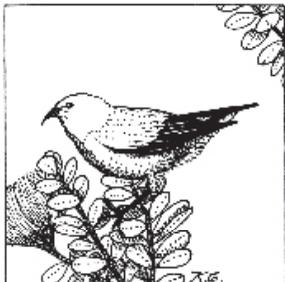


## Native Birds

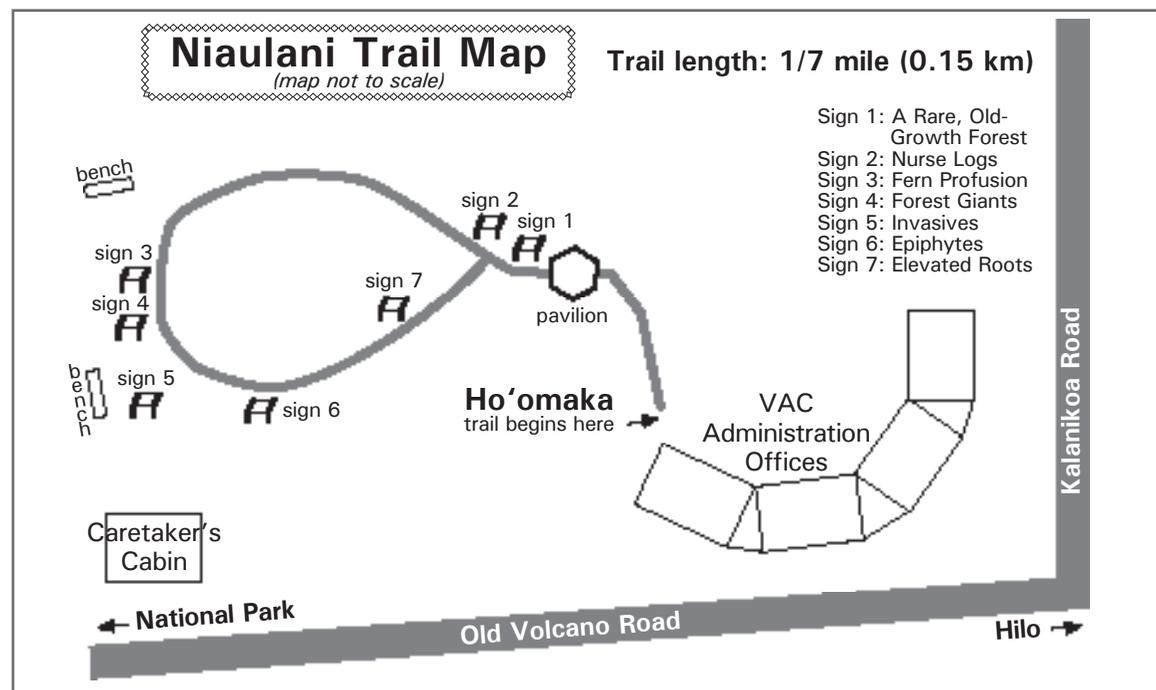


By far, the most abundant native forest bird at Ni‘aulani is the ‘apapane (*Himatione sanguinea*), a small, crimson

honeycreeper with black wings and tail and whitish undertail feathers. You may see the ‘apapane flitting among the ‘ōhi‘a branches, feeding with its down-curved bill on the nectar of the tree’s red lehua blossoms as well as on insects. ‘Apapane have survived, while other native forest birds have become extinct, because their ‘ōhi‘a food base is still intact, and because they are partially resistant to introduced

avian malaria. ‘Apapane have probably a greater variety of songs and calls than any other surviving Hawaiian forest bird, and it is usually their song that you will hear in our forest.

You may also hear another native forest bird, the ‘ōma‘o or Hawaiian Thrush (*Myadestes obscurus*). One distinctive call sounds like a police whistle. Even if you hear ‘ōma‘o, you will be lucky to see the gray-brown bird. They do not flit from branch to branch like ‘apapane, but tend to sit still in dense foliage. ‘Ōma‘o are largely fruit eaters, and thus play a very important role in the ecology of the rain forest because they are the only surviving native forest birds that disperse seeds.



Mahalo to the Hawai‘i Tourism Authority, which funded this trail companion.



# Ni‘aulani Trail Companion



The Natural and Human History of a Small Forest

## Niaulani: A Rare Old-Growth Forest

Dominated by towering native ‘ōhi‘a lehua (*Metrosideros polymorpha*) and koa (*Acacia koa*) trees, with an understory of tree ferns and a rich variety of other native plants, this 4-acre rain forest is a rare old-growth remnant within the Volcano Village area. The oldest of our trees—some more than 65 feet tall—are probably at least 200 years old. Also home to native birds, this montane tropical rain forest (110-120 inches of rain annually) grows in a bed of volcanic ash that last fell during the 18th century.

By contrast, most of the native forest surrounding Volcano Village is second-growth, made up of smaller trees, and much of it is infested with alien plants. The second-growth forest got established when ‘ōhi‘a and other native trees grew up in abandoned agricultural fields or in forests that had been logged for charcoal.

Ni‘aulani is particularly rich in ferns, with nearly 30 species. The largest and most abundant fern is the tree fern hāpu‘u pulu (*Cibotium glaucum*). Some are well over 100 years old. Tiny filmy ferns are also plentiful throughout our forest, usually

clothing the bark of ‘ōhi‘a trees. Far more rare is the meu tree fern (*Cibotium chamissoi*), with its evenly woven fibrous trunk and skirt of dead fronds hanging below the live fronds up top.

A number of native plant species at Ni‘aulani indicate that this forest stand was protected from the ravages of cattle, feral pigs, and logging. These include old-growth koa trees, the native vine ‘ie‘ie (*Freycinetia arborea*), as well as the native ferns hō‘i‘o (*Diplazium sandwichianum*), hō‘i‘o kula (*Pneumatopteris sandwicensis*), ‘akōlea (*Athyrium microphyllum*), and pala (*Marattia douglasii*).

The forest at Ni‘aulani is special in another way: It is an old-growth forest with a future. Now that invasive animal and plant species like wild pigs, kahili ginger (*Hedychium gardnerianum*), strawberry guava (*Psidium cattleianum*), and princess flower or glory bush (*Tibouchina urvilleana*) have been controlled, ‘ōhi‘a and koa, as well as tree ferns and other understory plants, can regenerate in their native habitat free from the threat of these aggressive aliens.

## Geological History

The Ni‘aualani forest is in its prime, partly due to the geological history of the area. But determining its exact history is difficult.

One interpretation of the geological record is that the ecological clock was reset in 1790 by a series of pyroclastic surges from Kīlauea Volcano’s summit. These rushing floods of hot gas, rock, and ash destroyed whatever vegetation had become established, and lay a bed for the forest we see today.

## Modern History

Because ‘ōhi‘a is a very dense wood, it makes excellent slow-burning firewood and charcoal. Until the 1960s, farmers around Volcano Village logged ‘ōhi‘a to make charcoal for cooking and heating their houses, and to sell in Hilo. Abandoned charcoal ovens still exist around the village. Many logged areas now contain second-growth stands of ‘ōhi‘a forest. Such patches of forest have also become re-established in fields after farmers let them go fallow.

Ni‘aualani’s ‘ōhi‘a trees were saved from harvesting when the 7.4-acre parcel was set aside in the 1920s as a state forest reserve. A summer cabin (which later became the Kīlauea Ranger Station) was built for L. W. Bryan, the Hawai‘i District Forester, until his retirement in 1961.

A more recent interpretation is that the soils at Ni‘aualani resulted from several eruptions between 1490 and 1790. The lethal blow might have been a 7-inch thick rain of ash, cinder, and rock sometime between 1700 and 1790. This rocky layer, now buried beneath the thick humus and litter of the forest floor, served as the seedling bed for the grand trees now towering over Nīaualani.

The cabin burned down in the early 1950s and was replaced in the 1960s with a cabin that was dubbed Ni‘aualani, after the builder’s wife (one meaning of the name is “brushed by the heavens”). This cabin was managed by the Division of State Parks as a public recreational facility.

When the Volcano Art Center assumed stewardship of the land in 1997, “Ni‘aualani” was chosen as the name for the entire site, where VAC’s offices, classrooms, and art studios are being developed alongside the forest’s edge.

The Volcano Art Center has continued Bryan’s efforts to preserve the native forest. A fence was built to exclude wild pigs which were ravaging the forest plants. Gradually, invasive alien plants have been removed, allowing the forest to regenerate.

## Ethnobotany

Over the millennia, native Hawaiians have developed many uses for plants—for everything from adornment and construction to medicine and spiritual offerings. Here are a few examples of traditional uses of plants growing in the Ni‘aualani forest. For more information, please see the *Ni‘aualani Plant Guide*.

### ‘Ama‘u (*Sadleria pallida*)

To treat boils and ulcers, to make red dye. The fronds spread to cover the path of an ali‘i (chief). Kinolau (body form) of the pig god, Kamapua‘a.

### Hāpu‘u pulu (*Cibotium glaucum*)

For food, for embalming the dead. Kinolau (body form) of the pig god, Kamapua‘a.



### ‘Te‘ie

#### (*Freycinetia arborea*)

To weave baskets, fish traps, and helmets. To treat pain and swelling of the chest. As an offering on the hula altar.

### Kāwa‘u (*Ilex anomala*)

For anvils on which to beat kapa (bark cloth) and for canoe trimmings. To treat oral infections, strokes, and heart failure.

### Koa (*Acacia koa*)

For canoes and weapons. For a red-brown dye. To treat cramps and induce sleep.

### Kōlea lau nui (*Myrsine lessertiana*)

For anvils on which to beat kapa (bark cloth). To make dye. To treat oral infections. The leaves said to resemble the kōlea (Pacific golden-plover).

### Māmaki (*Pipturus albidus*)

To make kapa (bark cloth). To treat the blood, and as a mild laxative for infants.

### ‘Ōhi‘a lehua (*Metrosideros polymorpha*)

For poi boards and bowls. To increase appetite. Kinolau (body form) of Hōpoe and the Hawaiian gods Kū and Kāne.

### ‘Ōhā wai (*Clermontia parviflora*)

For food and to treat cuts. The sticky sap used to trap birds.

### ‘Ōlapa (*Cheirodendron trigynum*)

For a bluish dye. To treat abscesses, ulcers, and infection. The leaves blowing in the wind said to resemble hula dancers.



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