

found on federally owned land along Palikea Stream in Haleakala National Park within the East Maui Watershed Partnership (GDSI 2001; HINHP Database 2001; Service 1997; 59 FR 62346; K. Wood, *in litt.* 1999).

This species typically grows in *Acacia koa* and *Metrosideros polymorpha*-dominated montane wet forests along streams at elevations between 753 and 1,537 m (2,469 and 5,042 ft). Associated plant species include: *Broussaisia arguta*; *Cheirodendron trigynum*; *Dicranopteris linearis*; *Dubautia plantaginea*; *Hedyotis hillebrandii*; *Labordia hedyosmifolia* (kamakahala); *Machaerina angustifolia* (uki); *Perrottetia sandwicensis*; or *Wikstroemia oahuensis* (akia) (HINHP Database 2001; Service 1997; 59 FR 62346; R. Hobdy, pers. comm., 2001).

Major threats to the only known population are habitat degradation and damage to plants by feral pigs and reduced reproductive vigor and/or extinction caused by random environmental events. Competition with introduced plants such as *Clidemia hirta*, *Paspalum conjugatum*, *Psidium cattleianum* and *Rubus rosifolius* (thimbleberry); seed predation by rats; and susceptibility to black twig borer are also threats to this species. Habitat degradation and damage to plants by feral goats and axis deer are potential threats if the integrity of the fence currently surrounding the occurrence is compromised (HINHP Database 2001; Service 1997; 59 FR 62346; K. Wood, *in litt.* 1999).

Remya mauiensis (NCN)

Remya mauiensis is a short-lived perennial member of the aster family (Asteraceae). The genus *Remya* is endemic to the Hawaiian Islands. This species is a small perennial shrub, about 90 cm (3 ft) tall, with many slender, sprawling, or scandent (climbing) to weakly erect branches. It is distinguished from the other two members of the genus by its hairy stems and foliage, leaf shape, and length of the petiole (Wagner *et al.* 1999).

Little is known about the life history of *Remya mauiensis*. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1997; 56 FR 1450).

Remya mauiensis was collected twice on West Maui by William Hillebrand between 1851 and 1871, and again in 1920 by Charles Forbes, also on West Maui. It was thought to be extinct until its rediscovery in 1971 by L.E. Bishop, W. Gagne, and S. Montgomery on the slopes of Manawainui Gulch, West

Maui. Currently, *R. mauiensis* is known from five occurrences on State-owned land within the West Maui Mountains Watershed Partnership at Paupau, Kokuula, Kanaulaiki, and Maunawainui Gulch in the Panaewa section of the West Maui NAR, the West Maui Forest Reserve, and the Manawainui Plant Sanctuary. Because of the sprawling habit of this species, and the often dense growth of the surrounding vegetation, it is difficult to determine the exact number of individuals; however, there is an estimated total of 21 individuals (GDSI 2001; HINHP Database 2001; Service 1997; 56 FR 1450).

Remya mauiensis grows chiefly on steep, north or northeast-facing slopes in mixed mesophytic forests or *Metrosideros polymorpha* montane wet forests containing one or more of the following associated native species: *Alyxia oliviformis* (maile); *Diospyros sandwicensis* (lama); *Diplazium sandwichianum*; *Dodonaea viscosa*; *Leptecophylla tameiameia*; *Lysimachia remyi*; *Melicope* spp.; *Microlepia strigosa* (palapalai); *Myrsine lessertiana* (kolea lau nui); *Nestegis sandwicensis*; *Pleomele auwahiensis*; *Psychotria mariniana*; *Wikstroemia* spp. (akia); or *Xylosma hawaiiense* at elevations between 400 and 1,228 m (1,312 and 4,029 ft) (HINHP Database 2001; Service 1997; 56 FR 1450; R. Hobdy, pers. comm., 2001).

This species is threatened by extinction caused by random catastrophic environmental events by virtue of the extremely small size of the occurrences coupled with their limited distribution. The limited gene pool may depress reproductive vigor, or a single environmental disturbance could destroy a significant percentage of the known individuals. However, the primary threat to this species is the loss and degradation of its habitat caused by the introduction of nonnative plants, such as *Adiantum hispidulum* (rough maidenhair fern), *Rubus rosifolius*, *Schinus terebinthifolius* (Christmas berry), or *Tibouchina herbacea*; human activities; and feral goats and pigs (Service 1997; 56 FR 1450).

Schiedea haleakalensis (NCN)

Schiedea haleakalensis, a short-lived perennial of the pink family (Caryophyllaceae), is a hairless shrub, with slightly fleshy, narrow leaves and a single vein. Flowers are in clusters at the ends of the branches. This species differs from other species of the genus on East Maui by its crowded, hairless inflorescence composed of bisexual flowers (Wagner *et al.* 1999).

Schiedea haleakalensis is gynodioecious (individuals either have

only female flowers or only bisexual flowers) and so likely requires cross-pollination by small insects. Small, short-flighted flies and moths have been observed visiting flowers. Fruits and seeds have been observed from August through September. Little else is known about the life history of *S.*

haleakalensis. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1997; 57 FR 20772).

Due to the lack of early collections or sightings, the historical range of *Schiedea haleakalensis* is unknown. This species is known only from Leleiwī Pali and Kaupo Gap in Haleakala National Park within the East Maui Watershed Partnership. The two occurrences are estimated to contain a total of 100 to 200 individuals, which together extend over a total area of 11 ha (28 ac) (GDSI 2001; HINHP Database 2001; Service 1997; 57 FR 20772).

Schiedea haleakalensis typically grows in rock cracks on sheer cliffs adjacent to barren lava and subalpine shrublands and grasslands with cinder, weathered volcanic ash, or in bare lava substrate with little or no soil development and periodic freezing temperatures, and containing one or more of the following associated native plant species: *Artemisia mauiensis* (hinahina), *Bidens micrantha* (kookoolau), *Dubautia menziesii*, *Leptecophylla tameiameia*, *Vaccinium reticulatum*, or *Viola chamissoniana* (pamakani) at elevations between 1,678 and 2,434 m (5,505 and 7,986 ft) (HINHP Database 2001, Service 1997, 57 FR 20772 R. Hobdy, pers. comm., 2001).

The greatest threats to *Schiedea haleakalensis* are fire and other catastrophic events that could severely impact the species due the small number and restricted distribution of remaining individuals and occurrences (Service 1997; 57 FR 20772).

Tetramolopium capillare (Pamakani)

Tetramolopium capillare, a short-lived perennial of the sunflower family (Asteraceae), is a sprawling shrub with stems measuring 50 to 80 cm (20 to 31 in) long and covered with many glands when young. *Tetramolopium capillare* differs from other species of the genus by its very firm leaves with edges rolled under, its solitary flower heads, the color of its disk florets, and its shorter pappus. It differs from *T. remyi*, with which it sometimes grows, by its more sprawling habit and the shorter stalks of its smaller flower heads (Lowrey 1999).

Little is known about the life history of *Tetramolopium capillare*. Flowering