

How Can Aquatic Macroinvertebrates Be Used to Help Determine the Water Quality of the LA River at Glendale Narrows Riverwalk?

By Morgan G.



The Various Aquatic Macroinvertebrates Found at Glendale Narrows Riverwalk

Water Boatman

Order *Hemiptera*

Family *Corixidae*



The water boatman is mildly tolerant to pollution, having a tolerance of 5 out of 10. They are named after their boat-like body and fore legs that resemble oars. Water boatmen can commonly be seen darting around water bodies such as Glendale Narrows. They live in both vegetation and at the bottom of water bodies.

Small Mayfly

Order *Ephemeroptera*
Family *Baetidae*



The small mayfly is sensitive to pollution, having a tolerance of 4 out of 10. Mayflies are a key indicator of water pollution. They are a major source of food for animals such as trout. Once mayflies reach their adult stage, they only live for 24 hours, enough time to mate. In fact, mayflies are known for their short lifespans and their population boom in the summer months.

Prong-gilled Mayfly

Order *Ephemeroptera*
Family *Leptophlebiidae*



The prong-gilled mayfly, a relative of the small mayfly, has an HBI of 4, making them sensitive to pollution. The prong-gilled mayfly is named after the forked gills present at the nymph's abdomens. They can commonly be seen darting around Glendale Narrows, feeding on algae and other detritus.

Damselfly

Order *Odonata*

Family *Coenagrionidae*



Damselflies are especially tolerant to pollution, having an HBI of 9 out of 10. They are excellent hunters in both their nymph and adult stages. Damselflies have a slender abdomen, unlike their cousins, the dragonflies. In their nymph stage, damselflies have leaf-like gills at the end of their abdomen, another key feature separating them from dragonflies.

Dragonfly

Order *Odonata*
Family *Libellulidae*



Dragonflies have a tolerance value of 9, making them pretty tolerant to pollution. In an ecosystem, dragonflies play the role of predator in both in the nymph and adult stage, eating other insects such as mosquitos and flies. Dragonflies are the fastest flying insects, traveling at around 30 miles per hour.

Aquatic Moth

Order *Lepidoptera*
Family *Pyralidae*



Aquatic moths have an HBI of 5, putting them right in the middle of the tolerance scale. Detritus forms the base of the aquatic moth larvae's diet, along with algae and plant foliage. For shelter, the aquatic moth may build a refuge made of silk produced by a modified salivary gland. Larvae can undergo as many as seven stages before reaching the pupa stage.

Pouch Snail

Order *Gastropoda*
Family *Physidae*



Pouch snails have an HBI of 8 out of 10, classifying them as tolerant to pollution. Pouch snails are lunged snails. Giving them the ability to tolerate pollution better than gilled snails. Pouch snails use a pulmonary cavity located in their mantle for respiration. Pouch snails and gilled snails live in the vegetation and sediment of water bodies.

Non-Biting Midge

Order *Diptera*
Family *Chironomidae*



The non-biting midge has a tolerance of 6 out of 10, meaning it is tolerant to pollution. The midge pictured to the left is the larval form of the adult fly. In their larval stage, non-biting midges are known as bloodworms. They get their name from their red color created by hemoglobin, a molecule carried by red blood cells. Non-biting midges live in the sediment of water bodies in their larval stage.

Black Fly

Order *Diptera*
Family *Simuliidae*



Black flies are relatively tolerant to pollution, having an HBI of 6 out of 10. Black fly larvae are filter feeders, feeding on any passing debris in the water. In their adult stage, black flies are known vectors for diseases such as bovine onchocerciasis, avian leucocytozoonosis, and vesicular stomatitis. They are also the cause of fatal diseases such as acute toxemia and onchocerciasis (also known as river blindness).

Scud

Order *Amphipods*
Family *Gammaridae*



Scuds, also known as gammarus shrimp and side swimmers, are intolerant of pollution, having an HBI of 4 out of 10. Scuds are a major source of prey for many animals, including various fish and amphibians. Scuds are scavengers, feeding on detritus. Scuds are commonly used in aquariums as tank cleaners. They are benthic, meaning they live on the bottom of water bodies.

Hoverfly

Order *Diptera*
Family *Syrphidae*



The hoverfly has an HBI of 10 out of 10, making them most tolerant to pollution. Hoverfly larvae are prized by gardeners because they are capable of controlling parasitic aphid populations. Adult hoverflies are also pollinators, helping in the key transfer of pollen in flowering plants.

Eastern Mudsnail

Order *Neogastropoda*
Family *Nassariidae*



The Eastern mudsnail, also known as the mud dog whelk, has an HBI of 7 out of 10. In addition to being tolerant to pollution, they are also capable of living in a range of temperatures and salinities. The Eastern mudsnail is native to the Northwest Atlantic and the Gulf of Mexico, but was accidentally introduced to the Pacific coast via shipments of oysters.

Aquatic Earthworm

Order Lumbriculida
Family Lumbriculidae



The aquatic earthworm has an HBI of 8 out of 10, making them one of the more tolerant aquatic macroinvertebrates. They move around by contracting parts of their segmented body and then propelling forward, similar to the way a land-dwelling earthworm might. They are a primary food source for animals such as leeches, fish, and crustaceans.



Black Fly larvae clinging to concreted river bottom

Simuliidae

Aquatic earthworms huddled in sediment
Lumbriculidae





Gammarus shrimp (a.k.a. scuds) feeding on
detritus
Gammaridae

Water boatmen and small mayfly nymphs
among sediment
Corixidae and *Baetidae*





Non-biting midge in sediment
Chironomidae

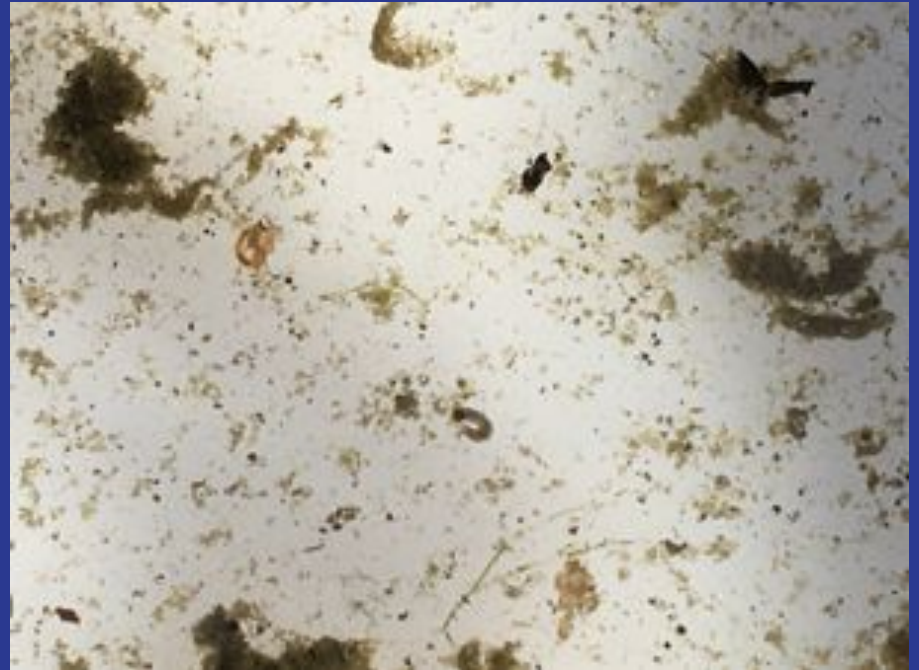
Pouch snail and green rope algae
Physa and *Ulotrichaceae*





Prong-gilled mayfly feeding on algae
Leptophlebiidae

Stagnant water- mainly detritus





Small Mayfly feeding on detritus
Baetidae

Black-necked stilt group feeding
Himantopus mexicanus
(not part of project, but still really cool)



Glendale Narrows Riverwalk

Another project funded by Proposition 50 through the California Natural Resources Agency to improve River Parkway

EDMUND G. BROWN, JR., GOVERNOR
John Laird, Secretary for Natural Resources

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Where I conducted my field work

Glendale Narrows Riverwalk



