequal, fusiform, about 1.85x as long as **A4**; **A4**, **A6** and **A8** subequal, subquadrate, about 0.55x as long as **A5**; **A7** trapezoidal, about 1.33x as long as **A8**; **A9-A10** subquadrate and **A11** slightly elongate, apex symmetrically conical. **Pronotum** dark brown to black; slightly transverse, about 1.25-1.3x as wide as long; sides straight and convergent on anterior 0.35 and subparallel on posterior 0.65, hind angles about 90°; glossy, punctures large and dense (distance between them smaller than their average diameter), pubescence moderately long and sparse. Scutellum dark brown. Prosternum reddish brown; meso- and metaventrite dark brown. Legs reddish brown. **Elytra** reddish brown, with dark brown diffuse area around scutellum, along sides and apex, about 1.55x as long as wide, about 2.8x as long as pronotum, sides slightly arcuate throughout, widest at middle; surface glossy with moderately large punctures (distance between them subequal to their average diameter). Abdominal ventrites reddish brown.

**Similar species:** *Atomaria nubipennis*, *A. postpallens* and *A. fulvipennis* have antennae with **A1** short, stout, about 1.5x as long as wide or less, about 1.4x as long as **A2** or less, pronotum wide, more transverse, about 1.3-1.5x as wide as long, punctures small and sparser, distance between them more than their average diameter. *A. testacea*, *A. apicalis*, *A. turgida* and *A. lederi* have antennae with club broad and abrupt, **A9-A10** strongly transverse. *A. vespertina* has antennae with **A9-A10** slightly transverse, pronotum more transverse, about 1.3-1.45x as wide as long and elytra yellowish brown with sides arcuate throughout.

**Holotype:** Canada, Quebec, Chibougamau Co., Chibougamau, 28.V.1968, Claude Chantal (CNC, Acc. No. 24571).

**Distribution:** Quebec, in the Boreal zone.

**Seasonality:** One record on the last week of May.

**Habitat:** Unknown.

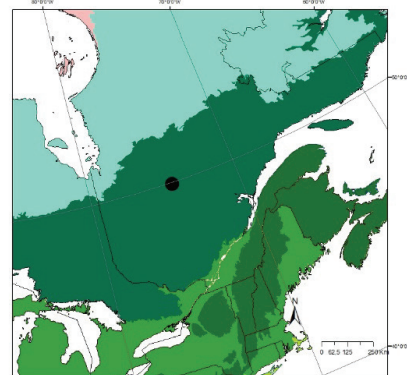
**Number of specimens examined:** 1.

**Etymology:** The name *parallellicollis* (= parallel collar) an adjective meaning "with parallel-sided pronotum", in reference to the subparallel pronotal sides.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:4AE3549F-AB9F-4CBE-AD5F-B25042060C71](https://zoobank.org/act:4AE3549F-AB9F-4CBE-AD5F-B25042060C71)



*Atomaria (Anchicera) parallellicollis* Pelletier  
Holotype



## *Atomaria (Anchicera) peltata* Kraatz

**Length** 1.5-1.8 mm. **Head** dark brown to black; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae dark brown**; A1 short, straight, about 1.2x as long as wide, about 1.1x as long as A2; A2 slender, oval, distinctly narrower than A1, about 1.2x as long as A3; A3 trapezoidal, about 1.6x as long as A4; A4 subequal to A6, subquadrate, about 0.85x as long as A5; A5 trapezoidal, about 1.2x as long as A6; A6 about 0.85x as long as A7; A7 subquadrate, about 1.5x as long as A8; A8 transverse; **A9-A10 transverse**, A11 slightly elongate, asymmetrically truncate. **Pronotum dark brown to black; transverse, about 1.4x (1.35-1.45x) as wide as long; sides straight and strongly convergent in anterior 0.4, angulate in front of middle, straight and convergent to posterior margin, hind angles about 100°; glossy, punctures moderately large and dense** (distance between them subequal to their average diameter), pubescence moderately long and sparse. Scutellum dark brown to black. Sternum dark brown. Legs dark brown. **Elytra reddish to dark brown, about 1.45x (1.4-1.55x) as long as wide, about 2.9x (2.7-3.0x) as long as pronotum, sides arcuate throughout, widest at anterior 0.35; surface glossy with moderately large punctures, more dense in anterior half, sparser apically, pubescence moderately long, dense, and appressed.** Abdominal ventrites dark reddish brown.

**Similar species:** *Atomaria sodermanni* is smaller (L = 1.2-1.4 mm) with legs reddish to yellowish brown and pronotum about 1.25-1.35x as wide as long, widest at middle with punctures large and dense. *A. pusilla* is smaller (L = 1.0-1.2 mm), pronotum reddish brown with sides arcuate throughout, punctures small and sparse and elytra yellowish brown with side slightly arcuate in anterior 0.65. *A. neomunda* has pronotum with both side borders completely visible along their entire length from dorsal view and double side borders in posterior half. *A. lewisi* has antennae with A1 arcuate, widened apically and elongate, about 1.5-2.0x as long as wide, pronotum reddish brown, and elytra about 1.35-1.4x as long as wide with pubescence longer and suberect.

**Distribution:** British Columbia including Queen Charlotte Islands, in the Marine West Coast Forest zone. **First record for North America in Canada, British Columbia.** Rare. **Holarctic.**

**Seasonality:** From the last week of May to the last week of July.

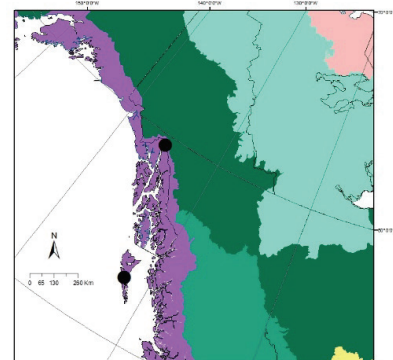
**Habitat:** In bear dung.

**Number of specimens examined:** 8.

**DNA Barcode Index Number (BIN):** [BOLD:ACA9266](#)



*Atomaria (Anchicera) peltata*



## *Atomaria (Anchicera) postpallens* Casey

**Length** 1.4-1.7 mm. **Head** dark brown; clypeus reddish brown; mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** reddish brown; A1-A3 elongate; **A1 arcuate, about 2x as long as wide**, about 1.1x as long as A2; A2-A3 fusiform, A2 about 1.1x as long as A3, A3 about 1.67x as long as A4; A4 subequal to A6 and A8, A4 and A6 trapezoidal, about 0.75x as long as A5; A5 subequal to A7, fusiform, about 1.33 as long as A8; A8 subquadrate; A9 subquadrate; A10 slightly transverse and A11 slightly elongate, symmetrically conical. **Pronotum dark brown; strongly transverse, about 1.5x (1.45-1.55x) as wide as long; sides straight and strongly convergent in anterior 0.4, subparallel in posterior 0.6, hind angles about 90-92°; glossy, punctures moderately small and sparse** (distance between them larger than their average diameter), pubescence moderately long and dense. Scutellum dark brown to black. Sternum dark reddish brown. Legs yellowish brown. **Elytra dark brown to black in basal 60%, yellowish brown apically with humeral corner dark reddish brown, about 1.42x (1.35-1.5x) as long as wide**, about 2.7x (2.6-2.8x) as long as pronotum, sides arcuate throughout, widest at basal 0.4; surface glossy with small punctures. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria nubipennis* has pronotum orange brown, about 1.3-1.4x as wide as long with punctures moderate, elytra dark brown, with anterior 20% and posterior 35% diffusely reddish brown. *A. fulvipennis* has pronotum black, about 1.35x as wide as long, punctures small, and elytra reddish brown, with 2 triangular spots, one at base and another inverted apically. All other *Anchicera* having pronotum with sides subparallel have antennae with A9-A10 transverse.

**Distribution:** From Alberta west to Northwest Territories and British Columbia, mostly in the Western Cordillera and the Marine West Coast Forest zones; also in the Temperate Prairie and the Taiga zones. **First record for Canada, in Alberta, British Columbia, Northwest Territories and Alaska.** Uncommon.

**Seasonality:** From the first week of April to the third week of September, peaking in the first week of June.

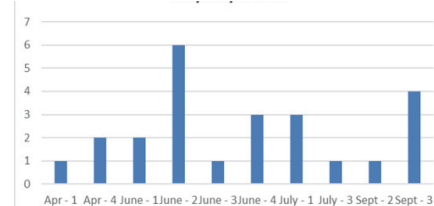
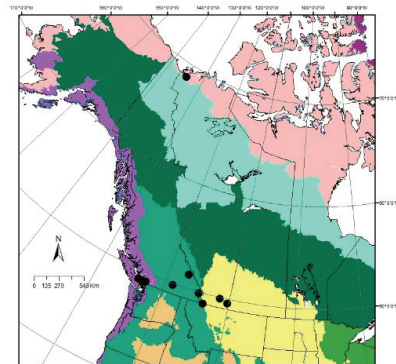
**Habitat:** In whitebark pine forests and probably also other pine forests and tundra, including alpine tundra.

**Number of specimens examined:** 26, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ADJ5694



*Atomaria (Anchicera) postpallens*  
Holotype





## *Atomaria (Anchicera) pusilla* (Paykull)

(Syn.: *A. fallax* Casey, 1900 **syn. nov.**)

**Length** 1.0-1.2 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** reddish brown; A1 short, straight, about 1.2x as long as wide, about 1.35x as long as A2; A2-A3 elongate, A2 about 1.2x as long as A3, A3 about 1.65x as long as A4; A4, A6 and A8 subequal, about 0.75x as long as A5, A4 trapezoidal, A6 and A8 subquadrate; A5 and A7 trapezoidal, about 1.35x as long as A6; A9-A10 transverse, A11 slightly elongate with apex arcuate. **Pronotum reddish brown; transverse, about 1.4x (1.35-1.45x) as wide as long; sides arcuate, widest at middle, strongly convergent in anterior half, slightly convergent to posterior margin, hind angles about 95°; glossy, punctures moderately small and sparse** (distance between them larger than their average diameter), pubescence moderately long and sparse. Scutellum reddish brown. Prosternum yellowish brown; meso- and metaventrite reddish brown. Legs yellowish brown. **Elytra reddish brown**, sometimes gradually yellowish brown apically, about 1.45x (1.4-1.55x) as long as wide, about 2.9x as long as pronotum, sides slightly arcuate throughout, widest at middle; surface glossy with moderately large punctures, apparently forming rows underneath, pubescence moderately dense, appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria lewisi* has A1 elongate and arcuate, about 1.5-2x as long as wide, at least 1.5x as long as A2 and elytra less elongate with sides more arcuate, about 1.35-1.4x as long as wide. *A. neomunda* has pronotum with both side borders completely visible along their entire length from dorsal view and double side borders in posterior half. *A. sodermani* and *A. peltata* are larger (L = 1.3-1.8 mm), have pronotum dark brown to black with sides straight anteriorly and posteriorly, forming an angle at or before middle.

**Distribution:** Nova Scotia west to Alaska and British Columbia, south to Arizona and Oregon, in the Mixedwood Plain, Northern Appalachian, and Marine West Coast Forest zones; also in the Boreal and Gila Mountain zone, probably widely distributed indoors. **First record for Ontario.** Common. **Adventive from Europe.**

**Seasonality:** From the second week of April to the second week of November, peaking in the last week of June, probably throughout the year indoor.

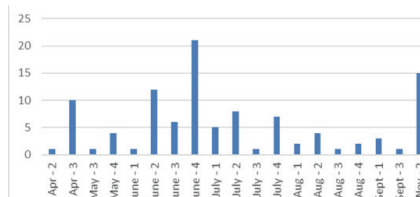
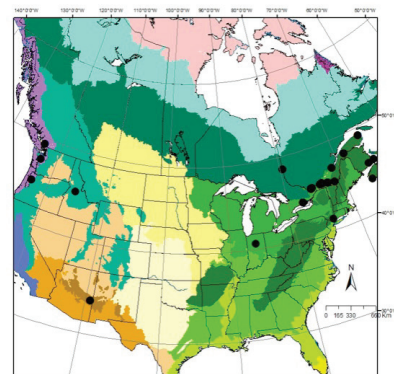
**Habitat:** Mostly indoor, **in stored food products**, in basement; outdoor in grasslands, around farms and gardens, collected from heaps of refuse, cut vegetation, hay, grass and compost (Klimaszewski et al., 2015). Also in balsam fir forests mixed with white spruce, regenerated after 50 years of clear cutting or in balsam fir plantations. Collected on a decaying gilled fungus (Majka et al, 2010).

**Number of specimens examined:** 106.

**DNA Barcode Index Number (BIN):** BOLD:ACC1110



*Atomaria pusilla*



## *Atomaria (Anchicera) salicicola* Pelletier n. sp.

**Length** 1.3-1.7 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown; A1-A3 elongate, A1-A2 subequal, A1 swollen, about 1.25x as long as wide, A2-A3 fusiform, A2 about 1.1x as long as A3, A3 about 1.8x as long as A4; A4, A6 and A8 subequal, subquadrate, about 0.7x as long as A5; A5 elongate, trapezoidal, about 1.4x as long as A6; A7 subquadrate, about 1.2x as long as A8; A9 subquadrate, A10 slightly transverse and A11 slightly elongate, diagonally truncate. **Pronotum** reddish brown to dark reddish brown; transverse, about 1.4x (1.35-1.45x) as wide as long; **sides convex throughout, widest at anterior 35-40%**, strongly convergent in anterior 0.35, convergent to posterior margin, hind angles about 95°; glossy, **punctures moderately small and sparse** (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Sternum reddish brown. Legs yellowish brown. **Elytra reddish to yellowish brown**, about 1.4x (1.35-1.45x) as long as wide, about 2.5x (2.25-2.65x) as long as pronotum, sides strongly arcuate throughout, widest at basal 0.35; surface glossy with small and sparse punctures, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria atra* is mostly dark brown to black with elytra reddish at most to apical 35% and pronotum with sides slightly sinuate at anterior half. *A. nigrirostrisoides* has pronotum with sides arcuate throughout, widest at posterior third, with very small punctures, distance between them much larger than their average diameter. *A. gilvipennis*, *A. fulvipennis*, *A. oblongula* and *A. brevicollis* have pronotum with sides straight, forming a distinct angle in front of middle.

**Holotype:** Canada, Alberta, Elk Island National Park, Wood Bison Trail, alt.: 722 m, 29.VI-3.VII.2012, trembling aspen forest with rose bushes in understory, BOLD team: 1 (CNC, Acc. No. 24572).

**Paratype:** Canada, Alberta, Elk Island National Park, Wood Bison Trail, alt.: 722 m, 29.VI-3.VII.2012, trembling aspen forest with rose bushes in understory, BOLD team: 2 (CBGUG, IRM).

**Additional specimens:** Canada, Alberta, Elk Island National Park, Wood Bison Trail, alt.: 722 m, 29.VI-3.VII.2012, trembling aspen forest with rose bushes in understory, BOLD team: 48 (CBGUG - ethanol); same data, wet land along side of trembling aspen forest: 7 (CBGUG - ethanol); Sylvan Lake, 24.VI.1943, E.J. Kiteley: 1 (CNC). **Saskatchewan**, Prince Albert National Park, Spruce River Highland Trail, alt. 541 m, 14.VII.2012, Intercept trap, mixed trembling aspen and white spruce forest, BOLD team: 10 (CBGUG - ethanol).

**Distribution:** Saskatchewan and Alberta in the Temperate Prairie zone, also in the Boreal zone. Locally fairly common.

**Seasonality:** From the last week of June to the second week of July.

**Habitat:** Trembling aspen forests, mixed trembling aspen and white spruce and wet land bordering trembling aspen forests.

**Number of specimens examined:** 68.

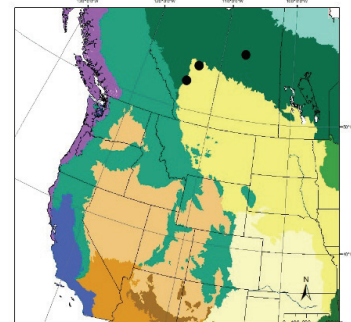
**Etymology:** *salicicola* means « living on willow », corresponding to the dominant shrub species in the habitat of the type series.

**DNA Barcode Index Number (BIN):** BOLD:ACE2416

**ZooBank LSID:** urn:lsid:zoobank.org:act:2614EB99-D99C-4E5A-918E-335F12915B51



*Atomaria (Anchicera) salicicola*  
Pelletier - Holotype



## *Atomaria (Anchicera) sodermani* Sjöberg

**Length** 1.2-1.4 mm. **Head** dark brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 short, straight, about 1.4x as long as wide, about 1.4x as long as A2; A2-A3 subequal, slender, A2 trapezoidal, A3 fusiform, about 1.67x as long as A4; A4 subequal to A6, subquadrate, about 0.75x as long as A5; A5 trapezoidal, about 1.33x as long as A6; A7 trapezoidal, about 1.5x as long as A8; A8 transverse; **A9-A10 transverse**, A11 slightly elongate. **Pronotum dark brown; transverse, about 1.3-1.35x as wide as long; sides straight and convergent in anterior 0.5, angulate at middle, slightly convergent to posterior margin, hind angles about 95°; glossy at middle to slightly reticulate at sides, punctures moderately large and dense** (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum dark brown to black. Prosternum reddish brown; meso- and metaventrite dark brown. Legs reddish brown. **Elytra dark brown anteriorly to reddish brown apically, about 1.45x as long as wide, about 2.5x as long as pronotum, sides arcuate throughout, widest at anterior 0.4; surface slightly reticulate with small and sparse punctures, pubescence moderately dense and appressed.** Abdominal ventrites reddish brown.

**Similar species:** *Atomaria peltata* is larger (L = 1.5-1.8 mm) with legs reddish to dark brown, pronotum about 1.35-1.4x as wide as long, widest slightly in front of middle, with punctures moderately large and sparse. *A. pusilla* is smaller (L = 1.0-1.2 mm) with pronotum reddish brown with sides arcuate throughout, punctures small and sparse and elytra with sides slightly arcuate in anterior 65%. *A. neomunda* has pronotum with both side borders completely visible along their entire length from dorsal view and double side borders in posterior half. *A. lewisi* has antennae with A1 arcuate, widened apically and elongate, about 1.5-2.0x as long as wide, pronotum reddish brown, and elytra about 1.3-1.4x as long as wide with pubescence longer and suberect.

**Distribution:** Quebec and Northwest Territories, in the Taiga and Mixedwood Plain zones. **First record for North America and Canada, in Quebec and Northwest Territories.** Rare. Probably Holarctic in the West, adventive in the East.

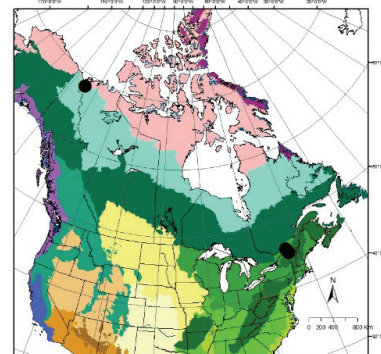
**Seasonality:** From the third week of June to the last week of August.

**Habitat:** Unknown.

**Number of specimens examined:** 3.



*Atomaria (Anchicera) sodermani*





## *Atomaria (Anchicera) testacea* Stephens

(Syn.: *Silpha ruficornis* Marsham, 1802)

**Length** 1.3-1.6 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown; A1-A3 elongate, fusiform, A1 about 1.5x as long as wide, about 1.35x as long as A2, A2 about 1.45x as long as A3, A3 about 1.5x as long as A4; A4 subequal to A6, subquadrate, about 0.75x as long as A5; A5 trapezoidal, about 1.35x as long as A6; A7 subquadrate, about 1.5x as long as A8; A8 transverse; A9 subquadrate, A10 slightly transverse and A11 subquadrate asymmetrically subconical. **Pronotum** dark brown to black, often dark reddish brown on anterior and posterior margin; **slightly transverse, about 1.3x (1.2-1.35x) as wide as long; sides arcuate and convergent in anterior half, straight and subparallel in posterior half, hind angles about 90°**; glossy, punctures moderately large and dense (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Sternum dark brown. Legs brown. **Elytra** dark brown, gradually paler to reddish and yellowish brown apically, about 1.35x (1.25-1.45x) as long as wide, about 2.35x (2.2-2.6x) as long as pronotum, sides strongly arcuate throughout, widest at basal 0.33; surface glossy with moderately small punctures, pubescence moderately short and appressed. Abdominal ventrites dark brown.

**Similar species:** *Atomaria apicalis*, *A. inepta*, *A. turgida* and *A. lederi* have pronotum reddish brown, more transverse, about 1.35x or more as wide as long, *A. apicalis* with punctures small and sparse. *A. parallelcollis* has antennae with A1 elongate, arcuate, about 2.2x as long as wide, about 1.8x or more as long as A2 and A9-A10 subquadrate. Other species having pronotum with sides mostly subparallel in posterior half have antennae with A9-A10 subquadrate.

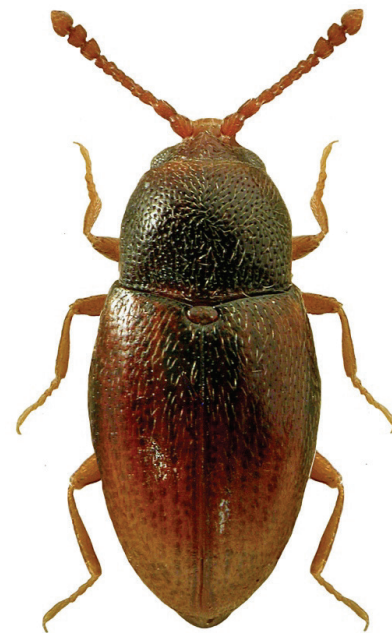
**Distribution:** Nova Scotia west to British Columbia, south to Massachusetts and New-York, in the Mixedwood Plain and Northern Appalachian zones; also in the Temperate Prairie and the Marine West Coast Forest zones. **First record in Saskatchewan and British Columbia.** Fairly common. **Adventive from Europe, probably separately introduced in the East and the West.**

**Seasonality:** From the first week of April to the second week of October, mostly from the third week of June to the third week of September, peaking in the first week of July.

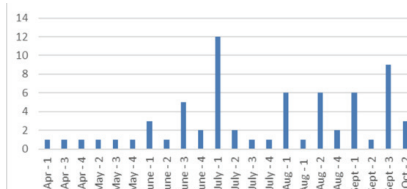
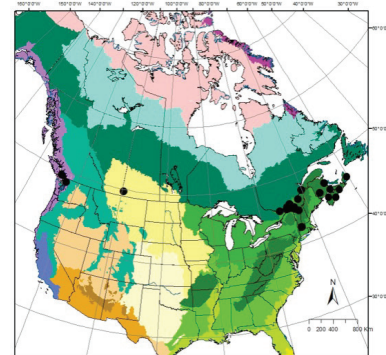
**Habitat:** Mostly indoor, in stored food products; also in grasslands, meadows, barnyards, mixed forests in decaying corncobs and cornhusks; in spruce forests from clearcut and wind disturbance origin (DeLancey et al., 2009); red spruce forests, bogs, marshes, beaches under wrack, in compost (Majka et al., 2010), and maple forests.

**Number of specimens examined:** 68.

**DNA Barcode Index Number (BIN):** BOLD:AAH0292



*Atomaria testacea*



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## *Atomaria (Anchicera) turgida* Erichson

(Syn.: *A. nanula* Casey, 1900 syn. nov.)

**Length** 1.3–1.6 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 33% width of head. **Antennae** reddish brown with club yellowish brown; A1 short and straight, about 1.6x as long as wide, about 1.15x as long as A2; A2–A3 fusiform, A2 about 1.4x as long as A3, A3 about 2.67x as long as A4; A4, A6 and A8 subequal, transverse, about 0.55x as long as A5; A5 trapezoidal, about 1.8x as long as A6; A7 subquadrate, about 1.6x as long as A8; A9–A10 transverse; A11 slightly elongate, symmetrically subconical. **Pronotum reddish brown; transverse, about 1.4x (1.35–1.45x) as wide as long; sides straight, strongly convergent in anterior 0.3, then subparallel to posterior margin, hind angles about 90°; glossy, punctures moderately large and dense** (distance between them smaller than their average diameter), pubescence moderately long and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra reddish to yellowish brown, about 1.3x (1.25–1.35x) as long as wide, about 2.4x (2.2–2.65x) as long as pronotum, sides strongly arcuate throughout, widest at basal 0.4; surface glossy with small and sparse punctures, pubescence short and appressed. Abdominal ventrites yellowish brown.**

**Similar species:** *Atomaria inepta* has pronotum wider, about 1.5–1.6x as wide as long and elytra with sides slightly arcuate throughout. *A. lederi* has pronotum moderately punctate, distance between punctures subequal to their average diameter, hind angle 105°. *A. apicalis* has pronotum with less pronounced middle angulation on sides and punctures small and sparse. *A. testacea* has pronotum dark brown to black, narrower, about 1.25–1.35x as wide as long with punctures large and dense. Other species having pronotum with sides mostly subparallel in posterior half have antennae with A9–A10 subquadrate.

**Distribution:** New Brunswick west to Alaska and British Columbia, south to Vermont, Utah, Arizona and California, mostly in the Temperate Prairie, Western Cordillera and Marine West Coast Forest zones; also in the Taiga, Boreal, Northern Appalachian, Cold Desert, Gila Mountain, and Mediterranean California zones.

**First record for North America in New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Northwest Territories, Yukon, and Alaska.** Fairly common. **Holarctic**, possibly adventive in the East.

**Seasonality:** From the first week of April to the second week of November, mostly between the second week of September and the second week of October.

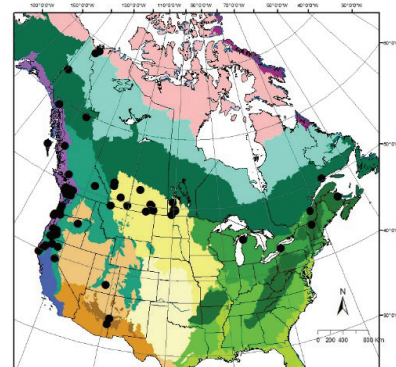
**Habitat:** Mostly in swamp and willow stand; collected also in barnyard litter, festooned exfoliated yew bark, duff of chinkapin, maple, white oak, black oak and serviceberry.

**Number of specimens examined:** 100.

**DNA Barcode Index Number (BIN):** BOLD:AAJ9463



*Atomaria (Anchicera) turgida*



## *Atomaria (Atomaria) affinis* R.F. Sahlberg

**Length** 1.6-2.0 mm. **Head** dark reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 25-30% width of head. **Antennae** reddish brown; A1 elongate, arcuate, about 1.67x as long as wide, about 1.67x as long as A2; A2 trapezoidal, about 1.15x as long as A3; A3 and A5 trapezoidal, subequal, about 2.5x as long as A4; A4, A6 and A8 subequal, transverse, about 0.4x as long as A5; A7 subquadrate, about 1.75x as long as A8; A9 and A10 transverse; A11 slightly elongate, symmetrically subconical. **Pronotum** dark reddish brown, transverse, about 1.3x (1.25-1.35x) as wide as long; sides sinuate and slightly convergent in anterior 0.7, widest at posterior 0.3, arcuate and convergent to hind margin, hind corners about 110°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence short and sparse. Scutellum reddish to yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** reddish to yellowish brown, usually with dark oblique broad diffuse band of variable extent, about 1.6x (1.55-1.65x) as long as wide, about 2.7x (2.6-2.8x) as long as pronotum, sides straight and slightly convergent in basal 0.6, arcuate and convergent to apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confuse but with apparent rows of punctures underneath, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** Most species having antennae with A9-A10 transverse and pronotum with sides sinuate at middle have pronotum with sides straight in posterior 0.3 and elytra uniform reddish to yellowish brown, without distinct median band.

**Distribution:** Nova Scotia west to Alaska and British Columbia, mostly in the Northern Appalachian, Mixedwood Plain, Temperate Prairie, and Western Cordillera zones; also in the Boreal and Marine West Coast Forest zones. **First record for North America, in Nova Scotia, New Brunswick, Quebec, Alberta, British Columbia, and Alaska.** Fairly common. **Probably adventive in most of its range except Alaska.**

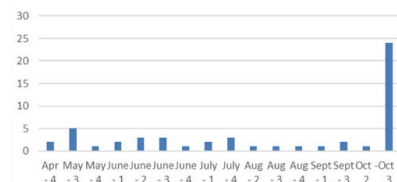
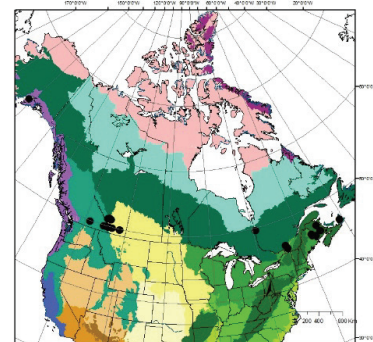
**Seasonality:** From the last week of April to the third week of October, peaking on the third week of October.

**Habitats:** Mostly in red oak forests; also in jack pine forests, red pine forests, black spruce forests, white spruce forests, lodgepole pine forests mixed with trembling aspen, old mixed forests, and white cedar swamps, mostly on tree trunks under bark.

**Number of specimens examined:** 53.



*Atomaria (Atomaria) affinis*





## *Atomaria (Atomaria) albertana* Pelletier n. sp.

**Length** 1.9 mm. **Head** orange; clypeus, mandibles and palpi yellowish brown; eyes small, about 20-25% width of head. **Antennae** dark brown with club brown; **A1** slightly arcuate, stout, about 1.3x as long as wide, about 1.5x as long as **A2**; **A2-A3** subequal, **A2** subquadrate, **A3** trapezoidal, about 2.5x as long as **A4**; **A4, A6 and A8** subequal, transverse, about 0.5x as long as **A5**; **A5** subquadrate, about 2x as long as **A6**; **A7** slightly transverse, about 2x as long as **A8**; **A9** and **A10** strongly transverse; **A11** slightly elongate, apex symmetrically conical. **Pronotum** orange brown; transverse, about 1.25x as wide as long; sides distinctly sinuate and convergent in anterior 0.65, widest at posterior 0.35, arcuate and convergent to hind margin, hind angles about 100°; glossy, punctures large and dense (distance between them smaller than their average diameter), pubescence moderately long and sparse. Scutellum orange. Sternum orange. Legs yellowish brown. **Elytra** yellowish brown, about 1.55x as long as wide, about 2.5x as long as pronotum, sides straight to slightly arcuate and convergent in basal half, arcuate and convergent to apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), confused, with apparent rows of larger punctures underneath, pubescence short and appressed. Abdominal ventrites orange.

**Similar species:** *Atomaria ontariensis* is almost identical but differ by antennae reddish brown with club yellowish brown and elytra without rows of large punctures underneath. *A. pseudotsugae* has antennae with **A1** elongate and arcuate, about 1.5x as long as wide, pronotum with double side borders in posterior 0.35 and stouter elytra, about 1.5x as long as wide. *Atomaria pinicola*, *A. macra* and *A. parviceps* have a pronotum with sides straight to slightly arcuate in anterior 0.65-0.75, forming a distinct angle posterior to middle. *A. orbicollis* has a narrower pronotum, about 1.15-1.25x as wide as long which is arcuate throughout.

**Holotype:** Canada, Alberta, Athabasca, Calling Lake, UTM, 123,44 O, 61,32 N, 10.VI.1997, Window Trap, J. Hammond, ♀ (CNC, Acc. No. 24573).

**Paratype:** Canada, Alberta, Jasper National Park, Miette Hot Springs, UTM, 117,75 O, 53,12 N, 21.VII.2012, Pan Trap, valley bed with creek, rocks and moss, BOLD team: 1 (CBGUG).

**Seasonality:** From second week of June to third week of July.

**Habitats:** River shore with rocks and moss.

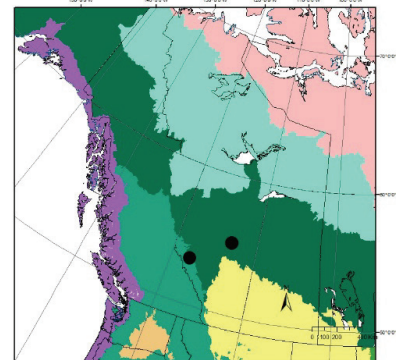
**Number of specimens examined:** 2.

**DNA Barcode Index Number (BIN):** BOLD:ACI4472

**ZooBank LSID:** [urn:lsid:zoobank.org:act:B95D2CC7-11C9-4DB4-88CB-971F6BF5A5F5](https://zoobank.org/act:B95D2CC7-11C9-4DB4-88CB-971F6BF5A5F5)



*Atomaria (Atomaria) albertana*  
Pelletier - Holotype



## *Atomaria (Atomaria) alpina* Heer

**Length** 1.6-1.9 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 elongate, arcuate, about 1.5x as long as wide, about 1.7x as long as A2; A2 trapezoidal, about 1.15x as long as A3; A3 and A5 fusiform, subequal, about 2x as long as A4; A4, A6 and A8 transverse, subequal, about 0.5x as long as A5; A7 subquadrate, about 1.75x as long as A8; A9 and A10 transverse; A11 slightly elongate, symmetrically subconical. **Pronotum** reddish brown, transverse, about 1.3x (1.25-1.35x) as wide as long; sides straight and slightly convergent in anterior 0.3, straight and parallel to posterior 0.15, straight and convergent to hind margin, hind angles about 110°; glossy, punctures moderately large (distance between them subequal than their average diameter), pubescence moderately short and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** reddish to yellowish brown, elongate, about 1.7x (1.6-1.8x) as long as wide, about 2.75x (2.55-2.9x) as long as pronotum, sides straight and slightly convergent in basal 0.6, arcuate and convergent to apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria planulata* has antennae with A4 and A6 subquadrate and pronotum reticulate, opaque, slightly transverse, about 1.2-1.3x as wide as long. *A. quadricollis* has pronotum reticulate and opaque, slightly transverse, about 1.2-1.3x as wide as long, sides strongly sinuate at middle. *A. patens* and *A. tenebrosa* have pronotum black, with sides arcuate throughout, widest at posterior 0.25-0.35 and elytra dark brown to black, shorter, about 1.60-1.65x as long as wide, widest at middle.

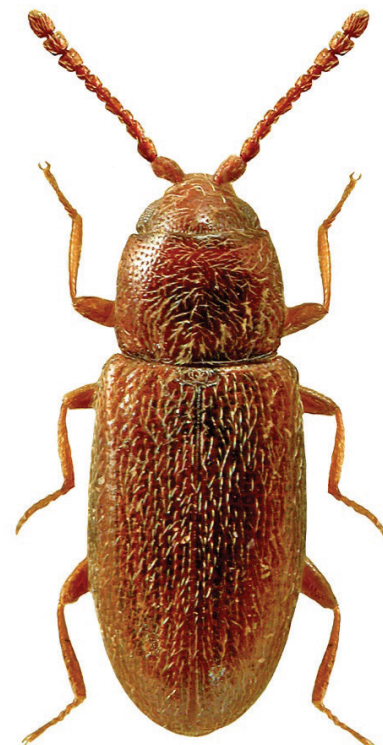
**Distribution:** Nova Scotia west to British Columbia, south to Missouri and California, mostly in the Boreal, Northern Appalachian, Mixedwood Plain, Western Cordillera and Marine West Coast Forest zones; also in the Temperate Prairie zones. **First record for North America, in Nova Scotia, New Brunswick, Quebec, Ontario, Alberta and British Columbia.** Fairly common. **Adventive from Europe.**

**Seasonality:** From the first week of May to the second week of October, mostly between the first week of June to the first week of July, peaking in the third week of June.

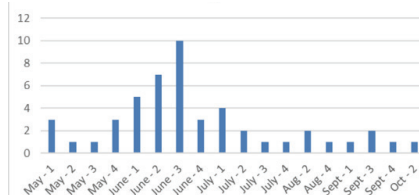
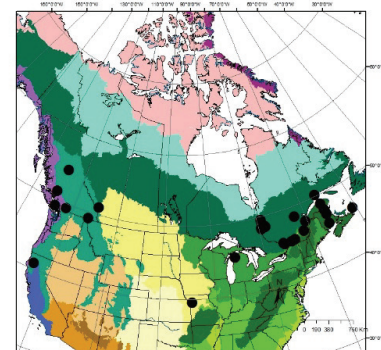
**Habitats:** Trembling aspen forests, balsam poplar stands near rivers, black spruce forests and mixed forests; also in silver maple forests within seasonally flooded marsh; burning lands 20 years after clearcutting and white cedar forests with balsam firs. Collected in *Populus tremuloides* canopy, *Populus balsamifera*; *Fomitopsis pinicola* (Hagvar, 1999); also in flood debris, paper yard in mushroom and under old grass near wood piles.

**Number of specimens examined:** 49.

**DNA Barcode Index Number (BIN):** BOLD:ACC6984



*Atomaria (Atomaria) alpina*



## *Atomaria (Atomaria) atrata* Reitter

(Syn.: *A. melanica* Hatch, 1962)

**Length** 1.3-1.6 mm. **Head** black; clypeus, mandibles and palpi dark reddish brown; eyes about 30% width of head. **Antennae** reddish brown with club yellowish brown; A1-A8 elongate, A1 broad with sides arcuate, A1 about 1.5x as long as wide, about 1.75x as long as A2; A2-A3 subequal, fusiform, about 1.5x as long as A4; **A4, A6 and A8 subequal, all oval**, about 0.8x as long as A5; A5 fusiform, about 1.25x as long as A6; A7 trapezoidal, about 1.75x as long as A8; A9 slightly transverse; A10 subquadrate and A11 slightly elongate. **Pronotum black; transverse, about 1.45x (1.4-1.5x) as wide as long; sides straight, convergent in anterior 0.25, subparallel in middle half, convergent in posterior 0.25, hind angles about 92°**; glossy, punctures moderately small and dense (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum black. Sternum black. Legs brown. **Elytra black, gradually paler to dark brown apically, distinctly wider than pronotum near base, about 1.55x (1.45-1.65x) as long as wide, about 2.9x (2.8-3.0x) as long as pronotum, sides straight and convergent in basal 0.33, then strongly arcuate to apex**; surface glossy with moderately small confused punctures, pubescence short and appressed. Abdominal ventrites dark brown.

**Similar species:** *Atomaria lineola* has pronotum dark brown, about as broad as elytra and elytra reddish to dark brown, about 1.7-1.9x as long as wide, widest at anterior 0.4-0.45. *A. vespertina* has pronotum with large and dense punctures and posterior corners arcuate. *A. pumilio* has pronotum with sides arcuate throughout, widest at or near middle and elytra elongate, about 1.65-1.8x as long as wide, widest at middle. *A. tenebrosa* has antennae with A9-A10 transverse and pronotum with sides arcuate in anterior 0.75, with strong and dense punctures.

**Distribution:** Quebec west to Alaska and British Columbia, mostly in the Mixedwood Plain and the Marine West Coast Forest zones; also in the Boreal and Temperate Prairie zones. **First record in Quebec, Ontario, Alberta and Alaska.** Rare. **Adventive from Asia.**

**Seasonality:** From the second week of April to the third week of September.

**Habitat:** White spruce forests.

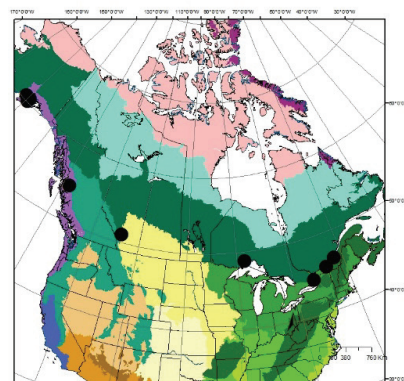
**Number of specimens examined:** 10.

**Remarks:** Described by Hatch as *A. melanica* in 1962, synonymized later by Colin Johnson. Klimaszewski et al. (2014) record the species in British Columbia but the specimen used for the photograph was *Atomaria (Anchicera) postpallens*.

**DNA Barcode Index Number (BIN):** BOLD:ACG2187



*Atomaria (Atomaria) atrata*





## *Atomaria (Atomaria) calidaria* Pelletier n. sp.

**Length** 1.9 mm. **Head** dark brown to black; mandibles and palpi reddish brown; eyes very small, about 15% width of head. **Antennae** reddish brown with club dark brown; A1 arcuate, about 1.8x as long as wide, about 2x as long as A2; A2 trapezoidal, about 1.1x as long as A3; A3 fusiform, about 1.5x as long as A4; A4 and A6 subequal, subquadrate, about 0.67x as long as A5; A5 and A7 subequal, A5 fusiform, A7 trapezoidal, about 2x as long as A8; A8 transverse; **A9 and A10 transverse**; A11 subquadrate, symmetrically subconical at apex. **Pronotum dark brown to black; transverse, about 1.3x as wide as long; sides straight and convergent in anterior 0.3, widest, straight and subparallel in middle 0.4, then slightly arcuate and convergent to base in posterior 0.35**, slightly crenulate; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately long and sparse. Scutellum dark brown. Sternum dark brown. Legs reddish brown. **Elytra reddish to yellowish brown**, about 1.6x as long as wide, about 2.65x as long as pronotum, sides straight and convergent in basal 0.5, arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, pubescence short and appressed. Abdominal ventrites dark reddish brown.

**Similar species:** *Atomaria tenebrosa* has pronotum with sides slightly arcuate in anterior 0.75, widest at posterior 0.25, punctures large and dense, distance between them shorter than their diameter and elytra with punctures moderate and denser. *A. alpina* and *A. planulata* have pronotum reddish brown, and elytra elongate, about 1.65–1.8x as long as wide, widest behind middle. *A. lyricollis* has pronotum with sides strongly sinuate in posterior 0.35 and subparallel in posterior 0.15. All other species having pronotum with sides subparallel at middle have antennae with A9 subquadrate or slightly transverse (*A. atra*, *A. lineola*) or A6–A10 strongly transverse and elytra with pubescence suberect (*A. umbrina*).

**Holotype:** Canada, Alberta, Jasper National Park, Miette Hot Springs, alt. 1439 m, 22.VII.2012, BOLD team, ♀ (CNC, Acc. No. 24574).

**Distribution:** known only in the Western Cordillera zone. Rare.

**Seasonality:** Collected only in the fourth week of July.

**Habitats:** Associated with hot springs.

**Number of specimens examined:** 1.

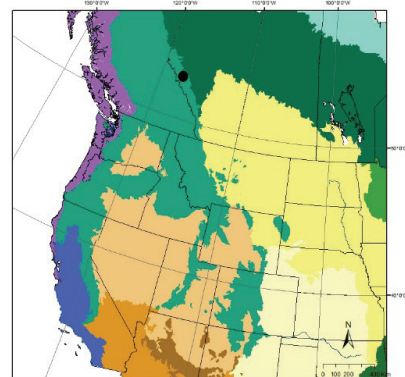
**Etymology:** *calidaria* derived from « heat », which refers to the hot springs where the holotype has been collected.

**DNA Barcode Index Number (BIN):** BOLD:ACI7254

**ZooBank LSID:** urn:lsid:zoobank.org:act:4151E449-09C7-42BC-82CA-392F8E3A501F



*Atomaria (Atomaria) calidaria*  
Pelletier - Holotype



## *Atomaria (Atomaria) californica* Pelletier n. sp.

**Length** 2.1 mm. **Head** reddish brown; palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 arcuate, about 2x as long as wide, about 1.7x as long as A2; A2 trapezoidal, about 1.15x as long as A3; A3 and A5 subequal, fusiform, about 2x as long as A4; A4 and A6 subequal, subquadrate, about 0.5x as long to A5; A7 trapezoidal, about 2x as long as A8; A8 transverse; A9 slightly transverse, A10 distinctly transverse; A11 nearly subquadrate, apically symmetrically conical. **Pronotum reddish brown, transverse, about 1.4x as wide as long; sides convergent in anterior 0.33, strongly sinuate in middle 0.33 then convergent, arcuate and slightly crenulate in posterior 0.33, nearly as wide at anterior 0.33 than at posterior 0.33; glossy, punctures very large and dense** (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum yellowish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.7x as long as wide, about 3.1x as long as pronotum**, sides straight, slightly convergent in basal half, widest at middle, arcuate to the apex; surface glossy with **moderately large punctures** (distance between them subequal to smaller than their average diameter), pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria subrecta* has pronotum with anterior 0.33 distinctly narrower than posterior 0.33 and punctures moderately large and dense, distance between them subequal to their average diameters. *Atomaria thujaplicatae* has antennae with A6-A10 strongly transverse.

**Holotype:** USA, California, Mono Co., Bridgeport, 8 km SW, 1.VII.1993, J.L. Carr, ♂ (CNC, Acc. No. 24575).

**Distribution:** California, in the Cold Desert zone. Rare.

**Seasonality:** A single specimen collected on the first week of July.

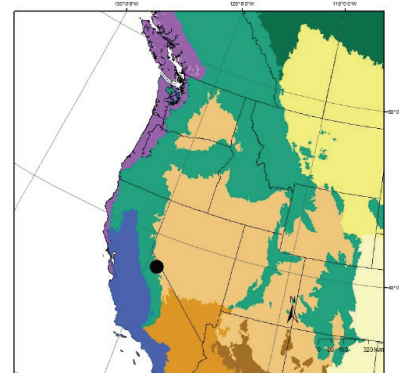
**Habitats:** Unknown.

**Number of specimens examined:** 1.

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*Atomaria (Atomaria) californica*  
Pelletier - Holotype



## *Atomaria (Atomaria) capitata* (Casey)

**Length** 1.7-1.8 mm. **Head** dark brown to black; clypeus, mandibles and palpi dark reddish brown; eyes about 25% width of head. **Antennae** dark reddish brown with club black; A1 arcuate, about 1.75x as long as wide, about 1.6x as long as A2; A2-A3 fusiform, A2 about 1.25x as long as A3, A3 about 1.2x as long as A4; A4 subequal to A6 and A8, A4 and A6 trapezoidal, about 1.3x as long as A5; A5 subequal to A7, A5 fusiform, about 1.3x as long as A6; A7 trapezoidal, about 1.2x as long as A8; A8 subquadrate; A9 slightly transverse, A10 transverse and A11 slightly elongate, asymmetrically subconical. **Pronotum** dark brown; transverse, about 1.38x (1.3-1.45x) as wide as long; sides straight and strongly convergent in anterior 0.6, slightly arcuate and convergent in posterior 0.4, widest and obtusely angulate at posterior 0.4, hind angles about 110°; opaque, with basal transverse impression at middle; punctures moderately small and dense (distance between them larger than their average diameter), pubescence moderately short and dense. Scutellum dark reddish brown. Sternum dark brown. Legs reddish brown. **Elytra** dark reddish brown, about 1.5x (1.4-1.6x) as long as wide, about 2.6x (2.5-2.7x) as long as pronotum, sides straight and convergent in basal 0.35, arcuate to apex, widest at basal 0.35; surface glossy with small punctures, pubescence short and appressed. Abdominal ventrites reddish brown.

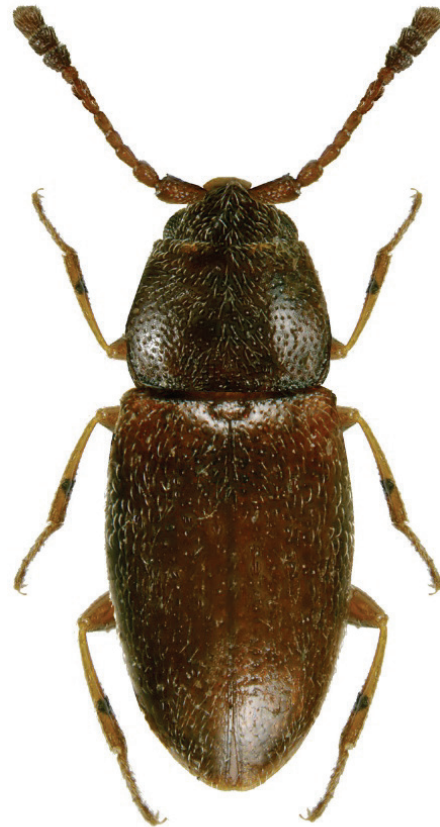
**Similar species:** *Atomaria nigrirostris*, *A. impressa*, *A. impressicollis* and *A. visoni* have pronotum with sides arcuate in anterior 0.65. *A. neocarinula* has pronotum with sides sinuate in anterior 0.65 and elytra bicolor, reddish brown patterned with diffused blackish spot.

**Distribution:** Quebec west to Alaska and British Columbia, in the Boreal, Western Cordillera and Marine West Coast Forest zones. **First record in Quebec, Alberta and Alaska.** Uncommon.

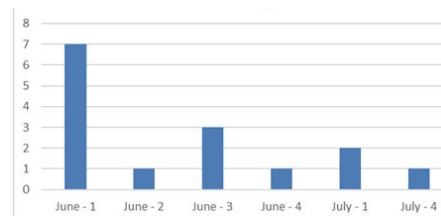
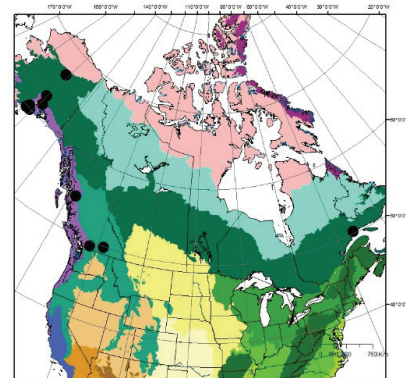
**Seasonality:** From the first week of June to the last week of July, peaking in the first week of June.

**Habitat:** White birch forests mixed with trembling aspen.

**Number of specimens examined:** 16, including the holotype.



*Atomaria capitata* (Casey) - Type





## *Atomaria (Atomaria) coloradensis* (Casey)

(Syn.: *A. strandi* Johnson, 1967 syn. nov.)

**Length** 1.6-1.9 mm. **Head** dark brown; clypeus, mandibles and palpi reddish brown; eyes small, about 25% width of head. **Antennae** reddish brown; **A1** slightly arcuate, about 2x as long as wide, **about 2x as long as A2**; A2-A3 subequal, fusiform, about 1.5x as long as A4; A4, A6 and A8 subequal, subquadrate, about 0.6x as long to A5; A5 fusiform, about 1.6x as long as A6; A7 trapezoidal, about 2x as long as A8; **A9 and A10 subquadrate**; A11 slightly elongate, symmetrically conical. **Pronotum** dark reddish to dark brown; transverse, about 1.3x (1.25-1.4x) as wide as long; sides convergent in anterior 0.33, straight and nearly subparallel in middle 0.33, straight and convergent to posterior margin, front margin width subequal to hind margin width, hind angles about 105°; glossy, **punctures moderately large** (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum dark reddish brown. Sternum dark reddish brown. Legs yellowish brown. **Elytra dark reddish to dark brown, about 1.65x (1.60-1.7x) as long as wide**, about 2.85x (2.75-2.9x) as long as pronotum, sides straight, parallel to slightly convergent in basal 0.6, then arcuate to apex; surface slightly opaque with moderately small punctures (distance between them larger than their average diameter), confused, but with apparent rows of punctures underneath, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria vespertina* has antennae with A9-A10 usually slightly transverse, pronotum with larger and denser punctures, and elytra reddish to yellowish brown. *Atomaria crassula* and *A. nigricollis* have pronotum with sides distinctly sinuate, widest behind middle.

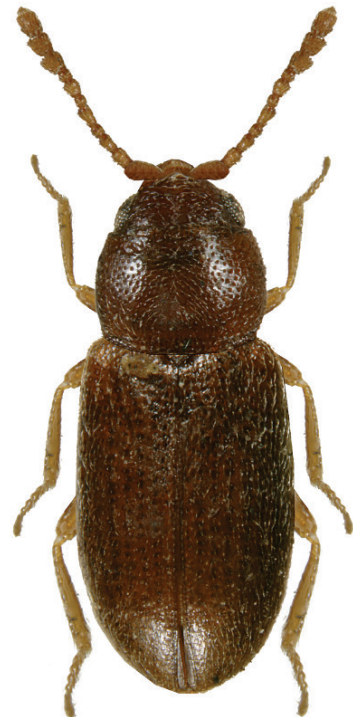
**Distribution:** Quebec west to Alaska and British Columbia, south to Virginia and Colorado, mostly in the Boreal zone; also in Appalachian, Mixedwood Plain, Western Cordillera and Marine West Coast Forest zones. **First record in Canada for Quebec, Alberta, British Columbia, Yukon and Alaska.** Uncommon.

**Seasonality:** From the first week of May to the first week of August, peaking in the second week of June.

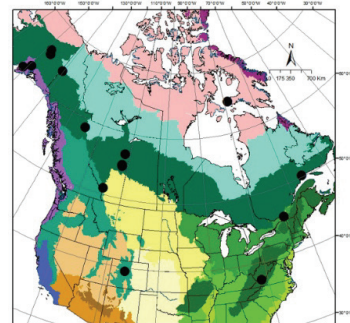
**Habitat:** White birch and trembling aspen forests, and white spruce forests, in leaf litter; also in *Alnus* litter, carrion and turnips.

**Number of specimens examined:** 18, including the holotype.

**Remark:** Colin Johnson described this species in 1967 as *Atomaria strandi*. This species seems to be adventive in Europe from North America, possibly introduced during lumber exportation between Canada and Great Britain in the 19th century.



*Atomaria (Atomaria) coloradensis* (Casey) - Holotype



## *Atomaria (Atomaria) constricta* (Casey)

**Length** 1.5-2.0 mm. **Head** dark reddish brown to black; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** reddish brown; A1 arcuate, about 1.7x as long as wide, about 1.7x as long as A2; A2-A3 fusiform, A2 about 1.35x as long as A3, A3 about 1.5x as long as A4; A4, A6 and A8 subequal, subquadrate, about 0.75x as long to A5; A5 and A7, subequal, trapezoidal, about 1.3x as long as A6; A9 and A10 strongly transverse; A11 subquadrate to slightly elongate, apically diagonally truncate. **Pronotum** dark reddish brown to black; transverse, about 1.35x (1.3-1.4x) as wide as long; sides convergent and distinctly sinuate in anterior 0.65, widest at posterior 0.35, straight, slightly convergent and often crenulate in posterior 0.35, hind angles about 105°; glossy, punctures large and dense (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum dark reddish brown. Prosternum dark reddish brown; meso- and metaventrite dark brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.57x (1.5-1.65x) as long as wide, about 2.7x (2.5-2.9x) as long as pronotum, sides straight, slightly convergent in basal half, widest at middle, arcuate to the apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), apparently forming rows underneath but rather confused on the surface, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria longipennis* has pronotum with punctures moderate, distance between them subequal to their diameter and elytra elongate, about 1.8x (1.68-1.95x) as long as wide. *A. dispersa* has pronotum widest at posterior 0.4, punctures small and sparse, their distance larger than their average diameter and elytra with punctures small and sparse. *A. pseudotsugae* has pronotum with double side borders in posterior 0.35. *A. undulata* and *A. cribricollis* has pronotum with anterior 0.35 subequal in width to posterior 0.35.

**Distribution:** New Brunswick west to British Columbia, south to Georgia and Minnesota, mostly in the Boreal and Western Cordillera; also in the Appalachian, Mixedwood Plain, Southeast USA Plain, and Temperate Prairie zones. **First record for Canada, in New Brunswick, Quebec, Alberta, and British Columbia.** Uncommon.

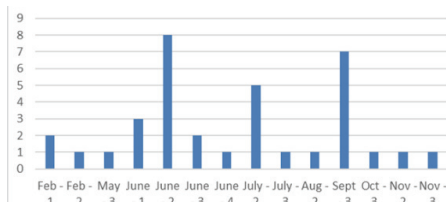
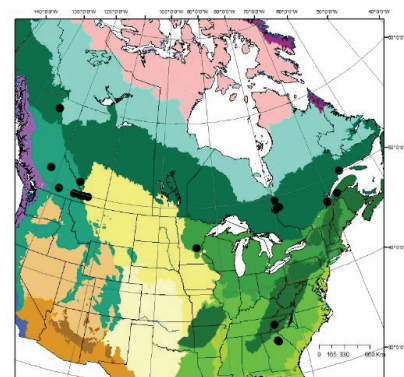
**Seasonality:** From the first week of February to the third week of November, mostly from the second week of June to the third week of September.

**Habitats:** Burned spruce forests with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, black spruce forests, white spruce and balsam fir forests, and trembling aspen forests, mostly on tree trunks under bark. Collected inside galleries of *Dryocoetes affaber*.

**Number of specimens examined:** 44, including the holotype.



*Atomaria (Atomaria) constricta*



## *Atomaria (Atomaria) crassula* (Casey)

**Length** 1.6 mm. **Head** dark reddish brown to black; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** reddish brown, often with club dark brown; A1 arcuate, about 1.75x as long as wide, about 1.6x as long as A2; **A2-A5 fusiform**, A2 about 1.15x as long as A3, A3 about 1.15x as long as A4, A4 about 0.75x as long as A5, A5 about 1.8x as long as A6; **A6 and A8 subequal, subquadrate**, about 0.7x as long as A7; A7 trapezoidal, about 1.25x as long as A8; **A9 and A10 subquadrate**; A11 slightly elongate, diagonally truncate at apex. **Pronotum dark reddish brown to black; transverse, about 1.38x (1.3-1.45x) as wide as long; sides convergent and slightly sinuate in anterior 0.65**, widest at posterior 0.35, then slightly convergent and often crenulate to hind margin, hind angles about 105°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum light reddish brown. Prosternum dark reddish brown; meso- and metaventrite dark brown. Legs yellowish brown. **Elytra reddish to yellowish brown, about 1.5x (1.4-1.6x) as long as wide**, about 2.8x (2.7-2.9x) as long as pronotum, sides straight and convergent in basal half, widest at middle, then arcuate to the apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), confused on the surface, but with apparent rows of punctures underneath, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria nigricollis* have pronotum with punctures large, distance between them smaller than their average diameter and elytra more elongate, about 1.55-1.7x as long as wide. *A. coloradensis* and *A. vespertina* have pronotum straight and subparallel in middle third.

**Distribution:** New Brunswick and Quebec, south to North Carolina, in the Boreal and Appalachian zones. **First record from Canada in New Brunswick and Quebec.** Uncommon.

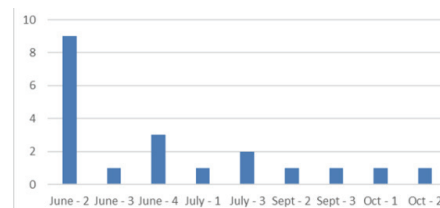
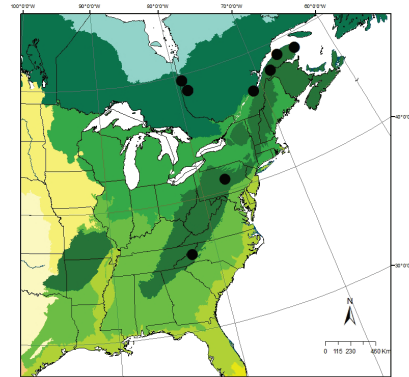
**Seasonality:** From the second week of June to the second week of October, peaking on the second week of June.

**Habitat:** Mostly in black spruce forests; also in white spruce and balsam fir forests.

**Number of specimens examined:** 20, including the holotype.



*Atomaria (Atomaria) crassula* (Casey) - Paratype





## *Atomaria (Atomaria) cribricollis* Pelletier n. sp.

**Length** 1.5–1.9 mm. **Head** reddish brown; palpi yellowish brown; eyes very small, about 15% width of head. **Antennae** reddish brown with club yellowish brown; A1 arcuate, about 2x as long as wide, about 1.7x as long as A2; A2–A3 trapezoidal, A2 about 1.15x as long as A3, A3 about 1.67x as long as A4; A4 and A6 subequal, subquadrate, about 0.75x as long to A5; A5 and A7 subequal, trapezoidal, about 2x as long as A8; A8 transverse; A9 and A10 strongly transverse; A11 nearly subquadrate, symmetrically conical apically. **Pronotum reddish brown, transverse, about 1.37x (1.3–1.45x) as wide as long; sides** slightly convergent in anterior 0.33, **sinuate in middle 33%**, then straight, convergent and slightly crenulate to posterior margin, **width subequal at anterior and posterior 0.33**, hind angles about 100°; glossy, **punctures very large and dense** (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum yellowish brown. Legs yellowish brown. **Elytra reddish to yellowish brown, about 1.45x (1.4–1.55x) as long as wide**, about 2.55x (2.4–2.7x) as long as pronotum, sides straight, slightly convergent in basal half, widest at middle, arcuate to the apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), confused on the surface, apparently forming rows underneath, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria undulata* has pronotum with punctures moderately large and dense (distance between them subequal to their average diameter). *A. pseudotsugae*, *A. longipennis* and *A. constricta* have pronotum widest at posterior 0.35. *A. vespertina* has antennae with A9 subquadrate to slightly transverse and pronotum nearly straight and subparallel in posterior 0.7.

**Holotype:** Canada, Alberta, Waterton Lakes National Park, 26.VI.1980, I. Smith & J.M. Campbell, ♂ (CNC, Acc. No. 24576).

**Paratype:** Canada, Alberta, same as holotype: 14 (CNC, IRM); Porcupine Hills, Claresholms, 2.VIII.2015, on *Pseudotsuga menziesii*, D. Langor & J. Hammond (NFC); Red Earth Creek, 31.VII.1997, window trap, J. Hammond: 1 (NFC); Hines Creek, Eureka River, 11–25.V.1994, J. Hammond: 1 (NFC); **USA, Alaska**, North Slope Co., 35.5 mi. Dalton Hwy., 31.V–5.VI.2008, white birch forest with white spruce and willow, intercept trap, D.S. Sikes: 1 (UAM); **Oregon**, Benton Co., Summit Mary's Peak, Philomath, 20 mi. SW, 5.V.1973, E.M. Benedict: 5 (CNC, IRM); Klamath Co., Fremont-Winema National Forest, 14.X.1972, tree hollow debris, E.M. Benedict: 1 (CNC); **California**, Contra Costa Co., El Cerrito, 23.XI.1961, Garcia & Radovski (CNC); Mariposa Co., Dampcave SE, 7.VI.1979, Rudolph & Martin: 6 (CNC, IRM); Mendocino Co., Hopland, *Neotoma* nest, C.L. Hemstreet: 1 (CNC); Trinity Co., Shasta National Forest, Coffee Creek, 14.VII.1979, J.M. Campbell: 1 (CNC).

**Distribution:** Alberta west to British Columbia and Alaska, south to California, in the Boreal, Western Cordillera, and Mediterranean California zones; also in the Marine West Coast Forest zone. Uncommon.

**Seasonality:** From the first week of April to the third week of November, peaking on the last week of June.

**Habitats:** Douglas fir forests and white birch forests. Collected on *Pseudotsuga menziesii*, and in *Neotoma* nests and tree hollow debris.

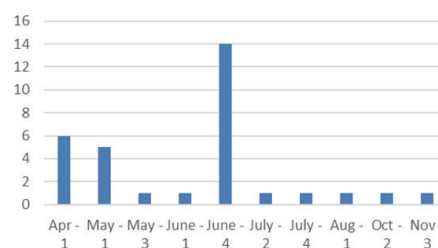
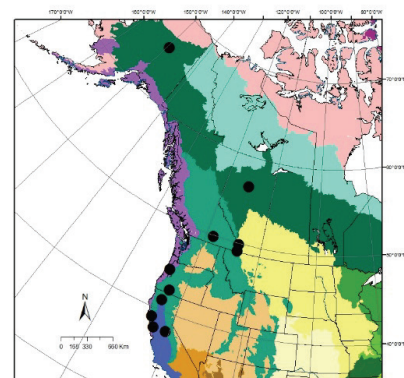
**Number of specimens examined:** 33.

**Etymology:** *cribricollis* means « pronotum with strong dense punctures », which refers to the densely punctate pronotum.

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*Atomaria (Atomaria) cribricollis*  
Pelletier - Holotype



## *Atomaria (Atomaria) dispersa* (Casey)

**Length** 1.6-2.1 mm. **Head** dark reddish brown to black; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 arcuate, about 2x as long as wide, about 2x as long as A2; A2, A3 and A5 subequal, A2 trapezoidal, A3 and A5 fusiform, about 1.67x as long as A4; A4 subquadrate, about 0.6x as long as A5; A6 and A8 subequal, transverse, about 0.5x as long as A7; A7 trapezoidal, about 2x as long as A8; A9 and A10 strongly transverse; A11 slightly elongate, subconical. **Pronotum** dark reddish brown to black; transverse, about 1.3x (1.25-1.35x) as wide as long; sides convergent and distinctly sinuate in anterior 0.65, widest at posterior 0.35, straight, slightly convergent and often crenulate in posterior 0.35, hind angles about 105°; glossy, punctures moderately small and sparse (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum dark reddish brown. Prosternum reddish brown; meso- and metaventrite dark brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.65x (1.6-1.7x) as long as wide, about 2.8x (2.7-2.9x) as long as pronotum, sides straight, slightly convergent in basal half, widest at middle, arcuate to the apex; surface glossy with small punctures (distance between them larger than their average diameter), apparently forming rows underneath but rather confused on the surface, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria longipennis* has pronotum with punctures moderate, distance between them subequal to their diameter and elytra elongate, about 1.8x (1.68-1.95x) as long as wide. *A. constricta* has pronotum dark brown to black, punctures large and dense, their distance smaller than their diameter and elytra with punctures moderately large and dense. *A. pseudotsugae* has pronotum with double side borders in posterior 35%. *A. undulata* and *A. cribricollis* has pronotum with anterior 35% subequal in width to posterior 35%.

**Distribution:** New Brunswick, Quebec west to British Columbia and Alaska, mostly in the Boreal, Northern Appalachian, Western Cordillera, and Marine West Coast Forest zones; also in the Taiga zone. **First record in New Brunswick, Quebec, Ontario, and Alberta.** Uncommon.

**Seasonality:** From the second week of April to the second week of November, peaking on the first week of June.

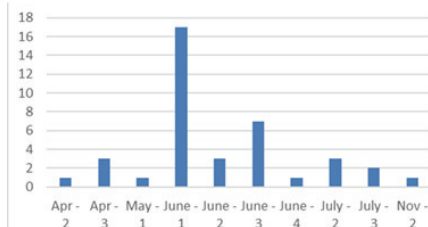
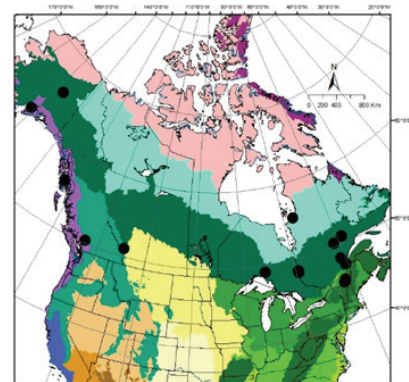
**Habitats:** Black spruce forests, partially cut or burned and white cedar forests with balsam fir; also in red pine or scotch pine plantations, trembling aspen forests, white spruce forests, black spruce bogs, mostly on tree trunks under bark; also in leaf litter. Collected on fungi on logs of *Populus tremuloides*.

**Number of specimens examined:** 39.

**DNA Barcode Index Number (BIN):** BOLD:ADY1804



*Atomaria (Atomaria) dispersa*  
(Casey) - Holotype



## *Atomaria (Atomaria) elongatula* Erichson

**Length** 1.6-2.0 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish brown; eyes about 20-25% width of head. **Antennae** reddish brown; A1 stout, about 1.45x as long as wide, about 1.6x as long as A2; A2 trapezoidal, about 1.1x as long as A3; A3 and A5 subequal, trapezoidal, about 1.5x as long as A4; A4, A6 and A8 subequal, transverse, about 0.67x as long to A5; A7 subquadrate, about 1.33x as long as A8; A9 and A10 transverse; A11 subquadrate, asymmetrically subconical. **Pronotum reddish to dark brown; transverse, about 1.32x (1.25-1.4x) as wide as long; sides arcuate throughout, widest at middle**, hind angles about 100°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately long and dense. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** reddish to yellowish brown, often paler apically, **about 1.55x (1.5-1.6x) as long as wide**, about 2.55x (2.4-2.7x) as long as pronotum, sides straight and slightly convergent in basal 0.4, widest at basal 0.4-0.45, then arcuate to the apex; surface glossy with very small punctures (distance between them larger than their average diameter), rather confused, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria parviceps* has pronotum reddish brown, widest at posterior 30% and elytra longer, about 1.6-1.7x as long as wide. *A. orbicollis* has pronotum usually narrower, about 1.15-1.25x as wide as long, punctures small and sparse. *A. pumilio* has antennae with A1 elongate, arcuate, about 2x as long as wide, A9 subquadrate to slightly transverse and elytra more elongate, about 1.65-1.75x as long as wide.

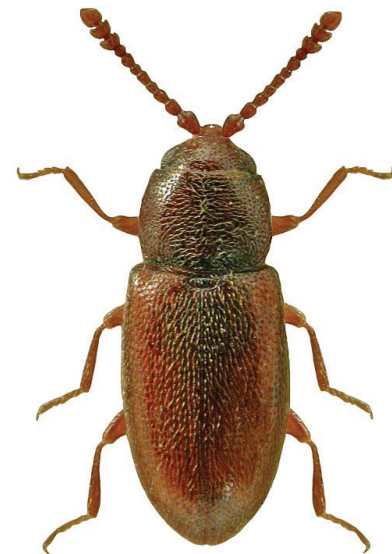
**Distribution:** Quebec west to Alberta and Alaska, mostly in the Boreal zone; also in the Mixedwood Plain and the Marine West Coast Forest zones. **First record for North America in Quebec, Alberta and Alaska.** Uncommon. **Holarctic.**

**Seasonality:** From the second week of May to the third week of July, peaking in the second week of June.

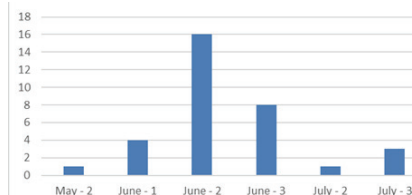
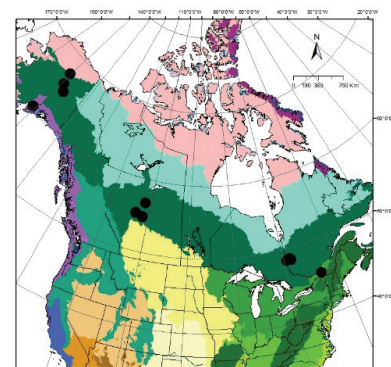
**Habitats:** Black spruce forests, white spruce forests, trembling aspen forests with birch and spruce, white birch forests with white spruce and willow, mixed forests and mixed forest edges.

**Number of specimens examined:** 33.

**DNA Barcode Index Number (BIN):** BOLD:AAO4898



*Atomaria (Atomaria) elongatula*





## *Atomaria (Atomaria) fimetarii* (Fabricius)

**Length** 2.0-2.4 mm. **Head** dark reddish brown; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 elongate, arcuate, about 1.75x as long as wide, about 1.75x as long as A2; A2 oval, about 1.33x as long as A3; A3 and A5 subequal, trapezoidal, about 1.5x as long as A4; A4 subquadrate, about 0.67x as long as A5; A6 and A8 subequal, transverse, about 0.67x as long as A7; A7 subquadrate, about 1.33x as long as A8; A9 and A10 strongly transverse; **A11** slightly elongate, symmetrically subconical, **distinctly narrower than A10**. **Pronotum** dark brown, slightly transverse, about 1.25x (1.20-1.30x) as wide as long; sides slightly arcuate in anterior 0.15, straight, subparallel to slightly divergent to posterior 0.7, sometimes indistinctly sinuate at middle, straight and convergent to hind margin, hind angles about 95°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Sternum reddish brown. Legs yellowish brown. **Elytra** brown, width subequal to pronotum, about 1.57x (1.50-1.65x) as long as wide, about 2.3x (2.2-2.4x) as long as pronotum, sides straight and slightly convergent in basal 0.67, arcuate and convergent to apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** Antennae with A11 distinctly narrower than A10 and elytra stout, width about as wide as pronotum, make this species quite distinctive.

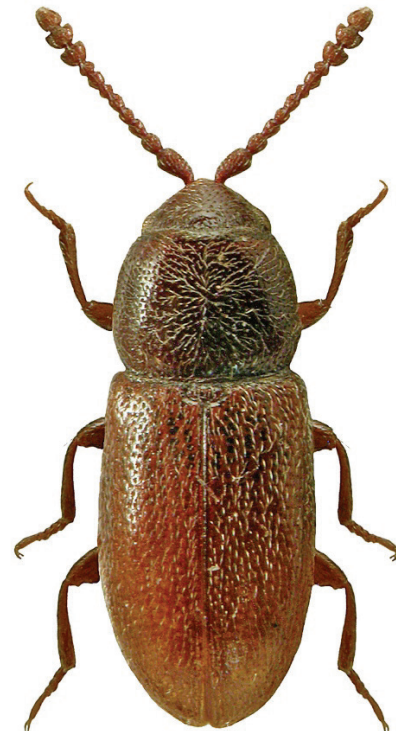
**Distribution:** Quebec west to British Columbia, south to Michigan, mostly in the Boreal, Mixedwood Plain, and the eastern slope of Western Cordillera zones; also in the Temperate Prairie zone. **First record for North America, in Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, and Northwest Territories.** Uncommon. **Adventive from Europe.**

**Seasonality:** From the third week of May to the third week of October.

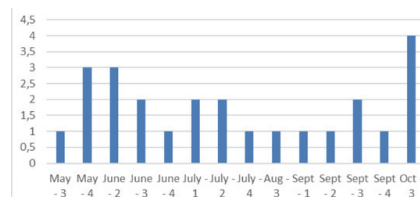
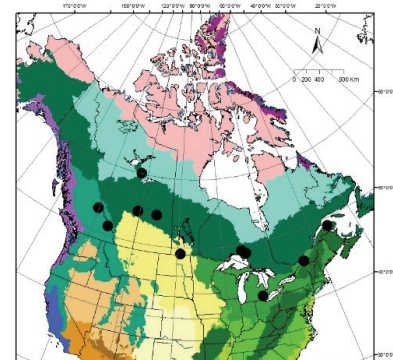
**Habitats:** Trembling aspen forests near spruce/cedar forests, paper factory yards and beaver lodges on mushrooms, weeds, under old bark and leaf litter. Collected on *Coprinus comatus*.

**Number of specimens examined:** 25.

**DNA Barcode Index Number (BIN):** BOLD:ABA4650



*Atomaria (Atomaria) fimetarii*



## *Atomaria (Atomaria) forticornis* (Casey)

**Length** 1.7-1.9 mm. **Head** reddish; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 stout, about 1.25x as long as wide, about 1.25x as long as A2; A2 trapezoidal, about 1.3x as long as A3; A3 fusiform, about 2x as long as A4; A4, A6 and A8 subequal, transverse, about 0.7x as long as A5; A5 trapezoidal, about 1.4x as long as A6; A7 subquadrate, about 1.5x as long as A8; A9 and A10 strongly transverse; A11 slightly elongate. **Pronotum** reddish brown; transverse, about 1.35x (1.3-1.4x) as wide as long; sides slightly arcuate and convergent in anterior 0.75, not distinctly angulate and widest at posterior 0.25, slightly arcuate and convergent to hind margin, hind angles about 120°; glossy, punctures moderately large (distance between them subequal to their average diameter) and very dense, pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.7x (1.6-1.8x) as long as wide, about 2.75x (2.65-2.85x) as long as pronotum, sides straight and subparallel in basal 0.6, arcuate and convergent to apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), confused on the surface but apparently forming rows underneath. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria pinicola* is nearly identical but has pronotum with sides distinctly angulate at posterior 0.25 and has a northeastern distribution. *A. parviceps* has elytra with sides distinctly convergent in basal 0.5. *A. macra* has pronotum distinctly angulate at posterior 0.35 and elytra with sides distinctly convergent anteriorly, widest at posterior 0.4. *A. subdentata* has pronotum dark brown, with sides straight and convergent in anterior half forming a distinct tooth at posterior 0.4 and elytra yellowish brown, distinctly paler than pronotum, sides distinctly convergent anteriorly, widest at middle. *A. elongatula* and *A. orbicollis* have pronotum with sides evenly arcuate throughout, widest at or near middle.

**Distribution:** Colorado and New Mexico, in the Western Cordillera and the Gila Mountains zones. Not collected in Canada yet. Rare.

**Seasonality:** Unknown.

**Habitats:** Unknown.

**Number of specimens examined:** 3, including the holotype.



*Atomaria (Atomaria)*  
*forticornis* (Casey) - Holotype

## *Atomaria (Atomaria) impressa* Erichson

**Length** 1.7-2.1 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 elongate, arcuate, about 2.4x as long as wide, about 2x as long as A2; A2 elongate, fusiform, about 1.2x as long as A3; A3 and A5 subequal, fusiform, about 1.25x as long as A4; A4 trapezoidal, about 0.8x as long to A5; A6 subquadrate, about 0.75x as long as A7; A7 trapezoidal, about 1.33x as long as A8; A8 transverse; **A9 subquadrate**; A10 transverse; A11 slightly elongate, asymmetrically subconical. **Pronotum** black, often dark reddish brown at anterior and posterior margins; **transverse, about 1.3x (1.25-1.4x) as wide as long**; sides arcuate throughout, strongly convergent in anterior 67%, widest at posterior 33%, than slightly convergent to hind margin, hind angles about 95°; glossy, **strong impression at basal middle without longitudinal striae**, punctures moderately small (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum dark reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra dark reddish brown to dark brown, distinctly wider than pronotum at base, about 1.4x (1.35-1.45x) as long as wide**, about 2.45x (2.3-2.6x) as long as pronotum, sides straight and convergent in anterior 0.35, than arcuate to the apex; surface glossy with very small punctures (distance between them larger than their average diameter), confused, with apparent rows of punctures underneath, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria nigrirostris* is smaller, about 1.5-1.8 mm, pronotum about as wide as elytra at base, with strong middle basal impression with longitudinal striae and elytra dentate at anterior corners. *A. impressicollis* has antennae reddish brown with club dark brown, A6 trapezoidal, A8 subquadrate and A9 slightly transverse, pronotum impression at basal middle with longitudinal striae and elytra longer, about 1.5-1.55x as long as wide. *A. visoni* is smaller (L = 1.5-1.7 mm) with body uniform yellowish brown, pronotum with narrow transverse basal groove without punctation and elytra narrower, about 1.5-1.55x as long as wide.

**Distribution:** Quebec, Ontario, and Alberta, in the Boreal and Mixedwood Plain zones. **First record for North America in Quebec, Ontario and Alberta. Rare. Adventive from Europe.**

**Seasonality:** From the first week of May to the last week of October, apparently more common in the spring.

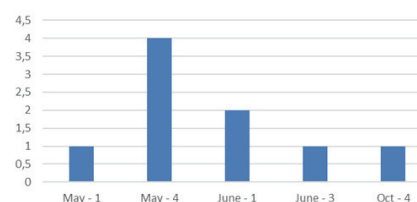
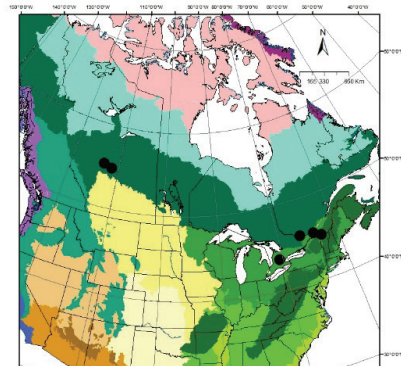
**Habitats:** Strawberry fields and beaver lodges.

**Number of specimens examined:** 9.

**DNA Barcode Index Number (BIN):** BOLD:ACK6051



*Atomaria (Atomaria) impressa*





## *Atomaria (Atomaria) impressicollis* Pelletier n. sp.

**Length 2.0 mm.** Head dark brown to black; clypeus, mandibles and palpi reddish brown; eyes about 30% width of head. **Antennae reddish brown with club dark brown;** A1 elongate, arcuate, about 2x as long as wide, about 2x as long as A2; A2 elongate, trapezoidal, about 1.15x as long as A3; A3 and A5 subequal, fusiform, about 1.5x as long as A4; **A4 and A6 subequal, trapezoidal,** about 0.67x as long to A5; A7 trapezoidal, about 1.4x as long as A8; **A8 subquadrate;** A9 slightly transverse; A10 transverse; A11 slightly elongate, asymmetrically subconical. **Pronotum black; transverse, about 1.4x (1.35-1.45x) as wide as long;** sides arcuate throughout, strongly convergent in anterior 0.67, widest at posterior 0.33, than slightly convergent to hind margin, hind angles about 95°; glossy, **strong impression at basal middle covered with small longitudinal striae,** punctures moderately small (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum dark reddish brown. Sternum dark brown. Legs with coxae to femur reddish brown, tibiae and tarsi yellowish brown. **Elytra reddish to dark brown, about 1.52x (1.5-1.55x) as long as wide, about 2.8x as long as pronotum, front corner sharply angulate,** sides straight and convergent in anterior 0.4, than arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, with apparent rows of punctures underneath, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria nigrirostris* is smaller (length = 1.5-1.8 mm), antennae entirely reddish brown, with A4 and A6 subquadrate, A8 transverse and elytra dentate at anterior corner. *A. impressa* has antennae entirely reddish brown, with A8 transverse, A6 and A9 subquadrate, pronotum impression at basal middle without longitudinal striae and elytra broader, wider than pronotum, about 1.4-1.45x as long as wide. *A. visoni* is smaller (L = 1.5-1.7 mm) with body uniform yellowish brown, antennae with A8 transverse, pronotum with narrow transverse basal groove without punctation and elytra not sharply angulate at anterior corner.

**Holotype:** Canada, Alberta, Waterton Lakes National Park, Hwy 5, nr. Bison Paddock, 25.VI.1980, in mink nest in abandoned beaver lodge, I.M. Smith, (CNC, Acc. No. 24577).

**Paratype:** Canada, Alberta, Ghost Dam, 13.VI.1973, J.L. Carr: 1 (CNC); **British Columbia,** Cariboo Co., Prince-George, 25.V.1968: 1 (CNC); **Yukon,** Elsa, 18.VII.1968, J.M. Campbell & A. Smetana: 1 (CNC); Keno, 9 mi. SW, Hansen Lake, 6000 ft., 18.VII.1968, J.M. Campbell & A. Smetana: 1 (CNC). **USA, Alaska,** Yukon-Koyukuk, Hess Creek, Wales Hwy., Mi. 24, 1.VII.1978, J.M. Campbell & A. Smetana: 1 (IRM).

**Distribution:** Alberta, British Columbia and Alaska, in the western Boreal and Western Cordillera zones. Rare.

**Seasonality:** From the last week of May to the third week of July.

**Habitats:** Beaver lodge in mink nests.

**Etymology:** *impressicollis*, adjective meaning *impressed neck*, related to the impressed base on the pronotum, which characterizes few species of that subgenus.

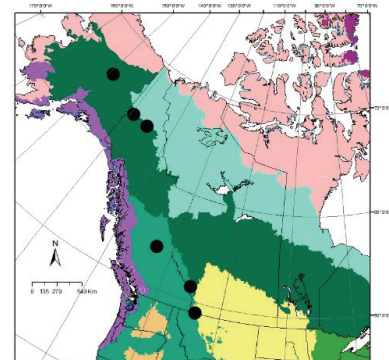
**Number of specimens examined:** 6.

**DNA Barcode Index Number (BIN):** BOLD:ACU8239

**ZooBank LSID:** urn:lsid:zoobank.org:act:B0C87E6D-103B-4EB7-BAC8-967342212395



*Atomaria (Atomaria) impressicollis*  
Pelletier - Holotype



## *Atomaria (Atomaria) linearis* Stephens

**Length** 1.2-1.5 mm. **Head** reddish to dark brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with last segment of club yellowish brown; A1 elongate, arcuate, about 2x as long as wide, about 1.5x as long as A2; A2 elongate, subparallel, about 1.3x as long as A3; A3, A5 and A7 subequal, trapezoidal, about 2x as long as A4; A4, A6 and A8 subequal, transverse, about 0.5x as long as A5; A9 and A10 strongly transverse; A11 slightly elongate, symmetrically subconical. **Pronotum** reddish to dark brown, nearly subquadrate to slightly transverse, about 1.2x (1.15-1.25x) as wide as long; sides straight and slightly convergent in anterior 0.3, straight and parallel to posterior 0.15, straight and convergent to hind margin, hind angles about 110°; glossy, punctures moderately large (distance between them subequal than their average diameter), pubescence moderately short and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** reddish to yellowish brown, about 1.8x (1.75-1.9x) as long as wide, about 2.7x (2.4-3.0x) as long as pronotum, sides straight and subparallel in basal half, arcuate and convergent to apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria fimetarii* is larger (L = 1.8-2.4 mm) with elytra stouter, about 1.55-1.65x as long as wide, about 2.35x as long as pronotum and antennae with A11 distinctly narrower than A10. With its nearly subquadrate pronotum and elongate elytra with sides subparallel, *A. linearis* is very distinctive.

**Distribution:** Arizona, Nevada and California, in the Cold Desert, Gila Mountains and Mediterranean California zones. **Not recorded in Canada yet.** Uncommon. **Adventive from Europe or Asia.**

**Seasonality:** From the last week of June to the third week of July, peaking on the first week of July.

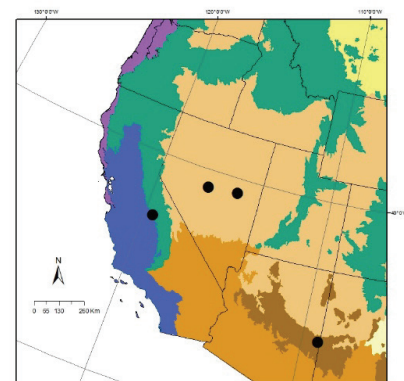
**Habitats:** In Europe, pests of beets and other Chenopodiaceae, living underground, feeding on cotyledon, on small roots or in the plant, within the sprout.

**Number of specimens examined:** 15.

**DNA Barcode Index Number (BIN):** BOLD:AAO1017



*Atomaria (Atomaria) linearis*



## *Atomaria (Atomaria) lineola* (Notman)

(Syn.: *A. wollastoni* of authors, not Sharp, 1867)

**Length** 1.9-2.0 mm. **Head** dark brown to black; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 arcuate, about 1.5x as long as wide, about 1.8x as long as A2; A2 trapezoidal, about 1.25x as long as A3; A3 and A5 subequal, trapezoidal, about 2x as long as A4; A4, A6 and A8 subequal, transverse, about 0.5x as long as A5; A7 subquadrate, about 2x as long as A8; **A9 and A10 subequal, slightly transverse**; A11 slightly elongate, symmetrically subconical. **Pronotum dark brown to black; transverse, about 1.35x (1.25-1.45x) as wide as long; sides straight and convergent in anterior 0.35, straight and subparallel to posterior 0.35, then convergent and slightly arcuate to posterior margin**, very slightly crenulate, hind angles about 105°; glossy, punctures moderately small (distance between them larger to subequal to their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Sternum reddish brown. Legs reddish brown. **Elytra reddish to dark brown**, subequal to pronotum at base, about 1.65x (1.6-1.7) as long as wide, about 2.83x (2.7-2.9x) as long as pronotum, sides straight and convergent in basal 0.4-0.45, then arcuate to the apex; **surface glossy with very small punctures** (distance between them much larger than their average diameter), confused, pubescence short, moderately dense and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria atrata* has pronotum black, narrower than elytra and elytra black, about 1.55-1.6x as long as wide, widest at anterior 0.35-0.4. *A. vespertina* has pronotum with strong and dense punctures, posterior corners arcuate. *A. pumilio* has pronotum arcuate throughout, widest at middle and elytra elongate, about 1.65-1.8x as long as wide, widest at middle. *A. tenebrosa* has antennae with A9-A10 transverse and pronotum with sides arcuate in anterior 0.7, with strong and dense punctures.

**Distribution:** Newfoundland west to British Columbia, south to Virginia and Indiana, mostly in the Boreal, Northern Appalachian and Mixedwood Plain zones; also in the Western Cordillera zone.

**First record in Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia.** Very common.

**Seasonality:** From the third week of March to the second week of November, mostly between the third week of April and the first week of July, peaking on the second week of June.

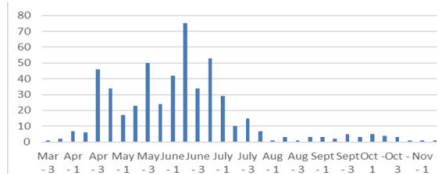
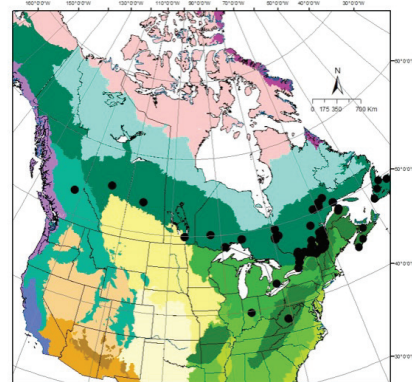
**Habitats:** Black spruce forests, partially cut or damaged by girdling, scotch pine and red pine plantations and sugar maple forests, moderately to strongly damaged by ice storm; also in balsam fir forests with white spruce, balsam fir plantations, white pine forests partially burned and wineries, mostly in tree trunks under bark, in polypore as *Fomitopsis pinicola* (Hagvar, 1999); also on flood debris, woodpiles, beaver lodges, under garden rubbish, on moss carpet and under dead branches.

**Number of specimens examined:** 511.

**DNA Barcode Index Number (BIN):** BOLD:AAU7170



*Atomaria lineola* (Notman) - Holotype





## *Atomaria (Atomaria) longipennis* (Casey)

**Length** 1.5-1.9 mm. **Head** dark reddish brown; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 arcuate, about 2x as long as wide, about 1.5x as long as A2; A2-A3 and A5 subequal, A2 trapezoidal, A3 and A5 fusiform, about 2x as long as A4; A4, A6 and A8 subequal, subquadrate, about 0.6x as long as A7; A7 oval; A9 and A10 slightly transverse; A11 slightly elongate. **Pronotum reddish to dark brown; transverse, about 1.42x (1.35-1.5x) as wide as long; sides sinuate and convergent in anterior 0.65**, straight and convergent to hind margin, hind angles about 110°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum light reddish brown. Prosternum dark reddish brown; meso- and metaventrite dark brown. Legs yellowish brown. **Elytra yellowish brown, about 1.8x (1.65-1.95x) as long as wide, about 2.9x (2.75-3x) as long as pronotum**, sides straight and slightly convergent in basal half, then arcuate to apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), apparently forming rows underneath but rather confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria constricta* has pronotum with punctures large and dense, distance between them smaller than their average diameter and elytra stouter, about 1.5-1.65x as long as wide. *A. dispersa* has pronotum with punctures small and sparse, distance between them larger than their average diameter and elytra stouter, about 1.5-1.65x as long as wide. *A. pseudotsugae* has pronotum with double side borders in posterior 0.35 and elytra stouter, about 1.5x as long as wide.

**Distribution:** Alaska and British Columbia, south to California, also collected in Quebec, mostly in the Boreal, and Western Cordillera zones; also in the Northern Appalachian, Marine West Coast Forest, and Mediterranean California zones. **First record in Quebec.** Fairly common in the west, rare in the east.

**Seasonality:** From the second week of May to the first week of September, peaking on the first week of July.

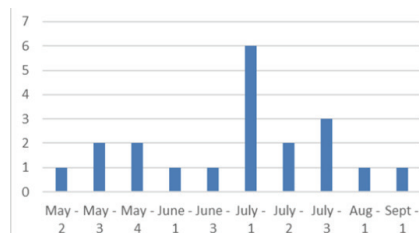
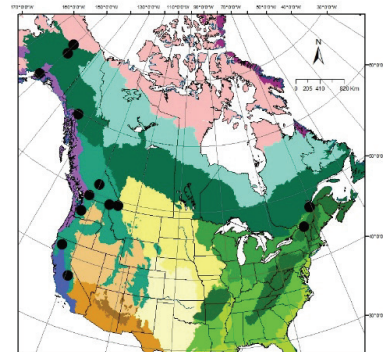
**Habitats:** Black spruce forests, white spruce forests, white birch forests with white spruce and willow, burned spruce forests, mostly associated on tree trunks under bark; also in leaf litter.

**Number of specimens examined:** 20, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ADY4730



*Atomaria (Atomaria) longipennis*  
(Casey) - Holotype



## *Atomaria (Atomaria) lyricollis* Pelletier n. sp.

**Length** 1.7 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 arcuate, about 1.4x as long as wide, about 1.5x as long as A2; A2 slightly elongate, rectangular, about 1.1x as long as A3; A3 trapezoidal, about 1.6x as long as A4; A4 transverse, about 0.85x as long as A5; A5 subequal to A7, subquadrate, about 1.5x as long as A6; A6 subequal to A8, transverse, about 0.67x as long as A7; A9 and A10 strongly transverse; A11 slightly elongate. **Pronotum** dark reddish brown with all margins black; transverse, about 1.4x as wide as long; sides slightly arcuate and convergent in anterior 0.65, widest at posterior 0.35, strongly sinuate and convergent to posterior 0.15 then subparallel to hind margin, hind angles about 90°; glossy, **punctures large and dense** (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.6x as long as wide, about 2.8x as long as pronotum, sides straight and convergent in basal half, arcuate and convergent to apex; surface glossy **with large punctures** (distance between them smaller to subequal than their average diameter), confused, **pubescence longer, sparse and suberect**. Abdominal ventrites yellowish brown.

**Similar species:** This species is very distinctive with its pronotum having sides strongly sinuate at posterior 35% with hind corner at 90°.

**Holotype:** Canada, Manitoba, Zed Lake, 14.VII.1985, B.F. & J.L. Carr, ♂ (CNC, Acc. No. 24578).

**Seasonality:** Unknown.

**Habitats:** Unknown.

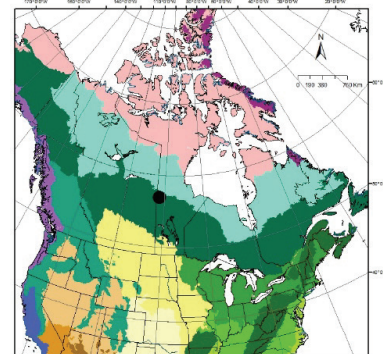
**Etymology:** *lyricollis*, adjective meaning "with harp-shaped neck" because of its harp-shaped pronotum, sides strongly sinuate and subparallel posteriorly.

**Number of specimens examined:** 1.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:8D703135-41C3-408A-BCC7-8A3E3660F14A](https://zoobank.org/act:8D703135-41C3-408A-BCC7-8A3E3660F14A)



*Atomaria (Atomaria) lyricollis* Pelletier  
Holotype



## *Atomaria (Atomaria) macra* (Casey)

**Length** 1.8-2.0 mm. **Head** reddish; clypeus, mandibles and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; **A1 arcuate, about 1.4x as long as wide, about 1.4x as long as A2**; A2 fusiform, about 1.4x as long as A3; A3 and A5 subequal, trapezoidal, about 1.4x as long as A4; A4 and A6 subequal, subquadrate, about 0.7x as long as A5; A7 trapezoidal, about 1.5x as long as A8; A8 transverse; A9 and A10 transverse; A11 slightly elongate. **Pronotum reddish brown; transverse, about 1.32x (1.25-1.4x) as wide as long; sides slightly arcuate and convergent in anterior 0.65, widest and angulate at posterior 0.35, straight and convergent to hind margin**, hind angles about 100°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.62x (1.55-1.7x) as long as wide, about 2.67x (2.6-2.75x) as long as pronotum**, sides straight and slightly convergent in basal half, widest at middle, arcuate and convergent to apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), apparently forming rows underneath but rather confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria pinicola* has pronotum widest at posterior 25% and elytra narrower, with sides mostly subparallel to posterior 0.4. *A. subdentata* has pronotum dark brown, with sides straight in anterior half forming a distinct tooth at posterior 0.4 and elytra yellowish brown, distinctly paler than pronotum. *A. parviceps*, *A. elongatula* and *A. orbicollis* have pronotum with sides arcuate throughout.

**Distribution:** Quebec west to Alaska and British Columbia, south to Georgia, Colorado, and Arizona, mostly in the Boreal, Appalachian and Western Cordillera zones; also in the Mixedwood Plain, Southeastern USA Forest Plain, and Gila Mountains zones. **First record for Canada, in Quebec Alberta, British Columbia and Alaska.** Common.

**Seasonality:** From the first week of February to the last week of October, mostly from the first week of June to the second week of July, peaking on the second and the third week of June.

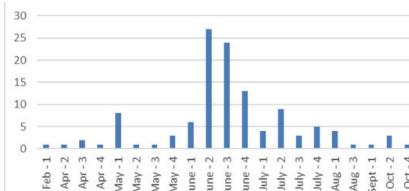
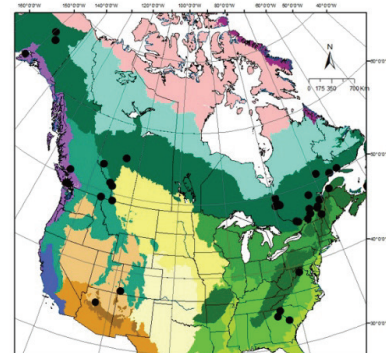
**Habitats:** Mostly in black spruce forests, burned spruce forests, burned lands with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, white pine forests partially burned, white spruce forests, trembling aspen forests with birch and spruce, white birch forests with white spruce and willow; also in balsam fir forests with white birch, white cedar forests with balsam fir, black cottonwood forests, loblolly pine forests, oak woodland shores and beaver ponds.

**Number of specimens examined:** 122, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ACI5062



*Atomaria macra* (Casey) - Holotype





## ***Atomaria (Atomaria) neocarinsula* Pelletier**

(replacement name for *A. carinula* (Casey, 1900), preoccupied by *A. carinula* Rey, 1889)

**Length** 1.6 mm. **Head** dark reddish brown; clypeus, mandibles and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** uniform light reddish brown; A1 arcuate, about 1.75x as long as wide, about 2x as long as A2; A2-A3 trapezoidal, A2 about 1.2x as long as A3, A3 about 1.4x as long as A4; A4, A6 and A8 subequal, transverse, about 0.85x as long as A5; A5 and A7 subequal, trapezoidal, about 1.2x as long as A6; A9 and A10 strongly transverse; A11 subquadrate, arcuate at apex. **Pronotum** dark reddish brown to dark brown; transverse, about 1.3x as wide as long; sides slightly sinuate in anterior 0.65, then slightly arcuate and convergent to posterior margin, widest at posterior 35%, hind angles about 105°; strong impression at middle of base delimited laterally by small longitudinal carinae; glossy, punctures small and sparse (distance between them wider than their average diameter), pubescence moderately short and sparse. Scutellum light reddish brown. Prosternum light reddish brown, meso- and metaventrite dark reddish brown. Legs yellowish brown. **Elytra** light reddish brown in anterior half, with a diffuse small post-scutellar spot at suture, a dark brown oblique transverse band behind middle, followed by a light yellowish brown area subapically, apical 20% dark brown, about 1.6x as long as wide, about 2.7x as long as pronotum, sides straight and convergent in basal 0.45, then arcuate to apex; **surface glossy with moderately large punctures** (distance between them subequal to their average diameter), pubescence moderately long and suberect. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria nigrirostris*, *A. impressa*, *A. impressicollis* and *A. visoni* have pronotum with sides arcuate in anterior 0.65. *A. capitata* has pronotum with sides straight and convergent in anterior half and elytra dark brown to black, not distinctly patterned but sometimes pale at suture in apical half.

**Distribution:** Pennsylvania and southern Alberta, in the Mixedwood Plain and Temperate Prairie zones. **First record for Canada, in Alberta.** Very rare.

**Seasonality:** A single specimen collected on the first week of May.

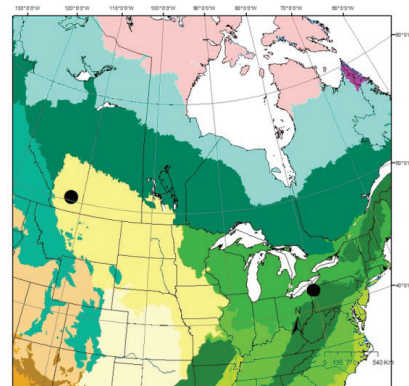
**Habitat:** Unknown.

**Number of specimens examined:** 2, including holotype.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:A97A8E11-7902-4FD9-AEAB-6BCF5C695322](https://zoobank.org/act:A97A8E11-7902-4FD9-AEAB-6BCF5C695322)



***Atomaria (Atomaria) carinula*  
(Casey) - Holotype**



## *Atomaria (Atomaria) nigricollis* (Casey)

(Syn.: *A. parvicollis* (Casey, 1900), preoccupied by *A. parvicollis* Rey **syn. nov.**; *A. parva* Schenkling, 1923 **syn. nov.**)

**Length** 1.5-2.1 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish brown; eyes about 20-25% width of head. **Antennae** reddish brown; A1 arcuate, about 2x as long as wide, about 1.8x as long as A2; A2-A3 and A5 fusiform, A2 about 1.25x as long as A3, A3 subequal to A5, about 1.6x as long as A4; A4 subquadrate, about 0.75x as long to A5; A6 and A8 subequal, transverse, about 0.67x as long as A7; A7 trapezoidal, about 1.5x as long as A8; **A9 and A10 subquadrate**; A11 slightly elongate, asymmetrically conical. **Pronotum dark brown to black; transverse, about 1.4x (1.3-1.45x) as wide as long; sides slightly convergent and slightly to distinctly sinuate in anterior 0.65, widest at posterior 0.35, straight and slightly convergent to hind margin, often slightly crenulate, hind angles about 105°; glossy, punctures large** (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Prosternum reddish brown; meso- and metaventrite dark brown. Legs yellowish brown. **Elytra reddish to yellowish brown, about 1.65x (1.6-1.7x) as long as wide, about 2.7x (2.4-3.1x) as long as pronotum, sides straight to slightly arcuate in basal 0.45, widest in front of or at middle, then arcuate to apex; surface glossy with moderately large punctures** (distance between them subequal to smaller than their average diameter), apparently forming rows underneath but rather confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria crassula* has pronotum with punctures moderate, distance between them subequal to their diameter and elytra stouter, about 1.4-1.6x as long as wide. *A. vespertina* and *A. coloradensis* have pronotum straight and subparallel in middle third. *A. longipennis* has antennae with A9-A10 transverse and elytra elongate, about 1.7-1.95x as long as wide or more.

**Distribution:** Ontario west to Alaska and Alberta, south to California, in the Boreal, Western Cordillera and Marine West Coast Forest zones. **First record for Canada, in Ontario, Manitoba, Alberta, British Columbia, Yukon, and Alaska.** Uncommon.

**Seasonality:** From the second week of April to the third week of October.

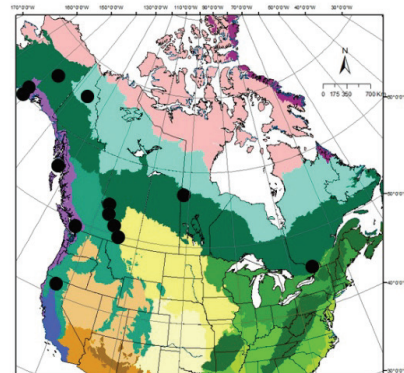
**Habitats:** White spruce forests, trembling aspen forests with birch and spruce, and clearcutting, within galleries of *Dryocoetes affaber*.

**Number of specimens examined:** 26, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:AAP7043



*Atomaria nigricollis* (Casey)  
Holotype



## *Atomaria (Atomaria) nigrirostris* Stephens

(Syn.: *A. fuscicollis* Mannerheim, 1852; *A. subnitens* (Casey, 1900); *A. luculenta* (Casey, 1900) **syn. nov.**; *A. lucida* (Casey, 1900), preoccupied by *A. lucida* Reitter, 1889 **syn. nov.**; *A. lucens* Grouvelle **syn. nov.**)

**Length** 1.5–1.8 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 arcuate, about 2x as long as wide, about 2x as long as A2; A2 elongate, trapezoidal, about 1.25x as long as A3; A3, A5 and A7 subequal, about 1.6x as long as A4, A3 fusiform, A5 and A7 trapezoidal; **A4 subequal to A6, subquadrate**, about 0.6x as long to A5; **A8 transverse**; A9 slightly transverse; A10 transverse; A11 slightly elongate, asymmetrically conical. **Pronotum black**, often dark reddish brown at anterior and posterior margins; **transverse, about 1.35x (1.3–1.4x) as wide as long**; sides arcuate throughout, strongly convergent in anterior 0.67, widest at posterior 0.33, than slightly convergent to hind margin, hind angles about 95°; glossy, **strong impression at basal middle covered with small longitudinal striae**, punctures moderately small (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum dark reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra dark reddish brown to dark brown, about 1.55x (1.45–1.6x) as long as wide, about 2.45x (2.3–2.6x) as long as pronotum, front corners with tooth, sides straight and convergent in anterior 0.4**, than arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *A. impressicollis* has a larger size (length = 1.7–2.1 mm), antennae reddish brown with club dark brown, A6 trapezoidal, A8 subquadrate and elytra about 2.65–2.9x as long as pronotum. *A. impressa* has a larger size (length = 1.8–2.1 mm), antennae with A9 subquadrate, pronotum with impression at basal middle without longitudinal striae and elytra broader than pronotum at base, about 1.35–1.45x as long as wide. *A. visoni* has body mostly brownish yellow, pronotum with narrow transverse basal groove without punctuation or striae and elytra with sides without tooth at anterior corner.

**Distribution:** Newfoundland west to Alaska and British Columbia, south to Georgia and Utah, mostly in the Boreal, Appalachian, Mixedwood Plain, Western Cordillera, and Marine West Coast Forest zones; also in Temperate Prairie and Southeast USA Plain zones. **First record in New Brunswick, Ontario, Saskatchewan, Alberta, British Columbia and Yukon.** Very common. **Holarctic.**

**Seasonality:** From the first week of January to the second week of November, mostly between the third week of May and second week of July, peaking in the first week of June.

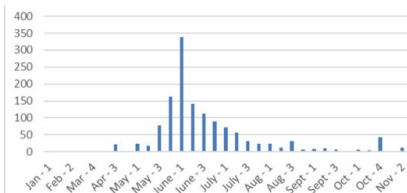
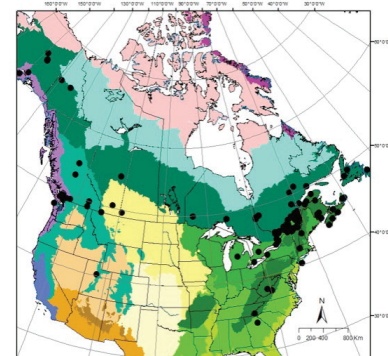
**Habitats:** Mostly semi-opened areas like burned spruce forests, burned lands with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, black spruce forests, balsam fir plantations, balsam fir forests with white spruce, white pine forests partially burned, and wineries; also in red pine forests, red spruce forests, white spruce forests, black and white spruce forests edging with bogs, white cedar forests with balsam fir (Webster et al., 2016), beaver ponds inside beaver lodge, salt marshes, alvars, yellow birch forests with firs, hemlock-beech forests, sugar maple forests, and house backyard.

**Number of specimens examined:** 1350.

**DNA Barcode Index Number (BIN):** BOLD:AAO1019



*Atomaria nigrirostris*



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## *Atomaria (Atomaria) ontariensis* Pelletier n. sp.

**Length** 1.8 mm. **Head** orange; clypeus, mandibles and palpi yellowish brown; eyes about 25-30% width of head. **Antennae** reddish brown with club yellowish brown; **A1 slightly arcuate, stout, about 1.4x as long as wide, about 1.4x as long as A2**; A2-A3 subequal, A2 slightly elongate, stout, A3 trapezoidal, about 2.5x as long as A4; A4, A6 and A8 subequal, transverse, about 0.5x as long as A5; A5 subquadrate, about 2x as long as A6; A7 slightly transverse, about 1.75x as long as A8; A9 and A10 strongly transverse; A11 slightly elongate, apex symmetrically conical. **Pronotum orange; transverse, about 1.3x as wide as long; sides distinctly sinuate and convergent in anterior 0.65, widest at posterior 0.35, straight and convergent to hind margin**, hind angles about 100°; glossy, punctures large and dense (distance between them smaller than their average diameter), pubescence moderately long and sparse. Scutellum orange. Sternum orange. Legs yellowish brown. **Elytra yellowish brown, about 1.65x as long as wide, about 2.6x as long as pronotum**, sides straight to slightly arcuate and convergent in basal half, arcuate and convergent to apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), confused, pubescence short and appressed. Abdominal ventrites orange.

**Similar species:** *Atomaria albertana* has antennae dark brown and elytra with apparent rows of large punctures underneath. *A. pseudotsugae* has shorter elytra, about 1.5x as long as wide and is distributed in western North America. *A. pinicola*, *A. macra* and *A. parviceps* have a pronotum with sides straight to slightly arcuate in anterior 65-75%, forming a distinct angle behind middle. *A. orbicollis* has a narrower pronotum, about 1.15-1.25x as wide as long, with sides arcuate throughout.

**Holotype:** Canada, Ontario, Norfolk Co., Turkey point, 12.X.2011, in leaf litter, Berlese, A. Brunke, ♂ (CNC, Acc. No. 24579).

**Seasonality:** Only one record in second week of October.

**Habitats:** Unknown.

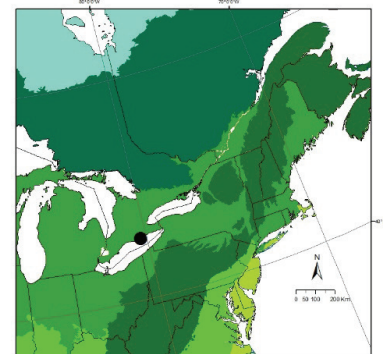
**Etymology:** *ontariensis* means *from Ontario*, where the holotype was collected.

**Number of specimens examined:** 1.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:A87BBDDDB-8332-4A25-B7C5-4AD298E42929](https://zoobank.org/act:A87BBDDDB-8332-4A25-B7C5-4AD298E42929)



*Atomaria (Atomaria) ontariensis*  
Pelletier - Holotype



## *Atomaria (Atomaria) orbicollis* Pelletier n. sp.

**Length** 1.7-2.0 mm. **Head** reddish; clypeus, mandibles and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; **A1 stout, arcuate, about 1.33x as long as wide**, about 1.33x as long as A2; A2-A3 subequal, A2 trapezoidal, A3 fusiform, about 1.8x as long as A4; **A4 and A6 subequal, subquadrate**, about 0.5x as long as A5; A5 elongate, with sides subparallel, about 1.8x as long as A6; A7 trapezoidal, about 1.75x as long as A8; A8 transverse; A9 and A10 strongly transverse; A11 slightly elongate with apex subconical. **Pronotum reddish brown; orbicular, about 1.23x (1.15-1.3x) as wide as long; sides arcuate throughout, widest at posterior 0.35**, hind angles about 100°; glossy, punctures moderately small (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.6x (1.5-1.7x) as long as wide, about 2.4x (2.3-2.5x) as long as pronotum**, sides straight and convergent in basal half, widest at middle, arcuate and convergent to apex; **surface glossy with moderately large punctures** (distance between them smaller than their average diameter), apparently forming rows underneath but rather confused. Abdominal ventrites reddish brown.

**Similar species:** All similar species (*Atomaria pinicola*, *A. macra*, *A. parviceps* and *A. subdentata*) have usually a more transverse pronotum, about 1.3-1.5x or more wider than long, with side usually distinctly angulate behind middle. *A. pumilio* has antennae with A1 elongate, arcuate, about 2x as long as A2, A9 subquadrate or slightly transverse and pronotum more transverse, about 1.25-1.35x as wide as long. *A. elongatula* has pronotum usually broader, about 1.28-1.4x as wide as long, more densely punctate.

**Holotype:** Canada, Ontario, Ottawa River, Deschênes Lookout, 1.V.1985, berlese in flood debris, A. Davies & W. Hamilton, (CNC, Acc. No. 24580).

**Paratypes:** Canada, Quebec, Abitibi Co., Eeyou Baie-James, Chemin Selbale, 27.VII-3.VIII.1997, black spruce forest, P. Paquin: 2 (IRM); Lac Duparquet, white cedar forest with balsam fir, P. Paquin, 29.V-5.VI.1994: 2 (CNC, IRM); 5-12.VI.1995: 6 (CNC, IRM); 12-19.VI.1994: 2 (CNC, IRM); 10-17.VII.1994: 1 (IRM); 9-16.X.1994: 2 (CNC); 30.X-10.XI.1994: 2 (IRM); 2-9.VI.1996: 1 (CNC); 22.VIII.1997: 1 (IRM); Lac Labyrinthe, 9-16.VI.1996, white cedar forest with balsam fir, P. Paquin: 2 (IRM).

**Distribution:** Quebec and Ontario, mostly in the Boreal zone; also in the Mixedwood Plain zone.

**Seasonality:** From the first week of May to the first week of November, peaking on the second week of June.

**Habitats:** Mostly white cedar forests with balsam fir; also in black spruce forests and river shores in flood debris.

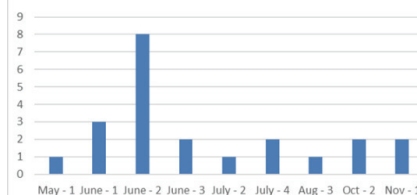
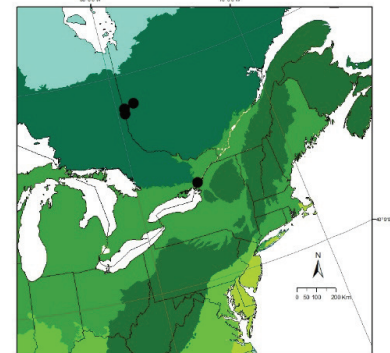
**Etymology:** *orbicollis* means *round narrow pronotum*, very characteristic of that species.

**Number of specimens examined:** 22.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:9FB1EABC-E1E7-4DD4-BEF8-70E68CA35898](https://zoobank.org/act:9FB1EABC-E1E7-4DD4-BEF8-70E68CA35898)



*Atomaria (Atomaria) orbicollis*  
Pelletier - Holotype



## *Atomaria (Atomaria) parviceps* Notman

**Length** 1.8-2.0 mm. **Head** reddish; clypeus, mandibles and palpi yellowish brown; eyes about 30% width of head. **Antennae** reddish brown with club yellowish brown; **A1 stout, arcuate, about 1.3x as long as wide**, about 1.25x as long as A2; A2 trapezoidal, about 0.9x as long as A3; A3 fusiform, about 2.7x as long as A4; A4, A6 and A8 subequal, transverse, about 0.67x as long as A5; A5 trapezoidal, about 1.75x as long as A6; A7 subquadrate, about 1.5x as long as A8; A9 and A10 strongly transverse; A11 slightly elongate. **Pronotum reddish brown; transverse, about 1.3x (1.25-1.4x) as wide as long; sides slightly arcuate and convergent in anterior 0.67, widest and not forming an angle at posterior 0.33, straight and convergent to hind margin**, hind angles about 120°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.65x (1.6-1.7x) as long as wide, about 2.7x (2.45-2.85x) as long as pronotum**, sides straight and slightly convergent in basal 0.6, arcuate and convergent to apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), apparently forming rows underneath but rather confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria elongatula* has pronotum usually dark brown, widest at or near middle. *A. orbicollis* has pronotum narrower, about 1.15-1.25x as wide as long with punctures small and sparse. *A. pinicola*, *A. macra* and *A. subdentata* have a pronotum with side distinctly angulate behind middle. *A. pumilio* has antennae with A1 elongate, arcuate, about 2x as long as wide and A9 subquadrate to slightly transverse.

**Distribution:** Quebec west to British Columbia, south to New York, mostly in the Boreal, Northern Appalachian, and Mixedwood Plain zones; also in the Western Cordillera zone. **First record for Canada, in Quebec, Ontario, Alberta, and British Columbia.** Uncommon.

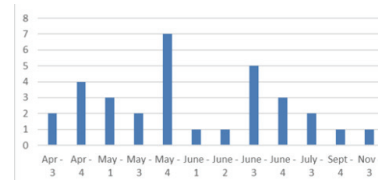
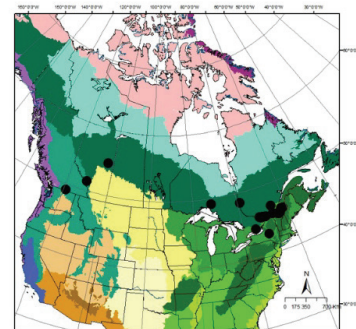
**Seasonality:** From the third week of April to the third week of November, peaking on the last week of May.

**Habitats:** Mostly in red pine and scotch pine plantations, in white pine forests partially burned and in maple forests damaged by ice storm; also in white cedar forests with balsam fir, in raspberry fields on leaf litter, in a sewage plant under old grass and leaves and in a paper factory yard. Collected on *Purshia*.

**Number of specimens examined:** 34, including the holotype.



*Atomaria parviceps* (Notman) - Holotype





## *Atomaria (Atomaria) patens* (Casey)

**Length** 1.9 mm. **Head** dark reddish brown to black; mandibles and palpi reddish brown; eyes about 30% width of head. **Antennae** reddish brown with club dark brown; A1 arcuate, about 1.7x as long as wide, about 2x as long as A2; A2-A3 fusiform, A2 about 1.2x as long as A3, A3 about 1.4x as long as A4; **A4 slightly elongate, about 0.7x as long to A5; A5 and A7 subequal, fusiform, about 1.67x as long as A6; A6 subquadrate, about 0.6x as long as A7; A8 transverse; A9 and A10 transverse; A11 subquadrate to slightly elongate, asymmetrically subconical at apex. Pronotum dark brown to black; transverse, about 1.3x as wide as long; sides straight and convergent in anterior 0.65, widest and arcuate at posterior 0.35, straight and convergent to base, often slightly crenulate, hind angles about 105°; glossy, punctures moderately small (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Sternum dark reddish brown. Legs reddish brown. Elytra reddish to dark brown, about 1.6x as long as wide, about 2.5x as long as pronotum, sides straight and convergent in basal half, widest at middle, arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, pubescence short and appressed. Abdominal ventrites reddish brown.**

**Similar species:** *Atomaria tenebrosa* has pronotum widest at posterior 0.25, punctures large and dense, distance between them shorter than their average diameter and elytra with punctures moderate and denser. *A. alpina* and *A. planulata* have pronotum reddish brown, with sides straight and subparallel from anterior 0.35 to 0.85 and elytra reddish brown, elongate, about 1.65-1.75x as long as wide, widest behind middle. *A. lyricollis* has pronotum with sides strongly sinuate in posterior 0.35 and subparallel at posterior 0.15.

**Distribution:** Quebec west to Ontario, south to Pennsylvania and Indiana, mostly in the Mixedwood Plain; also in the eastern Boreal, Northern and Southern Appalachian zones. **First record for Canada, in New Brunswick, Quebec and Ontario.** Uncommon.

**Seasonality:** From the first week of April to the second week of November.

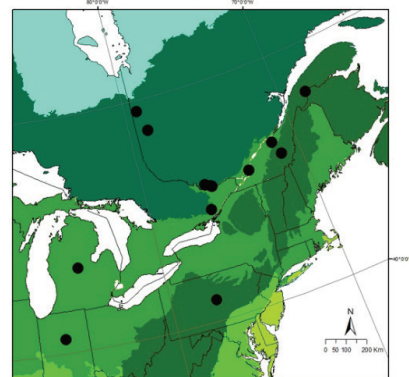
**Habitats:** Black spruce forests, beaver ponds inside beaver lodges, in litter on pond margin and in sugar maple forests damaged by ice storm.

**Number of specimens examined:** 14, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ACG3394



*Atomaria patens* (Casey) - Holotype



## *Atomaria (Atomaria) pinicola* Pelletier n. sp.

**Length** 1.7–1.9 mm. **Head** reddish; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 stout, about 1.25x as long as wide, about 1.45x as long as A2; A2 subquadrate, about 1.15x as long as A3; A3 trapezoidal, about 1.67x as long as A4; A4, A6 and A8 subequal, transverse, about 0.75x as long as A5; A5 trapezoidal, about 1.33x as long as A6; A7 slightly transverse, about 1.15x as long as A8; A9 and A10 strongly transverse; A11 slightly elongate. **Pronotum** reddish brown; transverse, about 1.35x (1.3–1.4x) as wide as long; sides slightly arcuate and convergent in anterior 0.75, widest and forming an angle at posterior 0.25, straight and convergent to hind margin, hind angles about 120°; glossy, punctures moderately large (distance between them subequal to their average diameter) and dense, pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.7x (1.6–1.8x) as long as wide, about 2.75x (2.65–2.85x) as long as pronotum, sides straight and subparallel in basal 0.6, arcuate and convergent to apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), confused on the surface but apparently forming rows underneath. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria macra* has pronotum widest at posterior 0.35 and elytra with sides distinctly convergent, widest at posterior 0.4. *A. subdentata* has pronotum dark brown, with sides straight and convergent in anterior half forming a distinct tooth at posterior 0.4 and elytra yellowish brown, distinctly paler than pronotum, sides distinctly convergent, widest at middle. *A. forticornis*, *A. parviceps*, *A. elongatula* and *A. orbicollis* have pronotum with sides arcuate throughout, not forming an angle posterior to middle.

**Holotype:** Canada, Quebec, Sherbrooke Co., Lennoxville, 30.V–3.VI.1996, in balsam fir plantation, Malaise trap, C. Hébert team (CNC, Acc. No. 24581).

**Paratypes:** Canada, Quebec, La Mauricie, Parc National de la Mauricie, 16.V–5.VI.2006, 5–18.VII.2006, white pine forest partially burned, Intercept trap, E. Domaine: 3 (IRM); Charlevoix, Parc des Grands Jardins, Lac Pointu, 4–11.VIII.2009, burning land, light pitfall trap, SCF – CFL: 2 (IRM).

**Additional materials:** Canada, Quebec, Abitibi, Lac Labyrinthe, 2–9.VI.1996, 16–23.VI.1996, 1–6.IX.1996, white cedar forest with balsam fir, P. Paquin: 3 (IRM); Eeyou-Istchee Baie-James Co., Chemin Selbale, 15–22.VI.1997, black spruce forest, P. Paquin: 1 (IRM); Ile Anticosti, Lac Larouche, 16.VII.1973, C. Chantal: 1 (CCC).

**Distribution:** New Brunswick west to Ontario, mostly in the Boreal and the Northern Appalachian zones. Uncommon.

**Seasonality:** From the first week of May to the first week of September, peaking in the second week of June.

**Habitats:** Old jack pine forests, red spruce forests with balsam firs and red maples, old growth white cedar forests and swamps, white cedar forests with balsam firs, white pine forests partially burned, white spruce mixed with balsam fir forests; also in burning lands with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, black spruce forests and balsam fir plantations.

**Number of specimens examined:** 31.

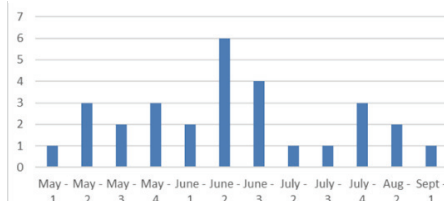
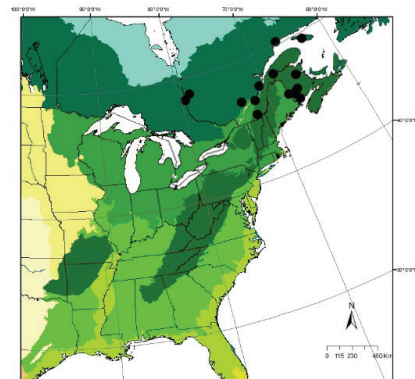
**Etymology:** *pinicola* means « living on pine », apparently its preferred type of forest.

**DNA Barcode Index Number (BIN):** **BOLD:ACR8872**

**ZooBank LSID:** [urn:lsid:zoobank.org:act:97D9916A-8C43-4FD9-942C-01088BAFE364](http://urn:lsid:zoobank.org:act:97D9916A-8C43-4FD9-942C-01088BAFE364)



*Atomaria (Atomaria) pinicola*



## *Atomaria (Atomaria) planulata* Mannerheim

**Length** 1.6-2.0 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; A1 elongate, arcuate, about 2.0x as long as wide, about 1.7x as long as A2; A2 trapezoidal, about 1.2x as long as A3; A3 and A5 subequal, fusiform, about 1.4x as long as A4; A4 and A6 subequal, subquadrate, about 0.7x as long as A5; A7 trapezoidal, about 1.15x as long as A8; A8 transverse; A9 and A10 transverse; A11 slightly elongate, symmetrically subconical. **Pronotum reddish brown, slightly transverse, about 1.25x (1.2-1.3x) as wide as long; sides slightly arcuate and convergent in anterior 0.3, straight and parallel to posterior 0.3, straight and convergent to hind margin, hind angles about 110°; surface strongly reticulated and opaque, punctures small** (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum yellowish brown. Legs yellowish brown. **Elytra yellowish brown, elongate, about 1.72x (1.65-1.8x) as long as wide, about 2.6x (2.5-2.75x) as long as pronotum, sides straight and slightly convergent in basal 0.6, arcuate and convergent to apex; surface reticulate with moderately small punctures** (distance between them larger than their average diameter), confused but with apparent striae underneath, pubescence short and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria alpina* has antennae with A4 and A6 transverse, and pronotum more transverse, about 1.3x (1.28-1.35x) as wide as long, with surface glossy. *A. quadricollis* has pronotum with sides strongly sinuate.

**Distribution:** Quebec west to Alaska and British Columbia, south to Utah, mostly in the Boreal, Western Cordillera, and Marine West Coast Forest zones; also in the Taiga zone. **First record in Quebec, Alberta and Yukon.** Fairly common.

**Seasonality:** From the third week of May to the second week of August, peaking in the last week of July.

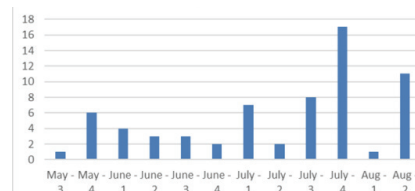
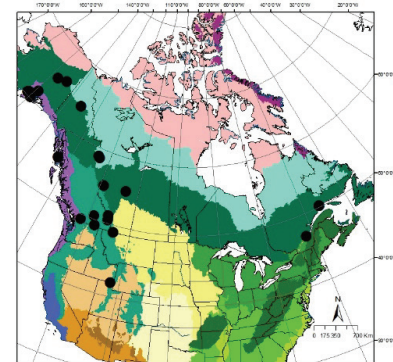
**Habitats:** In semi-opened areas, like alder and poplar willow stands, clear cutting, western larch forests, black and white spruce forests with larch, white spruce forests, and white birch forests mixed with trembling aspen, in leaf litter, bracket fungi, *Dryocoetes affaber* galleries and on turnips.

**Number of specimens examined:** 65.

**DNA Barcode Index Number (BIN):** BOLD:ACG7906



*Atomaria (Atomaria) planulata*





## *Atomaria (Atomaria) pseudotsugae* Pelletier n. sp.

**Length** 1.7 mm. **Head** reddish; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 arcuate, about 1.5x as long as wide, about 1.5x as long as A2; A2 trapezoidal, about 1.5x as long as A3; A3, A5 and A7 subequal, subquadrate, about 1.3x as long as A4; A4, A6 and A8 subequal, transverse, about 0.75x as long as A5; A9 and A10 strongly transverse; A11 subquadrate, apex symmetrically arcuate. **Pronotum reddish brown with double side borders at posterior 0.35; transverse, about 1.35-1.4x as wide as long; sides distinctly sinuate and convergent in anterior 0.75, widest at posterior 0.25, straight and convergent to hind margin**, hind angles about 120°; glossy, punctures moderately large and dense (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.55x as long as wide, about 2.7x as long as pronotum**, sides straight to slightly arcuate and convergent in basal 0.35, arcuate and convergent to apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), confused, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria dispersa*, *A. longipennis* and *A. constricta* have pronotum with single side borders throughout. *A. pinicola*, *A. macra* and *A. parviceps* have a pronotum with side straight to slightly arcuate in anterior 0.65-0.75 and elytra longer and narrower, about 1.60-1.8x as long as wide. *A. orbicollis* has a narrower pronotum, about 1.15-1.25x as wide as long with sides arcuate throughout.

**Holotype:** USA, Oregon, Marion Co., Silverton, 9 mi. S, 6 mi. E, near Smith Creek Youth Camp, 26.III.1972, in vine maple and Douglas fir duff, ♂ (CNC, Acc. No. 24582).

**Paratype:** Canada, British Columbia, Newcastle Co., Bowser, 8.VI.1955, W.J. Brown: 1 (IRM).

**Distribution:** British Columbia, south to Oregon, in the Marine West Coast Forest zone.

**Seasonality:** From the last week of March to the second week of June.

**Habitats:** Douglas fir forests.

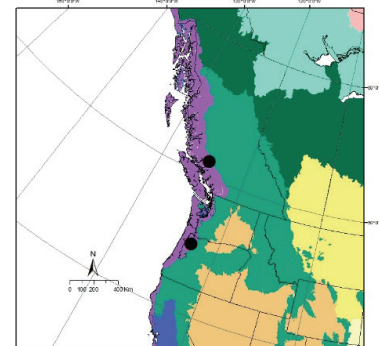
**Number of specimens examined:** 2.

**Etymology:** The name *pseudotsugae* relate the species to the Douglas Fir, where the holotype has been collected.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:65451F18-D0F9-4180-BAF8-964320912322](https://zoobank.org/act:65451F18-D0F9-4180-BAF8-964320912322)



*Atomaria (Atomaria) pseudotsugae*  
Pelletier - Holotype



## *Atomaria* (*Atomaria*) *puella* (Casey)

**Length** 1.4–1.8 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish brown; eyes about 25% width of head. **Antennae** reddish brown with club dark brown; A1 arcuate, about 1.6x as long as wide, about 1.6x as long as A2; A2 trapezoidal, about 1.3x as long as A3; A3 fusiform, about 1.4x as long as A4; A4 and A6 subequal, subquadrate, about 0.8x as long to A5; **A5 and A7 subequal, oval**, about 1.4x as long as A8; A8 transverse; A9 and A10 strongly transverse; A11 subquadrate, apex broadly symmetrically arcuate. **Pronotum dark brown to black; transverse, about 1.25x (1.2–1.3x) as wide as long; sides arcuate and convergent in anterior 0.33, straight and subparallel in middle 0.33, arcuate and convergent in posterior 0.33**, hind angles about 115°; glossy, punctures moderately small (distance between them larger than their average diameter), pubescence moderately long and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, with a brown diffuse spot at suture behind middle, about 1.7x (1.65–1.75x) as long as wide, about 2.65 (2.55–2.75x) as long as pronotum**, sides straight, slightly convergent in basal half, then arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, **pubescence short, sparse and suberect**. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria versa* has antennae with A8 subquadrate and pronotum with sides arcuate, widest at posterior 0.25, moderately punctate, distance between punctures subequal to their average diameter. *A. puelloides* has antennae with club reddish to yellowish brown, pronotum with sides distinctly sinuate at middle and has a southeastern USA distribution.

**Distribution:** Alberta and California, in the Temperate Prairie and Western Cordillera zones. **First record for Canada in Alberta.** Uncommon.

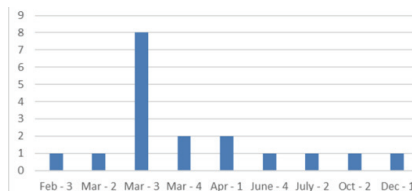
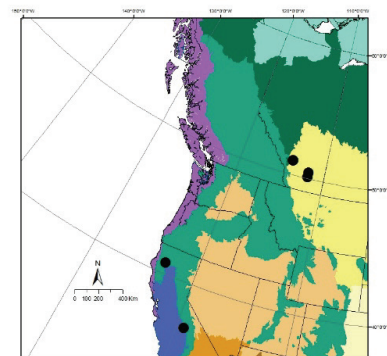
**Seasonality:** From the third week of February to the first week of December, peaking on the third week of March. Appears to be active mostly in early spring and fall.

**Habitats:** Mostly prairies, associated with *Formica* nests; also in white cedar forests with balsam firs.

**Number of specimens examined:** 19, including the holotype.



*Atomaria puella* (Casey)  
Holotype



## *Atomaria (Atomaria) puelloides* Pelletier n. sp.

**Length** 1.6–1.8 mm. **Head** orange; clypeus, mandibles and palpi yellowish brown; eyes small, about 15% width of head. **Antennae** reddish brown with club orange; A1 arcuate, about 2.0X as long as wide, about 1.67x as long as A2; A2, A3 and A5 subequal, A2 slightly elongate, subparallel, A3 and A5 trapezoidal, about 1.67x as long as A4; A4 subquadrate, about 0.6x as long as A5; A6 and A8 subequal, transverse, about 0.5x as long as A7; A7 subquadrate; A9 and A10 strongly transverse; A11 slightly elongate, apex asymmetrically conical. **Pronotum orange; transverse, about 1.3x as wide as long; sides distinctly sinuate and convergent in anterior 0.67, widest at posterior 0.33, arcuate and convergent in posterior 0.33**, hind angles about 115°; mostly glossy with very slight striate, wavy microsculpture, punctures small (distance between them larger than their average diameter), pubescence short and sparse. Scutellum yellowish brown. Sternum orange. Legs yellowish brown. **Elytra yellowish brown**, about 1.6x as long as wide, about 2.5x as long as pronotum, **sides straight, slightly convergent in basal 0.3, straight and subparallel to middle**, then arcuate through apex; surface glossy with very small punctures (distance between them much larger than their average diameter), rather confused but with apparent rows of larger punctures underneath, **pubescence short, sparse and suberect**. Abdominal ventrites orange.

**Similar species:** *Atomaria puella* has antennae with club dark brown, pronotum reddish to dark brown, with sides straight and subparallel in middle third and is distributed in Western Canada and USA, mostly in the Temperate Prairie zone. *A. versa* has antennae darker, head and pronotum dark brown to black, pronotum with larger punctures and a western North American distribution.

**Holotype:** USA, Georgia, Clarke Co., Athens, Memorial Park, 4.IV.2011, with Lingren funnel trap and UV light, J.V. McHugh (GMNH\_UGCA 00026901).

**Paratypes:** USA, Georgia, Clarke Co., Athens, Memorial Park, 4.IV.2011, with Lingren funnel trap and UV light, J.V. McHugh: 2; 16–31.III.2012: 1; 11–18.IV.2011: 1; 14–30.IV.2010: 1; 6–7.V.2010: 1 (UGM, CNC, IRM); Lumpkin Co., Dahlonega, 7–17.V.2011, Lingren funnel trap, C. Jones: 1 (UGM).

**Seasonality:** From the third week of March to the third week of May, in the Southeast USA Plain zone.

**Habitats:** Unknown.

**Number of specimens examined:** 8.

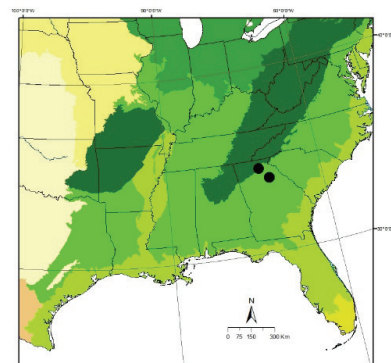
**Etymology:** Derived from *puella*, a closely related species described by Casey.

**DNA Barcode Index Number (BIN):** BOLD:ADX8941

**ZooBank LSID:** urn:lsid:zoobank.org:act:B89A3E95-BBBA-4A78-B338-F877E8E08BC1



*Atomaria (Atomaria) puelloides* Pelletier  
Holotype





| Month | Number of Cases |
|-------|-----------------|
| Mar   | 1               |
| Mar   | 2               |
| Apr   | 2               |
| Apr   | 3               |
| May   | 4               |
| May   | 5               |
| May   | 7               |
| May   | 8               |
| June  | 12              |
| June  | 14              |
| June  | 13              |
| July  | 5               |
| July  | 2               |
| July  | 8               |
| Sept  | 6               |
| Sept  | 7               |
| Sept  | 1               |
| Oct   | 1               |
| Oct   | 1               |
| Nov   | 1               |
| Nov   | 1               |
| Nov   | 2               |

## *Atomaria (Atomaria) quadricollis* (Casey)

**Length** 1.8-2.1 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown; A1 arcuate, about 2.0x as long as wide, about 1.8x as long as A2; A2 trapezoidal, about 1.25x as long as A3; A3 and A5 subequal, fusiform, about 1.5x as long as A4; A4 and A6 subequal, subquadrate, about 0.67x as long as A5; A7 trapezoidal, about 1.6x as long as A8; A8 transverse; A9-A10 strongly transverse; A11 subquadrate to slightly elongate, asymmetrically subconical. **Pronotum** reddish brown; slightly transverse, about 1.25x (1.2-1.3x) as wide as long; sides strongly sinuate and convergent in anterior 0.75, widest and angulate at posterior 0.25, then straight and slightly convergent to posterior margin, very slightly crenulate, hind angles about 105°; **surface reticulate**, punctures small (distance between them larger than their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum yellowish brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.7x (1.6-1.8x) as long as wide, about 2.55x (2.5-2.62x) as long as pronotum, sides straight to slightly arcuate, convergent in basal half, widest at middle, then arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), apparently forming rows underneath but rather confused, pubescence short, moderately dense and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria planulata* has pronotum with sides straight and subparallel from anterior 0.35 to 0.85. *A. stricticollis* and *A. subrecta* have pronotum more transverse, about 1.3-1.5x as wide as long, glossy, with punctures moderate and denser, distance between them at least subequal to their average diameter.

**Distribution:** Quebec west to Alaska and British Columbia, south to Colorado and Idaho, mostly in the Boreal and the Western Cordillera zones; also in the Northern Appalachian and the Marine West Coast Forest zones. **First record in Quebec, Ontario, Alberta, and Alaska.** Fairly common.

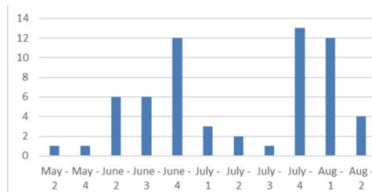
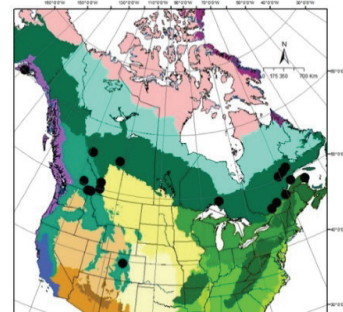
**Seasonality:** From the second week of May to the second week of August, peaking on the last week of June, the last week of July and the first week of August.

**Habitats:** Mostly burned black spruce forests, burned lands 50 years after clear cutting, black spruce forests partially cut and white pine forests partially burned; also in white bark pine forests, balsam fir forests, sugar maple forests damaged by ice storm, Engelmann spruce forests, alder and poplar stands, sandy shores of lake, mostly on tree trunks under bark; also under old leaves in gravel pit, driftwood, leaf litter, in fungi on log of *Picea engelmanni* and *Pinus albicaulis*.

**Number of specimens examined:** 62, including the holotype.



*Atomaria quadricollis* (Casey) - Holotype



## *Atomaria (Atomaria) stricticollis* (Casey)

(Syn.: *A. ochronitens* (Casey, 1900) **syn. nov.**)

**Length** 1.8-2.1 mm. **Head orange**; clypeus, mandibles and palpi pale yellow; eyes small, about 20% width of head. **Antennae** reddish brown; A1 arcuate, about 1.8x as long as wide, about 1.6x as long as A2; A2-A3 and A5 subequal, A2 trapezoidal, A3 and A5 fusiform, about 1.67x as long as A4; A4 and A6 subequal, subquadrate, about 0.6x as long as A5; A7 slightly elongate, about 2x as long as A8; A8 transverse; A9 and A10 strongly transverse; A11 slightly elongate, oval. **Pronotum orange yellow; transverse, about 1.4x (1.3-1.5x) as wide as long; sides strongly sinuate and convergent in anterior 0.65, angulate and widest at posterior 0.33, straight and convergent to hind margin**, very slightly crenulate, anterior margin 0.9x to subequal in width to posterior margin, hind corner about 110°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum pale yellow. Sternum reddish yellow. Legs pale yellow. **Elytra pale yellow, about 1.7x (1.6-1.8x) as long as wide, about 2.9x (2.65-3.05x) as long and 1.1x as wide as pronotum**, sides straight or slightly arcuate and convergent in basal half, widest at middle, then arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), apparently forming rows underneath but rather confused, pubescence short, moderately dense and appressed. Abdominal ventrites reddish yellow.

**Similar species:** *Atomaria subrecta* has pronotum with sides narrowly arcuate at posterior 0.25, punctures larger, their distance smaller than their average diameter and elytra reddish brown with punctures moderate and more dense. *A. quadricollis* has pronotum slightly transverse, reticulate, about 1.2-1.3x as wide as long, with punctures small and sparse, distance between them larger than their average diameter.

**Distribution:** Quebec west to British Columbia and Yukon, south to Oregon, mostly in the Western Cordillera and the Marine West Coast Forest zones, rare in the Boreal zone. **First record in Quebec, Alberta and Yukon.** Fairly common.

**Seasonality:** From the first week of April to the second week of October, mostly between the third week of May and the last week of July.

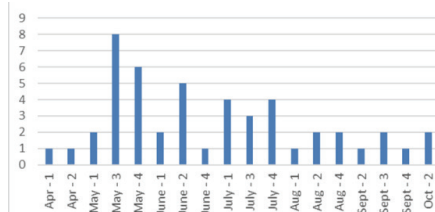
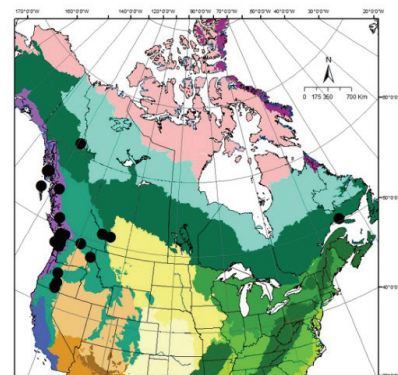
**Habitats:** Mostly in old growth forests of mixed Sitka spruce and western hemlock forests, giant fir forests and Pacific silver fir forests; also in unthinned 2<sup>nd</sup> growth, balsam fir forests with white birch, in *Dryocoetes affaber* galleries. Collected on *Abies amabilis* and *Abies grandis*.

**Number of specimens examined:** 55, including the holo-type.

**DNA Barcode Index Number (BIN):** **BOLD:ACR3723**



*Atomaria stricticollis* (Casey) - Holotype





## *Atomaria (Atomaria) subdentata* (Casey)

(Syn.: *A. subangulata* J. Sahlberg, 1926 syn. nov.)

**Length** 1.6-1.7 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown with club yellowish brown; A1 arcuate, about 2x as long as wide, about 1.8x as long as A2; A2 fusiform, about 1.4x as long as A3; A3 and A5 subequal, fusiform, about 1.6x as long as A4; A4 and A6 subequal, subquadrate, about 0.6x as long to A5; A7 trapezoidal, about 1.5x as long as A8; A8 transverse; A9-A10 transverse; A11 slightly elongate, asymmetrically subconical. **Pronotum** dark reddish brown; **strongly transverse, about 1.45x (1.35-1.55x) as wide as long; sides straight and slightly convergent in anterior 0.65 which is angulate with a tooth and widest at posterior 0.35**, then straight and convergent to hind margin, hind angles about 110°; glossy, punctures moderately large (distance between them subequal or smaller than their average diameter), pubescence moderately short and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra** yellowish brown, **about 1.65x (1.6-1.7x) as long as wide, about 2.85x (2.65-3.0x) as long as pronotum**, sides straight and convergent in basal half, widest at middle, arcuate and convergent to apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), apparently forming rows underneath but rather confused, pubescence short, moderately dense and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria pinicola* and *A. macra* have pronotum reddish brown with sides slightly arcuate at anterior half and elytra reddish to yellowish brown, not distinctly paler than pronotum. *A. parviceps*, *A. elongatula* and *A. orbicollis* have pronotum with sides arcuate throughout.

**Distribution:** New Brunswick west to Alaska and British Columbia, south to Montana and California, mostly in the Boreal, Northern Appalachian, Mixedwood Plain, and Western Cordillera zones; also in the Marine West Coast Forest and Temperate Prairie zones. **First record in New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and Alaska.** Fairly common. **Holarctic.**

**Seasonality:** From the first week of May to the first week of October, mostly from the third week of May to the second week of June, peaking in the first and the second week of June.

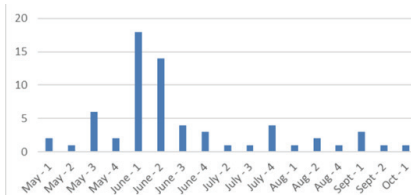
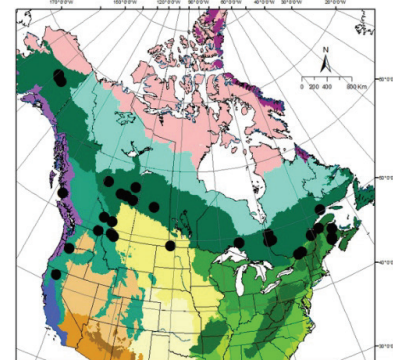
**Habitats:** Mostly in black spruce forests, old growth white spruce and balsam fir forests, mixed forests with spruces, pines and firs, old jack pine forests (R. Webster); also in white cedar forests with firs, white birch forests with willow and white spruce, open tussocks with willows and bog birch, swamps, stream shores, and bogs, mostly on tree trunks under bark; also in leaf litter, humus, driftwood, and moss. Collected on bark of *Picea mariana*, *Pinus banksiana*, *Populus tremuloides*, and *Betula alleghaniensis*.

**Number of specimens examined:** 65, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ACC9459



*Atomaria (Atomaria) subdentata*



## *Atomaria (Atomaria) subrecta* (Casey)

**Length** 2.0 mm. **Head** reddish brown; clypeus, mandibles and palpi yellowish brown; eyes about 25% width of head. **Antennae** reddish brown; A1 arcuate, about 1.9x as long as wide, about 1.7x as long as A2; A2 trapezoidal, about 1.2x as long as A3; A3 and A5 subequal, fusiform, about 1.35x as long as A4; A4 trapezoidal, about 0.65x as long as A5; A6 subquadrate, about 0.75x as long as A7; A7 trapezoidal, about 2x as long as A8; A8 strongly transverse; A9 slightly transverse; A10 strongly transverse; A11 slightly elongate. **Pronotum reddish brown; transverse, about 1.4x as wide as long; sides strongly sinuate and convergent in anterior 0.75, then arcuate and slightly convergent to hind margin**, very slightly crenulate, hind angles about 110°; glossy, punctures large (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum reddish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.7x as long as wide, about 2.9x as long as pronotum**, sides straight, slightly divergent in basal half, widest at middle, than arcuate to the apex; surface glossy with moderately large punctures (distance between them subequal to their average diameter), apparently forming rows underneath but rather confused, pubescence short, moderately dense and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria stricticollis* has pronotum with sides distinctly angulate at posterior 0.35, punctures moderate, their distance subequal to their average diameter and elytra brownish yellow with punctures small and sparse. *A. quadricollis* has pronotum slightly transverse, reticulate, about 1.2-1.3x as wide as long, with punctures small and sparse, distance between them larger than their average diameter.

**Distribution:** Oregon and California, in the Western Cordillera. **Not yet recorded in Canada.** Rare.

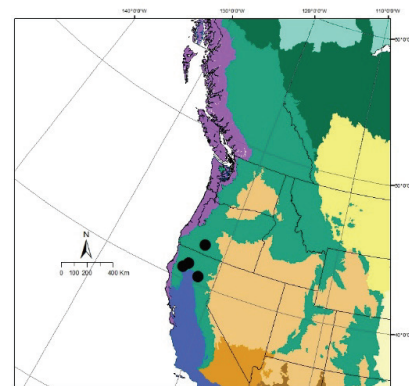
**Seasonality:** From the second to the third week of July.

**Habitats:** Wood rat nests (*Neotoma*).

**Number of specimens examined:** 6, including the holotype.



*Atomaria subrecta* (Casey) - Holotype



## *Atomaria (Atomaria) tenebrosa* (Casey)

(Syn.: *A. melas* (Casey, 1900) **syn. nov.**)

**Length** 1.7-1.9 mm. **Head** dark brown to black; clypeus, mandibles and palpi reddish to yellowish brown; eyes small, about 25% width of head. **Antennae** reddish brown with club dark brown to black; A1 arcuate, about 2.0x as long as wide, about 2.0x as long as A2; A2 trapezoidal, about 1.25x as long as A3; A3 and A5 subequal, fusiform, about 2x as long as A4; A4 and A6 subquadrate, about 0.5x as long as A5; A7 trapezoidal, about 2x as long as A8; A8 transverse; A9 and A10 transverse; A11 subquadrate. **Pronotum dark brown to black; transverse, about 1.35x (1.3-1.4x) as wide as long; sides slightly arcuate and convergent in anterior 0.7, sometime very slightly emarginate, then straight or slightly arcuate and very slightly crenulate and convergent to hind margin**, anterior margin about 0.8x as wide as posterior margin, hind angles about 105°; glossy, punctures large (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum dark brown to black. Prosteronum reddish to dark brown; meso- and metaventrites dark brown to black. Legs reddish brown. **Elytra dark brown**, about 1.65x (1.6-1.7x) as long as wide, about 2.9x (2.8-3.0x) as long and 1.2x as wide as pronotum, sides straight and slightly convergent in basal half, then arcuate to the apex; surface glossy with moderately large punctures (distance between them subequal to their average diameter), confused, pubescence short, sparse and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria patens* has pronotum widest at posterior 0.35, punctures small and sparse, distance between them larger than their average diameter and elytra shorter, about 1.6x as long as wide, with punctures small and sparse. *A. alpina* and *A. planulata* have pronotum reddish brown, with sides straight and subparallel from anterior 0.35 to 0.85 and elytra reddish brown, elongate, about 1.7-1.8x as long as wide, widest behind middle. *A. lyricollis* has pronotum with sides strongly sinuate in posterior 0.35 and subparallel in posterior 0.15.

**Distribution:** New Brunswick west to Alberta and Alaska, south to Colorado, in the Boreal, Northern Appalachian, Mixedwood Plain, and the Western Cordillera zones. **First record for Canada, in New Brunswick, Quebec, Ontario, Alberta, and Alaska.** Uncommon.

**Seasonality:** From the third week of April to the third week of October, peak on the second and the third week of June.

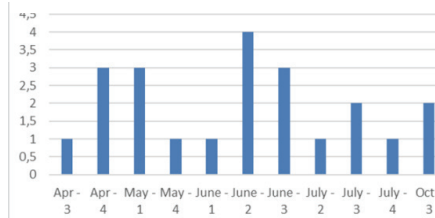
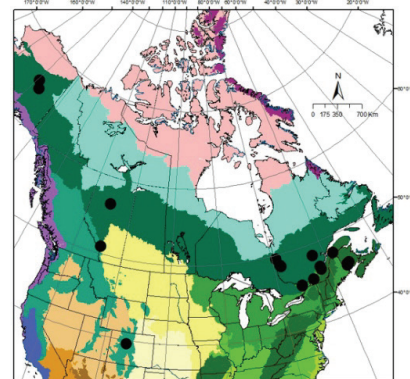
**Habitats:** Red pine forests, jack pine forests, red spruce forests with red maple and balsam fir, old growth white spruce and balsam fir, mixed forest edges and opening, mixed white birch and trembling aspen forests, white birch forests with willow and white spruce.

**Number of specimens examined:** 22, including the holotype.

**DNA Barcode Index Number (BIN):** BOLD:ACG2996



*Atomaria (Atomaria) tenebrosa*





## *Atomaria (Atomaria) thujaplicatae* Pelletier n. sp.

**Length** 1.9 mm. **Head** reddish brown; palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; A1 arcuate, about 1.67x as long as wide, about 1.67x as long as A2; A2-A3 trapezoidal, A2 about 1.15x as long as A3, A3 about 2.5x as long as A4; **A4, A6 to A8 subequal, strongly transverse**, about 0.5x as long to A5; A5 subquadrate, about 2x as long as A6; **A7 strongly transverse, about 1.25x as long as A8; A9 and A10 strongly transverse**; A11 nearly subquadrate, apically symmetrically conical. **Pronotum reddish brown, transverse, about 1.35x as wide as long; sides straight and convergent in anterior 0.33, strongly sinuate in middle 0.33 then convergent, arcuate and slightly crenulate to hind margin, about as wide at anterior 0.33 than at posterior 0.33**, hind angles about 100°; glossy, punctures moderately large and dense (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum yellowish brown. Legs yellowish brown. **Elytra yellowish brown, about 1.7-1.75x as long as wide, about 2.75x as long as pronotum**, sides straight, slightly convergent in basal half, widest at middle, arcuate to the apex; surface glossy with moderately large punctures (distance between them subequal to smaller than their average diameter), pubescence short, moderately dense and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria californica* and *A. subrecta* have antennae with A4 and A6 subquadrate, A5 fusiform and A7 trapezoidal. *A. umbrina* has pronotum with sides straight, subparallel in middle third and elytra with pubescence suberect.

**Holotype:** Canada, British Columbia, New Westminster Co., Anmore, Buntzen Lake, 11.IX.1950, from *Thuja plicata*, Forest Insect Survey ♂ (CNC, Acc. No. 24583).

**Paratype:** Canada, British Columbia, Rupert Co., Port McNeill, Cluxewe, 3.VI.1953, from *Abies amabilis*, Forest Insect Survey (IRM).

**Distribution:** British Columbia, in the Marine West Coast Forest zone. Rare.

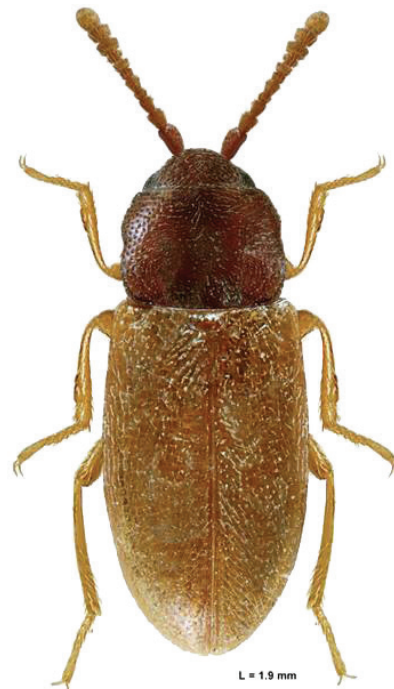
**Seasonality:** First week of June and second week of September. Seems to be active in spring and falls.

**Habitats:** Western cedar and amabilis fir forests.

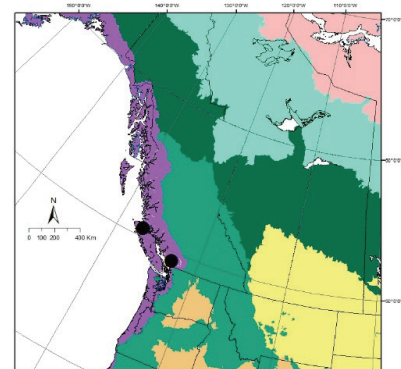
**Number of specimens examined:** 2.

**Etymology:** *thujaplicatae* derived from the Western Cedar (*Thuja plicata*), the tree where the holotype specimen was collected.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:1C9E3FA0-501F-4CDF-9721-42EEF4ECFB38](https://zoobank.org/act:1C9E3FA0-501F-4CDF-9721-42EEF4ECFB38)



*Atomaria (Atomaria) thujaplicatae* Pelletier  
Holotype



## *Atomaria (Atomaria) umbrina* (Gyllenhal)

**Length** 1.6-1.9 mm. **Head** dark brown to black; clypeus, mandibles and palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown; A1 arcuate, about 1.85x as long as wide, about 2.2x as long as A2; A2 trapezoidal, about 1.25x as long as A3; A3-A5 subquadrate, A3 about 1.33x as long as A4, A4 and A5 subequal, about 1.5x as long as A6; **A6-A8 transverse**, A6 and A8 subequal, about 0.67x as long as A7; **A9 and A10 strongly transverse**; A11 subquadrate, symmetrically arcuate at apex. **Pronotum dark brown to black; transverse, about 1.32x (1.3-1.35x) as wide as long; sides straight and convergent in anterior 0.35, straight and subparallel to posterior 0.35, then straight and convergent to hind margin**, hind angles about 105°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Sternum dark brown. Legs reddish brown. **Elytra reddish to dark brown**, about 1.65x (1.6-1.7x) as long as wide, about 2.65x (2.45-2.75x) as long as pronotum, sides straight and convergent in basal 0.4, then arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, **pubescence short, moderately dense and suberect**. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria thujaplicatae* has pronotum with sides strongly sinuate in middle third, about as wide at anterior third than at posterior third. All other *Atomaria* species with pronotum subparallel at middle never have antennae with A6-A10 transverse and elytra with pubescence suberect.

**Distribution:** New Brunswick west to British Columbia, in the Boreal, Northern Appalachian, Mixedwood Plain, and Western Cordillera zones. **First record for Canada, in Quebec, Ontario, Alberta, and British Columbia.** Uncommon. **Adventive from Europe.**

**Seasonality:** From the third week of April to the third week of November, mostly between the last week of April and the last week of May, peaking on the last week of September. Seems to be more active in spring and in fall.

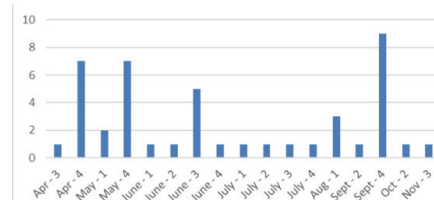
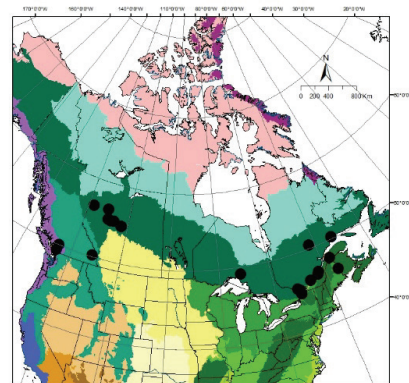
**Habitats:** Mixed forest with white pines and northern hardwood forests.

**Number of specimens examined:** 44.

**DNA Barcode Index Number (BIN):** BOLD:ADF0428



*Atomaria umbrina*



## *Atomaria (Atomaria) undulata* (Casey)

(Syn.: *A. cribripennis* (Casey, 1900) **syn. nov.**; *A. castanea* (Casey, 1900) **syn. nov.**)

**Length** 1.7-2.0 mm. **Head** reddish brown; palpi yellowish brown; eyes small, about 20% width of head. **Antennae** reddish brown with club yellowish brown; A1 arcuate, about 2x as long as wide, about 1.7x as long as A2; A2-A3 subequal, A2 trapezoidal, A3 fusiform, about 1.67x as long as A4; A4 subquadrate, about 0.75x as long to A5; A5 trapezoidal, about 2x as long as A6; A6 and A8 subequal, transverse, about 0.67x as long as A7; A7 subquadrate; A9 and A10 strongly transverse; A11 subquadrate, apically symmetrically conical. **Pronotum reddish brown, transverse, about 1.38x (1.3-1.45x) as wide as long; sides convergent in anterior 0.33, sinuate in middle 0.33 then straight, convergent and not crenulate in posterior 0.33, widest and subequal at anterior and posterior 0.33**, hind angles about 105°; glossy, punctures moderately large (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum yellowish brown. Sternum reddish brown. Legs yellowish brown. **Elytra yellowish brown**, about 1.6x (1.55-1.65x) as long as wide, about 2.8x (2.65-3.0x) as long as pronotum, sides straight, slightly convergent in basal half, widest at middle, arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, apparently forming rows underneath, pubescence short, moderately dense and appressed. Abdominal ventrites yellowish brown.

**Similar species:** *Atomaria cribricollis* has pronotum dark brown to black, with punctures very large and dense (distance between them smaller than their average diameter). *A. pseudotsugae*, *A. dispersa*, *A. longipennis*, and *A. constricta* have pronotum widest at posterior 0.35.

**Distribution:** New Brunswick west to Alaska and British Columbia, south to Arizona and California, mostly in the Boreal, Northern Appalachian, Mixedwood Plain, and Western Cordillera zones; also in the Temperate Prairie, Marine West Coast Forest, Gila Mountains, and Hot Desert zones. **First record for Canada, in New Brunswick, Quebec, Ontario, Alberta, British Columbia, and Alaska.** Common.

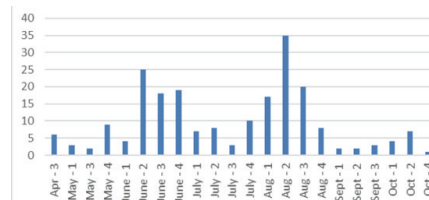
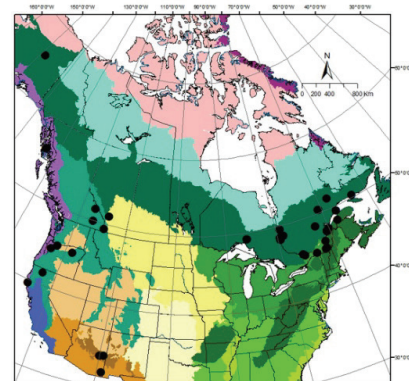
**Seasonality:** From the third week of April to the last week of October, mostly between the second week of June and the third week of August, peaking on the second week of August, however, apparently less numerous in July.

**Habitats:** Mostly in black spruce forests, intact or recently burned and in white cedar forests with balsam firs; also in balsam fir forests with white birch, red pine and scotch pine plantations and burning lands with regeneration of *Vaccinium*, *Kalmia* and *Rhododendron*, mostly associated with leaf litter; also in tree trunk under bark, under old grass in leaf or moss, near wood piles, flood debris, and in duff of *Acer macrophyllum*.

**Number of specimens examined:** 216, including the holotype.



*Atomaria (Atomaria) undulata*  
Holotype





## *Atomaria (Atomaria) versa* Grouvelle

(Syn.: *A. soror* (Casey, 1900), preoccupied by *A. soror* Ganglbauer)

**Length** 1.6 mm. **Head** dark reddish brown to black; clypeus, mandibles and palpi reddish brown; eyes about 30% width of head. **Antennae** reddish to dark brown, often with club dark brown; A1 arcuate, about 2x as long as wide, about 1.6x as long as A2; A2 fusiform, about 1.4x as long as A3; A3 trapezoidal, about 1.35x as long as A4; A4, A6 and A8 subequal, subquadrate, about 0.8x as long to A5; **A5 subequal to A7, oval**, about 1.4x as long as A6; A9 and A10 strongly transverse; A11 subquadrate, asymmetrically arcuate. **Pronotum dark reddish brown to black; transverse, about 1.3-1.35x as wide as long; sides slightly convergent and arcuate in anterior 0.65, widest at posterior 0.35, then straight and slightly convergent to hind margin**, hind angles about 110°; glossy, **punctures moderately large** (distance between them subequal to their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Prosternum dark brown; meso- and metaventrite dark reddish brown. Legs yellowish brown. **Elytra yellowish brown, often with a dark diffuse spot behind middle**, about 1.65x as long as wide, about 2.9x as long as pronotum, sides straight and slightly convergent in basal 0.6, then arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), confused, **pubescence short, sparse and suberect**. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria puella* has antennae with A8 transverse, pronotum sparsely punctate, distance between punctures wider than their average diameter, sides straight and subparallel in middle third. *A. puelloides* has antennae with club reddish to yellowish brown and pronotum with sides distinctly sinuate at middle.

**Distribution:** Western North America from Alaska south to California, in the western Boreal and Western Cordillera zones. **First record in Alaska.** Rare.

**Seasonality:** From the first to the second week of July.

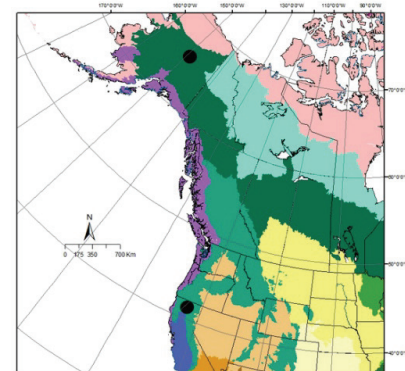
**Habitats:** Unknown.

**Number of specimens examined:** 3, including the holotype.

**Remark:** *Atomaria soror* has been described from eastern Europe by Ganglbauer in 1899, shortly before Casey, its name becoming a homonym.



*Atomaria (Atomaria) soror*  
(Casey) - Holotype



## *Atomaria (Atomaria) vespertina* Mäklin

**Length** 1.7-2.0 mm. **Head** dark brown to black; palpi yellowish brown; eyes about 25-30% width of head. **Antennae** reddish brown with club dark brown; A1 arcuate, about 2x as long as wide, about 1.85x as long as A2; A2-A3 trapezoidal, A2 about 1.5x as long as A3, A3 about 1.33x as long as A4; A4 and A6 subequal, subquadrate, about 0.6x as long to A5; A5 elongate, fusiform, about 1.67x as long as A6; A7 trapezoidal, about 1.6x as long as A8; A8 transverse; A9 subquadrate to slightly transverse, A10 transverse; A11 slightly elongate, asymmetrically conical apically. **Pronotum** reddish to dark brown, transverse, about 1.3-1.35x as wide as long; sides straight and convergent in anterior 0.3, usually straight to slightly sinuate and subparallel to posterior 0.2, than arcuate and convergent to hind margin, hind angles about 115°; glossy, **punctures very deep and dense** (distance between them smaller than their average diameter), pubescence moderately short and sparse. Scutellum dark brown. Sternum dark brown. Legs yellowish brown. **Elytra** yellowish brown, about 1.6x as long as wide, about 2.9x as long as pronotum, sides straight, slightly convergent in basal half, widest at middle, arcuate to the apex; **surface glossy with moderately large punctures** (distance between them subequal to larger than their average diameter), apparently forming rows underneath, pubescence short and appressed. Abdominal ventrites reddish brown.

**Similar species:** *Atomaria lineola* and *A. atrata* have pronotum with small and sparse punctures, posterior corners obtuse. *A. pumilio* has pronotum arcuate throughout, widest at middle and elytra elongate, about 1.75x as long as wide. *A. californica* has pronotum with sides strongly sinuate at middle, nearly as wide at anterior 33% than at posterior 33%. *A. cribricollis* has antennae with A9-A10 strongly transverse and pronotum with sides slightly sinuate.

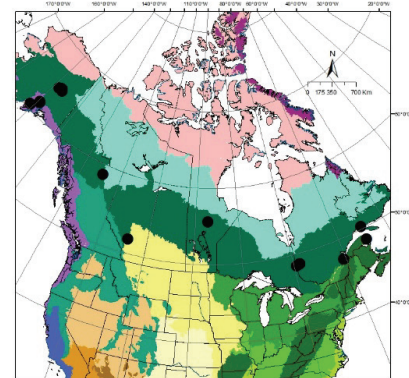
**Distribution:** New Brunswick, Quebec west to British Columbia and Alaska, mostly in the Boreal zone, also in Northern Appalachian, Western Cordillera, Marine West Coast Forest and the Taiga zones. **First record in Quebec, Ontario, Manitoba, and Alberta.** Uncommon. **Holarctic.**

**Seasonality:** From the second week of April to the second week of November, peaking on the first week of June.

**Habitats:** Black spruce forests, partially cut or burned and white cedar forests with balsam fir; also in red pine or scotch pine plantations, trembling aspen forests, white spruce forests, black spruce bogs, mostly on tree trunks under bark; also in leaf litter. Collected on fungi on logs of *Populus tremuloides*.

**Number of specimens examined:** 39.

**DNA Barcode Index Number (BIN):** BOLD:AAP7043



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## *Atomaria (Atomaria) visoni* Pelletier n. sp.

**Length** 1.5–1.7 mm. **Body entirely yellowish brown**; eyes small, about 20% width of head. **Antennae** reddish to yellowish brown; A1 elongate, arcuate, about 2x as long as wide, about 2x as long as A2; A2 trapezoidal, about 0.8x as long as A3; A3 and A5 subequal, fusiform, about 1.67x as long as A4; A4 and A6 subequal, trapezoidal to nearly subquadrate, about 0.6x as long to A5; A7 trapezoidal, about 2x as long as A8; A8 transverse; A9 subquadrate to slightly transverse; A10 transverse; A11 slightly elongate, symmetrically arcuate at apex. **Pronotum transverse, about 1.4x as wide as long; sides slightly arcuate and convergent in anterior 0.65, widest at posterior 0.35, slightly arcuate and convergent to hind margin**, hind angles about 100°; **narrow impression at basal middle covered with small punctures**, remaining punctures moderately small (distance between them larger than their average diameter), **surface with distinct microsculpture** and pubescence moderately short and sparse. Scutellum, sternum and legs yellowish brown. **Elytra yellowish brown, about 1.55x (1.5–1.6x) as long as wide**, about 2.7x as long as pronotum, sides straight and convergent basally, **widest at anterior 0.4**, then arcuate to the apex; surface glossy with moderately small punctures (distance between them larger than their average diameter), rather confused, pubescence short, sparse and appressed. Abdominal ventrites yellowish brown.

**Similar species:** All similar species (*Atomaria nigrirostris*, *A. impressa*, *A. impressicollis*) have darker head and pronotum, usually contrasting with paler elytra.

**Holotype:** Canada, Alberta, Waterton Lakes National Park, 25 .VI.1980, I.M. Smith, (CNC, Acc. No. 24584).

**Paratypes:** Same data as holotype: 3 (CNC, IRM). **British Columbia**, Cowichan Co., Mesachie Lake Forest Experiment Station, 2.VII.1979, I. Smith: 1 (CNC).

**Distribution:** Alberta and British Columbia, in the Western Cordillera and Marine West Coast Forest zones. Rare.

**Seasonality:** From the last week of June to the first week of July.

**Habitats:** Mink (*Neovison vison*) nest within beaver lodge.

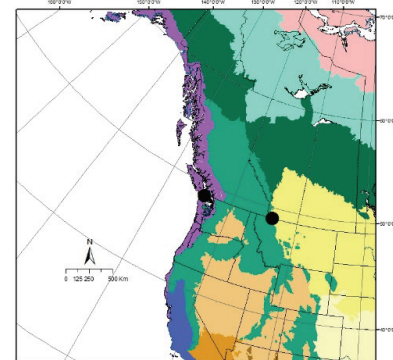
**Number of specimens examined:** 4.

**Etymology:** *visoni* derived from the latin name of the mink, the nest in which the holotype was collected.

**ZooBank LSID:** [urn:lsid:zoobank.org:act:6FC6967E-778F-47A1-B1FF-27CD2544FAA3](https://zoobank.org/act:6FC6967E-778F-47A1-B1FF-27CD2544FAA3)



*Atomaria (Atomaria) visoni* Pelletier  
Holotype





## ***Curelius japonicus* (Reitter)**

(Syn.: *Ephistemus perminutus* Casey, 1924 **syn. nov.**)

**Length** 0.9-1.2 mm. **Body** entirely yellowish brown, about 1.55-1.6x as long as wide. **Eyes** large, about 35-40% width of head. **Antennae** with **A1** short, recurved, about 1.5x as long as wide, about 0.9x as long as **A2**; **A2** elongate, about 1.25x as long as **A3**; **A3** fusiform, about 1.6x as long as **A4**; **A4** slightly elongate, about 1.25x as long as **A5**; **A5** subquadrate, about 2x as long as **A6**; **A6-A8** subequal, slightly transverse; **A9-A10** subequal, **A9** slightly transverse, **A10** strongly transverse and **A11** slightly elongate, asymmetrically subconical. **Pronotum** strongly transverse, about 2.05x (1.9-2.2x) as wide as long; sides arcuate in anterior 0.6, straight and slightly divergent in posterior 0.4, widest at base, hind angles about 85°; glossy, punctures very small and sparse (distance between them larger than their average diameter), pubescence minute, nearly invisible. **Elytra** about 1.15x (1.1-1.2x) as long as wide, about 2.65x (2.55-2.75x) as long as pronotum, sides arcuate throughout, widest at anterior 0.25; surface glossy with small punctures.

**Similar species:** *Ephistemus globulus* has body dark brown to black, elytra often paler apically, with punctures minute, almost indistinct. *Tisactia subglabra* has body oblong-oval, about 1.8x as long as wide with punctures small but distinct.

**Distribution:** Very common in southeastern USA; **not recorded yet in Canada**; may occur in extreme southeastern Ontario.

**Seasonality:** Unrecorded.

**Habitat:** Unknown.

**Number of specimens examined:** about 100, mostly from Georgia.

**DNA Barcode Index Number (BIN):** BOLD:ABX0615



***Curelius japonicus***

## *Ephistemus cactophilus* Schwarz

**Length** 1.0-1.1 mm. **Body** entirely yellowish brown, about 1.4-1.5x as long as wide. **Eyes** small, about 20% width of head. **Antennae** with **A1** slightly elongate and recurved, about 1.33x as long as wide, subequal to **A2**; **A2** elongate, about 1.15x as long as **A3**; **A3** fusiform, about 1.75x as long as **A4**; **A4-A5** subequal, slightly elongate, about 2x as long as **A6**; **A6-A8** subequal, transverse; **A9-A10** subequal, transverse and **A11** slightly elongate, symmetrically subconical. **Pronotum** strongly transverse, about 1.9-2.1x as wide as long; sides arcuate throughout, slightly emarginate anteriorly, widest at base, hind angles about 75°; glossy, punctures minute and sparse (distance between them 4-6x larger than their average diameter), pubescence minute, nearly invisible. **Elytra** about 1.1x as long as wide, about 2.6x as long as pronotum, sides arcuate throughout, widest at anterior 0.35; surface glossy with small punctures and minute pubescence.

**Similar species:** *Ephistemus globulus* has body dark brown to black, elytra often paler apically, with punctures minute, almost indistinct on elytra. *Tisactia subglabra* has body oblong-oval, about 1.8x as long as wide with punctures small but distinct.

**Distribution:** Southwestern USA, Arizona. Not yet recorded in Canada.

**Seasonality:** Unknown.

**Habitat:** Apparently associated with cactus.

**Number of specimens examined:** 4 including the holotype and 3 paratypes.



*Ephistemus cactophilus* Casey  
Holotype

## *Ephistemus globulus* (Paykull)

(Syn.: *E. apicalis* LeConte, 1863)

**Length** 1.0-1.1 mm. **Body** about 1.5x as long as wide. **Head** dark brown to black; **eyes** about 33% width of head. Antennae reddish brown with club dark brown, A1 stout, slightly elongate and straight, about 1.25x as long as wide, about 1.25x as long as A2; A2-A3 subequal, A2 elongate, A3 fusiform, about 2x as long as A4; A4-A5 subequal, subquadrate, about 2x as long as A6; A6-A8 subequal, transverse; A9-A10 subequal, transverse and A11 slightly elongate, asymmetrically subconical. **Pronotum** dark reddish brown to black, strongly transverse, about 1.65-1.7x as wide as long; sides arcuate throughout, slightly emarginate anteriorly, widest at base, hind angles about 65°; opaque, isodiametric reticulation at middle, elongate reticulation at sides, punctures minute and sparse (distance between them 4-6x larger than their average diameter), **pubescence** minute and very sparse. **Elytra** dark reddish brown to black anteriorly from 35% at middle to 60% at sides, diffusely reddish brown apically, about 1.1-1.2x as long as wide, about 2.6x as long as pronotum, sides arcuate throughout, widest at anterior 0.35; surface glossy with minute punctures and pubescence.

**Similar species:** *Ephistemus cactophilus* has body entirely yellowish brown, with punctures small and distinct on elytra. *Tisactia subglabra* has body oblong-oval, about 1.8x as long as wide with punctures small but distinct throughout. *Curelius japonicus* is entirely reddish brown with larger eyes, about 35-40% as wide as head, pronotum more transverse, about 2.0-2.5x as wide as long and punctures small but distinct throughout.

**Distribution:** From Newfoundland west to British Columbia, south to Louisiana, Texas, and Oregon, in the Northern Appalachian, Mixedwood Plain, Southeastern USA Plain Forest, and Marine West Coast Forest zones; also in the Boreal, Western Cordillera, and the Dry Prairie zones. **First record in British Columbia.** Probably common. **Adventive from Europe.**

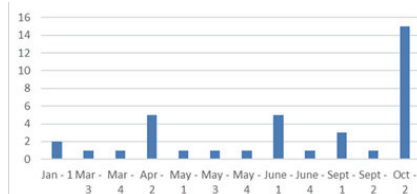
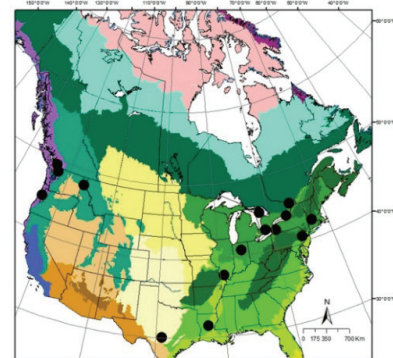
**Seasonality:** From the first week of January to the second week of October, peaking on the second week of October, probably active throughout the year.

**Habitat:** Lawns, in grass clipping (Hatch, 1962); also on old rotting hay and barnyard litter.

**Number of specimens examined:** 37.



*Ephistemus globulus*



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## *Tisactia subglabra* Casey

**Length** 1.0-1.1 mm. **Body** about 1.8x as long as wide. **Head** dark brown to black; **eyes** about 30-35% width of head. Antennae with A1 stout, slightly elongate and straight, about 1.5x as long as wide, about 1.1-1.15x as long as A2; A2 elongate, about 1.15x as long as A3; A3 fusiform, about 1.75x as long as A4; A4-A5 subequal, subquadrate, about 2x as long as A6; A6-A8 subequal, transverse; A9-A10 subequal, strongly transverse and A11 slightly elongate, apically arcuate. **Pronotum** dark brown to black, strongly transverse, about 1.6x (1.55-1.65x) as wide as long; sides slightly arcuate in anterior half, straight and subparallel in posterior half, widest at base, hind angles about 90°; opaque, isodiametric reticulation throughout, punctures small and sparse (distance between them 1-3x larger than their average diameter), **pubescence** minute and very sparse. **Elytra** dark brown, about 1.2x (1.15-1.25x) as long as wide, about 2.05x (1.9-2.2x) as long as pronotum, sides arcuate throughout, widest at anterior 0.35-0.4; surface opaque with small punctures and pubescence.

**Similar species:** *Curelius japonicus* and all species of *Ephistemus* has body broadly oval, about 1.4-1.6x as long as wide with punctures minute, almost indistinct.

**Distribution:** Quebec south to Georgia, Louisiana and Oklahoma, mostly in the Southeastern USA Plain Forest zone; also in the Mixedwood Plain and the Southern Appalachian zones (in the Ozark Mountains). **First record for Canada, in Quebec.** Rare.

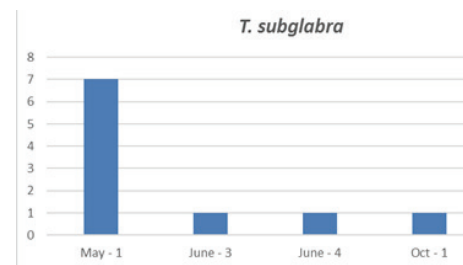
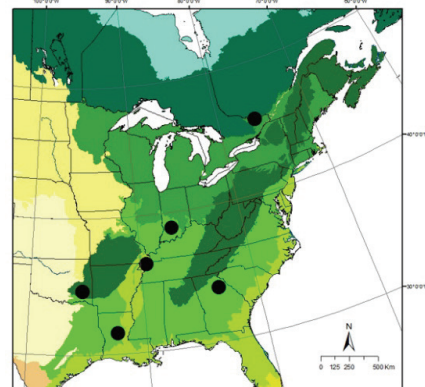
**Seasonality:** From the first week of May to the first week of October, peaking on the first week of May, apparently mostly in the spring.

**Habitat:** Beaver ponds, within beaver lodges.

**Number of specimens examined:** 12, including the holotype.



*Tisactia subglabra*



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