

Imported wasp saving wiliwili

KIA'I MOKU

By Lissa Fox



Art Medeiros greets his friends fondly at each meeting, calling them by their name

or nickname he's given them, checking in about their health and the health of their children. He's worked alongside them for years, toiling to save a remnant of one of the rarest native ecosystems left in the Hawaiian Islands—the dryland forest. This ecosystem has been damaged by development, agriculture, pastureland, and feral goats, deer, and cattle. As he arrives at the worksite, on the slopes of Haleakala, just steps above Kihei, he says hello to his friends. They nod with a flush of leaves, present him with bouquets of coral colored flowers and brilliant red seeds, answering yes, yes, we are healthy. Medeiros works alongside trees.

The native wiliwili tree, *Erythrina sandwicensis*, is the keystone species in the dryland forest ecosystem. Other plants and animals, many of them threatened with extinction depend on the wiliwili for protection, nutrients, and support. And in turn, a handful of dedicated individuals at the Hawaii Department of Agriculture (HDOA) are working with Art Medeiros and his staff at the Leeward Haelakala Watershed Restoration Partnership to protect the wiliwili.

The trees of the dryland forest were nearly silenced several years ago. A new invasive pest had hitchhiked to Maui. The *Erythrina* gall wasp laid eggs in the leaves of the wiliwili, causing the leaf to form a gall or bump around the larvae. The leaves withered and fell to the ground. Without leaves, the trees couldn't breathe. They couldn't release the water taken up by their roots. They were rotting standing up. Medeiros had unwittingly named one tree "Smoke of Pele" for the dark streak that appeared down the trunk—it was the bark of the tree splitting open as it collapsed under too much water. Seedlings were dying, saplings

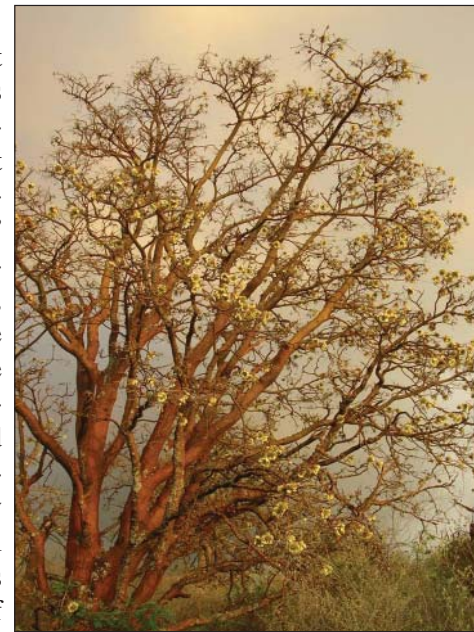
that were supposed to double in height each year were being halved as the upper branches broke off. The giants that had stood for 300-400 years were dying. The species was headed for extinction.

"When I first realized what it could mean for Puu-o-kali I was heartbroken," Medeiros recounts. "This could be a national park and we were losing it. We had saved the forest from the deer, and here was something smaller, deadlier. The trees were in trouble: I thought it would be 20-30 years before they all go. A colleague corrected me: it would be 3-5 years before the trees all died."

The non-native ornamental erythrina trees, such as those that once lined the Mokelele highway and the coral trees that decorated parking lots of Kahului, quickly died as they dropped leaves. Gall wasp infested leaves littered the back of pick-up trucks as they traveled across Maui.

Realizing that the gall wasp could mean the end of the dryland forest Medeiros frantically evaluated his options. Island-wide surveys showed that the gall wasp infestation was too widespread to stop; even cutting down every infested tree in Maui would not prevent the destruction. As a last ditch effort, volunteers began collecting seed to replant if the wiliwili did not survive. And the Hawaii Department of Agriculture began a search for a way to slow the unrelenting pest.

In Tanzania, the home range of the wasp, Mohsen Ramadan, an entomologist with HDOA, found the wasps' natural enemy—another wasp that depends solely on the *Erythrina* wasp for survival, much in the way a fish depends on water. After careful research and testing to ensure that the wasp would not cause unintended impacts, HDOA released the biological control agent. In December of 2008, just over 3



Above: Darcy Oisihi with the Hawaii Department of Agriculture releases the Eurytomid wasp, the natural enemy of the *Erythrina* gall wasp, at Puu o Kali above Kihei.

Left: This is a picture of a healthy wiliwili, which has been threatened by the *Erythrina* gall wasp. Photo courtesy of Art Medeiros.

years since the *Erythrina* gall wasp had been detected on Maui, HDOA introduced the Eurytomid wasp to the wiliwili forests of leeward Haleakala.

Medeiros and his staff are monitoring the health of the forest and the spread of both wasps in partnership with the Hawaii Department of Agriculture. "It was like auhuli, when two waves combine in the ocean," he explains. The introduced Eurytomid wasps, finding plenty of pest wasps to support their population, are spreading. The destructive wave of *Erythrina* gall wasp was lessened. Now both wasps and are found in the dryland forest. The Eurytomid keeps the population of *Erythrina* in check, lessening its destruction. And the native wiliwili are now producing leaves, flowers, and seed. "I have trees that I have known for years--they've been knocked down a little bit but, they're still around."

"This is the only forest that Hawaiians of old would recognize. We need a major eco-

system saving move. This begins it—if this continues the trees will recover and be around for future generations."

The Hawaii Department of Agriculture is currently working to discover natural enemies to control other pest species such as fireweed, miconia, and the stinging nettle caterpillar. With the current fiscal situation, this important work is suffering.

You can help restore Maui's dryland forest. The Leeward Haleakala Watershed Partnership works with volunteers every month to control weeds and plant native species. To find out more visit www.lh-wrp.org and click on events.

■ *Lissa Fox is the public relations and education specialist for the Maui Invasive Species Committee. "Kia'i Moku," (Guarding the Island) is prepared by the Maui Invasive Species Committee to provide information on protecting the island from invasive plants and animals that can threaten the island's environment, economy and quality of life.*