

the critical habitat designations (*i.e.*, the benefits over and above those that will occur due to other existing protections, and over and above the benefits from other conservation projects). Specifically, 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 many 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 in fact used in the DEA as a resource document for concepts, for identifying documents that report the original research on certain subjects, and for illustrating the economic value of an assumed incremental increase in environmental services.

However, as noted in the DEA, estimating the total value of the ecosystem services provided by the Koolau Mountains is a difficult task, requiring some assumptions that are open to challenge, including estimates of the magnitude of the environmental services provided by the Koolau Mountains and estimates of the per-unit value of each service. Also, the UH study does not address all of the benefits of the Koolau Mountains or any of the benefits of the Waianae Mountains.

More to the point, the UH study has limited applicability for valuing the benefits of the intended designation for the 99 Oahu plant species. Since the purpose of the UH study was to estimate the total value of environmental benefits provided by the entire Koolau Mountains on the island of Oahu, it does not address the value of the more limited benefits provided by the intended critical habitat for the 99 Oahu plant species. Specifically, the UH study provides no estimates of the changes in biological and/or environmental conditions resulting from changes in land management due to critical habitat designation.

In any case, the DEA reported that the value of the ecosystem services provided by the Koolau is very large. Since the intended designation covers nearly all of the Koolau Mountains, as well as parts of the Waianae Mountains, and since some project modifications can affect large portions of the mountains, even a very small percentage improvement to ecosystem services can translate into large economic benefits.

In summary, the discussion presented in the DEA on the biological and environmental benefits of critical habitat designation provides an overview of potential benefits, but we did not intend for it to provide a

complete quantitative analysis of the benefits. Instead, we believe that the benefits of critical habitat designation are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.

(49) *Comment:* 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: As noted in Chapter VI, Section 6.c. of the DEA, the benefit applies to proposed units or portions of units that the Service regards as occupied. Even without critical habitat, developers must consult with the Service on projects that have Federal involvement and that affect listed species. By knowing the critical habitat boundaries, and if developers have the flexibility, they can site projects outside the boundaries, thereby avoiding certain issues related to threatened and endangered species. But even if there is no flexibility in siting a project, it can still be helpful to developers to know the boundaries of a critical habitat unit. If a project is located outside the unit boundaries, then the developer can proceed with project planning with less risk of facing issues related to critical habitat. On the other hand, if a project is located inside a critical habitat boundary and there is Federal involvement, then the developer and action agency could enter into informal consultations with the Service before proceeding with detailed site plans. Since the discussion applies only to areas that are occupied and would be subject to regulation with or without critical habitat, the logic for the benefit to developers is not circular.

(50) *Comment:* The DEA fails to adequately address the economic value represented by the time, money, and energy that the people of Hawaii invest in the conservation of native Hawaiian plants, including the ethnobotanical value of these plants to the culture of native Hawaiians.

Our Response: Chapter VI, Sections 6 and 7 of the DEA discussed the benefits of critical habitat. While the time, money and energy that the people of Hawaii invest in the conservation of native plants could function as an indicator for residents' "willingness to pay" to protect these species, this information has not been gathered or analyzed comprehensively, and, given the scope of the economic analysis, no primary economic research was conducted. Moreover, as noted in the DEA, even if this information were

available, the economic value of these benefits attributable to critical habitat designation would still be difficult to estimate because of the scarcity of (1) scientific studies on the magnitude of the recovery and ecosystem changes resulting from the critical habitat designation, and (2) economic studies on the per-unit value of many of the changes.

(51) *Comment:* The analysis used in the DEA for Oahu is not consistent with the analysis used in the DEA for the island of Hawaii. The Service should use a consistent methodology in all of its economic analyses.

Our Response: This specific comment objected to differences in the methodology used to estimate direct economic costs related to Army activities and the fact that the estimated costs were much lower for Oahu. The economic analysis for both Oahu and the Big Island (island of Hawaii) used the same methodology. But the direct costs were lower for Oahu because of: (1) Differences in the extent of the overlap between the proposed designations and the Army installations on Oahu versus the installation on the Big Island; (2) differences in the planned military uses of land in the proposed designations; and (3) differences in information available to the analysts regarding project modifications. The addendum revisits the direct costs associated with Army activities and revises them based on updated information.

(52) *Comment:* One private landowner states that designated critical habitat affects over half of his land holdings and will result in impacts to land value, extraordinary levels of governance, and long-term economic impacts.

Our Response: For grazing land in critical habitat, the DEA addressed the possible direct section 7 costs for ranching activities (DEA, Chapter VI, Section 3.h), the indirect impacts of critical habitat on State and county development approvals (DEA, Chapter VI, Section 4.h.), and the possible loss of property value (DEA, Chapter VI, Section 4.i). Because the intended critical habitat would cover less grazing land than the proposed critical habitat, the addendum revisited the possible direct section 7 costs on ranching activities and the potential loss of property value (Sections 4.e and 5.g, respectively). For about 2,070 acres of privately owned agricultural land in the intended critical habitat, the analysis found that the loss in property value would be a small to moderate fraction of \$18.6 million.

(53) *Comment:* The DEA ignores the topic of subsistence gathering.