

The genus is *Clidemia*, its genre is horror

Kia'i Moku

By Art Medeiros



Picture a dancer from a *hula halau* gathering *liko* (leaf buds) for *lei*-making. Picture a hiker setting out to explore the Hawaiian wilderness. For these purposes,

and for botanizing and birding, the Hawaiian rain forests are as good as it gets. Each time you enter the forest, as if by magic you see something new. It could be a particularly beautiful example of a species you already know. It could be a new type of native plant. You might hear the seasonal cry of a Hawaiian bird previously unnoticed. These places, plants, and creatures are true *kama'aina*, endemic, so native that some exist only in the one place you find them. To put this in traditional language, these forests possess a powerful *mana* (spiritual power). They are the home of *akua* (gods).

A weed called *clidemia*, a member of the dreaded melastome family, threatens these Hawaiian forests. Also known as soapbush or "Koster's curse" (names rarely used in Hawaii), *Clidemia hirta* is native from the West Indies and Mexico southward through Brazil. In its native range, it thrives in moist, shaded localities such as streambanks, damp pastures, and thickets.

First recorded on Oahu in the 1940s, *clidemia* really began spreading when and where I spent my formative younger years, learning the beautiful details of Hawaiian botany. Through the late 1960s to mid-1970s, I became intimate with nearly every trail and species in the Ko'olau mountains, only to see the area completely transformed as the *clidemia* "invasion" swept across the open-statured rain forest. This weed now dominates 90,000 acres of that island.

Having witnessed this horror, I spent a lot of energy in the late 1970s on Moloka'i trying to eradicate what started off as a few *clidemia* plants on the rainforested back walls of Wailau Valley. Despite gung-ho efforts by a cadre of dedicated folk, I was saddened as each year more and more plants were found farther and farther from the original infestation. We had failed. Moloka'i forests were now in peril.

Then in 1978, chicken skin-kine botanical disaster: a *clidemia* plant was found on Maui, brought in by an *akamai* Nahiku hunter. Ai-yah. Eight people including State Foresters Bob Hobby and Wes Wong, hiking all day, found



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only a single *clidemia* plant. Thirty years later, *clidemia* occupies over 600,000 acres on Haleakala. Offspring of those first plants now dominate much of the wet forest regions of all major Hawaiian islands, and continue to spread.

Why and how is this plant so invasive? The answer is frighteningly simple. In its homeland, coevolved insect and pathogen species burden *clidemia* and reduce its fitness. Whenever *clidemia* escapes its homeland -- usually introduced unintentionally in seed-infested soil -- it escapes that burden. As a result, this pest is now spreading worldwide from Africa through Asia to the islands of the Indian and Pacific Oceans.

In peak fruiting season (October through January), each *clidemia* plant produces nearly 5,000 seeds per day. On average, a square yard of *clidemia* produces an astounding 10 million seeds a year, each about the size of a period on this page. Laid end to end, they would form a line 3.5 miles long.

In Hawai'i, the dark purple fruits are relished by two non-native forest birds, the Japanese white-eye (*mejiro*) and red-billed leiothrix. You know what happens next. The birds distribute seeds throughout the forest, sometimes over a mile away. In my dissertation done in Kipahulu Valley, *mejiro* and leiothrix birds captured within fruiting *clidemia* patches and held for 20 minutes in cloth bags before release excreted an average of 314 and 102 seeds/capture respectively. One *mejiro* yielded 1800 *clidemia* seeds. As the *mejiro* is the most abundant bird species in our islands, *clidemia* has an incredibly effective dispersal system, similar to that of its dreaded relative,



Above: Flowers and immature fruit.
Art Medeiros photo

Left: Invasion in a native forest, Kipahulu Valley.
Chuck Chimera photo

miconia.

So what happens now? No hope for Hawaiian forests? Are we at the beginning of the end of the greatest forests in the eastern Pacific? At this point, the careful testing of safe and effective biological control appears to be the last best hope for our Hawaiian watershed forests. I realize biocontrol worries some people. Unlike the mongoose (which was never tested before release and would have failed modern standards miserably), biological control has become a honed science. Since new standards were adopted in the 1970s, over fifty agents have been introduced in Hawai'i and none has switched from its intended host. The take home message is this: *clidemia* and a dozen other weeds, freed from constraints, are superspecies in our homelands. By leveling the playing field with carefully researched biological control, Hawaiian watershed forests, with all their economic, biological, aesthetic, and spiritual benefits can be saved in perpetuity.

- Art Medeiros of the Maui Restoration Group is a noted Maui research biologist. He holds a doctorate in botany with a specialty in plant ecology from the University of Hawaii at Manoa. "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.