

## 5-YEAR REVIEW

Short Form Summary

**Species Reviewed:** *Cyanea hamatiflora* subsp. *carlsonii* (hāhā)

**Current Classification:** Endangered

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

[USFWS] U.S. Fish and Wildlife Service. 2023a. 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 2024. The review was based on a review of current, available information since the last 5-year review for *Cyanea hamatiflora* subsp. *carlsonii* (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/4558>).

### **Review Analysis:**

Please refer to the previous 5-year reviews for *Cyanea hamatiflora* subsp. *carlsonii* published in the Federal Register on July 21, 2009, August 3, 2015, and March 2, 2020 (available at [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/1395.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1395.pdf), [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/2271.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/2271.pdf), and [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/2944.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/2944.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. hamatiflora* subsp. *carlsonii*.

This perennial palm-like tree in the Campanulaceae (bellflower) family is endangered and is known from the island of Hawai‘i. The status and trends for *Cyanea hamatiflora* subsp. *carlsonii* are provided in the tables below.

#### New Status Information:

- In 2020, we reported three mature and one immature wild individuals remaining at one location (‘Ōlelomoana) on the island of Hawai‘i (USFWS 2020; Plant Extinction Prevention Program [PEPP] 2019). At that location in 2024, there were three mature plants, and five plants observed to be extirpated (PEPP 2019–2024). Between 2022 and 2024, there were possibly three wild individuals at Pu‘uwa‘awa‘a Forest Bird Sanctuary (FBS) and one wild individual at Hōnaunau-Kēōkea; however, it is unknown if these individuals are recruits from translocated plants (PEPP 2019–2024).
- There are at least 14 founders from 3 populations (Kipāhoehoe, Kealakehe, Kukuiopa‘e represented in *ex situ* collections and translocations.

#### New Threats:

- None reported.

#### New Management Actions:

- Monitoring—Wild and reintroduced populations are monitored by PEPP (PEPP 2020, pp. 12–14, PEPP 2021, p. 11; PEPP 2022, p. 14; PEPP 2023, p. 8; PEPP 2024, p. 18).
- Ungulate control—Populations at Honomalino, Kealakehe Mauka, Pu‘uwa‘awa‘a FBS, Kukuiopa‘e, and Kipāhoehoe are within exclosures (PEPP 2019–2024; PEPP 2020, p. 12; PEPP 2022, p. 17; PEPP 2023, pp. 8, 42).
- Captive propagation for genetic storage and reintroduction—
  - In 2024, the Lyon Arboretum Seed Conservation Laboratory reported storage of over 23,000 seeds representing five founders from ‘Ōlelomoana and Kukuiopa‘e, and an unknown number of founders from a reintroduction at Kealakehe Mauka (Lyon Arboretum 2024).
  - In 2023, the Volcano Rare Plant Facility (VRPF) reported storage of 36 plants representing three founders at Honua‘ula Forest Reserve and five plants representing one founder at Kipāhoehoe/‘Ōlelomoana/Kukuiopa‘e and 169 plants were sent out for translocation representing four founders at Honua‘ula Forest Reserve and 649 plants were sent out representing seven founders at Kipāhoehoe/‘Ōlelomoana/Kukuiopa‘e (PEPP 2023, p. 116, VRPF 2025).
- Reintroduction and translocation—
  - Beginning in 2020, approximately 182 individuals were translocated to Pu‘uwa‘awa‘a FBS, six individuals were added to Kukuiopa‘e, more than 1,000 were added to Kipāhoehoe NAR, and 43 were translocated to Pāpā (PEPP 2019–2024). The current status of previously translocated plants at Kealakehe Mauka, Kukuiopa‘e, ‘Ōlelomoana, and Honomalino is not reported but plants may be stable. These translocations from 2020 to 2024 total approximately 1,231 individuals in addition to any remaining from previous reintroductions. The largest reintroduced population at Kipāhoehoe has a 76

percent survival rate and more than 2,000 individuals are being monitored (PEPP 2021, p. 11). Translocation sites at Pu‘uwa‘awa‘a FBS and Kukuiope‘e are also successful (PEPP 2020, pp. 12, 14; PEPP 2022, p. 14). A new translocation site with 43 immature plants also has 76 percent survival rate (PEPP 2020, p. 13).

**Table 1. Status and trends of *Cyanea hamatiflora* subsp. *carlsonii* from listing through current 5-year review. Table 1a shows progress according to Stability Criteria Goals; Table 1b show 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>1994 (listing)</b>	19	Unknown	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
<b>2009 (5-year review)</b>	17	54	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
<b>2015 (5-year review)</b>	4–6	>2,600	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	Partially, only 2 reintroduced populations, reproduction unknown

**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>	4–7	>600	All threats managed in all 3 populations	Partially, exclosures at almost all populations
			Complete genetic storage	Nearly complete for 3 populations
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Unknown
			3 populations with 50 mature individuals each	Yes, reproduction unknown
<b>2025 (5-year review)</b>	3–7	+1,231	All threats managed in all 3 populations	Partially, 6 fenced translocated populations with some nonnative invasive plant management
			Complete genetic storage	Almost complete
			Natural reproduction at all 3 populations	None reported
			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 hamatiflora* subsp. *carlsonii* and ongoing conservation efforts.**

<b>Threat</b>	<b>Listing factor</b>	<b>Current Status</b>	<b>Conservation/ Management Efforts</b>
Ungulate degradation of habitat	A	Ongoing	Partial, 6 translocated populations fenced; must monitor for ungulate ingress
Established ecosystem altering invasive plant species degradation of habitat and competition	A, E	Ongoing	Partial, invasive nonnative plant control within exclosures
Climate change degradation or loss of habitat	A	Ongoing	None
Ungulate predation and herbivory	C	Ongoing	Partial, 3 translocated populations fenced; must monitor for ungulate ingress
Rodent predation and herbivory	C	Ongoing	None
Invertebrate predation and herbivory	C	Ongoing	Partial, pesticide testing at one location
Reduced viability due to low numbers	E	Ongoing	Partial, seed storage, propagation, and translocation efforts ongoing

**Synthesis:**

In 2020, there were three wild individuals of *Cyanea hamatiflora* subsp. *carlsonii* on the island of Hawai‘i. Currently, there are three to seven wild individuals at three locations. Almost all wild and translocated populations are provided protection from the activities of feral ungulates by fencing. Collection and storage, propagation, and translocation are ongoing with at least 14 founders represented. Thousands of reintroduced individuals are mostly in two populations; however, natural recruitment and reproductive success of any second-generation plants is unreported.

Preventing extinction, interim stabilization, downlisting, and delisting objectives were provided in the Recovery Plan for the Big Island Plant Cluster (USFWS 1996) 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 hamatiflora* subsp. *carlsonii* is a short-lived perennial palm-like tree. 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 hamatiflora* subsp. *carlsonii* have not been met. Although there have been thousands of individuals translocated, there are an unknown number of mature individuals with no documentation of natural recruitment (Table 1a, Table 1b). There is genetic representation of at least 14 founders and may only be a couple more individuals from which to secure collections (Table 1b). However, not all threats including, predation by ungulates, rodents, and invertebrates, are being managed (Tables 1a, 1b, Table 2). Therefore, *C. hamatiflora* subsp. *carlsonii* 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 survey geographical and historical range for a current assessment of the wild individuals.
  - Continue to monitor wild and reintroduced populations especially regarding recruitment and success of reproduction.
- Ungulate monitoring and control—Continue to construct and maintain exclosures to protect individuals from the negative impacts of feral ungulates.
- Invasive nonnative plant monitoring and control—Continue control of established ecosystem-altering nonnative invasive plant species and those that compete with *Cyanea hamatiflora* subsp. *carlsonii*, especially within fenced areas.
- Climate change adaptation strategy—Assess the modeled effects of climate change on this species and use to determine future landscape needed for its recovery.
- Rodent monitoring and control—Implement effective control methods for rats at all wild and translocated populations.
- Invertebrate monitoring and control—Determine and implement effective methods to control nonnative insects and nonnative snails.
- Captive propagation for genetic storage and reintroduction—Continue collection and propagation efforts for maintenance of genetic stock and for reintroduction.
- Reintroduction and translocation—Continue to reintroduce individuals into suitable habitat within historic range that is being managed for known threats to increase species’ resiliency, redundancy, and representation.

- Alliance and partnership development—Continue to work with the Hawai‘i Division of Forestry, and other partners and land managers in planning and implementation of ecosystem-level restoration and management to benefit this subspecies.

**References:**

[HPPRCC] Hawai‘i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.

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[PEPP] 2023. Hawaii Department of Land & Natural Resources, Division of Forestry & Wildlife, Grant number: F21AP00243, Statewide Endangered Plant Program, INTERIM Performance Report. Submitted March 2023. 132 pp.

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**U.S. FISH AND WILDLIFE SERVICE**  
SIGNATURE PAGE for 5-YEAR REVIEW of *Cyanea hamatiflora* subsp. *carlsonii*  
(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
- X   No Change in listing status

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

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Date \_\_\_\_\_