

U.S. FISH AND WILDLIFE SERVICE SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

Scientific Name:

Calamagrostis expansa

Common Name:

Maui reedgrass

Lead region:

Region 1 (Pacific Region)

Information current as of:

06/19/2014

Status/Action

Funding provided for a proposed rule. Assessment not updated.

Species Assessment - determined species did not meet the definition of the endangered or threatened under the Act and, therefore, was not elevated to the Candidate status.

New Candidate

Continuing Candidate

Candidate Removal

Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status

Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species

Range is no longer a U.S. territory

Insufficient information exists on biological vulnerability and threats to support listing

Taxon mistakenly included in past notice of review

Taxon does not meet the definition of "species"

Taxon believed to be extinct

Conservation efforts have removed or reduced threats

___ More abundant than believed, diminished threats, or threats eliminated.

Petition Information

___ Non-Petitioned

X Petitioned - Date petition received: 05/11/2004

90-Day Positive:05/11/2005

12 Month Positive:05/11/2005

Did the Petition request a reclassification? **No**

For Petitioned Candidate species:

Is the listing warranted(if yes, see summary threats below) **Yes**

To Date, has publication of the proposal to list been precluded by other higher priority listing?
Yes

Explanation of why precluded:

Higher priority listing actions, including court-approved settlements, court-ordered and statutory deadlines for petition findings and listing determinations, emergency listing determinations, and responses to litigation, continue to preclude the proposed and final listing rules for this species. We continue to monitor populations and will change its status or implement an emergency listing if necessary. The Progress on Revising the Lists section of the current CNOR (<http://endangered.fws.gov/>) provides information on listing actions taken during the last 12 months.

Historical States/Territories/Countries of Occurrence:

- **States/US Territories:** Hawaii
- **US Counties:** Hawaii, HI, Maui, HI
- **Countries:** United States

Current States/Counties/Territories/Countries of Occurrence:

- **States/US Territories:** Hawaii
- **US Counties:** Hawaii, HI, Maui, HI
- **Countries:** United States

Land Ownership:

Over half of the statewide population of *Calamagrostis expansa* occurs on State land on the island of Hawaii (Puu o Umi Natural Area Reserve (NAR), Kohala Forest Reserve (FR), and Upper Waiakea FR). The remaining populations are located on the island of Maui and are divided between Federal (Haleakala National Park), State (West Maui NAR, Hana FR), private (Maui Land and Pineapple Company, Haleakala Ranch), and a small portion of county land (Board of Water Supply).

Lead Region Contact:

Lead Field Office Contact:

PACIFIC ISLANDS FISH AND WILDL OFC, Kristi Young, 808-792-9419, kristi_young@fws.gov

Biological Information

Species Description:

Calamagrostis expansa is a robust, short-rhizomatous perennial with erect or decumbent culms, 1.6 to 6.6 feet (ft) (0.5 to 2 meters (m)) tall and 0.16 to 0.3 inches (in) (4 to 8 millimeters (mm)) in diameter. Sheaths are 0.14 to 0.16 in (3.5 to 4 mm) long and overlap closely along the middle of the culm. Leaf blades are flat to involute, 6 to 8 in (15 to 20 centimeters (cm)) long, 0.4 to 1.2 in (1 to 3 cm) wide, with the uppermost leaf blade reduced and hard-pointed. Inflorescences are paniculate, oblong, 6 to 11.8 in (15 to 30 cm) long and devoid of spikelets on the lower half of the branch. The 0.06 to 0.08 in (1.5 to 2 mm) rachilla is obscured by long, whitish yellow, silky hairs. The fruit is pale brown, ovoid, 0.08 to 0.1 in (2 to 2.5 mm) long, slightly grooved ventrally, with an apiculate apex (OConnor 1999, p. 1,509).

Taxonomy:

Calamagrostis expansa was described by A.S. Hitchcock (1922, p. 148). This species is recognized as a distinct taxon in OConnor (1999, p. 1,509) and in Wagner and Herbst (2003, p. 59), the most recently accepted Hawaiian plant taxonomy.

Habitat/Life History:

Calamagrostis expansa is found in wet forest, open bogs, and bog margins. On Maui, *C. expansa* is found with the associated species *Carex echinata* (no common name (NCN)), *Cheirodendron trigynum* (olapa), *Deschampsia nubigena* (hairgrass), *Dicranopteris linearis* (uluhe), *Dryopteris* spp. (laukahi), *Dubautia* spp. (naenae), *Leptecophylla tameiameia* (pukiawe), *Lysimachia* spp. (NCN), *Machaerina* spp. (uki), *Metrosideros polymorpha* (ohia), *Oreobolus furcatus* (NCN), *Rhynchospora* spp. (kuolohia), *Sadleria* spp. (amaau), *Vaccinium* spp. (ohelo), and various ferns, at elevations between 4,000 and 7,500 ft (1,219 and 2,286 m). On the island of Hawaii, *C. expansa* is found in *Metrosideros polymorpha*-*Machaerina angustifolia* (ohia-uki) montane bogs with the associated species *Cheirodendron trigynum*, *Machaerina angustifolia*, *Metrosideros polymorpha* var. *incana*, and *Rhynchospora* spp., at elevations between 4,200 and 4,442 ft (1,280 and 1,354 m) (OConnor 1999, p. 1,509; Hawaii Biodiversity and Mapping Program (HBMP) 2008).

Historical Range/Distribution:

Historically rare, *Calamagrostis expansa* was reported from wet forest and bogs on Maui (OConnor 1999, p. 1,509). Discovered on the island of Hawaii in 1995, the historical status of the species on this island is unknown (HBMP 2008).

Current Range Distribution:

Currently, *Calamagrostis expansa* is found on the islands of Maui and Hawaii, in wet forest, open bogs, and bog margins (HBMP 2008).

Population Estimates/Status:

This species is known from 13 populations numbering fewer than 750 individuals observed during surveys conducted as recently as 2010. We are unaware of additional surveys conducted to date. On the island of Maui, there are 2 populations totaling approximately 100 individuals in the west Maui mountains at Eke Crater and from Honokohau to Kahoolewa, and 7 populations of about 200 individuals in the East Maui mountains, at Waikamoi Preserve, along the southern boundary of Hanawi NAR and Kalapawili Ridge, along the southern rim of Kipahulu Valley, and at New Greensword Bog (Wood, in litt. 2005; Welton, in litt. 2008, Fay, in litt. 2010; Oppenheimer, in litt. 2010; Welton, in litt. 2010; Agorastos, in litt. 2011). On the island of Hawaii, there are 3 populations in the Kohala FR and Puu o Umi NAR in the Kohala Mountains, totaling approximately 350 individuals (HBMP 2008). There is 1 small population in the Upper Waiakea FR, with 6 individuals observed in 2006 (Perry, in litt. 2006; HBMP 2008).

Threats

A. The present or threatened destruction, modification, or curtailment of its habitat or range:

Calamagrostis expansa is highly and imminently threatened by feral pigs (*Sus scrofa*) on Maui and the island of Hawaii. Evidence of the activities of feral pigs has been reported in areas where *C. expansa* populations are known to occur in the east Maui mountains and also in the Kohala Mountain and Upper Waiakea populations on the island of Hawaii (USFWS 1995; Hobdy, in litt. 1996; Medeiros, in litt. 1996; Perlman, in litt. 1996; Wood, NTBG, in litt. 1996; Perry, in litt. 2006; HBMP 2008).

Pigs of Asian ancestry were introduced to Hawaii by the Polynesians, and the Eurasian type was introduced to Hawaii by Captain James Cook in 1778, with many other introductions thereafter (Tomich 1986, p. 121). Some pigs raised as food escaped into the forests of Hawaii, Kauai, Oahu, Molokai, Maui, and Niihau, and are now managed as a game animal by the State to optimize hunting opportunities (Tomich 1986, p. 125; State of Hawaii 2001). In a study conducted in the 1980s on feral pig populations in the Kipahulu Valley on Maui, the deleterious effects of feral pig rooting on native forest ecosystems was documented (Diong 1982, 408 pp.). Kipahulu Valley consists of a diverse composition of native ecosystems, from near sea level to alpine, and forest types ranging from mesic to wet, dominated by *Acacia koa* (koa) and *Metrosideros polymorpha* (ohia lehua). Rooting by feral pigs was observed to be related to the search for earthworms, with rooting depths averaging 8 in (20 cm) greatly disrupting the leaf litter and topsoil layers and contributing to erosion and changes in ground topography (Diong 1982, pp. 143-150). The feeding habits of pigs were observed to create seed beds, enabling the establishment and spread of weedy species such as *Psidium cattleianum* (strawberry guava) (Diong 1982, pp. 164-165). The study concluded that all aspects of the food habits of pigs are damaging to the structure and function of the Hawaiian forest ecosystem (Diong 1982, pp. 166-167).

Hawaiian ecosystems, having evolved without hoofed mammals, are susceptible to large-scale disturbance by pigs and other introduced ungulates (Loope et al. 1991, p. 3). Because of demonstrated habitat modifications by feral pigs, such as destruction of native plants, disruption of topsoil leading to erosion, and establishment and spread of nonnative plants, the U.S. Fish and Wildlife Service (FWS) believes they are threats to *C. expansa*.

Climate change may pose a threat to the ecosystem that supports this species. Fortini et al. (2013, pp. 1134) conducted a landscape-based assessment of climate change vulnerability for native plants of Hawaii using high resolution climate change projections. Climate change vulnerability is defined as the relative inability of a species to display the possible responses necessary for persistence under climate change. The assessment by Fortini et al. (2013, p. 68) concluded that *Calamagrostis expansa* is modestly vulnerable to the impacts of climate change. Therefore, additional management actions may be needed to conserve this taxon into the future.

B. Overutilization for commercial, recreational, scientific, or educational purposes:

None known.

C. Disease or predation:

Calamagrostis expansa is potentially threatened by predation by feral pigs in the east Maui mountains populations and the Kohala Mountain and Upper Waiakea populations on the island of Hawaii (Hobdy, in litt. 1996; Medeiros, in litt. 1996; Perlman, in litt. 1996; Wood, in litt. 1996; Perry, in litt. 2006; HBMP 2008). Browsing by ungulates has been observed on many native plant species, including common and rare or endangered species (Cuddihy and Stone 1990, pp. 61-63; Loope et al. 1991, p. 19). Because Hawaii's native plants evolved without any browsing or grazing mammals present, many lost natural defenses to such impacts (Merlin and Juvik 1992, p. 597). Browsing by ungulates has been observed on many other native species, including common and rare or even endangered species (Cuddihy and Stone 1990, pp. 63-67).

Pigs are omnivorous in their diet. In the study described above on feral pig populations in the Kipahulu Valley, pigs were observed browsing on young shoots, leaves and fronds of a wide variety of plants, over 85 percent of which were endemic species (Diong 1982, p. 138). A stomach content analysis showed that the pigs' food sources consisted of native plants, primarily tree ferns (*Cibotium* spp.) at 60 percent and alternating with *Psidium cattleianum* when it was available. Pigs were observed felling and removing the bark of *Clermontia*, *Cibotium*, *Coprosma*, *Psychotria*, and *Hedyotis* species (herbaceous and woody plants) and causing enough damage to kill larger trees over a few months of repeated feedings (Diong 1982, pp. 138, 144).

As of May 2013, we do not have information to indicate that disease poses a threat to *C. expansa*.

D. The inadequacy of existing regulatory mechanisms:

Calamagrostis expansa is not currently protected under Hawaii's endangered species law (HRS, Sect. 195-D) or the Federal Endangered Species Act (16 U.S.C. §1531-1544).

Pigs are managed in Hawaii as game animals, but many populate inaccessible areas where hunting is difficult, if not impossible, and therefore has little effect on their numbers (Hawaii Heritage Program 1990, p. 3). Pig hunting is allowed year-round, or during certain months, depending on the area (Hawaii Department of Land and Natural Resources 1999, 2003); however, public hunting does not adequately control the number of ungulates to eliminate this threat to native plant species including *C. expansa*.

E. Other natural or manmade factors affecting its continued existence:

Calamagrostis expansa is threatened by nonnative plant species that degrade and destroy habitat and outcompete native plants (HBMP 2008; Hobdy, in litt. 1996; Medeiros, in litt. 1996; Perlman, in litt. 1996; Wood, in litt. 1996). The nonnative plant species that are the greatest threats to *C. expansa* are: *Juncus effusus* (Japanese mat rush), *Juncus planifolius* (bog rush), and *Tibouchina herbacea* (glorybush) in the west Maui Mountains; *Ageratina adenophora* (Maui pamakani), *Holcus lanatus* (common velvetgrass), *Prunella vulgaris* (selfheal), and *Sacciolepis indica* (glenwood grass) in the east Maui Mountains; and *Juncus ensifolius* (dagger-leaved rush), *Juncus planifolius*, *Polygonum punctatum* (water smartweed), and *Tibouchina herbacea* in the Kohala Mountains (HBMP 2008; Oppenheimer, in litt. 2007).

Ageratina adenophora is native to tropical America, and has naturalized in dry to wet forest on the islands of Oahu, Molokai, Lanai, and Maui (Wagner et al. 1999, pp. 254-255). *A. adenophora* is a shrub 3 to 5 ft (1 to 1.5 m) tall with trailing branches that root on contact with soil. It forms dense mats which prevent regeneration of native plants (Anderson et al. 1992, p. 315; California Invasive Plant Council 2013). It is

considered a serious weed in agriculture, especially in rangeland, because it often replaces more desirable vegetation or native species, and is fatally toxic to horses and most livestock. The eupatorium gall fly, *Procecidochares utilis*, was introduced to Hawaii in 1944 for control of *A. adenophora*, and has been successful in suppression of most of the infestations (Bess and Haramoto 1959, p. 248).

Holcus lanatus is native to Europe and naturalized in Hawaii where it occurs on poor, moist soils (O'Connor 1999, p. 1,551). *H. lanatus* is an aggressive weed, growing rapidly from basal shoots or prolific seed and therefore can become dominant if not controlled. It gradually forces other plants out, reducing species diversity. Allelopathy may also play a role in the dominance of this grass over other grasses (Remison and Snaydon 1980, p. 183). The most effective control measure is physical removal by hand-pulling or hoeing. No safe, effective means of biocontrol have been found (Pitcher and Russo 2005, pp. 1-6).

Juncus effusus is a perennial herb widely distributed in temperate regions and naturalized in Hawaii in ponds, streams, and open boggy sites. It was brought to Hawaii as a source of matting material, but grew too slowly to be of commercial value. This plant spreads by seeds and rhizomes, and forms dense mats that crowd out native plants (Coffey 1999, p. 1,453). We are unaware of any control methods for this species beyond herbicide application (University of Hawaii 2013).

Juncus ensifolius, a perennial herb native to the western United States, is naturalized in standing water of marshy areas in Hawaii (Coffey 1999, p. 1,453). This weedy colonizer can tolerate environmental stress and out-compete native species (Pojar and Mackinnon 1994). We are unaware of any control methods for this species.

Juncus planifolius is a perennial rush which has naturalized in moist, open, disturbed depressions on margins of forests and in bogs on Kauai, Oahu, Molokai, Maui, and Hawaii (Coffey 1999, pp. 1,453-1,454). This species forms dense mats and has the potential of displacing natives by preventing establishment of native seedlings (Medeiros et al. 1991, pp. 22-23). We are unaware of any control methods for this species.

Polygonum punctatum is a perennial herb native to North and South America and the West Indies that was introduced to Hawaii in 1909. This taxon established in Hawaii along streams, wet areas, and in disturbed forest (Wagner et al. 1999, p. 1,064). It grows in wetter areas or in shallow water, and has both floating and terrestrial forms. *P. punctatum* can grow up to 30 in (76 cm) high, and can carpet large areas with its wide leaves. The achenes are spread by waterbirds, and it also spreads by rooting at the nodes. Handling of this vegetation can cause stings and burns (Earth Cards 2006; USGS 2006). We are unaware of any control methods for this species.

Prunella vulgaris is a perennial herb in the mint family, native to North and Central America, temperate Europe, and Asia. In Hawaii, *P. vulgaris* is naturalized in mesic or wet forest on Molokai, Maui, and Hawaii (Wagner et al. 1999, pp. 828-829). It is a low-growing plant that spreads out well and will colonize an area with its creeping root stocks and by seed (The Green Web 2006). This herb is used medicinally in China and extracts have demonstrated anti-viral properties (Sahelian 2006). We are unaware of any control methods for this species.

Sacciolepis indica is a grass native to the Paleotropics, and naturalized in Hawaii in open, wet areas and along trails (O'Connor 1999, p. 1,589). This slender, annual grass invades disturbed and open areas in wet habitats. The seeds are dispersed by sticking to animal fur. Its response to fire is unknown. There is a large infestation moving into Wahiawa Bog, Kauai (University of Hawaii 1998). A study conducted in a bog at Haleakala National Park showed that within six years of an area being rooted and denuded by pigs, the cover of *Sacciolepis indica* increased from four percent to 33 percent (Medeiros et al. 1991, p. 11). This species has not been evaluated for biological control and we are unaware of any control methods for this species beyond herbicide application (University of Hawaii 2013).

Tibouchina herbacea is a member of the Melastomataceae family and is native to southern Brazil, Uruguay,

and Paraguay. In Hawaii, it is naturalized and abundant in disturbed mesic to wet forest on the islands of Hawaii, Maui, and Lanai (Wagner et al. 1999, p. 915). All members of this genus are legally declared noxious in the state of Hawaii (Hawaii Administrative Rules, Title 4, Subtitle 6, Chapter 68). Research is ongoing for biological controls of this species (Smith 1998; The Nature Conservancy 2003, pp. 8-9). Management is possible with herbicide application (University of Hawaii 2013).

The original native flora of Hawaii consisted of about 1,400 species, nearly 90 percent of which were endemic. Of the current total native and naturalized Hawaiian flora of 1,817 taxa, 47 percent are introduced species, and nearly 100 of those species are considered pests (Smith 1985, p. 180; Wagner et al. 1999, p. 45). Confirmed personal observations (HBMP 2008) and several studies (Cuddihy and Stone 1990, p. 74; Wood and Perlman 1997, p. 18; Robichaux et al. 1998, p. 4) indicate nonnative plant species may out-compete native plants similar to *C. expansa*. Competition may be for space, light, water, or nutrients, or they may produce a chemical that inhibits the growth of other plants (Smith 1985, p. 227-230; Cuddihy and Stone 1990, p. 74). In addition, nonnative pest plants found in habitat similar to that of this species have been shown to make the habitat less suitable for native species (Smith 1985, pp. 240-241; Loope and Medeiros 1992, pp. 7-8; Medeiros et al. 1992, p. 30; Ellshoff et al. 1995, pp. ii, 3-4; Meyer and Florence 1996, p. 778; Medeiros et al. 1997, pp. 23-24; Loope et al. 2004, p. 1,472). In particular, alien pest plant species degrade habitat by modifying availability of light, altering soil-water regimes, modifying nutrient cycling, or altering fire characteristics of native plant communities (Smith 1985, pp. 227-230; Cuddihy and Stone 1990, p. 74; Vitousek et al. 1997, pp. 6-10). Because of demonstrated habitat modification and resource competition by nonnative plant species in habitat similar to that of *C. expansa*, the FWS believes nonnative plant species are a threat to this species.

Conservation Measures Planned or Implemented :

All of the known populations of *Calamagrostis expansa* on the island of Maui occur in managed areas. Pig exclusion fences have been constructed and control of nonnative weeds is ongoing within the enclosures at Kahakuloa, Waikamoi, and Hanawi where populations of *C. expansa* exist (USFWS 1991; USFWS 1995; Maui Pineapple Company, Ltd. 1999, pp. 4-7; University of Hawaii 2005; Oppenheimer, in litt. 2007).

On the island of Hawaii the State has fenced a new population of six individuals discovered in the Upper Waiakea FR (Perry, in litt. 2006; Conry, in litt. 2012).

Summary of Threats :

Based on our evaluation of habitat degradation and loss by feral pigs and by competition with nonnative plants, we conclude there is sufficient information to develop a proposed listing rule for this species due to the present and threatened destruction, modification, or curtailment of its habitat and range, and the displacement of individuals of *Calamagrostis expansa* due to competition with nonnative plants for space, nutrients, water, air, and light. Predation by feral pigs is a potential threat to *C. expansa*. We find that this species is warranted for listing throughout all its range, and, therefore, find that it is unnecessary to analyze whether it is threatened or endangered in a significant portion of its range.

For species that are being removed from candidate status:

_____ Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions(PECE)?

Recommended Conservation Measures :

- Protect all individuals from feral pigs by removing pigs from areas where *C. expansa* populations exist and preventing reinvasion through the use of enclosures.

- Control nonnative plants through physical, mechanical, and biological control methods, as well as herbicides when necessary. Continue to conduct research into potential biocontrol species.
- Conduct field surveys in for additional populations in suitable *C. expansa* habitat.
- Reintroduce individuals into suitable habitat within historic range that is being managed for known threats to this species.
- Propagate and maintain genetic stock.

Priority Table

Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/Population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/Population	6
Moderate to Low	Imminent	Monotype genus	7
		Species	8
		Subspecies/Population	9
	Non-Imminent	Monotype genus	10
		Species	11
		Subspecies/Population	12

Rationale for Change in Listing Priority Number:

Magnitude:

This species is highly threatened by feral pigs that degrade and destroy habitat, and by nonnative plants that compete for light and nutrients. Threats to the wet forest and bog habitat of *Calamagrostis expansa*, and to individuals of this species, occur throughout most of its range on lands that are unmanaged, and are expected to continue or increase without control or eradication. Feral pigs have been fenced out of the east Maui populations of *C. expansa* within Haleakala National Park and Waikamoi Preserve, and out of one population in the Upper Waiakea Forest Reserve on Hawaii Island. Nonnative plant control is ongoing within these managed areas; however, these managed areas protect only those plants on Maui while none of the plants on the island of Hawaii (approximately 350 individuals) are protected. All fences must be continually maintained to prevent incursion by feral pigs. Long-term monitoring and management will be required to maintain threat-free areas.

Imminence :

Habitat degradation by feral pigs and competition with nonnative plants are imminent threats because they are ongoing. Possible predation by feral ungulates is considered non-imminent.

 Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determination whether emergency listing is needed?

Emergency Listing Review

 No Is Emergency Listing Warranted?

Calamagrostis expansa is currently known from 13 populations totaling approximately 750 individuals. The species is threatened by habitat destruction, possible predation by feral pigs, and competition with nonnative plants in unmanaged areas. The species does not appear to be appropriate for emergency listing at this time because the immediacy of the threats is not so great as to imperil a significant proportion of the taxon within the time frame of the routine listing process. In addition, individuals of *C. expansa* on Maui will benefit from conservation actions initiated by the State Division of Forestry and Wildlife, The Nature Conservancy of Hawaii, private landowners, and the West and East Maui Watershed Partnerships, all funded in part by the FWS. If it becomes apparent that the routine listing process is not sufficient to prevent large losses that may result in this species' extinction, then the emergency rule process for this species will be initiated. We will continue to monitor the status of *C. expansa* as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

Description of Monitoring:

Much of the information in this form is based on the results of a meeting of 20 botanical experts held by the Center for Plant Conservation in December of 1995, and was updated with information from a survey conducted by the National Tropical Botanical Garden in late 1995, and by personal communication with Robert Hobdy (formerly with the Hawaii Department of Land and Resources) in 1996; Arthur Medeiros of the U.S. Geological Survey, Biological Resources Discipline in 1996; and Steve Perlman and Ken Wood of NTBG in 1996. We incorporated additional new information on this species from information in our files and the most recent supplement to the Manual of Flowering Plants of Hawaii (Wagner and Herbst 2003). In 2004, the Pacific Islands Office contacted the following species experts: Robert Hobdy; Joel Lau of the Hawaii Natural Heritage Program; Arthur Medeiros; Hank Oppenheimer resource manager for the Maui Land and Pineapple Company; and Steve Perlman and Ken Wood of the NTBG; and no new information was provided. In 2006, confirmation of the status of *Calamagrostis expansa* was provided by Hank Oppenheimer and Lyman Perry (Hawaii Division of Forestry and Wildlife (DOFAW)). In 2007 and 2008, new status and range information was provided by Hank Oppenheimer of the Plant Extinction Prevention Program. We received new information from Patti Welton of the National Park Service, Haleakala National Park, in 2008; Patrice Moriyasu of the Volcano Rare Plant Facility in 2009; and Kerri Fay (The Nature Conservancy) and Hank Oppenheimer (Plant Extinction Prevention Program) in 2010. In 2011, we contacted the species experts listed below, and received information from Pat Bily (The Nature Conservancy-Maui) and Nick Agorastos (DOFAW). In 2012 and 2013, we received new information from the State and incorporated it into this form.

List all experts contacted in 2011:

Name Date Affiliation

Agorastos, Nick 02/16/11 Division of Forestry and Wildlife, Hawaii
Bakutis, Ane 02/16/11 Plant Extinction Prevention Program, Molokai
Ball, Donna 02/16/11 U.S. FWS, Partners Program, Hawaii
Bily, Pat 02/16/11 The Nature Conservancy, Maui
Bio, Kealii 02/16/11 Plant Extinction Prevention Program, Hawaii
Caraway, Vickie 02/22/11 Hawaii Division of Forestry and Wildlife, Oahu
Ching, Susan 02/16/11 Plant Extinction Prevention Program, Oahu
Clark, Michelle 02/16/11 U.S. FWS, Partners Program, Kauai
Duvall, Fern 02/16/11 Hawaii Division of Forestry and Wildlife, Maui
Fay, Kerri 02/16/11 The Nature Conservancy, Maui
Garnett, Bill 02/16/11 National Park Service, Kalaupapa, Molokai
Haus, Bill 02/16/11 National Park Service, Haleakala NP, Maui

Higashino, Jennifer 02/16/11 U.S. FWS, Partners Program, Maui
Imada, Clyde 02/16/11 Bishop Museum, Botany Department
Kawelo, Kapua 02/16/11 U.S. Army, Environmental Division
McDowell, Wendy 02/16/11 Plant Extinction Prevention Program, Kauai
Medeiros, Arthur 02/16/11 U.S. Geological Survey
Moses, Wailana 02/16/11 The Nature Conservancy, Molokai
Oppenheimer, Hank 02/16/11 Plant Extinction Prevention Program, Maui Nui
Perlman, Steve 02/16/11 National Tropical Botanical Garden
Perry, Lyman 02/16/11 Division of Forestry and Wildlife, Hawaii
Pratt, Linda 02/16/11 U.S.G.S., Biological Resources Division
Starr, Forest 02/16/11 U.S. Geological Survey
Stevens, Bryon 02/16/11 DLNR Natural Area Reserves, Maui
Ward, Joe 02/22/11 Puu Kukui Watershed Preserve
Welton, Patti 02/16/11 National Park Service, Haleakala NP, Maui
Wysong, Michael 02/16/11 DLNR Natural Area Reserves, Kauai

The Hawaii Biodiversity and Mapping Program identified this species as critically imperiled (HBMP 2006). Based on the International Union for Conservation of Nature and Natural Resources Red List of Threatened Species, *Calamagrostis expansa* is recognized as Endangered (facing a very high risk of extinction in the wild) (Bruegmann and Caraway 2003). *C. expansa* is not included in the list of species of greatest conservation need in Hawaii's 2005 Comprehensive Wildlife Conservation Strategy (Mitchell et al. 2005, 722 pp.).

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment:

Hawaii

Indicate which State(s) did not provide any information or comment:

none

State Coordination:

On February 20, 2013, we provided the Hawaii Division of Forestry and Wildlife with copies of our most recent candidate assessments for their review and comment. New information was received on April 12, 2013, and incorporated into this report. In addition, we are in frequent contact with State botanists and, PEPP, a multiagency (including State and Federal) organization operated by the University of Hawaii that functions to prevent extinction of Hawaii's rarest and most threatened plants. Therefore, we believe this assessment contains the most recent available information on *Calamagrostis expansa*.

Literature Cited:

Anderson, S.J., C.P. Stone, and P.K. Higashino. 1992. Distribution and spread of alien plants in Kipahulu Valley, Haleakala National Park, above 2,300 ft. elevation. In Stone, C.P., C.W. Smith, and J.T. Tunison (eds.), *Alien Plant Invasions in Native Ecosystems of Hawaii: Management and Research*, Cooperative National Park Resources Studies Unit, University of Hawaii, Honolulu. Pp. 300-338.

Bess, H.A., and F.H. Haramoto. 1959. Biological control of Pamakani, *Eupatorium adenophorum*, in Hawaii by a tephritid gall fly, *Proceicidochara utilis*. 2. Population studies of the weed, the fly, and the parasites of the fly. *Ecology* 40:244-249.

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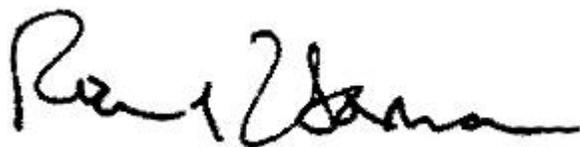
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Approval/Concurrence:

Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes;

the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve:



06/18/2014

Date

Concur:



11/18/2014

Date

Did not concur:

Date

Director's Remarks: