Oahu's Waianae Mountains. Between 220 and 330 individuals are scattered on slopes and ridges from Kaluakauila Gulch to Lualualei Valley—1 population on private land in TNCH's Honouliuli Preserve; 3 populations on City and County of Honolulu land; 3 populations on State land, 1 of which is on land leased by the DOD for Makua Military Reservation; and 4 populations on Federal land (3 on Lualualei Naval Magazine and 1 on Schofield Barracks Military Reservation) (HHP 1994m1, 1994m5, 1994m8, 1994m9, 1994m11 to 1994m17). Schiedea hookeri is usually found in diverse mesic or dry lowland forest, often with óhiá or lama dominant, between 365 and 790 m (1,200 and 2,600 ft) elevation. One population is reported at an elevation of 850 to 900 m (2,800 to 2,950 ft). Associated plant taxa include áálií, Artemisia australis (áhinahina), Bidens sp. (koókoólau), Carex meyenii, and *Éragrostis grandis* (kawelu) (HHP 1994m5, 1994m6, 1994m9, 1994m11 to 1994m17).

The primary threats to *Schiedea hookeri* are habitat degradation and/or destruction by feral goats and pigs and competition with alien plant taxa. The Kaluakauila Gulch population is also potentially threatened by fire and military activities (HHP 1994m5, 1994m8, 1994m11 to 1994m13, 1994m15 to 1994m17).

Schiedea kauaiensis was first collected by Otto Degener and Amy Greenwell in 1952. Degener and E.E. Sherff considered this collection from Kauai to be a new variety of *Schiedea* nuttallii, previously known only from Oahu, and named it Schiedea nuttallii var. pauciflora (Sherff 1952). In 1988, St. John elevated this variety to species level, naming it Schiedea kauaiensis. Wagner et al. (1990) recombined this species with Schiedea nuttallii, without recognizing any varieties. The authorities on this endemic Hawaiian genus, Stephen Weller, Ann Sakai, and Warren Wagner, now accept Schiedea kauaiensis as a distinct species (Stephen Weller, University of California, Irvine, in litt. 1994). Weller, Sakai, and Wagner consider Schiedea wichmanii St. John to be synonymous with Schiedea kauaiensis (S. Weller, in litt. 1994).

Schiedea kauaiensis, a member of the pink family, is a generally hairless, erect subshrub, with stems normally 0.3 to 1.5 m (1 to 5 ft) long. The green, sometimes purple-tinged leaves are opposite, narrowly egg-shaped or lance-shaped to narrowly or broadly elliptic, up to 13 cm (5 in.) long, and 3.5 cm (1.4 in.) wide. The petalless, perfect flowers are borne in open branched inflorescences, moderately covered with

fine, short, curly, white hairs. The lance-shaped sepals, 2 to 3.8 mm (0.08 to 1.5 in.) long, are green or sometimes purple-tinged. The fruit is a capsule. The round to kidney-shaped seeds are about 2 mm (0.08 in.) long. This species is distinguished from others in this endemic Hawaiian genus by its habit, larger leaves, the hairiness of the inflorescence, the number of flowers in each inflorescence, larger flowers, and larger seeds (Wagner et al. 1990; S. Weller, *in litt.* 1994).

Historically Schiedea kauaiensis was known from the northwestern side of Kauai, from Papa'a to Mahanaloa. It was thought to be extinct until the 2 currently known populations were found, which total about 15 plants. Both populations occur on State land—the Mahanaloa Valley population within Kuia NAR and the Kalalau Valley population within Na Pali Coast State Park. Schiedea kauaiensis typically grows in diverse mesic forest on steep slopes. Associated plant taxa include Psychotria hexandra (kopiko), Exocarpus luteolus (heau), lama, the federally threatened Peucedanum sandwicense (makou), and the proposed Euphorbia haeleeleana (ákoko) (HHP 1994n18; HPCC 1992c2; S. Weller, in litt. 1994).

Threats to Schiedea kauaiensis include habitat degradation and/or destruction by feral pigs, goats, and deer; competition from several alien plant taxa; landslides; and a risk of extinction from naturally occurring events and/or reduced reproductive vigor due to the low number of individuals in only two known populations (HHP 1994n18, HPCC 1992c2).

In 1834, Thomas Nuttall collected a specimen of *Schiedea nuttallii* in the Koolau Mountains of Oahu. Ten years later, William Hooker described this species (Mill *et al.* 1988, Nagata 1980). Other published names considered synonymous with *Schiedea nuttallii* include *S. nuttallii* var. *lihuensis* and *S. oahuensis* (Wagner *et al.* 1990; S. Weller, *in litt.* 1994).

Schiedea nuttallii, a member of the pink family, is a generally hairless, erect subshrub, with stems normally 0.3 to 1.5 m (1 to 5 ft) long, and internodes usually 0.8 to 4 cm (0.3 to 1.6 in.) long. The green, sometimes purple-tinged leaves are opposite, narrowly egg-shaped or lance-shaped to narrowly or broadly elliptic, 5 to 10 cm (2 to 4 in.) long, and 1.5 to 2 cm (0.6 to 0.8 in.) wide. The petalless, perfect flowers are borne in open branched inflorescences, normally 20 to 25 cm (8 to 10 in.) long. The lance-shaped sepals, 2 to 3.8 mm (0.08 to 1.5 in.) long, are green or

sometimes purple-tinged. The fruit is a capsule. The round to kidney-shaped seeds are about 1 mm (0.04 in.) long. This species is distinguished from others in this endemic Hawaiian genus by its habit, length of the stem internodes, length of the inflorescence, number of flowers per inflorescence, smaller leaves, smaller flowers, and smaller seeds (Wagner *et al.* 1990; S. Weller, *in litt.* 1994).

Historically Schiedea nuttallii was known from scattered locations on southeastern Kauai, Oahu, Molokai, and Maui (HHP 1994n1 to 1994n17; HPCC 1992c1; S. Weller, in litt. 1994). One population of Schiedea nuttallii is found on Kauai east of Haupu Peak on private land (HHP 1994n10, HPCC 1992c1). Five populations are found on Oahu-Kahanahaiki Valley, on State land leased by the DOD for Makua Military Reservation; two populations within the State owned Pahole NAR; and Ekahanui Gulch, on private land in TNCH's Honouliuli Preserve (HHP 1994n2 to 1994n4, 1994n14, 1994n17). The statewide total of 6 populations comprises fewer than 75 individuals of this species, with between 10 and 50 individuals on Kauai and about 25 on Oahu (HHP 1994n2 to 1994n4, 1994n10, 1994n14, 1994n17; HPCC 1992c1; S. Weller, in litt. 1994). Schiedea nuttallii typically grows in diverse lowland mesic forest, often with 'ohi'a dominant, between 415 and 730 m (1,360 and 2,400 ft) elevation. The population on Kauai is found at 790 m (2,590 ft) elevation. Associated plant taxa include hame, kopiko, olomea, papala kepau, and Hedyotis acuminata (au) (HHP 1994n2 to 1994n4, 1994n10, 1994n14, 1994n17, 1994n18; HPCC 1992c1).

Habitat degradation and/or destruction by feral ungulates such as pigs and goats, competition with several alien plant taxa, landslides, potential fire, potential military activities, and a risk of extinction from naturally occurring events and/or reduced reproductive vigor, due to the small number of populations and individuals, seriously threaten *Schiedea nuttallii* (HHP 1994n2, 1994n17; HPCC 1992c1; C. Russell, pers. comm. 1994).

Previous Federal Action

Federal action on these plants began when the Smithsonian Institution's report on plants considered to be endangered or threatened in the United States, designated as House Document No. 94–51, was presented to Congress on January 9, 1975. Seven of the 14 proposed taxa were considered to be endangered in that document and 2 were considered to be threatened. On July 1, 1975, the Service published a