# Dichotomous key to adults of economically important dermestids (Coleoptera: Dermestidae) of Canada and the United States

Erin M. Biggs[1], Andreas Herrmann[2], and Anthony I. Cognato[1*]

[1]Michigan State University, Department of Entomology, 288 Farm Lane, East Lansing, MI 48824, USA

[2]Bremervörder Strasse 123, 21682 Stade, Germany, e-mail: herrmann@coleopterologie.de

* Corresponding author: cognato@msu.edu

**Abstract**

Many species of Dermestidae (Coleoptera) are common scavengers of proteinaceous materials and are economically important pests. Here we provide a checklist and dichotomous key for 45 species of dermestid beetles that are pests in Canada and/or the United States. The key is richly illustrated with photographs, and each species page includes a morphological summary, economic importance, and distribution in Canada and the United States.

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## Introduction

Dermestid beetles are well known for their ability to infest a wide variety of stored products and materials of animal and vegetable origin (Bayer et al. 1972; Beal 1961, 1970, 1998; Bousquet 1990; Hinton 1945; Kadej et al. 2013; Rees 1943; Veer et al. 1991). Larvae feed on dried fish and meats, cheese, dried milk, dried blood, bones, skins and hides, hair, furs, feathers, carpets, wool, silk, cereal products, seeds, some grains, and dead insects (Hinton 1945). The larvae cause the majority of the damage while most adults feed on nectar and pollen (Bayer et al. 1972; Bousquet 1990; Hinton 1945; Rees 1943). Both the larvae and adults of *Dermestes* Linnaeus and *Thylodrias* Motschulsky can damage commodities, but the adult feeding is less significant (Bousquet 1990; Hinton 1945). In nature, many dermestid species can be found as scavengers in the nests of other insects, arthropods, birds, and small mammals (Beal 1954a, 1961, 1970; Hinton 1945; Kingsolver 2002).

Dermestid larvae are densely covered with long or short spinulate setae, which is one of many characters that most obviously separates the family from other beetles (Rees 1943). The unique appearance or habits of some genera provide diagnostic characters. *Dermestes* is distinguished from most other genera by their large size and absence of a median ocellus (Hinton 1945). Mature larvae of this genus bore into materials like wood, cork, cotton, mortar, lead, books, plaster, and vegetable fiber to pupate (Hinton 1945). A scale-covered body and deep antennal cavities distinguish *Anthrenus* Geoffroy (Beal 1998; Hinton 1945). *Thorictodes* Reitter is relatively minute and lacks compound eyes (Beal 1961, 2003). A single species represents *Thylodrias* whose adults do not resemble other dermestids because the males have seven externally visible sternites and the females are wingless and larviform (Beal 2003; Bousquet 1990; Hinton 1945). The presence of a single median ocellus and general appearance of the larvae are the main characters that relate this genus to other members of Dermestidae (Hinton 1945; Mertins 1981). Identification to species level typically requires examination of antennae, setae, and some cases the genitalia.

Dermestidae consists of 66 genera and 1,648 valid worldwide species and subspecies, with approximately 192 species recorded from North America (Háva 2018); both species counts have increased by roughly 10 percent, since Háva (2018) as reported by Háva and Herrmann (2021). Most available Nearctic Dermestidae keys concern taxa of a genus or tribe. Few have been published in the last 20 years. Keys to stored-product pests often include other insect families and only the most common dermestid pests (Bousquet 1990). Thus, an updated and more comprehensive key of species of pest dermestids would aid in their identification. Following the nomenclature of Háva's (2015) catalogue of Dermestidae, this key includes 45 economically significant species found in the United States and Canada based on Beal's ratings of pest status of each species (Beal 2003). We

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included species only occasionally reported as pests as well as notorious pest species. The intent of this key is to provide pest managers and diagnosticians with a tool for identifying the potential source of a dermestid infestation in an indoor environment. Occasionally, species that occur in the wild may be found indoors and these species are discussed in the species pages of morphologically similar species.

Our key is based on morphological features of adults. A key for larval identification was not included because infestations may not be known until adults appear in pest monitoring traps or are found at windows or indoor lights (Robinson 2005) and it is very difficult to use dermestid larvae for species determination (Kadej et al. 2013). A key to the genera of dermestid larvae can be found in Volume 2 of Stehr's Immature Insects (Beal 1991). Photos of male genitalia were not included given that these are not easily observed, but the taxon pages include links to AH's website (dermestidae.com) where photos of male genitalia are available for most species in this key.

## Materials and Methods

The keys of Beal (1956, 1970, 1998, 2003), Bousquet (1990), Casey (1900), Halstead (1981), Hinton (1945), Kadej and Háva (2016), and Kingsolver (2002) were modified to create this key. Beal (2003) and Kingsolver (2002) guided the first eight couplets for the key to genera. The subsequent couplets were similarly arranged. Couplets 12 and 16 were written using diagnostic characters from Hinton (1945). A portion of couplet 43 was written based on the description of *Trogoderma anthrenoides* (Sharp) (being now a synonym of *T. serraticorne*) from Beal (1961). In couplet 27 the subspecies of *Attagenus unicolor* (Brahm) are not distinguished since their habits do not differ, but they are separated in the taxon pages because of the species' significant pest status. Subspecies for other species are listed on the species page but not diagnosed. Information included in the species pages was also gleaned from the above literature.

For some couplets, male or female specimens better facilitate species identification. Females often have more antennal club segments as compared to the males and for some genera the arrangement of setae is often a secondary sexual character (e.g., *Dermestes*). However, there are exceptions to these observations even within genera (e.g., male *Anthrenus museorum* have more antennal club segments than females, whereas the clubs of the two sexes in *A. verbasci* are the same). Observation of the genitalia is the best determination of the sex.

Approximately 500 specimens were examined from the Texas A&M University Insect Collection (TAMU, College Station, Texas), the Field Museum of Natural History Collection of Insects, Arachnids, and Myriapods

Table 1. Checklist of 45 dermestid species reviewed for this key. References to current taxonomic status are cited in the species pages.

| |
|---|
| **Subfamily**: Attageninae Laporte de Castelnau, 1840 |
| **Tribe**: Attagenini Laporte de Castelnau, 1840 |
| *Attagenus brunneus* Faldermann, 1835 |
| *Attagenus cyphonoides* Reitter, 1881 |
| *Attagenus fasciatus* (Thunberg, 1795) |
| *Attagenus lobatus* Rosenhauer, 1856 |
| *Attagenus pellio* (Linnaeus, 1758) |
| *Attagenus rufipennis* LeConte, 1859 |
| *Attagenus unicolor* ssp. *japonicus* Reitter, 1877 |
| *Attagenus unicolor* ssp. *unicolor* (Brahm, 1791) |
| *Novelsis horni* (Jayne, 1882) |
| *Paranovelsis aequalis* (Sharp, 1902) |
| *Paranovelsis varicolor* (Jayne, 1882) |
| **Subfamily**: Dermestinae Latreille, 1804 |
| **Tribe**: Dermestini Latreille, 1804 |
| *Dermestes (Dermestes) ater* DeGeer, 1774 |
| *Dermestes (Dermestinus) carnivorus* Fabricius, 1775 |
| *Dermestes (Dermestinus) fasciatus* LeConte, 1854 |
| *Dermestes (Dermestinus) frischii* Kugelann, 1792 |
| *Dermestes (Dermestes) lardarius* Linnaeus, 1758 |
| *Dermestes (Dermestinus) maculatus* DeGeer, 1774 |
| *Dermestes (Dermestinus) marmoratus* Say, 1823 |
| *Dermestes (Dermestes) nidum* Arrow, 1915 |
| *Dermestes (Dermestes) peruvianus* Castelnau, 1840 |
| *Dermestes (Dermestes) signatus* LeConte, 1874 |
| **Subfamily**: Megatominae Leach, 1815 |
| **Tribe**: Anthrenini Gistel, 1848 |
| *Anthrenus (Anthrenops) coloratus* Reitter, 1881 |
| *Anthrenus (Anthrenus) flavipes* LeConte, 1854 |
| *Anthrenus (Helocerus) fuscus* Olivier, 1789 |
| *Anthrenus (Anthrenus) lepidus* LeConte, 1854 |
| *Anthrenus (Florilinus) museorum* (Linnaeus, 1761) |
| *Anthrenus (Anthrenus) pimpinellae* Fabricius, 1775 |
| *Anthrenus (Anthrenus) scrophulariae* (Linnaeus, 1758) |
| *Anthrenus (Nanthrenus) verbasci* (Linnaeus, 1767) |
| **Tribe**: Megatomini Leach, 1815 |
| *Megatoma (Megatoma) cylindrica* (Kirby, 1837) |
| *Megatoma (Megatoma) variegata* (Horn, 1875) |
| *Orphinus fulvipes* (Guérin-Méneville, 1838) |
| *Reesa vespulae* (Milliron, 1939) |
| *Trogoderma glabrum* (Herbst, 1783) |
| *Trogoderma granarium* Everts, 1898 |
| *Trogoderma grassmani* Beal, 1954 |
| *Trogoderma inclusum* (LeConte, 1854) |
| *Trogoderma serraticorne* (Fabricius, 1792) |
| *Trogoderma simplex* Jayne, 1882 |
| *Trogoderma sinistrum* Fall, 1926 |
| *Trogoderma sternale* Jayne, 1882 |
| *Trogoderma teukton* Beal, 1956 |
| *Trogoderma variabile* Ballion, 1878 |
| **Subfamily**: Thorictinae Agassiz, 1846 |
| **Tribe**: Thaumaphrastini Anderson, 1949 |
| *Thorictodes heydeni* Reitter, 1875 |
| **Subfamily**: Trinodinae Casey, 1900 |
| **Tribe**: Thylodriini Semenov-Tian-Shansky, 1909 |
| *Thylodrias contractus* Motschulsky, 1839 |

(FMNH, Chicago, Illinois), the A.J. Cook Arthropod Research Collection (MSUC, East Lansing, Michigan), the Santa Barbara Museum of Natural History (SBMNH, Santa Barbara, California), the University of Alaska Museum Insect Collection (UAM, Fairbanks, AK) and the collection of Andreas Herrmann.

Specimens were photographed using a Canon EOS 5D Mark II with a MP-E 65 mm lens mounted on a Stackshot rail. Images were taken using Zerene Stacker (version 1.04) and EOS Utility (version 2.10.2.0), processed using Helicon Focus (version 7.6.1 Pro), and edited using Adobe Photoshop (version 21.0.1).

Measurements were made at the greatest lengths (parallel to the body axis) the of the body parts.

## Results and Suggestions for Using the Key

We reviewed 45 economic important dermestid species among 10 genera that occur in Canada and the US (Table 1). Specimens of each species were examined. We distilled diagnostic characters from several previously published identification keys with the addition of new key couplets to produce a comprehensive key to these 45 species (see Materials and Methods for details). The resulting dichotomous key is illustrated with photographs of each species and diagnostic characters. A glossary is provided to assist with special terminology (Table 2). Species pages follow terminal couplets and provide further morphological diagnosis, description, distribution records, and economic and/or ecological information.

Specific preparation of dermestid specimens facilitates the identification of species (Fig.1). It is best to 1) soften the specimen in a warm aqueous solution containing pepsin or another protein digestive chemical for several days to a week, 2) remove abdomen and extract the genitalia, 3) rinse the body and abdomen in 100% ethanol, gently blot dry, 4) glue the specimen by the sternum on a glue board (*Aufklebeplättchen*), 5) stretch the antenna straight, 6) glue the abdomen ventral side up behind the beetle, 7) place the genitalia in a drop of glycerine to manually remove remaining tissue,

Table 2. Glossary of selected terms used in the key.

| |
|---|
| **Declivous**: sloping downward |
| **Denticle**: a small tooth |
| **Ensiform**: long and narrow with sharp edges and a pointed tip; sword-shaped |
| **Fascia**: a transverse band or broad line; it is common when it crosses both wings or wing covers |
| **Fossa**: a deep groove or sinus with sharp edges: specifically applied to grooves on the head or sides of prothorax in which the antennae are concealed |
| **Fovea/foveate**: a small pit or depression |
| **Humerus**: the basal exterior angle of elytra |
| **Lamina/ae**: a chitinous plate or plates |
| **Maculation**: the ornamentation or pattern of marking |
| **Marmorate**: veined like a marble, marbled |
| **Recumbent**: horizontal, laying down |

Figure 1. An example of the preferred preparation of a dermestid specimen, *Anthrenus coloratus*.

8) embed genitalia in a mixture of 50% water, 40% Polyvinylpyrrolidon (PVP), 5% glycerine, 5% sorbitol behind the beetle. For all genera position the genitalia in a ventral view except for *Dermestes*, which should have their parameres removed and the median lobe of the aedeagus placed in a lateral view.

Most species can be diagnosed with the characters provided in the key and species pages. However, there are morphologically similar species that rarely occur indoors and are of unknown pest status. These species are listed on the species pages were applicable. *Trogoderma* species in the key are the most challenging to identify given their similarity to each other and to other non-pestiferous species including: *T. angustum* (Solier, 1849), *T. ballfinchae* Beal, 1954, *T. cavum* Beal, 1982, *T. celatum* Sharp, 1902, *T. fasciferum* Blatchley, 1914, *T. mexicanum* Reitter, 1881, and *T. okumurai* Beal, 1964. Dissection of their genitalia as well as of their inner abdominal sternites is often needed to confirm species identity. Provinces/states were not given for species that have broad distributions. New distribution records at the province/state level were not discovered among the examined specimens. This key is limited to species known to be pests in human environments plus a few potential pest species, and therefore cannot be used to identify all dermestid species or genera known from Canada and the United States. If in doubt of an identification, please seek advice from taxonomic experts such as, AH and Jiri Háva. In addition, citation of taxonomic identification tools validates research (Packer et al. 2018); if you use this key to identify organisms for a publication, please cite this work.

*(Key, acknowledgments, and references follow.)*

# Key to economically important dermestids of Canada and the United States

Figure 1. *Dermestes carnivorus* Fabricius




Figure 2A-C. *Thylodrias contractus* Motschulsky (A-B: ♂; C:♀)

| | | |
|---|---|---|
| 1 | Antenna with apical club; abdomen with 5 visible sterna (Fig. 1); elytra present in both sexes | 2 |
| 1’ | Antenna without apical club; abdomen with 7 visible sterna (Fig. 2B); female larviform (without elytra or hind wings; Fig. 2C); male (Fig. A): 2.1-4.2 mm; female: 2.6-5.2 mm | *Thylodrias contractus* Motschulsky |

Figure 3. *Dermestes ater* DeGeer


Figure 4A-B. *Thorictodes heydeni* Reitter


| | | |
|---|---|---|
| 2 (1') | Compound eyes present; legs more or less retractile; hind femur received in groove in coxa (Fig. 3) | 3 |
| 2' | Compound eyes absent; legs not retractile; hind coxa not grooved for reception of femur (Fig 4A-B) | *Thorictodes heydeni* Reitter |

Figure 5. *Trogoderma glabrum,* male

Figure 6. *Orphinus fulvipes*, male antenna

| | | |
|---|---|---|
| 3 (2') | Last segment of the antennal club ovoid, elongate (Fig. 5 ) | 4 |
| 3' | Last segment of the antennal club circular (Fig. 6) | *Orphinus fulvipes* (Guérin-Méneville) |

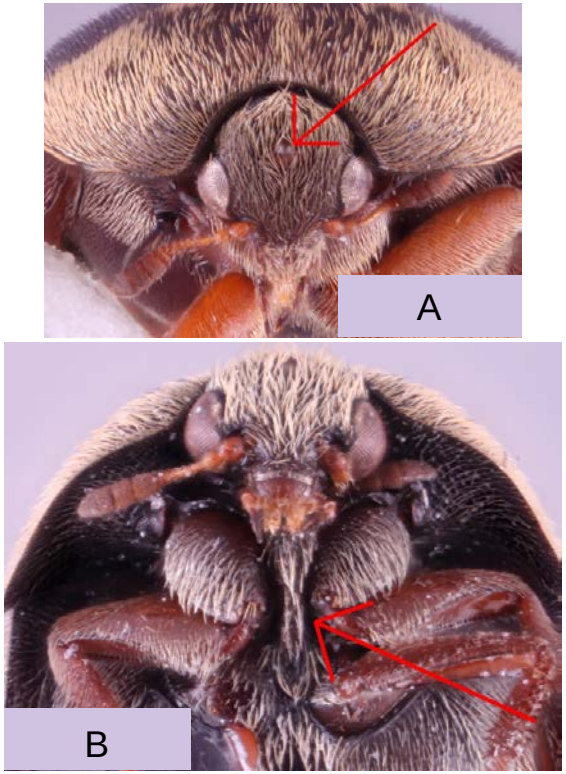



Figure 7a-b. *Attagenus fasciatus* (Thunberg)

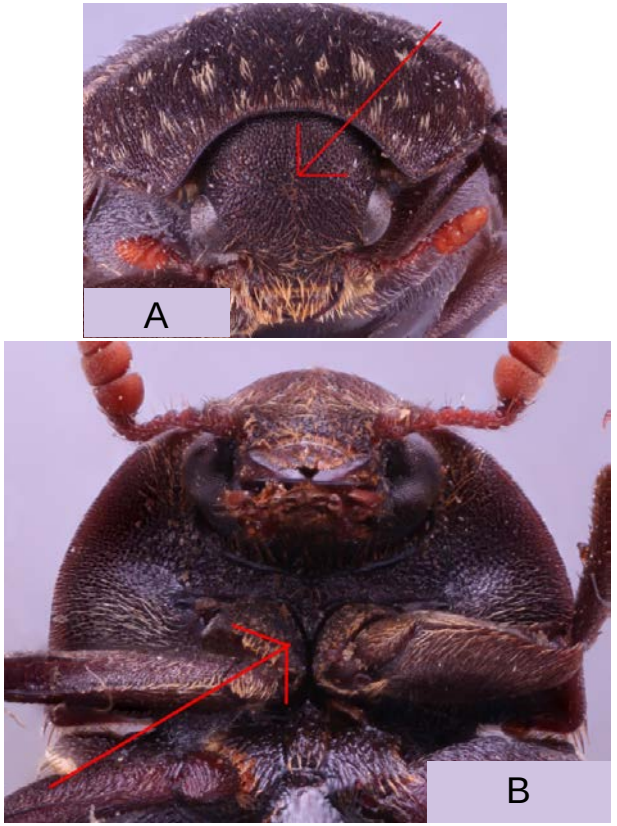
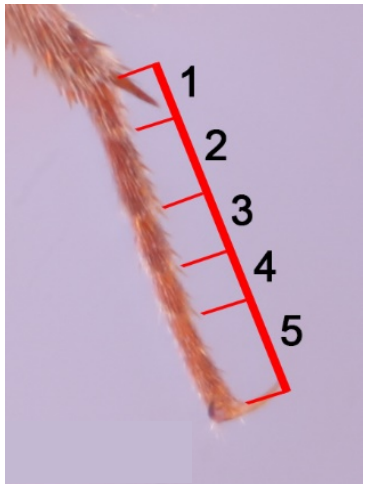



Figure 8a-b. *Dermestes lardarius* Linnaeus

| | | |
|---|---|---|
| 4 (3') | Head with median ocellus (Fig. 7A); procoxae more or less widely separated at apices with prosternal process visibly separating procoxae (Fig. 7B); species usually less than 5.5 mm in length | 5 |
| 4' | Head without median ocellus (Fig. 8A); procoxae large and nearly touching at apices, not visibly separated by prosternal process (Fig. 8B); species 5.5-12.0 mm long | 10 (*Dermestes*) |



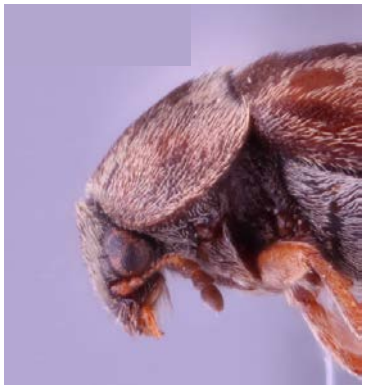



Figure 9. *Attagenus fasciatus* (Thunberg)
Figure 10. *Novelsis horni* (Jayne)

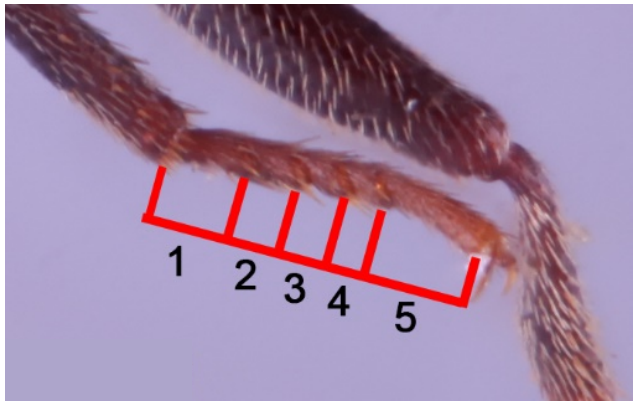



Figure 11. *Megatoma variegata* (Horn)
Figure 12. *Trogoderma variabile* Ballion

| | | |
|---|---|---|
| 5 (4') | First segment of hind tarsus much shorter than second segment (Fig. 9); lateral view of head not hidden by pronotum (Fig. 10); metacoxal lamina usually bearing a distinct tooth or distinctly broadened laterad to insertion of femur | 6 |
| 5' | First segment of hind tarsus as long as or longer than second segment (Fig. 11); lateral view of head hidden by pronotum (Fig. 12); metacoxal lamina with margins subparallel or gradually narrowed | 7 |

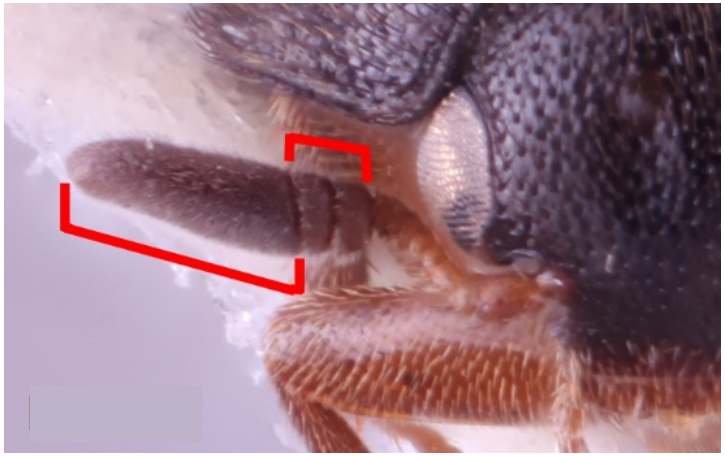


Figure 13. *Attagenus unicolor japonicus* Reitter ♂

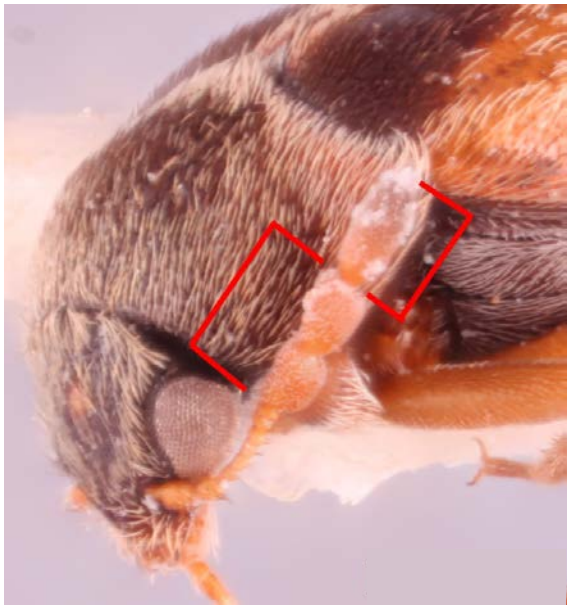


Figure 14. *Novelsis horni* (Jayne) ♂

| | | |
|---|---|---|
| 6 (5') | Segments of antennal club compact; length of terminal segment in male exceeding combined length of 2 preceding segments (Fig. 13) | 19 (*Attagenus*) |
| 6' | Segments of antennal club loosely joined; length of terminal segment in male shorter than combined length of 2 preceding segments (Fig. 14), or all 3 segments greatly elongated with penultimate segment 2x as long as wide | 23 (*Novelsis*) |

Figure 15. *Trogoderma serraticorne* (Fab.)

Figure 16. *Anthrenus scrophulariae* (Linnaeus)

| | | |
|---|---|---|
| 7 (5') | Vestiture of hairs, some of which may be slightly ensiform but never scale-like (Fig. 15) | 8 |
| 7' | Vestiture of flat, conspicuously colored scales (Fig. 16) | 28 (*Anthrenus*) |

Figure 17. *Trogoderma grassmani* Beal

Figure 18. *Megatoma variegata* (Horn)

| | | |
|---|---|---|
| 8 (7') | Antennal fossa posterior margin marked by low, threadlike carina or completely closed behind (Fig. 17) | 9 |
| 8' | Antennal fossa broadly open behind (Fig. 18); posterior margin of cavity with or without medial tumescence but never with a distinct broad margin or threadlike carina | 35 (*Megatoma*) |

Figure 19. *Reesa vespulae* (Milliron)

Figure 20. *Trogoderma granarium* Everts

| | | |
|---|---|---|
| 9 (8') | Antennal fossa posterior margin marked by low, threadlike carina; metasternum with transverse stria at anterior margin; elytra with single, diagonal, subbasal fascia (Fig. 19); length 2.5-4.0 mm | *Reesa vespulae* (Milliron) |
| 9' | Antennal fossa at least partially enclosed behind by knifelike carina (Fig. 20); metasternum without transverse stria near anterior margin; elytral markings variable | 36 (*Trogoderma*) |

## ***Dermestes***

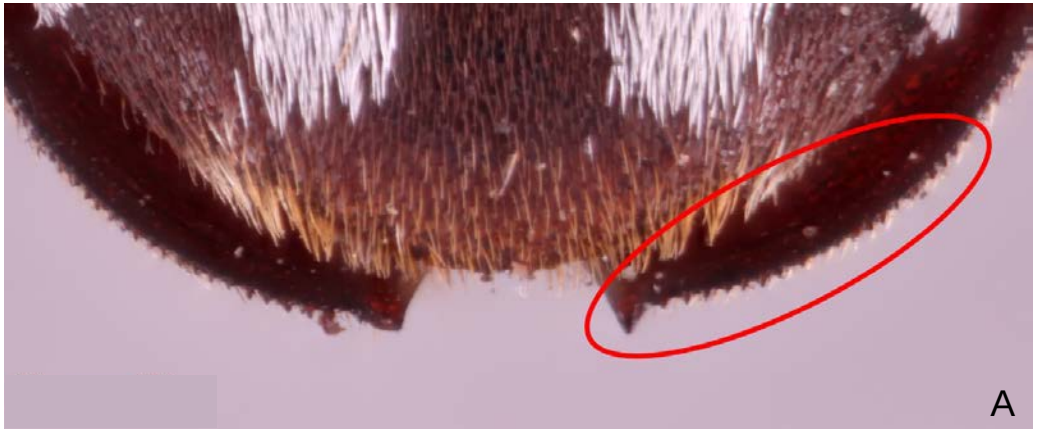




Figure 21A-B. *Dermestes maculatus* DeGeer

| | | |
|---|---|---|
| 10 (4') | Apical margin of elytra with numerous small, acute teeth; mesal apex of each elytron produced caudally to form a large spine (Fig. 21A); length 5.5-10.0 mm | *Dermestes maculatus* DeGeer |
| 10' | Apical margin of elytra more or less smooth; mesal apex of elytron not produced | 11 |

## ***Dermestes***

Figure 22. *Dermestes lardarius* Linnaeus

Figure 23. *Dermestes nidum* Arrow

Figure 24. *Dermestes frischii* Kugelann

| | | |
|---|---|---|
| 11 (10') | Sides of pronotum moderately declivous so that all or nearly all of lateral margin is visible from above (Fig. 22); ventral surface of abdomen with golden-brown or brown setae (Fig. 23) | 12 |
| 11' | Sides of pronotum strongly declivous so that most or all of lateral margin cannot be seen from above; ventral surface of abdomen densely clothed with white or yellowish white setae, lateral dark spots may be present (Fig. 24) | 16 |

## ***Dermestes***

Figure 25. *Dermestes ater* DeGeer

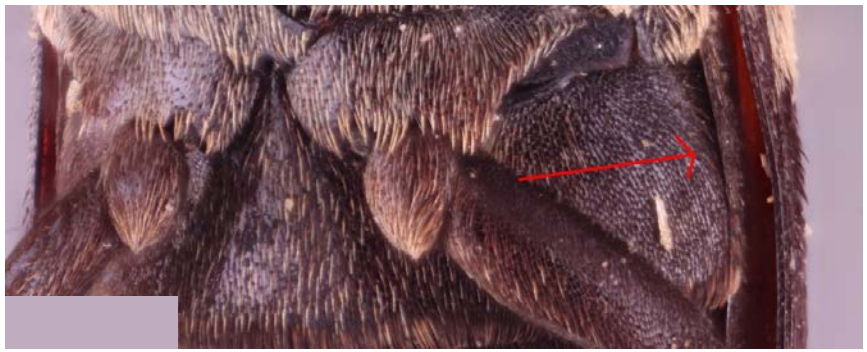


Figure 26. *Dermestes lardarius* Linnaeus

| | | |
|---|---|---|
| 12 (11') | Inner lateral suture of the first abdominal segment inflexed at base to the outer limit of the hind coxae (Fig. 25), becoming deeply excavated at the basal margin | 13 |
| 12' | Inner lateral suture straight (Fig. 26), not inflexed basally and distant at base from the outer limit of the coxae | 14 |

## ***Dermestes***


Figure 27A-B. *Dermestes ater* DeGeer

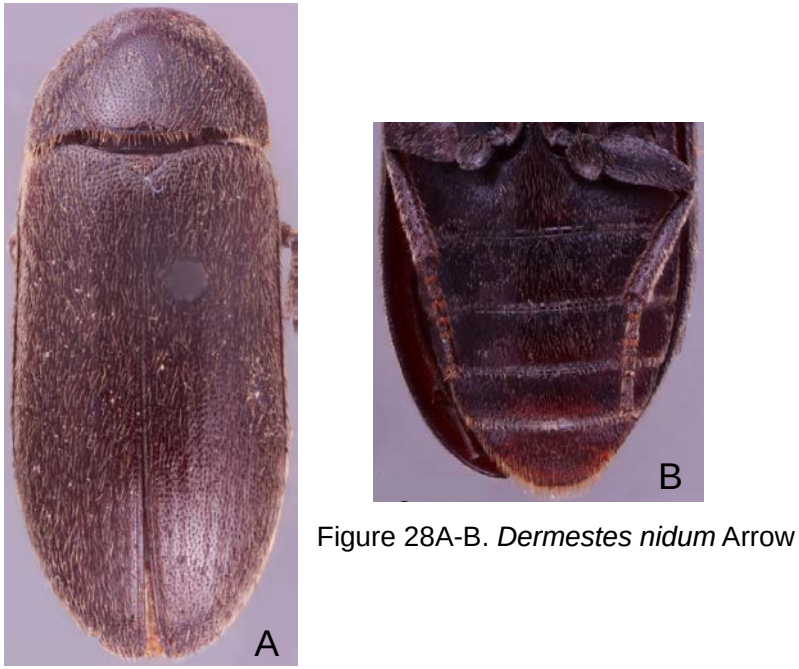



Figure 28A-B. *Dermestes nidum* Arrow

| | | |
|---|---|---|
| 13 (12') | Body oblong-oval; vestiture of abdomen dark, not conspicuous, with two marginal and two discal series of somewhat denuded spots (Fig. 27B); length 7.0-9.0 mm | *Dermestes ater* DeGeer |
| 13' | Body elongate; vestiture of abdomen uniform yellowish, not dense enough to conceal surface (Fig. 28B); length 7.5-9.5 mm | *Dermestes nidum* Arrow |

## *Dermestes*

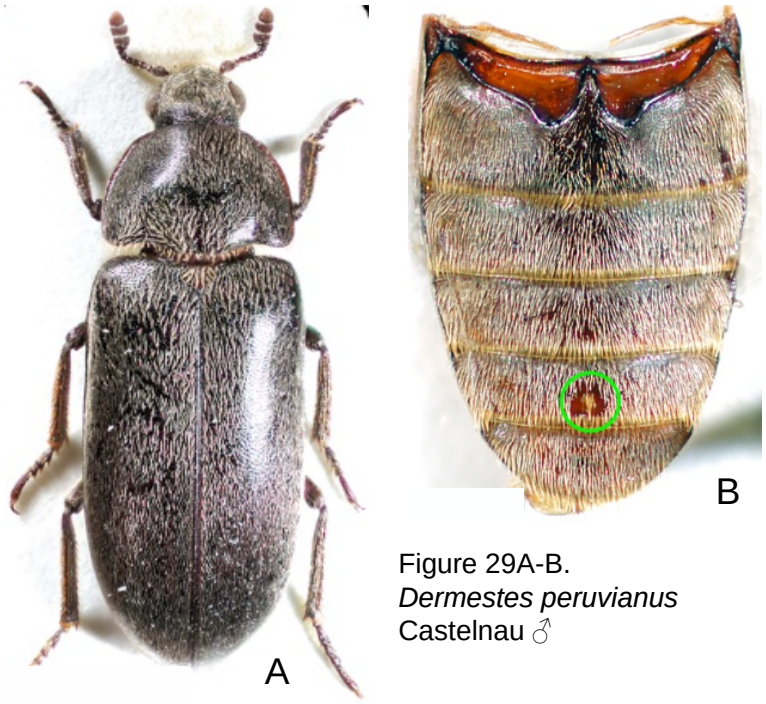



Figure 29A-B. *Dermestes peruvianus* Castelnau ♂

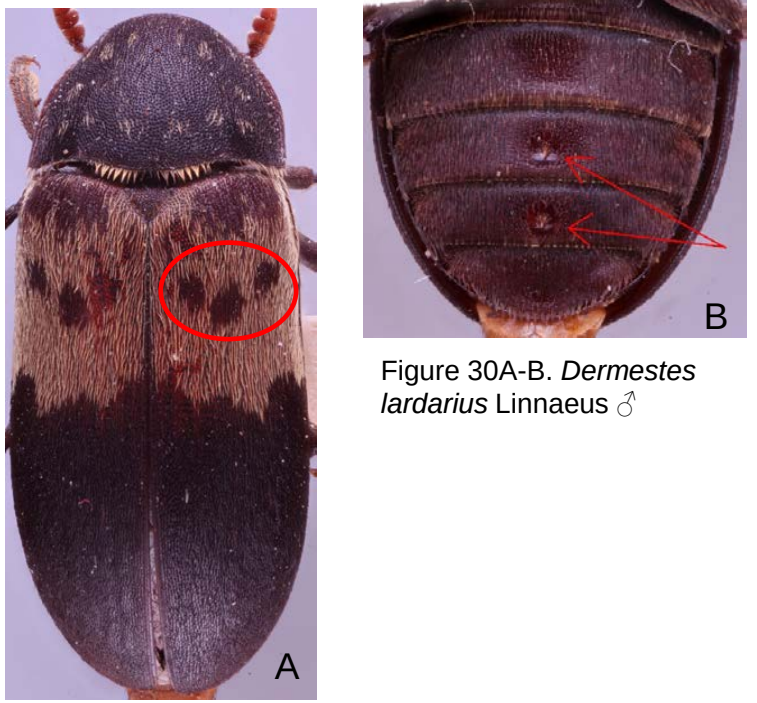



Figure 30A-B. *Dermestes lardarius* Linnaeus ♂

| | | |
|---|---|---|
| 14 (12') | Body and legs throughout uniform dark brown to black in color, the vestiture uniform throughout and consisting largely of golden-grey hairs; elytra clothed rather sparsely with dark pubescence, with golden-grey hairs sparsely and uniformly interspersed throughout (Fig. 29A); male with a median brush of erect hairs only on fourth abdominal sternite (Fig. 29B); length 7.0-11.0 mm | *Dermestes peruvianus* Castelnau |
| 14' | Basal half to three-fifths of each elytron greyish yellow, enclosing three black spots (Fig. 30A); male with a median brush of erect hairs on third and fourth abdominal sternites (Fig. 30B) | 15 |

## ***Dermestes***

Figure 31. *Dermestes lardarius* Linnaeus

Figure 32. *Dermestes signatus* LeConte

| | | |
|---|---|---|
| 15 (14') | Pronotum closely punctured throughout and uniformly clothed with blackish hairs, with small clusters of yellowish-grey hairs interspersed; basal pubescent area of the elytra not extending to the middle and sharply delimited, the hairs of the remainder being entirely black (Fig. 31); length 7.0-9.5 mm | *Dermestes lardarius* Linnaeus |
| 15' | Pronotum finely and sparsely punctured toward the middle, clothed uniformly throughout with longer yellowish-grey pubescence, the elytra dark reddish-brown throughout, the densely pubescent basal area extending well beyond the middle and not sharply defined, the pubescence of the remaining parts being in large part similar in color but sparser (Fig. 32); length 5.7-8.0 mm | *Dermestes signatus* LeConte |

## ***Dermestes***

Figure 33. *Dermestes frischi* Kugelann

Figure 34. *Dermestes fasciatus* LeConte

| | | |
|---|---|---|
| 16 (11') | Elytra black, clothed uniformly with black hairs with lighter (brown, yellow, red, or white) hairs intermixed at the basal portion of elytra and sparsely intermixed to caudal region (Fig. 33) | 17 |
| 16' | Elytra marmorate (with brown and black hairs), with a large oblong area of dense gray-white pubescence at each side not extending beyond basal half (Fig. 34) | 18 |

## ***Dermestes***



Figure 35A-B. *Dermestes carnivorus* Fabricius ♂

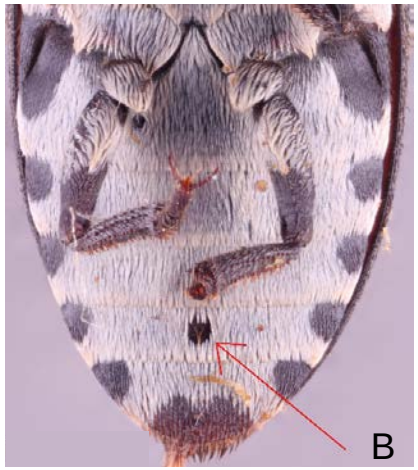




Figure 36A-B. *Dermestes frischii* Kugelann ♂

| | | |
|---|---|---|
| 17 (16') | Pronotum with sides and apex clothed only with white or yellowish-white hairs; elytra black, dark reddish-brown toward the humeri, where there is a small post-humeral area of reddish-yellow pubescence, elsewhere marmorate subtransversely with black and grey pubescence (Fig. 35A); abdomen very densely clothed with white hairs, the black marginal spots very small; male with foveae on the third and fourth segments (Fig. 35B); mesosternal keel, when seen from side, level and not interrupted; length 6.5-8.5 mm | *Dermestes carnivorus* Fabricius |
| 17' | Pronotum with a broad band on each side and a much narrower band on apex consisting entirely or almost entirely of white hairs; elytra black, sparsely clothed with black hairs, among which longer yellowish-grey to white hairs are uniformly but sparsely intermingled (Fig. 36A); body stouter and more oval; male with fovea only on fourth abdominal segment (Fig. 36B); mesosternal keel, when seen from side, distinctly interrupted; length 6.0-10.0 mm | *Dermestes frischii* Kugelann |

## ***Dermestes***

Figure 29. *Dermestes fasciatus* LeConte

Figure 37A-B. *Dermestes fasciatus* LeConte ♂

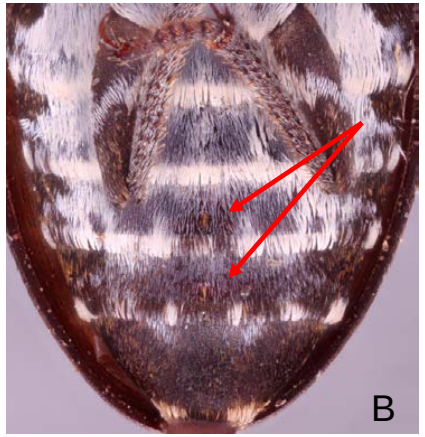




Figure 38A-B. *Dermestes marmoratus* Say ♂

| | | |
|---|---|---|
| 18 (16') | Elytra transversely marmorate with black and ash-gray pubescence, the pale hairs generally forming a condensed transverse fascia behind the base, the portion thence to the basal margin having some reddish yellow hairs intermingled (Fig. 37A); male with foveae on the third and fourth segments (Fig. 37B); length 6.8-9.0 mm | *Dermestes fasciatus* LeConte |
| 18' | Vestiture grey to orange, the pale points of the pronotum grey, sometimes yellow-orange to orange and less distinct; elytra with a large oblong area of dense yellowish-white to grey pubescence at each side, extending two-fifths, and elsewhere marmorate with black and grey or yellow-orange to orange hairs (Fig. 38A); ventral segments each with lateral dark spots, that of the basal segment very large; male with foveae on the third and fourth segments (Fig. 38B); length 9.0-13.0 mm | *Dermestes marmoratus* Say |

## ***Attagenus***

Figure 39. *Attagenus pellio* (Linnaeus)

| | | |
|---|---|---|
| 19 (6') | Elytron with brown hairs except for prominent oval spot (about as broad as eye) of white hairs at middle of disc near suture and often also with 2 or 3 very small lateral white spots at about basal two-fifths (Fig. 39); length 3.5-6.0 mm | *Attagenus pellio* (Linnaeus) |
| 19' | Elytral pubescence unicolorous or with bands of light pubescence or with several large spots of light pubescence, but not as described above | 20 |

## ***Attagenus***

Figure 40. *Attagenus rufipennis* LeConte

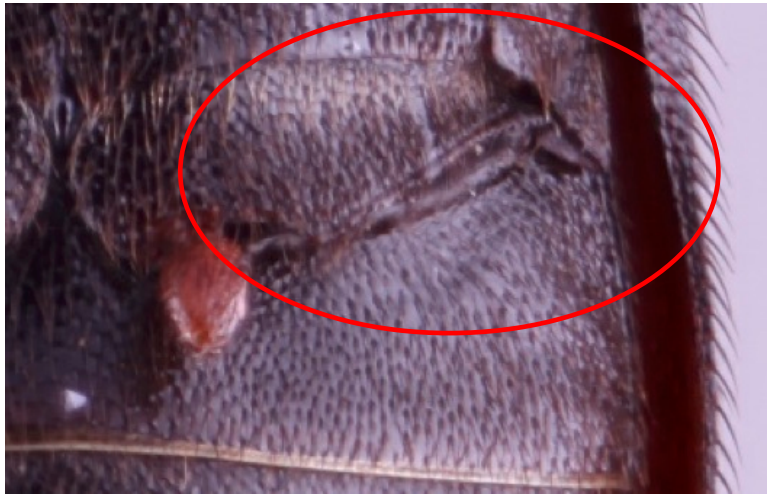


Figure 41. *Attagenus unicolor japonicus* Reitter

| | | |
|---|---|---|
| 20 (19') | Lamina of hind coxa not meeting metepimeron; coxa and epimeron appearing separated by metepisternum (Fig. 40) | 21 |
| 20' | Lamina of hind coxa extending behind metepisternum to meet metepimeron (Fig. 41) | 25 |

## ***Attagenus***

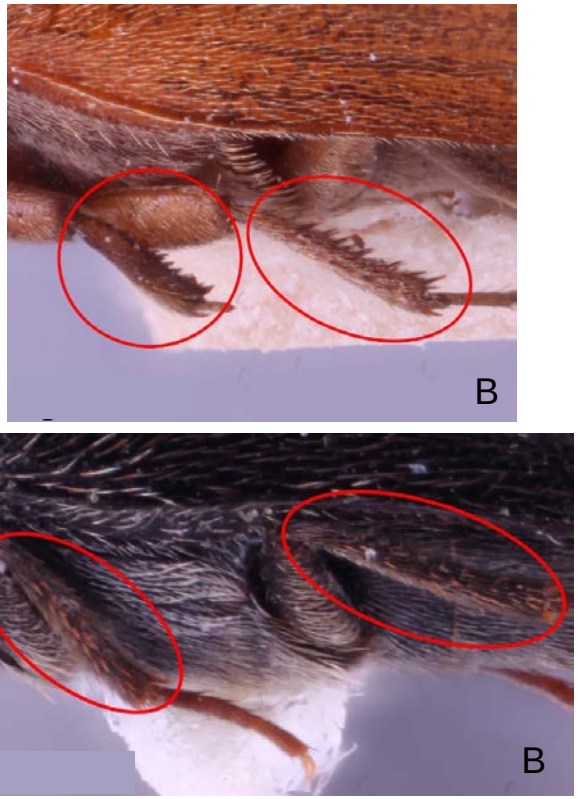




Figure 42A-B. *Attagenus lobatus* Rosenhauer


Figure 43A-B. *Attagenus rufipennis* LeConte

| | | |
|---|---|---|
| 21 (20') | Pronotum with middle basal part prolonged backward to form broad, apically truncate lobe (Fig. 42A); anterior tibia with sharp, knife-like carina along dorsal margin; short, stout spines inserted in row along posterior side of carina and on posterior face of tibia but not on anterior face of tibia (Fig. 42B); length 2.8-4.5 mm | *Attagenus lobatus* Rosenhauer |
| 21' | Pronotum produced only feebly backwards at middle basal part (Fig. 43A); anterior tibia rounded on dorsal margin without knife-like carina; short, stout spines inserted irregularly along dorsal margin as well as on posterior face (Fig. 43B), with or without spines on anterior face of tibia | 22 |

## ***Attagenus***

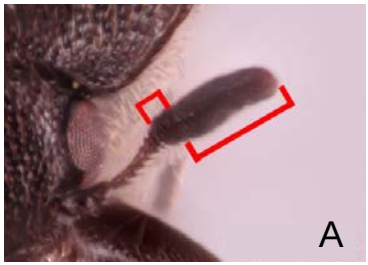





Figure 44A. *Attagenus rufipennis* LeConte ♂; 44B. ♀; 44C. ♂

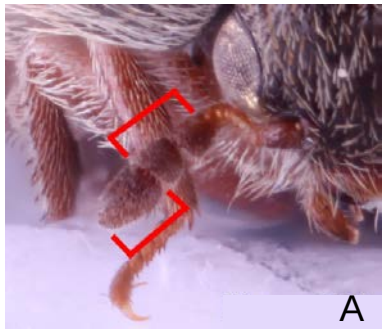



Figure 45A-B. *Paranovelsis varicolor* (Jayne)


| | | |
|---|---|---|
| 22 (21') | Male antennal club with terminal segment at least 4x as long as length of two preceding segments combined (Fig. 44A); female antennal club with terminal segment 1/8 longer than length of two preceding segments combined (Fig. 44B); integument of elytron colored black, mahogany, or mahogany with base black and with black sutural line; elytral hairs entirely black (Fig. 44C) or black with sparsely intermingled golden-yellow hairs or black with band of golden-yellow hairs at basal fourth; length 3.0-5.0 mm | *Attagenus rufipennis* LeConte |
| 22' | Male and female antennal club with terminal segment equal in length or shorter than length of two preceding segments combined (Fig. 45A); integument of elytron colored black, reddish yellow, or light brown with or without clearly defined maculae, but if black with suffused mahogany area on disc, then bands or patches of whitish pubescence present on apical as well as on basal area of elytron (Fig. 45B) | 23 |

## *Novelsis*

Figure 46. *Novelsis horni* (Jayne)

Figure 47. *Paranovelsis varicolor* (Jayne)

Figure 48. *Paranovelsis aequalis* (Sharp)

| | | |
|---|---|---|
| 23 (6', 22') | Hypomeron (ventrally inflexed side of pronotum) flat or slightly convex; male antennal club clothed with closely appressed setae about as long as 1/4 width of third antennal segment; marginal line of light maculation usually appearing as short spur on oblique subbasal band, but at most extending from base no further than middle of elytron (Fig. 46, red circle); length 2.4-4.5 mm | *Novelsis horni* (Jayne) |
| 23' | Hypomeron deeply concave, forming fossa for antenna (Fig. 47); male antennal club clothed with erect, white setae about 3/4 as long as width of third antennal segment; pubescence of elytron consisting of black hairs and light colored hairs; light colored hairs forming a thin band at base, a semicircular subbasal band, an irregular | 24 |

## ***Paranovelsis***

Figure 49. *Paranovelsis aequalis* (Sharp)

Figure 50. *Paranovelsis varicolor* (Jayne)

| | | |
|---|---|---|
| 24 (23') | Elytra with poorly defined brown or reddish-brown area on basal 2/3 (Fig. 49) and occasionally with reddish subapical spot; plane of disc of prosternum and plane of lateral lobe of prosternum separated by step-like bend in prosternum; length 2.5-3.5 mm | *Paranovelsis aequalis* (Sharp) |
| 24' | Elytra with more or less sharply-defined reddish yellow or light tan area occupying most of disc of elytron or with two or three distinct subbasal, median, and subapical spots (Fig. 50); plane of disc of prosternum and plane of lateral lobe connected by a declivitous transition of the prosternum; length 2.5-4.0 mm | *Paranovelsis varicolor* (Jayne) |

## ***Attagenus***

Figure 51. *Attagenus fasciatus* (Thunberg)

| | | |
|---|---|---|
| 25 (20') | Elytron covered with dark hairs except for very well-defined, subbasal band of light pubescence; band usually broad and extending continuously to median suture but occasionally reduced to two light-colored narrow bands on middle of elytron at basal two-fifths and spot of light-colored hairs on median suture at basal fourth (Fig. 51); length 3.0-5.9 mm | *Attagenus fasciatus* (Thunberg) |
| 25' | Elytron unicolorous or with diffuse subbasal or basal band of light-colored hairs; subbasal band, if present, not extending to median suture and no subbasal patch of light-colored hairs present on suture | 26 |

## ***Attagenus***

Figure 52. *Attagenus cyphonoides* Reitter ♂

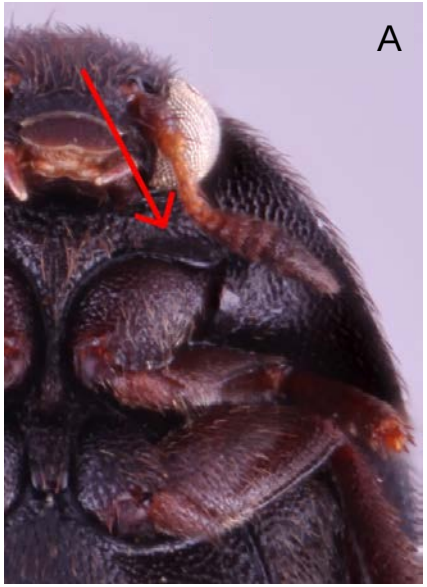




Figure 53A-B. *Attagenus unicolor japonicus* Reitter ♂

| | | |
|---|---|---|
| 26 (25') | Posterior margin of lateral lobe of prosternum bent almost vertically in front of coxa; posterior ventral carina of middle femur much weaker than anterior ventral carina and on apical half of femur 2/3 as far from dorsal margin as anterior ventral carina; elytral integument and hairs medium to dark brown with few light golden hairs forming indistinct lateral fascia at about basal fourth (Fig. 52); length 2.5-4.2 mm | *Attagenus cyphonoides* Reitter |
| 26' | Posterior margin of lateral lobe of prosternum weakly reflected against base of procoxa with reflected portion extending ventrad at about 30-40 degree angle (Fig. 53A); posterior ventral carina of middle femur about as distinct as anterior ventral carina and almost in same plane; elytral pubescence dark brownish-black to black; light-colored hairs, if present, forming fascia at base of elytron or limited to extreme lateral margin of elytron; integument of elytron mahogany to black (Fig. 53B) | 27 |

## ***Attagenus***



Figure 54A-B. *Attagenus brunneus* Faldermann, ♂

Figure 55. *Attagenus unicolor unicolor* (Brahm)

| | | |
|---|---|---|
| 27 (26') | Ratio of length of terminal segment of antenna of male to length of pronotum and elytra combined varying from 1:5.7 to 1:7.6; pronotum with band of golden hairs along basal margin; greatest length of band (measured anteriorly to posteriorly) about equal to length of scutellum; elytron with golden hairs absent or limited to scattered hairs or small patches of hair along basal margin and not extending posteriad beyond apex of scutellum except along extreme lateral margin (Fig. 54A-B); length 2.9-5.0 mm | *Attagenus brunneus* Faldermann |
| 27' | Ratio of length of terminal segment of antenna of male to length of pronotum and elytra combined varying from 1:7.9 to 1:11.4; pronotum without band of golden hairs along basal margin, or band present and not longer than half length of scutellum, or latero-posterior angles and basal margin covered with golden hairs; elytron without golden hairs (Fig. 55) or varying number of golden hairs present on basal fourth; if golden hairs present on base of elytron, these commonly extending from base well beyond scutellum; length 2.5-5.5 mm | *Attagenus unicolor* (Brahm)* |

## ***Anthrenus***

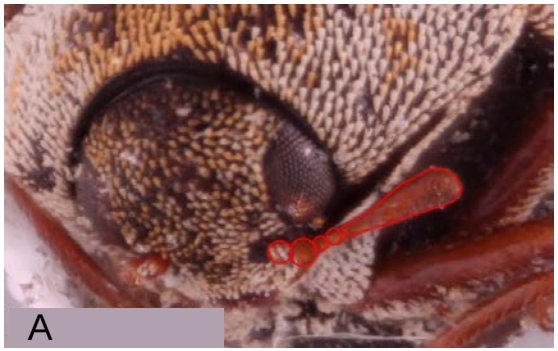




Figure 56A-B. *Anthrenus fuscus* Olivier

| | | |
|---|---|---|
| 28 (7') | Antenna 5-segmented; club consisting of 1 segment at least 1.5x as long as preceding segments combined (Fig. 56A); length 1.7-2.8 mm | *Anthrenus fuscus* Olivier |
| 28' | Antenna 8-11-segmented; club consisting of 2 or 3 segments with terminal segment shorter than length of preceding segments combined | 29 |

## ***Anthrenus***

Figure 57. *Anthrenus coloratus* Reitter

| | | |
|---|---|---|
| 29 (28') | Elytra with 3 transverse bands of pale scales continuing without interruption across suture or interrupted at suture by thin sutural line of golden scales; subbasal band not distinctly crescent-shaped; subapical band sometimes confluent with apical patch of pale scales; sutural line usually of white scales, less commonly of golden or intermingled golden and white scales; sublateral lines of pale scales and patches of pale scales present or not between bands (Fig. 57); antenna 8-9-segmented; length 1.5-2.5 mm | *Anthrenus coloratus* Reitter |
| 29' | Elytra with or without 3 transverse bands of pale scales, but if bands present, submedian and subapical bands more or less interrupted, or subbasal band distinctly crescent-shaped, or bands of all white scales meeting reddish (or mostly all reddish) scales of sutural line; antenna with 8-11 segments | 30 |

## ***Anthrenus***



Figure 58A-B. *Anthrenus verbasci* (Linnaeus)

| | | |
|---|---|---|
| 30 (29') | Scales of dorsum 3x to 6x as long as wide, but mostly about 5x as long as wide; pattern of elytral scales variable, but distinct bands, if present, including both yellowish scales and interrupted patches of white scales (Fig. 58A); antenna 11-segmented (Fig. 58B); length 1.7-3.2 mm | *Anthrenus verbasci* (Linnaeus) |
| 30' | Most scales of dorsum 1.5x to 2x as long as wide, but occasional scale on some species may be 3x as long as wide; pattern of elytral scales variable; antenna with 8-11 segments | 31 |

doi:10.3752/cjai.2022.46

## ***Anthrenus***



Figure 59A-B. *Anthrenus museorum* (Linnaeus) ♀

| | | |
|---|---|---|
| 31 (30') | Antenna with 8 segments and 3-segmented club. Male antennal segment 8 at least 5 x longer than segment 7; female antennal segment 8 varying from 2.1 to 2.2 x as long as segment 7 (Fig. 48A); pale scales forming more or less distinct pattern of transverse bands (Fig. 48A); length 2.7-3.1 mm | *Anthrenus museorum* (Linnaeus) |
| 31' | Antenna with 9-11 segments and 3-segmented club; pattern of elytral scales variable | 32 |

## ***Anthrenus***

Figure 60. *Anthrenus flavipes* LeConte

Figure 61. *Anthrenus scrophulariae* (Linnaeus)

| | | |
|---|---|---|
| 32 (31') | Pronotum with dorsal rim of antennal fossa not or only very slightly dilated and not visible from above; dorsal surface clothed with golden brown or black, golden, and usually white scales in various combinations but usually with distinguishable subbasal band of white scales and patches of submedian and subapical white scales (Fig. 60); length 2.0-3.5 mm | *Anthrenus flavipes* LeConte |
| 32' | Pronotum with dorsal rim of antennal fossa moderately to strongly dilated and visible from above (Fig. 61); pattern of dorsal scales variable | 33 |

## *Anthrenus*

Figure 62. *Anthrenus scrophulariae* (Linnaeus)

| | | |
|---|---|---|
| 33 (32') | Elytron with lateral subbasal, submedian, and subapical patches (short bands) of white scales distinct, not coalescing, and neither meeting sutural line of red scales nor connected with sutural red scales by interrupted bands; lobe of pronotum with narrow or broad margin of pale scales (Fig. 62); length 2.0-3.8 mm | *Anthrenus scrophulariae* (Linnaeus) |
| 33' | Elytron without sutural line of red scales extending from scutellum to apex, or if apparently so (very rarely), then red scales greatly expanded on anterior half and forming thin line on posterior half; white scales on sides of pronotum often enclosing more or less round patch of blackish, red, or yellowish scales | 34 |

## ***Anthrenus***

Figure 63A. *Anthrenus lepidus* LeConte

Figure 64. *Anthrenus pimpinellae* ssp. *pimpinellae* Fabricius

| | | |
|---|---|---|
| 34 (33') | Elytra usually without continuous subbasal band of white scales (Fig. 63A); if continuous subbasal band present, then elytral pattern more or less as described in Beal's (1998) Baca variation; pattern of scales extremely variable from uniformly gold to scales of black and white, black, yellowish, and white, black, red and white, but often with distinguishable, arrowhead-shaped patch of paler scales along suture at base (Figs.63A-D); length 1.9-3.4 mm | *Anthrenus lepidus* LeConte |
| 34' | Elytra with subbasal band of white scales much shorter at suture than at lateral margin; medial margins of subbasal band at middle somewhat resembling an inverted U; suture with line of golden brown scales extending from behind subbasal band or at least from middle to apex (Fig. 64); abdominal segment 1 with patch of dark scales at lateral margin; length 2.0-4.5 mm | *Anthrenus pimpinellae* ssp. *pimpinellae* Fabricius |

doi:10.3752/cjai.2022.46

***Anthrenus***

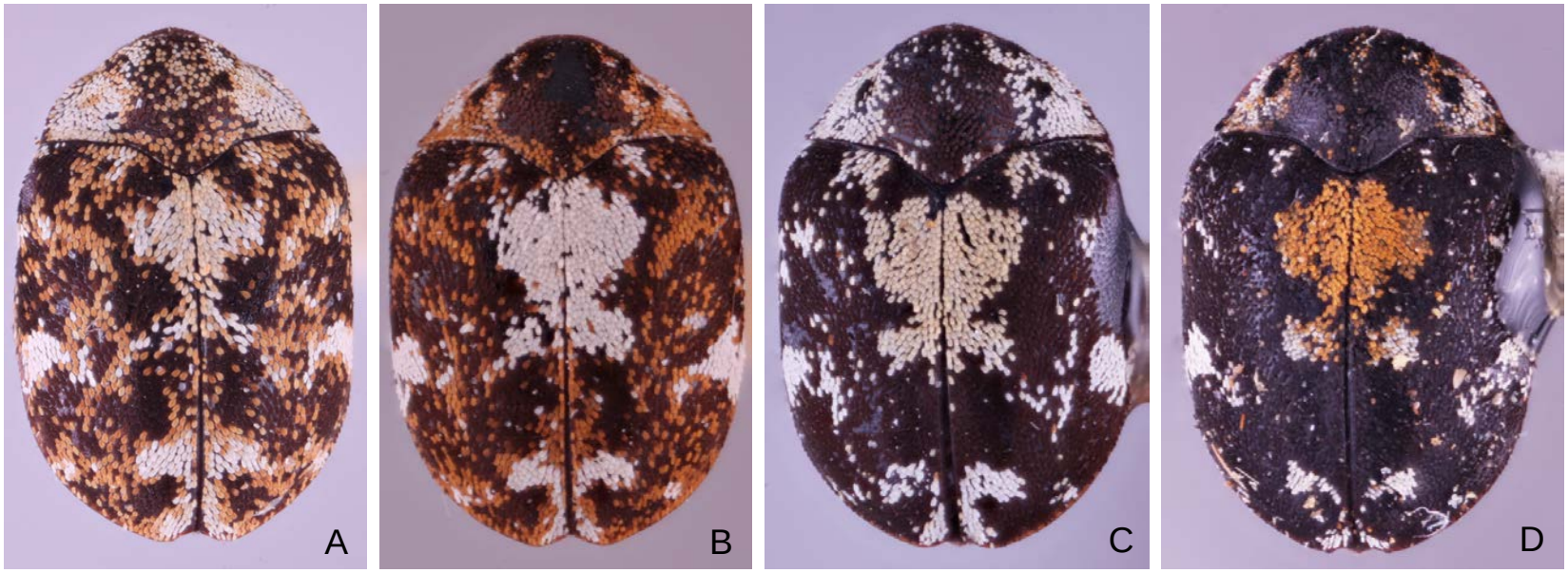



Figure 63a-d. Some *Anthrenus lepidus* LeConte varieties

doi:10.3752/cjai.2022.46

## ***Megatoma***

Figure 65. *Megatoma cylindrica* (Kirby) ♀

Figure 66. *Megatoma variegata* (Horn)

| | | |
|---|---|---|
| 35 (8') | White setae of subbasal fascia not forming dense patch near middle of elytron, or if forming dense patch, then white setae subequal in diameter to golden-brown setae (Fig. 65); length 3.2-4.0 mm | *Megatoma cylindrica* (Kirby) |
| 35' | White setae of subbasal fascia obscure or consisting of white setae intermixed with golden-brown setae or consisting of nearly all white setae, but these of normal shape and not ensiform (Fig. 66); length 3.8-6.0 mm | *Megatoma variegata* (Horn) |

## ***Trogoderma***

Figure 67. *Trogoderma sinistrum* Fall ♀

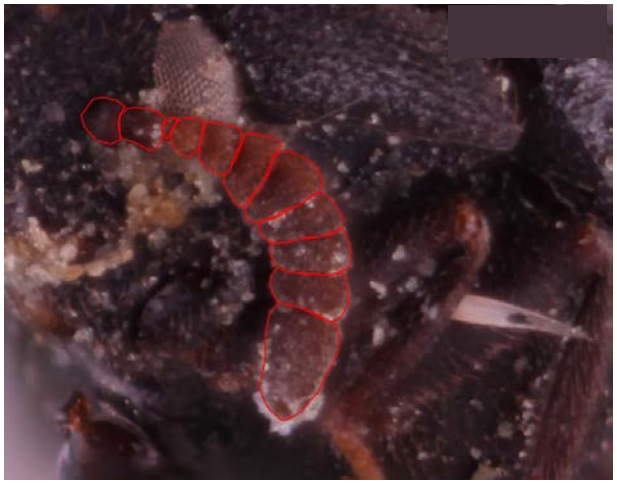


Figure 68. *Trogoderma sinistrum* Fall ♂

| | | |
|---|---|---|
| 36 (9') | Setae of dorsum unicolorous (Fig. 67); elytral pubescence closely appressed; female antennal club compact; segments of antenna only very slightly eccentric in male (Fig. 68), not at all eccentric in female; length 2.6-3.7 mm | *Trogoderma sinistrum* Fall |
| 36' | Setae of dorsum of two or three colors; elytra with more than one band of light maculation, or with no bands of light maculation, or with a pattern of three light bands indicated by areas of light pubescence | 37 |

## *Trogoderma*



Figure 69A-B. *Trogoderma simplex* Jayne ♀

| | | |
|---|---|---|
| 37 (36') | Antennal cavity coarsely and confluently punctate on all surfaces except for small smooth area near prosternal suture, punctures two or three times as large as facets of eye; female antennal club 5- or 6-segmented (Fig. 69A); length 2.2-4.4 mm | *Trogoderma simplex* Jayne |
| 37' | Antennal cavity finely punctate with punctures about as fine as facets of eye, or shining and minutely striate; female antennal club 3- or 4-segmented with seventh segment of antenna somewhat enlarged or not | 38 |

## ***Trogoderma***




Figure 70A-C. *Trogoderma granarium* Everts; 70B: ♂; 70C: ♀

| | | |
|---|---|---|
| 38 (37') | Elytral cuticle unicolorous or vaguely mottled without a clearly defined pattern (Fig. 70A); number of antennal segments varying from nine to eleven; male antennal club with five segments at most (Fig. 70B); female antennal club with three segments (Fig. 70C); cuticle may be very dark brown or black in some individuals; length 1.8-3.0 mm | *Trogoderma granarium* Everts |
| 38' | Elytra with a definite pattern (although in some species the pattern may be fine and intricate), the pattern visible either in the maculation or in the pubescence or both; antenna always of eleven segments; male antennal club of at least five segments; female antennal club of at least four segments | 39 |

## ***Trogoderma***



Figure 71A-B. *Trogoderma glabrum* (Herbst) ♂

| | | |
|---|---|---|
| 39 (38') | Integument unicolorous, black, or black with vague brownish maculations on the humeri and apical elytral margins only, never with basal, submedian, and subapical bands indicated in the maculation (these indicated by areas of light pubescence only; Fig. 71A); male antennal club compact and symmetrical (Fig. 71B); surface of antennal cavity of male glabrous and shining, obscurely marked with oblique striae; ratio of width (across base of elytra) to length (of pronotum and elytra) ranging from 1:1.60 to 1:1.75; length 2.0-4.0 mm | *Trogoderma glabrum* (Herbst) |
| 39' | Integument bicolorous, at least a pattern of basal, submedian, and subapical bands indicated by lighter areas in the maculation | 40 |

***Trogoderma***

Figure 72. *Trogoderma grassmani* Beal

| | | |
|---|---|---|
| 40 (39') | Area of light maculation of elytra not extending to base of elytra, but separated from base by at least twice length of scutellum (Fig. 72); length 2.1-2.9 mm | *Trogoderma grassmani* Beal |
| 40' | Area of light maculation of elytra extending entirely to base of elytra, or separated from base by not more than one-half length of scutellum | 41 |

## ***Trogoderma***



Figure 73A-B. *Trogoderma inclusum* (LeConte)

| | | |
|---|---|---|
| 41 (40') | Inner margin of eye distinctly emarginate (Fig. 73A); length 2.0-5.0 mm | *Trogoderma inclusum* (LeConte) |
| 41' | Inner margin of eye straight or very slightly sinuate | 42 |

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## *Trogoderma*


Figure 74A-B. *Trogoderma serraticorne* (Sharp)




Figure 75A-B. *Trogoderma variabile* Ballion ♂

| | | |
|---|---|---|
| 42 (41') | Male antennal club distinctly serrate with segments loosely joined so that pedicels are visible (Fig. 74A); basal band or "loop" of elytral maculation always connected with submedian elytral band by longitudinal lines of light maculation, the longitudinal lines occasionally so broad that basal light maculate area appears fused with submedian band of light maculation (Fig. 74B) | 43 |
| 42' | Male antennal club not serrate, terminal segments always more or less compactly joined (Fig. 75A); elytron with basal light maculate band or "loop," submedian band, and apical band well marked but without distinct longitudinal lines of light maculation connecting these bands (in *Trogoderma variabile* traces of longitudinal lines may rarely show around the submedian band, but these do not actually connect with the basal band or "loop"; Fig. 75B) | 44 |

***Trogoderma***


Figure 76A-B. *Trogoderma serraticorne* (Fab.)



Figure 77A-B. *Trogoderma sternale* Jayne ♂


| | | |
|---|---|---|
| 43 (42') | Third segment of male antenna subequal in width to fourth antennal segment; segments of male antennal club decidedly eccentric or pectinate; female with a short carina extending about halfway across antennal cavity from antero-lateral angle of prosternum, this carina forming an angle of 20 to 30 degrees with posterior carina (Fig. 76A); no longitudinal lines of light maculation ever connecting median band and subapical band (Fig. 76B); length 1.9-3.0 mm | *Trogoderma serraticorne* (Fab.) |
| 43' | Third segment of male antenna minute, in length and width about half either second or fourth segments (Fig. 77A); segments of club only moderately eccentric; elytral pattern of light maculation consisting of either broad (Fig. 77B) or thin lines, but if of thin lines, then the basal "loop" of light maculation not bisected by a longitudinal line of light | *Trogoderma sternale* Jayne |

## ***Trogoderma***



Figure 78A-B. *Trogoderma variabile* Ballion

Figure 79. *Trogoderma teukton* Beal

| | | |
|---|---|---|
| 44 (42') | Light hairs of pronotum almost entirely golden yellow (Fig. 78A); antennal club of male 8-segmented (Fig. 78B); eleventh segment bluntly rounded at apex; length 2.4-4.4 mm | *Trogoderma variabile* Ballion |
| 44' | Light hairs of pronotum consisting of at least one third white hairs (Fig. 79); male antennal club 5- or 6-segmented; eleventh segment acutely pointed at apex; length 2.0-3.9 mm | *Trogoderma teukton* Beal |

# *Anthrenus (Anthrenops) coloratus* Reitter, 1881

*Anthrenus coloratus*, dorsal habitus

**Synonyms:** *Anthrenus rufescens* Pic, 1923
*Anthrenus minor* ssp. *albidoflavus*: Alfieri, 1976
*Anthrenus colaratus* [sic]: Mroczkowski, 1979
*Anthrenus rufescens*: Háva, 2007

**Canada and United States Distribution:** Arizona, California, District of Columbia, Florida, Illinois, Indiana, Maryland, Michigan, Nevada, Texas, Utah, Virginia

**Economic Importance:** Minor economic importance; pest of homes and proteinaceous stored products; woollen materials, insect collections, taxidermy animals, house sparrow nests, spider webs

**Species with similar appearance:** *Anthrenus omoi* Beal, 1998

**Diagnostic Notes:** Antenna 9-segmented

**Morphology Summary:** Adult male
**Length**: 1.5-2.5 mm

**Cuticle** shining and pale to moderately dark reddish brown; antennae and legs frequently dull brick-red . Body obovate, often nearly subparallel, and moderately strongly convex. Scales of dorsal and ventral surface usually broadly obovate, rarely sub-triangular, and about half again as long as broad; broadest point near middle or sometimes very near apex and each with apex broadly rounded, or nearly truncate, or, more rarely, obtusely angulate. Dorsal surface with white or golden colored scales or with white, golden, and dark brownish golden scales; head with all scales yellowish white or golden, sometimes with a few darker scales on middle of vertex; pronotum with basal three-fourths or all of sides clothed in white and disc entirely golden, or entirely dark brown, or golden with a few white areas; elytra golden with three broad, transverse, complete or nearly complete, zig-zag bands, one on basal fourth, one just behind middle, and one near apex; golden scales of elytra sometimes partly and sometimes nearly completely replaced by dark golden-brown or even nearly black scales. Ventral surface with all scales white or

*Anthrenus coloratus*, male venter

*Anthrenus coloratus*, male frons

with basal side of each of four apical abdominal sternites with a patch of golden scales. **Antenna** 9-segmented, occasionally 8-segmented; apical segment twice as long than previous two segments combined. **Head**: eye with inner or mesal margin evenly rounded, not emarginate. **Pronotum** with sides strongly declivous so that anterior part of lateral margin (dorsal margin of antennal cavity) is not visible from above; antennal cavity occupying approximately half of lateral margin, obovate to subparallel in outline, half or slightly less than half as broad as long, and dorsal margin not dilated. Hypomeron with elevated, scale-covered part only slightly broader near sternum than near lateral margin of pronotum. **Abdomen** without lateral discal lines on first sternite; apical half of abdominal sternum 9 covered with fine spicules.

Adult female
Differs from male in having antennal apical segment a third longer than previous two segments combined.

**References:** Beal 1998, 2003; Háva 2015; Hinton 1945; Veer et al. 1991
**Internet Resources:**
http://www.dermestidae.com/Anthrenuscoloratus.html

*Anthrenus coloratus*, lateral habitus

# *Anthrenus (Anthrenus) flavipes* LeConte, 1854

*Anthrenus flavipes*, dorsal habitus

**Synonyms:** *Anthrenus pimpinellae* var. *cinnamomeus* Gredler, 1878
*Anthrenus fasciatus* Reitter, 1881
*Anthrenus scrophulariae* var. *flavipes*: Jayne, 1882
*Anthrenus vorax* Waterhouse, 1883
*Anthrenus fasciatus* var. *albo-impletus* J. Sahlberg, 1903
*Anthrenus fasciatus* var. *cinnamomeus*: Reitter, 1906
*Anthrenus seminiveus* Casey, 1916
*Anthrenus vorax* ssp. *seminiveus*: Back & Cotton, 1937
*Anthrenus vorax* var. *seminiveus*: Hinton, 1945
*Anthrenus importatus* Pic, 1952
*Anthrenus vorax* var. *cinnamomeus*: Mroczkowski, 1952
*Anthrenus flavipes* ab. *seminiveus*: Hatch, 1926
*Anthrenus flavipes* var. *seminiveus*: Mroczkowski, 1968
*Anthrenus flavipes* var. *alboimpletus*: Mroczkowski, 1968
*Anthrenus flavipes* var. *cinnamomeus*: Mroczkowski, 1968
*Anthrenus vorax* var. *seminivius*: Shahhosseini & Kamali, 1989
*Anthrenus flavips* [sic]: Abid & Yousif, 1994

**Canada and United States Distribution:** present in all states except Alaska, Canadian distribution unknown

**Economic Importance:** Moderately significant economic importance; pest of woolens, silks, bristles, fur, feathers, horn

**Species with similar appearance:** *Anthrenus maculatus* Fabricius, 1798

**Diagnostic Notes:** Most likely to be confused are some forms of *Anthrenus lepidus* and *Anthrenus parvus* (not considered in this key). In *Anthrenus flavipes* the lateral pronotal margin is not visible from above, particularly over the antennal fossa. In *A. lepidus* and *A. parvus* and other species with an 11 segmented antenna except for *Anthrenus verbasci*, the lateral margin of the pronotum is visible from above, particularly over the dilated antennal fossa. The elongated scales of *A. verbasci*, at

*Anthrenus flavipes*, frons

*Anthrenus flavipes*, lateral habitus

(cont.) least 3x as long as wide and mostly much longer, readily distinguishes that species from *A. flavipes*, in which a few scales may be 3x as long as wide but most are 1.6x as long as wide or wide

**Morphology Summary:** Adult male and female

**Length**: 2.0-3.5 mm

**Cuticle** shining and dark reddish brown to nearly black; antennae and legs distinctly paler reddish brown. Broadly oval with sides of elytra distinctly rounded; moderately strongly convex. Scales (length x width, 80-82 x 36-42 pm), apex rounded. Dorsal surface with white, golden and dark golden brown scales; ventral surface with predominantly white scales, but femora and a small patch on anterolateral part of sternites II-V and middle of sternites V with golden or dark brown scales or both; sometimes sternites I also with a spot of golden scales on anterolateral part but usually absent. **Antenna** 11-segmented; club 3-segmented. Antennal club with apical segment 1.2 times as long as previous two combined. **Head**: eye with inner or mesal margin broadly and deeply emarginate in front of middle. **Pronotum** with sides strongly declivous and dorsal margin of antennal cavity not visible from above or only with posterior part just visible; antennal cavity occupying 1/3 of lateral margin, obovate in outline, and slightly more than half as broad as long. **Hypomeron** with elevated, scale-covered part subparallel and about as broad or near sternum as lateral margin of pronotum.

**References:** Beal 1998, 2003; Háva 2015; Hinton 1945; Veer et al. 1991

**Internet Resources:**
http://www.dermestidae.com/Anthrenusflavipes.html

# *Anthrenus (Helocerus) fuscus* Olivier, 1789

*Anthrenus fuscus*, dorsal habitus

**Synonyms:** *Anthrenus obscurus* Schönherr, 1806
*Anthrenus claviger* Erichson, 1846
*Helocerus fuscus* Coucke, 1892
*Anthrenus polonicus* Mroczkowski, 1951

**Canada and United States Distribution:** Colorado, Georgia, Michigan, Montana, New Hampshire, New Jersey, Nova Scotia, New York, Ohio, Ontario, Quebec, Vermont, West Virginia

**Economic Importance:** Minor economic importance; pest in homes and insect collections

**Species with similar appearance:** *Anthrenus polonicus* Mroczkowski, 1951

**Diagnostic Notes:** Antenna 5-segmented

**Morphology Summary:**
Adult male
**Length**: 1.7-2.8 mm
**Cuticle** shining and black, rarely dark brown; four basal segments of antennae, tibiae, and tarsi usually dark reddish brown. Body moderately strongly convex and broadly to moderately narrowly obovate. Scales of dorsal and ventral surface usually distinctly triangular, half again to as much as twice as long as broad, broadest point of each at apex or very near apex, and apex of each usually truncate but occasionally feebly rounded. Dorsal surface with white, yellow, and very dark brown or black scales. Ventral surface with all scales white or yellowish white except as follows: posterior middle of metasternal disc, mesal region of hind coxa, and lateral basal region of apical three abdominal sternites as well as middle posterior region of apical sternite with few or numerous dark brown or black scales. **Antenna** 5-segmented; club 1-segmented and very nearly four times as long as combined length of four basal segments. **Head**: eye with inner or mesal margin evenly rounded, not emarginate. Pronotum with sides moderately strongly declivous and lateral margin with anterior

*Anthrenus fuscus*, female venter

*Anthrenus fuscus*, female frons

third or half (part of dorsal margin of antennal cavity) not visible from above; antennal cavity occupying nearly two-thirds of lateral margin (8:13-11:17), narrowly obovate to subparallel in outline, and nearly three times as long as broad. Hypomeron with elevated, scale-covered part more than twice as broad at sternum than at lateral margin of pronotum. **Abdomen** without lateral discal lines on first sternite.

Adult female
Differs from male as follows: antennal club has slightly different proportions and the third and fourth segments are much more distinct and relatively longer, the fourth being about 1/3 longer than the third; the antennal cavity occupies only slightly more than half (10:17-10:18) instead of nearly 2/3 of the lateral pronotal margin; the elevated scale-covered part or the hypomeron is only very slightly broader near sternum than near lateral pronotal margin instead of being more than twice as broad near sternum.

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Anthrenusfuscus.html

*Anthrenus fuscus*, lateral habitus

# *Anthrenus (Anthrenus) lepidus* LeConte, 1854

*Anthrenus lepidus*, dorsal habitus

**Synonyms:** *Anthrenus scrophulariae* var. *lepidus*: Horn, 1894
*Anthrenus lepidus* var. *conspersus* Casey, 1900
*Anthrenus lepidus* var. *obtectus* Casey, 1900
*Anthrenus lepidus* var. *suffusus* Casey, 1900
*Anthrenus occidens* Casey, 1900
*Anthrenus occidens* var. *nevadicus* Casey, 1900
*Anthrenus occidens* var. *pictus* Casey, 1900
*Anthrenus pimpinellae* var. *occidens*: Arrow, 1915
*Anthrenus pimpinellae* var. *lepidus*: Arrow, 1915

**Canada and United States Distribution:** Arizona, British Columbia, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington (probably also in Alberta and Wyoming)

**Economic Importance:** Negligible economic importance; pest in homes; reported in chicken feed and camel's hair brushes

**Species with similar appearance:** *Anthrenus sophonisba* Beal, 1998; *Anthrenus thoracicus* Melsheimer, 1844

**Diagnostic Notes:** All specimens have an area of pale scales on the sides of the pronotum. In many instances this encloses a round patch of darker scales. For convenience the round patch is termed the pronotal eye, which it somewhat resembles. In most forms a sutural trapezoidal figure of pale scales is at the base of the elytron. The trapezoids of the two elytra form a figure somewhat reminiscent of an arrowhead with the point at the scutellum. Behind the trapezoid is a wide submarginal line terminated by a small submedian band. As a descriptive short hand this entire figure is referred to as the arrow. The sutural line of the arrow and the submedian band usually consist of the same color scales as the trapezoid, although when the arrow is red or golden, the submedian band is commonly white or white in part.

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*Anthrenus lepidus*, lateral habitus

*Anthrenus lepidus*, female frons

**Morphology Summary:** Adult male
**Length**: 1.9-3.0 mm
Scales of various combinations of white, golden white to dark gold, cupreous, brick red, and chocolate brown to black; various forms described by Beal (1998) are described after the references and resources. Scales of ventral surfaces white except as follows: hypomeron with white or golden scales or mixture of each; lateral half of metasternum with golden or black scales, rarely almost all white; small patch of dark scales at antero-lateral margins of abdominal sterna 2-5 and usually narrow to broad line of dark scales at midline of sternum 5. Individual scales variable: widest at proximal 1/3 or middle; margins slightly or strongly curving toward apex; apex broad or narrow, truncate or rounding, without lappet; ribs more or less linear. **Antenna** 11-segmented; club 3-segmented; segment 11 about 1 1/2 times as wide as long. **Head**: labrum shallowly emarginate; lacinia with apex moderately sclerotized with medially directed spine; frons with all dark scales to all pale scales; pale scales commonly forming irregular band across middle and often sublateral patch or line above emargination of eye. Eye with median side broadly and deeply emarginate at about anterior 1/3. **Pronotum**: Lateral margins distinctly dilated above antennal fossa and visible from above; marginal carina not completely following lateral margin of fossa entire length but extending more or less straight from middle of fossa to anterior margin of pronotum so that minute triangular piece of hypomeron at anterolateral side of fossa separated from pronotum; ratio of length of antennal fossa to length of lateral margin ranging from 1:2.0 to 1:2.9. **Abdomen**: sternum 1 with shallow sulcus on each side extending from beneath hind trochanter to posterior margin of segment; sulcus with out scales.

Adult female
**Length**: 2.0-3.4 mm
Differs from male in having antennal segment 11 smaller than male, only slightly wider than long or about equal.

*Anthrenus lepidus*, dorsal habitus variations

**References:** Beal 1998, 2003; Háva 2015
**Internet Resources:**
http://www.dermestidae.com/Anthrenuslepidus.html

**Variations and known distribution described by Beal (1998):**
FORM BACA. Scales of dorsum black, white, and yellowish white. Pronotum with lateral declivity covered with white scales; pronotal eye of black scales, small, or lacking; disc with intermingled white and yellowish scales with few scattered patches of black scales. Elytra with arrow of white scales; subbasal and submedian lateral patches of mostly white scales extending mediad to join arrow.
DISTRIBUTION: Eastern Colorado

FORM CARNELIAN. Scales of dorsum black, brick red, and white. Pronotum with lateral declivity covered with mostly reddish scales, commonly with few white scales along margins; disc of black scales, sometimes with thin median line of white scales. Elytra entirely clothed with black scales except as follows: arrow of red scales, often with white scales on margins; red scales rarely forming sutural line from arrow to apex; subbasal and submedian lateral patches small and consisting of white scales; submedian band at suture (bottom of arrow) consisting of red or white scales.
DISTRIBUTION: Oregon, California, along the Sierra Nevada

FORM GOLD STREAK. Scales of dorsum black, gold, and white. Pronotum with lateral declivities covered with white scales with or without pronotal eye of golden scales; disc of predominately black scales with few or many golden scales more or less irregularly dispersed, usually in irregular lines. Elytra with arrow of white scales; subbasal, submedian lateral patches and median subbasal band of white scales; areas between white scales consisting of black scales with scattered golden scales or irregular lines of golden scales.
DISTRIBUTION: most common form; California, Colorado, New Mexico, southern border of Oregon

FORM KAWEAH. Scales of dorsum black, golden, and white. Pronotum with lateral declivity covered with white or intermingled white and golden scales; pronotal eye lacking or of golden scales; disc with intermingled black and golden scales, often with few small black patches. Elytra with arrow of golden scales; subbasal and submedian lateral patches and subapical median band usually of white scales, sometimes with intermingled white and golden scales; other areas with black scales and irregular sublateral lines of golden scales; golden scales forming sutural line to apex.
DISTRIBUTION: California, Oregon, Arizona, Nevada

FORM LONE PINE. Scales of dorsum golden and white. Pronotum with lateral declivity covered with white scales; pronotal eye lacking or of few golden scales; disc of all gold scales. Elytra of all golden scales except for white arrow, subbasal and submedian lateral patches, and subapical median band; subbasal and submedian patches not reaching arrow; submedian patch not appreciably wider than subbasal band.
DISTRIBUTION: California, Utah, Idaho, Arizona, New Mexico

FORM MOGOLLON. Scales of dorsum black, cupreous, and white. Pronotum with lateral declivities covered with white scales with pronotal eye of few cupreous scales; disc of intermingled patches of cupreous and white scales with 2 small patches of black scales on each side of midline. Elytra with arrow of white scales; subbasal and submedian patches and subapical median band of white scales; subbasal band often reduced to few white scales or lacking; submedian band often expanded; areas in between white scales consisting of black scales with cupreous scales in irregular lines.
DISTRIBUTION: Arizona, Utah, California, Colorado, New Mexico

FORM NEZ PERCE. Scales of dorsum black, golden, and white. Pronotum with lateral declivities covered with white scales and some intermingled golden scales, usually on margins and surrounding pronotal eye; pronotal eye prominent and of black scales; disc of black scales with scattered golden scales, usually on anterior margin, and usually thin median line of white scales. Elytra with arrow, subbasal lateral patch, submedian lateral patch, and subapical band of white scales; arrow extending to about basal 11/20; sutural line of white scales from arrow to apex or lacking; other areas covered with black scales with or without small isolated patches of white scales; some isolated golden scales sometimes on basal area.
DISTRIBUTION: California, Oregon, Idaho

FORM OLD GOLD. Scales of dorsum dark golden and white. Dorsal surfaces entirely clothed with golden scales except white scales on lateral declivity of pronotum; pronotal eye lacking or consisting of golden scales. The golden scales of this form are most often dark gold but not rose or copper-shaded gold. Uncommon.
DISTRIBUTION: California, Utah

FORM PLUMAS. Scales of dorsum black, golden, and white. Pronotum with lateral declivity of white or golden scales; eye of black scales. Elytra clothed entirely of black scales except as follows: arrow of golden scales, subbasal, median, and subapical bands of white scales.
DISTRIBUTION: California, Washington, Idaho, Montana

FORM RED ARROW. Scales of dorsum black, brick red, and white. Pronotum with lateral declivity of white scales; eye of black or red and black scales. Elytra clothed entirely with black scales except as follows: arrow of red scales, often with white margins; red scales often forming sutural line to about apical 1/4; subbasal and submedian bands small and consisting of white scales; subapical band of white scales.
DISTRIBUTION: California, British Columbia, Idaho

FORM SUPAI. Scales of dorsum black, tawny or cupreous, and white. Pronotum with lateral declivities covered with white scales; pronotal eye small and of black scales or wanting; disc covered mostly with tawny or cupreous scales with various small patches of black scales. Elytra with arrow not discernible although sometimes evidenced by few white scales; basal 1 /3 of elytra covered with tawny or cupreous scales and small, intermingled patches of black scales; no subbasal lateral patch of white scales; submedian band of white scales occupying nearly basal 1/3 to 2/3 of elytra at margins and extending to suture; subapical band of white scales present but usually small.
DISTRIBUTION: California, Nevada, Utah, Arizona

FORM TWIN FALLS. Scales of dorsum black, brick red, and white. Pronotum with lateral declivity covered with white scales, these with some intermixture of red scales at margin; pronotal eye of red scales; disc of black scales with anterior sublateral patch of white scales, sometimes with thin median line of white scales. Elytra with arrow red and with subbasal band of red scales reaching arrow; small lateral patch of white scales within subbasal band; submedian band with patch of white scales laterally and red scales extending toward but not reaching sutural red scales; subapical band of white scales with red scales extending laterad; other area of elytra of black scales with few scattered red scales or red scales forming irregular sublateral lines. Some specimens with yellowish or golden arrow and subbasal elytral band, but subbasal band always reaching arrow.
DISTRIBUTION: Idaho

FORM WHITE ARROW. Scales of dorsum black and white. Pronotum with lateral declivity covered with white scales with or without pronotal eye. Elytra with arrow of white scales; arrow terminating at about middle of elytra; subbasal lateral patch absent or small and not reaching arrow; submedian lateral patch commonly larger than subbasal but not reaching submedian band; other areas of elytra of all black scales or of black scales with scattered white scales or thin, irregular lines of white scales.
DISTRIBUTION: California, British Columbia, Oregon, Washington, Idaho, Montana, Arizona, Utah, New Mexico, Colorado

# *Anthrenus (Florilinus) museorum* (Linnaeus, 1761)

*Anthrenus museorum*, dorsal habitus

**Synonyms:** *Dermestes museorum* Linnaeus, 1761
*Byrrhus museorum* Linnaeus, 1761
*Anthrenus verbasci* Fabricius, 1775
*Byrrhus muscorum* Fuesslin, 1775
*Byrrhus verbasci* Goeze, 1777
*Anthrenus muscorum* Fabricius, 1787
*Anthrenus vagus* Gmelin, 1790
*Anthrenus pellio* Thunberg, 1815
*Anthrenus varius* Stephens, 1830
*Anthrenus brevasci* [sic] Fabricius: Mulsat & Rey, 1868
*Florilinus muscorum* Coucke, 1895
*Anthremus* [sic] *museorum* Kulczyński: Burakowski et al., 1986
*Anthrenus musicorum* [sic] Gyllenhal: Burakowski et al., 1986

**Canada and United States Distribution:** Connecticut, Massachusetts, Newfoundland, Ontario, Quebec, Wisconsin

**Economic Importance:** Moderate economic importance; pest of woolens, furs, insect collections; egg predator of *Lymantria dispar*

**Species with similar appearance:** *Anthrenus blanci* Beal, 1998; *Anthrenus castaneae* Melsheimer, 1844; *Anthrenus olgae* Kalík, 1946

**Diagnostic Notes:** Antenna 8-segmented

**Morphology Summary:** Adult male
**Length**: 2.7-3.1 mm
**Cuticle** shining and black, rarely dark brown; four basal segments of antennae, tibiae, and tarsi usually dark reddish brown. Body moderately strongly convex and broadly to moderately narrowly obovate. Scales of ventral surface usually distinctly triangular, half again to as much as twice as long as broad, broadest point of each at apex or very near apex, and apex of each usually truncate but occasionally feebly rounded; scales of dorsal surface relatively narrower and often as much as two and a half times longer than broad. Dorsal surface with

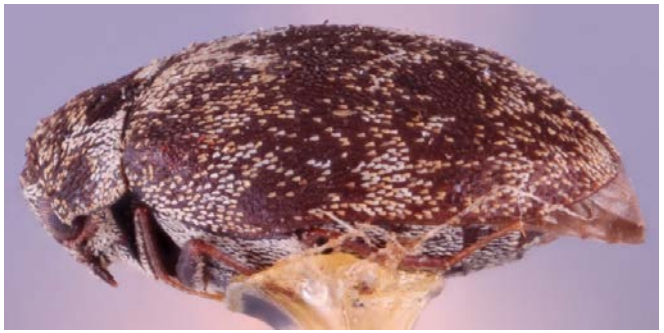
*Anthrenus museorum*, female frons

*Anthrenus museorum*, female venter

white, yellow, and very dark brown or black scales. Ventral surface with all scales white or yellowish white except as follows: posterior middle of metasternal disc, mesal region of hind coxa, and lateral basal region of apical three abdominal sternites as well as middle posterior region of apical sternite with few or numerous dark brown or black scales. **Antennae** 8-segmented with a 2-segmented club; apical segment six times longer than basal segment. **Head**: eye with inner or mesal margin evenly rounded, not emarginate. **Pronotum** with sides moderately strongly declivous and lateral margin with anterior third or half (part of dorsal margin of antennal cavity) not visible from above; antennal cavity occupying half or very little more than half of lateral margin. Hypomeron with elevated, scale-covered part more than twice as broad at sternum than at lateral margin of pronotum. **Abdomen** without lateral discal lines on first sternite. Male genitalia with median lobe relatively longer and extending much nearer to apices of parameres.

Adult female
Differs from male in having apical segment of antenna twice as long as basal segment.

**References:** Beal 1998, 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Anthrenusmuseorum.html



*Anthrenus museorum*, lateral habitus

# *Anthrenus (Anthrenus) pimpinellae* Fabricius, 1775

*Anthrenus pimpinellae pimpinellae*, dorsal habitus

**Synonyms:** *Byrrhus pimpinellae* Fabricius, 1775
*Anthrenus pimpinellae*: Goeze, 1777
*Anthrenus scrophulariae* Geoffroy in Fourcroy, 1785
*Anthrenus pimpinellae* var. *dimidiatus* Hauser, 1894
*Anthrenus pimpinellae* var. nov.: Hinton, 1945

**Canada and United States Distribution:** Delaware, Virginia

**Economic Importance:** Minor economic importance; pest of households, insect collections, woollens

**Species with similar appearance:** *Anthrenus chiton* Beal, 1998; *Anthrenus isabellinus* Küster, 1848; *Anthrenus oceanicus* Fauvel, 1903

**Diagnostic Notes:** Scales of the dorsum are white, black, and golden brown. The lateral declivity of the pronotum is covered with inter mingled white and golden brown scales and these enclose a more or less round patch of black scales.

**Morphology Summary:** Adult male and female
**Length**: 2.0-4.5 mm
**Cuticle** shining and dark reddish brown to nearly black; antennae and legs usually paler reddish brown. Body moderately strongly convex and broadly oval with sides of elytra distinctly rounded. The scales are widest at proximal 1/3 or middle and curve slightly or strongly toward apex. The apex is truncate or slightly rounding and without an apical lappet. Scales of the dorsum are white, black, and golden brown. The lateral declivity of the pronotum is covered with inter mingled white and golden brown scales and these enclose a more or less round patch of black scales. Elytra with subbasal band of white scales much shorter (1/4 as narrow) at suture than at lateral margin; medial margins of subbasal band at middle somewhat resembling an inverted U; suture with line of golden brown scales extending from behind subbasal band or at least from middle to apex. Abdominal segment 1 with patch of dark scales at lateral margin. **Antennae** 11-segmented; club 3-segmented with length of apical segment equal to combined lengths of two

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*Anthrenus pimpinellae pimpinellae*, frons

basal, and second as long to one-third longer than first. **Head**: eye with inner or mesal margin deeply and broadly emarginate at anterior two-fifths. **Pronotum** with sides moderately strongly declivous and lateral margins, including dorsal margin of antennal cavity, distinctly dilated and visible from above; antennal cavity occupying a third or slightly more than a third of lateral margin, broadly obovate in outline, and half or slightly more than half as broad as long. Hypomeron with elevated, scale-covered part subparallel and about as broad near sternum as near margin of pronotum.

**References:** Beal 1998, 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Anthrenuspimpinellae.html

*Anthrenus pimpinellae pimpinellae*, lateral habitus

# *Anthrenus (Anthrenus) scrophulariae* (Linnaeus, 1758)

*Anthrenus scrophulariae*, dorsal habitus

**Synonyms:** *Dermestes scrophulariae* Linnaeus, 1758
*Dermestes variegatus* Scopoli, 1763
*Byrrhus scrophulariae* Linnaeus, 1767
*Anthrenus histrio* Fabricius, 1792
*Anthrenus verbasci* Herbst, 1797
*Anthrenus scrophulariae* ab. *histrio*: Heer, 1841
*Anthrenus scrophulariae* var. *verbasci*: Gemminger & Harold, 1868
*Anthrenus scrophulariae* var. *albida* Dalla Torre, 1879
*Anthrenus scrophulariae* var. *flavida* Dalla Torre, 1879
*Anthrenus scrophulariae* var. *rubricollis* J. Sahlberg, 1913
*Anthrenus* (*Anthrenops*) *insulicola* Obenberger, 1917
*Anthrenus scrophulariae* var. *suecicus* Palm, 1940
*Anthrenus scvophulariae* [sic]: Korschefsky 1944
*Anthrenus scrofulariae* [sic]: Duran, 1952
*Anthrenus scrophulariae* var. *suecica*: Horion, 1954
*Athrenus* [sic] *serophulariae* [sic]: Obenberger, 1959
*Anthrenus* (*Anthrenus*) *scrophulariae* ab. *insulicola*: Mroczkowski, 1964
*Anthrenus scophulariae* [sic]: Koerth: Burakowski et al., 1986
*Anthrenus scrophulariae* ssp. *suecicus*: Angelini & Montemurro, 1986
*Anthrenus Scrop-hulariae* [sic]: Toskina, 1998

**Canada and United States Distribution:** British Columbia, Colorado, Connecticut, Iowa, Indiana, Kansas, Michigan, Minnesota, Missouri, New Brunswick, North Carolina, Nebraska, New Hampshire, New Jersey, Nova Scotia, New York, Ohio, Ontario, Oregon, Quebec, Utah, Wisconsin, West Virginia

**Economic Importance:** Minor economic importance; pest of households, dried plants, flour, woollens, furs, hair, bristles, horn, feathers, museum specimens, insect collections

**Species with similar appearance:** *Anthrenus fucosus* Beal, 1998; *Anthrenus pueblanus* Hava, 2021; *Anthrenus pulaskii* Kadej, 2011; *Anthrenus sophonisba* Beal, 1998; *Anthrenus thoracicus* Melsheimer, 1844; *Anthrenus um*bra Beal, 1998

*Anthrenus scrophulariae*, lateral habitus

*Anthrenus scrophulariae*, frons

**Diagnostic Notes:** The contrasting brownish black, white, and red scales (red scales may fade to yellow or near white in some specimens) with red scales forming a line the length of the elytral suture distinguish this species from most other Nearctic species.
**Morphology Summary:** Adult male and female
**Length**: 2.0-3.8 mm
**Cuticle** shining and reddish brown to black; antennae and legs paler reddish brown. Body broadly obovate but with sides of basal half of elytra nearly parallel; moderately strongly convex. Scales of dorsal and ventral surface obovate to nearly parallel, usually slightly more than half as broad as long, broadest point sometimes near middle and sometimes near apex, surface finely striate or, more rarely, with a complete, median longitudinal, impressed line, and apex of each truncate, rounded, or obtusely pointed. color of dorsal scales very variable but pronotal sides with patch of pale scales never enclosing a small patch of dark scales; pronotal lobe margined with light colored scales.
**Antenna** 11-segmented; club 3-segmented, length of apical segment equal to combined length of two basal, and second segment distinctly longer than first (3:2). For both males and females the ratio of length of segments 9, 10, and 11 is close to 1:2:3. **Head**: eye with inner (mesal) margin deeply and broadly emarginate in front of middle. **Pronotum** with sides moderately strongly declivous and lateral margins, including dorsal margin of antennal cavity, rather strongly dilated from above; antennal cavity occupying about a third of lateral margin of pronotum, broadly obovate to nearly subparallel in outline, and half or slightly more than half as broad as long. **Hypomeron** with elevated, scale-covered part subparallel and about half as long as broad near lateral margin of pronotum as near sternum.

**References:** Beal 1998, 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Anthrenusscrophulariae.html

*Anthrenus scrophulariae*, venter

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# *Anthrenus (Nanthrenus) verbasci* (Linnaeus, 1767)

*Anthrenus verbasci*, dorsal habitus

*Anthrenus verbasci*, lateral habitus

**Synonyms:** *Byrrhus verbasci* Linnaeus, 1767
*Bostrichus varius* Fabricius, 1775
*Anthrenus florilegus* Geoffroy in Fourcroy, 1785
*Dermestes varius* Schneider, 1785
*Anthrenus varius* Fabricius, 1775
*Anthrenus adspersus* Herbst, 1797
*Anthrenus tricolor* Herbst, 1797
*Anthrenus pictus* Germar, 1813
*Anthrenus tomentosus* Thunberg, 1815
*Anthrenus destructor* Melsheimer, 1844
*Anthrenus nitidulus* Küster, 1847
*Anthrenus varius* var. *destructor*: Lacordaire, 1856
*Anthrenus verbasci* var. *nitidulus*: Reitter, 1881
*Anthrenus verbasci* var. *confusus* Reitter, 1887
*Anthrenus verbasci* var. *nebulosus* Reitter, 1887
*Anthrenus funebris* Reitter, 1889
*Anthrenus verbasci* var. *vorax* Casey, 1900
*Anthrenus verbasci* var. *substriatus* Casey, 1900
*Anthrenus verbasci* var. *maculosus* Reitter: Gerhardt, 1910
*Anthrenus verbasci* ab. *bifasciata* Hänel, 1935
*Anthrenus verbasci* var. *voraz* [sic]: Hinton, 1945
*Anthrenus verbasci* var. *caseyi*: Hinton, 1945
*Anthrenus verbasci* ab. *destructor*: Hatch, 1962
*Anthrenus verbasci* ab. *nitidulus*: Hatch, 1962
*Antherenus* [sic] *verbasci*: Rebodello et al., 1994

**Canada and United States Distribution:** Cosmopolitan

**Economic Importance:** Moderate economic importance; pest of insect collections, silk, woollens, fur, hair, bristles, horn, leather, whalebone, skins and hides, dried deer's foot, skeletons, feathers, a wide variety of dried animal products

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*Anthrenus verbasci*, frons

*Anthrenus verbasci*, venter

**Diagnostic Notes:** Distinguished by its long, narrow scales.
**Morphology Summary:** Adult male and female
**Length**: 1.7-3.2 mm
**Cuticle** feebly to strongly shining and dark reddish brown to black. Body broadly oval and moderately strongly convex. Scales of dorsal and ventral surface obovate to sub-triangular, 2.5-4x as long as broad, apices truncate or nearly so, and broadest point as often at middle as at apex. Dorsal surface usually with scales dark brown to black except as follows: head almost entirely clothed with yellowish scales; pronotum with part before scutellum, lateral third of base, and all of extreme sides with white scales, the margins of these white patches usually being surrounded by yellowish scales; discal region of pronotum with yellowish scales forming a more or less complete, transverse patch on apical two-fifths; and elytra with three complete or incomplete, zig-zag, transverse patches of white scales, the borders of the patches having numerous yellowish scales and sometimes with the yellowish scales more or less evenly interrupted with white ones; first elytral patch extends from side at about basal fourth to near suture, second from side just behind middle to suture at middle of its length, and third patch across apical fourth or fifth of elytra. Dorsal surface with yellowish scales sometimes absent and entirely clothed with sharply contrasting black and white scales, but sometimes almost exclusively clothed with yellowish scales which are not arranged in distinct, transverse patches. Ventral surface usually white except for patches of yellowish and black scales on anterior sides of four apical abdominal sternites and middle region of fifth, but sometimes with all scales white or yellowish white. **Antenna.** **Head**: eye with inner or mesal margin rather strongly rounded, not emarginate. **Pronotum** with anterior part of dorsal margin of antennal cavity not visible from above; antennal cavity occupying about half or slightly less than half of lateral margin of pronotum, about three times as long as broad, and with dorsal rim not or only scarcely noticeably dilated. Hypomeron with elevated scaly part twice as broad ventrally (along tergo-sternal suture) as dorsally (near lateral margin of pronotum).

**References:** Beal 1998, 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Anthrenusverbasci.html

# *Attagenus brunneus* Faldermann, 1835

*Attagenus brunneus*, dorsal habitus

**Synonyms:** *Attagenus dalmatinus* Dejean, 1821 (nomen nudum)
*Attagenus sordidus* Heer, 1837 (nomen nudum)
*Attagenus dalmatinus* Küster, 1847
*Attagenus marginicollis* Handschuch in Küster*, 1847*
*Attagenus fulvipes* Mulsant & Rey, 1868
*Attagenus piceus var. sordidus* Reitter, 1881
*Attagenus piceus var. dalmatinus* Reitter, 1881
*Attagenus piceus var. brunneus* Reitter, 1883
*Megatoma picea var. dalmatina* Reitter, 1887
*Megatoma picea var. sordida* Reitter, 1887
*Megatoma marginicollis* (Küster, 1847) Reitter 1887
*Attagenus piceus var. obliquus* Rey, 1889
*Attagenus longicornis* Pic, 1894
*Attagenus fulvipes var. obliquus* Pic, 1895
*Attagenus elongatulus* Casey, 1900
*Attagenus extricates* Casey, 1900
*Attagenus bicolor* Casey, 1900
*Attagenus elongatus* Casey, 1916
*Attagenus megatoma dalmatinus* Mroczkowski, 1962
*Attagenus longizornis* [sic]: Kalík, 1986
*Attagenus megatoma delmatinus* [sic]: Veer, Negi & Rao, 1996

**Canada and United States Distribution:** Cosmopolitan

**Economic Importance:** Moderate economic importance; pest of households, dried milk factories, peanut storage,

**Species with similar appearance:** *Attagenus bicolor* Harold, 1868; *Attagenus schaefferi hypar* Beal, 1970; *Attagenus schaefferi spurcus* LeConte, 1854; *Attagenus unicolor simulans* Solsky, 1876.

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 2.9-3.9 mm
**Integument** of body yellowish or reddish brown to black; elytra often somewhat lighter in color than pronotum; legs and antenna

*Attagenus brunneus*, male lateral habitus

*Attagenus brunneus*, male frons

segment. Pubescence of head and dorsal surfaces subrecumbent, black except for band of light golden-brown hairs along basal margin of pronotum; length of light-colored band at widest point (i.e., longest anterior-to-posterior distance) four-fifths to one and one-fourth (0.8-1.25x) times as long as scutellum. Additional light golden-brown hairs wither present or not along lateral margins of pronotum, along anterior margin of pronotum, along lateral margins of elytra at basal fourth, and at base of elytra; if golden brown hairs present at base of elytra these intermingled with black hairs and not inserted posteriad beyond length of scutellum. Ventral pubescence recumbent, light golden-brown except for numerous black hairs on posterior half of fourth and on fifth visible sterna. **Antenna** 11-segmented; ratio of combined length of first two segments of club to length of terminal segment to length of pronotum and elytra combined varying from 1:6.2 to 1:7.6; club clothed with fine, erect hairs about one-third as long as width of third antennal segment. **Head** channel below eye for reception of flagellar shaft of antenna concave with anterior margin forming carina; margin of carina barely visible from front of head; carina projecting knife-like beneath head and curved behind base of maxilla to meet gular suture. Eye slightly emarginate over base of antenna. **Pronotum** with lateral carina continued as well-defined carina around anterolateral angle; basal lobe feebly rounded and not distinctly produced posteriad; setae on posterior margin of lobe about twice as long as light-colored setae on basal margin on either side of lobe; punctures of pronotal disc varying in diameter from width of one to width of two facets of eye; anterior margins more sharply defined than posterior margins with punctures nearly contiguous laterally, especially on anterior half of pronotum, so that pronotum somewhat transversely rugose. **Hypomeron** moderately concave. **Elytron** with punctures of disc about twice diameter of facet of eye and separated by one to two diameters of single puncture; hairs of disc of elytron no longer than combined length of third and fourth segments of antenna. **Prosternum** with posterior margin of lateral lobe reflected

*Attagenus brunneus*, female venter

against procoxa; reflected part about as long as horizontal part of lobe and forming angle of about 45 degrees with horizontal part. Prosternal process slightly wider at apex than between coxae; carina extending from apex of process onto disc and terminating at denticle near anterior margin of disc; carina broad and granulate on disc but thread-like on process; lateral carina present near anterior margin separating disc from anterior declivity Epipleuron terminating little behind hind margin of metepimeron. Ventral plate of hind coxa somewhat expanded laterad to insertion of trochanter to form obtusely angled or somewhat rounding tooth; plate extending laterad behind posterior margin of metepisternum and meeting metepimeron (actually extending beneath inner margin of metepimeron); protibia not carinate on dorsal margin; mesofemur with anteroventral and posteroventral margins of crural cavity about equally produced and nearly on same plane.

Adult female
**Length**: 3.6-5.0 mm
Externally similar to male except **antennal** club with first two segments yellow-ish brown to dark brown; all segments usually same color but occasionally terminal segment darker; terminal segment subequal to 1.5x as long as ninth and tenth segments combined; tenth segment about 5/6 as long as ninth segment.

**References:** Beal 1970, 2003; Háva 2015
**Internet Resources:**
http://www.dermestidae.com/Attagenusbrunneus.html

# *Attagenus cyphonoides* Reitter, 1881

*Attagenus cyphonoides*, male dorsal habitus

*Attagenus cyphonoides*, male antenna

**Synonyms:** *Attagenus alfierii* Pic, 1910
*Trogoderma cyphonoides* (Reitter, 1881)
*Telopes senegalensis* Pic, 1915

**Canada and United States Distribution:** Alabama, Arizona, California, Florida, Kansas, New Mexico, Nevada

**Economic Importance:** Moderate economic importance; pest in grain storage, dog and cattle feeds, houses; probably feeds on dead insects

**Species with similar appearance:** *Attagenus bicolor* Harold, 1868

**Diagnostic Notes:** Differs from *Attagenus unicolor* in having the posterior part of the prosternum strongly and vertically elevated to form a razor-like edge, whereas in *Attagenus unicolor* the posterior margin is only feebly but not vertically elevated and most of the prosternum in front of the anterior coxae is flat or nearly so the crural cavity of the middle femora has the postero-ventral margin scarcely produced and on a much lower level than the antero-ventral, whereas in *Attagenus unicolor* the postero-ventral margin of this cavity is only very slightly less produced than the antero-ventral margin

**Morphology Summary:** Adult male
**Length**: 2.5-4.2 mm
**Cuticle** varies from yellowish brown to a dark chestnut brown. Body obovate to broadly oval. Dorsal surface moderately densely clothed with suberect (occasionally recumbent), very dark brown to dull brick-red hairs which are as long as scutellum and among these are many only half as long. Head and pronotum often with most hairs dark dull brick-red . Elytra with hairs very dark brown except on each elytron at lateral half on basal fourth where there is a scarcely noticeable band of paler hairs extending to lateral

*Attagenus cyphonoides*, female dorsal habitus

*Attagenus cyphonoides*, female antenna

margin, and, because of the indistinctness of this band, the elytra always appear unicolorous. Ventral surface with hairs uniformly dark dull brick-red but near apex of abdomen with hairs brown or nearly so. **Antenna** 11-segmented; first two segments of male antennal club are subequal, and the terminal segment is nearly five times as long as the first two combined. **Head**: distance between eyes one and a half times as great as greatest diameter of an eye; surface with round punctures about half as coarse as facets of eyes and are usually separated by one or two diameters. **Pronotum**: middle of base broadly, moderately feebly produced backwards and apex of produced part truncate or feebly rounded; surface punctate like head except on middle of disc where it is more sparsely punctate. **Elytra** with round punctures which are about two-thirds as coarse as facets of eyes and are usually separated by two to four diameters. **Prosternum** in front of anterior coxae vertically elevated to form a razor-like edge; at sides this part of prosternum is broader than basal part of prosternal process, but even here the posterior margin is strongly elevated. Epipleura ending more or less opposite posterior margin of metasternal epimeron. **Hypomeron** punctate somewhat like elytra and also feebly rugulose. **Legs**: not thickened and middle tibiae about six times as long as broad; front femora with antero-ventral and postero-ventral margins of crural cavity equally prominent and on same level; the middle and hind femora do not have the two ventral carinae on the same or nearly the same plane; the posterior ventral carina on the apical half of the middle femur lies about two-thirds as far from the dorsal margin as does the anterior ventral carina.

Adult female
Differs from male in having the apical segment of the antennal club more or less equal to the combined length of the two basal segments instead of nearly five times longer.

**References:** Beal 1970, 2003; Háva 2015**;** Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Attagenuscyphonoides.html

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# *Attagenus fasciatus* (Thunberg, 1795)

*Attagenus fasciatus*, dorsal habitus

**Synonyms:** *Anthrenus fasciatus* Thunberg, 1795
*Anthrenus gloriosae* Fabricius, 1798
*Dermestes fasciatus* Schönherr, 1808
*Attagenus annulatus* Dejean, 1821
*Attagenus annulifer* Castelnau, 1840
*Attagenus cinnamomeus* Roth, 1837
*Attagenus gloriosae* Lacordaire, 1854
*Aethriostoma gloriosae* Motschulsky, 1858
*Attagenus unifasciatus* Fairmaire in Fairmaire & Coquerel, 1860
*Trogoderma subfasciatum* Chevrolat, 1863
*Attagenus subfasciatus* Reitter, 1881
*Attagenus plebeius* Sharp, 1885
*Megatoms cinnamomea*: Reitter, 1887
*Attagenus gossypiatus* Fauvel, 1903
*Attagenus plebejus* [sic]: Dalla Torre, 1911
*Attagenus plebius* [sic]: Illingworth, 1917
*Attagenus floriosae* [sic]: Halstead, 1975
*Attagenus fasiatus* [sic]: Robinson, 2005
*Trogoderma subfasciatum* [sic]: Peck, 2005

**Canada and United States Distribution:** has been found in Arizona, Indiana, New York; established in California, Florida

**Economic Importance:** Moderate economic importance; household pest, larvae feeds on skins, furs, feathers, woolen goods, museum specimens; pest of dried protein materials in tropics and subtropics.

**Diagnostic Notes:** Single transverse band of dull brick-red hairs on basal third of elytra.

**Morphology Summary:** Adult male and female
**Length**: 2.5-4.2 mm
**Cuticle** dark brown to black; elytra with cuticle beneath transverse band of dull brick-red hairs reddish; antennae and legs

*Attagenus fasciatus*, venter

moderately pale brown. Dorsal surface densely clothed with recumbent to erect hairs which are often as long as apical two segments of antennal club but are sometimes only half as long and are very dark brown or dull brick-red as follows: head with hairs uniformly dull brick-red ; pronotum like head or with dull brick-red hairs replaced by very dark ones on most of disc so that only sides and an area on each side of base are dull brick-red , but sometimes only with a few patches of dark hairs, one on each side at about middle and others near base; elytra with subbasal band of light golden hairs; remainder of the elytra is covered with brownish black hairs, which contrast sharply with the color of the elytral band; usually the band is fairly broad and extends from the lateral margin of each elytron to the median suture; at the median suture it is narrower and projects a little basad; rarely the band is discontinuous, but when it is there is always a distinct spot of light-colored hairs on the median suture posterior to the scutellum. Ventral surface with hairs uniformly dull brick-red , more recumbent, and slightly shorter. **Antenna** with apical segment of club shorter than combined length of two basal segments (4.5:6.0) and second segment equal to or only slightly longer than first. **Head**: distance between eyes one and a half times as great as greatest diameter of an eye; surface with round punctures as coarse as, to one-third coarser than, facets of eyes and separated by less than one or, more rarely, one diameter. **Pronotum** with middle of base broadly rounded and only very slightly produced posteriorly; surface of middle disc punctate like head but with punctures very slightly finer and more frequently separated by one diameter; sides with punctures slightly coarser and denser. **Hypomeron** coarsely, irregularly, longitudinally, and rugosely punctate. **Elytra** punctate like pronotal disc but with punctures usually separated by one to four diameters. **Prosternum** in front of anterior coxae vertically elevated to form a narrow, transverse, razor-like edge; at sides about half again as broad as apex of process though here also with posterior margin forming a razor-like edge. Epipleura ending slightly behind posterior margin of metasternal epimeron. **Mesosternum** with carinate sides of channel ending abruptly and vertically at

*Attagenus fasciatus*, frons

posterior two-fifths. **Legs** moderately stout but not much shortened, the middle tibiae being only slightly less than five times as long as broad (near apex, 33:7); front femora with antero-ventral margin of crural cavity as prominent or very slightly more prominent than postero-ventral; middle and hind femora with postero-ventral margin of crural cavity slightly but distinctly less prominent and more dorsal than antero-ventral margin.

**References:** Beal 1970, 2003; Háva 2015**;** Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Attagenusfasciatus.html

*Attagenus fasciatus*, lateral habitus

# *Attagenus lobatus* Rosenhauer, 1856

*Attagenus lobatus*, dorsal habitus

*Attagenus lobatus*, female lateral habitus (damaged specimen)

**Synonyms:** *Attagenus byturoides* Solsky, 1876
*Attagenus sericeus* Reitter, 1881
*Attagemis* [sic] *lobatus*: Schaumar et al., 1990
*Attagenus byturoldes* [sic]: Khamraev, 2003

**Canada and United States Distribution:** Michigan, New York

**Economic Importance:** Negligible economic importance; pest in buildings; larvae feed on skins, fur, feathers, woollen goods, museum specimens.

**Diagnostic Notes:** Distinctly lobed middle basal part of the pronotum, the pale brown cuticle, and the very short and uniformly dull brick-red hairs of the dorsal surface.

**Morphology Summary:** Adult male
**Length**: 2.8-4.5 mm
**Cuticle** pale brown or reddish brown; antennae and legs pale dull brick-red -brown. Dorsal surface moderately densely clothed with short (about as long as second antennal segment), recumbent, dull brick-red hairs; hind angles of pronotum and middle basal region with the hairs distinctly longer; ventral surface with hairs also uniformly dull brick-red but denser and slightly longer. **Antenna** with apical segment of club equal to combined length of two basal segments, and second segment about as long as basal. **Head**: distance between eyes equal to or only very slightly greater than greatest diameter of an eye; surface with more or less round punctures which are about two-thirds as coarse as facets of eyes and are usually separated by less than one diameter. **Pronotum** with middle basal part lobed or very strongly produced behind and apex of produced part truncate or feebly rounded; surface of middle disc slightly more sparsely but otherwise similarly punctate to head; sides punctate like head. **Hypomeron** finely, densely punctate and also feebly, irregularly rugose. **Elytra** with punctures about a third again as coarse as those of middle and pronotal disc with contiguous to separated by

*Attagenus lobatus*, female venter

*Attagenus lobatus*, female frons (damaged specimen)

one or slightly more than one diameter; on extreme base with punctures sometimes replaced by fine granules. **Prosternum** with part anterior to front coxae more or less flat (without a posterior, elevated, razor-like edge) and about half again as broad as process. Epipleura terminating more or less opposite posterior third of first abdominal sternite. Mesosternum with sides of channelled part of disc, when viewed from side, not elevated above level of caudal fourth of disc and nowhere abruptly interrupted. **Legs**: femora and tibiae moderately broad, middle femora five times as long as broad; front femora with antero-ventral margin of crural cavity very neatly as prominent as postero-ventral and very nearly on the same level; middle and hind femora with antero-ventral margin of crural cavity much more prominent and more ventral than postero-ventral margin which is much nearer dorsal side of femora.

Adult female
Differs from male in having a much smaller antennal club which is slightly shorter than the combined length of the first eight segments.

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Attagenuslobatus.html

# *Attagenus pellio* (Linnaeus, 1758)

*Attagenus pellio*, female dorsal habitus

**Synonyms:** *Dermestes pellio* Linnaeus, 1758
*Dermestes bipunctatus* DeGeer, 1774
*Dermestes macellarius* Fabricius, 1781
*Dermestes cylindricornis* Schrank, 1785
*Dermestes atra* Herbst, 1791
*Megatoma schrankii* Kugelann, 1792
*Dermestes ater*: Panzer, 1795
*Attagenus macellarius* Latreille, 1802
*Attagenus pellio* Leach, 1815
*Megatoma pellio*: Cristofori & Jan, 1832
*Attagenus pellio* var. *impunctata* Linnaeus: Gistel, 1829 (nomen nudum)
*Attagenus fruteti* Grimmer, 1841
*Attagenus marcellarius* [sic]: Murray, 1853
*Eunorops pellio*: Gistel, 1856
*Attagenus quisquiliorum* Gistel, 1857
*Attagenus Shranki* [sic]: Dalla Torre, 1911
*Attagenus bipunctatus* Wradatsch, 1914
*Attagenus pellio* var. *pilosissimus* Roubal, 1932
*Attagenus pelio* [sic]: Schaitter, 1870: Burakowski et al., 1986

**Canada and United States Distribution:** British Columbia, Kentucky, Massachusetts, New Hampshire, Nova Scotia, Quebec, Ontario

**Economic Importance:** found on fur, skins, woolens, carpets, grain, flour, maize, meal, cattle food, rye bran, and sugar

**Diagnostic Notes:** Easily recognized by the two small patches of white or golden-yellow hairs on the middle of the elytra near the suture; these contrast sharply with the dark brown to black hairs covering most of the dorsal surface.

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*Attagenus pellio*, female lateral habitus

*Attagenus pellio*, female frons

**Morphology Summary:** Adult male
**Length**: 3.5-6.0 mm
**Cuticle** dark reddish-brown to black; body obovate. Dorsal surface moderately to densely clothed with subequal, subrecumbent to erect hairs which are about half as long as an eye and are brownish-black except as follows: pronotum with middle of base and base near hind angle with an oval area as large or slightly larger than scutellum of white or pale golden hairs; pronotum often also with a smaller patch of pale golden hairs on lateral third about middle and, more rarely, with another small patch of golden hairs on anterior third of middle of disc; each elytron with an oval patch about twice as large as scutellum of white or yellowish hairs on middle near suture and usually also with two similar but much smaller patches on basal third, one behind humerus and the other opposite it very near lateral margin; ventral surface with hairs shorter and finer than those of dorsal surface, more or less uniformly recumbent, and pale golden in color. **Antenna** with apical segment of antennal club four to five times as long as combined length of two basal segments, and two basal segments subequal in length. **Head**: surface with round punctures which are slightly coarser than facets of eyes and are separated by one-half of one to one or more diameters. **Pronotum** with middle of base broadly rounded and not lobed, but in some specimens it is truncate and gives the appearance of being very slightly lobed; surface of middle of disc punctate like head, but towards sides punctures become coarser and denser so that near lateral margin they are twice as coarse as facets of eyes and are seldom separated by as much as one-half of one diameter but are frequently confluent. Ventral surface of hypomera densely and moderately coarsely, rugosely punctate or subgranulate. **Elytra** with punctures similar to those of pronotal disc but usually separated by two to three diameters. Epipleura extending to about anterior third of first abdominal sternite. Mesosternal disc with sides of channelled part abruptly but not vertically elevated at middle above caudal half. **Legs** with

*Attagenus pellio*, female venter

antero-ventral and postero-ventral margins of crural cavity of front femora similar and equally prominent; middle and hind femora with postero-ventral margin of crural cavity (cavity for the reception if the tibia) slightly but distinctly lower and less prominent than antero-ventral margin.

**References:** Beal 1970, 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Attagenuspellio.html

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# *Attagenus rufipennis* LeConte, 1859

*Attagenus rufipennis*, dorsal habitus

*Attagenus rufipennis*, lateral habitus

**Synonyms:** *Attagenus atrolucens* Casey, 1916

**Subspecies:** *Attagenus rufipennis rufipennis* LeConte, 1859

*Attagenus rufipennis nigripes* Casey

**Canada and United States Distribution:** Arizona, California, New Mexico, Oregon, Texas, Utah, Washington

**Economic Importance:** Negligible economic importance; pest of houses; found in nests of wood rats, spider webs, insect-infested grain trash, bird nests, general scavenger on dried protein materials

**Species with similar appearance:** *Attagenus rufipennis nigripes* Casey, 1916

**Diagnostic Notes:** Antenna 11-segmented, a small auricle-like lobe on the hypomeron behind the base of the procoxa, no knife-like carina along the dorsal margin of anterior tibia, no distinct submedian or apical spots, lines, or bands of light pubescence on elytra.

**Morphology Summary:** Adult male
**Length**: 3.0-4.1 mm
**Integument** of head and pronotum brownish black to black; elytra reddish, reddish brown, or black and if reddish or reddish brown usually but not invariably with blackish base and diffused blackish sutural line; ventral surfaces dark reddish brown to black; legs and flagellar shaft of of antennae usually somewhat lighter than ventral surfaces; antennal club brownish black to black. Pubescence of head and dorsal surface subrecumbent, entirely black, or black with oblique subbasal band of silver or golden-yellow hairs, or black with silver or golden-yellow hairs scattered among black hairs on lateral margins of pronotum and on posterior four-fifths of elytra. **Antenna** 11-segmented; ratio of combined length of first two segments of club to length of terminal segment varying from 1:3.7 to 1:4.8; ration of length of terminal segment to length of pronotum and elytra combined varying from 1:6.5 to 1:7.9. **Head**: channel below eye for reception of flagellar shaft of antenna deeply concave

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*Attagenus rufipennis*, female venter

*Attagenus rufipennis*, female frons

with anterior margin forming carina; margin of carina visible from front of head; carina projecting knife-like beneath head and curved behind base of maxilla to meet gular suture. Eye emarginate over base of antenna. **Pronotum** with lateral margin continued around anterolateral angle; basal lobe gradually rounding or truncate but not produced abruptly posteriad; punctures of disc about three times diameter of single puncture; punctures toward sides becoming larger and contiguous; setae on basal lobe and latero-posterior angles of pronotum subequal in length to setae of disc. **Hypomeron** a little inflated or flat on anterior half, occasionally slightly concave on posterior half. **Elytron** with hairs of disc about as long as combined length of third or fourth segments of antenna. **Prosternum** with posterior margin of lateral lobe slightly reflected against lateral half of procoxa; reflected part less than 1/3 as long as length of horizontal part of lobe and forming angle of 45 degrees or less with horizontal part. Prosternal process slightly wider at apex than between coxae; thread-like carina present on process but not extending onto disc of prosternum; thread-like transverse carina separating anterior declivity of prosternum from disc; no denticle present at middle of anterior margin of disc. **Legs**: ventral plate of hind coxa forming distinct tooth lateral to insertion of trochanter; plate terminating at posteromedial angle of metepisternum and not meeting metepimeron behind metepisternum; protibia not carinate on dorsal margin; mesofemur with anteroventral and posteroventral margins of crural cavity about equally produced and on same plane.

Adult female
**Length**: 3.5-5.0 mm
Differs from male in having antennal club with terminal segment 1/8 longer than length of two preceding segments combined.

**References:** Beal 1970, 2003; Háva 2015
**Internet Resources:**
http://www.dermestidae.com/Attagenusrufipennis.html

# *Attagenus unicolor japonicus* Reitter, 1877

*Attagenus unicolor japonicus*, male dorsal habitus

**Synonyms:** *Attagenus japonicus* Reitter, 1877
*Attagenus piceus japonicus*: Arrow, 1915
*Attagenus nankineus* Pic, 1916
*Attagenus canadensis* Casey, 1916
*Attagenus amurensis* Pic, 1942
*Attagenus piceus* ab. *sordidus* Hatch, 1962
*Attagenus megatoma japonicus*: Mroczkowski, 1965
*Attagenus magatoma* ssp. *canadensis*: Beal, 1970

**Canada and United States Distribution:** Idaho, Nevada, Michigan, Montana, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming, and most Canadian provinces

**Economic Importance:** Moderate economic importance; pest in grain and seed storage

**Species with similar appearance:** *Attagenus bicolor* Harold, 1868; *Attagenus schaefferi hypar* Beal, 1970; *Attagenus schaefferi spurcus* LeConte, 1854; *Attagenus unicolor simulans* Solsky, 1876.

**Diagnostic Notes:** The sides and base of the pronotum and the base of the elytra have distinctive golden brown setae, which distinguishes the subspecies from *Attagenus unicolor unicolor* (the pronotum and elytra are almost entirely covered with dark setae)

**Morphology Summary:** Adult male
**Length**: 2.5-4.0 mm
**Cuticle** dark reddish-brown or piceus to black; antennae and legs paler brown to brownish dull brick-red , the apical segment of the antennal club often black or nearly black. Dorsal pubescence black except for concentration of golden to golden-brown hairs on posterior margin and latero-posterior angles of pronotum and on base of elytra; light-colored hairs of pronotum occasionally covering most of sides of pronotum; light-colored hairs of elytra quite dense at base but intermingled with increasing numbers of black hairs posteriad; light-colored hairs

*Attagenus unicolor japonicus*, lateral habitus

*Attagenus unicolor japonicus*, male frons

inserted posteriad two to four lengths of scutellum from base. Ventral pubescence recumbent, light golden-brown except for black hairs on posterior half of fifth visible sternum. **Antenna** 11-segmented; ratio of length of terminal segment of antennal club to length of pronotum and elytra combined varying from 1:9.0 to 1:11.4; club clothed with fine, erect hairs about one-third as long as width of third antennal segment. **Head** with distance between eyes very nearly twice as great as greatest diameter of an eye (22:12); surface with round punctures about as coarse as facets of eyes and usually separated by less than one to one diameter. Channel below eye for reception of flagellar shaft of antenna concave with anterior margin forming carina visible from front of head; carina projecting knife-like beneath head and curved behind base of maxilla to meet gular suture. Eye slightly emarginate over base of antenna. **Pronotum** with lateral carina continued around anterolateral angle; basal lobe feebly rounded to slightly truncate and not distinctly produced backward; setae on posterior margin of lobe not appreciably longer than other setae of pronotum. Punctures of pronotal disc varying in diameter from width of one to two diameters of facet of eye; punctures nearly contiguous laterally, especially on anterior half of pronotum, with anterior margins more sharply defined than posterior margins so that pronotum somewhat transversely rugose. **Elytron** with punctures of disc about twice diameter of facet of eye and separated by one or two diameters of single puncture. **Prosternum** with posterior margin of lateral lobe reflected against procoxa; reflected part about as long as length of horizontal part of lobe and forming angle of about 45 degrees with horizontal part; prosternal process slightly wider at apex than between coxae; ventral surface of process thin and knife-like; no thread-like carina extending from process onto disc, but denticle present at middle or near anterior margin. Epipleuron terminating a little behind margin of metepimeron (actually extending beneath inner margin of metepimeron). Hypomeron rugosely punctate but with punctures distinctly sparser than

*Attagenus unicolor japonicus*, female venter

those of sides of pronotum. **Legs** moderately slender and middle tibiae about five times longer than broad; front femora with antero-ventral and postero-ventral margins of crural cavity about equally produced and on same level; middle and hind femora with antero-ventral margin of crural cavity only slightly, but nevertheless distinctly, more produced and slightly more ventral than postero-ventral margin.

Adult female
**Length**: 3.9-5.5 mm
Externally similar to male except as follows: antennal club with first two segments usually reddish brown and terminal segment piceus; terminal segment subequal to 1.5 times length of ninth and tenth segments combined; tenth segment about five-sixths as long as ninth segment.

**References:** Beal 1970, 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Attagenusjaponicus.html

# *Attagenus unicolor unicolor* (Brahm, 1791)

*Attagenus unicolor unicolor*, dorsal habitus

**<u>*See "Diagnostic Notes" for subspecies differentiation</u>**

**Synonyms:** *Dermestes piceus* Olivier, 1790 nec Thunberg, 1781
*Dermestes unicolor* Brahm, 1791
*Megatoma brevicornis* Herbst, 1792
*Dermestes brevicornis* Panzer, 1795
*Dermestes megatoma* Fabricius, 1798
*Nitidula cylindricornis* Schrank, 1798
*Attagenus piceus* Latreille, 1804
*Attagenus megatoma* Latreille, 1804
*Dermestes cilindricornis* Melsheimer, 1806 (nomen nudum)
*Dermestes floricola* Melsheimer, 1806 (nomen nudum)
*Dermestes obscurus* Melsheimer, 1806 (nomen nudum)
*Dermestes schaefferi* C. Sahlberg, 1819
*Attagenus cylindricornis* Say, 1825
*Attagenus cylindricornis* var. *obscurus* Say, 1825
*Attagenus cylindricornis* var. *floricola* Say, 1825
*Dermestes macellarius* Duftschmid, 1825
*Attagenus megadoma* [sic]: Sturm, 1826
*Attagenus antennatus* Castelnau, 1840
*Eunorops pellio* var. *unicolor* Gistel, 1856
*Attagenus urbicola* Gistel, 1857
*Attagenus stygialis* Mulsant & Rey, 1868
*Attagenus fulvipes* Mulsant & Rey, 1868
*Megatoma picea* Reitter, 1887
*Attagenus deficiens* Casey, 1900
*Attagenus cylindricornis* Casey, 1900 (homonym)
*Attagenus piceus var. megatoma* Reitter, 1906
*Attagenus unicolor*: Mroczkowski, 1968
*Anthrenus [sic] unicolor*: Hua, 2002
*Attagenus unicolor*: Háva, 2007
*Attagenes* [sic] *unicolor*: Denux & Zagatti, 2010

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*Attagenus unicolor unicolor*, lateral habitus

*Attagenus unicolor unicolor*, female frons

*Attagenus fulvipes*: Háva & Kalík, 2011
*Attagenus megatome* [sic]: Kumar et al., 2013
*Ataginus* [sic] *piceus*: Hasan et al., 2007

**Canada and United States Distribution:** most Canadian providences and all US states (Alaska?)

**Economic Importance:** Moderate to significant economic importance; pest of homes, grain and seed storage, peanut storage, dried fruit storage (likely feeding on insect remains)

**Species with similar appearance:** *Attagenus bicolor* Harold, 1868; *Attagenus inaguai* Hava, 2011 *Attagenus schaefferi hypar* Beal, 1970; *Attagenus schaefferi spurcus* LeConte, 1854; *Attagenus unicolor simulans* Solsky, 1876.

**Diagnostic Notes:** The pronotum and elytra are almost entirely covered with dark setae, which distinguishes the subspecies from *Attagenus unicolor japonicus* (sides and base of the pronotum and the base of the elytra of *Attagenus unicolor japonicus* have distinctive golden brown setae)

**Morphology Summary:**
Adult male
**Length**: 2.5-4.0 mm
**Cuticle** dark reddish-brown or piceus to black; antennae and legs paler brown to brownish dull brick-red , the apical segment of the antennal club often black or nearly black. Dorsal pubescence black except for few golden hairs at basal third along extreme lateral margin of pronotum and narrow band of short golden to golden-brown hairs along basal margin of pronotum; pronotal band not always distinguishable but when visible not more than half length of scutellum at longest point; often few dark golden hairs scattered among black hairs of pronotum, particularly at sides; rarely dorsal pubescence entirely black. Ventral pubescence recumbent, light golden-brown except for black hairs on posterior half of fifth visible sternum.
**Antenna** 11-segmented; ratio of last segment of antennal club to combined length of pronotum and elytra varying from 1:7.9 to 1:9.9; club clothed with fine, erect hairs about one-third as long as width of third antennal segment. **Head** with distance between eyes very nearly twice as

*Attagenus unicolor unicolor*, female venter

great as greatest diameter of an eye (22:12); surface with round punctures about as coarse as facets of eyes and usually separated by less than one to one diameter. Channel below eye for reception of flagellar shaft of antenna concave with anterior margin forming carina visible from front of head; carina projecting knife-like beneath head and curved behind base of maxilla to meet gular suture. Eye slightly emarginate over base of antenna. **Pronotum** with lateral carina continued around anterolateral angle; basal lobe feebly rounded to slightly truncate and not distinctly produced backward; setae on posterior margin of lobe not appreciably longer than other setae of pronotum. Punctures of pronotal disc varying in diameter from width of one to two diameters of facet of eye; punctures nearly contiguous laterally, especially on anterior half of pronotum, with anterior margins more sharply defined than posterior margins so that pronotum somewhat transversely rugose. **Elytron** with punctures of disc about twice diameter of facet of eye and separated by one or two diameters of single puncture. **Prosternum** with posterior margin of lateral lobe reflected against procoxa; reflected part about as long as length of horizontal part of lobe and forming angle of about 45 degrees with horizontal part; prosternal process slightly wider at apex than between coxae; ventral surface of process thin and knife-like; no thread-like carina extending from process onto disc, but denticle present at middle or near anterior margin. Epipleuron terminating a little behind margin of metepimeron (actually extending beneath inner margin of metepimeron). Hypomeron rugosely punctate but with punctures distinctly sparser than those of sides of pronotum. **Legs** moderately slender and middle tibiae about five times longer than broad; front femora with antero-ventral and postero-ventral margins of crural cavity about equally produced and on same level; middle and hind femora with antero-ventral margin of crural cavity only slightly, but nevertheless distinctly, more produced and slightly more ventral than postero-ventral margin.

Adult female
**Length**: 3.9-5.5 mm
Externally similar to male except as follows: antennal club with first two segments usually reddish brown and terminal segment piceus; terminal segment subequal to 1.5 times length of ninth and tenth segments combined; tenth segment about five-sixths as long as ninth segment.

**References:** Beal 1970, 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Attagenusunicolorunicolor.html

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# *Dermestes (Dermestes) ater* DeGeer, 1774

*Dermestes ater*, dorsal habitus

**Synonyms:** *Dermestes cadaverinus* Fabricius, 1775
*Dermestes piceus* Thunberg, 1781
*Dermestes felinus* Fabricius, 1787
*Dermestes domesticus* Germar, 1824
*Dermestes domesticus* Gebler in Ledebour, 1830
*Dermestes cinereus* Motschulsky, 1848
*Dermestes cadaverinus* ab. *domesticus*: Erichson, 1846
*Dermestes hispidulus* Montrouzier, 1860
*Dermestes chinensis* Motschulsky, 1866
*Dermestes subcostatus* Murray, 1867
*Dermestes noxius* Mulsant et Rey, 1868
*Dermestes domesticus* var. *subsulcatus* Ballion, 1878
*Dermestes cadaverinus* var. *subsulcatus*: Heyden, 1881
*Dermestes favarcqui* Godard, 1883
*Dermestes ater var. domestica*: Blackwelder, 1945
*Dermestes ruficapicalis* Pic, 1951
*Dermestes ater* var. *subsulcatus*: Mroczkowski, 1968
*Dermestes ater* ssp. *Domesticus* [sic]: Yan et al., 2010

**Canada and United States Distribution:** Cosmopolitan

**Economic Importance:** Moderate economic importance; pest of dried mushrooms, cheese, dried fish, dried insects, granaries, and various other materials of animal origin.

**Species with similar appearance:** *Dermestes haemorrhoidalis* Küster, 1852

**Diagnostic Notes:** None

**Morphology Summary:**
Adult male
**Length**: 7.0-9.0 mm
**Cuticle** shining and black to dark reddish brown, the antennae and tarsi being paler reddish brown. Dorsal surface clothed with moderately long, dense, dark brown to golden brown hairs; on pronotum these two colors of hairs are arranged so that they form definite patches not visible on most specimens; elytra with dark

*Dermestes ater*, lateral habitus

*Dermestes ater*, frons

hairs predominant, the paler hairs being sparsely sprinkled among the darker ones; ventral surface with hairs slightly shorter and nearly always golden-brown. **Pronotum** with broadest point at about basal third; sides only moderately declivous so that all or nearly all of lateral margin is visible from above; coarsely, completely margined and more or less evenly rounded; apex very finely, completely margined and apical angles broadly rounded but distinct; base with a fine, complete, indistinct marginal line or with marginal line absent in parts, rarely entirely without a marginal line; base broadly rounded or nearly truncate in front of scutellum and broadly, moderately deeply sinuate on each side; surface with a broad, shallow, oval, distinct basal depression on each side nearer to humerus than to scutellum; disc with round, moderately deep punctures which are a fourth or third again as broad as facets of eyes and are separated usually by two-thirds of one to one diameter; in some specimens these punctures are denser, being usually separated by half of one diameter; surface between these puntures with a few very much smaller punctures and sometimes also with dense, scarcely visible (magx75), microscopic punctures; at sides punctures are half again as coarse as on disc and are seldom separated by as much as half of one diameter but are sometimes confluent. **Hypomeron** with antennal depression moderately deep and limited antero-laterally by the slightly gibbous side. **Elytra** with broad, shallow, indistinct striae; disc with punctures similar to those of the pronotal disc but usually separated by one to one and a half diameters; basal region with punctures slightly coarser and denser and often with their anterior margins feebly raised; surface between punctures usually smooth. **Prosternum** with middle moderately strongly, longitudinally convex. **Mesosternal** keel, when seen from side, nearly straight, nearly vertical, and not distinctly interrupted at middle. **Metasternal** epimeron with caudal margin moderately broad, not distinctly oblique, and nearly truncate. **Abdomen** with lateral impressed line complete and strongly curved inwards at base to end opposite lateral margin of hind coxa; other sternites with lateral line complete; on middle caudal fourth of third and fourth sternites is a moderately large, moderately shallow, nearly round puncture from which arises a brush of long, suberect, golden

*Dermestes ater*, female venter

hairs. **Legs** with second segment of middle tarsi about a fourth again as long as basal segment; hind tarsi with second segment nearly twice as long as basal.

Adult female
Externally similar to male except **abdomen** without large puncture and associated brush of hairs on third and fourth abdominal sternites.

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:** http://www.dermestidae.com/Dermestesater.html

# *Dermestes (Dermestinus) carnivorus* Fabricius, 1775

*Dermestes carnivorus*, dorsal habitus

*Dermestes carnivorus*, lateral habitus

**Synonyms:** *Dermestes carniforus* (emend. by Goeze, 1777)
*Dermestes versicolor* Laporte, 1840
*Dermestes humeralis* Solier: Gaubil, 1849
*Dermestes mucoreus* LeConte, 1854
*Dermestes sobrinus* LeConte, 1854
*Dermestes muscoreus* Reitter, 1881
*Dermestes impressicollis* Reitter, 1881
*Dermestes carnivorus* var. *doemmlingi* Meier, 1899
*Dermestes unicolor* Lepesme, 1950
*Dermestes carnivorus* ab. *Dommlingi* [sic]: Lepesme, 1950
*Dermestes unicolor*: Kalík, 1952
*Dermestes sobrinus*: Kalík, 1952
*Dermestes nucoreus* [sic]: Liu & Zhang, 1986

**Canada and United States Distribution:** Nearly cosmopolitan; primarily in tropics, but has been reported as a pest in Arizona, British Columbia, California, Colorado, Florida.

**Economic Importance:** Negligible economic importance; pest of dried skins; found feeding on shed skins and dead insects

**Diagnostic Notes:** Distinguished from *Dermestes maculatus* by the rounded instead of acutely produced apices of the elytra and the presence in the male of a puncture and associated brush of hairs on the third and fourth abdominal sternites instead of only on the fourth. Distinguished from *Dermestes frischii* by the reddish brown basal region of the elytra and transverse patches of golden elytral hairs

**Morphology Summary:** Adult male
**Length**: 6.5-8.5 mm

*Dermestes carnivorus*, female venter

*Dermestes carnivorus*, frons

**Cuticle** shining and black; antennae reddish brown; scutellum and basal fourth or third of elytra usually dark reddish brown but sometimes black; tarsi sometimes reddish brown. Dorsal surface densely clothed with moderately long hairs as follows: head with all hairs white or whitish-dull brick-red and subrecumbent to nearly erect. Pronotum with sides and front clothed like head, the belt of whitish hairs being very broad at sides and only about a fourth as broad on middle of anterior margin; disc dark brown to black but with some of basal hairs often golden-brown and marginal fringe of base usually golden-brown. Elytra with all hairs black except as follows: epipleura with most hairs whitish; region immediately behind humeri with a transverse band of golden-brown and whitish hairs which extends from lateral margin to suture, this band being broad at sides and much narrower and often incomplete near suture; elytra elsewhere with small, irregular patches consisting of 2-10 golden hairs, these golden patches being rather sparse through median ones are so arranged that the elytra appear to have four median, transverse bands of golden hairs. Scutellum usually with golden but sometimes with brown hairs. Ventral surface clothed mostly in white but with patches of dark brown hair as follows: all of mesosternum except disc and a small patch near antero-lateral margin of middle coxa; metasternal episternum with a small oval patch adjacent to middle outer margin; and abdomen with a large area on basal side of first sternite and a much smaller, oval, dark brown to black area on basal side of each of apical four sternites. Legs very variable in color, being in some specimens nearly entirely white and in others nearly entirely golden-brown; coxae and trochanters all white or front and middle ones with golden-brown hairs predominating; femora with at least a transverse median bar of white on anterior face of middle and hind and usually also on posterior face of front, but sometimes all hairs of anterior face of front and basal three-fifths of anterior face of middle and hind femora are white; posterior face of middle and hind femora apparently only with brown hairs; tibiae of all legs in some individuals with most hairs whitish or yellowish. **Pronotum** with broadest point near base; sides strongly declivous so that at

*Dermestes carnivorus*, male abdomen

most only part of lateral margin is visible from above; sides moderately finely, completely margined and rather strongly rounded, but often feebly sinuate before apex and occasionally scarcely noticeably so before base; base not margined or only very indistinctly and extremely finely so; feebly rounded or nearly truncate in front of scutellum and very broadly, moderately deeply sinuate on each side; disc with round, deep punctures which are about a fourth to a third again as coarse as facets of eyes and are usually separated by a half of one to one and a half diameters; some specimens have most of the discal punctures separated by less than one diameter; towards sides these puntures always become slightly coarser and denser; surface between coarse punctures nearly smooth or with an occasional microscopic puncture. **Hypomeron** with antennal depression limited antero-laterally by the nearly vertical and somewhat gibbous side. **Elytra** not striate; disc with punctures slightly finer than those of pronotal disc, usually with an occasional microscopic puncture. **Prosternum** with middle moderately strongly convex and subcarinate near apex. **Mesosternal** keel, when seen from side, straight and nowhere interrupted. **Metasternal** epimeron with caudal margin very broad, not oblique, and shallowly, arcuately emarginate for its entire breadth. **Abdomen** with sublateral impression of first sternite confined to basal two-fifths, deep, moderately broad, moderately oblique, and at base ending some distance from lateral margin of hind coxa or between inner third and middle of caudal margin of metasternal epimeron; second and third sternite with lateral line confined to basal half, shallow, narrow, and curved near base; fourth sternite with lateral line similar to that of third but present on basal six-sevenths; fifth sternite with lateral line narrow, deep, and complete; each sternite with lateral line much shallower near apex than near base; on middle of caudal third of third and fourth sternites with a large round, moderately shallow puncture from which arises a brush of golden-yellow hairs. **Legs** with three basal segments of front and middle tarsi very densely clothed beneath with fine, erect, golden-dull brick-red hairs which are about as long as breadth of shorter and sparser hairs; middle tarsi with second segment slightly longer than basal; hind tarsi with second segment about a fifth again as long as basal.

Adult female
Externally similar to male except as follows: front and middle tarsi without distinct pads of erect, dull brick-red hairs; third and fourth abdominal sternites without a median puncture and associated brush of hairs.

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Dermestescarnivorus.html

# *Dermestes (Dermestinus) fasciatus* LeConte, 1854

*Dermestes fasciatus*, dorsal habitus

*Dermestes fasciatus*, lateral habitus

**Synonyms:** None

**Canada and United States Distribution:** Alabama, Arizona, California, Colorado, Idaho, Iowa, Kansas, Manitoba, Michigan, Montana, Nebraska, New Mexico, North Dakota, Oregon, South Dakota, Saskatchewan, Utah, Wisconsin, Wyoming

**Economic Importance:** Negligible economic importance; recorded as a pest in beehives and on dried animal skin.

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 6.8-9.0 mm
**Cuticle** black; antennae brownish black, club dark brown. Body elongate, convex; densely clothed with black and ash-gray pubescence. Elytra transversely marmorate with black and ash-gray pubescence, the pale hairs generally forming a condensed transverse fascia behind the base, the portion thence to the basal margin having some reddish yellow hair intermingled; scutellum covered with long, yellowish ash-gray, recumbent hairs. Ventral surface clothed with dense yellowish-white, recumbent pubescence, a single series of lateral black spots on abdomen, last segment black, except three white spots at base. **Head** moderately coarsely, densely punctate, pubescence semi-erect, dense, variegated reddish yellow and black. **Thorax** very convex, lateral margins not visible from above, sides arcuate, densely and finely punctate, only a very slight depression at the middle of the base; pubescence dense, variegated, brown, black and ash-gray. **Pronotal** flanks deeply declivous. **Elytra** finely and densely punctate, striae hardly apparent. **Abdomen** of male with the third and fourth segments foveolate at the middle. **Legs** covered with dense brown hairs, femora annulated at middle.

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*Dermestes fasciatus*, female venter

*Dermestes fasciatus*, frons

Adult female
Externally similar to male except **abdomen** without foveae on third and fourth abdominal segments.

**References:** Beal 2003; Casey 1900; Jayne 1882
**Internet Resources:**
http://www.dermestidae.com/Dermestesfasciatus.html

*Dermestes fasciatus*, male abdomen

# *Dermestes (Dermestinus) frischii* Kugelann, 1792

*Dermestes frischii*, dorsal habitus

**Synonyms:** *Dermestes frischi* Kugelann, 1792 (synonymous)
*Dermestes vulpinus* Herbst in Jablonsky, 1792
*Dermestes pollinctus* Hope in Pettigrew, 1834
*Dermestes fritschii* [sic]: Motschulsky, 1849
*Dermestes frischrii*: Wachtl, 1870
*Dermestes frischii* ab*. uniformis* Rey, 1889
*Dermestes Frishy* [sic]: Pic, 1895
*Dermestes Frischii* ssp*. Heyrovskyi* Obenberger, 1917
*Dermestes fritschi* [sic]: Cobos, 1950
*Dermestes frischii* var*. rufimembris* Pic, 1951
*Dermestes frischii* var*. sternimaculatus* Marcu, 1957
*Dermestes sibricus* Frilli, 1960
*Dermestes frischii* [sic]: Alexandrovitch, 1996
*Dermestes fritschi* [sic]: Abivardi, 2001

**Canada and United States Distribution:** British Columbia, Ontario, Quebec, Nova Scotia, and all states except Massachusetts and Vermont (Alaska?).

**Economic Importance:** Minor economic importance; pest on dried fish, dead insects, dried animal skins, dog biscuits, in homes, granaries, and mills; recorded once as a pest in beehives.

**Diagnostic Notes:** Distinguished from *Dermestes maculatus* by apical margin of elytra not serrate and inner apices not produced to form acute spines; sternum of abdomen with white hairs differently arranged; sternites two to five without short, basal, impressed lines at sides

**Morphology Summary:** Adult male
**Length**: 6.0-10.0 mm
**Cuticle** shining and black to dark reddish brown; antennae with basal segments always and club sometimes reddish brown, but in many specimens the club is dark grey or nearly black. dorsal surface with long, usually dense, recumbent to suberect hairs as

*Dermestes frischii*, lateral habitus

*Dermestes frischii*, female venter

follows: sides of head with white hairs and disc with golden-brown hairs amongst which are some white hairs which are often arranged to form distinct patches on either side of middle; in many specimens there is another and smaller white patch on each side near base of antenna; pronotum with white or yellowish white hairs forming a broad band at sides and along anterior margin, the middle part of the anterior band being considerably narrower than any part in the lateral band; in the white band on each side near base is a moderately large, oval area of black hairs; discal part of pronotum with black hairs among which are many white and golden-brown hairs; elytra with white and black hairs more or less regularly intermixed, the black hairs being much more numerous except at base and basal sides where there are irregular patches of white and/or golden-brown hairs; scutellum with all hairs white to golden-brown. Ventral surface with white hairs except as follows: hypomeron with most of area occupied by antennal cavity and all of caudal third or fourth clothed with brown or black hairs which are shorter than white ones; mesosternum with nearly all sides of brown or black; metasternum with only a large patch on middle side of episternum black; abdomen with black or very dark brown patches, the apical patch of fifth sternite being reddish brown. Legs with all coxae and trochanters white or at most with a few golden-brown hairs on apices; femora with ventral third to two-thirds white, front femora with a narrow, transverse, white band on a posterior face but with a broad band of white on middle of anterior face, and hind femora similar to middle but with white band occupying most of basal two-thirds of anterior face; remainder of femora, tibiae, and tarsi brownish but tarsi and tibiae with numerous whitish hairs amongst the brown ones.

**Pronotum** with sides strongly declivous so that most or all of lateral margin cannot be seen from above; sides finely and completely margined; strongly rounded, particularly near middle, but near base nearly straight and occasionally very feebly, scarcely noticeably sinuate; base not margined, nearly truncate opposite scutellum, and broadly, deeply sinuate on each side; disc with deep, usually round punctures which are a third to a

*Dermestes frischii*, frons

*Dermestes frischii*, male abdomen

half again as coarse as facets of eyes and are separated by one-third of one to nearly one diameter; sides with punctures denser, often more or less contiguous; surface between punctures with only an occasional microscopic puncture. **Hypomeron** with antennal depression extending to lateral margin. **Prosternum** with middle broadly and moderately strongly convex, not carinate. **Mesosternal** keel, when seen from side, abruptly interrupted at caudal two-fifths by a basal process which is rounded and not forked at apex. **Metasternal** epimeron with caudal margin very broad, only slightly oblique, and nearly truncate or at most only very shallowly and arcuately sinuate. **Abdomen** with sublateral impressed line of first sternite confined to anterior half, deep, narrow, and near base strongly curved inwards to end opposite lateral margin of hind coxa; sternites two to five without lateral impressed lines; on caudal fourth of disc of fourth sternite with a large, round, shallow puncture from which arises a dense brush of long, erect, brown hairs. **Legs** with three basal segments of front and middle tarsi very densely clothed beneath with fine, erect, golden-dull brick-red hairs which are about as long as breadth of segments; fourth segment of front and middle tarsi with shorter and fewer but otherwise similar hairs; middle tarsi with first two segments subequal; hind tarsi with second segment about a fourth longer than basal.

Adult female
Externally similar to male except as follows: fourth abdominal sternite without a pit and erect brush of hairs; first four segments of front and middle tarsi with dull brick-red ventral pads sparser, shorter, and less distinct

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Dermestesfrischi.html

# *Dermestes (Dermestes) lardarius* Linnaeus, 1758

*Dermestes lardarius*, dorsal habitus

**Synonyms:** *Dermestes lardarius* var*. conjunctus* Reitter, 1887
*Dermestes lardarius* var*. proximus* Reitter, 1887
*Dermestes luganensis* Stierlin, 1902
*Dermestes laradarius* [sic]: Lepesme, 1950
*Dermestes lardarius* var*. atrobasalis* Pic, 1951
*Dermestes laudarius* [sic]: Wajgiel, 1875: Burakowski et al. 1986
*Dermestes cardarius* [sic]: Hua, 2002

**Canada and United States Distribution:** Cosmopolitan

**Economic Importance:** Moderate to significant economic importance; pest of homes, dried meats and fish, cheese, hair, fur, feathers, poultry houses, beehives; feeds on almost any animal substance either dry or in the process of decomposition; predator on egg masses of the gypsy moth, *Lymantria dispar* (L.). The full-grown larvae bore into solid materials, such as timber, cork, vegetable, fibers, lead, and mortar, to pupate.

**Species with similar appearance:** *Dermestes reductus* Kalík, 1952

**Diagnostic Notes:** Unique arrangement of black and golden-dull brick-red hairs on the dorsal surface

**Morphology Summary:** Adult male
**Length**: 7.0-9.5 mm
**Cuticle** shining and black; antennae and tarsi reddish brown; basal two-fifths of elytra frequently reddish brown. Dorsal surface with dense, moderately long, recumbent hairs which are all black except as follows: head with hairs usually black but sometimes nearly all are dark golden-brown; pronotum with numerous bilaterally symmetrical groups of 3-10 hairs which are golden-dull brick-red , and lateral margins sometimes and base usually fringed with these golden hairs; elytra with basal two-fifths to one-half clothed with golden-dull brick-red hairs, and on each elytron with a large basal and three sub-basal oval patches of black hairs which vary somewhat in size and shape, the three subbasal

*Dermestes lardarius*, male venter

patches being sometimes more or less joined together; scutellum sometimes with hairs dark brown or black and sometimes with hairs golden like adjacent parts of elytra. Ventral surface and legs entirely clothed with dark golden-brown to nearly black hairs. **Pronotum** with broadest point well behind middle; sides sub-explanate, only moderately declivous so that all of lateral margin can be seen from above; sides coarsely, completely margined and rather evenly rounded; base finely and distinctly margined except at extreme sides; feebly rounded or nearly truncate in front of scutellum and very broadly, moderately deeply sinuate on each side; disc with deep, round or nearly round punctures which are a third to a half again as coarse as facets of eyes and are usually separated by distinctly less than one-half of one diameter; towards sides these punctures become slightly denser and slightly but distinctly coarser; surface between coarse punctures on disc and sides very densely and usually evenly, microscopically punctate. **Hypomeron** with antennal depression extending to antero-lateral margin and not limited by an antero-lateral gibbous part. **Prosternum** moderately strongly and longitudinally convex. **Mesosternal** keel, when seen from side, abruptly interrupted on basal fourth by a basal process whose apex is rounded and not forked; caudal four-fifths of keel evenly curved upwards to apex. **Metasternal** epimeron with caudal margin moderately narrow, not oblique, not extending beyond adjacent part of caudal margin of hind coxa, and broadly, arcuately emarginate. **Abdomen** with a deep, narrow, and complete impressed line parallel and near to lateral margin of first five sternites, this impressed line being much shallower on apical half of each sternite; first sternite with impressed line ending a considerable distance from lateral margin of hind coxa but more or less opposite postero-lateral margin of metasternal epimeron; middle caudal two-fifths of third and fourth sternites with a large, shallow, nearly round puncture from which arise numerous golden, erect hairs. **Legs** with second segment of middle tarsi about a third or fourth longer

*Dermestes lardarius*, frons

than basal; hind tarsi with second segment about twice as long as basal.

Adult female
Externally similar to male but without the large puncture and associated brush of hairs on third and fourth abdominal sternites.

**References:** Beal 2003; Bousquet 1990; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Dermesteslardarius.html

*Dermestes lardarius*, lateral habitus

# *Dermestes (Dermestinus) maculatus* DeGeer, 1774

*Dermestes maculatus*, dorsal habitus

**Synonyms:** *Dermestes marginatus* Thunberg, 1781
*Dermestes vulpinus* Fabricius, 1781
*Dermestes australis* Dejean, 1821 (nomen nudum)
*Dermestes senex* Germar, 1824
*Dermestes lateralis* Sturm, 1826 (nomen nudum)
*Dermestes senegalensis* Christofori & Jan, 1832 (nomen nudum)
*Dermestes lupinus* Christofori & Jan, 1832 (nomen nudum)
*Dermestes elongatus* Hope in Pettigrew, 1834
*Dermestes roei* Hope in Pettigrew, 1834
*Dermestes lupinus* Mannerheim, 1843
*Dermestes semistriatus* Boheman, 1851 (pars)
*Dermestes vulpinus* var. *lupinus*: LeConte, 1854
*Dermestes cinereus* Redtenbacher, 1867
*Dermestes vulpinus* var. *rattulus* Mulsant & Rey, 1867
*Dermestes rattulus* Mulsant & Rey, 1868
*Dermestes vulpinus* var. *sudanicus* Gredler, 1878
*Dermestes vulpinus* var. *senex*: Reitter, 1906
*Dermestes truncatus* Casey, 1916
*Dermestes maculatus* var. *kurseongensis* Lepesme, 1939
*Dermestes kurseongensis*: Lepesme, 1950
*Dermestes maculatus* var. *cyprius* Pic, 1951
*Dermestes maculatus* ssp. *pakistanicus* Havelka, 1951
*Dermestes maculatus* ssp. *vulpinus*: Kalík, 1955
*Dermestes maculatus* ab. *nigropubescens* Kalík, 1955 (nomen nudum )
*Dermestes maculatus* ab. *nigropubescens* Kalík, 1955
*Dermestes meculatus* [sic]: Li, 1988
*Dermestes maculatus pakistanicus*: Háva, 1999

**Canada and United States Distribution:** All US states, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec

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*Dermestes maculatus*, lateral habitus

*Dermestes maculatus*, frons

**Economic Importance:** Moderate economic importance; pest in houses, bone factories, dog biscuit factories, baled skins, dried fish, horn, feathers, fur, bristles, and other products of animal origin. Larvae bore into materials to pupate (cork, fiber-board, books, wood, stored tobacco, tea, linen and cotton, woolens, salt, sal-ammoniac, plaster molds, flexible asbestos, lead).

**Diagnostic Notes:** White or yellowish white hairs on sides of pronotum with the serrate and acutely produced apices of the elytra distinguish this species.

**Morphology Summary:** Adult male

**Length**: 5.5-10.0 mm

**Cuticle** shining and reddish brown to black; when black with antennae and legs reddish brown. Dorsal surface densely clothed with recumbent, reddish yellow to ash-gray hairs and also with a few black hairs, but sometimes with reddish yellow hairs mostly replaced by black hairs except as follows: sides of head and often a considerable part of frontal region with only white or nearly white hairs; pronotum with lateral third or fourth and frequently also with a narrow anterior belt with denser, paler (usually white) hairs; and base of pronotum and scutellum with hairs more golden-brown than elsewhere. Ventral surface clothed for the most part with dense white hairs; metasternum entirely white; metasternal episternum with a large oblong patch of black hairs adjacent to middle lateral margin; abdomen with patches of black or dark brown hairs; legs with coxae, trochanters, and basal third or fourth of ventral side of femora clothed mostly with white hairs, elsewhere with hairs usually reddish yellow or ash-gray. **Pronotum** with sides strongly declivous so that only part or none of lateral margins can be seen from above; sides finely margined and evenly arcuate except before apical angles where they are nearly straight or even feebly sinuate; base not margined ot only indistinctly so before scutellum and very broadly, moderately deeply sinuate on each side; disc with round punctures about one-third coarser than facets of eyes and usually separated by one-half of one to one diameter, though in many specimens they are slightly denser; towards sides punctures become much

*Dermestes maculatus*, female abdomen

denser and are occasionally confluent, seldom separated by as much as half a diameter; surface between punctures smooth or nearly so. **Hypomeron** with antennal depression extending to lateral margin. **Prosternum** with middle broadly and longitudinally convex, not carinate. **Mesosternal** keel, when seen from side, sharply interrupted at caudal two-fifths or one-third by a basal process whose apex is rounded, not forked. **Metasternal** epimeron with caudal margin very broad, nearly truncate. **Abdomen** with lateral impressed line of first sternite broad, very deep, strongly curved inwards near base to end opposite lateral margin of hind coxae, and extending caudally to apical three-fifths of segment; sternites two to five with a very short, basal, poorly developed, indistinct lateral line; disc of caudal half of fourth sternite with a large, round, shallow depression, about a fourth as long as the sternite, from which arises a long erect brush of dense, golden hairs. **Legs** with three basal segments of front and middle tarsi very densely clothed beneath with fine, erect, golden-dull brick-red hairs which are nearly as long as breadth of segment; fourth segment of front and middle tarsi with shorter and much fewer but otherwise similar hairs; hind tarsi with second segment about as long as first.

Adult female
Externally similar to male except as follows: **abdomen** without a pit and brush of hairs on fourth sternite; **legs** with fine golden-dull brick-red hairs of basal four segments of front and middle tarsi much shorter, recumbent, and not forming distinct ventral pads.

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Dermestesmaculatus.html

# *Dermestes (Dermestinus) marmoratus* Say, 1823

*Dermestes marmoratus*, dorsal habitus

**Synonyms:** *Dermestes armoralus* [sic]: Umpiérrez & Artabe, 2010

**Canada and United States Distribution:** Alberta, Alabama, British Columbia, California, Colorado, Idaho, Kansas, Manitoba, Mississippi, Montana, New Brunswick, North Dakota, New Mexico, Nevada, Oklahoma, Oregon, South Dakota, Saskatchewan, Texas, Utah, Washington, Wyoming

**Economic Importance:** Minor economic importance; pest in powdered milk plants and cereal warehouses, most likely feeding on dead insects; carrion, dry animal products.

**Species with similar appearance:** *Dermestes caninus caninus* Germar, 1824; *Dermestes caninus mannerheimi* LeConte, 1854; *Dermestes rattus tristis* Fall, 1897; *Dermestes rattus rattus* LeConte, 1854; Dermestes sardous Küster, 1846; *Dermestes talpinus* Escholtz in Mannerheim, 1843; *Dermestes undulatus* Brahm, 1790

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 9.0-13.0mm
**Cuticle** shining and black; elytra mottled with reddish brown; antennae and tarsi reddish brown. Dorsal surface with long, dense, recumbent to suberect hairs colored as follows: head with small patches of dark brown, pale brown, and nearly white hairs alternating, the white hairs being less numerous than brown; pronotum clothed like head, but usually without distinctly white hairs and with paler brown patches arranged very indistinctly in transverse series; elytra with alternating patches of pale brown and dark brown to black hairs and occasionally with smaller patches of nearly white hairs, the dark brown or black hairs arising from the black parts of the cuticle; each elytron with basal two-fifths of outer marginal region with only white or nearly white hairs, this area of white hairs extending in a very broad, somewhat oblique band behind humerus to reach or nearly reach the suture before middle. Ventral surface densely clothed with white and dark brown or black hairs, the white hairs being distributed as follows: prosternum sometimes with a small

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*Dermestes marmoratus*, lateral habitus

*Dermestes marmoratus*, frons

patch of white hairs on middle; mesosternum with only disc white; metasternum entirely white except for a moderately large, oval, black patch near outer margin of anterior third of episternum; abdomen mostly white except for a large lateral patch of dark brown or black hairs occupying basal four-fifths of first four sternites; fifth sternite with only a sublateral, basal patch of white hairs. Legs with middle and hind coxae and trochanters clothed almost entirely with white hairs; middle and hind femora with a complete transverse bar of white hairs at about middle of anterior face; front femora with a similar but much less distinct band of yellowish hairs on posterior face; apical part of middle and hind femora and all tibiae and tarsi with numerous white hairs amongst dark brown ones. **Pronotum** with broadest point at about apical third; sides strongly declivous so that at most only part of lateral margin can be seen from above; finely, completely margined; strongly rounded in apical half, and basal half nearly straight or often broadly, scarcely noticeably sinuate on basal third; base not margined, nearly truncate in front of scutellum and deeply, very broadly sinuate on each side; surface with three large basal more or less oval depressions, a moderately deep one before scutellum and a slightly shallower one on each side about half-way between middle and lateral margin; disc with deep, round punctures which are a fourth to a third again as coarse as facets of eyes and are separated by one-half of one to one diameter; towards base and sides these punctures become slightly coarser and distinctly denser; surface between punctures nearly smooth. **Hypomeron** with antennal depression extending to lateral margin. **Prosternum** with middle broadly and strongly convex; near apex more narrowly convex, subcarinate. **Mesosternal** keel, when seen from side, not interrupted and nearly straight. **Metasternal** epimeron with caudal margin very broad, not or only slightly oblique to long axis of body, and moderately shallowly and arcuately emarginate for entire breadth. **Abdomen** with sublateral impressed line of first sternite confined to anterior third or fourth of segment, deep, broad,

*Dermestes marmoratus*, male abdomen

*Dermestes marmoratus*, female abdomen

extending obliquely inwards towards base but not curved, and ending at base opposite lateral margin of hind coxa; sternites two to five without sublateral impressed lines; third and fourth sternites each with a small, shallow depression on middle basal third from which arises a brush of stiff, nearly erect, brown hairs. **Legs** with second basal segment of middle and hind tarsi a fourth to a third again as long as basal segment.

Adult female
Externally similar to male except **abdomen** without pit and associated brush of hairs on third and fourth abdominal sternites.

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Dermestesmarmoratus.html

# *Dermestes (Dermestes) nidum* Arrow, 1915

*Dermestes nidum*, dorsal habitus

**Synonyms:** *Dermestes elongatus* LeConte, 1854 (homonym)
*Dermestes elongatus*: Barber, 1914

**Canada and United States Distribution:** California, Florida, Georgia, Indiana, New Mexico, New York, Ohio, Oklahoma, Texas, West Virginia, Wisconsin

**Economic Importance:** Negligible economic importance; pest in homes, bird nests, skins, meat, fur.

**Species with similar appearance:** *Dermestes haemorrhoidalis* Küster, 1852

**Diagnostic Notes:** Distinguishable from *Dermestes peruvianus* as follows: eytra distinctly instead of at most very feebly striate; metasternal epimeron with caudal margin feebly rounded or truncate instead of deeply sinuate; abdomen with lateral impressed line of first sternite distinctly diverging obliquely inwards near base instead of being parallel to outer margin; male with median puncture and associated brush of hairs on both third and fourth abdominal sternites instead of only on fourth sternite.

**Morphology Summary:** Adult male
**Length**: 7.5-9.5 mm
**Cuticle** shining and moderately dark reddish brown; pronotum, elytra, and most of ventral surface sometimes black or nearly black; antennal club usually moderately pale reddish-brown. Dorsal surface with long, dense, more or less recumbent, golden-brown hairs among which on pronotum and elytra are sometimes numerous dark brown hairs. Ventral surface similarly clothed but with hairs slightly shorter, finer, and usually more recumbent. **Pronotum** with broadest point actually near base but appearing to be near middle; sides only moderately strongly declivous so that all of lateral margin is visible from

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*Dermestes nidum*, lateral habitus

*Dermestes nidum*, frons

above; coarsely, completely margined and nearly evenly rounded but slightly straighter before base; apex with a fine, complete, and distinct marginal line; apical angles distinct but broadly rounded; base with a complete, moderately fine, very distinct marginal line; broadly and feebly rounded or nearly truncate in front of scutellum and broadly, moderately deeply sinuate on each side; disc with round, shallow punctures which are about as coarse as facets of eyes and are usually separated by one and a half to three diameters; at sides these punctures are slightly but distinctly coarser and are usually separated by about one diameter; surface between punctures smooth or with very dense, scarcely visible (mag x75), microscopic punctures. **Hypomeron** with antennal depression moderately shallow and extending to lateral and anterior margin. **Prosternum** with a prominent, median longitudinal, carina-like convexity. **Mesosternal** keel, when seen from side, abruptly interrupted at about caudal two-fifths by a broad basal process with a pointed apex; caudal two-fifths nearly straight and nearly vertical. **Metasternal** epimeron with caudal margin moderately narrow and feebly rounded or nearly truncate. **Abdomen** with lateral impressed lines of sternites complete, narrow, and shallow, that of first sternite much deeper and broader near base than elsewhere and extending feebly and obliquely inwards to end slightly but distinctly lateral to lateral margin of coxa; on middle caudal two-fifths of third and fourth sternites with a small, round, moderately shallow depression or puncture from which arises a suberect brush of golden-dull brick-red hairs. **Legs** with four basal segments of front and middle tarsi rather densely clothed beneath with erect, golden-dull brick-red hairs which are nearly as long as their respective segments are broad; middle tarsi with second segment about a fifth again as long as basal; hind tarsi with second segment about a third again as long as basal.

Adult female

Externally similar to male except as follows: **abdomen**

without a median puncture and associated brush of hairs on middle of third and fourth abdominal sternites; ventral dull brick-red hairs of four basal segments of front and middle tarsi sparser, much more recumbent, and less distinct.

**References:** Beal 2003; Háva 2015; Hinton 1945; Marché 2017
**Internet Resources:**
http://www.dermestidae.com/Dermestesnidum.html

*Dermestes nidum*, female venter

# *Dermestes (Dermestes) peruvianus* Castelnau, 1840

*Dermestes peruvianus*, dorsal habitus

**Synonyms:** *Dermestes peruanus* Erichson, 1847 (nomen nudum)
*Dermestes angustus* Casey, 1900
*Dermestes pervianus* [sic]: Miwa, 1931
*Dermestes angustatus* Schaeffer, 1931
*Dermestes perviana* [sic]: Bertullo et al., 1954
*Dermestes pervianus* [sic]: Hua, 2002

**Canada and United States Distribution:** Florida, Indiana, Kansas, New York, Wisconsin

**Economic Importance:** Minor economic importance; pest in homes and on dry hides, meats, bird skins, raw silk waste.

**Species with similar appearance:** *Dermestes haemorrhoidalis* Küster, 1852

**Diagnostic Notes:** Distinguished from *Dermestes ater* as follows: mesosternal keel is abruptly and distinctly interrupted; caudal apex of mesosternal epimeron is distinctly narrowed instead of broad; lateral line of first abdominal sternite is parallel throughout its length; male has fovea only on fourth abdominal sternite; apex of median lobe of male genitalia is evenly narrowed.

**Morphology Summary:** Adult male
**Length**: 7.0-11.0 mm
**Cuticle** shining and moderately dark reddish brown; pronotum, elytra, and most of ventral surface sometimes black or nearly black; antennal club usually moderately pale reddish-brown. Dorsal surface with long, dense, more or less recumbent, golden-brown hairs among which on pronotum and elytra are sometimes numerous dark brown hairs. Ventral surface similarly clothed but with hairs slightly shorter, finer, and usually more recumbent.
**Pronotum** with broadest point actually near base but appearing to be near middle; sides only moderately strongly declivous so that all of lateral margin is visible from above; coarsely, completely margined and nearly evenly rounded but slightly straighter before base; apex with a fine, complete, and distinct marginal line; apical angles distinct but broadly rounded; base with a complete,

*Dermestes peruvianus*, male abdomen

moderately fine, very distinct marginal line; broadly and feebly rounded or nearly truncate in front of scutellum and broadly, moderately deeply sinuate on each side; disc with round, shallow punctures which are about as coarse as facets of eyes and are usually separated by one and a half to three diameters; at sides these punctures are slightly but distinctly coarser and are usually separated by about one diameter; surface between punctures smooth or with very dense, scarcely visible (mag x75), microscopic punctures. **Hypomeron** with antennal depression moderately shallow and extending to lateral and anterior margin. **Prosternum** with a prominent, median longitudinal, carina-like convexity. **Mesosternal** keel, when seen from side, abruptly interrupted at about caudal two-fifths by a broad basal process with a pointed apex; caudal two-fifths nearly straight and nearly vertical. Caudal apex of **metasternal** epimeron always distinctly and often very strongly narrowed and caudal margin always distinctly and often very deeply sinuate. **Abdomen** with lateral impressed line of first sternite parallel to lateral margin throughout its length and at base ending more or less opposite outer side of apex and metasternal epimeron; male with a median puncture and associated brush of hairs present only on the fourth abdominal sternite. **Legs** with four basal segments of front and middle tarsi rather densely clothed beneath with erect, golden-dull brick-red hairs which are nearly as long as their respective segments are broad; middle tarsi with second segment about a fifth again as long as basal; hind tarsi with second segment about a third again as long as basal.

Adult female
Externally similar to male except as follows: fourth abdominal sternite without a large, shallow puncture and brush of erect hairs on middle of disc; the fine, erect, dull brick-red hairs on the ventral surface of the four basal segments of the front and middle tarsi are sparser, suberect, and do not form such distinct ventral pads

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Dermestesperuvianus.html

# *Dermestes (Dermestes) signatus* LeConte, 1874

*Dermestes signatus*, dorsal habitus

**Synonyms:** *Dermestes lardarius* var*. signatus*: Jayne, 1882

**Canada and United States Distribution:** Alberta, Alabama, Arizona, British Columbia, California, Colorado, Idaho, Manitoba, Montana, Nebraska, Nevada, New Mexico, Ontario, Oregon, Saskatchewan

**Economic Importance:** Minor economic importance; occasional pest in homes, powdered milk plants, cereal warehouses

**Species with similar appearance:** *Dermestes reductus* Kalík, 1952; *Dermestes pulcher* LeConte, 1854

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 5.6-8.0 mm
**Cuticle** blackish-brown; body elongate oval, convex. Clothed with brown pubescence, which is more dense from the base of the elytra backwards to behind the middle. Elytra reddish brown throughout, the densely pubescent basal area extending well beyond the middle and not sharply defined, the pubescence of the remaining parts being in large part similar in color but sparser; near the base on each elytron is a small dark angulated mark of three spots. Pronotum finely and sparsely punctured toward the middle.

**References:** Casey 1900; LeConte 1874

**Internet Resources:**
http://www.dermestidae.com/Dermestessignatus.html

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*Dermestes signatus*, female venter

*Dermestes signatus*, lateral habitus

*Dermestes signatus*, frons

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# *Megatoma (Megatoma) cylindrica* (Kirby, 1837)

*Megatoma cylindrica*, male dorsal habitus

*Megatoma cylindrica*, male antenna

**Synonyms:** *Attagenus cylindricus* Kirby, 1837
*Megatoma cylindrica*: Crotch, 1873
*Perimegatoma cylindrica* var.: Jayne, 1882
*Perimegatoma impressa* Casey, 1900
*Perimegatoma monticola* Casey, 1900

**Canada and United States Distribution:** Alberta, Alabama, Arizona, British Columbia, Colorado, Idaho, Montana, New Mexico, Northwest Territories, Ontario, Oregon, Utah, Washington, Wyoming, Yukon Territories

**Economic Importance:** Negligible economic importance; pest in homes and stored corn

**Species with similar appearance:** Potentially confused with several species, belonging to other subgenera

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 3.2-4.0 mm
**color**: brownish black, shining; antennae reddish brown; legs brownish black. Body oblong oval. Body beneath elytra brownish black, coarsely punctate, moderately densely pubescent. Sparsely clothed with moderately short, semi-erect, easily removed, ash-gray pubescence. **Antenna**: first and second joints of antennae large, sub-equal, 3-8 very small, 9-11 forming a club which is longer than all the preceding joints together, the first nearly as large as the second, and the last longer than the other two together, and pointed at tip. **Head** coarsely and densely punctate, pubescence sparse. **Thorax** very densely and coarsely punctate, moderately densely pubescent, especially at sides. **Elytra** uniformly brownish black or marked by two transverse reddish brown bands; elytra less densely and coarsely punctate, either black and uniformly pubescent or marked by two brownish black bands at apical and basal third, to which the pubescence is more closely adherent.

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*Megatoma cylindrica*, female dorsal habitus

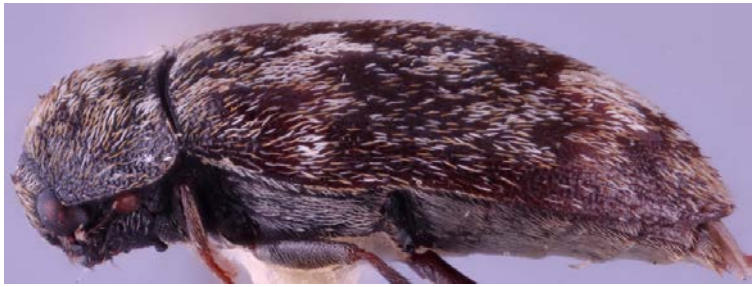
*Megatoma cylindrica*, female antenna

Adult female
Differs from male in having club of antennae only half as long as the preceding joints together, last joint not much larger than second, obtusely pointed at tip.

**References:** Beal 2003; Háva 2015; Horn 1875; Jayne 1882
**Internet Resources:**
http://www.dermestidae.com/Megatomacylindrica.html

# *Megatoma (Megatoma) variegata* (Horn, 1875)

*Megatoma variegata*, dorsal habitus



*Megatoma variegata*, lateral habitus

**Synonyms:** *Perimegatoma variegatum* Horn, 1875
*Perimegatoma jaynei* Casey, 1900
*Perimegatoma guadalupensis* Casey, 1900
*Perimegatoma nevadica* Casey, 1900
*Perimegatoma guadelupensis* [sic]: Dalla Torre, 1911
*Megatoma variegate* ab. *nevadica*: Hatch, 1962
*Dermegatona* [sic] *variegate*: Noya & Velez, 1998

**Canada and United States Distribution:** Alberta, British Columbia, California, Idaho, Oregon, Utah, Washington

**Economic Importance:** Minor economic importance; pest of insect collections; rarely occurring in flour mills, grain and raisin storage

**Species with similar appearance:** Potentially confused with several species, belonging to other subgenera

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 3.8-6.0 mm
**Cuticle** black or nearly black; elytra with cuticle beneath the two transverse bands of pale hairs reddish brown; antenna and tarsi and sometimes also tibiae dark reddish brown. Dorsal surface moderately densely clothed with recumbent to suberect hairs which are one-half to two-thirds as long as scutellum and are black, golden-brown, and white as follows: head with numerous brown hairs among black and also with an occasional white hair, the white hairs being here and elsewhere on dorsal surface slightly but usually distinctly stouter than brown or black ones. Pronotum with numerous golden-brown hairs which on disc form two moderately distinct transverse bands, on apical fourth and the other just behind the middle; white hairs often confined to a small basal patch on each side of scutellum and a slightly larger patch on lateral third opposite inner part of humeral gibbosity; some specimens with single white hairs or very small

*Megatoma variegata*, female frons

*Megatoma variegata*, female venter

groups of white hair scattered over most of the pronotum. Elytra with a moderately broad, transverse, strongly zig-zag band of pale hairs before basal third and at about apical fourth, these bands consisting of many white and fewer golden-brown hairs but the proportion of brown to white hairs is somewhat variable; the basal band is separated from the suture by a distance about equal to the breadth of the scutellum, whereas the apical band usually extends to the suture and both bands are sometimes shortly interrupted; elytra elsewhere with black hairs amongst which is a sprinkling of golden-brown and white hairs. Ventral surface with hairs slightly denser, more decumbent, finer, and uniformly dark dull brick-red. **Antenna** with apical segment of club half again as long as combined length of two basal segments (9:6) and with two basal segments subequal or with first scarcely noticeably longer than second. **Head** with round to irregular, deep punctures which are half again to nearly twice as coarse as facets of eyes and are seldom separated by as much as a third of their diameters. **Pronotum** with punctures of disc slightly coarser than those of head and usually separated by a third to a half of one diameter; sides with punctures about a third or fourth coarser and denser, being sometimes confluent. **Elytra** with round or oval, deep punctures which are only about two-thirds as coarse as those of pronotal disc and are usually separated by one and a half to four diameters; on base, particularly near humeri, the punctures are distinctly coarser and denser than on disc.

Adult female
Differs from male in having apical segment of antennal club equal to combined length of two basal segments.

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Megatomavariegata.html

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# *Novelsis horni* (Jayne, 1882)

*Novelsis horni*, dorsal habitus

**Synonyms:** *Attagenus hornii* Crotch, 1873
*Attagenus hornii* Jayne, 1882
*Attagenus byturodes* Jayne, 1882

**Canada and United States Distribution:** Arizona, Colorado, California, New Mexico, Texas

**Economic Importance:** Negligible economic importance; pest of homes and feed and seed establishments; general scavenger on dried protein materials

**Species with similar appearance:** *Novelsis andersoni* Beal, 1954; *Novelsis athlophora* Beal, 1954; *Novelsis beldensis* Háva, 2021; *Novelsis picta* Casey, 1900; *Novelsis timia* Beal, 1954; *Novelsis uteana* Casey, 1900

**Diagnostic Notes:** Cross-shaped, light yellowish brown marking on the blackish elytra

**Morphology Summary:** Adult male
**Length**: 2.4-2.9 mm
color of **integument** of dorsal surfaces dark brown to black with light yellowish-brown maculae on pronotum and elytra; pronotum light-maculate on basal margin with occasional, vague, light spots near antero-lateral angles; elytra with light-maculate sutural line extending from base to apex and narrow, transverse or somewhat oblique band at basal fourth; transverse band expanded at lateral margin, but not extended posteriad beyond basal two-fifths; integument of undersurfaces dark brown to black with legs and antennae light to dark brown. Pubescence of dorsal surfaces of black and light golden-brown or whitish hairs; pubescence of pronotum variable, but usually with mostly dark hairs on disc; light pubescence of elytra mostly confined to areas of light maculation; hairs moderately coarse, subrecumbent; hairs along margins of elytra 1.5-2x as long as hairs of disc, scarcely visible from above. **Antenna** 11-segmented; ratios of lengths of first, second, and third segments of antennal club approximately 11:11:18; segments of club densely clothed with fine pilosity. **Pronotum**: lateral margin dividing hypomeron and pronotum somewhat angulate

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*Novelsis horni*, female venter

*Novelsis horni*, male frons

but not carinate. Epipleuron somewhat transversely oblique, terminating about middle of first abdominal sternite. Surface of hypomeron relatively flat. Metacoxal lamina extending laterad barely as far as inner margin of metepisternum. **Legs** moderately slender; tibiae armed on dorsal side with short spines; protibiae only slightly clavate.

Adult female
**Length**: 2.8-4.5 mm
Differs from male in having the second segment of antennal club about one sixth shorter than first; third segment of club about one third longer than first.

**References:** Beal 1954b, 1970, 2003
**Internet Resources:**
http://www.dermestidae.com/Novelsishorni.html

*Novelsis horni*, female lateral habitus

# *Orphinus fulvipes* (Guérin-Méneville, 1838)

*Orphinus fulvipes*, female dorsal habitus

*Orphinus fulvipes*, male antenna

**Synonyms:** *Attagenus defectus* Walker, 1858
*Trogoderma brasiliensis* Reitter, 1881
*Cryptorhopalum brevicorne* Sharp in Blackburn & Sharp, 1885
*Trogoderma unicolor* Kolbe, 1910
*Trogoderma ruficeps* Pic, 1937
*Trododerma* [sic!] *congoana* Pic, 1950

**Canada and United States Distribution**: pantropical**,** introduced US: Florida, Hawaii

**Economic Importance:** Associated with stored food products

**Diagnostic Notes:** last segment of antennal club circular

**Morphology Summary:** Adult female
**Length**: ~2.5 mm
**color**: brownish black, shining; antennae yellowish brown; legs brownish. Body oblong oval. Body beneath elytra brownish black, coarsely punctate, moderately densely pubescent. Sparsely clothed with moderately short, semi-erect, brown-black pubescence. **Antenna**: first and second joints of antennae large, sub-equal, 3-8 very small, 9-11 forming a club which is longer than 3-8 joints together, the first smaller than second, and the last longer than the other two together, and circular. **Head** coarsely and densely punctate, pubescence sparse. **Thorax** very densely and coarsely punctate, moderately densely pubescent. **Elytra** uniformly brownish black; elytra densely and coarsely punctate, ei and uniformly brown-black pubescent.

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# *Paranovelsis aequalis* (Sharp, 1902)

*Paranovelsis aequalis*, dorsal habitus

**Synonyms:** *Genattus aequalis* Sharp, 1902
*Attagenus aequalis*: Hinton, 1945
*Novelsis aequalis*: Beal, 1954b
*Novelsis* (*Paranovelsis*) *aequalis*: Mroczkowski, 1968
*Paranovelsis incognitus* (Háva, 2003)

**Canada and United States Distribution:** District of Columbia, Maryland, Pennsylvania, Texas, Virginia, West Virginia

**Economic Importance:** Economic importance in question; found in buildings; recorded once as a pest in milled flour

**Species with similar appearance:** *Paranovelsis mcdon*aldi Herrmann & Hava (in press); *Paranovelsis perplexa* (Jayne, 1882)

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 2.6-3.2 mm
**Cuticle**: color of head black; pronotum and elytra black to brownish black with suffused, brown to reddish brown maculae on elytra; undersurfaces black to brownish black; antennae and legs brownish black to brown. Pubescence of dorsal surfaces of black, golden-brown, and white hairs; hairs subrecumbent to suberect, moderately coarse; hairs along margins of elytra 1.5-2x as long as hairs on disc; light colored hairs of elytron forming basal circle, submedian band, and subapical band, usually with addition of a few light hairs or spot of light hairs at apex; pubescence of ventral surfaces moderately coarse, recumbent, white. **Antenna** 11-segmented; terminal three segments forming an asymmetrical club, combined length of segments three through eight approximately equal to length of ninth or tenth segment; ninth and tenth segments more or less equal in length; segments of club densely clothed with very fine, erect pubescence, the individual hairs about two thirds as long as width of third segment of antenna. **Pronotum**: lateral margin dividing hypomeron and pronotum forming a knife-like carina.

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*Paranovelsis aequalis*, female frons

*Paranovelsis aequalis*, venter

Epipleuron somewhat transversely oblique for most of length, forming obtuse angle with adjacent, vertical side of elytron, rarely extending posteriad as far as hind margin of first abdominal sternite. Surface of hypomeron strongly concave between lateral margin and prosternum. Metacoxal lamina barely attaining inner margin of metepisternum. **Legs** moderately stout; tibiae armed on dorsal margin with short spines; protibiae slightly clavate.

Adult female
**Length**: +/- 3.4mm
Differs from male in having the first two segments of antennal club subequal; first or second segment one-half to three-fifths as long as terminal segment.

**References:** Beal 1954b, 2003; Háva 2015
**Internet Resources:**
http://www.dermestidae.com/Paranovelsisaequalis.html

*Paranovelsis aequalis*, female lateral habitus

# *Paranovelsis varicolor* (Jayne, 1882)

*Paranovelsis varicolor*, dorsal habitus

**Synonyms:** *Trogoderma varicolor* Sturm, 1843
*Attagenus varicolor* Crotch, 1873
*Attagenus varicolor* Jayne, 1882
*Novelsis* (*Paranovelsis*) *varicolor*: Casey, 1900
*Novelsis varicolor*: Beal, 1970

**Canada and United States Distribution:** Arizona, California, New Mexico, Texas

**Economic Importance:** Negligible economic importance; pest of feed and seed establishments; feeds on dead insects in grain

**Species with similar appearance:** *Paranovelsis mcdon*aldi Herrmann & Hava (in press); *Paranovelsis perplexa* (Jayne, 1882)

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 2.5-3.1 mm
**Cuticle**: color of head and pronotum black; elytra black with apices black to brownish black, and with variable light tan to light brownish black maculae; undersurfaces black; antennae and legs brownish black to brown. Pubescence of dorsal surfaces of black or brownish black and white hairs with a few golden-brown hairs; hairs subrecumbent to suberect, moderately coarse; hairs along margins of elytra 1.5-2x as long as hairs on disc; light colored hairs of elytron forming more or less complete basal circle, submedian band, and subapical band; pubescence of ventral surfaces moderately coarse, recumbent, white. **Antenna** 11-segmented; terminal three segments forming an asymmetrical club, combined length of segments three through eight approximately equal to length of ninth or tenth segment; ninth and tenth segments more or less equal in length; segments of club densely clothed with very fine, erect pubescence, the individual hairs about two-thirds as long as width of third segment of antenna. **Pronotum**: lateral margin dividing hypomeron and pronotum forming knife-like carina.

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*Paranovelsis varicolor*, female frons

*Paranovelsis varicolor*, female venter

Epipleuron transversely oblique for most of length, forming only slight angle with vertical side of elytron, extending beyond hind margin of first abdominal sternite. Surface of hypomeron strongly concave between lateral margin and prosternum. Metacoxal lamina barely attaining inner margin of metepisternum. **Legs** moderately stout; tibiae armed on dorsal margin with short spines; protibiae slightly clavate.

Adult female
**Length**: 2.9-4.0 mm
Differs from male in having the first two segments of antennal club subequal; first or second segment one-half to three-fifths as long as terminal segment.

**References:** Beal 1954b, 1970, 2003; Háva 2015
**Internet Resources:**
http://www.dermestidae.com/Paranovelsisvaricolor.html

*Paranovelsis varicolor*, lateral habitus

# *Reesa vespulae* (Milliron, 1939)

*Reesa vespulae*, female dorsal habitus

*Reesa vespulae*, female lateral habitus

**Synonyms:** *Perimegatoma vespulae* Milliron, 1939
*Megatoma vespula* Spencer, 1948

**Canada and United States Distribution:** Throughout Canada and the US

**Economic Importance:** Minor economic importance; pest of wheat storage, homes, insect collections

**Diagnostic Notes:** None

**Morphology Summary:** Adult female
**Length**: 2.5-4.0 mm
**Cuticle**: head and thorax usually entirely black as well as basal area of elytra, behind which is a dull brick-red , transverse, interrupted band bearing clay yellow pubescence, the remainder of elytra dark reddish brown, except black along the suture; antennae, except club which is black, dull brick-red with scape sometimes darker; legs dull brick-red, middle and hind coxae and femora, except apices usually appearing darker. Body oblong, oval, slightly widened beyond the middle. Pubescence inclined, prominent, shining, black throughout on dorsum, except an oblique, sinuate, clay yellow band on the basal half of each elytron not quite attaining the suture; venter with fine recumbent golden pubescence; legs pubescent like venter.
**Antennae** pubescent, 11-segmented, scape and pedicel globular, flagellum gradually enlarging into a 4-segmented, slightly compressed, club, the segments subquadrate, except the last which is conical in outline and about twice as long as the third. **Head** almost invisible from above, covered with strongly inclined black pubescence, nearly one-half as wide as the greatest width of the thorax. Eyes prominently convex, entire. **Pronotum**: punctures of pronotum small and simple, separated by 4 or 5 times the diameter of the puncture. Hypomeron forms a broad, shallow, antennal fossa

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*Reesa vespulae*, female venter

*Reesa vespulae*, female frons

that is margined behind by a thin, threadlike carina. **Thorax** convex especially at sides, sometimes showing weak depressions on dorsum, sides narrowly reflexed, surface shining, finely punctate, the greatest width nearly twice the length. **Elytra** slightly wider than the thorax, broadly convex, with a transverse depressed, basal area. Metathoracic wing venation reduced, jugal vein retained. **Prosternum** lobed in front, covering the mouth parts, except labrum and palpi, behind produced into a spine which fits into a well-defined groove along the entire length of mesosternum. Epipleuron ends behind metacoxa, gradually narrowing about the middle of the first abdominal sternum. Mesosternum short and deeply sulcate for its entire length; without diagonal striae. Anterior margin of metepisternum is somewhat raised and smooth, so there is a distinct but short stria near anterior margin. **Abdomen**: first abdominal sternum without diagonal striae. Metacoxal lamina barely meets the metepimeron.

**Notes:**
This species is parthenogenetic.

**References:** Beal 1967, 2003; Milliron 1939
**Internet Resources:**
http://www.dermestidae.com/Reesavespulae.html

# *Thorictodes heydeni* Reitter, 1875

*Thorictodes heydeni*, dorsal habitus


*Thorictodes heydeni*, lateral habitus

**Synonyms:** *Thaumaphrastus karanisensis* Blaisdell, 1927
*Thorictodes australis* [sic]: Mroczkowski, 1989
*Thorictodes haydeni* [sic]: Beal, 1991

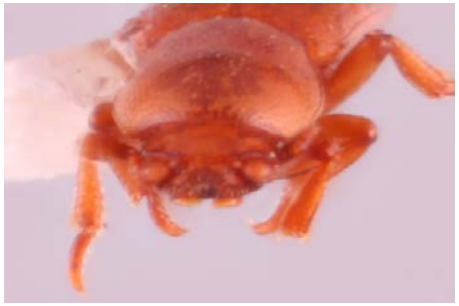
**Canada and United States Distribution:** Texas

**Economic Importance:** Negligible economic importance; pest of stored grains

**Diagnostic Notes:** length < 2.0 mm, compound eyes absent

**Morphology Summary:** Adult male
**Length**: approximately 1.2 mm
**Cuticle** color chestnutus to chestnut-brownish black. Body oblong. **Head** obtusely angulate and prominent between the antennae, declivous anteriorly; broadly and arcuately impressed behind the eyes, less so on the vertex; surface finely and sparsely punctate. Compound eyes minute or absent. Epistomal area rather narrow, slightly impressed and brownish black in color; apex broadly and moderately arcuately emarginate, suture not distinct, surface finely punctate. Mandibles in adduction, the left cleft at apex, cusps sharp and unequal. Mentum apparently oblong with lateral edges slightly prominent. Antennal joints closely articulated. Antennal fossa not beaded anteriorly, but rather coarsely margined posteriorly and continuously so with the sides of head. **Pronotum** about a fourth wider than long; apex broadly, evenly and semi-circularly arcuate, continuously so with the sides, the latter broadly arcuate, becoming broadly and feebly sinuate, as well as moderately convergent in about basal third, margins briefly subparallel before the small, nearly rectangular basal angles, a marginal bead not discernable, the lateral edge apparently extremely finely, microscopically denticulate; base lobed, lobe broadly and strongly arcuate, feebly and broadly sinuate laterally within the angles; disc

*Thorictodes heydeni*, venter



*Thorictodes heydeni*, frons

strongly convex and evidently inflated anteriorly, much less so posteriorly, more strongly declivous antero-laterally than posteriorly, finely and sparsely punctate, punctures not denser laterally, each with a very minute pale hair. Protopleura microscopically sculptured. Epipleura moderately wide, plane and nearly vertical in basal third, thence gradually taking the curve of the elytral disc, gradually narrowing to apex. Parapleura impunctate. Metasternum sparsely and relatively coarsely punctate. **Elytra** conjointly, broadly, evenly and quite semi-circularly rounded at apex, continuously so with the feebly arcuate sides which are slightly convergent to the humeri; the latter rather narrowly rounded and not in the least prominent laterally; base broadly and arcuately emarginate, not margined, but very narrowly rounded and inflexed; disc rather depressed, striate, feebly convex, arcuately declivous at the sides, more broadly and evenly so posteriorly, at the humeri the surface is more abruptly and rather sharply inflexed; surface quite smooth, sparsely, evenly punctate, punctures fine and slightly oval longitudinally, shallow and not impressed, slightly larger basally; floor of the punctures whitish giving the impression of the presence of a minute hair. **Abdomen** subglabrous, first ventral segment apparently as long or longer than the second, third and fourth taken together; the fifth broadly rounded at apex, evenly convex and about as long as the third and fourth taken together; intercoxal process of first segment obtusely pointed at apex, sides slightly arcuate, a little wider at base than long. First segment sparsely, finely and distinctly punctate; remaining segments very finely and sparsely punctulate. Anterior **legs** stout, femur and tibia subequal in length, the former slightly swollen and sparsely punctate; tibia gradually widening from base to apex, apical margin fringed with exceedingly fine, short spinules, external edge not denticulate; spurs short and fine. Tarsi rather stout and compact; first joint short, rather wider than long; second third and fourth quite equal in length, fifth feebly elongate narrowing slightly apically; planta with fine hair-like setae along the margins. Ungues small, slightly arcuate and sharp. Right middle femur and tibia sparsely pubescent or extremely finely spinulose.

**References:** Beal 2003; Blaisdell 1927; Robinson 2005
**Internet Resources:**
http://www.dermestidae.com/Thorictodesheydeni.html

# *Thylodrias contractus* Motschulsky, 1839

*Thylodrias contractus*, male dorsal habitus

*Thylodrias contractus*, male lateral habitus

**Synonyms:** *Ignotus aenigmaticus* Slosson, 1903
*Hospitopterus efflatouni* Pic, 1921
*Thelydrias* [sic] *contractus*: Pic, 1931
*Thilodrias* [sic] *contractus*: Pokorný et al. 2009

**Canada and United States Distribution:** probably common to all states and provinces but voucher specimens only exists for a few.

**Economic Importance:** Minor economic importance; pest in houses, grocery stores, meat markets, insect collections

**Diagnostic Notes:** distinctive by its general habitus; males have soft and dehiscent elytra on the posterior half, females are larviform

**Morphology Summary:** Adult male
**Length**: 2.1-4.2 mm
**Cuticle** dull or only feebly shining and dull brick-red ; abdomen dark brown. Body narrow, elongate, subparallel. Dorsal and ventral surface moderately densely clothed with erect or sub-recumbent dull brick-red hairs which are about as long as first antennal segment. **Antenna** 9-segmented. **Head** with a round and very prominent median ocellus which is about three-fourths as broad as second antennal segment; surface very densely, microscopically punctate and also with fine, indistinct tubercles from which arise long hairs. Clypeal suture obsolete; labrum with middle of anterior margin shallowly and arcuately emarginate. **Pronotum** across broadest point, which is at about basal fourth, much broader than long and base broader than apex; surface sculptured like head. **Elytra** more than four times as long as pronotum, moderately soft and flexible, dehiscent at apex, and usually not concealing apical one or two segments of abdomen; surface not striate and with punctures not arranged in rows; sculptured like head and with dense, very shallow, rather indistinct, oval to quadrate, very coarse (about as broad as second antennal segment) punctures. **Prosternum** convex and moderately long before coxae; coxal cavities confluent and widely

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*Thylodrias contractus*, male venter

*Thylodrias contractus*, male frons

*Thylodrias contractus*, female lateral habitus

open behind. **Abdomen** with first sternite broadly and completely divided at middle, each lateral piece being triangular; second sternite prominently and transversely gibbous on middle of caudal half and with a transverse brush of very dense, moderately short, dull brick-red hairs arising from this gibbosity; seventh sternite with caudal margin nearly truncate; surface of sternites at sides pubescent like remainder of body, but most of middle region of third to seventh with hairs much finer and three to four times as long as usual. **Legs** proportionally much longer than in any other known species of the family; front coxae very prominent, conical, and contiguous; middle and hind coxae similar to front coxae but broadly separated; tarsi with all segments narrow and long, the basal segment about equal to combined length of two following.

Adult female
Body larviform and very different from male; the body is proportionally broader and stouter and there is no trace of elytra or wings, the meso- and metatergites being unmodified and closely similar to the following abdominal tergites. **Antennae** 9-segmented and relatively much shorter, the three apical segments being noticeably shorter and broader. Eyes are much smaller and only feebly convex, and the median ocellus is less prominent. **Prosternum** is relatively shorter in front of the anterior coxae and is broadly produced and truncate behind so that the less prominent coxae, as well as their cavities, are widely separated. **Abdomen**: the first abdominal sternite is not divided at middle, and the second has no median gibbosity or brush of hairs. **Legs** are relatively much shorter, and the first segment of all tarsi is as short or only slightly longer than the second.

**References:** Beal 2003; Bousquet 1990; Háva 2015; Hinton 1945; Mertins 1981
**Internet Resources:**
http://www.dermestidae.com/Thylodriascontractus.html

# *Trogoderma glabrum* (Herbst, 1783)

*Trogoderma glabrum*, dorsal habitus

**Synonyms:** *Anthrenus glaber* Herbst, 1783
*Byrrhus glaber* Schneider, 1785
*Anthrenus niger* Herbst, 1793
*Anthrenus elongatulus* Fabricius, 1801
*Dermestes versicolor* Illiger, 1801
*Anthrenus elongatus* Schönherr, 1806
*Anthrenus ruficornis* Latreille, 1807
*Dermestes subfasciatus* Gyllenhal, 1808
*Trogoderma elongatula* Dejean, 1821
*Trochderma* [sic] *elongatula*: Dahl, 1823
*Trogoderma elongata* Latreille, 1829
*Trogoderma ruficornis* Latreille, 1829
*Trogoderma subfasciata* Latreille, 1829
*Trogoderma villosum* Dejean, 1837, nomen nudum
*Trogoderma nigrum* Schmidt, 1844
*Trogodermum elongatulum*: Gistel, 1856
*Trogoderma fuscicornis* Mulsant & Rey, 1868
*Trogoderma elongatula* var. β: Mulsant Rey, 1868
*Trogoderma glabrum*: Dalla Torre, 1879
*Trogoderma nigrum* ssp. *limbatum* Pic, 1934
*Trogoderma nigrescans* Hicks, 1953
*Trogoderma boron* Beal, 1954

**Canada and United States Distribution:** common in all states and provinces

**Economic Importance:** Minor economic importance; pest of stored grains and dry proteinaceous materials including fish meal and dried milk

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 2.0-4.0 mm; average length of male is 2.3 mm

*Trogoderma glabrum*, male frons

*Trogoderma glabrum*, lateral habitus

**Cuticle**: color of dorsal and ventral surfaces black except for vague brownish black markings on humeri and on apical margins of elytra; color of legs and antennae brownish black to brown. Body subparallel and moderately strongly convex. Pubescence of dorsal surfaces moderately coarse, suberect, consisting of black, golden-brown, and white hairs; pubescence of ventral surfaces moderately fine, recumbent, golden brown. Head with pubescence golden yellow with a few intermingled black hairs; pronotum with pubescence of black hairs on disc with large patches of golden-brown and white hairs on lateral margins and extending across disc as two, narrow, interrupted, transverse bands and with patch of white hairs on basal lobe; elytra with light-colored pubescence forming a loop, submedian band, and subapical band, no longitudinal lines being apparent. **Antenna** 11-segmented, extending in repose to basal half of prothorax; surface clothed with very fine, subrecumbent puberulence; segments all compact, symmetrical; segment three minute, half as wide as segment two; club appearing 6-segmented, widest at segment ten. **Head** with punctures one and a half times as coarse as facets of eye, separated on front by one-half to one and a half diameters, a little sparser on vertex; surface between smooth and shining. Eyes with medial margins somewhat sinuate but not emarginate. **Pronotum** with punctures of disc about as coarse as facets of eye, separated by two to four diameters, becoming coarser and denser at sides; surface between smooth and shining. Antennal fossa about half as wide as long, three-fourths as long as lateral length of prothorax, moderately deeply excavated; anterolateral wall somewhat concave; posterior oblique margin raised, extending length of fossa as knifelike carina; floor of fossa glabrous and shining, obscurely marked with oblique striae. **Elytra** with punctures of disc about twice as coarse as those of pronotum; surface between shining and feebly wrinkled. Hind wings with proximal pigmented spur on stigma; first anal vein extending nearly to margin of wing, unbranched. **Prosternum** moderately, confluently punctate, granulate on sides; posterior process moderately broad, tapering gradually to apex; median carina

*Trogoderma glabrum*, male venter

obsolete except at apex. Epipleura extending to about hind margin of metepimera, slightly transversely concave, at least on anterior half. Mesosternal disc with elevated part on either side of sulcus subquadrate to rhomboidal and a little wider than long. Metasternum with very short stria extending obliquely from mesocoxal cavity on either side; median anterior projection moderately broadly rounded, moderately margined on sides. **Abdomen** with oblique striae on first sternite extending outward from inner margins of metacoxal cavities. Ratio of width between procoxae to width between mesocoxae 1:2.7. **Male genitalia**: tergite of first periphallic segment with large, unsclerotized apical area; apical fringe of setae interrupted at middle. Lateral lobes of phallobase broad and strongly incurved at apex; bridge narrow, transverse.

Adult female
Average length of female 3.7 mm.
Differs from male as follows: **antenna** extending in repose to about apical third of lateral margin of prothorax, clothed with very fine, short, dense, subrecumbent puberulence and a few short, fine setae; third segment about half as wide as second; segments five to eight increasing gradually in width; segments eight to ten subequal in width making club appear 4-segmented; antennal fossa moderately excavated; posterior lateral angle not precisely defined but fossa about two and a half times as long as wide; posterior diagonal margin raised and carinate but carina becoming evanescent laterally; floor of fossa shining and finely striate medially becoming punctate laterally.

**References:** Beal 1954a, 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Trogodermaglabrum.html

# *Trogoderma granarium* Everts, 1898

*Trogoderma granarium*, dorsal habitus

**Synonyms:** *Trogoderma quinquefasciata* Leesberg, 1906 (homonym)
*Trogoderma khapra* Arrow, 1917
*Trogoderma koningsbergeri* Pic, 1933
*Trogoderma garanarium* [sic]: Korchefsky, 1994
*Trogoderma afrum* Priesner, 1951
*Trogoderma granarium* ssp. *afrum* Attia and Kamel, 1965

**Canada and United States Distribution:** Eradicated from the US; prior to eradication, *T. granarium* was present in Arizona, California, New Mexico, Texas

**Economic Importance:** Major economic importance; pest of stored grain

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** Distinguished by small size and immaculate or vaguely maculate elytra.

**Morphology Summary:** Adult male
**Length**: 1.8-3.0 mm
**Cuticle** usually strongly shining and pale red-brown with head and pronotum frequently but not always distinctly darker brown, sometimes nearly black; sometimes with the cuticle very dark brown or black and the antennae and legs moderately pale brown; elytra unicolorous or, more often, with red-brown or brown, indistinct markings. Body subparallel and moderately convex. Dorsal surface moderately densely clothed with sub-recumbent to erect, fine hairs which are about as long as scutellum and are pale brown to nearly black according to the color of the cuticle; pronotum with middle of base and sides with indistinct patches of yellowish or even white hairs (white hairs here and on elytra usually only present on black or nearly black specimens); elytra with two or three indistinct, transverse bands of sparse, yellowish or even white hairs; pale red-brown specimens with hairs of pronotum and elytra nearly uniformly

*Trogoderma granarium*, lateral habitus

*Trogoderma granarium*, male frons

colored; all hairs of dorsal surface are easily rubbed off so that many specimens appear to have a glabrous dorsal surface. Ventral surface with finer, slightly stouter, sub-recumbent hairs which are uniformly pale or dark dull brick-red . **Antenna** 9-, 10-, or 11-segmented; club 5-segmented but sometimes with the basal segments smaller so that the club appears to be 4- or even 3-segmented. **Head** with punctures distinctly finer than facets of eyes and usually separated by two to five diameters; middle of front anterior to ocellus often with punctures as coarse as facets of eyes and separated by less than one to one or more diameters; surface between punctures smooth. Eye with inner or mesal margin feebly and evenly rounded, not emarginate. **Pronotum** with sides moderately to strongly declivous so that lateral margin in some specimens entirely and in others only partly visible from above; disc with punctures only about two-thirds as coarse as facets of eyes, separated by two to four diameters, and, in many specimens, each has its margin very feebly and scarcely noticeably raised above the surrounding surface; side near lateral margin with punctures about as coarse as facets of eyes and nearly contiguous to separated by nearly two diameters; lateral punctures of a few specimens, mostly females, are as fine and sparse as those of disc; surface between discal punctures smooth and between lateral punctures often feebly rugose. Hypomeron with antennal cavity broad, moderately deep, and extending to about basal third and from here obsoletely to basal fourth; postero-lateral diagonal margin of cavity strongly produced and knife-like near sternum but obsolete posteriorly and separated by a rather wide space from lateral margin of pronotum; surface of bottom of cavity feebly strigose and/or rugose on anterior two-thirds but coarsely, rugosely punctate on posterior third and on outer side. **Elytra** with discal punctures round, shallow, about a fourth coarser than facets of eyes, and separated by one to two diameters; near base with punctures only very slightly coarser and denser; each puncture with margin feebly but distinctly raised above surrounding area;

*Trogoderma granarium*, male venter

surface between punctures sparsely, microscopically alutaceous. **Prosternum** with process not carinate but with a median gibbosity at apex. Epipleura ending more or less opposite hind margin of metasternal epimeron. Mesosternal disc with elevated part on each side of median channel subquadrate. Metasternum with lateral discal striae absent or very short and indistinct; middle anterior part broadly rounded, strongly margined, and broadly, moderately strongly produced between middle coxae. **Abdomen** without lateral discal striae or carinae on first sternite. **Legs** with middle coxae twice as widely separated as front coxae.

Adult female
Similar to male but differs slightly in its larger average size and in the 4- instead of 5-segmented antennal club; the antennal club sometimes has the last two segments united and it is then 3-segmented; when the antennal club is similar in the two sexes, the female may be distinguished by having the fifth abdominal sternite clothed like the preceding sternites, whereas in the male there is a dense fringe of slightly thicker, suberect hairs immediately before the middle apical margin of the fifth sternite.

**References:** Beal 2003; Háva 2015; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Trogodermagranarium.html

# *Trogoderma grassmani* Beal, 1954

*Trogoderma grassmani*, dorsal habitus

**Synonyms:** *Trogoderma grassmana* [sic]: Anonyme, 2002

**Canada and United States Distribution:** Arizona, California, New Mexico, Nevada, Utah

**Economic Importance:** Minor economic importance; pest of fish meal and stored cereals

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** Distinguished by the elytral maculation.

**Morphology Summary:** Adult male
**Length**: 2.1-2.9 mm
**Cuticle**: color of dorsal and ventral surfaces black with elytral maculae reddish; antennae with segments one to five brown, apical segments brownish black black; femora black with extremities of legs becoming brownish black. Pubescence of dorsal surfaces coarse, suberect, consisting of blackish, light golden-brown, and white hairs; pubescence of undersurfaces moderately coarse, recumbent, more or less light brownish black. Head with pubescence of light golden-brown hairs with a few blackish hairs on vertex; hairs of pronotum predominantly black on disc and basal margin, light golden brown on sides and anterior margin; elytra with light pubescence limited to areas of light maculation and consisting mostly of white hairs with a few scattered light golden-brown hairs. **Antenna** 11-segmented, extending in repose beyond base of prothorax about half length of eleventh segment, moderately densely set with very fine, short, erect hairs; segment three minute, half as wide as segments two to four; segments four to nine strongly eccentric; segment ten subeccentric; segment eleven one-sixth longer than segments nine and ten combined. **Head** with punctures of front shallow, somewhat umbilicate, two to three times as large as facets of eye, separated by one-fourth to one-half diameter on disc, contiguous at sides; punctures on vertex simple, about equal in size to facets of eye; separated

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*Trogoderma grassmani*, female frons

*Trogoderma grassmani*, female lateral habitus

by as much as three diameters; surface between punctures smooth and shining. Eyes with medial margins straight. **Pronotum** with punctures of disc simple, one to 1.5x as coarse as facets of eye, separated by one to three diameters, becoming coarser and denser toward sides; surface between smooth and shining. Antennal fossa extending almost to base of pronotum, about one-third as wide as long, moderately deeply excavated; anterolateral wall concave; posterior diagonal margin raised and knifelike, extending to lateral apex of fossa; floor of fossa minutely rugose and shining on median half, finely punctate-rugose on lateral half. **Elytra** with punctures of disc very slightly coarser than on pronotum, about as sparse and with margins somewhat raised; surface between more or less smooth and shining. Hind wings with pigmented proximal spur on stigma; first anal vein short, less than half as long as second anal vein. **Prosternum** deeply and confluently punctate on disc, confusedly punctate at sides; process moderately long with sides subparallel to apex; median carina present, a little wider than lateral carinae. Epipleura ending about opposite hind margin of metasternal epimera, more or less flattened transversely for entire length. Mesosternal disc with raised part on either side of sulcus subtrapezoidal, slightly longer than wide. Metasternum without oblique discal striae; median anterior projection broad, subtruncate, widely and strongly margined at sides. **Abdomen** without oblique striae on first sternite. Ratio of width between procoxae and mesocoxae 1:2.2. **Male genitalia**: tergite of first periphallic segment rounding, set with several series of setae along apical margin; lateral lobes of phallobase relatively narrow; bridge narrow, slightly arcuate at middle.

Adult female

Differs from male as follows: punctation of head relatively much finer, punctures large and umbilicate only at extreme sides and on clypeus; antenna light brown with all segments symmetrical; segments three to six subequal, half as wide as segment two; segment seven somewhat wider; segments eight to eleven much

*Trogoderma grassmani*, female venter

wider, half again as wide as second segment and forming 4-segmented club; maculation of elytra more pronounced; submedian band continuous from sutural to lateral margins.

**Variations:**
color of dorsal surfaces varying from black to brownish black; light pubescence of dorsum varying from nearly all white to half white and half light brown, evenly intermingled; punctation of elytra varying between simple with integument smooth to strongly crateriform with surface between strongly rugose. Maculation of elytra varying from reduced form described for male to pronounced form, however, never with basal half of loop evident.

**References:** Beal 1954a, 2003; Háva 2015
**Internet Resources:**
http://www.dermestidae.com/Trogodermagrassmani.html

# *Trogoderma inclusum* (LeConte, 1854)

*Trogoderma inclusum*, dorsal habitus

**Synonyms:** *Trogoderma meridionalis* Kraatz, 1858
*Trogoderma flexuosa* Thomson, 1862
*Trogoderma testaceicorne* Perris, 1862
*Trogoderma hieroglyphica* Abbeille de Perrin, 1872
*Trogoderma tarsale*: Riley, 1894
*Trogoderma obsolescens* Casey, 1900
*Trogoderma advena* Casey, 1900
*Trogoderma nigrescans* Casey, 1916
*Trogoderma brunnescens* Casey, 1916
*Trogoderma frosti* Casey, 1916
*Trogoderma versicolor*: Mutchler & Weiss, 1927
*Trogoderma versicolor meridionale*: Mroczkowski, 1962
*Trogoderma testaceum* [sic] Kraatz, 1858: Chikatunov, 2000 (nomen nudum)
*Trogoderma inclus* [sic]: Hua, 2002

**Canada and United States Distribution:** Arkansas, Arizona, British Columbia, California, Colorado, Connecticut, District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Massachusetts, Manitoba, Maryland, Michigan, Minnesota, Missouri, North Carolina, Nebraska, Newfoundland, Nevada, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oklahoma, Ontario, Oregon, Pennsylvania, Quebec, South Carolina, South Dakota, Saskatchewan, Tennessee, Texas, Utah, Wisconsin

**Economic Importance:** Moderate economic importance; pest of stored grain, nuts, dried fruit, dried milk, wide range of other dried proteinaceous products

**Species with similar appearance:** Potentially confused with several species, belonging to other subgenera

**Diagnostic Notes:** Distinguished by the emarginate eyes. Indistinguishable from *Trogoderma versicolor* (Creutzer) without genetic analysis, however the pest status of *T. versicolor* in North America is unknown

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*Trogoderma inclusum*, lateral habitus

*Trogoderma inclusum*, male frons

**Morphology Summary:** Adult male
**Length**: 2.0-5.0 mm
**Cuticle** shining; black to entirely reddish brown or chestnutus but usually all black except as follows: elytra with reddish bands and spots; antennae and tarsi moderately pale brown and femora and tibiae rather dark brown, but sometimes with antennae and all legs very dark brown; specimens which are entirely pale brown have similar but much paler markings on the elytra and frequently also have large pale areas on pronotum. Body obovate to subparallel and moderately convex. Dorsal surface moderately densely clothed with suberect to erect hairs which are about two-thirds as long as scutellum and are dark brown to black except on pale areas on the elytra where they are pale brown, dull brick-red , or occasionally even white; pronotum also with similar hairs forming irregular and indistinct patches, but even with a distinct oval patch of white or nearly white hairs on middle of base; in those specimens which have pale cuticular markings on the pronotum the pale hairs are usually confined to the pale areas. Ventral surface with hairs finer, recumbent, and more or less uniformly brownish or dark dull brick-red . **Antenna** with third segment minute; club 8-segmented but with the two basal segments distinctly smaller so that the club can be considered to be only 6-segmented. **Head** with round or irregularly shaped punctures which are as coarse as facets of eyes to one-fourth coarser and are often confluent (particularly anteriorly) to occasionally (on vertex) separated by as much as one diameter; surface between punctures smooth or nearly so. Eye with inner or mesal margin broadly, shallowly to rather deeply, and arcuately emarginate at about middle. **Pronotum** with sides moderately to strongly declivous but with extreme lateral margin often feebly dilated so that all of lateral margin is visible from above; disc with punctures slightly finer than, to as coarse as, facets of eyes and usually separated by two to four diameters, the surface between these punctures being smooth; sides with punctures distinctly coarser and denser, the surface

*Trogoderma inclusum*, female venter

between them being frequently feebly rugose. Hypomeron with antennal cavity deep, broad, extending nearly to base of prothorax, postero-lateral diagonal margin strongly produced and knife-like, and surface (bottom) of cavity transversely strigose on anterior half and more or less longitudinally strigose on posterior half. **Elytra** with punctures of disc slightly but distinctly coarser than those of pronotal disc and separated by one to two diameters; surface between punctures smooth or feebly rugose and/or sparsely, microscopically alutaceous. **Prosternum** with a broad, low, median longitudinal carina on process or with process flat or feebly convex. Epipleura extending to, or nearly to, hind margin of metasternal epimeron. Mesosternal disc with elevated part on each side of median channel sub-rectangular and about half again as long as broad. Metasternum with lateral discal striae distinct, diverging obliquely outwards behind, and confined to anterior third; middle anterior part of metasternum broadly rounded and feebly produced between middle coxae. **Abdomen** with lateral discal striae (or carinae) of first sternite distinct, obliquely diverging outwards, and extending to posterior half of segment or, more rarely, to hind margin. **Legs** with middle coxae twice as widely separated as front coxae.

Adult female
Differs from male as follows: antenna with third and fourth segments subequal instead of with third much smaller than fourth; antennal club with four instead of six to eight segments; antennal cavity much shallower, only extending to posterior fourth to third of prothorax, postero-lateral margin obsolete before lateral margin of pronotum, and surface of cavity punctate instead of strigose on posterior third.

**References:** Beal 2003; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Trogodermainclusum.html

# *Trogoderma serraticorne* (Fabricius, 1792)

*Trogoderma serraticorne*, dorsal habitus

*Trogoderma serraticorne*, lateral habitus

**Synonyms:** *Anthrenus denticornis* Fabricius, 1792
*Eucnocerus anthrenoides* Sharp, 1902
*Trogoderma ornatum*: Hinton, 1945

**Canada and United States Distribution:** California, Florida, North Carolina, Texas

**Economic Importance:** Minor economic importance; pest of insect collections, dried herbs, cereals

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 1.9-2.9 mm
color of dorsal and ventral surfaces black with reddish- to medium-brown maculae on pronotum and elytra; antennae and legs dark to light brown. Pubescence of dorsal surfaces coarse, suberect, consisting of black, golden-brown, and light hairs; pubescence of ventral surfaces moderately fine, subrecumbent, ash-gray. **Antenna** 11-segmented, extending in repose to basal fifth of prothorax, densely set with fine, short, erect hairs; segments 3 to 10 pectinate; segment 3 subequal in width to segment 4; segment 11 eccentrically placed on pedicel. **Pronotum**: antennal cavity deeply excavated, 3 times as long as wide, extending full length of lateral margin of pronotum; posterior diagonal margin raised as knifelike carina on same level as anterior margin and meeting lateral carina at base of pronotum; floor of cavity microscopically striate; striations more or less perpendicular to anterolateral wall of cavity. **Elytra**: light maculation of elytron forming basal loop or circle with subhumeral band extending from loop to lateral margin of elytron, median band which does not extend more than one-half distance from median suture to lateral margin of elytron, subapical band or spot, rarely an apical spot, and longitudinal line extending anteriad from median band usually about halfway into loop but sometimes completely bisecting loop; no longitudinal lines of light maculation ever connecting median band and subapical

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*Trogoderma serraticorne*, female frons

*Trogoderma serraticorne*, female venter

band; pubescence of elytron with light hairs on areas of light maculation and with a few clusters of light hairs lateral to median band and subapical band. Metasternum not marked with oblique discal striae. **Abdomen**: fine discal striae present on abdominal sternite 1, usually extending about one-half length of sternite from coxal cavities. **Male genitalia**: tergite of periphallic segment 1 evenly rounded apically with setae extending around apical margin in a single series; middle area of segment not sclerotized. Parameres of phallus narrow, subparallel; bridge relatively transverse and moderately narrow.

Adult female
**Length**: 2.3-3.0 mm
Differs from male as follows: antenna extending in repose to about apical third of lateral margin of pronotum; club four-segmented; segment 7 a little expanded; segments 3 to 6 subequal in width. Antennal cavity with deep anterior excavation but very shallow on posterior two-thirds; posterior diagonal margin carinate; carina low but extending to basal angle of pronotum; a short carina extending about halfway across antennal cavity from antero-lateral angle of prosternum, this carina forming an angle of 20 to 30 degrees with posterior carina; floor of fossa anterior to short carina finely striate; floor of fossa posterior to short carina confluently punctate.

**References:** Beal 1961, 2003; Háva 2015, Háva 2016
**Internet Resources:**
http://www.dermestidae.com/Trogodermaanthrenoides.html
http://www.dermestidae.com/Trogodermaserraticorne.html

# *Trogoderma simplex* Jayne, 1882

*Trogoderma simplex*, dorsal habitus

**Synonyms:** *Trogoderma pollens* Casey, 1900
*Trogoderma ajax* Casey, 1924

**Canada and United States Distribution:** Arizona, British Columbia, California, Colorado, Idaho, Montana, North Dakota, Nebraska, New Jersey, Nevada, New York, Oregon, Utah, Washington, Wyoming

**Economic Importance:** Minor economic importance; pest in grain and cotton seed storage; pest of insect collections

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 2.2-3.5 mm
**Cuticle**: color of head and pronotum black; elytra brownish black to black with variable reddish to ocherous maculae; undersurfaces black; antennae light brown to brownish black; legs light to dark brownish black. Pubescence of dorsal surfaces coarse, suberect, consisting of blackish, golden-brown, and white hairs; pubescence of ventral surfaces of medium coarseness, recumbent, ash-gray, or pale golden brown. Head with pubescence of mixed golden-brown and dark hairs, rarely with all golden-brown hairs or rarely with a few scattered whitish hairs. Pronotum with pubescence of dark, golden-brown, and white hairs in variable pattern, usually with light hairs more numerous at sides and base and with cluster of white hairs on basal lobe, but sometimes with white hairs covering nearly entire pronotum. Elytra pubescence variable with light pubescence usually disposed in patches on light-maculate areas, rarely with golden-brown hairs scattered over entire elytron. **Antenna** 11-segmented, extending in repose to a point about two-thirds distance of lateral margin of thorax toward base; surface of segments four to eleven clothed with very short, dense, suberect puberulence (minute pubescence); segment three minute, segments four to eleven slightly eccentrically

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*Trogoderma simplex*, female lateral habitus

*Trogoderma simplex*, female frons

placed on pedicels; segment eleven approximately as long as segments eight, nine, and ten combined. **Head** with punctures on anterior part of front and clypeus shallow, twice as coarse as facets of eye, separated by one-half to one-fourth diameter or occasionally contiguous, and on posterior half of front and on vertex about equal in coarseness to facets of eye, separated by one to two diameters or occasionally much sparser. Eyes with medial margins straight, not at all sinuate nor emarginate. **Pronotum** with surface shining and smooth; punctures on disc simple, about 1.5x as coarse as facets of eye, separated by one to 2.5 diameters, becoming coarser and having elevated rims on lateral margins. Antennal fossa half to slightly less than half as wide as long, shallowly excavated; anterolateral wall slightly concave to strongly convex, rarely so strongly convex as to reduce excavated area to half usual width; entire surface very finely pubescent and (with exception of small, minutely striate and shining area near prosternal suture) covered with large, shallow punctures two to three times as coarse as facets of eye; punctures contiguous to confluent, sometimes so confluent as to give surface granulate appearance; posterior diagonal wall raised with margin extending as knife-like carina full length of fossa. **Elytra** with punctures of disc simple or with anterior margins microscopically raised above surrounding surface, about twice as coarse as facets of eyes, separated by one to two diameters; surface between smooth and shining; maculation with variable, but typically with a basal loop, a submedian band, a subapical band, and an admedian line between loop and submedian band. Hind wings without proximal spur on stigma; first anal vein extending nearly to margin of hind wing and unbranched or with one or two short costally directed branches. **Prosternum** coarsely and confluently punctate to coarsely granulate; posterior process of moderate width, sides straight and gradually tapering to apex; median carina of process raised, slightly wider than lateral carinae. Epipleuron extending barely to hind margin of metepimeron or slightly beyond, transeversely flattened for most of length. Mesosternal disc with elevated part on either side of

*Trogoderma simplex*, female venter

sulcus usually longer than wide, roughly triangular or rhomboidal. Metasternum not marked with oblique discal striae; median anterior projection moderately to strongly margined and moderately narrowly rounded. **Abdomen** without lateral discal striae on first sternite. Ratio of width between procoxae to width between mesocoxae varying from 1:1.7 to 1:2.5. **Male genitalia**: tergite of first periphallic segment with short, unsclerotized area across middle of distal margin; lateral lobes of phallobase relatively broad, strongly incurved at apices; bridge narrow, strongly arcuate.

Adult female
**Length**: 2.2-4.4 mm
Differs from male as follows: antennae extending in repose no farther than middle of lateral length of pronotum; surface clothed with short pilosity and longer fine setae; terminal club consisting of five or rarely six compactly joined and symmetrically placed segments; antennal fossa about one-third as wide as long, extending nearly to base of prothorax; anterior diagonal wall concave to convex; posterior oblique margin with carina low but distinct for entire length; floor of fossa sculptured as in male.

**References:** Beal 1954a, 2003
**Internet Resources:**
http://www.dermestidae.com/Trogodermasimplex.html

# *Trogoderma sinistrum* Fall, 1926

*Trogoderma sinistrum*, female dorsal habitus

**Synonyms:** None

**Canada and United States Distribution:** Alberta, Alaska, Alabama, British Columbia, Colorado, Idaho, Illinois, Manitoba, Minnesota, Montana, New Hampshire, Northwest Territories, New York, Ontario, Quebec, South Dakota, Saskatchewan, Utah, Wyoming, Yukon Territories

**Economic Importance:** Minor economic importance; pest of granaries

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 2.6-3.3 mm
**Cuticle**: color of head and pronotum black; elytra uniformly dark brown; undersurfaces dark brown; legs brown with extremeties sometimes yellowish brown. Pubescence of dorsal and ventral surfaces recumbent, fine, uniformly light brown. **Antenna** 11-segmented, extending in repose to basal angle of pronotum, or beyond by as much as half length of eleventh segment; surface clothed with very short, dense, subrecumbent puberulence; segments four to eleven eccentrically placed on pedicels; segment three slightly eccentric or not. **Head** with punctures about three times as coarse as facets of eye, contiguous or separated by about half a diameter on front, becoming sparser on clypeal area and on vertex. Eye with medial margin slightly rounded or straight, not at all emarginate. **Pronotum** with surface shining and finely wrinkled; punctures on disc about twice as coarse as facets of eye, separated by one to two diameters, becoming slightly coarser on lateral margins. Antennal fossa one-half as wide as long, deeply excavated; anterolateral wall very slightly concave, minutely pubescent; surface (bottom) glabrous, extremely minutely and closely granulose; posterior diagonal margin low, extending as knifelike

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*Trogoderma sinistrum*, female frons

*Trogoderma sinistrum*, female abdomen

carina full length of fossa. **Elytra** with punctures of disc about twice as coarse as facets of eye, separated on disc by about two diameters, each puncture with anterior margin very slightly raised above surrounding area; surface between smooth and shining on disc, becoming finely wrinkled toward sides. Hind wings with proximal, pigmented spur on stigma; first anal vein long, extending nearly to margin of wing, unbranched. **Prosternum** coarsely granulate; posterior process broad, each side tapering concavely to apex; median carina of process low, broad, and indefinite or absent. Epipleura extending just beyond posterior margins of metepimera, transversely flattened on anterior third, gradually becoming shallowly concave behind. Mesosternal disc with elevated part on either side of sulcus roughly rhomboidal in shape. Metasternum not marked with oblique discal striae; median anterior projection strongly margined or not at all, moderately narrow to broad. **Abdomen** without oblique striae on first sternite. Ratio of width between procoxae to mesocoxae varying from 1:1.8 to 1:2.6. **Male genitalia**: genital segments with first periphallic segment as illustrated; phallus with lateral lobes broad, abruptly inflexed at apex, and with bridge relatively narrow, subtransverse.

Adult female
**Length**: 2.9-3.7 mm
Differs from male as follows: antennae extending in repose to about middle of lateral length of pronotum; surface clothed with short pilosity and longer fine setae; segments three to seven gradually expanding; segment eight half again as wide as segment seven; segments eight to eleven forming compact terminal club; segments not at all eccentric or pectinate; antennal fossa becoming shallow and coarsely granulate-punctate on lateral half.

**References:** Beal 1954a, 2003
**Internet Resources:**
http://www.dermestidae.com/Trogodermasinistrum.html

*Trogoderma sinistrum*, female lateral habitus

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# *Trogoderma sternale* Jayne, 1882

*Trogoderma sternale*, dorsal habitus; damaged specimen

**Synonyms:** *Trogoderma simulans* Casey, 1900
*Trogoderma variipes* Casey, 1900
*Trogoderma caseyi* Arrow, 1915

**Subspecies:** *Trogoderma sternale sternale* Jayne, 1882

*Trogoderma sternale aspericolle* Casey, 1900

*Trogoderma sternale complex* Casey, 1900

*Trogoderma sternale deserti* Beal, 1954

*Trogoderma sternale maderae* Beal, 1954

*Trogoderma sternale plagifer* Casey, 1916

**Canada and United States Distribution:** Nova Scotia, Ontario, Prince Edwards Is., Quebec, most US states except northern New England

**Economic Importance:** Moderate economic importance; pest of seeds, cereals, dried protein products; silkworm cocoons, packed figs, nuts, insect and plant museum specimens, and other dry animal and vegetable matter

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** Distinguished by the following combination of characters: elytral cuticle conspicuously maculate and elytra with very distinct patches of white and golden-brown hairs; eyes not emarginate; antenna of male with third segment minute and club 8-segmented, that of female with club 5-segmented; pronotal disc with punctures as fine as facets of eyes and separated by one to two diameters; antennal cavity broad, moderately shallow, and surface of cavity coarsely and very densely, rugosely punctate; metasternum and first abdominal sternite without trace of lateral discal striae or carinae; and middle coxae twice as widely separated as front coxae.

**Morphology Summary:** Adult male
**Length**: 2.4-4.0 mm

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*Trogoderma sternale*, female venter; damaged specimen

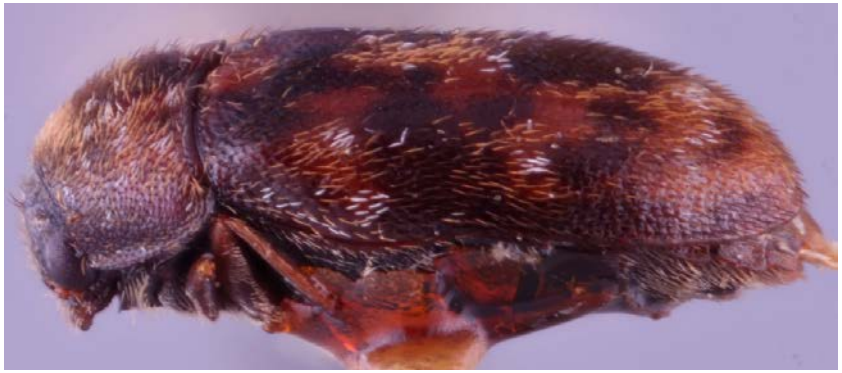
**Cuticle** shining and black; elytra with dark to moderately pale red-brown markings, and when these markings are pale red-brown the adjacent areas are very dark brown, rarely black; antennae and legs dark brown but femora frequently black or nearly so. Body subparallel and moderately convex with disc of elytra in some specimens feebly depressed. Dorsal surface densely clothed with suberect to erect hairs which are about two-thirds as long as scutellum and are tri-colorous (very dark brown or black, golden-brown, and white) and distributed as follows: head with very dark golden-brown and black hairs intermingled but not forming distinct patches; elytra with black hairs on dark areas and golden-brown and white hairs on red-brown areas, the white hairs, which are scarcely stouter and as long as others, usually less numerous than golden-brown but dense enough to form distinct patches among the latter; the elytra of some specimens, particularly those which have narrow and rather restricted reddish markings, have the white hairs at least as numerous as golden-brown and forming on apical half patches which are not infrequently bordered entirely with black instead of numerous as golden-brown and forming on apical half patches which are not infrequently bordered entirely with black instead of golden-brown hairs. **Antenna** with third segment minute and club distinctly 8-segmented. **Head** with round or oval, shallow punctures which are as coarse as facets of eyes to half again as coarse and are confluent to separated by nearly one diameter; vertex with punctures sparser, being here often separated by nearly two diameters; surface between punctures smooth or nearly so. Eye with inner or mesal margin feebly rounded or nearly straight, nowhere distinctly emarginate. **Pronotum** with side strongly declivous so that part or all of lateral margin is concealed from above; disc with punctures about as coarse as facets of eyes and usually separated by one to two or, more rarely, three diameters; sides and a narrow band along anterior margin with punctures half again as coarse as facets of eyes and nearly contiguous to seldom separated by as much as one diameter; surface between punctures smooth on disc but distinctly rugose on sides. Hypomeron with antennal cavity broad, moderately shallow, and extending to basal fourth of prothorax; postero-lateral margin line strongly produced and knife-like near sternum, but in some specimens obsolete or absent posteriorly and separated by a very wide space from lateral margin of pronotum, and in other specimens much less produced behind but traceable to hind angle of prothorax; surface of sides and bottom of cavity coarsely and very densely, rugosely punctate.

*Trogoderma sternale*, frons

**Elytra** with discal punctures as coarse as those of sides of pronotum and usually separated by one to nearly two diameters; surface between punctures smooth or feebly, sparsely, irregularly, and microscopically alutaceous; sides sculptured like sides of pronotum. **Prosternum** flat or with a low and broad median longitudinal carina. Epipleura ending slightly behind hind margin of metasternal epimeron. Mesosternal disc with elevated part on each side of median channel rectangular, about half again as long as broad. Metasternum without trace of lateral discal striae and with middle anterior part rather narrowly rounded and moderately strongly produced between middle coxae. **Abdomen** without a trace of lateral discal striae on first sternite. **Legs** with middle coxae about twice as widely separated as front coxae.

Adult female
Differs from male in having the antennal club of five instead of eight segments. Females usually have the produced anterior middle of the metasternum relatively broader and distinctively more broadly rounded.

**References:** Beal 2003; Bousquet 1990; Hinton 1945
**Internet Resources:**
http://www.dermestidae.com/Trogodermasternale.html



*Trogoderma sternale*, lateral habitus

# *Trogoderma teukton* Beal, 1956

*Trogoderma teukton*, dorsal habitus

**Synonyms:** *Trogoderma versicolor*: Pic, 1938
*Trogoderma glabrum*: Beal, 1954
*Trogoderma oothecophilum* Chao & Lee, 1966
*Trogoderma teucton* [sic]: Zhantiev, 1976

**Canada and United States Distribution:** Colorado, Iowa, Illinois, Indiana, Kansas, Minnesota, Montana, North Dakota, Nebraska, Ohio, Wisconsin

**Economic Importance:** Minor economic importance; pest of granaries

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 2.0-2.9 mm
**Cuticle**: color of head and pronotum black to brownish black black; elytra black to brown with maculae brown to light brown; undersurfaces black to brownish black black; antennae brownish black; legs brownish black to brown. Pubescence of dorsal surfaces coarse, subrecumbent, consisting of brownish black-black, light golden-brown, and white hairs; pubescence of ventral surfaces somewhat finer, recumbent, consisting of light golden-brown and ash-gray hairs. Head with pubescence entirely light golden brown. Pronotum with light pubescence disposed along lateral declivities of pronotum only, or extending across pronotum in two transverse bands, white hairs predominating, especially along lateral posterior angles and on basal lobe. **Antenna** 11-segmented, extending in repose to basal two-fifths of lateral margin of prothorax; surface clothed with very short, dense, subrecumbent puberulence; third segment less than half as wide as second segment; segments three to ten gradually increasing in width; segment eleven narrower than ten, a little longer than segments nine and ten combined. **Head** with punctures about as coarse as facets of eye,

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*Trogoderma teukton*, female frons

separated on front and clypeus by one-fourth to one-half diameter, becoming sparser and separated by as much as two diameters on vertex; surface between smooth and shining. Eye with broad, shallow, arcuate emargination in front of middle. **Pronotum** with punctures about as fine as facets of eye, separated on disc by two to four diameters, somewhat coarser and denser toward sides; surface between smooth and shining. Antennal fossa half as wide as long, extending nearly to base of prothorax, shallowly excavated; anterolateral wall very little concave; posterior oblique margin raised, extending full length of fossa as kinfelike carina; floor of fossa glabrous and shining, marked with a few, fine, longitudinal striae. **Elytra** with punctures about twice as coarse as those of pronotum, separated by one to two diameters; surface between shining or very feebly wrinkled; maculation usually weakly indicated, but pattern strongly indicated by disposition of light pubescence; patterns always lacking longitudinal lines except for occasional weak or evanescent continuation of admedian line posteriad of subapical band; submedian band usually continued entirely across each elytron as distinct, uninterrupted line, abruptly expanded at suture or bent abruptly posteriad; light-colored pubescence consisting mostly of white hairs. Hind wings with proximal pigmented spur on stigma; first anal vein extending nearly to margin of wing, unbranched. **Prosternum** moderately coarsely punctate; punctures contiguous and somewhat confluent; posterior process moderately broad, tapering gradually to apex; median carina obsolete or rarely as long as posterior process. Epipleura ending indefinitely a little posteriad of hind margins of metepimera. Mesosternal disc with elevated part on either side of sulcus roughly rhomboidal, a little longer than broad. Metasternum marked on each side with stria extending obliquely outward from mesoposterior margin of metacoxal cavity; median anterior projection moderately narrowly rounded, thinly margined at sides. **Abdomen** with striae present on first sternite, extending obliquely outward from inner margins of metacoxal cavities. Ratio of width between procoxae to width between mesocoxae plus or minus 1:2.4. **Male genitalia**: tergite of first periphallic segment

*Trogoderma teukton*, female lateral habitus

with large, unsclerotized, apical area and with apical fringe of setae interrupted at middle; lateral lobes of phallobase broad and incurved at apex; bridge narrow, slightly arcuate.

Adult female
**Length**: 2.5-3.9 mm
Differs from male as follows: antennae extending in repose to about apical third of lateral margin of prothorax, clothed with very short, dense, subrecumbent puberulence and with a few, short, fine setae; third segment about half as wide as second; segments five to seven increasing gradually in width; segment eight more abruptly so, making antennal club appear 4-segmented; club widest at segment ten; antennal fossa shallowly excavated with posterior lateral angle not precisely defined; posterior diagonal margin raised and carinate but carina becoming evanescent laterally; floor with fine confluent punctures and fine pubescence on posterior half, and on anterior half glabrous and minutely strigate.

**References:** Beal 1954a, 2003; Háva 2015
**Internet Resources:**
http://www.dermestidae.com/Trogodermateukton.html

# *Trogoderma variabile* Ballion, 1878

*Trogoderma variabile*, dorsal habitus

**Synonyms:** *Trogoderma brevis* Casey, 1900
*Globicornis quadriguttata unifasciata* Pic, 1908
*Phradonoma variabile*: Dalla Torre, 1911
*Trogoderma persica* Pic, 1914
*Trogoderma versicolor* var. *turkestanicum* Pic, 1914
*Trogoderma scabripennis* Casey, 1916
*Trogoderma versicolor*: Linsley & Michelbacher, 1943
*Trogoderma parabile* Beal, 1954
*Trogoderma persicum*: Chao & Lee, 1966
*Trogoderma persicum*: Hua, 2002

**Canada and United States Distribution:** Common in all provinces and states

**Economic Importance:** Serious economic importance; pest of a wide variety of animal feeds, cereals, dried milk factories, museum specimens, and other proteinaceous materials

**Species with similar appearance:** Potentially confused with several species

**Diagnostic Notes:** None

**Morphology Summary:** Adult male
**Length**: 2.4-3.3 mm
**Cuticle**: color of dorsal surface black with reddish-brown maculae on elytra; undersurfaces black; femora dark brown; tibiae and tarsi light brown; antennae light brown. Pubescence of dorsal surfaces of medium coarseness, subrecumbent, consisting of black and golden-brown hairs with a very few ash-gray hairs; pubescence of ventral surfaces of medium coarseness, recumbent, light golden brown. Head with pubescence of nearly all black hairs. Pronotum with light pubescence consisting almost entirely of golden-brown hairs in large patch on each lateral declivous area, in patch on basal lobe, and in narrow, interrupted anterior and posterior transverse bands on disc; disc otherwise covered with dark hairs. Elytra with light pubescence limited mostly to areas of light maculation, consisting largely of golden-

*Trogoderma variabile*, lateral habitus

*Trogoderma variabile*, female frons

brown hairs with only a few scattered ash-gray hairs. **Antenna** 11-segmented, extending in repose to basal fifth of prothorax; surface entirely clothed with moderately short, dense, suberect puberulence except for segments one and two, which bear moderately long, fine setae; segment three minute; segment four two-thirds again as wide as segment three; club appearing 8-segmented; segment eleven only a trifle shorter than segments eight, nine, and ten combined; apex of segment eleven more or less obtuse. **Head** with punctures on anterior part of front and clypeus shallow, twice as coarse as facets of eye, separated by one-fourth diameter or contiguous, on posterior half of front and on vertex becoming as fine as facets of eye, separated by one to two diameters. Eyes with broad, very shallow sinuation slightly anteriad of middle. Antennal fossa a trifle less than half as wide as long, extending nearly to base of prothorax, deeply excavated; anterolateral wall moderately concave, finely pubescent; posterior oblique margin raised, extending as knifelike carina full length of fossa; floor of cavity glabrous, microscopically punctate on median third (along prosternal suture) and more or less longitudinally strigate on lateral and posterior areas. **Pronotum** with punctures on disc simple, but as coarse as facets of eyes, separated by two to four diameters, becoming somewhat coarser and closer on sides; surface between smooth and shining. **Elytra** with punctures slightly but distinctly closer than those of pronotal disc, separated by one to two diameters; surface between minutely wrinkled; base and sides feebly rugose. Hind wing with pigmented proximal spur on stigma; first anal vein extending nearly to margin, unbranched. **Prosternum** moderately coarsely punctate, confluently punctate on disc, becoming granulate-punctate on sides; posterior process moderately narrow with sides subparallel; median carina evident only at apex of process. Mesosternal disc with raised part on either side of sulcus roughly rhomboidal, about as wide as long. Metasternum not marked with discal striae; median anterior projection moderately broad, semicircularly rounded, feebly margined. **Abdomen** without distinct discal striae on first

*Trogoderma variabile*, female venter

sternite. Ratio of width between procoxae to width between mesocoxae 1:2.3. **Male genitalia**: first periphallic tergite entirely sclerotized except for minute apical area with setae extending across entire apical margin; lateral lobes of phallobase wide; bridge rater wide and strongly arcuate but with median part transverse.

Adult female
**Length**: 2.9-4.4 mm
Differs from male as follows: antenna extending in repose no farther than middle of lateral length of pronotum; surface clothed with short pilosity and longer fine setae; terminal club consisting of four compactly and symmetrically joined segments; antennal fossa two and a half times as long as wide; floor irregularly strigate on median third; longitudinally strigate distally.

**Variations:**
color of elytra brownish black to black; color of maculae reddish brown to yellowish red; color of legs and antennae light brown to brownish black. Pubescence of head varying from nearly all golden-brown to nearly all black hairs; pubescence of pronotum with proportion of light and dark hairs varying, but pattern of light pubescence generally similar, and light pubescence always predominantly of golden-brown hairs.

**References:** Beal 1954a, 2003
**Internet Resources:**
http://www.dermestidae.com/Trogodermavariabile.html

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