



# Walking Among Ancients

The wiliwili  
once dominated Hawai'i's  
dry lowlands; today the survivors  
are defying the odds





**N**o one knows just how old they are, but the massive wiliwili trees seen here were undoubtedly alive at the time of Captain Cook's arrival and the conquests of Kamehameha I. Now these regal native trees are under increasing threat: drought-stricken, fire-threatened and attacked by invasive insects. Big Island architect Hai On (seen on these pages and the opening spread) visits as many wiliwili trees as he can, recording data on their lives and deaths and gathering seed to propagate. The tree on the opening spread, for example, was alive when Hai first encountered it but dead by the time this picture was taken. Still, he has salvaged branches from downed trees—and managed to get them to sprout.

**O**ne day a lone man named Hai On was wandering over a barren desert. He rounded a cinder cone and to his great surprise came upon a living tree. It stood alone in a heap of rocks. Orangeish in color with a strangely glowing trunk, the tree jutted into the air, then exploded into a mesmerizing tangle of limbs that stretched outward widely, as though yearning to touch something or anything else.

The place was hot and sere. Even the invasive plants in this desert had succumbed to the drought—the fountain grass bleached, the mesquite trees dead. The tree itself had no leaves. And yet it was covered with orange flowers, intensely orange, in thick inflorescences with pink-rose stamens all arcing upward like so many dancers. The fruits on the tree—twisting brown pods that had cracked wide open—each held just two or three kidney bean-size seeds that were all uniformly bright red.

At the base of the tree's chunky trunk grew a patch of grass, the only thing green to be seen for miles around. Otherwise the tree looked completely sealed inside itself, its bark a kind of glaze, like a translucent skin. Its internal glow suggested to Hai that some liveliness was happening within, perhaps even photosynthesis. Within the folds of the tree's bark, he imagined seeing faces and rivers.

"What is this plant?" Hai wondered. It's a common question for travelers, of course—"What's that?"—and most people

simply ask and move on. Hai, though, couldn't let it go.

He began searching for other specimens of this strange tree, and he came to realize that only a few hundred still existed in his area. These last trees had somehow survived the collapse of their ancient dryland forest home. As a defense against drought, they had dropped their leaves and withdrawn into their tightly sealed trunks to wait for rain. Hai asked around and learned the plant's name: wiliwili, which rhymes with "really really." No one seemed to know much about them.

For example, nobody knew how old the trees were. At least five hundred years was the best guess. Almost all the trees seemed to be that same size and age. As he kept wandering Hai discovered a few that looked somewhat smaller and younger. But he was able to locate only one keiki—that is, only one sapling—in the entire district he traversed.

Hai decided to adopt the trees and to visit them regularly. He developed a notation system to help him monitor individual trees and measure their health. Whenever he visited a tree, he always said, "Hello, old friend." If anyone asked him why he cared, he would answer, "They're so lonely."

Two years later when Hai rounded that same cinder cone to revisit the first wiliwili of his life, he saw that it had changed. Its bark had hardened into a kind of copper. Its trunk had sundered and collapsed onto



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the blistered clinkers of dry lava, its creamy white inner wood exposed and light as foam. The thick branches had snapped like chalk with clean ninety-degree breaks—no woody fibers in this tree. Hai picked up a huge limb and raised it into the air. The weighty heft of the tree had turned to meringue. The corpse of the tree was powdering in the hot lava-field wind.



he story of Hai On and the strange tree sounds almost mythic, but it's plain fact. The first encounter happened in 2008. Hai is a self-employed architect who lives in the Kawaihae area of the Big Island. To document wiliwili trees, he travels the South Kohala district and photographs the trees with his smartphone. Then, right there, he employs an app called Evernote to document his observations, link the tree to a GPS locator and post the results on his Facebook site. When I asked whether he had checked with credentialed botanists to make sure that his notation system jibed with established practices, he said, "In a way I'm afraid to talk with them because they might dampen

my enthusiasm." And yet he's torn by a sense of urgency. "We need little ones in the ground."

He's what you might call a citizen scientist—a volunteer, someone who has decided to "be the change." His labor is motivated not by academic duty but by this dictum of the Senegalese environmentalist Baba Dioum, which he quoted to me: "For in the end we will conserve only what we love. We will love only what we understand. We will understand only what we are taught."

Hai is Vietnamese. At age 11 he and his family were airlifted out of the Saigon airport by a US military chopper on April 29, 1975, the very last day of the Vietnam War. After an orientation period in efficiently run refugee camps, Hai finished his education in Indiana and Texas. For many years he listened and paid attention but did not speak.

Ever since getting his architecture training at Texas A&M, he has specialized in house designs that adapt cleverly to challenging locations. "I focus on passive aspects of environmental control in a building—siting correctly, making the structure comfortable in its environment." This biographical information perhaps sheds light on Hai's unusual empathy for trees that stand alone, quietly adapting to adverse circumstances.

He drives a battered red Jeep with a

bumper sticker that reads: Kill Your Television. He smiles readily, with creases in his face. He likes to get out and walk in the open wilderness because "when you walk you can think about things." But he doesn't hike. "In my mind it's more like wandering. I've done quite a bit of wandering."

He drove me down to Waikoloa Village, a mini-town of about six thousand residents set plunk in the middle of Hawai'i's most scorched lavascape. A confusion of locked gates finally gave us access to the taut new fencing of the Waikoloa Dryland Forest Preserve. The fence protects 275 acres of brown stone slag largely by "exclosing." Once the fencing was complete in September 2011, hunters killed a number of goats that might otherwise have stripped the bark from and demolished all surviving wiliwili trees.

The project started with citizen action in the village, when residents discovered that developers were actually pulling these dinosaur plants out of the ground for transplanting into resort locations. Waikoloa Village Outdoor Circle adopted the project and fenced it using federal funds. Those funds became available not specifically to preserve the hundred or so mammoth wiliwili here, but rather to fight for the survival of a tree called uhiuhi (*Caesalpinia kavaensis*). The wood of uhiuhi is rock hard, a true marvel, and only fifty individual plants remain alive on the planet.



"I

just want to put a face on the wiliwili," says Hai. "I feel a sense of urgency." The wiliwili tree pictured here stands in the Waikoloa Dryland Forest Preserve; the grass in the foreground is fountain grass, an ornamental introduction gone wild that now carpets the lava plains of Waikoloa. It explodes easily into runaway ground fires, making the wiliwili terribly vulnerable. Left: Hai holds aloft part of the skeleton of a fallen tree. Far left: Hai logging data.







**W**iliwili” means twisty in Hawaiian, and a single glance at the tree’s branching structure tells you how it got its name. The massive trunks of the trees are spongy and appear to act as water reservoirs but contain no growth rings — hence the difficulty in determining their exact age. Here, Hai On and Jen Lawson measure the diameter of a wiliwili growing just outside the edge of the Waikoloa preserve; the two were scouting for new trees.

More than a dozen of those live in this management area.

Botanist Jen Lawson met us at the gate of the Dryland Forest Preserve. Formerly a volunteer, she’s now manager. Hai and I were dressed like Gold Rush-era prospectors; Jen wore slip-on Vans, shorts, Ray-Bans and a bright white T-shirt. She could have been cast as a volleyball camp counselor. But her understanding of the preserve’s ecology was deep, matched only by her enthusiasm for its mission. She led us through her tough terrain as though skipping over stones, showing us the new native plant nursery, the outplantings and various individual trees that she knew well. We stopped at a wind-swept ridge overlooking arid miles, and we talked about the wiliwili trees as personalities—individual creatures that make individual choices. To flower or not? This tree here decided to go for it. But this one is hanging tough for a while in a willful hibernation. The parched flatlands were miles long, desperate-looking. But Jen pointed to distant patches she had explored, where she had discovered trees that gave her hope for the future.

Hope is as precious as rainfall out here. “In the past five years,” she said quietly, “we lost 30 percent of our wiliwili trees.” Just sixty-eight are left. She objects to the fact that the wiliwili is not an officially protected tree. “There’s not even a lobby for them yet,” said Jen. “But I feel we’re forming one.”



iliwili is a kind of bean tree, a legume. Like many legumes, it enriches the soil. It does this by cultivating a positive relationship with bacteria that pull nitrogen out of the atmosphere and make it available to plants. For this reason alone, scientists regard wiliwili as a foundational plant in Hawai’i’s low-elevation dryland forests. The present state of the wiliwili tree says a lot about the condition of those forests.

Wiliwili grow on all major Hawaiian Islands. In some populations—leeward Haleakalā, for example—the trees number in the thousands, not in the few hundreds as in Kohala. In every location, though, you encounter mortal drama. On Kaho’olawe, for example, there’s an old wiliwili that has clung to its topsoil in defiance of erosion. Now its pedestal of held soil stands eight feet above the surrounding ground, which is nearly impenetrable hardpan.

The genus name, *Erythrina* (rhymes with “Carolina”), puts wiliwili with a group of popular ornamentals that gardeners call “coral trees.” But this tree, the Hawaiian *Erythrina*, has a gnarliness and self-preservation instinct that distinguish it from

its lush relatives. And it is odd among Hawai’i native plants in a couple of ways—the summer deciduous (leaf-dropping) tactic, for example, and the thorns. You find very little thorniness among the natives, no doubt because Hawaiian plants evolved without the presence of the kind of munching mammals that thorns serve to repel.

Another remarkable trait of the wiliwili is its extreme variability from population to population. For example, the Kohala trees are stocky and widespread with orange flowers and with thorns only on young shoots. Haleakalā’s trees tend to be thorny throughout—black or gray conical barbs even on the trunks. They tend to grow in groves and reach for the sky. Most amazing, the Maui trees bloom in a Baskin-Robbins of colors. Wildly different hues twine among each other in the same population—burnt orange, honeydew green, creamsicle, plain yellow, salmon, iceberg, goldburst. The botany books say that such polymorphism is unique to the wiliwili.

The seeds are shiny, strong and almost always bright vermilion. The story goes that Captain Cook was greeted with lei of red wiliwili beans when he made landfall at Kealahou. But one population on Moloka’i, in the Mo’omomi dunes area, produces seeds as yellow as egg yolks.

Spend some time with wiliwili and you stop thinking of them as a species but rather as a far-flung clan of creative individuals—survivalists. What they all have in





common are the threats to their existence. Drought, for example. The plants are adapted for periods without rainfall, but there's a limit to what they can endure. Rain gauges at 'Ulupalakua Ranch, the East Maui spread that includes a great concentration of these trees, used to register thirty-five inches a year; now six or seven inches is the norm. Now add more stresses—cattle, which congregate in their shade and trample their seedlings, pigs that chomp their seeds and goats that clamber up into their low limbs and desperately strip away the bark. None of these animals existed in Hawai'i a thousand years ago.

It gets worse. In 2005 a minuscule wasp arrived in Hawai'i as if out of nowhere and—within a single season—destroyed most of the ornamental coral trees in the state. Then it moved into the hinterlands and pounced on the wiliwili. Scientists predicted a 95 percent mortality rate. As it turned out, the rate of death has been far lower, in part due to the release in Hawai'i of a biocontrol mechanism—a parasite of the parasite—and in part (this is an entirely unscientific opinion) because wiliwili trees are so damn resourceful.

This "Erythrina gall wasp" event received a lot of media coverage. Less has been reported about an earlier attacker, a type of seed-eating beetle that drills into the wiliwili pods and turns the luminous red beans to gaping black husks. 'Ulupalakua Ranch manager Sumner Erdman told me that the beetles are worrying him

more than the wasps. Ranch hands have taken to collecting viable seeds and sprouting them in their own native nursery. "We place a high value on them," Sumner said. When I asked why, he replied, "First of all, aesthetics. And the spiritual aspect, I guess." And, "If you're in land management you cannot ignore the importance of native plants to the mineral and water cycles." The ranch has pledged to replace five wiliwili for every one lost. This is an ambitious goal, but it illustrates the kind of loyalty this tree tends to engender.

Later I went out onto remote 'Ulupalakua slopes with retired state forester Bob Hobdy. Bob's spent a lifetime in the field observing what other botanists simply report. He's bear-like and bearded, and he wears an old brimmed hat of finely woven hala (pandanus) leaves adorned with a coppery hatband made from feathers of a pheasant that his own father shot long ago. We sat on jagged boulders under the wiliwili trees. To every odd idea I offered about the intelligence of these trees, he as much as said, "Could be. We don't know that much."

"What pollinates the flowers?" I asked.

"Who knows?" he said. Given the showy petals and sweet nectar in the big floral clumps, it was probably birds, he theorized. But those birds are long gone from these decimated lowland forests.

But as we sat, we watched the flowers receive visits from several late-introduced animals—the little bird called a Japanese white-eye, a Sonoran carpenter bee, then a common honeybee. Bob said, "Variability is the sign of a healthy population. Experimentation. Figuring out new ways of doing things."

I remembered then sitting with Hai under a magnificent ancestral wiliwili, one with a nine-foot-diameter trunk and a retinue of next-generation offspring, also antique, that ran in a row just downhill from their source. The place felt like a tabernacle. Hai started crushing a beetle-infested seed with a stone. He said, "Let's just give them a chance. Cut them some slack. Fence them off, and once the keiki get big enough, let the cattle back in."

How long it would take to give a new generation of wiliwili a running start no one can say. Even the age of these trees is a mystery: There are no growth rings to count—and what would a growth ring even mean in a tree that can shut down its operations through tough times? What is obvious, though, is that these trees are endowed with an array of survival strategies, and going forward the strategy they may need to rely on most is their ability to attract human wanderers such as Hai On. HH



Wiliwili put out their showy flowers in late summer, at the peak of their drought-driven dormancy. Flower colors range from the vivid orange-red seen here to the slightly melon-white of the flowers in the hand of Maui retired state forester Bob Hobdy (left). The scarlet seeds of the tree (far left) actually sprout easily, as long as they haven't been killed off by an invasive seed-eating beetle. Even after they sprout, though, young trees have to contend with ravenous goats, stomping cattle and the leaf-killing gall wasp.