

**A Stoney Creek Invertebrate Survey
(Pacific Streamkeepers Protocol)
September 15, 2024**



Stonefly larva (*Plecoptera*)



The work table kept pipettes, reference notes, identification cards, and sample trays handy. First, the stream dimensions were measured. This included the bankfull width (stream width at a point just before overflow would occur), wetted depth, etc. The site was then chosen, based on stream flow, pebble size, and other characteristics. The sampling area 30 x 30 cm was measured out. Most pebbles could have life on them, so every one down to a finger length depth was picked up and wiped. The water flow carried the resulting debris into the 400-micron-size-mesh D-net (d-shaped net).





The underside of this pebble has two Caddisfly larvae snuggled in a cleft. When all the pebbles within the sample area down to the chosen depth were hand wiped, the D-net was turned inside out over a collection bucket. The contents were then poured into a series of trays, one for each volunteer. When the critters were spotted (with much difficulty!), they were sucked up with water into a pipette and transferred to ice cube trays where they were counted and identified. The one below is a Caddisfly.





Above, on the left is another species of Caddisfly. Unlike the one on the previous page, this kind doesn't enclose itself in a protective case made of debris. Above, on the right, the larger creature is an aquatic worm. The smaller, light brown one is a Crane fly larva. Below, you can see from the size of the ice cube tray that the critters are very small. The Stonefly larva on the left is the one featured on the front page. It is perhaps 8 mm long. The Mayfly larva on the right is a bit larger. It takes an expert to tell one species of larva from another.





Results of the Survey:

In a survey following the **Pacific Salmonkeepers Program**, a site is rated 1 (poor), 2 (marginal), 3 (acceptable) or 4 (good). The Site Assessment Rating is based on these four criteria:

- a) The Abundance (total number) of organisms per square metre.
- b) The Predominant Species.
- c) The Water Quality, determined by the number of insect larvae found in these three categories:
 - 1. pollution intolerant (EPT—see the bottom of this page)
 - 2. somewhat pollution tolerant
 - 3. pollution tolerant.
- d) The Diversity, based on the ratio of the above categories.

Test station #1: (both stations or sampling sites were in the Glade)

At this location, the total number of macroinvertebrates found was 54 within the 30 square centimetre sampling area. This converts to a density of 600 per square metre.

The predominant macroinvertebrate here was the Mayfly of which there were 45, consisting of six species. There was also one Stonefly and one Caddisfly. Thus, in Category 1 (pollution intolerant), the total number of EPT insects was 47 and the number of species was eight.

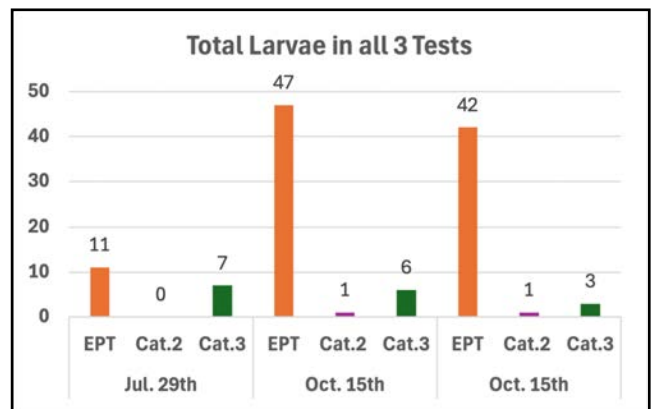
In Category 2 (somewhat pollution tolerant), there was one Cranefly for a total of one species.

In Category 3 (pollution tolerant), there were four Aquatic worms of two species, one Blackfly and one Midge. This was a total of six insects and four species.

Test station #2

At the second location, the same procedure was followed. Briefly, there were 42 larvae in Category 1: 37 Mayflies (six species), four Stoneflies and one Caddisfly; one in Category 2: a Cranefly; and three in Category 3: one Aquatic worm, one Midge and one Water mite.

The full methodology is too complex to detail here, but the end results show that, due to the very large proportion of Category 1 larvae (i.e. Mayflies), both sites score high on Water Quality and low on Diversity. However, when the data from all four criteria are taken into account, the **Site Assessment Rating** is “**marginal-acceptable.**” To put it simply, Stoney Creek invertebrates are out of balance but the Creek is recovering well. **Note: this chart includes the results from the Streamkeepers July 29th test.**



-----//-----

In general, all benthic macroinvertebrates are considered to be in one of the three categories mentioned above. The species of particular importance are the **EPT insects** (Ephemeroptera (mayflies), Plecoptera (stoneflies), and Tricoptera (caddisflies) because their presence indicates good water quality.