



United States Department of the Interior



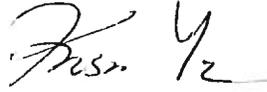
FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

In Reply Refer To:
TAILS 2015-F-0186
TE-014497-14

MAR 13 2015

Memorandum

To: Field Supervisor, Ecological Services
Honolulu, Hawai'i

Through: Deputy Field Supervisor, Programmatic Division
Honolulu, Hawai'i 

From: Recovery Permits Lead Biologist **APM**
Honolulu, Hawai'i

Subject: Recovery Permit Amendment Number TE-014497-14: Internal Section 7
Consultation

The applicant, Haleakalā National Park (HALE), has requested to add activities to their recovery permit, including presence/absence surveys, collect seeds and cuttings from wild populations, and propagate and outplant the following 12 newly listed endangered plant species: *Bidens campylotheca* ssp. *pentamera* (ko'oko'olau), *Bidens campylotheca* ssp. *waihoiensis* (ko'oko'olau), *Cyanea asplenifolia* (hāhā), *Cyanea duvalliorum* (hāhā), *Cyanea horrida* (hāhā nui), *Cyanea kunthiana* (hāhā), *Cyanea maritae* (hāhā), *Cyrtandra ferripilosa* (haiwale), *Geranium hanaense* (nohoanu), *Phyllostegia bracteata* (no common name [NCN]), *Phyllostegia haliakalae* (NCN), and *Wikstroemia villosa* (ākia).

Project Description

The applicant plans to conduct presence/absence surveys and collect seeds and cuttings of the twelve newly listed plants for the purposes of propagation and outplanting. Outplanting will occur in habitat secure from invasive species. If habitat is not secure, propagules will be collected to bank seeds in appropriate storage, grow in living collections, and then plant into secure managed habitat in HALE in the historic range of the species. Propagation shall be conducted at the most appropriate nursery for the species which may include the Olinda Rare Plant Facility (Anna Palomino). In addition, the material will be given to the Plant Extinction Prevention Program (Hank Oppenheimer) if private lands are more suitable or to the DOWAW (Lance DeSilva) if State lands are more suitable. Seeds will be propagated for outplanting or sent to Marian Chau or Tim Kroessig at the University of Hawai'i Lyon Seed Conservation Lab

for short- or long-term storage. Outplanted specimens will be monitored on a regular basis for growth and survival.

Plants will be collected following the Hawai'i Rare Plant Restoration Group (HRPRG), "Protocols for Collecting and Handling Native Hawaiian Plants" and "Revised Draft Policy-Collection of Endangered Plants" and all propagation material collected shall be cultivated at HALE Greenhouse(s) (except as allowed at the Olinda Rare Plant Facility indicated above) following the HRPRG "Phytosanitation Standards and Guidelines" located at <http://www.hear.org/hrprg>.

Status of Species in the Wild

The following plant species were all listed as endangered in 2013 and the following accounts are taken from that listing package (USFWS 2013).

Bidens campylotheca ssp. *pentamera* (ko`oko`olau) is a perennial herb in the sunflower family (Asteraceae) that occurs only on the island of Maui (Ganders and Nagata 1999). Historically, ko`oko`olau was found on Maui's eastern volcano (Haleakalā). Currently, this subspecies occurs on east Maui in the montane mesic, montane wet, dry cliff, and wet cliff ecosystems of Waikamoi Preserve and Kīpahulu Valley (in Haleakalā National Park) (HBMP 2008, NTBGa 2009, TNC 2007; Fay 2010, *in litt.*; Welton 2008, *in litt.*). It is not certain if plants observed in the Hāna Forest Reserve at Waiho`i Valley are ko`oko`olau (Haleakalā National Park (HNP) 2012, *in litt.*; Osterneck 2010, *in litt.*). On west Maui, ko`oko`olau is found on and near cliff walls in lowland dry and lowland mesic ecosystems of Pāpalaua Gulch (West Maui Forest Reserve) and Kaua`ula Valley (NTBG 2009a; Perlman 2009a, *in litt.*). There are approximately 200 individuals in 6 occurrences on east and west Maui total (USFWS 2013)

Bidens campylotheca ssp. *waihoiensis* (ko`oko`olau) is also a perennial herb in the sunflower family (Asteraceae) that occurs only on the island of Maui (Ganders and Nagata 1999). Historically, ko`oko`olau was found on Maui's eastern volcano in Waiho`i Valley and Kaumakani ridge (HBMP 2008). Currently, this subspecies is found in the lowland wet, montane wet, and wet cliff ecosystems in Kīpahulu Valley (Haleakalā National Park) and possibly in Waiho`i Valley (Hāna Forest Reserve) on east Maui (HBMP 2008; TNC 2007; Welton 2008, *in litt.*). In 1974, hundreds of individuals were observed in Waiho`i Valley along Waiohonu stream (NTBG 2009b). As of 2010, there are approximately 200 plants scattered over an area of about 2.5 miles (4 km) in Kīpahulu Valley (Welton 2010a, *in litt.*).

Cyanea asplenifolia (hāhā) is a shrub in the bellflower family (Campanulaceae) found only on the island of Maui. This species was known historically from west Maui in Waihe`e Valley and Kā`anapali and from east Maui on Halehaku ridge (HBMP 2008, Lammers 1999). On west Maui, in the lowland wet ecosystem, there are 3 occurrences totaling 14 individuals in the Pu`u Kukui Preserve and two occurrences totaling 5 individuals in the West Maui Natural Area Reserve (USFWS 2013). On east Maui, this hāhā is found in 1 occurrence each in the lowland mesic ecosystem in Haleakalā National Park (53 individuals) and Kīpahulu Forest Reserve (140 individuals) and there is 1 occurrence in the lowland wet ecosystem in the Makawao Forest Reserve (5 individuals) (HBMP 2008, NTBG 2009c, PEPP 2008, TNC 2007, Welton and Haus 2008; Oppenheimer 2008b, *in litt.*; 2010b; Welton 2010a, *in litt.*). Currently, this hāhā is known

from 8 occurrences totaling fewer than 200 individuals. The plants at Haleakalā National Park are protected by a temporary enclosure (HNP 2012, *in litt.*).

Cyanea duvalliorum (hāhā) is a tree in the bellflower family (Campanulaceae) found only in the east Maui mountains (Lammers 2004). This species was described in 2004, after individuals of a previously unknown species of *Cyanea* were discovered at Waiohiwi Gulch (Lammers 2004). Studies of earlier collections extend the historical range of this species on the windward slopes of Haleakalā in lowland wet and montane wet ecosystems, east of Waiohiwi Stream, from Honomanū Stream to Wailua Iki Streams, and to Kīpahulu Valley (Lammers 2004). In 2007, one individual was observed in the lowland wet ecosystem of the Makawao Forest Reserve (NTBG 2009d). In 2008, 71 individuals were found in 2 new locations in the Makawao Forest Reserve, as well as many juveniles and seedlings (NTBG 2009d). Currently there are 2 known occurrences with approximately 71 individuals in the montane wet ecosystem near Makawao Forest Reserve, and an additional 135 individuals outplanted in Waikamoi Preserve (TNC 2007; NTBG 2009d; Oppenheimer 2010a, *in litt.*).

Cyanea horrida (hāhā nui), a palm-like tree found only on the island of Maui, is a member of the bellflower family (Campanulaceae). Hāhā nui was known historically from the slopes of Haleakalā (HBMP 2008, Lammers 1999). Currently, hāhā nui is known from 12 occurrences totaling 44 individuals in the montane mesic, montane wet, and wet cliff ecosystems of the Waikamoi Preserve, Hanawī Natural Area Reserve, and Haleakalā National Park on east Maui (HBMP 2008, PEPP 2009, PEPP 2010, TNC 2007, TNCH 2010a; Oppenheimer 2010c, *in litt.*).

Cyanea kunthiana (hāhā) is a shrub in the bellflower family (Campanulaceae) found only on Maui. This hāhā was historically known from both the east and west Maui mountains (HBMP 2008, Lammers 1999) and was known to occur in the montane mesic ecosystem in the east Maui mountains in upper Kīpahulu Valley, in Haleakalā National Park and Kīpahulu Forest Reserve (HBMP 2008). In the east Maui mountains, this hāhā currently occurs in the lowland wet and montane wet ecosystems in Waikamoi Preserve, Hanawī Natural Area Reserve, East Bog, Ka`āpahu, and Kīpahulu Valley. In the west Maui mountains, this species occurs in the lowland wet and montane wet ecosystems at `Eke Crater, Kaho`olewa ridge, and at the junction of the Honokōwai, Hāhākea, and Honokōhau gulches (HBMP 2008, NTBG 2009e, TNC 2007; Oppenheimer 2010a, *in litt.*; Perlman 2010, *in litt.*). There are 15 occurrences totaling 165 individuals, although botanists speculate that this species may total as many as 400 individuals with additional surveys of potential habitat on east and west Maui (HBMP 2008, TNC 2007; Fay 2010, *in litt.*; Oppenheimer 2010a, *in litt.*; Osternak 2010, *in litt.*).

Cyanea maritae (hāhā) is also a shrub in the bellflower family (Campanulaceae) found only on Maui (Lammers 2004). In the early 1900s, sterile specimens of this hāhā were collected from the northwestern slopes of Haleakalā in the Waiohiwi watershed and east to Kīpahulu (USFWS 2013). Between 2000 and 2002, fewer than 20 individuals were found in the Waiohiwi area (Lammers 2004). Currently, there are 4 known occurrences, totaling between 23 to 50 individuals in Kīpahulu, Ka`āpahu, west Kahakapao, and the Ko`olau Forest Reserve in lowland wet and montane wet ecosystems on east Maui (TNC 2007; Oppenheimer 2010b, *in litt.*; Welton 2010b, *in litt.*).

Cyrtandra ferripilosa (haiwale) is a shrub in the African violet family (Gesneriaceae) that occurs only on Maui (St. John 1987, Wagner and Herbst 2003). This haiwale was discovered in 1980 in the east Maui mountains at Kuiki in Kīpahulu Valley (St. John 1987, Wagner *et al.* 2005a–*Flora*

of the Hawaiian Islands database). Currently, there are a few individuals each known in two occurrences at Kuiki and on the Manawainui plane in the montane mesic and montane wet ecosystems (Oppenheimer 2010f, *in litt.*; Welton 2010a, *in litt.*).

Geranium hanaense (nohoanu) is a shrub in the geranium family (Geraniaceae) found on Maui (Wagner *et al.* 1999e). Nohoanu was first collected in 1973 from two adjacent montane bogs located on the northeast rift of Haleakalā, east Maui (Medeiros and St. John 1988). At that time, there were around 500 to 700 individuals (Medeiros and St. John 1988). Currently, nohoanu occurs in two areas, “Big Bog” and “Mid Camp Bog,” in the montane wet ecosystem on the northeast rift of Haleakalā, with the same number of estimated individuals (Welton 2008, *in litt.*; Welton 2010a, *in litt.*; Welton 2010b, *in litt.*).

Phyllostegia bracteata (NCN) is a perennial herb in the mint family (Lamiaceae) found on Maui (Wagner *et al.* 1999h). Historically, this species was known to occur from the east Maui mountains at Ukulele, Pu`u Nianiau, Waikamoi Gulch, Ko`olau Gap, Kīpahulu, Nāhiku-Kūhiwa trail, Waiho`i Valley, and Manawainui; and from the west Maui mountains at Pu`u Kukui and Hanakaoo (HBMP 2008). This species appears to be short-lived, ephemeral, and disturbance-dependent and is found in lowland wet, montane mesic, montane wet, subalpine, and wet cliff ecosystems (NTBG 2009h). There have been several reported sightings of this species between 1981 and 2001 on east Maui at Waiho`i Crater Bog, Waikamoi Preserve, Waikamoi flume, and Kīpahulu, and at Pohakea Gulch on west Maui; however, none of these individuals were extant as of 2009 (PEPP 2009). In 2009, one individual was found at Kīpahulu, near Delta Camp, on east Maui, but was not observed on a follow-up survey during that same year (NTBG 2009h).

Phyllostegia haliakalae (NCN) is a vine in the mint family (Lamiaceae) known from Moloka`i, Lāna`i, and east Maui (Wagner 1999). The type specimen was collected by Wawra in 1869 or 1870 in a dry ravine at the foot of Haleakalā (USFWS 2013). A flowering individual was found on the eastern slope of Haleakalā, in the wet cliff ecosystem, in 2009; however, this plant died (TNC 2007; Oppenheimer 2010b, *in litt.*). Collections were made before the plant died, and propagules were outplanted in the Pu`u Māhoe Arboretum (three plants) and Olinda Rare Plant Facility (four plants) (Oppenheimer 2011b, *in litt.*). Additionally, this species has been outplanted in the lowland wet, montane wet, and montane mesic ecosystems of Haleakalā National Park (HNP 2012, *in litt.*). *Phyllostegia haliakalae* was last reported from lowland mesic ecosystem on Moloka`i in 1928, and from dry cliff and wet cliff ecosystems on Lāna`i in the early 1900s (HBMP 2008, TNC 2007). Currently, no individuals are known to occur in the wild on Maui, Moloka`i, or Lāna`i, however, over 100 individuals have been outplanted (HNP 2012, *in litt.*).

Wikstroemia villosa (ʻākia) is a shrub or tree in the ʻākia family (Thymelaeaceae) found on Maui (Peterson 1999). Historically known from the lowland wet, montane wet, and montane mesic ecosystems on east and west Maui, ʻākia is currently known from a recent discovery (2007) of one individual on the windward side of Haleakalā (on east Maui), in the montane wet ecosystem (HBMP 2008, Peterson 1999, TNC 2007). As of 2010, there was one individual and one seedling observed at the same location (Oppenheimer 2010m, *in litt.*) and three individuals have been outplanted in Waikamoi Preserve (Oppenheimer 2010m, *in litt.*).

Effects of the Action

Presence/absence surveys are not expected to impact these species. The collection of seeds and cuttings from wild plant populations will reduce the number of wild seedlings that could be produced. This one-time effect will be minimized by: (1) limiting seed collection to $\leq 15\%$ of seeds produced; and 2) limiting cuttings to no more than six cuttings of < eight inches (20 centimeters) from an individual plant. As many of these species are minimally successful at reproducing in the wild, observing best management procedures when doing greenhouse work to minimize risk of harm to plants from pests and disease, outplanting in habitat secure from invasive species at HALE (or the material will be given to the Plant Extinction Prevention Program (Hank Oppenheimer) if private lands are more suitable or to the DOFAW (Lance DeSilva) if State lands are more suitable), and monitoring outplants in the field, may enhance reproductive success.

In the event that any *Bidens campylotheca* ssp. *pentamera*, *Bidens campylotheca* ssp. *waihoiensis*, *Cyanea asplenifolia*, *Cyanea duvalliorum*, *Cyanea horrida*, *Cyanea kunthiana*, *Cyanea maritae*, *Cyrtandra ferripilosa*, *Geranium hanaense*, *Phyllostegia bracteata*, *Phyllostegia haliakalae*, or *Wikstroemia villosa* is accidentally damaged or destroyed, the permittee shall immediately stop the activity that resulted in the damaged or destroyed plant and reinitiate consultation.

Effects Determination

Although seeds and cuttings will be collected from wild plants, which potentially could grow into new plants *in situ*, many seeds, fruits, or spores never sprout or fail to grow to adulthood because of drought, seed predation by insects and small mammals, and browsing by ungulates. Possible harmful effects from collection and reduction of wild seedlings are offset by the potential establishment of new populations for each species. There is the potential that more seeds will sprout and plants grow from seeds grown in greenhouses. In addition, the research associated with this permit may help improve outplanting success for these species by identifying optimal microhabitats for outplanting. Critical habitat for these species has not been designated; therefore, none will be destroyed or adversely modified through implementation of the proposed actions.

Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(0)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking

under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of Federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

Conclusion

The removal of seeds and cuttings of these twelve newly listed plants is not expected to have long-term negative impacts due to measures taken during collection in the wild and in the greenhouse. Overall the proposed actions and information gained from the applicant's work is expected to contribute to the species' conservation and recovery by improving numbers in secure habitat through outplanting propagated individuals as well as improving our ability to propagate the species. For these reasons we have determined that issuance of permit TE-014497-14 is not likely to jeopardize the continued existence of these plant species.

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