

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AH08

Endangered and Threatened Wildlife and Plants; Determinations of Whether Designation of Critical Habitat Is Prudent for 20 Plant Species and the Proposed Designations of Critical Habitat for 32 Plant Species From the Island of Molokai, HI

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule and notice of determinations of whether designation of critical habitat is prudent.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), have reconsidered our findings concerning whether designating critical habitat for 20 federally protected plants from the island of Molokai, some of which may also occur on other Hawaiian Islands, would be prudent. The 20 plants were listed as endangered or threatened species under the Endangered Species Act of 1973, as amended (Act), between 1991 and 1999. At the time each plant was listed, we determined that designation of critical habitat was not prudent because designation would increase the degree of threat to the species and/or would not benefit the plant.

We determine that critical habitat is prudent for 19 of these species (*Bidens wiebkii*, *Brighamia rockii*, *Canavalia molokaiensis*, *Clermontia oblongifolia* ssp. *brevipes*, *Cyanea dunbarii*, *Cyanea mannii*, *Cyanea procera*, *Hibiscus arnottianus* ssp. *immaculatus*, *Lysimachia maxima*, *Mariscus fauriei*, *Marsilea villosa*, *Melicope reflexa*, *Phyllostegia mannii*, *Schiedea lydgatei*, *Schiedea sarmentosa*, *Silene alexandri*, *Silene lanceolata*, *Stenogyne bifida*, and *Tetramolopium rockii*) because the potential benefits of designating critical habitat essential for the conservation of these species outweigh the risks that may result from human activity because of critical habitat designation. We propose that critical habitat designation is not prudent for one species, *Pritchardia munroi*, because it would likely increase the threat from vandalism or collection of this species on Molokai. This proposed rule also proposes designation of critical habitat for 17 of these 20 species. Critical habitat is not proposed for two species, *Lysimachia maxima* and *Phyllostegia mannii*, that are currently found only in areas on Molokai that do not require

special management consideration or protection because they are already protected and managed to the benefit of these species. Thus, these areas do not meet the definition of critical habitat.

For one additional species from Molokai, *Labordia triflora*, we determined that designation of critical habitat was prudent at the time of its listing as an endangered species in 1999. Critical habitat designation for this species is proposed at this time.

In other proposed rules we determined that critical habitat was prudent for 19 species that occur on Molokai as well as on Kauai, Niihau, Maui, Kahoolawe, and/or Lanai. The determinations were included in proposed rules for Kauai and Niihau, published on November 7, 2000, for Maui and Kahoolawe, published on December 18, 2000, or for Lanai, published on December 27, 2000. These species are: *Adenophorous periens*, *Alectryon macrococcus*, *Centarium sebaeoides*, *Ctenitis squamigera*, *Cyanea grimesiana* ssp. *grimesiana*, *Diellia erecta*, *Hedyotis mannii*, *Hesperomannia arborescens*, *Ischaemum byrone*, *Melicope mucronulata*, *Neraudia sericea*, *Peucedanum sandwicense*, *Plantago princeps*, *Platanthera holochila*, *Schiedea nuttallii*, *Sesbania tomentosa*, *Spermolepis hawaiiensis*, *Vigna o-wahuensis*, and *Zanthoxylum hawaiiense*. Critical habitat designations for 14 of the 19 species on Molokai are proposed at this time. Critical habitat is not proposed for five of these species (*Adenophorus periens*, *Hedyotis mannii*, *Plantago princeps*, *Platanthera holochila*, and *Schiedea nuttallii*) that currently are found in areas on Molokai that do not require special management or protection because they are already protected and managed to the benefit of these species. Thus, these areas do not meet the definition of critical habitat.

Critical habitat designations for 32 species within 28 critical habitat units on the Hawaiian island of Molokai are proposed at this time.

We solicit data and comments from the public on all aspects of this proposal, including data on the economic and other impacts of the proposed designations. We may revise this proposal to incorporate or address new information received during the comment period.

DATES: We must receive comments from all interested parties by February 27, 2001. Public hearing requests must be received by February 12, 2001.

ADDRESSES: If you wish to comment, you may submit your comments and

materials concerning this proposal by any one of several methods:

You may submit written comments and information to the Field Supervisor, U.S. Fish and Wildlife Service, Pacific Islands Office, 300 Ala Moana Blvd., P.O. Box 50088, Honolulu, HI 96850-0001.

You may send comments by electronic mail (e-mail) to *mo_crithab_pr@fws.gov*. Please submit comments in ASCII file format and avoid the use of special characters and encryption. Please include "Attn: 1018-AH08" and your name and return address in your e-mail message. If you do not receive a confirmation from the system that we have received your e-mail message, contact us directly by calling our Pacific Islands Office at phone number 808/541-3441. Please note that the e-mail address (*mo_crithab_pr@fws.gov*) will be closed out at the termination of the public comment period.

You may hand-deliver written comments to our Pacific Islands Office at 300 Ala Moana Blvd., Room 3-122, Honolulu, HI.

Comments and materials received, as well as supporting documentation used in the preparation of this proposed rule will be available for public inspection, by appointment, during normal business hours at the Pacific Islands Office.

FOR FURTHER INFORMATION CONTACT: Paul Henson, Field Supervisor, Pacific Islands Office (see **ADDRESSES** section) (telephone: 808/541-3441; facsimile: 808/541-3470).

SUPPLEMENTARY INFORMATION:

Background

We, the U.S. Fish and Wildlife Service (Service), have reconsidered our findings concerning whether designating critical habitat for 20 federally protected plants from the island of Molokai is prudent. Currently, 15 of these species (*Bidens wiebkii*, *Canavalia molokaiensis*, *Clermontia oblongifolia* ssp. *brevipes*, *Cyanea dunbarii*, *Cyanea mannii*, *Cyanea procera*, *Hibiscus arnottianus* ssp. *immaculatus*, *Lysimachia maxima*, *Melicope reflexa*, *Pritchardia munroi*, *Schiedea lydgatei*, *Schiedea sarmentosa*, *Silene alexandri*, *Stenogyne bifida*, and *Tetramolopium rockii*) are endemic to the island of Molokai while three species (*Mariscus fauriei*, *Marsilea villosa*, and *Silene lanceolata*) are known from Molokai as well as one or more other islands. One species, *Brighamia rockii*, was known from Lanai, Maui, and Molokai but currently is extant only on Molokai. Another species, *Phyllostegia mannii*, was

known from Maui and Molokai but currently is extant only on Molokai (Table 1).

Prudency determinations for 19 other species (*Adenophorous periens*, *Alectryon macrococcus*, *Centarium sebaeoides*, *Ctenitis squamigera*, *Cyanea grimesiana* ssp. *grimesiana*, *Diellia erecta*, *Hedyotis mannii*, *Hesperomannia arborescens*, *Ischaemum byrone*, *Melicope mucronulata*, *Neraudia sericea*, *Peucedanum sandwicense*, *Plantago princeps*, *Platanthera holochila*,

Schiedea nuttallii, *Sesbania tomentosa*, *Spermolepis hawaiiensis*, *Vigna o-wahuensis*, and *Zanthoxylum hawaiiense*) which also occur on the islands of Kauai, Maui and/or Lanai were published in proposed rules on November 7, 2000 (Kauai and Niihau, 65 FR 66808), on December 18, 2000 (Maui and Kahoolawe, 65 FR 79192), or on December 27, 2000 (Lanai). Critical habitat designations for 14 of these 19 species on Molokai are proposed at this time. Critical habitat is not proposed for five species (*Adenophorous periens*,

Hedyotis mannii, *Plantago princeps*, *Platanthera holochila*, and *Schiedea nuttallii*) that currently are found only in areas on Molokai that are protected and managed for the benefit of these species.

In addition, for one species in this proposed rule, *Labordia triflora*, we determined that designation of critical habitat was prudent at the time of its listing as an endangered species in 1999. Critical habitat designation for this species on Molokai is proposed at this time.

TABLE 1.—SUMMARY OF ISLAND DISTRIBUTION OF 49 SPECIES ON MOLOKAI

Species	Island Distribution						
	Kauai	Oahu	Molokai	Lanai	Maui	Hawaii	N.W. Isles, Kahoolawe Niihau
<i>Adenophorus periens</i> (pendant kihi fern)	C	H	C	R	R	C	
<i>Alectryon macrococcus</i> (mahoe)	C	C	C		C		
<i>Bidens wiebkei</i> (ko oko olau)			C				
<i>Bonamia menziesii</i> (No common name)	C	C	H	C	C	C	
<i>Brighamia rockii</i> (pua ala)			C	H	H		
<i>Canavalia molokaiensis</i> (awikiwiki)			C				
<i>Centaurium sebaeoides</i> (awiwi)	C	C	C	C	C		
<i>Clermontia oblongifolia</i> ssp. <i>brevipes</i> (oha wai)			C				
<i>Ctenitis squamigera</i> (pauoa)	H	C	C	C	C	H	
<i>Cyanea dunbarii</i> (haha)			C				
<i>Cyanea grimesiana</i> ssp. <i>grimesiana</i> (haha)		C	C	C	C		
<i>Cyanea mannii</i> (haha)			C				
<i>Cyanea procera</i> (haha)			C				
<i>Cyperus trachysanthos</i> (pu ukaa)	C	C	H	H			Ni (C)
<i>Diellia erecta</i> (No common name)	H	H	C	H	C	C	
<i>Eugenia koolauensis</i> (nioi)		C	H				
<i>Flueggea neowawraea</i> (mehamehame)	C	C	H		C	C	
<i>Hedyotis mannii</i> (pilo)			C	C	C		
<i>Hesperomannia arborescens</i> (No common name)		C	C	H	C		
<i>Hibiscus arnotianus</i> ssp. <i>immaculatus</i> (kokio ke okeo)			C				
<i>Hibiscus brackenridgei</i> (mao hau hele)	H	C	H	C	C	C	Ka (R)
<i>Ischaemum byrone</i> (Hilo ischaemum)	R	H	C		C	C	
<i>Isodendron pyrifolium</i> (wahine noho kula)		H	H	H	H	C	Ni (H)
<i>Labordia triflora</i> (Kamakahala)			C				
<i>Lysimachia maxima</i> (No common name)			C				
<i>Mariscus faurei</i> (No common name)			C	H		C	
<i>Marsilea villosa</i> (ini ihi)		C	C				Ni (H)
<i>Melicope mucronulata</i> (alani)			C		C		
<i>Melicope reflexa</i> (alani)			C				
<i>Neraudia sericea</i> (No common name)			C	H	C		Ka (H)
<i>Peucedanum sandwicense</i> (makou)	C	C	C		C		
<i>Phyllostegia mannii</i> (No common name)			C		H		
<i>Phyllostegia mollis</i> (No common name)		C	H		C		
<i>Plantago princeps</i> (ale)	C	C	C		C	H	
<i>Platanthera holochila</i> (No common name)	C	H	C		C		
<i>Pritchardia munroi</i> (loulu)			C				
<i>Pteris lidgatei</i> (No common name)		C	H		C		
<i>Schiedea lydgatei</i> (No common name)			C				
<i>Schiedea nuttallii</i> (No common name)	C	C	C		R		
<i>Schiedea sarmentosa</i> (No common name)			C				
<i>Sesbania tomentosa</i> (ohai)	C	C	C	H	C	C	Ni (H), Ka (C), NW Isles (C)
<i>Silene alexandri</i> (No common name)			C				
<i>Silene lanceolata</i> (No common name)	H	C	C	H		C	
<i>Solanum incompletum</i> (popolo ku mai)	H		H	H	H	C	
<i>Spermolepis hawaiiensis</i> (No common name)	C	C	C	C	C	C	
<i>Stenogyne bifida</i> (No common name)			C				
<i>Tetramolopium rockii</i> (No common name)			C				
<i>Vigna o-wahuensis</i> (No common name)		H	C	C	C	C	Ni (H), Ka (C)
<i>Zanthoxylum hawaiiense</i> (a e)	C		C	H	C	C	

Key:

C (Current)—population last observed within the past 30 years.

H (Historical)—population not seen for more than 30 years.

R (Reported)—reported from undocumented observations.

An additional nine species are known on Molokai only from historical records (pre-1970) or from undocumented observations. Prudency determinations and proposed critical habitat designations or non-designations for these species which still occur on other islands are/will be included in the proposed rules for the islands on which they currently occur (Table 2).

The 40 plants at issue in this proposed rule were listed as endangered or threatened species under the

Endangered Species Act of 1973, as amended (Act), between 1991 and 1999. At the time 39 of these plants were listed, we determined that designation of critical habitat was not prudent because designation would increase the degree of threat to the species and/or would not benefit the plant. These are not prudent determinations, along with 206 others, were challenged in *Conservation Council for Hawaii v. Babbitt*. On March 9, 1998, the United States District Court for the District of

Hawaii directed us to review the prudency determinations for 245 listed plant species in Hawaii, including 39 of these species (2 F. Supp. 2d 1280). On August 10, 1998, the court ordered us to publish proposed critical habitat designations or non-designations for at least 100 species by November 30, 2000, and to publish proposed designations or non-designations for the remaining 145 species by April 30, 2002 (24 F. Supp. 2d 1074).

TABLE 2.—LIST OF PROPOSED RULES IN WHICH PRUDENCY DETERMINATIONS AND CRITICAL HABITAT DESIGNATIONS WILL BE MADE FOR NINE SPECIES THAT NO LONGER OCCUR ON MOLOKAI

Species	Proposed rule in which prudency will be determined	Proposed rules in which critical habitat designations will be proposed
<i>Bonamia menziesii</i>	Kauai and Niihau (65 FR 66808)	Kauai and Niihau (65 FR 66808); Maui and Kahoolawe (65 FR 79192); Lanai; Hawaii; Oahu.
<i>Cyperus trachysanthos</i>	Kauai and Niihau (65 FR 66808)	Kauai and Niihau (65 FR 66808); Oahu.
<i>Eugenia koolauensis</i>	Oahu	Oahu.
<i>Flueggea neowawraea</i>	Kauai and Niihau (65 FR 66808)	Kauai and Niihau (65 FR 66808); Maui and Kahoolawe (65 FR 79192); Hawaii; Oahu.
<i>Hibiscus brackenridgei</i>	Maui and Kahoolawe (65 FR 79192)	Maui and Kahoolawe (65 FR 79192); Lanai; Hawaii; Oahu.
<i>Isodendron pyriforme</i>	Hawaii	Hawaii.
<i>Phyllostegia mollis</i>	Maui and Kahoolawe (65 FR 79192)	Maui and Kahoolawe (65 FR 79192); Oahu.
<i>Pteris lidgatei</i>	Oahu	Oahu.
<i>Solanum incompletum</i>	Hawaii	Hawaii.

We determined that designation of critical habitat was prudent for *Labordia triflora* at the time it was listed and stated in the final listing rule that we would develop a critical habitat designation for this taxon, along with nine others from Maui, Molokai, Lanai, or Kahoolawe (the Maui Nui species) at the same time we developed the designations for the 245 Hawaiian plant species. In *Conservation Council for Hawaii v. Babbitt*, Civ. No. 99-00283 HG (D. Haw. Aug. 19, 1999, Feb. 16, 2000, and March 28, 2000), the United States District Court for the District of Hawaii ordered us to publish proposed critical habitat designations for these ten Maui Nui species by November 30, 2000, and to publish final critical habitat designations by November 30, 2001. This prudency determination and proposed rule designating critical habitat for 32 plants from the island of Molokai respond to these court orders.

We propose that critical habitat is prudent for 19 species (*Bidens wiebkei*, *Brighamia rockii*, *Canavalia molokaiensis*, *Clermontia oblongifolia* ssp. *brevipes*, *Cyanea dunbarii*, *Cyanea mannii*, *Cyanea procera*, *Hibiscus arnottianus* ssp. *immaculatus*,

Lysimachia maxima, *Mariscus fauriei*, *Marsilea villosa*, *Melicope reflexa*, *Phyllostegia mannii*, *Schiedea lydgatei*, *Schiedea sarmentosa*, *Silene alexandri*, *Silene lanceolata*, *Stenogyne bifida*, *Tetramolopium rockii*) because the potential benefits of designating critical habitat essential for the conservation of these species outweigh the risks of designation as a result of human activity. We propose that critical habitat designation is not prudent for one species, *Pritchardia munroi*, because it would likely increase the threat from vandalism or collection of this species on Molokai.

Critical habitat is proposed for designation within 28 critical habitat units on the island of Molokai. The land area within these units totals 6,165 hectares (ha) (15,230 acres (ac)). If this proposal is made final, section 7 of the Act would prohibit destruction or adverse modification of critical habitat through any activity funded, authorized, or carried out by any Federal agency. Section 4 of the Act requires us to consider economic and other impacts of specifying any particular area as critical habitat.

The Island of Molokai

The island of Molokai, the fifth largest in the Hawaiian Islands chain, is approximately 61 kilometers (km) (38 miles (mi)) long, up to 17 km (10 mi) wide, and encompasses an area of about 688 sq km (266 sq mi) (57 FR 46325). Three shield volcanoes make up most of the land mass of Molokai: West Molokai Mountain, East Molokai Mountain, and a volcano that formed Kalaupapa Peninsula (57 FR 46325).

The taller and larger East Molokai Mountain rises 1,813 meters (m) (4,970 feet (ft)) above sea level and comprises roughly 50 percent of the island's area (57 FR 46325). Topographically, the windward side of East Molokai differs from the leeward side. Precipitous cliffs line the northern windward coast and deep inaccessible valleys dissect the coastal area. The annual rainfall on the windward side is 200 to over 375 centimeters (cm) (75 to over 150 inches (in)), distributed throughout the year. The soils are poorly drained and high in organic matter. The gulches and valleys are usually very steep, but sometimes gently sloping (57 FR 46325). Much of the native vegetation on the northern

part of East Molokai is intact because of its relative inaccessibility to humans and animals, although destructive ungulates have begun to enter the coastline in recent years (57 FR 46325).

Discussion of the Plant Taxa

Species Endemic to Molokai

Bidens wiebkei (ko oko olau)

Bidens wiebkei, a member of the aster family (Asteraceae), is a short-lived perennial herb which is somewhat woody at the base and grows from 0.5 to 1 m (1.6 to 3.3 ft) tall with opposite, pinnately compound leaves. This plant is distinguished from other *Bidens* species which grow on Molokai by its erect habit and the curved or twisted, winged achenes (57 FR 46325; Ganders and Nagata 1999).

This species was observed in flower during May (Hawaii Natural Heritage Program (HINHP) database 2000). No additional life history information is currently available (United States Fish and Wildlife Service (USFWS) 1996a).

Historically *Bidens wiebkei* was known from Pelekunu and the easternmost section of Molokai at Halawa (HINHP Database 2000). It is found currently in Halawaiki Gulch, Lamaloa Gulch, and below Puu Kolekole on State and privately owned lands (Geographic Decision Systems International (GDSI) 2000; HINHP Database 2000). There are a total of three populations containing more than 200 individuals (HINHP Database 2000).

The currently known populations of *Bidens wiebkei* are scattered along steep, exposed slopes in *Metrosideros polymorpha* (ohia) dominated mesic shrublands and dry or mesic *Metrosideros polymorpha-Styphelia tameiameia* (pukiawe) lowland shrubland between 250 and 1,050 m (820 to 3,450 ft) in elevation, extending over a distance of 4 by 1.6 km (2.5 by 1 mi) (Gagne and Cuddihy 1999; HINHP Database 2000; Ganders and Nagata 1999). Other associated plant species include *Antidesma* sp. (hame), *Dodonea viscosa* (aalii), *Canthium odoratum* (alahee), *Lysimachia* sp. (kolokolo kuahiwi), *Nestegis sandwicensis* (olopua), *Phyllanthus sandwicensis* (pamakani-mahu), *Pisonia* sp. (papala kepau), and *Scaevola gaudichaudii* (naupaka kuahiwi) (HINHP Database 2000).

The major threats to *Bidens wiebkei* on Molokai, include habitat degradation and possible predation by deer (*Axis axis*) and feral goats (*Capra hircus*); competition with non-native plants, such as *Melinis minutiflora* (molasses grass) and *Schinus terebinthifolius* (Christmas berry); fire; and damage by

humans of those plants found along trails (HINHP Database 2000; 57 FR 46325).

Canavalia molokaiensis (awikiwiki)

Canavalia molokaiensis, a member of the legume family (Fabaceae), is a short-lived perennial climbing herb with twining branches with leaves made up of three lance-shaped or sometimes oval leaflets. The only species of this genus found on Molokai, this plant can be distinguished from others in the genus by its narrower leaflets and its larger, rose-purple flowers (57 FR 46325; Wagner and Herbst 1999).

This species has been observed in flower during May and December (HINHP Database 2000). Fruits and flowers were observed in March (HINHP Database 2000). No additional life history information is currently available (USFWS 1996a).

Historically, *Canavalia molokaiensis* was known from East Molokai at Kalaupapa, Pelekunu, and farther south in Kahuaawi Gulch, and the region of Manawai (HINHP Database 2000). It now has a more restricted range, from Kalaupapa to Waialeia, Kaunakakai, Pelekunu, and Kamakou (HINHP Database 2000). There are a total of seven populations containing more than 50 plants on State lands, including lands managed by the National Park Service at Kalaupapa National Historical Park, and privately owned lands (GDSI 2000; HINHP Database 2000).

Canavalia molokaiensis typically grows in exposed sites, both dry and mesic, on steep slopes in *Metrosideros polymorpha-Dodonea viscosa* lowland shrubland and mesic shrublands between 10 and 900 m (30 to 3,060 ft) in elevation (HINHP Database 2000). Associated plant species include *Artemisia* sp. (hinahina), *Chamaesyce* sp. (akoko), *Coprosma* sp. (pilo), *Styphelia tameiameia*, and *Wikstroemia* sp. (akia) (HINHP Database 2000).

The threats to this species on Molokai include habitat degradation by feral ungulates such as goats and pigs (*Sus scrofa*), possible predation by feral goats, and competition with non-native plants, such as *Melinis minutiflora* (USFWS 1996a).

Clermonita oblongifolia ssp. *brevipes* (oha wai)

Clermontia oblongifolia ssp. *brevipes*, a member of the bellflower family (Campanulaceae), is a short-lived perennial shrub or tree which reaches a height of 2 to 7 m (6.6 to 23 ft). This species is distinguished from others in the genus by the structure of its calyx and corolla as well as by the lengths of

the flower, the floral lobes, and the green hypanthium. This subspecies differs from others of the species by the shape and length of its leaves, leaf stalks, and flower stalks (Lammers 1988, 1999).

No life history information for this species is currently available (USFWS 1996a).

Clermontia oblongifolia ssp. *brevipes* is known from a single population of five individuals on the privately owned land of the Nature Conservancy of Hawaii's (TNCH) Kamakou Preserve (HINHP Database 2000; USFWS 1996a; Joel Lau, HINHP, *in litt.* 2000). The historical range of this subspecies is not known (USFWS 1996a).

Clermontia oblongifolia ssp. *brevipes* occurs in shallow soil on gulch slopes in the wet *Metrosideros polymorpha*-dominated forest at an elevation between 1,100 and 1,200 m (3,500 and 4,320 ft) (HINHP Database 2000; J. Lau, *in litt.* 2000). Associated plant species include *Cheirodendron trigynum* (olapa), *Cibotium* spp. (hapuu), *Broussaisia argutus* (kanawao), *Hedyotis terminalis* (manono), and *Melicope* sp. (alani) (J. Lau, *in litt.* 2000).

The threats to this species on Molokai are habitat degradation by feral pigs; possible predation on the fruit or plant parts by rats (*Rattus rattus*), as evidence on related species suggests (USFWS 1996a; 57 FR 46325); and random naturally occurring events that may cause the extinction of the entire taxon due to its single population and very low number of individuals.

Cyanea dunbarii (haha)

Cyanea dunbarii, a member of the bellflower family (Campanulaceae), is a short-lived perennial, branched shrub 1.5 to 2 m (4.9 to 6.6 ft) tall with oval to broadly elliptic leaves that have irregularly lobed or cleft margins. This species is distinguished from others in this endemic Hawaiian genus by the lack of prickles on the stems and the irregularly lobed and cleft leaf margins (Lammers 1999).

Cyanea dunbarii was observed in flower, with immature fruit, in September (HINHP Database 2000). No additional life history information is currently available (USFWS 1998a).

Cyanea dunbarii was collected in 1918 at Waihanau and Waialae Valleys, and was not observed again until 1992, when Joel Lau of the Hawaii Natural Heritage Program found it in Mokomoko Gulch on State owned land within Molokai Forest Reserve (GDSI 2000; HINHP Database 2000; 61 FR 53130; Ken Wood, National Tropical Botanical Garden (NTBG), *in litt.* 2000). Currently, it is known from a single population of

approximately 30 mature plants at an elevation of 671 m (2,200 ft) (HINHP Database 2000; K. Wood, *in litt.* 2000).

Cyanea dunbarii occurs on a streambank in a mesic to wet *Dicranopteris linearis* (uluhe)-*Metrosideros polymorpha* lowland forest on moderate to steep slopes (HINHP Database 2000). Associated species include *Diplazium sandwicianum* (hoio), *Charpentiera obovata* (papala), *Perrottetia sandwicensis* (olomea), *Pipturus albidus* (mamaki), *Clermontia kakeana* (ohawai), *Cheirodendron trigynum*, and *Freycinetia arborea* (ieie) (USFWS 1998a).

The major threats to this single population of *Cyanea dunbarii* on Molokai are competition with the non-native plants *Buddleia asiatica* (butterfly bush), *Erigeron karvinskianus* (daisy fleabane), *Rubus rosifolius* (thimbleberry), *Commelina diffusa* (honohono), *Hedychium gardnerianum* (ginger), and *Kalanchoe pinnata* (air plant); and catastrophic extinction by naturally occurring events such as landslides or flooding, and/or reduced reproductive vigor due to the small number of individuals in the only known population. In addition, predation by rats is a potential threat since rats are known to be in the area and are known to eat stems and fruits of other species of *Cyanea*; habitat degradation and predation by axis deer and pigs are other potential threats to this species, because both of these species are known to occur in areas adjacent to the only known population (USFWS 1998a; Cuddihy and Stone 1990).

Cyanea mannii (haha)

Cyanea mannii, a member of the bellflower family (Campanulaceae), is a branched short-lived perennial shrub 1.5 to 3 m (5 to 10 ft) tall with narrowly elliptic or lance-shaped leaves. This species is distinguished from the seven other species of the genus on Molokai by a combination of the following characters: a branched, woody habit; leaves with small, hardened, marginal teeth; and a purplish corolla (Lammers 1999; 57 FR 46325).

Cyanea mannii has been observed in flower during July (HINHP Database 2000). No additional life history information is currently available (USFWS 1996a).

Historically, *Cyanea mannii* was known only from Kalae on East Molokai (HINHP Database 2000). In 1984, a single plant was discovered by Joan Aidem on privately owned land west of Puu Kolekole on East Molokai (HINHP Database 2000; Lammers 1999; USFWS

1996a). Since then, eight additional populations have been discovered in the east and west forks of Kawela Gulch on the privately owned land of TNCH's Kamakou Preserve on East Molokai and within the State's Molokai Forest Reserve (K. Wood, *in litt.* 2000; HINHP Database 2000). These nine populations contain approximately 200 individuals on State and privately owned lands (GDSI 2000; HINHP Database 2000; K. Wood, *in litt.* 2000).

This species typically grows on the sides of deep gulches in *Metrosideros polymorpha* dominated montane mesic forest at elevations between 559 and 1,220 m (1,900 to 4,000 ft) (HINHP Database 2000; Lammers 1999; USFWS 1996a). Associated plant species include *Wiskstroemia* sp., *Dicranopteris linearis*, and *Vaccinium* sp. (ohelo) (USFWS 1996a).

Threats to *Cyanea mannii* on Molokai are habitat degradation by feral pigs; predation by rats who may feed on the fruit or other parts of the plant, as suggested by evidence from related species; catastrophic extinction through naturally occurring events that this species is vulnerable to due to its few populations and small number of individuals (USFWS 1996a).

Cyanea procera (haha)

Cyanea procera, a member of the bellflower family (Campanulaceae), is a palm-like short-lived perennial tree 3 to 9 m (10 to 30 ft) tall with stalkless, lance-shaped leaves 60 to 75 cm (24 to 30 in) long and 10 to 17 cm (3.9 to 6.7 in) wide with tiny hardened teeth along the margins. This species can be distinguished from other species of the genus by its growth habit, its sessile leaves, and the single-lipped appearance of the corolla (Lammers 1999; 57 FR 46325).

No life history information is currently available for this species (USFWS 1996a).

Historically, *Cyanea procera* was known only from an unspecified site in the Kamalo region of East Molokai (HINHP Database 2000). Currently, this species is found on the privately owned lands of Kamakou Preserve and the State's Puu Alii Natural Area Reserve (NAR) in a total of five populations containing at least 10 individuals (GDSI 2000; HINHP Database 2000).

Cyanea procera is found on the walls of steep gulches in wet *Metrosideros polymorpha* dominated lowland mixed forest between 935 and 1,073 m (3,180 to 3,650 ft) elevation (HINHP Database 2000). Associated plant species include various species of *Asplenium*, *Broussaissia arguta*, *Coprosma ochracea* (pilo), *Cyanea* spp. (haha), *Cyrtandra*

macrocalyx (haiwale), *Dicranopteris linearis*, *Pipturus albidus*, *Pisonia* spp., *Scaevola procera* (naupaka kuahiwi), and *Touchardia latifolia* (olona) (USFWS 1996a).

Threats to *Cyanea procera* on Molokai are predation by feral rats (as suggested by evidence on related species) and goats; habitat degradation by feral goats and pigs; habitat destruction through erosion; catastrophic extinction from naturally occurring events due to the vulnerability of a few populations with a small number of individuals (57 FR 46325).

Hibiscus arnottianus ssp. *immaculatus* (kokio ke okeo)

Hibiscus arnottianus ssp. *immaculatus*, a member of the hibiscus family (Malvaceae), is a long-lived perennial tree up to 3 m (10 ft) tall with alternate, oval, toothed leaves measuring 5 to 7 cm (2 to 2.8 in) long and 4 to 6.5 cm (1.6 to 2.6 in) wide. This subspecies is distinguished from other native Hawaiian members of the genus by its white petals and white staminal column (Bates 1999; 57 FR 46325).

This taxon was observed in flower during July (HINHP Database 2000). Currently, no additional life history information is available for this species (USFWS 1996a).

Hibiscus arnottianus ssp. *immaculatus* once ranged from Waihanau Valley east to Papalaua Valley on East Molokai (HINHP Database 2000). Currently this taxon is found only west of Papalaua Valley on privately owned land and in the State's Olokui NAR above Waiehu (GDSI 2000; HINHP Database 2000). There are a total of two populations containing between 20 and 30 individuals (HINHP Database 2000).

Hibiscus arnottianus ssp. *immaculatus* individuals are scattered along steep sea cliffs in mesic forests between 15 and 480 m (50 and 1,600 ft) in elevation (Bates 1999; HINHP Database 2000). Associated native plant species include *Athyrium* spp. (akolea), *Canthium odoratum*, *Cyanea grimesiana* (haha), *Antidesma platyphyllum* (hame), *Boehmeria grandis* (akolea), *Diospyros sandwicensis* (lama), *Pipturus* spp. (mamaki), *Urera glabra* (opuhe), and *Metrosideros polymorpha* (HINHP Database 2000).

The major threats to *Hibiscus arnottianus* ssp. *immaculatus* on Molokai are habitat destruction by feral goats and catastrophic extinction by naturally occurring events due to the vulnerability of the two remaining populations and few individuals (USFWS 1996a).

Labordia triflora (kamakahala)

Labordia triflora, a short-lived perennial member of the logan family (Loganiaceae), is very similar to *Labordia tinifolia* var. *lanaiensis*, except in the following characteristics: the stems of *L. triflora* are climbing; the leaf stalks are only 1 to 3 millimeters (mm) (0.04 to 0.1 in.) long; inflorescence stalks are 40 to 50 mm (1.6 to 2 in.) long; and, each flower stalk is 10 to 25 mm (0.4 to 1 in.) long (Motley 1995).

The flowers of this species are functionally unisexual (Motley 1995; HINHP Database 2000). No additional life history information is available at this time.

Until 1990, *Labordia triflora* was known only from the type collection at Mapulehu, on the island of Molokai (Motley 1995) and was believed to be extinct. In 1990, Joel Lau rediscovered the species in Kua Gulch on Molokai (HINHP Database 2000; Motley 1995). Currently, only 10 individuals are known from privately owned land (GDSI 2000; HINHP Database 2000).

This species occurs in mixed lowland mesic forest, at an elevation of ca. 800 m (2,600 ft). Associated species include *Pouteria sandwicensis* (alaa), the federally endangered *Cyanea mannii* (haha), and *Tetraplasandra* spp. (ohe ohe) (Motley 1995).

The threats to *Labordia triflora* include habitat degradation and destruction by feral pigs and goats; predation by rats that eat seeds; competition with the non-native plant species *Schinus terebinthifolius* (Motley 1995); catastrophic extinction through environmental events and reduced reproductive vigor due to the species' few populations and small number of individuals (64 FR 48307).

Lysimachia maxima (no common name)

Lysimachia maxima, a member of the primrose family (Primulaceae), is a sprawling short-lived perennial shrub with reddish brown bark. This species is differentiated from others in this genus by the leaves borne in groups of three, the broadest portion of the leaf above the middle, and rusty hairs that disappear with maturity (Wagner *et al.* 1999).

Flowers, buds and immature fruit of *Lysimachia maxima* have been observed in late May through July (USFWS 1998a). No other life history information is available for this species (61 FR 53130).

Lysimachia maxima is only known from a single population containing between 45 and 50 individuals on the rim of Pelekunu Valley near Ohialele, on the privately owned land of TNCH's

Pelekunu Preserve (GDSI 2000; HINHP Database 2000).

This species occurs in *Metrosideros polymorpha-Dicranopteris linearis* montane wet forest at an elevation of 975 m (3,200 ft). Associated species include *Psychotria* sp. (kopiko), *Vaccinium* sp., *Hedyotis* sp. (No common name), *Dubautia* sp. (na ena e), and *Ilex anomala* (aiae) (HINHP Database 2000).

The major threats to *Lysimachia maxima* are catastrophic extinction from random environmental events (*e.g.*, landslides); reduced reproductive vigor due to the small number of individuals in the only known population (USFWS 1998a); habitat degradation and/or predation by feral pigs and goats that are known from adjacent areas (USFWS 1998a).

Melicope reflexa (alani)

Melicope reflexa, a long-lived perennial of the citrus family (Rutaceae), is a sprawling shrub 1 to 3 m (3.3 to 10 ft) tall with short, yellowish-brown, short-lived hairs on new growth. Opposite leaves with leaf stalks usually over 1 cm (0.4 in) long, larger leaves and fruit, and partially fused sections of capsule separate it from other species of the genus (Stone *et al.* 1999).

Currently, no life history information is available for this species (USFWS 1996a).

Historically, *Melicope reflexa* occurred from a ridge between Hanalilolilo and Pepeopae in Kamakou Preserve to as far east as Halawa on East Molokai (HINHP Database 2000). The three remaining populations of fewer than a total of 1,000 individuals are on State and private lands in Honomuni, the Wailau-Mapulehu summit area, and Kukuinui Ridge in Wailau Valley (GDSI 2000; HINHP Database 2000).

Melicope reflexa typically grows in wet *Metrosideros polymorpha* dominated forest with native trees such as *Cheirodendron* sp. (olapa) at elevations between 760 and 1,190 m (2,490 and 3,900 ft) (Stone *et al.* 1999).

Major threats to *Melicope reflexa* include habitat degradation and predation by ungulates (axis deer and feral pigs); competition with the non-native plant *Clidemia hirta* (Koster's curse); catastrophic extinction from environmental events due to species' few populations and small number of individuals (57 FR 46325; USFWS 1996a).

Pritchardia munroi (loulu)

Pritchardia munroi, a member of the palm family (Arecaceae), is a perennial tree about 4 to 5 m (13 to 16 ft) tall. The

leaves and petioles have scattered, mostly deciduous scales and hairs, somewhat larger on the lower leaf ribs. The leaves are deeply divided into segments which have long, drooping tips. Numerous bisexual or functionally male flowers are arranged in clusters on hairy, branching stalks which originate at the leaf bases. The mature fruit is shiny, black, and nearly spherical. This species is distinguished from others of the genus by its relatively smooth leaves; the grayish-brown hair on the inflorescence stalks, which are shorter than the petioles; and the small size of the fruits (Read and Hodel 1999).

Currently, no life history information is available for this species (USFWS 1996a).

Historically and currently *Pritchardia munroi* is found in leeward East Molokai, above Kamalo, near Kapuaokoolau Gulch (HINHP Database 2000, Read and Hodel 1999). The only known wild individual is found on privately owned land (HINHP Database 2000).

The only known wild individual grows near the base of a small ravine in remnant dry to mesic forest at an elevation of about 610 m (2,000 ft) (Read and Hodel 1999). Associated plant species include *Dodonaea viscosa*, *Metrosideros polymorpha*, *Styphelia tameiameia*, and *Pleomele aurea* (hala pepe) (HINHP Database 2000).

Threats to the only known wild individual of *Pritchardia munroi* include habitat degradation by ungulates (axis deer, goats, and pigs) around its fenced enclosure prevent the establishment of seedlings; predation of seeds by rats; catastrophic extinction by random environmental events (*e.g.*, fire) due to its extreme rarity (57 FR 46325; USFWS 1996a).

Schiedea lydgatei (no common name)

Schiedea lydgatei, a member of the pink family (Caryophyllaceae), is a low, hairless perennial plant with branched stems 10 to 40 cm (4 to 16 in) long which are woody at the base. The opposite, three-veined leaves are elliptic. Bisexual flowers are arranged in loosely spreading clusters. The capsules open when mature to reveal dark reddish-brown seeds. The opposite, thin, three-veined leaves with petioles and the smooth, open flower clusters with relatively larger, green sepals separate this species from other members of this endemic Hawaiian genus (Wagner *et al.* 1999).

This species was observed with flowers and fruit in June (HINHP Database 2000). Currently, no additional life history information is available (USFWS 1996a).

Historically, *Schiedea lydgatei* was found in Kalae, Poholua, Makolelau, and Ohia Gulch on East Molokai (HINHP Database 2000). This species is now known from two scattered populations in a more restricted area in Makakupaia, Kawela, and Makolelau. The two populations are distributed over an area of less than 1.6 by 5.6 km (1 by 3.5 mi), totaling fewer than 1,000 individuals on State and privately owned lands (HINHP Database 2000; GDSI 2000).

This species is found along ridges in dry to mesic grassland, shrubland, and forest with scattered native trees. It ranges in elevation from about 600 to 650 m (2,000 to 2,100 ft) (HINHP Database 2000; Wagner *et al.* 1999). Associated plant species include *Dodonaea viscosa*, *Metrosideros polymorpha*, *Styphelia tameiameia*, and *Dicranopteris linearis* (Gagne and Cuddihy 1999).

The major threats to *Schiedea lydgatei* are habitat degradation by feral ungulates; and competition with the non-native plant species *Melinis minutiflora*; and catastrophic extinction due to random environmental events, primarily fire, (57 FR 46325; USFWS 1996a) because in this species' dry, windswept habitat, a single fire potentially could destroy a large part of the populations.

Schiedea sarmentosa (no common name)

Schiedea sarmentosa, a perennial herb of the pink family (Caryophyllaceae), is a many-branched shrub. The opposite leaves are slender, threadlike, and are covered with dense, glandular hairs. There may be as many as 40 to 60 inflorescences on one plant, often with 50 to 100 flowers in each inflorescence. The flowers are female on some plants and bisexual on others. The green sepals are egg-shaped and somewhat hairy. The staminodes (false stamens) are half as long as the sepals and two-branched at the tip. The fruits are oval capsules. This species differs from others in this endemic Hawaiian genus by its densely bushy habit, leaf width, hairiness, and staminode length (Wagner, *et al.* 1999).

The flowers are female on some plants and bisexual on others. The population on Makolelau Gulch has a frequency 31 percent females. Based on analyses of pollen-ovule ratios, pollen size, inflorescence structure, and comparison to other *Schiedea* species tested in a wind tunnel, *Schiedea sarmentosa* could be wind-pollinated. No other life history information for this species is available (USFWS 1998a).

Schiedea sarmentosa has been found in Kawela Gulch, Makolelau, and Onini Gulch (HINHP Database 2000).

Currently, only two populations are known to be extant. One population on the boundary of the privately owned land of TNCH's Kamakou Preserve and State owned land in Onini Gulch has approximately 30 individuals (HINHP Database 2000). The other population occurs on privately owned land in Makolelau, and consists of 4 subpopulations totaling approximately 300 to 400 individuals (USFWS 1998a; GDSI 2000). Estimates of the total number of individuals have ranged up to 1,000 (USFWS 1998a). An accurate count is somewhat difficult because this species is interspersed with *Schiedea lydgatei* (USFWS 1998a).

Schiedea sarmentosa is typically found on steep slopes in *Metrosideros polymorpha*-*Dodonaea viscosa* lowland dry or mesic shrubland between 610 and 790 m (2,000 and 2,600 ft) elevation (HINHP Database 2000; HPCC 2000). Associated species include *Styphelia tameiameia*, *Chenopodium oahuensis* (ahe ahea), *Alyxia oliviformis* (maile), *Pleomele* sp. (hala pepe), *Bidens menziesii* (kokoolau), *Carex meynii* (No common name), *Lipochaeta rockii* (nehe), *Nestegis sandwicensis*, *Nothocestrum latifolium* (aiea), *Nototrichium sandwicense* (kului), *Sida fallax* (ilima), *Sophora chrysophylla* (mamane), and *Chamaesyce* sp. (HINHP Database 2000).

Major threats to *Schiedea sarmentosa* include habitat degradation by feral goats and pigs, competition by the non-native plants *Melinis minutiflora* and *Ricinus communis* (paaila), and fire. The species is also threatened by a risk of extinction from naturally occurring events due to the low number of populations (61 FR 53130; USFWS 1998a).

Silene alexandri (no common name)

Silene alexandri, a member of the pink family (Caryophyllaceae), is an erect, perennial herb, 30 to 60 cm (1 to 2 ft) tall, and woody at the base. The narrow, elliptic leaves are hairless except for a fringe along the margins. Flowers are arranged in open clusters on stalks. The hairless stems, flowering stalks, and sepals and the larger flowers with white petals separate this species from other members of the genus (Wagner, *et al.* 1999).

Currently, no life history information is available for this species.

Historically, *Silene alexandri* was known from Makolelau and Kamalo on East Molokai. Currently, one population comprising fewer than 10 individuals remains in Makolelau on privately

owned land (GDSI 2000; HINHP Database 2000).

The only known population is found in remnant dry forest and shrubland at an elevation between 610 and 760 m (2,000 and 2,500 ft) (HINHP Database 2000; Wagner, *et al.* 1999). Associated plant species include *Dodonaea viscosa*, *Metrosideros polymorpha*, *Styphelia tameiameia*, *Dicranopteris linearis*, *Chenopodium oahuense*, and *Sophora chrysophylla* (Gagne and Cuddihy 1999).

Threats to the single population of *Silene alexandri* include habitat degradation by feral goats, predation by goats and cattle (*Bos taurus*) may possibly occur, and catastrophic extinction through random environmental events, of which the most serious is fire, due to the vulnerability of this single population (57 FR 46325; USFWS 1996a).

Stenogyne bifida (no common name)

Stenogyne bifida, a nonaromatic member of the mint family (Lamiaceae), is a climbing perennial herb, with smooth or slightly hairy, four-angled stems. The opposite, membranous, toothed leaves are oval or elliptical in shape, and are hairless except for the midribs. Flowers are usually arranged in groups of two to six in each of several whorls at the ends of the stems. The petals are fused into a nearly straight, yellow tube which flares into pale-brown lobes comprising an upper and a lower lip. The fruits are fleshy, black nutlets. The long, narrow calyx teeth and the deep lobe in the upper lip of the yellow corolla separate this species from others of the genus (Weller and Sakai 1999).

Currently, no life history information is available for this species.

Historically, *Stenogyne bifida* was known from scattered populations from Waianui in central Molokai to Pukoo Ridge on East Molokai (HINHP Database 2000). This species is now known from only four East Molokai populations totaling fewer than 10 individuals on Manawai-Kahananui Ridge along the boundary between private and State lands; on Kolo Ridge, at Kamoku flats; and on the eastern fork of Kawela Gulch on the privately owned land of TNCH's Pelekunu Preserve (GDSI 2000; HINHP Database 2000).

Stenogyne bifida typically grows on steep ridges in *Metrosideros polymorpha* dominated montane mesic to wet forest with native species such as *Cibotium* sp., *Hedyotis* sp., *Cyanea* sp., *Dicranopteris linearis*, *Dodonaea viscosa*, *Hedyotis hillebrandii* (manono), *Pipturus albidus*, *Psychotria* sp., *Styphelia tameiameia*, *Vaccinium* sp.,

Wikstroemia sp., *Cheirodendron trigynum*, *Broussaisia arguta*, and *Pouteria sandwicensis* (alaa) at elevations between 450 and 1,200 m (1,450 and 4,000 ft) (HINHP Database 2000; USFWS 1996a).

The most pervasive threat to this species is habitat degradation by ungulates (axis deer, goats, and pigs) (57 FR 46325; USFWS 1996a).

Tetramolopium rockii (no common name)

Tetramolopium rockii, a member of the aster family (Asteraceae), is a glandular, hairy, prostrate perennial shrub which forms complexly branching mats. The species has been divided into two varieties in the most recent treatment of this genus in Hawaii. Leaves of variety *calcisabulorum* have slightly inrolled edges, and are whitish due to the long silky hairs on their surfaces. Variety *rockii* has smaller, less hairy, flat, yellowish-green leaves. The leaves of both varieties are spatula-shaped with glands and smooth margins. Flower heads, arranged singly at the ends of flowering stalks are composed of approximately 60 to 100 white ray florets surround 30 to 55 functionally male, yellow, funnel-shaped disk florets. Fruits are achenes topped with white bristles. This species differs from others of the genus by its growth habit, its hairy and glandular surfaces, its spatulate leaf shape, and its yellow disk florets (Lowrey 1999).

Currently, no life history information is available for this species (USFWS 1996a).

Of the two recognized varieties of *Tetramolopium rockii*, variety *rockii* was first discovered at Moomomi about 80 years ago and is still extant in that area. *Tetramolopium rockii* var. *rockii* is found in three areas, from Kalawao to Kahinaakalani, Keieho Point to Kaplalaoua, and from Moomomi to Kahinaakalani (HINHP Database 2000). Variety *calcisabulorum* is only reported from Keieho Point to Kaplalaoua intergrading with variety *rockii* where their ranges overlap (HINHP Database 2000). The total number of individuals of both varieties in the three populations is estimated to be 174,000; they are located on State lands, including land managed by the National Park Service at Kalaupapa National Historical Park, and privately owned lands (HINHP Database 2000; GDSI 2000).

Tetramolopium rockii is restricted to hardened calcareous sand dunes or ash-covered basalt in the coastal spray zone or coastal dry shrubland and grassland between 10 and 200 m (30 and 650 ft) in elevation (Lowrey 1999). Native plant

species associated with this species include *Canthium odoratum*, *Diospyros sandwicensis*, *Metrosideros polymorpha*, *Osteomeles anthyllidifolia* (ulei), *Scaevola* sp. (naupaka), *Fimbristylis cymosa* (mau u aki aki), *Heliotropium anomalum* (ahinahina), *Lipochaeta integrifolia* (nehe), *Sida fallax*, and *Sporobolus virginicus* (akiaki) (USFWS 1996a; HINHP Database 2000).

The major threats to *Tetramolopium rockii* are habitat degradation by ungulate (axis deer and cattle) activity and human recreation, competition with the non-native plant *Prosopis pallida* (kiawe), and catastrophic extinction due to fire (57 FR 46325).

Multi-Island Species

Adenophorus periens (pendant kihi fern)

Adenophorus periens, a short-lived perennial member of the grammitis family (Grammitidaceae), is a small, pendant, epiphytic (not rooted on the ground) fern. This species differs from other species in this endemic Hawaiian genus by having hairs along the pinna margins, by the pinnae being at right angles to the midrib axis, by the placement of the sori on the pinnae, and the degree of dissection of each pinna (USFWS 1999; Linney 1989).

Little is known about the life history of *Adenophorus periens*, which seems to grow only in dense closed-canopy forest with high humidity. Its breeding system is unknown but outbreeding is very likely to be the predominant mode of reproduction. Spores are dispersed by wind, possibly by water, and perhaps on the feet of birds or insects (Linney 1989). Spores lack a thick resistant coat which may indicate their longevity is brief, probably measured in days at most. Due to the weak differences between seasons, there seems to be no evidence of seasonality in growth or reproduction. Additional information on reproductive cycles, longevity, specific environmental requirements, and limiting factors is not available (USFWS 1999).

Historically, *Adenophorus periens* was known from Kauai, Oahu, Lanai, East Maui, and Hawaii Island (HINHP Database 2000). Currently, it is known from several locations on Kauai, Molokai, and Hawaii (HINHP Database 2000). On Molokai, it is found in a single population containing seven individuals on the privately owned land within TNCH's Kamakou Preserve (GDSI 2000; HINHP Database 2000).

This species, an epiphyte usually growing on *Metrosideros polymorpha* trunks, is found in *Metrosideros*

polymorpha-*Myrsine lessertiana* (kolea) forest at elevations between 400 and 1,265 m (1,312 and 4,150 ft) (HINHP Database 2000). It is found in habitats of well-developed, closed canopy providing deep shade and high humidity (Linney 1989). Associated native species include *Broussaisia arguta*, *Cheirodendron trigynum*, *Coprosma ochracea*, *Cyanea* sp., *Cyrtandra* sp. (haiwale), *Dicranopteris linearis*, *Freycinetia arborea*, *Hedyotis terminalis*, *Labordia hirtella* (No common name), *Machaerina angustifolia* (uki), *Psychotria hexandra* (kopiko), *Styphelia tameiameia*, *Ilex anomala*, *Vaccinium calycinum* (ohelo), *Cibotium glaucum* (hapuu), *Melicope* sp., *Viola robusta* (pamakani), *Stenogyne kamehamehae* (No common name), *Anoectochilus sandwicensis* (jewel orchid), and *Syzygium sandwicensis* (ohia ha) (HINHP Database 2000; USFWS 1999).

The threats to this species on Molokai are habitat degradation by feral pigs and goats, and competition with the non-native plant *Psidium cattleianum* (strawberry guava) (HINHP Database 2000; 59 FR 56333; USFWS 1999).

Alectryon macrococcus (mahoe)

Alectryon macrococcus, a long-lived perennial member of the soapberry family (Sapindaceae), consists of two varieties, *macrococcus* and *auwahiensis*, both trees with reddish-brown branches and net-veined paper- or leather-like leaves with one to five pairs of sometimes asymmetrical egg-shaped leaflets. The underside of the leaf has dense brown hairs, only when young in *A. macrococcus* var. *macrococcus*, and whether young or mature (persistent) in *A. macrococcus* var. *auwahiensis* (only found on East Maui). The only member of its genus found in Hawaii, this species is distinguished from other Hawaiian members of its family by being a tree with a hard fruit 2.5 cm (0.9 in) or more in diameter (Kimura and Nagata 1980; Wagner *et al.* 1999).

Alectryon macrococcus is a relatively slow-growing tree that grows in xeric to mesic sites and is adapted to periodic drought. Little else is known about the life history of this species. Flowering cycles, pollination vectors, seed dispersal agents, and specific environmental requirements are unknown.

Currently, *Alectryon macrococcus* var. *macrococcus* is known from Kauai, Oahu, Maui, and Molokai. On Molokai, it is found on the privately owned land of TNCH's Kamakou Preserve, along the Puu Kolekole jeep road, Kaunakakai Gulch, and Kamiloloa Gulch in a total

of six populations containing nine individuals on State and privately owned lands (GDSI 2000; HINHP Database 2000).

Alectryon macrococcus var. *macrococcus* typically grows on dry or talus slopes or in gulches within dry or mesic lowland forest between elevations of 360 and 1,070 m (1,181 and 3,510 ft) (HINHP Database 2000; Wagner *et al.* 1999). Associated native plants include *Dodonea viscosa*, *Nestegis sandwicensis*, *Nothoecstrum* sp. (aiea), *Pleomele* sp., *Psychotria* sp., *Streblus pendulina* (aiai), *Myrsine* sp. (kolea), and *Lipochaeta* sp. (nehe) (USFWS 1997; HINHP Database 2000).

The threats to *Alectryon macrococcus* var. *macrococcus* on Molokai include habitat degradation by feral goats and pigs; competition from non-native plant species such as *Melinis minutiflora*, *Pennisetum clandestinum* (kikuyu grass), *Schinus terebinthifolius*, and *Psidium cattleianum*; damage from the black twig borer (*Xylosandrus compactus*); seed predation by rats and mice (*Mus domesticus*) and by insects (probably the endemic microlepidopteran *Prays* cf. *fulvocanella*); loss of pollinators; and catastrophic extinction through a single natural or human-caused environmental disturbance (e.g., fire) due to the very small remaining number of individuals and their limited distribution on Molokai (USFWS 1997; 57 FR 20772; HINHP Database 2000).

Brighamia rockii (pua ala)

Brighamia rockii, a long-lived perennial member of the bellflower family (Campanulaceae), grows as an unbranched stem succulent with a thickened stem that tapers from the base. This species is a member of a unique endemic Hawaiian genus with only one other species, found on Kauai, from which it differs by the color of its petals, its longer calyx (fused sepals) lobes, and its shorter flower stalks (Lammers 1999).

Observations of *Brighamia rockii* by Gemmill (1996) have provided the following information: the reproductive system is protandrous, meaning there is a temporal separation between the production of male and female gametes, in this case a separation of several days; only 5 percent of the flowers produce pollen; very few fruits are produced per inflorescence; there are 20 to 60 seeds per capsule; and plants in cultivation have flowers at an age of 9 months (USFWS 1996a). This species was observed in flower during August (HINHP Database 2000).

Historically, *Brighamia rockii* ranged along the northern coast of East Molokai

from Kalaupapa to Halawa and may possibly have grown on Lanai and Maui (HINHP Database 2000; Lammers 1999). Currently, it is only extant on Molokai in a total of five populations with between 121 to 131 individual plants occurring on State and privately owned lands (HINHP Database 2000; GDSI 2000). It occurs on steep, inaccessible sea cliffs along East Molokai's northern coastline from Anapuhi Beach to Wailau Valley on private lands, and on the relatively inaccessible State-owned sea stack of Huelo, east of Anapuhi Beach (HINHP Database 2000; K. Wood, *in litt.* 2000).

The plants are found in rock crevices on steep basalt sea cliffs, often within the spray zone, in coastal dry or mesic forest, *Eragrostis variabilis* (kawelu) mixed coastal cliff communities, or shrubland, or *Pritchardia* sp. (loulou) coastal mesic forest between sea level and 470 m (0 and 1,540 ft). Associated native species include *Pritchardia hillebrandii* (loulou), *Chamaesyce celastroides* var. *amplectans* (akoko), *Wikstroemia uva-ursi* (akia), *Carex wahuensis* ssp. *wahuensis* (No common name), *Mariscus phleoides* ssp. *pleoides* (No common name), *Eragrostis variabilis*, *Dianella sandwicensis* (ukiuki), *Cocculus trilobus* (huehue), *Phymatosorus scolopendria* (lauae), *Cryptanthus falcatus* (ahina kuahiwi), *Lepidium bidentatum* var. *o-waihiense* (anaunau), *Pittosporum halophilum* (hoawa), *Artemisia* sp., *Bidens* sp. (kookoolau), *Schiedea globosa* (No common name), *Reynoldsia sandwicensis* (ohe), *Pandanus tectorius* (hala), *Peucedanum sandwicensis* (makou), *Hedyotis littoralis* (No common name), *Metrosideros polymorpha*, *Psydrax odoratum*, *Diospyros sandwicensis*, *Osteomeles athyridifolia*, *Tetramolopium cassia* (pamakani), *Senna gaudichaudii* (kolomona), and *Scaevola sericea* (naupaka kahakai) (HINHP Database 2000; Lammers 1999; K. Wood, *in litt.* 2000).

The threats to this species on Molokai are habitat degradation (and possibly predation) by deer and goats; competition with the non-native plants, *Cyperus gracilis* (McCoy grass), *Digitaria ciliaris* (Henry's crabgrass), *Digitaria insularis* (sourgrass), *Ficus microcarpa* (Chinese banyan), *Kalanchoe pinnata*, *Lantana camara* (lantana), *Oxalis corniculata* (yellow wood sorrel), *Pluchea symphytifolia* (sorbush), *Portulaca oleracea* (pigweed), and *Solanum seaforthianum* (No common name); seed predation by rats; and lack of pollinators (USFWS 1996a; 57 FR 46325; HINHP Database 2000).

Centaurium sebaeoides (awiwi)

Centaurium sebaeoides, a member of the gentian family (Gentianaceae), is an annual herb with fleshy leaves and stalkless flowers. This species is distinguished from *Centaurium erythraea*, which is naturalized in Hawaii, by its fleshy leaves and the unbranched arrangement of the flower cluster (Wagner *et al.* 1999).

Centaurium sebaeoides has been observed flowering in April. Flowering may be induced by heavy rainfall. Populations are found in dry areas, and plants are more likely to be found following heavy rains (USFWS 1995a). This species appears to be a determinate annual; triggered by declining photoperiod, the plant produces seeds and dies (Medeiros *et al.* 1999). Medeiros *et al.* (1999) noted that in the wild seedlings first appeared in March and April; flowers first appeared in April and May; mature capsules were observed beginning in May and continuing through June; and by the first week of July, most plants were dead. No additional life history information is available for this plant (USFWS 1995a).

Historically and currently, *Centaurium sebaeoides* is known from scattered localities on Kauai, Oahu, Molokai, Lanai, and Maui (Wagner *et al.* 1999). Currently on Molokai, there are a total of two populations containing thousands of individuals, near Mokio Point on privately owned land and in Kalaupapa National Historical Park on State and federally owned land that is managed by the National Park Service (Chuck Chimera, formerly with Biological Resources Division (BRD), pers. comm. 2000; GDSI 2000; HINHP Database 2000).

This species typically grows in volcanic or clay soils or on cliffs in arid coastal areas below 120 m (400 ft) elevation on Molokai (56 FR 55770; Wagner *et al.* 1999). Associated species include *Chamaesyce celastroides* (akoko), *Dodonea viscosa*, *Fimbristylis cymosa*, *Heteropogon contortus* (pili grass), *Lipochaeta heterophylla* (nehe), *Lipochaeta integrifolia*, *Lycium sandwicense* (ohelo kai), *Lysimachia mauritiana* (kolokolo kuahiwi), *Mariscus phleoides* (No common name), *Panicum fauriei* (No common name), *Panicum torridum* (kakonakona), *Scaevola sericea*, *Schiedea globosa*, *Sida fallax*, *Wikstroemia uva-ursi*, *Artemisia* sp., *Bidens* sp., *Jaquemontia ovalifolia* (pa uohi iaka), and *Lipochaeta succulenta* (nehe) (Medeiros *et al.* 1999; 56 FR 55770).

The major threats to this species on Molokai are displacement by non-native

woody species such as: *Casuarina equisetifolia* (paina), *Casuarina glauca* (saltmarsh), *Laucaena leucocephala* (koa haole), *Prosopis pallida*, *Schinus terebinthifolius*, *Syzygium cumini* (Java plum), and *Tournefortia argentea* (tree heliotrope); trampling and habitat degradation by feral goats and cattle; and damage caused by off-road vehicles (Medeiros *et al.* 1999).

Ctenitis squamigera (pauoa)

Ctenitis squamigera is a short-lived perennial and a member of the wood fern family (Dryopteridaceae) (Wagner and Wagner 1992). It has a rhizome (horizontal stem) 5 to 10 mm (0.2 to 0.4 in) thick, creeping above the ground and densely covered with scales similar to those on the lower part of the leaf stalk. The leaf stalks are densely clothed with tan-colored scales up to 1.8 cm (0.7 in) long and 1 mm (0.04 in) wide. The sori are tan-colored when mature and are in a single row one-third of the distance from the margin to the midrib of the ultimate segments (Degener and Degener 1957). The indusium is whitish before wrinkling, thin, suborbicular with a narrow sinus extending about half way, glabrous except for a circular margin which is ciliate with simple several-celled glandular and nonglandular hairs arising directly from the margin or from the deltoid base (Degener and Degener 1957). *Ctenitis squamigera* can be readily distinguished from other Hawaiian species of *Ctenitis* by the dense covering of tan-colored scales on its fronds (Wagner and Wagner 1992).

Reproductive cycles, longevity, specific environmental requirements and limiting factors are unknown (USFWS 1998b).

Historically, *Ctenitis squamigera* was recorded from Kauai, Oahu, Molokai, Lanai, Maui, and Hawaii (HINHP Database 2000). It is currently found on Oahu, Lanai, Molokai, and Maui. There is currently a single population with 20 individuals on the island of Molokai in Wawaia Gulch on privately owned land (GDSI 2000; J. Lau, *in litt.* 2000).

On Molokai, this species is found in mesic forest at an elevation of approximately 865 m (254 ft) (J. Lau, *in litt.* 2000). Associated native plant taxa include *Metrosideros polymorpha*, *Myrsine lessertiana* (kolea), *Diospyros sandwicensis*, *Nestegis sandwicensis*, *Xylosma hawaiiense* (maua), *Pouteria sandwicensis*, *Nephrolepis exaltata* (kupukupu), *Carex meyenii*, *Dryopteris unidentata* (No common name), and *Pleomele auwahiensis* (hala pepe) (J. Lau, *in litt.* 2000; USFWS 1998b; 59 FR 49025).

The primary threats to *Ctenitis squamigera* are habitat degradation by

goats, and competition with the non-native plant taxa *Schinus terebinthifolius* and *Melinis minutiflora* (J. Lau, *in litt.* 2000; USFWS 1998b; 59 FR 49025).

Cyanea grimesiana ssp. *grimesiana* (haha)

Cyanea grimesiana ssp. *grimesiana*, a short-lived perennial member of the bellflower family (Campanulaceae), is a shrub with pinnately divided leaves. This species is distinguished from others in this endemic Hawaiian genus by the pinnately lobed leaf margins and the width of the leaf blades. This subspecies is distinguished from the other two subspecies by the shape and size of the calyx lobes which overlap at the base (Lammers 1999).

Little is known about the life history of this plant. On Molokai, flowering plants have been observed in July and August. Reproductive cycles, longevity, specific environmental requirements, and limiting factors are unknown (USFWS 1999).

Historically and currently, *Cyanea grimesiana* ssp. *grimesiana* is known from Oahu, Molokai, Lanai, and Maui (USFWS 1999). On Molokai, it is found in a total of three populations containing eight individuals, in Wailau, Puu Kahea and Olokui NAR on State and privately owned lands (GDSI 2000; HINHP Database 2000).

This species is typically found in mesic forest often dominated by *Metrosideros polymorpha* or *Metrosideros polymorpha* and *Acacia koa* (koa), or on cliffs, at elevations between 350 and 945 m (1,150 and 3,100 ft). Associated plants include *Psychotria* sp., *Bobea* sp. (ahakea), *Antidesma* sp., *Syzygium sandwicensis*, *Xylosma* sp. (maua), *Cibotium* sp., *Doodia* sp. (ohupukupulaui), *Nephrolepis* sp. (kupukupu), *Cyrtandra* sp., *Dicranopteris linearis*, and *Freyinetia arborea* (HINHP Database 2000).

The threats to this species on Molokai are habitat degradation and/or destruction caused by axis deer, feral goats, and pigs; competition with various non-native plants such as *Clidemia hirta*; catastrophic extinction by randomly naturally occurring events (e.g., fire, landslides) due to the small number of existing individuals; trampling by hikers; seed predation by rats; and predation by various slugs (*Milax* sp.) (HINHP Database 2000; 61 FR 53108; USFWS 1999).

Diellia erecta (no common name)

Diellia erecta, a short-lived perennial member of the spleenwort family (Aspleniaceae), is a fern that grows in

tufts of 3 to 9 lance-shaped fronds which emerge from a rhizome covered with brown to dark gray scales. This species differs from other members of the genus in having brown or dark gray scales usually more than 2 cm (0.8 in) in length, fused or separate sori along both margins, shiny black midribs that have a hardened surface, and veins that do not usually encircle the sori (Degener and Greenwell 1950; Robinson 1912; Wagner 1952).

Little is known about the life history of this taxon. Reproductive cycles, longevity, specific environmental requirements, and limiting factors are unknown (USFWS 1999).

Historically, *Diellia erecta* was known from Kauai, Oahu, Molokai, Lanai, Maui, and Hawaii Island (USFWS 1999). Currently, it is only known from Molokai, Maui, and Hawaii (USFWS 1999). On Molokai, it is known from a total of 4 populations containing at least 10 individuals in Halawa Valley, Kahuaawi Gulch, Makolelau and Onini Gulch on State and privately owned lands (HINHP Database 2000; K. Wood, *in litt.* 1999).

This species is found in mixed mesic forest and mesic *Diospyros sandwicensis* (lama) forest between elevations of 210 and 1,490 m (700 and 4,900 ft) (HINHP Database 2000; K. Wood, *in litt.* 1999). Associated native plant species include *Alyxia oliviformis*, *Metrosideros polymorpha*, *Bobea* sp., *Coprosma foliosa* (pilo), *Dodonea viscosa*, *Dryopteris unidentata*, *Myrsine* sp., *Ochrosia comta* (holei), *Dubautia linearis* ssp. *opposita* (na ena e), *Psychotria* sp., *Pleomele auwahiensis*, *Sophora chrysophylla*, *Styphelia tameiameia*, *Syzygium sandwicensis*, and *Wikstroemia* sp. (HINHP Database 2000; K. Wood, *in litt.* 1999).

The major threats to *Diellia erecta* on Molokai are habitat degradation by pigs, goats, and deer; competition with the non-native plant species *Fraxinus uhdei* (tropical ash), *Ricinus communis*, *Melinis minutiflora*, *Psidium cattleianum*, *Blechnum occidentale* (No common name); and catastrophic extinction due to random naturally occurring events and reduced reproductive vigor due to the small number of existing individuals (HINHP Database 2000; K. Wood, *in litt.* 1999; 59 FR 56333; USFWS 1999).

Hedyotis mannii (pilo)

Hedyotis mannii, a member of the coffee family (Rubiaceae), is a short-lived perennial with smooth, usually erect stems 30 to 60 cm (1 to 2 ft) long which are woody at the base and four-angled or -winged. The leaves are opposite, thin in texture and elliptic to

sometimes lance-shaped. Stipules (leaf-like appendages), which are attached to the slightly winged leaf stalks where they join and clasp the stem, are triangular. Flowers are arranged in loose clusters up to 30 cm (1 ft) long at the ends of the stems and are either bisexual or female. This species' growth habit; its quadrangular or winged stems; the shape, size, and texture of its leaves; and its dry capsule which opens when mature, separate it from other species of the genus (Wagner *et al.* 1999).

Currently, no life history information is available for this species (USFWS 1996a).

Hedyotis mannii was once widely scattered on Lanai, West Maui, and Molokai (HINHP Database 2000). Currently, this species is extant on Molokai, West Maui, and Lanai. After an absence of 50 years, this species was rediscovered in 1987 by Steve Perlman on private land in Kawela Gulch in TNCH's Kamakou Preserve (GDSI 2000; HINHP Database 2000). Only five plants are known to exist in this area (HINHP Database 2000).

Hedyotis mannii typically grows on dark, narrow, rocky gulch walls in mesic and perhaps wet forests at 150 to 1,050 m (490 to 3,450 ft) in elevation (Wagner *et al.* 1999; HINHP Database 2000). Associated plant species include *Pipturus* sp., *Cibotium* sp., *Cyanea* sp., *Scaevola* sp., and *Psychotria* sp. (HINHP Database 2000; USFWS 1996a).

The threats to *Hedyotis mannii* on Molokai are habitat degradation by feral pigs; competition with the non-native plant *Melinis minutiflora*; and catastrophic extinction through random environmental events to which the limited number of individuals are extremely vulnerable (HINHP Database 2000; 57 FR 46325; USFWS 1996a).

Hesperomannia arborescens (no common name)

Hesperomannia arborescens, a long-lived perennial member of the aster family (Asteraceae), is a small shrubby tree that usually stands 1.5 to 5 m (5 to 16 ft) tall. This member of an endemic Hawaiian genus differs from other *Hesperomannia* species in having the following combination of characters, erect to ascending flower heads, thick flower head stalks, and usually hairless and relatively narrow leaves (Wagner *et al.* 1999).

This species was observed in flower from April through June and fruit during March and June (USFWS 1998c). No other information is available on reproductive cycles, longevity, specific environmental requirements, and limiting factors (USFWS 1998c).

Hesperomannia arborescens was formerly known from Lanai, Molokai, and Oahu (HINHP Database 2000). This species is now known from Oahu, Molokai, and Maui. On Molokai, one population of five individuals is known from the State's Olokui NAR (GDSI 2000; HINHP Database 2000).

Hesperomannia arborescens is found on slopes or ridges in wet *Metrosideros polymorpha*-*Dicranopteris linearis* lowland forest or mesic *Diospyros sandwicensis*-*Metrosideros polymorpha* lowland forest transition zones between 360 and 750 m (1,200 and 2,500 ft) in elevation (HINHP Database 2000). Associated native species include *Broussaisia arguta*, *Freycinetia arborea*, *Antidesma* sp., *Cibotium glaucum*, *Psychotria mauiensis* (kopiko), *Elaphoglossum* sp. (ekaha), *Coprosma* sp., *Hedyotis* sp., *Cheirodendron* sp., *Smilax melastomifolia* (hoi kuahiwi), *Clermontia pallida* (oha wai), *Thelypteris* sp. (palapalaia), *Diplopterygium pinnatum* (uluhe lau nui), *Ilex anomala*, *Myrsine* sp., *Urera glabra*, *Cyrtandra* sp., *Pipturus* sp., *Boehmeria grandis*, *Nestegis sandwicensis* (olopua), *Nephrolepis exaltata*, and *Wikstroemia* sp. (HINHP Database 2000).

The major threats to *Hesperomannia arborescens* on Molokai are habitat degradation by feral pigs, goats, and humans; competition with non-native plant taxa such as *Clidemia hirta*, *Kalanchoe pinnata*, and *Rubus rosifolius*; catastrophic extinction due to random environmental events or reduced reproductive vigor due to this species' limited numbers are significant threats as well (59 FR 14482; HINHP Database 2000).

Ischaemum byrone (Hilo ischaemum)

Ischaemum byrone, a member of the grass family (Poaceae), is a short-lived perennial species with creeping underground and erect stems.

Ischaemum byrone can be distinguished from other Hawaiian grasses by its tough outer flower bracts, dissimilar basic flower units, which are awned and two-flowered, and a di- or trichotomously-branching inflorescence (O'Connor 1999).

No life history information is currently available for this species (USFWS 1996b).

Ischaemum byrone was historically distributed on Oahu, Molokai, Maui, and Hawaii Island (59 FR 10305). Currently, this species is found on Molokai, Maui, and Hawaii Island. It has also been reported from unconfirmed sightings on Kauai (HINHP Database 2000). On Molokai, there are a total of 2 populations containing

between 100 to 1,000 individuals located in Wailau Valley and the eastern edge of Kikipua on State and privately owned lands (GDSI 2000; HINHP Database 2000).

Ischaemum byrone is found in coastal dry shrubland or *Artemisia* cliff communities, near the ocean, among rocks or on basalt cliffs or talus slopes, and elevations between sea level and 75 m (0 and 250 ft) (Gagne and Cuddihy 1999; O'Connor 1999; HINHP Database 2000). Associated taxa include *Bidens molokaiensis* (No common name), *Hedyotis littoralis*, *Lysimachia mauritiana*, *Fimbristylis cymosa*, and *Pandanus tectorius* (hala) (HINHP Database 2000).

The threats to *Ischaemum byrone* on Molokai are competition by non-native grasses, particularly *Digitaria ciliaris*; predation by goats and axis deer; and elimination and degradation of habitat through fire and residential development; (USFWS 1996b).

Mariscus fauriei (no common name)

Mariscus fauriei, a member of the sedge family (Cyperaceae), is a perennial plant with somewhat enlarged underground stems and three-angled, single or grouped aerial stems 10 to 50 cm (4 to 20 in) tall. It has leaves shorter than or the same length as the stems 1 to 3.5 mm (0.04 to 0.1 in) wide. This species differs from others in the genus in Hawaii by its smaller size and its narrower, flattened, and more spreading spikelets (Koyama 1999; 59 FR 56333).

Currently, no life history information is available for this species (USFWS 1996b).

Historically and currently, *Mariscus fauriei* is found on east Molokai and on the island of Hawaii. This species is no longer extant on Lanai. Currently on Molokai, one population with 20 to 30 plants occurs above Kamiloloa on State-owned land (HINHP Database 2000; GDSI 2000).

This species typically grows in *Diospyros sandwicensis* dominated lowland dry forests, often on a lava substrate, at an elevation of 207 m (680 ft) (HINHP Database 2000; Koyama 1999). Associated species include *Canthium odoratum*, *Peperomia* sp. (ala ala wai nui), and *Rauvolfia sandwicensis* (hao) (HINHP Database 2000).

The threats to *Mariscus fauriei* on Molokai are predation and habitat degradation by feral goats and axis deer. Because there is only one known population on Molokai, the species is threatened by the risk of extinction through random environmental events and through reduced reproductive vigor (USFWS 1996b; 59 FR 56333).

Marsilea villosa (ihi ihi)

Marsilea villosa, a member of the family Marsileaceae, is a perennial aquatic to semiaquatic fern similar in appearance to a four-leaved clover. The leaves are born in pairs along a thin rhizome. The leaves and rhizomes vary in pubescence, depending on the aridity of the habitat at the time of development. A hard sporocarp (hard-walled case containing male and female spores) is borne at the base of a leaf pair. The young sporocarp, like the rhizome, is covered with rust-colored hairs which are lost as the sporocarp matures. The plant occurs either in scattered clumps or as a dense interwoven mat, depending on the competition with other species for limited habitat resources. The species is the only member of the genus native to Hawaii and is closely related to *Marsilea vestita* of the western coast of the United States (USFWS 1996c).

Marsilea villosa requires periodic flooding for spore release and fertilization, then a decrease in water levels for the young plants to establish, and finally dry soil for sporocarps to mature. Shading reduces vigor of *Marsilea villosa*. No other life history information is currently available for this species (USFWS 1996c).

Marsilea villosa was known historically from Oahu, Molokai and Niihau. Currently, it is found only on Oahu and Molokai. On Molokai there are four populations with an unspecified number of individuals located at Kamaka ipo, Ilio Point, Kaiehu Point, and from Kaeo to Mokio on State and privately owned lands (HINHP Database 2000; GDSI 2000).

Marsilea villosa typically occurs in shallow depressions in clay soil, or lithified sand dunes overlaid with alluvial clay. All reported populations occur at or below 150 m (500 ft) elevation. While *Marsilea villosa* can withstand minimal shading, it appears most vigorous growing in open areas. The associated native vegetation of *Marsilea villosa* on Molokai includes *Heteropogon contortus*, *Sida fallax*, *Waltheria indica* (uhaloa), *Centaurium sebaeoides* (awiwī), *Tetramolopium sylvae* (pamakani), and *Schiedea globosa* (USFWS 1996c).

The main reason for the decline of *Marsilea villosa* on Molokai is habitat destruction including the destruction of natural hydrology; the encroachment and competition from naturalized, non-native plants such as *Cenchrus ciliaris* (buffelgrass), *Prosopis pallida*, *Lantana camara*, *Digitaria insularis*, and *Chamaecrista nictitans* (partridge pea); the disturbance of areas where the plant

grows by off-road vehicles or by grazing cattle and axis deer; habitat destruction, degradation, and fragmentation through development, fire, trampling by humans and introduced mammals; catastrophic extinction from random environmental events and reduced reproductive vigor due to few populations and small population sizes (USFWS 1996c; 57 FR 27863).

Melicope mucronulata (no common name)

Melicope mucronulata, a long-lived perennial of the citrus family (Rutaceae) is a small tree up to 13 ft (4 m) tall with oval to elliptic-oval leaves. This species is distinguished from others in the genus by the growth habit, the number of flowers in each flower cluster, the size and shape of the fruit, and the degree of hairiness of the leaves and fruit walls (Stone *et al.* 1999).

Currently, no life history information is available for this species.

First discovered in 1920 in Kanaio, East Maui, *Melicope mucronulata* was not relocated until 1983. One population of two individuals was then found two years later in Kupaia on the border of the privately owned Kamakou Preserve and the State's Molokai Forest Reserve in east Molokai (GDSI 2000; HINHP Database 2000; Stone *et al.* 1999).

Melicope mucronulata occurs on steep, west- or north-facing, dry to mesic, forested lowland slopes at elevations of 670 to 870 m (2,200 to 2,850 ft). Associated native species include *Dodonea viscosa*, *Metrosideros polymorpha*, *Styphelia tameiameia*, and *Dubautia linearis* (naenae) (HINHP Database 2000).

The major threat to the continued existence of this species is catastrophic extinction from random environmental events due to the few extant populations and small number of individuals. Habitat degradation by goats and pigs; predation by goats; and competition with non-native plants, particularly *Melinis minutiflora*, also pose immediate threats to this species (USFWS 1997; 57 FR 20772).

Neraudia sericea (no common name)

Neraudia sericea, a short lived perennial and a member of the nettle family (Urticaceae), is a 3 to 5 m (10 to 16 ft) tall shrub with densely hairy branches. The elliptic or oval leaves have smooth margins or slightly toothed margins on young leaves. The upper leaf surface is moderately hairy and the lower leaf surface is densely covered with irregularly curved, silky gray to white hairs along the veins. The male flowers may be stalkless or have short

stalks. The female flowers are stalkless and have a densely hairy calyx that is either toothed, collar-like, or divided into narrow unequal segments. The fruits are achenes with the apical section separated from the basal portion by a deep constriction. Seeds are oval with a constriction across the upper half. *Neraudia sericea* differs from the other four closely related species of this endemic Hawaiian genus by the density, length, color, and posture of the hairs on the lower leaf surface and by its mostly entire leaf margins (Wagner *et al.* 1999).

Additional information on the life history of this plant, reproductive cycles, longevity, specific environmental requirements, and limiting factors are generally unknown (USFWS 1999).

Neraudia sericea was known historically from Molokai, Lanai, Maui, and Kahoolawe (HINHP Database 2000). Currently, this species is found only on Maui and Molokai. On Molokai, one population of 50 to 100 individuals is known from Makolelau on privately owned land (GDSI 2000; HINHP Database 2000).

Neraudia sericea generally occurs in lowland dry to mesic *Metrosideros polymorpha*-*Dodonea viscosa*-*Styphelia tameiameia* shrubland or forest between 670 and 1,370 m (2,200 and 4,500 ft) in elevation (HINHP Database 2000; Wagner *et al.* 1999). Other associated plant species include *Sida fallax*, *Diospyros sandwicensis*, *Bobea* sp., *Coprosma* sp., and *Hedyotis* sp. (HINHP Database 2000).

The primary threats to *Neraudia sericea* on Molokai are habitat degradation by feral pigs and goats; competition with the non-native plant, *Melinis minutiflora*; and catastrophic extinction through random environmental events due to the vulnerability of a single population (USFWS 1999; 59 FR 56333).

Peucedanum sandwicense (makou)

Peucedanum sandwicense, a short lived perennial and a member of the parsley family (Apiaceae), is a parsley-scented, sprawling herb. Hollow stems arise from a short, vertical, perennial stem with several fleshy roots. This species is the only member of the genus in the Hawaiian Islands (Constance and Affolter 1999).

Additional information on the life history of this plant, reproductive cycles, longevity, specific environmental requirements, and limiting factors are generally unknown (USFWS 1995b).

Historically and currently, *Peucedanum sandwicense* was known from Molokai, Maui, and Kauai (HINHP

Database 2000). Discoveries in 1990 extended the known distribution of this species to the island of Oahu (USFWS 1995b). On Molokai, five populations are known from private and State owned lands in Pelekunu Valley, on Huelo Islet and Mokapu Islet, and State owned lands managed by the National Park Service at Kalaupapa National Historical Park, totaling approximately 50 individuals (GDSI 2000; HINHP Database 2000; K. Wood, *in litt.* 2000).

This species grows in cliff habitats in brown soil and talus in *Chamaesyce celastroides* var. *amplectans*-*Chenopodium oahuense* coastal dry shrubland or *Diospyros sandwicensis* forest from sea level to above 900 m (3,000 ft) and is associated with native species such as *Eragrostis* sp. (kawelu), *Santalum ellipticum* (iliahialoe), *Pritchardia hillebrandii*, *Reynoldsia sandwicensis*, *Osteomeles anthyllidifolia*, *Scaevola sericea*, *Senna gaudichaudii*, *Pittosporum halophilum*, *Sida fallax*, *Plumbago zeylanica* (iliee), *Artemisia australis* (ahinahina), *Portulaca lutea* (ihi), *Lepidium bidentatum* var. *o-waihiense*, *Schiedea globosa*, *Lipochaeta integrifolia*, *Peperomia remyi* (No common name), *Plechranthus parviflorus* (ala ala wai nuu), *Dianella sandwicensis* and *Metrosideros polymorpha* (Constance and Affolter 1999; USFWS 1995b; HINHP Database 2000; K. Wood, *in litt.* 2000).

Threats to *Peucedanum sandwicense* on Molokai are seed predation by rats and competition with the non-native plant species *Ageratum conyzoides* (maile hohono), *Coronopus didymus* (swinecress), *Kalanchoe pinnata*, *Lantana camara*, *Malvastrum coromandelianum* ssp. *coromandelianum* (false mallow), *Morinda citrifolia* (Indian mulberry), *Plantago lanceolata* (English plantain), *Pluchea carolinensis* (sourbush), *Portulaca oleracea*, *Elaphantopus spicatus* (No common name), *Schinus terebinthifolius*, and *Sonchus oleraceus* (pualele) (USFWS 1995b; 59 FR 9304; K. Wood, *in litt.* 2000).

Phyllostegia mannii (no common name)

Phyllostegia mannii, a nonaromatic member of the mint family (Lamiaceae), is a climbing vine with many-branched, four-sided, hairy stems. The opposite, hairy leaves, which are shaped like narrow triangles or narrow triangular ovals have coarsely toothed margins. Clusters of four to six white flowers are arranged in each of several false whorls along an unbranched flowering stem. The fruits are fleshy, dark-green to black nutlets (dry seeds with a hard outer covering). This species is distinguished

from others in the genus by its hairiness; its thin, narrow leaves, which are not pinnately divided; and the usually six flowers per false whorl in a terminal inflorescence (Wagner *et al.* 1999).

This species was observed with fruit in July (USFWS 1996a). Currently, no additional life history information is available for this species.

Historically, *Phyllostegia mannii* was found from Hanalilolilo to Ohialele on East Molokai and at Ukulele on East Maui. It has not been seen on Maui for over 70 years and is apparently extirpated on that island (USFWS 1996a). This species is now known only from four individuals at Hanalilolilo within Kamakou Preserve on privately owned land (GDSI 2000; HINHP Database 2000).

Phyllostegia mannii grows in shaded sites in sometimes foggy and windswept, wet, open, *Metrosideros polymorpha*-dominated montane forest with a native shrub and *Cibotium* sp. understory at 347 m (1,140 ft) in elevation (USFWS 1996a). Associated plant species include *Asplenium* sp. (No common name), *Broussaisia arguta*, *Cheirodendron trigynum*, *Coprosma ochracea*, *Cyanea* sp., *Dicranopteris linearis*, *Hedyotis hillebrandii*, *Pipturus albidus*, *Pouteria sandwicensis*, *Psychotria* sp., *Touchardia latifolia*, *Vaccinium* sp., and *Wikstromia* sp. (HINHP Database 2000).

The only known population of *Phyllostegia mannii* is threatened by habitat destruction and degradation by feral pigs. Because of the small number of individuals, a natural or human-caused environmental event could extirpate all or a significant portion of the population (USFWS 1996a; 57 FR 46325).

Plantago princeps (ale)

Plantago princeps, a short-lived member of the plantain family (Plantaginaceae), is a small shrub or robust perennial herb. This species differs from other native members of the genus in Hawaii by its large branched stems, flowers at nearly right angles to the axis of the flower cluster, and fruits that break open at a point two-thirds from the base. The four varieties, *anomala*, *laxiflora*, *longibracteata*, and *princeps*, are distinguished by the branching and pubescence of the stems; the size, pubescence, and venation of the leaves; the density of the inflorescence; and the orientation of the flowers (Wagner *et al.* 1999).

Little is known about the life history of this plant. Reproductive cycles, longevity, specific environmental requirements, and limiting factors are generally unknown. However,

individuals have been observed in fruit from April through September (USFWS 1999).

Plantago princeps is historically and currently found on Kauai, Oahu, Molokai, and Maui. It is no longer extant on the island of Hawaii. *Plantago princeps* var. *anomala* is currently known from Kauai and Oahu; var. *longibracteata* is known from Kauai and Oahu; var. *princeps* is known from Oahu; and var. *laxiflora* is known from Molokai and Maui. On Molokai, there is currently one remaining population of *Plantago princeps* var. *laxiflora* with five individuals in Kawela Gulch on privately owned lands (GDSI 2000; HINHP Database 2000; USFWS 1999).

On Molokai, *Plantago princeps* var. *laxiflora* is typically found on basalt cliffs in *Metrosideros polymorpha* lowland wet forest or *Acacia koa*-*Metrosideros polymorpha* montane wet forest or *Metrosideros polymorpha* montane wet shrubland, from 402 to 2,042 m (1,320 to 6,700 ft) elevation (Wagner *et al.* 1999). Associated plant species include *Eragrostis variabilis*, *Hedyotis formosa* (No common name), and *Dubautia plantaginea* spp. *humile* (na ena e) (HINHP Database 2000; USFWS 1999).

The primary threats to *Plantago princeps* var. *laxiflora* on Molokai are predation and habitat degradation by feral pigs and goats and competition with various non-native plant species (59 FR 56333; USFWS 1999).

Platanthera holochila (no common name)

Platanthera holochila, a short-lived perennial and a member of the orchid family (Orchidaceae), is an erect, deciduous herb. The stems arise from underground tubers, the pale green leaves are lance to egg-shaped and the greenish-yellow flowers occur in open spikes. This is the only species of this genus that occurs in the Hawaiian Islands (Wagner *et al.* 1999).

Little is known about the life history of this plant. Reproductive cycles, longevity, specific environmental requirements, and limiting factors are unknown (USFWS 1999).

Historically, *Platanthera holochila* was known from Maui, Oahu, Molokai, and Kauai (HINHP Database 2000). Currently, *Platanthera holochila* is extant on Kauai, Molokai, and Maui (HINHP Database 2000). On Molokai, one population with less than 10 individuals is reported from Hanalilolilo on the privately owned land of Kamakou Preserve (HINHP Database 2000; GDSI 2000).

Platanthera holochila is found in *Metrosideros polymorpha*-*Dicranopteris*

linearis montane wet forest or *Metrosideros polymorpha* mixed montane bog between 1,048 and 1,515 m (3,440 and 4,970 ft) elevation. Associated native plants include *Cibotium* sp., *Coprosma ernodeoides* (nene), *Oreobolus furcatus* (No common name), *Styphelia tameiameia*, *Wikstroemia* sp., *Scaevola chamissoniana* (naupaka kuahiwi), *Sadleria* sp. (amau), *Lythrum maritimum* (pukamole), *Deschampsia* sp. (hair grass), *Luzula hawaiiensis* (wood rush), *Sisyrinchium acre* (mau u la ili), *Broussaisia arguta*, *Clermontia* sp. (oha wai), *Lycopodium cernuum* (wawae iole), *Dubautia scabra* (na ena e), *Polypodium pellucidum* (ae), *Gahnia gahniiformis* (No common name), and *Vaccinium reticulatum* (ohelo ai) (61 FR 53108; USFWS 1999).

The primary threats to *Platanthera holochila* on Molokai are habitat degradation and/or destruction by feral pigs; competition with non-native plants; and a risk of extinction from naturally occurring events and/or reduced reproductive vigor, due to the small number of remaining populations and individuals. Predation by slugs may also be a potential threat to this species (61 FR 53108; USFWS 1999).

Schiedea nuttallii (no common name)

Schiedea nuttallii, a member of the pink family (Caryophyllaceae), is a generally hairless, erect subshrub. This species is distinguished from others in this endemic Hawaiian genus by its habit, length of the stem internodes, length of the inflorescence, number of flowers per inflorescence, smaller leaves, smaller flowers, and smaller seeds (Wagner *et al.* 1999).

Little is known about the life history of *Schiedea nuttallii*. Based on field and greenhouse observations, it is hermaphroditic (flowers contain both sexes) (Weller *et al.* 1990). Plants located close to the Makua rim on Oahu have been under observation for 10 years, and they appear to be long-lived (USFWS 1999). *Schiedea nuttallii* appears to be an outcrossing species. Under greenhouse conditions, plants fail to set seed unless pollinated, suggesting that this species requires insects for pollination. Seedlings of *Schiedea* occurring in mesic or wet sites are apparently consumed by introduced slugs and snails. These have been observed feeding on *S. membranacea*, another mesic forest species occurring on Kauai. In contrast to mesic forest species, *Schiedea* occurring in dry areas produce abundant seedlings following winter rains, presumably because there are fewer alien consumers in drier sites (USFWS 1999). Fruits and flowers are

abundant in the wet season but can be found throughout the year (Kapua Kawelo, U.S. Dept. of Defense, Army Environmental, *in litt.* 1999). Little is known about the life history of this plant. Reproductive cycles, longevity, specific environmental requirements, and limiting factors are unknown.

Historically *Schiedea nuttallii* was known from scattered locations on southeastern Kauai, Oahu, Molokai, and Maui (HINHP Database 2000). Currently, known populations occur on Kauai, Oahu, and Molokai (USFWS 1999). On Molokai one population with 22 individuals of *Schiedea nuttallii* occurs on the privately owned lands of TNCH's Kamakou Preserve (HINHP Database 2000; GDSI 2000).

Schiedea nuttallii typically grows in diverse lowland mesic forest, often with *Metrosideros polymorpha* dominant, at elevations between 415 and 730 m (1,360 and 2,400 ft). On Molokai, the population is found at 354 m (1,160 ft) elevation. Associated plants include *Cyrtandra hawaiiensis* (haiwale), *Antidesma* sp., *Psychotria* sp., *Perottetia sandwicensis*, *Pisonia* sp., and *Hedyotis acuminata* (au) (HINHP Database 2000).

Schiedea nuttallii on Molokai is seriously threatened by competition with several non-native plants; predation by the black twig borer, slugs, and snails; and a risk of extinction from naturally occurring events (e.g., landslides) and/or reduced reproductive vigor due to the small number of individuals. (USFWS 1999; 61 FR 53108).

Sesbania tomentosa (ohai)

Sesbania tomentosa, a short lived perennial and a member of the pea family (Fabaceae), is typically a sprawling shrub but may also be a small tree. Each compound leaf consists of 18 to 38 oblong to elliptic leaflets which are usually sparsely to densely covered with silky hairs. The flowers are salmon tinged with yellow, orange-red, scarlet or rarely, pure yellow. *Sesbania tomentosa* is the only endemic Hawaiian species in the genus, differing from the naturalized *Sesbania sesban* by the color of the flowers, the longer petals and calyx, and the number of seeds per pod (Geesink *et al.* 1999).

The pollination biology of *Sesbania tomentosa* is being studied by David Hopper, a graduate student in the Department of Zoology at the University of Hawaii at Manoa. His preliminary findings suggest that although many insects visit *Sesbania* flowers, the majority of successful pollination is accomplished by native bees of the genus *Hylaeus* and that populations at Kaena Point on Oahu are probably

pollinator limited. Flowering at Kaena Point is highest during the winter-spring rains, and gradually declines throughout the rest of the year (USFWS 1999). Other aspects of this plant's life history are unknown.

Currently, *Sesbania tomentosa* occurs on at least six of the eight main Hawaiian Islands (Kauai, Oahu, Molokai, Kahoolawe, Maui, and Hawaii) and in the Northwestern Hawaiian Islands (Nihoa and Necker). It is no longer extant on Niihau and Lanai (59 FR 56333; GDSI 2000, USFWS 1999; HINHP Database 2000). On Molokai, *Sesbania tomentosa* is known from eight populations with an estimated total of 100 to 150 individuals. Three of the populations occur from Moomomi to Nenehanaupo and five from Kamiloloa to Makolekau on State and privately owned lands (HINHP Database 2000; GDSI 2000).

Sesbania tomentosa is found in *Scaevola sericea* coastal dry shrubland on windswept slopes, sea cliffs and weathered basaltic slopes between sea level and 579 m (0 and 1,900 ft) elevation (HINHP Database 2000). Associated plant species include *Lipochaeta integrifolia*, *Jacquemontia sandwicensis*, *Sida fallax*, and *Dodonea viscosa* (HINHP Database 2000; USFWS 1999).

The primary threats to *Sesbania tomentosa* on Molokai are competition with various non-native plant species such as *Lantana camara*, and grass species; habitat degradation by feral cattle; lack of adequate pollination; seed predation by rats, mice and, potentially, non-native insects; and destruction by random environmental events (e.g., fire) and by human activities (e.g., use of off-road vehicles) (59 FR 56333; USFWS 1999).

Silene lanceolata (no common name)

Silene lanceolata, a member of the pink family, is an upright, perennial plant with stems 15 to 50 cm (6 to 20 in) long, which are woody at the base. The narrow leaves are smooth except for a fringe of hairs near the base. Flowers are arranged in open clusters. The flowers are white with deeply-lobed, clawed petals. The capsule opens at the top to release reddish-brown seeds. This species is distinguished from *S. alexandri*, the only other member of the genus found on Molokai, by its smaller flowers and capsules and its stamens, which are shorter than the sepals (Wagner *et al.* 1999).

Currently, no life history information is available for this species (USFWS 1996a).

The historical range of *Silene lanceolata* includes five Hawaiian

Islands: Kauai, Oahu, Molokai, Lanai, and Hawaii Island. *Silene lanceolata* is presently extant on the islands of Molokai, Oahu, and Hawaii. On Molokai, a single population of approximately 100 individuals was found in 1987 on private land near Puu Kolekole (K. Wood, *in litt.* 1999; GDSI 2000; USFWS 1996a).

On Molokai, this species grows on cliff faces and ledges of gullies in dry to mesic shrubland at an elevation of about 800 m (2,600 ft) (USFWS 1996a). Associated native plant species include *Dodonea viscosa*, *Styphelia tameiameia*, and *Dubautia linearis* (K. Wood, *in litt.* 1999).

Habitat destruction by feral ungulates (goats and pigs), wildfires, and competition by invading non-native plants are immediate threats to *Silene lanceolata* on Molokai (57 FR 46325; USFWS 1996a).

Spermolepis hawaiiensis (no common name)

Spermolepis hawaiiensis, a member of the parsley family (Apiaceae), is a slender annual herb with few branches. Its leaves, dissected into narrow, lance-shaped divisions, are oblong to somewhat oval in outline and grow on stalks. Flowers are arranged in a loose, compound umbrella-shaped inflorescence arising from the stem, opposite the leaves. *Spermolepis hawaiiensis* is the only member of the genus native to Hawaii. It is distinguished from other native members of the family by being a non-succulent annual with an umbrella-shaped inflorescence (Constance and Afolter 1999).

Little is known about the life history of *Spermolepis hawaiiensis*. Reproductive cycles, longevity, specific environmental requirements, and limiting factors are unknown (USFWS 1999).

Historically, *Spermolepis hawaiiensis* was known from Kauai, Oahu, Lanai and the island of Hawaii (HINHP Database 2000). Currently, it is extant on Kauai, Oahu, Molokai, Lanai, Maui, and Hawaii (GDSI 2000; 59 FR 56333; HINHP Database 2000). On Molokai, there is one known population with approximately 600 individuals on privately owned land in Kamalo (HINHP Database 2000; GDSI 2000; USFWS 1999).

Spermolepis hawaiiensis is known from shady spots in *Dodonea viscosa* lowland dry shrubland, at an elevation of 219 m (720 ft). Associated plant species include *Eragrostis variabilis*, *Lipochaeta lavarum* (nehe), *Sida fallax*, *Myoporum sandwicensis* (naio), *Santalum ellipticum*, and *Heteropogon*

contortus (HINHP Database 2000; USFWS 1999).

The primary threats to *Spermolepis hawaiiensis* on Molokai are habitat degradation by feral goats; competition with various non-native plants such as *Melinis minutiflora*, *Lantana camara*, and grasses; and habitat destruction and extinction due to natural environmental events such as erosion, landslides, and rockslides due to natural weathering (59 FR 56333; USFWS 1999).

Vigna o-wahuensis (no common name)

Vigna o-wahuensis, a member of the pea family (Fabaceae), is a slender twining perennial herb with fuzzy stems. Each leaf is made up of three leaflets which vary in shape from round to linear, and are sparsely or moderately covered with coarse hairs. Flowers, in clusters of one to four, have thin, translucent, pale yellow or greenish yellow petals. The two lowermost petals are fused and appear distinctly beaked. The sparsely hairy calyx has asymmetrical lobes. The fruits are long slender pods that may or may not be slightly inflated and contain 7 to 15 gray to black seeds. This species differs from others in the genus by its thin yellowish petals, sparsely hairy calyx, and thin pods which may or may not be slightly inflated (Geesink *et al.* 1999).

Additional information on the life history of this plant, reproductive cycles, longevity, specific environmental requirements, and limiting factors are generally unknown (USFWS 1999).

Historically, *Vigna o-wahuensis* was known from Niihau, Oahu, and Maui (HINHP Database 2000). Currently, *Vigna o-wahuensis* is known from the islands of Molokai, Lanai, Kahoolawe, Maui, and Hawaii (HINHP Database 2000). There are no currently known populations on Niihau or Oahu. On Molokai, two populations with approximately 16 individuals occur on privately owned lands at Onini Gulch and Makolelau (GDSI 2000).

On Molokai, *Vigna o-wahuensis* occurs in dry to mesic grassland and shrubland from 207 to 256 m (680 to 840 ft) in elevation (Geesink *et al.* 1999; HINHP Database 2000). Associated plant species include *Chenopodium oahuense*, *Cyperus laevigatus*, *Eragrostis variabilis*, *Heteropogon contortus*, *Ipomoea* sp. (morning glory), *Scaevola sericea*, *Sida fallax*, *Vitex rotundifolia* (kolokolo kahakai), *Dodonea viscosa*, and *Styphelia tameiameia* (HINHP Database 2000; USFWS 1999).

The primary threats to *Vigna o-wahuensis* on Molokai are competition with various non-native plant species;

and a risk of extinction due to random environmental events (primarily fire), and/or reduced reproductive vigor due to the small number of existing populations and individuals (USFWS 1999; 59 FR 56333).

Zanthoxylum hawaiiense (ae)

Zanthoxylum hawaiiense, a long lived perennial, is a medium-size tree with pale to dark gray bark, and lemon-scented leaves in the rue family (Rutaceae). Alternate leaves are composed of three small triangular-oval to lance-shaped, toothed leaves (leaflets) with surfaces usually without hairs. *Zanthoxylum hawaiiense* is distinguished from other Hawaiian members of the genus by several characters: three leaflets all of similar size, one joint on lateral leaf stalk, and sickle-shape fruits with a rounded tip (Stone *et al.* 1999).

Additional information on the life history of this plant, reproductive cycles, longevity, specific environmental requirements, and limiting factors are generally unknown (USFWS 1996b).

Historically, *Zanthoxylum hawaiiense* was known from the islands of Kauai, Molokai, Lanai, southern and southwestern slopes of Haleakala on Maui, and Hawaii. Currently, *Zanthoxylum hawaiiense* is extant on Kauai, Molokai, Maui, and Hawaii. On Molokai, the two extant populations with a total of five individuals are located at Makolelau and Puu Hoi Ridge on private and State lands (HINHP Database 2000; GDSI 2000).

On Molokai, *Zanthoxylum hawaiiense* is found in mesic *Metrosideros polymorpha* or *Diospyros sandwicensis* lowland dry forest with *Nestegis sandwicensis* and *Pleomele auwahiensis* at elevations between 182 and 256 m (600 to 840 ft) (Stone *et al.* 1999; 59 FR 10305; HINHP Database 2000). Associated species include *Pisonia* sp., *Xylosma hawaiiensis*, *Santalum ellipticum*, *Alphitonia ponderosa* (kauila), *Osteomeles anthyllidifolia*, *Alectryon macrococcus* (mahoe), *Charpentiera* sp. (papala), *Melicope* sp., *Dodonea viscosa*, *Streblus pendulinus*, *Myrsine lanaiensis* (kolea), and *Sophora chrysophylla* (HINHP Database 2000).

The threats to *Zanthoxylum hawaiiense* on Molokai include browsing, grazing, and trampling by feral goats; competition with non-native plant species; habitat degradation and destruction by humans, and extinction from naturally occurring events (primarily fire) and/or from reduced reproductive vigor due to the small number of individuals and populations (59 FR 10305; USFWS 1996b).

A summary of populations and landownership for these 40 plant species on Molokai is given in Table 3.

TABLE 3.—SUMMARY OF POPULATIONS AND LANDOWNERSHIP FOR 40 SPECIES ON MOLOKAI.

Species	Number of current populations	Landownership		
		Federal	State	Private
<i>Adenophorus periens</i>	1	.....	.....	X
<i>Alectryon macrococcus</i>	6	.....	X	X
<i>Bidens wiebkei</i>	3	.....	X	X
<i>Brighamia rockii</i>	5	.....	X	X
<i>Canavalia molokaiensis</i>	7	.....	X*	X
<i>Centaurium sebaeoides</i>	2	X	.....	X
<i>Clermontia oblongifolia brevipes</i> ssp.	1	.....	.....	X
<i>Ctenitis squamigera</i>	1	.....	.....	X
<i>Cyanea dunbarii</i>	1	.....	X	.....
<i>Cyanea grimesiana</i> ssp. <i>grimesiana</i>	3	.....	X	X
<i>Cyanea mannii</i>	9	.....	X	X
<i>Cyanea procera</i>	5	.....	X	X
<i>Diellia erecta</i>	4	.....	X	X
<i>Hedyotis mannii</i>	1	.....	.....	X
<i>Hesperomannia arborescens</i>	1	.....	X	.....
<i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i>	2	.....	X	X
<i>Ischaemum byrone</i>	2	.....	X	X
<i>Labordia triflora</i>	1	.....	.....	X
<i>Lysimachia maxima</i>	1	.....	.....	X
<i>Mariscus fauriei</i>	1	.....	X	.....
<i>Marsilea villosa</i>	4	.....	X	X
<i>Melicope mucronulata</i>	1	.....	X	X
<i>Melicope reflexa</i>	3	.....	X	X
<i>Neraudia sericea</i>	1	.....	.....	X
<i>Peucedanum sandwicense</i>	5	.....	X*	X
<i>Phyllostegia mannii</i>	1	.....	.....	X
<i>Plantago princeps</i>	1	.....	.....	X
<i>Platanthera holochila</i>	1	.....	.....	X
<i>Pritchardia munroi</i>	1	.....	.....	X
<i>Schiedea lydgatei</i>	2	.....	X	X
<i>Schiedea nuttallii</i>	1	.....	.....	X
<i>Schiedea sarmentosa</i>	2	.....	X	X
<i>Sesbania tomentosa</i>	8	.....	X	X
<i>Silene alexandri</i>	1	.....	.....	X
<i>Silene lanceolata</i>	1	.....	.....	X
<i>Spermolepis hawaiiensis</i>	1	.....	.....	X
<i>Stenogyne bifida</i>	4	.....	X	X
<i>Tetramolopium rockii</i>	3	.....	X*	X
<i>Vigna o-wahuensis</i>	2	.....	.....	X
<i>Zanthoxylum hawaiiense</i>	2	.....	X	X

*Some populations are on State land that is managed by the National Park Service at Kalaupapa National Historical Park.

Previous Federal Action

Federal action on these plants began as a result of Section 12 of the Act, which directed the Secretary of the Smithsonian Institution to prepare a report on plants considered to be endangered, threatened, or extinct in the United States. This report, designated as House Document No. 94–51, was presented to Congress on January 9, 1975. In that document, *Adenophorus periens*, *Alectryon macrococcus* (as *Alectryon macrococcum* var. *macrococcum* and *Alectryon mahoe*), *Bidens wiebkei*, *Brighamia rockii*, *Canavalia molokaiensis*, *Hedyotis mannii* (as *Hedyotis thyrsoides* var. *thyrsoides*), *Hesperomannia arborescens* (as *Hesperomannia*

arborescens var. *bushiana* and var. *swezeyi*), *Hibiscus arnottianus* ssp. *immaculatus* (as *Hibiscus immaculatus*), *Ischaemum byrone*, *Marsilea villosa*, *Melicope reflexa* (as *Pelea reflexa*), *Neraudia sericea* (as *Neraudia kahoolawensis*), *Peucedanum sandwicense* (as *Peucedanum kauaiense*), *Plantago princeps* (as *Plantago princeps* var. *elata*, var. *laxifolia*, var. *princeps*), *Pritchardia munroi* (as *Pritchardia munroii*), *Sesbania tomentosa* (as *Sesbania hobydi* and *Sesbania tomentosa* var. *tomentosa*), *Silene alexandri*, *Silene lanceolata*, *Vigna o-wahuensis* (as *Vigna sandwicensis* var. *heterophylla* and var. *sandwicensis*), and *Zanthoxylum hawaiiense* (as *Zanthoxylum hawaiiense* var. *citiodora*) were considered

endangered; *Diellia erecta* and *Zanthoxylum hawaiiense* (as *Zanthoxylum hawaiiense* var. *hawaiiense* and var. *velutinosum*) were considered threatened; and, *Labordia triflora*, *Melicope mucronulata* (as *Pelea mucronulata*), *Plantago princeps* (as *Plantago princeps* var. *acaulis*, var. *denticulata*, and var. *queleniana*), and *Tetramolopium rockii* were considered to be extinct. On July 1, 1975, we published a notice in the **Federal Register** (40 FR 27823) of our acceptance of the Smithsonian report as a petition within the context of Section 4(c)(2) (now Section 4(b)(3)) of the Act, and giving notice of our intention to review the status of the plant taxa named therein. As a result of that review, on June 16, 1976, we published

a proposed rule in the **Federal Register** (41 FR 24523) to determine endangered status pursuant to Section 4 of the Act for approximately 1,700 vascular plant taxa, including all of the above taxa except *Labordia triflora*. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94–51 and the July 1, 1975, **Federal Register** publication.

General comments received in response to the 1976 proposal are

summarized in an April 26, 1978, **Federal Register** publication (43 FR 17909). In 1978, amendments to the Act required that all proposals over two years old be withdrawn. A one-year grace period was given to proposals already over two years old. On December 10, 1979, we published a notice in the **Federal Register** (44 FR 70796) withdrawing the portion of the June 16, 1976, proposal that had not been made final, along with four other proposals that had expired. The Service published updated notices of review for

plants on December 15, 1980 (45 FR 82479), September 27, 1985 (50 FR 39525), February 21, 1990 (55 FR 6183), September 30, 1993 (58 FR 51144), and February 28, 1996 (61 FR 7596), and September 19, 1977 (62 FR 49398). A summary of the status categories for these 40 plant species in the 1980–1996 notices of review can be found in Table 4(a). We listed the 40 species as endangered or threatened between 1991 and 1999. A summary of the listing actions can be found in Table 4(b).

TABLE 4(a).—SUMMARY OF CANDIDACY STATUS FOR 40 PLANT SPECIES ON MOLOKAI

Species	Federal Register Notice of Review				
	1980	1985	1990	1993	1996
<i>Adenophorus periens</i>	C1	C1	C1		
<i>Alectryon macrococcus</i>	C1	C1	C1		
<i>Bidens wiebkei</i>	C1	C1	C1		
<i>Brighamia rockii</i>	C1	C1	C1		
<i>Canavalia molokaiensis</i>	C1	C1	C1		
<i>Centaurium sebaeoides</i>			C1		
<i>Clermontia oblongifolia</i> ssp. <i>brevipes</i>			C1		
<i>Ctenitis squamigera</i>	C1	C1	C1		
<i>Cyanea dunbarii</i>					
<i>Cyanea grimesiana</i> ssp. <i>grimesiana</i>	C1	C1		C2	
<i>Cyanea mannii</i>			C1		
<i>Cyanea procera</i>			C1*		
<i>Diellia erecta</i>	C1	C1	C1		
<i>Hedyotis mannii</i>	C1*	C1*	C1		
<i>Hesperomannia arborescens</i>	C1	C1	C1		
<i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i>	C1	C1	C1		
<i>Ischaemum byrone</i>	C1	C1	C1		
<i>Labordia triflora</i>	C2	C2			C
<i>Lysmachia maxima</i>			C2	C2	
<i>Mariscus fauriei</i>			C1		
<i>Marsilea villosa</i>	C1	C1	C1		
<i>Melicope mucronulata</i>	C1	C1	C1		
<i>Melicope reflexa</i>	C1	C1	C1		
<i>Neraudia sericea</i>	3A	3A	C1		
<i>Peucedanum sandwicense</i>	C2	C2	C2		
<i>Phyllostegia mannii</i>			C1		
<i>Plantago princeps</i>	C2	C2	C1		
<i>Platanthera holochila</i>	C1	C1	C1	C2	
<i>Pritchardia munroi</i>	C1	C1	C1		
<i>Schiedea lydgatei</i>		C1	C1		
<i>Schiedea nuttallii</i>				C2	
<i>Schiedea sarmentosa</i>			C2	C2	
<i>Sesbania tomentosa</i>	C1*	C1*	C1		
<i>Silene alexandri</i>	C1	C1	C1		
<i>Silene lanceolata</i>	C1	C1	C1		
<i>Spermolepis hawaiiensis</i>			C1		
<i>Stenogyne bifida</i>			C1		
<i>Tetramolopium rockii</i>	C1	C1	C1		
<i>Vigna o-wahuensis</i>	C1	C1	C1		
<i>Zanthoxylum hawaiiense</i>	C1	C1	C1		

Key:

C: Taxa for which the Service has on file sufficient information on the biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. (The 1996 Notice of Review discontinued the use of different categories of candidates (as described below; candidates were redefined as species meeting the definition of former C1 species.)

C1: Taxa for which the Service has on file enough sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species.

C1*: Taxa of known vulnerable status in the recent past that may already have become extinct.

C2: Taxa for which there is some evidence of vulnerability, but for which there are not enough data to support listing proposals at this time.

3A: Taxa for which the Service has persuasive evidence of extinction. If rediscovered, such taxa might acquire high priority for listing.

Federal Register Notices of Review

1980: 45 FR 82479

1985: 50 FR 39525

1990: 55 FR 6183

1993: 58 FR 51144

1996: 61 FR 7596

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist: (1) The species is threatened by taking or other human activity, and identification of critical habitat can be

expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species. At the time each plant was listed, we determined that designation of critical habitat was prudent for one of these plants (*Labordia triflora*) and not prudent for the other 39 plants because it would not benefit the plant and/or would increase the degree of threat to the species.

The not prudent determinations were challenged in *Conservation Council for Hawaii v. Babbitt*, 2 F. Supp. 2d 1280 (D. Haw. 1998). On March 9, 1998, the

United States District Court for the District of Hawaii (the Court) directed us to review the prudency determinations for 245 listed plant species in Hawaii, including these 39 species. Among other things, the Court held that in most cases we did not sufficiently demonstrate that the species are threatened by human activity or that such threats would increase with the designation of critical habitat. The Court also held that we failed to balance any risks of designating critical habitat against any benefits (*Id.* at 1283–1285).

TABLE 4(b).—SUMMARY OF LISTING ACTIONS FOR 40 PLANT SPECIES ON MOLOKAI

Species	Federal status	Proposed rule		Final rule	
		Date	Federal Register	Date	Federal Register
<i>Adenophorus periens</i>	E	09/14/93	58 FR 48012	11/10/94	59 FR 56333
<i>Alectryon macrococcus</i>	E	05/24/91	56 FR 23842	05/15/92	57 FR 20772
<i>Bidens wiebkei</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Brighamia rockii</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Canavalia molokaiensis</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Centaurium sebaeoides</i>	E	09/28/90	55 FR 39664	10/29/91	56 FR 55770
<i>Clermontia oblongifolia</i> ssp. <i>brevipes</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Ctenitis squamigera</i>	E	06/24/93	58 FR 34231	09/09/94	59 FR 49025
<i>Cyanea dunbarii</i>	E	10/02/95	60 FR 51436	10/10/96	61 FR 53130
<i>Cyanea grimesiana</i> ssp. <i>grimesiana</i>	E	10/02/95	60 FR 51417	10/10/96	61 FR 53108
<i>Cyanea mannii</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Cyanea procera</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Diellia erecta</i>	E	09/14/93	58 FR 48012	11/10/94	59 FR 56333
<i>Hedyotis mannii</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Hesperomannia arborescens</i>	E	10/14/92	57 FR 47028	03/28/94	59 FR 14482
<i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Ischaemum byrone</i>	E	12/17/92	57 FR 59951	03/04/94	59 FR 10305
<i>Labordia triflora</i>	E	05/15/97	62 FR 26757	09/03/99	64 FR 48307
<i>Lysmachia maxima</i>	E	10/02/95	60 FR 51436	10/10/96	61 FR 53130
<i>Mariscus fauriei</i>	E	12/17/92	57 FR 59951	03/04/94	59 FR 10305
<i>Marsilea villosa</i>	E	02/15/91	56 FR 6349	06/22/92	57 FR 27863
<i>Melicope mucronulata</i>	E	05/24/91	56 FR 23842	05/15/92	57 FR 20772
<i>Melicope reflexa</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Neraudia sericea</i>	E	09/14/93	58 FR 48012	11/10/94	59 FR 56333
<i>Peucedanum sandwicense</i>	T	10/30/91	56 FR 55862	02/25/94	59 FR 9304
<i>Phyllostegia mannii</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Plantago princeps</i>	E	09/14/93	58 FR 48012	11/10/94	59 FR 56333
<i>Platanthera holochila</i>	E	10/02/95	60 FR 51417	10/10/96	61 FR 53108
<i>Pritchardia munroi</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Schiedea lydgatei</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Schiedea nuttallii</i>	E	10/02/95	60 FR 51417	10/10/96	61 FR 53108
<i>Schiedea sarmentosa</i>	E	10/02/95	60 FR 51436	10/10/96	61 FR 53130
<i>Sesbania tomentosa</i>	E	09/14/93	58 FR 48012	11/10/94	59 FR 56333
<i>Silene alexandri</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Silene lanceolata</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Spermolepis hawaiiensis</i>	E	09/14/93	58 FR 48012	11/10/94	59 FR 56333
<i>Stenogyne bifida</i>	E	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Tetramolopium rockii</i>	T	09/20/91	56 FR 47718	10/08/92	57 FR 46325
<i>Vigna o-wahuensis</i>	E	09/14/93	58 FR 48012	11/10/94	59 FR 56333
<i>Zanthoxylum hawaiiense</i>	E	12/17/92	57 FR 59951	03/04/94	59 FR 10305

Key:

E=Endangered
T=Threatened

Regarding our determination that designating critical habitat would have no additional benefits to the species above and beyond those already provided through the section 7

consultation requirement of the Act, the Court ruled that we failed to consider the specific effect of the consultation requirement on each species (*Id.* at 1286–88). In addition, the Court stated

that we did not consider benefits outside of the consultation requirements. In the Court's view, these potential benefits include substantive and procedural protections. The Court

held that substantively, designation establishes a “uniform protection plan” prior to consultation and indicates where compliance with section 7 of the Act is required. Procedurally, the Court stated that the designation of critical habitat educates the public and State and local governments and affords them an opportunity to participate in the designation (*Id.* at 1288). The Court also stated that private lands may not be excluded from critical habitat designation even though section 7 requirements apply only to Federal agencies. In addition to the potential benefit of informing the public and State and local governments of the listing and of the areas that are essential to the species’ conservation, the Court found that there may be Federal activity on the private property in the future, even though no such activity may be occurring there at the present (*Id.* at 1285–88).

On August 10, 1998, the Court ordered us to publish proposed critical habitat designations or non-designations for at least 100 species by November 30, 2000, and to publish proposed designations or non-designations for the remaining 145 species by April 30, 2002 (24 F. Supp. 2d 1074).

At the time we listed *Labordia triflora* (64 FR 48307) we determined that designation of critical habitat was prudent and that we would develop critical habitat designations for this taxon, along with nine others, at the same time we developed designations for the 245 Hawaiian plant species. This timetable was challenged in *Conservation Council for Hawaii v. Babbitt*, Civ. No. 99–00283 HG (D. Haw. Aug. 19, 1999, Feb. 16, 2000, and March 28, 2000). The Court agreed, however, that it was reasonable for us to integrate these ten Maui Nui (Maui, Lanai, Molokai, and Kahoolawe) plant taxa into the schedule established for designating critical habitat for the other 245 Hawaiian plants, and ordered us to publish proposed critical habitat designations for the ten Maui Nui species by November 30, 2000, and to publish final critical habitat designations by November 30, 2001. This notice responds to the Court orders.

On November 30, 1998, we published a notice in the **Federal Register** requesting public comments on our reevaluation of whether designation of critical habitat is prudent for the 245 Hawaiian plants at issue (63 FR 65805). The comment period closed on March 1, 1999, and was reopened from March 24, 1999, to May 24, 1999 (64 FR 14209). We received over 100 responses from individuals, non-profit organizations,

the State of Hawaii’s Division of Forestry and Wildlife, county governments, and Federal agencies (U.S. Department of Defense—Army, Navy, Air Force). Only a few responses offered information on the status of individual plant species or on current management actions for one or more of the 245 Hawaiian plants. While many of the respondents expressed support for the designation of critical habitat for 245 Hawaiian plants, more than 80 percent opposed the designation of critical habitat for these plants. In general, these respondents opposed designation because they believed it will cause economic hardship, chill cooperative projects, polarize relationships with hunters, or potentially increase trespass or vandalism on private lands. In addition, commenters also cited a lack of information on the biological and ecological needs of these plants which, they suggested, may lead to designation based on guesswork. The respondents who supported the designation of critical habitat cited that designation will: provide a uniform protection plan for the Hawaiian Islands; promote funding for management of these plants; educate the public and State government; and protect partnerships with landowners and build trust.

On February 18, 2000, we mailed letters to over 100 landowners on the island of Molokai requesting any information considered germane to the management of any of the 255 plants on his/her property, and containing a copy of the November 30, 1998, **Federal Register** notice, a map showing the general locations of the plants that may be on his/her property, and a handout containing general information on critical habitat. We received 25 written responses to our landowner mailing with varying types of information on their current land management activities. Some landowners reported that they are not conducting conservation management actions on their lands while others provided information on various activities such as fencing, weeding, ungulate control, hunting, control of human access, scientific research, fire control, and propagation and/or planting of native plants. We held one open house on the island of Molokai, at the Mitchell Pauole Community Center, on March 15, 2000, to meet one-on-one with local landowners and other interested members of the public. A total of 14 people attended the open house. In addition we met with Maui County Division of Forestry and Wildlife staff and discussed their management activities on Molokai.

On November 7, 2000, we published the first of the court-ordered prudency determinations and proposed critical habitat designations for Kauai and Niihau plants (65 FR 66808). The prudency determinations and proposed critical habitat designations for Maui and Kahoolawe plants were published on December 18, 2000 (65 FR 79192), and for Lanai plants on December 27, 2000. In those proposals we determined that critical habitat was prudent for 19 species (*Adenophorus periens*, *Alectryon macrococcus*, *Centarium sebaeoides*, *Ctenitis squamigera*, *Cyanea grimesiana* ssp. *grimesiana*, *Diellia erecta*, *Hedyotis mannii*, *Hesperomannia arborescens*, *Ischaemum byrone*, *Melicope mucronulata*, *Neraudia sericea*, *Peucedanum sandwicense*, *Plantago princeps*, *Platanthera holochila*, *Schiedea nuttallii*, *Sesbania tomentosa*, *Spermolepis hawaiiensis*, *Vigna-owahuensis*, and *Zanthoxylum hawaiiense*) that occur on Molokai as well as on Kauai, Niihau, Maui, Kahoolawe, and/or Lanai.

Critical Habitat

Critical habitat is defined in section 3 of the Act as—(i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. “Conservation” means the use of all methods and procedures that are necessary to bring an endangered or a threatened species to the point at which listing under the Act is no longer necessary.

Critical habitat receives protection under section 7 of the Act through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a Federal agency. Section 7 also requires conferences on Federal actions that are likely to result in the destruction or adverse modification of proposed critical habitat. In our regulations at 50 CFR 402.02, we define destruction or adverse modification as “* * * the direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any

of those physical or biological features that were the basis for determining the habitat to be critical." Aside from the added protection that may be provided under section 7, the Act does not provide other forms of protection to lands designated as critical habitat. Because consultation under section 7 of the Act does not apply to activities on private or other non-Federal lands that do not involve a Federal nexus, critical habitat designation would not afford any additional protections under the Act against such activities.

In order to be included in a critical habitat designation, the habitat must first be "essential to the conservation of the species." Critical habitat designations identify, to the extent known using the best scientific and commercial data available, habitat areas that provide essential life cycle needs of the species (*i.e.*, areas on which are found the primary constituent elements, as defined at 50 CFR 424.12(b)).

Section 4 requires that we designate critical habitat at the time of listing and based on what we know at the time of the designation. When we designate critical habitat at the time of listing or under short court-ordered deadlines, we will often not have sufficient information to identify all areas of critical habitat. We are required, nevertheless, to make a decision and thus must base our designations on what, at the time of designation, we know to be critical habitat.

Within the geographic area occupied by the species, we will designate only areas currently known to be essential. Essential areas should already have the features and habitat characteristics that are necessary to sustain the species. We will not speculate about what areas might be found to be essential if better information became available, or what areas may become essential over time. If the information available at the time of designation does not show that an area provides essential life cycle needs of the species, then the area should not be included in the critical habitat designation. Within the geographic area occupied by the species, we will not designate areas that do not now have the primary constituent elements, as defined at 50 CFR 424.12(b), that provide essential life cycle needs of the species.

Our regulations state that, "The Secretary shall designate as critical habitat areas outside the geographic area presently occupied by the species only when a designation limited to its present range would be inadequate to ensure the conservation of the species." (50 CFR 424.12(e)). Accordingly, when the best available scientific and

commercial data do not demonstrate that the conservation needs of the species require designation of critical habitat outside of occupied areas, we will not designate critical habitat in areas outside the geographic area occupied by the species.

The Service's Policy on Information Standards Under the Endangered Species Act, published in the **Federal Register** on July 1, 1994 (Vol.59, p. 34271), provides criteria, establishes procedures, and provides guidance to ensure that decisions made by the Service represent the best scientific and commercial data available. It requires Service biologists, to the extent consistent with the Act and with the use of the best scientific and commercial data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. When determining which areas are critical habitat, a primary source of information should be the listing package for the species. Additional information may be obtained from a recovery plan, articles in peer-reviewed journals, conservation plans developed by states and counties, scientific status surveys and studies, and biological assessments or other unpublished materials (*i.e.*, gray literature).

Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize that designation of critical habitat may not include all of the habitat areas that may eventually be determined to be necessary for the recovery of the species. For these reasons, all should understand that critical habitat designations do *not* signal that habitat outside the designation is unimportant or may not be required for recovery. Areas outside the critical habitat designation will continue to be subject to conservation actions that may be implemented under section 7(a)(1) and to the regulatory protections afforded by the section 7(a)(2) jeopardy standard and the section 9 take prohibition, as determined on the basis of the best available information at the time of the action. We specifically anticipate that federally funded or assisted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information

available to these planning efforts calls for a different outcome.

A. Prudency Redeterminations

As previously stated, designation of critical habitat is not prudent when one or both of the following situations exist: (i) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species; or (ii) such designation of critical habitat would not be beneficial to the species (50 CFR 424.12(a)(1)).

To determine whether critical habitat would be prudent for each of the 20 species at issue, we analyzed the potential threats and benefits for each species in accordance with the court's order. Due to low numbers of individuals and/or populations and their inherent immobility, the 20 plants may be vulnerable to unrestricted collection, vandalism, or disturbance. We have examined the evidence currently available for each of these taxa and have found specific evidence of taking, vandalism, collection or trade for one species of *Pritchardia*, the native palm on Molokai. At the time of listing, we determined that designation of critical habitat was not prudent for *Pritchardia munroi* because it would increase the degree of threat from vandalism or collecting, and would provide no benefit (57 FR 46325). Recently we received information on the commercial trade in palms conducted through the internet (Grant Canterbury, USFWS, *in litt.* 2000). Several nurseries advertise and sell seedlings and young plants, including 13 species of Hawaiian *Pritchardia*. Seven of these species are federally protected, including *Pritchardia munroi*. In light of this information, we believe that designation of critical habitat would likely increase the threat from vandalism or collection to this species of *Pritchardia* on Molokai. First, it is easy to identify, and second, it may be attractive to collectors of rare palms either for their personal use or to trade or sell for personal gain (Johnson 1996). We believe that the evidence shows that this species of palm may be attractive to such collectors. The final listing rule for this species contained only general information on its distribution, but the publication of precise maps and descriptions of critical habitat in the **Federal Register** would make this species more vulnerable to incidents of vandalism or collection, and therefore, make recovery more difficult and contribute to the decline of this species (57 FR 46325).

In addition, we believe that designation would not provide significant benefits that would outweigh these increased risks. First, *Pritchardia munroi* does not occur on Federal land. The private land where it is found is zoned for agriculture, though the single tree has been fenced (HINHP Database 2000). In addition, this species is found in a small ravine in an area that is remote and inaccessible to standard vehicles. It is, therefore, unlikely that the land on which it is found will be developed. Since there does not appear to be any actions in the future that would involve a Federal agency, designation of critical habitat would not provide any additional protection to the species that it does not already have through listing alone. If however in the future any Federal involvement did occur, such as through the permitting process or funding by the U.S. Department of Agriculture, the U.S. Department of Interior, the Corps through section 404 of the Clean Water Act, the U.S. Federal Department of Housing and Urban Development or the Federal Highway Administration, the actions would be subject to consultation under section 7 of the Act.

We acknowledge that critical habitat designation, in some situations, may provide some value to the species, for example, by identifying areas important for conservation and calling attention to those areas in need of special protection. However, for this species, we believe that the benefits of designating critical habitat do not outweigh the potential increased threats from vandalism or collection. Given all of the above considerations, we propose that designation of critical habitat for *Pritchardia munroi* is not prudent.

We examined the evidence for the other 19 taxa and have not, at this time, found specific evidence of taking, vandalism, collection or trade of these taxa or of similarly situated species. Consequently, while we remain concerned that these activities could potentially threaten these 19 plant species in the future, consistent with applicable regulations (50 CFR 424.12(a)(1)(i)) and the court's discussion of these regulations, we do not find that any of these species are currently threatened by taking or other human activity, which threats would be exacerbated by the designation of critical habitat.

In the absence of finding that critical habitat would increase threats to a species, if there are any benefits to critical habitat designation, then a prudent finding is warranted. The potential benefits include: (1) Triggering section 7 consultation in new areas

where it would not otherwise occur because, for example, it is or has become unoccupied or the occupancy is in question; (2) focusing conservation activities on the most essential areas; (3) providing educational benefits to State or county governments or private entities; and, (4) preventing people from causing inadvertent harm to the species.

In the case of these 19 species, there would be some benefits to critical habitat. The primary regulatory effect of critical habitat is the section 7 requirement that Federal agencies refrain from taking any action that destroys or adversely affects critical habitat. At least four of these species are reported from Federal lands or lands under Federal jurisdiction (*Canavalia molokaiensis*, *Centaurium seabaeoides*, *Peucedanum sandwicense*, and *Tetramolopium rockii*) (see Table 3), where most actions would be subject to section 7. While a majority of these species are located exclusively on non-Federal lands with limited Federal activities, there could be Federal actions affecting these lands in the future. While a critical habitat designation for habitat currently occupied by these species would be unlikely to change the section 7 consultation outcome because an action that destroys or adversely modifies such critical habitat would also be likely to result in jeopardy to the species, there may be instances where section 7 consultation would be triggered only if critical habitat were designated. There also may be some educational or informational benefits to the designation of critical habitat. Educational benefits include the notification of land owners, land managers, and the general public of the importance of protecting the habitat of these species and dissemination of information regarding their essential habitat requirements.

Therefore, we propose that critical habitat is prudent for 19 plant species: *Bidens wiebkei*, *Brighamia rockii*, *Canavalia molokaiensis*, *Clermontia oblongifolia* ssp. *brevipes*, *Cyanea dunbarii*, *Cyanea mannii*, *Cyanea procera*, *Hibiscus arnottianus* ssp. *immaculatus*, *Lysimachia maxima*, *Mariscus fauriei*, *Marsilea villosa*, *Melicope reflexa*, *Phyllostegia mannii*, *Schiedea lydgatei*, *Schiedea sarmentosa*, *Silene alexandri*, *Silene lanceolata*, *Stenogyne bifida*, and *Tetramolopium rockii*.

B. Primary Constituent Elements

In accordance with section 4(b)(2) of the Act and regulations at 50 CFR 424.12, in determining which areas to propose as critical habitat, we are required to base critical habitat

determinations on the best scientific and commercial data available and to consider those physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. Such requirements include, but are not limited to, space for individual and population growth, and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

As stated above in the discussion about each of the 32 species, very little is known about the specific physical and biological requirements of these species. As such, we are proposing to define the primary constituent elements on the basis of general habitat features of the areas in which the plant species are currently found, such as the type of plant community and their physical location (e.g., steep rocky cliffs, talus slopes, stream banks) and elevation. Therefore, the descriptions of the physical elements of the locations of each of these species and the plant community associated with the species, as described in the **SUPPLEMENTARY INFORMATION: Discussion of the Plant Taxa** section above, constitute the primary constituent elements for these species.

C. Methods for Selection of Areas for Proposed Critical Habitat Designations

Critical habitat is defined as the specific areas within the geographic area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Act, on which are found those physical and biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection (16 U.S.C. 1532(5)(A)(i)). As discussed above, very little is known about the specific physical and biological requirements of most of these 40 species. Therefore, we have defined primary constituent elements based on the general habitat features of the areas in which they currently occur such as the type of plant community the plants are growing in, their physical location (e.g., steep rocky cliffs, talus slopes, stream banks), and elevation. The areas we are proposing to designate as critical habitat provide some or all of the habitat components

essential for the conservation of the plant species.

Critical habitat may also include areas outside the geographic area presently occupied by a species upon determination that such areas are essential to the conservation of the species (16 U.S.C. 1532 (5)(A)(ii)). This may include, for example, potentially suitable unoccupied habitat that is important to the recovery of the species. However, we have not included such areas in the proposed designations for these species because of our limited knowledge of the historical range (the geographical area outside the area presently occupied by the species), and our lack of more detailed information on the specific physical or biological features essential for the conservation of the species that would be needed, for instance, to determine where to reintroduce a species.

The historical (pre-1970) or even post-1970 records for a species may be based on herbarium specimens that contain only the most rudimentary collection information, such as only the name of the island from which the specimen was collected or a general place name (e.g., East Molokai, Kamakou, Pelekunu). In the main Hawaiian Islands, climatic and ecological conditions such as rainfall, elevation, slope, aspect, etc., may vary dramatically within a relatively short distance. Therefore a simple place name does not provide adequate information on the physical and biological features that may have occurred there or may occur there now.

The unpredictable distribution of Hawaiian plant species also makes it difficult to designate potentially suitable unoccupied habitat. For example, currently a species may be known from northern and southern (or eastern and western) locations on an island but not from intervening locations in similar habitat. Based on the best available information, we are unable to determine whether a species once occurred in the intervening areas and disappeared from there prior to Polynesian or European times (thus never having been collected or documented there) or simply never occurred there.

We consider reintroduction (the planting of propagated individuals or seedlings into an area) to be an acceptable method to try to achieve plant species recovery. However, native plant reintroductions are difficult and successful efforts are not common. We do not know enough about these 40 species to identify areas where reintroductions are likely to be successful. We will continue to support experimental efforts to reintroduce species that may eventually provide us

with additional information on the physical and biological features essential to the conservation of these species, and thus, may eventually result in identification of unoccupied habitat for future designation.

As required by the Act and regulations (section 4 (b) (2) and 50 CFR 424.12) we used the best scientific information available to determine areas that contain those physical and biological features that are essential for the survival and recovery of the 40 plant species. This information included site-specific species information from the Hawaii Natural Heritage Program (HINHP) and our rare plant database, species information from the Center for Plant Conservation's (CPC) rare plant monitoring database housed at the University of Hawaii's Lyon Arboretum, recent biological surveys and reports, our recovery plans for 39 of these 40 species, discussions with botanical experts, and recommendations (see below) from the Hawaii and Pacific Plant Recovery Coordinating Committee (HPPRCC) (CPC, *in litt.* 1999; HINHP Database 2000, HPPRCC 1998, USFWS 1995a, 1995b, 1996a, 1996b, 1996c, 1997, 1998a, 1998b, 1998c; 1999).

In 1994, the HPPRCC initiated an effort to identify and map habitat it believed to be important for the recovery of 282 endangered and threatened Hawaiian plant species. The HPPRCC identified these areas on most of the islands in the Hawaiian chain, and in 1999 we published them in our *Recovery Plan for the Multi-Island Plants* (USFWS 1999). The HPPRCC expects there will be subsequent efforts to further refine the locations of important habitat areas and that new survey information or research findings may also lead to additional refinements (HPPRCC 1998).

Because the HPPRCC identified essential habitat areas for all listed, proposed, and candidate plant species and evaluated species of concern to determine if essential habitat areas would provide for their habitat needs as well, the HPPRCC's mapping of habitat is distinct from the regulatory designation of critical habitat, as defined by the Act. While these habitat maps are a planning tool to focus conservation efforts on the areas that may be most important to the conservation of Hawaii's listed plant species, as well as other plant species of concern, it does not substitute for the more exacting regulatory process of designating critical habitat. Therefore, the proposed critical habitat designations in this proposed rule do not include all of the habitat,

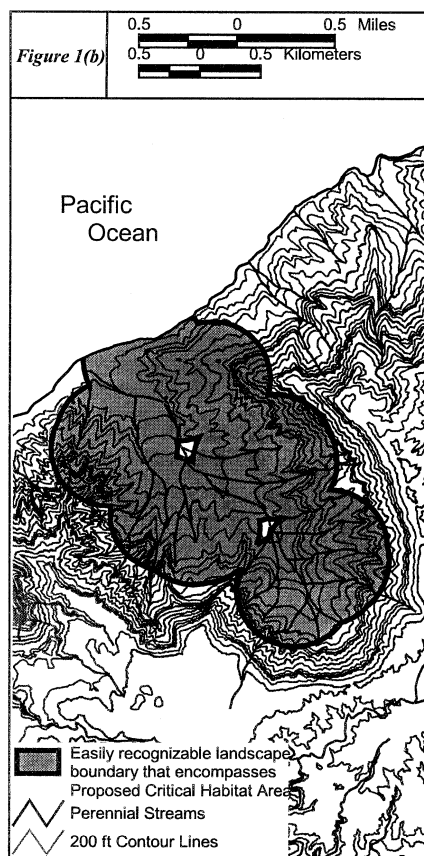
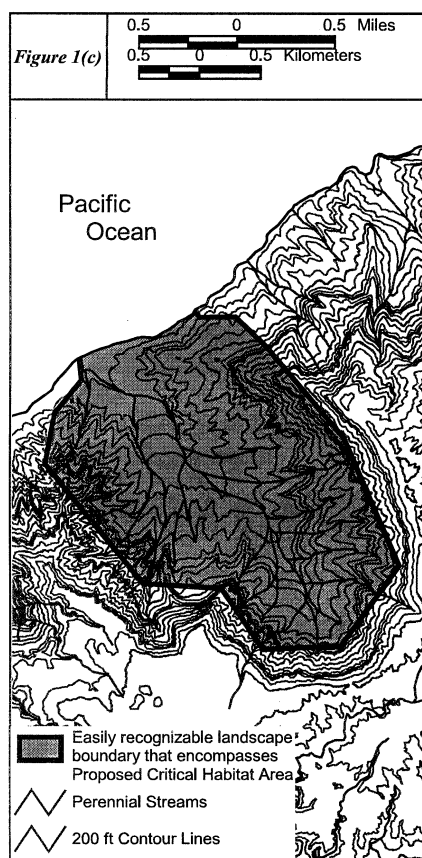
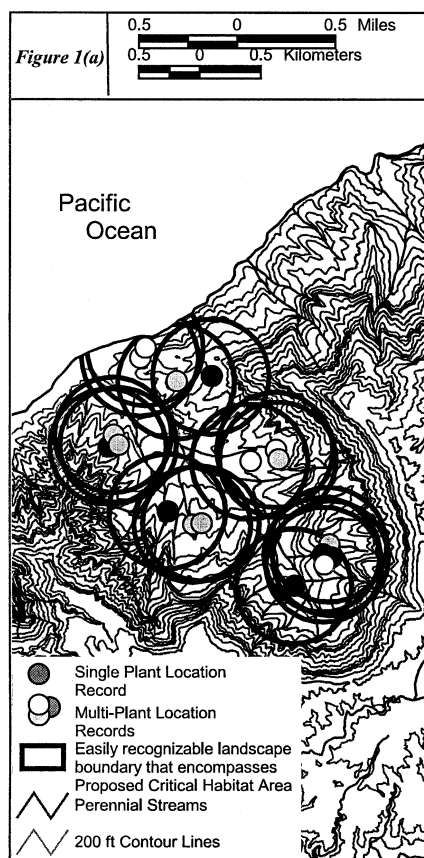
particularly unoccupied habitat, identified by the HPPRCC.

For these plant species from Molokai, currently occupied habitat was examined and critical habitat boundaries were delineated in such a way that locations with a high density of endangered and threatened plants could be depicted clearly (multi-species units). However, these multi-species critical habitat units are not homogenous or uniform in nature. Critical habitat units often encompassed a number of plant community types.

To examine plant occurrences, every current (post-1970) location of every species was delineated within a 536 m (1,760 ft) radius circle with an additional 50 m (164 ft) added to the radius of each location, in order to insure enough area to provide for the proper ecological functioning of the habitat immediately supporting the plant, for a total of 586 m (1,924 ft) radius. The 536 m (1,760 ft) radius is consistent with the accuracy of the mapped locations of the plant(s), and is based on the standard mapping methodology for rare species used by the HINHP (1996). The additional 50 m (164 ft) is consistent with the guidelines identified in the recovery plans for these species for minimum-sized exclosures for rare plants (USFWS 1995a, 1995b, 1996a, 1996b, 1996c, 1997, 1998a, 1998b, 1998c, 1999). In cases where there were isolated species locations, a circular area with a radius of roughly 586 m (1,924 ft) is proposed as critical habitat (HINHP 1996; USFWS 1995a, 1995b, 1996a, 1996b, 1996c, 1997, 1998a, 1998b, 1998c, 1999).

The manner in which we delineated each multi-species proposed critical habitat unit is described below.

- Known current locations of each species were delineated using the guidelines explained above (Figure 1(a)).
- The perimeter boundaries of individual circular areas were connected to form unit area boundaries (Figure 1(b)).
- Unit area boundaries were delineated to follow significant topographic features (50 CFR 424.12(c)) such as coastlines, ridgelines, and valleys (Figure 1(c)).



These delineation methods were used to facilitate identification of boundary lines and to aid in implementation of on-the-ground conservation measures. In delineating critical habitat units we made an effort to avoid developed areas such as towns, agricultural lands, and other lands unlikely to contribute to the conservation of these 32 species.

Within the critical habitat boundaries, adverse modification generally would only occur if the primary constituent elements are affected. Therefore, not all activities within critical habitat would trigger an adverse modification conclusion. Existing features and structures within proposed areas, such as buildings, roads, aqueducts, telecommunications equipment, arboreta and gardens, heiaus (indigenous places of worship or shrines), and other man-made features, do not contain, and are not likely to develop, constituent elements. Therefore, unless a Federal action related to such features or structures indirectly affected nearby habitat containing the primary constituent elements, operation and maintenance of such features or structures generally would not be impacted by the designation of critical habitat.

All currently occupied sites containing one or more of the primary constituent elements considered essential to the conservation of these 40

plant species were examined to determine if additional special management considerations or protection are required above those currently provided. We reviewed all available management information on these plants at these sites including published reports and surveys; annual performance reports; forestry management plans; grants; memoranda of understanding and cooperative agreements; State of Hawaii, Division of Forestry and Wildlife (DOFAW) planning documents; internal letters and memos; biological assessments and environmental impact statements; and, section 7 consultations. Additionally, each public (*i.e.*, any county, state, or Federal government office holdings) and private landowner on Molokai with a known occurrence of one of the 40 species was contacted by mail. We reviewed all information received during the public comment period, in response to our landowner mailing and at an open house held in Kaunakakai, Molokai on March 15, 2000. When clarification was required on the information provided to us, we followed up with a telephone contact.

Pursuant to the definition of critical habitat in section 3 of the Act, any area so designated must also require "special management considerations or protections." Adequate special management or protection is provided by a legally operative plan that addresses the maintenance and improvement of the essential elements and provides for the long-term conservation of the species. The Service considers a plan adequate when it meets all of the following three criteria: (1) The plan provides a conservation benefit to the species (*i.e.*, the plan must maintain or provide for an increase in the species' population or the enhancement or restoration of its habitat within the area covered by the plan; (2) the plan provides assurances that the management plan will be implemented (*i.e.*, those responsible for implementing the plan are capable of accomplishing the objectives, have an implementation schedule and/or have adequate funding to implement the management plan); and, (3) the plan provides assurances the conservation plan will be effective (*i.e.*, it identifies biological goals, has provisions for reporting progress, and is of a duration sufficient to implement the plan and achieve the plan's goals and objectives). If an area is covered by a plan that meets these criteria, it does not constitute critical habitat as defined by the Act.

In determining and weighing the relative significance of the threats that would need to be addressed in

management plans or agreements, we considered the following:

- The factors that led to the listing of the species, as described in the final rules for listing each of the species. For all or nearly all endangered and threatened plants in Hawaii, the major threats include adverse impacts due to non-native plant and animal species. Direct browsing, digging, and trampling by ungulates, including pigs, goats, cattle, sheep, and deer, and direct competition from non-native plants have led to the decline of Hawaii's native flora (Cuddihy and Stone 1990; Loope 1998; Scott *et al.* 1986; Smith 1985; Stone 1985; USFWS 1995a, 1995b, 1996a, 1996b, 1996c, 1997, 1998a, 1998b, 1998c, 1999; Vitousek 1992; Wagner *et al.* 1985). Ungulate activity in most areas results in an increase of non-native plants because most of these non-native plants are able to colonize newly disturbed areas more quickly and effectively than Hawaii's native plants (Cuddihy and Stone 1990; Mack 1992; Scott *et al.* 1986; Smith 1985; Tunison *et al.* 1992; USFWS 1995a, 1995b, 1996a, 1996b, 1996c, 1997, 1998a, 1998b, 1998c; 1999).
- The recommendations from the HPPRCC in their 1998 report to the Service ("Habitat Essential to the Recovery of Hawaiian Plants"). As summarized in this report, recovery goals for endangered Hawaiian plant species cannot be achieved with ungulates (*e.g.*, pigs, goats, deer, and sheep) present in Essential Habitat Areas.
- The management actions needed for assurance of survival and ultimate recovery of Hawaii's endangered plants. These actions are described in the Service's recovery plans for 39 of the 40 species (USFWS 1995a, 1995b, 1996a, 1996b, 1996c, 1997, 1998a, 1998b, 1998c, 1999), in the 1998 HPPRCC report to the Service (HPPRCC 1998), and in various other documents and publications relating to plant conservation in Hawaii (Cuddihy and Stone 1990; Mueller-Dombois 1985; Smith 1985; Stone 1985; Stone *et al.* 1992). These actions include, but are not limited to, the following: (1) Feral ungulate control; (2) non-native plant control; (3) rodent control; (4) invertebrate pest control; (5) fire control; (6) maintenance of genetic material of the endangered and threatened plants species; (7) propagation; reintroduction, and/or augmentation of existing populations into areas deemed essential for the recovery of these species; (8) ongoing

management of the wild, outplanted, and augmented populations; (9) habitat management and restoration in areas deemed essential for the recovery of these species; and (10) monitoring of the wild, outplanted, and augmented populations.

In general, taking all of the above recommended management actions into account, the following management actions are ranked in order of importance. It should be noted, however, that, on a case-by-case basis, some of these actions may rise to a higher level of importance for a particular species or area, depending on the biological and physical requirements of the species and the location(s) of the individual plants:

- Feral ungulate control;
- Non-native plant control;
- Rodent control;
- Invertebrate pest control;
- Fire control;
- Maintenance of genetic material of the endangered and threatened plant species;
- Propagation; reintroduction and/or augmentation of existing populations into areas deemed essential for the recovery of the species;
- Ongoing management of the wild, outplanted and augmented populations;
- Maintenance of natural pollinators and pollinating systems, when known;
- Habitat management and restoration in areas deemed essential for the recovery of the species;
- Monitoring of the wild, outplanted and augmented populations;
- Rare plant surveys;
- Control of human activities/access.

As shown in Table 3, these 40 species of plants occur on Federal, State, and private lands on the island Molokai. In response to our two public notices, letters to the landowners, open houses, and meetings, along with information in our files, we received varying amounts and various types of information on the conservation management actions occurring on these lands. Some landowners reported that they are not conducting conservation management actions on their lands while others provided information on various activities such as fencing, weeding, ungulate control, hunting, control of human access, scientific research, fire control, and propagation and/or planting of native plants.

Four species (*Canavalia molokaiensis*, *Centaurium sebaeoides*, *Peucedanum sandwicense*, *Tetramolopium rockii*) are reported from Kalaupapa National Historical Park, Molokai (GDSI 2000;

HINHP Database 2000). This national historical park, which is found on state-owned land, is managed by the National Park Service under a cooperative agreement between the State of Hawaii and the National Park Service (Gary Barbano, National Park Service, pers. comm. 2000). Although the National Park Service conducts some conservation management actions on these lands and provides access to others who are conducting such activities, there are no comprehensive management plans for the long-term conservation of endangered and threatened plants on these lands and no assurances that management actions will be implemented. Therefore, we can not at this time find that management on this land under Federal jurisdiction is adequate to preclude a proposed designation of critical habitat.

Twenty-three species (*Adenophorum periens*, *Alectryon macrococcus*, *Brighamia rockii*, *Canavalia molokaiensis*, *Clermontia oblongifolia* ssp. *brevipes*, *Ctenitis squamigera*, *Cyanea mannii*, *Cyanea procera*, *Diellia erecta*, *Hedyotis mannii*, *Lysimachia maxima*, *Marsilea villosa*, *Melicope mucronulata*, *Peucedanum sandwicense*, *Phyllostegia mannii*, *Plantago princeps*, *Platanthera holochila*, *Schiedea nuttallii*, *Schiedea sarmentosa*, *Stenogyne bifida*, *Tetramolopium rockii*, *Vigna o-wahuense*, *Zanthoxylum hawaiiense*) are reported from The Nature Conservancy's Moomomi, Kamakou, and Pelekunu Preserves which are located on the northwest coast (Moomomi) and in the East Molokai mountains (Kamakou and Pelekunu) (GDSI 2000; HINHP database 2000; The Nature Conservancy of Hawaii (TNCH) 1993, 1994a, 1994b, 1997, 1999a, 1999b, 1999c). Two of the preserves (Moomomi and Pelekunu) are owned by The Nature Conservancy while Kamakou was established by a grant of perpetual conservation easement from the private landowner to TNCH. All three preserves are included in the state's Natural Area Partnership (NAP) program which provides matching funds for the management of private lands that have been permanently dedicated to conservation (TNCH 1993, 1994a, 1994b, 1997, 1999a, 1999b, 1999c).

Under the NAP program, the State of Hawaii provides matching funds on a two-for-one basis for management of private lands dedicated to conservation. In order to qualify for this program, the land must be dedicated in perpetuity through transfer of fee title or a conservation easement to the State or a cooperating entity. The land must be managed by the cooperating entity or a

qualified landowner according to a detailed management plan approved by the Board of Land and Natural Resources. Once approved, the six-year partnership agreement between the State and the managing entity is automatically renewed each year so that there is always six years remaining in the term, although the management plan is updated and funding amounts are re-authorized by the board at least every six years. By April 1 of any year the managing partner may notify the state that it does not intend to renew the agreement; however, in such case the partnership agreement remains in effect for the balance of the existing six year term, and the conservation easement remains in full effect in perpetuity. The conservation easement may be revoked by the landowner only if state funding is terminated without the concurrence of the landowner and cooperating entity. Prior to terminating funding, the State must conduct one or more public hearings. The NAP program is funded through real estate conveyance taxes which are placed in a Natural Area Reserve Fund. Participants in the NAP program must provide annual reports to the Department of Land and Natural Resources (DLNR) and DLNR makes annual inspections of the work in the reserve areas. *See* Haw. Rev. Stat. §§ 195-1-195-11; Hawaii Administrative Rules § 13-210.

Management programs within the preserves are documented in long-range management plans and yearly operational plans. These plans detail management measures that protect, restore, and enhance the rare plants and their habitats within the preserves and in adjacent areas (TNCH 1993, 1994a, 1994b, 1997, 1999a, 1999b, 1999c). These management measures address factors which led to the listing of the 23 species including control of non-native species of ungulates, rodents, weeds, and fire. In addition, habitat restoration and monitoring are also included in these plans.

Kamakou Preserve

The primary management goals within Kamakou Preserve are to (1) prevent degradation of native forest by reducing feral ungulate damage; (2) improve or maintain the integrity of native ecosystems in selected areas of the preserve by reducing the effects of non-native plants; and (3) suppress wildfires.

Specific management actions to address feral ungulate impacts include the construction of fences, including strategic fencing (fences placed in proximity to natural barriers such as cliffs); staff hunting; and

implementation of organized hunting through the Molokai Hunters Working Group. By monitoring ungulate activity within the preserve, the staff are able to direct hunters to problem areas, thereby increasing hunting success. If increased hunting pressure does not reduce feral ungulate activity in the preserve, the preserve staff will work with the hunting group to identify and implement alternative methods (TNCH 1994, 1999).

The non-native plant control program within Kamakou Preserve focuses on habitat modifying non-native plants (weeds) and prioritizes them according to the degree of threat to native ecosystems. A weed priority list has been compiled for the preserve, and control and monitoring of the highest priority species are on-going. Weeds are controlled manually, chemically, or a through a combination of both. Preventative measures (prevention protocol) are required by all (volunteers, riders to the Preserve and hiking participants) who enter the Preserve. This protocol includes such things as brushing footwear before entering the Preserve to remove seeds of non-native plants. In addition, the staff are actively promoting awareness of alien plants in Hawaii and their impacts to native ecosystems in the local communities on Molokai through public education at schools, fairs, and displays at the airport.

Wildfire presuppression and response plans are coordinated with the Maui County Fire Department and the DOFAW Maui District Forester. The Kamakou Wildfire Management Plan is reviewed annually with the fire department and updated as necessary (TNCH 1994, 1999). In the event of fires in areas bordering the preserve staff from Kamakou assist with fire suppression in concert with DOFAW staff.

Natural resource monitoring and research addresses the need to track the biological and physical resources of the preserve and evaluate changes in these resources to guide management programs. Vegetation is monitored throughout the preserve to document long term ecological changes; rare plant species are monitored to assess population status; and, following fires on the boundaries or within the preserve, burned areas are assessed for ingress of weeds and recovery of native plants. In addition, the preserve staff provide logistical support to scientists and others who are conducting research within the preserve.

In addition, TNCH, DOFAW, USFWS and other Federal agencies including the National Park Service, and

neighboring landowners of East Molokai's watershed areas have formed a partnership (East Molokai Watershed Partnership) through a memorandum of understanding to ensure the protection of over 22,000 acres on the island. While the partnership is still in its infancy, the members have agreed, in principle, to participate in cooperative management activities within the East Molokai watershed because they believe that effective management is best achieved through the coordinated actions of all major landowners in the watershed.

Moomomi Preserve

The primary management goals within Moomomi Preserve are to (1) prevent degradation of natural communities by reducing feral ungulate damage; and (2) improve or maintain the integrity of native ecosystems in selected areas of the preserve by reducing the effects of non-native plants (TNCH 1999).

Specific management actions to address feral ungulate impacts include the construction of a perimeter fence to keep out livestock and an agreement with the neighboring landowner, Molokai Ranch, in which they will remove livestock within 48 hours of ingress. Analysis of the monitoring data collected within the axis deer enclosure will guide future management strategies (TNCH 1999).

As with the Kamakou Preserve, the non-native plant control program within Moomomi Preserve focuses on habitat modifying non-native plants (weeds) and prioritizes them according to the degree of threat to native ecosystems. A weed priority list has been compiled for the preserve, and control and monitoring of the highest priority species are on-going. Weeds are controlled manually, chemically, or a through a combination of both. Preventative measures (prevention protocol) are required by all (volunteers, riders to the Preserve and hiking participants) who enter the Preserve. This protocol includes such things as brushing footwear before entering the Preserve to remove seeds of non-native plants. In addition, the staff are actively promoting awareness of alien plants in Hawaii and their impacts to native ecosystems in the local communities on Molokai through public education at schools, fairs, and displays at the airport (TNCH 1999).

Natural resource monitoring and research addresses the need to track the biological and physical resources of the preserve and evaluate changes in these resources to guide management programs. Vegetation is monitored

throughout the preserve to document long term ecological changes; rare plant species are monitored to assess population status. In addition, the preserve staff provide logistical support to scientists and others who are conducting research within the preserve (TNCH 1999).

Pelekunu Preserve

The primary management goals within Pelekunu Preserve are to (1) prevent degradation of native forest by reducing feral ungulate damage; and (2) improve or maintain the integrity of native ecosystems in selected areas of the preserve by reducing the effects of non-native plants.

Specific management actions to address feral ungulate impacts include staff hunting; implementation of organized hunting through the Molokai Hunters Working Group; and quarterly transect and aerial monitoring of ungulate activity. By monitoring ungulate activity within the preserve, the staff are able to direct hunters to problem areas, thereby increasing hunting success. If increased hunting pressure does not reduce feral ungulate activity in the preserve, the preserve staff work with the hunting group to identify and implement alternative methods (TNCH 1999).

As with the other two preserves on Molokai, the non-native plant control program within Pelekunu Preserve focuses on habitat modifying non-native plants (weeds) and prioritizes them according to the degree of threat to native ecosystems. A weed priority list has been compiled for the preserve, and control and monitoring of the highest priority species are on-going. Weeds are controlled manually, chemically, or a through a combination of both. Preventative measures (prevention protocol) are required by all (volunteers, riders to the Preserve and hiking participants) who enter the Preserve. This protocol includes such things as brushing footwear before entering the Preserve to remove seeds of non-native plants. In addition, the staff are actively promoting awareness of alien plants in Hawaii and their impacts to native ecosystems in the local communities on Molokai through public education at schools, fairs, and displays at the airport.

Natural resource monitoring and research addresses the need to track the biological and physical resources of the preserve and evaluate changes in these resources to guide management programs. Vegetation is monitored throughout the preserve to document long term ecological changes; and rare plant species are monitored to assess

population status. In addition, the preserve staff provide logistical support to scientists and others who are conducting research within the preserve.

Because these plants and their habitats within the preserves receive long-term protection and management these lands are not in need of special management considerations or protection. Therefore, we have determined that the private lands within Moomomi Preserve, Kamakou Preserve, and Pelekunu Preserve do not meet the definition of critical habitat in the Act, and we are not proposing designation of these lands as critical habitat. Should the status of these reserves change, for example by non-renewal of a partnership agreement or termination of NAP funding, we will reconsider whether it then meets the definition of critical habitat. If so, we have the authority to proposed to amend critical habitat to include such area at that time. 50 CFR 424.12(g). Critical habitat is not proposed for six species, *Adenophorous periens*, *Hedyotis mannii*, *Phyllostegia mannii*, *Plantago princeps*, *Platanthera holochila*, and *Schiedea nuttallii*, that are currently only found in Kamakou Preserve and for one species, *Lysimachia maxima*, that is only found in Pelekunu Preserve.

For the 40 species in this proposed rule for which primary constituent elements are known, we believe that Kamakou Preserve, Moomomi Preserve, and Pelekunu Preserve are the only potential critical habitat areas on Molokai at this time that do not require special management considerations or protection. However, we are specifically soliciting comments on the appropriateness of this approach.

If we receive information during the public comment period that any of the lands within the proposed designations are actively managed to promote the conservation and recovery of the 40 listed species at issue in this proposed designation, in accordance with long term conservation management plans or agreements, and there are assurances that the proposed management actions will be implemented and effective, the Service can consider this information when making a final determination of critical habitat.

In addition, we are aware that other private landowners and the State of Hawaii are considering the development of land management plans or agreements that may promote the conservation and recovery of endangered and threatened plant species on the island of Molokai. The Service supports these efforts and provides technical assistance whenever

possible. We are also soliciting comments on whether future development and approval of conservation measures (e.g., Conservation Agreements, Safe Harbor Agreements) should trigger revision of designated critical habitat to exclude such lands and, if so, by what mechanism.

In summary, the proposed critical habitat areas described below constitute our best assessment of the physical and biological features needed for the conservation of 32 plant species (*Alectryon macrococcus*, *Bidens wiebkei*, *Brighamia rockii*, *Canavalia molokaiensis*, *Centarium sebaeoides*, *Clermontia oblongifolia* ssp. *brevipes*, *Ctenitis squamigera*, *Cyanea dunbarii*, *Cyanea grimesiana* ssp. *grimesiana*, *Cyanea mannii*, *Cyanea procera*, *Diellia erecta*, *Hesperomannia arborescens*, *Hibiscus arnottianus* ssp. *immaculatus*, *Ischaemum byrone*, *Labordia triflora*, *Mariscus fauriei*, *Marsilea villosa*, *Melicope mucronulata*, *Melicope reflexa*, *Neraudia sericea*, *Peucedanum sandwicense*, *Schiedea lydgatei*, *Schiedea sarmentosa*, *Sesbania tomentosa*, *Silene alexandri*, *Silene lanceolata*, *Spermolepis hawaiiensis*, *Stenogyne bifida*, *Tetramolopium rockii*, *Vigna o-wahuensis*, and *Zanthoxylum hawaiiense*) and the special management needs of the species, and are based on the best scientific and commercial information available and described above. We put forward this proposal acknowledging that we have incomplete information regarding many of the primary biological and physical requirements for these species. However, both the Act and the relevant court orders require us to proceed with designation at this time based on the best information available. As new information accrues, we may reevaluate which areas warrant critical habitat designation. We anticipate that comments received through the public review process and from any public hearings, if requested, will provide us with additional information to use in our decision making process and in assessing the potential impacts of designating critical habitat for one or more of these species.

The approximate areas of proposed critical habitat, by land ownership, are shown in Table 5. Proposed critical habitat includes habitat for 32 species predominantly on the east side of Molokai. Lands proposed as critical habitat have been divided into 28 units.

A brief description of each unit is presented below.

Descriptions of Critical Habitat Units**Molokai A**

The proposed unit Molokai A provides critical habitat for one species: *Marsilea villosa*. This unit contains a total of 73 hectares (ha) (180 acres (ac)). The land contained within this unit is

owned by a private entity. The natural feature found in this unit is the western most portion of Kamakaipo Gulch.

Molokai B

The proposed unit Molokai B provides critical habitat for one species: *Marsilea villosa*. This unit contains a

total of 49 ha (121 ac). The land contained within this unit is owned by the State. The natural features found in this unit are Ilio Point, Kawaihau and Keonehanau.

TABLE 5.—APPROXIMATE PROPOSED CRITICAL HABITAT AREA BY UNIT AND LAND OWNERSHIP, MOLOKAI, MAUI COUNTY, HAWAII

Unit name	State	Private	Federal	Total
Molokai A	N/A	73 ha (180 ac)	N/A	73 ha (180 ac)
Molokai B	49 ha (121 ac)	N/A	N/A	49 ha (121 ac)
Molokai C	N/A	254 ha (628 ac)	N/A	254 ha (628 ac)
Molokai D	213 ha (526 ac)	95 ha (235 ac)	N/A	308 ha (761 ac)
Molokai E	72 ha (178 ac)	N/A	N/A	72 ha (178 ac)
Molokai F	77 ha (190 ac)	N/A	N/A	77 ha (190 ac)
Molokai G	N/A	649 ha (1,604 ac)	N/A	649 ha (1,604 ac)
Molokai H	637 ha (1,574 ac)	302 ha (746 ac)	N/A	939 ha (2,320 ac)
Molokai I	204 ha (504 ac)	N/A	N/A	204 ha (504 ac)
Molokai J	298 ha* (736 ac)	416 ha (1,028 ac)	N/A	714 ha (1,764 ac)
Molokai K	36 ha (89 ac)	91 ha (225 ac)	N/A	127 ha (314 ac)
Molokai L	N/A	137 ha (339 ac)	N/A	137 ha (339 ac)
Molokai M	N/A	122 ha (301 ac)	N/A	122 ha (301 ac)
Molokai N	N/A	300 ha (741 ac)	N/A	300 ha (741 ac)
Molokai O	N/A	44 ha (109 ac)	N/A	44 ha (109 ac)
Molokai P	66 ha (163 ac)	52 ha (128 ac)	N/A	118 ha (291 ac)
Molokai Q	83 ha (205 ac)	202 ha (499 ac)	N/A	285 ha (704 ac)
Molokai R	30 ha (74 ac)	92 ha (227 ac)	N/A	122 ha (301 ac)
Molokai S	N/A	199 ha (492 ac)	N/A	199 ha (492 ac)
Molokai T	N/A	125 ha (309 ac)	N/A	125 ha (309 ac)
Molokai U	166 ha (410 ac)	28 ha (69 ac)	N/A	194 ha (479 ac)
Molokai V	136 ha (336 ac)	147 ha (363 ac)	N/A	283 ha (699 ac)
Molokai W	1 ha (2 ac)	N/A	N/A	1 ha (2 ac)
Molokai X	424 ha* (1,048 ac)	N/A	N/A	424 ha (1,048 ac)
Molokai Y	70 ha* (173 ac)	45 ha (111 ac)	N/A	115 ha (284 ac)
Molokai Z	N/A	111 ha (274 ac)	N/A	111 ha (274 ac)
Molokai Aa	109 ha (269 ac)	N/A	5 ha (12 ac)	114 ha (281 ac)
Molokai Bb	4 ha (10 ac)	N/A	N/A	4 ha (10 ac)
Total	2,674 ha (6,608 ac)	3,483 ha (8,608 ac)	5 ha (12 ac)	6,163 ha (15,228 ac)

* Portions of unit are found in Kalaupapa National Historical Park which is managed by the National Park Service.

Molokai C

The proposed unit Molokai C provides critical habitat for two species: *Centaurium sebaeoides* and *Marsilea villosa*. This unit contains a total of 254 ha (628 ac). The land contained within this unit is owned by a private entity. The natural features found in this unit are Pueoao, Kaeo and Mokio Point.

Molokai D

The proposed unit Molokai D provides critical habitat for two species: *Sesbania tomentosa* and *Tetramolopium rockii*. This unit contains a total of 308 ha (761 ac). The lands contained within this unit is owned by the State's Department of Hawaiian Homelands and a private entity. The natural features found in this unit are Kawaaloa, Moomomi, Naaukahihi, Kawahuha, Kahinaakalani and Anahaki.

Molokai E

The proposed unit Molokai E provides critical habitat for one species: *Sesbania tomentosa*. This unit contains a total of 72 ha (178 ac). The land contained within this unit is owned by the State's Department of Hawaiian Homelands. The natural feature found in this unit is Nenehanaupo.

Molokai F

The proposed unit Molokai F provides critical habitat for one species: *Cyanea procera*. This unit contains a total of 77 ha (190 ac). The land contained within this unit is owned by the State of Hawaii and is located within Puu Alii NAR. The natural features found in this unit are portions of the Waikolu Stream and Hanalilolilo.

Molokai G

The proposed unit Molokai G provides critical habitat for 13 species: *Alectryon macrococcus*, *Bidens wiebkei*,

Cyanea mannii, *Diellia erecta*, *Neraudia sericea*, *Schiedea lydgatei*, *Schiedea sarmentosa*, *Sesbania tomentosa*, *Silene lanceolata*, *Silene alexandri*, *Spermolepis hawaiiensis*, *Vigna o-wahuensis* and *Zanthoxylum hawaiiensis*. This unit contains a total of 649 ha (1,604 ac). The lands contained within this unit are owned by private entities and are partially found within the Molokai Forest Reserve. The natural features found in this unit are Puu kolekole, Na Puu Kulua, Waiakuilani Gulch, Kapuaokoolau Gulch, Wahuaalapai and Makolelauh.

Molokai H

The proposed unit Molokai H provides critical habitat for six species: *Alectryon macrococcus*, *Mariscus fauriei*, *Melicope mucronulata*, *Schiedea lydgatei*, *Schiedea sarmentosa*, and *Sesbania tomentosa*. This unit contains a total of 939 ha (2,320 ac). The lands contained within this unit are owned by

the State of Hawaii, including the Department of Hawaiian Homelands, and a private entity and are partially found within the State's Molokai Forest Reserve and Kamiloloa Plant Sanctuary. The natural features found in this area are Kamiloloa, Makakupaia, Onini Gulch, Ooa, Makakupaia 2, a portion of the south fork of Kaunakakai and Kamiloloa Gulches.

Molokai I

The proposed unit Molokai I provides critical habitat for two species:

Alectryon macrococcus and *Canavalia molokaiensis*. This unit contains a total of 204 ha (504 ac). The land contained within this unit is owned by the State of Hawaii and is found in the Molokai Forest Reserve. The natural features found in this unit are Kaunakakai Gulch, Puu Makaliilii and Kupaia Gulch.

Molokai J

The proposed unit Molokai J provides critical habitat for three species: *Canavalia molokaiensis*, *Cyanea dunbarii* and *Cyanea mannii*. This unit contains a total of 714 ha (1,764 ac). The lands contained within this unit are owned by the State of Hawaii and private owners, and are found in the State's Molokai Forest Reserve, and lands under Federal management at Kalaupapa National Historical Park. The natural features found in this unit are Kapuna Spring, Mokomoka Gulch, Kalamaula, Waihanau Stream, Maunahui, Kaunakakai Gulch, Kaunakakai and Kahuaawi Gulch.

Molokai K

The proposed unit Molokai K provides critical habitat for one species: *Sesbania tomentosa*. This unit contains a total of 127 ha (314 ac). The lands contained within this unit are owned by the State's Department of Hawaiian Homelands and private entities. The natural feature found in this unit is Onini Gulch.

Molokai L

The proposed unit Molokai L provides critical habitat for one species: *Sesbania tomentosa*. This unit contains a total of 137 ha (339 ac). The lands contained within this unit are owned by private entities.

Molokai M

The proposed unit Molokai M provides critical habitat for one species: *Sesbania tomentosa*. This unit contains a total of 122 ha (301 ac). The lands contained within this unit are owned by private entities.

Molokai N

The proposed unit Molokai N provides critical habitat for three species: *Ctenitis squamigera*, *Cyanea mannii*, and *Labordia triflora*. This unit contains a total of 300 ha (741 ac). The lands contained within this unit are owned by private entities. The natural features found in this unit are Puu Haha, Kaapahu, Haha Falls, Kalapa Konomanu, Kumueli Gulch, Helani Ridge, Kumueli, Kalapamoa Ridge, Kua Gulch, Wawaia Gulch and Helani Gulch.

Molokai O

The proposed unit Molokai O provides critical habitat for one species: *Clermontia oblongifolia* ssp. *brevipes*. This unit contains a total of 44 ha (1089 ac). The lands contained within this unit are owned solely by a private owner. The natural features found in this unit are portions of the headwaters of the Kamalo Stream.

Molokai P

The proposed unit Molokai P provides critical habitat for one species: *Stenogyne bifida*. This unit contains a total of 118 ha (291 ac). The lands contained within this unit are owned by the State and private entities, and are located partially within the State's Molokai Forest Reserve. The natural features found in this unit are Pelekunu Gulch, Manawai Gulch, Kahananui Gulch and Ohia Gulch.

Molokai Q

The proposed unit Molokai Q provides critical habitat for one species: *Melicope reflexa*. This unit contains a total of 285 ha (704 ac). The lands contained within this unit are owned by the State and private entities, and are partially found within the State's Molokai Forest Reserve. The natural features found within this unit are Kapuna Gulch, Puu Lua, Kaupuuiki, Puu Lua Wailau, Puu ohelo, Kawaiuliuli, Waiopipi, Honomuni Gulch, Uluwini Gulch and Kupeke Gulch.

Molokai R

The proposed unit Molokai R provides critical habitat for one species: *Diellia erecta*. This unit contains a total of 122 ha (301 ac). The lands contained within this unit are owned by the State and private entities, and are partially located within the State's Molokai Forest Reserve. The natural features found in this unit are Popaakai Gulch, Nawaihulili Stream, Moaula Stream, Hipuapua Stream, Hipuapua Falls, Moaula Falls, Halawa Valley, Halawa Stream, and Poala.

Molokai S

The proposed unit Molokai S provides critical habitat for one species: *Bidens wiebkei*. This unit contains a total of 199 ha (492 ac). The land contained within this unit is owned by a private entity. The natural features found in this unit are Kawaikapu, Kepuna Gulch, Lamaloa Gulch, Halawaiki Gulch, Kuinanaho Gulch, Kaonihu and Lamaloa Head.

Molokai T

The proposed unit Molokai T provides critical habitat for two species: *Hibiscus arnottianus* ssp. *immaculatus* and *Ischaemum byrone*. This unit contains a total of 125 ha (309 ac). The lands contained within this unit are owned by private entities. The natural features found in this unit are Kikipua Point, Waiokala, Papalaua Valley, Kahiwa Gulch and Kahiwa Falls.

Molokai U

The proposed unit Molokai U provides critical habitat for two species: *Cyanea grimesiana* ssp. *grimesiana* and *Melicope reflexa*. This unit contains a total of 194 ha (479 ac). The lands contained within this unit are owned by the State and private owners, and are partially contained within the State's Molokai Forest Reserve. The natural features found in this unit are Kukuinai Ridge and Naehu.

Molokai V

The proposed Unit V provides critical habitat for six species: *Brighamia rockii*, *Cyanea grimesiana* ssp. *grimesiana*, *Hesperomannia arborescens*, *Hibiscus arnottianus* ssp. *immaculatus*, *Ischaemum byrone*, and *Peucedanum sandwicense*. This unit contains a total of 283 ha (699 ac). The lands contained within this unit are owned by the State and private owners, and are partially contained within the State's Olokui NAR and Molokai Forest Reserve. The natural features found in this unit are Waiehu, Wailele Falls, Wailau Stream, Kahawaiiki Stream and Lepau Point.

Molokai W

The proposed unit Molokai W provides critical habitat for two species: *Brighamia rockii* and *Peucedanum sandwicense*. This unit contains a total of 1 ha (2 ac) and is owned by the State. This unit is the entire islet of Huelo which is the Huelo Bird Sanctuary.

Molokai X

The proposed Unit X on the island of Molokai provides critical habitat for two species: *Canavalia molokaiensis* and *Tetramolopium rockii*. This unit contains a total of 424 ha (1,048 ac). The

land contained within this unit is owned by the State and is managed by the National Park Service at Kalaupapa National Historical Park. The natural features in this unit are Kiloia, Ka Lae, Keanakua, Kaaia, Meaula Ridge, Puu Kauwa, Kepono, Keawaiki, Waialeia Stream, Mokio, Makalii, Kalawao, Kuololimu, Alau and Kaupikiawa.

Molokai Y

The proposed unit Molokai Y provides critical habitat for one species: *Peucedanum sandwicense*. This unit contains a total of 115 ha (284 ac). The lands contained within this unit are owned by the State's Department of Hawaiian Homelands and a private entity, and are found partially within the federally managed Kalaupapa National Historical Park and partially within the State's Palaa State Park. The natural features found in this unit are Awahua and Puwahi.

Molokai Z

The proposed unit Molokai Z provides critical habitat for one species: *Tetramolopium rockii*. This unit contains a total of 111 ha (274 ac). The land contained within this unit is owned by a private owner. This unit is located on the southwestern edge of TNCH's Moomomi Preserve.

Molokai Aa

The proposed unit Molokai Aa provides critical habitat for one species: *Centarium sebaeoides*. This unit contains a total of 114 ha (281 ac). The land contained within this unit is federally (Department of Treasury) and State owned, and managed by the National Park Service. This unit is located in Kalaupapa National Historical Park on the Kalaupapa Peninsula. The natural features found in this unit are Kapapakikane, Kahui Point, Lae Hoolehua, and Kaupikiawa.

Molokai Bb

The proposed unit Molokai Bb provides critical habitat for one species: *Peucedanum sandwicensis*. This unit contains a total of 4 ha (10 ac). The land contained within this unit is owned by the State. This unit is the entire islet of Mokapu which is the Mokapu Bird Sanctuary.

Effects of Critical Habitat Designation

Section 7(a) of the Act requires Federal agencies to ensure that actions they fund, authorize, or carry out do not jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat. Destruction or adverse modification of critical habitat is defined by our regulations as

a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical (50 CFR 402.02). Individuals, organizations, States, local governments, and other non-Federal entities are affected by the designation of critical habitat only if their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding.

Section 7(a) of the Act means that Federal agencies must evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated or proposed. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with us. If, at the conclusion of consultation, we issue a biological opinion concluding that the project is likely to result in the destruction or adverse modification of critical habitat, we also provide reasonable and prudent alternatives to the project, if any are identifiable. Reasonable and prudent alternatives are defined at 50 CFR 402.02 as alternative actions identified during consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that the Director believes would avoid destruction or adverse modification of critical habitat.

Section 7(a)(4) requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. Conference reports provide conservation recommendations to assist the agency in eliminating conflicts that may be caused by the proposed action. The conservation recommendations in a conference report are advisory. We may issue a formal conference report if requested by a Federal agency. Formal conference reports on proposed critical habitat contain biological opinion that is prepared according to 50 CFR 402.12, as if critical habitat were designated. We may adopt the formal conference report as the biological opinion when the

critical habitat is designated, if no significant new information or changes in the action alter the content of the opinion. See 50 CFR 402.10(d).

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions under certain circumstances, including instances where critical habitat is subsequently designated and the Federal agency has retained discretionary involvement or control has been retained or is authorized by law. Consequently, some Federal agencies may request consultation or conferencing with us on actions for which formal consultation has been completed if those actions may affect designated critical habitat or adversely modify or destroy proposed critical habitat.

Activities on lands being proposed as critical habitat for these 32 species or activities that may indirectly affect such lands and that conducted by a Federal agency, funded by a Federal agency or require a permit from a Federal agency will be subject to the section 7 consultation process. Federal actions not affecting critical habitat, as well as actions on non-Federal lands that are not federally funded or permitted, will not require Section 7 consultation.

Section 4(b)(8) of the Act requires us to briefly describe and evaluate in any proposed or final regulation that designates critical habitat those activities involving a Federal action that may adversely modify such habitat or that may be affected by such designation. Activities that may destroy or adversely modify critical habitat include those that alter the primary constituent elements to the extent that the value of critical habitat for both the survival and recovery of any one of the 32 species is appreciably reduced. We note that such activities may also jeopardize the continued existence of the species. Activities that, when carried out, funded, or authorized by a Federal agency, may directly or indirectly destroy or adversely modify critical habitat include, but are not limited to:

(1) Activities that appreciably degrade or destroy habitat defined in the discussion of primary constituent elements including but not limited to: overgrazing; maintenance of feral ungulates; clearing, cutting of native live trees and shrubs, whether by burning or mechanical, chemical, or other means (e.g., woodcutting, bulldozing, construction, road building, mining, herbicide application, etc.); introducing or enabling the spread of non-native species; and taking actions that pose a risk of fire.

(2) Water diversion or impoundment, groundwater pumping, or other activity that alters water quality or quantity to an extent that wet forest or bog vegetation is significantly affected; and,

(3) Recreational activities that appreciably degrade vegetation.

Actions affected by designation of critical habitat may include, but are not limited to:

(1) Regulation of activities affecting waters of the United States by the Army Corps of Engineers under section 404 of the Clean Water Act;

(2) Development requiring permits from Federal agencies such as Housing and Urban Development;

(3) Federally funded silviculture/forestry projects and research by the U.S. Department of Agriculture (Natural Resource Conservation Service and Forest Service);

(4) Regulation of airport improvement activities by the Federal Aviation Administration jurisdiction;

(5) Road construction and maintenance by, or funded by, the U.S. Department of Transportation;

(6) Federally funded importation of alien species for research, agriculture, and aquaculture, and the release or authorization of release of biological control agents by the U.S. Department of Agriculture;

(7) Regulation of activities affecting point source pollution discharges into waters of the United States by the Environmental Protection Agency under section 402 of the Clean Water Act;

(8) Hazard mitigation and post-disaster repairs funded by the Federal Emergency Management Agency;

(9) Installation and maintenance of U.S. Coast Guard navigational aids;

(10) Construction of communication sites licensed by the Federal

Communications Commission; and

(11) Construction activities by the U.S. Department of Interior (National Park Service);

(12) Activities not mentioned above funded or authorized by the U.S. Department of Agriculture (Forest Service, Natural Resources Conservation Service), Department of Defense, Department of Transportation, Department of Energy, Department of Interior (U.S. Geological Survey, National Park Service), Department of Commerce (National Oceanic and Atmospheric Administration) or any other Federal agency.

If you have questions regarding whether specific activities will constitute adverse modification of critical habitat, contact the Field Supervisor, Pacific Islands Ecological Services Field Office (see **ADDRESSES** section). Requests for copies of the

regulations on listed wildlife and plants and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Branch of Endangered Species/Permits.

Economic and Other Relevant Impacts Analysis

Section 4(b)(2) of the Act requires that we designate critical habitat on the basis of the best scientific and commercial information available and consider the economic and other relevant impacts of designating a particular area as critical habitat. Consideration of economic and other impacts will take place in the final rule. *See* 50 CFR 424.19. Although at this time we cannot identify any incremental effects of this proposed critical habitat designation above those impacts of listing, we will conduct an economic analysis to further evaluate this issue. We will conduct the economic analysis for this proposal prior to a final determination. When the draft economic analysis is completed, we will announce its availability with a notice in the **Federal Register**, and we will have a comment period for 30 days at that time to accept comments.

We will utilize the final economic analysis, and take into consideration all comments and information regarding economic or other impacts submitted during the public comment period and any public hearings, if requested, to make final critical habitat designations. We may exclude areas from critical habitat upon a determination that the benefits of such exclusions outweigh the benefits of specifying such areas as part of critical habitat; however, we cannot exclude areas from critical habitat when such exclusion will result in the extinction of the species.

Public Comments Solicited

It is our intent that any final action resulting from this proposal be as accurate and as effective as possible. Therefore, we solicit comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry or any other interested party concerning this proposed rule.

In this rule, we do not propose to designate critical habitat on the private lands within Moomomi, Pelekunu, and Kamakou Preserves because these areas are dedicated to conservation and are managed for the benefit of the federally protected plant species found there. We believe that these areas are not in need of special management considerations or protection and, therefore, do not meet the definition of critical habitat in the Act. We are, however, specifically

soliciting comments on the appropriateness of this approach.

We also invite comments from the public that provide information on whether lands within proposed critical habitat are currently being managed to address conservation needs of these listed plants. As stated earlier in this proposed rule, if we receive information that any of the areas proposed as critical habitat are adequately managed, we may delete such areas from the final rule because they would not meet the definition in section 3(5)(A)(i) of the Act. In determining adequacy of management, we must find that the management effort is sufficiently certain to be implemented and effective so as to contribute to the elimination or adequate reduction of relevant threats to the species.

In determining whether an action is likely to be implemented, we will generally consider the following:

- Whether or not a management plan or agreement exists which specifies the management actions being implemented, or if to be implemented, the schedule for implementation;
- Whether there are responsible party(ies), and funding source(s) or other resources necessary to implement the actions, with a high level of certainty that the funding will be provided; and
- The authority and long-term commitment of the party(ies) to the agreement or plan to implement the management action, as demonstrated, for example, by a legal instrument providing enduring protection and management of the lands.

In determining whether an action is likely to be effective, we will generally consider whether or not the plan is specific concerning the threats to be addressed by the management actions; whether such actions have been successful in the past; whether there are provisions for monitoring and assessment of the effectiveness of the management actions; and whether adaptive management principles have been incorporated into the plan.

We are aware that the State of Hawaii and some private landowners may be considering the development and implementation of land management plans or agreements that may promote the conservation and recovery of endangered and threatened plant species on the island of Molokai. We are soliciting comments in this proposed rule on whether current land management plans or practices applied within the areas proposed as critical habitat adequately address the threats to

these listed species. We are also soliciting comments on whether future development and approval of conservation measures (e.g., Conservation Agreements, Safe Harbor Agreements, etc.) should be excluded from critical habitat, and if so, by what mechanism.

In addition, we are seeking comments on the following:

(1) The reasons why critical habitat for any of these species is prudent or not prudent as provided by section 4 of the Act and 50 CFR 424.12(a)(1), including whether the benefits of designation would outweigh any threats to these species due to designation;

(2) The reasons why any particular area should or should not be designated as critical habitat for any of these species, as critical habitat is defined by section 3 of the Act (16 U.S.C. 1532 (5));

(3) Specific information on the amount and distribution of habitat for *Adenophorous periens*, *Alectryon macrococcus*, *Bidens wiebkei*, *Brighamia rockii*, *Canavalia molokaiensis*, *Centarium sebaeoides*, *Clermontia oblongifolia* ssp. *brevipes*, *Ctenitis squamigera*, *Cyanea dunbarii*, *Cyanea grimesiana* ssp. *grimesiana*, *Cyanea mannii*, *Cyanea procera*, *Diellia erecta*, *Hedyotis mannii*, *Hesperomannia arborescens*, *Hibiscus arnotianus* ssp. *immaculatus*, *Ischaemum byrone*, *Labordia triflora*, *Lysimachia maxima*, *Mariscus fauriei*, *Marsilea villosa*, *Melicope mucronulata*, *Melicope reflexa*, *Neraudia sericea*, *Peucedanum sandwicense*, *Phyllostegia mannii*, *Plantago princeps*, *Platanthera holochila*, *Pritchardia munroi*, *Schiedea lydgatei*, *Schiedea nuttallii*, *Schiedea sarmentosa*, *Sesbania tomentosa*, *Silene alexandri*, *Silene lanceolata*, *Spermolepis hawaiiensis*, *Stenogyne bifida*, *Tetramolopium rockii*, *Vigna o-wahuensis*, and *Zanthoxylum hawaiiense*, and what habitat is essential to the conservation of the species and why;

(4) Land use practices and current or planned activities in the subject areas and their possible impacts on proposed critical habitat;

(5) Any economic or other impacts resulting from the proposed designations of critical habitat, including, any impacts on small entities or families; and

(6) Economic and other potential values associated with designating critical habitat for the above plant species such as those derived from non-consumptive uses (e.g., hiking, camping, birding, enhanced watershed protection, increased soil retention, "existence values," and reductions in administrative costs).

If you wish to comment, you may submit your comments and materials concerning this proposal by any one of several methods (see **ADDRESSES**). Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours.

Individual respondents may request that we withhold their home address, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold a respondent's identity, as allowable by law. If you wish us to withhold your name and/or address, you must state this request prominently at the beginning of your comment. However, we will not consider anonymous comments. To the extent consistent with applicable law, we will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

Peer Review

In accordance with our policy published on July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of such review is to ensure listing and critical habitat decisions are based on scientifically sound data, assumptions, and analyses. We will send copies of this proposed rule to these peer reviewers immediately following publication in the **Federal Register**. We will invite the peer reviewers to comment, during the public comment period, on the specific assumptions and conclusions regarding the proposed designations of critical habitat.

We will consider all comments and data received during the 60-day comment period on this proposed rule during preparation of a final rulemaking. Accordingly, the final decision may differ from this proposal.

Clarity of the Rule

Executive Order 12866 requires each agency to write regulations and notices that are easy to understand. We invite your comments on how to make this proposed rule easier to understand including answers to questions such as the following: (1) Are the requirements in the proposed rule clearly stated? (2) Does the proposed rule contain technical language or jargon that

interferes with the clarity? (3) Does the format of the proposed rule (grouping and order of sections, use of headings, paragraphing, etc.) aid or reduce its clarity? (4) Is the description of the proposed rule in the **SUPPLEMENTARY INFORMATION** section of the preamble helpful in understanding the document? (5) What else could we do to make the proposed rule easier to understand?

Send a copy of any comments that concern how we could make this notice easier to understand to: Office of Regulatory Affairs, Department of the Interior, Room 7229, 1849 C Street, NW, Washington, DC 20240. You may e-mail your comments to this address: Execsec@ios.doi.gov.

Required Determinations

1. Regulatory Planning and Review

In accordance with Executive Order (EO) 12866, this action was submitted for review by the Office of Management and Budget (OMB). We are in the process of preparing an economic analysis to determine the economic consequences of designating the specific areas identified as critical habitat. If our economic analysis reveals that the economic impacts of designating any area as critical habitat outweigh the benefits of designation, we may exclude those areas from consideration, unless such exclusion will result in the extinction of the species.

(a) While we will prepare an economic analysis to assist us in considering whether areas should be excluded pursuant to section 4 of the Act, at this time we do not believe this rule will have an annual economic effect of \$100 million or adversely affect an economic sector, productivity, jobs, the environment, or other units of government. Therefore we do not believe a cost benefit and economic analysis pursuant to EO 12866 is required.

The plants at issue were listed as endangered or threatened species between the years 1991 and 1999. The areas proposed for critical habitat are currently occupied by one or more of these species. Under section 7 of the Act, critical habitat may not be destroyed or adversely modified by a Federal agency action; it does not impose any restrictions on non-Federal persons unless they are conducting activities funded or otherwise sponsored or permitted by a Federal agency (See Table 6). Section 7 also requires Federal agencies to ensure that they do not jeopardize the continued existence of the species. Because of their limited number of individuals and populations, and limited range, we

conclude that any Federal action or authorized action that could potentially cause an adverse modification of the proposed critical habitat for any of the 32 species would also likely cause "jeopardy" to that species. Accordingly, the designation of currently occupied areas as critical habitat would not have any additional incremental impacts on what actions may or may not be conducted by Federal agencies or non-Federal persons that receive Federal authorization or funding. Non-Federal persons that do not have a Federal

involvement in their actions are not restricted by the designation of critical habitat.

(b) This rule will not create inconsistencies with other agencies' actions. As discussed above, Federal agencies have been required to ensure that their actions not jeopardize the continued existence of the 32 plant species since their listing between 1991 and 1999. The prohibition against adverse modification of critical habitat would not be expected to impose any additional restrictions to those that

currently exist because all proposed critical habitat is currently occupied.

(c) This rule will not materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients. Federal agencies are currently required to ensure that their activities do not jeopardize the continued existence of the species, and as discussed above we do not anticipate that the adverse modification prohibition resulting from critical habitat designation will have any incremental effects.

TABLE 6.—IMPACTS OF CRITICAL HABITAT DESIGNATION FOR 32 PLANTS FROM MOLOKAI

Categories of activities	Activities potentially affected by species listing only	Additional activities potentially affected by critical habitat designation ¹
Federal Activities Potentially Affected ²	Activities conducted by the Army Corps of Engineers, Department of Transportation, Department of Defense, Department of Agriculture, Environmental Protection Agency, Federal Emergency Management Agency, Federal Aviation Administration..	Activities by these Federal Agencies in any unoccupied critical habitat areas.
Private or other non-Federal Activities Potentially Affected ³	Activities that require a Federal action (permit, authorization, or funding) and may remove or destroy habitat for these plants by mechanical, chemical, or other means (e.g., overgrazing, clearing, cutting native live trees and shrubs, water diversion, impoundment, groundwater pumping, road building, mining, herbicide application, recreational use, etc.) or appreciably habitat value or quality through indirect effects (e.g., edge effects, invasion of exotic plants or animals, fragmentation of habitat)..	Funding, authorization, or permitting actions by Federal Agencies in any unoccupied critical habitat areas.

¹ This column represents activities potentially affected by the critical habitat designation in addition to those activities potentially affected by listing the species.

² Activities initiated by a Federal agency.

³ Activities initiated by a private or other non-Federal entity that may need Federal authorization or funding.

(d) This rule will not raise novel legal or policy issues. The proposed rule follows the requirements for determining critical habitat contained in the Endangered Species Act.

2. Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

In the economic analysis, we will determine whether designation of critical habitat will have a significant effect on a substantial number of small entities. As discussed under Regulatory Planning and Review above, this rule is not expected to result in any restrictions in addition to those currently in existence. As indicated on Table 5 (see "Methods for Selection of Areas for Proposed Critical Habitat Designations") we have designated property owned by Federal and State governments, and private property.

Within these areas, the types of Federal actions or authorized activities that we have identified as potential concerns are:

(1) Regulation of activities affecting waters of the United States by the Army Corps of Engineers under section 404 of the Clean Water Act;

(2) Development on private or State lands requiring permits from other

Federal agencies such as Housing and Urban Development;

(3) Federally funded silviculture/forestry projects and research by the U.S. Department of Agriculture (Natural Resource Conservation Service and Forest Service);

(4) Regulation of airport improvement activities by the Federal Aviation Administration jurisdiction;

(5) Road construction and maintenance by, or funded by, the U.S. Department of Transportation;

(6) Federally funded importation of alien species for research, agriculture, and aquaculture, and the release or authorization of release of biological control agents by the U.S. Department of Agriculture;

(7) Regulation of activities affecting point source pollution discharges into waters of the United States by the Environmental Protection Agency under section 402 of the Clean Water Act.;

(8) Hazard mitigation and post-disaster repairs funded by the Federal Emergency Management Agency;

(9) Installation and maintenance of U.S. Coast Guard navigational aids;

(10) Construction of communication sites licensed by the Federal Communications Commission; and

(11) Construction activities by the U.S. Department of Interior (National Park Service);

(12) Activities not mentioned above funded or authorized by the U.S. Department of Agriculture (Forest Service, Natural Resources Conservation Service), Department of Defense, Department of Transportation, Department of Energy, Department of Interior (U.S. Geological Survey, National Park Service), Department of Commerce (National Oceanic and Atmospheric Administration) or any other Federal agency.

Many of these activities authorized or funded by Federal agencies within the proposed critical habitat areas are carried out by small entities (as defined by the Regulatory Flexibility Act) through contract, grant, permit, or other Federal authorization. As discussed in section 1 above, these actions are currently required to comply with the protections of the Act that are triggered by listing, such as avoiding jeopardy to these species, and the designation of critical habitat is not anticipated to have any additional effects on these activities.

For actions on non-Federal property that do not have a Federal connection

(such as funding or authorization), the current State restrictions concerning take of listed threatened or endangered plant species remain in effect, and this rule would impose no additional restrictions.

3. *Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 804(2))*

In the economic analysis, we will determine whether designation of critical habitat will cause (a) any effect on the economy of \$100 million or more, (b) any increases in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions in the economic analysis, or (c) any significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises.

4. *Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)*

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.):

(a) This rule will not “significantly or uniquely” affect small governments. A Small Government Agency Plan is not required. Small governments will only be affected to the extent that any Federal funds, permits or other authorized activities must ensure that their actions will not adversely affect the critical habitat. However, as discussed in section 1, these actions are currently subject to equivalent restrictions through the listing protections of the species, and no further restrictions are anticipated.

(b) This rule will not produce a Federal mandate of \$100 million or greater in any year, that is, it is not a “significant regulatory action” under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments.

5. *Takings*

In accordance with Executive Order 12630, this rule does not have significant takings implications. A takings implication assessment is not required. As discussed above, the designation of critical habitat affects only Federal agency actions. The rule will not increase or decrease the current restrictions on private property concerning take of the 32 plant species. We do not anticipate that property values will be affected by the critical habitat designations. Landowners in areas that are included in the designated critical habitat will continue to have

opportunity to utilize their property in ways consistent with State law and with the continued survival of the plant species.

6. *Federalism*

In accordance with Executive Order 13132, the rule does not have significant Federalism effects. A Federalism assessment is not required. As discussed above, the designation of critical habitat in areas currently occupied by the 32 plant species would have little incremental impact on State and local governments and their activities. The designations may have some benefit to these governments in that the areas essential to the conservation of these species are more clearly defined, and the primary constituent elements of the habitat necessary to the survival of the species are identified. While this definition and identification does not alter where and what federally sponsored activities may occur, it may assist these local governments in long range planning rather than waiting for case-by-case section 7 consultation to occur.

7. *Civil Justice Reform*

In accordance with Executive Order 12988, the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and meets the requirements of sections 3(a) and 3(b)(2) of the Order. We designate critical habitat in accordance with the provisions of the Endangered Species Act. The rule uses standard property descriptions and identifies the primary constituent elements within the designated areas to assist the public in understanding the habitat needs of the 32 plant species.

8. *Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)*

This rule does not contain any information collection requirements for which OMB approval under the Paperwork Reduction Act is required.

9. *National Environmental Policy Act*

We have determined that an Environmental Assessment and/or an Environmental Impact Statement as defined by the National Environmental Policy Act of 1969 need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act, as amended. A notice outlining our reason for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244). This proposed rule does not constitute a major Federal action significantly affecting the quality of the human environment.

10. *Government-to-Government Relationship With Tribes*

In accordance with the President’s memorandum of April 29, 1994, “Government-to-Government Relations with Native American Tribal Governments” (59 FR 22951) and 512 DM 2, we understand that Federally recognized Tribes must be related to on a Government-to-Government basis. The 1997 Secretarial Order on Native Americans and the Act clearly states that Tribal lands should not be designated unless absolutely necessary for the conservation of the species. According to the Secretarial Order, “Critical habitat shall not be designated in an area that may impact Tribal trust resources unless it is determined essential to conserve a listed species. In designating critical habitat, the Services shall evaluate and document the extent to which the conservation needs of a listed species can be achieved by limiting the designation to other lands.”

We determined that no Tribal lands are essential for any of the 18 plant species for which critical habitat designation is proposed because none of these plants are known to occur on Tribal lands.

References Cited

A complete list of all references cited in this proposed rule is available upon request from the Pacific Islands Ecoregion Office (see **ADDRESSES** section).

Authors

The primary authors of this notice are Christa Russell, Michelle Stephens, and Marigold Zoll (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. In § 17.12(h) revise the entries for *Alectryon macrococcus*, *Bidens wiebkei*, *Brighamia rockii*, *Canavalia molokaiensis*, *Centarium sebaeoides*, *Clermontia oblongifolia* ssp. *brevipes*, *Cyanea dunbarii*, *Cyanea grimesiana*

ssp. grimesiana, *Cyanea mannii*, *Cyanea procera*, *Hesperomannia arborescens*, *Hibiscus arnottianus* ssp. *immaculatus*, *Ischaemum byrone*, *Labordia triflora*, *Mariscus fauriei*, *Melicope* (= *Pelea*) *mucronulata*, *Melicope reflexa*, *Neraudia sericea*, *Peucedanum*

sandwicense, *Schiedea lydgatei*, *Schiedea sarmentosa*, *Sesbania tomentosa*, *Silene alexandri*, *Silene lanceolata*, *Spermolepis hawaiiensis*, *Stenogyne bifida*, *Tetramolopium rockii*, *Vigna o-wahuensis*, and *Zanthoxylum hawaiiense* under "FLOWERING

PLANTS" and *Ctenitis squamigera*, *Diellia erecta* and *Marsilea villosa*, under "FERNS AND ALLIES" to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *
(h) * * *

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
FLOWERING PLANTS							
*	*	*	*	*	*		*
<i>Alectryon macrococcus.</i>	Mahoe	U.S.A. (HI)	Sapindaceae-Soapberry.	E	467	17.96(a)	NA
*	*	*	*	*	*		*
<i>Bidens wiebkei</i>	Kookoolau	U.S.A. (HI)	Asteraceae-Sunflower.	E	480	17.96(a)	NA
*	*	*	*	*	*		*
<i>Brighamia rockii</i>	Olulu	U.S.A. (HI)	Campanulaceae-Bell flower.	E	530	17.96(a)	NA
*	*	*	*	*	*		*
<i>Canavalia molokaiensis.</i>	Awikiwiki	U.S.A. (HI)	Fabaceae-Legume	E	480	17.96(a)	NA
*	*	*	*	*	*		*
<i>Centaurium sebaeoides.</i>	Awiwi	U.S.A. (HI)	Gentianaceae-Gentian.	E	448	17.96(a)	NA
*	*	*	*	*	*		*
<i>Clermontia oblongifolia</i> ssp. <i>brevipes.</i>	Oha wai	U.S.A. (HI)	Campanulaceae-Bell flower.	E	480	17.96(a)	NA
*	*	*	*	*	*		*
<i>Cyanea dunbarii</i>	Haha	U.S.A. (HI)	Campanulaceae-Bell flower.	E	594	17.96(a)	NA
*	*	*	*	*	*		*
<i>Cyanea grimesiana</i> ssp. <i>grimesiana.</i>	Haha	U.S.A. (HI)	Campanulaceae-Bell flower.	E	592	17.96(a)	NA
*	*	*	*	*	*		*
<i>Cyanea mannii</i>	Haha	U.S.A. (HI)	Campanulaceae-Bell flower.	E	480	17.96(a)	NA
*	*	*	*	*	*		*
<i>Cyanea procera</i>	Haha	U.S.A. (HI)	Campanulaceae-Bell flower.	E	480	17.96(a)	NA
*	*	*	*	*	*		*
<i>Hesperomannia arborescens.</i>	None	U.S.A. (HI)	Asteraceae-Sunflower.	E	536	17.96(a)	NA
*	*	*	*	*	*		*
<i>Hibiscus arnottianus</i> ssp. <i>immaculatus.</i>	Kokio keokeo	U.S.A. (HI)	Malvaceae-Mallow ..	E	480	17.96(a)	NA
*	*	*	*	*	*		*
<i>Ischaemum bryone</i> ..	Hilo ischaemum	U.S.A. (HI)	Poaceae-Grass	E	532	17.96(a)	NA
*	*	*	*	*	*		*
<i>Labordia triflora</i>	Kamakahala	U.S.A. (HI)	Loganiaceae-Logan	E	666	17.96(a)	NA
*	*	*	*	*	*		*
<i>Mariscus fauriei</i>	None	U.S.A. (HI)	Cyperaceae-Sedge	E	532	17.96(a)	NA

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
<i>Melicope (=Pelea) mucronulata.</i>	Alani	U.S.A. (HI)	Rutaceae-Rue	E	467	17.96(a)	NA
<i>Melicope reflexa</i>	Alani	U.S.A. (HI)	Rutaceae-Rue	E	480	17.96(a)	NA
<i>Neraudia sericea</i>	None	U.S.A. (HI)	Urticaceae-Nettle	E	559	17.96(a)	NA
<i>Peucedanum sandwicense.</i>	Makou	U.S.A. (HI)	Apiaceae-Parsley	T	530	17.96(a)	NA
<i>Schiedea lydgatei</i>	None	U.S.A. (HI)	Caryophyllaceae-Pink.	E	480	17.96(a)	NA
<i>Schiedea sarmentosa.</i>	None	U.S.A. (HI)	Caryophyllaceae-Pink.	E	594	17.96(a)	NA
<i>Sesbania tomentosa</i>	Ohai	U.S.A. (HI)	Fabaceae-Legume	E	559	17.96(a)	NA
<i>Silene alexandri</i>	None	U.S.A. (HI)	Caryophyllaceae-Pink.	E	480	17.96(a)	NA
<i>Silene lanceolata</i>	None	U.S.A. (HI)	Caryophyllaceae-Pink.	E	480	17.96(a)	NA
<i>Spermolepis hawaiiensis.</i>	None	U.S.A. (HI)	Apiaceae-Parsley	E	559	17.96(a)	NA
<i>Stenogyne bifida</i>	None	U.S.A. (HI)	Lamiaceae-Mint	E	480	17.96(a)	NA
<i>Tetramolopium rockii</i>	None	U.S.A. (HI)	Asteraceae-Sunflower.	T	480	17.96(a)	NA
<i>Vigna o-wahuensis</i>	None	U.S.A. (HI)	Fabaceae-Legume	E	559	17.96(a)	NA
<i>Zanthoxylum hawaiiense.</i>	Ae	U.S.A. (HI)	Rutaceae-Rue	E	532	17.96(a)	NA
FERNS AND ALLIES							
<i>Ctenitis squamigera</i>	Pauoa	U.S.A. (HI)	Aspleniaceae-Spleenwort.	E	553	17.96(a)	NA
<i>Diellia erecta</i>	Asplenium leaved diellia.	U.S.A. (HI)	Aspleniaceae-Spleenwort.	E	559	17.96(a)	NA
<i>Marsilea villosa</i>	Ihihi	U.S.A. (HI)	Marsileaceae-Marselia.	E	474	17.96(a)	NA

3. In § 17.96, as proposed to be amended at 65 FR 66865, November 7, 2000, add introductory text to paragraph (a)(1)(i), add paragraph (a)(1)(i)(F), and revise paragraphs (a)(1)(ii)(A) and (a)(1)(ii)(B) to read as follows:

§ 17.96 Critical habitat—plants.

(a) * * *

(1) * * *

(i) *Maps and critical habitat unit descriptions.* The following sections contain the legal descriptions of the

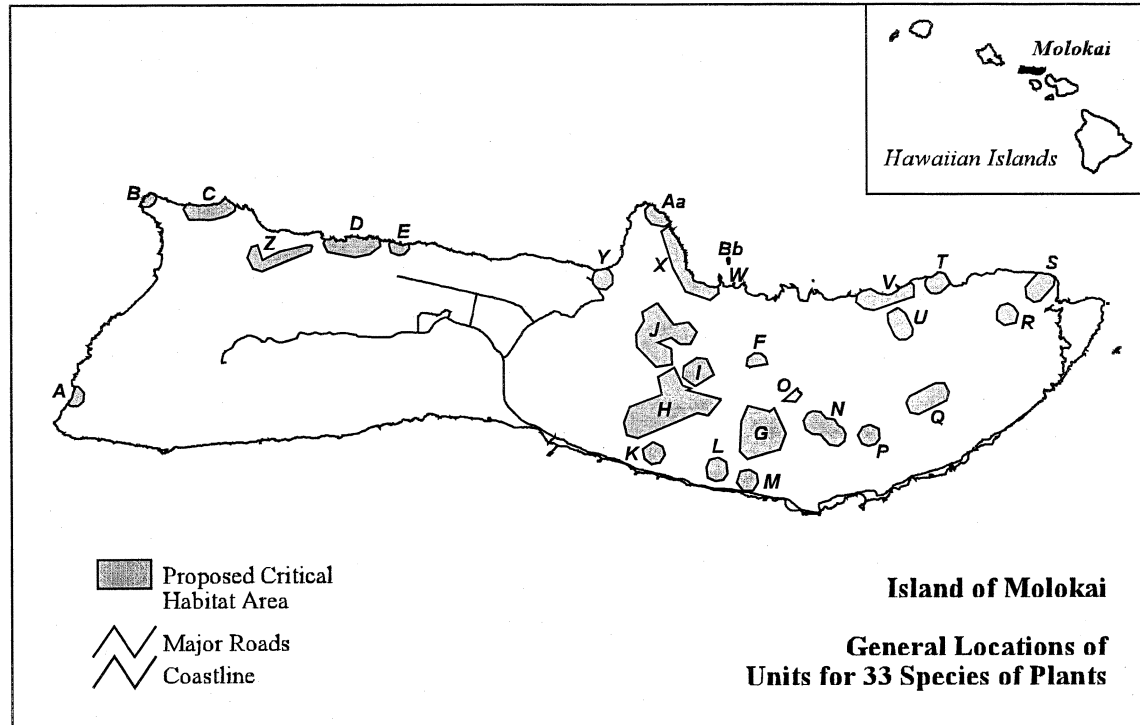
critical habitat units designated for each of the Hawaiian islands. Existing features and structures within proposed areas, such as buildings, roads, aqueducts, telecommunication equipment, arboreta and gardens, heiaus (indigenous place of worship, shrine) and other man-made features do not contain, and are not likely to develop, the constituent elements described for each species in paragraphs (a)(1)(ii)(A) and (a)(1)(ii)(B) of this section. Therefore, these features or structures

are not included in the critical habitat designation.

* * * * *

(F) *Molokai.* Critical habitat areas are described below. Coordinates are in UTM Zone 4 with units in meters using North American Datum of 1983 (NAD83). The following map shows the general locations of the 28 critical habitat units designated on the island of Molokai.

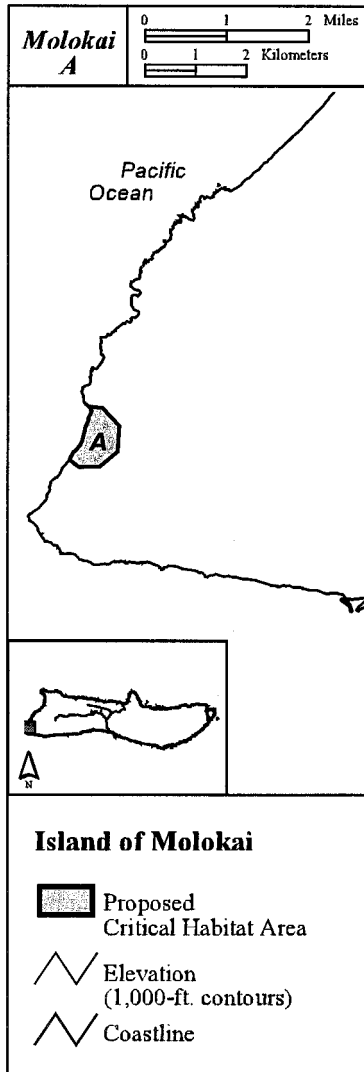
Note: Map follows:



Critical Habitat Molokai Unit A (73 ha; 180 ac)

Unit consists of the following nine points and the intermediate coastline: 676640, 2336512; 676640, 2336514; 676904, 2336494; 677235, 2336150; 677203, 2335634; 676861, 2335347; 676443, 2335339; 676250, 2335477; 676251, 2335477.

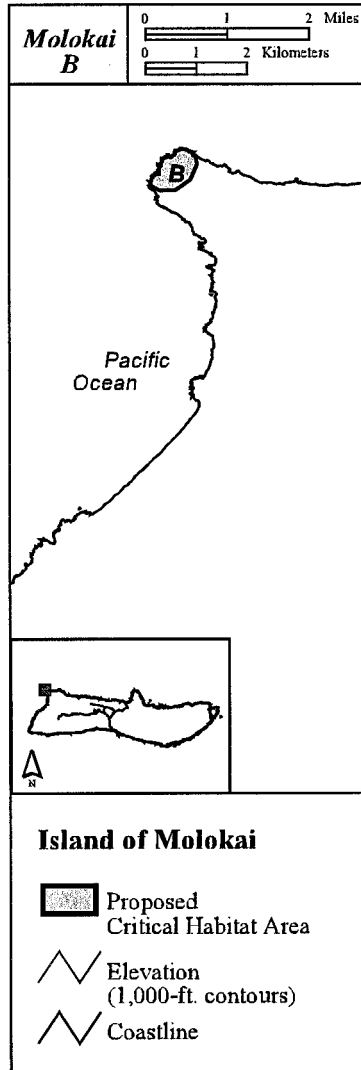
Note: Map follows:



Critical Habitat Molokai Unit B (49 ha; 121 ac)

Unit consists of the following seven points and the intermediate coastline: 681491, 2347819; 681525, 2347655; 681398, 2347338; 681107, 2347147; 680780, 2347124; 680587, 2347237; 680587, 2347242.

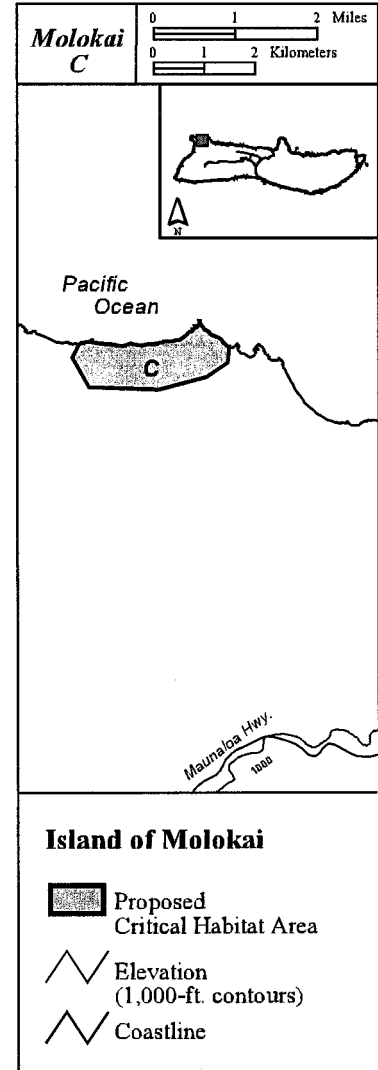
Note: Map follows:



Critical Habitat Molokai Unit C (254 ha; 628 ac)

Unit consists of the following seven points and the intermediate coastline: 686185, 2347195; 686152, 2346870; 685737, 2346591; 684786, 2346346; 683426, 2346387; 683093, 2346978; 683235, 2347250.

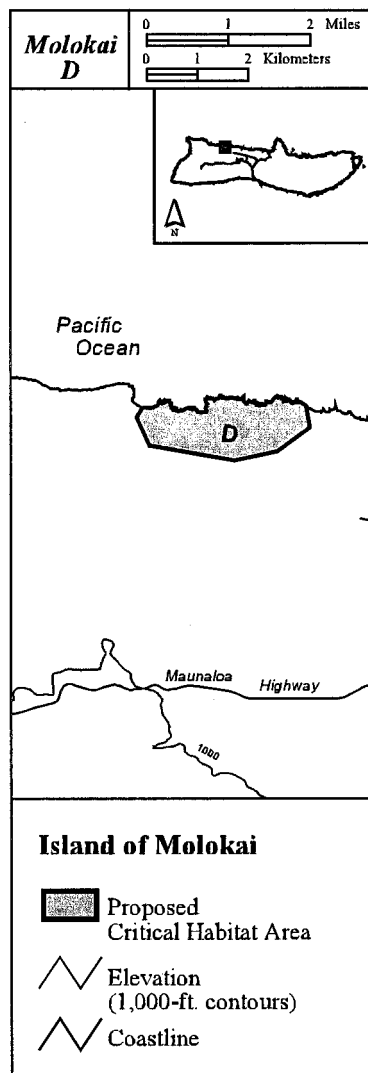
Note: Map follows:



Critical Habitat Molokai Unit D (308 ha; 761 ac)

Unit consists of the following seven points and the intermediate coastline: 694720, 2345197; 694782, 2344764; 694149, 2344287; 693299, 2344108; 691629, 2344413; 691383, 2344965; 691494, 2345158.

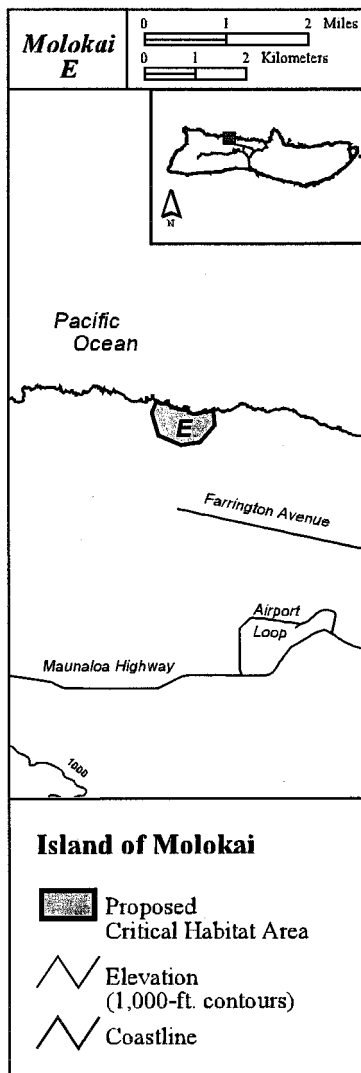
Note: Map follows:



Critical Habitat Molokai Unit E (72 ha; 178 ac)

Unit consists of the following eight points and the intermediate coastline: 696491, 2344923; 696492, 2344923; 696513, 2344602; 696230, 2344266; 695857, 2344202; 695415, 2344391; 695282, 2344860; 695376, 2345085.

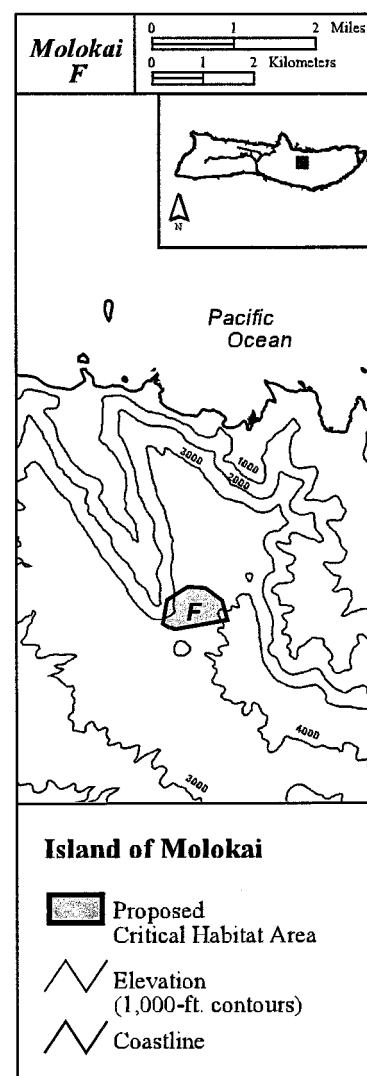
Note: Map follows:



Critical Habitat Molokai Unit F (77 ha; 190 ac)

Unit consists of the following twelve boundary points: 716712, 2337581; 716580, 2337654; 716662, 2338123; 717072, 2338381; 717424, 2338357; 717740, 2338123; 717849, 2337728; 716851, 2337552; 716804, 2337550; 716798, 2337555; 716769, 2337574; 716713, 2337581.

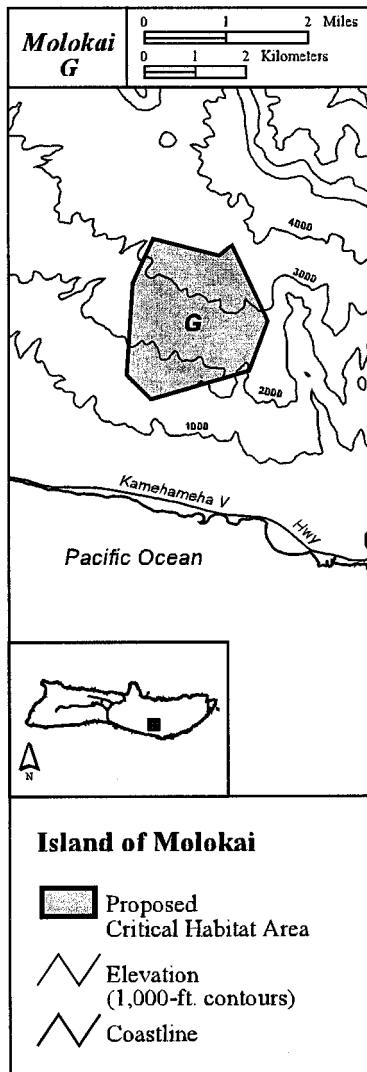
Note: Map follows:



Critical Habitat Molokai Unit G (649 ha; 1,604 ac)

Unit consists of the following eleven boundary points: 718149, 2335058; 718210, 2335097; 718915, 2333601; 718541, 2332609; 716606, 2332055; 716139, 2332523; 716247, 2334342; 716654, 2335225; 717898, 2334905; 717955, 2334888; 717969, 2334907.

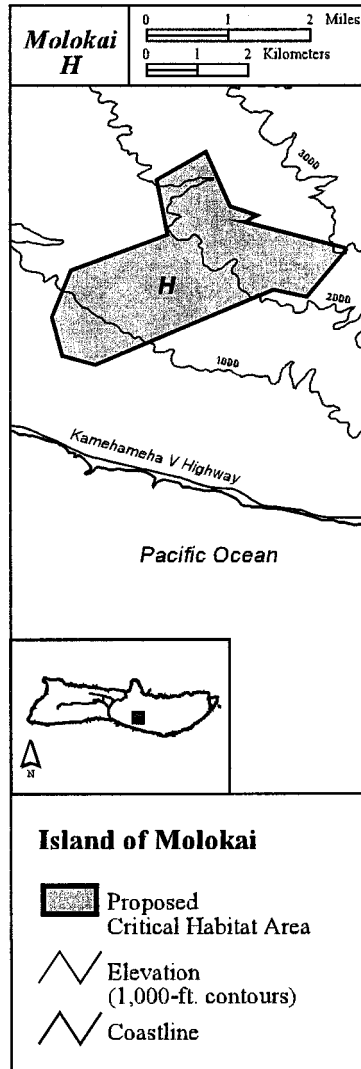
Note: Map follows:



Critical Habitat Molokai Unit H (939 ha; 2,320 ac)

Unit consists of the following fifteen boundary points: 715073, 2335632; 714272, 2334677; 713628, 2334820; 710107, 2333328; 709463, 2333507; 709260, 2334271; 709630, 2335202; 711539, 2335906; 711325, 2336985; 712291, 2337541; 712769, 2336467; 713291, 2336291; 713217, 2336246; 713076, 2336161; 713071, 2336154.

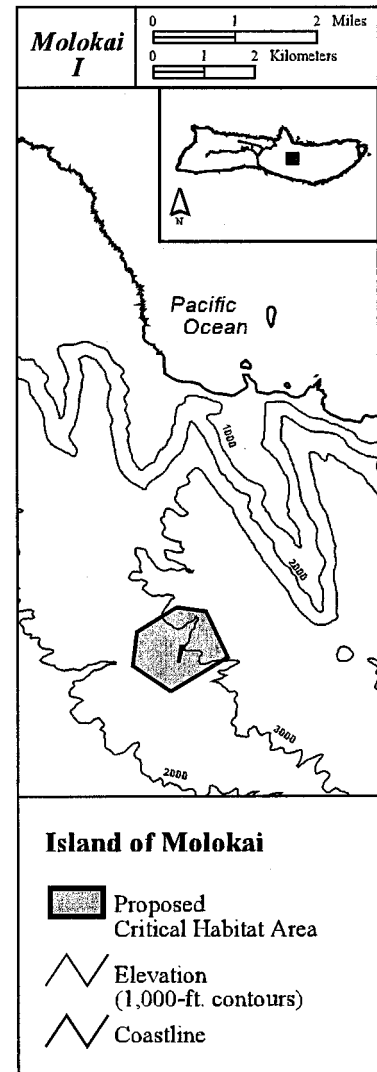
Note: Map follows:



Critical Habitat Molokai Unit I (204 ha; 504 ac)

Unit consists of the following seven boundary points: 713530, 2336433; 712780, 2336945; 712864, 2337613; 713640, 2338102; 714224, 2338019; 714651, 2337113; 714627, 2337098.

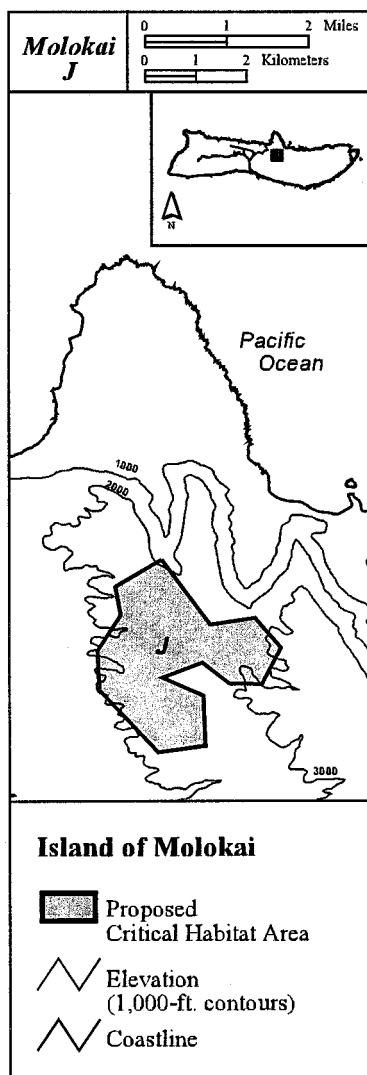
Note: Map follows:



Critical Habitat Molokai Unit J (714 ha; 1,764 ac)

Unit consists of the following fifteen boundary points: 711289, 2341384; 712255, 2340095; 713126, 2340227; 713640, 2339630; 713258, 2338914; 712625, 2338926; 712088, 2339332; 711301, 2339045; 712112, 2338687; 712148, 2337708; 711217, 2337577; 710059, 2338794; 710024, 2339570; 710489, 2340286; 710382, 2340847.

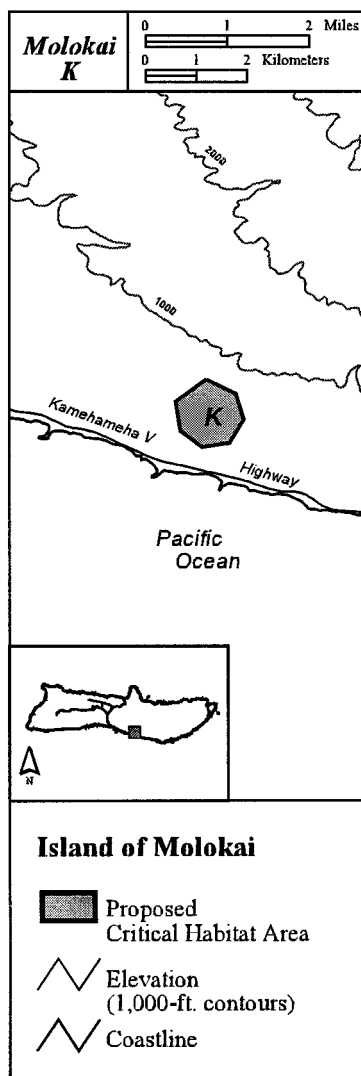
Note: Map follows:



Critical Habitat Molokai Unit K (127 ha; 314 ac)

Unit consists of the following seven boundary points: 710982, 2333123; 711568, 2332839; 711717, 2332325; 711434, 2331869; 710900, 2331777; 710472, 2332099; 710381, 2332686.

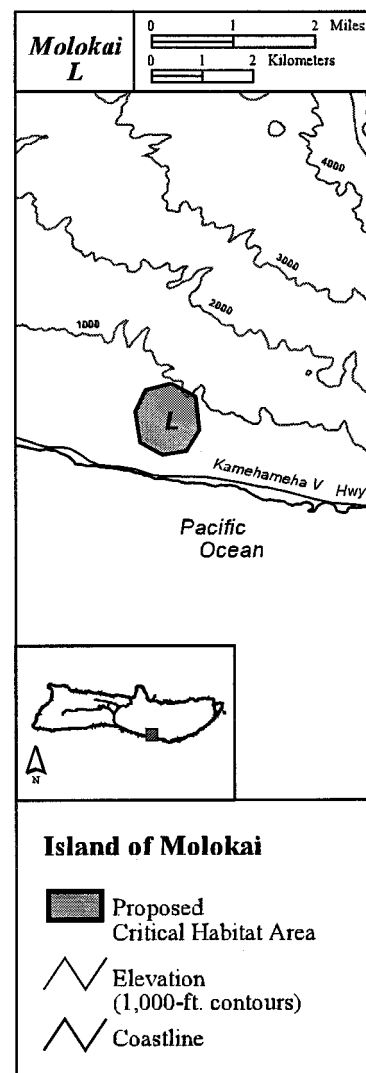
Note: Map follows:



Critical Habitat Molokai Unit L (137 ha; 339 ac)

Unit consists of the following eight boundary points: 714885, 2332152; 715357, 2331885; 715429, 2331230; 715183, 2330831; 714703, 2330746; 714265, 2330992; 714167, 2331587; 714367, 2332021.

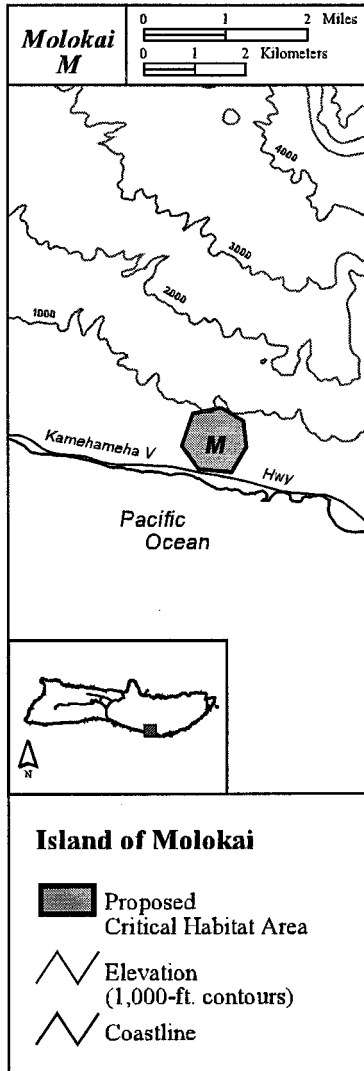
Note: Map follows:



Critical Habitat Molokai Unit M (122 ha; 301 ac)

Unit consists of the following seven boundary points: 716748, 2331446; 717191, 2331185; 717253, 2330676; 716951, 2330171; 716313, 2330233; 715973, 2330692; 716191, 2331324.

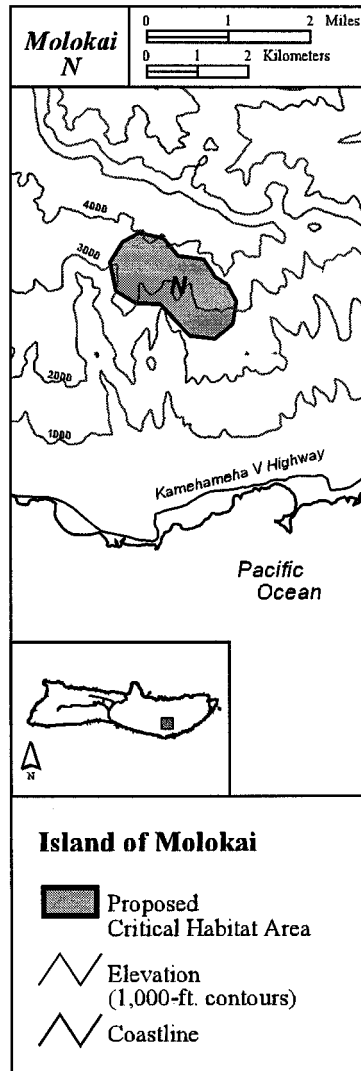
Note: Map follows:



Critical Habitat Molokai Unit N (300 ha; 741 ac)

Unit consists of the following fifteen boundary points: 722270, 2333916; 722443, 2333591; 722371, 2333139; 722016, 2332844; 721535, 2332903; 720951, 2333534; 720468, 2333549; 720075, 2333794; 719953, 2334346; 720198, 2334756; 720518, 2334933; 721004, 2334828; 721295, 2334481; 721807, 2334411; 722031, 2334064.

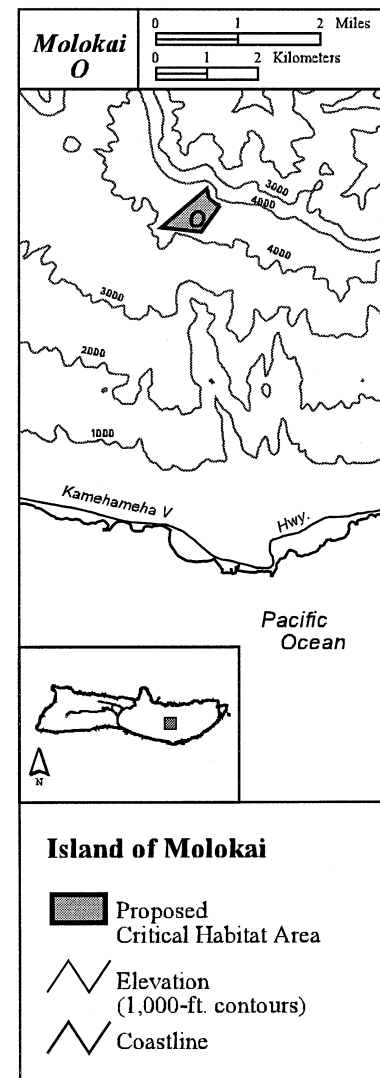
Note: Map follows:



Critical Habitat Molokai Unit O (44 ha; 109 ac)

Unit consists of the following seventeen boundary points: 719860, 2335968; 719493, 2335459; 718713, 2335538; 719597, 2336291; 719603, 2336276; 719620, 2336255; 719626, 2336226; 719623, 2336191; 719631, 2336157; 719639, 2336135; 719657, 2336101; 719672, 2336081; 719694, 2336066; 719735, 2336045; 719755, 2336030; 719781, 2336002; 719794, 2335992.

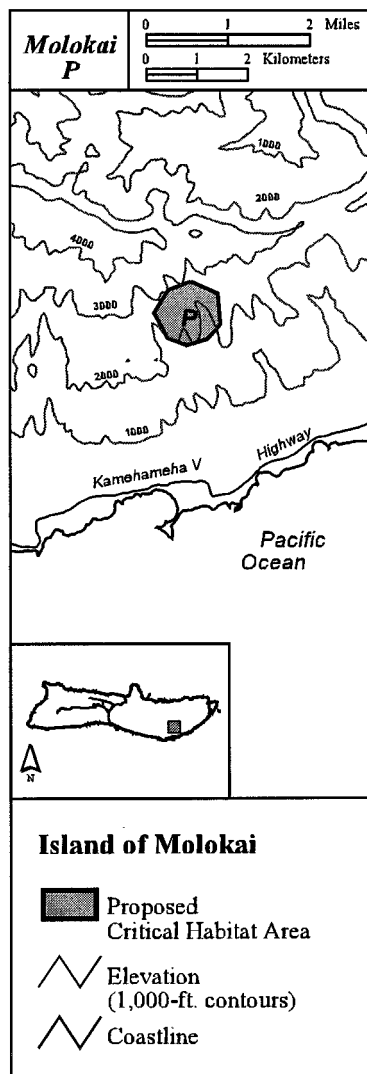
Note: Map follows:



Critical Habitat Molokai Unit P (118 ha; 291 ac)

Unit consists of the following eight boundary points: 723887, 2334107; 724418, 2333859; 724467, 2333254; 724204, 2332957; 723802, 2332837; 723440, 2332990; 723160, 2333488; 723454, 2333941.

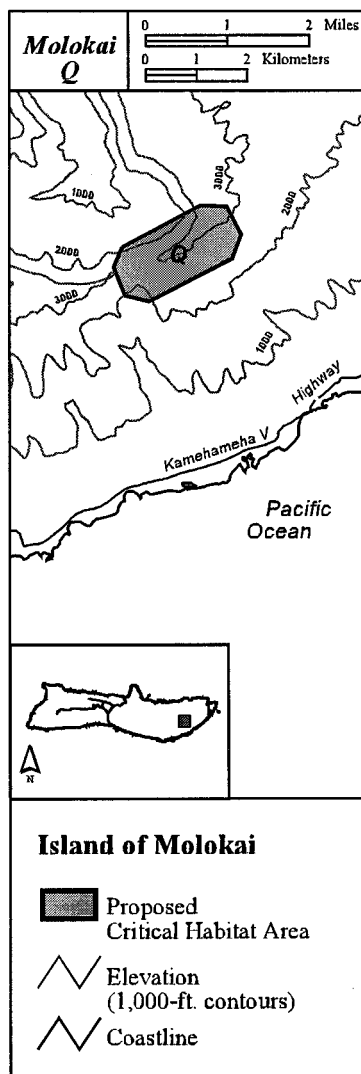
Note: Map follows:



Critical Habitat Molokai Unit Q (285 ha; 704 ac)

Unit consists of the following eight boundary points: 726254, 2335771; 727798, 2336579; 728318, 2336555; 728597, 2336013; 728426, 2335538; 726780, 2334697; 726306, 2334816; 726089, 2335373.

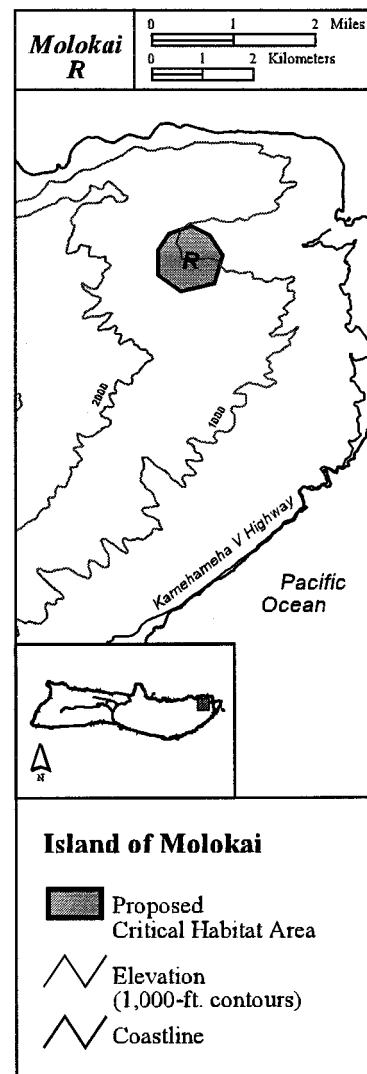
Note: Map follows:



Critical Habitat Molokai Unit R (122 ha; 301 ac)

Unit consists of the following eight boundary points: 732455, 2341104; 732704, 2340714; 732545, 2340158; 731888, 2339994; 731435, 2340323; 731441, 2340821; 731645, 2341140; 732093, 2341287.

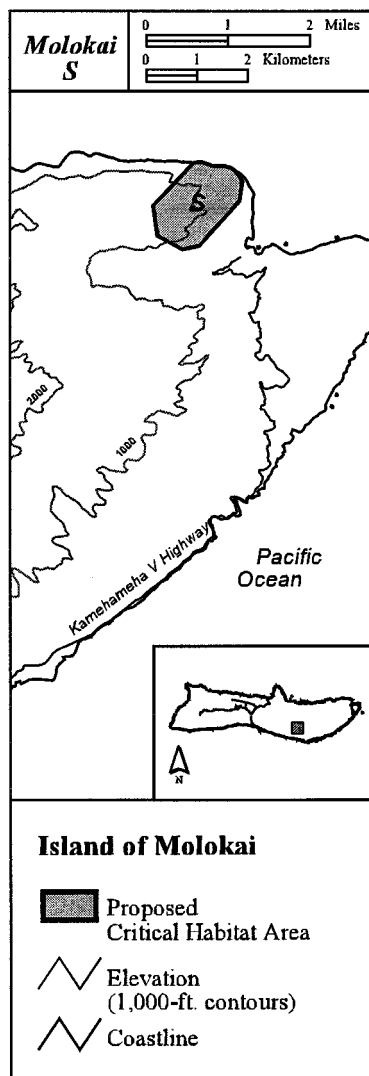
Note: Map follows:



Critical Habitat Molokai Unit S (199 ha; 492 ac)

Unit consists of the following nine points and the intermediate coastline: 734741, 2342919; 734879, 2342711; 734820, 2342320; 734020, 2341450; 733685, 2341380; 733205, 2341646; 733120, 2342247; 733902, 2343068; 733923, 2343082.

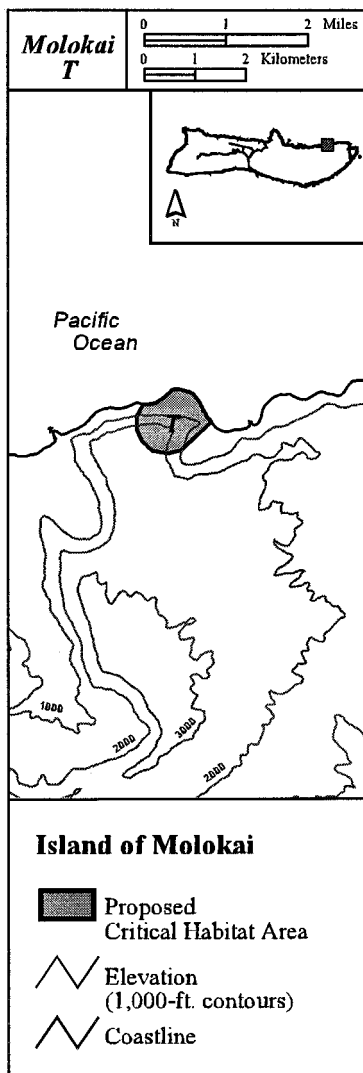
Note: Map follows:



Critical Habitat Molokai Unit T (125 ha; 309 ac)

Unit consists of the following eight points and the intermediate coastline: 728702, 2342486; 728109, 2341927; 727848, 2341860; 727550, 2341914; 727329, 2342114; 727236, 2342328; 727235, 2342611; 727358, 2342827.

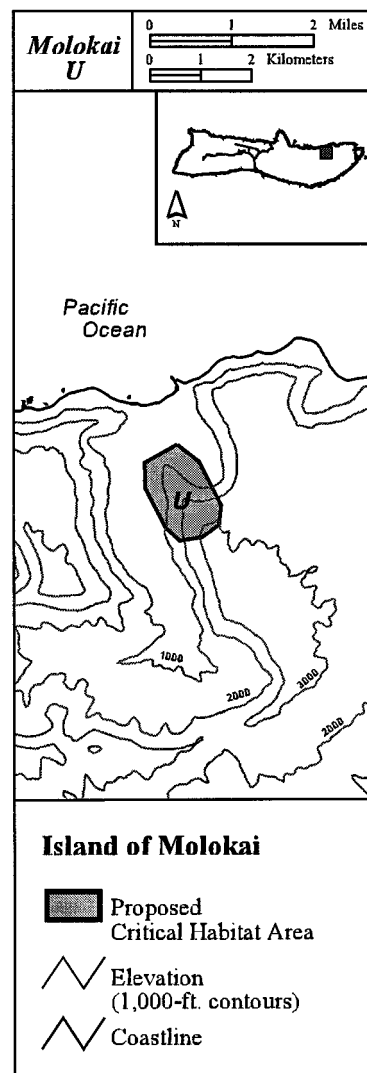
Note: Map follows:



Critical Habitat Molokai Unit U (194 ha; 479 ac)

Unit consists of the following nine boundary points: 725621, 2341045; 726046, 2340710; 726486, 2339828; 726437, 2339432; 726103, 2339195; 725666, 2339128; 725392, 2339392; 724991, 2340179; 724976, 2340681.

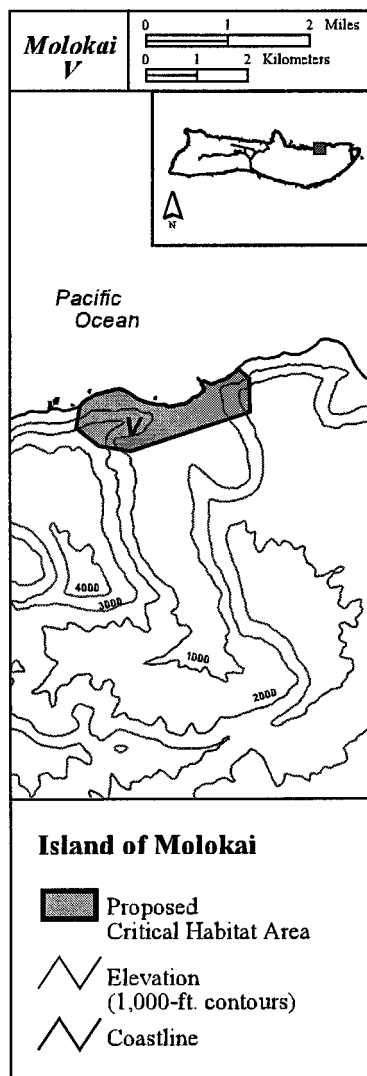
Note: Map follows:



Critical Habitat Molokai Unit V (283 ha; 699 ac)

Unit consists of the following eight points and the intermediate coastline: 726312, 2342554; 726525, 2342355; 726532, 2341699; 724187, 2340913; 723553, 2341022; 723113, 2341371; 723183, 2341795; 723236, 2341873.

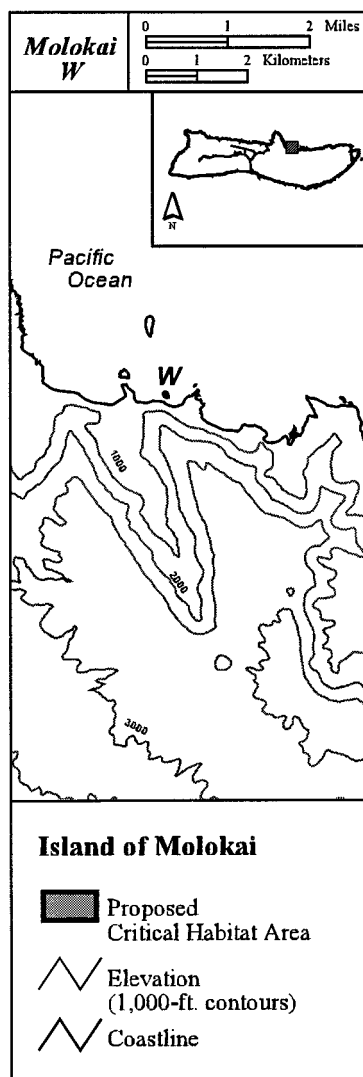
Note: Map follows:



Critical Habitat Molokai Unit W (1 ha; 2 ac)

Unit consists of the entire island, located at 715835, 2342456.

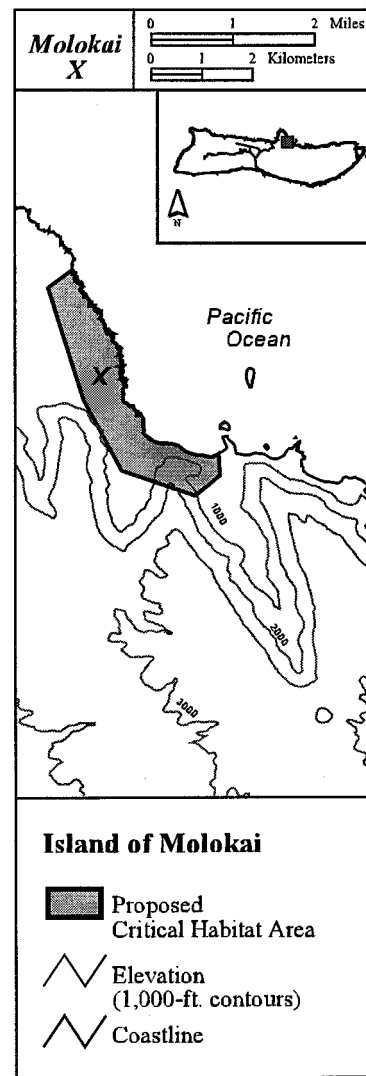
Note: Map follows:



Critical Habitat Molokai Unit X (424 ha; 1,048 ac)

Unit consists of the following eight points and the intermediate coastline: 714892, 2342337; 714895, 2342336; 714921, 2341907; 714427, 2341515; 712984, 2342002; 712223, 2343400; 711532, 2345604; 712012, 2345954.

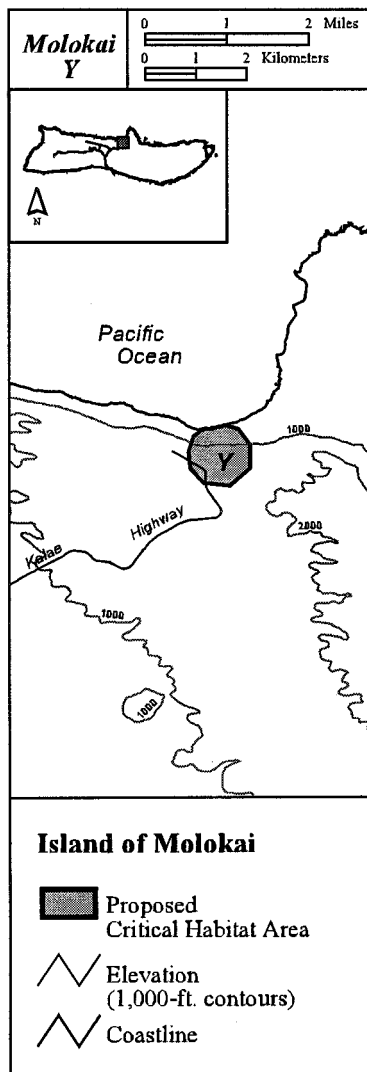
Note: Map follows:



Critical Habitat Molokai Unit Y (115 ha; 284 ac)

Unit consists of the following ten points and the intermediate coastline: 708130, 2343363; 708406, 2343292; 708634, 2342975; 708627, 2342526; 708224, 2342169; 707709, 2342227; 707456, 2342514; 707423, 2342848; 707514, 2343152; 707727, 2343294.

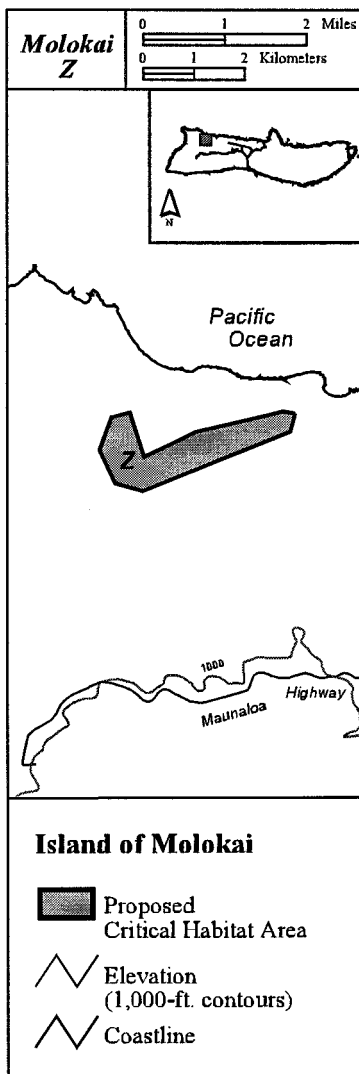
Note: Map follows:



Critical Habitat Molokai Unit Z (111 ha; 274 ac)

Unit consists of the following six boundary points: 689443, 2345663; 689444, 2345664; 689460, 2345662; 689479, 2345646; 689461, 2345661; 689448, 2345663.

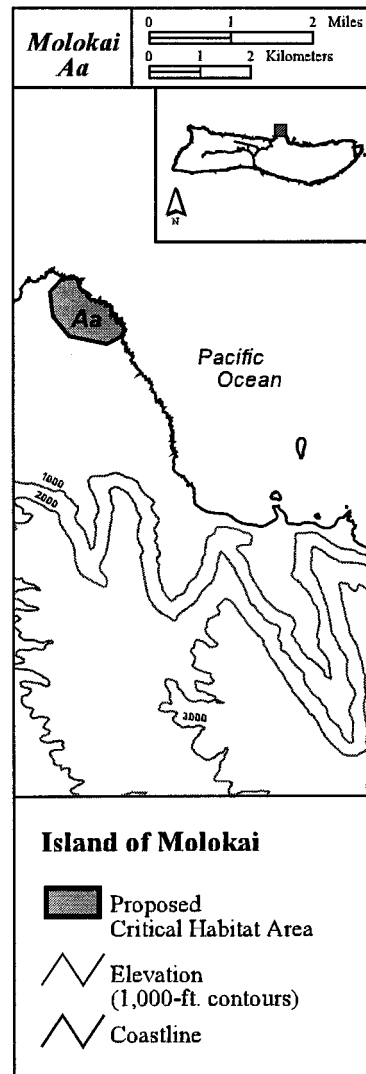
Note: Map follows:



Critical Habitat Molokai Unit Aa (114 ha; 281 ac)

Unit consists of the following six points and the intermediate coastline: 711994, 2346034; 711678, 2345884; 710942, 2346030; 710630, 2346428; 710562, 2346895; 710826, 2347185.

Note: Map follows:



Critical Habitat Molokai Unit Bb (4 ha; 10 ac)

Unit consists of the entire island, located 715510, 2343836.

Note: Map follows:

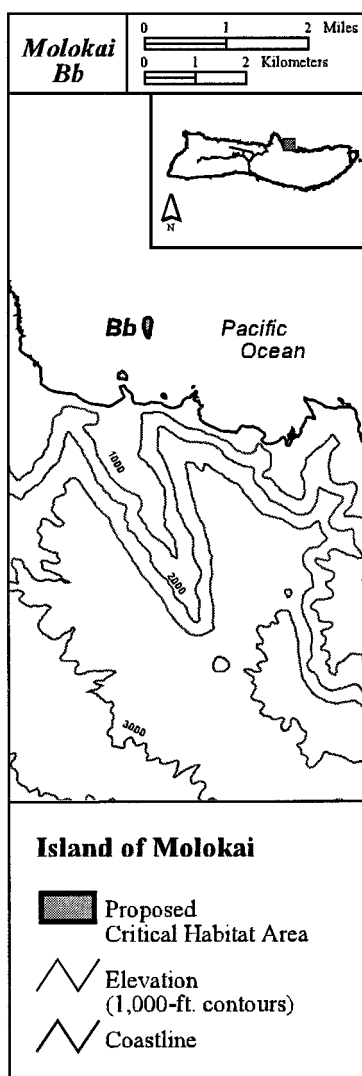


TABLE (a)(1)(i)(F)—PROTECTED SPECIES WITHIN EACH CRITICAL HABITAT UNIT FOR MOLOKAI

Unit name	Species
Molokai A	<i>Marsilea villosa</i>
Molokai B	<i>Marsilea villosa</i>
Molokai C	<i>Centaurium sebaeoides</i> ; <i>Marsilea villosa</i>
Molokai D	<i>Sesbania tomentosa</i> ; <i>Tetramolopium rockii</i>
Molokai E	<i>Sesbania tomentosa</i>
Molokai F	<i>Cyanea procera</i>
Molokai G	<i>Alectryon macrococcus</i> ; <i>Bidens wiebkei</i> ; <i>Cyanea mannii</i> ; <i>Diellia erecta</i> ; <i>Neraudia sericea</i> ; <i>Schiedea lydgatei</i> ; <i>Schiedea sarmentosa</i> ; <i>Sesbania tomentosa</i> ; <i>Silene lanceolata</i> ; <i>Silene alexandri</i> ; <i>Spermolepis hawaiiensis</i> ; <i>Vigna o-wahuensis</i> ; <i>Zanthoxylum hawaiiensis</i>
Molokai H	<i>Alectryon macrococcus</i> ; <i>Mariscus fauriei</i> ; <i>Melicope mucronulata</i> ; <i>Schiedea lydgatei</i> ; <i>Schiedea sarmentosa</i> ; <i>Sesbania tomentosa</i>
Molokai I	<i>Alectryon macrococcus</i> ; <i>Canavalia molokaiensis</i>
Molokai J	<i>Canavalia molokaiensis</i> ; <i>Cyanea dunbarii</i> ; <i>Cyanea mannii</i>
Molokai K	<i>Sesbania tomentosa</i>
Molokai L	<i>Sesbania tomentosa</i>
Molokai M	<i>Sesbania tomentosa</i>
Molokai N	<i>Ctenitis squamigera</i> , <i>Cyanea mannii</i> , and <i>Labordia triflora</i>
Molokai O	<i>Clermontia oblongifolia</i> ssp. <i>brevipes</i>
Molokai P	<i>Stenogyne bifida</i>
Molokai Q	<i>Melicope reflexa</i>
Molokai R	<i>Diellia erecta</i>
Molokai S	<i>Bidens wiebkei</i>
Molokai T	<i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> ; <i>Ischaemum byrone</i>
Molokai U	<i>Cyanea grimesiana</i> ssp. <i>grimesiana</i> ; <i>Melicope reflexa</i>

TABLE (a)(1)(i)(F)—PROTECTED SPECIES WITHIN EACH CRITICAL HABITAT UNIT FOR MOLOKAI—Continued

Unit name	Species
Molokai V	<i>Brighamia rockii</i> ; <i>Cyanea grimesiana</i> ssp. <i>grimesiana</i> ; <i>Hesperomannia arborescens</i> ; <i>Hibiscus arnottianus</i> ssp. <i>immaculatus</i> ; <i>Ischaemum byrrone</i> ; <i>Peucedanum sandwicense</i>
Molokai W	<i>Brighamia rockii</i> ; <i>Peucedanum sandwicense</i>
Molokai X	<i>Canavalia molokaiensis</i> ; <i>Tetramolopium rockii</i>
Molokai Y	<i>Peucedanum sandwicense</i>
Molokai Z	<i>Tetramolopium rockii</i>
Molokai Aa	<i>Centaurium sebaeoides</i>
Molokai Bb	<i>Peucedanum sandwicensis</i>

(ii) *Hawaiian plants—Constituent elements.*

(A) *Flowering plants.*

Family Apiaceae: *Peucedanum sandwicense* (makou)

i. Kauai F, G, I, and M, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Peucedanum sandwicense* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Cliff habitats (a) in mixed shrub coastal dry cliff communities or diverse mesic forest and (b) containing one or more of the following associated native plant species: *Hibiscus kokio*, *Brighamia insignis*, *Bidens* sp., *Artemisia* sp., *Lobelia niihauensis*, *Wilkesia gymnoxiphium*, *Canthium odoratum*, *Dodonaea viscosa*, *Psychotria* sp., *Acacia koa*, *Kokia kauaiensis*, *Carex meyenii*, *Panicum lineale*, *Chamaesyce celastroides*, *Eragrostis* sp., *Diospyros* sp., or *Metrosideros polymorpha*; and (2) elevations from sea level to above 915 m (3,000 ft).

ii. Molokai units V, W, Y and Bb, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Peucedanum sandwicense* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Peucedanum sandwicense* are the habitat components that provide: (1) Cliff habitats with brown soil and talus—(a) in *Chamaesyce celastroides* var. *amplectans*—*Chenopodium oahuense* coastal dry shrubland or *Diospyros sandwicensis* forest and (b) containing one or more of the following associated native species: *Eragrostis* sp., *Santalum ellipticum*, *Pritchardia hillebrandii*, *Reynoldsia sandwicensis*, *Osteomeles anthyllidifolia*, *Scaevola sericea*, *Senna gaudichaudii*, *Pittosporum halophilum*, *Sida fallax*, *Plumbago zeylanica*, *Artemisia australis*, *Portulaca lutea*, *Lepidium bidentatum* var. *o-waihiense*, *Schiedea globosa*, *Lipochaeta integrifolia*, *Peperomia remyi*, *Plechranthus*

parviflorus, *Dianella sandwicensis*, or *Metrosideros polymorpha*; and (2) from sea level to above 900 m (3,000 ft).

Family Apiaceae: *Spermolepis hawaiiensis* (no common name)

i. Kauai B and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Spermolepis hawaiiensis* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) *Metrosideros polymorpha* forests or *Dodonaea viscosa* lowland dry shrubland containing one or more of the following associated plant species: *Eragrostis variabilis*, *Bidens sandwicensis*, *Schiedea spargulina*, *Lipochaeta* sp., *Cenchrus agrimonoides*, *Sida fallax*, *Doryopteris* sp., or *Gouania hillebrandii*; and (2) elevations of about 305 to 610 m (1,000 to 2,000 ft).

ii. Molokai unit G, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Spermolepis hawaiiensis* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Spermolepis hawaiiensis* are the habitat components that provide: (1) shady spots in *Dodonaea viscosa* lowland dry shrubland and containing one or more of the following associated native species: *Eragrostis variabilis*, *Lipochaeta lavarum*, *Sida fallax*, *Myoporum sandwicensis*, *Santalum ellipticum*, and *Heteropogon contortus*; and (2) an elevation of 219 m (720 ft).

Family Apocynaceae: *Pteralyxia kauaiensis* (kaulu)

Kauai F, G, I, M, Q, T, and U, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Pteralyxia kauaiensis* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Diverse mesic or wet forests containing one or more of the following associated plant taxa: *Pisonia sandwicensis*,

Euphorbia haeleeleana, *Charpentiera elliptica*, *Pipturus* sp., *Neraudia kauaiensis*, *Hedyotis terminalis*, *Pritchardia* sp., *Gardenia remyi*, *Syzygium* sp., *Pleomele* sp., *Cyanea* sp., *Hibiscus* sp., *Kokia kauaiensis*, *Alectryon macrococcus*, *Canthium odoratum*, *Nestegis sandwicensis*, *Bobea timonioides*, *Rauvolfia sandwicensis*, *Nesoluma polynesianum*, *Myrsine lanaiensis*, *Caesalpinia kauaiensis*, *Tetraplasandra* sp., *Acacia koa*, *Styphelia tameiameia*, *Dodonaea viscosa*, *Gahnia* sp., *Freycinetia arborea*, *Psychotria mariniana*, *Diplazium sandwichianum*, *Zanthoxylum dipetalum*, *Carex* sp., *Delissea* sp., *Xylosma hawaiiense*, *Alphitonia ponderosa*, *Santalum freycinetianum*, *Antidesma* sp., *Diospyros* sp., *Metrosideros polymorpha*, *Dianella sandwicensis*, *Poa sandwicensis*, *Schiedea stellarioides*, *Peperomia macraeana*, *Claoxylon sandwicense*, or *Pouteria sandwicensis*; and (2) elevations between 250 to 610 m (820 to 2,000 ft).

Family Araliaceae: *Munroidendron racemosum* (no common name)

Kauai G, I, M, and N, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Munroidendron racemosum* on Kauai. Within these units the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep exposed cliffs or ridge slopes (a) in coastal or lowland mesic forest and (b) containing one or more of the following associated plant taxa: *Pisonia umbellifera*, *Canavalia galeata*, *Sida fallax*, *Brighamia insignis*, *Canthium odoratum*, *Psychotria* sp., *Nestegis sandwicensis*, *Tetraplasandra* sp., *Bobea timonioides*, *Rauvolfia sandwicensis*, *Pleomele* sp., *Pouteria sandwicensis*, or *Diospyros* sp.; and (2) elevations between 120 to 400 m (395 to 1,310 ft).

Family Asteraceae: *Bidens wiebkei* (kookoolau)

Molokai units G and S, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Bidens wiebkei* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Bidens wiebkei* are the habitat components that provide: (1) Steep, exposed slopes—(a) in *Metrosideros polymorpha* dominated mesic shrublands or dry or mesic *Metrosideros polymorpha*—*Styphelia tameiameia* lowland shrubland and (b) containing one or more of the following associated native plant species: *Antidesma* sp., *Dodonea viscosa*, *Canthium odoratum*, *Lysimachia* sp., *Nestegis sandwicensis*, *Phyllanthus sandwicensis*, *Pisonia* sp., or *Scaevola gaudichaudii*; and (2) elevations between 250 and 1,050 m (820 and 3,450 ft).

Family Asteraceae: *Dubautia latifolia* (na'ena'e)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Dubautia latifolia* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Gentle or steep slopes on well drained soil in (a) semi-open or closed, diverse montane mesic forest dominated by *Acacia koa* and/or *Metrosideros polymorpha* and (b) containing one or more of the following native plant species: *Pouteria sandwicensis*, *Dodonaea viscosa*, *Nestegis sandwicensis*, *Diplazium sandwicheanum*, *Elaeocarpus bifidus*, *Claoxylon sandwicense*, *Bobea* sp., *Pleomele* sp., *Antidesma* sp., *Cyrtandra* sp., *Xylosma* sp., *Alphitonia ponderosa*, *Coprosma waimeae*, *Dicranopteris linearis*, *Hedyotis terminalis*, *Ilex anomala*, *Melicope anisata*, *Psychotria mariniana*, or *Scaevola* sp.; and (2) elevations between 800 to 1,220 m (2,625 to 4,000 ft).

Family Asteraceae: *Dubautia pauciflora* (na'ena'e)

Kauai L, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Dubautia pauciflora* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Lowland wet forest within stream drainages; and (2) elevations between 670–700 m (2,200–2,300 ft).

Family Asteraceae: *Hesperomannia arborescens* (No common name)

Molokai unit V, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Hesperomannia arborescens* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Hesperomannia arborescens* are the habitat components that provide: (1) Slopes or ridges—(a) in wet *Metrosideros polymorpha*—*Dicranopteris linearis* lowland forest or mesic *Diospyros sandwicensis*—*Metrosideros polymorpha* lowland forest transition zones and (b) containing one or more of the following associated native plant species: *Broussaisia arguta*, *Freycinetia arborea*, *Antidesma* sp., *Cibotium glaucum*, *Psychotria mauianensis*, *Elaphoglossum* sp., *Coprosma* sp., *Hedyotis* sp., *Cheirodendron* sp., *Smilax melastomifolia*, *Clermontia pallida*, *Thelypteris* sp., *Diplopterygium pinnatum*, *Ilex anomala*, *Myrsine* sp., *Urera glabra*, *Cyrtandra* sp., *Pipturus* sp., *Boehmeria grandis*, *Nestegis sandwicensis*, *Nephrolepis exaltata*, or *Wikstroemia* sp.; and (2) elevations between 360 and 750 m (1,200 and 2,500 ft).

Family Asteraceae: *Hesperomannia lydgatei* (no common name)

Kauai F, L, and P, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Hesperomannia lydgatei* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Stream banks with rich brown soil and silty clay (a) in *Metrosideros polymorpha* or *Metrosideros polymorpha*—*Dicranopteris linearis* lowland wet forest and (b) containing one or more of the following associated native plant species: *Adenophorus* sp., *Antidesma* sp., *Broussaisia arguta*, *Cheirodendron* sp., *Elaphoglossum* sp., *Freycinetia arborea*, *Hedyotis terminalis*, *Labordia lydgatei*, *Machaerina angustifolia*, *Peperomia* sp., *Pritchardia* sp., *Psychotria hexandra*, and *Syzygium sandwicensis*; and (2) elevations between 410–915 m (1,345–3,000 ft).

Family Asteraceae: *Lipochaeta fauriei* (nehe)

Kauai G, I, and U, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Lipochaeta fauriei* on Kauai. Within these units, the currently known primary constituent elements of

critical habitat are habitat components that provide: (1) Moderate shade to full sun on the sides of steep gulches (a) in diverse lowland mesic forests and (b) containing one or more of the following native species: *Diospyros* sp., *Myrsine lanaiensis*, *Euphorbia haeleleana*, *Acacia koa*, *Pleomele aurea*, *Sapindus oahuensis*, *Nestegis sandwicensis*, *Dodonaea viscosa*, *Psychotria mariniana*, *Psychotria greenwelliae*, *Kokia kauaiensis*, or *Hibiscus waimeae*; and (2) elevations between 480 and 900 m (1,575 and 2,950 ft).

Family Asteraceae: *Lipochaeta micrantha* (nehe)

i. Kauai I and M, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Lipochaeta micrantha* on Kauai. Within these units the currently known primary constituent elements of critical habitat for *Lipochaeta micrantha* var. *exigua* are habitat components that provide: (1) Cliffs, ridges, or slopes (a) in grassy, shrubby or dry mixed communities and (b) containing one or more of the following associated native plant species: *Artemisia australis*, *Bidens sandwicensis*, *Plectranthus parviflorus*, *Chamaesyce celastroides*, *Diospyros* sp., *Canthium odoratum*, *Neraudia* sp., *Pipturus* sp., *Hibiscus kokio*, *Sida fallax*, *Eragrostis* sp., or *Lepidium bidentatum*; and (2) elevations between 305–430 m (1,000–1,400 ft).

ii. Within these units, the currently known primary constituent elements of critical habitat for *Lipochaeta micrantha* var. *micrantha* are habitat components that provide: (1) Basalt cliffs, stream banks, or level ground (a) in mesic or diverse *Metrosideros polymorpha*—*Diospyros* sp. forest and (b) containing one or more of the following associated native plant species: *Lobelia niihauensis*, *Chamaesyce celastroides* var. *hanapepensis*, *Neraudia kauaiensis*, *Rumex* sp., *Nontrichium* sp. (kului), *Artemisia* sp., *Dodonaea viscosa*, *Antidesma* sp., *Hibiscus* sp., *Xylosma* sp., *Pleomele* sp., *Melicope* sp., *Bobea* sp., and *Acacia koa*; and (2) elevations between 610–720 m (2,000–2,360 ft).

Family Asteraceae: *Lipochaeta waimeensis* (nehe)

Kauai B, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Lipochaeta waimeensis* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Precipitous, shrub-covered gulch (a) in diverse lowland forest and

(b) containing the native species *Dodonaea viscosa* or *Lipochaeta connata*; and (2) elevations between 350 and 400 m (1,150 and 1,310 ft).

Family Asteraceae: *Remya kauaiensis* (no common name)

Kauai G, I, and U, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Remya kauaiensis* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep, north or northeast facing slopes (a) in *Acacia koa*-*Metrosideros polymorpha* lowland mesic forest and (b) containing one or more of the following associated native plant species: *Chamaesyce* sp., *Nestegis sandwicensis*, *Diospyros* sp., *Hedyotis terminalis*, *Melicope* ssp., *Pouteria sandwicensis*, *Schiedea membranacea*, *Psychotria mariniana*, *Dodonaea viscosa*, *Dianella sandwicensis*, *Tetraplasandra kauaiensis*, or *Claoxylon sandwicensis*; and (2) elevations between 850 to 1,250 m (2,800 to 4,100 ft).

Family Asteraceae: *Remya montgomeryi* (no common name)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Remya montgomeryi* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep, north or northeast-facing slopes, cliffs, or stream banks near waterfalls (a) in *Metrosideros polymorpha* mixed mesic forest and (b) containing one or more of the following associated native plant species: *Lysimachia glutinosa*, *Lepidium serra*, *Boehmeria grandis*, *Poa mannii*, *Stenogyne campanulata*, *Myrsine linearifolia*, *Bobea timonioides*, *Ilex anomala*, *Zanthoxylum dipetalum*, *Claoxylon sandwicensis*, *Tetraplasandra* spp., *Artemisia* sp., *Nototrichium* sp., *Cyrtandra* sp., *Dubautia plantaginea*, *Sadleria* sp., *Cheirodendron* sp., *Scaevola* sp., or *Pleomele* sp.; and (2) elevations between 850 to 1,250 m (2,800 to 4,100 ft).

Family Asteraceae: *Tetramolopium rockii* (No common name)

Molokai units D, X and Z, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Tetramolopium rockii* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Tetramolopium rockii* are the habitat components that provide: (1) Hardened

calcareous sand dunes or ash-covered basalt—(a) in the coastal spray zone or coastal dry shrublands and grasslands and (b) containing one or more of the following associated native species: *Canthium odoratum*, *Diospyros sandwicensis*, *Metrosideros polymorpha*, *Osteomeles anthyllidifolia*, *Scaevola* sp., *Fimbristylis cymosa*, *Heliotropium anomalum*, *Lipochaeta integrifolia*, *Sida fallax*, and *Sporobolus virginicus*; and (2) between 10 and 200 m (30 and 650 ft) in elevation.

Family Asteraceae: *Wilkesia hobbdi* (dwarf iliau)

Kauai G and J, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Wilkesia hobbdi* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Coastal dry cliffs or very dry ridges containing one or more of the following associated native plant species: *Artemisia* sp., *Wilkesia gymnoxiphium*, *Lipochaeta connata*, *Lobelia niihauensis*, *Peucedanum sandwicensis*, *Hibiscus kokio* ssp. *saint johnianus*, *Canthium odoratum*, *Peperomia* sp., *Myoporum sandwicense*, *Sida fallax*, *Waltheria indica*, *Dodonaea viscosa*, or *Eragrostis variabilis*; and (2) elevations between 275 to 400 m (900 to 1,310 ft).

Family Campanulaceae: *Brighamia insignis* ('olulu)

Kauai E, G, and M, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, and Niihau B, identified in the legal descriptions in paragraph (a)(1)(i)(B) of this section, constitute critical habitat for *Brighamia insignis* on Kauai and Niihau. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Rocky ledges with little soil or steep sea cliffs (a) in lowland dry grasslands or shrublands with annual rainfall that is usually less than 170 cm (65 in.) and (b) containing one or more of the following native plant species: *Artemisia* sp., *Chamaesyce celastroides*, *Canthium odoratum*, *Eragrostis variabilis*, *Heteropogon contortus*, *Hibiscus kokio*, *Hibiscus saintjohnianus*, *Lepidium serra*, *Lipochaeta succulenta*, *Munroidendron racemosum*, or *Sida fallax*; and (2) elevations between sea level to 480 m (1,575 ft) elevation.

Family Campanulaceae: *Brighamia rockii* (Pua ala)

Molokai units V and W, identified in the legal descriptions in paragraph

(a)(1)(i)(F) of this section constitute critical habitat for *Brighamia rockii* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Brighamia rockii* are the habitat components that provide: (1) Rock crevices on steep basalt sea cliffs, often within the spray zone—(a) in coastal dry or mesic forest, *Eragrostis variabilis* mixed coastal cliff communities, or shrubland, or *Pritchardia* sp. coastal mesic forest and (b) containing one or more of the following associated native plant species: *Pritchardia hillebrandii*, *Chamaesyce celastroides* var. *amplectans*, *Wikstoremia uva-ursi*, *Carex wahuensis* ssp. *wahuensis*, *Mariscus phleoides* ssp. *pleoides*, *Eragrostis variabilis*, *Dianella sandwicensis*, *Cocculus trilobus*, *Phymatosorus scolopendria*, *Cryptomium falcatum*, *Lepidium bidentatum* var. *owaihiense*, *Pittosporum halophilum*, *Artemisia* sp., *Bidens* sp., *Schiedea globosa*, *Reynoldsia sandwicensis*, *Pandanus tectorius*, *Peucedanum sandwicensis*, *Hedyotis littoralis*, *Metrosideros polymorpha*, *Psydrax odoratum*, *Diospyros sandwicensis*, *Osteomeles anthyllidifolia*, *Tetramolopium cassia*, *Senna gaudichaudii*, or *Scaevola sericea*; and (2) elevations between sea level and 470 m (0 and 1,540 ft).

Family Campanulaceae: *Clermontia oblongifolia* ssp. *brevipes* (oha wai)

Molokai unit O, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Clermontia oblongifolia* ssp. *brevipes* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Clermontia oblongifolia* ssp. *brevipes* are the habitat components that provide: (1) Shallow soil on gulch slopes—(a) in wet *Metrosideros polymorpha* dominated forests and (b) containing one or more of the following associated native plant species: *Cheirodendron trigynum*, *Cibotium* spp., *Broussaisia argutus*, *Hedyotis terminalis*, or *Melicope* sp.; and (2) elevations between 1,100 and 1,200 m (3,500 and 4,320 ft).

Family Campanulaceae: *Cyanea asarifolia* (haha)

Kauai R and T, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Cyanea asarifolia* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Pockets of soil on sheer rock cliffs (a) in lowland wet forests and (b) containing one or more of the following

native plant species: *Hedyotis elatior*, *Machaerina angustifolia*, *Metrosideros polymorpha*, *Touchardia latifolia*, or *Urera glabra*; and (2) elevations between 330 to 730 m (1,080 to 2,400 ft).

Family Campanulaceae: *Cyanea dunbarii* (haha)

Molokai unit J, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Cyanea dunbarii* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Cyanea dunbarii* are the habitat components that provide: (1) Streambanks on moderate to steep slopes—(a) in mesic to wet *Dicranopteris linearis*-*Metrosideros polymorpha* lowland forest and (b) containing one or more of the following associated native plant species: *Diplazium sanwicianum*, *Charpentiera obovata*, *Perrottetia sandwicensis*, *Pipturus albidus*, *Clermontia kakeana*, *Cheiodendron trigynum*, or *Freycinetia arborea*; and (2) elevation of 671 m (2,200 ft).

Family Campanulaceae: *Cyanea grimesiana* ssp. *grimesiana* (haha)

Molokai units U and V, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Cyanea grimesiana* ssp. *grimesiana* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Cyanea grimesiana* ssp. *grimesiana* are the habitat components that provide: (1) cliffs, or (2) mesic forest dominated by *Metrosideros polymorpha* or *Metrosideros polymorpha* and *Acacia koa* and containing one or more of the following associated native plant species: *Psychotria* sp., *Bobea* sp., *Antidesma* sp., *Syzygium sandwicensis*, *Xylosma* sp., *Cibotium* sp., *Doodia* sp., *Nephrolepis* sp., *Cyrtandra* sp., *Dicranopteris linearis*, or *Freycinetia arborea*; and (2) elevations between 350 and 945 m (1,150 and 3,100 ft).

Family Campanulaceae: *Cyanea mannii* (haha)

Molokai units G, J, and N, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Cyanea mannii* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Cyanea mannii* are the habitat components that provide: (1) Sides of deep gulches—(a) in *Metrosideros polymorpha* dominated montane mesic forest and (b) containing one or more of the following associated native plant species: *Wiskstroemia* sp., *Dicranopteris linearis*, or *Vaccinium* sp.;

and (2) elevations between 559 and 1,220 m (1,900 and 4,000 ft).

Family Campanulaceae: *Cyanea procera* (haha)

Molokai unit F, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Cyanea procera* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Cyanea procera* are the habitat components that provide: (1) Walls of steep gulches—(a) in wet *Metrosideros polymorpha* dominated lowland mixed forest and (b) containing one or more of the following associated native plant species: *Asplenium* sp., *Broussaia arguta*, *Coprosma ochracea*, *Cyanea* sp., *Cyrtandra macrocalyx*, *Dicranopteris linearis*, *Pipturus albidus*, *Pisonia* sp., *Scaevola procera*, or *Touchardia latifolia*; and (2) elevations between 935 and 1,073 m (3,180 and 3,650 ft).

Family Campanulaceae: *Cyanea recta* (haha)

Kauai K, O, P, and R, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Cyanea recta* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Gulches or slopes (a) in lowland wet or mesic *Metrosideros polymorpha* forest or shrubland and (b) containing one or more of the following native plant species: *Dicranopteris linearis*, *Psychotria* sp., *Antidesma* sp., *Cheiodendron platyphyllum*, *Cibotium* sp., or *Diplazium* sp.; and (2) elevations between 400 to 1,200 m (1,310 to 3,940 ft).

Family Campanulaceae: *Cyanea remyi* (haha)

Kauai L, P, R, and T, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Cyanea remyi* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Lowland wet forest or shrubland and containing one or more of the following native plant species: *Antidesma* sp., *Cheiodendron* sp., *Diospyros* sp., *Broussaia arguta*, *Metrosideros polymorpha*, *Freycinetia arborea*, *Hedyotis terminalis*, *Machaerina angustifolia*, *Perrottetia sandwicensis*, *Psychotria hexandra*, or *Syzygium sandwicensis*; and (2) elevations between 360 to 930 m (1,180 to 3,060 ft).

Family Campanulaceae: *Cyanea undulata* (haha)

Kauai L, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Cyanea undulata* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Pristine, undisturbed sites along shady stream banks or steep to vertical slopes; and (2) elevations between 630 to 800 m (2,070 to 2,625 ft).

Family Campanulaceae: *Delissea rhytidosperma* (no common name)

Kauai F, G, and M, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Delissea rhytidosperma* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Well-drained soils with medium or fine-textured subsoil (a) in diverse lowland mesic forests or *Acacia koa* dominated lowland dry forests and (b) containing one or more of the following native species: *Euphorbia haelealeana*, *Psychotria hobbdi*, *Pisonia* sp., *Pteralyxia* sp., *Dodonaea viscosa*, *Cyanea* sp., *Hedyotis* sp., *Dianella sandwicensis*, *Diospyros sandwicensis*, *Styphelia tameiameia*, or *Nestegis sandwicensis*; and (2) elevations between 120 and 915 m (400 and 3,000 ft).

Family Campanulaceae: *Delissea rivularis* ('oha)

Kauai G, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Delissea rivularis* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep slopes near streams (a) in *Metrosideros polymorpha*—*Cheiodendron trigynum* montane wet or mesic forest and (b) containing one or more of the following native plant species: *Broussaia arguta*, *Carex* sp., *Coprosma* sp., *Melicope clusiifolia*, *M. anisata*, *Psychotria hexandra*, *Dubautia knudsenii*, *Diplazium sandwichianum*, *Hedyotis foggiana*, *Ilex anomala*, or *Sadleria* sp.; and (2) elevations between 1,100 to 1,220 m (3,610 to 4,000 ft).

Family Campanulaceae: *Delissea undulata* (no common name)

Kauai G, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Delissea undulata* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat

are habitat components that provide: (1) Dry or mesic open *Sophora chrysophylla*-*Metrosideros polymorpha* forests containing one or more of the following native plant species: *Diospyros sandwicensis*, *Dodonaea viscosa*, *Psychotria maritima*, *P. greenwelliae*, *Santalum ellipticum*, *Nothocestrum breviflorum*, or *Acacia koa*; and (2) elevations between 610–1,740 m (2,000–5,700 ft).

Family Campanulaceae: *Lobelia niihauensis* (no common name)

Kauai F, G, I, and J, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Lobelia niihauensis* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Exposed mesic mixed shrubland or coastal dry cliffs containing one or more of the following associated native plant species: *Eragrostis* sp., *Bidens* sp., *Plectranthus parviflorus*, *Lipochaeta* sp., *Lythrum* sp., *Wilkesia hobbeyi*, *Hibiscus kokio* ssp. *saint johnianus*, *Nototrichium* sp., *Schiedea apokremnos*, *Chamaesyce celastroides*, *Charpentiera* sp., or *Artemisia* sp.; and (2) elevations between 100 to 830 m (330 to 2,720 ft).

Family Caryophyllaceae: *Alsinidendron lychnoides* (kuawawaenohu)

Kauai G and H, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Alsinidendron lychnoides* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Montane wet forests (a) dominated by *Metrosideros polymorpha* and *Cheirodendron* sp., or by *Metrosideros polymorpha* and *Dicranopteris linearis* and (b) containing one or more of the following native plant species: *Carex* sp., *Cyrtandra* sp., *Machaerina* sp., *Vaccinium* sp., *Peperomia* sp., *Hedyotis terminalis*, *Astelia* sp., or *Broussaisia arguta*; and (2) elevations between 1,100 and 1,320 m (3,610 and 4,330 ft).

Family Caryophyllaceae: *Alsinidendron viscosum* (no common name)

Kauai I, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Alsinidendron viscosum* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep slopes (a) in *Acacia koa*-*Metrosideros polymorpha* lowland, montane mesic, or wet forest and (b)

containing one or more of the following native plant species: *Alyxia olivaeformis*, *Bidens cosmoides*, *Bobea* sp., *Carex* sp., *Coprosma* sp., *Dodonaea viscosa*, *Gahnia* sp., *Ilex anomala*, *Melicope* sp., *Pleomele* sp., *Psychotria* sp., or *Schiedea stellarioides*; and (2) elevations between 820 and 1,200 m (2,700 and 3,940 ft).

Family Caryophyllaceae: *Schiedea apokremnos* (ma'oli'oli)

Kauai G and J, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Schiedea apokremnos* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Crevices of near-vertical coastal cliff faces (a) in sparse dry coastal shrub vegetation and (b) containing one or more of the following associated native plant species: *Heliotropium* sp., *Chamaesyce* sp., *Bidens* sp., *Artemisia australis*, *Lobelia niihauensis*, *Wilkesia hobbeyi*, *Lipochaeta connata*, *Myoporum sandwicense*, *Canthium odoratum*, or *Peperomia* sp.; and (2) elevations between 60 to 330 m (200 to 1,080 ft).

Family Caryophyllaceae: *Schiedea helleri* (no common name)

Kauai I, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Schiedea helleri* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Ridges and steep cliffs (a) in closed *Metrosideros polymorpha*-*Dicranopteris linearis* montane wet forest, or *Metrosideros polymorpha*-*Cheirodendron* sp. montane wet forest, or *Acacia koa*-*Metrosideros polymorpha* montane mesic forest, and (b) containing one or more of the following associated native plant species: *Dubautia raillardiioides*, *Scaevola procera*, *Hedyotis terminalis*, *Syzygium sandwicensis*, *Melicope clusifolia*, *Cibotium* sp., *Broussaisia arguta*, *Cheirodendron* sp., *Cyanea hirtella*, *Dianella sandwicensis*, *Viola wailenalenae*, or *Poa sandwicensis*; and (2) elevations between 1,065–1,100 m (3,490–3,610 ft).

Family Caryophyllaceae: *Schiedea kauaiensis* (no common name)

Kauai G, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Schiedea kauaiensis* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that

provide: (1) Steep slopes (a) in diverse mesic or wet forest and (b) containing one or more of the following associated plant taxa: *Psychotria maritima*, *Psychotria hexandra*, *Canthium odoratum*, *Pisonia* sp., *Microlepia speluncae*, *Exocarpos luteolus*, *Diospyros* sp., *Peucedanum sandwicense*, or *Euphorbia haeleeleana*; and (2) elevations between 680–790 m (2,230–2,590 ft).

Family Caryophyllaceae: *Schiedea lydgatei* (No common name)

Molokai units G and H, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Schiedea lydgatei* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Schiedea lydgatei* are the habitat components that provide: (1) Along ridges—(a) in dry to mesic grasslands, shrublands, and forests with scattered native trees and (b) containing one or more of the following associated native species: *Dodonaea viscosa*, *Metrosideros polymorpha*, *Styphelia tameiameia*, and *Dicranopteris linearis*; and (2) elevations from about 600 to 650 m (2,000 to 2,100 ft).

Family Caryophyllaceae: *Schiedea membranacea* (no common name)

Kauai G, I, and K, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Schiedea membranacea* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Cliffs or cliff bases (a) in mesic or wet habitats, (b) in lowland, or montane shrubland, or forest communities dominated by *Acacia koa*, *Pipturus* sp., or *Metrosideros polymorpha* and (c) containing one or more of the following associated native plant species: *Hedyotis terminalis*, *Melicope* sp., *Pouteria sandwicensis*, *Poa mannii*, *Hibiscus waimeae*, *Psychotria maritima*, *Canthium odoratum*, *Pisonia* sp., *Perrottetia sandwicensis*, *Scaevola procera*, *Sadleria cyatheoides*, *Diplazium sandwicensis*, *Thelypteris sandwicensis*, *Boehmeria grandis*, *Dodonaea viscosa*, *Myrsine* sp., *Bobea brevipes*, *Alyxia olivaeformis*, *Psychotria greenwelliae*, *Pleomele* sp., *Alphitonia ponderosa*, *Joinvillea ascendens* ssp. *ascendens*, *Athyrium sandwichianum*, *Machaerina angustifolia*, *Cyrtandra paludosa*, *Touchardia latifolia*, *Thelypteris cyatheoides*, *Lepidium serra*, *Eragrostis variabilis*, *Remya kauaiensis*, *Lysimachia kalalauensis*, *Labordia*

helleri, *Mariscus pennatiformis*, *Asplenium praemorsum*, or *Poa sandwicensis*; and (2) elevations between 520 and 1,160 m (1,700 and 3,800 ft).

Family Caryophyllaceae: *Schiedea nuttallii* (no common name)

Kauai M, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Schiedea nuttallii* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Diverse lowland mesic forest, often with *Metrosideros polymorpha* dominant, containing one or more of the following associated native plant species: *Antidesma* sp., *Psychotria* sp., *Perrottetia sandwicensis*, *Pisonia* sp., or *Hedyotis acuminata*; and (2) elevations between 415 and 790 m (1,360 and 2,590 ft).

Family Caryophyllaceae: *Schiedea sarmentosa* (No common name)

Molokai units G and H, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Schiedea sarmentosa* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Schiedea sarmentosa* are the habitat components that provide: (1) Steep slopes—(a) in *Metrosideros polymorpha*-*Dodonaea viscosa* lowland dry or mesic shrubland and (b) containing one or more of the following associated native species: *Styphelia tameiameia*, *Chenopodium oahuensis*, *Alyxia oliviformis*, *Pleomele* sp., *Bidens menziesii*, *Carex meynii*, *Lipochaeta rockii*, *Nestegis sandwicensis*, *Nothocestrum latifolium*, *Nototrichium sandwicense*, *Sida fallax*, *Sophora chrysophylla*, and *Chamaesyce* sp.; and (2) between 610 and 790 m (2,000 and 2,600 ft) elevation.

Family Caryophyllaceae: *Schiedea spargulina* var. *leiopoda* (no common name)

Kauai C, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Schiedea spargulina* var. *leiopoda* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Bare rock outcrops or sparsely vegetated portions of rocky cliff faces or cliff bases (a) in diverse lowland mesic forests and (b) containing one or more of the following native plants: *Bidens sandwicensis*, *Doryopteris* sp., *Peperomia leptostachya*, or *Plectranthus parviflorus*; and (2) elevations between 180 and 800 m (590 and 2,625 ft).

Family Caryophyllaceae: *Schiedea spargulina* var. *spargulina* (no common name) Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Schiedea spargulina* var. *spargulina* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Bare rock outcrops or sparsely vegetated portions of rocky cliff faces or cliff bases (a) in diverse lowland mesic forests and (b) containing one or more of the following associated plant taxa: *Heliotropium* sp., or *Nototrichium sandwicense*; and (2) elevations between 180 and 800 m (590 and 2,625 ft).

Family Caryophyllaceae: *Schiedea stellarioides* (lauhilihi (=ma'oli'oli))

Kauai I, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Schiedea stellarioides* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep slopes (a) in closed *Acacia koa*-*Metrosideros polymorpha* lowland or montane mesic forest or shrubland and (b) containing one or more of the following native plant species: *Nototrichium* sp., *Artemisia* sp., *Dodonaea viscosa*, *Melicope* sp., *Dianella sandwicensis*, *Bidens cosmoides*, *Mariscus* sp., or *Styphelia tameiameia*; and (2) elevations between 610 and 1,120 m (2,000 and 3,680 ft).

Family Caryophyllaceae: *Silene alexandri* (No common name)

Molokai unit G, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Silene alexandri* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Silene alexandri* are the habitat components that provide: (1) Remnant dry forest and shrubland and containing one or more of the following associated native species: *Dodonaea viscosa*, *Metrosideros polymorpha*, *Styphelia tameiameia*, and *Dicranopteris linearis*, *Chenopodium oahuense*, and *Sophora chrysophylla*; and (2) elevations between 610 and 760 m (2,000 and 2,500 ft).

Family Caryophyllaceae: *Silene lanceolata* (No common name)

Molokai unit G, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Silene lanceolata* on Molokai. Within this unit the currently known primary constituent elements of critical

habitat for *Silene lanceolata* are the habitat components that provide: (1) Cliff faces and ledges of gullies—(a) in dry to mesic shrubland and (b) containing one or more of the following associated native species: Associated native plant species include *Dodonaea viscosa*, *Styphelia tameiameia*, and *Dubautia linearis*; and (2) an elevation of about 800 m (2,600 ft).

Family Convolvulaceae: *Bonamia menziesii* (no common name)

Kauai G and L, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Bonamia menziesii* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Dry, mesic or wet forests containing one or more of the following native plant species: *Metrosideros polymorpha*, *Canthium odoratum*, *Dianella sandwicensis*, *Diospyros sandwicensis*, *Dodonaea viscosa*, *Hedyotis terminalis*, *Melicope anisata*, *Melicope barbiger*, *Myoporum sandwicense*, *Nestegis sandwicense*, *Pisonia* sp., *Pittosporum* sp., *Pouteria sandwicensis*, or *Sapindus oahuensis*; and (2) elevations between 150 and 850 m (500 and 2,800 ft).

Family Cyperaceae: *Cyperus trachysanthos* (pu'uka'a)

Kauai G, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, and Niihau A, identified in the legal descriptions in paragraph (a)(1)(i)(B) of this section, constitute critical habitat for *Cyperus trachysanthos* on Kauai and Niihau. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Wet sites (mud flats, wet clay soil, or wet cliff seeps) (a) on coastal cliffs or talus slopes and (b) containing the native plant species *Hibiscus tiliaceus*; and (2) elevations between 3 and 160 m (10 and 525 ft).

Family Cyperaceae: *Mariscus fauriei* (No common name)

Molokai unit H, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Mariscus fauriei* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Mariscus fauriei* are the habitat components that provide: (1) aa substrate—(a) *Diospyros sandwicensis* dominated lowland dry forests and (b) containing one or more of the following associated native species: *Canthium odoratum*, *Peperomia* sp., and *Rauvolfia*

sandwicensis; and (2) at an elevation of 207 m (680 ft).

Family Euphorbiaceae: *Chamaesyce halemanui* (no common name)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Chamaesyce halemanui* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep slopes of gulches (a) in mesic *Acacia koa* forests and (b) containing one or more of the following native plant species: *Metrosideros polymorpha*, *Alphitonia ponderosa*, *Antidesma platyphyllum*, *Bobea brevipes*, *Cheirodendron trigynum*, *Coprosma* sp., *Diospyros sandwicensis*, *Dodonaea viscosa*, *Elaeocarpus bifidus*, *Hedyotis terminalis*, *Kokia kauaiensis*, *Melicope haupuensis*, *Pisonia* sp., *Pittosporum* sp., *Pleomele aurea*, *Psychotria mariniana*, *Psychotria greenwelliae*, *Pouteria sandwicensis*, *Santalum freycinetianum*, or *Styphelia tameiameia*; and (2) elevations between 660 to 1,100 m (2,165 to 3,610 ft).

Family Euphorbiaceae: *Euphorbia haeleleana* ('akoko)

Kauai G, I, and U, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Euphorbia haeleleana* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Lowland mixed mesic or dry forest that (a) is often dominated by *Metrosideros polymorpha*, *Acacia koa*, or *Diospyros* sp. and (b) containing one or more of the following native plant species: *Acacia koa*, *Antidesma platyphyllum*, *Claoxylon* sp., *Carex meyenii*, *Carex wahuensis*, *Diplazium sandwichianum*, *Dodonaea viscosa*, *Erythrina sandwicensis*, *Kokia kauaiensis*, *Pleomele aurea*, *Psychotria mariniana*, *P. greenwelliae*, *Pteralyxia sandwicensis*, *Rauvolfia sandwicensis*, *Reynoldsia sandwicensis*, *Sapindus oahuensis*, *Tetraplasandra kauaiensis*, *Pouteria sandwicensis*, *Pisonia sandwicensis*, or *Xylosma* sp.; and (2) elevations between 205 and 670 m (680 and 2,200 ft).

Family Euphorbiaceae: *Flueggea neowawraea* (mehamehame)

Kauai F, G, and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Flueggea neowawraea* on Kauai. Within these units, the currently known primary constituent

elements of critical habitat are habitat components that provide: (1) Dry or mesic forests containing one or more of the following native plant species:

Alectryon macrococcus, *Bobea timonioides*, *Charpentiera* sp., *Caesalpinia kauaiense*, *Hibiscus* sp., *Melicope* sp., *Metrosideros polymorpha*, *Myrsine lanaiensis*, *Munroidendron racemosum*, *Tetraplasandra* sp., *Kokia kauaiensis*, *Isodendron* sp., *Pteralyxia kauaiensis*, *Psychotria mariniana*, *Diplazium sandwichianum*, *Freycinetia arborea*, *Nesoluma polynesicum*, *Diospyros* sp., *Antidesma pulvinatum*, *A. platyphyllum*, *Canthium odoratum*, *Nestegis sandwicensis*, *Rauvolfia sandwicensis*, *Pittosporum* sp., *Tetraplasandra* sp., *Pouteria sandwicensis*, *Xylosma* sp., *Pritchardia* sp., *Bidens* sp., or *Streblus pendulinus*; and (2) elevations of 250 to 1,000 m (820 to 3,280 ft).

Family Fabaceae: *Canavalia molokaiensis* (awikiwiki)

Molokai units I, J and X, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Canavalia molokaiensis* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Canavalia molokaiensis* are the habitat components that provide: (1) Exposed dry and mesic sites on steep slopes—(a) in *Metrosideros polymorpha*-*Dodonaea viscosa* lowland shrubland or mesic shrublands and (b) containing one or more of the following associated native plant species:

Artemesia sp., *Chamaesyce* sp., *Coprosma* sp., *Styphelia tameiameia*, or *Wikstroemia* sp.; and (2) elevations between 10 and 900 m (30 and 3,060 ft).

Family Fabaceae: *Sesbania tomentosa* ('ohai)

i. Kauai J, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Sesbania tomentosa* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Sandy beaches, dunes, soil pockets on lava, or pond margins (a) in coastal dry shrublands, or open *Metrosideros polymorpha* forests, or mixed coastal dry cliffs, and (b) containing one or more of the following associated native plant species: *Sida fallax*, *Heteropogon contortus*, *Myoporum sandwicense*, *Sporobolus virginicus*, *Scaevola sericea*, or *Dodonaea viscosa*; and (2) elevations between sea level and 12 m (0 and 40 ft).

ii. Molokai units D, E, G, H, K, L and M, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Sesbania tomentosa* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Sesbania tomentosa* are the habitat components that provide: (1) Windswept slopes, sea cliffs and weathered basaltic slopes—(a) in *Scaevola sericea* coastal dry shrublands and (b) containing one or more of the following associated native species: *Lipochaeta integrifolia*, *Jacquemontia sandwicensis*, *Sida fallax*, and *Dodonaea viscosa*; and (2) elevations between sea level and 579 m (0–1,900 ft).

Family Fabaceae: *Vigna o-wahuense* (No common name)

Molokai unit G, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Vigna o-wahuensis* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Vigna o-wahuensis* are the habitat components that provide: (1) Dry to mesic grassland and shrubland and containing one or more of the following associated native species: *Chenopodium oahuense*, *Cyperus laevigatus*, *Eragrostis variabilis*, *Heteropogon contortus*, *Ipomoea* sp., *Scaevola sericea*, *Sida fallax*, *Vitex rotundifolia*, *Dodonaea viscosa*, and *Styphelia tameiameia*; and (2) from 207 to 256 m (680–840 ft) in elevation.

Family Flacourtiaceae: *Xylosma crenatum* (no common name)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Xylosma crenatum* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Diverse *Acacia koa*-*Metrosideros polymorpha* montane mesic forest, or *Metrosideros polymorpha*-*Dicranopteris linearis* montane wet forest, or *Acacia koa*-*Metrosideros polymorpha* montane wet forest, and containing one or more of the following associated native plant species: *Tetraplasandra kauaiensis*, *Hedyotis terminalis*, *Pleomele aurea*, *Ilex anomala*, *Claoxylon sandwicense*, *Myrsine alyxifolia*, *Nestegis sandwicensis*, *Streblus pendulinus*, *Psychotria* sp., *Diplazium sandwichianum*, *Pouteria sandwicensis*, *Scaevola procera*, *Coprosma* sp., *Athyrium sandwichianum*, *Touchardia latifolia*, *Dubautia knudsenii*, *Cheirodendron* sp., *Lobelia yuccoides*, *Cyanea hirta*, *Poa sandwicensis*, or

Diplazium sandwichianum; and (2) elevations between 975 to 1,065 m (3,200 to 3,490 ft).

Family Gentianaceae: *Centaurium sebaeoides* (awiwi)

i. Kauai G, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Centaurium sebaeoides* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Volcanic or clay soils or cliffs (a) in arid coastal areas and (b) containing one or more of the following native plant species: *Artemisia* sp., *Bidens* sp., *Chamaesyce celastroides*, *Dodonaea viscosa*, *Fimbristylis cymosa*, *Heteropogon contortus*, *Jaquemontia ovalifolia*, *Lipochaeta succulenta*, *Lipochaeta heterophylla*, *Lipochaeta integrifolia*, *Lycium sandwicense*, *Lysimachia mauritiana*, *Mariscus phloides*, *Panicum fauriei*, *P. torridum*, *Scaevola sericea*, *Schiedea globosa*, *Sida fallax*, or *Wikstroemia uva-ursi*; and (2) elevations above 250 m (800 ft).

ii. Molokai units C and Aa, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Centaurium sebaeoides* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Centaurium sebaeoides* are the habitat components that provide: (1) Volcanic or clay soils or cliffs—(a) in arid coastal areas and (b) containing one or more of the following associated native plant species: *Chamaesyce celastroides*, *Dodonaea viscosa*, *Fimbristylis cymosa*, *Heteropogon contortus*, *Lipochaeta heterophylla*, *Lipochaeta integrifolia*, *Lycium sandwicense*, *Lysimachia mauritiana*, *Mariscus phleoides*, *Panicum fauriei*, *Panicum torridum*, *Scaevola sericea*, *Schiedea globosa*, *Sida fallax*, *Wikstroemia uva-ursi*, *Artemisia* sp., *Bidens* sp., *Jaquemontia ovalifolia*, or *Lipochaeta succulenta*; and (2) elevations below 120 m (400 ft).

Family Gesneriaceae: *Cyrtandra cyaneoides* (mapele)

Kauai K, P, and R, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Cyrtandra cyaneoides* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep slopes or cliffs near streams or waterfalls (a) in lowland or montane wet forest or shrubland dominated by *Metrosideros polymorpha* or a mixture of *Metrosideros polymorpha* and

Dicranopteris linearis and (b) containing one or more of the following native species: *Perrottetia sandwicensis*, *Pipturus* sp., *Bidens* sp., *Psychotria* sp., *Pritchardia* sp., *Freycinetia arborea*, *Cyanea* sp., *Cyrtandra limahuliensis*, *Diplazium sandwichianum*, *Gunnera* sp., *Coprosma* sp., *Stenogyne* sp., *Machaerina* sp., *Boehmeria grandis*, *Pipturus* sp., *Cheirodendron* sp., *Hedyotis terminalis*, or *Hedyotis tryblum*; and (2) elevations between 550 and 1,220 meter (1,800 and 4,000 ft).

Family Gesneriaceae: *Cyrtandra limahuliensis* (ha'iwale)

Kauai A, F, K, L, O, P, Q, R, and T, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Cyrtandra limahuliensis* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Stream banks (a) in lowland wet forests and (b) containing one or more of the following native plant species: *Antidesma* sp., *Cyrtandra kealiea*, *Pisonia* sp., *Pipturus* sp., *Cibotium glaucum*, *Eugenia* sp., *Hedyotis terminalis*, *Dubautia* sp., *Boehmeria grandis*, *Touchardia latifolia*, *Bidens* sp., *Hibiscus waimeae*, *Charpentiera* sp., *Urera glabra*, *Pritchardia* sp., *Cyanea* sp., *Perrottetia sandwicensis*, *Metrosideros polymorpha*, *Dicranopteris linearis*, *Gunnera kauaiensis*, or *Psychotria* sp.; and (2) elevations between 245 and 915 m (800 and 3,000 ft).

Family Lamiaceae: *Phyllostegia knudsenii* (no common name)

Kauai I, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Phyllostegia knudsenii* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) *Metrosideros polymorpha* lowland mesic or wet forest containing one or more of the following associated native plant species: *Perrottetia sandwicensis*, *Cyrtandra kauaiensis*, *Cyrtandra paludosa*, *Elaeocarpus bifidus*, *Claoxylon sandwicensis*, *Cryptocarya mannii*, *Ilex anomala*, *Myrsine linearifolia*, *Bobea timonioides*, *Selaginella arbuscula*, *Diospyros* sp., *Zanthoxylum dipetalum*, *Pittosporum* sp., *Tetraplasandra* spp., *Pouteria sandwicensis*, or *Pritchardia minor*; and (2) elevations between 865–975 m (2,840–3,200 ft).

Family Lamiaceae: *Phyllostegia wawrana* (no common name)

Kauai G, I, and R, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Phyllostegia wawrana* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) *Metrosideros polymorpha* dominated lowland or montane wet or mesic forest with (a) *Cheirodendron* sp. or *Dicranopteris linearis* as co-dominants, and (b) containing one or more of the following associated native plant species: *Delissea rivularis*, *Diplazium sandwichianum*, *Vaccinium* sp., *Broussaisia arguta*, *Myrsine lanaiensis*, *Psychotria* sp., *Dubautia knudsenii*, *Scaevola procera*, *Gunnera* sp., *Pleomele aurea*, *Claoxylon sandwicense*, *Elaphoglossum* sp., *Hedyotis* sp., *Sadleria* sp., and *Syzygium sandwicensis*; and (2) elevations between 780–1,210 m (2,560–3,920 ft).

Family Lamiaceae: *Stenogyne bifida* (No common name)

Molokai unit P, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Stenogyne bifida* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Stenogyne bifida* are the habitat components that provide: (1) Steep ridges—(a) in *Metrosideros polymorpha*-dominated montane mesic to wet forests and (b) containing one or more of the following associated native species: *Cibotium* sp., *Hedyotis* sp., *Cyanea* sp., *Dicranopteris linearis*, *Dodonaea viscosa*, *Hedyotis hillebrandii*, *Pipturus albidus*, *Psychotria* sp., *Styphelia tameiameia*, *Vaccinium* sp., *Wikstromia* sp., *Cheirodendron trigynum*, *Broussaisia arguta*, and *Pouteria sandwicensis*; and (2) elevations between 450 and 1,200 m (1,450 and 4,000 ft).

Family Lamiaceae: *Stenogyne campanulata* (no common name)

Kauai G, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Stenogyne campanulata* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Rock faces of nearly vertical, north-facing cliffs (a) in diverse lowland or montane mesic forest and (b) containing one or more of the following associated native plant species: *Heliotropium* sp., *Lepidium serra*,

Lysimachia glutinosa, *Perrottetia sandwicensis*, or *Remya montgomeryi*; and (2) an elevation of 1,085 m (3,560 ft).

Family Loganiaceae: *Labordia lydgatei* (kamakahala)

Kauai F, K, L, P, R, and T, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Labordia lydgatei* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) *Metrosideros polymorpha-Dicranopteris linearis* lowland wet forest containing one or more of the following associated native plant species: *Psychotria* sp., *Hedyotis terminalis* sp., *Cyanea* sp., *Cyrtandra* sp., *Labordia hirtella*, *Antidesma platyphyllum* var. *hillebrandii*, *Syzygium sandwicensis*, *Ilex anomala*, or *Dubautia knudsenii*; and (2) elevations between 635 and 855 m (2,080 to 2,800 ft).

Family Loganiaceae: *Labordia tinifolia* var. *wahiawaensis* (kamakahala)

Kauai L, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Labordia tinifolia* var. *wahiawaensis* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Streambanks (a) in lowland wet forests dominated by *Metrosideros polymorpha* and (b) containing one or more of the following associated species: *Cheirodendron* sp., *Dicranopteris linearis*, *Cyrtandra* sp., *Antidesma* sp., *Psychotria* sp., *Hedyotis terminalis*, or *Athyrium microphyllum*; and (2) elevations between 300 to 920 m (985 to 3,020 ft).

Family Loganiaceae: *Labordia triflora* (kamakahala)

Molokai unit N, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Labordia triflora* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Labordia triflora* are the habitat components that provide: (1) Mixed lowland mesic forest containing one or more of the following associated native plant species: *Pouteria sandwicensis*, *Cyanea mannii*, or *Tetraplasandra* sp.; and (2) elevation of ca. 800 m (2,600 ft).

Family Malvaceae: *Hibiscadelphus woodii* (hau kuahiwi)

Kauai G, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Hibiscadelphus woodii* on Kauai.

Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Basalt talus or cliff walls (a) in *Metrosideros polymorpha* montane mesic forest and (b) containing one or more of the following associated native plant species: *Bidens sandwicensis*, *Artemisia australis*, *Melicope pallida*, *Dubautia* sp., *Lepidium serra*, *Lipochaeta* sp., *Lysimachia glutinosa*, *Carex meyenii*, *Chamaesyce celastroides* var. *hanapepensis*, *Hedyotis* sp., *Nototrichium* sp., *Panicum lineale*, *Myrsine* sp., *Stenogyne campanulata*, *Lobelia niihauensis*, or *Poa mannii*; and (2) elevations around 915m (3,000 ft).

Family Malvaceae: *Hibiscus arnottianus* ssp. *immaculatus* (kokio ke okeo)

Molokai units T and V, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Hibiscus arnottianus* ssp. *immaculatus* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Hibiscus arnottianus* ssp. *immaculatus* are the habitat components that provide: (1) steep sea cliffs—(a) in mesic forests and (b) containing one or more of the following associated native plant species: *Athyrium* sp., *Canthium odoratum*, *Cyanea grimesiana*, *Antidesma platyphyllum*, *Boehmeria grandis*, *Diospyros sandwicensis*, *Pipturus* sp., *Urera glabra*, or *Metrosideros polymorpha*; and (2) elevations between 15 and 480 m (50 and 1,600 ft).

Family Malvaceae: *Hibiscus clayi* (Clay's hibiscus)

Kauai N, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Hibiscus clayi* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Slopes (a) in *Acacia koa* or *Diospyros* sp.-*Pisonia* sp.-*Metrosideros polymorpha* lowland dry or mesic forest and (b) containing one or more of the following associated native plant species: *Hedyotis acuminata*, *Pipturus* sp., *Psychotria* sp., *Cyanea hardyi*, *Artemisia australis*, or *Bidens* sp.; and (2) elevations between 230 to 350 m (750 to 1,150 ft).

Family Malvaceae: *Hibiscus waimeae* ssp. *hannerae* (koki'o ke'oke'o)

Kauai F, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Hibiscus waimeae* ssp. *hannerae* on Kauai. Within this unit, the currently known primary constituent elements of

critical habitat are habitat components that provide: (1) *Metrosideros polymorpha-Dicranopteris linearis* or *Pisonia* sp.-*Charpentiera elliptica* lowland wet or mesic forest and containing one or more of the following associated native plant species: *Antidesma* sp., *Psychotria* sp., *Pipturus* sp., *Bidens* sp., *Bobea* sp., *Sadleria* sp., *Cyrtandra* sp., *Cyanea* sp., *Cibotium* sp., *Perrottetia sandwicensis*, or *Syzygium sandwicensis*; and (2) elevations between 190 and 560 m (620 and 1,850 ft).

Family Malvaceae: *Kokia kauaiensis* (koki'o)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Kokia kauaiensis* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Diverse mesic forest containing one or more of the following associated native plant species: *Acacia koa*, *Metrosideros polymorpha*, *Bobea* sp., *Diospyros sandwicensis*, *Hedyotis* sp., *Pleomele* sp., *Pisonia* sp., *Xylosma* sp., *Isodendron* sp., *Syzygium sandwicensis*, *Antidesma* sp., *Alyxia olivaeformis*, *Pouteria sandwicensis*, *Streblus pendulinus*, *Canthium odoratum*, *Nototrichium* sp., *Pteralyxia kauaiensis*, *Dicranopteris linearis*, *Hibiscus* sp., *Flueggea neowawraea*, *Rauvolfia sandwicensis*, *Melicope* sp., *Diellia laciniata*, *Tetraplasandra* sp., *Chamaesyce celastroides*, *Lipochaeta fauriei*, *Dodonaea viscosa*, *Santalum* sp., *Claoxylon* sp., or *Nestegis sandwicensis*; and (2) elevations between 350–660 m (1,150–2,165 ft).

Family Marsileaceae: *Marsilea villosa* (ihi ihi)

Molokai units A, B and C, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Marsilea villosa* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Marsilea villosa* are the habitat components that provide: (1) Minimally shaded or open areas in shallow depressions in clay soil, or lithified sand dunes overlaid with alluvial clay and containing one or more of the following associated native species: *Heteropogon contortus*, *Sida fallax*, *Waltheria indica*, *Centaurium sebaeoides*, *Tetramolopium sylvae* and *Schiedea globosa*; and (2) at or below 150 m (500 ft) elevation.

Family Myrsinaceae: *Myrsine linearifolia* (kolea)

Kauai F, G, H, I, L, and P, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Myrsine linearifolia* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Diverse mesic or wet lowland or montane *Metrosideros polymorpha* forest with (a) *Cheirodendron* sp. or *Dicranopteris linearis* as co-dominants, and (b) containing one or more of the following associated native plant species: *Dubautia* sp., *Cryptocarya mannii*, *Sadleria pallida*, *Myrsine* sp., *Syzygium sandwicensis*, *Machaerina angustifolia*, *Freycinetia arborea*, *Hedyotis terminalis*, *Cheirodendron* sp., *Bobea brevipes*, *Nothocestrum* sp., *Melicope* sp., *Eurya sandwicensis*, *Psychotria* sp., *Lysimachia* sp., or native ferns; and (2) elevations between 585 to 1,280 m (1,920 to 4,200 ft).

Family Orchidaceae: *Platanthera holochila* (no common name)

Kauai H, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Platanthera holochila* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) *Metrosideros polymorpha-Dicranopteris linearis* montane wet forest or *M. polymorpha* mixed bog containing one or more of the following associated native plants: *Myrsine denticulata*, *Cibotium* sp., *Coprosma ernodeoides*, *Oreobolus furcatus*, *Styphelia tameiameia*, or *Vaccinium* sp.; and (2) elevations between 1,050 and 1,600 m (3,450 and 5,245 ft).

Family Plantaginaceae: *Plantago princeps* (laukahi kuahiwi)

Kauai G, K, P, and T, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Plantago princeps* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep slopes, rock walls, or bases of waterfalls (a) in mesic or wet *Metrosideros polymorpha* forest and (b) containing one or more of the following associated native plant species: *Dodonaea viscosa*, *Psychotria* sp., *Dicranopteris linearis*, *Cyanea* sp., *Hedyotis* sp., *Melicope* sp., *Dubautia plantaginacea*, *Exocarpos luteolus*, *Poa siphonoglossa*, *Nothocestrum peltatum*, *Remya montgomeryi*, *Stenogyne campanulata*, *Xylosma* sp., *Pleomele*

sp., *Machaerina angustifolia*, *Athyrium* sp., *Bidens* sp., *Eragrostis* sp., *Lysimachia filifolia*, *Pipturus* sp., *Cyrtandra* sp., or *Myrsine linearifolia*; and (2) elevations between 480 to 1,100 m (1,580 to 3,610 ft).

Family Poaceae: *Ischaemum byrone* (Hilo ischaemum)

Molokai units T and V, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Ischaemum byrone* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Ischaemum byrone* are the habitat components that provide: (1) Rocks, basalt cliffs or talus slopes—(a) in coastal dry shrubland or *Artemisia* cliff communities and (b) containing one or more of the following associated native plant species: *Bidens molokaiensis*, *Hedyotis littoralis*, *Lysimachia mauritiana*, *Fymbristylis cymosa*, or *Pandanus tectorius*; and (2) elevations between sea level and 75 m (0 and 250 ft).

Family Poaceae: *Panicum niihauense* (lau 'ehu)

Kauai J, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Panicum niihauense* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Sand dunes (a) in coastal shrubland and (b) containing one or more of the following associated native plant species: *Dodonaea viscosa*, *Cassytha filiformis*, *Scaevola sericea*, *Sida fallax*, *Vitex rotundifolia*, or *Sporobolus* sp.; and (2) elevations of 100 m or less (330 ft).

Family Poaceae: *Poa mannii* (Mann's bluegrass)

Kauai G, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Poa mannii* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Cliffs, rock faces, or stream banks (a) in lowland or montane wet, dry, or mesic *Metrosideros polymorpha* or *Acacia koa-Metrosideros polymorpha* montane mesic forest and (b) containing one or more of the following associated native plant species: *Alectryon macrococcus*, *Antidesma platyphyllum*, *Bidens cosmoides*, *Chamaesyce celastroides* var. *hanapeensis*, *Artemisia australis*, *Bidens sandwicensis*, *Lobelia sandwicensis*, *Wilkesia gymnoxiphium*, *Eragrostis variabilis*, *Panicum lineale*,

Mariscus phloides, *Luzula hawaiiensis*, *Carex meyenii*, *C. wahuensis*, *Cyrtandra wawrae*, *Dodonaea viscosa*, *Exocarpos luteolus*, *Labordia helleri*, *Nototrichium* sp., *Schiedea amplexicaulis*, *Hedyotis terminalis*, *Melicope anisata*, *M. barbigera*, *M. pallida*, *Pouteria sandwicensis*, *Schiedea membranacea*, *Diospyros sandwicensis*, *Psychotria maritima*, *P. greenwelliae*, or *Kokia kauaiensis*; and (2) elevations between 460 and 1,150 m (1,510 and 3,770 ft).

Family Poaceae: *Poa sandwicensis* (Hawaiian bluegrass)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Poa sandwicensis* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Wet, shaded, gentle or steep slopes, ridges, or rock ledges (a) in semi-open or closed, mesic or wet, diverse montane forest dominated by *Metrosideros polymorpha* and (b) containing one or more of the following associated native species: *Dodonaea viscosa*, *Dubautia* sp., *Coprosma* sp., *Melicope* sp., *Dianella sandwicensis*, *Alyxia olivaeformis*, *Bidens* sp., *Dicranopteris linearis*, *Schiedea stellarioides*, *Peperomia macraeana*, *Claoxylon sandwicense*, *Acacia koa*, *Psychotria* sp., *Hedyotis* sp., *Scaevola* sp., *Cheirodendron* sp., or *Syzygium sandwicensis*; and (2) elevations between 1,035 to 1,250 m (3,400 to 4,100 ft).

Family Poaceae: *Poa siphonoglossa* (no common name)

Kauai G, I, and U, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Poa siphonoglossa* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Shady banks near ridge crests (a) in mesic *Metrosideros polymorpha* forest and (b) containing one or more of the following associated native plant species: *Acacia koa*, *Psychotria* sp., *Scaevola* sp., *Alphitonia ponderosa*, *Zanthoxylum dipetalum*, *Tetraplasandra kauaiensis*, *Dodonaea viscosa*, *Hedyotis* sp., *Melicope* sp., *Vaccinium* sp., *Styphelia tameiameia*, *Carex meyenii*, *Carex wahuensis*, or *Wilkesia gymnoxiphium*; and (2) elevations between 1,000 to 1,200 m (3,300 and 3,900 ft).

Family Primulaceae: *Lysimachia filifolia* (no common name)

Kauai T, identified in the legal description in paragraph (a)(1)(i)(A) of

this section, constitutes critical habitat for *Lysimachia filifolia* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Mossy banks at the base of cliff faces within the spray zone of waterfalls or along streams in lowland wet forests and containing one or more of the following associated native plant species: mosses, ferns, liverworts, *Machaerina* sp., *Heteropogon contortus*, or *Melicope* sp.; and (2) elevations between 240 to 680 m (800 to 2,230 ft).

Family Rhamnaceae: *Gouania meyenii* (no common name)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Gouania meyenii* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Rocky ledges, cliff faces, or ridge tops (a) in dry shrubland or *Metrosideros polymorpha* lowland mesic forest and (b) containing one or more of the following native plant species: *Dodonaea viscosa*, *Chamaesyce* sp., *Psychotria* sp., *Hedyotis* sp., *Melicope* sp., *Nestegis sandwicensis*, *Bidens* sp., *Carex meyenii*, *Diospyros* sp., *Lysimachia* sp., or *Senna gaudichaudii*; and (2) elevations between 490 to 880 m (1,600 to 2,880 ft).

Family Rubiaceae: *Hedyotis cookiana* ('awiwi)

Kauai G, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Hedyotis cookiana* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) streambeds or steep cliffs close to water sources in lowland wet forest communities; and (2) elevations between 170 and 370 m (560 and 1,210 ft).

Family Rubiaceae: *Hedyotis st.-johnii* (Na Pali beach *Hedyotis*)

Kauai G and J, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Hedyotis st.-johnii* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Crevices of north-facing, near-vertical coastal cliff faces within the spray zone (a) in sparse dry coastal shrubland and (b) containing one or more of the following native plant species: *Myoporum sandwicense*, *Eragrostis variabilis*, *Lycium sandwicense*, *Heteropogon contortus*,

Artemisia australis or *Chamaesyce celastroides*; and (2) elevations above 75 m (250 ft).

Family Rutaceae: *Melicope haupuensis* (alani)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Melicope haupuensis* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Moist talus slopes (a) in *Metrosideros polymorpha* dominated lowland mesic forests or *Metrosideros polymorpha*-*Acacia koa* montane mesic forest and (b) containing one or more of the following associated native plant species: *Dodonaea viscosa*, *Diospyros* sp., *Psychotria mariniana*, *P. greenwelliae*, *Melicope ovata*, *M. anisata*, *M. barbigera*, *Dianella sandwicensis*, *Pritchardia minor*, *Tetraplasandra waimeae*, *Claoxylon sandwicensis*, *Cheirodendron trigynum*, *Pleomele aurea*, *Cryptocarya mannii*, *Pouteria sandwicensis*, *Bobea brevipes*, *Hedyotis terminalis*, *Elaeocarpus bifidus*, or *Antidesma* sp.; and (2) elevations between 375 to 1,075 m (1,230 to 3,530 ft).

Family Rutaceae: *Melicope knudsenii* (alani)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Melicope knudsenii* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Forested flats or talus slopes (a) in lowland dry or montane mesic forests and (b) containing one or more of the following associated native plant species: *Dodonaea viscosa*, *Antidesma* sp., *Metrosideros polymorpha*, *Xylosma* sp., *Hibiscus* sp., *Myrsine lanaiensis*, *Diospyros* sp., *Rauvolfia sandwicensis*, *Bobea* sp., *Nestegis sandwicensis*, *Hedyotis* sp., *Melicope* sp., *Psychotria* sp., or *Pittosporum kauaiensis*; and (2) elevations between 450 to 1,000 m (1,480 to 3,300 ft).

Family Rutaceae: *Melicope mucronulata* (alani)

Molokai unit H, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Melicope mucronulata* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Melicope mucronulata* are the habitat components that provide: (1) Steep, west-or north-facing, lowland slopes—(a) in dry to mesic, forests and (b) containing one or more of the

following associated native species: *Dodonaea viscosa*, *Metrosideros polymorpha*, *Styphelia tameiameia*, and *Dubautia linearis*; and (2) elevations between 670 and 870 m (2,200 and 2,850 ft).

Family Rutaceae: *Melicope pallida* (alani)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Melicope pallida* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep rock faces (a) in lowland or montane mesic or wet forests or shrubland and (b) containing one or more of the following associated native plant species: *Dodonaea viscosa*, *Lepidium serra*, *Pleomele* sp., *Boehmeria grandis*, *Coprosma* sp., *Hedyotis terminalis*, *Melicope* sp., *Pouteria sandwicensis*, *Poa mannii*, *Schiedea membranacea*, *Psychotria mariniana*, *Dianella sandwicensis*, *Pritchardia minor*, *Chamaesyce celastroides* var *hanapepensis*, *Nototrichium* sp., *Carex meyenii*, *Artemisia* sp., *Abutilon sandwicense*, *Alyxia olivaeformis*, *Dryopteris* sp., *Metrosideros polymorpha*, *Pipturus albidus*, *Sapindus oahuensis*, *Tetraplasandra* sp., or *Xylosma hawaiiense*; and (2) elevations between 490 to 915 m (1,600 to 3,000 ft).

Family Rutaceae: *Melicope reflexa* (alani)

Molokai units Q and U, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Melicope reflexa* on Molokai. Within these units the currently known primary constituent elements of critical habitat for *Melicope reflexa* are the habitat components that provide: (1) Wet *Metrosideros polymorpha* dominated forests with native trees such as *Cheirodendron* sp.; and (2) elevations between 760 and 1,190 m (2,490 and 3,900 ft).

Family Rutaceae: *Zanthoxylum hawaiiense* (ae)

i. Kauai I, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Zanthoxylum hawaiiense* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Lowland dry or mesic forests, or montane dry forest, (a) dominated by *Metrosideros polymorpha* or *Diospyros sandwicensis*, and (b) containing one or more of the following associated plant species: *Pleomele*

auwahiensis, *Antidesma platyphyllum*, *Pisonia* sp., *Alectryon macrococcus*, *Charpentiera* sp., *Melicope* sp., *Streblus pendulinus*, *Myrsine lanaiensis*, *Sophora chrysophylla*, or *Dodonaea viscosa*; and (2) elevations between 550 and 730 m (1,800 and 2,400 ft).

ii. Molokai unit G, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Zanthoxylum hawaiiense* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Zanthoxylum hawaiiense* are the habitat components that provide: (1) Mesic *Metrosideros polymorpha* or *Diospyros sandwicensis* lowland dry forest with *Nestegis sandwicensis* and *Pleomele auwahiensis* and containing one or more of the following associated native species: *Pisonia* sp., *Xylosma hawaiiensis*, *Santalum ellipticum*, *Alphitonia ponderosa*, *Osteomeles anthylidifolia*, *Alectryon macrococcus*, *Charpentiera* sp., *Melicope* sp., *Dodonaea viscosa*, *Streblus pendulinus*, *Myrsine lanaiensis*, and *Sophora chrysophylla*; and (2) elevations between 182 and 256 m (600 and 840 ft).

Family Santalaceae: *Exocarpos luteolus* (heau)

Kauai G, H, I, L, and S, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Exocarpos luteolus* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Wet places bordering swamps; open, dry ridges (a) in lowland or montane *Metrosideros polymorpha* dominated wet forest communities and (b) containing one or more of the following native plant species: *Acacia koa*, *Cheirodendron trigynum*, *Pouteria sandwicensis*, *Dodonaea viscosa*, *Pleomele aurea*, *Psychotria mariniana*, *Psychotria greenwelliae*, *Bobea brevipes*, *Hedyotis terminalis*, *Elaeocarpus bifidus*, *Melicope hauptensis*, *Dubautia laevigata*, *Dianella sandwicensis*, *Poa sandwicensis*, *Schiedea stellarioides*, *Peperomia macraeana*, *Claoxylon sandwicense*, *Santalum freycinetianum*, *Styphelia tameiameiae*, or *Dicranopteris linearis*; and (2) elevations between 475 and 1,290 m (1,560 and 4,220 ft).

Family Sapindaceae: *Alectryon macrococcus* (mahoe)

i. Kauai G, I, and U, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Alectryon macrococcus* on Kauai. Within these units, the currently known primary constituent elements of critical habitat

are habitat components that provide: (1) Dry slopes or gulches (a) in *Diospyros* sp.-*Metrosideros polymorpha* lowland mesic forest, *Metrosideros polymorpha* mixed mesic forest, or *Diospyros* sp. mixed mesic forest, (b) containing one or more of the following native plant species: *Nestegis sandwicensis*, *Psychotria* sp., *Pisonia* sp., *Xylosma* sp., *Streblus pendulinus*, *Hibiscus* sp., *Antidesma* sp., *Pleomele* sp., *Acacia koa*, *Melicope knudsenii*, *Hibiscus waimeae*, *Pteralyxia* sp., *Zanthoxylum* sp., *Kokia kauaiensis*, *Rauvolfia sandwicensis*, *Myrsine lanaiensis*, *Canthium odoratum*, *Canavalia* sp., *Alyxia oliviformis*, *Nesoluma polynesianum*, *Munroidendron racemosum*, *Caesalpinia kauaiensis*, *Tetraplasandra* sp., *Pouteria sandwicensis*, or *Bobea timonioides*; and (2) elevations between 360 to 1,070 m (1,180 to 3,510 ft).

ii. Molokai units G, H and I, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Alectryon macrococcus* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Alectryon macrococcus* are the habitat components that provide: (1) Dry or talus slopes or gulches—(a) in dry or mesic lowland forests and (b) containing one or more of the following associated native plant species: *Dodonaea viscosa*, *Nestegis sandwicensis*, *Nothocestrum* sp., *Pleomele* sp., *Psychotria* sp., *Streblus pendulinus*, *Myrsine* sp., or *Lipochaeta* sp.; and (2) elevations between 360 and 1,070 m (1,181 and 3,510 ft).

Family Solanaceae: *Nothocestrum peltatum* ('aiea)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Nothocestrum peltatum* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Rich soil on steep slopes (a) in montane or lowland mesic or wet forest dominated by *Acacia koa* or a mixture of *Acacia koa* and *Metrosideros polymorpha*, and (b) containing one or more of the following associated native plant species: *Antidesma* sp., *Dicranopteris linearis*, *Bobea brevipes*, *Elaeocarpus bifidus*, *Alphitonia ponderosa*, *Melicope anisata*, *M. barbigera*, *M. hauptensis*, *Pouteria sandwicensis*, *Dodonaea viscosa*, *Dianella sandwicensis*, *Tetraplasandra kauaiensis*, *Claoxylon sandwicensis*, *Cheirodendron trigynum*, *Psychotria mariniana*, *P. greenwelliae*, *Hedyotis terminalis*, *Ilex anomala*, *Xylosma* sp.,

Cryptocarya mannii, *Coprosma* sp., *Pleomele aurea*, *Diplazium sandwicensis*, *Broussaia arguta*, or *Perrottetia sandwicensis*; and (2) elevations between 915 to 1,220 m (3,000 to 4,000 ft).

Family Solanaceae: *Solanum sandwicense* ('aiakeakua, popolu)

Kauai D, G, and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Solanum sandwicense* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Open, sunny areas (a) in diverse lowland or montane mesic or wet forests and (b) containing one or more of the following associated plants: *Alphitonia ponderosa*, *Ilex anomala*, *Xylosma* sp., *Athyrium sandwicensis*, *Syzygium sandwicensis*, *Bidens cosmoides*, *Dianella sandwicensis*, *Poa siphonoglossa*, *Carex meyenii*, *Hedyotis* sp., *Coprosma* sp., *Dubautia* sp., *Pouteria sandwicensis*, *Cryptocarya mannii*, *Acacia koa*, *Metrosideros polymorpha*, *Dicranopteris linearis*, *Psychotria* sp., or *Melicope* sp.; and (2) elevations between 760 and 1,220 m (2,500 and 4,000 ft).

Family Urticaceae: *Neraudia sericea* (No common name)

Molokai unit G, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Neraudia sericea* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Neraudia sericea* are the habitat components that provide: (1) Lowland dry to mesic *Metrosideros polymorpha*-*Dodonaea viscosa*-*Styphelia tameiameiae* shrubland or forest and containing one or more of the following associated native species: *Sida fallax*, *Diospyros sandwicensis*, *Bobea* sp., *Coprosma* sp., and *Hedyotis* sp.; and (2) between 670 and 1,370 m (2,200 and 4,500 ft) in elevation.

Family Violaceae: *Isodendron laurifolium* (aupaka)

Kauai G, I, and U, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Isodendron laurifolium* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Diverse mesic or wet forest (a) dominated by *Metrosideros polymorpha*, *Acacia koa*, or *Diospyros* sp. and (b) containing one or more of the following associated native plant

species: *Kokia kauaiensis*, *Streblus* sp., *Elaeocarpus bifidus*, *Canthium odoratum*, *Antidesma* sp., *Xylosma hawaiiense*, *Hedyotis terminalis*, *Pisonia* sp., *Nestegis sandwicensis*, *Dodonaea viscosa*, *Euphorbia haeleleana*, *Pleomele* sp., *Pittosporum* sp., *Melicope* sp., *Claoxylon sandwicense*, *Alphitonia ponderosa*, *Myrsine lanaiensis*, or *Pouteria sandwicensis*; and (2) elevations between 490 and 820 m (1,600 and 2,700 ft).

Family Violaceae: *Isodendron longifolium* (aupaka)

Kauai F, G, L, M, and P, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Isodendron longifolium* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Steep slopes, gulches, or stream banks (a) in mesic or wet *Metrosideros polymorpha* forests and (b) containing one or more of the following native species: *Dicranopteris linearis*, *Eugenia* sp., *Diospyros* sp., *Pritchardia* sp., *Canthium odoratum*, *Melicope* sp., *Cheirodendron* sp., *Ilex anomala*, *Pipturus* sp., *Hedyotis fluviatilis*, *Peperomia* sp., *Bidens* sp., *Nestegis sandwicensis*, *Cyanea hardyi*, *Syzygium* sp., *Cibotium* sp., *Bobea brevipes*, *Antidesma* sp., *Cyrtandra* sp., *Hedyotis terminalis*, *Peperomia* sp., *Perrottetia sandwicensis*, *Pittosporum* sp., or *Psychotria* sp.; and (2) elevations between 410 to 760 m (1,345 to 2,500 ft).

Family Violaceae: *Viola helenae* (no common name)

Kauai L, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Viola helenae* on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Stream banks or adjacent valley bottoms with light to moderate shade in *Metrosideros polymorpha*-*Dicranopteris linearis* lowland wet forest; and (2) elevations between 610–855 m (2,000–2,800 ft).

Family Violaceae: *Viola kauaiensis* var. *wahiawaensis* (nani wai'ale'ale)

Kauai L, identified in the legal description in paragraph (a)(1)(i)(A) of this section, constitutes critical habitat for *Viola kauaiensis* var. *wahiawaensis*

on Kauai. Within this unit, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Open montane bog or wet shrubland containing one or more of the following native plant species: *Dicranopteris linearis*, *Diplopterygium pinnatum*, *Syzygium sandwicensis*, or *Metrosideros polymorpha*; and (2) elevations between 640 and 865 m (2,100 and 2,840 ft).

(B) *Ferns and Allies*.

Family Aspleniaceae: *Ctenitis squamigera* (pauoa)

Molokai unit N, identified in the legal description in paragraph (a)(1)(i)(F) of this section constitutes critical habitat for *Ctenitis squamigera* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Ctenitis squamigera* are the habitat components that provide: (1) Mesic forest containing one or more of the following associated native plant taxa: *Metrosideros polymorpha*, *Myrsine lessertiana*, *Diospyros sandwicensis*, *Nestegis sandwicensis*, *Xylosma hawaiiense*, *Pouteria sandwicensis*, *Nephrolepis exaltata*, *Carex meyenii*, *Dryopteris unidentata*, or *Pleomele auwahiensis*; and (2) an elevation of approximately 865 m (254 ft).

Family Aspleniaceae: *Diellia erecta* (No common name)

Molokai units G and R, identified in the legal descriptions in paragraph (a)(1)(i)(F) of this section constitute critical habitat for *Diellia erecta* on Molokai. Within this unit the currently known primary constituent elements of critical habitat for *Diellia erecta* are the habitat components that provide: (1) Mixed mesic forest or mesic *Diospyros sandwicensis* forest containing one or more of the following associated native plant species: *Alyxia oliviformis*, *Metrosideros polymorpha*, *Bobea* sp., *Coprosma foliosa*, *Dodonaea viscosa*, *Dryopteris unidentata*, *Myrsine* sp., *Ochrosia compta*, *Dubautia linearis* ssp. *opposita*, *Psychotria* sp., *Pleomele auwahiensis*, *Sophora chrysophylla*, *Styphelia tameiameia*, *Syzygium sandwicensis*, or *Wikstroemia* sp.; and (2) elevations between 210 and 1,490 m (700 and 4,900 ft).

Family Aspleniaceae: *Diellia pallida* (no common name)

Kauai G and I, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat

for *Diellia pallida* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Bare soil on steep, rocky, dry slopes (a) in lowland mesic forests and (b) containing one or more of the following native plant species: *Acacia koa*, *Alectryon macrococcus*, *Antidesma platyphyllum*, *Metrosideros polymorpha*, *Myrsine lanaiensis*, *Zanthoxylum dipetalum*, *Tetraplasandra kauaiensis*, *Psychotria mariniana*, *Carex meyenii*, *Diospyros hillebrandii*, *Hedyotis knudsenii*, *Canthium odoratum*, *Pteralyxia kauaiensis*, *Nestegis sandwicensis*, *Alyxia olivaeformis*, *Wilkesia gymnoxiphium*, *Alphitonia ponderosa*, *Styphelia tameiameia*, or *Rauvolfia sandwicensis*; and (2) elevations between 530 to 915 m (1,700 to 3,000 ft).

Family Grammitidaceae: *Adenophorus periens* (pendant kihi fern)

Kauai F, G, K, L, P, and R, identified in the legal descriptions in paragraph (a)(1)(i)(A) of this section, constitute critical habitat for *Adenophorus periens* on Kauai. Within these units, the currently known primary constituent elements of critical habitat are habitat components that provide: (1) Well-developed, closed canopy that provides deep shade or high humidity (a) in *Metrosideros polymorpha*-*Cibotium glaucum* lowland wet forests, open *Metrosideros polymorpha* montane wet forest, or *Metrosideros polymorpha*-*Dicranopteris linearis* lowland wet forest, and (b) containing one or more of the following native plant species: *Athyrium sandwicensis*, *Broussaisia* sp., *Cheirodendron trigynum*, *Cyanea* sp., *Cyrtandra* sp., *Dicranopteris linearis*, *Freycinetia arborea*, *Hedyotis terminalis*, *Labordia hirtella*, *Machaerina angustifolia*, *Psychotria* sp., *Psychotria hexandra*, or *Syzygium sandwicensis*; and (2) elevations between 400 and 1,265 m (1,310 and 4,150 ft).

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Dated: November 30, 2000.

Kenneth L. Smith,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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