

Isodendrion pyrifolium, *Labordia triflora*, *Lysimachia maxima*, *Mariscus fauriei*, *Melicope mucronulata*, *Melicope reflexa*, *Neraudia sericea*, *Peucedanum sandwicense*, *Phyllostegia mannii*, *Plantago princeps*, *Pteris lidgatei*, *Schiedea lydgatei*, *Schiedea nuttallii*, *Schiedea sarmentosa*, *Sesbania tomentosa*, *Silene alexandri*, *Silene lanceolata*, *Spermolepis hawaiiensis*, *Stenogyne bifida*, *Tetramolopium rockii*, 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 41 species; the December 29, 2000, proposal; the April 5, 2002, revised proposal; information received during the public comment periods and public hearings; recent biological surveys and reports; our recovery plans for these species; information received from landowners, land managers, and interested parties on the island of Molokai; discussions with botanical experts; and recommendations from the Hawaii and Pacific Plant Recovery Coordinating Committee (HPPRCC) (see also the discussion below) (CPC *in litt.* 1999; GDSI 2000; HINHP Database 2000; HPPRCC 1998; Service 1995, 1996a, 1996b, 1997, 1998a, 1998b, 1999, 2001; 65 FR 83158; 67 FR 16492).

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 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 specific 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 sections 3(5)(A)(i) and 4(b)(1)(A) 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, 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 periens*, *Alectryon macrococcus*, *Bidens wiebkei*, *Brighamia rockii*, *Canavalia molokaiensis*, *Centaurium sebaeoides*, *Clermontia oblongifolia* ssp. *brevipes*, *Ctenitis squamigera*, *Cyanea dunbarii*, *Cyanea grimesiana* ssp. *grimesiana*, *Cyanea mannii*, *Cyanea procera*, *Diellia erecta*, *Diplazium molokaiense*, *Eugenia koolauensis*, *Flueggea neowawraea*, *Hesperomannia arborescens*, *Hibiscus arnotianus* ssp. *immaculatus*, *Hibiscus brackenridgei*, *Ischaemum byrone*, *Isodendrion pyrifolium*, *Labordia triflora*, *Lysimachia maxima*, *Mariscus fauriei*, *Melicope mucronulata*, *Melicope reflexa*, *Neraudia sericea*,

Peucedanum sandwicense, *Phyllostegia mannii*, *Plantago princeps*, *Pteris lidgatei*, *Schiedea lydgatei*, *Schiedea nuttallii*, *Schiedea sarmentosa*, *Sesbania tomentosa*, *Silene alexandri*, *Silene lanceolata*, *Spermolepis hawaiiensis*, *Stenogyne bifida*, *Tetramolopium rockii*, and *Zanthoxylum hawaiiense* is described in the "Background" section of this final rule. We are unable to identify these features for *Bonamia menziesii*, *Cyperus trachysanthos*, *Melicope munroi*, and *Solanum incompletum*, which no longer occur on the island of Molokai, because information on the physical and biological features (i.e., the primary constituent elements) that are considered essential to the conservation of these four species on Molokai is not known. *Bonamia menziesii*, *Cyperus trachysanthos*, and *Melicope munroi* were last reported on Molokai between 1910 and 1918. According to David Symon (1999), the known distribution of *Solanum incompletum* included Molokai, as well as Kauai, Lanai, Maui, and the island of Hawaii. It is unclear when *Solanum incompletum* was last reported on Molokai, as there are no collections of this species from Molokai in the HINHP Database or the Bishop Museum (Chris Puttock, Bishop Museum, pers comm, 2002). There is currently no information about the plant communities, associated native plant species, locales, and elevations of these four species on Molokai.

All areas designated as critical habitat are within the historical range of the 41 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 41 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, streambanks), 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