

Kahili ginger recalls royalty, but it is not native

Kia'i Moku

By Art Medeiros



Vast areas of native rain-forest are being lost to an alien plant with a Hawaiian name. Kahili ginger, named for the flower's resemblance to the feathered standard carried by Hawaiian royalty, is anything but a Hawaiian plant.

There are three common cultivated species of gingers (genus *Hedy-chium*) or gingerlilies as they are sometimes called in Hawaii. These are the white (*H. coronarium*), the yellow (*H. flavescens*) and the kahili (*H. gardnerianum*). None are native to Hawaii. All three originated in the Himalayas of southern Asia.

Two of these species were introduced by the earliest of our Chinese immigrants, yellow ginger around 1850 and white ginger around 1871. Both of these, especially the white, moved gradually into the understory of native Hawaiian forests. But neither is regarded by Hawaiian land managers as a serious invader.

Kahili ginger came to the Islands much more recently as an ornamental in the 1940s. The late, great mountain man Lawrence Oliveira claimed that kahili ginger started on Maui during the 1950s in Nahiku and Hana districts.

At the time gardeners simply enjoyed kahili ginger's beautiful, fragrant flowers. They didn't realize that each of those flowers can and often does form a large, dark red seed. This is not the case with white ginger and yellow ginger, which rarely produce fruits in Hawaii.

Birds favor red-colored flowers and fruits. Evidence suggests that this attraction is tied to a common trait of birds -- that females are attracted to brightly colored males. Birds derive most of the carotenoid pigments responsible for red and yellow pigmentation from the food they eat. In other words, red fruit makes colorful birds, and colorful birds are successful.

Whatever the reason, birds love the ginger fruit. And in their enthusiasm they spread ginger seeds



Left: A dense stand of kahili ginger dominates the ohia forest understory in Waikamoi
Photo courtesy of Art Medeiros

Far Left: The kahili ginger's red fruit is attractive to birds which feed on it and, thus, help spread the plant
Photo courtesy of Forest and Kim Starr

far and wide. My dissertation research, conducted in Maui's own Kipahulu Valley, documented that the fruits of kahili ginger are dispersed by two very common non-native birds of Hawaiian forests -- the mejiro and the red-billed leiothrix. This fact, plus the ability of this plant to germinate and thrive with no natural enemies, has placed kahili ginger in the top-ten most wanted list of Hawaii's land managers.

Kahili ginger is damaging rain forests on Hawaii island, Lanai, Maui and Kauai. At Kilauea of Hawaii Island, near Hawaii Volcanoes National Park, and at Kokee on Kauai, kahili ginger has formed such extensive and dense six-foot-plus tall thickets in the understory of ohia-dominated rain forests that it threatens the survival of those forests. On Maui, the three largest rain-forest populations occur in upper Makawao Forest Reserve, Nahiku- Hana and Kipahulu Valley.

Another factor that makes kahili ginger such a serious invader is its tolerance to cold. In its native range, the snowy foothills of the Himalayas, it grows at over 8,000 feet elevation -- about the same elevation as Halemau trail above Park Headquarters at Haleakala National Park. Left to its own devices, Himalayan ginger would be able to invade even the highest elevations of Maui rain forests.

Any plant that becomes a serious forest weed in Hawai'i will inevitably show the same bad behavior in other regions. Kahili ginger has become naturalized and problematic in South Africa, Australia (northern New South Wales and southern Queensland), the Azores (Sao Mi-

guel, Pico, Flores, and Terceira islands) and Madeira, Jamaica, La Reunion in the Indian Ocean and New Zealand.

A friend of mine who lives on Kauai, where kahili ginger is rampant, recently went trekking in Nepal and northern India, where the species is native. She observed, "Being so familiar with it at Kokee, I can spot kahili ginger even without trying. In 25 days of trekking, I saw it only twice. And those patches seemed small and almost stunted -- at least compared to the robust plants I see on Kauai. At Kokee, it just seems to take off, it's so robust, and soon, it turns into a forest of kahili ginger."

Kahili ginger is now so firmly established in Hawaiian rain forests that most managers and scientists doubt that it can be ever eradicated through mechanical and/or chemical control. The good news is that carefully researched biological control (the importation of natural enemies that have evolved with and that attack only their native host) can turn the tide. Biocontrol is as an essential part of the toolbox of those working to save our Hawaiian forests into perpetuity.

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