

limiting factors are unknown (HINHP Database 2000, Service 1996a).

Historically, *Canavalia molokaiensis* was known from East Molokai at Kalaupapa, Pelekunu, and farther south in Kahuaawi Gulch, and in the region of Manawai. It now has a more restricted range, from Kalaupapa to Waialeia, Kaunakakai, Pelekunu, and Kamakou. There are a total of 7 occurrences containing more than 50 plants on State lands, including lands managed by the National Park Service at Kalaupapa National Historical Park, and privately owned lands (GDSI 2000, HINHP Database 2000).

*Canavalia molokaiensis* typically grows in exposed sites, both dry and mesic, on steep slopes in *Metrosideros polymorpha*-*Dodonaea viscosa* lowland shrubland and mesic shrublands between 271 and 1,140 m (889 and 3,739 ft) in elevation. Associated plant species include *Artemisia* sp. (hinahina), *Chamaesyce* sp. (akoko), *Coprosma* sp. (pilo), *Leptecophylla tameiameia*, or *Wikstroemia* sp. (akia) (HINHP Database 2000).

The threats to this species include habitat degradation by feral ungulates, such as feral goats and pigs (*Sus scrofa*), possible predation by feral goats, and competition with nonnative plants, such as *Melinis minutiflora* (Service 1996a).

*Clermontia oblongifolia* ssp. *brevipes* (oha wai)

*Clermontia oblongifolia* ssp. *brevipes*, a member of the bellflower family (Campanulaceae), is a short-lived perennial shrub or tree that reaches a height of 2 to 7 m (6.6 to 23 ft). This species is distinguished from others in the genus by the structure of its calyx and corolla, as well as by the lengths of the flower, the floral lobes, and the green hypanthium (base of flower). This subspecies differs from others of the species by the shape and length of its leaves, leaf stalks, and flower stalks (Lammers 1988, 1999).

Little is known about the life history of *Clermontia oblongifolia* ssp. *brevipes*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1996a).

*Clermontia oblongifolia* ssp. *brevipes* is known from five individuals on the privately owned land of the Nature Conservancy of Hawaii's (TNCH) Pelekunu Preserve. The historical range of this subspecies is not known (HINHP Database 2000; Service 1996a; Joel Lau, HINHP, *in litt.* 2000).

*Clermontia oblongifolia* ssp. *brevipes* occurs in shallow soil on gulch slopes in the wet *Metrosideros polymorpha*-

dominated forests between 776 and 1,508 m (2,545 and 4,946 ft) in elevation. Associated plant species include *Broussaia arguta* (kanawao), *Cheirodendron trigynum* (olapa), *Cibotium* spp. (hapuu), *Hedyotis terminalis* (manono), or *Melicope* sp. (alani) (HINHP Database 2000; Joel Lau, HINHP, *in litt.* 2000).

The threats to this species on Molokai are habitat degradation by feral pigs; possible predation on the fruit or plant parts by rats (*Rattus rattus*), as evidence on related species suggests; and random naturally occurring events that may cause the extinction of the entire species due to the very small number of individuals (Service 1996a, 57 FR 46325).

*Cyanea dunbarii* (haha)

*Cyanea dunbarii*, a member of the bellflower family (Campanulaceae), is a short-lived perennial, branched shrub 1.5 to 2 m (4.9 to 6.6 ft) tall with oval to broadly elliptic leaves that have irregularly lobed or cleft margins. This species is distinguished from others in this endemic Hawaiian genus by the lack of prickles on the stems and the irregularly lobed and cleft leaf margins (Lammers 1999).

*Cyanea dunbarii* has been observed in flower, with immature fruit, in September. Little is known about the life history of *Cyanea dunbarii*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (HINHP Database 2000, Service 1998a).

*Cyanea dunbarii* was collected in 1918 at Waihanau and Waialae Valleys, and was not observed again until 1992, when Joel Lau of HINHP found it in Mokomoko Gulch on State-owned land within Molokai Forest Reserve. Currently it is known from one occurrence of approximately 30 mature plants at an elevation of 671 m (2,200 ft) (GDSI 2000; HINHP Database 2000; 61 FR 53130; Ken Wood, National Tropical Botanical Garden (NTBG), *in litt.* 2000).

*Cyanea dunbarii* occurs on a streambank in a mesic to wet *Dicranopteris linearis* (uluhe)-*Metrosideros polymorpha* lowland forest on moderate to steep slopes between 191 and 1,248 m (626 and 4,093 ft) in elevation. Associated species include *Charpentiera obovata* (papala), *Cheirodendron trigynum*, *Clermontia kakeana* (ohawai), *Diplazium sandwicianum* (hoio), *Freycinetia arborea* (ieie), *Perrottetia sandwicensis* (olomea), or *Pipturus albidus* (mamaki) (HINHP Database 2000, Service 1998a).

The major threats to *Cyanea dunbarii* on Molokai are competition with the non-native plants *Buddleia asiatica* (butterfly bush), *Commelina diffusa* (honohono), *Erigeron karvinskianus* (daisy fleabane), *Kalanchoe pinnata* (air plant), or *Rubus rosifolius* (thimbleberry); catastrophic extinction by naturally occurring events, such as landslides or flooding; reduced reproductive vigor due to the small number of individuals; predation by rats as rats are known to be in the area and are known to eat stems and fruits of other species of *Cyanea*; and habitat degradation and predation by axis deer and pigs (Cuddihy and Stone 1990, Service 1998a).

*Cyanea mannii* (haha)

*Cyanea mannii*, a member of the bellflower family (Campanulaceae), is a branched, short-lived perennial shrub 1.5 to 3 m (5 to 10 ft) tall with narrowly elliptic or lance-shaped leaves. This species is distinguished from the seven other species of the genus on Molokai by a combination of the following characteristics: a branched, woody habit; leaves with small, hardened, marginal teeth; and a purplish corolla (Lammers 1999, 57 FR 46325).

*Cyanea mannii* has been observed in flower during July. Little is known about the life history of *Cyanea mannii*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (HINHP Database 2000, Service 1996a).

Historically, *Cyanea mannii* was known only from Kalae on East Molokai. In 1984, a single plant was discovered by Joan Aidem on privately owned land west of Puu Kolekole on East Molokai. Since then, seven additional occurrences have been discovered in the east and west forks of Kawela Gulch on privately owned land on East Molokai and within the State's Molokai Forest Reserve. These 8 occurrences contain approximately 200 individuals on State and privately owned lands (GDSI 2000; HINHP Database 2000; Lammers 1999; Service 1996a; Ken Wood, NTBG, *in litt.* 2000).

This species typically grows on the sides of deep gulches in *Metrosideros polymorpha*-dominated montane mesic forests between 191 and 1,248 m (626 and 4,093 ft) in elevation. Associated plant species include *Dicranopteris linearis*, *Vaccinium* sp. (ohelo), or *Wikstroemia* sp. (HINHP Database 2000, Lammers 1999, Service 1996a).

Threats to *Cyanea mannii* are habitat degradation by feral pigs; predation by rats, which may feed on the fruit or other parts of the plant, as suggested by