

PLECOPTERA

These are the stoneflies. The order name means pleated or folded winged, and refers to the wings being rather large and having to be folded when at rest. This is another order that has aquatic immatures (naiads).

They are small to medium-sized with elongate, slender bodies (the bodies are parallel sided). The head is prognathous; they have chewing mouthparts which are often reduced in the adults. The compound eyes are usually present but may be somewhat smaller; there are 2 or 3 ocelli, or the ocelli may be absent. The antennae are usually long and tapering, filiform.

There are usually 2 pairs of membranous wings that have many veins; the wings do have anal lobes. The males of some species may be apterous or brachypterous. The wings are held flat over the body at rest. The tarsi are 2 or 3-segmented with 2 tarsal claws.

They lack an ovipositor, but the cerci are usually long (multi-segmented) and filiform. The naiads sometimes have gills on first 2 abdominal segments; they have a closed tracheal system (the gills are usually on the venter of the thorax).

There are about 2000 species known worldwide; about 550 species in North America. They are not commonly collected, however, because they do not usually venture far from the water they lived in as naiads. They also are somewhat seclusive, hiding on vegetation and rocks. A good place to look for these is around bridges. The naiads tend to like rather fast moving stretches of the creek or river. It may take 1-3 years for naiads to reach maturity, and they may molt 12-24 times (33 molts has been recorded).

Classification:

Suborder Antarctoperlia: This suborder occurs only in the southern hemisphere. The 9th abdominal sternite of the male lacks a ventral lobe. Males and/or females do not exhibit drumming behavior. None of our families belong in this suborder.

Suborder Arctoperlia: This suborder occurs in the northern hemisphere. The 9th abdominal sternite of the male has a ventral lobe. Males exhibit acoustic behavior known as drumming, tapping the abdomen against a substrate. This suborder is divided into 2 groups based upon the shape of the glossae and paraglossae of the labium, which reflects differences in feeding habits.

Group Euholognatha (used to be called suborder Filipalpia): the glossae and paraglossae are about the same size; these are mainly plant feeders (herbivores and detritivores).

Family Taeniopterygidae: These are the winter stoneflies (emerge from January to June).

Relatively small, usually less than 13mm in length. All three tarsal segments of about equal length. Dark brown to black.

Family Capniidae: These are the small winter stoneflies. Relatively small, usually less than 10mm in length. Second tarsal segment much shorter than each of the other two. Cerci relatively long, 4 or more segmented. Front wing with only 1 or 2 cubital crossveins, the CA is not forked; some may be wingless or they may have short wings. These emerge during cold months, crawl or fly about, copulate, and oviposit in subfreezing weather. May be wingless or short winged; some species use wings to scull over water surface. One species in Lake Tahoe passes entire life cycle under water.

Family Nemouridae: These are the spring stoneflies. Second tarsal segment much shorter than each of the other two. Cerci short, 1-segmented. Front wing with 4 or more cubital crossveins, 2A forked. Front wings flat at rest, with an apical crossvein. Brown or black

in color. This family used to be divided into a number of subfamilies, many of which have now been elevated to full families.

Family Leuctridae - These are the rolled-winged stoneflies. Second tarsal segment much shorter than each of the other two. Cerci short, 1-segmented. Front wing with 4 or more cubital crossveins, 2A forked. Front wings at rest bent around sides of abdomen, without an apical crossvein. Brown or black in color, usually less than 10mm in length.

Group Systellognatha (used to be called suborder Setipalpia): the glossae are very small, appearing almost as just a basal lobe of the paraglossae (except in the Pteronarcyidae and Peltoperlidae); these are mainly carnivorous species.

Family Perlidae: These are called the common stoneflies. The gill remnants are branched. There are more than 2 branches of the radial sector. The life cycle is longer than 1 year.

Family Perlodidae: These are the perlodid stoneflies. The wings are greenish and the body yellowish or greenish. The pronotum is rectangular. Five or more anal veins reaching wing margin. The adults usually do not feed, a few are pollen feeders.

Family Chloroperlidae: These are the green stoneflies. The pronotal corners are rounded. The anal lobe of the hind wing is small, only about 3 anal veins reaching wing margin. The adults are often green in color.

Family Pteronarcyidae: These are the giant stoneflies. They are usually larger than 25mm & up to 55mm. Glossae and paraglossae are about the same size. The basal tarsal segment is very short, shorter than the 3rd tarsal segment. Anal area of front wings with 2 series of crossveins (fig. 16-6E). Three ocelli present. They occur in large rivers.