

Red shrimp, unique habitats disappearing

December 20 2010, By Miles O'Brien

"As a child in Hawaii, I grew up exploring. Those experiences shaped my direction and interest in science," recalls molecular biologist Scott Santos. He remembers playing along the shore and swimming in the ponds imbedded in lava rocks.

Santos later learned that these special pools contain organisms found only in that environment. Among the marine life he remembers swimming beneath his feet were hundreds of these tiny red shrimp. Ultimately, Santos grew up and became a [molecular biologist](#), and his life came full circle when he decided to study these unusual shrimp and the extraordinary environment they call home.

Small as they are, the shrimp just might be the perfect pet, Santos says, because they can live in a [fish](#) tank for years and never need food or even a change of water, as long as they get a little sunshine.

"Economically, they are being sold as aquarium pets, but culturally, these were organisms used by the native peoples, either in fishing or in stories," explains Santos.

In fact, the shrimp are the stuff of legend. According to Hawaiian folklore, the reddish-colored crustaceans showed up *en masse* after a jealous Maui prince murdered his young wife. "The waters turned red with these tiny shrimp, known as öpae 'ula," he says.

Already, Santos and his team are discovering there is more to the hardy red shrimp than he realized. "We started looking at one species of shrimp and what we've found is that we can identify eight potential

species based on their genetics."

With support from the National Science Foundation (NSF), Santos and his team at Auburn University are studying how the shrimp, along with other organisms, thrive in harsh, brackish pools of water.

Their habitats, known as anchialine environments, occur very close to the shoreline. This ecosystem shares a connection to the ocean as well as groundwater. There are only about 1,000 known in the world; 600 of which are in the Hawaiian Islands.

"The waters in the anchialine pools undergo wide swings in temperature, salinity and exposure to ultraviolet radiation from the sun," explains Santos. "They are considered extreme environments and there has been a lot of interest in looking at things like microbes from extreme environments because they might hold potential applied value to human welfare."

But, these inland lava depressions are disappearing, along with their unique inhabitants. "They are starting to vanish very, very quickly. Unfortunately, shoreline development is growing uncontrollably in [Hawaii](#) so we're losing a lot of habitat," notes Santos.

So, it's a race against the clock to identify and study the legendary red shrimp and other creatures that manage to survive in this environment before it's gone.

"I love working on this. We're very interested in understanding what's going on with this ecosystem that is characterized by these little shrimp, and there are many things we're starting to discover," Santos adds. "It feels good knowing that my nieces and nephews might benefit from the work I'm doing to help preserve these ecosystems for future generations."

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