

2014-2015 Outstanding Thesis Award Winners



Stacey Nerkowski's award-winning master's thesis in biology focuses on the biodiversity in her very own backyard: the tributaries within the Santa Ana Watershed, many of which flow from the San Bernardino Mountains. A native of the Inland Empire, Stacey also received her bachelor's degree from CSUSB (as did her parents, back in the '60s). Her thesis, *Microsatellite Analysis of Population Structure in the Santa Ana Speckled Dace*, identifies polymorphic populations by analyzing genetic markers, revealing that Southern California's declining populations of the speckled dace may in fact be a distinct subspecies in need of increased conservation efforts.

"I think of my project as providing a voice for our fish," Stacey said. "I've been presenting my research at state and local research competitions, and I've noticed that people are becoming more aware of them, the repercussions of losing them, and how we can fix it."

The Santa Ana speckled dace (*Rhinichthys osculus*) once occupied the majority of the Santa Ana, San Gabriel, and Los Angeles River systems; however, due to habitat fragmentation and the effects of floods and fires, by the 1990s they had completely disappeared from the Los Angeles River system. They have been listed as a species of special concern by the California Department of Fish and Game and as a species of concern by the U.S. Forest Service. Unfortunately, due to a lack of peer-reviewed genetic descriptions—research Stacey and her peers have undertaken—the speckled dace is ineligible for protection as an endangered species.

In the San Bernardino National Forest, they are still found in Lytle Creek, Cajon Creek, City Creek, and Mill Creek. CSUSB's biology lab has been examining and identifying their genetic variation and population structure in order to provide genetic descriptions needed for improved conservation. The information may also lead to more successful restocking efforts, since conservation and land management agencies will be better able to identify which genetic pool to pull from.

Stacey said one of the most difficult aspects of the project was getting started. "Getting samples, obtaining permits, and identifying markers took over a year. I also had to learn how to use the data analysis program. Ecological work takes a lot of time."

Taking on a new challenge, Stacey is currently teaching biology and physiology at Victor Valley Community College. She still has a hand in research, spending one day a week in CSUSB's biology lab, and she plans to continue her studies and obtain a Ph.D. in Fishery Science. "I really enjoy my time in the lab as well as my time outdoors," Stacey said. "Freshwater fish are an important indicator of what's going on in our freshwater systems, and I plan to eventually study other non-game native fish like the dace."

The Office of Graduate Studies would like to congratulate Stacey Nerkowski on her award-winning thesis, and wish her the best in her future endeavors in both teaching and ecological conservation.