Explore the Watershed

The Black Fly Larva

Third year of the drought and there was not much water in the creek before the recent rains. But even when the water level is low there's still plenty of aquatic insect life making a living as best it can. In the well aerated riffles (places where the creek bounces over rocks to mix oxygen from the air into the water) there are lots of black fly larvae.

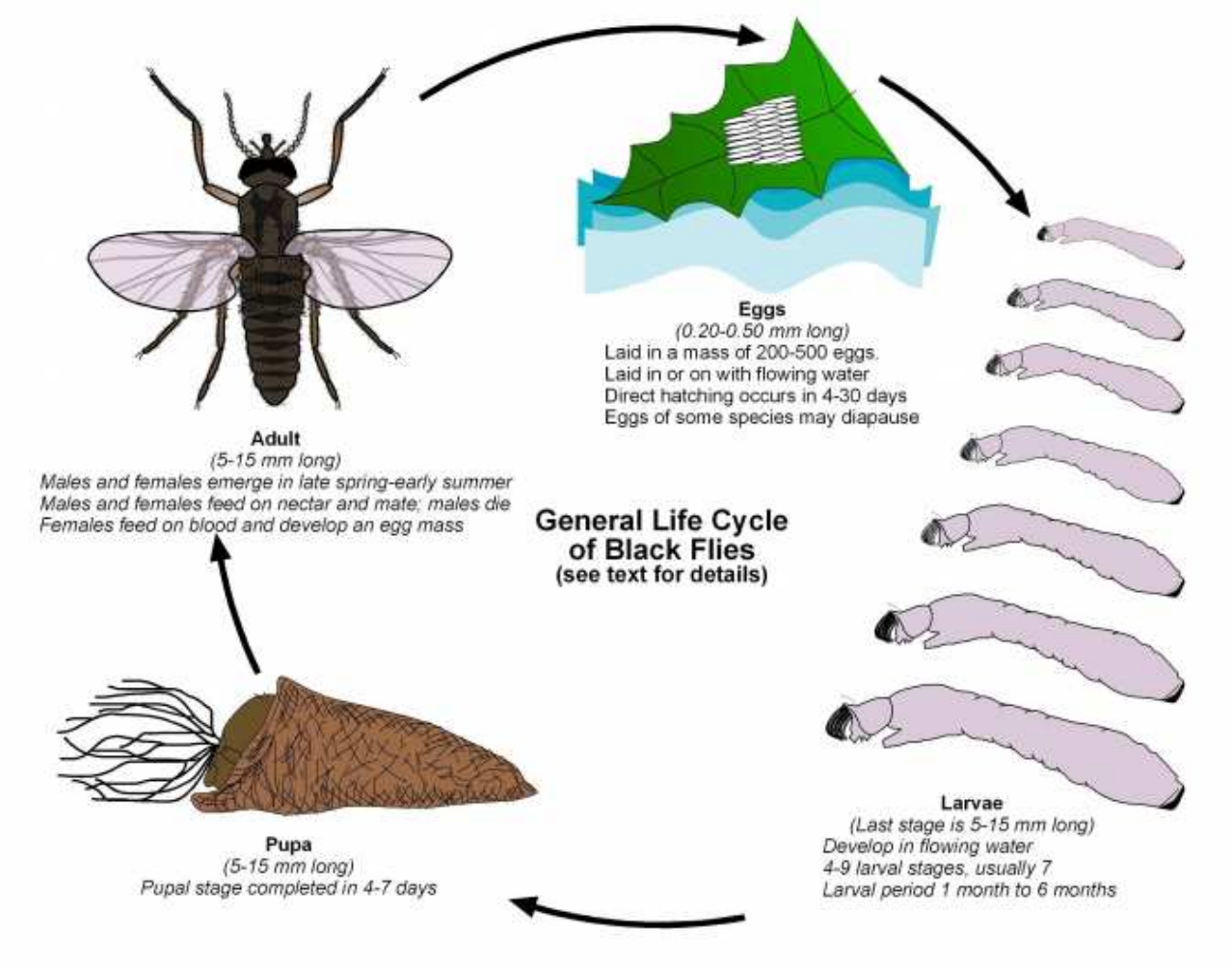
These little guys look wormy, but they are not even remotely related to worms. They are the larvae of black flies and are:

Class: Insecta
Order: Diptera
Family: Simuliidae

They live on rocks and leaves and make their living by filter feeding—straining bacteria and other very small bits of organic material from the water column. Experiments by fresh water entomologists show that these little larvae even clear coliforms (a type of fecal bacteria) from water as it flows over them.

You can see that they are not simple organisms. They have heads, tails that feature sticky hairs to anchor them to rocks and leaves, and little pro-legs. They move from place to place in a characteristic head-tail-head-tail inchworm fashion.

And they have the typical complicated life cycle of an insect that undergoes complete metamorphosis—egg, larva, pupa, and winged adult.



Black fly life cycle (Illustration by Scott Charlesworth, Purdue University, based in part on Peterson, B.V., IN: Manual of Nearctic Diptera, Volume 1)

The juvenile larval form lives in the creek and pupates in a little cocoon that is shaped like a slipper and attaches to the rocks. The long threads coming out of the pupa in the drawing above act as gills.

In Sausal Creek we often see black fly adults emerging in July and August. These pests bite but usually animals other than people. In the United States they do not carry diseases. And there are a lot of other aquatics in the creek that love to dine on tasty simuliid larvae and simuliid eggs.

Find a shady spot in the creek, a place where the water is moving rapidly over the substrate. Pick up a loose rock and turn it over. Look for motion, then focus in—you might see our resident black fly larvae in their native habitat. Be sure to put your rock back in the creek!

--Kathleen Harris