DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AH94

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Blackburn's Sphinx Moth

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the Blackburn's sphinx moth *(Manduca blackburni)*, pursuant to the Endangered Species Act of 1973, as amended (Act). A total of approximately 22,440 hectares (55,451 acres) fall within the boundaries of the 9 critical habitat units designated on the Hawaiian islands of Hawaii, Kahoolawe, Maui, and Molokai for Blackburn's sphinx moth. This critical habitat designation requires the Service to consult under section 7 of the Act with regard to actions carried out, funded, or authorized by a Federal agency. Section 4 of the Act requires us to consider economic and other relevant impacts when specifying any particular area as critical habitat. We solicited data and comments from the public on all aspects of our proposal, including data on economic and other impacts of the designation.

DATES: This rule becomes effective on July 10, 2003.

ADDRESSES: Comments and materials received, as well as supporting documentation used in the preparation of this final rule, will be available for public inspection, by appointment, during normal business hours at U.S. Fish and Wildlife Service, Pacific Islands Office, 300 Ala Moana Blvd., Room 3–122, P.O. Box 50088, Honolulu, HI 96850–0001.

FOR FURTHER INFORMATION CONTACT: Paul Henson, Field Supervisor, Pacific Islands Office, at the above address (telephone 808/541–3441; facsimile 808/541–3470).

SUPPLEMENTARY INFORMATION:

Designation of Critical Habitat Provides Little Additional Protection to Species

In 30 years of implementing the ESA, the Service has found that the designation of statutory critical habitat provides little additional protection to most listed species, while consuming significant amounts of available conservation resources. The Service's present system for designating critical habitat has evolved since its original statutory prescription into a process that provides little real conservation benefit, is driven by litigation and the courts rather than biology, limits our ability to fully evaluate the science involved, consumes enormous agency resources, and imposes huge social and economic costs. The Service believes that additional agency discretion would allow our focus to return to those actions that provide the greatest benefit to the species most in need of protection.

Role of Critical Habitat in Actual Practice of Administering and Implementing the Act

While attention to and protection of habitat is paramount to successful conservation actions, we have consistently found that, in most circumstances, the designation of critical habitat is of little additional value for most listed species, yet it consumes large amounts of conservation resources. Sidle (1987) stated, ''Because the ESA can protect species with and without critical habitat designation, critical habitat designation may be redundant to the other consultation requirements of section 7.''

Currently, only 306 species or 25% of the 1,211 listed species in the U. S. under the jurisdiction of the Service have designated critical habitat. We address the habitat needs of all 1,211 listed species through conservation mechanisms such as listing, section 7 consultations, the Section 4 recovery planning process, the Section 9 protective prohibitions of unauthorized take, Section 6 funding to the States, and the Section 10 incidental take permit process. The Service believes that it is these measures that may make the difference between extinction and survival for many species.

Procedural and Resource Difficulties in Designating Critical Habitat

We have been inundated with lawsuits for our failure to designate critical habitat, and we face a growing number of lawsuits challenging critical habitat determinations once they are made. These lawsuits have subjected the Service to an ever-increasing series of court orders and court-approved settlement agreements, compliance with which now consumes nearly the entire listing program budget. This leaves the Service with little ability to prioritize its activities to direct scarce listing resources to the listing program actions with the most biologically urgent species conservation needs.

The consequence of the critical habitat litigation activity is that limited listing funds are used to defend active lawsuits, to respond to Notices of Intent (NOIs) to sue relative to critical habitat, and to comply with the growing number of adverse court orders. As a result, listing petition responses, the Service's own proposals to list critically imperiled species, and final listing determinations on existing proposals are all significantly delayed.

The accelerated schedules of court ordered designations have left the Service with almost no ability to provide for adequate public participation or to ensure a defect-free rulemaking process before making decisions on listing and critical habitat proposals due to the risks associated with noncompliance with judicially-imposed deadlines. This in turn fosters a second round of litigation in which those who fear adverse impacts from critical habitat designations challenge those designations. The cycle of litigation appears endless, is very expensive, and in the final analysis provides relatively little additional protection to listed species.

The costs resulting from the designation include legal costs, the cost of preparation and publication of the designation, the analysis of the economic effects and the cost of requesting and responding to public comment, and in some cases the costs of compliance with NEPA, all are part of the cost of critical habitat designation. None of these costs result in any benefit to the species that is not already afforded by the protections of the Act enumerated earlier, and they directly reduce the funds available for direct and tangible conservation actions. Sidle, J.G. 1987. Critical Habitat Designation: Is it Prudent? Environmental Management 11(4):429–437.

Background

Blackburn's sphinx moth (moth) (*Manduca blackburni*) is one of Hawaii's largest native insects. We provided a detailed species description as well as a biogeographical overview of the Hawaiian islands in the proposed rule (67 FR 40633), we incorporate that information by reference in this final designation.

Blackburn's Sphinx Moth Biology and Status

Very few specimens of the moth have been seen since 1940, and after a concerted effort by staff at the Bishop Museum to relocate this species in the late 1970s, it was considered to be extinct (Gagné and Howarth 1985). In

1984, a single population was rediscovered on Maui (Riotte 1986), and subsequently, populations on two other islands were rediscovered. Currently, the moth is known only from populations on Maui, Kahoolawe, and Hawaii. Moth population numbers are known to be small based upon past sampling results; however, no reasonably accurate estimate of population sizes has been determinable at this point because of the adult moth's wide-ranging behavior and overall rarity (Arthur Medeiros, U.S. Geological Survey-Biological Resources Division (USGS–BRD), pers. comm. 1998; Van Gelder and Conant 1998). Before humans arrived, dry and mesic shrubland and forest covered about 823,283 hectares (ha) (2,034,369 acres (ac)) on all the main islands (Hawaii Natural Heritage Program (HHP) 2000), and it is likely that the Blackburn's sphinx moth inhabited much of that area (Riotte 1986). Reports by early naturalists indicate the species was once widespread and abundant, at least during early European settlement on nearly all the main Hawaiian islands (Riotte 1986).

The moth has been recorded from the islands of Kauai, Kahoolawe, Oahu, Molokai, Maui, and Hawaii, and has been observed from sea level to 1,525 m (5,000 ft) elevation. Most historical records were from coastal or lowland dry forest habitats in areas receiving less than 127 cm (50 in) of annual rainfall. On the island of Kauai, the moth was recorded only from the coastal area of Nawiliwili. Populations were known from Honolulu, Honouliuli, and Makua on leeward Oahu, and Kamalo, Mapulehu, and Keopu on Molokai. On Hawaii, it was known from Hilo, Pahala, Kalaoa, Kona, and Hamakua. It appears that this moth was historically most common on Maui, where it was recorded on Kahului, Spreckelsville, Makena, Wailuku, Kula, Lahaina, and West Maui.

Blackburn's sphinx moth larvae feed on plants in the nightshade family (Solanaceae). The natural host plants are native trees within the genus *Nothocestrum* (aiea), on which the larvae consume leaves, stems, flowers, and buds. However, many of the plants recorded for this species are not native to the Hawaiian Islands, and include *Nicotiana tabacum* (commercial tobacco), *Nicotiana glauca* (tree tobacco), *Solanum melongena* (eggplant), *Lycopersicon esculentum* (tomato), and possibly *Datura stramonium* (Jimson weed). Sphingid moths are known to exploit nutritious but low-density, low-apparency host plants such as vines and sapling trees. Development from egg to adult can take as little as 56 days, but pupae may remain in a state of torpor (inactivity) in the soil for up to a year. The growth rates of larvae for many closely related sphingid species are reported to decrease when their host plants lack suitable water content. In fact, suitable host plant water content can improve the later fecundity of the adult stage (Murugan and George 1992).

Adult moths have been found throughout the year, and have been observed feeding on nectar from *Ipomoea indica* (koaliawa). Other likely native nectar-providing plants for the moth are other *Ipomea* species (spp.), *Capparis sandwichiana* (maiapilo), and *Plubago zeylancia* (iliee). Many sphingid studies have shown that air temperature restricts adult feeding activity above a certain temperature (usually 30 degrees Celsius (86 degrees Fahrenheit)) (Herrera 1992). During Van Gelder and Conant's captive-rearing study (1998), adult moth feeding was not observed and captive-reared adult moths lived no longer than 12 days. In general, sphingids are known to live longer than most moths because of their ability to feed and take in water from a variety of sources, rather than relying only upon stored fat reserves. Because they live longer than most moths, female sphingid moths have less time pressure to mate and lay eggs, and often will take more time in locating the best host plants for egg laying (B. Gagné, pers. comm. 1994; David Hopper, Service, *in litt.* 2000, 2002; Williams 1931, 1947; Riotte 1986; Van Gelder and Conant 1998; Kitching and Cadiou 2000). Because there are no studies showing any sphingid-species adults being short-lived, we believe that some unknown factor contributed to the brief adulthood of the Blackburn's sphinx moths observed during Van Gelder and Conant's (1998) study.

Blackburn's Sphinx Moth Habitat and Range

Plant species composition in the moth's habitat varies considerably depending on location and elevation, but some of the most common native plants in areas where the moth occurs are the trees *Diospyros sandwicensis* (lama), *Rauvolfia sandwicensis* (hao), *Reynoldsia sandwicensis* (ohe), *Pouteria sandwicensis* (alaa), the shrubs *Erythrina sandwicensis* (wiliwili), *Dodonaea viscosa* (aalii), and *Myoporum sandwicense* (naio) (Roderick and Gillespie 1997; Van Gelder and Conant 1998; Wagner *et al.* 1999; Cabin *et al.* 2000; Wood 2001a, 2001b).

The largest populations of Blackburn's sphinx moths, on Maui and Hawaii, are associated with trees in the genus *Nothocestrum* (Van Gelder and Conant 1998). For example, the large stand of *Nothocestrum* trees within the Ka naio Natural Area Reserve (NAR), Maui, is likely the largest in the State (Medeiros *et al.* 1993), and this fact may explain why the moth occurs with such regularity in the Ka naio area (A. Medeiros, pers. comm. 1994). *Nothocestrum* is a genus of four species endemic to the Hawaiian Islands (Simon 1999) which currently occur on Kauai, Oahu, Molokai, Lanai, Hawaii, and Maui. One species, *N. longifolium*, primarily occurs in wet forests, but can occur in mesic forests as well. Three species, *N. latifolium, N. brevifolium*, and *N. peltatum*, occur in dry to mesic forests, the habitat in which the moth has been most frequently recorded. Moth larvae have been documented feeding on two *Nothocestrum* spp., *N. latifolium*, and *N. brevifolium*; it is likely that *N. peltatum* and *N. longifolium* are suitable host plants for larval moths as well. This is supported not only by the fact that these two species are closely related to known larval hosts, but also because past historical records document the moth as occurring on the islands of Kauai and Oahu, where *N. latifolium* is not abundant and *N. brevifolium* does not occur. Furthermore, the species is known to feed on a variety of native and nonnative Solanaceae.

On Molokai, moth habitat includes vegetation consisting primarily of mixed-species mesic and dry forest communities composed of native and introduced plants (HHP 2000). Although Molokai is not known to currently contain a moth population, past moth sightings on Molokai have been reported. The island does contain native *Nothocestrum* larval host plants, including *N. longifolium* and *N. latifolium*, as well as adult host plants and restorable, manageable areas associated with these existing host plants (Wood 2001a). Because of its proximity to Maui (currently and historically home to the most persistent and largest population) and the fact that Molokai has in the past and presently supports *N. latifolium*, many researchers believe the moth could re-establish itself on the island and become a viable population(s) in the future (Frank Howarth, Bishop Museum, pers. comm. 2001).

The endangered larval host plant, *Nothocestrum brevifolium*, as well as adult host plants, occur in the areas on Hawaii Island that support populations of the moth (Marie Bruegmann, Service,

pers. comm. 1998), where there are many recorded associations of eggs, larvae, and adult moths with this plant species. This tree species is primarily threatened by habitat conversion associated with development; competition from nonnative species such as *Schinus terebinthifolius* (Christmas berry), *Pennisetum setaceum* (fountain grass), *Lantana camera* (lantana), and *Leucaena leucocephala* (Kona hao le); browsing by cattle; fire; random environmental events such as prolonged drought; and reduced reproductive potential resulting from the small number of existing individuals (59 FR 10325).

Although *Nothocestrum* spp. are not currently reported from Kahoolawe, there were very few surveys of this island prior to the intense ranching activities, which began in the middle of the last century, and the subsequent use of the island as a weapons range for 50 years. Prior to their removal, goats also played a major role in the destruction of vegetation on Kahoolawe (Cheetah and Stone 1990). It is likely that the reappearance of some vegetation as a result of the removal of the goats and the cessation of military bombing activities have allowed the moth to inhabit the island. On Kahoolawe, moth larvae feed on the nonnative *Nicotiana glauca*, which appears to adequately support production and growth of the larval stage during nondrought years. However, the native *Nothocestrum* are more stable and drought-resistant than the *Nicotiana glauca*, which dies back significantly during especially dry years (A. Medeiros, pers. comm. 2001). Therefore, it appears likely that long-term survival of the moth on Kahoolawe will require the planting of *Nothocestrum latifolium* (A. Medeiros, pers. comm. 1998).

Threats to the Conservation of Blackburn's Sphinx Moth

Habitat Loss and Degradation

Dry to mesic forest habitats in Hawaii have been severely degraded by past and present land management practices, including ranching, the impacts of introduced plants and animals, wildfire, and agricultural development (Cheetah and Stone 1990). Because of these factors, *Nothocestrum peltatum* on Kauai and *N. brevifolium* on Hawaii are now federally listed as endangered species (59 FR 9327; 59 FR 10325). Although all *Nothocestrum* spp. are not presently listed as endangered or threatened, the entire genus is declining and considered uncommon (Medeiros *et al.* 1993; HHP 2000). For example, while *N. latifolium* presently occurs at moderate densities at Ka naio NEAR (HHP 1993), there has been a complete lack of seedling survival and the stand is being degraded by goats (F. Howarth, pers. comm. 1994; Steven Montgomery, pers. comm. 1994; Medeiros *et al.* 1993). Goats have played a major role in the destruction of dryland and mesic forests throughout the Hawaiian Islands (Van Riper and Van Riper 1982; Stone 1985).

Because the moth was once so widespread and sphinx moths are known to be strong fliers, we believe it is likely that inter-island dispersal of the species occurred to some degree prior to the loss of much of its historical habitat. Currently, the areas of dry to mesic shrub and forest habitats below 1,525 m (5,000 ft) elevation that are suitable for Blackburn's sphinx moth are approximately 148,585 ha (367,161 ac).

Localized Extirpation

In addition to, or perhaps because of, habitat loss and fragmentation, Blackburn's sphinx moths are also susceptible to seasonal variations and weather fluctuations affecting their quality and quantity of available habitat and food. For example, during times of drought, nectar availability for adult moths are expected to decrease. During times of decreased nectar availability, life spans of individuals may not be affected, but studies with butterflies have shown marked decreases in reproductive capacity for many species (Center for Conservation Biology 1994). In another study, Jansen (1984) reported that host plant availability directly affected sphingid reproductive activity. In fact, for some lepidopteran (butterflies and moths) species, if nectar intake is cut in half, reproduction is also cut approximately in half. Such resource stress may occur on any time scale, ranging from a few days to an entire season, and a pattern of continuous long-term adult feeding stress could affect the future viability of a population (Center for Conservation Biology 1994).

Often, habitat suitability for herbivorous insects is determined by factors other than host plant occurrence or density. Microclimatic conditions (Thomas 1991; Solbreck 1995) and predator pressure (Roland 1993; Roland and Taylor 1995; Walde 1995) are two such widely reported factors. In a study of moth population structure, habitat patch size and the level of sun exposure were shown to affect species occupancy, while patch size and the distance from the ocean coast were reported to affect moth density. Moth populations in small habitat patches were more likely to become extinct (Forare and Solbreck 1997).

Nonnative Arthropods

The geographic isolation of the Hawaiian Islands restricted the number of original successful colonizing arthropods and resulted in the development of an unusual fauna. Only 15 percent of the known insect families are represented by the native insects of Hawaii (Howarth 1990). Some groups that often dominate continental arthropod faunas, such as social Hymenoptera (group-nesting ants, bees, and wasps), are entirely absent from the native Hawaiian fauna. Accidental introductions from commercial shipping and air cargo to Hawaii have now resulted in the establishment of over 2,500 species of alien arthropods (Howarth 1990; Howarth *et al.* 1994), with a continuing establishment rate of 10 to 20 new arthropod species per year (Nishida 1997). In addition to the accidental establishment of nonnative species, private individuals and government agencies began importing and releasing nonnative predators and parasites for biological control of pests as early as 1865. This resulted in the introduction of 243 nonnative species between 1890 and 1985, in some cases with the specific intent of reducing populations of native Hawaiian insects (Funasaki *et al.* 1988; Lai 1988). Alien arthropods, whether purposefully or accidentally introduced, pose a serious threat to Hawaii's native insects, through direct predation, parasitism, and competition for food or space (Howarth and Medeiros 1989; Howarth and Ramsay 1991).

Ants

Ants are not a natural component of Hawaii's arthropod fauna, and native species evolved in the absence of predation pressure from ants. Ants can be particularly destructive predators because of their high densities, recruitment behavior, aggressiveness, and broad range of diet (Reimer 1993). Because they are often generalist feeders, ants may affect prey populations independent of prey density, and may locate and destroy isolated individuals and populations (Nafus 1993a). At least 36 species of ants have become established in the Hawaiian Islands, and three particularly aggressive species have severely affected the native insect fauna (Zimmerman 1948).

For example, in areas where the big-headed ant (*Pheidole megacephala*) is present, native insects, including most moths, have been eliminated (Perkins 1913; Gagné 1979; Gillespie and Reimer 1993). The big-headed ant generally does not occur at elevations higher than

610 m (2,000 ft), and is also restricted by rainfall, rarely being found in particularly dry (less than 35 to 50 cm (15 to 20 in) annually) or wet (more than 250 cm (100 in) annually) areas (Reimer *et al.* 1990). The big-headed ant is also known to be a predator of eggs and caterpillars of native Lepidoptera, and can completely exterminate populations (Zimmerman 1958). This ant occurs on all the major Hawaiian Islands, including those currently inhabited by Blackburn's sphinx moth and is a direct threat to these populations (Neil Reimer, Hawaii Department of Agriculture (HDOA), pers. comm. 2001; Medeiros *et al.* 1993; Nishida 1997).

Several additional ant species threaten the conservation of Blackburn's sphinx moth. The Argentine ant (*Linepithema humilis*) has been reported on several islands, including Maui, Kahoolawe, and Hawaii (Adam Asquith, Service, pers. comm. 1998; A. Medeiros, pers. comm. 1998; Nishida 1997). The long-legged ant (*Anoplolepis longipes*) is reported on several islands, including Hawaii and Maui (Hardy 1979). At least two species of fire ants, *Solenopsis geminata* and *S. papuana*, are also important threats (Reagan 1986; Gillespie and Reimer 1993) and occur on many of the major islands (Reimer *et al.* 1990; Nishida 1997). *Ochetellus glaber*, a recently reported ant introduction, occurs on Maui, Hawaii, and Kahoolawe (A. Medeiros, pers. comm. 1998; N. Reimer, pers. comm. 2001; Nishida 1997).

Parasitic Wasps

Hawaii also has a limited fauna of native Hymenopteran wasp species, with only two native species in the family Braconidae (Beardsley 1961), neither of which is known to parasitize Blackburn's sphinx moth. In contrast, other species of Braconidae are common predators (parasitoids) on the larvae of the tobacco hornworm and the tomato hornworm in North America (Gilmore 1938). There are now at least 74 nonnative species, in 41 genera, of braconid wasps established in Hawaii, of which at least 35 species were purposefully introduced as biological control agents (Nishida 1997). Most species of alien braconid and ichneumonid wasps that parasitize moths are not host-specific, but attack the caterpillars or pupae of a variety of moths and have become the dominant larval parasitoids even in intact, high-elevation, native forest areas of the Hawaiian Islands (Zimmerman 1948, 1978; Funasaki *et al.* 1988; Howarth *et al.* 1994). These wasps lay their eggs within the eggs or caterpillars of Lepidoptera. Upon hatching, the wasp larvae consume internal tissues, eventually killing the host. At least one species established in Hawaii, *Hyposeter exiguae*, is known to attack the tobacco hornworm and the related tomato hornworm in North America (Carlson 1979). This wasp is recorded from all of the main islands except Kahoolawe and Lanai (Nishida 1997) and is a recorded parasitoid of the lawn armyworm (*Spodoptera maurita*) on tree tobacco on Maui (Swezey 1927). Because of the rarity of Blackburn's sphinx moths, no documentation exists of alien braconid and ichneumonid wasps parasitizing the species. However, given the abundance and the breadth of available hosts of these wasps, they are considered significant threats to the moth (F. Howarth, pers. comm. 1994; Howarth 1983; Gagné and Howarth 1985; Howarth *et al.* 1994).

Small wasps in the family Trichogrammatidae parasitize insect eggs, with numerous adults sometimes developing within a single host egg. The taxonomy of this group is confusing, and it is unclear if Hawaii has any native species (John Beardsley, University of Hawaii, pers. comm. 1994; Nishida 1997). Several alien species are established in Hawaii (Nishida 1997), including *Trichogramma minutum*, which is known to attack the sweet potato hornworm in Hawaii (Fullaway and Krauss 1945). In 1929, the wasp *Trichogramma chilonis* was purposefully introduced into Hawaii as a biological control agent for the Asiatic rice borer (*Chilo suppressalis*). This wasp parasitizes the eggs of a variety of Lepidoptera in Hawaii, including sphinx moths (Funasaki *et al.* 1988). Williams (1947) found 70 percent of the eggs of Blackburn's sphinx moth to be parasitized by a *Trichogramma* wasp that was probably *T. chilonis*. Over 80 percent of the eggs of the alien grasswebworm (*Herpetogramma licarsisalis*) in Hawaii are parasitized by these wasps (Davis 1969). In Guam, *Trichogramma chilonis* effectively limits populations of the sweet potato hornworm (Nafus and Schreiner 1986), and is considered under complete biological control by this wasp in Hawaii (Lai 1988). While this wasp probably affects Blackburn's sphinx moth in a density-dependent manner (Nafus 1993a), and theoretically is unlikely to directly cause extinction of a population or the species, the availability of more abundant alternate hosts (any other lepidopteran eggs) may allow for the extirpation of Blackburn's sphinx moth by this or other egg parasites as part of a broader host base (Tothill *et al.* 1930; Howarth 1991; Nafus 1993b).

Parasitic Flies

Hawaii has no native parasitic flies in the family Tachinidae (Nishida 1997). Two species of tachinid flies, *Lespesia archippivora* and *Chaetogaedia monticola*, were purposefully introduced to Hawaii for control of army worms (Funasaki *et al.* 1988; Nishida 1997). These flies lay their eggs externally on caterpillars, and upon hatching, the larvae burrow into the host, attach to the inside surface of the cuticle, and consume the soft tissues (Etchegaray and Nishida 1975b). In North America, *C. monticola* is known to attack at least 36 species of Lepidoptera in eight families, including sphinx moths; *L. archippivora* is known to attack over 60 species of Lepidoptera in 13 families, including sphinx moths (Arnaud 1978). These species are on record as parasites of a variety of Lepidoptera in Hawaii and are believed to depress populations of at least two native species of moths (Lai 1988). Over 40 percent of the caterpillars of the monarch butterfly (*Danaus plexippus*) on Oahu are parasitized by *Lespesia archippivora* (Etchegaray and Nishida 1975a), and the introduction of a related species to Fiji resulted in the extinction of a native moth there (Tothill *et al.* 1930; Howarth 1991). Both of these species occur on Maui and Hawaii (Nishida 1997) and are direct threats to the Blackburn's sphinx moth.

Based on the findings discussed above, nonnative predatory and parasitic insects are considered important factors contributing to the reduction in range and abundance of the Blackburn's sphinx moth, and in combination with habitat loss and fragmentation, are a serious threat to its continued existence. Some of these nonnative species were intentionally introduced by HDOA or other agricultural agencies (Funasaki *et al.* 1988) and importations and augmentations of lepidopteran parasitoids continues. Although the State of Hawaii requires new introductions to be reviewed before release (HDOA 1994), post-release biology and host range cannot be predicted from laboratory studies (Gonzalez and Gilstrap 1992; Roderick 1992), and the purposeful release or augmentation of any lepidopteran parasitoid is a potential threat to the conservation of the Blackburn's sphinx moth (Gagné and Howarth 1985; Simberloff 1992).

As Table 1 indicates, the assemblage of potential alien predators and parasites on each island may differ.

TABLE 1.—POTENTIAL NONNATIVE INSECT PREDATORS AND PARASITES OF BLACKBURN'S SPHINX MOTH

Order/family	Genus/species	Major island(s) on which the species has been reported	Major island(s) on which the species has not been reported
Diptera/Tachinidae	Chaetogaedia monticola (fly)	Hawaii, Kauai, Lanai, Maui, Molokai, Oahu.	Kahoolawe.
Diptera/Tachinidae	Lespesia archippivora (fly)	Hawaii, Kauai, Maui, Molokai, Oahu	Kahoolawe, Lanai.
Hymenoptera/Formicidae	Anoplolepis longipes (long-legged ant).	Hawaii, Kauai, Maui, Oahu	Kahoolawe, Lanai, Molokai.
Hymenoptera/Formicidae	Linepithema humilis (Argentine ant)	Hawaii, Kahoolawe, Kauai, Lanai, Maui.	Molokai, Oahu.
Hymenoptera/Formicidae	Ochetellus glaber (ant)	Hawaii, Kahoolawe, Kauai, Maui, Oahu.	Lanai, Molokai.
Hymenoptera/Formicidae	Pheidole megacephala (big-headed ant).	Hawaii, Kahoolawe, Kauai, Lanai, Maui, Molokai, Oahu.	none.
Hymenoptera/Formicidae	Solenopsis geminita (fire ant)	Hawaii, Kauai, Lanai, Maui, Molokai, Oahu.	Kahoolawe.
Hymenoptera/Formicidae	Solenopsis papuana (fire ant)	Hawaii, Kauai, Lanai, Maui, Molokai, Oahu.	Kahoolawe.
Hymenoptera/Vespidae	Vespula pennsylvanica (yellow jacket wasp).	Hawaii, Kauai, Maui, Oahu	Kahoolawe, Molokai.
Hymenoptera/Ichneumonidae	Hyposeter exiguae (wasp)	Hawaii, Kauai, Maui, Molokai, Oahu	Kahoolawe, Lanai.
Hymenoptera/ Trichogrammatidae.	Trichogramma chilonis (wasp)	Kauai, Oahu	Hawaii, Maui, Kahoolawe, Lanai, Molokai.
Hymenoptera/ Trichogrammatidae.	Trichogramma minutum (wasp)	Hawaii, Lanai, Molokai, Oahu	Kauai, Kahoolawe, Maui.

Furthermore, the arthropod community may differ from one area to another, even on the same island, based upon elevation, temperature, prevailing wind pattern, precipitation, or other factors (Nishida 1997). Conserving and restoring Blackburn's sphinx moth populations in multiple locations should decrease the likelihood that the effect of any single alien parasite or predator, or the combined pressure of such species, could result in the diminished vigor or extinction of the moth.

Because of the threats discussed above, we do not believe the existing habitats containing Blackburn's sphinx moth populations are sufficient to ensure the long-term survival of the species. A diverse set of habitats and climates within its former range is necessary to remove the long-term risk of rangewide extinction of the species. Threats to the moth identified in the final listing rule include vandalism and collection, predation/parasitism by alien arthropods, and habitat alteration and loss from nonnative plant and ungulate invasion (65 FR 4770; February 1, 2000). Considering the rarity of the moth, small population size is also believed to be a factor that threatens the long-term survival of the species, since random population fluctuations and catastrophic events are more likely to result in the extirpation of local populations. Wildfire and feral ungulate pressure on the moth's habitat, along with direct pressure of alien predators and parasites, are important factors currently reducing the moth's range and abundance and threatening the species' continued existence (Funasaki *et al.* 1988).

Previous Federal Action

A summary of previous Federal actions on this species up to the time we proposed this critical habitat designation is found in the **Federal Register** notice proposing designation of this critical habitat (67 FR beginning page 40638).

On June 13, 2002, we published a proposed rule for designation of critical habitat for Blackburn's sphinx moth on approximately 40,240 ha (99,433 ac) of land on the islands of Hawaii, Kahoolawe, Maui, and Molokai (67 FR 40633). The publication of the proposed rule opened a 60-day public comment period, which closed on August 12, 2002.

Subsequently, we determined that an additional extension of time was needed to complete this designation process. On August 21, 2002, the District Court in Hawaii approved another joint stipulation extending the date for the final rule designating critical habitat for Blackburn's sphinx moth to May 30, 2003.

On August 26, 2002, we published a notice (67 FR 54763) announcing the reopening of the comment period until December 30, 2002, and notice of a public hearing on the proposed rule to be held on the island of Maui. On September 12, 2002, we held a public hearing at the Maui Arts and Cultural Center Meeting Room, Kahului.

On October 10, 2002, we published a notice of a public hearing on the proposed rule to be held on the island of Hawaii (67 FR 63064). On October 29, 2002, we held a public hearing in Kailua-Kona, Hawaii.

On November 15, 2002, we published a notice of the availability of, and invitation for, comments on the draft economic analysis (DEA) for the proposed rule (67 FR 69179). The second public comment period closed on December 30, 2002.

Summary of Comments and Recommendations

Peer Review

In accordance with our policy published on July 1, 1994 (59 FR 34270), we solicited, during a prepublication peer review process, independent opinions from 15 knowledgeable individuals with expertise in one or several fields, including familiarity with the species, the geographic region that the species occurs in, and the principles of conservation biology. We received comments from five reviewers. After publication of the proposed rule, we solicited independent opinions from 27 knowledgeable individuals with similar expertise. We received 8 written responses from those 27 individuals. All eight reviewers generally supported our methodology and conclusion, and supported the proposed critical habitat designation, although they recognized the limitations of scientific knowledge of life history and population characteristics of the Blackburn's sphinx moth. All of the reviewers supported including currently unoccupied habitat

within the designation. Several reviewers suggested specific locations where critical habitat should have been expanded; in most cases this was to include additional mesic habitat areas for the moth. Several reviewers specifically expressed concern with the identified primary constituent elements, particularly pertaining to the fact that nonnative tree tobacco (*Nicotiana glauca*) was not identified as such. We summarize and address comments received from the peer reviewers in the following section. We considered all reviewers' comments in developing the final rule.

In the June 13, 2002, proposed critical habitat designation (67 FR 40633), we requested all interested parties submit comments on the specifics of the proposal, including information related to biological justification, policy, economics, and proposed critical habitat boundaries. We also contacted all appropriate Federal, State, and local agencies, scientific organizations, and other interested parties and invited them to comment. The comment period was scheduled to close on August 12, 2002. To allow for additional comments on the proposed designation and to allow for comments on the DEA of the proposed critical habitat, we extended the comment period until December 30, 2002 (67 FR 54763). We received 30 individually written letters, from 10 designated peer reviewers, 4 State agencies, and 16 individuals or organizations. Approximately 715 additional letters were submitted as part of a mailing campaign, all of which supported the proposed designation.

We received three requests for a public hearing. We announced the date and time of the public hearings and invited comments in letters to appropriate elected officials; Federal, State, and local agencies; scientific organizations; and other interested parties. We also published notices in several news sources, including the **Federal Register**, Star Bulletin, West Hawaii Today, Hawaii Tribune Herald, Honolulu Advertiser, Molokai Advertiser News, and the Maui News. Five individuals at the October 2002 Kahului, Maui, public hearing and 5 individuals at the November 2002 Kailua-Kona, Hawaii, public hearing, gave testimony on the Blackburn's sphinx moth critical habitat proposal.

We provided notification of the DEA through letters and news releases faxed and/or mailed to affected elected officials, media outlets, local jurisdictions, and interest groups. We also published notice of its availability in the **Federal Register** (67 FR 69179; November 15, 2002), and the DEA and associated material were made available on our Region 1 Fish and Wildlife Office Internet site following its release on November 15, 2002.

We reviewed all comments received for substantive issues and new information regarding the Blackburn's sphinx moth. Similar comments were grouped into six general issue categories relating specifically to the proposed critical habitat determination and DEA on the proposed determination. Comments have been incorporated directly into the final rule or final addendum to the economic analysis, and/or they have been addressed in the following summary.

Issue 1: Biological Justification and Methodology

(1) *Comment:* Multiple commenters, including one official with HDOA, stated that the Service should not designate unoccupied habitat for the moth, and that unoccupied areas should be excluded from the designation. However, all peer reviewers of the proposed rule, including one with the Hawaii Division of Forestry and Wildlife (DOFAW) and one with HDOA, were in support of the designation of unoccupied habitat. Many of the peer reviewers stated that unoccupied habitat is essential since currently occupied areas would be inadequate for conservation of the species.

Our Response: Because of the comparatively limited current range of this species, designating only occupied areas would not meet the conservation requirements of the species. Many peer reviewers agreed with this and stated that currently occupied areas, as well as the similar habitat around them within the designated units of critical habitat that may be occupied in the future, cannot provide all of the essential life-cycle needs of the species, nor provide all of the habitat components essential for the conservation (primary constituent elements) of this species. Therefore, providing the opportunity for expansion of this species to areas that were known to have been historically occupied (*i.e.*, Molokai) is essential to its conservation, and should help to prevent the possibility of the species' extinction in the event that some populations are extirpated by catastrophes such as large wildfires or hurricanes.

When designating currently unoccupied habitat for this species, we first evaluated lands that are suitable. Of this suitable habitat, we then identified those areas essential for the conservation of the species if they contained one or more of the primary constituent elements; were either in acceptable condition for conservation efforts, or could be made acceptable through appropriate management actions; and would provide the space and distribution needed by the moth to sustain itself in the future.

The one unoccupied area designated in this final rule is located on the island of Molokai. Although currently unoccupied by the moth, the area contains both larval stage and adult moth native host plants. The area is close enough in proximity to the Maui moth population that many peer reviewers stated it is feasible that the area may again be repopulated by the moth on its own. However, because it is a separate island, some additional protection from a potential natural catastrophe affecting, for example, the Maui population, may be afforded a future moth population on Molokai. Furthermore, as Molokai is the closest island to Oahu, we believe that allowing for a future moth population on Molokai may facilitate the species' dispersal and provide a flight corridor for moths eventually dispersing to the island of Oahu, which is also part of its historical range.

Molokai was designated as critical habitat in lieu of, or rather than, other suitable unoccupied areas, because we determined, to the best of our abilities, that it is the highest quality unoccupied habitat essential to the conservation of the moth. Lastly, the designated unoccupied area on Molokai may lack some of the serious potential threats to the moth (see Table 1). Conserving and restoring Blackburn's sphinx moth populations in multiple locations decreases the likelihood that the effect of any single alien parasite or predator, or the combined pressure of such species and other threats, could result in the diminished vigor or extinction of the species.

(2) *Comment:* Critical habitat designation should consider the following: (1) The importance of designating the best remaining elements of ecosystems for multispecies conservation; (2) the practicality of managing and protecting scattered units without apparent physical boundaries; and (3) the importance of public/private partnerships for species conservation.

Our Response: We agree that all these factors are important for the conservation of listed species. We have designated only areas that are essential for the conservation of the Blackburn's sphinx moth, and which contain primary constituent elements within the highest quality remaining habitats. We also agree that public/private partnerships are often essential for species conservation. As an example,

we are excluding portions of proposed Units 1 and 2 because some private landowners are managing portions of their lands for the conservation benefit of the moth and numerous other listed species. We believe that the benefits of exclusion outweigh the benefits of including these areas as critical habitat because there is a higher likelihood of beneficial conservation activities occurring in those two areas without designated critical habitat. *See*-Exclusions Under Section 4(b)(2) for a more detailed discussion of the excluded areas.

(3) *Comment:* The majority of peer reviewers noted the lack of knowledge regarding basic biology of the species. They noted that little peer-reviewed biological and ecological information is available for the Blackburn's sphinx moth, and that much of the technical information used for the critical habitat designation is based on unpublished reports and field observations by Service staff, State biologists, and university researchers. One peer reviewer with DOFAW stated that the use of information from studies of other sphinx moths or butterflies is probably not valid for Blackburn's sphinx moth. Another peer reviewer suggested the use of studies for other lepidopterans could be problematic. However, other peer reviewers agreed that it was acceptable and appropriate for the Service to use studies and information on other lepidopterans, especially since there is limited information on the moth.

Our Response: As noted in the Background section of this rule, we recognize the limited amount of scientific data available for this species, especially the very limited amount of information that is available in a peer-reviewed format. However, the Act requires us to use the best available scientific and commercial information in undertaking species listing and conservation actions, including the designation of critical habitat as set forth in this rule.

Prior to the rulemaking process associated with listing the Blackburn's sphinx moth as endangered, we participated in, led, or sponsored a number of surveys and studies in numerous habitat areas on several islands to document the presence or absence of the moth or its essential host plant species at these locations. In addition, other natural resource agencies and organizations, including the University of Hawaii, USGS-BRD, DLNR, and the National Botanical Garden, provided us with reports of field observations at many sites on several islands. While we acknowledge the limited amount of peer-reviewed published information regarding the Blackburn's sphinx moth, as required by law we have used the best scientific and commercial data available to identify and delineate the critical habitat boundaries. Furthermore, we believe that we have been cautious in using information from studies of other, similar lepidoptera in identifying critical habitat for this moth species. For example, throughout this rule, we have explicitly identified where we were making comparisons between Blackburn's sphinx moth and related taxa rather than making assumptions outright about the moth. We have also acknowledged throughout the rule that additional studies are needed to confirm certain aspects of the species's biology, including, but not limited to, its host plant co-interactions.

(4) *Comment:* Some commenters stated that the Service did not adequately consider recovery science and management in its proposed critical habitat designation.

Our Response: When developing the rule to designate critical habitat for the moth, we have used the best scientific and commercial data available. This included, but is not limited to, documented locations of known Blackburn's sphinx moth populations and locations of the primary constituent elements, including peer-reviewed scientific publications; unpublished reports by researchers; the rule listing the species (65 FR 4770); the Blackburn's sphinx moth Recovery Outline (Service 2000); the HHP's current database; island-wide Geographic Information System (GIS) coverages (*e.g.*, vegetation, soils, annual rainfall, elevation contours, landownership); information received during the public comment periods and public hearings; recent biological surveys and reports; 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; responses to the published Blackburn's sphinx moth critical habitat proposed rule; and the DEA.

The critical habitat unit approach in this rule addresses the numerous risks to the long-term survival and conservation of Blackburn's sphinx moth by employing two widely recognized and scientifically accepted methods for promoting viable populations of imperiled species—(1) creation or maintenance of multiple populations to reduce the possibility that a single or series of catastrophic events could threaten to extirpate the species; 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 (Tear *et al.* 1995; Meffe and Carroll 1996; Service 1997a).

In general, the larger the number of populations and the larger the size of each population, the lower the probability of extinction (Raup 1991; Meffe and Carroll 1996). This basic conservation principle of redundancy applies to Blackburn's sphinx moth. By maintaining viable populations in the designated critical habitat units, the threats represented by a fluctuating environment are reduced and the species has a greater likelihood of achieving conservation. Conversely, loss of a Blackburn's sphinx moth critical habitat unit will result in an appreciable increase in the risk that the species may not recover and survive.

Re-establishing the species to a diverse set of habitats and climates within its former range is necessary to remove the long-term risk of rangewide extinction due to catastrophic events and the numerous direct threats to the species and its habitat (Service 1997a). We are keenly aware that simply designating an area as critical habitat will not ensure its long-term conservation and recovery and, in fact, we know and recognize that active management actions and proven recovery science methods will be far more important in the long run for the moth. In accordance with our policy on peer review published on July 1, 1994 (59 FR 34270), we also solicited the expert opinions of appropriate and independent specialists regarding the proposed rule. The purpose of this peer review was to ensure that our designation methodology of critical habitat for the Blackburn's sphinx moth was based on scientifically sound data, assumptions, and analysis, and recovery science. The comments of all of the peer reviewers were taken into consideration in the development of this final designation. Furthermore, we are in the process of developing a draft recovery plan for the moth, and all peer reviewers, stakeholders, and other interested parties will have an opportunity to provide input to ensure that the best recovery science is outlined for the moth's long-term conservation and recovery.

(5) *Comment:* Numerous comments were submitted regarding the Service's identification of the Blackburn's sphinx moth's primary constituent elements. Most peer reviewers stated that the Service had properly identified the primary constituent elements for this species. However, several reviewers,

including one with HDOA and one with DOFAW, expressed concern with the Service's decision not to include tree tobacco (*Nicotiana glauca*) as a primary constituent element because the adult moth often lays eggs on this plant species, and the moth's larval stage appears to feed readily and successfully on it. In addition, *N. glauca* is believed to be the only larval stage host plant that the Kahoolawe island Blackburn's sphinx moth population is utilizing.

Our Response: Although Blackburn's sphinx moth larvae feed on the nonnative *Nicotiana glauca,* we do not consider this plant to be a primary constituent element for the designation of critical habitat. As previously discussed, the native *Nothocestrum* spp. are more stable and persistent components of dry-to-mesic forest habitats than *N. glauca*. *Nicotiana glauca* is a short-lived species that may disappear from areas during prolonged drought (A. Medeiros, pers. comm. 1998) or during successional changes in the plant community (F. Howarth, pers. comm. 2001; Simon 1999). Many studies have shown that insects, and particularly lepidopteran larvae, consume more food when the food has a relatively high water content (Murugan and George 1992). Relative consumption rate and growth have been reported to decrease for many sphingids closely related to the Blackburn's sphinx moth when raised on host plants or diets with a relatively low water content (Murugan and George 1992). The vulnerability of *N. glauca* to drought conditions suggests that its water content frequently may not be suitable for optimal growth of Blackburn's sphinx moth larvae.

Numerous conservation and restoration plans for particular areas throughout the State of Hawaii have identified as primary goals the restoration of native plants, including the native host plants for the Blackburn's sphinx moth and other endangered species. Achieving these restoration goals may also require the control or elimination of nonnative vegetation, potentially including *Nicotiana* spp. (*See also* Comment #22).

Additionally, unlike the *Nothocestrum* spp., *Nicotiana glauca* is more likely to occur in habitats less suitable because of their occupation by alien insect predators (D. Hopper, *in litt.* 2000, 2002; Simon 1999). Therefore, in comparison with *N. glauca*, the native *Nothocestrum* spp. better fulfill the primary biological needs of the moth larvae. For all of these reasons, we are not considering *N. glauca* as a primary constituent element for the designation of critical habitat.

(6) *Comment:* Several reviewers stated that the native *Nothocestrum* spp. host plant populations are currently very rare and most of them are not demonstrating regeneration, so that reviewers questioned the likelihood of the Blackburn's sphinx moth's eventual recovery. Several reviewers also pointed out that the few existing *Nothocestrum* populations are highly vulnerable to extirpation by catastrophic events such as large wild fires or hurricanes. Reviewers recommended that *Nothocestrum* populations be aggressively managed using techniques that include fencing and weed and feral ungulate control; otherwise, the decline of *Nothocestrum* populations would continue. Furthermore, it was suggested that existing *Nothocestrum* populations be augmented and new populations be established with techniques including outplanting and propagation.

Our Response: We agree that active management of the remaining *Nothocestrum* spp. populations will be necessary to prevent their continued decline and thereby facilitate the moth's long-term conservation. This critical habitat designation and the draft recovery plan, which we are currently preparing, identify these needs.

(7) *Comment:* One peer reviewer questioned whether it was prudent to identify nectar food source plants for the adult Blackburn's sphinx moths as primary constituent elements because these plants, especially *Ipomea* spp., are more widespread than the native larval stage host plants identified as primary constituent elements, and they are found outside of the boundaries of proposed critical habitat. The reviewer noted that some areas proposed as critical habitat, *i.e.,* proposed Unit 2, were selected partly because the areas are known to contain adult moth primary constituent elements, even if currently devoid of native *Nothocestrum* spp.

Our Response: We agree that known and likely native nectar food sources for adult Blackburn's sphinx moths are more widespread and abundant than known native food sources for larval moths. We included native nectar food sources as primary constituent elements for the moth to identify the specific habitat components needed for the species to complete its entire life cycle. We determined that identifying critical habitat based solely on the existing locations of larval stage primary constituent elements, *i.e., Nothocestrum* spp., would not meet the species' needs essential for its conservation. Some critical habitat areas were selected because they are known to contain adult moth primary constituent elements, even if currently devoid of native *Nothocestrum* spp. We included such areas when we determined that the areas were: (1) Within the moth's current or historic range; and/or (2) known or believed to have been occupied by *Nothocestrum* spp. in the past and capable of supporting *Nothocestrum* spp. again if properly protected or restored.

(8) *Comment:* One peer reviewer suggested that some areas currently occupied by the Blackburn's sphinx moth and proposed as critical habitat may actually be suboptimal habitat for the species. It was hypothesized that these same areas are occupied currently only because some threats, such as ants or certain *Trichogramma* parasitic wasp species, are either lacking or present in sufficiently low levels to allow the moth to persist there. The same peer reviewer also suggested that soil substrate is an important habitat component that may have been overlooked in the proposed rule. It was noted that the moth has often been found in areas with rocky, cinderlike, and relatively barren substrate. It was hypothesized that the moth may prefer such a loose, uncompacted substrate for the purpose of burrowing to complete pupation. However, it was also noted that moth occurrences in these areas may be due to the fact that such substrates are somewhat comparatively abiotic and sparsely vegetated, and may thus yield lower moth parasite and predator populations.

Our Response: The best available information, both historic and current, was used from a variety of sources (see Methods section) to determine the primary constituent elements for the Blackburn's sphinx moth and its current and former range. As pointed out by reviewers, historic information is extremely scant for the species, but the only information currently available indicates the species is restricted to somewhat dry and leeward areas. While we acknowledge that additional studies are needed to better understand the moth's long-term conservation needs, the designated lands represent, to the best of our current knowledge, the areas essential to the species' conservation. We are currently preparing a draft recovery plan for the moth, and this plan identifies several priority research tasks such as the investigation of substrate preferences and effects of various predators and parasites on the species. We may revise this critical habitat designation in the future if new information indicates revisions are warranted.

(9) *Comment:* One peer reviewer recommended that the Service conduct

a genetic analysis of moth populations from both Kahoolawe and Maui to determine if the moth has perhaps evolved either a preference for, or an adaptation to, feeding on *Nicotiana glauca*. It was suggested that the Service might learn whether the Kahoolawe moth population is dependent upon Maui moth populations for recruitment. Furthermore, genetic analysis might reveal that *Nicotiana glauca* raised moth populations are dependent upon *Nothocestrum* spp. plants or that such moth populations are genetically distinct from those moth populations that appear to be *Nothocestrum* spp. dependent.

Our Response: We agree that a greater understanding of the moth's genetics is needed to better address its long-term conservation needs. However, researching this aspect of the moth's biology is beyond the scope of this document. We are currently preparing a draft recovery plan for the moth that will identify a genetics study, in addition to other priority research objectives.

(10) *Comment:* Most of the peer reviewers stated that the proposed critical habitat areas seem suitable in size and that they are ecologically appropriate, provided that: (1) The proposed areas are protected from their primary threats, and (2) the excluded lands are properly managed and of large enough size to be ecologically sustainable.

Our Response: We believe the core area of suitable habitat has been demarcated by the critical habitat boundaries as presented in this final rule. Moreover, the designated critical habitat units were chosen to create an array of multiple discrete populations across the four islands to reduce the risk of extinction resulting from catastrophic natural events, such as hurricanes, and to enhance the likelihood of conservation. Furthermore, the units were chosen because they are the highest quality native habitats essential to the moth's conservation and all are identified as manageable, restorable, and sufficient in size to capably support self-sustaining moth populations. Our conclusion is that 9 sites located within historic range on four islands are sufficient to achieve these goals. If provided with new information, we may revise the critical habitat designation in the future.

(11a) *Comment:* Three peer reviewers and one commenter noted that the proposed rule did not contain a great deal of information about the distribution of the mesic habitat plant, *Nothocestrum longifolium* nor its potential as a host plant for the larval stage of the moth. It was recommended that the Service map the distribution of *N. longifolium* by island. (11b) *Comment:* Two reviewers and one commenter, including one with HDOA, noted that very little mesic habitat, other than on Molokai, was proposed as critical habitat for the Blackburn's sphinx moth. They recommended that the Service include more mesic habitat in the final designation, especially in light of the fact that the islands have undergone, and often undergo, long periods of drought. (11c) *Comment:* One peer reviewer with HDOA provided additional observational data for the moth at light traps located near Olinda, East Maui, and suggested that the moths were either flying long distances from known habitat areas, or represented adults from an undocumented population potentially utilizing *N. longifolium* plants in mesic forests of northwest Haleakala. (11d) *Comment:* Another peer reviewer with DOFAW provided additional observational data for the moth on Maui that may indicate a distinct seasonal pattern to its appearances on that island. It was suggested that these respective periods of moth appearance coincided with annual regional precipitation patterns, and might indicate the moth was taking advantage of appropriate opportunities for larval development and flower (*e.g.,* nectar) foraging. (11e) *Comment:* The same reviewer recommended the inclusion of an altogether new unit on West Maui that was not proposed as critical habitat. The unit was justified since it would include additional mesic habitat and was persistently and strongly occupied by the moth. Additionally, the area contained adult Blackburn's sphinx moth primary constituent elements, specifically *Plumbago* spp. and *Ipomea* spp., as well as other potential larval stage host plants (not identified as primary constituent elements) such as *Solanum nelsoni* and *Scaevola sericea.* Lastly, it was suggested that the new unit might provide an important corridor for adult moths migrating toward the proposed Unit 7 on Molokai because of its proximity to Molokai and the area's relative lack of strong winds like those found in the isthmus area of Maui between West Maui and Haleakala.

Our Response: We did not designate additional mesic land on East or West Maui because those lands are not essential for the conservation of the moth. This conclusion is based on available information concerning the status of the Blackburn's sphinx species in specific areas and/or the level of habitat degradation. We agree that some mesic forest areas not designated as critical habitat, especially on Maui, may potentially harbor undocumented populations of Blackburn's sphinx moth. We also acknowledge that additional survey efforts are needed to ascertain the existence of these moth populations or potential host plant populations. In preparation of this rule, we did fund three surveys for moth host plants within mesic habitats (Perry 2001; Wood 2001a; 2001b). While new reports of moth sightings provided by reviewers will be useful in focusing future survey efforts and research needs, the fact remains that too little is known about the moth's potential mesic habitat requirements. For example, the potential host plant suitability of mesic habitat plants such as *Nothocestrum longifolium*, to warrant the designation of additional mesic habitat for the moth beyond what we have designated. Furthermore, the mesic habitat we designated on the island of Molokai was identified as the best quality mesic habitat essential for the conservation of the moth. Lastly, the two designated units within the Maui isthmus, Units 5 and 6 are expected to adequately serve as a corridor for moths migrating to the designated unit on Molokai (Unit 9).

(12) *Comment:* Two peer reviewers noted that the quality of 'darkness' (*i.e.*, absence of artificial lighting) could be an important factor in the Blackburn's sphinx moth's biology, and suggested this habitat quality be considered a primary constituent element. It was stated that 'darkness' may be important for the normal nocturnal foraging, biology, and movement behavior of the adult Blackburn's sphinx moth. Furthermore, it was noted that most of the proposed critical habitat units are still in relatively dark areas, with the exception of proposed Units 3, 5a, and 5b. One commenter provided information about two occasions in which the moth was observed flying to bright lights at the State Forestry Baseyard in Kahului, Maui. During one of the occasions, the moth became disoriented and was killed by a feral cat. Two reviewers and one commenter suggested that management for darkness may be an important issue for Blackburn's sphinx moth conservation, especially if specific critical habitat units became more developed, such as in proposed Units 3, 5a, and 5b. One reviewer suggested that low-intensity and/or shielded lighting strategies might help reduce attraction and disorientation of nocturnally migrating adult moths. One commenter recommended that proposed Unit 3 not be included in the designation because

of the absence of 'darkness.' Another reviewer with DOFAW questioned whether future development within the two proposed Kailua-Kona units, and the subsequent reduction of darkness, might negatively impact moth behavior within that area.

Our Response: We agree that the quality of darkness might be an important factor in the adult Blackburn's sphinx moth's behavior. However, at this time the we are unaware of prior studies on this issue. In the draft recovery plan for this species that we are currently preparing, we will include a research objective to explore the importance of the 'darkness' habitat quality to the moth. If provided with new information, we may revise the critical habitat designation in the future.

(13) *Comment:* One peer reviewer recommended the identification of additional primary constituent elements for the adult Blackburn's sphinx moth, *Scaevola sericea* and *S. coriacea,* located within coastal areas, and other *Scaevola* spp. located within montane areas. The reviewer had documented several observations of similar sphingid species taking nectar from *Scaevola* spp., although no Blackburn's sphinx moths were observed feeding upon these species. Furthermore, within coastal areas of proposed Unit 3, sphingid moths had been documented foraging during crepuscular (twilight) hours on *Scaevola* spp. within less than 50 m (164 ft) of *Nicotiana glauca* host plants containing Blackburn's sphinx moth larvae. It was suggested it was highly likely that some of the observed foraging adult moths could have been Blackburn's sphinx moth adults.

Our Response: We agree that *Scaevola* spp. could potentially serve as a nectar food source for foraging adult moths. Flowers produced by this plant group share many of the characteristics of the flowers of plants described as primary constituent elements in this rule. We will include a research objective to explore the suitability of *Scaevola* spp. as a moth nectar resource in the draft recovery plan for this species that is currently being prepared.

Issue 2: Effects of Designation

(14) *Comment:* Multiple commenters stated that the designation of critical habitat alone will not prevent the loss of remaining natural habitats, and that funds would be better spent on natural resource management activities. Additionally, some reviewers, including one with DOFAW, stated that if management is not realistic, it makes little sense to designate critical habitat.

Our Response: We are required under the Act to designate critical habitat on the basis of best available information. Management needs for the species will be addressed in the draft recovery plan that we are currently preparing.

(15) *Comment:* Multiple commenters expressed concern about the potential impacts to hunting activities and traditional gathering rights of native Hawaiians as a result of the proposed critical habitat designation. One commenter suggested the Service should involve hunter groups in any relevant discussions should it be determined that game animal management or hunting activities may be affected by the designation.

Our Response: We agree that in many circumstances a well-designed hunting program can be an important component in the conservation of native ecosystems in Hawaii by helping to control excessive damage caused by large populations of feral mammals. In preparation of this rule, we did conduct public information meetings with State agencies and hunting groups to address these kinds of concerns.

Unless there is Federal nexus to the activity, an activity by the State or private landowner or individual, such as farming, grazing, logging, and gathering, generally is not affected by a critical habitat designation, even if the property is within the geographical boundaries of the critical habitat. Recreational, commercial, and subsistence activities on non-Federal lands, including hunting, are not regulated by this critical habitat designation. These activities may be impacted only where there is Federal involvement in the action and the action is likely to destroy or adversely modify critical habitat.

(16) *Comment:* Some commenters stated that critical habitat should be consistent with current and ongoing conservation efforts in priority areas so that resources are not directed elsewhere in an uncoordinated manner. It was suggested that the Service and landowners and managers work together to develop approaches that are more likely to lead to species conservation, rather than a passive designation lacking management.

Our Response: We agree and recognize that the ultimate purpose of critical habitat is to contribute to the conservation of listed species, a purpose that can be best reached by cooperation between ourselves and the community. As an example, we are excluding portions of proposed Units 1 and 2 because some private landowners are managing portions of their lands for the conservation benefit of Blackburn's sphinx moth and numerous other listed species. We believe there is a higher likelihood of beneficial conservation activities occurring in those two areas without designated critical habitat than there would be with designated critical habitat in those locations. See Exclusions Under Section 4(b)(2) for a more detailed discussion of the excluded areas.

Issue 3: Site-Specific Biological Comments

(17) *Comment:* One peer reviewer with DOFAW commented that the two proposed Kailua-Kona Units (5a and 5b) may be too small and urbanized to be effective for the long-term conservation of the Blackburn's sphinx moth. One commenter with the Housing and Development Corporation of Hawaii (HCDCH), a State agency, provided more recent survey data that indicated the proposed Unit 5b no longer contained living *Nothocestrum brevifolium* host plants. Another commenter questioned whether the proposed Unit 5a was actually essential to the species. It was suggested that the 1992 data used to indicate presence of the *N. brevifolium* host plants was outdated, and at any rate, the presence of only two known *N. brevifolium* host plants failed to prove the area would be capable of supporting a viable moth population. Furthermore, it was questioned whether inclusion of the area would actually facilitate dispersal of the moth to other proposed areas, and ultimately whether the unit would contribute to genetic exchange between moth populations on the island of Hawaii. The commenter inquired as to the number of past moth sightings within the unit. One commenter requested that the proposed Units 5a and 5b be excluded from the designation since the rule did not demonstrate that exclusion would result in extinction of the moth.

Our Response: We have excluded proposed Units 5a and 5b from the final designation. See the Summary of Changes from the Proposed Rule section for additional detail concerning the exclusion of these units.

(18) *Comment:* One peer reviewer suggested that it may be difficult to defend the inclusion of the Kahului Airport runway safety zone within Unit 3 because the area does not currently support native *Nothocestrum* spp. host plants. It is also unlikely to do so in the future since any potentially outplanted *Nothocestrum* spp. may not survive the strong winds and salt spray prevalent within the area. However, it was noted that the area could possibly support other native solanaceous plants such as

Solanum nelsoni, which may be suitable larval stage host plants.

Our Response: We were provided with additional information in the form of recently completed surveys for portions of the proposed Unit 3. The study, conducted by the Hawaii Biological Survey and the Bishop Museum, showed that areas on the western edge of the proposed Unit 3, encompassing and bordering some Kahului Airport lands, were in fact relatively devoid of identified primary constituent elements, and the area would therefore not appear to provide suitable long-term habitat for the moth. As a result of receiving the additional information on the proposed Unit 3, critical habitat in the area is now designated in the form of two smaller units that do not encompass the Kahului Airport runway safety zone, nor any other Kahului Airport lands other than that contained within the Kanaha Pond Wildlife Sanctuary boundaries. See the Summary of Changes from the Proposed Rule section for additional detail on the changes that were made to this unit.

We agree that *Solanum nelsoni* could potentially serve as an alternate coastal host plant food source for the moth's larval stage. We will include a research objective to explore the suitability of *Solanum nelsoni* as larval stage host plant in the draft recovery plan for this species, currently under preparation.

(19) *Comment:* One commenter pointed out that approximately 4 ha (10 ac) of proposed Unit 3 overlapped with a private parcel under a grazing lease. It was requested that the area in question be removed from the designation if the primary constituent elements were not present, or if the area did not warrant special management considerations.

Our Response: As a result of receiving additional information on proposed Unit 3, we excluded several portions of this proposed unit, including the area in question from critical habitat because we determined that those areas lacked the moth's primary constituent elements. *See* the Summary of Changes from the Proposed Rule section for additional detail on the changes we made to this unit.

(20) *Comment:* One peer reviewer with HDOA suggested that the lack of collection records for certain potential parasites and predators on Molokai does not mean those organisms are not present on the island. Rather it is possible that the lack of records is, in fact, an artifact of limited prior collecting work there. It was recommended that searches for these potential parasites and predators should be conducted on Molokai before special effort is put forth to utilize the island as a restoration site for the Blackburn's sphinx moth.

Our Response: We agree. The need to better document the presence of potential predator and parasites within identified habitat conservation areas for the Blackburn's sphinx moth will be addressed in the draft recovery plan currently being prepared for the species.

(21) *Comment:* One peer reviewer with DOFAW suggested that the proposed Units 1, 2, 6, and 7 would require fencing and large scale feral ungulate management to ensure conservation of the moth and its host plants in those areas. On a related note, one reviewer and one commenter suggested that the use of managed grazing could potentially aid moth habitat restoration through the suppression of invasive weeds and fire fuels.

Our Response: We agree with the reviewer regarding the identified fencing needs, yet we also acknowledge that managed grazing, and even highly managed game animal populations, may potentially serve as tools in the suppression of invasive weeds and fire fuels. Many of these concepts are explored in greater detail within the draft recovery plan currently being prepared for the moth. Furthermore, we look forward to developing and implementing innovative strategies to restore identified Blackburn's sphinx moth habitat conservation areas with our public and private partners involved in the management of game or livestock.

(22) *Comment:* One peer reviewer with DOFAW stated that a potential, but resolvable, conflict in land management could occur within proposed Unit 3, specifically within the boundaries of the Kanaha Pond Wildlife Sanctuary, based on current management plans to ultimately restore the 95 ha (235 ac) of sanctuary lands as much as possible to native pre-contact conditions. The planned removal of all alien plant species may entail the removal of all existing *Nicotiana glauca* plants, the nonnative host plant for the moth. It was suggested that planned experimental outplanting of native *Nothocestrum* spp. may be attempted within the sanctuary. However, it was noted that if the attempts were unsuccessful, there may then be a need to retain the *N. glauca* for the moth, an important change in both the sanctuary's management and management plans.

Our Response: We agree that the restoration of the Kanaha Pond area to a more native and pre-contact condition will benefit the remaining native components of that ecosystem, and that it should benefit the Blackburn's sphinx moth as well. We look forward to developing and implementing an innovative restoration strategy for this area with DOFAW. Determining if there are suitable, native coastal host plants that could be outflanked for the moth's larval stage is a research need that we will address in the draft recovery plan.

(23) *Comment:* One commenter provided additional information about the extent of grazing activities within proposed Unit 7 on Molokai, and questioned whether the area actually contained the Blackburn's sphinx moth's primary constituent elements. It was requested that the area be excluded from the designation.

Our Response: As a result of receiving the additional information on proposed Unit 7, several portions of the proposed unit were excluded from critical habitat because new information revealed some lands in that unit did not contain the primary constituent elements, or were more seriously degraded than previously ascertained, and are therefore not essential for the conservation of the species. *See* the Summary of Changes from the Proposed Rule section for additional detail on the changes that were made to this unit.

(24a) *Comment:* It was recommended by two commenters that some of the areas within proposed Unit 1 be excluded since they did not contain the moth's primary constituent elements. One peer reviewer suggested that proposed Unit 1 could be extended eastward of the southern Haleakala boundary to Kaupo, especially along the coast (*e.g.,* Nui coastline), to include additional areas containing the primary constituent elements. (24b) *Comment:* Another peer reviewer with DOFAW recommended that the boundaries of proposed Unit 3 be expanded by extending the unit to the south and southeast to include the area demarcated by Highway 36, and east along Highway 36 to the three-way intersection of Highway 37 with Old Haleakala Highway and Hana Highway. The reviewer noted that both Blackburn's sphinx moth adults and larvae had been observed on numerous occasions, often in good numbers within the area. Furthermore, the reviewer suggested that this expansion of proposed Unit 3 would provide additional windward and mesic habitat for the moth, a habitat type not highly represented in the proposed areas.

Our Response: As a result of receiving the additional information on proposed Unit 1, critical habitat in the area is now designated in the form of four smaller units. *See* the Summary of Changes from the Proposed Rule section for additional detail on the changes that were made to

this unit. In this final rule, several portions of proposed Unit 1 were excluded from critical habitat it was determined that these areas lacked the moth's primary constituent elements. Other portions of proposed Unit 1 were excluded because we decided that the benefits of excluding critical habitat outweighed the benefits of including critical habitat. *See* Exclusions Under Section 4(b)(2) for a more detailed discussion of the excluded areas.

We did not include these additional lands in critical habitat Units 1 and 3 because we concluded that they were not essential for the conservation of the Blackburn's sphinx moth. This was based on available information concerning the status of the species in specific areas and the level of habitat degradation. We agree that some of these additional lands may potentially harbor undocumented populations of Blackburn's sphinx moth, and we also acknowledge that additional survey efforts are needed to ascertain the existence of potential moth or host plant populations in these areas and likely in other areas as well. While new reports of moth sightings or other observations of potentially suitable habitat provided by reviewers will be useful in focusing future survey efforts and research needs, we believe we have identified for designation, the best quality habitat essential for the conservation of the moth.

Issue 4: Mapping

(25) *Comment:* Two commenters stated that greater precision is needed to identify manmade structures and features such as roads, houses, and buildings already present within the proposed critical habitat designation areas. The DEA conceded that a lack of clarity regarding excluded features and structures could force landowners to incur costs to investigate the implications of the regulations.

Our Response: The maps in the **Federal Register** are meant to provide a general location and shape of critical habitat. The legal descriptions are readily plotted and transferable to a variety of mapping formats, and are available electronically upon request for use with GIS programs. At the two public hearings, the maps were expanded to wall size to assist the public in better understanding the proposal. These larger scale maps were also provided to individuals upon request. Furthermore, we provided direct assistance in response to written or telephone questions with regard to mapping and landownership within the proposed designation.

As stated in the proposed rule and this final rule, existing manmade features and structures within the boundaries of the mapped areas. This includes features such as the following that do not contain one or more of the primary constituent elements, and therefore, are not included in the critical habitat designations: Buildings; roads; aqueducts and other water system features, including but not limited to pumping stations, irrigation ditches, pipelines, siphons, tunnels, water tanks, gauging stations (section in a stream channel equipped with facilities for obtaining streamflow data), intakes, and wells; telecommunications towers and associated structures and equipment; electrical power transmission lines and associated rights-of-way; radars; telemetry antennas; missile launch sites; arboreta and gardens; heiau (indigenous places of worship or shrines); airports; other paved areas; lawns; and other rural residential landscaped areas.

To further address concerns with the potential costs of identifying nondesignated areas, the Economic Analysis Addendum (Addendum) revisited the hour estimates presented in the DEA. Chapter VI, section 4.I of the DEA indicated that the landowners may want to learn how the designation may affect: (1) the use of their land (either through restrictions or new obligations), and (2) the value of their land. Since no commenters provided an estimate of time or cost incurred in order to investigate implications of critical habitat, and because of the reduction in acreage from proposed to designated, the Addendum revised the number of landowners downward, which resulted in a cost for landowners of $173,000 to $618,000 to investigate the implication of critical habitat.

While some landowners may expend time and money to investigate the implications of critical habitat on their land during the designation process, many landowners may not do so until after final designation is complete. Thus, the DEA and the Addendum treated these costs as a cost attributable to the final designation.

Issue 5: Policy and Regulations

(26) *Comment:* One commenter stated that excluding any areas from designation based on current management would violate 16 U.S.C. 1533(a)(3), and further stated that conservation efforts do not alter the habitat's critical nature or the need to ensure its protection. Multiple commenters stated that areas already subject to conservation measures, or which may be the subject of conservation agreements in the future, should not be excluded from critical habitat.

Our Response: 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 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. If an area is covered by a plan that already provides adequate management, we believe it does not constitute critical habitat as defined by the Act because the primary constituent elements found there are not considered to be in need of special management or protection. We considered a plan to be adequate when it provides: (1) 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) 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 in place, and/or have adequate funding for the management plan; and (3) 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. Therefore, if an area provides physical and biological features essential to the conservation of the species, and also is covered by a plan that meets these criteria, then such an area would not have constituted critical habitat, as defined by the Act, because the physical and biological features found there do not require special management. However, in the case of the moth no areas were found currently to be adequately managed, and therefore no areas have been excluded on that basis.

As to future conservation agreement, several owners have indicated that including their lands in a critical habitat designation would have a negative impact on their existing and future voluntary conservation efforts for the moth and other species. After weighing the benefits of including these areas as critical habitat with the benefits of excluding them, we concluded that the designation of critical habitat would have a net negative conservation effect in some situations, and we excluded some of these areas from the final designation of critical habitat. *See* our

discussion under *the Exclusions Under Section 4(b)(2) section.*

(27) *Comment:* Multiple commenters, including DLNR, a State agency, noted that the Service has stated 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. However, the commenters stated that 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 develop their property. Such requirements extend to all State agencies using Federal funds in connection with a proposed action, and community actions for which Federal approval or review is necessary. The requirements also extend to loan and grant programs such as Natural Resources Conservation Service (NRCS) loans and grants.

Our Response: Under section 7 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. We have provided our best assessment of what may be the effects of this consultation requirement on private landowners as well as for State agencies. However, not every project, land use, and activity that has a Federal involvement has historically been subject to a formal or informal section 7 consultation with the Service. The draft economic analysis and Addendum were confined to those projects, land uses, and activities that are, in practice, likely to be subject to consultation and are based on review of past consultations, current practices, and the professional judgments of Service staff and other Federal agency staff.

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. Again, we have provided our best assessment for what this may mean in terms of management actions or land uses and any associated costs in the draft economic analysis and Addendum.

(28) *Comment:* Two commenters, including the Hawaii Department of Transportation, Airports Division (DATA), stated that prudence cannot be determined without an analysis of the economic impacts of critical habitat. 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 is therefore required, is treated as a given, even though it ignored economic factors. The Service should revisit (*Sierra Club* v. *U.S. Fish and Wildlife Service,* 245 F.3d 434, 440–443 (5th Cir. 2001).

Our Response: We determine whether critical habitat designation is prudent according to regulations found at 50 CFR 424.12(a)(1). In accordance with these regulations and recent case law, critical habitat designation is not prudent only when 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. To determine whether critical habitat would be prudent for the species, we analyzed the potential threats and benefits 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 designation of critical habitat is prudent, we look at all of the impacts of designating specific areas as critical habitat to see if the benefits of designation outweigh the benefits of excluding it from critical habitat. If we find that economic or other impacts outweigh the benefit of designating critical habitat in a given area, that area will be excluded. We concluded in the final rule listing the Blackburn's sphinx moth as endangered that there may be benefits of critical habitat designation that may outweigh the risks. Therefore, critical habitat is prudent for the species.

(29a) *Comment:* Multiple commenters stated that the DEA fails to consider economic impacts of critical habitat that result through interaction with Hawaii Land Use Law. Critical habitat could result in changes to zoning under State law.

Our Response: Chapter VI, section 4.e. of the DEA and section 4.b. of the Addendum address costs involved in redistricting lands from the Urban, Rural and Agricultural Districts to the Conservation District. About 50,772 acres of Agricultural land, one acre of Rural land, and 430 acres of Urban land are included in the intended designation. Of this, approximately 12,352 acres of Agricultural land is owned by private landowners; one acre of Rural land is owned by private landowners; and 32 acres of Urban land is owned by private landowners. In the event that all of these private lands were redistricted to the Conservation District, the total economic cost could range from $80 million to $249 million. However, as discussed in the economic analysis, the redistricting of all lands to Conservation is not envisioned for several reasons.

HRS section 195D–5.1 states that the Department of Land and Natural Resources (DLNR) ''shall initiate amendments to the conservation district boundaries consistent with section 205–4 in order to include high quality native forests and the habitat of rare native species of flora and fauna within the conservation district.'' HRS section 205–2(e) specifies that ''conservation districts shall include areas necessary for * * * conserving indigenous or endemic plants, fish and wildlife, including those which are threatened or endangered * * *.'' Unlike the automatic conferral of State law protection for all federally listed species (see HRS 195D–4(a)), these provisions do not explicitly reference federally designated critical habitat and, to our knowledge, DLNR has not proposed amendments in the past to include all designated critical habitat in the Conservation District. Nevertheless, according to the Land Division of DLNR, DLNR is required by HRS 195D–5.1 to initiate amendments to reclassify critical habitat lands to the Conservation District (Deirdre Mamiya, Administrator, Land Division, in litt. 2002).

State law only permits other State departments or agencies, the county in which the land is situated, and any person with a property interest in the land to petition the State Land Use Commission (LUC) for a change in the boundary of a district. HRS section 205–4. The Hawaii Department of Business, Economic Development & Tourism's (DBEDT) Office of Planning also conducts a periodic review of district boundaries taking into account current land uses, environmental concerns and other factors and may propose changes to the LUC.

The State Land Use Commission determines whether changes proposed by DLNR, DBEDT, other state agencies, counties or landowners should be enacted. In doing so, State law requires LUC to take into account specific criteria, set forth at HRS 205–17. While the LUC is specifically directed to consider the impact of the proposed

reclassification on ''the preservation or maintenance of important natural systems or habitats,'' it is also specifically directed to consider five other impacts in its decision: (1) ''Maintenance of valued cultural, historical, or natural resources;'' (2) ''maintenance of other natural resources relevant to Hawaii's economy, including, but not limited to, agricultural resources;'' (3) ''commitment of state funds and resources;'' (4) ''provision for employment opportunities and economic development;'' and (5) ''provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups.'' HRS 205.17. Approval of redistricting requires six affirmative votes from the nine commissioners, with the decision based on a ''clear preponderance of the evidence that the proposed boundary is reasonable.'' HRS 205–4.

Thus, even if all federally designated critical habitat is petitioned for redistricting, the likelihood of redistricting will vary parcel by parcel. While the LUC may redistrict some parcels, it is unlikely that lands with a high economic value to the community, such as lands with significant State investments, prime agricultural land, land planned for the economic and community development, and land planned for the provision of housing, would be redistricted. By way of illustration, in the last State district boundary review only five privately owned parcels were redistricted to Conservation even though several hundred parcels were proposed for redistricting. While concern has been expressed that a third party would challenge a decision by the LUC not to redistrict a critical habitat parcel in State court, State courts have been deferential to the LUC decisions if they are supported by the record, consistent with statutory provisions, and not affected by errors. *See, e.g., Kilauea Neighborhood Ass'n.* v. *Land Use Comm'n.* 751 P.2d 1031, 1035 (Haw. Ct. App. 1988) (finding that, although LUC's findings were poorly drawn, the record provided sufficient support for the decision); *Outdoor Circle* v. *Harold K.L. Castle Trust Estate,* 675 P.2d 784, 793 (Haw. Ct. App. 1983) (upholding LUC's decision as consistent with statutory provisions and not affected by errors).

In summary, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood appears small, absent litigation, that these lands would be redistricted.

(29b) *Comment:* Multiple commenters stated that the Service did not adequately address the direct or indirect ''takings'' of private property as a result of designating critical habitat for the Blackburn's sphinx moth. 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. Also, the incremental impact of designating critical habitat, over and above the original listing, is that it creates a presumption that modification of the land will ''take'' members of the species. The Service is obliged to calculate the impact of deterring landowners use of their land. If any economic use of the land not already developed is prevented, the Service is liable to compensate the private landowner for such losses.

Our Response: Any redistricting of land to Conservation and any corresponding loss of economically beneficial use would be decided by the State Land Use Commission, not the Service, based on an array of state laws and other factors, including the extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii state plan (*see* our response to comment 29a); the extent to which the proposed reclassification conforms to the applicable district standards; and the impacts of the proposed reclassification on the following: preservation or maintenance of important natural systems or habitats; maintenance of valued cultural, historical, or natural resources; maintenance of other natural resources relevant to Hawaii's economy; commitment of state funds and resources; provision for employment opportunities and economic development; and provision for housing opportunities for all income groups; and the representations and commitments made by the petitioner in securing a boundary change.

In chapter VI, section 4 of the November 2002 DEA under indirect costs and in section 4 of the Addendum, they examined the indirect costs of critical habitat designation, such as where critical habitat triggers the applicability of a State or local statute. The economic analysis did not conclude that designation of critical habitat on Agricultural lands would prevent a rancher from using those lands. Rather, the economic analysis recognized that many areas within the critical habitat designation have been grazed for tens or hundreds of years, yet still contain the primary constituent elements for Blackburn's sphinx moth. The DEA concluded that sustainable grazing does not adversely affect the moth, and in fact, may indirectly benefit the species by reducing fire danger and controlling nonnative weeds. Moreover, the DEA concluded that areas historically subject to grazing were unlikely to meet the standards of a natural ecosystem required to be put in the Protective Subzone (HAR § 13–5–11). As a result, even if Agricultural land within the critical habitat designation were redistricted to Conservation, the DEA anticipated that agricultural activities could continue because typical agricultural activities are allowed in all subzones, except the Protective Subzone, with permission of the State Board of Land and Natural Resources (BLNR).

(30) *Comment:* Multiple commenters stated 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: We recognize the importance of landowner cooperation for conservation of listed species. This is true for many of the lands designated for the Blackburn's sphinx moth that are under private ownership. We also recognize that critical habitat designations could potentially have a negative impact on voluntary partnerships with private landowners. Conservation of the moth requires control of threats from alien species and fire, and outplanting of host plant species that have been extirpated from the wild. Several owners have indicated that including their lands in a critical habitat designation would have a negative impact on their existing and future voluntary conservation efforts for the moth and other species. After weighing the benefits of including these areas as critical habitat with the benefits of excluding them, we concluded that the designation of critical habitat would have a net negative conservation effect in some situations, and we excluded some of these areas from the final designation of critical habitat. *See* our discussion under the Exclusions Under Section 4(b)(2) section.

(31) *Comment:* One commenter stated that although they support protection for endangered species, they are also concerned about protecting nonnative species. The current interpretation of critical habitat allows the Federal government and its partners to utilize any methodology they wish in dealing with feral animals, even though such

methods may be cruel and environmentally unsound.

Our Response: The designation of critical habitat does not give the Federal government and its partners the authority to utilize any methodology they wish in dealing with feral animals. Any potential animal control program would be subject to all applicable State, Federal, and local laws.

(32) *Comment:* DATA commented that the Service has provided inadequate support for its decision to reverse its prior determination that designation of critical habitat for the Blackburn's sphinx moth is not ''prudent.''

Our Response: Our reasoning for determining that the designation of critical habitat for the Blackburn's sphinx moth is prudent is thoroughly discussed in the final rule listing the moth as an endangered species (65 FR 4770), which was published in the **Federal Register** on February 1, 2000, and is consistent with recent case law.

(33) *Comment:* DATA stated that the proposed rule does not contain an analysis of the potential impacts to aviation safety that might result from the designation of certain areas contained within proposed Unit 3. The Service is required by law to analyze any relevant potential impacts when proposing a specific area as critical habitat. The commenter recommended that the proposed rule be withdrawn until an analysis of the potential impacts to aviation safety has been conducted.

Our Response: As discussed in the DEA (Chapter VI, section 3.h. Hawaii Department of Transportation, Airports Division expressed concern about designating critical habitat within the boundaries of Kahului Airport, due to possible conflicts with safety requirements. In this final rule, we have not included Kahului Airport lands from critical habitat designation due to a lack of primary constituent elements or because the areas were not essential to the moth's conservation (see Summary of Changes from the Proposed Rule section). We are unaware of any other areas in which aviation safety may be an issue as a result of the designation of critical habitat for the Blackburn's sphinx moth.

(34) *Comment:* The Service has misinterpreted the intent of the Act with exclusion of areas under 3(5)(A)(I). If a specific area of Blackburn's sphinx moth habitat is recognized to be critical to the extent that management is already taking place, the notion that such management renders designation unnecessary does not make sense. In fact, designation of these areas would seem more urgent.

Our Response: Although we disagree with the commenter, we have not found any areas that are currently adequately managed for the moth. Therefore, we have not excluded areas on that basis. Please also refer to our response to Comment 26.

(35) *Comment:* The proposal violates the ''commerce clause'' because the Blackburn's sphinx moth is not related to interstate commerce. Critical habitat designation, and the underlying decision to list the species as endangered, are the subject of the designation and exceed the constitutional limits of the Service's delegated authority. Congress enacted the Act as an exercise of its Commerce Clause power and delegated exercise of that Commerce Clause power to the Service to apply the Act by regulation. The listed species exists only in Hawaii and does not cross State lines. Nor is it in commerce as the subject of any economic endeavor and it lacks any commercial value. Therefore, the Service's regulations listing this species and designating critical habitat for it 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 apply the protections of the Act to species that occur within a single State. A number of court cases have specifically addressed this issue. The *National Association of Homebuilders* v. *Babbitt,* 130 F. 3d 1041 (D.C. Cir. 1997), *cert. denied,* 1185 S.Ct, 2340 (1998), involved a challenge to application of Act's prohibitions to protect the listed Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*). As with the species at issue here, the Delhi Sands flower-loving fly is endemic to only one State. The court 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. Similar conclusions have been reached in other cases, *see Gibbs* v. *Babbitt,* No. 99–1218 (4th Cir. 2000) and *Rancho Viejo* v. *Norton,* No. 01–5373 (D.C. Cir. 2003).

Issue 6: Economic Issues

(36) *Comment:* HDOA suggested that the Service is required to conduct a cumulative impacts analysis to determine the economic impacts resulting from all critical habitat designations on all the islands.

Our Response: The commenter appears to be using the term ''cumulative impacts'' in the context of the National Environmental Policy Act (NEPA). We are required to consider only the effect of the designation of critical habitat for Blackburn's sphinx moth. The appropriate baseline for use in this analysis is the regulatory environment without this regulation. Against this baseline, we attempt to identify and measure the incremental costs and benefits associated with this designation of critical habitat. When critical habitat for other species has already been designated, it is properly considered part of the baseline for this analysis. Proposed and future critical habitat designations for other species in the area will be part of separate rulemaking, and consequently, their economic effects will be considered separately.

We have determined that an Environmental Assessment and/or an Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act, which includes critical habitat designations. A notice outlining our reason for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

(37) *Comment:* The DEA lists economic impacts; however, there is no indication that the Service has identified appropriate critical habitat boundaries or modified the critical habitat boundaries in consideration of these economic impacts.

Our Response: We considered the economic impacts that were analyzed and summarized in the DEA, and addendum, and excluded two units (proposed Units 5a and 5b) from critical habitat (*see* Exclusions Under Section 4(b)(2)).

(38) *Comment:* The DEA fails to distinguish potential costs resulting from the designation from those costs resulting from listing the moth as endangered. Nowhere does the draft provide any analysis of what impacts, if any, designating critical habitat for the moth would impose above and beyond those associated with the species' listing. Because the DEA does not distinguish between these costs, it cannot exclude proposed critical habitat from a final critical habitat designation pursuant to section 4(b)(2).

Our Response: Our draft economic analysis evaluated potential future effects associated with the listing of Blackburn's sphinx moth as an endangered species under the Act, as

well as any potential effect of the critical habitat designation above and beyond those regulatory and economic impacts associated with listing. To quantify the proportion of total potential economic impacts attributable to section 7 implementation, including both the section 7 listing provisions and the proposed critical habitat designation, the analysis evaluated a ''without section 7'' baseline and compared it to a ''with section 7'' scenario. The ''without section 7'' baseline represented the current and expected economic activity under all modifications except those associated with section 7, including protections afforded the species under Federal and State laws. The difference between the two scenarios measured the net change in economic activity attributable to the implementation of section 7 for the Blackburn's sphinx moth. The categories of potential direct and indirect costs considered in the analysis included the costs associated with: (1) Conducting section 7 consultations associated with the listing or with the critical habitat, including incremental consultations and technical assistance; (2) modifications to projects, activities, or land uses resulting from the section 7 consultations; (3) potential delays associated with reinitiating completed consultations after critical habitat is finalized; (4) uncertainty and public perceptions resulting in loss of land value from the designation of critical habitat; (5) potential effects on property values including potential indirect costs resulting from the loss of hunting opportunities and increased regulation related costs due to the interaction of State and local laws; and (6) potential offsetting benefits associated with critical habitat, including educational benefits.

The majority of consultations resulting from the critical habitat designation for the Blackburn's sphinx moth are likely to address land development and road construction or road expansion activities. The planned road projects (proposed Ane Keohokalole Highway) within proposed Unit 5A is not in this designation. The final economic analysis estimates that, over the next 10 years, the designation may result in potential direct economic costs ranging from approximately $1,183,800 to $1,739,000, and concludes that economic impacts from the designation of critical habitat would not be significant.

A more detailed discussion of our analyses are contained in the November 15, 2002, DEA and the Addendum to the DEA. Both documents are available for inspection at the Pacific Islands Office (see **ADDRESSES** section).

(39) *Comment:* The Service has failed to consider the cascading impacts resulting from State-led regulatory activities that must, by law, be implemented as a result of critical habitat designation. Additional concerns include the broad interpretation of ''take'' under Hawaii's Endangered Species Act (ESA) (HRS Ch. 195D); mandatary ''downzoning'' of private lands under Hawaii's Land Use Law (HRS Ch. 205); unreasonably frequent requirements for full environmental impact statements for minor actions under Hawaii's Environmental Impact Statement Law (HRS Ch. 343); unreasonable permit delays for County-regulated Special Management Area permits under Hawaii's Coastal Zone Management Law (HRS Ch. 205A); and uncertainty of interpretation of the reach and extent of State regulatory authority under Hawaii's State Water Code (HRS Ch. 174C) and implications for water quality standards under Hawaii Administrative Rules Ch. 11–54, Water Quality Standards.

Our Response: Possible costs resulting from interplay of the Act and Hawaii State laws were discussed in Chapter VI, section 4 of the November 2002 DEA under indirect costs and in section 4 of the Addendum. They examine the indirect costs of critical habitat designation, such as where critical habitat triggers the applicability of a State or local statute. Take prohibitions under Hawaii law are attributable to a listing decision and they are not coextensively costs of critical habitat designations. 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 and are not considered in the economic analysis of critical habitat designation. Other possible indirect impacts, such as the loss of development or loss in property values due to State redistricting of land from agricultural or rural to conservation were analyzed (see also our response to Comment 29a). However, there is considerable uncertainty as to whether any or all of these indirect impacts may occur since they depend on actions and decisions other than the source statute, and there is only limited history to serve as guidance.

(40) *Comment:* A commenter stated the following: The narrative exclusion of areas underlying currently developed areas such as buildings and driveways (''unmapped holes'') is too vague considering the cryptic nature of the moth and its habitat. Although the DEA concedes that the lack of clarity can force landowners to incur costs to investigate the implications of the regulations, it fails to fully consider the economic impacts of landowners' costs to properly demarcate ''unmapped holes'' in the process of obtaining necessary permits for development projects. The estimate that this will only take 15 to 40 hours is too low given the size of the designated areas, the vagueness of the regulatory exclusion, and the real costs of obtaining development approvals.

Another commenter also stated that the DEA's analysis of potential costs expected to be incurred by private landowners to investigate the implications of critical habitat on their lands was flawed, because the analysis failed to recognize that the costs to investigate the implications of critical habitat are associated with the designation process, not additional costs that the final designation would impose. The commenter further stated that any concerned party investigating the proposed designation of critical habitat on their lands would have already hired lawyers and consultants, and would have incurred the costs associated with figuring out the implications of designation on their lands. Moreover, were the private landowners' lands ultimately excluded from the final critical habitat designation, the landowners would still not recoup those costs; the money has already been spent. Thus, the commenter concluded that these costs should not be included in the analysis of future potential costs from designation since they have already been incurred, and were incurred, regardless of the final designation decision.

Our Response: Chapter VI, section 4.I of the DEA indicated that landowners may want to learn how the designation may affect (1) the use of their land (either through restrictions or new obligations), and (2) the value of their land. It is recognized that some landowners may spend a great deal of time investigating, while other landowners may not conduct any investigation. The estimate contained in the DEA is a range that reflects the total cost for all landowners based on an average cost per landowner. Public comment did not provide an alternative estimate of time or cost incurred in order to investigate implications of critical habitat sufficient to require changes to the estimated average cost per landowner. Thus, the Addendum does not revise the number of hours that the DEA estimated the landowner and/or his attorneys or professional staff would spend on investigating the issues.

However, the Addendum does revise the number of affected landowners to 65 because of the intended modifications to the critical habitat indicated by us. As described in section 4.e. of the Addendum, an estimate of the costs involved with investigation for the intended designation ranges from roughly $173,000 to $618,000.

While some landowners may expend time and money to investigate the implications of critical habitat on their land during the designation process, many landowners may not do so until after final designation is complete. Thus, the DEA and the Addendum conservatively treat these costs as costs attributable to the final designation.

(41) *Comment:* DOTA stated that project modification costs, such as those to roads, are underestimated, particularly the cascading effect of project realignment with the purpose of avoiding critical habitat.

Our Response: The project modification cost estimates were developed considering a wide array of projects, locations, and contingencies, as well as by examining the limited historical record of project modifications regarding the Blackburn's sphinx moth. The planned road project (proposed Ane Keohokalole Highway) within proposed Unit 5A is not in this designation.

(42) *Comment:* HCDCH stated the following: The DEA only partially considers the ''indirect impacts'' of critical habitat designation, and instead focuses on ''direct impacts'' resulting primarily from consultations under section 7 of the Act because of precedent set by *New Mexico Cattle Growers,* the Service must fully consider both types of impacts, and the DEA must present a thorough analysis of these economic effects. Several other commenters stated the DEA overemphasizes the direct costs attributable to critical habitat designation and ignores or omits other indirect impacts, such as: Impacts to housing supply, including affordable housing; decreases in public revenues as a result of lost construction and reduced economic activity; impacts to subsistence activities and their role in the local economy; and impacts to public infrastructure such as roads and water systems.

Our Response: An analysis of both direct and indirect impacts was presented in chapter VI of the DEA and sections 3 and 4 of the Addendum. With respect to indirect effects, there is considerable uncertainty regarding whether any or all of the indirect impacts may actually occur, because they depend upon actions and decisions by entities other than the Service under circumstances for which there is limited or no history that can be used to determine the likelihood of different outcomes. Thus, based on the available information, indirect impacts were discussed qualitatively in the DEA and Addendum. In addition, where possible, estimates were given of worst-case scenarios for illustrative purposes and a sense of the likelihood of occurrence was provided.

The impact to the supply of affordable housing was discussed in the DEA in chapter VI, section 4.e. The DEA recognized that some landowners feared the possibility of redistricting land within the critical habitat designation to the Conservation District, and discussed the impact to the affordable housing supply should redistricting occur and prevent planned development. Specifically, in regards to the planned Villages at Laiopua (VOLA), affordable housing development planned by the State in proposed Unit 5b (island of Hawaii), the DEA noted that the County of Hawaii requires developers to provide a certain number of affordable housing units, or pay $4,720 to the County for each unit not built. Using this value as a proxy for the social value of affordable housing, the DEA estimated that the loss of 570 affordable units in the VOLA development equates to a loss of almost $2.7 million to the community. We did not include this area in this designation (*see* Exclusions Under Section 4(b)(2)).

Further, the DEA also addressed the potential impact on public revenues as a result of lost construction. In chapter VI, section 4.e., the DEA recognized that a loss in development can lead to economic losses due to the ''ripple-effect.'' For example, if a home cannot be built, both the developer and construction company who would have built the home would have reduced revenues. In addition, the lumber company and other companies supplying the construction company would have reduced revenues, an impact that would ''ripple'' through the regional economy and could result in reduced public revenues. However, due to the availability of suitable land outside the critical habitat designation, the DEA concluded that any economic activity displaced within critical habitat for the moth due to redistricting of land to the Conservation District would still be expected to occur, just in other locations. Thus, the DEA implicitly concluded that there would be no appreciable impact on public revenues.

The DEA addressed the impacts to subsistence and their role in the local economy in chapter VI, section 4.d. The DEA recognized that subsistence not only plays an important role in community life, but also provides important sustenance to many residents in communities on Maui, the island of Hawaii, and Molokai. The DEA estimated that restriction of access and prohibition of subsistence activities in all areas proposed for critical habitat designation was extremely unlikely, and that more likely to occur were restrictions in small, localized areas of significant biological importance. Because of the strong stewardship and conservation values associated with those practicing subsistence activities within the proposed critical habitat, as well as the traditional recognition of the value of protecting certain areas through the kapu system, the DEA concluded that the impact of critical habitat designation on subsistence activities would be minimal.

Finally, the economic analysis addressed impacts to public infrastructure such as roads and water systems in chapter VI, sections 3.I and 3.j. of the DEA, and section 3.j. of the Addendum. These sections addressed projects planned within the critical habitat designation. Final estimated potential section 7 costs for planned road projects are $32,600 for consultations and $985,000 to $1,230,000 for project modifications. Final estimated potential section 7 costs for planned water projects are $20,600 to $61,200 for consultations and up to $6,200 for project modifications.

(43) *Comment:* A commenter stated that the DEA acknowledges some or all lands designated as critical habitat may be redistricted/rezoned at the State or county level to preclude further development, and that the actual economic costs of redistricting could be very high. The commenter noted that while these estimates are mentioned in the text, they are not included in the summaries of the economic impacts.

Our Response: Tables ES–1 and VI–3 (''Summary Tables'') of the DEA and Table Add-2 of the Addendum summarize the economic impacts associated with the Blackburn's sphinx moth critical habitat designation are also discussed in detail in the response to Comment 29a. Although chapter VI, section 4 of the DEA, and section 4 of the Addendum provided general estimates of some of the potential indirect costs, including costs associated with State redistricting of land (chapter VI, section 4.e. of the DEA, section 4.b. of the Addendum), these estimates were not totaled in the Summary Tables because the probability that many of the indirect costs will occur is unknown. As noted on each of

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

is not necessarily the case with the moth critical habitat. Delisting of the moth is not anticipated within the 10-year time horizon of this economic analysis, and it is beyond the scope of the economic analysis to forecast when delisting may occur beyond this period. The economic analysis does not conclude that the moth or critical habitat for the moth has no economic value; rather, it simply states that the value of the species cannot be quantified at this time. The economic analysis does not attempt to quantify the economic benefit derived from not fully developing lands proposed for critical habitat. Rather, the economic analysis acknowledges there may be benefits resulting from the preservation of open lands that might otherwise be developed, but concludes that because much of the critical habitat designation is already kept as open space and governed by existing State and local land use laws and county plans, these benefits may be insignificant. Finally, while the economic analysis concludes that many of the benefits of critical habitat designation are ''difficult to estimate,'' it does not necessarily lead to a conclusion that the benefits are exceeded by the costs. We believe that the benefits of the species and of critical habitat designation are best expressed in biological terms that can be weighed against the expected costs of the rulemaking.

(47) *Comment:* One commenter pointed out that critical habitat does not benefit ecotourism by creating new special places for people to visit, as the DEA suggested. Rather, it helps to protect the special places that already exist from degradation, ensuring that they will be around in the future to attract future ecotourists.

Our Response: Chapter VI, section 6.b.(1) of the DEA indicated that the proposed critical habitat may enhance the appeal of ecotourism by providing a marketing dimension. However, the DEA also stated that this benefit may be slight since these places may already be regarded as special due to the existing natural and cultural resources in the area.

(48) *Comment:* A commenter stated that assigning an economic value to preservation of ecosystem functions that may result from the designation of critical habitat (such as groundwater recharge, protection of coastal marine waters and fisheries, and other ecosystem services) is now an acceptable method of economic analysis, and that the dollar value of these services is high. The commenter noted that this analysis was done in a qualitative, narrative manner in the DEA and questioned why it was not done in a quantitative manner.

Our Response: The economic analysis recognized that the preservation of ecosystem functions may result from the designation of critical habitat for the Blackburn's sphinx moth. It was not feasible, however, to fully describe and accurately quantify these benefits in the specific context of the proposed critical habitat for the moth because of the scarcity of available studies and information relating to the size and value of beneficial changes that are 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 the moth's critical habitat; and (2) quantified data on the change in the quality of the ecosystem and the species as a result of the designation.

(49) *Comment:* A commenter stated that there was no attempt in the DEA to quantify the value of open space (parks, preserves, even golf courses) surrounding real estate. The commenter noted that such increased property values are acknowledged but there was no attempt to estimate the corresponding increases in property values. Also, the commenter noted that some tourists prefer less developed areas.

Our Response: As discussed in the DEA and in the Addendum, there are only two areas where Blackburn's sphinx moth critical habitat could potentially increase the amount of open space. These areas include approximately 89 ha (220 ac) planned for single-family and multi-family homes in the Kaloko Properties development in proposed Unit 5a (island of Hawaii), and approximately 30 ha (75 ac) planned single-family and multi-family homes in the State VOLA project in proposed Unit 5b (island of Hawaii). (Note: this area was not included in this designation.) If these areas are redistricted to the Conservation District, the likelihood of which, as discussed in the Addendum, is considered small, they may remain open spaces but they will not necessarily be converted into golf courses and parks. Most golf courses and parks are not consistent with the regulations associated with the Conservation District. If the areas are left in the natural state or as preserves, the positive impact on surrounding real estate is likely to be minimal because much of the area is currently open and likely remain open over the next 10 years.

(50) *Comment:* Multiple commenters, including HDOA, opposed the designation of Agricultural land and lands needed to support agriculture and ranching. Commenters were concerned that designation would reduce property values and the ability to develop lands that were previously planned for development and also stated the following: Thirty-three percent of the proposed designated land is within the State Conservation District, which includes irrigation water essential to agriculture. The rest of the lands proposed for designation are primarily in the State Agricultural District. Designation of Agricultural lands could prevent a farmer or rancher from using those lands since the very nature of those uses would in all likelihood entail cutting, uprooting, or injuring plants to a certain extent. The DEA failed to examine the economic impact of a landowner not being able to use his own land for fear of injuring a species he doesn't even recognize. No protection is afforded to farmers who unwittingly ''harm'' the designated critical habitat.

Our Response: Chapter VI, section 4.e. of the DEA discussed potential indirect impacts to Agricultural land, including the potential reduction in property values and the impact of redistricting Agricultural land to the Conservation. Section 4.b. of the Addendum revised these estimates based upon the intended modifications to the critical habitat designation to remove areas for biological reasons. The Addendum estimated the loss in property value associated with an extreme scenario—that of all unplanned Agricultural land on Maui, Molokai, and the island of Hawaii being redistricted to Conservation—at $17 million to $169 million. The loss of development potential on the Agricultural land in proposed Unit 5a (island of Hawaii) is estimated at $13 million to $25 million. We did not include this area in this designation (*see* Exclusions Under Section 4(b)(2)). Please refer to our responses to comment 29a for a detailed discussion of this issue. Additionally, it is important to note that the Land Use Commission considers the ''maintenance of other resources relevant to Hawaii's economy, including, but not limited to, agricultural resources'' as well as ''the preservation or maintenance of important natural systems or habitats'' when considering a petition for redistricting.

In addition, the economic analysis did not conclude that designation of critical habitat on Agricultural lands would prevent a rancher from using those lands. Rather, the economic analysis recognized that many areas within the critical habitat designation have been

grazed for tens or hundreds of years, yet still contain the primary constituent elements for Blackburn's sphinx moth. The DEA concluded that sustainable grazing does not adversely affect the moth, and in fact, may indirectly benefit the species by reducing fire danger and controlling nonnative weeds. Moreover, the DEA concluded that areas historically subject to grazing were unlikely to meet the standards of a natural ecosystem required to be put in the Protective Subzone (HAR § 13–5–11). As a result, even if Agricultural land within the critical habitat designation were redistricted to Conservation, the DEA anticipated that agricultural activities could continue because typical agricultural activities are allowed in all subzones, except the Protective Subzone, with permission of the State Board of Land and Natural Resources (BLNR).

(51) *Comment:* Several commenters were concerned about the potential for critical habitat to decrease the amount of available hunting lands and game animals. Frustration was expressed that governmental officials value plants and insects more than hunting, an important family and cultural tradition, means of subsistence, and way of life. In addition, commenters stated the following: Members of all ethnic groups hunt and depend on subsistence activities as a real part of their income. Hunting also contributes to the economy via money spent on pet foods, interisland trips, gasoline, supplies, etc. Additionally, DLNR will lose money as the demand for hunting licenses and tag fees dwindles. The DEA does not adequately reflect the costs associated with management of game mammals and loss of hunting lands.

Our Response: Chapter VI, section 4.b. of the DEA discussed the potential indirect impact of critical habitat on the management of game mammals on Molokai and the island of Hawaii, the only areas where the critical habitat designation overlaps with State-managed hunting units. The DEA noted that section 7 of the Act by itself does not require DLNR to manage State hunting lands to protect critical habitat; assure the survival and conservation of listed species; or participate in projects to recover species for which critical habitat has been established. Moreover, the DEA noted that critical habitat designation does not require: (1) Creating any reserve, refuge, or wilderness areas; (2) fencing for any reason; (3) removing ungulates; or (4) closing areas to hunters.

However, the DEA recognized that a change in game-management strategy as a result of a lawsuit or as a voluntary decision by DLNR is possible, but not likely.

Nonetheless, for illustration purposes, chapter VI, section 4.b. of the DEA presented potential costs that could result if DLNR removed areas within the intended designation from the State-managed hunting units. To illustrate the magnitude of the impacts on Molokai, if about half of those who hunt game mammals on the affected lands were to give up hunting, then hunting activity could drop by about 8 percent (half of 16 percent, which is the estimated percentage of the accessible State-managed hunting lands on Molokai proposed for designation). This translates into an annual decrease in economic activity related to hunting on Molokai of about $25,000 in direct sales; $45,000 in total direct and indirect sales; one job; and $15,000 in income. To illustrate the magnitude of the impacts on the island of Hawaii, if about half of those who hunt game mammals on the affected lands were to give up hunting, then hunting activity could drop by about 12.5 percent. While the proposed critical habitat covers only 3 percent of the total hunting area on the island of Hawaii, the actual hunting activity within the area proposed for designation is much higher than 3 percent. Based on information provided by DLNR regarding the popularity and the number of hunting trips in the Puu Waawaa area, it is assumed the area included in critical habitat supports approximately 25 percent of the hunting activity on the island of Hawaii. A reduction in hunting activity by half in this area would translate into an annual decrease in economic activity related to hunting on the island of Hawaii of about $425,000 in direct sales; $750,000 in total direct and indirect sales; 13 jobs; and $250,000 in income. However, the $450,000 ($25,000 + $425,000) decrease in expenditures by the displaced hunters would probably be spent on other activities, goods and services, so these figures are likely to overstate economic costs.

In addition to the change in economic activity discussed above, a reduction in hunting activity would also result in a loss in value or benefit to hunters (consumers' surplus). Chapter VI, section 4.b. of the DEA estimates this potential loss in value at $238,000 ($13,000 for hunting on Molokai and $225,000 for hunting on the island of Hawaii) annually and recognizes that benefits derived from recreational activities that replace game mammal hunting would partially offset this loss. Because the intended revisions did not significantly reduce the amount of overlap between State-managed hunting units and the intended designation, the Addendum made no changes to the conclusions reported in the DEA regarding hunting.

(52) *Comment:* DOTA stated that the proposed rule fails to adequately consider potential economic impacts to the Kahului Airport as a result of the designated airport lands.

Our Response: Chapter VI, section 3.h. of the DEA and section 3.i. of the Addendum discussed direct economic impacts associated with activity by DATA at Kahului Airport. Specifically, the DEA recognized that DOTA opposes designation of critical habitat in this area due to a possible conflict with safety requirements. In addition, the DEA noted that while DOTA receives Federal funding for transportation improvements, the Federal funds were not likely to be used for activities within the proposed critical habitat designation. Thus, while the possibility of a future Federal nexus was recognized, the DEA concluded that no section 7 consultations or project modifications were anticipated because there was no known Federal involvement for the existing activities.

During public comment, DOTA objected to designation of Kahului Airport and stated that the proposed designation failed to adequately consider the potential economic impacts to the Kahului Airport. As noted in the DEA, activities within the critical habitat designation primarily involve the clearance and cutting back of vegetation. These activities are not typically supported through Federal funds. However, based on discussions with DOTA, it is assumed that DOTA would avoid utilizing Federal funds, if they were available, to support activities within the area designated for critical habitat in order to avoid Federal involvement and section 7 consultation. As DOTA does not currently use or anticipate using Federal funds to support activities within the critical habitat designation, the economic impact of forgoing Federal funding sources is estimated to be zero.

DOTA did not provide any specific information demonstrating economic impact, identify any other activities that would be impacted by the designation, or raise any other Federal nexus. As discussed above, there is no anticipated Federal involvement for activities at Kahului Airport. Thus, no section 7 consultations or project modifications relating to Kahului Airport are anticipated.

(53) *Comment:* The MID Corporation and TSA Corporation (MID/TSA) stated that the DEA vastly understated potential economic impacts to its

various projects as a result of designation of lands in proposed proposed Unit 5a. The commenters suggested indirect costs approximating $415 million. Furthermore, the commenters stated that the DEA fails to address broader economic impacts to the community of Kailua-Kona and the State such as costs approximating $24 million as a result of potential loss of land development.

Our Response: We did not include this area in this designation (*see* Exclusions Under Section 4(b)(2)).

(54) *Comment:* Table ES–1: Under ''Residential Development,'' needs to add reference to Kaloko Properties Development.

Our Response: The Kaloko Properties development is referenced in section 3.e. of the Addendum and it is included in the heading ''Other Residential Development, Agricultural District'' in Table Add-1.

(55) *Comment:* Page VI–11, second to last paragraph: Based on maps supplied by the Service, MID/TSA estimates that 15 ha (37 ac) are in the Urban District (Kaloko Industrial Park, Phases III & IV). Assuming the referenced 5 ha (13 ac) refers to lands north of Hina Lani Street, the second sentence should be revised to reflect that there are plans to develop golf course and residential uses on Urban lands proposed for critical habitat designation. Page VI–13, 2nd paragraph: The second sentence should be revised to reflect that as part of the Kaloko Properties development, there are plans to develop golf course and residential uses on lands proposed for critical habitat designation. Development is planned within the next 10 years. Page VI–14, 2nd paragraph under 3.c: The paragraph should be revised to reflect that: (1) The developer is TSA Corporation, and (2) county zone change allowing for commercial-industrial mixed use development was granted. Page VI–28, section 3.i.(2) New Roads: In the first paragraph, the County of Hawaii no longer plans to extend Olowalu Street. As such, this paragraph should be deleted. Page VI–39, section 3.m.(2) Planned Golf Courses: The discussion should add the planned Kaloko Golf Course in proposed Unit 5a that has Urban zoning and is planned to be constructed on approximately 78 ha (194 ac) in TMK Parcel 7–3–09: 25.

Our Response: This information is included in section 3.l. of the Addendum; however, there is no change in the DEA cost estimate.

(56) *Comments:* Page VI–64, last paragraph: Need to also add reference to the Kaloko Properties development; Page VI–65, Previous Expenditures and Future Profits: Need to add reference to the economic impacts from Kaloko Properties development; Page VI–65, 7th paragraph regarding Kaloko Industrial Park: We estimate up to 33 lots would be affected, with an economic loss of $15 million based on property sales in the latest phase; Page VI–69, 3rd paragraph, Potential Redistricting Costs: The potential economic cost range of $255 million to $550 million appears to be grossly understated given our own estimate of the loss of $415 million on our Properties in proposed Unit 5a, but even then, this cost range (including Kaloko Properties costs) should be included in the summary tables, rather than being dismissed as ''speculative.''

Our Response: All of this information is included in section 4.b. of the Addendum. The potential economic impacts to the Kaloko Industrial Park expansion in proposed Unit 5a (island of Hawaii) include a loss of $500,000 in previous expenditures and $12 million in future profits. The potential impacts to the Kaloko Properties development in proposed Unit 5a (island of Hawaii) include $4.2 million in previous expenditures and $13 million to $25 million in future profits. We did not include this area in this designation (*see* Exclusions Under Section 4(b)(2)).

(57) *Comment:* HCDCH commented that the DEA incorrectly concluded that economic impacts to the VOLA project would be moderate or modest because there is not likely to be any Federal involvement. The VOLA project may in the future request Federal funding to assist with development of affordable housing. The State would then lose money due to the direct impacts of various required consultations. Furthermore, the DEA does not acknowledge the cost of developing affordable housing at VOLA in lieu of Federal funding assistance.

Our Response: Section 3.c. of the Addendum specifically addresses HCDCH concerns. We did not include this area in this designation (*see* Exclusions Under Section 4(b)(2)).

(58) *Comment:* The DLNR identified five parcels (TMK (2) 1–8–001:005; TMK (2) 2–1–004:049; TMK (2) 2–1–006:076; TMK (2) 2–1–006:077; and TMK (2) 2–1–006:078) that should be excluded from designation because the DEA failed to establish that the benefits of including these parcels in the designation outweigh the costs of including these parcels in the designation.

Our Response: Two of the five parcels (TMK (2) 1–8–001:005 and TMK (2) 2–1–004:049) are leased for pasture purposes. The other three parcels (TMK (2) 2–1–006:076, TMK (2) 2–1–006:077, and TMK (2) 2–1–006:078) are identified as lands with either high land values or with development potential.

Section 3.g. of the Addendum evaluated the direct economic impact of critical habitat designation on these two parcels under lease for pasture purposes and concluded that no direct section 7 costs involving these leases are anticipated because there is no known Federal involvement.

Sections 4.a. and 4.b. of the Addendum discussed indirect costs, specifically the possibility of mandated conservation management measures that would interfere with the ability to lease these lands for pasture purposes, and the possibility of restrictions on the State's ability to develop the land in the future as a result of redistricting.

As discussed in section 4.a., mandated conservation management of all of the land in critical habitat is not reasonably foreseeable. The concern expressed by some is that the prohibition on taking endangered and threatened species could be triggered by designation of critical habitat if courts apply the principles of *Palila* v. *Hawaii Department of Land and Natural Resources* 471 F. Supp. 985 (D. Haw. 1979), *aff'd* 639 F.2d 495 (9th Cir. 1981) and *Palila* v. *Hawaii Department of Land and Natural Resources* 649 F. Supp. 1070 (D. Haw. 1986) *aff'd* 852 F.2d 1106 (9th Cir. 1988). While the circumstances considered by these cases happened to occur in the palila's critical habitat, the legal issues involved interpretation of ''harm'' in the Act's definition of ''take'' affirming that habitat degradation can constitute ''harm'' to a listed species. They did not announce a rule that degradation of designated critical habitat automatically constitutes take. While critical habitat may provide information to help a landowner identify where take through habitat modification may occur, the Federal and State take prohibitions are triggered by the listing of a species. These prohibitions apply whether or not critical habitat has been designated. In addition, there is legal interpretation Federal, State, or county law or regulation that mandates conservation management for critical habitat. As such, this analysis concludes that mandated conservation management based on critical habitat designation is not likely.

Section 4.b. of the Addendum discussed the possible impact on future development on the three parcels identified by DLNR. The Addendum recognized that while it is possible that redistricting of these parcels (should it occur) could restrict the ability of DLNR to develop these lands in the future, the economic impact of such a restriction

was impossible to estimate due to the speculative nature of such development at this time in light of the fact that there were no current plans for development of these parcels. In addition, section 4.b. concluded that while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District. This conclusion was based on the requirements for redistricting, including the requirement that the Land Use Commission consider the ''commitment of State funds and resources'' as well as ''the preservation or maintenance of important natural systems or habitats'' when considering a petition for redistricting.

(59) *Comment:* DOTA stated that the proposed designations on the islands of Maui and Hawaii would greatly increase costs to maintain and repair State Highway facilities. Specifically, the proposed Kanaha Pond-Spreckelsville unit would impact costs to the planned widening project for Route 36. The proposed Kailua-Kona Unit 5b will impact planned widening for Route 197, and the proposed Puu Waawaa Unit will impact planned improvements for Route 190. DOTA recommends that a buffer zone of 30 m (100 ft) on the sides of the State highway right of way lines be excluded from critical habitat units to eliminate or minimize designation-related additional costs for improvements, maintenance, and repair.

Our Response: Section 3.j. of the Addendum evaluated the impact of critical habitat designation on these three identified road projects. While the existing roadway of Route 36 (Hana Highway) is located outside of the Blackburn sphinx moth critical habitat designation, future widening of the roadway could possibly involve use of land inside the critical habitat designation. The widening of the area adjacent to the critical habitat designation was planned for construction between 1996 and 2000 in the 1997 Maui Long Range Transportation Plan. However, in the January 2002 Final Joint County/State Maui Interim Transportation Plan, the project is designated as a long-term project with no anticipated date of construction. Given the circumstances and the number of other priority projects listed before it, it is deemed unlikely that widening of Hana Highway will occur within the next 10 years.

The Mamalahoa Highway (Route 190) safety improvements in proposed Unit 6 (Unit 8, island of Hawaii) involve simple reading and resurfacing of the existing roadway. As mentioned in the DEA, the critical habitat provisions of section 7 do not apply to the operation and maintenance of existing manmade features and structures because these features are excluded from the designation. Although we are unable to individually map out every road and other manmade features and structures, they have been excluded in narrative form. Thus, the reading and resurfacing of the existing roadway planned for Mamalahoa Highway in proposed Unit 6 (Unit 8, island of Hawaii) would not be subject to section 7 consultation for critical habitat because they would not occur within designated critical habitat.

Finally, because proposed Kailua-Kona Unit 5b is not included the proposed widening of Kealakehe Parkway (Route 197) will not be affected by this critical habitat designation.

(60) *Comment:* Multiple commenters stated the following: The DEA failed to consider economic impacts of critical habitat that result through interaction with Hawaii's Land Use Law. Critical habitat could result in changes to zoning under State law. There is an overriding directive under State law that endangered plant species are to be protected in the State's planning and zoning process. 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 lawsuits. 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, will reduce market value, increase property tax, 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: As indicated in the section 4.b. of the Addendum, about 20,547 ha (50,772 ac) of Agricultural land, 0.4 ha (1 ac) of Rural land, and 174 ha (430 ac) of Urban land are included in the intended designation. Of this, approximately 5,099 ha (12,600 ac) of Agricultural land is owned by private landowners; 0.4 ha (1 ac) of Rural land is owned by private landowners; and 18 ha (45 ac) of Urban land is owned by private landowners. Assuming a most extreme scenario, the potential cost to agricultural activities could range from $250,000 to $3 million. Reduction in land values for unplanned land due to redistricting from the Agricultural, Rural, or Urban District to Conservation District could range from $17 million to $169 million, and the cost of contesting redistricting could reach $2.5 million. Under this scenario, even if a landowner has no plans to sell the land, the loss in land value could reduce potential mortgage financing. However, as discussed more fully in section 4.b., while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

In addition, under a most extreme scenario, planned development on the privately owned Agricultural and Urban land would be stopped. The economic impact to the developer would include the amount of money already invested in the project plus the expected profits that would not be realized due to redistricting. The potential cost associated with such a scenario is approximately $62.4 million to $74.4 million. Combined with the impacts mentioned above, the total economic cost associated with redistricting could range from $80 million to $249 million. Again, and as discussed more fully in section 4.b., while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

(61) *Comment:* Multiple commenters stated that 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.

Our Response: Chapter VI, section 4.f. of the DEA discussed the concern that

critical habitat will result in more expensive environmental studies. The DEA noted that subject to certain exemptions, a State Environmental Assessment (EA) or Environmental Impact Statement (EIS) is required for projects that: (1) Use State or county lands or funds; (2) are in the Conservation District; (3) are in the Shoreline Setback Area (usually 12 m (40 ft) inland from the certified shoreline); (4) require an amendment to a county plan that would designate land to some category other than Agriculture, Conservation or preservation; or (5) involve reclassification of State Conservation District lands. If a project ''substantially affects a rare, threatened, or endangered species, or its habitat,'' then a State EIS might be required instead of the simpler and less expensive EA.

Based on a review of projects planned within the critical habitat designation, the DEA concluded that five projects could be affected: Makena State Park; Kanaha Beach Park improvements; Kahoolawe Island Reserve Commission projects; and water tank installation and fire control at Puu Waawaa. The DEA reported that if all these projects subsequently require EISs, the additional cost to prepare them could be between $125,000 and $375,000. However, the DEA also recognized that this estimate may overstate costs, because other aspects of these projects may compel the preparation of an EIS rather than an EA. Because the areas surrounding these five projects remain within the intended designation, the Addendum made no changes to the conclusions reported in the DEA.

(62) *Comment:* Multiple commenters stated that the DEA fails to evaluate the practical effect critical habitat designation will have on development. One commenter speculated that Special Management Area permits administered by Maui 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.

Another commenter expressed concern that the Service may get involved in county permitting processes, stating: ''[r]egardless of whether there is a Federal nexus for a proposed action, State and local agencies can and will require consultations with the Service (whether formal or informal) on actions that they approve in areas within or near critical habitat, and are likely to place restrictions on those actions as a result of such consultations. For example, a recent informal consultation between the County of Maui and the Service, pursuant to issuance of a County Special Management Area Permit for a proposed A & B project near BSM habitat in Kahului, resulted in the incorporation of permit conditions requiring the planting of three native *Nothocestrum latifolium* trees for every tree tobacco plant removed from the project area. The proposed project would not have impacted any BSM critical habitat, nor would it have resulted in the take of any BSM. Mandatory compensatory measures therefore do not appear to have been warranted for this project under any provisions of the Endangered Species Act.''

Finally, another commenter 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. For example, the Service petitioned 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. The failure of the Service to address this type of activity in the DEA is a fundamental error of the analysis.

Our Response: The DEA acknowledged that if a proposed project requires major State or county approvals and is within critical habitat, developers are likely to be required by State and county agencies to request comments from us on the project. If we indicate that the project would have a negative impact on the habitat of listed species, then State and county agencies may require project mitigation to address our concerns. This would be expected even with no Federal involvement. The DEA concluded that the cost of the potential mitigation would depend upon the circumstances. Because there were no anticipated projects within the proposed critical habitat for the moth that would require major discretionary approvals by the State or county, there was no specific discussion in the DEA of what mitigation measures might be required by the State or county as a condition of receiving the discretionary approvals for projects within the critical habitat designation.

During public comment, a landowner in proposed Unit 5a (island of Hawaii) indicated that the Kaloko Properties development in critical habitat will require major discretionary approvals from the State and county, including Land Use District Boundary Amendment and a county zone change. (Note: this area was not included in this designation.) Section 4.c. of the Addendum addresses the costs of potential State and county mitigation measures that could be associated with approvals for this project. For example, as a mitigation measure for this project, the State or county may require the landowner to use native vegetation that is beneficial to the moth in the residential and golf course construction. The cost of this mitigation measure is estimated at $720,000 to $750,000. In a most extreme scenario, if the State or county did not grant the discretionary approvals as a result of the moth critical habitat designation, the landowner may not be able to continue with the current plans for residential and golf course development. In this case, the total cost for the Kaloko Properties development would be $4.2 million in previous expenditures and $13 million to $25 million in the potential loss of future profits. The specific likelihood of either occurrence is unknown, as it depends upon the actions of the State or county agency with permit approval under circumstances for which there is no prior history. In addition, the State or county may develop their own mitigation measures based on the particular circumstances before them when reviewing the permit. Based on the professional judgment of the team of economists preparing the economic analysis, it is not deemed likely that discretionary approval for the Kaloko Properties project would be denied solely on the basis of moth critical habitat designation. However, for illustrative purposes, costs associated with this most extreme scenario are reported.

(63) *Comment:* Multiple commenters stated that 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 ''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. Multiple commenters were concerned that water resource development would be greatly restricted leading to many indirect costs. The proposed rule states that activities such as watershed alteration or water diversion may trigger section 7 consultations if there is Federal involvement. If the ability to divert or take water from these sources or systems is restricted or limited, the impact

would be far reaching and affect all lands served by such water sources or systems. 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 and balance this against any benefit to the species. One commenter stated that opponents of water diversions may use critical habitat as a tool to delay, and effectively stop, many worthwhile water diversion projects.

Our Response: Future (*i.e.,* currently unplanned) water diversion projects are most likely to be planned in mountainous areas with significant rainfall or existing water resources. In other words, they are most likely to occur in areas already in the Conservation District and thus, would be subject to discretionary approval by the BLNR. While development is already limited within the Conservation District, the designation of critical habitat would be relevant to BLNR's determination of whether to grant a permit. More specifically, the designation of critical habitat could make it more likely that BLNR would find that a proposed land use would cause substantial adverse impact to existing natural resources within the surrounding area (Hawaii Administrative Rules 13–5–30). Therefore, it is possible that critical habitat designation could result in additional environmental studies, project delays, project modifications, and potential project denials (as discussed generally in chapter VI, section 4.f. of the DEA). However, without more specific information on the scope and location of a future (and currently unplanned) water diversion project, it is not possible to meaningfully estimate the potential indirect costs associated with these events.

Moreover, no costs would be expected to occur from such impacts to water systems, because neither the Blackburn's sphinx moth nor the host plants on which it relies are stream-dependent for their survival and, therefore, would not cause a reduction in existing water diversions.

(64) *Comment:* A commenter stated the following: The DEA failed to consider the more restrictive Habitat Conservation Plan (HCP) guidelines under the Hawaii Endangered Species Law (HRS 195D–4, HRS 195D–21) that required the State HCP permittee show a net benefit to the species. The DEA failed to analyze impacts due to the circumstance in which a landowner qualifies for a Federal HCP but is unable to obtain a State HCP.

Our Response: As discussed in chapter III of the DEA, the Act allows us to permit take by private applicants that would otherwise be prohibited, provided such taking is ''incidental to, and not [for] the purpose of, the carrying out of an otherwise lawful activity.'' Section 10(a)(1)(B) of the Act allows non-Federal parties planning activities that have no Federal involvement, but which could result in the incidental taking of listed animals, to apply for an incidental take permit. The application must include an HCP laying out the proposed actions, determining the effects of those actions on affected fish and wildlife species and their habitats (often including proposed or candidate species), and defining measures to minimize and mitigate adverse effects. We must issue an incidental take permit if the incidental take is to be minimized by reasonable and prudent measures and implementing terms and conditions that are stipulated in the permit. The HESA has a comparable incidental take provision that also requires the permittee to show a net benefit to the species to receive the permit.

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 (*e.g.,* further regulating the take of federally listed species), the impacts are not attributable to critical habitat designation and are not appropriately considered in the economic analysis of critical habitat designation. Take prohibitions under Hawaii law are tied to the Federal listing of the species and do not co-extensively occur because of critical habitat designation. Thus, the circumstance in which a landowner qualifies for a Federal HCP but is unable to obtain a State HCP is outside the scope of the economic analysis and was not addressed by it.

Summary of Changes From the Proposed Rule

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

(1) We revised the list of manmade features that are excluded from the designation in order to exclude additional features based on information received during the public comment periods. The revised list is described in the Criteria Used to Identify Critical Habitat section, and in regulatory language for section 17.95, ''Critical habitat— fish and wildlife,'' described at the end of this document.

(2) 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, which indicated: (1) The primary constituent elements were not present in certain portions of the proposed units; (2) 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 (3) the areas were not essential to the conservation of the species. Specifically, private landowners on the islands of Molokai, Maui, and Hawaii provided us with new information regarding current land uses or prior land changes to some to the proposed areas that allowed us to identify certain lands as not essential or unsuitable for the long-term conservation of the Blackburn's sphinx moth. Likewise, the State provided us with new information regarding current land uses or prior land changes to some proposed areas on islands of Maui, Kahoolawe, and Hawaii that allowed us to identify portions of some proposed units as not essential or unsuitable for the long-term conservation of the moth. In addition, information obtained during the process of finalizing critical habitat designations for plants on the islands of Maui, Molokai, and Hawaii helped us to identify some proposed areas on those islands that are lacking the primary constituent elements, or are unsuitable for the long-term conservation of the moth. Lastly, some areas were excluded based on weighing the benefits of inclusion versus exclusion pursuant to section 4(b)(2) of the Act (*see* Economic Analysis section). A brief summary of the modifications made to each unit is given below (*see* also Figures 1–4).

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Figure 1 - Summary of Changes from Proposed Rule to Final Rule

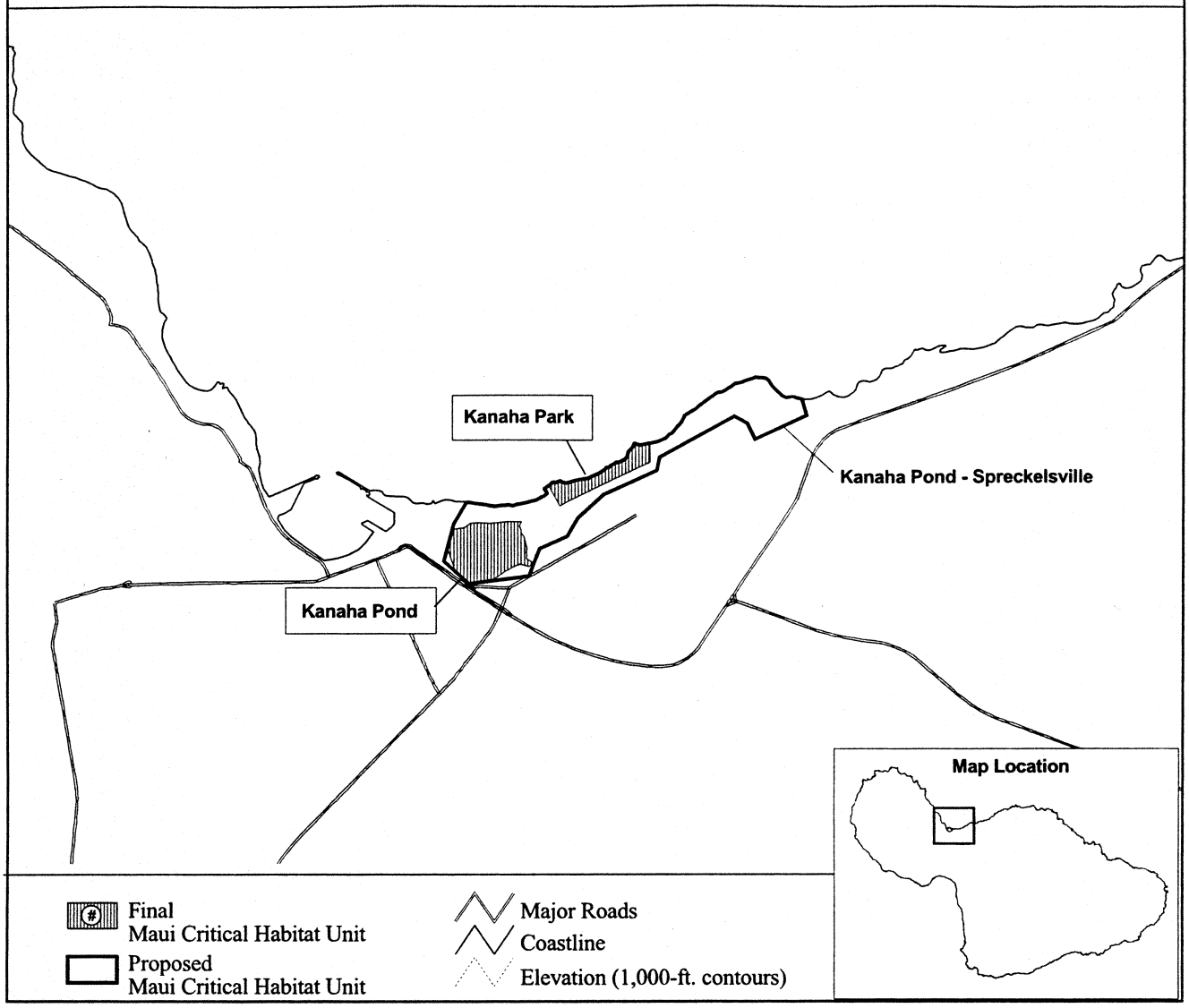


Figure 2 - Summary of Changes from Proposed Rule to Final Rule

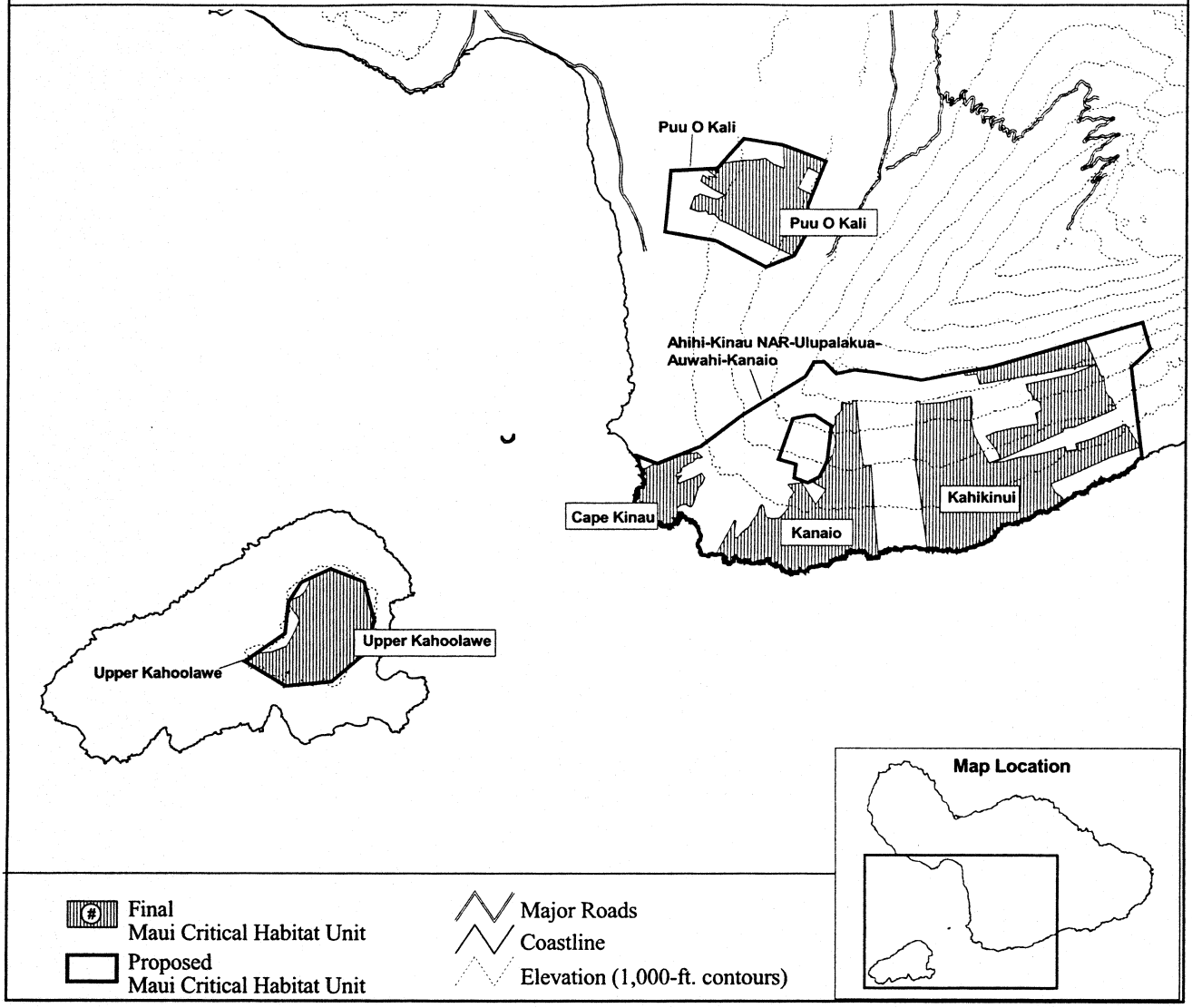


Figure 3 - Summary of Changes from Proposed Rule to Final Rule

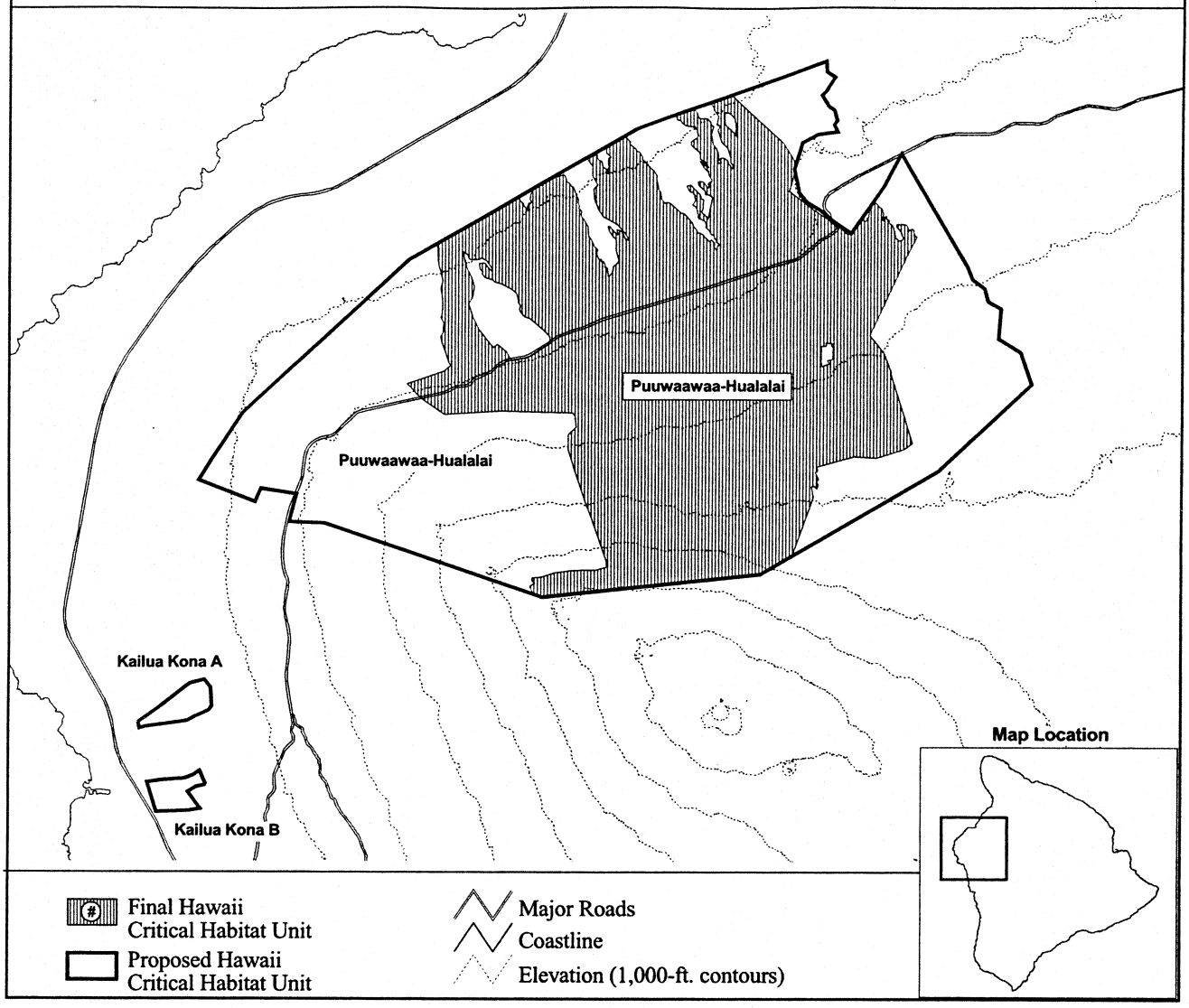
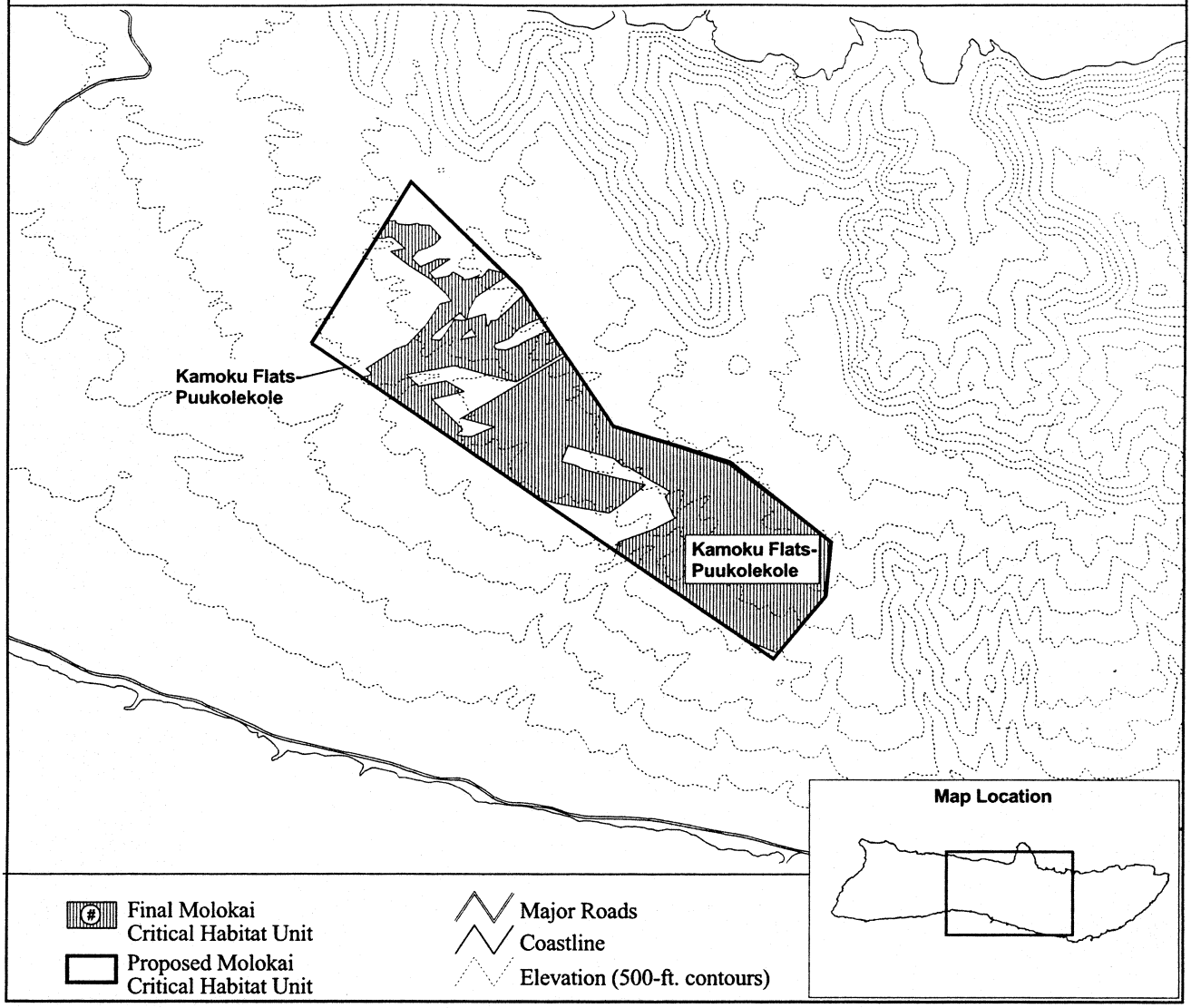


Figure 4 - Summary of Changes from Proposed Rule to Final Rule



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Former Unit 1. Ahihi-Kinau NEAR—Ulupalakua—Auwahi—Ka naio Maui Meta Unit (Formerly 15,216 ha (37,599 ac))

This unit has been subdivided into three smaller separate units (Unit 2, Cape Kinau; Unit 3, Ka naio; and Unit 4, Kahikinui) (*see* Table 2 and 3), which resulted in a total net decrease of 7,393 ha (18,269 ac).

TABLE 2.—APPROXIMATE CRITICAL HABITAT AREA DESIGNATED BY UNIT, ISLAND AND LANDOWNERSHIP IN HECTARES AND ACRES

Critical habitat unit	Island	State	Private	Total
1. Puu O Kali	Maui	1,503 ha 3,715 ac	101 ha 250 ac	1,604 ha 3,965 ac
2. Cape Kinau	Maui	597 ha 1,475 ac	6 ha 15 ac	603 ha 1,490 ac
3. Ka naio	Maui	2,416 ha 5,971 ac	4 ha 10 ac	2,420 ha 5,981 ac
4. Kahikinui	Maui	4,783 ha 11,820 ac	16 ha 39 ac	4,799 ha 11,859 ac
5. Kanaha Pond	Maui	56 ha 139 ac	0 ha 0 ac	56 ha 139 ac
6. Kanaha Park	Maui	25 ha 62 ac	0 ha 0 ac	25 ha 62 ac
7. Upper Kahoolawe	Kahoolawe	1,721 ha 4,252 ac	0 ha 0 ac	1,721 ha 4,252 ac
8. Puuwaawaa—Hualalai	Hawaii	9,120 ha 22,535 ac	835 ha 2,063 ac	9,954 ha 24,598 ac
9 Kamoko Flats—Puukolekole	Molokai	331 ha 817 ac	926 ha 2,288 ac	1,256 ha 3,105 ac
Total		20,552 ha 50,786 a	1,888 ha 4,665 ac	22,440 ha 55,451 ac

TABLE 3.—APPROXIMATE FINAL CRITICAL HABITAT AREA IN HECTARES (ACRES), ESSENTIAL AREA, AND EXCLUDED AREA ON HAWAII, KAHOOLAWE, MAUI, AND MOLOKAI

Area considered essential on Hawaii, Kahoolawe, Maui, and Molokai	27,366 ha (67,625 ac)
Area considered essential on Maui	14,226 ha (35,152 ac)
Maui Area excluded under 4(b)(2) (Haleakala and Ulupalakua Ranches)	4,717 ha (11,656 ac)
Final Critical Habitat on Maui	9,509 ha (23,496 ac)
Area considered essential on Hawaii	10,164 ha (25,115 ac)
Hawaii Area excluded under 4(b)(2) (MID/TSA Corp, and State)	210 ha (518 ac)
Final Critical Habitat on Hawaii	9,954 ha (24,597) ac)
Final Critical Habitat on Hawaii, Kahoolawe, Maui, and Molokai	22,440 ha (55,451 ac)

Some areas from the original unit were excluded under section 4(b)(2) because the benefits of designation of critical habitat are outweighed by the negative effect on the landowners' voluntary conservation activities on their property. Additional area was excluded because new information revealed that some lands in question did not contain moth's adult or larval stage primary constituent elements, or were more seriously degraded than previously ascertained, and are therefore not essential for the conservation of the species.

Former Unit 2. Puu O Kali Unit (formerly 2,750 ha (6,794 ac))

This unit was renamed Unit 1 Puu O Kali, and is now 1,604 ha (3,965 ac) in size (*see* Table 2). This unit's boundary was adjusted with a total net decrease of 1,145 ha (2,829 ac). Some areas from the original unit were excluded under section 4(b)(2) because designation of critical habitat would have had a negative effect on the landowners' voluntary conservation activities on their property. Additional area was excluded because new information revealed that some lands in question did not contain the moth's adult or larval stage primary constituent elements, or were more seriously degraded than previously ascertained, and are therefore not essential for the conservation of the species.

Former Unit 3. Kanaha Pond—Spreckelsville Unit (formerly 226 ha (559 ac))

This unit has been subdivided into two smaller, separate units (Unit 5 Kanaha Pond and Unit 6 Kanaha Park) (*see* Table 2), which resulted in a total net decrease of 145 ha (358 ac). Some areas from the original unit were excluded because new information revealed that some lands in question did not contain the moth's adult or larval stage primary constituent elements, or were more seriously degraded than previously ascertained, and are therefore not essential for the conservation of the species.

Former Unit 4. Upper Kahoolawe Unit (formerly 1,878 ha (4,641 ac))

This unit was renamed Unit 7 Upper Kahoolawe, and is now 1,721 ha (4,252 ac) in size (*see* Table 2). This unit's boundary was adjusted with a total net decrease of 157 ha (389 ac). Some areas from the original unit were excluded because new information revealed that some lands in question did not contain the moth's adult or larval stage primary constituent elements, or were more seriously degraded than previously ascertained, and are therefore not essential for the conservation of the species (PBR Hawaii *et al.* 1995).

Former Unit 6. Puuwaawaa—Hualalai Meta Unit (formerly 18,111 ha (44,753 ac))

This unit was renamed Unit 8 Puuwaawaa—Hualalai, and is now 9,954 ha (24,598 ac) in size (*see* Table 2). This unit's boundary was adjusted with a total net decrease of 8,156 ha (20,155 ac). Some areas from the original unit were excluded because new information revealed that some lands in question did not contain the moth's adult or larval stage primary constituent elements, or were more seriously degraded than previously ascertained, and are therefore not essential for the conservation of the species.

Former Unit 7. Kamoko Flats—Puukolekole Unit (formerly 1,829 ha (4,520 ac))

This unit was renamed Unit 9 Kamoko Flats—Puukolekole, and is now 1,256 ha (3,105 ac) in size (*see* Table 2). This unit's boundary was adjusted with a total net decrease of 573 ha (1,415 ac). Some areas from the original unit were excluded because new information revealed that some lands in question did not contain the moth's adult or larval stage primary constituent elements, or were more seriously degraded than previously ascertained, and are therefore not essential for the conservation of the species.

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 conservation 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.'' However, in a 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), 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 at least one of the physical or biological features essential to the conservation of the species (primary constituent elements, as defined at 50 CFR 424.12(b)). Section 3(5)(C) of the Act states that not all areas that can be occupied by a species should be designated as critical habitat unless the Secretary determines that all such areas are essential to the conservation of the species. Our regulations (50 CFR 424.12(e)) also state that, ''The Secretary shall designate as critical habitat areas outside the geographic area presently occupied by the species only when a designation limited to its present range would be inadequate to ensure the conservation of the species.''

Section 4(b)(2) of the Act requires that we take into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. We may exclude areas from critical habitat designation when the benefits of exclusion outweigh the benefits of including the areas within critical habitat, provided the exclusion will not result in extinction of the species. 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 or alternatively, we may inadvertently include areas that later will be shown to be nonessential. Nevertheless, we are required to designate those areas we believe to be critical habitat, using the best information available to us.

Our regulations state that ''The Secretary shall designate critical habitat outside the geographic areas presently occupied by the 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 indicate 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 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 conservation. 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 conservation of the species.

Methods

As required by section 4(b)(2) of the Act and regulations 50 CFR 424.12, we used the best scientific information available to determine areas containing the physical and biological features that are essential for the conservation of Blackburn's sphinx moth. We evaluated areas containing dry and mesic habitats as well as data on known moth occurrence. The best scientific information we analyzed included peer-reviewed scientific publications; unpublished reports by researchers; the final rule listing the species (65 FR 4770); the Blackburn's sphinx moth Recovery Outline (Service 2000); the HHP database; island-wide GIS coverages (*e.g.*, vegetation, soils, annual rainfall, elevation contours, landownership); information received during the public comment periods and public hearings; recent biological surveys and reports; and information received in response to outreach materials and from landowners, land managers, and interested parties.

The critical habitat unit approach in this rule addresses the numerous risks to the long-term survival and conservation of Blackburn's sphinx moth by employing two widely recognized and scientifically accepted methods for promoting viable populations of imperiled species—(1) creation or maintenance of multiple populations to reduce the possibility that a single or series of catastrophic events could threaten to extirpate the species; 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 (Tear *et al.* 1995; Meffe and Carroll 1996; Service 1997a).

In general, the larger the number of populations and the larger the size of each population, the lower the probability of extinction (Raup 1991; Meffe and Carroll 1996). This basic conservation principle of redundancy applies to Blackburn's sphinx moth. By maintaining viable populations in the designated critical habitat units, the threats represented by a fluctuating environment are reduced and the species has a greater likelihood of achieving conservation. Conversely, loss of a Blackburn's sphinx moth critical habitat unit will result in an appreciable increase in the risk that the species may not recover and survive.

The Blackburn's sphinx moth is short-lived, extremely mobile, and rare; hence population densities are not easily determined (A. Medeiros, pers comm., 1998; Janzen 1984; Roderick and Gillespie 1997; Van Gelder and Conant 1998). Even if the threats responsible for the decline of the moth were controlled, the persistence of existing populations is hampered by the small number of extant populations and the small number of individuals in known populations. These circumstances make the species more vulnerable to extinction resulting from a variety of natural processes. Small populations are particularly vulnerable to reduced reproductive vigor caused by inbreeding depression, and they may suffer a loss of genetic variability over time due to random genetic drift, resulting in decreased evolutionary potential and decreased ability to cope with environmental change (Lande 1988; International Union for Conservation of Nature and Natural Resources 1994).

Populations small in size are also demographically vulnerable to extinction caused by random fluctuations in population size and sex ratio, and to catastrophes such as hurricanes (Lande 1988). We believe the existing Blackburn's sphinx moth populations on Kahoolawe, Hawaii, and Maui are insufficient in size and too limited in range to ensure the conservation of the species. While Blackburn's sphinx moth population sizes may be naturally small, establishing the species to a diverse set of habitats and climates within its former range is necessary to remove the long-term risk of rangewide extinction due to catastrophic events and the numerous direct threats to the species and its habitat (Service 1997a).

Janzen (1984) described the characteristics of tropical sphingid moths found in a Costa Rican National Park. In general, adult sphingids are nocturnal or crepuscular (dusk-flying) and regularly drink with a long proboscis from many kinds of sphingophilous flowers while hovering in front of them. Sphingophilus flowers are characterized by lightly colored tubular corollas, evening anthesis (opening), and nocturnal nectar and scent production (Haber and Frankie 1989). Fecundity was unknown, but estimated in the hundreds if the female can feed freely.

Particularly helpful in understanding the conservation needs of sphingids is Janzen's (1984) description of the adult moth biological characteristics, including that they have large latitudinal ranges, feed heavily over a long period of time and extensively at spatially particulate resources relatively fixed in location, *i.e.*, they feed on specific resources spread throughout the landscape, live for weeks to months, lay few eggs per night, probably oviposit (deposit eggs) on many host plant individuals and repeatedly visit many of them, have less synchronous eclosion (emergence from the pupa) during the rainy season than other moths, migrate, and are highly mobile, repeatedly returning to the same food plants. In another study of sphingids, adults were reported to travel greater distances to pollinate and visit flowers than those distances traveled by other insect pollinators or even hummingbirds (Linhart and Mendenhall 1977).

Sphingid caterpillars are known to feed heavily over a long time period and eat limited types of foliage, typically plants rich in toxic small molecules (*e.g.*, in the family Solanaceae). They also have less synchronous eclosion than other moths. Since sphingids search widely for good local conditions, Janzen (1984) concluded that isolated habitats may have difficulty supporting

sphingid populations, *i.e.*, connectivity between habitat areas is necessary to support wide-ranging sphingid species.

Ehrlich and Murphy (1987) noted that populations of herbivorous insects such as lepidopterans are often regulated by environmental factors, such as weather conditions, and thus small populations can be particularly at risk of extinction. Ehrlich and Murphy (1987) identified a number of principles important for the conservation of herbivorous insects. First, in most cases, a series of diverse demographic units will typically be needed to conserve a species. Second, where possible, corridors among the sites should be established to promote re-colonizations in areas where the species once occurred. Lastly, they noted that when populations are very sensitive to environmental changes and limited information is available on the species' population biology, it is easy to underestimate the conservation needs of such insects.

Murphy *et al.* (1990) also noted that reviews of butterfly population ecology demonstrate that environmental factors play important roles in determining butterfly population dynamics. They stated that most documented population extinctions have resulted from habitat deterioration combined with extreme weather events. Decreases in the quality or abundance of larval host plants and adult nectar sources are caused by changes in plant community composition, particularly changes associated with succession, disturbance, and grazing regimes. But, because many butterfly species are especially sensitive to thermal conditions, habitat changes that disrupt micro-climatic regimes can cause habitat deterioration without elimination of plant resources. Ehrlich and Murphy (1987) noted several patterns within typical butterfly populations: A number of subpopulations within a given specie's metapopulation (a set of local populations or breeding sites within an area, where typically migration from one local population or breeding site to other areas containing suitable habitat is possible, but not routine) are often extirpated and later re-colonized; and a given species may not be present in many of its habitat remnants, including within those containing the highest host plant diversity.

Section 3(5)(A)(i) of the Act provides that areas outside the geographical area currently occupied by the species may meet the definition of critical habitat upon determination that they are essential for the conservation of the species. Although our knowledge of the Blackburn's sphinx moth's historical range is incomplete, we believe the existing natural habitats needed to support viable populations of the moth are too small, isolated, and seriously threatened to ensure its long-term conservation, particularly in light of the foraging needs of adult sphingid moths (Janzen 1984) and the apparent wide-ranging Blackburn's sphinx moth foraging habits (Fern Duvall, DOFAW, pers. comm. 2001; B. Gagne, pers. comm. 2001; D. Hopper, *in litt.* 2000, 2002; HHP 2000).

Long-term conservation of the species will require the protection and subsequent restoration of additional and larger areas of dry and mesic habitat that include the larval and adult primary constituent elements at different elevational and rainfall gradients, in order to improve the likelihood of successful larval development and adult moth foraging (A. Medeiros, pers. comm. 1998; Roderick and Gillespie 1997; Van Gelder and Conant 1998). The long-term persistence of the existing populations will likely improve if they could be increased in size, and if the connectivity among the populations was enhanced, thus promoting dispersal of individuals across intervening lands. Restoring moth populations in multiple locations would decrease the likelihood that the effect of any single alien parasite, predator, or combined pressure of such species could result in the diminished vigor or extinction of the moth.

Small habitats tend to support small populations, which frequently are extirpated by events that are part of normal environmental variation. The continued existence of such satellite populations requires the presence of one or more large reservoir populations, which may provide colonists to smaller, outlying habitat patches (Ehrlich and Murphy 1987). Based on recent field observations of the Blackburn's sphinx moth, we believe the species likely occurs within two regional populations on separate islands, one centered in the area of leeward East Maui (Units 1–4 (*see* Unit Descriptions below)), and one centered near Puuwaawaa (Unit 8) on Hawaii Island, north of Kailua-Kona (A. Medeiros, pers. comm. 1998; F. Howarth, pers. comm. 2001). Both of these two areas contain populations of the moth regarded as probable source areas or ''reservoirs'' (Murphy *et al.* 1990) for dispersing or colonizing moth adults.

Habitat areas close to the two large reservoir areas are also designated in order to promote genetic variability in the Blackburn's sphinx moth population, contributing to the long-term persistence and conservation of the species. These areas will serve as corridors for dispersing adult moths or as overflow habitat during particularly fecund years, which could be very important to the integrity of moth populations. For example, adult moths observed at Cape Kinau (Unit 2) on Maui may have originated from larval host plants located in the Kanaio NAR (Unit 3). The moth populations inhabiting these habitat areas appear to be taking advantage of lower elevation adult native host plants and nonnative host plants such as tree tobacco upon which the larval stage is completed successfully. In addition, these habitat areas may be able to support persistent moth populations independent of the reservoir areas, significantly contributing to conservation of the species.

Molokai is an example of essential habitat because it provides for the expansion of the species' range and for improved connectivity of the different populations. While the designated unit on this island is not known to currently harbor a Blackburn's sphinx moth population, preserving this habitat is important because some threats to the species may be absent there (Table 1 shows several of the potential moth predators and parasites are not reported on Molokai). Likewise, because of Molokai's distance from islands currently inhabited by the moth, we believe the designated critical habitat on this island will be extremely important for the species' conservation as it will help protect the species from extinction by catastrophic events, which could impact other more closely grouped populations (*e.g.*, those on Maui or the island of Hawaii). For these reasons, we find that inclusion of an area such as on Molokai, identified as containing the primary constituent elements, is essential to the conservation of the species even though it does not currently contain known Blackburn's sphinx moth populations.

Due to the species' presently reduced range, the Blackburn's sphinx moth is now more susceptible to the variations and weather fluctuations affecting quality and quantity of available habitat and food. Furthermore, the moth is now more susceptible to direct pressure from numerous nonnative insect predators and parasites. For these reasons, and the reasons discussed above, those areas currently occupied would be inadequate to ensure the conservation of the species, and we have designated 9 units on four islands.

We are developing a draft recovery plan for this species. The overall objective of this recovery plan will be to ensure the species' long-term conservation and identify research

necessary so that the moth can be reclassified to threatened and ultimately removed from the list of endangered and threatened species. Because a recovery plan for the moth has not yet been completed, in making this determination we evaluated the remaining potential habitat, the biological and life history characteristics of the moth, and the best available scientific information on conservation planning to determine what will be required to ensure viable populations of this species. However, should our understanding of what areas support essential features for the conservation of the moth change after completing the recovery planning process, we may revise the existing critical habitat designation accordingly.

Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas to designate as critical habitat, we are required to base critical habitat determinations on the best scientific and commercial data available. We 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 include, but are not limited to: Space for individual and population growth and for normal behavior; food, water, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or egg laying; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

The primary constituent elements for the Blackburn's sphinx moth include specific habitat components identified as essential for the primary biological needs of foraging, sheltering, maturation, dispersal, breeding, and egg laying, and are organized by life cycle stage. The primary constituent elements required by the Blackburn's sphinx moth larvae for foraging, sheltering, maturation, and dispersal are the two documented host plant species within the endemic genus *Nothocestrum* (*N. latifolium* and *N. breviflorum*), and the dry and mesic habitats between the elevations of sea level and 1,525 m (5,000 ft) and receiving between 25 and 250 cm (10 and 100 in) of annual precipitation. The primary constituent elements required by Blackburn's sphinx moth adults for foraging, sheltering, dispersal, breeding, and egg production are native, nectar-supplying plants including, but not limited to, *Ipomoea indica* and other species within the genus *Ipomoea, Capparis sandwichiana,* and *Plumbago zeylanica,* and within the dry to mesic habitats between the elevations of sea level and 1,525 m (5,000 ft) and receiving between 25 and 250 cm (10 and 100 in) of annual precipitation.

Both the larval and adult food plants are found in undeveloped areas supporting mesic and dry habitats, typically receiving less than 250 cm (100 in) of rain per year and are located between the elevations of sea level and 1,525 m (5,000 ft). Vegetative communities in these areas include native plants, and in some instances, introduced plant species (A. Medeiros, pers. comm. 1998; Roderick and Gillespie 1997; Van Gelder and Conant 1998).

Although Blackburn's sphinx moth larvae feed on the nonnative *Nicotiana glauca,* we do not consider this plant to be a primary constituent element for the designation of critical habitat. As previously discussed, the native *Nothocestrum* species are more stable and persistent components of dry to mesic forest habitats than *Nicotiana glauca. Nicotiana glauca* is a short-lived species that may disappear from areas during prolonged drought (A. Medeiros, pers. comm. 1998), or during successional changes in the plant community (F. Howarth, pers. comm. 2001; Symon 1999). Many studies have shown that insects, and particularly lepidopteran larvae, consume more food when the food has a relatively high water content (Murugan and George 1992). Relative consumption rate and growth have been reported to decrease for many sphingids closely related to the Blackburn's sphinx moth when raised on host plants or diets with a relatively low water content (Murugan and George 1992). *Nicotiana glauca's* vulnerability to drought conditions suggests that its water content frequently may not be suitable for optimal growth of Blackburn's sphinx moth larvae.

The restoration of native host species for the moth and other endangered species may also require the control or elimination of nonnative vegetation, potentially including *Nicotiana.* Additionally, unlike the *Nothocestrum* species, *Nicotiana glauca* is more likely to occur in habitats less suitable due to their occupation by alien insect predators (D. Hopper, *in litt.* 2000, 2002; Symon 1999). Therefore, in comparison with *Nicotiana glauca,* the native *Nothocestrum* species better fulfill the primary biological needs of the moth larvae. For all of these reasons, we are not considering *Nicotiana glauca* as a primary constituent element for the designation of critical habitat at this time.

Criteria Used To Identify Critical Habitat

We identified critical habitat areas essential to the conservation of Blackburn's sphinx moth in the primary locations where it currently occurs or has been known to occur. We have designated sufficient critical habitat at each site to maintain self-sustaining populations of Blackburn's sphinx moth at each of these locations.

During the development of this rule, we considered the role of unoccupied habitat in the conservation of Blackburn's sphinx moth. Due to the historic loss of the habitat that supports this species, we believe that future conservation and recovery of this taxon depends not only on protecting it in the limited area that it currently occupies, but also on providing the opportunity to expand its distribution by protecting currently unoccupied habitat that contains the necessary primary constituent elements within its historic range.

To help achieve our goal of conservation of Blackburn's sphinx moth, we are including one critical habitat unit on Molokai, despite the fact that the moth has not been documented there in recent years. The area is located within dry to mesic forest on the southern uplands of Molokai and contains both larval and adult stage host plants. By allowing the moth to recover to this area, either through its own ability or with assistance, the threat of extinction due to natural catastrophe occurring within the currently, close-grouped populations will be minimized. We believe the site is essential to the conservation of the species because it is the most appropriate site for a reestablishment effort. The combination of limited range, few populations, and restricted habitat, makes the moth susceptible to extinction or extirpation due to random events, such as disease, hurricanes, or other occurrences (Shaffer 1981, 1987; Primack 1993; Meffe and Carroll 1994). Such events are a concern when the number of populations or the geographic distribution of a species is severely limited, as is the case with Blackburn's sphinx moth. Establishment of the Molokai unit for the moth is likely to prove important in reducing the risk of extinction due to such catastrophic events.

Given the large size and strong flight capabilities of the Blackburn's sphinx moth, the species is believed to use large areas of habitat. Therefore, moth

population linkages will likely be enhanced if designated habitat occurs in large contiguous blocks or within a matrix of undeveloped habitat (A. Medeiros, pers. comm. 1998; S. Montgomery, pers. comm. 2001; McIntyre and Barrett 1992; Roderick and Gillespie 1997; Van Gelder and Conant 1998). To the extent possible with the limited potential habitat remaining, we have attempted to consider the wide-ranging behavior of the Blackburn's sphinx moth. Since the moth is believed to be a strong flier and able to move many kilometers from one area to another, areas of larval or adult presence and feeding may be separated from similar habitat areas and still serve important functions in maintaining moth populations.

Some small habitat areas are also suitable for Blackburn's sphinx moth larvae (*e.g.*, Units 2, 5, 6, and 9 (see unit descriptions below)) and are critical for the species' conservation since such habitats may facilitate adult moth dispersal and promote genetic exchange between populations located on different islands. These areas also provide nectar resources and sheltering opportunities required by the adult moth. However, geographically isolated populations may be subject to decreased viability caused by inbreeding depression, reductions in effective population size due to random variation in sex ratio, and limited capacity to evolve in response to environmental change (Soule 1987). The adult moth is dependent on its primary constituent element nectar source host plants for dispersal and migrating to and from various habitats. Because the factors threatening the moth's conservation are often not so mobile, providing for access to the moth's adult stage primary constituent elements, and thereby facilitating its ability to disperse, can minimize the effect of the various threats.

Blackburn's sphinx moth populations fluctuate from year to year and season to season, apparently correlated with environmental and climatic variation. The moth is likely sensitive to thermal conditions and habitat changes that disrupt its microclimatic requirements. Therefore, the critical habitat units include dry and mesic habitats containing the primary constituent elements along wide elevational gradients to better ensure adult moth foraging needs, up and downslope, within their range. Furthermore, the boundaries include elevational gradients to better ensure larval host plant availability during periods of drought. Numerous habitat elevations containing the various primary constituent elements are believed to be necessary for successful conservation of the sphingid species (Ehrlich and Murphy 1987; Shaffer 1987; Murphy and Weiss 1988; Murphy *et al.* 1990) in order to minimize the effects of annual localized drought conditions throughout different areas of the species' host plant range (Murugan and George 1992).

Critical habitat is being designated on those Hawaiian Islands where the Blackburn's sphinx moth's primary constituent elements are known to occur and are considered essential for the conservation of the species. This will allow the species the ability to persist and recolonize areas where it has become extirpated due to catastrophic events or demographic stochasticity (randomness) (Shaffer 1987). For example, on the island of Kauai in 1992, Hurricane Iniki blew over large areas of native forest, leaving open areas where nonnative plants became established, and created paths for further invasion of nonnative animals, both of which have been identified as threats to the survival of the moth.

Natural areas of suitable native, dry-to-mesic habitat containing at least one *Nothocestrum* plant adjacent to or near other *Nothocestrum* populations are included in the critical habitat units. We have included suitable habitat without *Nothocestrum* larval host plants, provided it contained the adult stage primary constituent elements including, but not limited to, *Ipomoea* species, *Capparis sandwichiana,* or *Plumbago zeylanica.* This is especially true for areas lying between or adjacent to large populations of *Nothocestrum* spp. that could serve as a flight corridor to other larger host plant habitat areas. An area may also serve as a corridor when it contains adult native host plants, thereby providing foraging opportunities for adults. Natural areas of primarily native vegetation containing the larval or adult stage primary constituent elements and where habitat could support a moth population and increase the potential for conservation are also designated as critical habitat. The designation and protection of a unit not known to currently contain a moth population (*i.e.,* the unit on Molokai), but which contains the primary constituent elements and lacks some of the serious threats to the species (*see* Table 1), will enhance population expansion and connectivity, thereby improving the likelihood of the species' conservation.

Mapping

Following publication of the proposed critical habitat rule for Blackburn's sphinx moth (67 FR 40633), we re-evaluated the proposed critical habitat units and modified the boundaries using additional information from peer review experts and comments on the proposed rule. We excluded areas that do not contain one or more of the primary constituent elements, or that are highly degraded and thus not essential for the conservation of the species. In addition, some areas were excluded under section 4(b)(2) of the Act (*see* Exclusions Under Section 4(b)(2)). The specific modifications are described above in the Summary of Changes from the Proposed Rule section. The boundaries of the final critical habitat units are described by their Universal Transverse Mercators (UTMs).

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 designating critical habitat, we made an effort to avoid developed areas, such as towns and other similar lands, which are unlikely to contribute to the conservation of the species. However, the minimum mapping unit that we used to approximate our delineation of critical habitat for this species did not allow us to exclude all such developed areas, or other areas unlikely to contain the primary constituent elements from the maps. In addition, existing manmade features and structures within the boundaries of the mapped unit, such as the following, do not contain one or more of the primary constituent elements, and are therefore excluded under the terms of this regulation: buildings; roads; aqueducts and other water system features, including but not limited to pumping stations, irrigation ditches, pipelines, siphons, tunnels, water tanks, gauging stations, intakes, and wells; telecommunications towers and associated structures and equipment; electrical power transmission lines and associated rights-of-way; radars; telemetry antennas; missile launch sites; arboreta and gardens; heiau (indigenous places of worship or shrines); airports; other paved areas; and other rural residential landscaped areas. 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.

The lack of scientific data on Blackburn's sphinx moth life history makes it impossible for us to develop a quantitative model (*e.g.*, population viability analysis) to identify the optimal number, size, and location of

critical habitat units (Ginzburg *et al.* 1990; Menges 1990; Murphy *et al.* 1990; Karieva and Wennergren 1995; Taylor 1995; Bessinger and Westphal 1998). At this time, we are only able to conclude that the current size and distribution of the extant populations are not sufficient to expect a reasonable probability of the Blackburn's sphinx moth's long-term survival and conservation. Therefore, we used the best available information to identify as critical habitat a reasonable number of additional units.

The one unoccupied area designated in this final rule is located on the island of Molokai (Unit 9). Although currently unoccupied by the moth, the area contains both larval stage and adult moth native host plants. The area is close enough in proximity to the Maui moth population that the area may again be re-populated by the moth on its own, yet because it is a separate island, some additional protection from a potential natural catastrophe affecting, for example, the Maui population, may be afforded a future moth population on Molokai. Also, as Molokai is the closest island to Oahu, we believe that allowing for a future moth population on Molokai may facilitate the species' dispersal and provide a flight corridor for moths eventually migrating to the island of Oahu, which is also part of its historical range.

Molokai was designated as critical habitat rather than other suitable unoccupied areas because we determined, to the best of our abilities, that it is the highest quality unoccupied habitat essential to the conservation of the moth. The designated unoccupied area on Molokai may lack some of the serious potential threats to the moth (*see* Table 1). Conserving and restoring Blackburn's sphinx moth populations in multiple locations decreases the likelihood that the effect of any single alien parasite or predator, or the combined pressure of such species and other threats, could result in the diminished vigor or extinction of the species.

Exclusions Under Section 4(b)(2)

Subsection 4(b)(2) of the Act allows us to exclude areas from critical habitat designation where the benefits of such exclusions outweigh the benefits of designation, provided the exclusion will not result in the extinction of the species.

Economic Impacts

Following the publication of the proposed critical habitat designation on June 13, 2002, a DEA was prepared to estimate the potential economic impact of the designation, in accordance with recent decisions in the *New Mexico Cattlegrowers Association* v. *U.S. Fish and Wildlife Service,* 248 F.3d 1277 (10th Cir. 2001). The DEA was made available for review on November 15, 2002 (67 FR 69179). We accepted comments on it until the comment period closed on December 30, 2002.

Our DEA evaluated the potential direct and indirect economic impacts associated with the proposed critical habitat designation for Blackburn's sphinx moth on Hawaii, Kahoolawe, Maui, and Molokai over the next 10 years. Direct impacts are those related to consultations under section 7 of the Act. They include the cost of completing the section 7 consultation process and potential project modifications resulting from the consultation. Indirect impacts are secondary costs and benefits not related to the specific provisions of the Act. Examples of indirect impacts include potential effects to property values, redistricting of land from agricultural or urban to conservation, and social welfare benefits of ecological improvements.

The categories of potential direct and indirect costs considered in the analysis included the costs associated with: (1) Conducting section 7 consultations associated with the listing or with the critical habitat, including incremental consultations and technical assistance; (2) modifications to projects, activities, or land uses resulting from the section 7 consultations; (3) potential delays associated with reinitiating completed consultations after critical habitat is finalized; (4) uncertainty and public perceptions resulting in loss of land value from the designation of critical habitat; (5) potential effects on property values including potential indirect costs resulting from the loss of hunting opportunities and increased regulation related costs due to the interaction of State and local laws; and (6) potential offsetting benefits associated with critical habitat, including educational benefits. The most likely economic effects of critical habitat designation are on activities funded, authorized, or carried out by a Federal agency (*i.e.*, direct costs).

The DEA included an evaluation of the economic impacts associated with implementation of the section 7 provisions of the Act for the Blackburn's sphinx moth. To quantify the proportion of total potential economic impacts attributable to section 7 implementation, including both the section 7 listing provisions and the proposed critical habitat designation, the analysis evaluated a ''without section 7'' baseline and compared it to a ''with section 7'' scenario. The ''without section 7'' baseline represented the current and expected economic activity under all modifications except those associated with section 7, including protections afforded the species under Federal and State laws. The difference between the two scenarios measured the net change in economic activity attributable to the implementation of section 7 for the Blackburn's sphinx moth. Because of the uncertainty of the costs resulting solely from critical habitat designation, we believe it is reasonable to estimate the total impacts of section 7 application. However, it is important to note that inclusion of impacts attributable co-extensively to listing does not convert this economic analysis into a tool to be used in making listing decisions.

Following the close of the comment period on the DEA, an addendum was completed that incorporated public comments on the draft analysis and made other changes in the draft as necessary. These changes were primarily the result of information received during the comment period indicating that certain areas do not contain the necessary primary constituent elements or are not essential to the conservation of the species. However, the Addendum did analyze the economic impacts of areas that have been excluded pursuant to section 4(b)(2) in this final rule. Therefore, the total area and the potential impacts evaluated in the Addendum are greater than the total area designated as critical habitat and the actual impacts.

Together, the DEA as modified by the addendum constitute our final economic analysis. The final economic analysis estimates that, over the next 10 years, the designation may result in potential direct economic costs ranging from approximately $1,183,800 to $1,739,000. This reduction of approximately $27,399 to $175,400 from the costs estimated in the DEA is primarily due to the reduction in acreage for biological reasons.

Our final economic analysis for this rule also includes an evaluation of potential indirect costs associated with the designation of critical habitat for the Blackburn's sphinx moth. For example, in the event that designation results in a rezoning of property from agricultural district to conservation district a landowner could be expected to spend $50,000 to contest a potential re-zoning of their property, and a CDUA might cost as much as $100,000. Also, as described in section 4.e. of the Addendum, an estimate of the costs involved with investigation for the

intended designation ranges from approximately $173,000 to $618,000.

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.

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

Although we do not find the economic costs to be significant, they were considered in balancing the benefits of including or excluding areas from critical habitat. The likely cost of designating critical habitat for the Blackburn's sphinx moth is estimated to be between $118,380 to $173,900 per year over the next 10 years.

Approximately 4,717 ha (11,656 ac) within two proposed critical habitat units (Units 1 and 2) are located on private lands owned by Ulupalakua and Haleakala Ranches. We are excluding both ranches from designation 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.

Ulupalakua Ranch

The portion of proposed Unit 1 on Ulupalakua Ranch lands is occupied habitat for Blackburn's sphinx moth.

As discussed previously, conservation of the moth will require self-sustaining, reproducing populations located in a geographic array across its range, with population numbers and population locations of sufficient robustness to withstand periodic threats due to natural disaster or biological threats. The highest priority conservation tasks include active management, such as host plant propagation and reintroduction, fire control, alien species removal, and ungulate fencing. Failure to implement these active management measures, all of which require voluntary landowner support and participation, virtually assures the extirpation of this moth species from those areas. Many of these types of conservation actions in this area of Maui are carried out as part of Ulupalakua Ranch's participation with our Partners for Fish and Wildlife and other landowner incentive-based programs, and by actions taken on the landowner's initiative in areas outside the partnership area. These activities, which are described in more detail below, require substantial voluntary cooperation by Ulupalakua Ranch.

The following analysis describes the likely conservation benefits of a critical habitat designation compared to the conservation benefits without critical habitat designation. We paid particular attention to the following issues: Whether critical habitat designation would confer regulatory conservation benefits on this species; whether the designation would educate members of the public such that conservation efforts would be enhanced; and whether a critical habitat designation would have a positive, neutral, or negative impact on voluntary conservation efforts on this privately owned land.

If excluding an area from a critical habitat designation will provide substantial conservation benefits, and at the same time including the area fails to confer a counter-balancing benefit to the species, then the benefits of excluding the area from critical habitat outweigh the benefits of including it. The results of this type of evaluation will vary significantly depending on the landowners, geographic areas, and species involved.

(1) Benefits of Inclusion

Critical habitat was proposed for Blackburn's sphinx moth on 3,533 ha (8,730 ac) in the Ulupalakua Ranch portion of proposed Unit 1. The primary direct benefit of inclusion of this portion of proposed Unit 1 as final critical habitat would result from the requirement under section 7 of the Act that Federal agencies consult with us to ensure that any proposed Federal actions do not destroy or adversely modify critical habitat. Without critical habitat, some site-specific projects might not trigger consultation requirements under the Act in areas where species are not currently present. In contrast, Federal actions in areas occupied by listed species would still require consultation under section 7 of the Act. The portion of Unit 1 being excluded is occupied by the moth, and thus would be subject to consultation anyway. *See e.g.,* 50 CFR section 402.12 (biological assessments are based on a list of species present in the action area).

Historically, we have conducted no formal or informal consultations under section 7 on Maui for Blackburn's sphinx moth. We have conducted only two informal intraservice consultations regarding Ulupalakua Ranch, and these have been on the effects of fencing and outplanting of certain endangered plants including *Alectryon Micrococcus* var. *auwahiensis* and *Zanthoxylum hawaiiense* within the Puu Makua Partnership Project area and the Auwahi Partnership Project area (*see* discussion below). Current and likely future economic activities on the ranch include cattle grazing, diversified agriculture such as strawberry and papaya production, eco-tourism, wild fowl hunting, and lease of lands for cellular phone and radio transmission towers. The most likely future Federal involvement on these lands includes the development of voluntary conservation agreements between the ranch and Federal agencies such as the Service and NRCS. Additionally, it is possible the ranch may apply for and receive Farm Service loans for land improvement projects pertaining to agricultural needs or to enhance habitat for wild fowl.

As a result of the low level of previous Federal activity on Ulupalakua Ranch, and after considering the likely future Federal activities in this area, it is our opinion that there is likely to be a low number of future Federal activities that would affect designated Blackburn's sphinx moth critical habitat on Ulupalakua Ranch. Even if a Federal action is proposed in the future, it would likely be subject to section 7 consultation because of the presence of the moth. The Final Economic Analysis (FEA) prepared for this rule does discuss the possibility that a re-zoning of some lands from agricultural status to conservation status could occur which might limit certain agricultural activities. However, the FEA concedes that the possibility of re-zoning of agricultural lands is low or unlikely. Furthermore, there are different levels of conservation district land use categories, and in the event of a potential re-zoning, activities such as grazing would likely continue. Therefore, we anticipate little direct regulatory benefits from including Ulupalakua Ranch lands in critical habitat.

Another possible benefit if including these lands is that the designation of critical habitat can serve to educate landowners and the public regarding the potential conservation value of an area. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation value for certain species. Any information about the moth species for which critical habitat was proposed in Unit 1 that reaches a wide audience, including other parties engaged in conservation activities, would be considered valuable.

However, we believe we have achieved the same educational benefits through ongoing conservation activities

and the critical habitat designation process. The portion of proposed Unit 1 that lies within Ulupalakua Ranch has been identified as essential to the conservation of the Blackburn's sphinx moth and has been addressed in this rule. In addition, the existing conservation activities being conducted within proposed Unit 1, as well as within other areas of Ulupalakua Ranch, by the Service and other Federal agencies (*e.g.,* NRCS), the State, and private organizations (*e.g.,* Ducks Unlimited, Incorporated (DU)) demonstrates that the landowner and the public is already aware of the importance of this area for the conservation of Blackburn's sphinx moth.

In summary, we believe that a critical habitat designation for Blackburn's sphinx moth on Ulupalakua Ranch lands would provide a relatively low level of additional regulatory conservation benefits to the species. Any regulatory conservation benefits would accrue through the benefit associated with section 7 consultation. Based on a review of past consultations and consideration of the likely future activities in this area, there is little Federal activity expected to occur on this privately owned land that would trigger section 7 consultation. We also believe that a final critical habitat designation provides little additional educational benefits since the conservation value is already known by the landowner, the State, Federal agencies, and private organizations, and the area has been identified as essential to the conservation of Blackburn's sphinx moth. Both the additional regulatory conservation benefits to the species and the additional educational benefits appear marginal when considering the past and likely future conservation partnership opportunities with this landowner. Through cooperative and creative land restoration activities which have occurred on the ranch and are likely to continue to occur, a significant amount of land (hundreds of acres or more) can and will likely be restored for the long-term conservation of the moth, its host plant species, and other native Hawaiian ecosystem components. No such future conservation partnerships with this landowner are likely to occur if the proposed portions of the ranch are designated as outlined by the landowner within several letters.

(2) Benefits of Exclusion

Proactive voluntary conservation efforts on private lands are necessary to prevent the extinction and promote the conservation of this species on Maui and other Hawaiian islands (Wilcove and Chen 1998; Wilcove *et al.* 1998; Shogren *et al.* 1999). This is especially important in areas where species or their essential habitat components, *i.e.,* host plants, have been extirpated and their recovery requires access and permission for reintroduction or restoration efforts. For example, the Blackburn's sphinx moth's larval stage host plant species, *Nothocestrum latifolium,* associated with proposed Unit 1, are in decline on Ulupalakua Ranch lands, and natural repopulation is likely not possible without human assistance and landowner cooperation.

Ulupalakua Ranch is involved in several important voluntary conservation agreements, and is currently carrying out some of these activities for the conservation of the moth and its essential habitat components. For example, the Partners for Fish and Wildlife Auwahi and Puu Makua agreements were entered into in 1997 and 1998 with the stated purpose of protecting and restoring dryland forest, including construction of exclosure 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, the lowland dry forest. This management strategy is consistent with recovery of the Blackburn's sphinx moth. The Auwahi agreement is between Ulupalakua Ranch, USGS–BRD, and the Service. We provided funding ($64,388) for fence materials, plant propagation and outplanting, and weed control, Ulupalakua Ranch provided labor and materials valued at $18,000, and USGS–BRD provided materials and technical assistance as well as staff and volunteer labor. In the 4 ha (10 ac) Auwahi project area, Ulupalakua Ranch has built the exclosure fence, outplanted native plants grown in the greenhouse including *Nothocestrum latifolium,* removed the majority of non-native alien species within the fence, and removed all ungulates. We provided $31,675, through an agreement with Ulupalakua Ranch, for restoration work at Puu Makua. Ulupalakua Ranch has provided in-kind labor and materials valued at $37,055 to construct a fence around the 40 ha (100 ac) exclosure, removal of ungulates, control of nonnative plants and out-planting of native plants. The first two tasks have been completed, with weed control and out-planting ongoing.

A third voluntary partnership project undertaken in cooperation with the landowner is the Auwahi II Dryforest Restoration Project. We provided $76,500 (matched by in-kind services valued at $52,000) for this 8 ha (20 ac) restoration effort adjacent to the Auwahi I project. This project is ongoing, and will employ the same methods used at Auwahi I: Construct ungulate exclosure fence, remove ungulates, control nonnative plants, and outplant native species, including listed species.

Ulupalakua Ranch entered a partnership with Ducks Unlimited (DU), a private conservation organization, and the NRCS's Wetland Reserve Program (WRP) in 2000, to create wetland complexes suitable for the Hawaiian goose, nene (*Branta sandvicensis*) and Hawaiian duck, koloa (*Anas wyvilliana*). The NRCS WRP provided $100,000 for funding and technical support to develop the wetland complex, DU provided funds and provided full survey, design, construction management and completion of wetland development practices, and Ulupalakua Ranch provided fencing, equipment, labor or other in-kind serves as required to match the WRP funds. DU also conducted waterfowl monitoring at the four ponds for 1 full year after pond construction. In 2001, a 14 ha (35 ac) area was fenced and encompassed the four constructed ponds and associated upland habitat at a 1,585 m (5,200 ft) elevation site. The ponds were created to attract nene and koloa pairs to forage and nest within the protected pond/wetland area, which totals approximately 0.4 ha (1 ac) of surface water, with 0.9–1.8 m (3–6 ft) depths filled and maintained by natural hydrology and rainfall.

In addition to the projects described above, to address the conservation needs of the species in a larger area, Ulupalakua Ranch has expanded their Partners for Fish and Wildlife projects with the Service and in cooperation with the State NAR program for conserving additional areas, which include the following important voluntary actions by Ulupalakua Ranch:

(1) Construction of exclosure fencing around a portion of Ulupalakua Ranch and the Ka naio NAR (a portion of proposed Unit 1 (approximately 283 ha (700 ac)) with $50,000 provided us, matched by in-kind services (*e.g.,* labor and materials) valued at $50,000;

(2) Active management of feral ungulates that are negatively affecting listed plants within the fenced areas;

(3) Active management of nonnative grasses and other fire hazards, and development of fire control measures; and

(4) Nursery propagation and planting of native flora, including *Nothocestrum latifolium,* within the fenced areas.

Currently, this is the only large-scale planned nursery production of the moth's native larval host plants in the State.

We believe that Blackburn's sphinx moth habitat and host plant populations originally included within the Ulupalakua Ranch portion of proposed Unit 1 will benefit substantially from these management actions. Specifically, the planned and current conservation actions on 324 ha (800 ac) or approximately 10 percent of the area originally proposed on ranch lands should directly benefit the moth and its host plants. These benefits include a reduction in ungulate browsing and habitat conversion, a reduction in competition with nonnative weeds, a reduction in risk of fire, and the potential for reintroduction of moth host plants currently extirpated from various areas. Also, these benefits include what is current or currently planned only, additional benefits could be derived from projects not yet conceived.

On Maui, simply preventing ''harmful activities'' will not slow the extinction of listed species. Where consistent with the discretion provided by the Act, we believe it is necessary to provide positive incentives to private landowners to voluntarily conserve natural resources. The FEA for this rule concluded that the likelihood of any particular parcel being rezoned as conservation district was low. However, the potential costs of such a rezoning should it occur, could entail additional costs to a landowner. For example, a landowner could be expected to spend $50,000 to contest a rezoning, and a conservation district use application (CDUA) might cost as much as $100,000. However, the FEA also conceded that some economic activities such as grazing would likely be permitted to continue even with a conservation district rezoning. Although the FEA concludes that the potential effects of rezoning are anticipated to be low, this landowner and other commenters nevertheless believe there is a risk that the critical habitat designation will result in the rezoning of lands, a decrease in the Ulupalakua Ranch's ability to remain economically competitive, and an increased risk of third-party litigation. The landowner has expressed concern over these potential negative impacts and has stated in several letters that they would cease all voluntary conservation activities on ranch property. We believe the ranch's cooperation on all current and planned future conservation projects on ranch property are necessary to conserve the moth. Current conservation projects alone will result in the direct restoration and conservation of approximately 10 percent of the ranch's property proposed for designation.

As described earlier, Ulupalakua Ranch has a history of entering into conservation agreements with various Federal and State agencies and private organizations on biologically important portions of their lands. These arrangements have taken a variety of forms. They include partnership commitments such as the Puu Makua and the two Auwahi Dryland Forest Restoration Partners for Fish and Wildlife projects (in cooperation with USGS–BRD and funded through Partners for Fish and Wildlife), wetland restoration/creation (in cooperation with NRCS and DU), and the Ka naio Dry Forest Restoration Project (in cooperation with DOFAW and funded through Partners for Fish and Wildlife and section 6 of the Act).

Approximately 80 percent of imperiled species in the United States occur partly or solely on private lands where we have little management authority (Wilcove *et al.* 1996). In addition, recovery actions involving the reintroduction of listed species onto private lands require the voluntary cooperation of the landowner (Knight 1999; Main *et al.* 1999; Shogren *et al.* 1999; Norton 2000; Bean 2002; James 2002). Therefore, ''a successful recovery program is highly dependent on developing working partnerships with a wide variety of entities, and the voluntary cooperation of thousands of non-Federal landowners and others is essential to accomplishing recovery for listed species'' (Crouse *et al.* 2002). Because the Federal government owns relatively little land in the State of Hawaii, and because large tracts of land suitable for conservation of threatened and endangered species are owned by private landowners, successful recovery of the Blackburn's sphinx moth and other listed species in Hawaii is especially dependent upon working partnerships and the voluntary cooperation of non-Federal landowners. Thus, we believe it is essential for the conservation of Blackburn's sphinx moth to build on continued conservation activities such as these with a proven partner.

(3) The Benefits of Exclusion Outweigh the Benefits of Inclusion

Based on the above considerations, and consistent with the direction provided in section 4(b)(2) of the Act, we have determined that the benefits of excluding the Ulupalakua Ranch portion of proposed Unit 1 as critical habitat outweigh the benefits of including it as critical habitat for Blackburn's sphinx moth. This conclusion is based on the following analysis:

(1) *Benefits of inclusion:* There will be little Federal regulatory benefit to the moth as a result of including ranch property in the designation because, as described in the FEA and in this rule, there is a low likelihood that this critical habitat unit will be negatively affected to any significant degree by Federal activities requiring section 7 consultation. The designation of critical habitat can serve to educate the general public, as well as conservation organizations regarding the potential conservation value of an area. However, this goal has already been effectively accomplished through the identification of this area in the management agreements described above. Lastly, even if any given ranch parcel were re-zoned as conservation district as a result of the designation, the FEA concluded that grazing activities would likely continue. Given the current Partners for Fish and Wildlife agreements between ourselves and the landowner, we believe the overall regulatory and educational benefits of including the Ulupalakua Ranch lands portion of proposed Unit 1 as critical habitat are relatively small.

(2) *Benefits of exclusion:* Excluding Ulupalukua Ranch property from the designation will result in the elimination of uncertainty about decreased land values and potential third party litigation. Potential costs to the landowner resulting from the need to investigate the effect of designation or to contest potential conservation rezoning, for example, will be eliminated. Lastly, and perhaps, most important for the conservation of the moth, excluding the properties from designation will ensure the landowner's continued voluntary participation in proactive conservation agreements and partnerships as the landowner has stated in several letters to the Service.

(3) In the past, Ulupalakua Ranch has cooperated with us, the State, and other organizations to implement voluntary conservation activities on their lands that have resulted in tangible conservation benefits. The ranch has a long history of participation in conservation projects beginning in the 1960s through the present. A substantial amount (approximately 10 percent) of the Ulupalakua Ranch portion of proposed Unit 1 is currently being managed by the landowner on a voluntary basis to achieve important conservation goals and which directly benefits numerous native Hawaiian plant and animal species including the

moth. For example, the landowner is currently cooperating with the Service and the State to restore and actively manage approximately 324 ha (800 ac) of high quality habitat for the moth and its host plants.

Simple regulation of potential ''harmful activities'' is not sufficient to conserve the Blackburn's sphinx moth on private lands. Landowner cooperation and support will be required to prevent its extirpation in this area of Maui and promote the recovery of the moth's host plants in this area due to the need to implement proactive conservation actions such as ungulate management, weed control, fire suppression, and plant propagation and reintroduction. This need for landowner cooperation is especially important because the Ulupalakua portion of proposed Unit 1 is part of the habitat for what is considered a core or metapopulation of the moth. In fact, some portions of the ranch's property currently being fenced and actively managed for restoration include some of the highest quality moth habitat remaining anywhere in the State. Future conservation efforts, such as maintaining and conserving Blackburn's sphinx moth host plant habitat in this area, will require the cooperation of Ulupalakua Ranch.

In conclusion, we find that the designation of critical habitat in the Ulupalakua Ranch portion of proposed Unit 1 would most likely have a net negative conservation effect on the recovery and conservation of Blackburn's sphinx moth. As described above, the overall benefits to this moth of a critical habitat designation for this portion of Unit 1 are relatively small. We conclude there is a greater likelihood of beneficial conservation activities occurring on this area of Maui without designated critical habitat than there would be with designated critical habitat in this location. We reached this conclusion because the landowner is more likely to continue and increase their ongoing voluntary conservation efforts for the moth and other listed species if their property is not designated as critical habitat. In fact, the landowner has stated in several letters to the Service that all voluntary conservation activities will cease if ranch property is designated. Therefore, it is our conclusion that the net benefits of excluding this portion of proposed Unit 1 from critical habitat for the Blackburn's sphinx moth outweigh the benefits of including it.

(4) Exclusion of This Unit Will Not Cause Extinction of the Species

In considering whether or not exclusion of this portion of proposed Unit 1 might result in the extinction of Blackburn's sphinx moth, we considered the impacts to the species. It is our conclusion that the current partnership agreements developed by Ulupalakua Ranch and the Service will provide more net conservation benefits than would be provided by designating the portion of proposed Unit 1 as critical habitat. These agreements will provide tangible proactive conservation benefits that will result in the direct restoration and active management of 324 ha (800 ac) of habitat for the moth and its native host plants within proposed Unit 1. Specifically, the benefits will include the construction of exclosure fencing around a large portion of high quality moth habitat, active management of feral ungulates and nonnative grasses and weeds, development of fire control methods, and nursery propagation of the moth's host plants. These benefits will reduce the likelihood of the moth's extirpation in this area of Maui, reduce the likelihood of its extinction, and increase its likelihood of conservation overall. Extinction of the Blackburn's sphinx moth as a consequence of this exclusion is unlikely because there are no known threats in this portion of proposed Unit 1 due to any current or reasonably anticipated Federal actions that might be regulated under section 7 of the Act. Implementation of the partnership agreements between the landowner and the Service, and the exclusion of the portion of proposed Unit 1, have the highest likelihood of preventing extinction of this species and enhancing its conservation.

In addition, critical habitat is being designated in other areas of Maui and on the islands of Hawaii, Kahoolawe, and Molokai for Blackburn's sphinx moth. These other designations identify conservation areas for the maintenance and expansion of existing populations.

In summary, the above analysis indicates there is a much greater likelihood of the landowner undertaking conservation actions on Maui to prevent extinction, such as the outplanting of moth host plants to expand and establish additional populations, without the Ulupalakua Ranch portion of proposed Unit 1 being designated as critical habitat. Therefore, the exclusion of this portion of proposed Unit 1 will not cause extinction and should in fact improve the chances of conservation for Blackburn's sphinx moth.

Haleakala Ranch

Most of the portion of proposed Units 1 and 2 on Haleakala Ranch lands is believed to be occupied habitat for Blackburn's sphinx moth.

The following analysis describes the likely conservation benefits of a critical habitat designation compared to the conservation benefits without critical habitat designation. We paid particular attention to the following issues: Whether critical habitat designation would confer regulatory conservation benefits on this species; whether the designation would educate members of the public such that conservation efforts would be enhanced; and whether a critical habitat designation would have a positive, neutral, or negative impact on voluntary conservation efforts on this privately owned land.

If a critical habitat designation reduces the likelihood that voluntary conservation activities will be carried out, and at the same time fails to confer a counter-balancing positive regulatory or educational benefit to the species, then the benefits of excluding such areas from critical habitat outweigh the benefits of including them. The results of this type of evaluation will vary significantly depending on the landowners, geographic areas, and species involved.

(1) Benefits of Inclusion

On Haleakala Ranch property, critical habitat was proposed for Blackburn's sphinx moth on 393 ha (972 ac) for proposed Unit 1 and 791 ha (1,955 ac) for proposed Unit 2. The primary direct benefit of inclusion of this portion of proposed Units 1 and 2 as final critical habitat would result from the requirement under section 7 of the Act that Federal agencies consult with us to ensure that any proposed Federal actions do not destroy or adversely modify critical habitat.

Historically, there have been no formal consultations of informal consultations under section 7 involving Haleakala Ranch lands, except the consultation in the process of being completed for the Puu Pahu conservation project that we are funding in part.

Current and likely future economic activities on the ranch include cattle grazing, diversified agriculture, eco-tourism, hunting, and lease of lands for cellular phone and radio transmission towers. Likely future Federal involvement includes the development of voluntary conservation agreements between the ranch and Federal agencies such as the Service and NRCS. Additionally, it is possible the ranch

may apply for and receive Farm Service loans for land improvement projects pertaining to agricultural needs or to enhance habitat for wild fowl.

As a result of this low level of Federal activity on Haleakala Ranch, and after considering the likely future Federal activities in this area, it is our opinion that there is likely to be a low number of future Federal activities that would affect designated Blackburn's sphinx moth critical habitat on Haleakala Ranch. Even if a Federal action is proposed in the future, it would likely be subject to section 7 consultation because of the presence of the moth. The FEA prepared for this rule does discuss the possibility that a rezoning of some lands from agricultural status to conservation status could occur which might limit certain agricultural activities. However, the FEA concedes that the possibility of rezoning of agricultural lands is low or unlikely. Furthermore, there are different levels of conservation district land use categories, and in the event of a potential rezoning, activities such as grazing would likely continue. Therefore, we anticipate little regulatory benefits from including Haleakala Ranch lands in critical habitat.

Another possible benefit of including these lands is that the designation of critical habitat can serve to educate landowners and the public regarding the potential conservation value of an area. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation value for certain species. This outcome would be important for the Blackburn's sphinx moth. Any information about the species and its habitat that reaches a wide audience, including other parties engaged in conservation activities, would be considered valuable.

However, we believe we have achieved the same educational benefits through ongoing conservation actions and the critical habitat designation process. The portion of proposed Units 1 and 2 that lie within Haleakala Ranch has been identified as essential to the conservation of the Blackburn's sphinx moth. In addition, the existing conservation activities being conducted within proposed Units 1 and 2, as well as within other areas of Haleakala Ranch, by the Service and other Federal agencies (*e.g.*, NRCS), the State, and private organizations (*e.g.*, The Nature Conservancy (TNC)) demonstrates that the landowner and the public is already aware of the importance of these areas for the conservation of the moth.

In summary, we believe that a critical habitat designation for Blackburn's sphinx moth on Haleakala Ranch lands would provide a relatively low level of additional regulatory conservation benefits to the species. Any regulatory conservation benefits would accrue through the benefit associated with section 7 consultation. Based on a review of past consultations and consideration of the likely future activities in this area, there is little Federal activity expected to occur on this privately owned land that would trigger section 7 consultation. In addition, we believe that the critical habitat proposal and final designation provides some conservation benefits by educating the public on the site-specific areas on Maui essential to the conservation of the Blackburn's sphinx moth. Both the additional regulatory conservation benefits to the species and the additional educational benefits appear marginal when considering the past and likely future conservation partnership opportunities with this landowner. Through cooperative and creative land restoration activities which have occurred and are likely to continue to occur on the ranch, a significant amount of land (hundreds of acres or more) can and will likely be restored for the long-term conservation of the moth, its host plant species, and other native Hawaiian ecosystem components. No such future conservation partnerships with this landowner are likely to occur if the proposed portions of the ranch are designated as outlined by the landowner within several letters.

(2) Benefits of Exclusion

Proactive voluntary conservation efforts on private lands are necessary to prevent the extinction and promote the conservation of this species on Maui and other Hawaiian islands (Wilcove and Chen 1998; Wilcove *et al.* 1998; Shogren *et al.* 1999). This is especially important in areas where species or their essential habitat components, *i.e.*, host plants, have been extirpated and their recovery requires access and permission for reintroduction or restoration efforts. For example, the Blackburn's sphinx moth's host plant species, associated with proposed Units 1 and 2 are either extirpated or in decline on Haleakala Ranch lands, and natural repopulation is likely not possible without human assistance and landowner cooperation.

Haleakala Ranch is involved in several important voluntary conservation agreements, some of which benefit the moth. For example, in the mid-1980s, Haleakala Ranch Company sold to TNC a perpetual conservation easement that included over 19,000 ha (47,000 ac) (Waikamoi Preserve) in order to protect its native forest resources and watershed from damage caused by pigs and cattle. Haleakala Ranch Company has been working with the Central Maui Soil and Water Conservation District to address soil and resource issues. In cooperation with the NRCS Environmental Quality Incentives Program (EQIP), Haleakala Ranch Company has been implementing a weed control program that has been ongoing for over 80 years. Eight years ago, the Haleakala Ranch Company Directors created and filled a Land Steward position in order to shepherd conservation efforts of the ranch and update the conservation plans for all Haleakala Ranch lands.

The Partners for Fish and Wildlife Puu Pahu agreement was begun in 2001 with the stated purpose of protecting and restoring native subalpine dry shrubland including construction of a 6.9 kilometers (km) (4.3 miles (mi)) exclosure fence, and removal of ungulates within the area in order to allow the already semi-intact native vegetation to regenerate. Preservation of this area conserves critically endangered species of plants and animals in one of Hawaii's most restricted ecosystem types, subalpine dry shrubland. The agreement is between Haleakala Ranch, the Service, and NRCS. The Service and NRCS provided funding for fencing materials ($91,418 from us), and are providing technical assistance on the conservation of certain native plants and restoration of the subalpine dry shrubland, whereas Haleakala Ranch is building the fence and removing the ungulates (in-kind cost-share valued at $28,875). This work is to be completed by August 30, 2003. Haleakala Ranch has also been working with DOFAW for the past 2 years on an ungulate free reserve for native habitat regeneration in the Waiopae area. Haleakala Ranch is fencing the area for better grazing management from the forest to the shoreline. These actions will include riparian protection to improve habitat for native plants and watershed management. The area contains high quality habitat for both the moth's larval and adult stage host plants, and when completed, it would involve the conservation, restoration, and management of approximately 445 ha (1,100 ac) of moth habitat.

Through voluntary agreements with our Partners for Fish and Wildlife and the NRCS Wildlife Habitat Incentives Programs (WHIP), and in cooperation with the Native Hawaiian Plant Society, USGS-BRD and DOFAW, Haleakala Ranch is assisting with the fencing and exclusion of feral axis deer in the Puu

o Kali project area (part of proposed Unit 2) by granting access to the area. Furthermore, the success of this project, a high quality habitat area for the moth and its host plants, can be enhanced and facilitated by voluntary cooperation of Haleakala Ranch. Currently, the ranch is planning to implement similar fire control, weed, and ungulate management, and fence construction efforts on its properties adjacent and partly surrounding the Puu o Kali project area. Additionally, the ranch is fencing and excluding feral ungulates from a high elevation shrubland adjacent to Haleakala National Park, for conservation of endangered plants and animals and habitat protection purposes. Preservation of both these habitat areas conserves critically endangered species of plants and animals in two of Hawaii's most degraded ecosystem types. This management strategy is consistent with the conservation needs of Blackburn's sphinx moth and should directly benefit the moth's host plant habitat.

In addition, Haleakala Ranch has informed us that they are currently devising additional management plans for conserving habitat, including that of the moth. These plans include the following important voluntary actions by Haleakala Ranch:

(1) Construction of a 9 ha (22 ac) exclosure fence around Keokea Gulch in Kihei to reduce sedimentation on the shoreline and reef, and to reduce the fire hazard in the area by using R–1 (highest quality recycled water) water to irrigate a riparian buffer; exclosure fencing of a dryland lava flow in the Keokea area, in cooperation with the Service. Additionally, the ranch has begun planning with the Service and DOFAW to fence and restore a significant portion of the Waiopae area (within proposed Unit 1) for habitat protection of native forest and riparian areas. The project would involve the enclosure and management of approximately 445 ha (1,100 ac) of high quality moth habitat, or approximately 30 percent of the amount of Haleakala Ranch lands proposed for designation.

(2) Control of feral ungulates that are negatively impacting listed and rare plants, including the Blackburn's sphinx moth's host plants, within all the currently fenced areas and planned project areas;

(3) Control of nonnative grasses and other fire hazards, and development of fire control measures within many project areas including some occupied by the moth; and

(4) Habitat protection for natural regeneration of native flora including Blackburn's sphinx moth host plants, within many of the fenced project areas.

We believe that Blackburn's sphinx moth habitat included within the Haleakala Ranch portion of proposed Units 1 and 2 will benefit substantially from these management actions. Specifically, the planned and current conservation actions on approximately 445 ha (1,100 ac) or approximately 30 percent of the ranch property amount originally proposed should directly benefit the moth and its host plants. These benefits include a reduction in ungulate browsing and habitat conversion, a reduction in competition with nonnative weeds, a reduction in risk of fire, and the potential for reintroduction of moth host plants currently extirpated from various areas. Furthermore, these benefits include what is current or currently planned only, additional benefits could be derived from projects not yet conceived.

On Maui, simply preventing ''harmful activities'' will not slow the extinction of listed species. Where consistent with the discretion provided by the Act, we believe it is necessary to provide incentives to private landowners to voluntarily conserve natural resources. The FEA for this rule concluded that the likelihood of any particular parcel being rezoned as conservation district was low. However, the potential costs of such a rezoning, should it occur, could entail additional costs to a landowner. For example, a landowner could be expected to spend $50,000 to contest a rezoning, and a CDUA might cost as much as $100,000. However, the FEA also conceded that some economic activities such as grazing would likely be permitted to continue even with a conservation district rezoning. Although the FEA concludes that the potential effects of rezoning are therefore anticipated to be low, this landowner and other commenters nevertheless believe there is a risk that the critical habitat designation will result in the rezoning of lands, a decrease in the Haleakala Ranch's ability to remain economically competitive and that there is an increased risk of third-party litigation. The landowner has expressed concern over these potential negative impacts and has stated in several letters that they would cease all voluntary conservation activities on ranch property. We believe the ranch's cooperation on all current and planned future conservation projects on ranch property are necessary to conserve the moth. Current and planned conservation projects alone could result in the direct restoration and conservation of approximately 30 percent of the ranch property acreage amount proposed for designation.

As described earlier, Haleakala Ranch has a history of entering into conservation agreements with various Federal and State agencies, and private organizations on important portions of their lands. These arrangements have taken a variety of forms. They include partnership commitments ranging from the Partners for Fish and Wildlife projects, and an agreement with DOFAW to fence areas in Waiopae, to weed control programs with NRCS WHIP, and a perpetual easement to TNC (Waikamoi Preserve).

We believe it is essential for the conservation of Blackburn's sphinx moth to build on continued conservation activities such as these with a proven partner. Approximately 80 percent of imperiled species in the United States occur partly or solely on private lands where we have little management authority (Wilcove *et al.* 1996). In addition, recovery actions involving the reintroduction of listed species onto private lands require the voluntary cooperation of the landowner (Knight 1999; Main *et al.* 1999; Shogren *et al.* 1999; Norton 2000; Bean 2002; James 2002). Therefore, ''a successful recovery program is highly dependent on developing working partnerships with a wide variety of entities, and the voluntary cooperation of thousands of non-Federal landowners and others is essential to accomplishing recovery for listed species'' (Crouse *et al.* 2002). Because the Federal government owns relatively little land in the State of Hawaii, and because large tracts of land suitable for conservation of threatened and endangered species are owned by private landowners, successful recovery of the Blackburn's sphinx moth and other listed species in Hawaii is especially dependent upon working partnerships and the voluntary cooperation of non-Federal landowners.

(3) The Benefits of Exclusion Outweigh the Benefits of Inclusion

Based on the above considerations, and consistent with the direction provided in section 4(b)(2) of the Act, we have determined that the benefits of excluding the Haleakala Ranch portion of proposed Units 1 and 2 as critical habitat outweigh the benefits of including it as critical habitat for Blackburn's sphinx moth. This conclusion is based on the following analysis:

(1) *Benefits of inclusion:* There will be little Federal regulatory benefit to the moth as a result of including ranch property in the designation because, as described in the FEA and in this rule,

there is a low likelihood that this critical habitat unit will be negatively affected to any significant degree by Federal activities requiring section 7 consultation. The designation of critical habitat can serve to educate the general public, as well as conservation organizations regarding the potential conservation value of an area. However, this goal has already been effectively accomplished through the identification of this area in the management agreements described above. Lastly, even if any given ranch parcel were re-zoned as conservation district as a result of the designation, the FEA concluded that grazing activities would likely continue. Given the current Partners for Fish and Wildlife agreements between ourselves and the landowner, we believe the overall regulatory and educational benefits of including the Haleakala Ranch lands portion of proposed Units 1 and 2 as critical habitat are relatively small.

(2) *Benefits of exclusion:* Excluding Haleakala Ranch property from the designation will result in the elimination of uncertainty about decreased land values and potential third party litigation. Potential costs to the landowner resulting from the need to investigate the effect of designation or to contest potential conservation rezoning, for example, will be eliminated. Lastly, and perhaps, most important for the conservation of the moth, excluding the properties from designation will ensure the landowner's continued voluntary participation in proactive conservation agreements and partnerships as the landowner has stated in several letters to the Service.

(3) In the past, Haleakala Ranch has cooperated with us, the State, and other organizations to implement voluntary conservation activities on their lands that have resulted in tangible conservation benefits. Currently only a small percentage of the Haleakala Ranch portion of proposed Units 1 and 2 are being restored or managed for the moth. However, a substantial amount (approximately 30 percent) of the ranch's portion of proposed Units 1 and 2 is within the planning stage to be restored and managed by the landowner on a voluntary basis to achieve important conservation goals, and to directly benefit numerous native Hawaiian plant and animal species including the moth. For example, the landowner is currently planning with the Service and the State to restore and actively manage approximately 445 ha (1,100 ac) of high quality habitat for the moth and its host plants.

Simple regulation of potential ''harmful activities'' is not sufficient to conserve the Blackburn's sphinx moth on private lands. Landowner cooperation and support will be required to prevent its extirpation in this area of Maui and promote the recovery of the moth's host plants in this area due to the need to implement proactive conservation actions such as ungulate management, weed control, fire suppression, and plant propagation and reintroduction. This need for landowner cooperation is especially important because the Haleakala Ranch portion of proposed Units 1 and 2 is part of the habitat for what is considered a core or metapopulation of the moth. Future conservation efforts, such as maintaining and conserving Blackburn's sphinx moth host plant habitat in this area, will require the cooperation of Haleakala Ranch.

In conclusion, we find that the designation of critical habitat in the Haleakala Ranch portion of proposed Units 1 and 2 would most likely have a net negative conservation effect on the recovery and conservation of Blackburn's sphinx moth. As described above, the overall benefits to this moth of a critical habitat designation for this portion of Units 1 and 2 are relatively small. We conclude there is a greater likelihood of beneficial conservation activities occurring within this area of Maui without designated critical habitat than there would be with designated critical habitat in this location. We reached this conclusion because the landowner is more likely to continue and increase their ongoing voluntary conservation efforts for the moth and other listed species if their property is not designated as critical habitat. In fact, the landowner has stated in several letters to the Service that all voluntary conservation activities will cease if ranch property is designated. Therefore, it is our conclusion that the net benefits of excluding this portion of proposed Units 1 and 2 from critical habitat for the Blackburn's sphinx moth outweigh the benefits of including it.

(4) Exclusion of This Unit Will Not Cause Extinction of the Species

In considering whether or not exclusion of this portion of proposed Units 1 and 2 might result in the extinction of Blackburn's sphinx moth, we considered the impacts to the species. It is our conclusion that the current partnership agreements developed and planned by Haleakala Ranch and the Service will provide more net conservation benefits than would be provided by designating the portion of proposed Units 1 and 2 as critical habitat. These agreements will provide tangible proactive conservation benefits that may result in the direct restoration and active management of 445 ha (1,100 ac) of habitat for the moth and its native host plants within proposed Units 1 and 2. Specifically, the benefits would include the construction of exclosure fencing around a large portion of high quality moth habitat, active management of feral ungulates and nonnative grasses and weeds, and development of fire control methods. These benefits will reduce the likelihood of the moth's extirpation in this area of Maui, reduce the likelihood of its extinction, and increase its likelihood of conservation overall. Extinction of the Blackburn's sphinx moth as a consequence of this exclusion is unlikely because there are no known threats in this portion of proposed Units 1 and 2 due to any current or reasonably anticipated Federal actions that might be regulated under section 7 of the Act. Implementation of the partnership agreements between the landowner and the Service, and the exclusion of the portion of proposed Units 1 and 2, have the highest likelihood of preventing extinction of this species and enhancing its conservation.

In addition, critical habitat is being designated in other areas of Maui and on the islands of Hawaii, Kahoolawe, and Molokai for Blackburn's sphinx moth. These other designations identify conservation areas for the maintenance and expansion of existing populations.

In summary, the above analysis indicates there is a much greater likelihood of the landowner undertaking conservation actions on Maui to prevent extinction, such as the restoration and management of moth host plant habitat, without the Haleakala Ranch portion of proposed Units 1 and 2 being designated as critical habitat. Therefore, the exclusion of this portion of proposed Units 1 and 2 will not cause the species' extinction and should, in fact, improve the chances of conservation for Blackburn's sphinx moth.

Other Private Lands

Approximately 567 acres of State and private land within two proposed critical habitat units (Units 5A and 5B) are excluded because the economic impacts of their inclusion outweigh the benefits provided by a designation of critical habitat. The economic analysis indicates that activities already planned for these two units, including the State VOLA master planned community with over 1,000 units of affordable housing, and the Kaloko Properties projects, could incur indirect costs ranging between $49.9 and $61.9 million. While

there is no certainty that any or all of these indirect costs would be incurred, these figures are illustrative of the order of magnitude of the indirect impacts that could occur from the designation.

(1) Benefits of Inclusion

These areas proposed for development or other uses are proposed Units 5A and 5B. Proposed Unit 5A absent this exclusion would consist of 226 acres of State and private land. Proposed Unit 5B absent this exclusion would consist of 232 acres of State land. Both units are unoccupied by the moth.

If these areas were designated as critical habitat, any Federal agency which proposed to approve, fund or undertake any action which might adversely modify the critical habitat would be required to consult with us. This is commonly referred to as a ''Federal nexus'' for requiring the consultation. Since the areas in question are not occupied by the plants, this consultation would not be required absent the critical habitat designation.

The draft economic analysis and final addendum indicate no projects within the areas proposed for exclusion which have a Federal nexus, and thus there is no expectation that there would be any section 7 consultations if these areas were designated as critical habitat for the moth.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has largely been achieved. These units have already been identified through the draft proposal and final designation. In addition, the State has included a preserve for listed plants within its VOLA development project, which will contribute to the long-term educational benefit of conserving the habitat of listed species.

In summary, we believe that a critical habitat designation for the moth on these properties would provide relative low additional Federal regulatory benefits. There is no Federal activity which might trigger the section 7 consultation process for these species known or anticipated for the lands to be excluded. The additional educational benefits which might arise from critical habitat designation are largely accomplished through the notice and comments which accompanied the development of this regulation, and the proposed critical habitat is known to the landowners. In addition, the State is planning for a preserve for the listed plants within the VOLA development which will provide ongoing educational benefits regarding the habitat of listed species.

(2) Benefits of Exclusion

There are two development projects currently planned within the pre-exclusion boundaries of proposed Units 5A and 5B which could suffer significant economic impacts due to indirect effects of the critical habitat designation.

The Housing and Community Development Corporation of Hawaii has since 1990 had a master-planned community development project known as ''Villages at Laiopua'' (VOLA), much of which is within the pre-exclusion boundary of proposed Unit 5B. This includes a planned 570 ''affordable housing'' homes within the area proposed for designation. The State of Hawaii has already invested $30 million in infrastructure costs, including roads, utilities, a High School, planning and expanding the local waste-water treatment plant, and some of the project has been constructed.

There are real but undeterminable possibilities that designation of these areas as critical habitat would lead to loss or significant restriction of the project through actions not under the control of the Federal government but resulting from the critical habitat designation. These include redistricting of land, rezoning and other regulatory approvals, and litigation related to both.

Hawaii has statewide land classifications of Urban, Rural, Agricultural and Conservation, with restrictions on what type of activities can be conducted within the different classifications. The State Department of Land and Natural Resources commented on this proposal that they would be required to initiate rezoning of lands designated as critical habitat into the ''Conservation'' classification, which prohibits development.

While there is a low probability that the State Land Use Commission would finally vote to redistrict the lands proposed for the VOLA project, that possibility exists. In addition, there could well be litigation designed to either force the Commission to act or to have a court make the decision.

The VOLA project has already been troubled by litigation and defaulting developers; additional regulatory or legal uncertainties arising from this designation could well cause further delays or kill the project altogether. If this were to occur, the Housing and Community Development Corporation would lose the $30 million in sunk costs, and the affordable housing units that would have been constructed. Although the final addendum to the economic analysis assigns a cost to the loss of the affordable units of $2.7 million, there could well be considerable non-monetary social costs as well, particularly inasmuch as the available information indicates that there are no other affordable housing projects planned within the next 10 years.

The second project within the excluded areas is known as the Kaloko Properties/Kaloko Town Center. This project has been underway since 1987, and covers 1,150 acres, of which 240, or 21%, is within the preexclusion boundary of the proposed units. The developers have already expended over $20 million for infrastructure improvements, engineering and related costs, which approximately $4.2 (by percentage allocation) is associated with the portion of the project within the proposed critical habitat. This project will need both redistricting from the State and rezoning from the county for portions of the land. The final addendum to the economic analysis finds there is a reasonably foreseeable chance that the designation of critical habitat would affect this development.

In the worst-case scenario, the State or county might decide not to grant the discretionary approvals needed for the project—redistricting and rezoning—or might be prevented from doing so by litigation. This could lead to loss of the $4.2 million in sunk costs for the portion of the property within the proposed critical habitat, or of the entire $20 million investment. In addition, there would be an estimated loss of future profits from the land proposed for inclusion within the critical habitat of between $40 to $80 million. Using a present value discount, the loss would range between $13 and $25 million.

(3) The Benefits of Exclusion Outweigh the Benefits of Inclusion

The VOLA project has already been troubled by litigation and defaulting developers; additional regulatory or legal uncertainties arising from this designation could well cause further delays or kill the project altogether. If this were to occur, the Housing and Community Development Corporation would lose the $30 million in sunk costs, and the affordable housing units that would have been constructed.

Although the final addendum to the economic analysis assigns a cost to the loss of the affordable units of $2.7 million, there could well be considerable non-monetary social costs as well, particularly inasmuch as the

available information indicates that there are no other affordable housing projects planned within the next 10 years.

We accordingly do not find that the benefits from the designation of critical habitat for lands within the VOLA project, as discussed above, exceed the benefits of avoiding the possible economic and social costs which could well arise from this designation.

For the Kaloko Properties/Kaloko Town Center, there is also the real possibility that the designation of critical habitat could lead to loss of necessary regulatory approvals. This in turn could lead to loss of the $4.2 million in sunk costs for the portion of the property within the proposed critical habitat, or of the entire $20 million investment. In addition, there would be an estimated loss of future profits from the land proposed for inclusion within the critical habitat of between $40 to $80 million. Using a present value discount, this loss would range between $13 and $25 million. (There could also be the loss of all project revenues in the event the inability to utilize the lands within the critical habitat designation caused the failure of the entire project.)

The possibility of significant economic impacts to this project, while not certain, clearly exist. As noted above, we cannot find offsetting benefits from the designation of critical habitat in these two units which exceed the benefits of avoiding these possible economic costs.

There are two other factors of which we take note but upon which our decision does not rest. First, in June 2002, the State enacted legislation allowing State entities to enter into Safe Harbor agreements and Habitat Conservation Plans for three designated areas, including the VOLA project. There were previously specimens of the moth's larval host plant, which presumably could be reintroduced. There are also populations of the various plants on which adult moths feed. This area is thus a candidate for a Safe Harbor agreement. Absent the exclusion, it is highly unlikely the State would pursue these conservation options.

Secondly, the developers of this project contacted us after the close of the comment period offering to undertake a number of actions designed to provide conservation benefits to the species. Specifically, the offer included: (1) To set aside 100 to 130 acres within the proposed Unit 13; (2) enter into good faith negotiations with the Federal, State or county entities for acquisition of the area; (3) agree to enter into a Safe Harbor agreement with us; and (4) to enter into a memorandum of understanding or cooperative agreement to address habitat protection, monitoring and management actions for the remainder of their property relating to Blackburn's sphinx moth and two species of endangered plants.

Due to the court-ordered date by which this designation must be completed, we were unable to conclude such an agreement with the developers or to enter into a Safe Harbor agreement with the State prior to issuing this notice and regulation. However, if we had been, these are the types of agreements for which we have found in other cases that the benefits of the agreement exceed the benefits of designation and thus warrant exclusion (*See* previous discussions of exclusions under section 4(b)(2)).

It has been our policy not to make exclusions under section 4(b)(2) based on offers of conservation agreements, and we are not doing so in either case here. However, we find it highly unlikely that either party would pursue them absent the exclusions, and note the ability to pursue the agreements as a secondary benefit of the exclusions. A decision by the developers to follow through on their offer and by the State to pursue a Safe Harbor agreement might well be in both their and the species best interest.

(4) Exclusion Will Not Cause Extinction of the Species

In considering whether or not exclusion of this portion of the proposed critical habitat might result in the extinction of Blackburn's sphinx moth, we considered the impacts on the species. Given that the units in question are unoccupied, we find, based on all of the information available to us, that the projects proposed for the areas to be excluded will not adversely impact existing populations of the moth.

The exclusions will provide an opportunity to pursue beneficial conservation agreements with the landowners, as noted above, that most likely would not exist without the exclusions.

Critical habitat for the moth is also designated on Molokai, Maui, and Kahoolawe, and in other locations on the island of Hawaii.

We accordingly find no basis for any conclusion that these exclusions would cause extinction of the species.

Critical Habitat Designation

The critical habitat areas described below constitute our best assessment of the physical and biological features needed for the conservation of Blackburn's sphinx moth and the special management needs of this species, and are based on the best scientific and commercial information available. We publish this final rule acknowledging that we have incomplete information regarding many of the primary biological and physical requirements for this 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.

Descriptions of Critical Habitat Units

The approximate areas of the designated critical habitat by landownership or jurisdiction are shown in Table 2.

Critical habitat includes habitat for the Blackburn's sphinx moth on the islands of Hawaii, Kahoolawe, Maui, and Molokai. Lands designated as critical habitat have been divided into 9 units. A brief description of each unit is presented below.

Unit 1: Puu O Kali (Maui)

Unit 1 consists of approximately 1,604 ha (3,965 ac) on State and private land, encompassing portions of the leeward slope of Haleakala and adjacent portions of the upper southeast isthmus. The unit is bounded on the north and the south by pasture lands, on the east by the lower slopes of Haleakala below the area of Kula, and on the west by the coastal town of Kihei. Natural features within the unit include widely spread, remnant dry forest communities, rugged aa lava flows, and numerous cindercones, including the highly visible Puu O Kali. Vegetation consists primarily of mixed-species mesic and dry forest communities composed of native and introduced plants (HHP 1993).

Along with Units 2, 3, and 4, this unit contains what is probably the largest extant Blackburn's sphinx moth population or metapopulation. This unit is essential to the species' conservation because it is occupied and contains the native larval host plant *Nothocestrum latifolium,* and other nectar-supplying plants for adult moths. In addition to providing essential habitat for the Maui metapopulation, areas within this unit provide temporary (ephemeral) habitat for migrating Blackburn's sphinx moths.

Unit 2: Cape Kinau (Maui)

Unit 2 consists of approximately 603 ha (1,490 ac) on State and private land, encompassing Cape Kinau and the entire Ahihi-Kinau NAR. The unit is

bounded on the north by Puu Naio, to the south by the ocean, to the east by La Perouse Bay, and on the west by Ahihi Bay. Natural features within the unit include widely spread, remnant dry forest communities, and numerous rugged aa lava flows. Vegetation consists primarily of mixed-species dry forest communities composed of native and introduced plants, with smaller amounts of dry coastal shrubland (HHP 1993).

Along with Units 1, 3, and 4, this unit contains what is probably the largest extant Blackburn's sphinx moth population or metapopulation. This unit is essential to the species' conservation because it is occupied and contains the native larval host plant *Nothocestrum latifolium,* and other nectar-supplying plants for adult moths. In addition to providing essential habitat for the Maui metapopulation, areas within this unit provide ephemeral habitat for migrating Blackburn's sphinx moths.

Unit 3: Kanaio (Maui)

Unit 3 consists of approximately 2,421 ha (5,982 ac) on State and private land, encompassing portions of the leeward slope of Haleakala and adjacent portions of the upper southeast isthmus. The unit is bounded on the north by pasture lands, to the south by ocean, to the east by the Kanaio NAR boundary and Puu Hokukano, and on the west by the Kanaio Homesteads and Cape Hanamanioa. Natural features within the unit include widely spread, remnant dry forest communities, rugged aa lava flows, and numerous cindercones including the highly visible Puu Pimoe. Vegetation consists primarily of mixed-species mesic and dry forest communities composed of native and introduced plants, with smaller amounts of dry coastal shrubland (HHP 1993).

Along with Units 1, 2, and 4, this unit contains what is probably the largest extant Blackburn's sphinx moth population or metapopulation. This unit is essential to the species' conservation because it is occupied and contains the native larval host plant *Nothocestrum latifolium,* and other nectar-supplying plants for adult moths. In addition to providing essential habitat for the Maui metapopulation, areas within this unit provide ephemeral habitat for migrating Blackburn's sphinx moths.

Unit 4: Kahikinui (Maui)

Unit 4 consists of approximately 4,799 ha (11,859 ac) on State and private land, encompassing portions of the leeward slope of Haleakala. The unit is bounded on the northeast by the 1,525 m (5,000 ft) elevation contour of Haleakala Volcano, to the south by the ocean, to the east by Poopoo Gulch, and on the west by Lualailua Hills. Natural features within the unit include widely spread, remnant dry forest communities, rocky coastline, numerous cindercones, and some of the most recent lava flows on Maui. Vegetation consists primarily of mixed-species mesic and dry forest communities composed of native and introduced plants, with smaller amounts of dry coastal shrubland (HHP 1993).

Along with Units 1, 2, and 3, this unit contains what is probably the largest extant Blackburn's sphinx moth population or metapopulation. This unit is essential to the species' conservation because it is occupied and contains the native larval host plant *Nothocestrum latifolium,* and other nectar-supplying plants for adult moths. In addition to providing essential habitat for the Maui metapopulation, areas within this unit provide ephemeral habitat for migrating Blackburn's sphinx moths.

Unit 5: Kanaha Pond (Maui)

Unit 5 consists of approximately 56 ha (139 ac) on State land, entirely comprised of the Kanaha Pond State Sanctuary on Maui. It is bounded on the south by the Kahului Airport, on the north by the ocean, on the east by coastline, and to the west by the town of Kahului. Natural features within the unit includes Kanaha Pond and remnant coastal dune communities. Vegetation consists primarily of mixed-species, dry coastal shrub land communities composed of native and introduced plants, including nonnative larval host plants (HHP 2000).

Although devoid of naturally occurring *Nothocestrum* spp., the unit is essential to the species' conservation because it contains adult Blackburn's sphinx moth primary constituent elements, and recent observations of both larvae and adults have been documented within the sanctuary. Although this unit is lower in elevation than areas currently containing *Nothocestrum* plants, the persistent occurrence of Blackburn's sphinx moth within the Kanaha Pond State Sanctuary and other nearby areas indicates this site provides habitat for this area's moth population, and plays an important role in the species' population dynamics. Based upon an understanding of this species and other moth species' flight capabilities and migrational needs, we believe that designation of this area contributes to the available matrix of undeveloped habitat necessary as refugia for Blackburn's sphinx moths migrating to other areas of existing suitable host plant habitat on Maui (A. Medeiros, pers. comm. 1998; S. Montgomery, pers. comm. 2001; McIntyre and Barrett 1992; Roderick and Gillespie 1997; Van Gelder and Conant 1998).

Unit 6: Kanaha Park (Maui)

Unit 6 consists of approximately 25 ha (62 ac) of State land, entirely comprised of coastal land on Maui. It is bounded on the south by the Kahului Airport, on the north by the ocean, on the east by other coastal lands, and immediately to the west by the Kanaha Pond State Sanctuary. Natural features within the unit include remnant coastal dune communities. Vegetation consists primarily of mixed-species, dry coastal shrub land communities composed of native and introduced plants, including nonnative larval host plants (HHP 2000).

We have no recent and verified Blackburn's sphinx moth observations within this unit. However, the unit is considered essential to the species' conservation because it is within the geographical area occupied by the species at the time of listing and contains the moth's adult stage primary constituent elements. Furthermore, recent observations of both larvae and adults have been documented within the adjacent Kanaha Pond State Sanctuary and in the nearby Kanaha-Spreckelsville area. Although this unit is lower in elevation than areas currently containing *Nothocestrum* plants, the persistent occurrence of Blackburn's sphinx moth within the nearby Kanaha Pond State Sanctuary, and other nearby areas, indicates this site provides habitat for this area's moth population and plays an important role in the species' population dynamics. Based upon an understanding of this species and other moth species' flight capabilities and migrational needs, we believe that designation of this area contributes to the available matrix of undeveloped habitat necessary as refugia for adult Blackburn's sphinx moths migrating to other areas of existing suitable host plant habitat on Maui in order to forage or lay eggs (A. Medeiros, pers. comm. 1998; S. Montgomery, pers. comm. 2001; McIntyre and Barrett 1992; Roderick and Gillespie 1997; Van Gelder and Conant 1998).

Unit 7: Upper Kahoolawe (Kahoolawe)

Unit 7 consists of approximately 1,721 ha (4,252 ac) on State land, encompassing portions of the upper elevational contour of Kahoolawe, approximately above 305 m (1,000 ft) in elevation. Kahoolawe is located approximately 11 km (6.7 mi) south of

Maui and is approximately 11,655 ha (28,800 ac) in total land area. Natural features within the unit include the main caldera, Lua Makika, and Puu Moaulaiki. Vegetation within the unit consists primarily of mixed-species, mesic and dry grass and shrubland communities composed of primarily introduced plants and some native plant species (HHP 2000).

This unit contains a large Blackburn's sphinx moth population, which may or may not be part of the larger Maui populations. Adult host plants identified as primary constituent elements are numerous within this area. Because the unit is occupied, harbors adult native host plants, and is in close proximity to the large Maui moth population, this unit is essential for Blackburn's sphinx moth conservation and would improve dispersal and migration corridors and thus expand population recruitment potential (P. Higashino, pers. comm. 2001).

Unit 8: Puuwaawaa—Hualalai (Hawaii)

Unit 8 consists of approximately 9,954 ha (24,597 ac) on State and private land, encompassing portions of the flows and northwest slopes of Hualalai volcano on the island of Hawaii. It is bounded on the south by the Kailua-Kona region and large expanses of barren lava flows, on the north by Parker Ranch and large expanses of nonnative grass lands, to the east by the upper slopes of Hualalai volcano, and to the west by lava flows and coastal land. Natural features within the unit include Puuwaawaa cindercone and significant stands of native dry forest including the adult Blackburn's sphinx moth's nectar food plants and large numbers of *Nothocestrum breviflorum* host plants (Perry 2001). Vegetation consists primarily of mixed-species mesic and dry forest communities composed of native and introduced plants, with smaller amounts of dry coastal shrubland (HHP 2000).

This unit is essential to the species' conservation because frequent and persistent observations of both Blackburn's sphinx moth larvae and adults throughout this unit indicate that Unit 8 contains the largest population of Blackburn's sphinx moth on the island of Hawaii. In addition to providing habitat for this area's population, Unit 8 provides refugia for moths migrating to other areas of existing suitable host plant habitat. As previously discussed, given the large size and strong flight capabilities of the Blackburn's sphinx moth, support for moth population linkages requires habitat in large contiguous blocks or within a matrix of undeveloped habitat (A. Medeiros, pers. comm.1998; S. Montgomery, pers. comm. 2001; McIntyre and Barrett 1992; Roderick and Gillespie 1997; Van Gelder and Conant 1998).

Unit 9: Kamoko Flats—Puukolekole (Molokai)

Unit 9 consists of approximately 1,256 ha (3,105 ac) on State and private land, encompassing portions of the higher, yet drier portions of east Molokai. It is bounded on the north by wet forests, to the south by drier coastal land, to the east by rugged, dry gullies and valleys, and to the west by dry to mesic lowland forest. Natural features within the unit include numerous forested ridges and gullies. Vegetation consists primarily of mixed-species mesic and dry forest communities composed of native and introduced plants (HHP 2000).

This unit is part of the historical range of the moth. Unit 9 is not known to currently contain a Blackburn's sphinx moth population, but it does contain native *Nothocestrum* host plants, including *N. longifolium* and *N. latifolium* (Wood 2001a), as well as adult native host plants. Because Unit 9 contains both larval and adult native host plants and is in close proximity to the large Maui population, it is essential for Blackburn's sphinx moth conservation. It would allow the species to expand into a former part of its historical range in very close proximity to its current range on the island of Maui. Furthermore, it may facilitate dispersal and provide a flight corridor for moths eventually migrating to the island of Oahu, which is also part of its historical range.

Due to its proximity to the island of Maui where the current and presumed highest historical concentration of Blackburn's sphinx moth occurred, and because this unit contains currently and historically known dry and mesic habitats to support the larval and adult native host plants, scientists believe that the Blackburn's sphinx moth will re-establish itself on this unit over time (F. Howarth, pers. comm. 2001). Furthermore, this unit lacks some of the serious potential threats to the moth, three ant, and one wasp species (*see* Table 1). Conserving and restoring Blackburn's sphinx moth populations in multiple locations decreases the likelihood that the effect of any single alien parasite or predator or the combined pressure of such species and other threats could result in the diminished vigor or extinction of the moth. Including this unit also reduces the possibility of the species' extinction from catastrophic events impacting the existing populations on other islands. Designating critical habitat within this area on Molokai is complementary to existing and planned management activities of the landowners. The critical habitat unit lies within a larger existing conservation area to be managed for watershed conservation and the conservation of endangered and rare species. The landowners, State and Federal resource agencies, and local citizens groups are involved with these planned natural resource management activities on Molokai.

Effects of Critical Habitat Designation

Section 7(a) of the Act requires Federal agencies, including the Service, to ensure that actions they fund, authorize, or carry out do not destroy or adversely modify critical habitat. Destruction or adverse modification of critical habitat occurs when a Federal action directly or indirectly alters critical habitat to the extent that it appreciably diminishes the value of critical habitat for the conservation of the species. Individuals, organizations, States, local governments, and other non-Federal entities are affected by the designation of critical habitat when their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding.

Section 7(a) of the Act requires Federal agencies, including the Service, to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened, and with respect to its critical habitat, if any is designated or proposed. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a species proposed for listing, or result in destruction or adverse modification of proposed critical habitat. Conference reports provide conservation recommendations to assist the action agency in eliminating conflicts that may be caused by the proposed action. The conservation measures in a conference report are advisory. We may issue a formal conference report, if requested by the Federal action agency. Formal conference reports include an opinion that is prepared according to 50 CFR 402.14, as if the species was listed or critical habitat designated. We may adopt the formal conference report as the biological opinion when the species is listed or critical habitat designated, if no substantial new information or changes in the action alter the content

and conclusion(s) of the opinion (50 CFR 402.10(d)).

If a species is listed or critical habitat is designated, section 7(a)(2) of the Act requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal action agency must enter into consultation with us. Through this consultation, the action agency would ensure that the actions do not destroy or adversely modify critical habitat.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions under certain circumstances, including instances where critical habitat is subsequently designated and the Federal agency has retained discretionary involvement, or control has been retained or is authorized by law. Consequently, some Federal agencies may request reinitiation of consultation or conferencing with us on actions for which formal consultation has been completed.

If we issue a biological opinion concluding that a project is likely to result in the destruction or adverse modification of critical habitat, we also provide ''reasonable and prudent alternatives'' to the project, if any are identifiable. Reasonable and prudent alternatives are defined at 50 CFR 402.02 as alternative actions identified during consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent with the scope of the Federal agency's legal authority and jurisdiction, which are economically and technologically feasible, and which the Director believes would avoid destruction or adverse modification of critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project.

Federal activities that may affect Blackburn's sphinx moth or its critical habitat will require consultation under section 7 of the Act. Activities on private or State lands requiring a permit from a Federal agency, such as a permit from the U.S. Army Corps of Engineers (Corps) under section 404 of the Clean Water Act (33 U.S.C. 1344 *et seq.*), the Department of Housing and Urban Development, or a section 10(a)(1)(B) permit from us; or some other Federal action (funding or authorization from the Federal Highway Administration, Federal Aviation Administration (FAA), Federal Emergency Management Agency (FEMA), Environmental Protection Agency (EPA), or Department of Energy); regulation of airport improvement activities by the FAA; and construction of communication sites licensed by the Federal Communications Commission (FCC)) will also continue to be subject to the section 7 consultation process. Federal actions not affecting listed species or critical habitat, and actions on non-Federal lands that are not federally funded, authorized, or permitted do not require Section 7 consultation.

Section 4(b)(8) of the Act requires us to briefly describe and evaluate in any proposed or final regulation that designates critical habitat those activities involving a Federal action that may adversely modify such habitat or that may be affected by such designation. We note that such activities may also jeopardize the continued existence of the species.

Activities that, when carried out, funded, or authorized by a Federal agency, may directly or indirectly destroy or adversely modify critical habitat include, but are not limited to:

(1) Overgrazing; maintenance of feral ungulates; clearing or cutting of native live trees and shrubs, whether by burning or mechanical, chemical, or other means (*e.g.*, woodcutting, bulldozing, construction, road building, mining, herbicide application); introducing or enabling the spread of nonnative species; and taking actions that pose a risk of fire;

(2) Recreational activities that appreciably degrade vegetation;

(3) Introducing or encouraging the spread of nonnative plant species into critical habitat units; and

(4) Importation of nonnative species for research, agriculture, and aquaculture, and the release of biological control agents that would have unanticipated effects on the listed species and the primary constituent elements of its habitat.

If you have questions regarding whether specific activities will likely constitute adverse modification of critical habitat, contact the Field Supervisor, Pacific Islands Ecological Services Field Office (*see* **ADDRESSES** section). Requests for copies of the regulations on listed plants and animals, and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Branch of Endangered Species/Permits, 911 NE. 11th Ave., Portland, OR 97232–4181 (telephone 503/231–2063; facsimile 503/231–6243).

Required Determinations

Regulatory Planning and Review

In accordance with Executive Order 12866, the Office of Management and Budget (OMB) has determined that this critical habitat designation is not a significant regulatory action. This rule will not have an annual economic effect of $100 million or more or adversely affect any economic sector, productivity, competition, jobs, the environment, or other units of government. This designation will not create inconsistencies with other agencies' actions or otherwise interfere with an action taken or planned by another agency. It will not materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients. Finally, this designation will not raise novel legal or policy issues. Accordingly, OMB has not formally reviewed this final critical habitat designation.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA) (as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entitiesm, *i.e.*, small businesses, small organizations, and small governmental jurisdictions. However, no regulatory flexibility analysis is required if the head of the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

Based on the information in our economic analysis (DEA and Addendum), we are certifying that the critical habitat designation for Blackburn's sphinx moth will not have a significant effect on a substantial number of small entities because a substantial number of small entities are not affected by the designation.

Small entities include small organizations, such as independent nonprofit organizations, and small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents, as well as small businesses. The RFA/SBREFA requires

that agencies use the Small Business Administration's definition of ''small business'' that has been codified at 13 CFR 121.201. Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. The RFA/SBREFA defines ''small governmental jurisdiction'' as the government of a city, county, town, school district, or special district with a population of less than 50,000. By this definition, neither Maui nor Hawaii County is a small governmental jurisdiction because both counties had populations exceeding 50,000 in 2000. Although certain State agencies, such as the DLNR, may be affected by this critical habitat designation, State governments are not considered small governments, for the purposes of the RFA. SBREFA further defines ''small organization'' as any not for profit enterprise that is independently owned and operated and is not dominant in its field.

The RFA/SBREFA does not explicitly define either ''substantial number'' or ''significant economic impact.'' Consequently, to assess whether a ''substantial number'' of small entities is affected by this designation. This analysis considers the relative number of small entities likely to be impacted in an area. In addition, Federal courts and Congress have indicated that an RFA/SBREFA is properly limited to impacts to entities directly subject to the requirements of the regulation (Service 2002). Therefore, entities not directly regulated by the listing or critical habitat designation are not considered in this section of the analysis.

The primary projects and activities that might be affected by the designation that could affect small entities include ranching operations and conservation projects. Our DEA found that the only small or potentially small entities that could be impacted by the listing of Blackburn's sphinx moth and critical habitat designation were: (1) Ka Ohana O Kahikinui on Maui (participation in residential loan program; conservation activities; development of water collection system); (2) one to two lending institutions on Maui (loans for Department of Hawaiian Home Lands residential development); and (3) one farmer or rancher on Maui, Molokai, or the island of Hawaii (participation in farm loan programs). The DEA concluded that these entities did not represent a substantial number of small entities in their respective fields or industries. Because estimated section 7 costs associated with possible lessee participation in the Housing and Urban Development loan insurance and guarantee program are no longer expected, the Addendum estimates that the one to two lending institutions on Maui would no longer be impacted by critical habitat designation, and no new small entities were identified as being potentially impacted. Thus, the Addendum concluded that the critical habitat designation would not have a significant economic impact on a substantial number of small entities in Hawaii.

These conclusions are supported by the history of consultations on the Blackburn's sphinx moth. Since the species was listed in February 2000, there have been no formal section 7 consultations and only five informal section 7 consultations concerning the species, specifically on the island of Kahoolawe and entirely involved the Department of the Navy. The Navy is not a small entity.

Even where the requirements of section 7 might apply due to critical habitat, based on our experience with section 7 consultations for all listed species, virtually all projects—including those that, in their initial proposed form, would result in jeopardy or adverse modification determinations under section 7—can be implemented successfully with, at most, the adoption of reasonable and prudent alternatives. These measures by definition must be economically feasible and within the scope of authority of the Federal agency involved in the consultation.

For these reasons, we are certifying that the designation of critical habitat for the Blackburn's sphinx moth will not have a significant economic impact on a substantial number of small entities. Therefore, a regulatory flexibility analysis is not required.

Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 804(2))

Under the Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 801 *et seq.*), this rule is not a major rule. Our detailed assessment of the economic effects of this designation are described in the DEA and final addendum to the economic analysis. Based on the effects identified in these documents, we believe that this rule will not have an effect on the economy of $100 million or more, will not cause a major increase in costs or prices for consumers, and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises. Refer to the final addendum to the economic analysis for a discussion of the effects of this determination.

Executive Order 13211

On May 18, 2001, the President issued Executive Order 13211, on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. Although this rule is a significant regulatory action under Executive Order 12866, it is not expected to significantly affect energy production supply and distribution facilities because no energy production, supply, and distribution facilities are included within designated critical habitat. Further, for the reasons described in the economic analysis, we do not believe the designation of critical habitat for Blackburn's sphinx moth on the islands of Hawaii, Kahoolawe, Maui, and Molokai will affect future energy production. Therefore, this action is not a significant energy action and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.)*

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*):

(a) For reasons described in the economic analysis, this rule will not produce a Federal mandate on State or local governments or the private sector of $100 million or greater in any year, that is, it is not a ''significantly regulatory action'' under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no direct obligations on State or local governments.

(b) This rule will not ''significantly or uniquely'' affect small governments so a Small Government Agency Plan is not required. Small governments will not be affected unless they propose an action requiring Federal funds, permits, or other authorizations. Any such activities will require that the Federal agency ensure that the action will not adversely modify or destroy designated critical habitat.

Takings

In accordance with Executive Order 12630 (''Government Actions and Interference with Constitutionally Protected Private Property Rights''), we have analyzed the potential takings implications of designating critical habitat for Blackburn's sphinx moth on

the islands of Hawaii, Kahoolawe, Maui, and Molokai in a takings implication assessment. The takings implications assessment concludes that this final rule does not pose significant takings implications.

Federalism

In accordance with Executive Order 13132, this final rule does not have significant federalism effects or impose substantial direct compliance costs on State and local governments. This designation requires Federal agencies to ensure that their actions do not adversely modify critical habitat; it does not impose direct obligations on State or local governments. A federalism assessment is not required. In keeping with Department of Interior policy, we requested information from appropriate State agencies in Hawaii. The economic analysis does address possible impacts to State programs (*e.g.* hunting, airport operations) that may receive Federal funding. However, it does not conclude that there will be substantial costs to those programs due to the designation of critical habitat.

The designations may have some benefit to these governments, in that the areas essential to the conservation of the moth are more clearly defined, and the primary constituent elements of the habitat necessary to the survival of this species are specifically identified. While this definition and identification do not alter where and what federally sponsored activities may occur, they may assist these local governments in long-range planning, rather than waiting for case-by-case section 7 consultation to occur.

Civil Justice Reform

In accordance with Executive Order 12988, the Department of the Interior's Office of the Solicitor has determined that this rule does not unduly burden the judicial system and does meet the requirements of sections 3(a) and 3(b)(2) of the Order. We have designated critical habitat in accordance with the provisions of the Endangered Species Act. The rule uses standard property descriptions and identifies the primary constituent elements within the designated areas to assist the public in understanding the habitat needs of Blackburn's sphinx moth.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain any information collection requirements for which OMB approval under the Paperwork Reduction Act is required. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number.

National Environmental Policy Act

We have determined that we do not need to prepare an Environmental Assessment and/or an Environmental Impact Statement as defined by the National Environmental Policy Act of 1969 in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act. We published a notice outlining our reason for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This determination does not constitute a major Federal action significantly affecting the quality of the human environment.

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951) Executive Order 13175 and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. We have determined that there are no Tribal lands essential for the conservation of the Blackburn's sphinx moth. Therefore, designation of critical habitat for this species does not involve any Tribal lands.

References Cited

A complete list of all references cited in this final rule is available upon request from the Pacific Islands Fish and Wildlife Office (*see* **ADDRESSES** section).

Authors

The primary author of this final rule is Mike Richardson, Pacific Islands Fish and Wildlife Office (*see* **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

■ Accordingly, we hereby amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

■ 2. Amend § 17.11(h) by revising the entry for ''Moth, Blackburn's Sphinx'' under INSECTS in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habita	Special trules
Common name	Scientific name						
*	*	*	*	*	*	*	
INSECTS							
*	*	*	*	*	*	*	
Moth, Blackburn's sphinx.	*Manduca blackburni*	U.S.A. (HI)	NA	E	682	17.95(I)	NA
*	*	*	*	*	*	*	

■ 3. Amend § 17.95(i) by adding critical habitat for the Blackburn's sphinx moth (*Manduca blackburni*), in the same alphabetical order as this species occurs in § 17.11(h), to read as follows:

§ 17.95 Critical habitat-fish and wildlife.

* * * * *

(i) *Insects.*

* * * * *

Blackburn's Sphinx Moth (*Manduca blackburni*)

(1) Critical habitat units are depicted for the Hawaiian islands of Maui, Kahoolawe, Hawaii, and Molokai on the maps below.

(2) The primary constituent elements of critical habitat for Blackburn's sphinx moth include specific habitat components identified as essential for the primary biological needs of foraging, sheltering, maturation, dispersal, breeding, and egg-laying.

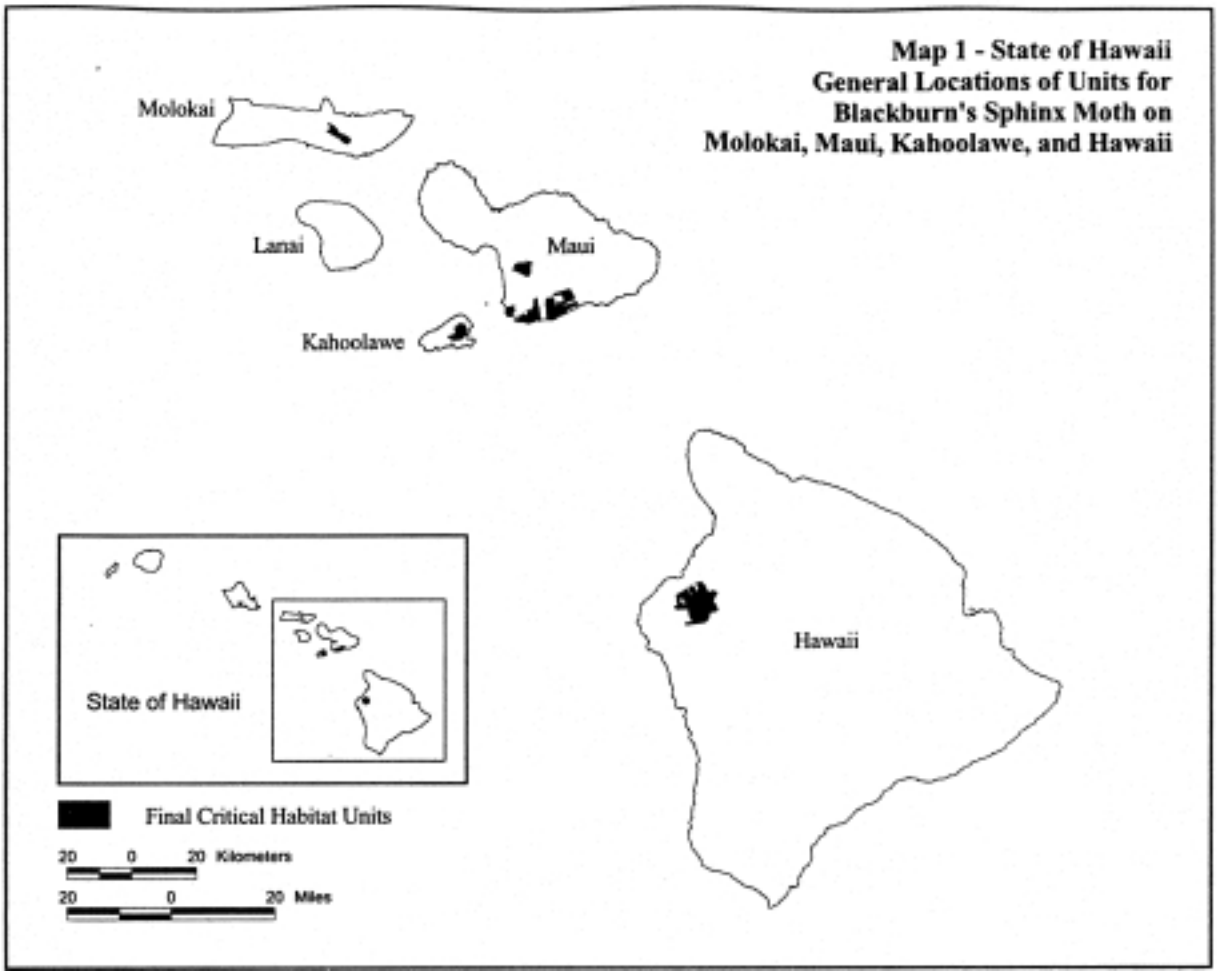
(i) Based on our current knowledge of the species, the primary constituent elements required by Blackburn's sphinx moth larvae for foraging and maturation are two larval host plant species in the endemic genus *Nothocestrum* (*N. breviflorum* and *N. latifolium*) and the habitats that support these plants, *i.e.*, dry and mesic habitats between the elevations of sea level and 1,525 m (5,000 ft) that receive between 25 and 250 cm (10 and 100 in) of annual precipitation.

(ii) Based on our current knowledge of the species, the primary constituent elements required by Blackburn's sphinx moth adults for foraging, sheltering, dispersal, breeding, and egg production are native nectar-supplying plants, including, but not limited to, *Ipomoea* spp., *Capparis sandwichiana,* and *Plumbago zeylanica,* and the habitats that support these plants, *i.e.*, dry and mesic habitats between the elevations of sea level and 1,525 m (5,000 ft) that receive between 25 and 250 cm (10 and 100 in) of annual precipitation.

(3) Existing manmade features and structures within the boundaries of the mapped areas do not contain one or more of the primary constituent elements described for the species in paragraph (2) of this section, and therefore, are not included in the critical habitat designations. These features include, but are not limited to: buildings; roads; aqueducts and other water system features such as pumping stations, irrigation ditches, pipelines, siphons, tunnels, water tanks, gauging stations (section in a stream channel equipped with facilities for obtaining streamflow data), intakes, and wells; telecommunications towers and associated structures and equipment; electrical power transmission lines and associated rights-of-way; radars; telemetry antennas; missile launch sites; arboreta and gardens; heiau (indigenous places of worship or shrines); airports; other paved areas; lawns; and other rural residential landscaped areas.

(4) Critical habitat units are described below. Coordinates are in UTM Zone 4 with units in meters using North American Datum of 1983 (NAD83). The following index map shows the general locations of the 9 critical habitat units designated on the islands of Hawaii, Kahoolawe, Maui, and Molokai.

(i) Note: Map 1—State of Hawaii General Locations of Units for Blackburn's Sphinx Moth on Molokai, Maui, Kahoolawe, and Hawaii follows:



(ii) Unit 1: Island of Maui, Puu O Kali (1,604 ha; 3,965 ac):

(A) Unit 1 consists of the following 38 boundary points: Start at 770230, 2293671; 769969, 2293640; 769876, 2293794; 769523, 2293779; 769444, 2293784; 769146, 2293904; 769358, 2294451; 769492, 2294471; 769569, 2294563; 770123, 2294379; 770384, 2294317; 770707, 2294517; 770169, 2294794; 769629, 2295149; 769732, 2295410; 770032, 2295219; 769985, 2295371; 770360, 2295328; 769892, 2295671; 770362, 2295705; 770578, 2295954; 771492, 2296086; 772138, 2296102; 772522, 2296179; 772876, 2295933; 773384, 2295733; 773324, 2296764; 775265, 2296040; 775041, 2295484; 774484, 2295757; 774033, 2294844; 774654, 2294538; 774448, 2294006; 774392, 2292779; 773825, 2291760; 772032, 2292639; 770772, 2293255; 770524, 2293353; return to starting point.

(B) **Note:** Unit 1 is depicted below on Map 2—Units 1, 2, 3, and 4—Island of Maui.

(iii) Unit 2: Island of Maui, Cape Kinau (603 ha; 1,490 ac):

(A) Unit 2 consists of the following 36 boundary points: 769419, 2281688; 769716, 2281856; 769854, 2281648; 769726, 2281351; 769548, 2281173; 769433, 2280683; 769312, 2280406; 769251, 2280342; 769175, 2280353; 769073, 2280442; 768954, 2280466; 768791, 2280406; 768658, 2280329; 768621, 2280282; 768645, 2279874; 768737, 2279820; 767046, 2281800; 767136, 2281768; 767208, 2281837; 767139, 2281940; 767151, 2281994; 767136, 2282020; 767607, 2282308; 767710, 2282266; 767837, 2282318; 767857, 2282291; 768160, 2282410; 769380, 2282944; 769746, 2282588; 769429, 2282400; 769103, 2282123; 768598, 2281510; 768687, 2281391; 768737, 2281399; 768836, 2281460. 768738, 2279820. Coast.

(B) **Note:** Unit 2 is depicted below on Map 2—Units 1, 2, 3, and 4—Island of Maui.

(iv) Unit 3: Island of Maui, Kanaio (2,420 ha; 5,981 ac):

(A) Unit 3 consists of the following 45 boundary points: 777366, 2282219; 777421, 2281595; 777453, 2281235; 777531, 2280334; 777588, 2279661; 777719, 2278166; 770402, 2278173; 770445, 2278268; 770936, 2279194; 771208, 2279714; 771289, 2279691; 771211, 2279314; 771211, 2278906; 771368, 2278922; 771525, 2279173; 771854, 2279424; 772011, 2279707; 772231, 2279974; 772357, 2280335; 772451, 2280445; 772514, 2280351; 772561, 2280068; 772687, 2279848; 772938, 2279801; 773221, 2279817; 773425, 2280021; 773676, 2280335; 773676, 2280665; 773888, 2280993; 773606, 2281355; 774253, 2281430; 774897, 2280433; 775340, 2281119; 774662, 2281499; 775105, 2281701; 775435, 2282376; 775590, 2284264; 776004, 2284678; 776020, 2285055; 776484, 2284998; 776553, 2285169; 776691, 2285141; 776878, 2283402; 777021, 2282206; 777227, 2278017. Coast.

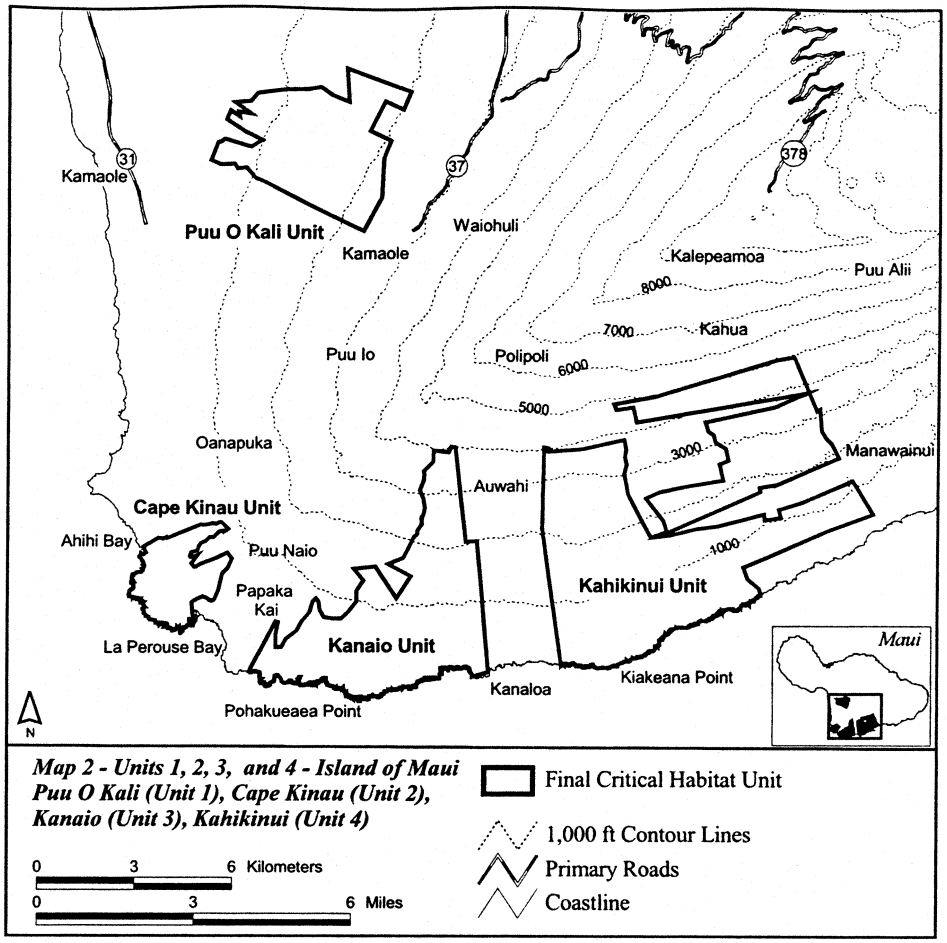
(B) Unit excludes an area (1 ha; 2 ac) consisting of the following 6 boundary points: 771887, 2277914; 771944, 2277910; 771986, 2277995; 771948, 2277989; 771909, 2277980; 771870, 2277975.

(C) **Note:** Unit 3 is depicted below on Map 2—Units 1, 2, 3, and 4—Island of Maui.

(v) Unit 4: Island of Maui, Kahikinui (4,799 ha; 11,859 ac):

(A) Unit 4 consists of the following 79 boundary points: 786068, 2283893; 786089, 2283760; 782956, 2282353; 783312, 2282399; 784167, 2282606; 784764, 2282682; 785521, 2282878; 786198, 2283068; 786227, 2282882; 786706, 2282953; 786657, 2283206; 787388, 2283424; 787555, 2283500; 788907, 2284087; 789388, 2283321; 789534, 2283053; 788185, 2282559; 786399, 2281761; 785563, 2281400; 785715, 2281039; 786057, 2280754; 786112, 2280548; 779950, 2278500; 779720, 2280135; 779703, 2280237; 779617, 2280887; 779412, 2282307; 779402, 2282377; 779372, 2282585; 779368, 2282602; 779376, 2282933; 779427, 2285142; 779549, 2285133; 779550, 2285007; 780604, 2285092; 781898, 2285373; 781956, 2285061; 781923, 2284848; 781966, 2284607; 781902, 2284320; 782032, 2283672; 782491, 2282783; 782731, 2282340; 783230, 2282514; 783112, 2282850; 782587, 2283565; 782996, 2283744; 783721, 2283912; 784941, 2284106; 784823, 2284611; 785088, 2284724; 785012, 2285109; 784719, 2285271; 784639, 2285526; 784482, 2285613; 784385, 2285910; 786498, 2286367; 787288, 2286710; 787415, 2286765; 787506, 2286804; 787311, 2286772; 782285, 2285909; 782162, 2286366; 781651, 2286291; 781569, 2286457; 782827, 2286695; 786589, 2287817; 787091, 2287913; 787800, 2286248; 787893, 2286297; 787957, 2285636; 788105, 2285388; 788261, 2285257; 788481, 2284803; 788363, 2284742; 786517, 2283943; 786510, 2283966; 786068, 2283893; 779965, 2278394. Coast.

(B) **Note:** Unit 4 is depicted on Map 2—Units 1, 2, 3, and 4—Island of Maui, which follows:



(vi) Unit 5: Island of Maui, Kanaha Pond (56 ha; 139 ac):

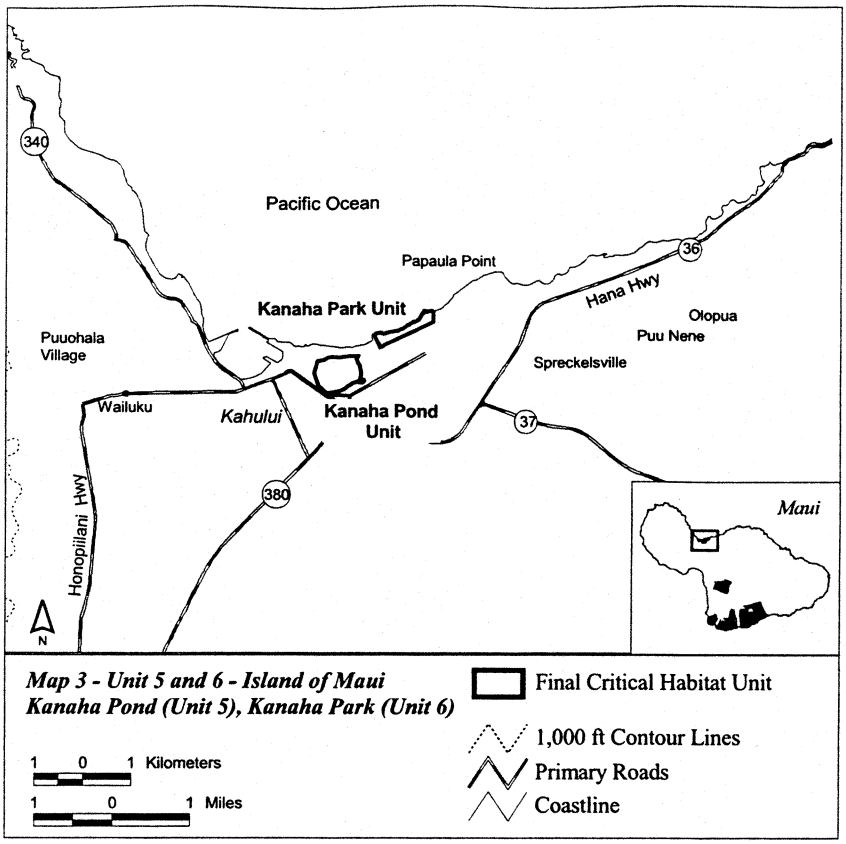
(A) Unit 5 consists of the following 35 boundary points: Start at 764695, 2312624; 764849, 2312615; 765062, 2312636; 765174, 2312639; 765226, 2312636; 765201, 2312573; 765221, 2312534; 765223, 2312502; 765259, 2312452; 765291, 2312304; 765287, 2312260; 765291, 2312223; 765281, 2312190; 765356, 2312144; 765352, 2312121; 765325, 2312090; 765284, 2312093; 765213, 2312118; 765183, 2312109; 765157, 2312091; 765106, 2312075; 765069, 2312044; 765036, 2312036; 764954, 2311971; 764872, 2311927; 764845, 2311912; 764588, 2311880; 764530, 2311946; 764474, 2311988; 764424, 2312038; 764390, 2312140; 764336, 2312293; 764397, 2312539; 764542, 2312565; 764615, 2312613; return to starting point.

(B) **Note:** Unit 5 is depicted below on Map 3—Units 5 and 6—Island of Maui.

(vii) Unit 6: Island of Maui, Kanaha Park (25 ha; 62 ac):

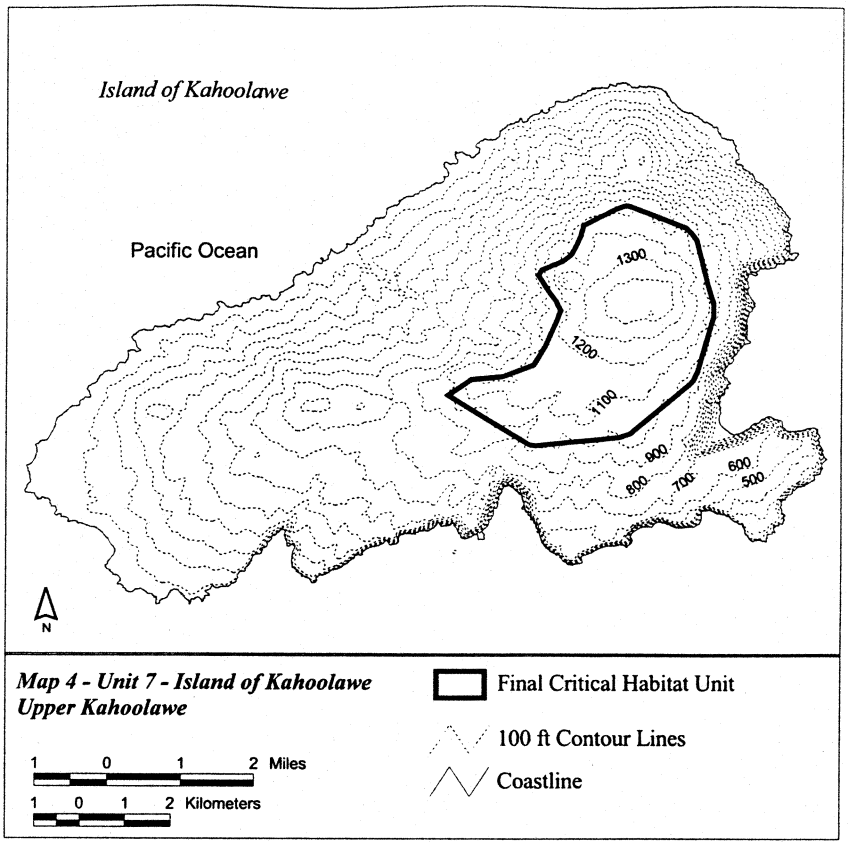
(A) Unit 6 consists of the following 7 boundary points: 766783, 2313583; 766781, 2313351; 766330, 2313141; 765776, 2312874; 765717, 2312838; 765689, 2312823; 765557, 2313073. Coast.

(B) **Note:** Unit 6 is depicted on Map 3—Units 5 and 6—Island of Maui, which follows:



(A) Unit 7 consists of the following 39 boundary points: Start at 751848, 2276600; 751944, 2276801; 752021, 2277051; 752708, 2277402; 752817, 2277444; 752922, 2277482; 753039, 2277468; 754266, 2276996; 754390, 2276868; 754486, 2276715; 754758, 2275711; 754871, 2275319; 754880, 2275141; 754868, 2275021; 754822, 2274844; 754523, 2273789; 754438, 2273635; 754364, 2273546; 754213, 2273418; 753057, 2272446; 752825, 2272362; 750995, 2272184; 750869, 2272206; 750787, 2272247; 749069, 2273302; 749575, 2273659; 750287, 2273729; 750943, 2273970; 751205, 2274403; 751431, 2274927; 751475, 2275037; 751531, 2275180; 751447, 2275330; 751428, 2275366; 751291, 2275543; 751032, 2275938; 751109, 2276062; 751570, 2276254; 751752, 2276408; return to starting point.

(B) **Note:** Unit 7 is depicted on Map 4—Unit 7—Island of Kahoolawe, which follows:



(ix) Unit 8: Island of Hawaii, Puuwaawaa—Hualalai (9,954 ha; 24,598 ac):

(A) Unit 8 consists of the following 449 boundary points: Start at 193748, 2193379; 193979, 2193518; 194022, 2193428; 194091, 2193386; 194109, 2193303; 194145, 2193281; 194185, 2193225; 194212, 2193188; 194225, 2193213; 194201, 2193260; 194232, 2193325; 194227, 2193356; 194266, 2193381; 194290, 2193366; 194306, 2193379; 194301, 2193431; 194281, 2193478; 194292, 2193504; 194286, 2193538; 194291, 2193598; 194328, 2193648; 194331, 2193666; 194320, 2193710; 194969, 2194077; 195027, 2194069; 195065, 2194098; 195121, 2194107; 195172, 2194152; 195231, 2194087; 195235, 2194013; 195256, 2193957; 195324, 2193909; 195378, 2193840; 195441, 2193804; 195564, 2193455; 195558, 2193407; 195590, 2193322; 195588, 2193245; 195641, 2193182; 195659, 2193134; 195645, 2193064; 195682, 2192983; 195722, 2192963; 195793, 2192836; 195838, 2192773; 195829, 2192664; 195844, 2192499; 195907, 2192445; 196009, 2192213; 196079, 2192144; 196061, 2192063; 196077, 2191999; 196121, 2191888; 196184, 2191891; 196196, 2191837; 196250, 2191837; 196287, 2191749; 196280, 2191681; 196331, 2191672; 196361, 2191560; 196379, 2191428; 196414, 2191446; 196473, 2191524; 196497, 2191624; 196494, 2191708; 196593, 2191768; 196656, 2191837; 196644, 2191885; 196593, 2192093; 196576, 2192195; 196596, 2192288; 196581, 2192409; 196566, 2192451; 196506, 2192484; 196397, 2192655; 196367, 2192770; 196427, 2192764; 196452, 2192703; 196581, 2192577; 196614, 2192547; 196623, 2192577; 196605, 2192634; 196608, 2192685; 196679, 2192667; 196749, 2192610; 196804, 2192476; 196831, 2192436; 196879, 2192403; 196885, 2192466; 196815, 2192586; 196717, 2192687; 196614, 2192809; 196241, 2193037; 196094, 2193227; 196003, 2193494; 195985, 2193759; 196088, 2193858; 195949, 2194099; 195958, 2194379; 195865, 2194469; 195811, 2194559; 196050, 2194687; 196076, 2194653; 196055, 2194610; 196109, 2194511; 196184, 2194505; 196223, 2194361; 196256, 2194337; 196322, 2194285; 196334, 2194171; 196370, 2194174; 196348, 2194291; 196379, 2194331; 196367, 2194427; 196363, 2194508; 196372, 2194578; 196427, 2194610; 196385, 2194670; 196314, 2194718; 196304, 2194841; 196831, 2195161; 196944, 2195021; 196930, 2194959; 197092, 2194830; 197104, 2194773; 197179, 2194752; 197273, 2194622; 197279, 2194550; 197361, 2194467; 197477, 2194325; 197573, 2194252; 197613, 2194177; 197654, 2194115; 197640, 2194033; 197654, 2193943; 197697, 2193753; 197750, 2193692; 197778, 2193488; 197871, 2193374; 197922, 2193401; 197995, 2193392; 198304, 2193109; 198362, 2193103; 198518, 2192944; 198584, 2192854; 198620, 2192761; 198680, 2192715; 198716, 2192658; 198731, 2192586; 198801, 2192589; 198879, 2192547; 198921, 2192493; 199051, 2192352; 199101, 2192412; 199177, 2192324; 199171, 2192201; 199246, 2192141; 199252, 2192243; 199294, 2192252; 199303, 2192291; 199225, 2192348; 199243, 2192397; 199186, 2192439; 199156, 2192529; 199084, 2192566; 199047, 2192643; 198948, 2192736; 198956, 2192786; 198949, 2192835; 198931, 2192888; 198913, 2192924; 198819, 2192954; 198760, 2192979; 198741, 2193028; 198777, 2193070; 198746, 2193098; 198718, 2193126; 198730, 2193180; 198683, 2193290; 198609, 2193325; 198679, 2193472; 198648, 2193542; 198669, 2193598; 198623, 2193633; 198602, 2193685; 198553, 2193675; 198480, 2193748; 198442, 2193839; 198494, 2193857; 198550, 2193860; 198819, 2193594; 198819, 2193514; 198882, 2193479; 198872, 2193388; 198872, 2193252; 198861, 2193199; 198844, 2193143; 198935, 2193063; 198981, 2193027; 199010, 2192968; 199103,

2193492; 199103, 2193552; 199015, 2193608; 198931, 2193619; 198910, 2193717; 198753, 2193867; 198735, 2193951; 198805, 2193972; 198889, 2193941; 198942, 2193853; 199005, 2193794; 199050, 2193829; 199001, 2193880; 199029, 2193930; 199092, 2193962; 199110, 2194004; 199025, 2194133; 199012, 2194241; 198896, 2194308; 198861, 2194399; 198799, 2194485; 198862, 2194479; 198938, 2194378; 199015, 2194329; 198987, 2194392; 198934, 2194434; 198931, 2194472; 198798, 2194560; 198795, 2194672; 198749, 2194749; 198623, 2194860; 198553, 2194937; 198550, 2195004; 198637, 2195060; 198683, 2195074; 198746, 2195175; 198714, 2195256; 198707, 2195340; 198588, 2195399; 198497, 2195417; 198402, 2195429; 198344, 2195490; 198302, 2195511; 198274, 2195563; 198179, 2195584; 198172, 2195658; 198127, 2195703; 198641, 2195878; 198662, 2195829; 198714, 2195780; 198732, 2195665; 198809, 2195633; 198970, 2195626; 199047, 2195549; 199075, 2195469; 199141, 2195427; 199087, 2195235; 199101, 2195127; 199124, 2194955; 199208, 2194840; 199267, 2194675; 199270, 2194567; 199260, 2194504; 199263, 2194437; 199310, 2194460; 199347, 2194479; 199306, 2194541; 199326, 2194591; 199424, 2194595; 199508, 2194525; 199522, 2194441; 199582, 2194392; 199598, 2194329; 199643, 2194295; 199662, 2194406; 199599, 2194462; 199596, 2194588; 199515, 2194853; 199368, 2195011; 199260, 2195319; 199312, 2195434; 199235, 2195476; 199274, 2195696; 199169, 2195847; 199138, 2195938; 199071, 2196039; 199663, 2196234; 199977, 2195921; 200985, 2194989; 201320, 2194454; 201268, 2194305; 201289, 2194176; 201150, 2193708; 201809, 2193212; 202487, 2192751; 202713, 2192557; 202794, 2192559; 203007, 2192869; 203088, 2192979; 203136, 2192967; 203139, 2192921; 203197, 2192911; 203224, 2192943; 203218, 2192991; 203264, 2193014; 203275, 2193130; 203278, 2193165; 203253, 2193224; 203277, 2193250; 203296, 2193248; 203321, 2193200; 203355, 2193261; 203340, 2193353; 203398, 2193434; 203487, 2193372; 203534, 2193296; 203580, 2193267; 203611, 2193247; 203631, 2193197; 203661, 2193126; 203650, 2193032; 203644, 2192994; 203649, 2192943; 203665, 2192930; 203692, 2192935; 203681, 2193005; 203695, 2193038; 203743, 2193045; 203751, 2193024; 203738, 2192991; 203747, 2192970; 203800, 2192948; 203810, 2192905; 203819, 2192867; 203833, 2192838; 203878, 2192830; 203916, 2192790; 203944, 2192724; 203935, 2192680; 203951, 2192655; 203968, 2192628; 203952, 2192587; 203978, 2192535; 203975, 2192477; 203992, 2192466; 204025, 2192444; 204044, 2192404; 204086, 2192392; 204133, 2192395; 204170, 2192417; 204186, 2192474; 204162, 2192528; 204130, 2192602; 204129, 2192641; 204081, 2192714; 204046, 2192717; 204022, 2192755; 204021, 2192835; 204057, 2192840; 204076, 2192827; 204105, 2192829; 204151, 2192846; 204218, 2192835; 204283, 2192808; 204311, 2192754; 204327, 2192655; 204350, 2192684; 204434, 2192709; 204459, 2192700; 204478, 2192684; 204469, 2192614; 204482, 2192593; 204485, 2192570; 204478, 2192547; 204485, 2192512; 204523, 2192529; 204540, 2192511; 204553, 2192479; 204294, 2191977; 203325, 2189871; 203670, 2189403; 203884, 2188867; 203876, 2188804; 204461, 2186966; 204241, 2186814; 203491, 2186573; 202905, 2186615; 201914, 2186332; 201935, 2186229; 201876, 2186192; 201969, 2186029; 201914, 2185947; 201962, 2185871; 201921, 2185754; 201866, 2185830; 201776, 2185816; 201838, 2185534; 201270, 2183971; 200424, 2183478; 194641, 2182859; 194391, 2182952; 194378, 2183030; 194326, 2183157; 194456, 2183246; 194375, 2183319; 194389, 2183392; 194641, 2183400; 195006, 2183522; 195441, 2183574; 195719, 2183591; 196066, 2183591; 196362, 2183670; 196372, 2183812; 195923, 2185051; 195805, 2185370; 195527, 2186175; 195324, 2186794; 195333, 2187189; 195544, 2187388; 195515, 2187690; 195450, 2187775; 193517, 2187814; 192035, 2187735; 191436, 2188145; 191395, 2188201; 191330, 2188228; 191183, 2188413; 191053, 2188549; 192020, 2188888; 192202, 2189030; 192137, 2189101; 192046, 2189432; 191945, 2189652; 191926, 2189817; 192000, 2189918; 191994, 2190055; 192009, 2190194; 191926, 2190322; 191954, 2190387; 191972, 2190616; 191961, 2190800; 191953, 2190938; 191917, 2191094; 191981, 2191296; 191943, 2191461; 191923, 2191548; 191871, 2191672; 191850, 2191864; 191834, 2192269; return to starting point.

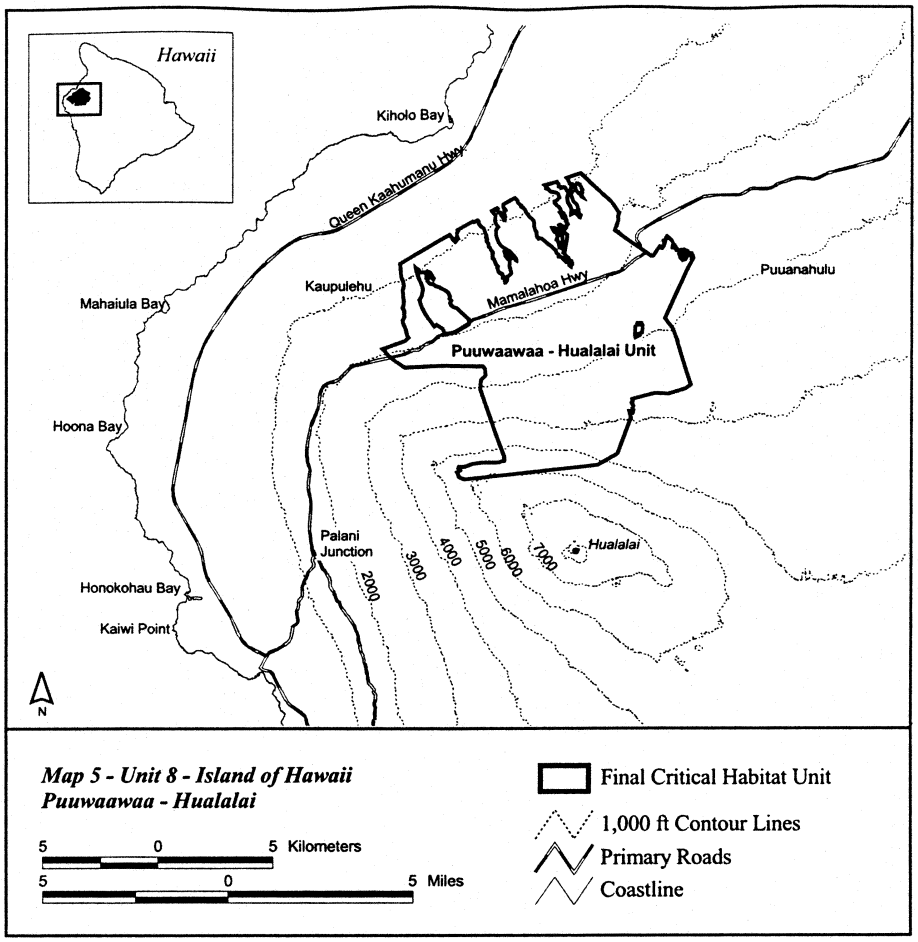
(B) This unit excludes three areas:

(*1*) Unit excludes an area (292 ha; 723 ac) consisting of the following 53 boundary points: Start at 194866, 2189663; 194567, 2189462; 194355, 2189326; 194325, 2189306; 194187, 2189261; 193786, 2189183; 193790, 2189211; 193677, 2189413; 193430, 2189605; 193325, 2189528; 192941, 2190012; 192773, 2190361; 192668, 2190673; 192763, 2190854; 192807, 2191149; 192721, 2191436; 192600, 2191671; 192527, 2191928; 192513, 2192089; 192642, 2191999; 192658, 2191915; 192697, 2191881; 192913, 2191886; 193004, 2191923; 193133, 2191855; 193180, 2191784; 193280, 2191621; 193278, 2191563; 193175, 2191653; 193109, 2191763; 193075, 2191789; 192949, 2191779; 192960, 2191622; 193028, 2191556; 193012, 2191490; 193102, 2191393; 193291, 2191346; 193364, 2191272; 193540, 2191230; 193782, 2191099; 193918, 2190994; 193958, 2190933; 193989, 2190799; 193984, 2190718; 194048, 2190643; 194008, 2190547; 194039, 2190466; 194149, 2190358; 194304, 2190298; 194449, 2190177; 194695, 2189967; 194808, 2189833; 194848, 2189683; return to starting point.

(*2*) Unit excludes an area (15 ha; 38 ac) consisting of the following 12 boundary points: Start at 202034, 2189562; 202141, 2189566; 202153, 2189649; 202308, 2189645; 202298, 2189564; 202339, 2189548; 202329, 2189219; 202193, 2189187; 202230, 2189088; 202042, 2189024; 202020, 2189151; 202024, 2189554; return to starting point.

(*3*) Unit excludes an area (11 ha; 28 ac) consisting of the following 23 boundary points: Start at 199447, 2195793; 199533, 2195796; 199635, 2195736; 199639, 2195696; 199701, 2195643; 199708, 2195591; 199713, 2195537; 199743, 2195499; 199737, 2195444; 199746, 2195368; 199725, 2195312; 199732, 2195273; 199753, 2195207; 199772, 2195162; 199732, 2195181; 199706, 2195245; 199646, 2195283; 199615, 2195345; 199573, 2195368; 199509, 2195416; 199449, 2195478; 199437, 2195611; 199430, 2195734; return to starting point.

(C) **Note:** Unit 8 is depicted on Map 5–Unit 8—Island of Hawaii, which follows:



(x) Unit 9: Island of Molokai, Kamoko Flats—Puukolekole (1,256 ha; 3,105 ac):

(A) Unit 9 consists of the following 170 boundary points: Start at 713960, 2337883; 713787, 2337815; 713641, 2337737; 713587, 2337686; 713542, 2337635; 713525, 2337608; 713514, 2337604; 713488, 2337574; 713275, 2337497; 713260, 2337442; 713302, 2337415; 713444, 2337400; 713651, 2337482; 713677, 2337507; 713828, 2337580; 713834, 2337585; 713841, 2337587; 713989, 2337659; 714006, 2337664; 714030, 2337681; 714036, 2337674; 714090, 2337691; 714150, 2337601; 714065, 2337490; 714169, 2337531; 714182, 2337553; 714217, 2337500; 714313, 2337356; 714267, 2337327; 713658, 2336950; 713641, 2336937; 713639, 2336938; 713638, 2336937; 713592, 2336909; 713171, 2337020; 713128, 2337025; 713101, 2337039; 712948, 2337083; 712768, 2337134; 712739, 2337127; 712714, 2337150; 712707, 2337152; 712647, 2337156; 711929, 2337023; 712115, 2336844; 712527, 2336930; 712811, 2336772; 712314, 2336653; 712783, 2336203; 712700, 2336108; 712785, 2336093; 712927, 2336085; 713147, 2336184; 713257, 2336224; 713265, 2336238; 712778, 2336365; 712783, 2336372; 712923, 2336457; 713217, 2336633; 714333, 2337309; 714341, 2337313; 715056, 2336242; 715073, 2336232; 716805, 2335668; 717490, 2335146; 717565, 2335112; 718350, 2334490; 718276, 2333666; 717554, 2332806; 717447, 2332851; 717080, 2333001; 716796, 2333195; 715114, 2334345; 715139, 2334491; 715684, 2334688; 716000, 2334857; 715980, 2334880; 715849, 2335177; 715914, 2335254; 715842, 2335306; 715274, 2335635; 715213, 2335636; 715076, 2335749; 715046, 2335773; 714377, 2335948; 714372, 2335938; 714373, 2335938; 714280, 2335711; 714494, 2335653; 714617, 2335594; 714901, 2335519; 715544, 2335359; 715547, 2335358; 715174, 2335053; 715005, 2334932; 714716, 2334982; 714205, 2335078; 714040, 2335127; 714024, 2335088; 711244, 2336986; 711354, 2337009; 711401, 2337037; 711322, 2337112; 711727, 2337380; 711733, 2337403; 711948, 2337483; 712220, 2337776; 712433, 2338103; 712602, 2338152; 712517, 2338265; 712284, 2338486; 711968, 2338683; 711759, 2338845; 711681, 2338900; 711900, 2338941; 711710, 2339118; 711642, 2339123; 711579, 2339096; 711465, 2339097; 711625, 2339356; 711763, 2339365; 711777, 2339323; 711817, 2339308; 711969, 2339303; 712089, 2339324; 712130, 2339297; 712272, 2339304; 712447, 2339115; 712346, 2339007; 712231, 2338953; 712098, 2338911; 712002, 2338805; 712132, 2338664; 712392, 2338783; 712579, 2338783; 712421, 2338675; 712279, 2338579; 712353, 2338489; 712568, 2338528; 712635, 2338591; 712780, 2338508; 712777, 2338472; 712895, 2338488; 713001, 2338534; 713003, 2338502; 713072, 2338512; 713177, 2338629; 713424, 2338561; 713452, 2338533; 712978, 2338207; 712867, 2337997; 712845, 2337873; 713121, 2337952; 713150, 2337771; 713181, 2337784; 713184, 2337801; 713189, 2337803; 713196, 2337826; 713191, 2337829; 713197, 2337831; 713204, 2337853; 713303, 2337864; 713482, 2338023; 713503, 2338044; 713520, 2338067; 713525, 2338081; 713557, 2338108; 713664, 2338205; 713713, 2338254; 713731, 2338228; return to starting point.

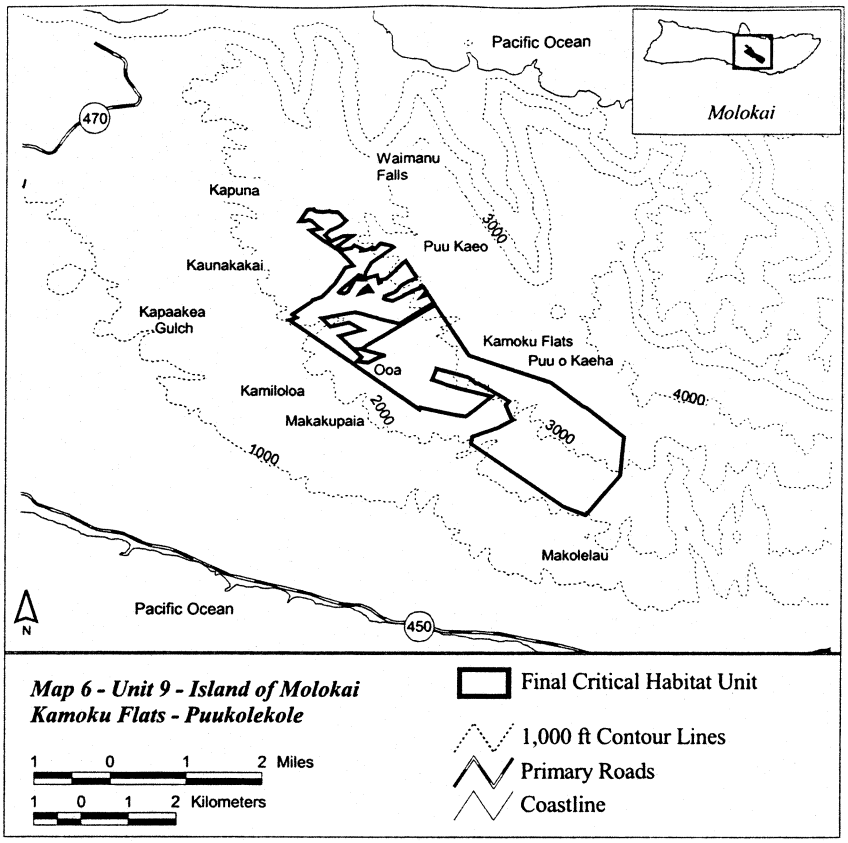
(B) This unit excludes two areas:

(*1*) Unit excludes an area (2 ha; 4 ac) consisting of the following 5 boundary

points: Start at 712804, 2337632; 712923, 2337724; 712990, 2337608; 712917, 2337600; 712748, 2337553; return to starting point.

(*2*) Unit excludes an area (5 ha; 13 ac) consisting of the following 10 boundary points: Start at 712742, 2337968; 712839, 2337857; 712748, 2337850; 712646, 2337870; 712632, 2337823; 712481, 2337590; 712425, 2337550; 712313, 2337564; 712299, 2337574; 712360, 2337661; return to starting point.

(C) **Note:** Unit 9 is depicted on Map 6–Unit 9–Island of Molokai, which follows:



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Dated: May 30, 2003.

Paul Hoffman,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 03–14144 Filed 6–9–03; 8:45 am]

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