

its distinct flower clusters and corolla (Constance and Affolter 1999).

Reproduction occurs year-round, with flowers and fruits found throughout the year. Self-pollination is assumed to occur since viable seeds have been produced by isolated individuals. Pollinators have not been observed, but insect pollination is likely. Dispersal mechanisms are unknown (Service 1995).

Historically, *Munroidendron racemosum* was known from scattered locations throughout the island of Kauai. Occurrences are now known from Waiahuakua, Pohakuao, the left and right branches of Kalalau Valley, Nakeikionaiwi Valley, Awaawapuhi Valley spring, Honopu Valley, Nualolo Valley, Poomau Valley, Kawaiiki Valley, Koaie Canyon, Nonou, Haupu, and Keopaweo. There are currently 17 known occurrences with approximately 59 to 99 individuals on State (Hono o Na Pali NAR, Na Pali Coast State Park, Na Pali-Kona Forest Reserve, Nonou Forest Reserve, and Puu Ka Pele Forest Reserve) and privately owned lands (GDSI 2000; HINHP Database 2000).

Munroidendron racemosum is typically found on steep exposed cliffs or on ridge slopes in coastal to lowland mesic forests at elevations between 6 and 979 m (19 and 3,213 ft). Associated plant species include *Bobea brevipes*, *Brighamia insignis*, *Canavalia napaliensis* (awikiwiki), *Diospyros hillebrandii*, *Diospyros sandwicensis*, *Nestegis sandwicensis*, *Pisonia sandwicensis* (aulu), *Pisonia umbellifera* (papala kepau), *Pleomele aurea*, *Pouteria sandwicensis*, *Psychotria* spp., *Psydrax odorata*, *Rauvolfia sandwicensis*, *Schiedea* spp. (NCN), *Sida fallax*, or *Tetraplasandra* spp. (Gagne and Cuddihy 1999; HINHP Database 2000; 59 FR 9304; K. Wood, pers. comm., 2001).

The threats to *Munroidendron racemosum* are competition with nonnative plant species, such as *Aleurites moluccana*, *Lantana camara*, *Leucaena leucocephala* (koa haole), or *Psidium guajava*; habitat degradation by feral goats and fruit predation by rats; introduced insects of the long-horned beetle family (Cerambycidae); fire; extinction from naturally occurring events, such as landslides or hurricanes; and reduced reproductive vigor (HINHP Database 2000; Service 1995; 59 FR 9304).

Myrsine linearifolia (kolea)

Myrsine linearifolia, a member of the myrsine family (Myrsinaceae), is a branched shrub. This long-lived perennial species is distinguished from others of the genus by the shape, length,

and width of the leaves, length of the petals, and number of flowers per cluster (Wagner *et al.* 1999).

Little is known about the life history of *Myrsine linearifolia*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1998a).

Historically, *Myrsine linearifolia* was found at scattered locations on Kauai: Olokele Valley, Kalualea, Kalalau Valley, Kahuamaa Flat, Limahuli-Hanakapi'ai Ridge, Koaie Stream, Pohakuao, Namolokama summit plateau, and Haupu. There are currently 12 occurrences with approximately 490 to 564 individuals on State (Alakai Wilderness Preserve and Na Pali Coast State Park) and privately owned lands. The populations are found in Limahuli Valley, Alealau, the left branch of Kalalau Valley, Puu O Kila, Koaie Canyon, Namolokama, and Kapalaoa (GDSI 2000; HINHP Database 2000; K. Wood, *in litt.* 1999).

Myrsine linearifolia typically grows at elevations between 105 and 1,380 m (346 and 4,526 ft) in diverse mesic or wet lowland or montane *Metrosideros polymorpha* forest with *Cheiodendron* spp. or *Dicranopteris linearis* as co-dominant species. Plants growing in association with this species include *Bobea brevipes*, *Cryptocarya mannii*, *Dubautia* spp., *Eurya sandwicensis* (anini), *Freycinetia arborea*, *Hedyotis terminalis*, *Lysimachia glutinosa*, *Machaerina angustifolia*, *Melicope* spp., *Myrsine* spp., *Nothoestrum* spp. (aiea), *Psychotria* spp., *Sadleria pallida*, or *Syzygium sandwicensis* (HINHP Database 2000; 61 FR 53070; K. Wood, pers. comm., 2001).

Competition with nonnative plants, such as *Erigeron karvinskianus*, *Kalanchoe pinnata* (air plant), *Lantana camara*, *Psidium cattleianum*, *Rubus argutus*, and *Rubus rosifolius* and habitat degradation by feral pigs and goats are the major threats to *Myrsine linearifolia* (61 FR 53070).

Nothoestrum peltatum (aiea)

Nothoestrum peltatum, a member of the nightshade family (Solanaceae), is a small tree with ash-brown bark and woolly stems. The usually peltate (leaf stem attached to the center) leaves and shorter leaf stalks separate this species from others in the genus (Symon 1999).

Although plants of this long-lived perennial species have been observed flowering, they rarely set fruit. This could be the result of a loss of pollinators, reduced genetic variability, or an inability to fertilize itself. Little else is known about the life history of

Nothoestrum peltatum. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (59 FR 9304).

Historically, *Nothoestrum peltatum* was known from Kauai at Kumuwela, Kaholuamanu, and the region of Nualolo. This species is now known from a total of 10 occurrences with 20 individuals, located at Kahuamaa Flats, Awaawapuhi Trail, Awaawapuhi Valley, Kawaiula Valley, and Makaha Valley on State-owned land within the Kokee State Park, Kuia NAR, Na Pali Coast State Park, Na Pali-Kona Forest Reserve, and Puu Ka Pele Forest Reserve (GDSI 2000; HINHP Database 2000; K. Wood, *in litt.* 1999).

This species generally grows in rich soil on steep slopes in mesic or wet forest dominated by *Acacia koa* or a mixture of *A. koa* and *Metrosideros polymorpha*, at elevations between 581 and 1,290 m (1,906 and 4,232 ft). Associated native plants include *Alphitonia ponderosa*, *Antidesma* spp., *Bobea brevipes*, *Broussaisia arguta*, *Cheiodendron trigynum*, *Claoxylon sandwicense*, *Coprosma* spp., *Cryptocarya mannii*, *Dianella sandwicensis*, *Dicranopteris linearis*, *Diplazium sandwichianum*, *Dodonaea viscosa*, *Elaeocarpus bifidus*, *Hedyotis terminalis*, *Ilex anomala*, *Melicope anisata*, *M. barbigera*, *M. haupuensis*, *Perrottetia sandwicensis*, *Pleomele aurea*, *Pouteria sandwicensis*, *Psychotria greenwelliae*, *Psychotria mariniana*, *Tetraplasandra kawaiensis*, or *Xylosma* spp. (HINHP Database 2000; K. Wood, pers. comm., 2001).

Competition with nonnative plants (such as *Erigeron karvinskianus*, *Lantana camara*, *Passiflora tarminiana*, or *Rubus argutus*), and habitat degradation by feral pigs, deer, and red jungle fowl (*Gallus gallus*) constitute the major threats to *Nothoestrum peltatum*. This species is also threatened by fire, risk of extinction from naturally occurring events (e.g., landslides or hurricanes), and reduced reproductive vigor due to the small number of existing individuals (HINHP Database 2000; 59 FR 9304).

Panicum niihauense (lau ehū)

Panicum niihauense, a member of the grass family (Poaceae), is a perennial bunchgrass with unbranched culms (aerial stems). This short-lived perennial species is distinguished from others in the genus by the erect inflorescence branches and the densely clustered spikelets (Davidse 1999).

Little is known about the life history of this species. Reproductive cycles,