

not adequate to find that the designated areas in PMRF are no longer in need of special management considerations or protection and thus do not meet the definition of critical habitat because it does not include enough specific information on the conservation of *Panicum niihauense*. As far as the Service is aware, this INRMP has not yet been updated to address management needs of this species.

(40) *Comment*: Additional dry and mesic areas should be considered for critical habitat designations, including Olokeke Canyon.

Our Response: Olokeke Canyon was not included in any critical habitat designations because no data was available on the historic or current primary constituent elements or current species locations within those lands.

(41) *Comment*: One commenter would like to see Haena State Park removed from the critical habitat designation, because it is a high use visitor area, wall to wall historic and cultural landscape, and very degraded habitat with very few native plants. The cultural sites are currently being restored by the Hawaiian community.

Our Response: Information received during the public comment period informed us of the lack of primary constituent elements for the species in this area. Therefore, we revised the lines for the final designation to start around the 200-foot elevation line where a higher density of primary constituent elements exist for the species at issue.

Issue 3: Legal Issues

(42) *Comment*: Critical habitat designation and the underlying decision to list as endangered the species that are the subject of the designation, exceed the constitutional limits of the Service's delegated authority. Congress enacted the ESA as an exercise of its Commerce Clause power and delegated exercise of that Commerce Clause power to the Service to apply the ESA by regulation. The listed species are not interstate. They exist only in Hawaii and do not cross State lines. Nor are they in commerce as the subject of any economic endeavor. They lack any commercial value. Therefore, the Service's regulations listing these species and designating critical habitat for them within Hawaii exceed the federal power to regulate interstate commerce under the governing precedents interpreting the Commerce Clause.

Our Response: The Federal government has the authority under the Commerce Clause of the U.S. Constitution to protect this species, for the reasons given in Judge Wald's

opinion and Judge Henderson's concurring opinion in *National Association of Homebuilders v. Babbitt*, 130 F.3d 1041 (D.C. Cir. 1997), *cert. denied*, 1185 S.Ct. 2340 (1998). See also *Gibbs v. Babbitt*, No. 99-1218 (4th Cir. 2000). The *Home Builders* case involved a challenge to application of ESA prohibitions to protect the listed Delhi Sands flower-loving fly. As with the species at issue here, the Delhi Sands flower-loving fly is endemic to only one state. Judge Wald held that application of the ESA to this fly was a proper exercise of Commerce Clause power because it prevented loss of biodiversity and destructive interstate competition.

(43) *Comment*: Since concerns were raised from the hunting community and local government officials, a fair approach to resolving this issue may be through mediation, using the State's Judiciary Center for Alternative Dispute Resolution. To date, this will be the second recommendation made on this issue that still has not been taken under advisement.

Our Response: We have held several meetings with the hunting community and local government officials to promote information exchange and open dialogue. These meetings have served to alleviate some of the controversy and contention that have surrounded the issue of critical habitat designation on Kauai and other Hawaiian Islands. However, this is a rulemaking process governed by the ESA and the Administrative Procedures Act and not easily resolved thru mediation. We have tried our best to have an open process with an opportunity for all interested parties to participate, while complying with our statutory responsibilities and court-ordered deadlines.

(44) *Comment*: Any activity that may degrade critical habitat, including activities that are not subject to section 7 consultation, could be seen as an "injury" to (and therefore, under State law, a "taking" of) an endangered plant species under the State of Hawaii's endangered species law (Hawaii Revised Statutes (HRS) Chapter 195D). It is important that this receive due consideration in evaluating the proposed critical habitat designations (for example, in completing the economic analysis), and that the Service explain to what extent it has considered the potential interplay between the Federal Endangered Species Act and Hawaii endangered species laws.

Our Response: Possible costs resulting from interplay of the Federal Endangered Species Act and Hawaii State law were discussed in the economic analysis under indirect costs (e.g., possible conservation management

mandate for the private landowner and reduction in game mammal populations). The economic analysis considers the economic impacts of section 7 consultations related to critical habitat even if they are attributable co-extensively to the listed status of the species. In addition, the economic analysis examines any indirect costs of critical habitat designation, such as where critical habitat triggers the applicability of a State or local statute. However, where it is the listing of a species that prompts action at the State or local level, the impacts are not attributable to critical habitat designation. Take prohibitions under Hawaii law are purely attributable to a listing decision and do not co-extensively occur because of critical habitat designations. There are no take prohibitions associated with critical habitat.

(45) *Comment*: One commenter stated that the Service should do a better job of communicating what critical habitat does and does not do, including a review of recent "Federal monies and Federal approvals," and which of those programs might even remotely be affected by designations of critical habitat.

Our Response: We have made a concerted effort to provide the public with information on what critical habitat does and does not do, through a series of public workshops and meetings, correspondence, news releases, and publications. A detailed review of Federal activities that may be affected by the critical habitat designations on Kauai and Niihau may be found in the economic analysis section of this rule. The public could also refer to the Service's National website <http://www.fws.gov>.

Issue 4: Section 7 Consultation

(46) *Comment*: The draft economic analysis states that if a landowner needs a Federal permit or receives Federal funding for a specific activity, the Federal agency issuing the permit or dispersing the funds would consult with the Service to determine how the action may affect the designated critical habitat. The commenter questioned what is meant by the term "consult." The nature of the consultation could result in control of whether the Federal government conducts its proposed action on those lands or not, thereby controlling the land to the extent that the private landowner could or could not do business with the Federal government. What would consultation result in when a proposed Federal action is being compared to the activities not affected by critical habitat

designation, such as, grazing, farming, hunting or recreational use?

Our Response: The term "consult" refers to consultation between the Service and other Federal agencies under the provisions of section 7 of the Act. Under this provision of the Act all Federal agencies must consult with the Service to insure that any action that they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. If the Service finds that the proposed actions are likely to jeopardize the continued existence of an endangered or threatened species or result in destruction or adverse modification of critical habitat, we suggest reasonable and prudent alternatives that would allow the Federal agency to implement their proposed action without such adverse consequences. Every consultation is unique and it is impossible to comment on what the results of a future consultation will be without details on the proposed activity and the status of the species and its critical habitat at the time of the consultation.

Issue 5: Mapping and PCEs

(47) *Comment:* Although the text in the proposed rule appears to indicate that unit F in Lawai Valley is restricted to land owned by the National Tropical Botanical Garden, a map provided by the Service shows some overlap between this unit and McBryde land above Lawai Stream, near Luawai Reservoir. The Service should clarify whether unit F is intended to include portions of the McBryde land, as suggested by the map, or if any overlap is purely due to mapping inaccuracies. If the proposal is intended to include McBryde land in this area, the Service should consider conducting a biological survey of the area to confirm whether the area in question actually contain any individuals of *Schiedea spergulina* var. *leipoda* and/or whether this area is essential.

Our Response: The majority of the unit is within the lands owned by the National Tropical Botanical Garden. However, some of the McBryde land does fall within the unit. Efforts were made to exclude lands currently used for cultivation. This unit is important to the conservation of *Schiedea spergulina* var. *leipoda* because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are important for this

species include, but are not limited to, bare rock outcrops or sparsely vegetated portions of rocky cliff faces or cliff bases in diverse lowland dry to mesic forests. Although we do not feel that there is enough habitat designated to reach the recovery goal of 8 to 10 populations, this species is a very narrow endemic and probably never naturally occurred in more than a single or a few populations.

(48) *Comment:* The draft economic analysis dismisses concerns about impacts on the use of structures and features already placed in areas to be designated as critical habitat. Although manmade features and structures are excluded from critical habitat because they lack the primary constituent elements, greater precision in pinning down these "unmapped holes" is needed to avoid a chilling effect on legitimate uses that necessarily approach a fuzzy boundary line.

Our Response: Existing features and structures within critical habitat areas, buildings; roads; aqueducts and other water system features—including but not limited to pumping stations, irrigation ditches, pipelines, siphons, tunnels, water tanks, gaging stations, intakes, reservoirs, diversions, flumes, and wells; existing trails; campgrounds and their immediate surrounding landscaped area; scenic lookouts; remote helicopter landing sites; existing fences; telecommunications equipment towers and associated structures and equipment; electrical power transmission lines and distribution, and communication facilities and regularly maintained associated rights-of-way and access ways; radars, telemetry antennas; missile launch sites; arboreta and gardens; heiau (indigenous places of worship or shrines) and other archaeological sites; airports; other paved areas; and lawns and other rural residential landscaped areas and other manmade features do not contain, and are not likely to develop, primary constituent elements, and are specifically excluded from designation under this rule. Therefore, unless a Federal action related to such features or structures indirectly affects 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. We have attempted to exclude manmade structures using aerial photos, our own field experience on Kauai and that of other expert field botanists from DOFAW and the University of Hawaii at Manoa. However, we were not always able to successfully exclude these structures from the critical habitat maps

because the resolution of our imagery does not allow us to locate small structures. Higher resolution imagery is currently unavailable on a State-wide basis.

Issue 6: Effects of Designation

(49) *Comment:* One commenter stated that the designation of critical habitat would almost certainly make its private endangered species reserve the target of a government takeover attempt.

Our Response: Section 3(5) of the Act defines critical habitat as those specific areas which contain physical or biological features essential to the conservation of the species and which may require special management considerations or protection (16 U.S.C. 1532(5)). Designations of critical habitat are to be made on the basis of the best scientific and commercial data available, after taking into account the economic and other relevant impacts of specifying any area as critical habitat (16 U.S.C. 1533(b)(2)). An area may be excluded from designation as critical habitat if the Secretary determines the benefits of excluding the area outweigh the benefits of designating the area as critical habitat (and provided the exclusion would not result in the extinction of the species).

To a property owner, the designation of critical habitat becomes important when viewed in the context of section 7 of the Act, which requires all Federal agencies to ensure, in consultation with the Service, that any action authorized, funded, or carried out by the agency does not result in the destruction or adverse modification of designated critical habitat. If, after consultation, our biological opinion concludes that a proposed action is likely to result in the destruction or adverse modification of critical habitat, we are required to suggest reasonable and prudent alternatives to the action which would avoid the destruction or adverse modification of the critical habitat (16 U.S.C. 1536(b)(3)(A)). If we cannot suggest acceptable reasonable and prudent alternatives, the agency (or the applicant) may apply for an exemption from the Endangered Species Committee under section 7(e)-(p) of the Act.

The mere promulgation of a regulation, like the enactment of a statute, does not take private property unless the regulation on its face denies the property owners all economically beneficial or productive use of their land (*Agins v. City of Tiburon*, 447 U.S. 255, 260-263 (1980); *Hodel v. Virginia Surface Mining and Reclamation Ass'n*, 452 U.S. 264, 195 (1981); *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1014 (1992)). The designation of

critical habitat alone does not deny anyone economically viable use of their property. The Act does not automatically restrict all uses of critical habitat, but only imposes restrictions under section 7(a)(2) on Federal agency actions that may result in destruction or adverse modification of designated critical habitat. Furthermore, as discussed above, if a biological opinion concludes that a proposed action is likely to result in destruction or modification of critical habitat, we are required to suggest reasonable and prudent alternatives.

We are aware of relatively few activities in the proposed critical habitat areas for these 83 plants that have Federal involvement, and thus, would require consultation or reinitiation of already completed consultations for on-going projects. We are not aware of any commercial activities on the Federal lands included in these proposed critical habitat designations.

(50) *Comment:* If endangered species are dying through no fault of the landowner, then the landowner should not be penalized with onerous and costly regulations. What incentives are being provided private landowners to act on behalf of listed plants?

Our Response: Critical habitat designation does not impose additional regulatory requirements upon non-Federal landowners unless they are receiving funding or authorization from a Federal agency for a proposed action that is likely to destroy or adversely modify critical habitat. Many threatened and endangered species occur on private lands and the Service recognizes the importance of conservation actions by private landowners. Cooperation from private landowners is an important element of our conservation efforts, and we have had considerable success in developing partnerships with large and small landowners, government agencies, and non-governmental organizations for conservation activities on Kauai, in the State of Hawaii, and throughout the nation.

The Service administers several programs aimed at providing incentives for landowners to conserve endangered and threatened species on their lands, one of which is the Endangered Species Landowner Incentive Program, which was first funded by Congress in fiscal year 1999. Under this program, the Service provides technical assistance and funding to landowners for carrying out conservation actions on their lands. In the first year alone, 145 proposals totaling \$21.1 million competed for \$5 million in grant money. Additional information on landowner incentive programs administered by the Service

may be found on our website <http://endangered.fws.gov/landowner/index.html>.

(51) *Comment:* The Service has tried to reassure the public that the wholesale dedication of land as critical habitat will not result in restrictions of public access and that most land use proposals will be approved. One commenter said that this is probably not true, based on what has happened in other parts of the country.

Our Response: Undoubtedly, human activities have had a negative impact to many species in Hawaii. However, numerous threatened and endangered species are currently on the road to recovery through the direct intervention of humans. These include marine and terrestrial vertebrates, plants, and invertebrates. The designation of an area as critical habitat does not in itself restrict public access. The regulatory effect of critical habitat designation is limited to requiring consultation under section 7 of the Act for Federal actions. Since few, if any, Federal actions affect public access to the State and private lands designated as critical habitat for these plants, it is unlikely that public access to these areas will be altered.

(52) *Comment:* By setting aside so many acres of land with no guarantee that the plan will work it will rob the Hawaiian people of their culture and lifestyle. Critical habitat designation should accommodate the traditional cultural gathering rights of Native Hawaiians as reflected in Article XII of the State Constitution and upheld by the Hawaii Supreme Court in PASH and Ka Paakai o Ka Aina decisions. Native Hawaiian issues should be handled by the native Hawaiian people. The Service should make a plan to save plants where the Hawaiian people would have a say.

Our Response: Critical habitat designation does not affect activities, including human access, on State or private lands unless some sort of Federal permit, license, or funding is involved and the activities may affect endangered or threatened species. It imposes no regulatory prohibitions on State or other non-Federal lands, nor does it impose any restrictions on State or non-Federal activities that are not funded or authorized by any Federal agencies.

Access to Federal lands that are designated as critical habitat is not restricted unless access is determined to result in the destruction or adverse modification of the critical habitat. If we determine that access will result in such destruction or adverse modification, we will suggest reasonable or prudent alternatives.

Activities of the State or private landowner or individual, such as

farming, grazing, logging, and gathering, generally are not affected by a critical habitat designation, even if the property is within the geographical boundaries of the critical habitat. A critical habitat designation has no regulatory effect on access to State or private lands. Recreational, commercial, and subsistence activities, including hunting, on non-Federal lands are not regulated by this critical habitat designation, and may be impacted only where there is Federal involvement in the action and the action is likely to destroy or adversely modify critical habitat.

The Service actively seeks input and participation from the public in development and implementation of recovery plans for endangered and threatened species and believes that it is only through such active participation by the public that we will be able to recover these plants.

(53) *Comment:* The critical habitat initiative is generating an unwelcome degree of rift between the State Department of Land and Natural Resources (DLNR) and the Service, and may erode public support for needed recovery efforts. The Service should withdraw their plans for critical habitat designation on Kauai, and instead, work with existing agencies on their current efforts at conservation and preservation. The testimony presented by DLNR at the February 2001 hearing recommends suggestions for working together and cites specific methods for its implementation. They deserve the Service's utmost attention.

Our Response: We agree that the Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) comments and suggestions should be given the utmost attention. During the public comment periods for the November 7, 2000, proposal for plants from Kauai and Niihau, we received written comments and a map showing the DOFAW's vegetation classes and recommended critical habitat units. We evaluated DOFAW's comments on a species by species basis and incorporated their information into the revised proposal published on January 28, 2002. DOFAW recommended deletion of some of the proposed critical habitat units as they do not believe these areas are suitable for the recovery of some species because they would not be able to manage these areas with their limited staff and funding. Because the basis for identifying areas by DOFAW was made on the manageability of the area, their mapping of habitat is distinct from the regulatory designation of critical habitat as defined by the Act.

Following publication of the revised proposal in January 2002, we met with DOFAW on numerous occasions and conducted several site assessment surveys to evaluate habitat that meets the legal requirements of the Act and takes into account the on-the-ground knowledge of DOFAW's biologists and land managers. As a result of the assessment surveys and information provided to us by Kauai DOFAW staff we excluded non-essential areas that did not contain primary constituent elements. In addition, we received important information from Kauai DOFAW staff that enabled us to refine the final critical habitat designations to meet the conservation needs of the species.

Issue 7: Policy and Regulations

(54) *Comment:* Prudence cannot be determined without an analysis of the economic impacts of critical habitat.

Our Response: The Service makes an initial determination on the prudence of designating critical habitat according to regulations found at 50 CFR 424.12(a). In accordance with these regulations, critical habitat designation is not prudent only when one or both of the following two 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 such threat to the species; or, (2) such designation would not be beneficial to the species. The economic analysis is conducted after critical habitat has been proposed in a given area, as set forth in regulations found at 50 CFR 424.19. If the Service finds that economic and other impacts outweigh the benefit of designating critical habitat in a given area, that area will be excluded from critical habitat designation unless such exclusion will result in the extinction of the species concerned.

(55) *Comment:* The prudence of critical habitat designation is a final conclusion based on weighing all relevant factors, including economic factors. While the Service promised to complete its economic impact analysis before it promulgates its final determination of critical habitat, it risks putting the decision before the analysis. The prior determination that critical habitat is prudent and therefore required, is treated as a given, even though it ignored economic factors.

Our Response: An economic analysis of the impact of critical habitat cannot be done without knowing the location of the critical habitat. This fact is easily realized by considering the difference of proposed critical habitat on land zoned for protective conservation versus land

zoned for urban development. These types of zoning issues as well as other issues will greatly affect any economic analysis of critical habitat and cannot be taken into consideration until a proposal of critical habitat is put forth. The proposed prudency finding is not a final prudency finding since it has not considered the economic issues. The fact that the proposed critical habitat is published in a proposed rule emphasizes that no final decision has been made on location or extent of critical habitat. The final designation of critical habitat occurs after public comments have been received and the economic analysis on the proposed critical habitat has been completed. The effects of the public comments and the economic analysis are then reflected in the final rulemaking.

(56) *Comment:* The proposed rule unfairly transfers the Service's obligations to determine "prudent and determinable" areas for designation as critical habitat from itself to the owners of the designated lands. This action could potentially violate Section 3(5)(c) of the ESA, which specifically provides that "except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species."

Our Response: All areas designated as critical habitat are determined by the Service, after taking into account the economic analyses and public comments. As established by the Congress of the United States, the Secretary of the Interior or the Secretary of Commerce has the responsibility for designation of critical habitat areas. This responsibility has been delegated to the U.S. Fish and Wildlife Service for listed fish, wildlife and plants and cannot be transferred to any other party. Proposing areas for designation as critical habitat does not transfer any of the designation responsibilities of the Service. As part of the Service's designation process, the entire geographic area that could be occupied by the threatened or endangered species is never put forth as proposed or final critical habitat, unless circumstances unique to the species require such a designation and only after approval by the Secretary of the Interior (or the Secretary of Commerce).

Issue 8: Economic Issues

(57) *Comment:* Some reviewers commented that the DEA did not address or did not adequately consider a variety of costs and benefits that they believe could occur due to the implementation of section 7 for the plants.

Our Response: Many of these possible costs were, in fact, considered and some were addressed in the DEA. In many cases, however, potential costs were purposely not addressed in the DEA because they are not expected to occur. In other cases, it is impossible for them to occur. In still other cases, the concerns no longer have substance given the Service's modifications to the proposed critical habitat.

(58) *Comment:* Several commenters stated the following: The Service did not adequately address the takings of private property as a result of designating critical habitat for endangered plants on Kauai. If the proposed designation of critical habitat precipitates conversion of agricultural lands to conservation land that has no economically beneficial use, then the Federal and State governments will have taken private property.

Our Response: The possible costs associated with redistricting land proposed for critical habitat designation were discussed in the DEA under indirect costs. The final rule removes most of the land in the Agricultural and Urban Districts from the critical habitat designation. Redistricting the remaining privately owned parcels to the Conservation District could result in a small probability of: (1) Approximately \$178,500 in lost property values; (2) \$3,570 in an annual loss of economic activity associated with ranching; and (3) \$500 in increased property taxes.

(59) *Comment:* One commenter said that estimated management costs needed to recover a species should be part of an economic analysis associated with critical habitat designation. Another commenter said that management costs for the recovery of listed species are not appropriate costs to assign to critical habitat designation.

Our Response: The Act does not obligate landowners to manage their land to protect critical habitat, nor would landowners and managers be obligated under the Act to participate in projects to recover a species for which critical habitat has been established. However, Chapter VI, section 4.d. of the DEA and section 4.c. of the Addendum does discuss landowners' concerns that the interplay between the state's prohibition on take and critical habitat could result in a potential mandate for conservation management pursuant to litigation and the resulting costs for the proposed designation on Kauai. As noted in Section 4.c. of the Addendum, the costs of conservation management for critical habitat as modified could reach \$1.8 million per year. However, the likelihood of this result is estimated to be low and such costs would not

necessarily be assigned to critical habitat.

(60) *Comment:* Several commenters stated the following: The Service fails to adequately analyze the economic impact to small entities under the Regulatory Flexibility Act, and the Small Business Regulatory Enforcement Fairness Act. Given Kaua'i's small population, a large proportion of firms in the agricultural sector may well be affected and could suffer severe impact. In addition, the prospect of indirect costs mounting into the tens of millions of dollars on a small island requires the Service to reconsider its blithe assumption that there will be no significant impact on small businesses. Having mentioned huge potential losses to landowners and the county economy, the DEA fails to carefully consider the sum of the many "indirect" effects of critical habitat designation, ignoring all but direct costs of consultation.

Our Response: Section 5 of the addendum presents a regulatory flexibility analysis that is consistent with the RFA/SBREFEA. Federal courts and Congress have indicated that an RFA/SBREFEA analysis should be limited to the impacts to entities subject to the requirements of the regulation (Service, 2002). As such, entities not directly regulated by the listing or critical habitat designation are not considered in the RFA/SBREFEA analysis. Based on the analysis, there are no small entities that may be impacted by the implementation of the Act's section 7 provisions for the plants on Kauai. Therefore, the plants' critical habitat designation, as modified, will not have a significant economic impact on a substantial number of small entities.

(61) *Comment:* Several commenters stated the following: While the Service has stated that critical habitat affects only activities that require Federal permits or funding, and does not require landowners to carry out special management or restrict use of their land, this fails to address the breadth of Federal activities that affect private property in Hawaii and the extent to which private landowners are required to obtain Federal approval before they can use their property. These requirements also extend to State agencies requiring Federal funds or approvals.

Our Response: The analysis in the DEA, as revised by the Addendum, is based on a review of all projects, activities, and land uses that may be directly affected by the implementation of section 7 for the listed plants. The DEA and the Addendum present any reasonably foreseeable Federal

involvement (Federal permit, license, or other authorization, or Federal funding) for these projects, activities, and land uses. These results of this analysis are presented in Table ES-1 in the DEA and Table Add-2 in the Addendum.

(62) *Comment:* Several commenters stated the following: The impact of the proposed designations under State law is potentially more extensive than under Federal law since the Act contains at least general criteria for determining when alteration of critical habitat constitutes "destruction or adverse modification." The lack of analogous provisions under State law lends itself to a much broader interpretation of what activities might be considered injurious to the species (and therefore prohibited). One commenter asked if, to the extent that the Service has considered the potential interplay between the Act and State statutes, whether the Service is aware of any circumstances where similar issues have been raised under other State conservation statutes when critical habitat was designated. Another commenter noted, however, that because Hawaii's land use laws are uniquely onerous, precedent from other states is of little value. The current wave of proposals to designate critical habitat are the first time that the Act has been applied to significant areas of private land in Hawaii. Consequently, even prior experience in Hawaii is of little relevance.

Our Response: Possible costs resulting from interplay of Federal Endangered Species Act and Hawaii State law are already discussed in the DEA and Addendum under indirect costs (e.g., possible conservation management mandate for the private landowner and reduction in game mammals population). The lack of experience with critical habitat on private land in Hawaii is reflected in the uncertainty regarding the probabilities that certain indirect costs will occur.

(63) *Comment:* Several commenters stated the following: The DEA fails to consider economic impacts of listing and critical habitat that result through interaction with State law, specifically Hawaii's Endangered Species Act. *New Mexico Cattlegrowers Association v. U.S. Fish and Wildlife Service* requires consideration of the impact of listing as well as the impact of designating an area as critical habitat. Instead, the analysis is expressly limited to the impact of Federal agency consultation under the jeopardy standard. However, since listing triggers listing under State law, the Service must consider the impact of take prohibitions under State law (and consequently Federal law which

prohibits destruction of plants in knowing violation of State law).

Our Response: The DEA and Addendum consider the economic impacts of section 7 consultations related to critical habitat even if they are attributable co-extensively to the listed status of the species. In addition, they examine any indirect costs of critical habitat designation such as where critical habitat triggers the applicability of a State or local statute. However, where it is the listing of a species that prompts action at the State or local level, the impacts are not attributable to critical habitat designation. Take prohibitions under Hawaii law are purely attributable to a listing decision and do not co-extensively occur because of critical habitat designations. There are no take prohibitions associated with critical habitat.

(64) *Comment:* Several commenters stated the following: The DEA fails to consider economic impacts of critical habitat that result through interaction with State law, specifically Hawaii's Land Use Law. Critical habitat could result in downzoning under State law. HRS § 205-2(e) states that conservation districts shall include areas necessary for conserving endangered species. HRS 195D-5.1 states that DLNR shall initiate amendments in order to include the habitat of rare species. Even if DLNR does not act, the Land Use Commission may initiate such changes, or they may be forced by citizen suits. Areas for endangered species are placed in the protected subzone with the most severe restrictions. While existing uses can be grandfathered in, downzoning will prevent landowners from being able to shift uses in the future, reduce market value, and make the land unmortgageable. Although the Service acknowledges that there could be substantial indirect costs relating to redistricting of land to the Conservation District, several commentators disagreed with the characterization of these costs as "minor" and with the statement that the probabilities of redistricting as "slight to small."

Our Response: About 370 acres of privately owned agricultural lands and 12 acres of privately owned urban lands are included in the final designation. Most of the agricultural land is on Niihau and all of the urban land is on steep ocean cliffs. The potential economic costs discussed in the DEA of over \$10 million associated with urban Land in Unit D1 are no longer anticipated because Unit D1 has been removed from the final critical habitat designation for biological reasons. Reduction in land values due to redistricting land from Agricultural or

Urban District to Conservation District could result in a loss of \$178,500 in property values on Niihau. The loss of the economic activity from ranching and the increase in property taxes is estimated at \$4,070 per year. Under this scenario, even if a landowner has no plans to sell the land, the loss in land value could reduce potential mortgage financing.

(65) *Comment:* One commenter stated the following: The State currently leases some of its lands for agriculture or ranching uses. There is uncertainty whether any endangered plant species exists on these lands, which have historically been used for agricultural and ranching purposes, and have been subject to grazing and cultivation activities. If such species do exist, State law would completely prohibit or substantially restrict the continued use of these lands for agriculture or ranching purposes and would clearly have an adverse impact on the operations of the lessees and lease revenues. The DEA fails to establish that the benefits of including specific leased parcels outweigh the costs.

Our Response: Approximately 37 acres of State owned land are included in critical habitat Units H1 and M, as modified in the final rule. The 33 acres in Unit H1 comprise a sliver of land that is makai (toward the ocean) of the existing road in the northern portion of the unit and does not include any fields or grazing land. The State does not have any agricultural leases for the four acres of Agricultural land in Unit M. As such, the designation of critical habitat is not anticipated to have adverse effects on agricultural activities on State land.

(66) *Comment:* Several commenters stated the following: The DEA fails to consider economic impacts of critical habitat that result through interaction with State law, specifically Hawaii's Environmental Impact Statement Law. HRS 343-5 applies to any use of conservation land, and a full Environmental Impact Statement is required if any of the significance criteria listed in HAR 11-200-12 apply. One of these criteria is that an action is significant if it "substantially affects a rare, threatened or endangered species or its habitat." This will result in costly procedural requirements and delays. However, the DEA does not acknowledge that any impact on endangered species habitat will be deemed to be "significant." In addition, multiple commenters stated that the DEA fails to evaluate the practical effect critical habitat designation will have on development. Special Management Area permits administered by Kauai County as required by Hawaii's Coastal Zone

Management Act will be harder to get, will result in delays, will cause a decline in property values and may make it impossible to develop. This economic impact disappears because the DEA's bottom line erroneously counts only so-called "direct" costs of consultation.

Several commenters also stated the following: The Service has taken the position in other states that it has a right to intervene in local land use proceedings if they affect endangered species on private property, as evidenced by the Service's petition to the local zoning board in Arizona to postpone approval of a rezoning petition pending a survey to determine the extent to which an endangered plant was present on the property even though no Federal approval was being sought. That the Service does not address these activities in the DEA is a fundamental error of the analysis.

Our Response: Chapter VI, Section 4.f.(2) of the DEA discusses State and county environmental review, with emphasis on Hawaii's Environmental Impact Statement Law. This section indicates that if a project is required to do an Environmental Assessment (EA) and is located in critical habitat, a more expensive EIS may have to be prepared. The estimated increase in costs to prepare an EIS is \$25,000 to \$75,000 per project. There is one project that may require an EA and is located in critical habitat, as modified. As such, the additional environmental review cost potentially attributable to critical habitat is \$25,000 to \$75,000.

However, there are no planned development projects that will require State and county development approvals and are located in critical habitat, as modified in this final rule. The following factors make future development projects in the proposed critical habitat highly unlikely: (1) As modified, 99 percent of the proposed critical habitat is in Conservation District where development is severely limited; (2) almost all of the remaining agricultural land is on Niihau in an area not subject to development pressure; and (3) all of the land in the Urban District is on steep ocean cliffs that cannot support development. Thus, the probability that the Service will intervene in State and county development approvals is regarded as negligible because there is no development planned and almost no development potential in critical habitat.

(67) *Comment:* Several commenters stated the following: The DEA fails to consider economic impacts of critical habitat that result through interaction

with State law, specifically the State Water Code. HRS 174C-2 states that "adequate provision shall be made for protection of fish and wildlife. HRS 174C-71 instructs the Commission of Water Resource Management to establish an instream use protection program to protect fish and wildlife. Since landowners may depend on water pumped from other watersheds, these effects can be far-reaching. It is impossible to tell from the descriptions in the proposal whether any water diversions will have to be reduced as a result of listing and critical habitat designation. It is unfair to dismiss costly but vital sources of energy and inexpensive irrigation water while maintaining the highest level of effort to protect primary constituent element for species that do not physically reside in the area but may somehow be transported. If the critical habitat proposal would require reducing water diversions from any stream, the Service should investigate whether that would take anyone's vested water rights. The Service has an obligation to thoroughly investigate this issue and refrain from designating critical habitat until it has determined whether its actions will affect water use. Water sources and irrigation ditches that are part of the former Kekaha irrigation system for the former Kekaha Sugar Plantation should be removed from designation. At minimum, portions of specific parcels that include water sources or water systems should be removed.

Our Response: No costs are expected to occur from such impacts to water systems, because none of the listed plants are aquatic and therefore would not cause a reduction in water diversion. In addition, water infrastructure, including the Kekaha irrigation system, is considered a manmade feature and therefore would not be included in critical habitat pursuant to the rule, because these features and structures normally do not contain, and are not likely to develop, any primary constituent elements. Thus, unless its operation and maintenance would indirectly affect critical habitat, which is not anticipated, it should not be affected by section 7 of the Act. (See comment 7.m. of the Economic Analysis for a discussion of the impacts of the proposed designation on potential new water diversions.)

(68) *Comment:* Several commenters stated the following: The irrigation system stemming from the North Fork diversion of the Wailua River and the hydropower plant located in Wainiha Valley are necessary for the continued viability and possible expansion of agricultural activities on Kauai.

Continued operation of the systems require registration permits from the State and, depending on the nature of the maintenance, may require Army Corps of Engineers (COE) permits. These uses should not be burdened with the threat of potential Federal or civil action prohibiting or delaying their continued or expanded use. Furthermore, any additional requirement brought about by a critical habitat designation would be borne by the system's end users. Similarly, restoration of the taro fields in Haena State Park would require a COE permit. The designation of this area as critical habitat would make it unlikely that this permit would be approved, thus frustrating the efforts and development of the park. Additional analysis of costs associated with hydropower development is warranted. Such analysis would indicate that agricultural lands and hydropower development should be excluded from designation of critical habitat because benefits of exclusion would far outweigh the benefits of designation and the exclusion would not result in the extinction of the species.

Our Response: The irrigation system stemming from the North Fork diversion of the Wailua River, the diversion and hydropower plant located in Wainiha Valley, the taro fields in Haena State Park, and all areas downstream from these water systems/improvements have been removed from the critical habitat as modified in this final rule. In addition, as noted in responses to other comments, none of the listed plants are aquatic and therefore would not cause a reduction in water diversion. Thus, no costs are expected from continued operation of these water systems.

Chapter VI, section 3.i. of the DEA discusses the potential for additional hydropower development in the areas proposed as critical habitat. Since the publication of the DEA, information regarding a hydropower diversion and powerhouse in the upper Wainiha Valley was made available. This hydropower plant was proposed in the 1980's, but due to the landowner's capital limitations at the time, it was not constructed. There are no current plans to continue to investigate the feasibility of the project, but the potential for future development adds to the land value of the Upper Wainiha Valley. However, the area planned for the diversion, powerhouse, and other project elements are no longer included in critical habitat as modified. As such, no costs associated with future hydropower development potential are anticipated.

(69) *Comment:* One commenter stated the following: In discussing possible future hydropower facilities, the DEA appears to contradict itself by saying that in May 2001 a company filed an application with the Federal Energy Regulation Commission for a preliminary permit and then saying it is "highly unlikely" that any additional hydro plants will be built. If critical habitat designations make it all but impossible to build a new hydropower facility, which seems to be the implication of the DEA, then the designations contradict the State and national policies of promoting energy independence.

Our Response: Chapter VI, Section 3.i. of the DEA does mention that in May 2001, a company filed an application with the Federal Energy Regulatory Commission (FERC) to build a dam on the lower Wailua River and that the area affected by this project is outside of critical habitat. The DEA also states that "it is highly unlikely that additional plants will be built in the next 10 years in areas that could impact the proposed critical habitat." This statement is supported by studies performed by the State Department of Business, Economic Development, and Tourism (DBEDT) of the areas in critical habitat, and current plans of those who own land in critical habitat. In addition, the planned generating capacity on Kauai is sufficient to supply projected demand over the 10-year period of the analysis. Since the proposed critical habitat does not cover the entire island of Kauai, these two statements are not contradictory.

Furthermore, development of a new hydropower plant would still be possible even if the hydropower plant was located upstream or within critical habitat. If the project had Federal involvement, and the Federal action agency determined the project may affect critical habitat or listed species, the Federal action agency would enter into section 7 consultation with the Service. The section 7 consultation process is described in detail in Chapter III of the DEA.

(70) *Comment:* One commenter stated the following: On Maui, there is an administrative contested case proceeding pending before the Board of Land and Natural Resources that involves the diversion of millions of gallons of water. Any diversion in or upstream of critical habitat will be challenged by people who oppose all diversions on principle. They will contend that diverting water from endangered plants risk driving them to extinction. Opponents of diversions could use the critical habitat

designations to invent a colorable argument sufficient to delay and confuse water use decisions.

Our Response: Chapter VI, section 3.j.(2). of the DEA states that it is highly unlikely that a new ditch system or major expansion to an existing one (including new diversions) would be proposed or approved in the proposed critical habitat. This assessment is made due to the existing protections provided by the baseline environmental regulations (described in Chapter IV of the DEA), the projected demand for additional diversions for irrigation above and beyond the existing supply, and current environmental concerns, as well as likely public opposition to stream diversions.

None of the plants for which critical habitat is designated on Kauai or Niihau in this final rule are aquatic. These plants rely on rainwater that percolates down through the substratum and is absorbed by the plant's roots. Thus, local rainfall and localized surface runoff are the critical factors that affect the habitat of the listed plants. In addition, water infrastructure, including irrigation systems, are considered manmade features and therefore would not be included in critical habitat pursuant to the rule, because these features and structures normally do not contain, and are not likely to develop, any primary constituent elements. Thus, unless its operation and maintenance would indirectly affect critical habitat, which is not anticipated, it should not be affected by section 7 of the Act. (See comment 7.m. of the Economic Analysis for a discussion of the impacts of the proposed designation on potential new water diversions.)

We are unable to find documentation of extinction of Hawaiian plants due to water diversions and are unable to comment on the speculation that people who oppose all water diversions on principle will challenge any future or current diversions by contending that diverting water from endangered plants risks driving them to extinction.

(71) *Comment:* Two commenters stated the following: The estimated total costs of designating critical habitat are deceptively low because they exclude costs that "are difficult to estimate." However, the costs of conservation management are quantifiable and examples of cost per acre are available from watershed management projects around the State. There is no reason why these costs should be ignored in the DEA. If included, these costs will certainly outweigh the benefits of designation. The DEA also underestimates the economic costs because they are limited to what is

likely to occur within 10 years even though critical habitat designation is permanent and not automatically revised if there is new evidence of the benefits of non-designation, or if the species is delisted.

Our Response: As noted above, the illustrative cost of conservation management of the entire critical habitat as modified is \$1.8 million per year. In addition, as discussed in the economic analysis, while there is no existing obligation to proactively manage lands in critical habitat to control threats, there is an undetermined probability that a State or Federal court could mandate conservation management.

A listed species is delisted when it is recovered or has gone extinct. Recovery is defined as no longer needing the protections provided by the Endangered Species Act, including critical habitat. As such, when a species is delisted, its critical habitat would also be "undesigned." Furthermore, as indicated by the DEA, many landowners and managers do not have specific plans for projects beyond 10 years, and forecasts of future economic activity are based on current socio-economic trends and the current level of technology, both of which are likely to change over the long term. However, information available in documents with planning horizons that are longer than 10 years such as the Kauai Planning Department's Kauai General Plan (2002), and the State Department of Transportation Kauai Long Range Land Transportation Plan (1997) are considered in the preparation of the DEA and the Addendum.

(72) *Comment:* One commenter stated the following: The conclusion under E.O. 12866 that the rule will not have an annual economic effect of \$100 million or more, or adversely affect in a material way any sector of the economy or State or local governments or communities, is flawed because it does not consider the major adverse impacts from secondary effects.

Our Response: For the reasons explained in the economic analysis, the rule is not expected to have an annual economic effect of \$100 million or more. As indicated in Table Add-2, the annualized direct costs of the implementation of section 7 for the listed plants ranges from approximately \$17,800 to \$112,500. While the probability that many of the indirect effects will occur is low or unknown, the total worst case scenario for the indirect costs of critical habitat, as modified, includes (1) \$513,000 in direct and indirect annual sales from the loss of economic activity associated with hunting (however, the decrease in

expenditures by the displaced hunters would probably be spent on other recreational activities, goods and services, so this figure is likely to overstate the economic costs); (2) \$149,000 per year in the loss of hunter benefits (however, as above, some of this loss will be offset by benefits derived from alternative recreational activity); (3) \$1.8 million in annual conservation management costs (some of which may be in the form of new Federal funds to Hawaii and thus represent an increase of the regional economy instead of a loss); (4) approximately \$178,500 in lost property values; (5) \$3,570 in an annual loss of economic activity associated with ranching; (6) \$500 in increased property taxes; (7) \$25,000 to \$75,000 in the additional cost to prepare an EIS; and (8) \$53,000 to \$169,000 in the costs to investigate the implications of critical habitat. Annualized, these indirect costs amount to \$2.49 million to \$2.51 million per year. The sum of the direct and indirect costs, annually, ranges from \$2.51 million to \$2.62 million, significantly less than the \$100 million level of significance.

(73) *Comment:* Several commenters stated the following: Critical habitat designation could indirectly result in limitations or special management requirements, such as fencing or control of invasive species, being established on private lands. These requirements could result in considerable cost to both the State and private landowners. The DEA estimates that the Palila case may be interpreted to mandate private conservation and could cost Kauai landowners \$3 million or more per year. These costs should be considered. Where such costs are likely to outweigh the benefits, the Service should determine that critical habitat designation is not prudent. At minimum, areas proposed for designation should be significantly reduced so that any special management measures that may eventually be mandated through litigation are of a scale that is reasonable and cost effective to implement.

Our Response: Section 4(a)(3)(A) of the Act directs the Secretary to designate critical habitat to the "maximum extent prudent and determinable." Critical habitat is not prudent when one or both of the following situations exist: (i) A species is threatened by taking or other human activity and identification of critical habitat would increase the degree of threat; or (ii) designation would not be beneficial to the species. 50 CFR 424.12(a)(1). Thus the costs of designation are not considered in

analyzing whether critical habitat is prudent. However, such costs are considered under section 4(b)(2) of the Act, which directs the Secretary to take into consideration the economic and other impacts of designation and authorizes the Secretary to exclude any area if she determines that the benefits of exclusion outweigh the benefits of designating it as critical habitat, unless it will result in extinction of the species.

The Act does not obligate landowners to manage their land to protect critical habitat, nor would landowners and managers be obligated under the Act to participate in projects to recover a species for which critical habitat has been established. However, the DEA and the Addendum discuss the potential mandate for conservation management pursuant to litigation and the resulting costs for the proposed designation on Kauai. The cost of conservation management for the critical habitat as modified could be approximately \$1.8 million per year. However, there is an undetermined probability that this impact will occur.

(74) *Comment:* Several commenters stated the following: The cost of potential citizen suits preventing certain activities or requiring some sort of management in critical habitat was not discussed in the DEA. Litigation regarding land management requirements is not only foreseeable, but likely. The proposals will give the government and the environmental groups a legal excuse to attack and severely damage anyone who grows endangered Hawaiian plants, and also anyone whose land is listed as critical habitat. Human freedom and constitutional principles are far more important than biologically incompetent plants. Critical habitat designation will bring unnecessary and costly litigation, thus creating an economic disaster that would severely challenge one private landowner's economic viability. These official listings will also give the government and the environmental groups a legal excuse to meddle destructively in the affairs of Niihau.

Our Response: As discussed in the DEA and in the Addendum, an undetermined probability exists that a Federal or State court could mandate certain indirect impacts as a result of critical habitat. However, it is beyond the scope of the economic analysis to assess the legal merits of the arguments for or against the various indirect impacts, the probability that a lawsuit will be filled, and, if filed, to identify possible outcomes of a court decision and the associated probabilities. However, whenever possible, the DEA and the Addendum present the worst-

case scenario of the costs associated with the potential outcomes of third party lawsuits.

(75) *Comment:* Several commenters stated the following: A strip of Grove Farm-owned land along the coastline from the Poipu Bay Golf Course to Kaweliko Point is being proposed for critical habitat. Although much of this land is within the Conservation District and development, if any, is expected to be minimal, critical habitat designations may affect current activities that exist in this area, as well as possible future activities, such as, hiking, kayaking or horseback riding. The Poipu Mahaulepu property also has future potential as a quality resort development, with potential construction valued in the hundreds of millions of dollars and employment and housing for over a thousand residents. The U.S. Navy currently has 14 beach cottages and an officers beach facility within its Pacific Missile Range Facility (PMRF). Funding has been appropriated to add six cottages and future plans provide for additional cottages to follow. Completed documents also identify construction plans for other new facilities and structures on PMRF. The economic analysis does not adequately consider such future costs.

Our Response: Activities such as hiking, kayaking, and horseback riding are not identified as threats to critical habitat in the proposed rule. As such, any additional environmental review or modification to these activities directly or indirectly attributable to critical habitat is anticipated to be negligible. The planned site for the Poipu Mahaulepu resort and the 14 beach cottages at PMRF are not included in critical habitat as modified. The potential costs associated with other planned construction at PMRF are discussed in Chapter VI, section 3.m. of the DEA and in section 3.b. of the Addendum.

(76) *Comment:* Several commenters stated the following: Portions of the proposed critical habitat designations are within the Conservation District. Although there are no intense activities occurring on these lands, roadway and water systems traverse some of these lands. Critical habitat designations may affect operations and maintenance of these systems as well as any future change in use of the lands.

Our Response: As mentioned in the proposed rule and in Chapter I of the DEA, existing manmade features and structures do not contain, and are not likely to develop, primary constituent elements essential for the conservation of the listed species. These features and structures are considered “unmapped

holes” that are found within the boundaries of critical habitat units but are not considered by the Service to be part of critical habitat. As such, there are unlikely to be any direct section 7 related costs to the operation and maintenance (O&M) of existing features and structures.

The inclusion of these features and structures in the critical habitat boundaries could indirectly affect the activities associated with the existing features due to an increase in State and county environmental review. However, any additional delays or modifications as a result of the increased State and county review are anticipated to be negligible because manmade features and structures do not contain the primary constituent elements for the listed plants.

The DEA and the Addendum present all of the reasonably foreseeable projects, land uses, and activities that could occur within critical habitat over the next ten years. While there may be some unknown future change in the use of the land in the Conservation District in critical habitat, there is insufficient information to assess the potential indirect or direct effects critical habitat will have on the land use. However, any impact attributable to critical habitat is anticipated to be minor due to the existing protections provided by Conservation District and other baseline regulations discussed in Chapter IV of the DEA.

(77) *Comment:* Several commenters stated the following: Kauai’s economy is far from robust and serious consideration must be given to the economic consequences of designating critical habitat. The total designation of 99,206 acres on Kauai and 697 acres on Niihau encompass approximately one-fourth of the total land area of Kauai County and is of grave concern.

Our Response: Critical habitat, as modified, includes roughly 15 percent of the island of Kauai and less than one percent of the island of Niihau. The economic costs to the economy of Kauai County (which includes both Kauai and Niihau) are expected to be minimal because (1) as modified, 99 percent of the proposed critical habitat is in Conservation District where development and other economic activity is severely limited; (2) almost all of the remaining agricultural land is on Niihau in an area not subject to development pressure; and (3) all of the land in the Urban District is on steep ocean cliffs that cannot support development.

(78) *Comment:* Several commenters stated the following: All Hawaiian plant recovery plans call for fencing to keep

feral animals away from the plants. Yet the Service has stated that the 99,000 acres being designated as critical habitat on Kauai will have no impact on the hunters. Clarification of this statement is needed. Critical habitat designation will greatly impact the public hunting program and deprive hunters access to lands they have used for generations for recreation as well as food supplement for their families. This loss is of further significance, given Kauai’s hard-pressed economy and the recent closures of Amfac and Kekaha Sugar plantations. The State could also lose much needed revenues to continue its game and area management services as sales of hunting licenses would decrease. This, in turn, would result in the overgrowth of non-endangered plant species that will eventually overrun the protected endangered species population. Also, limitations on game hunting in areas of critical habitat may lead to an increase in the numbers of wild pigs and goats, which would feed on the endangered plant species.

Our Response: Chapter VI, sections 3.a. and 4.b. of the DEA and section 4.a. of the Addendum discuss the potential effects the implementation of section 7 for the listed plants will likely have on hunting, as well as the potential indirect effect critical habitat could have on hunting. The direct effects include costs ranging from \$9,000 to \$17,600 for two section 7 consultation between the Service and DLNR and costs ranging from \$50,000 to \$100,000 for project modifications associated with State game management activities. The indirect effects include a slight probability of a change in State game management policy and an undetermined probability of a successful third party lawsuit to mandate conservation management of State and private lands, which could include fencing to exclude feral ungulates. The potential drop in hunting activity translates into a decrease in annual economic activity related to hunting on Kauai of about \$297,000 in direct sales (a figure that includes expenditures on hunting licenses); \$513,000 in total direct and indirect sales; nine jobs; and \$176,000 in income, as well as a loss of \$149,000 in hunter benefits. However, the decrease in expenditures and hunter benefits would probably be off-set by expenditures and benefits associated with other recreational activities, so these figures are likely to overstate the economic costs. If the critical habitat, as modified, is fenced to exclude ungulates, the annual cost of conservation management for the listed

plants would be approximately \$1.8 million.

A critical habitat designation does not in any way create a wilderness area, preserve or wildlife refuge, nor does it close an area to human access or use. It applies only to activities sponsored at least in part by Federal agencies. Land uses such as logging, grazing and recreation that may require Federal permits may take place if they do not adversely modify critical habitat. Critical habitat designations do not constitute land management plans. A designation of critical habitat does not require a private or State landowner to fence the designated area and/or remove game mammals. However, feral ungulates have been extremely important causes of vegetation decline in Hawaii (Cuddihy and Stone 1990) and have been identified as a primary threat to many of the listed plant species on Kauai. The Service recognizes that populations of many game mammal species affect the distribution and abundance of many listed endangered plant and animal species to varying degrees, either directly or indirectly. We also recognize that game mammal hunting is a highly valued activity to a portion of the present-day Hawaiian culture. We recognize hunting as an important tool to manage wild populations of game and support hunting as a recreational activity and the maintenance of game mammal hunting programs within the State of Hawaii. However, Federal and State law dictate that hunting programs should be designed and executed in a way that is compatible with endangered species conservation. Game mammal hunting programs should not only prevent extinction, but allow for the recovery of federally listed endangered and threatened species. The Service also recognizes that under certain circumstances, removal of ungulates can result in an increase in weedy growth and associated fire risk, and we recommend that ungulate management programs assess and address this issue.

(79) *Comment:* The Navy commented that: There is no indication that the specific Navy parcels are, in fact, critical to the survival of these species; the vast majority of the proposed areas to be designated are presently unoccupied by the species in question and their successful introduction to and survival in these areas is speculative; and the proposed areas are presently utilized for national defense operations that may present incompatibilities with the objective of species preservation. Therefore, the benefits of excluding the areas outweigh the benefits of specifying these areas as part of the critical habitat.

Our Response: We have had numerous discussions with the Navy regarding these areas, and as a result, have removed some sections of the units for these species, based on either the lack of primary constituent elements or the presence of structures and areas used for Navy training operations. The remaining areas are not excluded because they contain at least one of the primary constituent elements for *Panicum niihauense* as described in the "Hawaiian plants—Constituent elements" section. These areas are essential to the recovery of *Panicum niihauense* because not enough other areas that contain these primary constituent elements outside of the PMRF are known to exist in order to meet our goals of 8 to 10 populations.

(80) *Comment:* One commenter stated the following: It is not prudent to designate critical habitat on Niihau as it may serve to restrict Federal actions that promote the readiness of our nation's fighting forces. The operations most likely to be impacted would be the Special Warfare and the downed pilot recovery training exercised by the U.S. Marine Corps and U.S. Navy. Disruption of these activities may also result in negative economic impact to Niihau residents.

Our Response: The potential project modifications as a result of the implementation of section 7 for the plants on military activities on Niihau are discussed in Chapter VI, section 3.m. of the DEA. These project modifications include placing stakes in the ground to mark the boundaries of the areas which should be avoided. The Navy may also give maps to military personnel before they are deployed to the area to delineate these areas. The total cost of these project modifications is estimated at \$6,000. Given that the proposed critical habitat as modified covers less than one percent of Niihau, and the military uses much of the island for Special Warfare and the downed pilot recovery training, the avoidance of the areas in critical habitat is not anticipated to have an effect on the readiness of our nation's fighting forces or Niihau residents.

(81) *Comment:* One commenter stated the DEA lacks a thorough benefits analysis. Multiple commenters stated that the DEA ignored the benefit of keeping other native species off the endangered species list, of maintaining water quality and quantity, of promoting ground water recharge, and of preventing siltation of the marine environment, thus protecting coral reefs. Another commenter noted that additional benefits of critical habitat include combating global warming,

providing recreational opportunities, attracting ecotourism, and preserving Hawaii's natural heritage. Although the DEA makes general observations of the benefits associated with designating critical habitat, it makes no attempt to quantify these acknowledged benefits. The Service must use the tools available such as a University of Hawaii Secretariat for Conservation Biology study that estimated the value of ecosystem services, to determine the benefits of critical habitat. On the other hand, one commenter stated that the DEA overestimates economic benefits and many of the alleged benefits are entirely speculative, unquantifiable or lack any commercial value. In addition, treating "better siting of projects by developers so as to avoid costly project delays," as an economic benefit is circular. The costly project delays result from regulations. They could be avoided by not imposing the regulations in the first place.

Our Response: Chapter VI, Sections 6 and 7 of the DEA discusses the potential benefits addressed in the above comments. However, the DEA also indicates that these benefits are not quantified due to lack of information on the value of the environmental benefits that would be attributable specifically to the critical habitat designations (*i.e.*, the benefits over and above those which will occur due to other existing protections, and over and above the benefits from other conservation projects). In addition, there is a lack of (1) scientific studies regarding ecosystem changes due to critical habitat, and (2) economic studies on the per-unit value of the changes.

The 1999 analysis by University of Hawaii (UH) economists on the total value of environmental services provided by Oahu's Koolau Mountains was used in the DEA as a resource document for concepts, and for identifying documents that report the original research on certain subjects.

However, the UH study has limited applicability for valuing the benefits of plants critical habitat designation for a number of reasons. First, the UH study had a different purpose which was to estimate the total value of environmental benefits provided by the entire Koolau Mountains on the island of Oahu versus the value of the more limited benefits provided by the proposed plants critical habitat on the island of Kauai. Consistent with its purpose, the UH study provides no estimates of the changes in environmental conditions resulting from changes in land management due to critical habitat designations.

Furthermore, many of the assumptions and much of the analysis in the UH study are not transferable to the economic analysis for the plants critical habitat. For example, the value of water recharge in the UH study reflects projected water supply and demand conditions on Oahu—an island which is nine percent larger than Kauai but has a population of more than 12 times that of Kauai. Also, the UH benefit analysis of reducing soil runoff is unique to three valleys that drain through partially channelized streams in urban areas into the manmade Ala Wai Canal. Since this canal was designed with inadequate flushing from stream or ocean currents, it functions as an unintended settling basin so must be dredged periodically. In addition, the recreational and ecotourism values provided in the UH study apply to areas that are accessible to most hikers, which is not the case with most of the plants critical habitat. As mentioned in the DEA, most of the plants critical habitat units are located in the mountainous interior of Kauai. Much of the proposed critical habitat has steep slopes, remote locations, and difficult access; some of the units are accessible only by helicopter and are rarely visited.

Chapter VI, section 6.c. of the DEA discusses a potential benefit of critical habitat to developers. By knowing the critical habitat boundaries, developers can site projects outside the boundaries, thereby avoiding certain issues related to threatened and endangered species. As such, the benefit is not circular, because, as a result of critical habitat, developers can avoid take issues associated with section 9 of the Act and the other baseline regulations protecting listed species discussed in Chapter IV of the DEA.

(82) *Comment:* Several commenters stated the following: Existence values should be quantified. Studies referenced in the analysis contain information about how much people would be willing to pay to save various species. Even assuming plants are non-charismatic and therefore would justify lower values, there would still be a value of \$6 per household per year. If the study is able to take values for a day of hunting from the State of Idaho and apply them to Hawaii, it should be equally able to take values from studies which have looked at other species to get some sense of what people would pay to make sure these species recover and do not go extinct.

Our Response: When primary research on benefits is not feasible, economists frequently rely on the method of benefits transfer. Benefits transfer involves application of results

of existing valuation studies to a new policy question. Two core principals of defensible benefits transfer are (1) the use of studies that apply acceptable techniques to generate welfare values, and (2) similarity between the good being valued in the literature and the good being valued in the policy context to which the transfer is being made (*i.e.*, the protection afforded the plants by critical habitat). No known studies exist on quantified data on the value of plants. Therefore, applying results of existing valuation studies on non-plants to the Kauai plants is not feasible.

(83) *Comment:* Several commenters stated the following: Active management by private landowners would be more beneficial than critical habitat designations because private landowners can carry out conservation actions that might otherwise not happen. The proposal fails to properly consider the importance of cooperation and goodwill between the Service and private landowners, and the impact critical habitat designations will have in discouraging voluntary partnerships on private lands.

Our Response: Chapter VI, section 4.j. of the DEA discusses the potential for reduced cooperation on conservation projects as a result of critical habitat. The DEA determines that a modest but undetermined reduction in cooperation may occur, along with a corresponding but undetermined environmental loss to society.

Summary of Changes From the Revised Proposed Rule

Based on a review of public comments received on the proposed determinations of critical habitat, we have reevaluated our proposed designations and included several changes to the final designations of critical habitat. These changes include the following:

(1) The scientific names changed for the following associated species with the listed species found in the “*Supplementary Information: Discussion of the Plant Taxa*” section: *Lipochaeta integrifolia* changed to *Melanthera integrifolia* for *Centaurium sebaeoides*; *L. subcordata* changed to *Melanthera subcordata* for *Lipochaeta fauriei*; *Styphelia tameiameia* changed to *Leptocophylla tameiameia* for *Chamaesyce halemanui*, *Delissea rhytidosperra*, *Diellia erecta*, *Diellia pallida*, *Exocarpos luteolus*, *Mariscus pennatiformis*, *Melicope knudsenii*, *Platanthera holochila*, *Poa siphonoglossa*, *Pteralyxia kauaiensis*, *Schiedea kauaiensis*, *Schiedea stellarioides*, *Viola kauaiensis* var. *wahiawaensis*, and *Xylosma*

hawaiiense; *Hibiscus tiliaceus* changed to *Talipariti tiliaceus* for *Cyperus trachysanthos*; *Myrica faya* changed to *Morella faya* for *Diellia erecta* and *Exocarpos luteolus*; *Stachytarpheta dichotoma* changed to *S. australis* for *Brighamia insignis*, *Cyanea undulata*, *Dubautia pauciflorula*, *Lipochaeta micrantha*, and *Viola helena*; *Mariscus meyenianus* changed to *Cyperus meyenianus* for *Diellia erecta* and *Poa mannii*; *Mariscus phleoides* changed to *Cyperus phleoides* for *Centaurium sebaeoides*; *Pluchea symphytifolia* changed to *P. carolinensis* for *Cyanea undulata*, *Dubautia pauciflorula*, *Hedyotis st.-johnii*, and *Lipochaeta micrantha*; *Athyrium sandwichianum* changed to *Diplazium sandwichianum* for *Plantago princeps*, *Melicope knudsenii*, *Flueggea neowawraea*, *Euphorbia haeleleana*, *Xylosma crenatum*, *Viola helena*, *Schiedea membranacea*, *Pteralyxia kauaiensis*, *Phyllostegia wawrana*, *Phyllostegia waimeae*, *Nothoctrum peltatum*, *Dubautia latifolia*, *Delissea rivularis*, *Cyrtandra limahuliensis*, *Cyrtandra cyaneoides*, *Cyanea undulata*, *Cyanea remyi*, and *Alsinidendron lychnoides*; and *Setaria gracilis* changed to *Setaria parviflora* for *Brighamia insignis*, *Cyanea undulata*, and *Dubautia pauciflorula*.

(2) We corrected the misidentification of *Passiflora mollissima* to *P. tarminiana* which is an associated species found with the following listed species: *Delissea rhytidosperra*, *Dubautia latifolia*, *Nothoctrum peltatum*, *Phyllostegia wawrana*, *Poa sandvicensis*, *Schiedea membranacea*, *Delissea undulata*, *Diellia erecta*, and *Solanum sandwicense* in the threat section of the species descriptions in the “*Supplementary Information: Discussion of the Plant Taxa*”.

(3) We changed “spp.” to the specific species which are associated with the following listed species found on Kauai in the “*Supplementary Information: Discussion of the Plant Taxa*” and section 17.99: *Touchardia* spp. changed to *Touchardia latifolia* for *Cyanea remyi*; *Syzygium* spp. changed to *Syzygium sandwicense* for *Isodendron longifolium*; *Gunnera* spp. changed to *Gunnera kauaiensis* for *Cyrtandra cyaneoides*, *Plantago princeps*, and *Phyllostegia waimeae*; *Eugenia* spp. changed to *Eugenia reinwardtiana* for *Cyrtandra limahuliensis* and *Isodendron longifolium*; *Pteralyxia* spp. changed to *Pteralyxia kauaiensis* for *Alectryon macrococcus*, *Delissea rhytidosperra*, and *Euphorbia haeleleana*; *Alectryon* spp. changed to *Alectryon macrococcus* for *Phyllostegia wawrana*; *Broussaisia* spp. changed to

Broussaisia arguta for *Adenophorus periens*; *Pleomele* spp. changed to *Pleomele aurea* for *Alsinidendron viscosum*, *Dubautia latifolia*, *Pritchardia napaliensis*, and *Alectryon macrococcus*; and *Antidesma* spp. changed to *Antidesma platyphyllum* for *Cyanea remyi*, *Cyanea undulata*, *Cyrtandra limahuliensis*, *Dubautia latifolia*, *Hesperomannia lydgatei*, *Hibiscus waimeae* ssp. *hannerae*, *Kokia kauaiensis*, *Lipochaeta micrantha*, *Nothoecstrum peltatum*, *Pritchardia viscosa*, *Alectryon macrococcus*, *Flueggia neowawraea*, *Isodendron laurifolium*, and *Isodendron longifolium*.

(4) For species associated with listed species, we replaced specific species names for those that do not exist on Kauai with "spp." for genera with multiple species on Kauai in the "Supplementary Information: Discussion of the Plant Taxa" and section 17.99 as follows: *Cibotium chamissoi* changed to *Cibotium* spp. for *Phlegmariurus nutans*; *Peperomia leptostachya* changed to *Peperomia* spp. for *Wilkesia hobdyi*; *Lipochaeta succulenta* and *Lipochaeta heterophylla* changed to *Lipochaeta* spp. for *Centaurium sebaeoides*; *Coprosma grayana* changed to *Coprosma* spp. for *Viola kauaiensis* var. *wahiawaensis*; *Peperomia macraeana* changed to *Peperomia* spp. for *Exocarpos luteolus* and *Phyllostegia wawrana*; *Schiedea lydgatei* var. *attenuata* changed to *Schiedea* spp. for *Poa mannii*; *Adenophorus oligadenus* changed to *Adenophorus* spp. for *Delissea rhytidosperma*; and *Cyanea hirta* changed to *Cyanea* spp. for *Xylosma crenatum*.

(5) We corrected the species name to the species that occurs on Kauai for species associated with listed species in the "Supplementary Information: Discussion of the Plant Taxa" and section 17.99 as follows: *Santalum ellipticum* changed to *Santalum freycinetianum* for *Lipochaeta waimeaeensis* and *Delissea undulata*; and *Pteralyxia sandwicensis* changed to *Pteralyxia kauaiensis* for *Delissea rhytidosperma* and *Euphorbia haeleleana*.

(6) We removed the following species from the list of associated species from the "Supplementary Information: Discussion of the Plant Taxa" and section 17.99 as they do not occur on Kauai: *Abutilon sandwicense* was removed from *Melicope pallida*; *Reynoldsia sandwicensis* was removed from *Euphorbia haeleleana*; *Rhynchospora laxa* was removed from *Platanthera holochila*; and *Antidesma*

pulvinatum was removed from *Flueggea neowawraea*.

(7) In order to avoid confusion regarding the number of location occurrences for each species (that does not necessarily represent a viable population) and the number of recovery populations (8 to 10 with 100, 300, or 500 reproducing individuals) we changed the word "population" to "occurrence" and updated the number of occurrences and/or individuals for the following species found in the "Supplementary Information: Discussion of the Plant Taxa" section and "Table 2.—Summary of existing occurrences on Kauai and Niihau, and landownership for 95 species reported from Kauai and Niihau": *Adenophorus periens* changed from 80 individuals to 59; *Alectryon macrococcus* changed from six populations to 18 occurrences and from 204 individuals to 159–174; *Alsinidendron lychnoides* changed from two populations to four occurrences and from 10 individuals to eight; *Alsinidendron viscosum* changed from five populations to seven occurrences and from 263 individuals to 319; *Bonamia menziesii* changed from eight populations to nine occurrences and from 62 individuals to 36; *Brighamia insignis* changed from 65 individuals to 42–62; *Centaurium sebaeoides* changed from 52 individuals to 22–52; *Chamaesyce halemanui* changed from six populations to nine occurrences and from 143 individuals to 85–135; *Cyanea asarifolia* changed from one population to two occurrences and from five individuals to 4–5; *Cyanea recta* changed from seven populations to eight occurrences and from 609 individuals to 198–208; *Cyanea remyi* changed from 374 individuals to 394–484; *Cyperus trachysanthos* changed from two populations to one occurrence; *Cyrtandra cyaneoides* changed from 404 individuals to 354–454; *Cyrtandra limahuliensis* changed from 11 populations to 13 occurrences and from 822 individuals to 2,746–3,024; *Delissea rhytidosperma* changed from 19 individuals to 11; *Diellia pallida* changed from four populations to six occurrences and from 20–25 individuals to 43–48; *Dubautia latifolia* changed from nine populations to 26 occurrences and from 80 individuals to 65–84; *Dubautia pauciflorula* changed from two populations to four occurrences; *Euphorbia haeleleana* changed from seven populations to 23 occurrences; *Exocarpos luteolus* changed from eight populations to nine occurrences; *Flueggea neowawraea* changed from eight populations to 10 occurrences and from 85 individuals to 62; *Hedyotis st.*-

johnii changed from four populations to 11 occurrences and from 296 individuals to 227–292; *Hesperomannia lydgatei* changed from three populations to four occurrences and from 295 individuals to 298; *Hibiscadelphus woodii* changed from one population to two occurrences; *Hibiscus clayi* changed from six individuals to four; *Hibiscus waimeae* ssp. *hannerae* changed from three populations to two occurrences; *Isodendron laurifolium* changed from five populations to 13 occurrences and from 151 individuals to 142–154; *Isodendron longifolium* changed from nine populations to 15 occurrences and from 521 individuals to 804–854; *Kokia kauaiensis* changed from five populations to 21 occurrences and from 166 individuals to 166–171; *Labordia tinifolia* var. *wahiawaensis* changed from 100 individuals to 20–30; *Lipochaeta fauriei* changed from four populations to five occurrences and from 183 individuals to 82; *Lipochaeta micrantha* changed from 231 individuals to 171; *Lobelia niihauensis* changed from 11 populations to 13 occurrences and from 1,106 individuals to 284–2,134; *Lysimachia filifolia* changed from 75 individuals to 20–75; *Melicope haupuensis* changed from five individuals to 13; *Melicope knudsenii* changed from seven populations to 10 occurrences; *Melicope pallida* changed from five populations to six occurrences; *Munroidendron racemosum* changed from 14 populations to 17 occurrences and from 101 individuals to 59–99; *Myrsine linearifolia* changed from eight populations to 12 occurrences and from 522 individuals to 490–564; *Nothoecstrum peltatum* changed from six populations to 10 occurrences and from 19 individuals to 20; *Peucedanum sandwicense* changed from 14 populations to 15 occurrences and from 340 individuals to 156–256; *Phyllostegia knudsenii* changed from one population to three occurrences and from 17 individuals to 4–13; *Phyllostegia wawrana* changed from 49 individuals to 34–54; *Plantago princeps* changed from six populations to seven occurrences and from 471 individuals to 542–670; *Platanthera holochila* changed from 28 individuals to 24–34; *Poa sandwicensis* changed from 1,740 individuals to 1,321; *Pritchardia napaliensis* changed from three populations to five occurrences; *Pteralyxia kauaiensis* changed from 15 populations to 39 occurrences and from 807 individuals to 1,124–1,161; *Remya kauaiensis* changed from 12 populations to 17 occurrences and from 124 individuals to 106–114; *Remya*

montgomeryi changed from three populations to six occurrences and from 113 individuals to 143; *Schiedea apokremnos* changed from 751 individuals to 819–1,751; *Schiedea helleri* changed from 63 individuals to 50–60; *Schiedea kauaiensis* changed from two populations to five occurrences; *Schiedea membranacea* changed from seven populations to 10 occurrences and from 195 individuals to 344–348; *Schiedea nuttallii* changed from 50 individuals to 10–50; *Schiedea spergulina* var. *leiopoda* changed from 50 individuals to 135–150; *Schiedea spergulina* var. *spergulina* changed from 206 individuals to 208; *Schiedea stellarioides* changed from two populations to three occurrences and from 400 individuals to 1,500; *Sesbania tomentosa* changed from 18 individuals to 11; *Solanum sandwicense* changed from six populations to eight occurrences; *Spermolepis hawaiiensis* changed from three populations to two occurrences; *Stenogyne campanulata* changed from two populations to three occurrences; *Wilkesia hobdyi* changed from six populations to nine occurrences and from 491 individuals to 406–471; *Xylosma crenatum* changed from 8 individuals to 16; and *Zanthoxylum hawaiiense* changed from two populations to three occurrences.

(8) We changed “flowering cycles, pollination vectors, seed dispersal agents” to “reproduction cycles,

dispersal agents” in the life history portion of the “Supplementary Information: Discussion of the Plant Taxa” section for the fern species *Adenophorus periens*, *Ctenitis squamigera*, *Diellia erecta*, *Diellia pallida*, *Diplazium molokaiense*, and *Phlegmariurus nutans*.

(9) We revised the list of excluded, manmade features in the “Criteria Used to Identify Critical Habitat” and section 17.99 to include additional features based on information received during the public comment periods.

(10) We updated the elevation ranges in section 17.99 for *Adenophorus periens*, *Alectryon macrococcus*, *Alsindendron lychnoides*, *Bonamia menziesii*, *Chamaesyce halemanui*, *Ctenitis squamigera*, *Cyanea recta*, *Cyanea remyi*, *Cyanea undulata*, *Cyperus trachysanthos*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rivularis*, *Diellia pallida*, *Diplazium molokaiense*, *Dubautia latifolia*, *Dubautia pauciflorula*, *Euphorbia haeleeeleana*, *Exocarpos luteolus*, *Gouania meyenii*, *Hesperomannia lydgatei*, *Hibiscus clayi*, *Ischaemum byrone*, *Isodendron laurifolium*, *Isodendron longifolium*, *Kokia kauaiensis*, *Labordia lydgatei*, *Lipochaeta fauriei*, *Lipochaeta micrantha*, *Lipochaeta waimeaensis*, *Lobelia niihauensis*, *Lysimachia filifolia*, *Mariscus pennatiformis*, *Melicope hauptuensis*, *Melicope*

knudsenii, *Melicope pallida*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Nothoctrum peltatum*, *Panicum niihauense*, *Peucedanum sandwicense*, *Phlegmariurus nutans*, *Phyllostegia knudsenii*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Poa sandwicensis*, *Poa siphonoglossa*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Schiedea apokremnos*, *Schiedea helleri*, *Schiedea kauaiensis*, *Schiedea membranacea*, *Schiedea nuttallii*, *Schiedea spergulina* var. *leiopoda*, *Schiedea stellarioides*, *Sesbania tomentosa*, *Solanum sandwicense*, *Spermolepis hawaiiensis*, *Xylosma crenatum*, and *Zanthoxylum hawaiiense*.

(11) We made revisions to the unit boundaries based on information supplied by commenters, as well as information gained from field visits to some of the sites, that indicated that the primary constituent elements were not present in certain portions of the proposed unit, that certain changes in land use had occurred on lands within the proposed critical habitat that would preclude those areas from supporting the primary constituent elements, or that the areas were not essential to the conservation of the species in question.

A brief summary of the modifications made to each unit is given below (see also Figure 1).

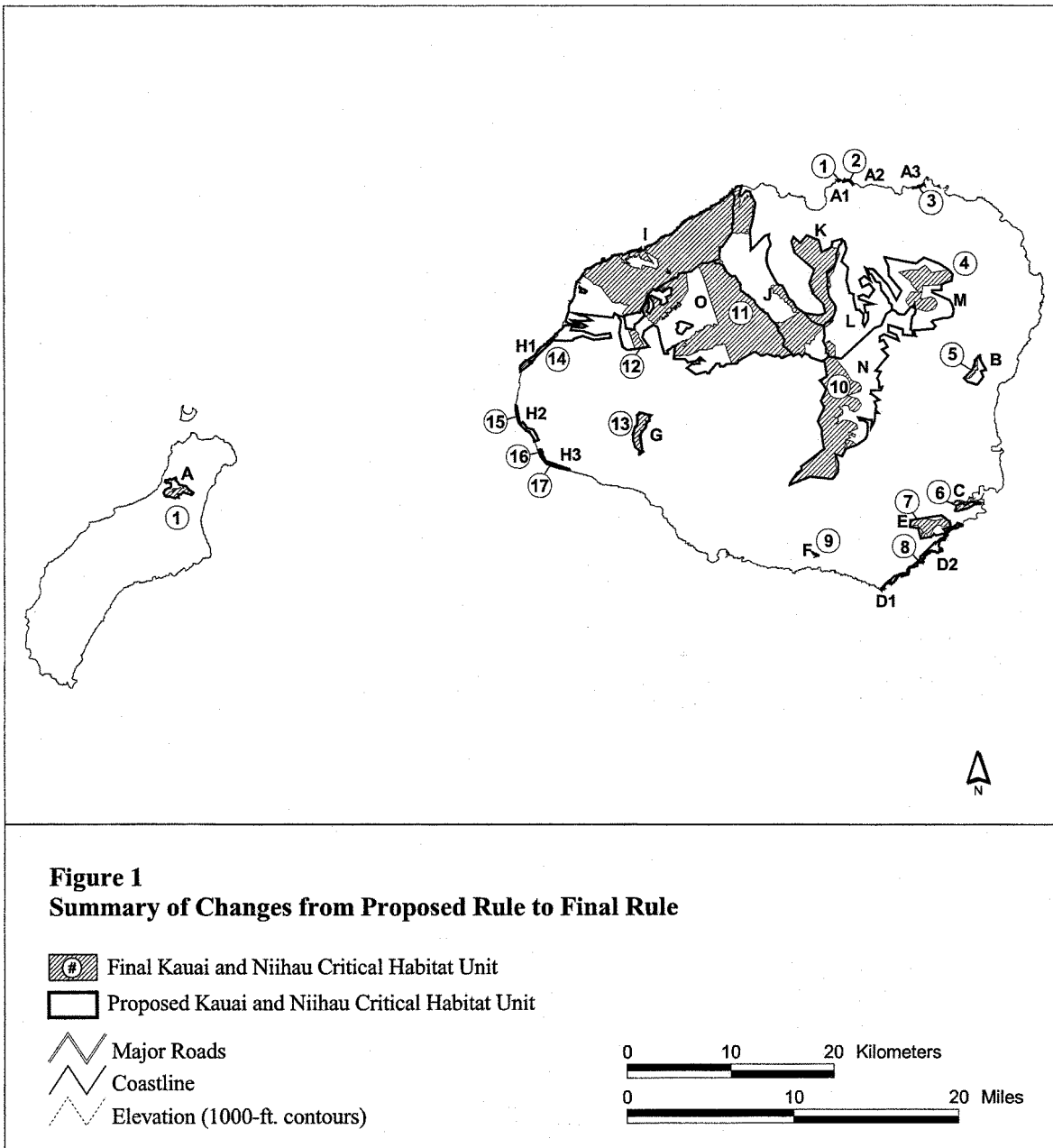





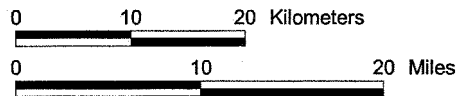


Figure 1
Summary of Changes from Proposed Rule to Final Rule

-  Final Kauai and Niihau Critical Habitat Unit
-  Proposed Kauai and Niihau Critical Habitat Unit
-  Major Roads
-  Coastline
-  Elevation (1000-ft. contours)



Kauai A

This unit was proposed as critical habitat for two multi-island species: *Centaurium sebaeoides* and *Ischaemum byrone*. We excluded the proposed critical habitat for *Centaurium sebaeoides*. This area is not essential for the conservation of *Centaurium sebaeoides* because it lacks one or more of the primary constituent elements, has a lower proportion of associated native species than other areas we consider to be essential to the conservation of *Centaurium sebaeoides*, is not currently managed for the conservation of this species, and there are at least 10 other locations in its historical range on Kauai and other islands which provide habitat

for this species and which are either designated as critical habitat in this rule or have been proposed for designation in other rules.

Modifications were made to this unit to exclude areas that do not contain the primary constituent elements for *Ischaemum byrone*. The area designated as critical habitat for this species provides habitat within its historical range for two populations.

This modification resulted in the reduction from 15 ha (38 ac) to 13 ha (32 ac). This unit was renamed Kauai 1—*Ischaemum byrone*—a, Kauai 2—*Ischaemum byrone*—b, and Kauai 3—*Ischaemum byrone*—c.

Kauai B

This unit was proposed as critical habitat for two species: *Hibiscus clayi* and *Munroidendron racemosum*. Modifications were made to this unit to exclude areas that do not contain the primary constituent elements essential to the conservation of *Hibiscus clayi* and *Munroidendron racemosum*. The area designated as critical habitat for these two Kauai endemic species provides habitat within their historical ranges for one population of each species.

This modification resulted in the reduction from 271 ha (669 ac) to 60 ha (148 ac). This unit was renamed Kauai 5—*Hibiscus clayi*—f and Kauai 5—*Munroidendron racemosum*—a.

Kauai C

This unit was proposed as critical habitat for two species: *Brighamia insignis* and *Lobelia niihauensis*. We excluded the proposed critical habitat for *Lobelia niihauensis*. This area is not essential for the conservation of *Lobelia niihauensis* because it has a lower proportion of associated native species than other areas we consider to be essential for the conservation of *Lobelia niihauensis*, and there are 10 other locations within its historical range on Kauai and Oahu which provide habitat for two species and which are either designated as critical habitat in this rule or have been proposed for designation in other rules.

Modifications were made to this unit to exclude degraded areas not essential to the conservation of *Brighamia insignis*. The remaining area designated as critical habitat for this endemic species provides habitat within its historical range for one population.

This modification resulted in the reduction from 97 ha (239 ac) to 63 ha (156 ac). This unit was renamed Kauai 6—*Brighamia insignis*—a.

Kauai D

This unit was proposed as critical habitat for the multi-island species *Sesbania tomentosa*. Modifications were made to this unit to exclude degraded areas not essential to the conservation of *Sesbania tomentosa*, including the removal of subunit D1. The remaining area designated as critical habitat for this species provides habitat within its historical range for one population.

This modification resulted in the reduction from 255 ha (629 ac) to 47 ha (117 ac). This unit was renamed Kauai 8—*Sesbania tomentosa*—a.

Kauai E

This unit was proposed as critical habitat for 10 species: *Brighamia insignis*, *Delissea rhytidosperra*, *Isodendron longifolium*, *Lipochaeta micrantha*, *Melicope haupuensis*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Peucedanum sandwicense*, *Pteralyxia kauaiensis* and *Schiedea nuttallii*. Modifications were made to this unit to exclude areas that do not contain the primary constituent elements essential to the conservation of these 10 species.

The area designated as critical habitat for the Kauai and Niihau endemic species *Brighamia insignis* provides habitat within its historical range for one population. The area designated as critical habitat provides habitat within the historical ranges for two populations each of *Delissea rhytidosperra*,

Lipochaeta micrantha, and *Melicope haupuensis*, and one population each of *Munroidendron racemosum*, *Myrsine linearifolia*, and *Pteralyxia kauaiensis*, all Kauai endemic species.

The area designated as critical habitat for the multi-island species *Isodendron longifolium* and *Peucedanum sandwicense* provides habitat within their historical ranges for one population each and for two populations of *Schiedea nuttallii*.

This modification resulted in the reduction from 563 ha (1,390 ac) to 349 ha (862 ac). This unit was renamed Kauai 7—*Brighamia insignis*—b, Kauai 7—*Delissea rhytidosperra*—a, Kauai 7—*Isodendron longifolium*—a, Kauai 7—*Lipochaeta micrantha*—a, Kauai 7—*Melicope haupuensis*—a, Kauai 7—*Munroidendron racemosum*—b, Kauai 7—*Myrsine linearifolia*—a, Kauai 7—*Peucedanum sandwicense*—a, Kauai 7—*Pteralyxia kauaiensis*—a, and Kauai 7—*Schiedea nuttallii*—a.

Kauai F

No changes were made to Kauai F. However, due to revising the polygon to more closely follow geographical and topographical features, a correction has been made to the total acreage. The reduction in area does not affect the ability of this unit to provide habitat for one population of *Schiedea spergulina* var. *leiopoda* in this unit.

The area designated as critical habitat for the Kauai endemic species *Schiedea spergulina* var. *leiopoda* provides habitat within its historical range for one population. The correction resulted in a total of 5 ha (11 ac). This unit was renamed Kauai 9—*Schiedea spergulina* var. *leiopoda*—a.

Kauai G

This unit was proposed as critical habitat for three species: *Lipochaeta waimeaensis*, *Schiedea spergulina* var. *spergulina*, and *Spermolepis hawaiiensis*. Modifications were made to this unit to exclude areas that do not contain the primary constituent elements essential to the conservation of these three species. The reduction in area does not affect the ability of this unit to provide for one to two populations of these three species.

The area designated as critical habitat provides habitat for one population of *Lipochaeta waimeaensis* and two populations of *Schiedea spergulina* var. *spergulina* within the historical ranges of these Kauai endemic species. The area designated as critical habitat for the multi-island species *Spermolepis hawaiiensis* provides habitat within its historical range for one population.

This modification resulted in the reduction from 317 ha (784 ac) to 289 ha (713 ac). This unit was renamed Kauai 13—*Lipochaeta waimeaensis*—a, Kauai 13—*Schiedea spergulina* var. *spergulina*—c, Kauai 13—*Spermolepis hawaiiensis*—b, and Kauai 13—*Spermolepis hawaiiensis*—c.

Kauai H

This unit was proposed as critical habitat for two species, *Panicum niihauense* (a Kauai and Niihau endemic) and *Sesbania tomentosa*. Modifications were made to this unit to exclude areas that do not contain the primary constituent elements essential to the conservation of *Panicum niihauense* based on a site visit conducted during the public comment period. This reduction in area did not affect the ability of this unit to provide habitat for seven populations of this species in this unit. The remaining area designated as critical habitat for *Panicum niihauense* provides habitat within its historical range for seven populations.

Modifications were made to this unit to exclude degraded areas not essential to the conservation of the multi-island species *Sesbania tomentosa*. The area designated as critical habitat for this species provides habitat within its historical range for one population.

These modifications resulted in the reduction from 329 ha (812 ac) to 175 ha (431 ac). This unit was renamed Kauai 14—*Panicum niihauense*—a, Kauai 14—*Sesbania tomentosa*—b, Kauai 15—*Panicum niihauense*—b, Kauai 16—*Panicum niihauense*—c, and Kauai 17—*Panicum niihauense*—d.

Kauai I

This unit was proposed as critical habitat for 60 species: *Adenophorus periens*, *Alectryon macrococcus*, *Alsinidendron lychnoides*, *Bonania menziesii*, *Brighamia insignis*, *Centaurium sebaeoides*, *Chamaesyce halemanui*, *Ctenitis squamigera*, *Cyanea recta*, *Cyanea remyi*, *Cyperus trachysanthos*, *Cyrtandra limahuliensis*, *Delissea rhytidosperra*, *Delissea rivularis*, *Delissea undulata*, *Diellia pallida*, *Diplazium molokaiense*, *Dubautia latifolia*, *Euphorbia haeleleana*, *Exocarpos luteolus*, *Flueggea neowawraea*, *Gouania meyenii*, *Hedyotis cookiana*, *Hedyotis st.-johnii*, *Hesperomannia lydgatei*, *Hibiscadelphus woodii*, *Hibiscus waimeae* ssp. *hannerae*, *Ischaemum byrone*, *Isodendron laurifolium*, *Isodendron longifolium*, *Kokia kauaiensis*, *Labordia lydgatei*, *Lipochaeta fauriei*, *Lobelia niihauensis*, *Melicope haupuensis*, *Melicope*

knudsenii, *Melicope pallida*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Nothoecstrum peltatum*, *Panicum niihauense*, *Peucedanum sandwicense*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Poa mannii*, *Poa sandvicensis*, *Poa siphonoglossa*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Remya montgomeryi*, *Schiedea apokremnos*, *Schiedea kauaiensis*, *Schiedea membranacea*, *Schiedea spergulina* var. *spergulina*, *Sesbania tomentosa*, *Solanum sandwicense*, *Stenogyne campanulata*, *Wilkesia hobdyi*, and *Xylosma crenatum*.

We excluded the proposed critical habitat for *Bonamia menziesii*. This area is not essential for the conservation of *Bonamia menziesii* because it has a lower proportion of associated native species than other areas we consider to be essential for the conservation of *Bonamia menziesii*, and there are at least 10 other locations within its historical range on Kauai and on other islands that provides habitat for this species and that are either designated as critical habitat in this rule or have been proposed for designation in other rules.

Modifications were made to this unit to exclude degraded areas not essential to the conservation of *Brighamia insignis*, *Cyperus trachysanthos*, *Hedyotis st.-johnii*, *Ischaemum byrone*, *Lobelia niihauensis*, *Melicope knudsenii*, *Munroidendron racemosum*, *Nothoecstrum peltatum*, *Peucedanum sandwicense*, *Poa mannii*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Schiedea apokremnos*, *Schiedea membranacea*, and *Wilkesia hobdyi* and not managed for the conservation of these 15 species. There are other locations that have been identified to meet the recovery goal of 8 to 10 populations throughout their historical ranges on Kauai (*Brighamia insignis*, *Hedyotis st.-johnii*, *Munroidendron racemosum*, *Nothoecstrum peltatum*, *Poa mannii*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Schiedea apokremnos*, *Schiedea membranacea*, and *Wilkesia hobdyi*) and on other islands (*Cyperus trachysanthos*, *Ischaemum byrone*, *Lobelia niihauensis*, *Melicope knudsenii*, and *Peucedanum sandwicense*).

The area designated as critical habitat for the Kauai and Niihau endemic species *Brighamia insignis* provides habitat within its historical range for seven populations. The remaining area designated as critical habitat provides habitat within the historical ranges for six populations of *Alsinidendron lychnoides*, eight populations of *Chamaesyce halemanui*, three

populations each of *Cyanea recta* and *Cyanea remyi*, two populations of *Cyrtandra limahuliensis*, four populations of *Delissea rhytidosperma*, three populations of *Delissea rivularis*, two populations of *Diellia pallida*, one population of *Dubautia latifolia*, eight populations of *Exocarpos luteolus*, seven populations of *Hedyotis st.-johnii*, one population of *Hesperomannia lydgatei*, five populations of *Hibiscadelphus woodii*, eight populations of *Hibiscus waimeae* ssp. *hannerae*, five populations of *Kokia kauaiensis*, one population of *Labordia lydgatei*, four populations of *Lipochaeta fauriei*, three populations of *Melicope haupuensis*, six populations of *Munroidendron racemosum*, three populations of *Myrsine linearifolia*, five populations of *Nothoecstrum peltatum*, four populations of *Phyllostegia wawrana*, seven populations of *Poa mannii*, one population of *Poa sandvicensis*, five populations each of *Poa siphonoglossa* and *Pteralyxia kauaiensis*, six populations of *Remya kauaiensis*, three populations of *Remya montgomeryi*, nine populations of *Schiedea apokremnos*, six populations of *Schiedea kauaiensis*, five populations of *Schiedea membranacea*, two populations of *Schiedea spergulina* var. *spergulina*, three populations of *Stenogyne campanulata*, nine populations of *Wilkesia hobdyi*, and four populations of *Xylosma crenatum*. All of these are Kauai endemic species.

The area designated as critical habitat for the following multi-island species provides habitat within their historical ranges for one population each of *Adenophorus periens* and *Alectryon macrococcus*, four populations of *Centaurium sebaeoides*, one population of *Ctenitis squamigera*, six populations of *Cyperus trachysanthos*, three populations of *Delissea undulata*, one population of *Diplazium molokaiense*, four populations of *Euphorbia haeleleana*, three populations each of *Flueggea neowawraea* and *Gouania meyenii*, seven populations of *Hedyotis cookiana*, one population of *Ischaemum byrone*, two populations of *Isodendron laurifolium*, three populations of *Isodendron longifolium*, four populations of *Lobelia niihauensis*, three populations each of *Mariscus pennatiformis* and *Melicope knudsenii*, two populations of *Melicope pallida*, three populations of *Peucedanum sandwicense*, two populations of *Plantago princeps*, four populations of *Platanthera holochila*, and five populations of *Solanum sandwicense*.

These modifications resulted in the reduction from 8,238 ha (20,355 ac) to 6,102 ha (15,078 ac). This unit was

renamed Kauai 11—*Adenophorus periens*—d, Kauai 11—*Alectryon macrococcus*—b, Kauai 11—*Alsinidendron lychnoides*—a, Kauai 11—*Brighamia insignis*—c, Kauai 11—*Centaurium sebaeoides*—a, Kauai 11—*Chamaesyce halemanui*—c, Kauai 11—*Ctenitis squamigera*—a, Kauai 11—*Cyanea recta*—d, Kauai 11—*Cyanea remyi*—d, Kauai 11—*Cyperus trachysanthos*—a, Kauai 11—*Cyrtandra limahuliensis*—e, Kauai 11—*Delissea rhytidosperma*—b, Kauai 11—*Delissea rhytidosperma*—c, Kauai 11—*Delissea rivularis*—a, Kauai 11—*Delissea undulata*—a, Kauai 11—*Delissea undulata*—b, Kauai 11—*Diellia pallida*—a, Kauai 11—*Diplazium molokaiense*—a, Kauai 11—*Dubautia latifolia*—b, Kauai 11—*Euphorbia haeleleana*—a, Kauai 11—*Euphorbia haeleleana*—b, Kauai 11—*Exocarpos luteolus*—b, Kauai 11—*Exocarpos luteolus*—c, Kauai 11—*Exocarpos luteolus*—e, Kauai 11—*Flueggea neowawraea*—a, Kauai 11—*Flueggea neowawraea*—b, Kauai 11—*Flueggea neowawraea*—d, Kauai 11—*Flueggea neowawraea*—e, Kauai 11—*Flueggea neowawraea*—f, Kauai 11—*Gouania meyenii*—a, Kauai 11—*Gouania meyenii*—b, Kauai 11—*Hedyotis cookiana*—a, Kauai 11—*Hedyotis st.-johnii*—a, Kauai 11—*Hesperomannia lydgatei*—c, Kauai 11—*Hibiscadelphus woodii*—a, Kauai 11—*Hibiscadelphus woodii*—b, Kauai 11—*Hibiscus waimeae* ssp. *hannerae*—a, Kauai 11—*Ischaemum byrone*—d, Kauai 11—*Isodendron laurifolium*—a, Kauai 11—*Isodendron longifolium*—c, Kauai 11—*Isodendron longifolium*—e, Kauai 11—*Kokia kauaiensis*—b, Kauai 11—*Kokia kauaiensis*—c, Kauai 11—*Kokia kauaiensis*—d, Kauai 11—*Labordia lydgatei*—e, Kauai 11—*Lipochaeta fauriei*—b, Kauai 11—*Lobelia niihauensis*—b, Kauai 11—*Mariscus pennatiformis*—a, Kauai 11—*Melicope haupuensis*—b, Kauai 11—*Melicope knudsenii*—a, Kauai 11—*Melicope pallida*—b, Kauai 11—*Munroidendron racemosum*—c, Kauai 11—*Myrsine linearifolia*—d, Kauai 11—*Myrsine linearifolia*—e, Kauai 11—*Nothoecstrum peltatum*—b, Kauai 11—*Nothoecstrum peltatum*—c, Kauai 11—*Peucedanum sandwicense*—b, Kauai 11—*Peucedanum sandwicense*—c, Kauai 11—*Phyllostegia wawrana*—b, Kauai 11—*Phyllostegia wawrana*—d, Kauai 11—*Plantago princeps*—b, Kauai 11—*Plantago princeps*—d, Kauai 11—*Platanthera holochila*—a, Kauai 11—*Poa mannii*—a, Kauai 11—*Poa mannii*—c, Kauai 11—*Poa mannii*—d, Kauai 11—*Poa sandvicensis*—b, Kauai 11—*Poa siphonoglossa*—a, Kauai 11—

Pteralyxia kauaiensis—c, Kauai 11—*Pteralyxia kauaiensis*—d, Kauai 11—*Pteralyxia kauaiensis*—e, Kauai 11—*Pteralyxia kauaiensis*—g, Kauai 11—*Remya kauaiensis*—b, Kauai 11—*Remya kauaiensis*—c, Kauai 11—*Remya montgomeryi*—a, Kauai 11—*Remya montgomeryi*—c, Kauai 11—*Schiedea apokremnos*—a, Kauai 11—*Schiedea apokremnos*—b, Kauai 11—*Schiedea apokremnos*—c, Kauai 11—*Schiedea kauaiensis*—b, Kauai 11—*Schiedea kauaiensis*—c, Kauai 11—*Schiedea kauaiensis*—d, Kauai 11—*Schiedea membranacea*—b, Kauai 11—*Schiedea membranacea*—c, Kauai 11—*Schiedea membranacea*—d, Kauai 11—*Schiedea spergulina* var. *spergulina*—a, Kauai 11—*Solanum sandwicense*—a, Kauai 11—*Stenogyne campanulata*—a, Kauai 11—*Wilkesia hobdyi*—a, Kauai 11—*Xylosma crenatum*—a, Kauai 14—*Panicum niihauense*—a, and Kauai 14—*Sesbania tomentosa*—b.

Kauai J

This unit was proposed as critical habitat for 26 species: *Adenophorus periens*, *Alsinidendron lychnoides*, *Bonamia menziesii*, *Brighamia insignis*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rivularis*, *Delissea undulata*, *Euphorbia haeleeleana*, *Exocarpos luteolus*, *Hesperomannia lydgatei*, *Hibiscus waimeae* ssp. *hannerae*, *Isodendron longifolium*, *Labordia lydgatei*, *Lobelia niihauensis*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Peucedanum sandwicense*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Remya montgomeryi*, *Schiedea kauaiensis* and *Schiedea membranacea*.

We excluded the proposed critical habitat for the Kauai endemic species *Schiedea membranacea*. This area is not essential for the conservation of this species because there are at least 10 other locations throughout its historical range on Kauai that contain a higher quality habitat or are on lands with a management mandate.

We excluded the proposed critical habitat for the Kauai and Niihau endemic species *Brighamia insignis*. This area is not essential for the conservation of this species because there are at least 10 other locations that have been identified to meet the recovery goal of 8 to 10 populations throughout its historical range on Kauai and Niihau that contain a higher quality habitat and/or are on lands with a management mandate.

We excluded the proposed critical habitat for the multi-island species *Bonamia menziesii*, *Euphorbia haeleeleana*, and *Peucedanum*

sandwicense. These areas are not essential for the conservation of these three species because there are at least 10 other locations that have been identified to meet the recovery goal of 8 to 10 populations of each species throughout their historical ranges on Kauai and other islands that contain a higher quality habitat and/or are on lands with a management mandate.

Modifications were made to this unit to exclude degraded areas not essential to the conservation of *Adenophorus periens*, *Alsinidendron lychnoides*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rivularis*, *Delissea undulata*, *Exocarpos luteolus*, *Hesperomannia lydgatei*, *Hibiscus waimeae* ssp. *hannerae*, *Isodendron longifolium*, *Labordia lydgatei*, *Lobelia niihauensis*, *Myrsine linearifolia*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Remya montgomeryi*, and *Schiedea kauaiensis*.

The area designated as critical habitat provides habitat for six populations of *Alsinidendron lychnoides*, three populations each of *Cyanea recta* and *Cyanea remyi*, four populations of *Cyrtandra cyaneoides*, six populations of *Cyrtandra limahuliensis*, three populations of *Delissea rivularis*, four populations of *Exocarpos luteolus*, one population of *Hesperomannia lydgatei*, eight populations of *Hibiscus waimeae* ssp. *hannerae*, one population of *Labordia lydgatei*, four populations of *Remya montgomeryi*, and one population of *Schiedea kauaiensis* within the historical ranges of these Kauai endemic species.

The area designated as critical habitat provides habitat for one population each of *Adenophorus periens* and *Delissea undulata*, two populations of *Isodendron longifolium*, five populations of *Lobelia niihauensis*, six populations of *Munroidendron racemosum*, one population of *Myrsine linearifolia*, three populations of *Phyllostegia wawrana*, one population of *Plantago princeps*, and four populations of *Platanthera holochila* within the historical ranges of these multi-island species.

These modifications resulted in the reduction from 5,536 ha (13,681 ac) to 2,026 ha (5,006 ac). This unit was renamed Kauai 11—*Adenophorus periens*—d, Kauai 11—*Alsinidendron lychnoides*—a, Kauai 11—*Cyanea recta*—d, Kauai 11—*Cyanea remyi*—d, Kauai 11—*Cyrtandra cyaneoides*—c, Kauai 10—*Cyrtandra limahuliensis*—c, Kauai 11—*Cyrtandra limahuliensis*—e, Kauai 11—*Delissea rivularis*—a, Kauai 11—*Delissea undulata*—a, Kauai 11—*Exocarpos luteolus*—b, Kauai 11—

Hesperomannia lydgatei—c, Kauai 11—*Hibiscus waimeae* ssp. *hannerae*—a, Kauai 11—*Isodendron longifolium*—e, Kauai 11—*Labordia lydgatei*—e, Kauai 11—*Lobelia niihauensis*—b, Kauai 11—*Munroidendron racemosum*—c, Kauai 11—*Myrsine linearifolia*—d, Kauai 11—*Phyllostegia wawrana*—b, Kauai 10—*Plantago princeps*—a, Kauai 11—*Platanthera holochila*—a, Kauai 10—*Pteralyxia kauaiensis*—b, Kauai 11—*Remya montgomeryi*—b, and Kauai 11—*Schiedea kauaiensis*—a.

Kauai K

This unit was proposed as critical habitat for 13 species: *Adenophorus periens*, *Alsinidendron lychnoides*, *Bonamia menziesii*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Hesperomannia lydgatei*, *Isodendron longifolium*, *Labordia lydgatei*, *Myrsine linearifolia*, *Plantago princeps*, and *Schiedea membranacea*.

We excluded the proposed critical habitat for *Alsinidendron lychnoides*, and *Schiedea membranacea*, two Kauai endemic species, and for *Bonamia menziesii*, a multi-island species. These areas are not essential for the conservation of these three species because they are more degraded than other areas that have been designated to provide habitat for 8 to 10 populations throughout their historical ranges on Kauai (*Alsinidendron lychnoides* and *Schiedea membranacea*) or proposed on other islands (*Bonamia menziesii*.)

Modifications were made to this unit to exclude degraded areas not essential to the conservation of *Adenophorus periens*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Isodendron longifolium*, or *Plantago princeps*. There are other areas that have been identified to meet the recovery goals of 8 to 10 populations of each species throughout their historical ranges on Kauai (*Cyanea recta*, *Cyanea remyi*, *Cyrtandra cyaneoides*, and *Cyrtandra limahuliensis*) and other islands (*Adenophorus periens*, *Isodendron longifolium* and *Plantago princeps*).

The area designated as critical habitat provides habitat for three populations of *Cyanea recta*, one population of *Cyanea remyi*, eight populations of *Cyrtandra cyaneoides*, two populations of *Cyrtandra limahuliensis*, four populations of *Hesperomannia lydgatei*, and one population each of *Labordia lydgatei* and *Myrsine linearifolia* within the historical ranges of these Kauai endemic species.

The area designated as critical habitat provides habitat for one population each of *Adenophorus periens*, *Isodendron*

longifolium, and *Plantago princeps* within the historical ranges for these multi-island species.

These modifications resulted in the reduction from 1,752 ha (4,330 ac) to 1,667 ha (4,119 ac). This unit was renamed Kauai 11—*Adenophorus periens*—c, Kauai 11—*Cyanea recta*—c, Kauai 11—*Cyanea remyi*—c, Kauai 11—*Cyrtandra cyaneoides*—b, Kauai 11—*Cyrtandra cyaneoides*—c, Kauai 11—*Cyrtandra limahuliensis*—d, Kauai 11—*Hesperomannia lydgatei*—b, Kauai 11—*Isodendron longifolium*—d, Kauai 11—*Labordia lydgatei*—c, Kauai 11—*Labordia lydgatei*—d, Kauai 11—*Myrsine linearifolia*—f, and Kauai 11—*Plantago princeps*—c.

Kauai L

This unit was proposed as critical habitat for 13 species: *Adenophorus periens*, *Bonamia menziesii*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Hesperomannia lydgatei*, *Isodendron longifolium*, *Labordia lydgatei*, *Lysimachia filifolia*, *Myrsine linearifolia*, *Plantago princeps* and *Platanthera holochila*.

We excluded the proposed critical habitat for the Kauai endemic species *Hesperomannia lydgatei* and for the multi-island species *Bonamia menziesii*, *Lysimachia filifolia*, and *Platanthera holochila*. These areas are not essential for the conservation of these four species because they are highly degraded and are unlikely to be restored by the State or private landowners (Buck 2002). There are other locations that have been identified to meet the recovery goals of 8 to 10 populations throughout their historical ranges on Kauai (*Hesperomannia lydgatei*) or on other islands (*Bonamia menziesii*, *Lysimachia filifolia*, and *Platanthera holochila*).

Modifications were made to this unit to exclude highly degraded areas not essential to the conservation of *Adenophorus periens*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra limahuliensis*, *Labordia lydgatei*, *Myrsine linearifolia*, or *Plantago princeps*. In addition, it is unlikely that the State or private landowners will restore these areas (Buck 2002). Other locations are being designated that will provide habitat for 8 to 10 populations of each species throughout their historical ranges on Kauai (*Cyanea recta*, *Cyanea remyi*, *Cyrtandra limahuliensis*, *Labordia lydgatei*, *Myrsine linearifolia*) and on other islands (*Adenophorus periens* and *Plantago princeps*).

The area designated as critical habitat provides habitat for three populations of *Cyanea recta*, one population of *Cyanea*

remyi, eight populations of *Cyrtandra cyaneoides*, six populations of *Cyrtandra limahuliensis*, one population of *Labordia lydgatei*, and one population each of *Myrsine linearifolia* and *Pteralyxia kauaiensis* within the historical ranges for these Kauai and Niihau endemic species.

The area designated as critical habitat provides habitat for one population each of *Adenophorus periens*, *Isodendron longifolium*, and *Plantago princeps* within the historical ranges for these multi-island species.

These modifications resulted in the reduction from 3,407 ha (8,418 ac) to 240 ha (592 ac). This unit was renamed Kauai 11—*Adenophorus periens*—c, Kauai 11—*Cyanea recta*—c, Kauai 11—*Cyanea remyi*—c, Kauai 11—*Cyrtandra cyaneoides*—b, Kauai 11—*Cyrtandra cyaneoides*—c, Kauai 10—*Cyrtandra limahuliensis*—c, Kauai 11—*Cyrtandra limahuliensis*—d, Kauai 11—*Isodendron longifolium*—d, Kauai 11—*Labordia lydgatei*—d, Kauai 11—*Myrsine linearifolia*—f, Kauai 10—*Plantago princeps*—a, Kauai 11—*Plantago princeps*—c, and Kauai 10—*Pteralyxia kauaiensis*—b.

Kauai M

This unit was proposed as critical habitat for nine species: *Adenophorus periens*, *Bonamia menziesii*, *Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Labordia lydgatei*, and *Phyllostegia wawrana*.

We excluded the proposed critical habitat for the multi-island species *Bonamia menziesii*. This area is not essential for the conservation of this species because it is highly degraded and is unlikely to be restored by the State or private landowners (Buck 2002). There are at least 10 other locations that have been designated or proposed for *Bonamia menziesii* throughout its historical range on Kauai and on other islands.

Modifications were made to this unit to exclude highly degraded areas not essential to the conservation of *Adenophorus periens*, *Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra limahuliensis*, *Labordia lydgatei*, and *Phyllostegia wawrana*. In addition, it is unlikely that the State or private landowners will restore these areas (Buck 2002). There are other locations that have been designated to meet the recovery goals of 8 to 10 populations of each species throughout their historical ranges on Kauai (*Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyrtandra limahuliensis*, *Labordia lydgatei*, and *Phyllostegia wawrana*) and

proposed on other islands (*Adenophorus periens*).

The area designated as critical habitat provides habitat for two populations of *Cyanea asarifolia*, four populations of *Cyanea recta*, two populations of *Cyanea remyi*, two populations each of *Cyrtandra cyaneoides* and *Cyrtandra limahuliensis*, five populations of *Hibiscus clayi*, and two populations each of *Labordia lydgatei* and *Phyllostegia wawrana* within the historical ranges for these Kauai endemic species.

The area designated as critical habitat for the multi-island species *Adenophorus periens* provides habitat within its historical range for one population.

These modifications resulted in the reduction from 3,302 ha (8,160 ac) to 1,040 ha (2,570 ac). This unit was renamed Kauai 4—*Adenophorus periens*—a, Kauai 4—*Cyanea asarifolia*—a, Kauai 4—*Cyanea recta*—b, Kauai 4—*Cyanea remyi*—a, Kauai 4—*Cyrtandra cyaneoides*—a, Kauai 4—*Cyrtandra limahuliensis*—a, Kauai 4—*Cyrtandra limahuliensis*—b, Kauai 4—*Hibiscus clayi*—a, Kauai 4—*Hibiscus clayi*—b, Kauai 4—*Hibiscus clayi*—c, Kauai 4—*Hibiscus clayi*—d, Kauai 4—*Hibiscus clayi*—e, Kauai 4—*Labordia lydgatei*—a, and Kauai 4—*Phyllostegia wawrana*—a.

Kauai N

This unit was proposed as critical habitat for 23 species: *Adenophorus periens*, *Bonamia menziesii*, *Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyanea undulata*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rivularis*, *Dubautia pauciflora*, *Exocarpos luteolus*, *Hesperomannia lydgatei*, *Isodendron longifolium*, *Labordia lydgatei*, *Labordia tinifolia* var. *wahiawaensis*, *Lysimachia filifolia*, *Myrsine linearifolia*, *Phlegmariurus nutans*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Viola helenae*, and *Viola kauaiensis* var. *wahiawaensis*.

We excluded the proposed critical habitat for the Kauai endemic species *Cyanea recta*, *Cyrtandra cyaneoides*, *Delissea rivularis*, and *Phyllostegia wawrana*, and for the multi-island species *Platanthera holochila*. These areas are not essential to the conservation of these five species because they are highly degraded and are unlikely to be restored by the State or private landowners (Buck 2002). There are other locations that have been designated to meet the recovery goals of 8 to 10 populations of each species throughout their historical ranges on Kauai (*Cyanea recta*, *Cyrtandra*

cyaneoides, *Delissea rivularis*, and *Phyllostegia wawrana*) or proposed on other islands (*Platanthera holochila*).

Modifications were made to this unit to exclude highly degraded areas not essential to the conservation of *Adenophorus periens*, *Bonamia menziesii*, *Cyanea remyi*, *Cyrtandra limahuliensis*, *Isodendron longifolium*, *Labordia lydgatei*, *Lysimachia filifolia*, and *Plantago princeps*. In addition, it is unlikely that the State or private landowners will restore these areas (Buck 2002). There are other locations that have been designated to meet the recovery goals of 8 to 10 populations of each species throughout their historical ranges on Kauai (*Cyanea remyi*, *Cyrtandra limahuliensis*, and *Labordia lydgatei*) or proposed on other islands (*Adenophorus periens*, *Bonamia menziesii*, *Isodendron longifolium*, *Lysimachia filifolia*, and *Plantago princeps*).

The area designated as critical habitat provides for seven populations of *Cyanea asarifolia*; four populations of *Cyanea remyi*; six populations of *Cyanea undulata*; four populations each of *Cyrtandra limahuliensis* and *Dubautia pauciflora*; one population of *Exocarpos luteolus*; four populations of *Hesperomannia lydgatei*; three populations of *Labordia lydgatei*; four populations of *Labordia tinifolia* var. *wahiawaensis*; one population each of *Myrsine linearifolia* and *Pteralyxia kauaiensis*; and five populations each of *Viola helenae* and *Viola kauaiensis* var. *wahiawaensis* within the historical ranges for these Kauai endemic species.

The area designated as critical habitat provides for one population each of *Adenophorus periens*, *Bonamia menziesii*, and *Isodendron longifolium*, four populations of *Lysimachia filifolia*, three populations of *Phlegmariurus nutans*, and one population of *Plantago princeps* within the historical ranges for these multi-island species.

These modifications resulted in the reduction from 6,599 ha (16,307 ac) to 3,274 ha (8,090 ac). This unit was renamed Kauai 10—*Adenophorus periens*—b, Kauai 10—*Bonamia menziesii*—a, Kauai 10—*Cyanea asarifolia*—b, Kauai 10—*Cyanea remyi*—b, Kauai 10—*Cyanea undulata*—a, Kauai 10—*Cyrtandra limahuliensis*—c, Kauai 10—*Dubautia pauciflora*—a, Kauai 10—*Exocarpos luteolus*—a, Kauai 10—*Hesperomannia lydgatei*—a, Kauai 10—*Isodendron longifolium*—b, Kauai 10—*Labordia lydgatei*—b, Kauai 10—*Labordia tinifolia* var. *wahiawaensis*—a, Kauai 10—*Lysimachia filifolia*—a, Kauai 10—*Myrsine linearifolia*—b, Kauai 10—*Phlegmariurus nutans*—a, Kauai 10—*Plantago princeps*—a, Kauai 10—

Pteralyxia kauaiensis—b, Kauai 10—*Viola helenae*—a, and Kauai 10—*Viola kauaiensis*—a.

Kauai O

This unit was proposed as critical habitat for 51 species: *Adenophorus periens*, *Alectryon macrococcus*, *Alsinidendron lychnoides*, *Alsinidendron viscosum*, *Bonamia menziesii*, *Chamaesyce halemanui*, *Cyanea recta*, *Delissea rivularis*, *Diellia erecta*, *Diellia pallida*, *Diplazium molokaiensis*, *Dubautia latifolia*, *Euphorbia haeleleana*, *Exocarpos luteolus*, *Flueggea neowawraea*, *Gouania meyenii*, *Isodendron laurifolium*, *Isodendron longifolium*, *Kokia kauaiensis*, *Lipochaeta fauriei*, *Lipochaeta micrantha*, *Lobelia niihauensis*, *Mariscus pennatiformis*, *Melicope haupuensis*, *Melicope knudsenii*, *Melicope pallida*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Nothoctrum peltatum*, *Peucedanum sandwicense*, *Phyllostegia knudsenii*, *Phyllostegia waimeae*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Poa mannii*, *Poa sandwicensis*, *Poa siphonoglossa*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Remya montgomeryi*, *Schiedea helleri*, *Schiedea kauaiensis*, *Schiedea membranacea*, *Schiedea spergulina* var. *spergulina*, *Schiedea stellarioides*, *Solanum sandwicense*, *Spermolepis hawaiiensis*, *Stenogyne campanulata*, *Xylosma crenatum*, and *Zanthoxylum hawaiiense*.

We excluded the proposed critical habitat for the Kauai endemic species *Cyanea recta* and for the multi-island species *Adenophorus periens*, *Diplazium molokaiensis*, *Isodendron longifolium*, *Mariscus pennatiformis*, *Peucedanum sandwicense*, and *Plantago princeps*. These areas are not essential for the conservation of these seven species because there are other locations that have been designated to meet the recovery goals of 8 to 10 populations of each species on Kauai (*Cyanea recta*) and proposed on other islands (*Adenophorus periens*, *Diplazium molokaiensis*, *Isodendron longifolium*, *Mariscus pennatiformis*, *Peucedanum sandwicense*, and *Plantago princeps*) that either contain higher quality habitat or have a management mandate.

Modifications were made to this unit to exclude degraded areas not essential to the conservation of *Alectryon macrococcus*, *Alsinidendron lychnoides*, *Alsinidendron viscosum*, *Chamaesyce halemanui*, *Delissea rivularis*, *Diellia erecta*, *Diellia pallida*, *Dubautia latifolia*, *Euphorbia haeleleana*, *Exocarpos luteolus*,

Flueggea neowawraea, *Gouania meyenii*, *Isodendron laurifolium*, *Kokia kauaiensis*, *Lipochaeta fauriei*, *Lipochaeta micrantha*, *Lobelia niihauensis*, *Melicope haupuensis*, *Melicope knudsenii*, *Melicope pallida*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Nothoctrum peltatum*, *Phyllostegia knudsenii*, *Platanthera holochila*, *Poa mannii*, *Poa sandwicensis*, *Poa siphonoglossa*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Remya montgomeryi*, *Schiedea helleri*, *Schiedea membranacea*, *Schiedea spergulina* var. *spergulina*, *Schiedea stellarioides*, *Solanum sandwicense*, *Spermolepis hawaiiensis*, *Xylosma crenatum*, *Zanthoxylum hawaiiense*.

The area designated as critical habitat provides for ten populations of *Alsinidendron lychnoides*, nine populations of *Alsinidendron viscosum*, two populations of *Chamaesyce halemanui*, three populations of *Delissea rivularis*, one population of *Diellia pallida*, seven populations of *Dubautia latifolia*, eight populations of *Exocarpos luteolus*, three populations of *Kokia kauaiensis*, two populations each of *Lipochaeta fauriei*, *Lipochaeta micrantha*, *Melicope haupuensis*, and *Munroidendron racemosum*, five populations of *Myrsine linearifolia*, nine populations of *Nothoctrum peltatum*, three populations of *Phyllostegia waimeae*, two populations of *Phyllostegia wawrana*, three populations of *Poa mannii*, six populations of *Poa sandwicensis*, ten populations of *Poa siphonoglossa*, two populations of *Pteralyxia kauaiensis*, four populations of *Remya kauaiensis*, six populations of *Remya montgomeryi*, seven populations of *Schiedea helleri*, two populations each of *Schiedea kauaiense*, *Schiedea membranacea*, and *Schiedea spergulina* var. *spergulina*, six populations of *Schiedea stellarioides*, three populations of *Stenogyne campanulata*, and five populations of *Xylosma crenatum* within the historical ranges for these Kauai endemic species.

The area designated as critical habitat provides for one population each of *Alectryon macrococcus*, *Bonamia menziesii*, and *Diellia erecta*, two populations of *Euphorbia haeleleana*, one population of *Flueggea neowawraea*, two populations each of *Gouania meyenii*, *Isodendron laurifolium*, *Lobelia niihauensis*, and *Melicope knudsenii*, one population of *Melicope pallida*, four populations of *Platanthera holochila*, six populations of *Solanum sandwicense*, one population of *Spermolepis hawaiiensis*, and two populations of *Zanthoxylum*

hawaiiense within the historical range for these multi-island species.

These modifications resulted in the reduction from 9,462 ha (23,382 ac) to 5,933 ha (14,661 ac). This unit was renamed Kauai 11—*Alectryon macroccus*—a, Kauai 11—*Alsinidendron lychnoides*—a, Kauai 11—*Alsinidendron lychnoides*—b, Kauai 11—*Alsinidendron viscosum*—c, Kauai 11—*Alsinidendron viscosum*—b, Kauai 11—*Alsinidendron viscosum*—c, Kauai 11—*Alsinidendron viscosum*—d, Kauai 11—*Bonamia menziesii*—b, Kauai 11—*Chamaesyce halemanui*—a, Kauai 11—*Chamaesyce halemanui*—b, Kauai 11—*Delissea rivularis*—a, Kauai 11—*Diellia erecta*—a, Kauai 11—*Diellia pallida*—b, Kauai 11—*Dubautia latifolia*—a, Kauai 11—*Dubautia latifolia*—b, Kauai 11—*Dubautia latifolia*—c, Kauai 11—*Euphorbia haeleleana*—c, Kauai 11—*Exocarpos luteolus*—b, Kauai 11—*Exocarpos luteolus*—d, Kauai 11—*Exocarpos luteolus*—e, Kauai 11—*Flueggea neowawraea*—c, Kauai 11—*Gouania meyerii*—c, Kauai 11—*Isodendron laurifolium*—b, Kauai 11—*Kokia kauaiensis*—a, Kauai 11—*Lipochaeta fauriei*—a, Kauai 11—*Lipochaeta micrantha*—b, Kauai 11—*Lobelia niihauensis*—a, Kauai 11—*Melicope haupuensis*—c, Kauai 11—*Melicope knudsenii*—b, Kauai 11—*Melicope pallida*—a, Kauai 11—*Munroidendron racemosum*—d, Kauai 11—*Myrsine linearifolia*—c, Kauai 11—*Myrsine linearifolia*—e, Kauai 11—*Nothocestrum peltatum*—a, Kauai 11—*Nothocestrum peltatum*—b, Kauai 11—*Nothocestrum peltatum*—c, Kauai 12—*Nothocestrum peltatum*—d, Kauai 11—*Phyllostegia knudsenii*—a, Kauai 11—*Phyllostegia waimeae*—a, Kauai 11—*Phyllostegia waimeae*—b, Kauai 11—*Phyllostegia wawraea*—c, Kauai 11—*Platanthera holochila*—a, Kauai 11—*Poa mannii*—b, Kauai 11—*Poa sandwicensis*—a, Kauai 11—*Poa siphonoglossa*—a, Kauai 11—*Poa siphonoglossa*—b, Kauai 11—*Pteralyxia kauaiensis*—f, Kauai 11—*Remya kauaiensis*—a, Kauai 11—*Remya kauaiensis*—d, Kauai 11—*Remya kauaiensis*—e, Kauai 12—*Remya kauaiensis*—f, Kauai 11—*Remya montgomeryi*—b, Kauai 11—*Remya montgomeryi*—c, Kauai 11—*Schiedea helleri*—a, Kauai 11—*Schiedea helleri*—b, Kauai 11—*Schiedea helleri*—c, Kauai 11—*Schiedea kauaiensis*—b, Kauai 11—*Schiedea membranacea*—a, Kauai 11—*Schiedea spergulina* var. *spergulina*—b, Kauai 11—*Schiedea stellarioides*—a, Kauai 11—*Schiedea stellarioides*—b, Kauai 11—*Solanum sandwicense*—a,

Kauai 11—*Solanum sandwicense*—b, Kauai 11—*Spermolepis hawaiiensis*—a, Kauai 11—*Stenogyne campanulata*—a, Kauai 11—*Xylosma crenatum*—a, Kauai 12—*Xylosma crenatum*—b, and Kauai 11—*Zanthoxylum hawaiiense*—a.

Niihau A

This unit was proposed as critical habitat for two species, *Brighamia insignis* and *Cyperus trachysanthos*. We excluded the proposed critical habitat for the multi-island species *Cyperus trachysanthos*. This area is not essential for the conservation of *Cyperus trachysanthos* because it is more degraded than other areas and is not managed for the conservation of this species, and there are at least 10 other locations that have been designated to meet the recovery goal of 8 to 10 populations throughout its historical range on Kauai and proposed on other islands.

The area designated as critical habitat for the Kauai and Niihau endemic species *Brighamia insignis* provides habitat within its historical range for one population.

This modification resulted in the reduction from 282 ha (697 ac) to 144 ha (357 ac). This unit was renamed Niihau 1—*Brighamia insignis*—a.

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,” as defined by the Act, 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.” The relationship between a species survival and its recovery has been a source of confusion to some in the past. We believe that a species’ ability to recover depends on its ability to survive into the future when its recovery can be achieved; thus, the concepts of long-term survival and recovery are intricately linked. However, in the March 15, 2001, decision of the United States Court of Appeals for the Fifth Circuit (*Sierra Club v. U.S. Fish and Wildlife Service et al.*, 245 F.3d 434) regarding a not prudent finding the Court found our definition of destruction or adverse modification as currently contained in 50 CFR 402.02 to be invalid. In response to this decision, we are reviewing the regulatory definition of adverse modification in relation to the conservation of the species.

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 for a species, to the extent such habitat is determinable, at the time of listing. When we designate critical habitat at the time of listing or under short court-ordered deadlines, we may not have sufficient information to identify all the areas essential for the conservation of the species. Nevertheless, we are required to designate those areas we know to be critical habitat, using the best information available to us.

Within the geographic areas occupied by the species, we will designate only areas currently known to be essential. Essential areas should already have some of 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.

Our regulations State that "The Secretary shall designate as critical habitat areas outside the geographical area presently occupied by a 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.

Our Policy on Information Standards Under the Endangered Species Act, published in the **Federal Register** on July 1, 1994 (59 FR 34271), provides criteria, establishes procedures, and provides guidance to ensure that our decisions represent the best scientific and commercial data available. It requires our 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 recovery plans, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, and biological assessments or other unpublished materials.

It is important to clearly 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 Act's 7(a)(2) jeopardy standard and section 9 prohibitions, 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. 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.

A. Prudence

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 species, we analyzed the potential threats and benefits for each species in accordance with the court's order. Two species, *Acaena exigua*, a multi-island species, and *Melicope quadrangularis*, a Kauai endemic species, are no longer extant in the wild. *Acaena exigua* was last seen in 2000 and no individuals were seen in a subsequent visit in 2001 to the last known location (Oppenheimer, pers. comm. 2002). *Melicope quadrangularis* was last observed in the Wahiawa drainage area in 1991. This species has not been seen in surveys of this area subsequent to Hurricane Iniki in 1992 (S. Perlman and K. Wood, pers. comm. 2000). In addition, neither species is known to be in storage or under propagation. Under these circumstances, designation of critical habitat for *Acaena exigua* and *Melicope quadrangularis* is not prudent because such designation would be of no benefit to these species. If either species is relocated we may revise this final determination to incorporate or address new information as new data becomes available (See 16 U.S.C. 1532 (5)(B); 50 CFR 424.13(f)).

Due to low numbers of individuals and/or populations and their inherent immobility, the other 93 plants may be vulnerable to unrestricted collection, vandalism, or disturbance. We examined the evidence currently available for each of these taxa and found specific evidence of vandalism, disturbance, and/or the threat of unrestricted collection for three species of *Pritchardia*, the native palm, on Kauai and Niihau. At the time of listing we determined that designation of critical habitat was not prudent for *Pritchardia napaliensis*, *P. aylmer-robinsonii*, and *P. viscosa* because it would increase the degree of threat from vandalism or collecting, and would provide no benefits (60 FR 53070). At

that time, we had information that at least one of the remaining adult plants has been damaged by spiked boots used either by a botanist or seed collector to scale these trees (61 FR 53070). Since publication of the listing rule, we learned of additional instances of vandalism, collection, and commercial trade involving these three species of *Pritchardia*. In 1993, the State's DOFAW planted 39 young *Pritchardia napaliensis* plants within a fenced enclosure near the Wailua River. A short time after this, the fence was vandalized and all 39 plants were removed (A. Kyono, pers. comm. 2000; Craig Koga, DOFAW, *in litt.* 1999). In mid-1996, a young plant and seeds of *Pritchardia viscosa* were removed from the only known location of this species (A. Kyono, pers. comm. 2000; C. Koga, *in litt.* 1999). 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 aylmer-robinsonii* and *P. napaliensis*.

In light of this information, we believe that designation of critical habitat would likely increase the threat to these three species of *Pritchardia* on Kauai and Niihau from vandalism or collection. These plants are easy to identify, and they are attractive to collectors of rare palms either for their personal use or to trade or sell for personal gain (Johnson 1996). The final listing rules for these three species contained only general information on their distribution, but the publication of precise maps and descriptions of critical habitat in the **Federal Register** would make these species more vulnerable to incidents of vandalism or collection, and, therefore, contribute to the decline of these species and make recovery more difficult (61 FR 53070).

In addition, we believe that designation would not provide significant benefits that would outweigh these increased risks. First, *Pritchardia napaliensis* and *P. viscosa* do not occur on Federal land, and the State lands where they are found are zoned for conservation. Some of the plants are on lands set aside in perpetuity to conserve their natural flora and fauna, or as geological sites (State of Hawaii natural area reserves) (HRS 195-1). In addition, these species are found in areas that are remote and accessible only by four-wheel drive (*Pritchardia viscosa* only), foot, boat, or helicopter. It is, therefore, unlikely that the lands on which these

species are found will be developed. Since there do 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 than they do 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.

Pritchardia aylmer-robinsonii is only found on Niihau, which is presently zoned for agriculture. There are no hotels, resorts, or other commercial development on the island. Public access to the island is not generally authorized by the landowner. Most of the people living on this island (fewer than 300) are employed in ranching activities (Department of Geography 1998). While future activities on the island are unknown, it is unlikely that the land on which this species is found will be developed. Future projects that would require Federal permitting or funding such as those mentioned above are particularly unlikely on this privately owned island. Although access to the island has been and continues to be restricted, *P. aylmer-robinsonii* is endemic only to Niihau, so any commercial availability indicates that collection, either with or without the land owner's permission, has occurred in the past and may still be occurring.

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 these three 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 determine that designation of critical habitat for *Pritchardia aylmer-robinsonii*, *P. napaliensis*, and *P. viscosa* is not prudent.

On January 9, 2003, we found that critical habitat was prudent for the following 15 multi-island species: *Adenophorus periens*, *Bonamia menziesii*, *Centaurium sebaeoides*, *Ctenitis squamigera*, *Cyperus trachysanthos*, *Diellia erecta*, *Diplazium molokaiense*, *Hibiscus brackenridgei*, *Isodendron pirifolium*, *Sesbania*

tomentosa, *Silene lanceolata*, *Solanum incompletum*, *Spermolepis hawaiiensis*, *Vigna o-wahuensis* and *Zanthoxylum hawaiiense* (68 FR 1220), which also occur on Kauai or Niihau.

Four species no longer occur on Kauai or Niihau but are reported from one or more other islands. To find whether critical habitat would be prudent for these four species we analyzed the potential threats and benefits for each species in accordance with the court's orders. These four plants were listed as endangered species under the Act between 1991 and 1996. 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 examined the evidence available for these four species and have not, at this time, found specific evidence of taking, vandalism, collection, or trade of these species or of similar species. Consequently, while we remain concerned that these activities could potentially threaten *Achyranthes mutica*, *Mariscus pennatiformis*, *Phlegmariurus manni*, and *Phlegmariurus nutans* 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 these species are currently threatened by taking or other human activity, which 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 *Achyranthes mutica*, *Mariscus pennatiformis*, *Phlegmariurus manni*, and *Phlegmariurus nutans* 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. None of these four species are reported from Federal lands on Kauai (the entire island of Niihau is privately owned) where actions are subject to section 7 consultation. However, two of

these species, *Phlegmariurus manni*, and *Phlegmariurus nutans* are reported from Federal lands or lands that are administered by a Federal agency on other islands (*Phlegmariurus nutans* is reported from the United States Army's Schofield Barracks Military Reservation and Kawaihoa Training Area, and the Service's Oahu Forest National Wildlife Refuge on Oahu, and *Phlegmariurus manni* is reported from Haleakala National Park on Maui). Although *Achyranthes mutica* and *Mariscus pennatiformis* are located exclusively on non-Federal lands with limited Federal activities on Oahu and Maui, there could be Federal actions affecting these lands in the future. While a critical habitat designation for habitat currently occupied by *Achyranthes mutica*, *Mariscus pennatiformis*, *Phlegmariurus manni*, and *Phlegmariurus nutans* would not likely change the section 7 consultation outcome, since 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 may also be some educational or informational benefits to the designation of critical habitat. Educational benefits include the notification of landowner(s), 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 find that critical habitat is prudent for these four species (*Achyranthes mutica*, *Mariscus pennatiformis*, *Phlegmariurus manni*, and *Phlegmariurus nutans*).

We examined the evidence available for the other 71 taxa and have not, at this time, found specific evidence of taking, vandalism, collection or trade of these taxa or of similar species. Consequently, while we remain concerned that these activities could potentially threaten these 71 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 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; (2) focusing conservation activities; (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 71 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. One of these species is reported on or near Federal lands (see Table 2), where actions are subject to section 7 consultation. Although a majority of the species considered in this rule 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 not likely change the section 7 consultation outcome, since 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 would also be some educational or informational benefits to the designation of critical habitat. Benefits of designation would 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, designation of critical habitat is prudent for these 71 plant species: *Alectryon macrococcus*, *Alsinidendron lychnoides*, *Alsinidendron viscosum*, *Brighamia insignis*, *Chamaesyce halemanui*, *Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyanea undulata*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rhytidosperma*, *Delissea rivularis*, *Delissea undulata*, *Diellia pallida*, *Dubautia latifolia*, *Dubautia pauciflora*, *Euphorbia haeleleana*, *Exocarpos luteolus*, *Flueggea neowawraea*, *Gouania meyenii*, *Hedyotis cookiana*, *Hedyotis st.-johnii*, *Hesperomannia lydgatei*, *Hibiscadelphus woodii*, *Hibiscus clayi*, *Hibiscus waimeae* ssp. *hannerae*, *Ischaemum byrone*, *Isodendrion laurifolium*, *Isodendrion longifolium*, *Kokia kauaiensis*, *Labordia lydgatei*, *Labordia tinifolia* var. *wahiawaensis*, *Lipochaeta fauriei*, *Lipochaeta micrantha*, *Lipochaeta waimeae*, *Lobelia niihauensis*, *Lysimachia filifolia*, *Melicope haupuensis*, *Melicope*

knudsenii, *Melicope pallida*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Nothoctrum peltatum*, *Panicum niihauense*, *Peucedanum sandwicense*, *Phyllostegia knudsenii*, *Phyllostegia waimeae*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Poa mannii*, *Poa sandwicensis*, *Poa siphonoglossa*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Remya montgomeryi*, *Schiedea apokremnos*, *Schiedea helleri*, *Schiedea kauaiensis*, *Schiedea membranacea*, *Schiedea nuttallii*, *Schiedea spergulina* var. *leiopoda*, *Schiedea spergulina* var. *spergulina*, *Schiedea stellarioides*, *Solanum sandwicense*, *Stenogyne campanulata*, *Viola helenae*, *Viola kauaiensis* var. *wahiawaensis*, *Wilkesia hobdyi*, and *Xylosma crenatum*.

B. Methods

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 the physical and biological features that are essential for the conservation of *Adenophorus periens*, *Alectryon macrococcus*, *Alsinidendron lychnoides*, *Alsinidendron viscosum*, *Bonamia menziesii*, *Brighamia insignis*, *Centaurium sebaeoides*, *Chamaesyce halemanui*, *Ctenitis squamigera*, *Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyanea undulata*, *Cyperus trachysanthos*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rhytidosperma*, *Delissea rivularis*, *Delissea undulata*, *Diellia erecta*, *Diellia pallida*, *Diplazium molokaiense*, *Dubautia latifolia*, *Dubautia pauciflora*, *Euphorbia haeleleana*, *Exocarpos luteolus*, *Flueggea neowawraea*, *Gouania meyenii*, *Hedyotis cookiana*, *Hedyotis st.-johnii*, *Hesperomannia lydgatei*, *Hibiscadelphus woodii*, *Hibiscus clayi*, *Hibiscus waimeae* ssp. *hannerae*, *Ischaemum byrone*, *Isodendrion laurifolium*, *Isodendrion longifolium*, *Kokia kauaiensis*, *Labordia lydgatei*, *Labordia tinifolia* var. *wahiawaensis*, *Lipochaeta fauriei*, *Lipochaeta micrantha*, *Lipochaeta waimeae*, *Lobelia niihauensis*, *Lysimachia filifolia*, *Mariscus pennatifolius*, *Melicope haupuensis*, *Melicope knudsenii*, *Melicope pallida*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Nothoctrum peltatum*, *Panicum niihauense*, *Peucedanum sandwicense*, *Phlegmariurus nutans*, *Phyllostegia knudsenii*, *Phyllostegia waimeae*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Poa mannii*, *Poa sandwicensis*, *Poa siphonoglossa*,

Pteralyxia kauaiensis, *Remya kauaiensis*, *Remya montgomeryi*, *Schiedea apokremnos*, *Schiedea helleri*, *Schiedea kauaiensis*, *Schiedea membranacea*, *Schiedea nuttallii*, *Schiedea spergulina* var. *leiopoda*, *Schiedea spergulina* var. *spergulina*, *Schiedea stellarioides*, *Sesbania tomentosa*, *Solanum sandwicense*, *Spermolepis hawaiiensis*, *Stenogyne campanulata*, *Viola helenae*, *Viola kauaiensis* var. *wahiawaensis*, *Wilkesia hobdyi*, *Xylosma crenatum*, and *Zanthoxylum hawaiiense*. This information included the known locations, site-specific species information from the HINHP database and our own rare plant database; species information from the Center for Plant Conservation's (CPC's) rare plant monitoring database housed at the University of Hawaii's Lyon Arboretum; island-wide Geographic Information System (GIS) coverages (e.g., vegetation, soils, annual rainfall, elevation contours, landownership); the final listing rules for these 83 species; the November 7, 2000, proposal; the January 28, 2002, revised proposal; information received during the public comment periods and the public hearings; recent biological surveys and reports; our recovery plans for these species; information received in response to outreach materials and requests for species and management information that we sent to all landowners, land managers, and interested parties on the islands of Kauai and Niihau; discussions with botanical experts; and recommendations from the Hawaii and Pacific Plant Recovery Coordinating Committee (HPPRCC) (see also the discussion below) (GDSI 2000; HINHP Database 2000; HPPRCC 1998; Service 1994, 1995, 1996, 1997, 1998a, 1998b, 1998c, 1999; 65 FR 66808; 67 FR 3940; CPC in litt. 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* (Service 1999). The HPPRCC expects that there will be subsequent efforts to further refine the locations of important habitat areas and that new survey information or research may also lead to additional refinement of identifying and mapping of habitat important for the recovery of these species.

The HPPRCC identified essential habitat areas for all listed, proposed, and candidate plants and evaluated

species of concern to determine if essential habitat areas would provide for their habitat needs. However, the HPPRCC's mapping of habitat is distinct from the regulatory designation of critical habitat as defined by the Act. More data have been collected since the recommendations made by the HPPRCC in 1998. Much of the area that was identified by the HPPRCC as inadequately surveyed has now been surveyed to some degree. New location data for many species have been gathered. Also, the HPPRCC identified areas as essential based on species clusters (areas that included listed species as well as candidate species, and species of concern) while we have only delineated areas that are essential for the conservation of the 83 listed species at issue. As a result, the critical habitat designations in this rule include not only some habitat that was identified as essential in the 1998 recommendations but also habitat that was not identified as essential in those recommendations.

C. Primary Constituent Elements

In accordance with section 3(5)(A)(i) 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 (primary constituent elements) that are essential to the conservation of the species and that may require special management considerations or protection. These features 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.

Much of what is known about the specific physical and biological requirements of *Adenophorus perieni*, *Alectryon macrococcus*, *Alsinidendron lychnoides*, *Alsinidendron viscosum*, *Bonamia menziesii*, *Brighamia insignis*, *Centaurium sebaeoides*, *Chamaesyce halemanui*, *Ctenitis squamigera*, *Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyanea undulata*, *Cyperus trachysanthos*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rhytidisperma*, *Delissea rivularis*, *Delissea undulata*, *Diellia erecta*, *Diellia pallida*, *Diplazium molokaiense*,

Dubautia latifolia, *Dubautia pauciflora*, *Euphorbia haeleeleana*, *Exocarpos luteolus*, *Flueggea neowawraea*, *Gouania meyenii*, *Hedyotis cookiana*, *Hedyotis st.-johnii*, *Hesperomannia lydgatei*, *Hibiscadelphus woodii*, *Hibiscus clayi*, *Hibiscus waimeae* ssp. *hannerae*, *Ischaemum byrone*, *Isodendron laurifolium*, *Isodendron longifolium*, *Kokia kauaiensis*, *Labordia lydgatei*, *Labordia tinifolia* var. *wahiawaensis*, *Lipochaeta fauriei*, *Lipochaeta micrantha*, *Lipochaeta waimeaensis*, *Lobelia niihauensis*, *Lysimachia filifolia*, *Mariscus pennatiformis*, *Melicope haupuensis*, *Melicope knudsenii*, *Melicope pallida*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Nothoecstrum peltatum*, *Panicum niihauense*, *Peucedanum sandwicense*, *Phlegmariurus nutans*, *Phyllostegia knudsenii*, *Phyllostegia waimeae*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Poa mannii*, *Poa sandwicensis*, *Poa siphonoglossa*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Remya montgomeryi*, *Schiedea apokremnos*, *Schiedea helleri*, *Schiedea kauaiensis*, *Schiedea membranacea*, *Schiedea nuttallii*, *Schiedea spergulina* var. *leiopoda*, *Schiedea spergulina* var. *spergulina*, *Schiedea stellarioides*, *Sesbania tomentosa*, *Solanum sandwicense*, *Spermolepis hawaiiensis*, *Stenogyne campanulata*, *Viola helenae*, *Viola kauaiensis* var. *wahiawaensis*, *Wilkesia hobdyi*, *Xylosma crenatum*, and *Zanthoxylum hawaiiense* is described in the "Background" section of this final rule.

We are unable to identify these features for *Achyranthes mutica*, *Hibiscus brackenridgei*, *Isodendron pyriformis*, *Phlegmariurus mannii*, *Silene lanceolata*, *Solanum incompletum*, and *Vigna o-wahuensis*, which no longer occur on the islands of Kauai or Niihau, because information on the physical and biological features (*i.e.*, the primary constituent elements) that are considered essential to the conservation of these seven species is not known.

All areas designated as critical habitat are within the historical range of the 83 species at issue and contain one or more of the physical or biological features (primary constituent elements) essential for the conservation of the species.

As described in the discussions for each of the 83 species for which we are designating critical habitat, we are defining the primary constituent elements on the basis of the habitat features of the areas from which the plant species are reported, as described

by the type of plant community (*e.g.*, mesic *Metrosideros polymorpha* forest), associated native plant species, locale information (*e.g.*, steep rocky cliffs, talus slopes, gulches, stream banks), and elevation. The habitat features provide the ecological components required by the plant. The type of plant community and associated native plant species indicate specific microclimate (localized climatic) conditions, retention and availability of water in the soil, soil microorganism community, and nutrient cycling and availability. The locale indicates information on soil type, elevation, rainfall regime, and temperature. Elevation indicates information on daily and seasonal temperature and sun intensity. Therefore, the descriptions of the physical elements of the locations of each of these species, including habitat type, plant communities associated with the species, location, and elevation, as described in the "Supplementary Information: Discussion of Plant Taxa" section above, constitute the primary constituent elements for these species on the islands of Kauai and Niihau.

D. Criteria Used To Identify Critical Habitat

The lack of detailed scientific data on the life history of these plant species makes it impossible for us to develop a robust quantitative model (*e.g.*, population viability analysis (National Research Council 1995)) to identify the optimal number, size, and location of critical habitat units to achieve recovery (Beissinger and Westphal 1998; Burgman *et al.* 2001; Ginzburg *et al.* 1990; Karieva and Wennergren 1995; Menges 1990; Murphy *et al.* 1990; Taylor 1995). At this time, and consistent with the listing of these species and their recovery plans, the best available information leads us to conclude that the current size and distribution of the extant populations are not sufficient to expect a reasonable probability of long-term survival and recovery of these plant species. Therefore, we used available information, including expert scientific opinion, to identify potentially suitable habitat within the known historic range of each species.

We considered several factors in the selection and proposal of specific boundaries for critical habitat for these 83 species. For each of these species, the overall recovery strategy outlined in the approved recovery plans includes: (1) Stabilization of existing wild populations, (2) protection and management of habitat, (3) enhancement of existing small populations and reestablishment of new populations

within historic range, and (4) research on species biology and ecology (Service 1994, 1995, 1996, 1997, 1998a, 1998b, 1998c, 1999). Thus, the long-term recovery of these species is dependent upon the protection of existing population sites and potentially suitable unoccupied habitat within their historic range.

The overall recovery goal stated in the recovery plans for each of these species includes the establishment of 8 to 10 populations with a minimum of 100 mature, reproducing individuals per population for long-lived perennials; 300 mature, reproducing individuals per population for short-lived perennials; and 500 mature, reproducing individuals per population for annuals. There are some specific exceptions to this general recovery goal of 8 to 10 populations for species that are believed to be very narrowly distributed on a single island and the proposed critical habitat designations reflect this exception for these species. For example, the recovery goals for *Cyanea undulata*, *Dubautia pauciflora*, *Hesperomannia lydgatei*, *Labordia lydgatei*, and *Viola helenae* are five populations for each species with 250 individuals in each population. The numbers of individuals and populations for these five species are based on our current understanding of these species and our current understanding of the unique biological characteristics of Wahiawa Bog. These numbers should provide for the maintenance of the majority of the genetic diversity of each species, and assurances that a single catastrophic event will not destroy all members of a species (Service 1994). To be considered recovered, the populations of a multi-island species should be distributed among the islands of its known historic range (Service 1994, 1995, 1996, 1997, 1998a, 1998b, 1998c, 1999). A population, for the purposes of this discussion and as defined in the recovery plans for these species, is a unit in which the individuals could be regularly cross-pollinated and influenced by same small-scale events (such as landslides), and which contains a minimum of 100, 300, or 500 mature, reproducing individuals, depending on whether the species is a long-lived perennial, short-lived perennial, or annual.

By adopting the specific recovery objectives enumerated above, the adverse effects of genetic inbreeding and random environmental events and catastrophes, such as landslides, hurricanes, or tsunamis, that could destroy a large percentage of a species at any one time may be reduced (Menges 1990; Podolsky 2001). These

recovery objectives were initially developed by the HPPRCC and are found in all of the recovery plans for these species. While they are expected to be further refined as more information on the population biology of each species becomes available, the justification for these objectives is found in the current conservation biology literature addressing the conservation of rare and endangered plants and animals (Beissinger and Westphal 1998; Burgman *et al.* 2001; Falk *et al.* 1996; Ginzburg *et al.* 1990; Hendrix and Kyhl 2000; Karieva and Wennergren 1995; Luijten *et al.* 2000; Meffe and Carroll 1996; Menges 1990; Murphy *et al.* 1990; Podolsky 2001; Quintana-Ascencio and Menges 1996; Taylor 1995; Tear *et al.* 1995; Wolf and Harrison 2001). The overall goal of recovery in the short-term is a successful population that can carry on basic life-history processes, such as establishment, reproduction, and dispersal, at a level where the probability of extinction is low. In the long-term, the species and its populations should be at a reduced risk of extinction and be adaptable to environmental change through evolution and migration.

Many aspects of species life history are typically considered to determine guidelines for species' interim stability and recovery, including longevity, breeding system, growth form, fecundity, ramet (a plant that is an independent member of a clone) production, survivorship, seed longevity, environmental variation, and successional stage of the habitat. Hawaiian species are poorly studied, and the only one of these characteristics that can be uniformly applied to all Hawaiian plant species is longevity (*i.e.*, long-lived perennial, short-lived perennial, and annual). In general, long-lived woody perennial species would be expected to be viable at population levels of 50 to 250 individuals per population, while short-lived perennial species would be viable at population levels of 1,500 to 2,500 individuals or more per population. These population numbers were refined for Hawaiian plant species by the HPPRCC (1994) due to the restricted distribution of suitable habitat typical of Hawaiian plants and the likelihood of smaller genetic diversity of several species that evolved from one single introduction. For recovery of Hawaiian plants, the HPPRCC recommended a general recovery guideline of 100 mature, reproducing individuals per population for long-lived perennial species, 300 mature, reproducing individuals per population for short-lived perennial

species, and 500 mature, reproducing individuals per population for annual species.

The HPPRCC also recommended the conservation and establishment of 8 to 10 populations to address the numerous risks to the long-term survival and conservation of Hawaiian plant species. Although absent the detailed information inherent to the types of population variability analysis models described above (Burgman *et al.* 2001), this approach employs two widely recognized and scientifically accepted goals for promoting viable populations of listed species—(1) Creation or maintenance of multiple populations so that a single or series of catastrophic events cannot destroy the entire listed species (Luijten *et al.* 2000; Menges 1990; Quintana-Ascencio and Menges 1996); and (2) increasing the size of each population in the respective critical habitat units to a level where the threats of genetic, demographic, and normal environmental uncertainties are diminished (Hendrix and Kyhl 2000; Luijten *et al.* 2000; Meffe and Carroll 1996; Podolsky 2001; Service 1997; Tear *et al.* 1995; Wolf and Harrison 2001). In general, the larger the number of populations and the larger the size of each population, the lower the probability of extinction (Meffe and Carroll 1996; Raup 1991). This basic conservation principle of redundancy applies to Hawaiian plant species. By maintaining 8 to 10 viable populations in several critical habitat units, the threats represented by a fluctuating environment are alleviated, and the species has a greater likelihood of achieving long-term survival and recovery. Conversely, loss of one or more of the plant populations within any critical habitat unit could result in an increase in the risk that the entire listed species may not survive and recover.

Due to the reduced size of suitable habitat areas for these Hawaiian plant species, they are now more susceptible to the variations and weather fluctuations affecting quality and quantity of available habitat, as well as direct pressure from hundreds of species of nonnative plants and animals. Establishing and conserving 8 to 10 viable populations on one or more islands within the historic range of the species will provide each species with a reasonable expectation of persistence and eventual recovery, even with the high potential that one or more of these populations will be eliminated by normal or random adverse events, such as the hurricanes that occurred in 1982 and 1992 on Kauai, fires, and nonnative plant invasions (HPPRCC 1994; Luijten

et al. 2000; Mangel and Tier 1994; Pimm *et al.* 1998; Stacey and Taper 1992). We conclude that designation of adequate suitable habitat for 8 to 10 populations as critical habitat is essential to give the species a reasonable likelihood of long-term survival and recovery, based on currently available information.

In summary, the long-term survival and recovery of Hawaiian plant species requires the designation of critical habitat units on one or more of the Hawaiian islands with suitable habitat for 8 to 10 populations of each plant species. Some of this habitat is currently not known to be occupied by these species. To recover the species, it will be necessary to conserve suitable habitat in these unoccupied units, which in turn will allow for the establishment of additional populations through natural recruitment or managed reintroductions. Establishment of these additional populations will increase the likelihood that the species will survive and recover in the face of normal and stochastic events (*e.g.*, hurricanes, fire, and nonnative species introductions) (Mangel and Tier 1994; Pimm *et al.* 1998; Stacey and Taper 1992).

In this rule, we have defined the primary constituent elements based on the general habitat features of the areas from which the plants are reported, such as the type of plant community, the associated native plant species, the physical location (*e.g.*, steep rocky cliffs, talus slopes, stream banks), and elevation. The areas we are designating as critical habitat provide some or all of the habitat components essential for the conservation of the 83 plant species.

Our approach to delineating critical habitat units was applied in the following manner:

1. Critical habitat was proposed and will be designated on an island by island basis for ease of understanding for landowners and the public, for ease of conducting the public hearing process, and for ease of conducting public outreach. In Hawaii, landowners and the public are most interested and affected by issues centered on the island on which they reside.

2. We focused on designating units representative of the known current and historical geographic and elevational range of each species; and

3. We designated critical habitat units to allow for expansion of existing wild populations and reestablishment of wild populations within the historic range, as recommended by the recovery plans for each species.

The proposed critical habitat units were delineated by creating rough units for each species by screen digitizing polygons (map units) using ArcView

(Environmental Systems Research Institute, Inc.), a computer GIS program. We created polygons by overlaying current and historic plant location points onto digital topographic maps of each of the islands.

We then evaluated the resulting shape files (delineating historic elevational range and potential, suitable habitat). We refined elevation ranges, and we avoided land areas identified as not suitable for a particular species (*i.e.*, not containing the primary constituent elements). We then considered the resulting shape files for each species to define all suitable habitat on the island, including occupied and unoccupied habitat.

We further evaluated these shape files of suitable habitat. We used several factors to delineate the proposed critical habitat units from these land areas. We reviewed the recovery objectives as described above and in recovery plans for each of the species to determine if the number of populations and population size requirements needed for conservation would be available within the suitable habitat units identified as containing the appropriate primary constituent elements for each species. If more than the area needed for the number of recovery populations was identified as potentially suitable, only those areas within the least disturbed suitable habitat were designated as proposed critical habitat. A population for this purpose is defined as a discrete aggregation of individuals located a sufficient distance from a neighboring aggregation such that the two are not affected by the same small-scale events and are not believed to be consistently cross-pollinated. In the absence of more specific information indicating the appropriate distance to assure limited cross-pollination, we are using a distance of 1,000 m (3,280 ft) based on our review of current literature on gene flow (Barret and Kohn 1991; Fenster and Dudash 1994; Havens 1998; Schierup and Christiansen 1996). We further refined the resulting critical habitat units by using satellite imagery and parcel data to eliminate areas that did not contain the appropriate vegetation or associated native plant species, as well as features such as cultivated agriculture fields, housing developments, and other areas that are unlikely to contribute to the conservation of one or more of the 83 plant species for which critical habitat was proposed on January 28, 2002. We used geographic features (ridge lines, valleys, streams, coastlines, etc.) or manmade features (roads or obvious land use) that created an obvious

boundary for a unit as unit area boundaries.

Following publication of the proposed critical habitat rules, some of which were revised, for 255 Hawaiian plants (67 FR 3940, 67 FR 9806, 67 FR 15856, 67 FR 16492, 67 FR 34522, 67 FR 36968, 67 FR 37108), we re-evaluated proposed critical habitat, State-wide, for each species using the recovery guidelines (8 to 10 populations with a minimum of 100 mature, reproducing individuals per population for long-lived perennials; 300 mature, reproducing individuals per population for short-lived perennials; and 500 mature, reproducing individuals per population for annuals) to determine if we had inadvertently proposed for designation too much or too little habitat to meet the essential recovery goals of 8 to 10 populations per species distributed among the islands of the species' known historic range (HINHP Database 2000, 2001; Wagner *et al.* 1990, 1999). Based on comments and information we received during the comment periods, we assessed the proposed critical habitat in order to ascertain which areas contained the highest quality habitat and had the highest likelihood of conserving the species. We ranked areas of the proposed critical habitat by the quality of the primary constituent elements (*i.e.*, intact native plant communities, predominance of associated native plants versus nonnative plants), potential as a conservation area (*i.e.*, whether the land is zoned conservation and; whether the landowner is already participating in plant conservation or recovery actions), and current or expected management of known threats (*e.g.*, ungulate control; weed control; nonnative insect, slug, and snail control). We ranked as most essential areas that contain high quality primary constituent elements, are zoned for conservation, and have on-going or expected threat abatement actions. This ranking process also included determining which habitats were representative of the historic geographical and ecological distributions of the species (see "Primary Constituent Elements"). Areas that are zoned for conservation or have been identified as a State Forest Reserve, NAR, Wildlife Preserve, State Park, or are managed for conservation by a private landowner have a high likelihood of providing conservation benefit to the species and are therefore more essential than other comparable habitat outside of those types of areas. Of these most essential areas, we selected adequate area for our recovery goals of 8 to 10 populations distributed

among the islands of each species' historical range. Of the proposed critical habitat for a species, areas that were not ranked most essential and that may provide habitat for populations above the recovery goal of 8 to 10 were determined not essential for the conservation of the species and were excluded from the final designation. An area that is covered by a plan that meets the criteria as outlined in "Managed Lands" (provides a conservation benefit to the species and assurances that it will be implemented and effective), does not constitute critical habitat as defined by the Act because the primary constituent elements found there are not in need of special management considerations or protection (section 3(5)(a) of the Act).

Within the critical habitat boundaries, section 7 consultation is generally necessary and adverse modification could occur only if the primary constituent elements are affected. Therefore, not all activities within critical habitat would trigger an adverse modification conclusion. In selecting areas of designated critical habitat, we made an effort to avoid developed areas, such as towns and other similar lands, that are unlikely to contribute to the conservation of the 83 species. However, the minimum mapping unit that we used to approximate our delineation of critical habitat for these species did not allow us to exclude all such developed areas from the maps. In addition, existing manmade features and structures within the boundaries of the mapped unit, such as buildings; roads; aqueducts and other water system features—including, but not limited to, pumping stations, irrigation ditches, pipelines, siphons, tunnels, water tanks, gaging stations, intakes, reservoirs, diversions, flumes, and wells; telecommunications towers and associated structures and equipment; electrical power transmission lines and distribution, and communication facilities and regularly maintained associated rights-of-way and access ways; radars; telemetry antennas; missile launch sites; arboreta and gardens; heiau (indigenous places of worship or shrines) and other archaeological sites; airports; other paved areas; lawns and other rural residential landscaped areas do not contain one or more of the primary constituent elements and are therefore excluded under the terms of this regulation. Federal actions limited to those areas would not trigger a section 7 consultation unless they affect the species or primary constituent elements in adjacent critical habitat.

In summary, for these species we utilized the approved recovery plan

guidance to identify appropriately sized land units containing essential occupied and unoccupied habitat. Based on the best available information, we believe these areas constitute the habitat necessary on Kauai and Niihau to provide for the recovery of these 83 species.

Managed Lands

Currently occupied and historically known sites containing one or more of the primary constituent elements considered essential to the conservation of these 83 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 and progress reports; management plans; grants; memoranda of understanding and cooperative agreements; DOFAW planning documents; internal letters and memos; biological assessments and environmental impact statements; and section 7 consultations. Additionally, we contacted the major private landowners on Kauai and Niihau by mail, and we met with several landowners between the publication of the revised proposal on January 28, 2002, and the end of the comment period on September 30, 2002, to discuss their current management for the plants on their lands. We also met with Kauai District DOFAW and State Parks office staff to discuss management activities they are conducting on Kauai. In addition, we reviewed new biological information and public comments received during the public comment periods and at the public hearings.

Pursuant to the definition of critical habitat in section 3 of the Act, the primary constituent elements as found in 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. We consider a plan adequate when it: (1) 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) 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 have adequate funding for the management plan); and, (3) provides assurances that 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 because the primary constituent elements found there are not in need of special management.

In determining whether a management plan or agreement provides a conservation benefit to the species, we considered the following:

(1) The factors that led to the listing of the species, as described in the final rules for listing each of the species. Effects of clearing and burning for agricultural purposes and of invasive nonnative plant and animal species have contributed to the decline of nearly all endangered and threatened plants in Hawaii (Cuddihy and Stone 1990; Howarth 1985; Loope 1998; Scott *et al.* 1986; Service 1994, 1995, 1996, 1997, 1998a, 1998b, 1998c, 1999; Smith 1985; Stone 1985; Vitousek 1992; Wagner *et al.* 1985).

Current threats to these species include nonnative grass- and shrub-carried wildfire; browsing, digging, rooting, and trampling from feral ungulates (including deer, goats, cattle, and pigs); direct and indirect effects of nonnative plant invasions, including alteration of habitat structure and microclimate; and disruption of pollination and gene-flow processes by adverse effects of mosquito-borne avian disease on forest bird pollinators, direct competition between native and nonnative insect pollinators for food, and predation of native insect pollinators by nonnative hymenopteran insects (ants). In addition, physiological processes such as reproduction and establishment continue to be negatively affected by fruit- and flower-eating pests such as nonnative arthropods, molluscs, and rats, and photosynthesis and water transport are affected by nonnative insects, pathogens, and diseases. Many of these factors interact with one another, thereby compounding effects. Such interactions include nonnative plant invasions altering wildfire regimes, feral ungulates carrying weeds and disturbing vegetation and soils, thereby facilitating dispersal and establishment of nonnative plants, and numerous nonnative insect species feeding on native plants, thereby increasing their vulnerability and exposure to pathogens and disease

(Bruegmann *et al.* 2001; Cuddihy and Stone 1990; D'Antonio and Vitousek 1992; Howarth 1985; Mack 1992; Scott *et al.* 1986; Service 1994, 1995, 1996, 1997, 1998a, 1998b, 1998c, 1999; Smith 1985; Tunison *et al.* 1992);

(2) The recommendations from the HPPRCC in their 1998 report to us ("Habitat Essential to the Recovery of Hawaiian Plants"). As summarized in this report, recovery goals for endangered Hawaiian plant species cannot be achieved without the effective control of nonnative species threats, wildfire, and land use changes; and

(3) The management actions needed for assurance of survival and ultimate recovery of Hawaii's endangered plants. These actions are described in our recovery plans for these 83 species (Service 1994, 1995, 1996, 1997, 1998a, 1998b, 1998c, 1999), in the 1998 HPPRCC report to us, 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). In addition to monitoring the plant populations, these actions include, but are not limited to: (1) Feral ungulate control; (2) nonnative plant control; (3) rodent control; (4) invertebrate pest control; (5) fire management; (6) maintenance of genetic material of the endangered and threatened plant species; (7) propagation, reintroduction, and augmentation of existing populations into areas deemed essential for the recovery of these species; (8) ongoing management of the wild, outplanted, and augmented populations; and (9) habitat management and restoration in areas deemed essential for the recovery of these species.

In general, taking all of the above recommended management actions into account, the following management actions are important: Feral ungulate control; wildfire management; nonnative plant control; rodent control; invertebrate pest control; maintenance of genetic material of the endangered and threatened plant species; propagation, reintroduction, and 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; and control of human activities/access (Service 1994, 1995, 1996, 1997, 1998a, 1998b, 1998c,

1999). On a case-by-case basis, these actions may rise to different levels 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.

As shown in Table 2, the 83 species of plants are found on Federal, State, and private lands on the islands of Kauai and Niihau. Information received in response to our public notices; meetings with landowners of Kauai County and Kauai District DOFAW staff; the November 7, 2000, and January 28, 2002, proposals; public comment periods; and the February 6, 2001, and February 13, 2002, public hearings; as well as information in our files, indicated that there is limited on-going conservation management action for these plants, except as noted below. Without management plans and assurances that the plans will be implemented, we are unable to find that the land in question does not require special management or protection.

Federal Lands

The Pacific Missile Range Facility (PMRF) at Barking Sands on Kauai's west side is on federally owned or State-leased lands administered by the Navy for instrumented and multi-environment weapon testing and tracking. *Sesbania tomentosa* and *Panicum niihauense* are reported from the dunes on State lands adjacent to the Barking Sands Facility at Polihale State Park. The dune system extends from Polihale State Park through the PMRF to State-owned lands at Kekaha, and may be one of the best intact coastal dune systems remaining on the main Hawaiian Islands. We evaluated the dune habitat at the Barking Sands Facility for *Sesbania tomentosa* and *Panicum niihauense*, (proposed Unit H), as well as the habitat on Navy lands at Makaha Ridge for *Wilkesia hobdyi* (proposed Unit I), and determined that these lands are not essential for the conservation of *Sesbania tomentosa* or *Wilkesia hobdyi*, although they are essential for *Panicum niihauense*. The Navy completed an Integrated Natural Resources Management Plan (INRMP 2001) that addressed some of the issues concerning maintenance and improvement of the essential elements for listed threatened and endangered species on their lands at PMRF and Makaha Ridge. In 2001, we sent a letter pursuant to section 7 of the Act concurring that the actions in the plan would not have an adverse impact on listed threatened or endangered species, but that the plan did not address the specific needs of *Panicum niihauense*.

Management at the Barking Sands Facility lands currently consists of restricting human access and off-road vehicles from the dune ecosystems and mowing landscaped areas. These actions alone are not sufficient to address the factors inhibiting the long-term conservation of *Panicum niihauense*. Therefore, we cannot at this time find that management on these lands under Federal jurisdiction as sufficient to find that they no longer meet the definition of critical habitat. If the Navy revises and implements an INRMP or other endangered species management plans that address the maintenance and improvement of the essential elements for this plant species and provides for its long-term conservation, we will reassess the critical habitat boundaries in light of these management plans.

State of Hawaii Lands

The State lands on the island of Kauai include ceded and leased lands, and those that are administered by the Department of Land and Natural Resources (DLNR). DLNR lands include State Parks, administered by the State Division of State Parks; and Forest Reserves, NARs, and the Alakai Wilderness Preserve, administered by the DOFAW. The DLNR also manages DHHL lands on the island of Kauai. We determined that habitat that is essential to the conservation of the following 78 of the 83 federally threatened or endangered plant species is found on State lands: *Adenophorus periens*, *Alectryon macrococcus*, *Alsinidendron lychnoides*, *Alsinidendron viscosum*, *Bonamia menziesii*, *Brighamia insignis*, *Centaurium sebaeoides*, *Chamaesyce halemanui*, *Ctenitis squamigera*, *Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyanea undulata*, *Cyperus trachysanthos*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rhytidosperma*, *Delissea rivularis*, *Delissea undulata*, *Diellia erecta*, *Diellia pallida*, *Diplazium molokaiense*, *Dubautia latifolia*, *Dubautia pauciflora*, *Euphorbia haeleleana*, *Exocarpos luteolus*, *Flueggea neowawraea*, *Gouania meyenii*, *Hedyotis cookiana*, *Hedyotis st.-johnii*, *Hesperomannia lydgatei*, *Hibiscadelphus woodii*, *Hibiscus clayi*, *Hibiscus waimeae* ssp. *hannerae*, *Ischaemum byrone*, *Isodendron laurifolium*, *Isodendron longifolium*, *Kokia kauaiensis*, *Labordia lydgatei*, *Lipochaeta fauriei*, *Lipochaeta micrantha*, *Lipochaeta waimeaensis*, *Lobelia niihauensis*, *Lysimachia filifolia*, *Mariscus pennatifolius*, *Melicope haupeensis*, *Melicope knudsenii*, *Melicope pallida*, *Munroidendron racemosum*, *Myrsine*

linearifolia, *Nothocestrum peltatum*, *Panicum niihauense*, *Peucedanum sandwicense*, *Phlegmariurus nutans*, *Phyllostegia waimeae*, *Plantago princeps*, *Platanthera holochila*, *Poa mannii*, *Poa sandwicensis*, *Poa siphonoglossa*, *Pteralyxia kauaiensis*, *Remya kauaiensis*, *Remya montgomeryi*, *Schiedea apokremnos*, *Schiedea helleri*, *Schiedea kauaiensis*, *Schiedea membranacea*, *Schiedea spergulina* var. *spergulina*, *Schiedea stellarioides*, *Sesbania tomentosa*, *Solanum sandwicense*, *Spermolepis hawaiiensis*, *Stenogyne campanulata*, *Viola helenae*, *Viola kauaiensis* var. *wahiawaensis*, *Wilkesia hobdyi*, *Xylosma crenatum*, and *Zanthoxylum hawaiiense*.

Although the State conducts some conservation management actions on these lands and provides access to others who are conducting such activities, these programs do not adequately address the threats to these listed plant species on their lands. In addition, there are no comprehensive management plans for the long-term conservation of endangered and threatened plants on these lands, no updated detailed reports on management actions conducted, and no assurances that management actions will be implemented. Therefore, we cannot at this time find that management on these State lands is sufficient to find that they do not meet the definition of critical habitat. However, we will work with the State in developing conservation planning efforts.

Private Lands

We determined that habitat that is essential to the conservation of 38 of the 83 federally listed plant species is found on privately owned lands on Kauai and Niihau: *Adenophorus periens*, *Alsiniendron lychnoides*, *Bonamia menziesii*, *Brighamia insignis*, *Cyanea asarifolia*, *Cyanea recta*, *Cyanea remyi*, *Cyanea undulata*, *Cyrtandra cyaneoides*, *Cyrtandra limahuliensis*, *Delissea rhytidosperma*, *Delissea undulata*, *Dubautia pauciflorula*, *Exocarpos luteolus*, *Hesperomannia lydgatei*, *Hibiscus clayi*, *Hibiscus waimeae* ssp. *hannerae*, *Ischaemum byrone*, *Isodendron longifolium*, *Labordia lydgatei*, *Labordia tinifolia* var. *wahiawaensis*, *Lipochaeta micrantha*, *Lobelia niihauensis*, *Lysimachia filifolia*, *Melicope haupuensis*, *Munroidendron racemosum*, *Myrsine linearifolia*, *Peucedanum sandwicense*, *Phlegmariurus nutans*, *Phyllostegia wawrana*, *Plantago princeps*, *Platanthera holochila*, *Pteralyxia kauaiensis*, *Schiedea nuttallii*, *Schiedea spergulina* var. *leiopoda*, *Sesbania*

tomentosa, *Viola helenae*, and *Viola kauaiensis* var. *wahiawaensis*.

Based on current information, the main activities being conducted by several of these landowners are weeding, control of human access, and planting of native species. In addition, responses and comments we received during the three comment periods and the public hearings, and new information used in preparing this final rule, did not adequately address the threats to these listed plant species on private lands on Kauai and Niihau. In addition, none of the private landowners are implementing management actions which would exclude them from critical habitat under 3(5)(A). If the private landowner is managing their lands that address the maintenance and improvement of the essential elements for these plant species and provide for their long-term conservation, we will reassess the critical habitat boundaries in light of this new information.

The critical habitat areas described below constitute our best assessment of the physical and biological features needed for the conservation of the 83 plant species and the special management needs of these species, and are based on the best scientific and commercial information available and described above. We publish this final rule 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 consider reevaluating the boundaries of areas that warrant critical habitat designation.

The approximate areas of the designated critical habitat by landownership or jurisdiction are shown in Table 4.

Critical habitat includes habitat for these 83 species primarily in the upland portions of Kauai, and for one species in the northern portion of Niihau. Lands designated as critical habitat have been divided into a total of 217 units. A brief description of each unit is presented below.

Descriptions of Critical Habitat Units

Kauai 4—*Adenophorus periens*—a

This unit is critical habitat for *Adenophorus periens* and is 237 ha (585 ac) on State (Alakai Wilderness Preserve and Kealia, and Moloaa Forest Reserves) and private land. The unit contains a portion of Waioli and Limahuli Valleys, Ke Ana Kolea and Kahili, Kekoiki,

Leleiwi, Mount Namahana, and Puu Eu Summits. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Adenophorus periens* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, *Metrosideros polymorpha* trunks, in riparian banks of stream systems in well-developed, closed, shady canopy. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations on the island from being destroyed by one naturally occurring catastrophic event.

Kauai 10—*Adenophorus periens*—b

This unit is critical habitat for *Adenophorus periens* and is 492 ha (1,215 ac) on State (Lihue-Koloa Forest Reserve) and private land. The unit contains a portion of Kalalau Valley, Limahuli Valley, Kanaele Swamp, and Hulua, Kahili, and Kapalaoa Summits. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Adenophorus periens* and is currently occupied with 50 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, *Metrosideros polymorpha* trunks, in riparian banks of stream systems in well-developed, closed, shady canopy. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations on the island from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Adenophorus periens*—c

This unit is critical habitat for *Adenophorus periens* and is 469 ha (1,160 ac) on State (Halelea Forest Reserve) and private land. The unit contains a portion of Kalalau and

Limahuli Valleys, Waiopa, and Kaliko, Namolokama Mountain, and Puu Manu Summits, and. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Adenophorus periens* and is currently occupied with two plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, *Metrosideros polymorpha* trunks, in riparian banks of stream systems in well-developed, closed, shady canopy. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations on the island from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Adenophorus periens*—d

This unit is critical habitat for *Adenophorus periens* and is 1,007 ha (2,487 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, and Na Pali Coast State Park) and private land. The unit contains a portion of Kalalau and Limahuli Valleys, and Hono o Na Pali, Keanapuka, Moaalele, Pali Eleele, and Pihea Summits. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Adenophorus periens* and is currently occupied with six plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, *Metrosideros polymorpha* trunks, in riparian banks of stream systems in well-developed, closed, shady canopy. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations on the island from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Alectryon macrococcus*—a

This unit is critical habitat for *Alectryon macrococcus* and is 382 ha (943 ac) on State land (Alakai Wilderness Preserve). This unit contains portions of Kawaiiki and Kipalau Valleys. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Alectryon macrococcus* and is currently occupied with between 123 and 133 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry slopes or gulches in *Diospyros* spp.-*Metrosideros polymorpha* lowland mesic forest, *Metrosideros polymorpha* mixed mesic forest, or *Diospyros* spp. mixed mesic forest. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations on the island from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Alectryon macrococcus*—b

This unit is critical habitat for *Alectryon macrococcus* and is 90 ha (222 ac) on State land (Na Pali Coast State Park) and is completely within the back of Kalalau Valley. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry slopes or gulches in *Diospyros* spp.-*Metrosideros polymorpha* lowland mesic forest, *Metrosideros polymorpha* mixed mesic forest, or *Diospyros* spp. mixed mesic forest. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Alectryon macrococcus* and is currently occupied with between 35 and 40 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. Critical habitat on this island provides for a recovery population within the historical range of this multi-island species.

Kauai 11—*Alsinidendron lychnoides*—a

This unit is critical habitat for *Alsinidendron lychnoides* and is 994 ha (2,457 ac) on State (Alakai Wilderness Preserve, Halelea Forest Reserve, Hono o Na Pali NAR, and Na Pali Coast State Park) and private land. This unit contains portions of the Alakai Trail and Alealau, Hono o Na Pali, Keanapuka, Moaalele, Pihea, Pohakea, and Waiahuakua Summits. This unit provides habitat for six populations of 100 mature, reproducing individuals of the long-lived perennial *Alsinidendron lychnoides* and is currently occupied with three plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep riparian clay or silty soil banks in montane wet forests, and is the area most likely to contain a viable seed bank on this side of the island. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Alsinidendron lychnoides*—b

This unit is critical habitat for *Alsinidendron lychnoides* and is 138 ha (340 ac) on State land (Alakai Wilderness Preserve) and contains a portion of the Mohihi-Waialae Trail and the Alakai Swamp. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Alsinidendron lychnoides* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep riparian clay or silty soil banks in montane wet forests. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Alsinidendron lychnoides*—c

This unit is critical habitat for *Alsinidendron lychnoides* and is 55 ha

(136 ac) on State land (Alakai Wilderness Preserve) and contains a portion of the Mohihi Waialai Trail, Mohihi Stream and the Alakai Swamp. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Alsinidendron lychnoides* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep riparian clay or silty soil banks in montane wet forests. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Alsinidendron viscosum*—a

This unit is critical habitat for *Alsinidendron viscosum* and is 736 ha (1,820 ac) on State land (Alakai Wilderness Preserve). This unit contains portions of Kaluahaulu and Kawaiiki Ridge. This unit provides habitat for seven populations of 300 mature, reproducing individuals of the short-lived perennial *Alsinidendron viscosum* and is currently occupied with 26 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes in *Acacia koa-Metrosideros polymorpha* lowland or montane mesic forest. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Alsinidendron viscosum*—b

This unit is critical habitat for *Alsinidendron viscosum* and is 17 ha (42 ac) on State land (Kokee State Park) and contains a portion of Kumuela Ridge. This unit, in combination with *Alsinidendron viscosum*—c, provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Alsinidendron viscosum* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat

that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes in *Acacia koa-Metrosideros polymorpha* lowland or montane mesic forest. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Alsinidendron viscosum*—c

This unit is critical habitat for *Alsinidendron viscosum* and is 22 ha (55 ac) on State land (Kokee State Park) and contains a portion of Kauaikinana Stream and Kumuela Trail and Ridge. This unit, in combination with *Alsinidendron viscosum*—b, provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Alsinidendron viscosum* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes in *Acacia koa-Metrosideros polymorpha* lowland or montane mesic forest. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Alsinidendron viscosum*—d

This unit is critical habitat for *Alsinidendron viscosum* and is 61 ha (150 ac) on State land (Alakai Wilderness Preserve) and contains a portion of Mohihi Waialae Trail and Kohua Ridge. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Alsinidendron viscosum* and is currently occupied with 26 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes in *Acacia koa-Metrosideros polymorpha* lowland or montane mesic forest. This unit is geographically separated from the other three units designated as critical habitat

for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. The 267 other plants on Kauai are not included in critical habitat because the habitat they occupy is not considered essential to the conservation of this species. The more appropriate habitat on Kauai, within its historical range, are being designated as critical habitat.

Kauai 10—*Bonamia menziesii*—a

This unit is critical habitat for *Bonamia menziesii* and is 420 ha (1,038 ac) on State (Lihue-Koloa Forest Reserve) and private land. This unit contains Kahili Summit and portions of Kanaele Swamp. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Bonamia menziesii* and is currently occupied with 25 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species and wet habitat that is unique to the Kauai populations. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry, mesic, or wet *Metrosideros polymorpha-Cheirodendron-Dicranopteris* forest. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Bonamia menziesii*—b

This unit is critical habitat for *Bonamia menziesii* and is 93 ha (229 ac) on State land (Alakai Wilderness Preserve) and contains a portion of Koaie Stream and Kipalau Valley. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Bonamia menziesii* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species and wet habitat that is unique to the Kauai populations. The habitat features contained in this unit that are essential for this species include, but are

not limited to, dry, mesic, or wet *Metrosideros polymorpha-Cheirodendron-Dicranopteris* forest. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 6—*Brighamia insignis*—a

This unit is critical habitat for *Brighamia insignis* and is 63 ha (156 ac) on private land and contains a portion of Keopaweo Summit on the north side of Mount Haupu. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Brighamia insignis* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, rocky ledges with little soil or steep sea cliffs in lowland dry grasslands or shrublands with annual rainfall that is usually less than 170 cm (65 in). This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 7—*Brighamia insignis*—b

This unit is critical habitat for *Brighamia insignis* and is 340 ha (843 ac) on private land. This unit contains the Haupu and Naluakeina Summits and Queen Victoria's Profile. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Brighamia insignis* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, rocky ledges with little soil or steep sea cliffs in lowland dry grasslands or shrublands with annual rainfall that is usually less than 170 cm (65 in). This unit provides for one population within this multi-island

species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Brighamia insignis*—c

This unit is critical habitat for *Brighamia insignis* and is 1,639 ha (4,051 ac) on State land (Hono o Na Pali NAR, Puu Ka Pele Forest Reserve, and Milolii, Nualolo Kai, and Na Pali Coast State Parks). This unit contains Alapii, Mukuaiki, and Puanaiea Points; Awaawapuhi, Honopu, Kalalau, Kawaiula, Makaha, Milolii, Nualolo, Paaiki, and Poopooiki Valleys; Hanakoa, Hoolulu, Kalalau, and Waiahuakua Streams; Kalalau Beach and Trail; Kanakou Summit and Nakeikionaiwi Pillar. The habitat features contained in this unit that are essential for this species include, but are not limited to, rocky ledges with little soil or steep sea cliffs in lowland dry grasslands or shrublands with annual rainfall that is usually less than 170 cm (65 in). This unit provides habitat for seven populations of 300 mature, reproducing individuals of the short-lived perennial *Brighamia insignis* and is currently occupied with between 40 and 60 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. This unit provides for seven populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Niihau 1—*Brighamia insignis*—a

This unit is critical habitat for *Brighamia insignis* and is 144 ha (357 ac) on private land. This unit contains Puu Alala and Mokouia Valley. The habitat features contained in this unit that are essential for this species include, but are not limited to, rocky ledges with little soil or steep sea cliffs in lowland dry grasslands or shrublands with annual rainfall that is usually less than 170 cm (65 in). This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Brighamia insignis* and is currently occupied with at least one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important

for the expansion of the present population, which is currently considered non-viable. This unit provides for one population within this multi-island species' historical range on Niihau that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Centaurium sebaeoides*—a

This unit is critical habitat for *Centaurium sebaeoides* and is 155 ha (385 ac) on State land (Hono o Na Pali NAR, Puu Ka Pele Forest Reserve, and Milolii, Nualolo, and Na Pali Coast State Parks). This unit contains Awaawapuhi, Honopu, Kalalau, Milolii, and Nualolo Valleys; Hanakoa, Hoolulu, Kalalau, and Waiahuakua Streams; Mukuaiki and Puanaiea Points; and Kalalau Beach. This unit provides habitat for four populations of 500 mature, reproducing individuals of the annual *Centaurium sebaeoides* and is currently occupied with between 22 and 52 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, volcanic or clay soils or cliffs in arid coastal areas. This unit provides for four populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Chamaesyce halemanui*—a

This unit is critical habitat for *Chamaesyce halemanui* and is 108 ha (267 ac) on State land containing Kawaiiki Ridge. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Chamaesyce halemanui* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes of gulches in mesic *Acacia koa* forests. This unit is geographically separated from the other two units

designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Chamaesyce halemanui*—b

This unit is critical habitat for *Chamaesyce halemanui* and is 17 ha (43 ac) on State land (Kokee State Park) and contains a portion of the east-facing side of Halemanu Valley below the National Aeronautics and Space Administration (NASA) Tracking Station. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Chamaesyce halemanui* and is currently occupied with 30 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes of gulches in mesic *Acacia koa* forests. This unit is geographically separated from the other two units designated as critical habitat for this island endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Chamaesyce halemanui*—c

This unit is critical habitat for *Chamaesyce halemanui* and is 1,283 ha (3,172 ac) on State land (Kuia NAR, and Kokee and Na Pali Coast State Parks). This unit contains Mahanaloa Valley, Kainamanu Summit, and Nualolo, Awaawapuhi, and Honopu Trails. This unit provides habitat for eight populations of 300 mature, reproducing individuals of the short-lived perennial *Chamaesyce halemanui* and is currently occupied with between 50 and 100 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes of gulches in mesic *Acacia koa* forests. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Ctenitis squamigera*—a

This unit is critical habitat for *Ctenitis squamigera* and is 735 ha (1,817 ac) on State land (Kuia NAR). This unit contains Mahanaloa Valley and Milolii Ridge. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Ctenitis squamigera* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, rock faces in gulches in the understory of *Metrosideros polymorpha-Diospyros* spp. mesic forest and diverse mesic forest. It provides habitat for the westernmost range of the species and the rock face habitat requirement that is unique to Kauai. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 4—*Cyanea asarifolia*—a

This unit is critical habitat for *Cyanea asarifolia* and is 656 ha (1,619 ac) on State (Kealia and Moloaa Forest Reserves) and private land. This unit contains Ke Ana Kolea, Mount Namahana, and Anahola, Kekoiki, Leleiwi, and Puu Awa Summits. This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Cyanea asarifolia* and is currently unoccupied. This unit provides habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, pockets of soil on sheer, wet rock cliffs and waterfalls in lowland wet forests. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 10—*Cyanea asarifolia*—b

This unit is critical habitat for *Cyanea asarifolia* and is 903 ha (2,232 ac) on State (Lihue-Koloa Forest Reserve) and private land. This unit contains Iole, Kalalea, Kamanu, and Palikea Summits. This unit provides habitat for seven populations of 300 mature, reproducing

individuals of the short-lived perennial *Cyanea asarifolia* and is currently occupied with 4 or 5 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, pockets of soil on sheer wet rock cliffs and waterfalls in lowland wet forests. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 4—*Cyanea recta*—a

This unit is critical habitat for *Cyanea recta* and is 252 ha (623 ac) on State (Kealia and Moloaa Forest Reserves) and private land. This unit contains Kahili, Kekoiki, Leleiwi, Namahana, and Puu Eu Summits. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Cyanea recta* and is currently occupied with 43 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, gulches or slopes in lowland wet or mesic *Metrosideros polymorpha* forest or shrubland. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 4—*Cyanea recta*—b

This unit is critical habitat for *Cyanea recta* and is 352 ha (868 ac) on State (Kealia Forest Reserve) and private land. This unit contains Makaleha and Leleiwi Summits. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Cyanea recta* and is currently occupied with 80 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this

species include, but are not limited to, gulches or slopes in lowland wet or mesic *Metrosideros polymorpha* forest or shrubland. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Cyanea recta*—c

This unit is critical habitat for *Cyanea recta* and is 553 ha (1,367 ac) on State (Halelea Forest Reserve) and private land. This unit contains Puu Manu and Kaliko Summits, and Mount Namolokama. This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Cyanea recta* and is currently occupied with between 75 and 85 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, gulches or slopes in lowland wet or mesic *Metrosideros polymorpha* forest or shrubland. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Cyanea recta*—d

This unit is critical habitat for *Cyanea recta* and is 398 ha (982 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, and Na Pali Coast State Park) and private land. This unit contains Pali Eleele Summit and Limahuli Falls. This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Cyanea recta* and is currently unoccupied. This unit provides habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, gulches or slopes in lowland wet or mesic *Metrosideros polymorpha* forest or shrubland. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 4—*Cyanea remyi*—a

This unit is critical habitat for *Cyanea remyi* and is 354 ha (874 ac) on State (Kealia Forest Reserve) and private land. This unit contains Leleiwi Summit and portions of the Makaleha Mountains. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Cyanea remyi* and is currently occupied with between 11 and 51 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, narrow drainages and seepy stream banks in lowland wet forest or shrubland. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 10—*Cyanea remyi*—b

This unit is critical habitat for *Cyanea remyi* and is 1,904 ha (4,706 ac) on private land. This unit contains Ioloe, Kalalea, Kamanu, Kapalaoa and Palikea Summits. This unit provides habitat for four populations of 300 mature, reproducing individuals of the short-lived perennial *Cyanea remyi* and is currently occupied with between 70 and 120 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, narrow drainages and seepy stream banks in lowland wet forest or shrubland. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Cyanea remyi*—c

This unit is critical habitat for *Cyanea remyi* and is 365 ha (902 ac) on State land (Halelea Forest Reserve), containing Puu Manu Summit. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Cyanea remyi* and is currently occupied with 12 plants. This unit is essential to the

conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, narrow drainages and seepy stream banks in lowland wet forest or shrubland. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Cyanea remyi*—d

This unit is critical habitat for *Cyanea remyi* and is 664 ha (1,642 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, and Haena and Na Pali Coast State Parks) and private land. This unit contains Pohakea and Maunapuluo Summits, Hanakapiai and Limahuli Valleys, and Manoa Stream. This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Cyanea remyi* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, narrow drainages and seepy stream banks in lowland wet forest or shrubland. This unit is geographically separated from other units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 10—*Cyanea undulata*—a

This unit is critical habitat for *Cyanea undulata* and is 1,006 ha (2,483 ac) on State (Lihue-Koloa Forest Reserve) and private land. This unit contains Kanaele Swamp, Kahili, Kapalaoa, and Puu a Uuka Summits. This unit provides habitat for five populations of 250 mature, reproducing individuals of the short-lived perennial *Cyanea undulata* and is currently occupied with 28 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are

essential for this species include, but are not limited to, narrow drainages and seepy stream banks in *Metrosideros polymorpha* dry to wet montane forest or shrubland. This unit is of an appropriate size so that each potential recovery population on Kauai within the unit is geographically separated enough to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Cyperus trachysanthos*—a

This unit is critical habitat for *Cyperus trachysanthos* and is 272 ha (672 ac) on State land (Na Pali Coast State Park and Puu Ka Pele Forest Reserve) and extends along the coast from Makaha point to Hanakoa Valley. This unit provides habitat for six populations of 300 mature, reproducing individuals of the short-lived perennial *Cyperus trachysanthos* and is currently occupied with over 300 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, wet sites (mud flats, wet clay soil, or wet cliff seeps) on seepy flats or talus slopes. This unit provides for six populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 4—*Cyrtandra cyaneoides*—a

This unit is critical habitat for *Cyrtandra cyaneoides* and is 376 ha (929 ac) on State (Kealia and Lihue-Koloa Forest Reserves) and private land. This unit contains Leleiwi, Makaleha, Puu Eu, and Wekiu Summits. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Cyrtandra cyaneoides* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, talus rubble on steep slopes or cliffs with water seeps running below, near streams or waterfalls in lowland or montane wet forest or shrubland dominated by *Metrosideros polymorpha* or a mixture of

Metrosideros polymorpha, *Cheirodendron* spp., and *Dicranopteris linearis*. This unit is geographically separated from the other two units designated as critical habitat for this island endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Cyrtandra cyaneoides*—b

This unit is critical habitat for *Cyrtandra cyaneoides* and is 849 ha (2,098 ac) on State (Halelea Forest Reserve) and private land. This unit contains Mount Namolokama and Kaliko and Puu Manu Summits. This unit provides habitat for four populations of 300 mature, reproducing individuals of the short-lived perennial *Cyrtandra cyaneoides* and is currently occupied with between 51 and 101 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, talus rubble on steep slopes or cliffs with water seeps running below, near streams or waterfalls in lowland or montane wet forest or shrubland dominated by *Metrosideros polymorpha* or a mixture of *Metrosideros polymorpha*, *Cheirodendron* spp., and *Dicranopteris linearis*. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Cyrtandra cyaneoides*—c

This unit is critical habitat for *Cyrtandra cyaneoides* and is 1,117 ha (2,761 ac) on State (Halelea Forest Reserve) and private land. This unit contains Hinalele Falls and portions of Mahinakehau Ridge. This unit provides habitat for four populations of 300 mature, reproducing individuals of the short-lived perennial *Cyrtandra cyaneoides* and is currently occupied with over 300 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population. The habitat features contained in this unit that are essential for this species include, but are not limited to, talus rubble on steep slopes or cliffs with water seeps running below, near streams

or waterfalls in lowland or montane wet forest or shrubland dominated by *Metrosideros polymorpha* or a mixture of *Metrosideros polymorpha*, *Cheirodendron* spp., and *Dicranopteris linearis*. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 4—*Cyrtandra limahuliensis*—a

This unit is critical habitat for *Cyrtandra limahuliensis* and is 501 ha (1,238 ac) on State (Kealia and Moloaa Forest Reserves) and private land. This unit contains portions of Mount Namahana, Leileiwi, Keana Kolea, Puuawa, and Anahola Stream. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Cyrtandra limahuliensis* and is currently occupied with between 51 and 101 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in lowland wet forests. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. The six to seven other plants on Kauai are not included in critical habitat because the habitat they occupy is not considered essential to the conservation of this species. The more intact and appropriate habitat within its historical range on Kauai, is being designated as critical habitat.

Kauai 4—*Cyrtandra limahuliensis*—b

This unit is critical habitat for *Cyrtandra limahuliensis* and is 354 ha (874 ac) on State (Kealia Forest Reserve) and private land. This unit contains Leleiwi Summit and portions of the Makaleha Mountains. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Cyrtandra limahuliensis* and is currently occupied with 109 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat

features contained in this unit that are essential for this species include, but are not limited to, stream banks in lowland wet forests. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 10—*Cyrtandra limahuliensis*—c

This unit is critical habitat for *Cyrtandra limahuliensis* and is 2,014 ha (4,975 ac) on State (Halelea and Lihue-Koloa Forest Reserves) and private land. This unit contains Iole, Kalalea, Kamanu, Kapalaoa, and Kawaikini Summits, all within the Waialeale area. This unit provides habitat for four populations of 300 mature, reproducing individuals of the short-lived perennial *Cyrtandra limahuliensis* and is currently occupied with between 530 and 707 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in lowland wet forests. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Cyrtandra limahuliensis*—d

This unit is critical habitat for *Cyrtandra limahuliensis* and is 816 ha (2,018 ac) on State (Halelea Forest Reserve) and private land. This unit contains Kapailu, Mamalahoa, and Puu Manu Summits. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Cyrtandra limahuliensis* and is currently occupied with over 2,000 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in lowland wet forests. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Cyrtandra limahuliensis*—e

This unit is critical habitat for *Cyrtandra limahuliensis* and is 693 ha (1,715 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, and Haena and Na Pali Coast State Parks) and private land. This unit contains Hono o Na Pali, Kulanaililia, Maunapuluo, Pali Eleele, Pohakea, Summits, Limahuli Falls, and Pohakukane Cliff. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Cyrtandra limahuliensis* and is currently occupied with between 50 and 100 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in lowland wet forests. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 7—*Delissea rhytidosperra*—a

This unit is critical habitat for *Delissea rhytidosperra* and is 221 ha (545 ac) on private land. This unit contains Haupu and Naluakeina Summits and Queen Victoria's Profile. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Delissea rhytidosperra* and is currently occupied with four plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, well-drained soils with medium or fine-textured subsoil in *Diospyros* diverse lowland mesic or diverse *Metrosideros polymorpha-Acacia koa* forests. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Delissea rhytidosperra*—b

This unit is critical habitat for *Delissea rhytidosperra* and is 258 ha (638 ac) on State land (Kuia NAR and

Puu Ka Pele Forest Reserve). This unit contains portions of Kuia Valley and Milolii Ridge. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Delissea rhytidosperra* and is currently occupied with six plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, well-drained soils with medium or fine-textured subsoil in *Diospyros* diverse lowland mesic or diverse *Metrosideros polymorpha-Acacia koa* forests. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, the units are of an appropriate distance apart to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Delissea rhytidosperra*—c

This unit is critical habitat for *Delissea rhytidosperra* and is 103 ha (254 ac) on State land (Haena and Na Pali Coast State Parks) within Hanakapiai Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Delissea rhytidosperra* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, well-drained soils with medium or fine-textured subsoil in *Diospyros* diverse lowland mesic or diverse *Metrosideros polymorpha-Acacia koa* forests. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Delissea rivularis*—a

This unit is critical habitat for *Delissea rivularis* and is 851 ha (2,102 ac) on State land (Alakai Wilderness Preserve, Halelea Forest Reserve, Hono

o Na Pali NAR, and Na Pali Coast State Park). This unit contains Keanapuka, Moaalele, Pihea, and Waiahuakua Summits. This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Delissea rivularis* and is currently occupied with 40 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes near streams in *Metrosideros polymorpha-Cheirodendron trigynum* montane wet or mesic forest. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of an appropriate size so that each potential recovery population on Kauai within the unit is geographically separated enough to avoid destruction by one naturally occurring catastrophic event.

Kauai 11—*Delissea undulata*—a

This unit is critical habitat for *Delissea undulata* and is 256 ha (636 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, and Na Pali Coast State Park) and private land. This unit contains Pali Elele Summit. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Delissea undulata* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry or open *Metrosideros polymorpha-Acacia koa* forest or *Alphitonia ponderosa* forest. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Delissea undulata*—b

This unit is critical habitat for *Delissea undulata* and is 532 ha (1,314 ac) on State land (Kuia NAR). This unit contains portions of Mahanaloa Valley and Milolii Ridge. This unit provides

habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Delissea undulata* and is currently occupied with three plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry or open *Metrosideros polymorpha-Acacia koa* forest or *Alphitonia ponderosa* forest. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Diellia erecta*—a

This unit is critical habitat for *Diellia erecta* and is 365 ha (901 ac) on State land (Alakai Wilderness Preserve) containing portions of Kawaiiki Ridge. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Diellia erecta* and is currently occupied with 30 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, brown granular soil with leaf litter and occasional terrestrial moss on north-facing slopes in deep shade, or on steep slopes or gulch bottoms in *Metrosideros polymorpha-Dicranopteris linearis* wet forest or *Metrosideros polymorpha* mixed mesic forest with *Acacia koa* and *Acacia koaia* as codominants. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event. This fern species has wind-blown spores with limited opportunity for germination and growth. Therefore, this species requires large intact areas of land to support a viable population.

Kauai 11—*Diellia pallida*—a

This unit is critical habitat for *Diellia pallida* and is 602 ha (1,487 ac) on State land (Kuia NAR). This unit contains portions of Kuia and Mahanaloa Valleys, and Milolii Ridge. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Diellia pallida* and is currently occupied with between 38 and 43 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, bare granular soil with dry to mesophytic leaf litter with a pH of 6.9 to 7.9 on steep slopes in lowland mesic forest. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. This fern species has wind-blown spores with limited opportunity for germination and growth. Therefore, this species requires large intact areas of land to support a viable population.

Kauai 11—*Diellia pallida*—b

This unit is critical habitat for *Diellia pallida* and is 55 ha (136 ac) on State land within Koaie Canyon. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Diellia pallida* and is currently occupied with three plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, bare granular soil with dry to mesophytic leaf litter with a pH of 6.9 to 7.9 on steep slopes in lowland mesic forest. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. This fern species has wind-blown spores with limited opportunity for germination and growth. Therefore, this species requires large intact areas of land to support a viable population.

Kauai 11—*Diplazium molokaiense*—a

This unit is critical habitat for *Diplazium molokaiense* and is 430 ha (1,062 ac) on State land (Kuia NAR and Kokee State Park). This unit contains portions of Awaawapuhi, Honopu, and Nualolo Trails. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Diplazium molokaiense* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, brown soil with basalt outcrops near waterfalls in lowland or montane mesic *Metrosideros polymorpha*-*Acacia koa* forest. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event. This fern species has wind-blown spores with limited opportunity for germination and growth. Therefore, this species requires large intact areas of land to support a viable population.

Kauai 11—*Dubautia latifolia*—a

This unit is critical habitat for *Dubautia latifolia* and is 31 ha (76 ac) on State land (Kokee State Park). This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Dubautia latifolia* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, gentle or steep slopes on well drained soil in semi-open or closed, diverse montane mesic forest dominated by *Acacia koa* and/or *Metrosideros polymorpha*. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Dubautia latifolia*—b

This unit is critical habitat for *Dubautia latifolia* and is 1,522 ha (3,764 ac) on State land (Kuia Natural Area Reserve and Kokee State Park). This unit contains portions of Kawaiiki Ridge and Kipalau Valley. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Dubautia latifolia* and is currently occupied with between 50 and 69 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, gentle or steep slopes on well drained soil in semi-open or closed, diverse montane mesic forest dominated by *Acacia koa* and/or *Metrosideros polymorpha*. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Dubautia latifolia*—c

This unit is critical habitat for *Dubautia latifolia* and is 809 ha (1,999 ac) on State land (Alakai Wilderness Preserve). This unit contains Iole and Kahili Summits. This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Dubautia latifolia* and is currently occupied with three plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, gentle or steep slopes on well drained soil in semi-open or closed, diverse montane mesic forest dominated by *Acacia koa* and/or *Metrosideros polymorpha*. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 10—*Dubautia pauciflora*—a

This unit is critical habitat for *Dubautia pauciflora* and is 814 ha (2,012 ac) on State (Lihue-Koloa Forest Reserve) and private land. This unit

contains portions of Iole and Kahili Summits. This unit provides habitat for four populations of 250 mature, reproducing individuals of the short-lived perennial *Dubautia pauciflora* and is currently occupied with 42 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream drainages containing *Metrosideros polymorpha*-*Dicranopteris linearis* lowland wet forest. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is an appropriate size so that each potential recovery population on Kauai within the unit is geographically separated enough to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Euphorbia haeleeleana*—a

This unit is critical habitat for *Euphorbia haeleeleana* and is 262 ha (649 ac) on State land (Kuia NAR). This unit contains portions of Milolii Ridge and Mahanaloa Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Euphorbia haeleeleana* and is currently occupied with between 355 and 405 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, lowland mixed mesic or dry *Diospyros* forest that is often co-dominated by *Metrosideros polymorpha* and *Alphitonia ponderosa*. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Euphorbia haeleeleana*—b

This unit is critical habitat for *Euphorbia haeleeleana* and is 193 ha (476 ac) on State land (Na Pali Coast

State Park) within Kalalau Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Euphorbia haelealeana* and is currently occupied with over 120 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, lowland mixed mesic or dry *Diospyros* forest that is often co-dominated by *Metrosideros polymorpha* and *Alphitonia ponderosa*. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Euphorbia haelealeana*—c

This unit is critical habitat for *Euphorbia haelealeana* and is 204 ha (505 ac) on State land, containing portions of Kawaiiki Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Euphorbia haelealeana* and is currently occupied with two plants. This unit is important to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, lowland mixed mesic or dry *Diospyros* forest that is often co-dominated by *Metrosideros polymorpha* and *Alphitonia ponderosa*. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 10—*Exocarpos luteolus*—a

This unit is critical habitat for *Exocarpos luteolus* and is 401 ha (990 ac) on State (Lihue-Koloa Forest Reserve) and private land. This unit contains Kahili Summit and Kaneale

Swamp. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Exocarpos luteolus* and is currently occupied with three plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, wet places bordering swamps or bogs; open or dry ridges in lowland or montane mesic *Acacia koa-Metrosideros polymorpha*-dominated forest communities with *Dicranopteris*. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Exocarpos luteolus*—b

This unit is critical habitat for *Exocarpos luteolus* and is 3,800 ha (9,389 ac) on State (Alakai Wilderness Preserve, Halelea Forest Reserve, and Hono o Na Pali NAR) and private land. This unit contains the Alakai Swamp and Trail, Halehaha and Halepaakai Streams, Kaluhaulua Ridge, and Kapoki, Kilohana, Koali, and Pihea Summits. This unit provides habitat for four populations of 300 mature, reproducing individuals of the short-lived perennial *Exocarpos luteolus* and is currently occupied with 19 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, wet places bordering swamps or bogs; open or dry ridges in lowland or montane mesic *Acacia koa-Metrosideros polymorpha*-dominated forest communities with *Dicranopteris*. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Exocarpos luteolus*—c

This unit is critical habitat for *Exocarpos luteolus* and is 176 ha (438 ac) on State land (Kokee and Na Pali Coast State Parks) within Kalalau Valley. This unit provides habitat for one population of 300 mature,

reproducing individuals of the short-lived perennial *Exocarpos luteolus* and is currently occupied with over 40 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, wet places bordering swamps or bogs; open or dry ridges in lowland or montane mesic *Acacia koa-Metrosideros polymorpha*-dominated forest communities with *Dicranopteris*. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Exocarpos luteolus*—d

This unit is critical habitat for *Exocarpos luteolus* and is 83 ha (206 ac) on State land (Kokee State Park) on Kamuela Ridge. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Exocarpos luteolus* and is currently occupied with between five and seven plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, wet places bordering swamps or bogs; open or dry ridges in lowland or montane mesic *Acacia koa-Metrosideros polymorpha*-dominated forest communities with *Dicranopteris*. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Exocarpos luteolus*—e

This unit is critical habitat for *Exocarpos luteolus* and is 522 ha (1,290 ac) on State land (Kuia NAR, Kokee and Na Pali Coast State Parks). This unit contains Awaawapuhi, Honopu, and Nualolo Trails, and Kainamanu and Kalahu Summits. This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Exocarpos luteolus* and is currently occupied with six plants. This unit is essential to the conservation of the taxon because it

supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, wet places bordering swamps or bogs; open or dry ridges in lowland or montane mesic *Acacia koa*-*Metrosideros polymorpha*-dominated forest communities with *Dicranopteris*. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Flueggea neowawraea*—a

This unit is critical habitat for *Flueggea neowawraea* and is 51 ha (126 ac) on State land (Na Pali Coast State Park) within Kalalau Valley. This unit, in combination with units 11—*Flueggea neowawraea*—b and 11—*Flueggea neowawraea*—e, provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Flueggea neowawraea* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry or mesic forests. This unit together with the two other units, provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Flueggea neowawraea*—b

This unit is critical habitat for *Flueggea neowawraea* and is 48 ha (117 ac) on State land (Na Pali Coast State Park) within Kalalau Valley. This unit, in combination with units 11—*Flueggea neowawraea*—a and 11—*Flueggea neowawraea*—e, provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Flueggea neowawraea* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently

considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry or mesic forests. This unit together with the two other units, provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Flueggea neowawraea*—c

This unit is critical habitat for *Flueggea neowawraea* and is 152 ha (376 ac) on State land (Alakai Wilderness Preserve), containing portions of Kawaiiki Valley. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Flueggea neowawraea* and is currently occupied with 30 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry or mesic forests. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Flueggea neowawraea*—d

This unit is critical habitat for *Flueggea neowawraea* and is 77 ha (191 ac) on State land (Hono o Na Pali NAR and Na Pali Coast State Park). This unit contains Puu Ki Summit and Kaalahina Ridge. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Flueggea neowawraea* and is currently occupied with nine plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry or mesic forests. This unit provides for one population within this multi-island

species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Flueggea neowawraea*—e

This unit is critical habitat for *Flueggea neowawraea* and is 27 ha (67 ac) on State land (Na Pali Coast State Park) within Kalalau Valley. This unit, in combination with units 11—*Flueggea neowawraea*—a and 11—*Flueggea neowawraea*—b, provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Flueggea neowawraea* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry or mesic forests. This unit together with the two other units, provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Flueggea neowawraea*—f

This unit is critical habitat for *Flueggea neowawraea* and is 240 ha (594 ac) on State land (Kuia NAR). This unit contains portions of Milolii Ridge, and Kuia and Mahanaloa Valleys. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Flueggea neowawraea* and is currently occupied with four plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, dry or mesic forests. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Gouania meyenii*—a

This unit is critical habitat for *Gouania meyenii* and is 442 ha (1,094 ac) on State land (Kuia NAR), and containing portions of Mahanaloa Valley. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Gouania meyenii* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, rocky ledges, cliff faces, and ridge-tops in dry shrubland or *Metrosideros polymorpha* lowland diverse mesic forest. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Gouania meyenii*—b

This unit is critical habitat for *Gouania meyenii* and is 128 ha (316 ac) on State land (Na Pali Coast State Park) within Kalalau Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Gouania meyenii* and is currently occupied with eight plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, rocky ledges, cliff faces, and ridge-tops in dry shrubland or *Metrosideros polymorpha* lowland diverse mesic forest. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Gouania meyenii*—c

This unit is critical habitat for *Gouania meyenii* and is 215 ha (532 ac)

on State land, and containing portions of Kawaiiki Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Gouania meyenii* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, rocky ledges, cliff faces, and ridge-tops in dry shrubland or *Metrosideros polymorpha* lowland diverse mesic forest. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Hedyotis cookiana*—a

This unit is critical habitat for *Hedyotis cookiana* and is 772 ha (1,907 ac) on State land (Hono o Na Pali NAR and Na Pali Coast State Park). This unit contains Kanakau Summit. This unit provides habitat for seven populations of 300 mature, reproducing individuals of the short-lived perennial *Hedyotis cookiana* and is currently occupied with between 60 and 80 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, streambeds or steep cliffs close to water sources in relict *Metrosideros polymorpha* low mesic and low wet forest communities. Although we do not believe that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of appropriate size so that each potential recovery population on Kauai within the unit is geographically separated enough to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Hedyotis st.-johnii*—a

This unit is critical habitat for *Hedyotis st.-johnii* and is 238 ha (589 ac) on State land (Hono o Na Pali NAR, Na Pali Coast State Park, and Puu Ka Pele Forest Reserve) Makaha point to Waiahuakua Valley. This unit provides

habitat for seven populations of 300 mature, reproducing individuals of the short-lived perennial *Hedyotis st.-johnii* and is currently occupied with between 227 and 292 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, crevices of north-facing, near-vertical coastal cliff faces within the spray zone in sparse dry coastal shrubland.

Kauai 10—*Hesperomannia lydgatei*—a

This unit is critical habitat for *Hesperomannia lydgatei* and is 646 ha (1,596 ac) on private land, containing Hulua Summit. This unit provides habitat for two populations of 250 mature, reproducing individuals of the long-lived perennial *Hesperomannia lydgatei* and is currently occupied with 296 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks and forested slopes with rich brown soil and silty clay in *Metrosideros polymorpha* or *Metrosideros polymorpha-Dicranopteris linearis* lowland wet forest. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Hesperomannia lydgatei*—b

This unit is critical habitat for *Hesperomannia lydgatei* and is 914 ha (2,258 ac) on State (Halelea Forest Reserve) and private land. This unit contains portions of the Namolokama Mountains and Kaliko Summit. This unit provides habitat for two populations of 250 mature, reproducing individuals of the long-lived perennial *Hesperomannia lydgatei* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this

species include, but are not limited to, stream banks and forested slopes with rich brown soil and silty clay in *Metrosideros polymorpha* or *Metrosideros polymorpha-Dicranopteris linearis* lowland wet forest. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Hesperomannia lydgatei*—c

This unit is critical habitat for *Hesperomannia lydgatei* and is 180 ha (445 ac) on State and private land, containing Hono o Na Pali Summit. This unit provides habitat for one population of 250 mature, reproducing individuals of the long-lived perennial *Hesperomannia lydgatei* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks and forested slopes with rich brown soil and silty clay in *Metrosideros polymorpha* or *Metrosideros polymorpha-Dicranopteris linearis* lowland wet forest. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Hibiscadelphus woodii*—a

This unit is critical habitat for *Hibiscadelphus woodii* and is 278 ha (687 ac) on State land (Hono o Na Pali NAR and Na Pali Coast State Park). This unit contains portions of Kaaalahina and Manono Ridges and Puu Ki Summit. This unit provides habitat for three populations of 100 mature, reproducing individuals of the long-lived perennial *Hibiscadelphus woodii* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, basalt talus or cliff walls in *Metrosideros polymorpha* montane mesic forest. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species

to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of appropriate size and distance from the other unit to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Hibiscadelphus woodii*—b

This unit is critical habitat for *Hibiscadelphus woodii* and is 72 ha (177 ac) on State land (Halelea Forest Reserve, Hono o Na Pali NAR, and Na Pali Coast State Park). This unit contains Kalahu Summit. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Hibiscadelphus woodii* and is currently occupied with six plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, basalt talus or cliff walls in *Metrosideros polymorpha* montane mesic forest. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of appropriate size and distance from the other unit to avoid their destruction by one naturally occurring catastrophic event.

Kauai 4—*Hibiscus clayi*—a

This unit is critical habitat for *Hibiscus clayi* and is 4 ha (9 ac) on private land near Puu Eu. This unit, in combination with unit 4—*Hibiscus clayi*—d, provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Hibiscus clayi* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is essential to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, slopes in *Acacia koa* or *Diospyros* spp.-*Pisonia* spp.-*Metrosideros polymorpha* lowland dry or mesic forest. This unit is geographically separated from other

critical habitat for this island-endemic species to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of an appropriate distance from the other units to avoid their destruction by one naturally occurring catastrophic event.

Kauai 4—*Hibiscus clayi*—b

This unit is critical habitat for *Hibiscus clayi* and is 85 ha (210 ac) on private land on the northeast side of Makaleha Mountain. This unit, in combination with 4—*Hibiscus clayi*—e, provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Hibiscus clayi* and is currently unoccupied. This unit is important to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, slopes in *Acacia koa* or *Diospyros* spp.-*Pisonia* spp.-*Metrosideros polymorpha* lowland dry or mesic forest. This unit is geographically separated from other critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of an appropriate distance from the other units so that each potential recovery population on Kauai within the unit is geographically separated enough to avoid their destruction by one naturally occurring catastrophic event.

Kauai 4—*Hibiscus clayi*—c

This unit is critical habitat for *Hibiscus clayi* and is 590 ha (1,455 ac) on State (Kealia and Moloaa Forest Reserves) and private land. This unit contains Leleiwi and Puu Awa Summits. This unit provides habitat for three populations of 100 mature, reproducing individuals of the long-lived perennial *Hibiscus clayi* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, slopes in

Acacia koa or *Diospyros* spp.-*Pisonia* spp.-*Metrosideros polymorpha* lowland dry or mesic forest. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of an appropriate distance from the other units to avoid their destruction by one naturally occurring catastrophic event.

Kauai 4—*Hibiscus clayi*—d

This unit is critical habitat for *Hibiscus clayi* and is 48 ha (119 ac) on private land. This unit contains Leleiwi and a portion of the northwest side of Makaleha Mountain. This unit, in combination with unit 4—*Hibiscus clayi*—a, provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Hibiscus clayi* and is currently unoccupied. This unit is important to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, slopes in *Acacia koa* or *Diospyros* spp.-*Pisonia* spp.-*Metrosideros polymorpha* lowland dry or mesic forest. This unit is geographically separated from other critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of an appropriate distance from other units to avoid their destruction by one naturally occurring catastrophic event.

Kauai 4—*Hibiscus clayi*—e

This unit is critical habitat for *Hibiscus clayi* and is 19 ha (47 ac) on State land (Kealia Forest Reserve) at the headwaters of Makaleha Stream. This unit, in combination with unit 4—*Hibiscus clayi*—b, provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Hibiscus clayi* and is currently unoccupied. This unit is important to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, slopes in *Acacia koa* or *Diospyros* spp.-*Pisonia* spp.-*Metrosideros polymorpha* lowland dry or mesic forest. This unit is geographically separated from other

critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of an appropriate distance from other units to avoid their destruction by one naturally occurring catastrophic event.

Kauai 5—*Hibiscus clayi*—f

This unit is critical habitat for *Hibiscus clayi* and is 60 ha (148 ac) on State land (Nonou Forest Reserve), containing portions of the Nonou Mountains. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Hibiscus clayi* and is currently occupied with four plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, slopes in *Acacia koa* or *Diospyros* spp.-*Pisonia* spp.-*Metrosideros polymorpha* lowland dry or mesic forest. This unit is geographically separated from the other five units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of an appropriate distance from the other units to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Hibiscus waimeae* ssp. *hannerae*—a

This unit is critical habitat for *Hibiscus waimeae* ssp. *hannerae* and is 1,120 ha (2,769 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, Haena and Na Pali Coast State Parks) and private land. This unit contains Limahuli Falls and Kulanaailia, Maunapulo, and Pali Elelee Summits. This unit provides habitat for eight populations of 100 mature, reproducing individuals of the long-lived perennial *Hibiscus waimeae* ssp. *hannerae* and is currently occupied with 25 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population,

which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, *Metrosideros polymorpha-Dicranopteris linearis* or *Pisonia* spp.-*Charpentiera elliptica* lowland wet or mesic forest.

Kauai 1—*Ischaemum byrone*—a

This unit is critical habitat for *Ischaemum byrone* and is 0.4 ha (1 ac) on private land at Hanalei Point. This unit, in combination with unit 1—*Ischaemum byrone*—b, provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Ischaemum byrone* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, coastal shrubland near the ocean among rocks and seepy cliffs. This unit, together with the other unit, provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 2—*Ischaemum byrone*—b

This unit is critical habitat for *Ischaemum byrone* and is 6 ha (15 ac) on private land, containing Kaweonui Point. This unit, in combination with unit 1—*Ischaemum byrone*—a, provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Ischaemum byrone* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, coastal shrubland near the ocean among rocks and seepy cliffs. This unit, together with the other unit, provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by

one naturally occurring catastrophic event.

Kauai 3—*Ischaemum byrone*—c

This unit is critical habitat for *Ischaemum byrone* and is 6 ha (16 ac) on private land along the cliffs of Kauapea Beach. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Ischaemum byrone* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, coastal shrubland near the ocean among rocks and seepy cliffs. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Ischaemum byrone*—d

This unit is critical habitat for *Ischaemum byrone* and is 45 ha (111 ac) on State land (Hono o Na Pali NAR and Na Pali Coast State Park). This unit contains portions of Hanakapiai Beach, Hoolulu and Hanakapiai Streams. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Ischaemum byrone* and is currently unoccupied. This unit is important to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, coastal shrubland near the ocean among rocks and seepy cliffs. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Isodendron laurifolium*—a

This unit is critical habitat for *Isodendron laurifolium* and is 401 ha (991 ac) on State land (Kuia NAR). This

unit contains portions of Mahanaloa Valley and Milolii Ridge. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Isodendron laurifolium* and is currently occupied with between 86 and 96 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic forest dominated by *Metrosideros polymorpha*, *Acacia koa* or *Diospyros* spp. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Isodendron laurifolium*—b

This unit is critical habitat for *Isodendron laurifolium* and is 400 ha (988 ac) on State land (Alakai Wilderness Preserve) containing portions of Kawaiiki Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Isodendron laurifolium* and is currently occupied with between six and eight plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic forest dominated by *Metrosideros polymorpha*, *Acacia koa* or *Diospyros* spp. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 7—*Isodendron longifolium*—a

This unit is critical habitat for *Isodendron longifolium* and is 338 ha (833 ac) on private land. This unit contains Hokulei Peak, Haupua and

Naluakeina Summits, and Queen Victoria's Profile. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Isodendron longifolium* and is currently occupied with two plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes, gulches, or stream banks and flats in undisturbed areas, in mesic or wet *Metrosideros polymorpha*-*Acacia koa* forests. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 10—*Isodendron longifolium*—b

This unit is critical habitat for *Isodendron longifolium* and is 142 ha (350 ac) on private land containing Hulua Summit. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Isodendron longifolium* and is currently occupied with between 83 and 103 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes, gulches, or stream banks and flats in undisturbed areas, in mesic or wet *Metrosideros polymorpha*-*Acacia koa* forests. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Isodendron longifolium*—c

This unit is critical habitat for *Isodendron longifolium* and is 59 ha (145 ac) on State land (Kokee and Na Pali Coast State Parks), containing Kainamanu Summit. This unit provides habitat for one population of 300

mature, reproducing individuals of the short-lived perennial *Isodendron longifolium* and is currently occupied with 20 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes, gulches, or stream banks and flats in undisturbed areas, in mesic or wet *Metrosideros polymorpha-Acacia koa* forests. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Isodendron longifolium*—d

This unit is critical habitat for *Isodendron longifolium* and is 494 ha (1,219 ac) on State land (Halelea Forest Reserve). This unit contains Kaliko and Puu Manu Summit. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Isodendron longifolium* and is currently occupied with between 80 and 90 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes, gulches, or stream banks and flats in undisturbed areas, in mesic or wet *Metrosideros polymorpha-Acacia koa* forests. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Isodendron longifolium*—e

This unit is critical habitat for *Isodendron longifolium* and is 381 ha (941 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, and Na Pali Coast State Park) and private land. This unit contains Pohahea Summit. This unit provides habitat for two populations of 300 mature, reproducing

individuals of the short-lived perennial *Isodendron longifolium* and is currently occupied with 424 plants. This unit is essential to the conservation of the taxon because it supports extant colonies of this species and includes habitat that is important for the expansion of the present populations, which are currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep slopes and some flats in certain undisturbed areas, gulches, or stream banks in mesic or wet *Metrosideros polymorpha-Acacia koa* forests. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Kokia kauaiensis*—a

This unit is critical habitat for *Kokia kauaiensis* and is 155 ha (384 ac) on State land (Alakai Wilderness Preserve). This unit contains portions of Kawaiiki and Kipalau Valleys. This unit provides habitat for three populations of 100 mature, reproducing individuals of the long-lived perennial *Kokia kauaiensis* and is currently occupied with 70 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic forest. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Kokia kauaiensis*—b

This unit is critical habitat for *Kokia kauaiensis* and is 30 ha (74 ac) on State land (Na Pali Coast State Park) within Pohakuau Valley. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Kokia kauaiensis* and is currently occupied with two plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently

considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic forest. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Kokia kauaiensis*—c

This unit is critical habitat for *Kokia kauaiensis* and is 666 ha (1,648 ac) on State land (Kuia NAR). This unit contains portions of Milolii Ridge, Kuia and Mahanaloa Valleys. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Kokia kauaiensis* and is currently occupied with between 78 and 83 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic forest. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Kokia kauaiensis*—d

This unit is critical habitat for *Kokia kauaiensis* and is 127 ha (313 ac) on State land (Na Pali Coast State Park) within Kalalau Valley. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Kokia kauaiensis* and is currently occupied with 16 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic forest. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 4—*Labordia lydgatei*—a

This unit is critical habitat for *Labordia lydgatei* and is 587 ha (1,455 ac) on State (Kealia and Moloaa Forest

Reserves) and private land. This unit contains Kekoiiki, Leleiwi, Namahana, and Puu Awa Summits. This unit provides habitat for one population of 250 mature, reproducing individuals of the short-lived perennial *Labordia lydgatei* and is currently occupied with one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in *Metrosideros polymorpha-Dicranopteris linearis* forest. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 10—*Labordia lydgatei*—b

This unit is critical habitat for *Labordia lydgatei* and is 1,035 ha (2,558 ac) on State (Lihue-Koloa Forest Reserve) and private land. This unit contains Hulua, Iole, Kahile, and Pilikea Summits. This unit provides habitat for two populations of 250 mature, reproducing individuals of the short-lived perennial *Labordia lydgatei* and is currently occupied with five plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in *Metrosideros polymorpha-Dicranopteris linearis* forest. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Labordia lydgatei*—c

This unit is critical habitat for *Labordia lydgatei* and is 325 ha (804 ac) on private land within Lumahai Valley. This unit provides habitat for one population of 250 mature, reproducing individuals of the short-lived perennial *Labordia lydgatei* and is currently occupied with seven plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the

expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in *Metrosideros polymorpha-Dicranopteris linearis* forest. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Labordia lydgatei*—d

This unit is critical habitat for *Labordia lydgatei* and is 82 ha (204 ac) on State land (Halelea Forest Reserve). This unit contains portions of Waioli Valley and Waiopa Summit. This unit provides habitat for one population of 250 mature, reproducing individuals of the short-lived perennial *Labordia lydgatei* and is currently occupied with two plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in *Metrosideros polymorpha-Dicranopteris linearis* forest. This unit is geographically separated from the other four units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Labordia lydgatei*—e

This unit is critical habitat for *Labordia lydgatei* and is 119 ha (291 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, and Na Pali Coast State Park) and private land. This unit contains Hono O Na Pali and Pali Elelee Summits. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Labordia lydgatei* and is currently occupied with two plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in *Metrosideros polymorpha-Dicranopteris linearis* forest. This unit is geographically separated from the other four units

designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 10—*Labordia tinifolia* var. *wahiawaensis*—a

This unit is critical habitat for *Labordia tinifolia* var. *wahiawaensis* and is 912 ha (2,255 ac) on private land. This unit contains Hulua, Iole, Kahili, Kapalaoa, and Palikea Summits. This unit provides habitat for four populations of 100 mature, reproducing individuals of the long-lived perennial *Labordia tinifolia* var. *wahiawaensis* and is currently occupied with 20 to 30 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, stream banks in lowland wet forest. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is of appropriate size so that each potential recovery population on Kauai within the unit is geographically separated enough to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Lipochaeta fauriei*—a

This unit is critical habitat for *Lipochaeta fauriei* and is 106 ha (262 ac) on State land (Alakai Wilderness Preserve), containing portions of Kipalau Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Lipochaeta fauriei* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, sides of steep gulches in diverse mesic forests. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is at an appropriate distance from the

other unit to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Lipochaeta fauriei*—b

This unit is critical habitat for *Lipochaeta fauriei* and is 545 ha (1,347 ac) on State land (Kuia NAR). This unit contains portions of Mahanaloa and Kuia Valleys. This unit provides habitat for four populations of 300 mature, reproducing individuals of the short-lived perennial *Lipochaeta fauriei* and is currently occupied with 70 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, sides of steep gulches in diverse mesic forests. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is at an appropriate distance from the other unit to avoid their destruction by one naturally occurring catastrophic event.

Kauai 7—*Lipochaeta micrantha*—a

This unit is critical habitat for *Lipochaeta micrantha* and is 340 ha (843 ac) on private land. This unit contains Hokulei Peak, Haupu and Naluakeina Summits, and Queen Victoria's Profile. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Lipochaeta micrantha* and is currently occupied with 50 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, cliffs, ridges, stream banks, or slopes in mesic to wet mixed communities. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that

currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is at an appropriate distance from the other unit to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Lipochaeta micrantha*—b

This unit is critical habitat for *Lipochaeta micrantha* and is 212 ha (523 ac) on State land, containing portions of Kaluahaulu Ridge. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Lipochaeta micrantha* and is currently occupied with at least one plant. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, cliffs, ridges, stream banks, or slopes in mesic to wet mixed communities. This unit is geographically separated from the other unit designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is at an appropriate distance from the other unit to avoid their destruction by one naturally occurring catastrophic event.

Kauai 13—*Lipochaeta waimeaensis*—a

This unit is critical habitat for *Lipochaeta waimeaensis* and is 56 ha (139 ac) on State land, containing portions of Waimea Canyon. This unit provides habitat for one population of 300 mature, reproducing individuals of the short-lived perennial *Lipochaeta waimeaensis* and is currently occupied with at least 100 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, precipitous, shrub-covered gulches in diverse lowland forest. Although there may not be sufficient habitat designated to reach the recovery goal of 8 to 10 populations, this species is a very narrow endemic and may never

naturally occurred in more than a single or a few populations.

Kauai 11—*Lobelia niihauensis*—a

This unit is critical habitat for *Lobelia niihauensis* and is 89 ha (220 ac) on State land (Alakai Wilderness Preserve), containing portions of Kipalau Valley. This unit provides habitat for two populations of 300 mature, reproducing individuals of the short-lived perennial *Lobelia niihauensis* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, exposed mesic mixed shrubland or coastal dry cliffs. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Lobelia niihauensis*—b

This unit is critical habitat for *Lobelia niihauensis* and is 2,003 ha (4,950 ac) on State (Haena State Park and Hono o Na Pali NAR) and private land. This unit contains Hanakapiai, Hanakoa, Kalalau, and Limahuli Valleys, Kaaalahina and Manono Ridges, Kanakou and Makana Summits, Hoolau and Waiahuakua Streams. This unit provides habitat for five populations of 300 mature, reproducing individuals of the short-lived perennial *Lobelia niihauensis* and is currently occupied with 168 to 1,108 plants. This unit is important to the conservation of the taxon because it supports an extant colony of this species. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, exposed mesic mixed shrubland or coastal dry cliffs. This unit provides for five populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 10—*Lysimachia filifolia*—a

This unit is critical habitat for *Lysimachia filifolia* and is 995 ha (2,458

ac) on State (Lihue-Koloa Forest Reserve) and private land. This unit contains Iole, Kalalea, Kamanu, and Palikea Summits. This unit provides habitat for four populations of 300 mature, reproducing individuals of the short-lived perennial *Lysimachia filifolia* and is currently occupied with 20 to 75 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, mossy banks at the base of cliff faces within the spray zone of waterfalls or along streams in lowland wet forests. This unit provides for four populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Mariscus pennatiformis*—a

This unit is critical habitat for *Mariscus pennatiformis* and is 1,003 ha (2,479 ac) on State land (Kuia NAR, Kokee and Waimea Canyon State Parks). This unit contains portions of Milolii Ridge and Nualolo Trail. This unit provides habitat for three populations of 300 mature, reproducing individuals of the short-lived perennial *Mariscus pennatiformis* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, open sites in *Metrosideros polymorpha-Acacia koa* mixed mesic forest. This unit provides for three populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 7—*Melicope haupuensis*—a

This unit is critical habitat for *Melicope haupuensis* and is 330 ha (816 ac) on private land. This unit contains Hokulei Peak, Haupu and Naluakeina Summits, and Queen Victoria's Profile.

This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Melicope haupuensis* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, moist talus slopes in *Metrosideros polymorpha* dominated lowland mesic forest or *Metrosideros polymorpha-Acacia koa* montane mesic forest. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is at an appropriate distance from the other unit to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Melicope haupuensis*—b

This unit is critical habitat for *Melicope haupuensis* and is 575 ha (1,418 ac) on State land (Kuia NAR, Kokee and Na Pali Coast State Parks). This unit contains portions of Awaawapuhi, Honopu, and Nualolo Trails, Kainamanu and Kalahu Summits. This unit provides habitat for three populations of 100 mature, reproducing individuals of the long-lived perennial *Melicope haupuensis* and is currently occupied with 11 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, moist talus slopes in *Metrosideros polymorpha* dominated lowland mesic forest or *Metrosideros polymorpha-Acacia koa* montane mesic forest. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is at an appropriate distance from the other unit to avoid

their destruction by one naturally occurring catastrophic event.

Kauai 11—*Melicope haupuensis*—c

This unit is critical habitat for *Melicope haupuensis* and is 290 ha (716 ac) on State land (Alakai Wilderness Preserve), containing portions of Kipalau Valley. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Melicope haupuensis* and is currently occupied with two plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, moist talus slopes in *Metrosideros polymorpha* dominated lowland mesic forest or *Metrosideros polymorpha-Acacia koa* montane mesic forest. This unit is geographically separated from the other two units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe. Although we do not feel that there is enough habitat that currently exists to reach the recovery goal of 8 to 10 populations for this species, this unit is at an appropriate distance from the other unit to avoid their destruction by one naturally occurring catastrophic event.

Kauai 11—*Melicope knudsenii*—a

This unit is critical habitat for *Melicope knudsenii* and is 967 ha (2,389 ac) on State land (Kuia NAR). This unit contains portions of Awaawapuhi and Nualolo Trails, and Milolii Ridge. This unit provides habitat for three populations of 100 mature, reproducing individuals of the long-lived perennial *Melicope knudsenii* and is currently occupied with four plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, forested flats with brown granular soil in lowland dry to montane mesic forests. This unit provides for three populations within this multi-island species' historical range on Kauai that are some distance away from the

other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Melicope knudsenii*—b

This unit is critical habitat for *Melicope knudsenii* and is 373 ha (922 ac) on State land (Alakai Wilderness Preserve). This unit contains portions of Kawaiiki and Kipalau Valleys. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Melicope knudsenii* and is currently occupied with six plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species that is unique to Kauai. The habitat features contained in this unit that are essential for this species include, but are not limited to, forested flats with brown granular soil in lowland dry to montane mesic forests. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Melicope pallida*—a

This unit is critical habitat for *Melicope pallida* and is 143 ha (353 ac) on State land (Alakai Wilderness Preserve), containing portions of Kipalau Valley. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Melicope pallida* and is currently occupied with 10 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep rock faces in lowland to montane mesic to wet forests or shrubland. This unit provides for one population within this multi-island species' historical range on Kauai that is some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Melicope pallida*—b

This unit is critical habitat for *Melicope pallida* and is 310 ha (766 ac) on State land (Na Pali Coast State Park). This unit contains portions of Kaaalahina Ridge and Puu Ki Summit. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Melicope pallida* and is currently occupied with 50 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. It provides habitat for the westernmost range of the species. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep rock faces in lowland to montane mesic to wet forests or shrubland. This unit provides for two populations within this multi-island species' historical range on Kauai that are some distance away from the other critical habitat for this species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 5—*Munroidendron racemosum*—a

This unit is critical habitat for *Munroidendron racemosum* and is 60 ha (148 ac) on State land (Nonou Forest Reserve). This unit contains Nonou Summit and the Sleeping Giant. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Munroidendron racemosum* and is currently occupied with six plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep exposed cliffs or ridge slopes in coastal or lowland mesic forest. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 7—*Munroidendron racemosum*—b

This unit is critical habitat for *Munroidendron racemosum* and is 50 ha (123 ac) on private land, containing

Naluakeina Summit and Queen Victoria's Profile. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Munroidendron racemosum* and is currently occupied with two plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep exposed cliffs or ridge slopes in coastal or lowland mesic forest. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Munroidendron racemosum*—c

This unit is critical habitat for *Munroidendron racemosum* and is 1,952 ha (4,824 ac) on State (Hono o Na Pali NAR, Haena and Na Pali Coast State Parks) and private land. This unit contains Hanakapiai, Hanakoa, and Kalalau Valleys, Kanakou Summit, Kaaalahina and Kalepa Ridges, Nualolo Kai, and Pohakuao. This unit provides habitat for six populations of 100 mature, reproducing individuals of the long-lived perennial *Munroidendron racemosum* and is currently occupied with 46 to 86 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep exposed cliffs or ridge slopes in coastal or lowland mesic forest. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophic event.

Kauai 11—*Munroidendron racemosum*—d

This unit is critical habitat for *Munroidendron racemosum* and is 153 ha (379 ac) on State land (Alakai Wilderness Preserve). This unit contains portions of Kawaiiki and Kipalau Valleys. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-

lived perennial *Munroidendron racemosum* and is currently occupied with three plants. This unit is essential for the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, steep exposed cliffs or ridge slopes in coastal or lowland mesic forest. This unit is geographically separated from the other three units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 7—*Myrsine linearifolia*—a

This unit is critical habitat for *Myrsine linearifolia* and is 334 ha (825 ac) on private land. This unit contains Hokulei Peak, Haupū and Naluakeina Summits, and Queen Victoria's Profile. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Myrsine linearifolia* and is currently unoccupied. This unit is essential to the conservation of the taxon because it supports habitat that is important to the establishment of additional populations on Kauai in order to reach recovery goals. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic or wet lowland or montane *Metrosideros polymorpha* forest with *Cheirodendron* spp. or *Dicranopteris linearis* as co-dominant species. This unit is geographically separated from the other five units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 10—*Myrsine linearifolia*—b

This unit is critical habitat for *Myrsine linearifolia* and is 167 ha (412 ac) on private and State land (Lihue-Koloa Forest Reserve). This unit contains Hulua, Kahili, and Kapalaoa Summits. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Myrsine linearifolia* and is currently occupied with 47 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in

this unit that are essential for this species include, but are not limited to, diverse mesic or wet lowland or montane *Metrosideros polymorpha* forest with *Cheirodendron* spp. or *Dicranopteris linearis* as co-dominant species. This unit is geographically separated from the other five units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Myrsine linearifolia*—c

This unit is critical habitat for *Myrsine linearifolia* and is 685 ha (1,692 ac) on State land (Alakai Wilderness Preserve), containing portions of Kipalau Valley. This unit provides habitat for three populations of 100 mature, reproducing individuals of the long-lived perennial *Myrsine linearifolia* and is currently occupied with 34 to 44 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic or wet lowland or montane *Metrosideros polymorpha* forest with *Cheirodendron* spp. or *Dicranopteris linearis* as co-dominant species. This unit is geographically separated from the other five units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Myrsine linearifolia*—d

This unit is critical habitat for *Myrsine linearifolia* and is 286 ha (707 ac) on State (Halelea Forest Reserve, Hono o Na Pali NAR, and Na Pali Coast State Park) and private land. This unit contains Hono o Na Pali and Pali Elelee Summits, and Limahuli Falls. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Myrsine linearifolia* and is currently occupied with 23 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic or wet lowland or montane *Metrosideros polymorpha* forest with *Cheirodendron*

spp. or *Dicranopteris linearis* as co-dominant species. This unit is geographically separated from the other five units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Myrsine linearifolia*—e

This unit is critical habitat for *Myrsine linearifolia* and is 345 ha (854 ac) on State land (Hono o Na Pali NAR, Kokee and Na Pali Coast State Parks). This unit contains Alealau, Pihea, and Puu o Kila Summits. This unit provides habitat for two populations of 100 mature, reproducing individuals of the long-lived perennial *Myrsine linearifolia* and is currently occupied with 366 to 420 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic or wet lowland or montane *Metrosideros polymorpha* forest with *Cheirodendron* spp. or *Dicranopteris linearis* as co-dominant species. This unit is geographically separated from the other five units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.

Kauai 11—*Myrsine linearifolia*—f

This unit is critical habitat for *Myrsine linearifolia* and is 135 ha (334 ac) on State (Halelea Forest Reserve) and private land, containing Kaliko Summit. This unit provides habitat for one population of 100 mature, reproducing individuals of the long-lived perennial *Myrsine linearifolia* and is currently occupied with 20 to 30 plants. This unit is essential to the conservation of the taxon because it supports an extant colony of this species and includes habitat that is important for the expansion of the present population, which is currently considered non-viable. The habitat features contained in this unit that are essential for this species include, but are not limited to, diverse mesic or wet lowland or montane *Metrosideros polymorpha* forest with *Cheirodendron* spp. or *Dicranopteris linearis* as co-dominant species. This unit is geographically separated from the other five units designated as critical habitat for this island-endemic species, in order to avoid all recovery populations from being destroyed by one naturally occurring catastrophe.