

kuahiwi); *Peperomia* spp.; *Pipturus albidus*; *Pleomele* spp.; *Psychotria* spp.; *Touchardia latifolia*; or *Xylosma* spp. (HINHP Database 2001; Lammers 1999; Service 1997; 57 FR 20772; R. Hobdy, pers. comm., 2001).

The threats to this species on Maui are habitat degradation by feral pigs, depressed reproductive vigor, and natural or human-caused environmental disturbance that could easily be catastrophic caused by the small number of remaining individuals and the limited and scattered distribution of the species (Service 1997; 57 FR 20772).

Cyrtandra munroi (Haiwale)

Cyrtandra munroi, a short-lived perennial and member of the African violet family (Gesneriaceae), is a shrub with opposite, elliptic to almost circular leaves that are sparsely to moderately hairy on the upper surface and covered with velvety, rust-colored hairs underneath. This species is distinguished from other species of the genus by the broad opposite leaves, the length of the flower cluster stalks, the size of the flowers, and the amount of hair on various parts of the plant (Wagner *et al.* 1999).

The reproductive biology of some species of *Cyrtandra* has been studied, but not on *C. munroi* specifically. Studies of other members of the genus suggest that a specific pollinator may be necessary for successful pollination. Seed dispersal may be via birds that eat the fruits. Flowering time, longevity of plants and seeds, specific environmental requirements, and other limiting factors are unknown (Service 1995b; 57 FR 20772).

Cyrtandra munroi was historically and is currently known from Lanai and West Maui. Currently on Maui, there are 5 occurrences with a total of approximately 1,000 individuals on private and State (West Maui Forest Reserve) owned lands within the West Maui Mountains Watershed Partnership in Kahanaiki Gulch, Pulepule Gulch, Honokahua Gulch, along Makamakaole Stream, and Hahakea (GDSI 2001; HINHP Database 2001; Service 1995b; Wagner *et al.* 1999; 57 FR 20772).

The habitat of this species is rich, moist to wet, moderately steep talus slopes in lowland wet *Metrosideros polymorpha* forest at elevations between 390 and 1,108 m (1,280 and 3,635 ft) and containing one or more of the following associated native plant species: *Alyxia oliviformis*; *Bobea* spp.; *Clermontia* spp.; *Coprosma* spp.; *Cyrtandra* spp.; *Diospyros* spp. (lama); *Freyinetia arborea*; *Hedyotis acuminata*; *Melicope* spp.; *Myrsine* spp.; *Perrottetia sandwicensis*; *Pipturus* spp.

(mamaki); *Pittosporum* spp.; *Pouteria sandwicensis*; *Psychotria* spp.; *Sadleria* spp.; *Scaevola* spp. (naupaka); *Sicyos* spp.; *Strongylodon ruber* (nuku iiwi); *Xylosma* spp.; or *Zanthoxylum kauense* (ae) (HINHP Database 2001; Service 1995b; 57 FR 20772; R. Hobdy, pers. comm., 2001).

The threats to this species on Maui are from competition with the nonnative plant species *Melinis minutiflora*, *Paspalum conjugatum*, *Pluchea carolinensis* (sourbush), *Psidium cattleianum*, and *Rubus rosifolius*; loss of appropriate pollinators; a very small number of extant individuals which can cause depressed reproductive vigor; and the effects of random environmental events that could easily be catastrophic caused by the small number of occurrences on Maui (Service 1995b; 57 FR 20772).

Delissea undulata (NCN)

Delissea undulata, a member of the bellflower family (Campanulaceae) and a short-lived perennial, is an unbranched, palm-like, woody-stemmed tree with a dense cluster of leaves at the tip of the stem. One or two knob-like structures often occur on the back of the flower tube. Three subspecies, all but the last of which are considered extinct, may be separated on the basis of leaf shape and margin characters: In *D. undulata* var. *kauaiensis*, the leaf blades are oval and flat-margined with sharp teeth; in *D. undulata* var. *niihauensis*, the leaf blades are heart shaped and flat-margined with shallow, rounded teeth; and in *D. undulata* var. *undulata*, the leaf blades are elliptic to lance-shaped and wavy-margined with small, sharply pointed teeth. This species is separated from the other closely related members of the genus by its large flowers and berries and broad leaf bases. *Delissea undulata* ssp. *undulata* is the only subspecies known from Maui (Lammers 1990).

Delissea undulata var. *undulata* has been observed in fruit and flower during December. Little else is known about the life history of *D. undulata* var. *undulata*. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (HINHP Database 2001; Service 1996a; 61 FR 53124).

Delissea undulata var. *undulata* was known from southwestern Maui, western Hawaii, and Niihau. Currently it occurs on Kauai and the island of Hawaii (GDSI 2001; HINHP Database 2001; Service 1996a; 61 FR 53124; Linda Pratt, USGS-BRD, pers. comm., 2001; K. Wood, pers. comm., 2001).

Nothing is known of the preferred habitat of or native plant species associated with *Delissea undulata* var. *undulata* on the island of Maui (Service 1996a; 61 FR 53124; R. Hobdy, pers. comm., 2001) or of the threats to *Delissea undulata* var. *undulata* on the island of Maui (Service 1996a; 61 FR 53124).

Diellia erecta (Asplenium-leaved diellia)

Diellia erecta, a short-lived perennial fern in the spleenwort family (Aspleniaceae), grows in tufts of three to nine lance-shaped fronds emerging from a rhizome covered with brown to dark gray scales. This species differs from other members of the genus in having brown or dark gray scales usually more than 2 cm (0.8 in) in length, fused or separate sori along both margins, shiny black midribs that have a hardened surface, and veins that do not usually encircle the sori (Degener and Greenwell 1950; Smith 1934; Wagner 1952).

Little is known about the life history of *Diellia erecta*. Reproduction cycles, dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1999; 59 FR 56333).

Historically, *Diellia erecta* was known on Kauai, Oahu, Molokai, Lanai, Maui, and the island of Hawaii. Currently, it is known from Kauai, Molokai, Maui, and Hawaii. On Maui, there are 5 known occurrences with a total of 35 individual plants on State (West Maui Forest Reserve, Manawainui Plant Sanctuary, and Department of Hawaiian Home Lands) and privately owned lands within the West Maui Mountains Watershed Partnership in Iao Valley, Hanalaiki, Manawainui Gulch, near Polipoli in Kamaole, and west of Waiopai Gulch (GDSI 2001; HINHP Database 2001; Service 1999; 59 FR 56333).

This species is found in steep slopes or gulch sides in deep shade in *Acacia koa*-*Metrosideros polymorpha* low-to mid-elevation mesic forests between 338 and 1,744 m (1,109 and 5,722 ft) and containing one or more of the following associated native plant species: *Coprosma* spp.; *Dodonaea viscosa*; *Dryopteris unidentata* (akole); *Leptecophylla tameiameia*; *Melicope* spp.; *Myrsine* spp.; *Osteomeles anthyllidifolia*; or *Psychotria* spp. (HINHP Database 2001; Service 1999; 59 FR 56333; R. Hobdy, pers. comm., 2001).

The major threats to *Diellia erecta* on Maui are habitat degradation by pigs, goats, and cattle; competition with nonnative plant species, including