

**Insect Taxonomy & Phylogeny**  
**ENT 5021**  
**Coleoptera**

SUBORDER ARCHOSTEMATA

**1. Family Cupedidae (reticulated beetles)**

Tarsi 5-5-5; body elongate. Elytra parallel sided and strongly sculptured, with coarse punctures. Thorax narrower than elytra. Antennae threadlike.

SUBORDER ADEPHAGA

**2. Family Rhysodidae (wrinkled bark beetles)**

Tarsi 5-5-5. Distinctive body shape - body elongate and narrow; head with a distinct neck, pronotum with 1 or 3 elongate grooves. Antennae beadlike (moniliform). This family is now frequently included in the Carabidae.

**3. Family Cincindellidae - (tiger beetles)**

Tarsi 5-5-5. Distinctive body shape - head and elytra wider than thorax, eyes bulging, antennae threadlike and inserted above base of mandibles. Frequently with iridescent blue, green or copper color and distinctive markings on elytra. This family is now frequently included in the Carabidae.

**4. Family Carabidae (ground beetles)**

Tarsi 5-5-5. Usually with cursorial legs and threadlike antennae. Often black and shiny in color and with striate elytra, widely variable in size and shape, but usually instantly recognizable as a ground beetle. Antenna inserted between eye and mandible. Hind coxae divide first abdominal segment.

**5. Family Haliplidae (crawling water beetles)**

Tarsi 5-5-5. Small, convex beetles, tapering at both ends, with greatly enlarged, platelike hind coxae. Usually yellow or brownish in color, with dark spots on the elytra. Antennae short and threadlike. Elytra striate.

**6. Family Dytiscidae (predacious diving beetles)**

Tarsi 5-5-5 (almost always). Elongate oval shape, convex above and below. Antennae threadlike. Hind legs flattened, with fringe of hairs (for swimming).

**7. Family Gyrinidae (whirligig beetles)**

Tarsi 5-5-5. Eyes distinctive: divided into two parts (for above and below water viewing). Legs distinctive: forelegs long; middle and hindlegs short. Antennae short and clubbed.

SUBORDER POLYPHAGA

**8. Family Hydrophilidae (water scavenger beetles)**

Tarsi 5-5-5 or 5-4-4. Body generally oval in shape, convex above, and usually flat below. Antennae short, with 4-segmented, clubbed apex (often concealed). Maxillary palps elongate; usually longer than antennae and easily confused with antennae by novice.

**9. Family Staphylinidae (rove beetles)**

Characteristic form -- usually elongate, slender, parallel sided. Elytra short, exposing 5-6 abdominal segments. Antennae threadlike or clubbed. Very large family of mostly small beetles (usually 1-10 mm., but up to 20 mm.)

**10. Family Pselaphidae (short-winged mold beetles)**

Resemble staphylinids in having short elytra, but abdomen is rounded and wider at middle than thorax or head.

**11. Family Silphidae (carrion beetles)**

Generally rather large beetles with flattened shape and soft body. Frequently black or blackish in color with yellow, orange, or red markings. Often with last few segments of abdomen exposed. Antennae clubbed, with last 2-3 segments pubescent. Two common genera of rather characteristically different shape -- *Nicrophorus* (burying beetles) and *Silpha*.

**12. Family Ptiliidae (feather-winged beetles)**

Very small beetles (0.25-1.0 mm.) that feed on fungus spores. Antennae clubbed, each segment with whorl of long hair. Hindwing with fringe of long hair. Oval, often pubescent. Some of these beetles are smaller than many protozoa.

**13. Family Scaphidiidae (shining fungus beetles)**

Distinctive body shape -- convex, usually black, shiny, some with red spots; elytra truncate and tip of abdomen pointed. Antennae clubbed.

**14. Family Histeridae (hister beetles)**

Black, shining beetles with truncate elytra. Elbowed, clubbed antennae. Usually oval or elliptical in shape, but greatly flattened in some species.

**15. Family Lucanidae (stag beetles)**

Elongate, robust beetles, usually with large head and greatly enlarged mandibles in males of some species. Thorax usually evidently separated from abdomen by waist. Antennae geniculate (elbowed) with 3-4 segmented club whose segments are not capable of being apposed (held together in a tight ball).

**16. Family Passalidae (bess beetles or betsybugs)**

Characteristic form -- elongate, robust beetles, parallel-sided, black and shiny with striate elytra. Antennae not elbowed; club with segments not apposable. All passalids around the world look alike, differing mostly in size.

**17. Family Scarabeidae (scarab beetles)**

Large family whose subfamilies are frequently raised to family status (hence Geotrupidae, Melolonthidae, Trogidae, etc.). Variable in size, typically oval or elongate and heavy bodied. Antennae 8-11 segmented with club that is lamellate (platelike); antennal segments are apposable. Very diverse family.

**18. Family Heteroceridae (variegated mud-loving beetles)**

Tarsi 4-4-4. Distinctive shape -- mandibles of male extended forward. Tibiae flattened and spined on outer margin (fossorial). Elytra often with undulating yellowish bands or spots. Antennae short, serrate.

**19. Family Dryopidae (long-toed water beetles)**

Body oval and dark in color. Head mostly concealed from above. Legs long; claws large. Antennae short, most segments broader than long.

**20. Family Elmidae (riffle beetles)**

Body oval and dark in color. Head mostly concealed from above. Legs long; claws large. Antennae short to moderate in length, clubbed or threadlike.

- 21. Family Buprestidae (metallic wood-boring beetles)**  
Tarsi 5-5-5. Hard-bodied, usually elongate oval or parallel sided; nearly always shiny and with metallic or bronzed color, especially ventrally. Antennae short, serrate or threadlike.
- 22. Family Elateridae (click beetles)**  
Tarsi 5-5-5. Distinctive shape -- parallel sided and flattened, rounded at each end; body usually black or brown in color. Posterior corners of pronotum prolonged backward into sharp points. Clicking mechanism ventrally. Antennae usually serrated, sometimes threadlike or pectinate.
- 23. Family Phengodidae (glowworms)**  
Female larvaform. Male flat, soft-bodied; antennae plumose; HW extending beyond short FW and covering abdomen.
- 24. Family Cantharidae (soldier beetles)**  
Tarsi 5-5-5. Soft bodied; body elongate, parallel sided. Head not concealed. Margin of pronotum often flattened, disklike. Usually largely black or brown with red, yellow, or orange, especially on margin of pronotum (or sometimes predominantly yellow overall).
- 25. Family Lycidae (net-winged beetles)**  
Tarsi 5-5-5. Soft bodied. FW reticulate, with longitudinal ridges. Head concealed from above. Antennal segments often flattened; color usually yellow or red with black markings.
- 26. Family Lampyridae (lightningbugs or fireflies)**  
Tarsi 5-5-5. Soft bodied, similar to cantharids, but head concealed from above by pronotum. Last 2-3 abdominal segments often luminous. Color usually brownish or blackish with yellow or orange.
- 27. Family Dermestidae (dermestids)**  
Tarsi 5-5-5. Elongate or oval body, often covered with scales or hair. Antennae short and clubbed and fitting into grooves below sides of pronotum.
- 28. Family Anobiidae (death-watch beetles)**  
Tarsi 5-5-5. Small to medium sized, usually brown or black body. Pronotum hoodlike, enclosing head and concealing it from above. Antennae (nearly always) with last 3 segments lengthened and expanded, often pectinate (comblike). Appendages often contractile; hind coxae grooved for reception of femora.
- 29. Family Bostrichidae (branch-and-twig borers)**  
Tarsi 5-5-5. Body form distinctive -- cylindrical, parallel-sided. Head bent down and nearly concealed from above. Pronotum (usually) with rasplike teeth anteriorly. Antennae with loose, 3-4 segmented club.
- 30. Family Cleridae (checkered beetles)**  
Tarsi 5-5-5. Body elongate, narrow, with long, erect pubescence. Pronotum narrow, cylindrical; often marked with red, orange, yellow, or blue. Antennae frequently clubbed, sometimes threadlike.
- 31. Family Melyridae (soft-winged flower beetles)**  
(= Malachiidae + Dasytidae of some classifications)  
Tarsi 5-5-5. Elytra soft, loosely covering abdomen and widest toward rear of insect. Black, blue, or green, often with red, yellow or orange markings; often covered with erect, stiff hairs. Antennae sawtoothed or threadlike.

**32. Family Nitidulidae (sap beetles)**

Tarsi 5-5-5 or 4-4-4. Relatively small (1.2-12 mm.), variable in shape but frequently broadly oval, sometimes with last few abdominal segments exposed. Color usually brown or black, often marked with yellow or red. Antennal club with abrupt, 3-segmented apex. Front coxae transverse.

**33. Family Cucujidae (flat bark beetles)**

Tarsi 5-5-5, or apparently 5-5-4. Small to medium sized; body often greatly flattened, usually narrow and parallel-sided; brown, black or reddish in color. Antennae threadlike (or sometimes clubbed). Pronotum often with serrate margin.

**34. Family Languriidae (lizard beetles)**

Tarsi 5-5-5. Hard bodied with distinctive shape -- elongate slender and parallel-sided. Color shining black or blue-black. Pronotum (usually) reddish, orange or yellow (and also sometimes head and part of elytra). Antennae with 4-segmented club.

**35. Family Erotylidae (pleasing fungus beetles)**

Tarsi 5-5-5, but 4th segment often small. Small to medium sized, elongate or oval, black and shiny, often with red, orange or yellow markings; body without pubescence. 3-segmented antennal club. Front coxae rounded.

**36. Family Coccinellidae (ladybird beetles)**

Tarsi apparently 3-3-3 (actually 4-4-4). Oval or nearly spherical in shape and convex dorsally. Color yellow, orange, red, or black (frequently with contrasting spots or markings). Head partly or totally concealed by pronotum. Antennae short and with 3-6 segmented club.

**37. Family Endomychidae (handsome fungus beetles)**

Tarsi apparently 3-3-3. Rather oval in shape; forward angles of pronotum prolonged. Shining black or brown in color, often with red or orange markings. Antennal club 3-segmented.

**38. Family Tenebrionidae (darkling beetles)**

Tarsi 5-5-4. Mostly medium to large in size and generally rather dull black or brown. Antennae 11 segmented and threadlike, beadlike, or slightly clubbed. Eyes notched by a projecting shelf.

**39. Family Alleculidae (comb-clawed beetles)**

Tarsi 5-5-4. Body elongate, robust or narrow. Color brown to black with silky pubescence. Antennae usually threadlike or serrate. Tarsal claws pectinate (comblike).

**40. Family Pyrochroidae (fire-colored beetles)**

Tarsi 5-5-4. Shape and color distinctive -- elongate; elytra parallel-sided or (frequently) widened posteriorly and black. Pronotum (and often head) reddish or yellowish. Antennae serrate, pectinate, or almost plumose.

**41. Family Melandryidae (false darkling beetles)**

Tarsi 5-5-4. Elongate oval in shape; nearly always dark colored. Pronotum with 2 dents at base. First tarsal segment longer than others. Antennae threadlike.

**42. Family Mordellidae (tumbling flower beetles)**

Tarsi 5-5-4, humpbacked and wedged-shaped (head bent down and abdomen pointed); antennae short (threadlike, serrate, or clubbed).

**43. Family Rhipiphoridae (wedge-shaped beetles)**

Tarsi 5-5-4. Humpbacked and wedged shaped (like Mordellidae), but abdomen blunt. Antennae pectinate or serrate. FW often short with hindwing projecting.

**44. Family Meloidae (blister beetles)**

Tarsi 5-5-4. Body soft, often leathery; shape usually distinctive -- head broad and wider than thorax; elytra elongate and wider than thorax with "rolled" edges. Antennae threadlike or beadlike. Legs long and slender.

**45. Family Cerambycidae (long-horned beetles)**

Tarsi apparently 4-4-4 (actually 5-5-5). Generally medium to large sized. Antennae elongate (at least half the length of body). Eyes usually notched, with antennae arising in notch.

**46. Family Chrysomelidae (leaf beetles)**

Tarsi apparently 4-4-4. Variable in shape and color, but generally somewhat oval shaped. Antennae usually less than half the length of body. Eyes not notched

**47. Family Bruchidae (seed beetles)**

Tarsi apparently 4-4-4, distinctive shape -- oval or egg shaped, with head mostly concealed. Head prolonged into a short broad snout. Antennae clubbed (or sometimes serrate or pectinate). Color black or brown, often mottled with patches of white or brown pubescence. Elytra short, exposing tip of abdomen.

**48. Family Brentidae (primitive weevils)**

Tarsi usually apparently 4-4-4 (actually 5-5-5). Elongate and parallel-sided body. Head with long or short straight beak. Antennae beadlike or threadlike.

**49. Family Curculionidae (weevils or snout beetles)**

Tarsi usually apparently 4-4-4 (actually 5-5-5). Usually with a well developed, curved snout. Antennae clubbed and almost always elbowed (geniculate) and often recessed into groove along snout. Palps small and often concealed. Labrum absent. This is a huge family with many subfamilies, some of which are often raised to family status.

**50. Family Scolytidae (bark-and-ambrosia beetles)**

Tarsi apparently 4-4-4. Small brown or black, cylindrical, elongate beetles. Frequently with head partly or wholly concealed and thorax relatively elongate compared to elytra. Tips of elytra often squarred off. Antennae elbowed and clubbed. Tarsi short.

The beetles display a wide range of antennal shapes. Some terms which are used to describe them are:

Filiform -- threadlike

Moniliform -- beadlike

Geniculate -- elbowed

Lamellate -- platelike (as in the terminal antennal segments of scarabs)

Serrate -- sawlike

Pectinate -- comblike

Flabellate -- fanlike

Plumose -- featherlike