

*Cyanea platyphylla*  
(Haha)

**5-Year Review  
Summary and Evaluation**

**U.S. Fish and Wildlife Service  
Pacific Islands Fish and Wildlife Office  
Honolulu, Hawaii**

## 5-YEAR REVIEW

Species reviewed: *Cyanea platyphylla* (Haha)

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**5-YEAR REVIEW**  
***Cyanea platyphylla* (Haha)**

**1.0 GENERAL INFORMATION**

**1.1 Reviewers**

**Lead Regional Office:**

Region 1, Endangered Species Program, Division of Recovery, Jesse D'Elia, (503) 231-2071

**Lead Field Office:**

Pacific Islands Fish and Wildlife Office, Loyal Mehrhoff, Field Supervisor, (808) 792-9400

**Cooperating Field Office(s):**

N/A

**Cooperating Regional Office(s):**

N/A

**1.2 Methodology used to complete the 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 April 8, 2010. The review was based on the designation of critical habitat for *Cyanea platyphylla* and the addendum to the recovery plan for the Big Island plant cluster (USFWS 2003, 1998), as well as a review of current, available information. The Bernice Pauahi Bishop Museum provided an initial draft of portions of the review and recommendations for conservation actions needed prior to the next five-year review. The evaluation of Samuel Aruch, biological consultant, was reviewed by a recovery biologist and the Plant Recovery Coordinator. The document was then reviewed by the Recovery Program Leader and the Assistant Field Supervisor for Endangered Species before submission to the Field Supervisor for approval.

**1.3 Background:**

**1.3.1 Federal Register (FR) Notice citation announcing initiation of this review:**

[USFWS] U.S. Fish and Wildlife Service. 2010. Endangered and threatened wildlife and plants; 5-year review status of 69 species in Idaho, Washington, Hawaii, Guam, and the Commonwealth

of the Northern Mariana Islands. Federal Register  
75(67):17947-17950.

### 1.3.2 Listing history

#### Original Listing

**FR notice:** USFWS. 1996. Endangered and threatened wildlife and plants; determination of endangered or threatened status for thirteen plant species from the island of Hawaii, State of Hawaii; final rule. Federal Register 61(198):53137-53153.

**Date listed:** October 10, 1996

**Entity listed:** Species

**Classification:** Endangered

#### Revised Listing, if applicable

**FR notice:** N/A

**Date listed:** N/A

**Entity listed:** N/A

**Classification:** N/A

### 1.3.3 Associated rulemakings:

USFWS. 2003. Endangered and threatened wildlife and plants; final designation and nondesignation of critical habitat for 46 plant species from the island of Hawaii, Hawaii; final rule. Federal Register 68(127):39624-39761.

Critical habitat was designated for *Cyanea platyphylla* in two units totaling 2,567 hectares (7,234 acres) on Hawaii Island. These designations include habitat on State and private lands (USFWS 2003).

### 1.3.4 Review History:

Species status review [FY 2010 Recovery Data Call (August 2010)]:  
Declining

#### **Recovery achieved:**

1 (0-25%) (FY 2007 Recovery Data Call)

### 1.3.5 Species' Recovery Priority Number at start of this 5-year review:

2

### 1.3.6 Current Recovery Plan or Outline

**Name of plan or outline:** USFWS. 1998. Big Island II: Addendum to the recovery plan for the Big Island cluster. U.S. Fish and Wildlife Service, Portland, Oregon. 80 pages + appendices. Available online at <http://www.fws.gov/pacificislands/recoveryplans.html>.

Date issued: May 11, 1998

Dates of previous revisions, if applicable: N/A

## 2.0 REVIEW ANALYSIS

### 2.1 Application of the 1996 Distinct Population Segment (DPS) policy

2.1.1 Is the species under review a vertebrate?

Yes

No

2.1.2 Is the species under review listed as a DPS?

Yes

No

2.1.3 Was the DPS listed prior to 1996?

Yes

No

2.1.3.1 Prior to this 5-year review, was the DPS classification reviewed to ensure it meets the 1996 policy standards?

Yes

No

2.1.3.2 Does the DPS listing meet the discreteness and significance elements of the 1996 DPS policy?

Yes

No

2.1.4 Is there relevant new information for this species regarding the application of the DPS policy?

Yes

No

### 2.2 Recovery Criteria

2.2.1 Does the species have a final, approved recovery plan containing objective, measurable criteria?

Yes

No

2.2.2 Adequacy of recovery criteria.

2.2.2.1 Do the recovery criteria reflect the best available and most up-to date information on the biology of the species and

**its habitat?**

*Yes*  
 *No*

**2.2.2.2 Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria?**

*Yes*  
 *No*

**2.2.3 List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information:**

A synthesis of the threats (Listing Factors A, B, C, D, and E) affecting this species is presented in Section 2.3.2 and Table 2.

Stabilizing, downlisting, and delisting objectives are provided in the addendum to the recovery plan for the Big Island plant cluster (USFWS 1998), based on whether the species is an annual, a short-lived perennial (fewer than ten years), or a long-lived perennial. *Cyanea platyphylla* is a short-lived perennial, and to be considered stabilized, which is the first step in recovering the species, the taxon must be managed to control threats (*e.g.*, fenced) and be represented in an *ex situ* (off-site) collection. In addition, a minimum of three populations should be documented on the Big Island (Hawaii Island). For the species to be considered stable, each of these populations must be naturally reproducing and increasing in number, with a minimum of 50 mature individuals per population.

This recovery objective has not been met.

For downlisting, a total of five to seven populations of *Cyanea platyphylla* should be documented on the island of Hawaii. Each of these populations must be naturally reproducing, stable or increasing in number, and secure from threats, with a minimum of 300 mature individuals per population. Each population should persist at this level for a minimum of five consecutive years before downlisting is considered.

This recovery objective has not been met.

For delisting, a total of eight to ten populations of *Cyanea platyphylla* should be documented on the island of Hawaii. Each of these populations must be naturally reproducing, stable or increasing in

number, and secure from threats, with 300 mature individuals per population for short-lived perennials. Each population should persist at this level for a minimum of five consecutive years before delisting is considered.

This recovery objective has not been met.

## **2.3 Updated Information and Current Species Status**

### **2.3.1 Biology and Habitat**

#### **2.3.1.1 New information on the species' biology and life history:**

*Cyanea platyphylla* is a short-lived perennial species (USFWS 1998, 2003). Wagner *et al.* (1990) indicated that precocious flowering occurs in *C. platyphylla*. Specimens annotated at Bishop Museum by the specialist Dr. Thomas Lammers show the flowering cycle to be essentially year-round, with only the months of April and June not being represented by flowering specimens (Bishop Museum 2011). In contrast, fruiting material is rare, known only in February and March (Bishop Museum 2011; National Tropical Botanical Garden 2011). The flower color is said to be greenish white (National Tropical Botanical Garden 2011).

The flowers of *Cyanea* likely coevolved with honeycreepers (Givnish *et al.* 1994). Like some others within the genus, the stem and lower leaf surfaces of *Cyanea platyphylla* have sharp, thorn-like projections, as well as dimorphic juvenile and adult leaves (Wagner *et al.* 1999). As with *C. stictophylla*, which is also endangered, *C. platyphylla* has orange fruits. Buss *et al.* (2001) reported that *Cyanea platyphylla* has a “type C” seed coat, which is characterized by a striate (marked with fine, usually parallel lines or grooves) or striate-verruculate (covered with very small wart-like elevations) testa (seed coat), which was found in four of the five sections studied by the authors.

#### **2.3.1.2 Abundance, population trends (e.g. increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends:**

The understanding of the population size of *Cyanea platyphylla* has fluctuated due to changes in taxonomy (USFWS 1996). At

the time the species was listed (USFWS 1996), *Cyanea platyphylla* was known from a population in Laupahoehoe Natural Area Reserve, which consisted of five mature and two immature individuals and four populations, totaling 50 to 100 individuals, in the Kohala Mountains (USFWS 1996).

When the recovery plan for the species was published (USFWS 1998), a total of nine individuals were known in the wild in two populations, and a total of 12 individuals were known from a reintroduction site in the Waiakea Forest Reserve (USFWS 1998). An unknown number of individuals were known from Saddle Road (USFWS 1998).

When critical habitat was proposed for *Cyanea platyphylla* (USFWS 2002), fewer than 50 individuals were known to occur in nine populations on State and private lands. The populations included a reintroduced population in the Waiakea Forest Reserve (USFWS 2002). At the time final critical habitat was designated (USFWS 2003), only six populations were known totaling 57 individuals.

In 2003, Steve Perlman collected this species in Laupahoehoe Natural Area Reserve (National Tropical Botanical Garden 2011). In 2004, two individuals were found near Kilau Stream, 11 more individuals were found in the Laupahoehoe Natural Area Reserve (USFWS 2010).

In 2009, the Plant Extinction Prevention Program (2009) reported that less than twelve individuals of *Cyanea platyphylla* remained. In 2010, the Plant Extinction Prevention Program (2010) reported possibly finding a single new individual, for a total of 13 individuals in 2 populations.

Additional habitat for this species remains to be surveyed in the Hakalau Forest National Wildlife Refuge (USFWS 2010).

### **2.3.1.3 Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.):**

The chromosome number for some species of *Cyanea* are  $n = 14$ , although no counts are known for *Cyanea platyphylla* (Lammers 1988).

### **2.3.1.4 Taxonomic classification or changes in nomenclature:**

*Cyanea platyphylla*, a member of the bellflower family (Campanulaceae), was first described by Asa Gray (1861) as *Delissea platyphylla*, based on a specimen collected by Mann and Brigham in the Puna District of Hawaii (USFWS 1996). Hillebrand (1888) later transferred the species to *Cyanea*. Additional accepted synonyms (Wagner *et al.* 1990) for *C. platyphylla* include: *Cyanea bryanii* Rock; *C. crispohirta* F. Wimmer; *C. fernaldii* Rock; *C. nolimetangere* Rock; *C. rollandioides* Rock; *Delissea bryanii* (Rock) St. John; *D. crispohirta* (F. Wimmer) St. John; *D. fernaldii* (Rock) St. John; *D. nolimetangere* (Rock) St. John; *D. pulchra* (Rock) St. John; and *D. rollandioides* (Rock) St. John.

More so than for other plant species of concern, the synonyms are important because some (*e.g.*, *Cyanea bryanii* and *C. fernaldii*) were treated previously as distinct taxa and recommended for consideration of federal protection (USFWS 1996, 2002). Also, some field biologists feel that the population at Laupahoehoe Natural Area Reserve should be resurrected as a separate species (USFWS 1998). Steve Perlman of the National Tropical Botanical Garden collected material from Laupahoehoe Natural Area Reserve in 2003 that he felt was atypical and resembled (in his view) the taxon previously considered to represent *C. fernaldii* (National Tropical Botanical Garden 2011). However, to date no one has published the resurrection of *C. fernaldii*.

The generic distinction between *Cyanea* and *Delissea* has been debated for some time (USFWS 1996), but most recently they have been treated as a distinct genera (Lammers 1999). In addition, *Rollandia* also has been merged into *Cyanea* (Lammers *et al.* 1993). Rock (1919) placed *Cyanea platyphylla* in the section *Cyanea*.

**2.3.1.5 Spatial distribution, trends in spatial distribution (e.g. increasingly fragmented, increased numbers of corridors, etc.), or historic range (e.g. corrections to the historical range, change in distribution of the species' within its historic range, etc.):**

No new information.

**2.3.1.6 Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem):**

The historical range of *Cyanea platyphylla* included the Kohala Mountains, Laupahoehoe in the Hamakua District, the mountains above Hilo, Pahoa, Glenwood, Honaunau in South Kona, and “Kalanilehua,” the lattermost locality of which has not been identified (USFWS 1996, 1998). The species typically grows in areas dominated by *Metrosideros polymorpha* (ohia) or *Acacia koa* (koa) in lowland to montane wet forests. The elevational range of the species as most recently understood is approximately 615 to 1,082 meters (2,017 to 3,551 feet) (USFWS 2003), which corresponds to rainfall averages of 1,200 to 3,800 millimeters (47 to 150 inches) a year (USFWS 1998).

The soil groups from which *Cyanea platyphylla* has been recorded includes typic tropofolists, lithic tropofolists, typic hydrandepts, and histic plaqaquepts (Hawaii Biodiversity and Mapping Program 2010).

In addition to *Metrosideros polymorpha* and *Acacia koa*, native plant species found growing with *Cyanea platyphylla* include *Diplazium sandwichianum* (hoio), *Antidesma platyphyllum* (hame), *Cheirodendron trigynum* (olapa), *Colubrina oppositifolia* (kauila), *Perrottetia sandwicensis* (olomea), *Psychotria hawaiiensis* (kopiko), and species of *Cibotium* (hapuu), *Clermontia* (oha wai), *Coprosma* (pilo), *Cyrtandra* (haiwale), *Hedyotis* (pilo), and *Scaevola* (naupaka) (USFWS 1996, 1998, 2002; National Tropical Botanical Garden 2011).

#### **2.3.1.7 Other:**

No new information.

### **2.3.2 Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)**

#### **2.3.2.1 Present or threatened destruction, modification or curtailment of its habitat or range:**

##### **Threats:**

- Ungulate degradation of habitat – Disturbance by feral pigs (*Sus scrofa*) (Hawaii Biodiversity and Mapping Program 2010; USFWS 1996; Plant Extinction Prevention Program 2009)
- Established ecosystem-altering invasive plant species

degradation of habitat (Hawaii Biodiversity and Mapping Program 2010; USFWS 1996, 2002; Plant Extinction Prevention Program 2009; National Tropical Botanical Garden 2011)

- *Angiopteris evecta* (mule's-foot fern)
- *Clidemia hirta* (Koster's curse)
- *Cyathea cooperi* (Australian tree fern)
- *Psidium cattleianum* (strawberry guava)
- *Psidium guajava* (guava)
- *Rubus rosifolius* (thimbleberry)
- *Tibouchina herbacea* (cane ti, cane tibouchina, glorybush)
- Lava flows – Degradation of habitat by volcanic activity (USFWS 1996; Plant Extinction Prevention Program 2009)

**Current conservation efforts:**

- Ungulate exclosures:
  - The population at Laupahoehoe Natural Area Reserve was fenced prior to the listing of *Cyanea platyphylla* to prevent further destruction by pigs (USFWS 1996).
  - In 2007, a fence was completed around an area near Tom's Trail to provide protected habitat for *Cyanea* species (Hawaii Department of Land and Natural Resources 2007).
  - The Plant Extinction Prevention Program (2009) reported that an area of 69 by 46 meters (225 by 150 feet) in size was fenced for protection of *Cyanea platyphylla* in the Laupahoehoe Natural Area Reserve. Two additional exclosure fences were constructed and were 30 square meters (100 square feet) and 190 square meters (625 square feet) (*i.e.*, 5.5 by 5.5 meters to 13.8 by 13.8 meters [10 by 10 feet to 25 by 25 feet]).
  - An exclosure was also constructed in 2009 in Upper Waiakea Forest Reserve of approximately 4 hectares (10 acres) (Plant Extinction Prevention Program 2009) to benefit *C. platyphylla* and three other plant taxa of concern, and another 2

hectares (5 acres) were added to an existing enclosure.

- Another enclosure was built in 2009 in Laupahoehoe Natural Area Reserve of approximately 69 by 23 meters (225 by 75 feet) to benefit *C. platyphylla* and four other plant species of concern (Plant Extinction Prevention Program 2009).

#### **2.3.2.2 Overutilization for commercial, recreational, scientific, or educational purposes:**

None reported.

#### **2.3.2.3 Disease or predation:**

##### **Threats:**

- Rodent predation or herbivory – Potentially by rats (*Rattus* spp.) (not observed directly) (USFWS 1996; Plant Extinction Prevention Program 2009)

#### **2.3.2.4 Inadequacy of existing regulatory mechanisms:**

##### **Threats:**

- Lack of adequate hunting regulation in areas with ungulates – The lack of adequate ungulate control and the existence of established hunting programs in areas where *Cyanea platyphylla* occurs continue to threaten this species.

#### **2.3.2.5 Other natural or manmade factors affecting its continued existence:**

##### **Threats:**

- Low numbers – increased likelihood of stochastic extinction due to changes in demography, the environment, genetics, or other factors (USFWS 1996; Plant Extinction Prevention Program 2009)
- Established invasive plant species competition (Hawaii Biodiversity and Mapping Program 2010; USFWS 1996, 2002; Plant Extinction Prevention Program 2009; National Tropical Botanical Garden 2011)
  - *Passiflora ligularis* (sweet granadilla)

- *Setaria palmifolia* (palmgrass)
- Climate change may pose a threat to this species. However, current climate change analyses in the Pacific Islands lack sufficient spatial resolution to make predictions on impacts to this species. The Pacific Islands Climate Change Cooperative (PICCC) has currently funded climate modeling that will help resolve these spatial limitations. We anticipate high spatial resolution climate outputs by 2013.

**Current conservation efforts:**

- Captive propagation for genetic storage and reintroduction:
  - At the time the recovery plan was published, the National Tropical Botanical Garden had 125 seeds in storage and 18 individuals growing in their nursery or greenhouse (USFWS 1998); Lyon Arboretum had 30 tissue accessions representing 120 cultures (USFWS 1998); and the Volcano Rare Plant Facility had 38 individuals in their nursery (USFWS 1998).
  - In 2007, a total of six individuals of *Cyanea platyphylla* were in propagation (Hawaii Department of Land and Natural Resources 2007).
  - In 2010, the Plant Extinction Prevention Program (2010) reported a total of 12 individuals in *ex situ* cultivation, with individuals representing each of the four populations known at the time.
  - In 2011, the Volcano Rare Plant Facility (2011) reported 46 individuals, 18 individuals were in genetic storage, and 28 individuals were in controlled propagation. In previous years, Volcano Rare Plant Facility (2010, 2009, 2008, 2007, 2006) totals were: 2010, 14 individuals in genetic storage and 56 individuals in controlled propagation from Laupahoehoe and Wao O Kele O Puna; 2009, 21 individuals in genetic storage and 19 individuals in controlled propagation; 2008, 9 individuals in genetic storage from Laupahoehoe and 2 individuals in genetic storage from Tom's Trail, and none in controlled propagation; 2007, 9 individuals from

Laupahoehoe and a single individual from Tom's trail in genetic storage; 2006, 9 individuals in genetic storage, 12 individuals in controlled propagation from Laupahoehoe.

- Reintroduction / translocation implementation:
  - In 1998, the Hawaii Department of Land and Natural Resources reintroduced and fenced 12 individuals in Waiakea Forest Reserve (USFWS 1998).
  - In 2011, the Volcano Rare Plant Facility (2011) reported a single individual was reintroduced at Laupahoehoe. In 2006, 6 individuals were reintroduced into Laupahoehoe Natural Area Reserve and 9 individuals into Umikoa (Volcano Rare Plant Facility 2006).

## 2.4 Synthesis

The interim stabilization goals for this species have not been met, as there is no known population containing more than 50 individuals (Table 1), and all threats are not being managed (Table 2). Therefore, *Cyanea platyphylla* meets the definition of endangered as it remains in danger of extinction throughout its range.

**Table 1. Status of *Cyanea platyphylla* from listing through 5-year review.**

| <b>Date</b>             | <b>No. wild individuals</b> | <b>No. outplanted</b> | <b>Stabilization Criteria identified in Recovery Plan</b> | <b>Stabilization Criteria Completed?</b> |
|-------------------------|-----------------------------|-----------------------|-----------------------------------------------------------|------------------------------------------|
| 1996 (listing)          | 57 - 107                    | 0                     | All threats managed in all 3 populations                  | Partially                                |
|                         |                             |                       | Complete genetic storage                                  | No                                       |
|                         |                             |                       | 3 populations with 50 mature individuals each             | No                                       |
| 1998 (recovery plan)    | >9                          | 12                    | All threats managed in all 3 populations                  | Partially                                |
|                         |                             |                       | Complete genetic storage                                  | No                                       |
|                         |                             |                       | 3 populations with 50 mature individuals each             | No                                       |
| 2003 (critical habitat) | >58                         | Unknown               | All threats managed in all 3 populations                  | Partially                                |
|                         |                             |                       | Complete genetic storage                                  | No                                       |
|                         |                             |                       | 3 populations with 50 mature individuals each             | No                                       |
| 2012 (5-year review)    | ~12                         | ~15                   | All threats managed in all 3 populations                  | Partially (see Table 2)                  |
|                         |                             |                       | Complete genetic storage                                  | Partially                                |
|                         |                             |                       | 3 populations with 50 mature individuals each             | No                                       |

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

| <b>Threat</b>                                                                | <b>Listing factor</b> | <b>Current Status</b> | <b>Conservation/ Management Efforts</b>                                                                                              |
|------------------------------------------------------------------------------|-----------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Ungulates – Degradation of habitat                                           | A, D                  | Ongoing               | Partially: Ungulate exclosures – Populations are spot-fenced, but larger scale habitat fences are needed for long-term viability     |
| Lava flows – Degradation of habitat                                          | A                     | Ongoing               | No                                                                                                                                   |
| Established ecosystem-altering invasive plant species degradation of habitat | A                     | Ongoing               | No                                                                                                                                   |
| Rodent predation or herbivory                                                | C                     | Ongoing               | No                                                                                                                                   |
| Established invasive plant species competition                               | E                     | Ongoing               | No                                                                                                                                   |
| Low numbers                                                                  | E                     | Ongoing               | Partially: Captive propagation for genetic storage and reintroduction, reintroduction / translocation implementation, and monitoring |
| Climate change                                                               | A, E                  | Increasing            | No                                                                                                                                   |

### 3.0 RESULTS

#### 3.1 Recommended Classification:

- Downlist to Threatened
- Uplist to Endangered
- Delist
  - Extinction*
  - Recovery*
  - Original data for classification in error*
- No change is needed

#### 3.2 New Recovery Priority Number:

**Brief Rationale:**

#### 3.3 Listing and Reclassification Priority Number:

**Reclassification (from Threatened to Endangered) Priority Number: \_\_\_\_\_**

**Reclassification (from Endangered to Threatened) Priority Number: \_\_\_\_\_**

**Delisting (regardless of current classification) Priority Number: \_\_\_\_\_**

**Brief Rationale:**

#### **4.0 RECOMMENDATIONS FOR FUTURE ACTIONS**

- Captive propagation for genetic storage and reintroduction
  - Increase the number of individuals in *ex situ* propagation.
  - Continue to collect seed and cuttings from all existing individuals in the wild and *ex situ*, and closely monitor the crossing process during propagation to maximize the genetic variation among offspring.
- Reintroduction / translocation implementation – Continue to reintroduce the species back into its historical native range of the species.
- Reintroduction / translocation site identification – Identify new sites within the historical range of the species to establish additional reintroductions.
- Ecosystem-altering invasive plant species control – Control invasive introduced plant species around all populations.
- Ungulate exclosures:
  - Build exclosure fences around each *ex situ* population to exclude ungulate species.
  - Monitor exclosure fences after completion for signs of breaching.
  - Continue to maintain fenced exclosures around all populations.
- Ungulate control – Protect all populations against disturbances from feral ungulates.
- Surveys / inventories – Resurvey the historical range of *Cyanea platyphylla* for populations that may have been overlooked previously.
- Population biology research – Study existing populations in the field to determine what species of insect or bird pollinate the species.
- Threat monitoring and control:
  - Monitor existing wild populations for evidence of decline due to insects or disease, respond with control as needed.

- Monitor existing wild and introduced populations for predation or herbivory by rats, if rats are impacting the species implement effective control methods.
- Alliance and partnership development – Work with the Hawaii Division of Forestry and Wildlife and other land managers to continue implementation of ecosystem-level restoration and management to benefit this species.
- Threats research – Assess the modeled effects of climate change on this species, and use to determine future landscape needed for the recovery of the species.

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**Signature Page**  
**U.S. FISH AND WILDLIFE SERVICE**  
**5-YEAR REVIEW of *Cyanea platyphylla* (Haha)**

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

**Appropriate Listing/Reclassification Priority Number, if applicable:** \_\_\_\_\_

**Review Conducted By:**

Chelsie Javar, Fish and Wildlife Biologist  
Marie Bruegmann, Plant Recovery Coordinator  
Jess Newton, Endangered Species Recovery Program Leader  
Kristi Young, Assistant Field Supervisor for Endangered Species

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

*for*

Jess Newton

Date 8/28/2012