

# Endangered bird grounds beetle in fight to eradicate invasive saltcedar trees along western rivers

BY JOHN WATERS, PUBLISHER

The United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) has placed a moratorium on the use of imported leaf-eating beetles as a biological control for invasive saltcedar, the exotic tree found extensively along rivers in the West, including the Rio Grande. It turns out the exotic beetles have done such a good job towards eradicating the exotic saltcedar, just as was hoped, that they are now contributing to the disappearance of a native bird, the Southwestern Willow Flycatcher.

According to the inspection service, "concerns about the potential effects to the critical habitat of the federally-listed, endangered Southwestern Willow flycatcher" was the reason for terminating the beetle program.

Used throughout the West, and locally along the Rio Grande and Pecos Rivers, the imported beetle has been widely successful in reducing populations saltcedar trees, which were imported to the United States in the 1880s to keep stream and river banks in place.

Since then, the fire-resistant, salt-tolerant, drought-hardy water-guzzling tree has invaded ecosystems throughout the West, outcompeting native trees such as cottonwoods and willows.

For reasons not fully understood, when saltcedar was first imported into the United States, its natural predators – insects such as the leaf beetle from central Asia or the mealybug from Israel – didn't come with the saltcedar, or didn't survive long after arriving.

In the late 1990s, entomologists with the USDA began releasing imported populations of leaf beetles (of the genus *Diorhabda*), a natural predator of saltcedar, to reduce the infestation of the tree. The leaf beetles devour saltcedar leaves, leaving the tree incapable of photosynthesizing, causing the saltcedar to die.

In 1987, the Agricultural Research Service in Temple, Texas under the direction of entomologist C. Jack DeLoach, initiated a biological control using insects native to saltcedar. After several years of intensive research, with the leaf beetles isolated in cages over saltcedars, in 2000 DeLoach and others got the go-ahead to remove the cages and release beetles.

Meanwhile, while saltcedar spread rapidly throughout riparian areas in the West, also in 1987, ornithologists sounded an alarm call for the Southwestern Willow Flycatcher, estimating only 500 breeding pairs remained in the United States. Due to habitat decimation and degradation, the flycatchers had dwindled to the point where the species was near extinction.



The use of saltcedar beetles to combat invasive exotic saltcedar trees has been successful along the Rio Grande in Presidio County. Although a recent termination of a federally-sponsored bio-control program has stymied federal beetle programs such as the one in Big Bend National Park, Andrew Berezin (above), biology instructor from Sul Ross State University, is confident the beetle program will continue and the recent discontinuation of a federal program will not hamper efforts at the state level to combat. (John Waters, photo)

as contributing to habitat loss were livestock overgrazing and saltcedar invasion.

The fish and wildlife service refused to process the request. The environmentalists from the center sued.

In 1995, in response to litigation from the center, the fish & wildlife service listed the Southwestern Willow Flycatcher as endangered. This would be the first of many lawsuits the center would file regarding the flycatcher.

Under the Endangered Species Act, federal agencies such as the USDA's Animal and Plant Health Inspection Service are required to confer with the U.S. Fish and Wildlife Service before undertaking any activities that would affect an endangered species such as the flycatcher or its critical habitat. Agencies may engage in informal



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The flycatchers prefer mature communities of Fremont cottonwoods and Gooding willows found along rivers. These forests consist of a well-developed overstory of cottonwoods, a mixed midstory, and an abundant understory of willows. (The loss of riparian cottonwood communities was so extensive that in 1987 the Nature Conservancy declared the ecosystems North America's rarest forest type.)

Flycatchers rarely leave the forests where they were born; as such, if those forests are destroyed, the flycatchers are greatly imperiled.

In 1992, several conservationists, including an emergency room physician named Robin Silver, and conservation groups including what would become the Center for Biological Diversity, petitioned the U.S. Fish and Wildlife Service to list the Southwestern Willow Flycatcher as "endangered" under the Endangered Species Act. When the original petition seeking protection for the flycatcher was filed, the two major factors cited

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After assurances were made by the inspection service that the release of the leaf beetle would not negatively impact the flycatcher, a concurrence agreement with Fish and Wildlife was made. The concurrence had several fundamental provisions: no beetles would be released within 200 miles of flycatcher habitat or within 300 miles of flycatcher breeding areas, and beetles would not become established within the range of the flycatcher.

In 2005, Brian Arroyo with the U.S. Fish and Wildlife Service wrote a concurrence, that among its assumptions stated, "Saltcedar had limited suitability for insectivorous birds, in particular the flycatcher." The concurrence also specified that populations of introduced beetles, "would not reach sufficient levels to defoliate saltcedar sufficient to impact any flycatchers breeding, feeding or sheltering habitat."

Both assumptions would later prove wrong.

A biological assessment from the inspection service would offer the opinion the

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beetle "cannot become established in virtually all of the documented range of the Southwestern Willow Flycatcher."

Yet becoming established in the range of the flycatcher is exactly what the beetles did.

While assurances were made that a tight reign would be kept on any future beetle distribution and despite tight permit restrictions imposed on applicants, some beetles flew the program's agreed-upon coop, so to speak.

One of the greatest fears biologists and environmentalists have with the use of introduced bio-controls such as the leaf-eating beetle is the loss of control of the introduced agent and the program itself. All of these fears have become reality for the *Diorhabda* program.

Internal documents within the inspection service affirm these realized fears, noting that since "approximately 2003 and independently from APHIS authorization, other entities and agencies have collected and redistributed *Diorhabda* from established populations within their respective states."

In what may be the greatest undoing of the beetle program, the city of Saint George, Utah obtained beetles from an inspection service's release site in Delta, Utah and introduced them along the Virgin River – in critical habitat for the Southwestern Willow Flycatcher. Two years later, the beetles were well-established along the river within known flycatcher nesting area. The beetles had also spread to Littlefield, Arizona.

The St. George, Utah release would fly in the face of the original 2005 concurrence between US Fish and Wildlife Service and the Animal and the Animal and Plant Health Inspection Service, which stipulated that release locations be "at least 200 miles from reported flycatcher habitats, and at least 300 miles from documented breeding areas."

In 2006, the *Hurricane Valley Journal* reported, the St. George City Council approved introducing the saltcedar leaf beetle to the area in May of that year: "City workers gathered approximately 100,000 beetles from the Delta experimental site and released them at three different sites invaded by tamarisk."

The *Diorhabda* genie was out of the proverbial bottle – within southwestern willow flycatcher habitat and headed towards litigation.

Last year, the Center for Biological Diversity and the Maricopa Audubon Society sued the inspection service, seeking a reevaluation of the program to eradicate saltcedar via the leaf-eating beetles.

Response to the litigation was brutal. Last month a memo from Alan K. Dowdy of inspection service to Plant Protection and Quarantine State Plant Health Directors, stated that the "APHIS PPQ saltcedar biological control program in 13 states has been terminated."

The memo went on to say if endangered species issues are resolved, consultation between Fish & Wildlife and the inspection service might be undertaken to resume the beetle program. That does not seem likely, at least not in the short term.

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Dr. Robin Silver of the Center for Biological Diversity told the *Gazette*, "My experience with [Secretary of the Interior] Salazar is there is no difference between Salazar and Gail Norton [former Interior Secretary]." Hence, Silver has "no expectations of improved behavior, and we expect to be back in court soon."

Both the saltcedar tree and the leaf-eating beetle were introduced with expected outcomes; the tree would shore up riverbanks; and, more recently the leaf-eating beetle would reign in the saltcedar.

"A hundred years ago, few imagined that tamarisk could spread across the West," stated Public Employees for Environmental Responsibility Executive Director Jeff Ruch. And "five years ago, USDA liberated the leaf beetle under the illusion that nothing could go wrong."

Currently, the Animal and Plant Health Inspection Service is threatening that any human-assisted movement of the beetles, particularly into flycatcher habitat, may result in criminal and or civil prosecution and fines of up to \$250,000. The moratorium specifically prohibits the "interstate transportation."

The moratorium extends only to federal agencies, however, leaving state researchers free to conduct existing research, although no funds or beetles will be forthcoming from the federal government.

Local biologist Andrew Berezin with Sul Ross State University will continue to conduct research along the Rio Grande. Said Berezin, "Our program is still on track and doing very well."

The federal beetle program in Big Bend National Park is on hold, according to Joe Sirotnak, park botanist. "We are currently not allowed to transport or release any

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*Diorhabda elongata*, a natural predator of the saltcedar, eats the leaves, thereby killing it. (James Tracy, USDA, photo)

beetles," said Sirotnak. "I think that these restrictions will be lifted for Texas, because we were not one of the original thirteen states on the initial permit, and we don't have Southwestern Willow Flycatchers."

The beetle program of saltcedar eradication has many supporters. Dr. Dan Bean from the Colorado Department of Agriculture said the beetle has been used very successfully in that state, particularly in the western part.

Bean refers to some beetle research in Colorado being shut down "regrettable," and added the program would continue in Colorado, utilizing existing beetles and diverting inspection service funding to projects other than saltcedar beetles.

Describing the program as "well-run," Bean said, "What is sad about it is that the program has been highly successful."

C. Jack Deloach, entomologist with the USDA who was been at the forefront of *Diorhabda* research, traveling the globe to bring the beetles back from Kazakhstan, Tunisia and China for trials in the U.S., is undaunted. While noting "we are absolutely prohibited from releasing or helping anyone release," Deloach will continue his research.

"Fish and Wildlife is convinced, erroneously I think, that saltcedar is the best thing that ever happened to the flycatcher," said Deloach. And, he notes, reproductive rates of flycatchers in saltcedar are about half the rate as they are in cottonwoods and willows.

A fundamental reason for attempting to eradicate saltcedar is been the long-held belief they are huge consumers of water. In April, however, the U.S. Geological Survey released a report disputing this.

The report found that "native trees such as cottonwoods and willows along western rivers typically consume as much water as non-native saltcedar and Russian olive."

While the report concedes the non-native saltcedar landscapes do not provide suitable habitat for specialized wildlife such as woodpeckers, "even the endangered southwestern willow flycatcher breeds in saltcedar stands."

Most ecologists still believe that saltcedar is detrimental to riparian habitats.

So it seems the leaf-eating beetle, like the saltcedar itself, has fallen victim to its own success: the beetle was introduced to defoliate saltcedar, and it succeeded without consuming other plants. Despite assurances to the contrary, the beetle made its way into Southwestern willow flycatcher habitat.

Summing up this unfortunate dance between the beetle and the bird, says Jeff Ruch of Public Employees for Environmental Responsibility, "This episode underlines the hubris of efforts to engineer nature."