

Together, the draft economic analysis, the addendum and the addendum amendment constitute our final economic analysis. The draft economic analysis estimated the total direct cost of the designation of critical habitat on Maui and Kahoolawe for the 60 plant species co-extensive with the listing to be between \$418,700 and \$2,075,600 over 10 years. This direct cost was revised in the addendum to \$241,700 to \$1,441,200 over 10 years. The reduction of \$177,000 to \$634,400 from the costs estimated in the draft economic analysis is primarily due to the exclusion of some proposed units and the significant reduction in size of other proposed units. Using a seven percent discount rate and assuming these direct costs are distributed evenly over the 10-year period, the annualized direct costs range from \$24,170 to \$144,120 per year.

Certain costs identified the final economic analysis are based on "worst-case" scenarios that, while possible, do not seem likely based on past consultation histories for these species. In particular, the final economic analysis includes an evaluation of potential indirect costs associated with the designation of critical habitat for 60 plant species on Maui and Kahoolawe. These reported costs are speculative and, in general, thought to have a low probability of occurrence. In addition, the final economic analysis discusses economic benefits in qualitative terms rather than providing quantitative estimates because of the lack of information available to estimate the economic benefits of endangered species preservation and ecosystem improvements.

The likely direct cost impact of designating critical habitat on Maui and Kahoolawe for the 60 plant species is estimated to be between \$24,170 to \$144,120 per year over the next 10 years. This estimate, however, includes areas that were proposed as critical habitat, but have been excluded under sections 3(5)(a) and/or 4(b)(2) of the Act. Therefore, the direct cost of designating critical habitat for these 60 plant species is likely to be somewhat less than this amount.

A more detailed discussion of our economic analysis is contained in the draft economic analysis and the addendum. Both documents are included in our administrative record and are available for inspection at the Pacific Islands Fish and Wildlife Office (see ADDRESSES section).

Other Impacts

As described in the "Analysis of Managed Lands Under Section 3(5)(A)" section above, based on our evaluation

of the adequacy of special management and protection that is provided in current management plans involving *Alectryon macrococcus*, *Argyroxiphium sandwicense* ssp. *macrocephalum*, *Asplenium fragile* var. *insulare*, *Bonamia menziesii*, *Clermontia oblongifolia* ssp. *mauiensis*, *Clermontia samuelii*, *Colubrina oppositifolia*, *Ctenitis squamigera*, *Cyanea lobata*, *Cyanea mceldowneyi*, *Cyrtandra munroi*, *Diplazium molokaiense*, *Geranium arboreum*, *Geranium multiflorum*, *Hesperomannia arborescens*, *Melicope balloui*, *Phlegmariurus mannii*, *Plantago princeps*, *Platanthera holochila*, *Remya mauiensis*, and *Sanicula purpurea* in accordance with section 3(5)(A)(i) of the Act, we have not included TNCH's Waikamoi and Kapunakea Preserves, Maui Land and Pineapple's Puu Kukui WMA, and the State's upper Hanawi NAR lands, in this final designation of critical habitat. However, to the extent that special management considerations and protection may be required for these areas, and they therefore meet the definition of critical habitat according to section 3(5)(A)(i), they are properly excluded from designation under section 4(b)(2) of the Act, based on the following analysis.

In addition, approximately 3,894 ha (9,622 ac) within five proposed critical habitat units (Maui units H, I1, I2, and I4) located on private lands owned by Ulupalakua and Haleakala Ranches are excluded from designation under section 4(b)(2) because the benefits provided by these two landowners' voluntary conservation activities within and adjacent to these units outweigh the benefits provided by a designation of critical habitat.

The Service believes that designation of critical habitat on these lands would be a disincentive to those that have demonstrated a willingness to manage their lands in a manner compatible with the conservation of listed and non-listed species on Maui and Kahoolawe. Designation, therefore, would have a strong possibility of having a detrimental effect on the recovery of the listed species on these lands. The exclusion of these lands from critical habitat, on the other hand, will help improve and maintain our positive relationship with the landowners involved and it will also provide incentives to other landowners on Maui and Kahoolawe to consider implementing similar voluntary conservation activities, conservation partnerships, and beneficial natural resource programs on their lands.

TNCH's Waikamoi and Kapunakea Preserves contain occupied habitat for

13 species (*Alectryon macrococcus*, *Argyroxiphium sandwicense* ssp. *macrocephalum*, *Asplenium fragile* var. *insulare*, *Bonamia menziesii*, *Colubrina oppositifolia*, *Ctenitis squamigera*, *Cyanea lobata*, *Diplazium molokaiense*, *Geranium arboreum*, *Geranium multiflorum*, *Plantago princeps*, *Platanthera holochila*, and *Sanicula purpurea*) and unoccupied habitat for three species (*Melicope balloui*, *Phlegmariurus mannii*, and *Remya mauiensis*). The State's upper Hanawi NAR contains occupied habitat for *Clermontia samuelii* and *Geranium multiflorum*, and unoccupied habitat for *Cyanea mceldowneyi*. Eight species (*Ctenitis squamigera*, *Clermontia oblongifolia* ssp. *mauiensis*, *Cyanea lobata*, *Cyrtandra munroi*, *Hesperomannia arborescens*, *Phlegmariurus mannii*, *Platanthera holochila*, and *Sanicula purpurea*) occur within the Maui Land and Pineapple Company's Puu Kukui WMA. For a more detailed description of the management activities conducted on TNCH's Waikamoi and Kapunakea Preserves, the State's Hanawi NAR and Maui Land and Pineapple's Puu Kukui WMA, see the "Analysis of Managed Lands Under Section 3(5)(A)" section.

The portion of proposed unit Maui H on Ulupalakua Ranch lands is occupied habitat for nine species: *Alectryon macrococcus*; *Bonamia menziesii*; *Cenchrus agrimonoides*; *Flueggea neowawraea*; *Geranium arboreum*; *Lipochaeta kamolensis*; *Melicope adscendens*; *Melicope knudsenii*; and *Melicope mucronulata*. It is unoccupied habitat for three species: *Clermontia lindseyana*; *Colubrina oppositifolia*; and *Diellia erecta*.

Ulupalakua Ranch is involved in several important voluntary conservation agreements and is currently carrying out some of these activities for the conservation of these species. For example, the Partners for Fish and Wildlife Auwahi and Puu Makua agreements were entered into in fiscal year 1997 and 1998 with the stated purpose of protecting and restoring dryland forest including construction of enclosure fences, a greenhouse, access road, and propagation and outplanting of native plants. Preservation of these areas conserves critically endangered species of plants and animals in one of Hawaii's most degraded ecosystem types (lowland dry forest). This management strategy is consistent with recovery of these species. The Auwahi agreement (Auwahi I Project) is between Ulupalakua Ranch, USGS-BRD, and the Service. The Service provided funding (\$64,388) for fence materials, plant