

only on leeward east Maui (HINHP Database 2000; Medeiros *et al.* 1986).

The habitat of *Alectryon macrococcus* var. *macrococcus* on Kauai is *Diospyros* spp.-*Metrosideros polymorpha* lowland mesic forest, *M. polymorpha* mixed mesic forest, or *Diospyros* spp. mixed mesic forest on dry slopes or in gulches, at elevations between 341 and 954 m (1,120 and 3,129 ft). Associated native plant species include *Acacia koa*, *Alyxia oliviformis*, *Antidesma* spp., *Bobea timonioides*, *Caesalpinia kavaense* (uhiuhi), *Canavalia* spp. (awikiwiki), *Carex meyenii*, *Carex wahuensis*, *Doodia kunthiana*, *Hibiscus waimeae*, *Kokia kauaiensis*, *Melicope knudsenii* (alani), *Microlepia strigosa*, *Munroidendron racemosum*, *Myrsine lanaiensis*, *Nesoluma polynesicum*, *Nestegis sandwicensis*, *Pisonia* spp., *Pleomele aurea*, *Pouteria sandwicensis*, *Psychotria* spp., *Psydrax odorata*, *Pteralyxia kauaiensis*, *Rauvolfia sandwicensis*, *Streblus pendulinus*, *Tetraplasandra* spp., *Xylosma* spp., or *Zanthoxylum* spp. (HINHP Database 2000; 57 FR 20772; K. Wood, pers. comm., 2001).

Alectryon macrococcus var. *macrococcus* on Kauai is threatened by feral goats and pigs; the nonnative plant species *Melinis minutiflora*, *Psidium cattleianum*, or *Schinus terebinthifolius* (Christmasberry); damage from the black twig borer; seed predation by rats and mice; fire; depressed reproductive vigor; seed predation by insects (probably the endemic microlepidopteran *Prays* cf. *fulvocanella*); loss of pollinators; and, due to the small remaining number of individuals and their limited distribution, natural or human-caused environmental disturbances that could easily be catastrophic (57 FR 20772).

Bonamia menziesii (NCN)

Bonamia menziesii, a member of the morning-glory family (Convolvulaceae), is a vine with twining branches that are fuzzy when young. This species is the only member of the genus that is endemic to the Hawaiian Islands and differs from other genera in the family by its two styles, longer stems and petioles, and rounder leaves (Austin 1999).

Little is known about the life history of *Bonamia menziesii*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1999).

Historically, *Bonamia menziesii* was known from the following general areas: scattered locations on Kauai, the Waianae Mountains of Oahu, scattered locations on Molokai, one location on

West Maui, and eastern Hawaii.

Currently, it is known from Kauai, Oahu, Lanai, Maui, and Hawaii. On Kauai, there are nine occurrences with 36 individuals on State (Alakai Wilderness Preserve, Hono o Na Pali NAR, Lihue-Koloa Forest Reserve, Na Pali Coast State Park, and Na Pali-Kona Forest Reserve) and privately owned lands in Waiahuakua, Kalalau Valley, Awaawapuhi Valley, Paaiki Valley, Kipalau Valley, Hulua, Wahiawa Falls, and Laauhihaihai (GDSI 2000; HINHP Database 2000; Service 1999; K. Wood, *in litt.* 1999).

Bonamia menziesii is found in dry, mesic, or wet *Metrosideros polymorpha*-*Cheirodendron-Dicranopteris* forest at elevations between 351 and 1,415 m (1,151 and 4,644 ft). Associated native plant species include *Acacia koa*, *Alphitonia ponderosa*, *Antidesma platyphyllum*, *Cyanea* spp., *Cyrtandra limahuliensis*, *Cyrtandra pickeringii*, *Dianella sandwicensis*, *Diospyros sandwicensis*, *Dodonaea viscosa*, *Dubautia knudsenii*, *Hedyotis terminalis*, *Isodendron longifolium*, *Labordia hirtella*, *Melicope anisata*, *Melicope barbiger* (uahiapele), *Myoporum sandwicense*, *Nestegis sandwicensis*, *Pisonia* spp., *Pittosporum* spp., *Pouteria sandwicensis*, *Psychotria hexandra*, *Psychotria mariniana*, *Psydrax odorata*, *Sapindus oahuensis*, *Scaevola procera*, or *Syzygium sandwicensis* (HINHP Database 2000; Service 1999; K. Wood, pers. comm., 2001).

The primary threats to this species on Kauai include habitat degradation and possible predation by feral pigs and goats, deer, and cattle; competition with a variety of nonnative plants; and fire (59 FR 56333).

Centaurium sebaeoides (awiwi)

Centaurium sebaeoides, a member of the gentian family (Gentianaceae), is an annual herb with fleshy leaves and stalkless flowers. This species is distinguished from *C. erythraea* (bitter herb), which is naturalized in Hawaii, by its fleshy leaves and the unbranched arrangement of the flower cluster (Wagner *et al.* 1999).

Centaurium sebaeoides has been observed flowering in April. It is possible that heavy rainfall induces flowering. Populations are found in dry areas, and plants are more likely to be found following heavy rains. Little else is known about the life history of *C. sebaeoides*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1999).

Historically and currently, *Centaurium sebaeoides* is known from scattered localities on the islands of Kauai, Oahu, Molokai, Lanai, and Maui. Currently on Kauai, there are a total of three occurrences with approximately 22 to 52 individuals on State-owned land. This species is found at Punaiea Point, the caves at Nakeikionaiwi, and Pohakuao within the Na Pali Coast State Park (GDSI 2000; HINHP Database 2000).

Centaurium sebaeoides typically grows in volcanic or clay soils or on cliffs in arid coastal areas at elevations between 0 and 147 m (0 and 483 ft). Associated native plant species include *Artemisia* spp. (hinahina), *Bidens* spp., *Chamaesyce celastroides*, *Cyperus phleoides*, *Dodonaea viscosa*, *Fimbristylis cymosa* (mauu akiaki), *Heteropogon contortus*, *Jacquemontia ovalifolia* (pauohiika), *Lipochaeta* spp., *Lycium sandwicense*, *Lysimachia mauritiana* (kolokolo kuahiwi), *Melanthera integrifolia* (nehe), *Panicum fauriei* (NCN), *P. torridum* (kakonakona), *Scaevola sericea*, *Sida fallax*, or *Wikstroemia uva-ursi* (akia) (56 FR 55770; K. Wood, pers. comm., 2001).

The major threats to this species on Kauai include habitat degradation by feral goats and cattle; competition from the nonnative plant species *Casuarina equisetifolia* (ironwood), *Casuarina glauca* (saltmarsh), *Leucaena leucocephala*, *Prosopis pallida* (kiawe), *Schinus terebinthifolius*, *Syzygium cumini* (Java plum), and *Tournefortia argentea* (tree heliotrope); trampling by humans on or near trails; and fire (Medeiros *et al.* 1999; Service 1999; 56 FR 55770).

Ctenitis squamigera (pauoa)

Ctenitis squamigera is a short-lived perennial fern of the spleenwort family (Aspleniaceae). *Ctenitis squamigera* can be readily distinguished from other Hawaiian species of *Ctenitis* by the dense covering of tan-colored scales on its frond (Degener and Degener 1957; Wagner and Wagner 1992).

Little is known about the life history of *Ctenitis squamigera*. Its reproduction cycles, dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1998c).

Historically, *Ctenitis squamigera* was recorded from the islands of Kauai, Oahu, Molokai, Lanai, Maui, and Hawaii. It is currently found on Oahu, Lanai, Molokai, and Maui. It was last seen on Kauai in 1896 (HINHP Database 2000).

This species is found on rock faces in gulches in the forest understory at