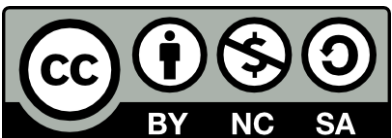


# Coleoptera of Alberta: Visual Guide to Common Terrestrial Families (Adults)

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# Coleoptera terrestrial families found in Alberta – page 1

## Adephaga

**Carabidae** ([p. 7](#))

Rhysodidae\*

Trachypachidae\*

## Archostemata

Cupedidae\*

Micromalthidae\*

## Polyphaga

### Bostrichoidea

Bostrichidae\*

**Dermestidae** ([p. 14](#))

Endecatommidae\*

Ptinidae

### Derodontoidea

Derodontidae\*

Nosodendridae\*

### Scarabaeoidea

Geotrupidae\*

Glaphyridae\*

Glaresidae\*

Hybosoridae\*

Lucanidae\*

Ochodaeidae

Passalidae\*

**Scarabaeidae** ([p. 17](#))

Trogidae

## Polyphaga: Elateriformia

### Buprestoidea

**Buprestidae** ([p. 9](#))

### Byrrhoidea

Byrrhidae

Dryopidae\*

Elmidae\*

Heteroceridae

Limnichidae\*

Lutrochidae\*

Psephenidae\*

Ptilodactylidae\*

### Dascilloidea

Rhipiceridae\*

### Elateroidea

Artematopodidae\*

Cantharidae

**Elateridae** ([p. 15](#))

Eucnemidae

Lampyridae

Lycidae

Phengodidae\*

Throscidae\*

### Scirtoidea

Clambidae\*

Eucinetidae\*

Scirtidae

## Polyphaga: Staphyliniformia

### Hydrophiloidea

Georissidae\*

Helophoridae

Histeridae

Hydrochidae\*

Sphaeritidae\*

### Staphylinoidea

Agyrtidae\*

Hydraenidae\*

Leiodidae

Ptiliidae\*

**Silphidae** ([p. 18](#))

**Staphylinidae** ([p. 19](#))

black text = families

blue text = other taxonomic levels

**bold** text = included in identification guide

\* = family unlikely to be found

# Coleoptera terrestrial families found in Alberta – page 2

## Polyphaga: Cucujiformia

### Chrysomeloidea

**Cerambycidae** ([p. 10](#))  
**Chrysomelidae** ([p. 11](#))  
Megalopodidae\*  
Orsodacnidae

### Cleroidea

Biphyllidae\*  
Byturidae  
Cleridae  
Melyridae  
Trogossitidae\*

### Coccinelloidea

Anamorphidae\*  
Bothrideridae\*  
Cerylonidae\*  
**Coccinellidae** ([p. 12](#))  
Corylophidae\*  
Endomychidae  
Euxestidae\*  
Latridiidae  
Mycetaeidae\*  
Murmidiidae\*

### Cucujoidea

Cryptophagidae  
Cucujidae  
Cybocephalidae\*  
Erotylidae\*  
Kateretidae  
Laemophloeidae\*  
Monotomidae\*  
Nitidulidae  
Passandridae\*  
Phalacridae\*  
Silvanidae  
Sphindidae\*

### Curculionoidea ([p. 13](#))

Anthribidae  
Attelabidae  
Brachyceridae\*  
Brentidae  
Cimberididae\*  
Curculionidae  
Dryophthoridae\*

### Lymexyloidea

Lymexylidae\*

### Tenebrionoidea

Aderidae\*  
Anthicidae  
Boridae\*  
Ciidae\*  
Ischaliidae  
Melandryidae  
**Meloidae** ([p. 16](#))  
Mordellidae  
Mycetophagidae\*  
Mycteridae\*  
Oedemeridae\*  
Prostomidae\*  
Pyrochroidae  
Pythidae\*  
Rhipiphoridae\*  
Salpingidae\*  
Scraptiidae\*  
Stenotrachelidae  
Synchroidae\*  
**Tenebrionidae** ([p. 20](#))  
Tetratomidae\*  
Zopheridae

black text = families

blue text = other taxonomic levels

**bold text** = included in identification guide

\* = family unlikely to be found

# Coleoptera families you can identify with this guide – page 1

## ADEPHAGA

Carabidae  
(ground beetles)



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## POLYPHAGA

Buprestidae  
(metallic wood-boring beetles)



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Cerambycidae  
(long-horned beetles)



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Chrysomelidae  
(leaf beetles)



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Coccinellidae  
(lady beetles)



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Curculionoidea  
(snout and bark beetles, weevils)



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# Coleoptera families you can identify with this guide – page 2

## POLYPHAGA continued

**Dermestidae**  
(skin beetles)



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**Elateridae**  
(click beetles)



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**Meloidae**  
(blister beetles, oil beetles)



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**Scarabaeidae**  
(scarab beetles)



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**Silphidae**  
(carrion beetles)



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**Staphylinidae**  
(rove beetles)



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**Tenebrionidae**  
(darkling beetles)



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# Coleoptera: Adephaga versus Polyphaga

## Adephaga

- **hind coxae** fused to metasternum and divide the first abdominal ventrite
- notopleural sutures present (see [p. 7](#))

One family commonly found in Alberta: Carabidae

proceed to next page

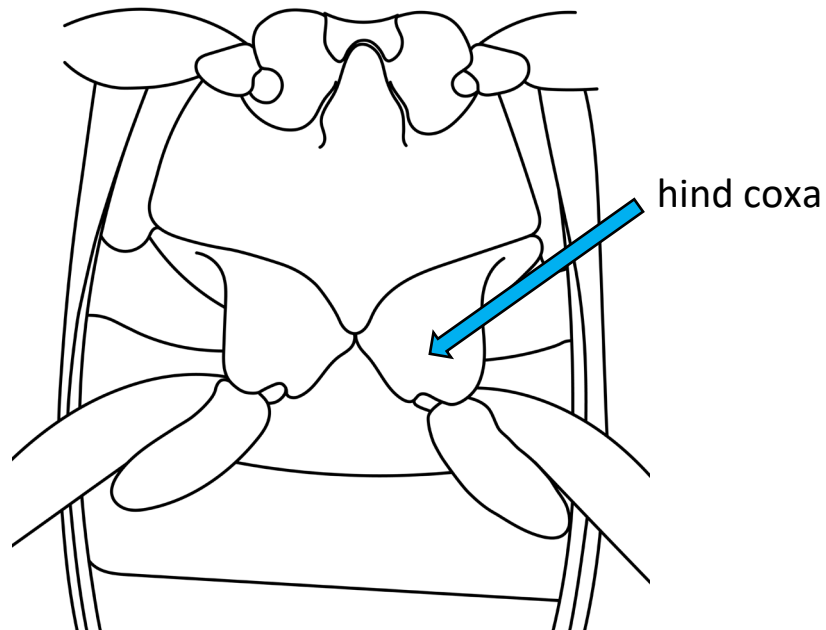


Illustration by Arminty Carson

## Polyphaga

- **hind coxae** are mobile and do not divide the first abdominal ventrite (posterior portion extends across abdomen)
- notopleural sutures absent

proceed to [page 8](#)

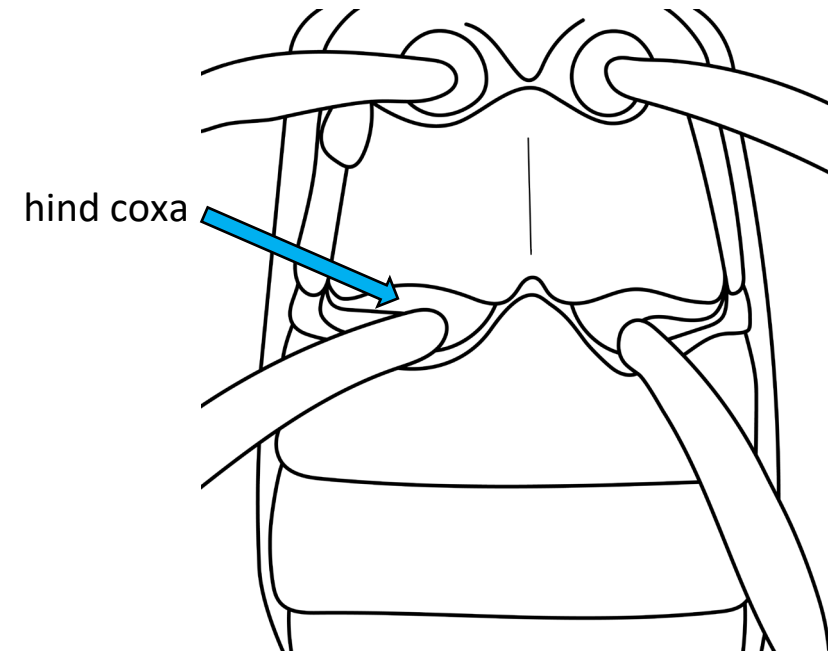


Illustration by Arminty Carson

# Adephaga: Carabidae

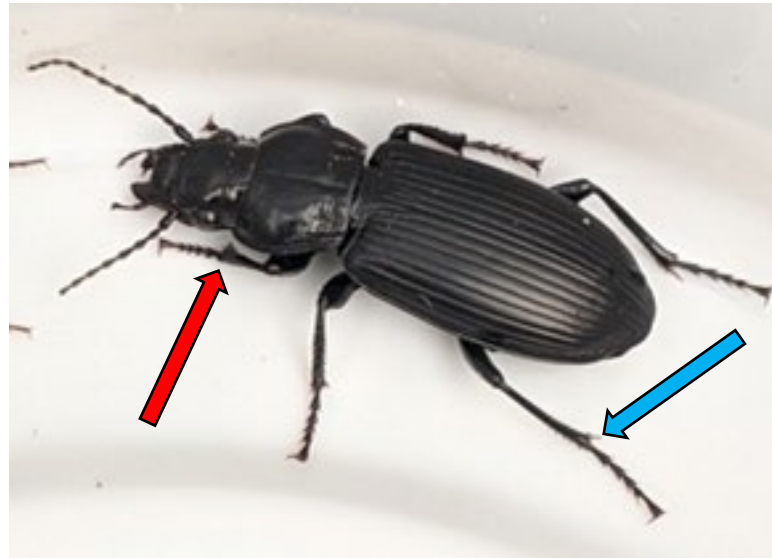
## Carabidae (ground beetles)

- hind coxae fused to metasternum and divide the first abdominal ventrite
- **notopleural sutures** present
- fore tibia with **antenna cleaner** on inner apical angle
- **tibial spurs** present
- tarsal formula 5,5,5
- usually black or dark coloured



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*Carabus nemoralis*



"Photo 99674746" by [Jan Smith](#) is licensed under [CC BY 4.0](#) / original cropped

*Pterostichus melanarius*

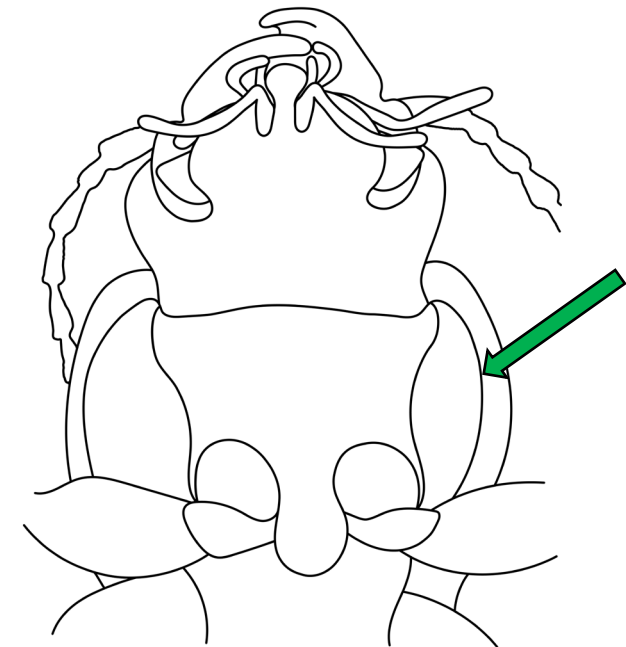


Illustration by Arminty Carson

# Polyphaga: narrow choices down using visible traits

## antennae

fit into grooves below sides of pronotum? [Dermestidae](#)

lamellate? [Scarabaeidae](#)

partly surrounded by compound eye? [Cerambycidae](#)

hidden from above by extension of head? [Tenebrionidae](#)

## head

elongated with distinct snout? [Curculionoidea](#)

mostly or completely concealed from above by pronotum?

[Coccinellidae](#), [Dermestidae](#)

## pronotum

clearly narrower than head and base of elytra? [Meloidae](#)

posterior corners prolonged into sharp points? [Elateridae](#)

prosternal process extends into groove on mesosternum?

[Buprestidae](#), [Elateridae](#)

## abdomen

4 - 6 complete abdominal segments visible beyond elytra?

[Staphylinidae](#)

## tarsal formula

4,4,4? [Coccinellidae](#)\*

5,5,4? [Meloidae](#), [Tenebrionidae](#)

5,5,5? [Cerambycidae](#)^, [Chrysomelidae](#)^, [Curculionoidea](#),  
[Scarabaeidae](#), [Silphidae](#)

^pseudotetramerous

\*pseudotrimerous

## tibial spurs present

[Cerambycidae](#)



# Polyphaga: Buprestidae

## Buprestidae (metallic wood-boring beetles)

- very metallic, especially on ventral body and dorsal abdomen
- **prosternal spine** extending into groove on mesosternum
- abdominal segments 1 and 2 fused on ventral side
- characteristic shape: rounded anterior, nearly parallel sides, tapered posterior
- antennae short; serrate or filiform

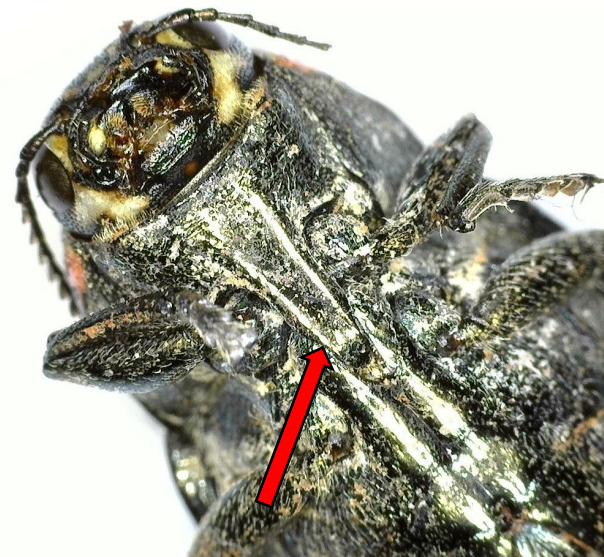
### Similar family:

Elateridae, but their abdominal segments are not fused and their prothorax and mesothorax are firmly joined (inflexible); see [p. 15](#)



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*Anthaxia inornata*



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*Buprestis lyrata*



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*Buprestis confluenta*

# Polyphaga: Cerambycidae

## Cerambycidae (long-horned beetles)

- antennae nearly always at least half as long as body, usually longer
- **compound eyes** wrap part way around base of antennae
- tarsal formula 5,5,5; pseudotetramerous (4<sup>th</sup> tarsomere small and hidden)  
(see photo on next page)
- **tibial spurs well developed**
- antennae filiform or nearly so
- body usually elongate and cylindrical

### Similar family:

Chrysomelidae, but lack tibial spurs and antennae are less than half length of body; see [p. 11](#)



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*Monochamus scutellatus*



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*Lepturobosca chrysocoma*

# Polyphaga: Chrysomelidae

## Chrysomelidae (leaf beetles)

- antennae nearly always < half as long as body
- tarsal formula 5,5,5; tarsi pseudotetramerous (4<sup>th</sup> tarsomere hidden in notch in 3<sup>rd</sup> tarsomere)
- tibial spurs absent
- antennae filiform or nearly so

### Similar family:

Cerambycidae, but they have tibial spurs and their antennae are much longer; see [p. 10](#)



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*Calligrapha verrucosa*



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*Chrysochus auratus*



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*Lilioceris lili*

# Polyphaga: Coccinellidae

## Coccinellidae (lady beetles)

- pronotum mostly or completely conceals head from dorsal view
- tarsal formula 4-4-4; tarsi pseudotrimerous (3<sup>rd</sup> tarsomere small and nested in 2<sup>nd</sup> tarsomere)
- **tarsal claws are toothed** (tooth is not as long as claw)
- body broadly oval to nearly spherical; strongly convex dorsally
- antennae short; club of 3-6 segments

**Note:** Many species of Coccinellidae have numerous colour morphs. Refer to John Acorn's "Ladybugs of Alberta"; For *Adalia bipunctata* can also look at <https://bugguide.net/node/view/78798#id>

**Similar family:**  
Chrysomelidae, but they have pseudotetramerous tarsi; see [p. 11](#)

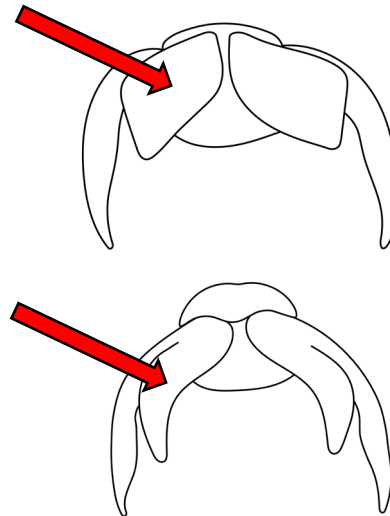


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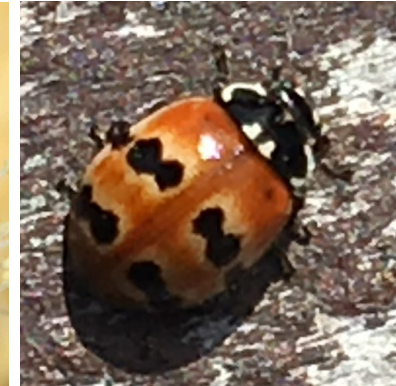
*Calvia quatuordecimguttata*



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*Adalia bipunctata*

# Polyphaga: Curculionoidea

**Curculionoidea** (snout and bark beetles, true weevils, leaf-rolling weevils)

- head prolonged; snout either short and broad, or long and slender; snout usually curves downward
- **antennae arise from sides of snout**
- **tarsal formula 5,5,5; tarsi pseudotetramerous (4<sup>th</sup> tarsomere small and nested in 3<sup>rd</sup> tarsomere)**
- Curculionidae: antennae geniculate, club compact, beak has protective groove for scape, 2<sup>nd</sup> tarsal segment rounded at apical angles
- Attelabidae: antennae straight, ≥ segments of club articulated loosely, 2<sup>nd</sup> tarsal segment **projecting at apical angles**
- there are other families found in Alberta; all families can be difficult to distinguish between

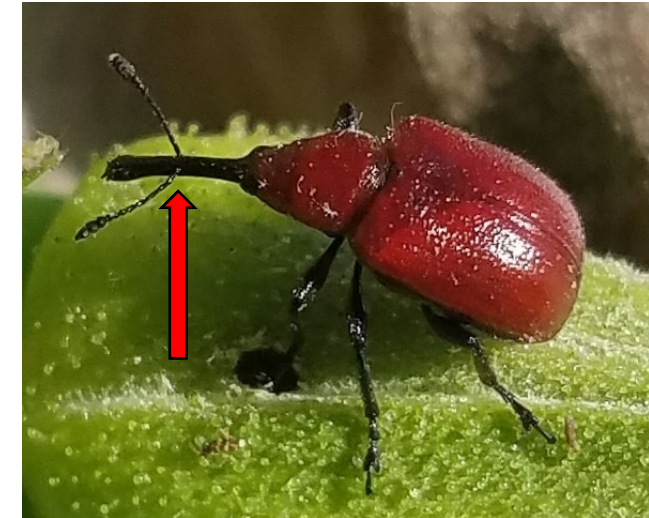


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*Polydrusus impressifrons*



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*Merhynchites bicolor*

# Polyphaga: Dermestidae

## Dermestidae (skin beetles)

- head mostly to completely concealed from above by pronotum
- antennae fit into **grooves/concave spaces** below the pronotum, so may not be visible from above
- usually covered with scales or hairs
- body elongate to broadly oval
- brown or black, sometimes patterned
- antennae short; last 3 segments clubbed



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*Dermestes lardarius*



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*Dermestes lardarius*



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*Anthrenus verbasci*

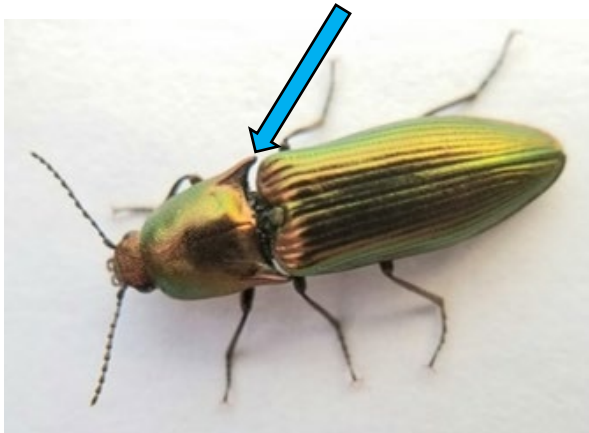
# Polyphaga: Elateridae

## Elateridae (click beetles)

- **prosternal spine** extending into groove on mesosternum
- **prothorax firmly joined to mesothorax, which, when combined with prosternal spine, makes a “click mechanism”** (helps beetle right itself from its back)
- **posterior corners of pronotum** are prolonged backward into sharp points or spines
- antennae serrate
- body elongate, slender, parallel-sided, and rounded at each end

### Similar family:

Buprestidae, but their prothorax and mesothorax are independently mobile, and abdominal segments 1 and 2 are fused on ventral side; see [p. 9](#)



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*Nitidolimonius resplendens*



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*Ampedus apicatus*

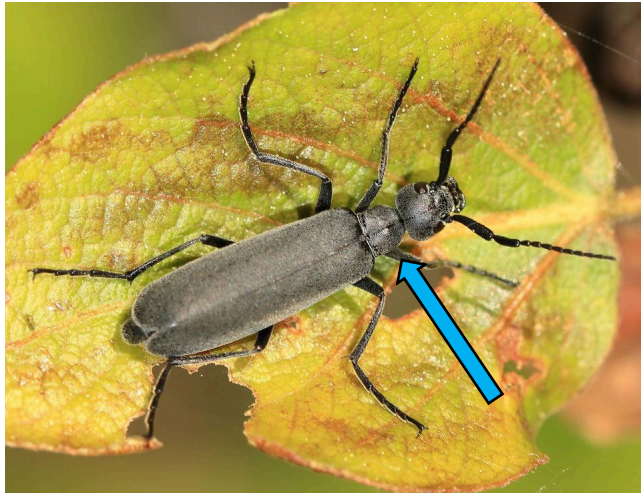
# Polyphaga: Meloidae

## Meloidae (blister beetles, oil beetles)

- **pronotum** narrower than both head and base of elytra
- **tarsal claws are bifid** (looks like there are 4 claws)
- head broad; strongly constricted at base
- antennae filiform or moniliform
- body elongate, parallel-sided
- tarsal formula 5,5,4

### Similar family:

Tenebrionidae have same tarsal formula, but tarsal claws are not split; see [p. 20](#)



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*Epicauta pennsylvanica*



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*Lytta nuttalli*



# Polyphaga: Scarabaeidae

## Scarabaeidae (scarab beetles)

- antennae lamellate; lamellae may be spread or held together
- front tibiae outer edge scalloped or spiny
- heavy-bodied, oval or elongate, convex dorsal profile
- tarsal formula 5,5,5



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*Triclotinus assimilis*



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*Aphodius distinctus*



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*Polyphylla decemlineata*

# Polyphaga: Silphidae

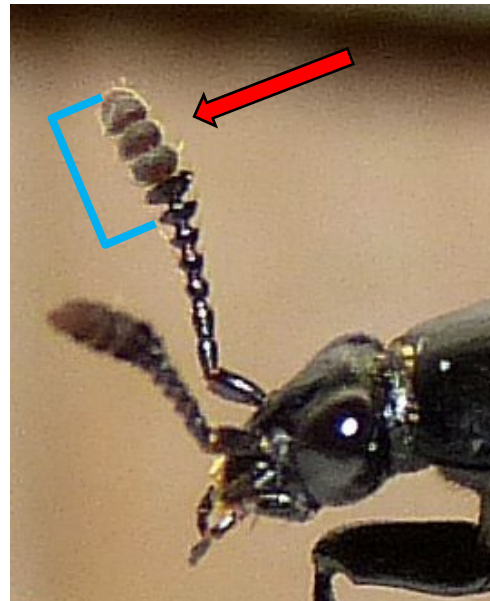
## Silphidae (carrion beetles)

- four apical antennomeres expanded into asymmetrical club (clavate or capitate)
- first antennomere of club is shiny, last 3 antennomeres tomentose and not shiny
- elytra usually black with yellow, orange, or red markings; occasionally all black
- body is dorsoventrally flattened
- tarsal formula 5,5,5



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*Necrodes pustulatus*



"Photo 6943066" by Stuart Tingley is licensed under [CC BY-NC 4.0](#)

*Necrodes surinamensis*



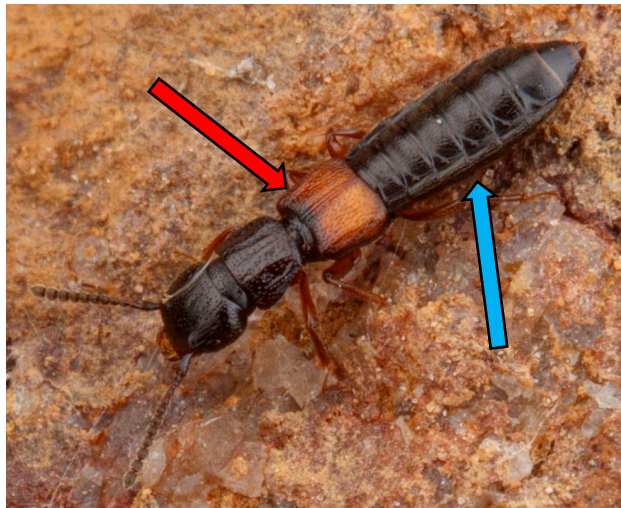
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*Necrodes surinamensis*

# Polyphaga: Staphylinidae

## Staphylinidae (rove beetles)

- **very short elytra**, usually not much longer than their combined width
- **4-6 complete abdominal segments exposed** dorsally posterior to elytra
- body elongate and very slender (usually parallel-sided)
- abdomen flexible and often bent upward
- antennae filiform or weakly clubbed
- usually black or brown



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*Anotylus insecatus*



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*Ontholestes cingulatus*

Similar to Dermaptera, but without **cerci** at tip of abdomen.

## Dermaptera



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# Polyphaga: Tenebrionidae

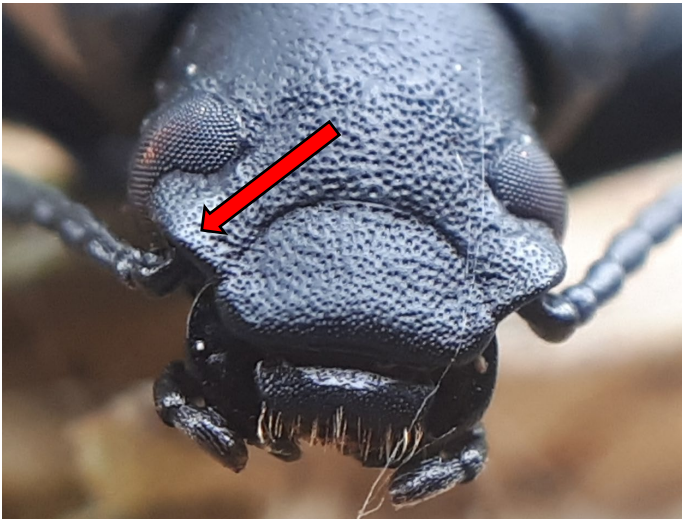
## Tenebrionidae (darkling beetles)

- **antennal insertions hidden from above** by extension of front of head that **continues between eyes**
- antennae usually 11-segmented; filiform, moniliform, or slightly clubbed
- **pronotum keeled laterally**
- **tarsal formula 5,5,4**; tarsal claws simple
- dull black or brown

### Similar family:

Meloidae have same tarsal formula, but their tarsal claws are split; see [p. 16](#)

Some appear similar to Carabidae, but Carabidae are in Adephaga; see [p. 7](#)



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*Upis ceramboides*



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*Upis ceramboides*

# Glossary

**antennomere:** antennal segment; antennomere 1 is the scape; antennomere 2 is the pedicel; antennomeres 3 and above are part of the flagellum (and more accurately called flagellomeres)

**notopleural suture:** suture between the sclerites of the notum and pleuron

**notum:** dorsal sclerite of a thoracic segment

**pleuron:** lateral sclerite of a thoracic segment

**pseudotetramerous / pseudotrimerous:** tarsi appear to have one segment fewer than actually have because one segment is very small and hidden, usually in a notch of another segment; pseudotetramerous appear to have four segments but actually have five; pseudotrimerous appear to have three segments but actually have four

Good photos of these can be found in the family Spot IDs at:

<https://genent.cals.ncsu.edu/insect-identification/order-coleoptera/>

**sclerite:** hardened body-wall plate surrounded by sutures or membranous areas

**tarsal formula:** indicates number of tarsal segments on fore, mid, and hind tibia respectively; e.g. 5,5,4

**tomentose:** covered with dense, short, matted hairs

**ventrite:** visible sternite (ventral abdominal segment); ventrite number may not equal sternite number

# References

Borror, D.J. & White, R.E. (1983). *A field guide to beetles of North America*. Houghton Mifflin.

Borror, D.J., & White, R.E. (1998). *A field guide to insects: America north of Mexico*. Houghton Mifflin.

Bousquet, Y. (1990). *Beetles associated with stored products in Canada: An identification guide*. Canadian Government Publishing Centre.

Retrieved September, 2020, from [https://esc-sec.ca/wp/wp-content/uploads/2017/03/AAFC\\_bousquet1990.pdf](https://esc-sec.ca/wp/wp-content/uploads/2017/03/AAFC_bousquet1990.pdf)

Choate, P.M. (2003). Dichotomous keys to some families of Florida Coleoptera. In *Identification of beetles (Coleoptera)*. University of Florida.

Retrieved September, 2020, from <http://entnemdept.ufl.edu/choate/beetles1a.pdf>

Choate P.M. (2008). Ground Beetle (Coleoptera: Carabidae) Taxonomy. In J.L. Capinera (Ed.) *Encyclopedia of Entomology*. Springer,

Dordrecht. Retrieved September, 2020, from [https://doi.org/10.1007/978-1-4020-6359-6\\_1202](https://doi.org/10.1007/978-1-4020-6359-6_1202)

Ivie, M.A. (2002). Key to families of beetles in America north of Mexico. In R.H. Arnett, M.C. Thomas, P.E. Skelley, & J.H. Frank (Eds.), *American*

*Beetles, Polyphaga: Scarabaeoidea through Curculionoidea* (pp. 816-835). Retrieved September, 2020, from

<http://academic.uprm.edu/~franz/WeevilCourseResources/Ivie2002-KeyToFamilies.pdf>

NC State Agriculture and Life Sciences. (2015). *ENT 425 – General Entomology. Coleoptera*. Retrieved September, 2020, from

<https://genent.cals.ncsu.edu/insect-identification/order-coleoptera/>

# References

Scudder, G.G.E., & Cannings, R.A. (2005). *Key to Families of Coleoptera in British Columbia*. Beetle Families of British Columbia. Retrieved

September, 2020, from <https://www.zoology.ubc.ca/bcbeetles/Text%20files/coleoptera%20keys.htm>

Triplehorn, C., & Johnson, N. (2005). *Borror and DeLong's Introduction to the study of insects* (7th Edition). Brooks/Cole.