

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Platydesma remyi*

COMMON NAME: No common name

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: February 2003

STATUS/ACTION (Check all that apply):

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: ____

90-day positive - FR date: ____

12-month warranted but precluded - FR date: ____

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP: ____

New LP: ____

Latest date species became a Candidate:

Candidate removal: Former LP: ____ (Check only one reason)

A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

F - Range is no longer a U.S. territory.

M - Taxon mistakenly included in past notice of review.

N - Taxon may not meet the Act's definition of "species."

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Plant, Rutaceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Hawaii

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Hawaii

LEAD REGION CONTACT (Name, phone number): Scott McCarthy, 503-231-6131

LEAD FIELD OFFICE CONTACT (Office, name, phone number): Pacific Islands (Ecological Services), Christa Russell, 808-541-3441

BIOLOGICAL INFORMATION (Describe habitat, historic vs. current range, historic vs. current population estimates (# populations, #individuals/population), etc.):

This species is known from two populations totaling less than 100 individuals. The Kohala Mountain population is scattered in wet, low stature forest above 914 meters (m) (3,000 feet (ft)), while the Hamakua population is found between 610 m (2,000 and 3,000 ft) in wet forest (Perlman and Wood 1996; Hawaii Heritage Program 1992).

THREATS (Describe threats in terms of the five factors in section 4 of the ESA providing specific, substantive information. If this is a removal of a species from candidate status or a change in listing priority, explain reasons for change):

A. The present or threatened destruction, modification, or curtailment of its habitat or range. *Platydesma remyi* is highly and imminently threatened by cattle and feral pigs that adversely modify habitat (Perlman and Wood 1996). Cattle from poorly-fenced ranching operations intrude into the western border of the Kohala forest (Bryon Stevens, Hawaii Department Land and Natural Resources, pers. comm., 1996), and feral pigs have severely degraded the forest understory in both the Kohala Mountains and the Hamakua district.

Pig damage to native forest is being monitored in a portion of the Kohala range of *Platydesma remyi*. The data show widespread and severe disturbance in most areas (B. Stevens, pers. comm., 1996).

As early as 1778, European explorers introduced livestock, which became feral, increased in number and range, and caused significant changes to the natural environment of Hawaii. Past and present activities of introduced alien mammals are the primary factors in altering and degrading vegetation and habitats on the Hawaiian islands. Feral ungulates trample and eat native vegetation and disturb and open areas. This causes erosion and allows the entry of alien plant taxa (Cuddihy and Stone 1990; Wagner *et al.* 1990). The pig (*Sus scrofa*) is originally native to Europe, northern Africa, Asia Minor, and Asia. European pigs, introduced to Hawaii by Captain James Cook in 1778, became feral and invaded forested areas, especially wet and mesic forests and dry areas at high elevations. They are currently present on Hawaii and four other islands, and inhabit rain forests and grasslands. Pig hunting is allowed on all islands either year-round or during certain months, depending on the area (Hawaii Department of Land and Natural Resources (DLNR) n.d.-a, n.d.-b, n.d.-c, 1990). While rooting in the ground in search of the invertebrates and plant material they eat, feral pigs disturb and destroy vegetative cover, trample plants and seedlings, and threaten forest regeneration by damaging seeds and seedlings. They disturb soil and cause erosion, especially on slopes. Alien plant seeds are dispersed on their hooves and coats as well as through their digestive tracts, and the disturbed soil is fertilized by their feces, helping these plants to establish. Pigs are a major vector in the spread of many introduced plant species (Cuddihy and Stone 1990; Medeiros *et al.* 1986; Scott *et al.* 1986; Smith 1985; Stone 1985; Tomich 1986; Wagner *et al.* 1990).

Cattle (*Bos taurus*), the wild progenitor of which was native to Europe, northern Africa, and southwestern Asia, were introduced to the Hawaiian Islands in 1793. Large feral herds developed as a result of restrictions on killing cattle decreed by King Kamehameha I. While small cattle ranches were developed on Kauai, Oahu, and West Maui, very large ranches of tens of thousands of acres were created on East Maui and Hawaii. Much of the land used in these private enterprises was leased from the State or was privately owned and considered Forest Reserve and/or Conservation District land. Feral cattle can presently be found on the island of Hawaii, and ranching is still a major commercial activity there. Hunting of feral cattle is no

longer allowed in Hawaii (DLNR 1985). Cattle eat native vegetation, trample roots and seedlings, cause erosion, create disturbed areas into which alien plants invade, and spread seeds of alien plants in their feces and on their bodies. The forest in areas grazed by cattle becomes degraded to grassland pasture, and plant cover is reduced for many years following removal of cattle from an area. Several alien grasses and legumes purposely introduced for cattle forage have become noxious weeds (Cuddihy and Stone 1990; Tomich 1986).

B. Overutilization for commercial, recreational, scientific, or educational purposes.

None known.

C. Disease or predation.

None known.

D. The inadequacy of existing regulatory mechanisms.

Platydesma remyi is not protected by Federal or State regulatory mechanisms. The State of Hawaii does not recognize this species as endangered until it is Federally listed as endangered.

E. Other natural or manmade factors affecting its continued existence.

Platydesma remyi is threatened by numerous alien plant species (Perlman and Wood 1996). The original native flora of Hawaii consisted of about 1,000 species, 89 percent of which were endemic. Of the total native and naturalized Hawaiian flora of 1,817 species, 47 percent were introduced from other parts of the world and nearly 100 species have become pests (Smith 1985; Wagner *et al.* 1990). Naturalized, introduced species compete with native plants for space, light, water, and nutrients (Cuddihy and Stone 1990). Some of these species were brought to Hawaii by various groups of people, including the Polynesian immigrants, for food or cultural reasons. Plantation owners, alarmed at the reduction of water resources for their crops caused by the destruction of native forest cover by grazing feral animals, supported the introduction of alien tree species for reforestation. Ranchers intentionally introduced pasture grasses and other species for agriculture, and sometimes inadvertently introduced weed seeds as well. Other plants were brought to Hawaii for their potential horticultural value (Cuddihy and Stone 1990; Scott *et al.* 1986).

Particularly serious threats to *Platydesma remyi* are kahili ginger (*Hedychium gardnerianum*) in Kohala and banana poka (*Passiflora mollissima*) in both Kohala and Hamakua. Kahili ginger is capable of excluding all understory plants, even under an intact native canopy (Cuddihy and Stone, 1990) and can suppress seedling establishment even if ungulates are controlled. Banana poka infests over 518 square kilometers (200 square miles) on Hawaii and Kauai and severely alters forest structure (Cuddihy and Stone, 1990). These highly invasive species are uncontrolled and are measurably increasing in the wet forest habitats of *Platydesma remyi* (B. Stevens, pers. comm., 1996).

With only 100 or less widely scattered individuals in two populations, reduced reproductive vigor and extinction due to naturally occurring events, such as hurricanes or landslides, are also major threats.

FOR RECYCLED PETITIONS:

- a. Is listing still warranted? ____
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? ____
- c. Is a proposal to list the species as threatened or endangered in preparation? ____
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

LAND OWNERSHIP (Estimate proportion Federal/state/local government/private, identify non-private owners): Populations are on State and private lands.

PRELISTING (Describe status of conservation agreements or other conservation activities):
None.

REFERENCES (Identify primary sources of information (e.g., status reports, petitions, journal publications, unpublished data from species experts) using formal citation format):

The information in this form is based on the results of a meeting of 20 botanical experts held by the Center for Plant Conservation in December of 1995, and has been updated by personal communication with Ken Wood of National Tropical Botanical Garden and Fredrick Warshauer of National Biological Service. Based on the IUCN Red Plant Data Book rarity categories, this species is recognized as Rare (could be considered at risk) by Wagner, Herbst, and Sohmer in the 1990 Manual of Flowering Plants of Hawai`i.

Cuddihy, L.W., and C.P. Stone. 1990. Alteration of native Hawaiian vegetation; effects of humans, their activities and introductions. Coop. Natl. Park Resources Stud. Unit, Hawaii. 138 pp.

Hawaii, Department of Land and Natural Resources. 1985. Hunting in Hawaii, fourth revision. Division of Forestry and Wildlife, Honolulu, 32 pp.

Hawaii, Department of Land and Natural Resources. N.d.-a. Summary of Title 13, Chapter 123, Game mammal hunting rules, island of Oahu. Division of Forestry and Wildlife, Honolulu. 2 pp.

Hawaii, Department of Land and Natural Resources. N.d.-b. Summary of Title 13, Chapter 123, Game mammal hunting rules, island of Molokai. Division of Forestry and Wildlife, Honolulu. 2 pp.

Hawaii, Department of Land and Natural Resources. N.d.-c. Summary of Title 13, Chapter 123, Game mammal hunting rules, island of Maui. Division of Forestry and Wildlife, Honolulu. 2 pp.

Hawaii Heritage Program. 1992. Element Occurrence Records for *Platydesma remyi*. Honolulu, HI.

Medeiros, A.C., Jr., L.L. Loope, and R.A. Holt. 1986. Status of native flowering plant species

- on the south slope of Haleakala, East Maui, Hawaii. Coop. Natl. Park Resources Stud. Unit, Hawaii, Techn. Rept. 59:1-230.
- Perlman, S. and K. Wood. 1996. Kohala Mountains surveys. Prepared by National Tropical Botanical Garden for U.S. Fish and Wildlife Service, Honolulu.
- Scott, J.M., S. Mountainspring, F.L. Ramsey, and C.B. Kepler. 1986. Forest bird communities of the Hawaiian Islands: Their dynamics, ecology, and conservation. *Studies in Avian Biology* 9:1-429. Cooper Ornithological Society, Los Angeles.
- Smith, C.W. 1985. Impact of alien plants on Hawai'i's native biota: in Stone, C.P., and J.M. Scott (eds.), Hawai'i's terrestrial ecosystems: preservation and management. Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu, pp. 180-250.
- Stone, C.P. 1985. Alien animals in Hawai'i's native ecosystems: toward controlling the adverse effects of introduced vertebrates: in Stone, C.P., and J.M. Scott (eds.), Hawai'i's terrestrial ecosystems: preservation and management. Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu, pp. 251-197.
- Tomich, P.Q. 1986. Mammals in Hawai'i; a synopsis and notational bibliography. Bishop Museum Press, Honolulu. 375 pp.
- Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i. University of Hawaii Press and Bishop Museum Press, Honolulu. Bishop Mus. Spec. Publ. 83:1-1853.

LISTING PRIORITY (* after number)

THREAT

Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2 *
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

Magnitude:

Imminence:

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Rowan Gould March 6, 2003
Regional Director, Fish and Wildlife Service Date

Concur: _____
Director, Fish and Wildlife Service Date

Do not concur: _____
Director, Fish and Wildlife Service Date

Director's Remarks:

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Date of annual review: 2/03

Conducted by: _____

Comments:

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