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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  Seine Net The type and number of fish in the creek can provide evidence of water quality. Exotic species introduced by locals can lead to major changes in the makeup and diversity of the Arroyo ecosystem. The presence or absence of predatory species can impact the density of many key indicator species.  The Arroyo Del Valle has become more of a creek like ecosystem as a consequence of the quarry activity being done near the Shadow Cliffs reservoir. Many of the vertebrate species now seen in the Arroyo would not be present if it did not receive a continuous flow as a result of the mining. The Department of Fish & Game have made it clear that the mining operation must maintain the existing constant flow situation to maintain the ecosystem that they have created. [Stopping flow](http://docs.google.com/about/chronicles/news/noflow.html) has and would result in a wide scale fish kill below the Main Street Bridge. As a result of changing the nature of runoff and establishing different abiotic conditions than what would typically exist, it is difficult to actually define what is exotic and what is endemic.  Assuming we treat the area as a large continuous flow slow moving creek ecosystem being supplied by runoff from an upstream reservoir, a majority of the vertebrates observed are more typical of a large pond or reservoir rather than a creek ecosystem. These species would include [bluegill](http://docs.google.com/field_guide/verts/blue_gill.html), [black bass](http://docs.google.com/field_guide/verts/bass.html), [bull frogs](http://docs.google.com/field_guide/verts/bullfrog.html), [pond turtles](http://docs.google.com/field_guide/verts/turtle.html), and [mosquito fish](http://docs.google.com/field_guide/verts/gambusia.html). Less desirable species like squaw fish, carp, and bait fish have also been collected. Vertebrates are more commonly collected using the seine net. The net is 10 feet long and 5 feet high. Floats on the top edge of the net and lead weights on the bottom edge keep the net face vertical in the water. Using the bank to create an enclosure and then carefully "herding" vertebrate species into the trap formed requires teamwork and perfectly timed movements.  Students with dip nets, and at least one bucket, begin moving in directions that will herd the fish toward the enclosure that will be formed with the seine net. Once the wooden poles have trapped the fish along the bank, the students with the wooden poles lower the "float end" of the pole away from the trap while lifting the "lead line" end of the wooden poles upward. This creates a "U shaped hammock" forcing any fish in the trough created. (See images below)  Species collected are identified, measured, sexed if possible, and then released back into the creek. Some species will be placed into buckets for further observation purposes. We have raised crawfish and fish fry in the classroom and then returned these organisms in the spring after the winter floods.  Dramatic changes in numbers of fish have been observed over the past 8 years. These changes may be the result of extreme runoff during the [winters of 1998](http://docs.google.com/about/chronicles/news/spring98.html) and 1999, the periodic entry of [herbicides through storm drains](http://docs.google.com/about/chronicles/news/solvent.html), and the [stopping of runoff](http://docs.google.com/about/chronicles/news/noflow.html) as a result of maintenance by the mining operation up stream. In general, fish fry are rare in the fall and adults are common. In the spring fry are very abundant and adults are rare. In the spring of 1999 no adults were observed or collected and fish fry were not as abundant as seen in past years. We have seen a remarkable return of fish species over the last few years but an obvious decline in bullfrogs and their tadpoles. This is likely due to amphibians low tolerance to pollutants. [Mating pairs of blue gill](http://docs.google.com/field_guide/verts/blue_gill.html) were observed during the spring of 2005. An abundance of young black bass are commonly observed in deeper pools. They frequently move close to the banks to feed on mosquito fish, the fry of other species, [crayfish](http://docs.google.com/field_guide/arthro/crawdad.html), and [insect larva](http://docs.google.com/field_guide/arthro.html).     |  | | --- | | Copyright © 2008 Amador Valley High. All Rights Reserved. Reproduction in whole or in part in any form or medium without express written permission of Amador Valley is prohibited. | |