

Point by J. F. Rock (HINHP Database 2000).

On Molokai, *Hibiscus brackenridgei* ssp. *molokaiana* occurred on slopes in lowland dry forest and shrubland from 11 to 467 m (36 to 1,531 ft) in elevation (HINHP Database 2000; J. Lau, *in litt.* 2001).

Information on threats that may affect *Hibiscus brackenridgei* ssp. *molokaiana* on Molokai is unknown (Service 1999a).

*Ischaemum byrone* (Hilo ischaemum)

*Ischaemum byrone*, a member of the grass family (Poaceae), is a short-lived perennial species with creeping underground and erect stems. *Ischaemum byrone* can be distinguished from other Hawaiian grasses by its tough outer flower bracts, dissimilar basic flower units, which are awned and two-flowered, and a two-or three-tiered inflorescence (O'Connor 1999).

Little is known about the life history of this species. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1996b).

*Ischaemum byrone* was historically distributed on Kauai, Oahu, Molokai, Maui, and Hawaii Island. Currently, this species is found on Kauai, Molokai, Maui, and Hawaii Island. On Molokai, there are a total of 2 occurrences containing between 100 and 1,000 individuals located in Wailau Valley and the eastern edge of Kikipua on privately owned lands (GDSI 2000, HINHP Database 2000, 59 FR 10305).

On Molokai, *Ischaemum byrone* is found in coastal dry shrubland or *Artemisia* sp. cliff communities, near the ocean, among rocks or on basalt cliffs or talus slopes, at elevations between sea level and 238 m (0 and 781 ft). Associated taxa include *Bidens molokaiensis* (NCN), *Fimbristylis cymosa*, *Hedyotis littoralis*, *Lysimachia mauritiana*, or *Pandanus tectorius* (hala) (Gagne and Cuddihy 1999, HINHP Database 2000, O'Connor 1999).

The threats to *Ischaemum byrone* on Molokai are competition by non-native grasses, particularly *Digitaria ciliaris*; predation by goats and axis deer; and elimination and degradation of habitat through fire and residential development (Service 1996b).

*Isodendron pyrifolium* (wahine noho kula)

*Isodendron pyrifolium*, a short-lived perennial member of the violet family (Violaceae), is a small, branched shrub. It is distinguished from other taxa in the genus by its smaller, green-yellow

flowers and hairy stipules and leaf veins (Wagner *et al.* 1999).

During periods of drought, this species drops all but the newest leaves. After sufficient rain, the plants produce flowers with seeds ripening one to two months later. No further information is available on flowering cycles, pollination vectors, seed dispersal agents, specific environmental requirements, or limiting factors (Service 1996c).

*Isodendron pyrifolium* was known historically from Kauai, Oahu, Maui, Hawaii, Niihau, Molokai, and Lanai. Currently, this species is only extant on the island of Hawaii. It was last collected on Molokai in the 1800s (HINHP Database 2000).

On Molokai, *Isodendron pyrifolium* was found in dry shrublands at low elevations between 69 and 422 m (226 and 1,384 ft). Associated native plant species included *Bidens menziesii*, *Dodonaea viscosa*, *Heteropogon contortus*, or *Leptecophylla tameiameia* (HINHP Database 2000; Wagner *et al.* 1999; J. Lau, *in litt.* 2001).

Information on threats that may have affected *Isodendron pyrifolium* on Molokai is unknown (Service 1996a).

*Mariscus fauriei* (NCN)

*Mariscus fauriei*, a member of the sedge family (Cyperaceae), is a short-lived perennial plant with somewhat enlarged underground stems and three-angled, single or grouped aerial stems 10 to 50 cm (4 to 20 in) tall. This species differs from others in the genus in Hawaii by its smaller size and its narrower, flattened, and more spreading spikelets (flower clusters) (Koyama 1999, 59 FR 56333).

Little is known about the life history of this species. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1996b).

Historically, *Mariscus fauriei* was found on east Molokai, Lanai, and Hawaii Island. This species is no longer extant on Lanai. Currently on Molokai, there is one occurrence with 20 to 30 plants above Kamiloloa on State-owned land (GDSI 2000; HINHP Database 2000).

On Molokai, *Mariscus fauriei* typically grows in *Diospyros sandwicensis*-dominated lowland dry forests, often on a lava substrate, at elevations between 436 and 1,120 m (1,430 and 3,673 ft). Associated species include *Peperomia* sp. (ala ala wai nui), *Psydrax odorata*, or *Rauvolfia sandwicensis* (hao) (HINHP Database 2000, Koyama 1999).

The threats to *Mariscus fauriei* on Molokai include predation and habitat degradation by feral goats and axis deer. Because there is only one known occurrence on Molokai, the species is also threatened by the risk of extinction through random environmental events and through reduced reproductive vigor (Service 1996b, 59 FR 56333).

*Marsilea villosa* (ihihihi)

*Marsilea villosa*, a member of the marsilea family (Marsileaceae), is a short-lived perennial aquatic to semi-aquatic fern, similar in appearance to a four-leaved clover. The leaves are borne in pairs along a thin rhizome. A hard sporocarp (hard-walled case containing male and female spores) is borne at the base of a leaf pair. The plant occurs either in scattered clumps or as a dense interwoven mat, depending on the competition with other species for limited habitat resources. The species is the only member of the genus native to Hawaii and is closely related to *Marsilea vestita* (NCN) of the western coast of the United States (Service 1996c).

*Marsilea villosa* requires periodic flooding for spore release and fertilization, then a decrease in water level for the young plants to establish, and finally dry soil for sporocarps to mature. Shading reduces the vigor of *Marsilea villosa*. No other life history information is known for this species (Service 1996c).

*Marsilea villosa* was known historically from Oahu, Molokai, and Niihau. Currently, it is found only on Oahu and Molokai. On Molokai, there are four occurrences with an unspecified number of individuals located at Kamaka ipo, Ilio Point, Kaiehu Point, and from Kao to Mokio on State- and privately owned lands (GDSI 2000, HINHP Database 2000).

On Molokai, *Marsilea villosa* typically occurs in shallow depressions in clay soil or lithified sand dunes overlain with alluvial clay. All reported populations occur at elevations between 125 and 172 m (410 and 564 ft). While *Marsilea villosa* can withstand minimal shading, it appears most vigorous growing in open areas. The associated native vegetation with *Marsilea villosa* on Molokai includes *Centaurium sebaeoides*, *Heteropogon contortus*, *Schiedea globosa*, *Sida fallax*, *Tetramolopium sylvae* (pamakani), or *Waltheria indica* (uhaloa) (Service 1996c).

The threats to *Marsilea villosa* on Molokai are the destruction of natural hydrology; encroachment and competition from naturalized, non-native plants such as *Cenchrus ciliaris* (buffelgrass), *Chamaecrista nictitans*