

Plants have been observed flowering in February. Little else is known about the life history of *Schiedea stellarioides*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1995).

Historically, *Schiedea stellarioides* was found at the sea cliffs of Hanakapiai Beach, Kaholuamano-Opaewela region, the ridge between Waialae and Nawaimaka Valleys, and Haupu Range on the island of Kauai. Currently it is found in Kawaiiki Valley and Waialae Falls within the Na Pali-Kona Forest Reserve. There is a total of three occurrences with 1,500 individuals on State-owned land (GDSI 2000; HINHP Database 2000; K. Wood, *in litt.* 1999).

Schiedea stellarioides is found on steep slopes in closed *Acacia koa*-*Metrosideros polymorpha* lowland to montane mesic forest or shrubland at elevations between 376 and 1,251 m (1,135 and 4,102 ft). Associated native plant species include *Alsinidendron viscosum*, *Artemisia australis*, *Bidens cosmoides*, *Chenopodium* spp. (aheahea), *Dianella sandwicensis*, *Dodonaea viscosa*, *Leptecophylla tameiameia*, *Mariscus* spp., *Melicope* spp., *Nototrichium sandwicense*, *Pipturus* spp., *Syzygium sandwicensis*, or *Zanthoxylum dipetalum* (HINHP Database 2000; 61 FR 53070; K. Wood, pers. comm., 2001).

The primary threats to this species include habitat degradation and herbivory by feral pigs and goats, competition with the nonnative plants *Melinis minutiflora* and *Rubus argutus*, and a risk of extinction of the two remaining populations from naturally occurring events, such as landslides or hurricanes (61 FR 53070).

Stenogyne campanulata (NCN)

Stenogyne campanulata, a member of the mint family (Lamiaceae), is a vine with four-angled, hairy stems. A short-lived perennial species, *Stenogyne campanulata* is distinguished from closely related species by its large and very broadly bell-shaped calyces that nearly enclose the relatively small, straight corollas, and by small calyx teeth that are half as long as wide (Weller and Sakai 1999).

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

Stenogyne campanulata is known from three occurrences with 66 individuals which were originally

discovered in the left branch of Kalalau Valley on State-owned land in the Na Pali Coast State Park (GDSI 2000; HINHP Database 2000).

Stenogyne campanulata grows on the rock face of a nearly vertical, north-facing cliff in diverse lowland or montane mesic forest at elevations between 335 and 1,290 m (1,100 and 4,232 ft). The associated native plant species include *Lepidium serra*, *Lobelia niihauensis*, *Lysimachia* spp., *Melicope pallida*, *Metrosideros polymorpha*, *Neraudia kauaiensis*, *Nototrichium divaricatum* (kului), *Poa mannii*, *Remya montgomeryi*, or *Wilkesia gymnoxiphium* (Weller and Sakai 1999; 57 FR 20580; K. Wood, pers. comm., 2001).

The restriction of this species to virtually inaccessible cliffs suggests that herbivory by feral goats may have eliminated it from more accessible locations. Goat herbivory and habitat degradation remain the primary threat. Feral pigs have disturbed vegetation in the vicinity of these plants. Erosion caused by feral goats or pigs exacerbates the potential threat of landslides. *Erigeron karvinskianus* and *Rubus argutus* are the primary nonnative plants threatening *Stenogyne campanulata*. The small number of individuals and its restricted distribution are serious potential threats to the species. The limited population size may depress reproductive vigor, or a single environmental disturbance, such as a landslide, could destroy all known extant individuals (57 FR 20580).

Viola helenae (NCN)

Viola helenae is a small, unbranched perennial subshrub with an erect stem in the violet family (Violaceae). It is distinguished from other Kauai species of *Viola* by the leaf shape and width, woody stems, and strictly chasmogamous (open at maturity for access by pollinators) flowers (Wagner *et al.* 1999).

Little is known about the life history of *Viola helenae*. Wagner *et al.* (1999) state that the flowers are all chasmogamous and not cleistogamous (remain closed and self-fertilize in the bud) as in certain other violet species. Therefore, it is likely that its flowers require pollination by insects for seed set. Mature flowering plants do produce seed; however, seed viability may be low and microhabitat requirements for germination and growth may be very specific. Seeds planted at NTBG on Kauai failed to germinate, although they may not have been sufficiently mature when collected and violet seeds are often very slow to germinate. The seeds

are jettisoned when the capsule splits open, as in most species of the genus (Service 1994).

Historically, *Viola helenae* was known from four populations, two along either branch of Wahiawa Stream on Kauai. Currently, there is one known occurrence with a total of 137 plants, on privately owned land within the Wahiawa drainage (GDSI 2000; HINHP Database 2000; Service 1994; 56 FR 47695).

This species is found in *Metrosideros polymorpha*-*Dicranopteris linearis* lowland wet forest or *M. polymorpha*-*Cheirodendron* wet forest growing on stream drainage banks or adjacent valley bottoms in light to moderate shade at elevations between 522 and 1,006 m (1,712 and 3,301 ft). Associated native plant species include *Antidesma platyphyllum* var. *hillebrandii*, *Broussaisia arguta*, *Dicranopteris linearis*, *Diplazium sandwichianum*, *Dubautia* spp., *Freycinetia arborea*, *Hesperomannia lydgatei*, *Melicope* spp., or *Pritchardia* spp. (HINHP Database 2000; Service 1994; K. Wood, pers. comm., 2001).

Threats to *Viola helenae* include competition from nonnative plant species, including *Elephantopus mollis*, *Erechtites valerianifolia*, *Melastoma candidum*, *Psidium cattleianum*, *Rubus rosifolius*, *Stachytarpheta australis*, various nonnative grasses, or potentially *Melaleuca quinquenervia*; trampling and browsing damage by feral pigs; landslides and erosion; and hurricanes (Service 1994; 56 FR 47695).

Viola kauaiensis var. *wahiawaensis* (nani waialeale)

Viola kauaiensis, a member of the violet family (Violaceae), is a short-lived perennial herb with upward curving or weakly rising, hairless, lateral stems. The species is distinguished from others of the genus by its non-woody habit, widely spaced kidney-shaped leaves, and by having two types of flowers: conspicuous, open flowers and smaller, unopened flowers. Two varieties of the species are recognized, both occurring on Kauai: var. *kauaiensis* and var. *wahiawaensis*. *Viola kauaiensis* var. *wahiawaensis* is distinguished by having broadly wedge-shaped leaf bases (Service 1998a; Wagner *et al.* 1999).

Viola kauaiensis var. *wahiawaensis* has been observed in flower in December. Little else is known about the life history of *V. kauaiensis* var. *wahiawaensis*. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1998a).