

the Summary Tables, the Tables instead reported qualitatively on the likelihood and the potential magnitude of each of the indirect costs. Moreover, the Summary Tables referred the reader to the narrative analyses for additional information on any of the indirect impacts.

(44) *Comment:* A commenter stated the following: The DEA does not account for investments and other expenditures already made on lands with the expectation that rezoning and redistricting will allow future development and hence a return on investment, nor does it account for the potential lost recapture of investment yields that may be foregone due to lost development potential for lands that have successfully been rezoned and permitted for development at a very high cost.

*Our Response:* Chapter VI, section 4.e.(6) of the DEA and section 4.b. of the Addendum specifically considered the investments and expenditures already made on lands within the critical habitat designation to facilitate future planned development, as well as the future profits that may be foregone due to lost development potential as a result of redistricting. The total cost associated with previous expenditures and estimated future profits for planned projects within the intended critical habitat designation ranges from \$62.4 million to \$74.4 million. Please refer to our response to Comment 29a for a detailed discussion of rezoning and redistricting.

(45) *Comment:* HDOA stated the following: The DEA underestimated economic costs because the costs are limited to what is likely to occur within 10 years. Critical habitat designation is permanent and not automatically revised if there is new evidence of the benefits of nondesignation, or if the species is delisted.

*Our Response:* 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 Act, including critical habitat. Thus, when a species is delisted, critical habitat for that species would no longer be in effect.

Furthermore, a 10-year time horizon is used because many landowners and managers do not have specific plans for projects beyond 10 years, and timeframes beyond 10 years greatly increases the subjectivity of estimating potential economic impacts. In addition, the forecasts in the analysis of future economic activity are based on current socioeconomic trends and the current level of technology, both of which are likely to change over the long term.

(46) *Comment:* A commenter stated the following: The level of effort to document and analyze the potential economic impacts resulting from critical habitat designation greatly exceeded the level of effort to document and analyze the potential economic benefits due to designation, such as the benefits of watershed protection and improvement, protection of other stream and riparian biota, the value of the species as an indicator of ecological health, the value of protecting culturally significant species, the value that Hawaiians place on conservation of Hawaiian species, 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. The Service cannot exclude land from critical habitat designation if it considers only the costs, and not the benefits, of critical habitat designation. In failing to discuss these benefits, the Service missed an opportunity to educate the public regarding the value of protecting native species and native ecosystems. The Service must use the tools available, such as a study by the University of Hawaii (UH) Secretariat for Conservation Biology that estimated the value of ecosystem services, to quantify the benefits of critical habitat. The DEA results in an unbalanced overestimation of detrimental economic impacts, and an unfair under-estimation of economic benefits due to designation of critical habitat.

However, multiple other commenters stated the following: The benefits of species protection are overstated and speculative. The DEA does not present the expected circumstances or timeline for delisting the species, nor is there a quantifiable estimate of the economic benefits of delisting. Additionally, multiple commenters stated that the species themselves have no economic value. Any estimate of economic benefit derived from not fully developing lands proposed for critical habitat are speculative and unquantifiable, and the likelihood of new conservation dollars entering the State is speculative. Furthermore, in the DEA summary of costs and benefits, the benefits of designating critical habitat are "difficult to estimate" and are exceeded by the costs.

*Our Response:* The DEA discussed the benefits mentioned above. There is little disagreement in the published economic literature that real social welfare benefits can result from the conservation and recovery of endangered and threatened species. Such benefits have also been ascribed to

preservation of open space, general biodiversity, and ecosystem function, all of which are associated with species conservation. Likewise, a regional economy can benefit from the preservation of healthy populations of endangered and threatened species, and the habitat on which these species depend.

It is not feasible, however, to fully describe and accurately quantify these benefits in the specific context of the proposed critical habitat for Blackburn's sphinx moth because of the scarcity of available studies and information relating to the size and value of beneficial changes that area likely to occur as a result of listing the moth or designating critical habitat. In particular, the following information is not currently available: (1) Quantified data on the value of the moth or its critical habitat; and (2) quantified data on the change in the quality of the ecosystem and the species as a result of the designation.

Although the UH study does value ecosystem services, it has limited applicability for valuing the benefits of the critical habitat designation for the moth 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. Consistent with its purpose, the UH study provides no estimates of the changes in environmental conditions resulting from changes in land and stream management due to critical habitat designation. Furthermore, many of the assumptions and much of the analysis in the UH study are not transferable to the economic analysis for the critical habitat of the moth. For example, the Koolau Mountains were evaluated as a contiguous area, whereas the moth critical habitat is composed of separate areas on four different islands.

The value of water recharge in the UH study reflects projected water supply and demand conditions on Oahu—conditions that are not applicable to Maui, Molokai, Kahoolawe, or the island of Hawaii due to the differences in size and population. 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