

*Gouania meyenii* flowers from March to May. Seed capsules develop in about 6 to 8 weeks. Plants appear to live about 10 to 18 years in the wild. Little else is known about the life history of *Gouania meyenii*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1998b).

Historically, *Gouania meyenii* was known only from Oahu. It was discovered on Kauai in 1993. Currently, this species is found on Oahu and on Kauai on State-owned land within the Na Pali Coast State Park and the Na Pali-Kona Forest Reserve. There is a total of three occurrences on Kauai with nine individuals found in Kalalau and Hipalau valleys (GDSI 2000; HINHP Database 2000; Wagner *et al.* 1999; 56 FR 55770).

This species typically grows on rocky ledges, cliff faces, and ridge tops in dry shrubland or *Metrosideros polymorpha* lowland diverse mesic forest at elevations between 375 and 1,179 m (1,231 and 3,867 ft). Associated native plant species include *Bidens* spp., *Carex meyenii*, *Chamaesyce* spp., *Diospyros* spp., *Dodonaea viscosa*, *Eragrostis variabilis*, *Euphorbia haelealeana*, *Hedyotis* spp., *Hibiscadelphus* spp., *Lysimachia* spp., *Melicope pallida*, *Neraudia kauaiensis*, *Nestegis sandwicensis*, *Nototrichium divaricatum*, *Panicum lineale*, *Poa mannii*, *Psychotria* spp., *Senna gaudichaudii* (kolomona), or *Wilkesia gymnoxiphium* (HINHP Database 2000; 56 FR 55770; K. Wood, pers. comm., 2001).

Threats to *Gouania meyenii* on Kauai include competition from the nonnative plants *Melinis minutiflora*, *Psidium cattleianum*, or *Schinus terebinthifolius*; fire; habitat degradation by feral pigs and goats; and the small number of extant populations and individuals (Service 1998b; 56 FR 55770).

#### *Hedyotis cookiana* (awiwi)

*Hedyotis cookiana*, a member of the coffee family (Rubiaceae), is a small shrub with many branches and papery-textured leaves which are fused at the base to form a sheath around the stem. This short-lived perennial species is distinguished from other species in the genus that grow on Kauai by being entirely hairless (Wagner *et al.* 1999).

Little is known about the life history of *Hedyotis cookiana*. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1995).

Historically, *Hedyotis cookiana* was known from the islands of Hawaii, Kauai, Molokai, and Oahu. Currently, it is only known from one occurrence of 60 to 80 individuals on State-owned land within Hono O Na Pali NAR in Waiahuakua Valley on Kauai (GDSI 2000; HINHP Database 2000).

This species generally grows in streambeds or on steep cliffs close to water sources in relict *Metrosideros polymorpha* lowland mesic and lowland wet forest communities at elevations between 119 and 553 m (392 and 1,814 ft). Associated native plant species include *Boehmeria grandis*, *Chamaesyce celastroides* var. *hanapepensis*, *Hibiscus kokio* ssp. *saintjohnianus*, *Machaerina angustifolia*, *Nototrichium sandwicense*, *Pipturus kauaiensis* (mamaki), *Pleomele aurea*, *Pouteria sandwicensis*, *Psydrax odorata*, or *Rauvolfia sandwicensis* (Wagner *et al.* 1999; K. Wood, pers. comm., 2001).

The threats to this species on Kauai are risk of extinction from naturally occurring events, such as landslides or hurricanes, and/or reduced reproductive vigor due to the small number of individuals in the only known population; flooding; competition with nonnative plants; and habitat modification by feral pigs and goats (HINHP Database 2000; Service 1995; 59 FR 9304).

#### *Hibiscus brackenridgei* (mao hau hele)

*Hibiscus brackenridgei*, a short-lived perennial and a member of the mallow family (Malvaceae), is a sprawling to erect shrub or small tree. This species differs from other members of the genus in having the following combination of characteristics: yellow petals, a calyx consisting of triangular lobes with raised veins and a single midrib, bracts attached below the calyx, and thin stipules that fall off, leaving an elliptical scar. Two subspecies are currently recognized, *Hibiscus brackenridgei* ssp. *brackenridgei* and *H. brackenridgei* ssp. *mokuleianus* (Bates 1990).

*Hibiscus brackenridgei* is known to flower continuously from early February through late May, and intermittently at other times of year. Intermittent flowering may possibly be tied to day length. Little else is known about the life history of this plant. Pollination biology, longevity, specific environmental requirements, and limiting factors are unknown (Service 1999).

Historically, *Hibiscus brackenridgei* was known from the islands of Kauai, Oahu, Lanai, Maui, Molokai, Hawaii, and possibly Kahoolawe. Currently, *Hibiscus brackenridgei* ssp.

*mokuleianus* is only known from Oahu. *Hibiscus brackenridgei* ssp. *brackenridgei* is currently known from Lanai, Maui, and the island of Hawaii (Bates 1990; HINHP Database 2000; Service 1999).

Nothing is known of the preferred habitat of or native plant species associated with *Hibiscus brackenridgei* on the island of Kauai.

Nothing is known of the threats to *Hibiscus brackenridgei* on the island of Kauai.

#### *Ischaemum byrone* (Hilo ischaemum)

*Ischaemum byrone*, a short-lived perennial member of the grass family (Poaceae), has 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).

Additional information on the life history of this plant, its reproductive cycles, longevity, specific environmental requirements, and limiting factors is generally unknown (Service 1996).

Historically, *Ischaemum byrone* was reported from Oahu, Molokai, East Maui, Kauai and the island of Hawaii. Currently, this species is found on Molokai, Hawaii, Maui, and recently rediscovered on the north shore of Kauai. On Kauai, there are two occurrences with at least two individuals at Kaweonui Point and Kauapea Beach on privately owned land (HINHP Database 2000; 59 FR 10305).

The habitat of *Ischaemum byrone* is coastal shrubland, near the ocean among rocks and seepy cliffs at elevations between 0 and 297 m (0 and 975 ft). Associated native plant species include *Bidens* spp., *Chamaesyce celastroides*, *Fimbristylis cymosa*, *Lipochaeta succulenta*, *Lysimachia mauritiana*, or *Scaevola sericea* (HINHP Database 2000; K. Wood, pers. comm., 2001).

Threats to *Ischaemum byrone* include the invasion of nonnative plants, fire, grazing and browsing by feral goats and pigs. Disturbance incurred from these ungulates further promotes the introduction and establishment of nonnative weeds. Some populations are also threatened from residential development (HINHP Database 2000; Service 1996; 59 FR 10305).

#### *Isodendron laurifolium* (aupaka)

*Isodendron laurifolium*, a member of the violet family (Violaceae), is a slender, erect shrub with few branches. The short-lived perennial species is distinguished from others in the genus