

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Cyanea dolichopoda* (hāhā)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2020. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada. Federal Register 85(48): 14240–14243, March 11, 2020.

Lead Region/Field Office:

Interior Region 12/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai‘i

Name of Reviewer:

Cheryl Phillipson, Biologist, PIFWO

Lauren Weisenberger, Plant Recovery Coordinator, PIFWO

Megan Laut, Conservation & Restoration Team Manager, PIFWO

Methodology used to complete this 5-year review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service or USFWS) beginning in October 2021. The review was based on a review of current, available information since the last 5-year review for *Cyanea dolichopoda* (USFWS 2017). The evaluation by Cheryl Phillipson, Biologist, was reviewed by Lauren Weisenberger, Plant Recovery Coordinator, and Megan Laut, Conservation and Restoration Team Manager.

Background:

For information regarding the species’ listing history and other facts, please refer its species profile page on the Service’s Environmental Conservation On-line System (ECOS) database for threatened and endangered species (<https://ecos.fws.gov/ecp/species/8949>).

Review Analysis:

Please refer to the previous 5-year review for *Cyanea dolichopoda* published in the Federal Register on September 13, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2417.pdf) for a complete review of the species’ status, threats, management efforts, and references cited. We are not aware of any significant new information regarding the species’ biological status since listing to warrant a change in the Federal listing status of *C. dolichopoda*.

This short-lived perennial shrub in the Campanulaceae (bellflower) family is listed as endangered and is known from the island of Kaua‘i. The status and trends for *Cyanea dolichopoda* are provided in the tables below.

New Status Information:

- *Cyanea dolichopoda* was last observed in 1990 and has not been relocated since Hurricane ‘Iniki in 1992 (Wood et al. 2019, p. 4).
- The Plant Extinction Prevention Program (PEPP) reports from 2016 through 2018 classify this species as possibly extinct; however, survey efforts continue (PEPP 2016, 2017, 2018).

New Threats:

- None reported.

New Management Actions:

- Monitoring and surveys—Numerous surveys were conducted in the holotype region and nearby locations, but no plants were located (Wood et al. 2019, p. 4).

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

Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2010 (listing)	0	0	All threats managed in 1 population	No
			Complete genetic storage	No
			1 population with 200 mature individuals	No
2017 (5-year review)	0	0	All threats managed in 1 population	No
			Complete genetic storage	No
			Reproduction (i.e., viable seeds, seedlings)	Unknown, seedlings last observed in 1990
			1 population with 200 mature individuals	No
2022 (5-year review)	0	0	All threats managed at 1 population	No
			Complete genetic storage	No

			Natural reproduction	No
			1 population with 150 mature individuals	No

* The Preventing Extinction Stage was established in 2011. Prior to 2011, the Interim Stabilization Stage was the first stage towards recovery (now it is the second stage after Preventing Extinction).

Table 2. Threats to *Cyanea dolichopoda* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, public hunting allowed in FR
Established ecosystem altering invasive plant species degradation of habitat and competition	A, E	Ongoing	Partial, some nonnative plant control at Blue Hole (Līhu'e-Kōloa FR)
Landslide destruction and degradation of habitat	A	Ongoing	None
Predation and herbivory by invertebrates—slugs	C	Ongoing	None
Inadequacy of existing regulatory mechanisms—lack of adequate hunting regulations	D	Ongoing	Partial, public hunting allowed in FR
Stochastic events—Hurricanes	E	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, seed collection, and propagation

Synthesis:

Currently there are no known individuals of *Cyanea dolichopoda* on Kaua‘i. There is some nonnative plant control in historical habitat; however, the only ungulate control is via public hunting. There are no materials in collections for storage or propagation. Botanists continue to survey for this species.

Stabilizing (interim), downlisting, and delisting objectives are provided in the Kaua‘i Islandwide Recovery Plan (USFWS 2021) and have been updated according to the draft revised recovery objective guidelines developed by the Hawai‘i and Pacific Plants Recovery Coordinating Committee (HPPRCC 2011). The HPPRCC identifies an additional initial objective, the Preventing Extinction Stage, in addition to the Interim Stabilization, Delisting, and Downlisting objectives. Furthermore, life history traits such as breeding system, population size fluctuation or decline, and reproduction type (sexual or vegetative), have been included in the calculation of goals for the number of

populations and reproducing individuals for each stage. The goals for each stage remain grouped by life span defined as annual, short-lived perennial (fewer than 10 years), or long-lived perennial.

Cyanea dolichopoda is a short-lived perennial shrub with no known populations. To prevent extinction, which is the first milestone in recovering the species, the taxon must be managed to control threats (e.g., fenced) and have 50 individuals (or the total number of individuals if fewer than 50 exist) from each of three populations represented in *ex situ* (secured off-site, such as a nursery or seed bank) collections that are well managed. In addition, a minimum of one population should be documented on Kaua‘i where the species occurred historically and this population must be naturally reproducing (i.e., viable seeds, seedlings) with a minimum of 150 mature, reproducing individuals.

The preventing extinction goals for this species have not been met. Currently, there are no known plants (Table 1), no genetic representation, and all threats are not being managed (Table 1, Table 2). Therefore, *Cyanea dolichopoda* meets the definition of Endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

No new threats and no significant new information regarding the species' biological status have been reported since the last 5-year review in 2017. Thus, the following recommendations for future actions are reiterated or updated for the 5-year review for 2022.

- Surveys and inventories—Continue to survey the geographic and historical range of *Cyanea dolichopoda* for additional wild populations. Consider utilizing UAV (unmanned aerial vehicles) to survey inaccessible cliff habitat.
- Ungulate monitoring and control—Construct ungulate exclosures, strategic fencing, or implement other methods to protect *C. dolichopoda* from the negative impacts of feral ungulates.
- Nonnative invasive plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species at any populations found.
- Climate change adaptation strategy—Research suitability of habitat for viability of species if found, including where to conduct translocations in the future due to impacts of climate change.
- Predator and herbivore monitoring and control—Implement effective control methods for slugs at any populations found.
- Captive propagation for genetic storage and reintroduction—Collect material for genetic storage and propagation for reintroduction from any individuals found.
- Stochastic events—Build resiliency and redundancy—Increase numbers of individuals and populations through historic range to reduce impacts of landslides and hurricanes.
- Alliance and partnership development—Continue to work with partners and other land managers in planning and implementation of ecosystem-level restoration and management to benefit this species.

References:

- [HPPRCC] Hawai'i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.
- [PEPP] Plant Extinction Prevention Program. 2016. Plant Extinction Prevention Program FY 2016 Annual Report (Oct 1, 2015-Sep 30, 2016), US FWS CFDA Program #15.657; Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F14AC00174, December 24, 2016, UH Manoa, PCSU, PEPP, 237 pp.
- [PEPP] 2017. Plant Extinction Prevention Program FY 2017 Annual Report (Oct 1, 2016-Sep 30, 2017), Coop Agreement: F14A00174, U.S. Fish and Wildlife Service CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, 235 pp.
- [PEPP] 2018. Plant Extinction Prevention Program, fiscal year 2018 interim performance report (October 1, 2017-September 30, 2018) cooperative agreement F18AC00502, US Fish and Wildlife Service CFDA Program #15.657, Endangered species conservation—recovery implementation funds, University of Hawaii at Manoa, Pacific Cooperative Studies Unit, Plant Extinction Prevention Program. 49 pp.
- [USFWS] U.S. Fish and Wildlife Service. 2010. Endangered and threatened wildlife and plants; determination of endangered status for 48 species on Kauai and designating critical habitat; final rule. Department of the Interior, 75 FR 18960, April 13, 2010.
- [USFWS] 2017. *Cyanea dolichopoda* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/tess/species_nonpublish/2417.pdf.
- [USFWS] 2020. Endangered and threatened wildlife and plants; initiation of 5-year status reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada. Federal Register 85(48): 14240–14243, March 11, 2020.
- [USFWS] 2021. Kaua'i Islandwide Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 65 pp. + appendices.
- Wood, K.R., H. Oppenheimer, and M. Keir. 2019. A checklist of endemic Hawaiian vascular plant taxa that are considered possibly extinct in the wild, May 2019. National Tropical Botanical Garden report. 17 pp.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Cyanea dolichopoda* (hāhā)

Pre-1996 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 Field Supervisor, Pacific Islands Fish and Wildlife Office

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