

In Search of the Big Mussel

Community Service Project

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Lake Havasu has undergone significant change during the past eight years as the quagga mussel has infested the waters. This invasive species is responsible for filtering a large portion of the nutrients that fish need to survive. In addition, the filtering achieved by the bi-valve mussel has made the water clearer and as a result, more sunlight can penetrate deeper causing greater algae blooms to occur. The changes have altered the ecosystem of the lake in a manner in which reversal is not probable in the near future. Arizona has thirty-six native species in its waters, of which twenty-one are on the endangered species list. These fish have virtually nothing to eat. While a few are eating the quagga mussels, most do not. Understanding what is living in Lake Havasu waters is critical not only to the environment but has economic impacts on the community as well.

In January 2014, a scuba diver came across a large mussel shell in the lake. This particular shell was different from the quagga or the fresh water mussels that are a regular inhabitant. This particular shell was quite large. Through the Lake Havasu Divers Association, we contacted Suzanne Ehret of the Arizona



Game and Fish Department for help in identification of the shell. Suzanne's office passed the shell on to the department's biologist who indicated that this particular shell is a *Pyganadon Grandis* that is found in Upper Lake Mary in Cococino County, in the Little Colorado River watershed. These mussels are between 95 – 110 mm across and are quite large. Shells like these had appeared in the Bill Williams River, but none of them alive.

The curiosity of *Pyganadon Grandis* caused the biologist to seek further data on where this shell originated. Unlike the quagga mussel, this mussel is not invasive. Nevertheless locating live mussels would allow the biologist to gain an understanding as to where these mussels originated and possibly identify their method of travel into the lake. One theory is the mussels entered the lake as eggs on the gills of stocked fish.

Through a volunteer effort, the Lake Havasu Divers Association has collaborated with the Arizona Game and Fish Department to search for live samples of the *Pyganadon Grandis* in the lake. AGFD does not have a diving division. They rely heavily on contractors and volunteers to do this type of research collection.

One issue is finding these mussels on the bottom of rivers and lakes. Where most mussels lay flat with one large area of the shell exposed these mussels bury themselves vertically in the mud or sand and only leave a small portion of their shell exposed. When the mussel feeds, the siphon is exposed. The orientation of the



mussel on the bottom makes locating this particular species difficult. Careful visual exploration is required. In addition, hand sifting through the mud and sand is necessary when targets are identified.



On March 16, 2014 Lake Havasu Divers Association under the direction of Joel Silverstein, Kathy Weydig, and Dave Cotner, with Suzanne Ehret (AGFD) conducted the first of a series of searches for *Pyganadon Grandis*. A team of eight divers (including Silverstein and Weydig) searched approximately 4.65 acres (204, 000 square feet) of lake bottom in the area where the original dead shell was found. Unfortunately, the efforts did not produce positive results in finding the mussel. However, the team did collaborate well with Arizona Game and Fish Department and has plans to search eight more areas of the lake. The next area will be near the Bill Williams River.

Total time on project: 60 person hours.