

A NANFA EDUCATION GRANT REPORT

Underwater Video Monitoring of Four Desert Fishes at an Arizona High School

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Palo Verde High Magnet School (PVHMS) in Tucson, Arizona, is a city school with little native habitat close enough for students to visit and study during school hours. Realizing this, students and faculty constructed a wetland habitat that is representative of the wetlands that once were commonly found throughout the Santa Cruz River Basin, in which the city of Tucson lies. Now nearly four years later, the wetland, named Tierra Mojada Environmental Research Center (TMERC), teems with native flora and fauna. Of particular interest are the native fishes, which we obtained by permit through the Arizona Game and Fish Department. Four species now reside in the 16,000-gallon habitat: longfin dace (*Agosia chrysogaster*), Gila chub (*Gila intermedia*), desert pupfish (*Cyprinodon macularius macularius*), and Gila topminnow (*Poeciliopsis occidentalis*). The latter two species are federally endangered species, their populations having dwindled due to loss of suitable habitat and competition with non-native species. Not only is TMERC a holding facility for these fish, but the wetland is also a designated refugium ready to support other populations in the near future.

Surveying fish populations *in vivo* can be difficult even for the most adept aquatic biologist. For high school students attempting to sample fishes in a constructed wetland habitat, traditional survey methods are nearly impossible due to their complexity and the risk of undue stress to the fish. However, it's possible to gain an estimate of fish activity and numbers using underwater video equipment. Taken and archived at regular intervals, video and still clips can yield significant data. Posting these graphics along with conservation information on the TMERC Web site and uploading video-survey data would allow students and other interested parties to become

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more familiar with these species and gain a greater appreciation for Arizona's native desert fishes.

We purchased a durable underwater video camera with the help of NANFA's Corcoran Education Grant. We chose this camera for versatility and its ability to capture images in very low-light conditions such as those at dawn, dusk, and on overcast days. We placed the camera into the TMERC wetland, and after some experimentation we determined the optimal location and depth for its placement.

Despite some unanticipated equipment problems and software compatibility issues, we programmed the camera to take images at regular intervals for viewing on the TMERC Web site. In the future each image will be archived after spending a predetermined amount of time on the site. Students can then examine the archived images to determine the total number of fish visible, the number of each species visible, and any other significant information from the images. This data will also be added to the TMERC Web site in both table and graph formats.

Students in two PVHMS courses—"Plant and Animal Biology" and "Biological Research Methods"—are gathering information on the four fish species that reside in TMERC. They will add this information to the TMERC Web site, which is currently being developed.

The PVHMS faculty and students are grateful to the North American Native Fishes Association for its grant award. We applaud NANFA's dedication to education and to the conservation of our native fish fauna. Please visit the TMERC Web site at <http://edweb.tusd.k12.az.us/pvscience/Kehl/TmercHome.htm> to view our project. 