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Native strength

A biologically and culturally vital dryland forest on Maui survives Iselle

By Shannon Wianecki

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ULUPALAKUA, Maui » When the roaring winds of Iselle finally quieted, Sumner Erdman ventured out to assess the damage at Maui's Ulupalakua Ranch. The ranch president and his crew surveyed 18,000 acres on foot and by helicopter.

They saw miles of fence lines smashed, rooftops ripped off of ranch buildings and homes, and an estimated 1,000 trees splintered or yanked from the earth.

But amid the destruction appeared a silver lining: the valuable Auwahi dryland forest appeared to have weathered the storm intact.

Before being downgraded to a tropical storm on the night of Aug. 8, Hurricane Iselle battered houses, downed trees and flooded areas of Puna and Hilo on Hawaii island. By the time the storm reached Maui, its fury had dissipated considerably. Few Valley Isle residents felt more than a few strong breezes.

But winds tend to accelerate over ridgelines, and when Iselle hit the southwest rift of Haleakala, its gusts strengthened to 80 mph.

"It sounded like a big jet engine," said Erdman, who witnessed the storm's peak between 6:30 and 10 a.m. that Friday from his ranch office. "I deal with the elements all the time, but I've never seen their wrath. Huge eucalyptus trees were falling 100 feet away, and we couldn't hear them because the wind was that loud."

He caught a glimpse of an airborne stable roof as it flew through the air, crashed against a building and snapped a nearby power pole. Funneled down Haleakala's steep southeast ridge, the wind acted less like a hurricane and more like a tornado, surgically savaging one particular spot. While Ulupalakua received a thrashing, the nearby community of Keokea remained relatively unscathed.

Erdman's post-storm survey revealed that non-native trees caused the bulk of the destruction.

Trunks and branches of 100-foot-tall eucalyptus trees, pines, wattles and jacarandas crashed down on water and power lines, buildings, fences and roads, rendering Piilani Highway impassable.

In comparison, the native trees — koa and rare dryland forest species — withstood the winds.

This mirrors what happened in Puna, the district of the Big Island hardest hit by Iselle. There, non-native albizia trees fell like dominoes, knocking out power distribution for up to two weeks.

Art Medeiros, a Maui biologist with the U.S. Geological Survey, wasn't surprised to learn that exotic trees were responsible for compounding the storm's damage. Quick-growing trees like eucalyptus and wattle (members of the *Acacia* genus), he said, "don't invest that much in holding on."

Due to a combination of factors — grow rate, wood strength and shallow root systems — the non-native trees have low resistance to high winds. In contrast, "the native trees, the koa, didn't turn themselves upside down," Medeiros said. "They proved more durable, more resilient."

Still, he held his breath until Erdman confirmed that the native forest at Auwahi was unscathed. The area apparently was just outside the range of the fiercest winds.

Medeiros has led restoration efforts at Auwahi since January 2000. On the leeward slope of Haleakala, the remnant dryland forest is a biological and ethnobotanical treasure.

Noted 20th-century botanist Joseph Rock singled Auwahi out as one of the richest botanical regions in the Territory of Hawaii, with more tree species than any Hawaiian rain forest.

Decades of cattle grazing degraded the forest, but the restoration initiative spearheaded by the USGS and Ulupalakua Ranch has proved wildly successful.

More than 50 species of exceptionally rare Hawaiian trees survive there, including endemic sandalwood, holei and alani. Medeiros and his team of volunteers focus on fencing out predators and planting seedlings to one day replace the few remaining elder trees.

"All of these years I've been doing restoration in that forest, I took the old trees for granted," Medeiros said. "Losing their genetic resources would cripple our restoration efforts."

If the storm had uprooted the endangered holei or alani trees, it could have spelled the end of the species' existence, and the ramifications would have extended beyond the forest. Not only are the Hawaiian trees biologically significant, many are also culturally important.

"I don't think most people realize that a hurricane could have irrevocable cultural impacts," Medeiros said. "A Hawaiian tree goes extinct and with it goes a kapa dye color, a medicine, or a spiritual usage."

While the native trees survived Iselle, the reforestation project suffered some losses. Both the Ulupalakua Ranch greenhouse and the shed where Medeiros stored vehicles and equipment were smashed. It will be weeks — maybe months — before the ranch itself is up and running at full capacity again.

"From a biologist's point of view, we got away with this one," Medeiros said. "But as they say in the islands, it's not a question of if a hurricane strikes, but when."