

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Scaevola coriacea* (dwarf naupaka)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; 5-year status reviews of 46 species in Idaho, Oregon, Washington, Nevada, Montana, Hawaii, Guam, and the Northern Mariana Islands. Federal Register 77(44):13248-13251.

Lead Region/Field Office:

Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawaii

Name of Reviewer(s):

Chelsie Javar-Salas, Plant Biologist, PIFWO
Maui Nui and Hawaii Island Team Manager, PIFWO
Marie Bruegmann, Plant Recovery Coordinator, PIFWO
Recovery Program Lead, PIFWO
Kristi Young, Programmatic Deputy Field Supervisor, PIFWO

Methodology used to complete this 5-year review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office of the U.S. Fish and Wildlife Service (USFWS), beginning on March 6, 2012. The review was based on a review of current, available information since the last 5-year review for *Scaevola coriacea* (USFWS 2010). The evaluation of Chelsie Javar-Salas, Plant Biologist, was reviewed by the Island Team Manager, and Plant Recovery Coordinator, followed by the Recovery Program Lead. It was subsequently reviewed and approved by the Programmatic Deputy Field Supervisor

Background:

For information regarding the species listing history and other facts, please refer to the Fish and Wildlife Service's Environmental Conservation On-line System (ECOS) database for threatened and endangered species (http://ecos.fws.gov/tess_public).

Review Analysis:

Please refer to the previous 5-year review for *Scaevola coriacea* published on August 27, 2010 (available at http://ecos.fws.gov/docs/five_year_review/doc3318.pdf) for a complete review of the species' status, threats, and management efforts. No significant new information regarding the species' biological status has come to light since listing to warrant a change in the Federal listing status of *S. coriacea*.

This short-lived perennial herb is endangered and occurred historically on the islands of Niihau, Kauai, Oahu, Lanai, Maui, Hawaii, and two offshore islets off Maui and Molokai (USFWS 1997). It is currently only found on Maui and two offshore islets. The current status and trends for *Scaevola coriacea* are provided in the tables below.

New status information:

In addition to those populations cited in the previous 5-year review, new observations include the following:

- The Plant Extinction Prevention Program [PEPP] (2010) reported three individuals of *S. coriacea* on Mokapu Islet off of Molokai.
- On Maui, there were 98 wild mature individuals and 2 immature individuals of *S. coriacea* (PEPP 2011).
- On Moku Hooniki Islet, off of Molokai, two of the four wild individuals remained (PEPP 2013).

Overall, the numbers of individuals have decreased from approximately a 108 wild individual reported in the previous 5-year review to approximately 103 wild mature individuals (PEPP 2010, 2011, 2013).

New threats:

- Landslide and flooding degradation of habitat – Flooding is a threat to this species on Maui (PEPP 2010).
- Slug herbivory – Herbivory by slugs (unidentified species) has been reported as a threat to this species on Maui (PEPP 2012) and Molokai (PEPP 2013).
- Climate change degradation of habitat – Fortini *et al.* (2013) conducted a landscape-based assessment of climate change vulnerability for native plants of Hawaii using high resolution climate change projections. Climate change vulnerability is defined as the relative inability of a species to display the possible responses necessary for persistence under climate change. The assessment by Fortini *et al.* (2013) concluded that *S. coriacea* is highly vulnerable to the impacts of climate change. Furthermore, *S. coriacea* was identified as a “wink-out” species, defined as a species that is projected to lose more than 99 percent of its current climate envelope (areas that contain the full range of climate conditions under which the species is known to occur) by 2100. Therefore, additional management actions are needed to conserve this taxon into the future.

New management actions:

- Captive propagation for genetic storage and reintroduction
 - The Harold L. Lyon Arboretum Seed Conservation Laboratory (2013) contains 15 seeds of *S. coriacea* in genetic storage.
 - The National Tropical Botanical Gardens (2013) contains approximately 100 propagules of *S. coriacea* in their nursery.
 - Maui Nui Botanical Gardens (2013) has 25 individuals propagated at their nursery.
 - Waimea Valley Arboretum has three individuals of *S. coriacea* in its nursery propagated from the Maui source population (Waimea Valley 2013).
- Reintroduction / translocation
 - A total of 8 individuals propagated by the Maui Nui Botanical Gardens were outplanted at Alau Islet (4 individuals) and Moku Huki Islet (4 individuals) off of Maui (PEPP 2009).

- Nine individuals from propagated from genetic material collected from Okala Islet were outplanted at Kukaiwaa (PEPP 2013).
- The Plant Extinction Prevention Program (2013) outplanted 9 individuals at Kaholaiki propagated from genetic material collected from Okala Islet.
- Population viability monitoring and analysis
 - Five outplanted individuals remain on State lands on Maui (PEPP 2010).
 - The Plant Extinction Prevention Program (2010, 2012) monitored the outplanted and wild populations on Maui.
 - The outplanted population on Molokai was monitored by PEPP (2012). There were 3 individuals. Monitoring discovered that the fence protecting this population was breached by goats.
 - The wild population on Moku Hooniki Islet was monitored by PEPP (2013). There were 2 individuals.

Synthesis:

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for the Maui plant cluster (USFWS 1997), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Scaevola coriacea* is a short-lived perennial, and to be considered stable, this species must be managed to control threats (e.g. fenced) and be represented in an *ex situ* (at other than the plant's natural location, such as a nursery or arboretum) collection. In addition, a minimum total of three populations should be documented on Maui where it now occurs and if possible at least one other island where it occur or occurred historically. Each of these populations must be naturally reproducing and increasing in number, with a minimum of 50 mature individuals per population.

The interim stabilization goals for this species have not been met, as only one population of 50 or more mature individuals exists (Table 1) and all threats are not being sufficiently managed throughout all of the populations (Table 2). Therefore, *Scaevola coriacea* meets the definition of endangered, as it remains in danger of extinction throughout its range.

Recommendations for future actions:

- Surveys/inventories – Survey geographical and historical range for a current assessment of the species’ status.
- Captive propagation genetic storage and reintroduction
 - Continue collection of genetic resources for storage, propagation, and reintroduction into protected suitable habitat within historical range.
 - Evaluate genetic resources currently in storage to determine the need to place additional genetic resources in long-term storage due to this species’ high vulnerability to climate change.
- Ungulate monitoring and control – Fence remaining populations to protect them from the impacts of feral ungulates.
- Invasive plant monitoring and control – Control invasive introduced plant species within the vicinity of all known *S. coriacea* populations.

- Predator / herbivore monitoring and control – Control slugs, giant African snails (*Achatina fulica*), and rodents within the vicinity of all known *S. coriacea* populations.
- Population viability monitoring and analysis – Continue monitoring wild and outplanted individuals.
- Climate change adaptation strategy – Research the suitability of habitat for reintroducing this species in the future due to the impacts of climate change. As a species likely to wink out by 2100, ensure that adequate genetic storage is maintained as viable material.
- Alliance and partnership development – Initiate planning and contribute to implementation of ecosystem-level restoration and management to benefit this taxon.

Table 1. Status and trends of *Scaevola coriacea* from listing through current 5-year review.

Date	No. wild individuals	No. outplanted	Stabilization Criteria identified in Recovery Plan	Stabilization Criteria Completed?
1986 (listing)	350	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1997 (recovery plan)	< 340	Unknown	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2010 (5-yr review)	108	160	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No
2014 (5-yr review)	103	13	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

Table 2. Threats to *Scaevola coriacea* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulates – degradation of habitat and herbivory	A, C, D, E	Ongoing	Partially, only one outplanted population is fenced on Molokai
Invasive introduced plants	A, E	Ongoing	None
Development (Maui population)	A	Ongoing	None
Off-road vehicles (Maui population)	A	Ongoing	None
Landslides (Okala & Moku Hooniki islet population) and flooding (Maui population)	A	Ongoing	None
Collecting impacts	B	Ongoing	None
Rodent predation or herbivory – rats (Molokai)	C	Ongoing	None
Invertebrate herbivory – giant African snail (Maui population)	C	Ongoing	None
Slug herbivory	C	Ongoing	None
Fire (Maui population)	E	Ongoing	None
Drought (Okala & Moku Hooniki Islet population)	E	Ongoing	None
Low numbers	E	Ongoing	Partially, captive propagation for genetic storage and reintroduction
Climate change	A, E	Increasing	None

References:

See previous 5-year review for a full list of references (USFWS 2010). Only references for new information are provided below.

Fortini, L., J. Price, J. Jacobi, A. Vorsino, J. Burgett, K. Brinck, F. Amidon, S. Miller, S. Gon II, G. Koob, and E. Paxton. 2013. A landscape-based assessment of climate change vulnerability for all native Hawaiian plants. Technical report HCSU-044. Hawaii Cooperative Studies Unit, University of Hawaii at Hilo, Hawaii. 141 pages.

Harold L. Lyon Arboretum Seed Conservation Laboratory. 2013. Seed storage database. University of Hawaii at Manoa, Honolulu, Hawaii. Unpublished.

Maui Nui Botanical Gardens. 2013. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. 12 pages. Unpublished.

National Tropical Botanical Garden. 2013. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. 30 pages. Unpublished.

[PEPP] Plant Extinction Prevention Program. 2009. Annual report for Plant Extinction Prevention Program, fiscal year 2009 (July 1, 2008-June 30, 2009). 115 pages. Unpublished.

[PEPP] Plant Extinction Prevention Program. 2010. Plant Extinction Prevention Program annual report, fiscal year 2010 (July 1, 2009-June 30, 2010). 122 pages. Unpublished.

[PEPP] Plant Extinction Prevention Program. 2011. Plant Extinction Prevention Program annual report, fiscal year 2011 (July 1, 2010-June 30, 2011). 200 pages. Unpublished.

[PEPP] Plant Extinction Prevention Program. 2012. Plant Extinction Prevention Program annual report, fiscal year 2012 (July 1, 2011-June 30, 2012). 169 pages. Unpublished.

[PEPP] Plant Extinction Prevention Program. 2013. Plant Extinction Prevention Program annual report, fiscal year 2013 (July 1, 2012-June 30, 2013). 207 pages. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 1997. Recovery plan for the Maui plant cluster. U.S. Fish and Wildlife Service, Portland, Oregon. 130 pages.

[USFWS] U.S. Fish and Wildlife Service. 2010. *Scaevola coriacea* 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Honolulu, Hawaii. 19 pages.

[USFWS] U.S. Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; listing 38 species on Molokai, Lanai, and Maui as endangered and designating critical habitat on Molokai, Lanai, Maui, and Kahoolawe for 135 species; proposed rule. Federal Register 77(112):34464-34775.

Waimea Valley. 2013. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. Waimea, Hawaii. 16 pages. Unpublished.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Scaevola coriacea* (dwarf naupaka)

Pre-1992 DPS listing still considered a listable entity? N/A

Recommendation resulting from the 5-year review:

- Delisting
- Reclassify from Endangered to Threatened status
- Reclassify from Threatened to Endangered status
- No Change in listing status

for **Programmatic Deputy Field Supervisor, Pacific Islands Fish and Wildlife Office**

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Date 2014-06-05