

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 (leaf bracts) 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 *H. brackenridgei*. Pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1999; 59 FR 56333).

Historically, *Hibiscus brackenridgei* was known from the islands of Kauai, Oahu, Lanai, Maui, Molokai, Kahoolawe, and Hawaii. Currently, *H. brackenridgei* ssp. *mokuleianus* is known from Oahu and from undocumented observations on Kauai. *Hibiscus brackenridgei* ssp. *brackenridgei* is currently known from Lanai, Maui, and Hawaii. On Maui, *H. brackenridgei* ssp. *brackenridgei* is found in 5 occurrences, containing 40 individuals, on State (Lihau section of West Maui NAR and DHHL) and privately owned lands at Lihau, Kaonohua, Keokea, and near Puu O Kali (Bates 1990; GDSI 2001; HINHP Database 2001; Service 1999; 59 FR 56333).

*Hibiscus brackenridgei* ssp. *brackenridgei* occurs in lowland dry forest sometimes with *Erythrina sandwicensis* as the dominant tree at elevations between 43 and 771 m (141 and 2,530 ft) and containing one or more of the following associated native plant species: *Achyranthes* spp. (NCN); *Chamaesyce celastroides* var. *lorifolia*; *Chenopodium* spp. (aheahea); *Diospyros* spp.; *Dodonaea viscosa*; *Melanthera lavarum*; *Myoporum sandwicense*; *Nototrichium* spp.; annual *Panicum* spp.; *Psydrax odorata*; *Schiedea salicaria* (NCN); or *Sida fallax* (HINHP Database 2001; Service 1999; 59 FR 56333; R. Hobdy, pers. comm., 2001).

The primary threats to *Hibiscus brackenridgei* ssp. *brackenridgei* on Maui and Kahoolawe are habitat degradation and possible predation by pigs, goats, cattle, axis deer, and rats; competition with nonnative plant species; fire; and extinction caused by random environmental events or

reduced reproductive vigor caused by small occurrence size and the limited number of individuals (Service 1999; 59 FR 56333).

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

*Ischaemum byrone*, a short-lived member of the grass family (Poaceae), is a 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 (slender bristle) and two-flowered; and a two- or three-tiered-branching inflorescence (O'Connor 1999).

Little is known about the life history of *Ischaemum byrone*. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1996a; 59 FR 10305).

Historically, *Ischaemum byrone* was reported from Kauai, Oahu, Molokai, East Maui, and the island of Hawaii. Currently, this species is found on Kauai, Molokai, Maui, and Hawaii. On Maui, there are 6 occurrences with less than 2,000 individuals found on State and privately owned lands at Keopuka Rock, Paupalu Point, Moku Huki, west of Kalahu Point, between Keakulikuli Point and Pukaaulua Point, and Kauiki Head (GDSI 2001; HINHP Database 2001; Service 1996a; 59 FR 10305).

*Ischaemum byrone* grows in close proximity to the ocean, among rocks or on basalt cliffs in windward coastal dry shrubland at elevations between 0 and 190 m (0 and 623 ft) and containing one or more of the following associated native plant species: *Bidens* spp. *Fimbristylis cymosa* (mauu akiaki) or *Scaevola taccada* (HINHP Database 2001; Service 1996a; 59 FR 10305; R. Hobdy, pers. comm., 2001).

The most serious threat to *Ischaemum byrone* is the invasion of nonnative plant species, particularly *Digitaria ciliaris* (Henry's crabgrass), *Ardisia elliptica* (shoebutton ardisia), and *Casuarina equisetifolia* (ironwood). Additionally, fire may pose a threat in areas infested with nonnative grasses, provided enough fuel is present. Other potential threats include grazing and browsing by goats and axis deer. Disturbance incurred from these ungulates further promotes the introduction and establishment of nonnative weeds. Some occurrences are also threatened by residential development (HINHP Database 2001; Service 1996a; 59 FR 10305).

*Isodendron pyriformis* (Wahine noho kula)

*Isodendron pyriformis*, a short-lived perennial of the violet family (Violaceae), is a small, branched shrub with elliptic to lance-shaped leaf blades. The papery-textured blade has moderately hairy veins. Below the petiole are oval, hairy stipules. *Isodendron pyriformis* is distinguished from other species 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 will drop all but the newest leaves. After sufficient rains, the plants produce flowers with seeds ripening one to two months later. Little else is known about the life history of *Isodendron pyriformis*. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1996a; 59 FR 10305).

*Isodendron pyriformis* is known historically from six of the Hawaiian Islands: Niihau, Molokai, Lanai, Oahu, Maui, and the island of Hawaii. Currently, it is only found on the island of Hawaii (GDSI 2001; HINHP Database 2001; Service 1996a; 59 FR 10305; Marie Brueggemann, Service, pers. comm., 2000).

On Maui, *Isodendron pyriformis* occurred in dry shrubland at elevations between 54 and 557 m (177 and 1,827 ft) with one or more of the following associated native plant species: *Capparis sandwichiana*; *Dodonaea viscosa*; *Myoporum sandwicense*; or *Psydrax odorata* (Service 1996a; 59 FR 10305; R. Hobdy and J. Lau, pers. comm., 2001).

Nothing is known of the threats to *Isodendron pyriformis* on the island of Maui (Service 1996a; 59 FR 10305).

#### *Lysimachia lydgatei* (NCN)

*Lysimachia lydgatei*, a short-lived perennial member of the primrose family (Primulaceae), is a sprawling, branched shrub with stems from 1 to 1.3 m (3 to 4 ft) long. This species is distinguished from others in the genus by the dense hairs on both the upper and lower surfaces of mature leaves (Wagner *et al.* 1999).

Little is known about the life history of *Lysimachia lydgatei*. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1997; 57 FR 20772).

*Lysimachia lydgatei* was known historically from a gulch behind