

Caddisflies



Apataniid Case Makers (Apataniidae)

- ▶ Cases made of small rock fragments or sand; most are cylindrical, tapered and curved
- ▶ Some larvae add moss, algae, and leaf and twig fragments to the cases as camouflage.



Common Net-spinners (Hydropsychidae)

- ▶ Rigid plates on top of all three thoracic segments
- ▶ Conspicuous branched gills next to the middle and hind legs and along the underside of the abdomen



Comb-lipped Case Makers (Calamoceratidae)

- ▶ A single species, *Heteroplectron californicum*, known from Alaska
- ▶ Head and the top of the first segment of the thorax is dark brown and shiny
- ▶ Row of 16 stout hairs across the upper lip



Fingernet Caddisflies (Philopotamidae)

- ▶ Unique to this family: a broad (nearly as wide as the head) t-shaped and membranous upper lip (labrum)--in other families, the upper lip is narrower than the head, dark colored, and rigid)
- ▶ Only first thoracic segment sclerotized; abdomen conspicuously white

Caddisflies



**Giant Case Makers
(Phryganeidae)**

- ▶ Mature larvae quite large compared to those of other families
- ▶ Top of the head and first segment of the thorax usually marked with dark bands or patches on a yellow background
- ▶ Top of the second and third thoracic segments mostly soft tissue (i.e. lack large hard plates)



**Green Rock Worms
(Rhyacophilidae)**

- ▶ First thoracic segment and last abdominal segment topped with rigid plates
- ▶ Well developed anal prolegs each end in a sharp claw
- ▶ Many are green
- ▶ Most lack gills on the abdomen. When present, abdominal gills branched



**Hoodcase Makers
(Molannidae)**

- ▶ Case shape is distinctive of this family



**Humpless Case Makers
(Brachycentridae)**

Caddisflies



**Lepidostomatid Case Makers
(Lepidostomatidae)**

- ▶ Similar to Northern Case Maker larvae, but:
 - a. lack hump on first abdominal segment
 - b. antenna is right next to eye.



**Northern Case Makers
(Limnephilidae)**



**Longhorned Case Makers
(Leptoceridae)**



**Purse-case Makers
(Hydroptilidae)**

- ▶ Smaller than most other families
- ▶ Rigid plates on each of the three thoracic segments
- ▶ No gills on the abdomen.

Caddisflies



**Stone-cased Caddisflies
(Uenoidae)**

- ▶ Plate on top of middle thoracic segment is notched
- ▶ Underside front edge of the head has a T-shaped sclerite



**Tortoise-case Makers
(Glossosomatidae)**

- ▶ The design of the case is unique among caddisfly families; no gills on the abdomen; only the first thoracic segment is covered by sclerites; all three sets of legs are the same length.



**Tube-making Caddisflies
(Polycentropodidae)**

- ▶ Pointed projection at the base of each front leg
- ▶ Prolegs are long and each bears a large claw.

Dragonflies



**Pond Damsel Damselflies
(Coenagrionidae)**



**Spread-winged Damselflies
(Lestidae)**



- ▶ Larvae relatively short and thick-bodied compared to Spreadwing Damselflies; gills have light and dark bands; lower lip short and wide
- ▶ Adults fold wings together and hold abdomens horizontal when at rest; with the exception of Sedge Sprites, adult males (and some females) blue and black; females may be black with lighter areas of grey, green, or tan
- ▶ Sedge Sprite, our smallest damselfly (< 30 mm long), has metallic green body and abdomen tipped with light blue
- ▶ Larvae distinguished from those of Narrow-winged Damselflies by elongate and stalked (spoon-shaped) lower lip ; gills have dark vertical bands.
- ▶ Adults ≥ 35 mm long with front of thorax and top of abdomen blackish to metallic green; usually perch with wings spread open at a 45 degree angle and abdomen pointed downward

Dragonflies



**Emerald adult
(Corduliidae)**

- ▶ Adults medium-sized (43-55 mm long), dark, with brilliant green eyes (red-brown in juveniles) and metallic green and bronzy bodies; some have pale yellow spots on thorax and brown spots at base of hind wings; all have at least one narrow white ring on abdomen; hold bodies vertically or at angle when perched



**Emerald larva
(Corduliidae)**

- ▶ Larvae short and wide; difficult to distinguish from Skimmer Dragonfly larvae; usually uniformly brown and conspicuously hairy; crenulations on the end of the lower lip larger than those of Skimmers ($\frac{1}{4}$ to $\frac{1}{2}$ as long as wide); lower lip spoon-shaped and obscures lower half of face



**Mosaic Darner adult
(Aeshnidae)**

- ▶ Adults brown with blue, green, and sometimes yellow spots and stripes; most perch in vertical position



**Mosaic Darner larva
(Aeshnidae)**

- ▶ Larvae elongate and slender (compared to other true dragonflies), with spindle-shaped and tapered abdomens that are somewhat cylindrical; body and legs may be patterned and lower lip is flat

Dragonflies



**Skimmer Dragonfly adults
(Libellulidae)**

- ▶ Adults perch in horizontal position; Whitefaces < 40 mm long, black, with red and yellow markings and white face; mature adult Meadowhawks mostly red or all black; Four-Spotted Skimmers have broad black and yellow abdomen and spotted wings



**Skimmer Dragonfly larva
(Libellulidae)**

- ▶ Larval body relatively flat and short compared to that of Darners; distinguished from Emeralds by scoop-shaped lower lip and relative size of tooth-like crenulations at end of lower lip: in Skimmer larvae, crenulations are 1/10 to 1/6 as long as they are wide

Flies



**Aquatic Dance Fly larva
(Empididae)**

- ▶ Larvae tan to white in color, with 7 or 8 pairs of fleshy prolegs under the abdomen; abdomen may be tipped with up to 4 fleshy lobes and/or tufts of hair; poorly developed head usually tucked into the thorax and visible through the skin as a pair of dark-colored rods

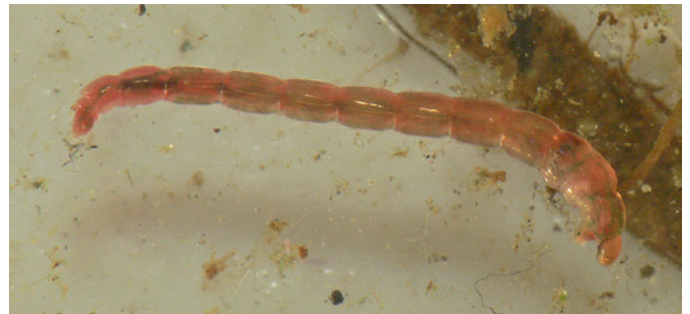


**Biting Midge larva
(Ceratopogonidae)**

- ▶ Burrowing larvae needle-shaped; those that crawl on the surface are shorter, somewhat flattened, with prominent fleshy tubercles or hairs on top of the abdomen.



Dance Fly



**Chironomid larva
(Chironomidae)**

- ▶ Larvae elongate, slightly curved, and usually cylindrical, with head capsules and paired prolegs near the head and at the end of the abdomen



**Black Fly larva
(Simuliidae)**

- ▶ Lower one-third of larval body is swollen, so larvae resemble bowling pins

Flies



**Crane Fly larva
(Tipulidae)**

- ▶ Elongate larvae are cylindrical to slightly flattened and soft-bodied; head is usually withdrawn into the thorax; head consists mainly of soft tissues except for the mouthparts and a few rod-shaped sclerites



**Dixid Midge larva
(Dixidae)**

- ▶ Larvae elongate, usually “U” shaped, barely enlarged thorax; first and (usually) second abdominal segments have paired short prolegs; end of abdomen has breathing tube and pair of paddle-like structures



**Horse and Deer Fly larva
(Tabanidae)**

- ▶ Larvae cylindrical and tapered at both ends; most abdominal segments encircled with fleshy knobs called “creeping welts” that provide traction when burrowing; head is well developed, but usually withdrawn into the thorax



**Mosquitoe larva (left) & Pupa (right)
(Culicidae)**

- ▶ Larvae lack prolegs and thorax is much larger than the rest of the body; most possess a respiratory siphon that projects at an angle from the tip of the abdomen



**Horse and Deer Fly adult
(Tabanidae)**

Flies



**Moth Fly larva
(Psychodidae)**

- ▶ Larvae body segments divided two or three times into secondary segments—many topped with a sclerotized plate; thorax similar in width to the rest of the body; abdomen ends in a breathing tube



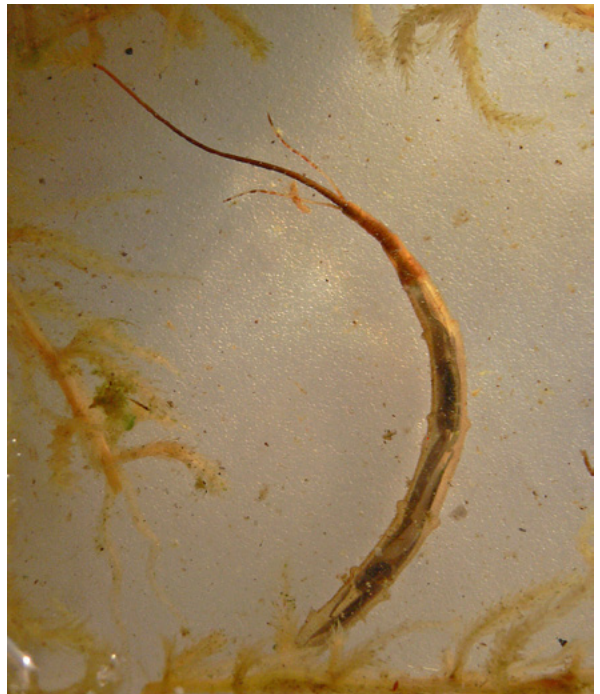
**Net-winged Midge larva
(Blephariceridae)**

- ▶ Larvae flattened, with seven apparent segments; first through sixth segments each bear a single attachment disc on the underside and a pair of short lateral leg-like structures called pseudopods. Pupae brown to black, oval, convex, and leathery



**Mountain Midge larva
(Deuterophlebitidae)**

- ▶ Larvae have forked antennae; head and thorax are distinct from abdomen; seven pairs of long lateral prolegs



**Phantom Crane Fly larva
(Ptychopteridae)**

- ▶ Larval body extendable, pairs of prolegs on each of first 3 abdominal segments; long breathing tube on tip of abdomen

Flies



**Phantom Midge larva
(Chaoboridae)**

- ▶ Larvae almost transparent, with a single jointed grasping antenna above the mouth (a); larvae of Mosquito-like species lack the mouth brushes of Mosquitoes and have grasping antennae



**Rattailed Maggot larva
(Syrphidae)**

- ▶ Larvae semitransparent with blunt front end and long breathing tube at back end; some species have prolegs



**Shore Fly pupae
(Ephydriidae)**

- ▶ Larva body cylindrical and tapering towards the head; head inconspicuous
- ▶ Abdomen ending in a pair of small spines or a breathing tube which may be forked.



**Snail-killing Fly larva
(Sciomyzidae)**

- ▶ Larvae yellow to dark brown, cylindrical, tapered at both ends; body segments of many species encircled with rounded tubercles; spiracles surrounded by fleshy lobes or located on a short, broad breathing tube; some larvae covered in a thick layer of short, fine hairs

Mayflies



**Cleftfooted Minnow Mayfly larva
(Metretopodidae)**

- ▶ Similar to Primitive Minnow Mayflies
- ▶ The only mayfly family with forked claws on the front pair of legs
- ▶ Most abdominal segments with plate-like gills
- ▶ 3 tails.



**Flatheaded Mayfly larva
(Heptageniidae)**

- ▶ Larvae have 2 or 3 tails, broad flat heads, plate-like gills on abdominal segments 1-7
- ▶ In most species, body is compressed and legs extend outward from the body like crab legs.



**Combmouthed Minnow Mayfly larva
(Ameletidae)**

- ▶ Mature larvae have conspicuous pigmentation pattern
- ▶ Mouthparts with a pair of conspicuous comb-like structures
- ▶ Tails short, stout, and densely fringed with long hairs and usually with a dark band
- ▶ Plate-like, oval gills have a dark colored



**Primitive Minnow Mayfly larva
(Siphonuridae)**

- ▶ Similar to Small Minnow Mayflies.
- ▶ Three tails
- ▶ Short antennae, less than twice width of head
- ▶ platelike gills on abdominal segments 1-7 that cover sharp spines on the sides of each segment

Mayflies



**Prongbill Mayfly larva
(Leptophlebiidae)**

- ▶ Gills long, narrow, and deeply forked (prong-like) and present on most abdominal segments



**Small Minnow Mayfly larva
(Baetidae)**

- ▶ Similar to Primitive Minnow Mayflies
- ▶ Antennae long, usually longer than twice the width of the head
- ▶ Upper lip notched
- ▶ All claws are similar in size and shape
- ▶ Tails number 2 or 3
- ▶ Gills plate-like



**Spiny Crawler Mayfly larva
(Ephemereliidae)**

- ▶ The only family of mayflies that lack gills on abdominal segment 2
- ▶ Top of head, thorax and abdomen often with rounded or sharp spines; abdominal segments usually have lateral spines
- ▶ Three tails

Stoneflies



**Forestfly Stonefly larva
(Nemouridae)**

- ▶ Small, stout, and hairy. Abdomen quite short, giving them a cricket-like look. Some species have tube-shaped gills, sometimes branched, under mouth or neck. Hind wing pads angled outward.



**Needlefly Stonefly larva
(Leuctridae)**

- ▶ Body long and slender; there are no gills and the wing pads are parallel.
- ▶ Similar to Snowflies. The abdomen is about the same width along its entire length; Snowflies have bulbous abdomens that are widest near the end.



**Golden Stonefly larva
(Perlidae)**

- ▶ Many are yellow with bold black markings.
- ▶ Conspicuous highly branched gills present at the base of each leg; no gills on the abdomen.



**Sallfly Stonefly larva
(Chloroperlidae)**

- ▶ The larvae are yellowish to light brown, lack gills, and have short tails ($\frac{3}{4}$ the length of the abdomen or shorter). The outer edge of the wing pads are parallel or slightly divergent

Stoneflies



**Salmonfly Stonefly larva
(Pteronarcyidae)**

- ▶ Tufts of gills present on the underside of the thorax and the first 2 or 3 abdominal segments



**Stripetail Stonefly larva
(Perlodidae)**

- ▶ Similar to Golden Stoneflies but lack branched gills on the thorax.
- ▶ Many have fingerlike gills near the base of each leg and/or on the underside of the head and neck; head and thorax usually distinctly marked and some species have dark stripes down the length of the abdomen; tails are as long as or longer than the abdomen and the hind wing pads are divergent.



**Snowfly Stonefly larva
(Capniidae)**

- ▶ Snowfly larvae are long and slender. They lack gills and their wing pads are nearly parallel. Snowflies can be difficult to tell apart from Needleflies. Winterflies have bulbous abdomens; the widest segments are near the end of the abdomen. In Needleflies the width of the abdomen varies little along its length.



**Willowfly Stonefly larva
(Taeniopterygidae)**

- ▶ Similar to Forestflies. A single segmented gill at the base of each leg or a plate on the underside of the abdomen that covers last two segments. Wing pads strongly divergent.

Water Beetles



**Aquatic Leaf Beetle larva
(Chrysomelidae)**

- ▶ Larvae legs are very small but complete and visible



**Crawling Water Beetle larva
(Haliplidae)**

- ▶ Larvae distinguished from other beetles by legs with five segments, a single claw on each leg, and ten abdominal segments, the tenth segment being longer than any other.



**Marsh Beetle larva
(Scirtidae)**

- ▶ Larval antennae are longer than head.



**Marsh Beetle adult
(Scirtidae)**



**Crawling Water Beetle adult
(Haliplidae)**

- ▶ Adults distinguished from other beetles by large plates at the base of hind legs that cover most of the abdomen.

Water Beetles



**Predacious Diving Beetle larva
(Dytiscidae)**

- ▶ Larvae look ferocious with their large hooked piercing mandibles.



**Predacious Diving Beetle adult
(Dytiscidae)**

- ▶ Adult males have smooth wing covers; wing covers of females are grooved (above).



**Rove Beetle adult
(Staphylinidae)**

- ▶ Adults elongate; most have short wing covers leaving much of the abdomen exposed.



**Water Scavenger Beetle larva
(Hydrophilidae)**

- ▶ Larvae have 8 abdominal segments, are sometimes wrinkled, and have large toothed mandibles.



**Water Scavenger Beetle adult
(Hydrophilidae)**

- ▶ Adults strongly convex with short, club-shaped antennae

Water Beetles



**Trout-Stream Beetle larva
(Amphizoidae)**

- ▶ Trout-Stream Beetle larvae are elongate and strongly flattened. The thorax and abdomen are covered with rigid plates that project laterally into thin, flat projections. The mandibles are prominent and the abdomen ends in two short tails.



**Riffle Beetle larva and adult
(Elmidae)**



- ▶ Riffle Beetle larvae elongate, hard-bodied, somewhat circular in cross-section; yellow to golden in color; tip of abdomen has ventral plate enclosing clinging hooks and retractable gills



**Whirligig Beetle adult
(Gyrinidae)**

- ▶ Adults' eyes are divided for viewing above and below the water simultaneously
- ▶ Larvae elongate, cream to white in color, with brown markings on the the head and thorax; abdomen with 10 pairs of long slender gills and tip of abdomen with a pair of curved hooks

Water Bugs



**Giant Water Bug adult
(Belostomatidae)**

- ▶ Body flattened and shaped like an elongated oval when viewed from above
- ▶ Large size and strong looking front legs



**Shortlegged Strider adult
(Veliidae)**

- ▶ When extended rearward, hind leg's first segment (a) may just barely extend beyond the end of the abdomen; in Water Striders this segment extends well beyond the tip of the abdomen



**Water Boatmen adult
(Corixidae)**

- ▶ Short, modified beak and short, modified fore legs are unique among water bugs in Alaska



**Water Strider adult
(Gerridae)**

- ▶ Similar to Short-legged Water Striders but longer and with the first segment of hind leg extending beyond the tip of the abdomen