

## 5-YEAR REVIEW

Short Form Summary

**Species Reviewed:** *Cyanea platyphylla* ('akū'akū)

**Current Classification:** Endangered

### **Federal Register Notice announcing initiation of this review:**

[USFWS] U.S. Fish and Wildlife Service. 2023. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 88(56):17611–17614, March 23, 2023.

### **Lead Region/Field Office:**

Region 1/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, Recovery Program 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) beginning in October 2023. The review was based on a review of current, available information since the last 5-year review for *Cyanea platyphylla* (USFWS 2020). The evaluation by Cheryl Phillipson, Biologist, was reviewed by Lauren Weisenberger, Plant Recovery Coordinator, and Megan Laut, Recovery Program Manager.

### **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/ecp/species/2041>).

### **Review Analysis:**

Please refer to the previous 5-year reviews for *Cyanea platyphylla* published in the Federal Register on August 28, 2012, and March 2, 2020 (available at [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/1990.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1990.pdf) and [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/2943.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/2943.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. platyphylla*.

This short-lived perennial shrub in the Campanulaceae (bellflower) family is endangered and occurs on the island of Hawai‘i. The status and trends for *Cyanea platyphylla* are provided in the tables below.

#### New Status Information:

- Currently, there are five wild populations at ‘O‘ōkala-Humu‘ula, Laupāhoehoe, Waiākea Upper, and Wao Kele O Puna, totaling 7 individuals of *Cyanea platyphylla*. Between 1982 and 2019 there were several subpopulations at Laupāhoehoe totaling nearly 100 individuals, but these have not been resurveyed to confirm current presence. At Waiākea Upper there were 22 individuals some of which may still be present and at Pu‘u Maka‘ala Natural Area Reserve there were four individuals. In addition, from the early 1900s though 2010, *C. platyphylla* was wide-ranging with occurrences at Waikā, Pu‘ukapu, Waipi‘o Valley, Umaumau-Honohina, Hakalau Nui, Mahanaloa, Pauka‘a, Kaūmana-Punahoa, Waiākea Lower, Pāhoa, and Hōnaunau, but their current status is unknown. There have been reintroductions at Laupāhoehoe and Pu‘u Maka‘ala currently totaling 32 individuals (Plant Extinction Prevention Program [PEPP] 2019–2024).
- There are at least 6 wild plants from 3 populations represented in *ex situ* storage.

#### New Threats:

- None reported.

#### New Management Actions:

- Surveys and monitoring—The Plant Extinction Prevention Program (PEPP) monitors wild and translocated/augmented populations (PEPP 2019–2024; PEPP 2024, p. 20).
- Ungulate monitoring and control—In 2024, PEPP reported conducting ungulate control activities benefitting *C. platyphylla* (PEPP 2024, p. 5). Wild and reintroduced populations at Laupāhoehoe, ‘O‘ōkala-Humu‘ula, Pu‘u Maka‘ala-Ola‘a, and Waiākea Upper are fenced and fences are monitored and repaired (PEPP 2019–2024; PEPP 2021, p. 6; PEPP 2022, pp. 6, 27; PEPP 2024, p. 20).
- Captive propagation for genetic storage and reintroduction—
  - In 2023, PEPP collected 1,223 seeds of *C. platyphylla* and sent them to Lyon Arboretum (PEPP 2023, pp. 43, 154).
  - In 2020 and 2022, the Hawai‘i Statewide Endangered Plant Program reported collection of propagules of *C. platyphylla* using grant money for plant restoration and enhancement (Hawai‘i Department of Land and Natural Resources-Division of Forestry and Wildlife [DLNR-DOFAW] 2020, p. 2; DLNR 2022, p. 3).
  - In 2024, the Volcano Rare Plant Facility (VRPF) reported one plant in refugia representing one founder at Laupāhoehoe and seven plants in refugia and two plants in inventory representing three founders at Tom’s Trail (VRPF 2024). The facility also reported storage of one plant in refugia representing a subspecies at Wao Kele O Puna, *C. platyphylla* subsp. *rollandioides* (VRPF 2024). This taxon, *Cyanea rollandioides*, as well as *Cyanea fernaldii* are

currently recognized as synonyms of *C. platyphylla* and are therefore included in its range and taxonomy.

- In 2024, Lyon Arboretum reported storage of 98 explants representing two founders at Laupāhoehoe (Lyon Arboretum 2024). The Lyon Seed Conservation Laboratory reported collection of 3,272 seeds representing one founder at Laupāhoehoe, one founder at ‘O‘ōkala-Humu‘ula, and two founders at Waiākea Upper, with testing of 275, and the remaining 2,997 seeds kept in storage (Lyon Arboretum 2024).
- Reintroduction and translocation—
  - In 2023, PEPP reported construction of hog panel cages around two reintroduced plants due to pig ingress into the Kilau unit of Laupāhoehoe (PEPP 2019-2024).
  - In 2020, the Hawai‘i Statewide Endangered Plant Program reported reintroduction of two individuals of *C. platyphylla* (HDLNR-DOFAW 2020, p. 2).

**Table 1. Status and trends of *Cyanea platyphylla* from listing through current 5-year review. Table 1a shows progress according to Interim Stabilization Goals; Table 1b shows progress according to Preventing Extinction Goals.**

**Table 1a.**

<b>Date</b>	<b>No. wild individuals</b>	<b>No. Outplanted</b>	<b>Stability Criteria Identified in Recovery Plan</b>	<b>Stability Criteria Completed?</b>
<b>1996 (listing)</b>	57–107	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
<b>2012 (5-year review)</b>	<13	ca 15	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

**Table 1b.**

<b>Date</b>	<b>No. wild individuals</b>	<b>No. Outplanted</b>	<b>Preventing Extinction Criteria Identified by HPPRCC*</b>	<b>Preventing Extinction Criteria* Completed?</b>
<b>2020 (5-year review)</b>	10 mature 3 immature	27	All threats managed in all 3 populations	Partially
			Complete genetic storage	Complete for 3 populations
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Partially, recruitment at 1 population
			3 populations with 50 mature individuals each	No
<b>2025 (5-year review)</b>	<10	2	All threats managed in all 3 populations	Partially, at least 3 populations are fenced
			Complete genetic storage	Partially
			Natural reproduction at all 3 populations	None observed
			3 populations with 50 mature individuals each	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 platyphylla* and ongoing conservation efforts.**

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat and herbivory by feral ungulates	A, C	Ongoing	Partial, at least 3 populations are completely or partially fenced
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	None reported
Climate change degradation or loss of habitat	A	Ongoing	None
Predation and herbivory by rodents and invertebrates	C	Ongoing	None
Inadequacy of existing regulatory mechanisms— hunting	D	Ongoing	Partial, at least 3 populations are completely or partially fenced
Reduced viability due to low numbers	E	Ongoing	Partial, collection, propagation, and reintroduction ongoing

**Synthesis:**

Currently there are fewer than 10 wild individuals of *Cyanea platyphylla* in four to five populations. At least 13 population areas have not been surveyed since 2010, and if plants exist, these may increase the population totals and genetic representation. Three wild/augmented populations are protected from feral ungulates by selective and landscape-scale fencing. At least 6 wild plants from three populations are represented in collections, propagation, and translocations.

Interim stabilization targets, and Downlisting and Delisting objectives are provided in the Big Island II: Addendum to the Recovery Plan for the Big Island Plant Cluster, 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, USFWS 1998). The HPPRCC identifies an additional initial objective, the Preventing Extinction Stage, in addition to the Interim Stabilization, Downlisting, and Delisting 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 platyphylla* is a short-lived perennial shrub. 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 a total of three populations should be documented on the island of Hawai‘i where the species occurs or occurred historically and each of these populations must be naturally reproducing (i.e., viable seeds, seedlings) with a minimum of 50 mature, reproducing individuals per population.

The preventing extinction goals for *Cyanea platyphylla* have not been met. There are approximately 7 wild individuals remaining; however, most of these plants are represented in collections and translocations. Three wild or translocated/augmented populations are protected by selective or landscape-scale fencing. Only 6 wild plants from three populations are represented in collections. The effects of climate change, invasive nonnative plants, and seed predation and herbivory by rats and invertebrates are not addressed (Table 1, Table 2). Fencing must be continuously monitored and maintained. Therefore, *C. platyphylla* meets the definition of Endangered as it remains in danger of extinction throughout its range.

#### **Recommendations for Future Actions:**

No significant new information regarding the species’ biological status has been reported since the last 5-year review in 2020. Thus, the following recommendations for future actions are updated or reiterated for the 5-year review for 2025.

- Surveys and monitoring—
  - Continue to assess the status of known populations of *Cyanea platyphylla* in historical locations and search for the species in areas of potentially suitable habitat.
  - Monitor reintroduced populations, including for natural recruitment.
- Ungulate monitoring and control—Continue to construct and maintain exclosures and strategic fencing to protect individuals from the negative impacts of feral ungulates.
- Invasive nonnative plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species and those that compete with *C. platyphylla* at all populations.
- Control of predation and herbivory by rats and invertebrates—Implement effective control measures for rats and invertebrates at all populations.
- Captive propagation for genetic storage and reintroduction—Continue to collect seeds for storage and propagation efforts and for maintenance of genetic stock.
- Reintroduction and augmentation—Continue to propagate and reintroduce individuals into suitable habitat and augment populations in areas that are being managed for known threats to reduce the impacts of climate change.
- Climate change adaptation strategy—Research suitability of habitat in the future due to the impacts of climate change.
- Build resiliency, redundancy, and representation—Increase species’ viability through continued habitat restoration, threat control, and translocations/augmentation into managed suitable habitat.

- Alliance and partnership development—Continue to collaborate with partners in planning and implementation of ecosystem-level restoration and management to benefit this taxon.

## References:

- [DLNR-DOFAW] Department of Land and Natural Resources-Division of Forestry and Wildlife. 2020. Plant restoration and enhancement, interim performance report, F18AF01199. Hawai‘i Statewide Endangered Plant Program. 15 pp.
- [DLNR] 2022. Plant restoration and enhancement: threatened and endangered, candidate, and species of concern outplanting. Plant restoration and enhancement: Hawai‘i Island, F19AF00785. 8 pp.
- [HPPRCC] Hawai‘i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.
- Lyon Arboretum. 2024. Report on controlled propagation of listed species, as designated under the U.S. Endangered Species Act. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawai‘i.
- [PEPP] Plant Extinction Prevention Program. 2019–2024. Plant Extinction Prevention Program fiscal years 2019 to 2023 interim performance report (October 1, 2018-September 30, 2023). U.S. Fish and Wildlife Service CFDA Program \$15.657 Endangered Species Conservation—Recovery Implementation Funds, Cooperative Agreement: F18AC00502 (Final performance report), University of Hawai‘i at Mānoa, Pacific Cooperative Studies Unit. 105 pp.
- [PEPP] 2021. Plant Extinction Prevention Program fiscal year 2021 interim performance report (October 1, 2020-September 30, 2021), Cooperative Agreement F19AC00532 (Interim report), U.S. Fish and Wildlife Service CFDA Program #15.657 Endangered Species Conservation—Recovery Implementation Funds, University of Hawai‘i at Mānoa, Pacific Cooperative Studies Unit, Plant Extinction Prevention Program. 46 pp.
- [PEPP] 2022. Plant Extinction Prevention Program fiscal year 2022 interim performance report (October 1, 2021-September 30, 2022), Cooperative Agreement F19AC00532 (Interim report), U.S. Fish and Wildlife Service CFDA Program #15.657 Endangered Species Conservation—Recovery Implementation Funds, University of Hawai‘i at Mānoa, Pacific Cooperative Studies Unit, Plant Extinction Prevention Program. 50 pp.
- [PEPP] 2023. Hawai‘i Department of Land & Natural Resources, Division of Forestry & Wildlife, Grant number: F21AP00243, Statewide Endangered Plant Program, INTERIM Performance Report. Submitted March 2023. 132 pp.

- [PEPP] 2024. Plant Extinction Prevention Program Fiscal Year 2024 Interim Performance Report (October 1, 2023-September 30, 2024), Cooperative Agreements F19AC00532, F22AC02205, F23AC01766. 56 pp.
- [USFWS] U.S. Fish and Wildlife Service. 1998. Big Island II: Addendum to the Recovery Plan for the Big Island Plant Cluster. Portland, OR. 69 pp. + appendices.
- [USFWS] 2012. *Cyanea platyphylla* (hāhā) 5-year review summary and evaluation. Pacific Islands Fish and Wildlife Office, Honolulu. 24 pp. [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/1990.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1990.pdf).
- [USFWS] 2020. *Cyanea platyphylla* (‘akū‘akū) 5-year review summary and evaluation. Pacific Islands Fish and Wildlife Office, Honolulu. 24 pp. [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/2943.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/2943.pdf).
- [USFWS] 2023. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 88(56):17611–17614, March 23, 2023.
- [VRPF] Volcano Rare Plant Facility. 2024. Report on controlled propagation of listed species, as designated under the U.S. Endangered Species Act. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawai‘i.

**U.S. FISH AND WILDLIFE SERVICE**  
SIGNATURE PAGE for 5-YEAR REVIEW of *Cyanea platyphylla* ('akū'akū)

**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
- X   No Change in listing status

**For Field Supervisor, Pacific Islands Fish and Wildlife Office**

\_\_\_\_\_ Date \_\_\_\_\_