

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