

# Beetle may pack a big punch in curbing salt cedar

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Dr. Heather Bateman holds a tiger whiptail, the most common reptile species captured along the Virgin River. Credit: Arizona Board of Regents

(PhysOrg.com) -- Non-native vegetation's infiltration to the greater Southwest has caused its share of ecosystem concerns over the years. Now Heather Bateman is looking at the effectiveness of some of the methods employed to help control invasive species, especially salt cedar, along the Virgin River.

Salt cedar or Tamarisk, a non-native tree of Eurasian/African origin, is a deciduous shrub or small tree that was first brought to the western United States in the early 1800s. The Virgin River, which flows from Zion National Park in Utah through the northwest corner of Arizona into

northeastern Nevada where it empties into Lake Mead, is overwhelmed with salt cedar where it can have detrimental effects on native plants and habitat quality.

“A healthy riparian ecosystem will have a diverse range of vegetation,” says Bateman, assistant professor in the Department of Applied Sciences and Mathematics in the College of Technology and Innovation at ASU’s Polytechnic campus. “Salt cedar is a concern because it can grow in dense single species plant populations, displacing native plants and altering wildlife habitat.”

Bateman studies riparian ecosystems, the vegetated area along rivers and streams where land meets water. She studies how wildlife populations respond to habitat alteration, with a particular interest in amphibians, reptiles, small mammals and birds.

Though riparian [ecosystems](#) take up a small part of the landscape, they are important because many wildlife species will use these zones at some point in their life cycle for foraging, nesting and commuting.

To combat the salt cedar invasion along the Virgin River, natural resource managers opted to use a form of biocontrol in 2006 rather than chemical, mechanical or burning methods. So what is the biocontrol method? A leaf beetle, which is a specialist herbivore or native enemy, has been introduced as biological control of salt cedar.

“The beetle forages along the stems of the tree and causes it to drop its leaves, thus controlling the salt cedar population,” Bateman says.

Although some biologists feel that biocontrol is a better control option than the use of chemicals or prescribed burning, it still could have consequences. Despite the widespread application of the leaf beetle, only limited research has described the benefits or cost to native riparian

communities. It is these consequences Bateman plans to study in collaboration with other scientists from the U.S. Geological Survey, University of California-Santa Barbara and Northern Arizona University.

The [beetles](#) are slowly making their way down the river, and Bateman sees this as an excellent opportunity to get a before-and-after look at the riparian ecosystem.

Because Bateman and her colleagues were able to establish study sites prior to leaf beetle establishment, she will be able to collect data along the river prior to the beetles' arrival and after their departure. She uses capture-mark-release methods to track amphibian, reptile and small mammal populations.

This before-and-after study will allow her to make observations about the effects the beetles have on the riparian ecosystem, which will be helpful to natural resource managers to balance the need to conserve native habitats and species with weed control.

“I want my results to be meaningful to natural resource managers and to provide them with information that allows them to make the best land management decisions they can,” Bateman says.

Although some researchers are focused specifically on bird populations, this project is likely the first attempt to document the impacts of beetle biocontrol on small wildlife communities. Depending upon funding, Bateman and her colleagues hope to collect data along the Virgin River for many years.

Provided by Arizona State University

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