



Hellgrammite (Dobsonfly)

February 2016

Field Notes

Author's note: Alright. Hellgrammites are so incredible that I keep checking the KLMN website to make sure we really haven't written about them yet!

General Description

The name Hellgrammite refers to the larval form of the Dobsonfly. Dobsonflies are in the Corydalidae family (Order Megaloptera). The origins of larval and adult names are unknown (certainly an intentional reference to Hell or Hades).

These aquatic larvae can be large, up to 9 cm (3.5 inches). As a "fiercely predaceous larvae," they have large pincer mandibles (middle column photo). Their long abdomen is bordered by long filamentous gills that contribute to a remarkable hardness in low oxygenated water for some species (plus spiracles for air breathing). They can also swim using a snake-like movement.



Hellgrammite in Whiskeytown. Photo: H. Rudolph

Hellgrammites are common in a variety of aquatic habitats, but prefer cobble strewn stream substrates. Some species can be found in ephemeral streams that only flow four months of the year.

Life Cycle

Hellgrammites are a long-lived predator in the water. As they grow, there isn't much

that will mess with them (although anglers do like to use them as fish bait). Their aquatic residency lasts 3-5 years. They eat continuously for that period and then enter a two-week pupal stage.

Their pupal stage is different from many other aquatic insects in that their mandibles and legs are still functional (in other words, they aren't completely resting/sleeping like a caterpillar). In an entomology book from the 1950s it is stated, "The mandibles... are functional so that when two pupae are placed together in the same container, only one survives." (Chandler, 1956).

Who knew that scientists in the 1950s were playing "death match" with aquatic insects?



Hellgrammite head. Photo: Andrew Williams, Critterzone.com.

The adult stage is short lived, with most mouthparts so soft that they probably couldn't eat if they wanted to. They also have a limited digestive tract.

Nonetheless the adults are still impressive! The males of certain species (not found in the Klamath Network) retain their large mandibles, which are almost as large as their abdomen (top right photo). Although the mandibles cannot open wide enough to bite or pinch, they are relevant in sexual selection and are used to battle over females.

Where to See

Hellgrammites and Dobsonflies can be found in Whiskeytown and Redwood National and State Parks. The large

Orohermes crepusculus is common; however, the Alderfly (a fellow Megalopteran) is found in some of our other parks. In Oregon Caves, we found smaller Corydalidae specimens which are likely *Orohermes*. As a taxonomic order, they can be found across the northern and southern hemispheres and are generally more common in temperate than tropical.



Male Corydalidae/adult Dobsonfly. Ahem. Note the mandibles. Photo Credit: T. Duckworth, www.ent.iastate.edu

Side note – If you go to China, they have the [world's largest aquatic insect](http://blogs.scientificamerican.com/running-ponies/world-s-largest-aquatic-insect-reportedly-found-in-china/); a Megalopteran with a 21 cm (>8 inches) wingspan!
<http://blogs.scientificamerican.com/running-ponies/world-s-largest-aquatic-insect-reportedly-found-in-china/>.

Did you know?

That aquatic insects entered the world of Superman? In a 1968 Superman comic, Superman battles an entomologist... who goes by the evil name of Hellgrammite! In a later comic, the alias of the scientist is Robert Dobson... (as in Dobsonfly?). Alas, the mutated form of Robert Dobson resembles a grasshopper and not a true Hellgrammite.

Final author's note: Oh, and I get this question about them all the time. "Do Hellgrammites bite?" And I reply with an emphatic,

"YES, they bite!"