

***Manduca blackburni* (Butler), 1880
Blackburn's Sphinx Moth
(Sphingidae: Sphinginae: Sphingini)**

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SUMMARY

In the 1970s it was believed that Blackburn's Sphinx Moth was extinct. However, it was rediscovered in 1984 when a single population was found on Maui. Subsequently, populations have also been discovered on Kaho'olawe and Hawaii. Threats to the moth include loss and degradation of habitat from urban and agricultural development, invasion by non-native plant species, habitat fragmentation and degradation, increased wildfire frequency, and disturbance by grazing cattle. In addition, non-native parasitoids and insect predators have directly impacted moth populations and significantly reduced the species' range. Blackburn's Sphinx Moth is also susceptible to over-collection for personal collections or for trade.

CONSERVATION STATUS

Xerces Red List Status: Critically Imperiled

Other Rankings:

Canada – Species at Risk Act:	N/A
Canada – provincial status:	N/A
Mexico:	N/A
USA – Endangered Species Act:	Endangered
USA – state status:	None
NatureServe:	G1
IUCN Red List:	N/A

SPECIES PROFILE

DESCRIPTION

With a wingspan of up to 5 inches (12 cm), Blackburn's Sphinx Moth is Hawaii's largest native insect. Like other sphinx moths, it has long, narrow forewings and a thick, spindle-shaped body that tapers at both ends. The moth is grayish brown in color with black

bands across the top margins of the hindwings and five orange spots along each side of the abdomen.

The moth's caterpillar is large and occurs in two color morphs, bright green or gray. Both morphs have scattered white speckles throughout the back and a horizontal white stripe on the side margin of each segment.

TAXONOMIC STATUS

Manduca blackburni (Butler), 1880.

LIFE HISTORY

Larvae of Blackburn's Sphinx Moth feed on plants in the nightshade family (Solanaceae). The native hostplants are trees within the genus *Nothocestrum* (aiea) on which the larvae consume leaves, stems, flowers, and buds. However, many of the hostplants recorded for this species are not native to the Hawaiian Islands. These include commercial tobacco (*Nicotiana tabacum*), tree tobacco (*Nicotiana glauca*), eggplant (*Solanum melongena*), tomato (*Lycopersicon esculentum*), and possibly, Jimsonweed (*Datura stramonium*).

In general, sphingid moths can develop from egg to adult in as little as fifty-six days but pupae may remain in a state of torpor (inactivity) in the soil for up to a year.

Blackburn's Sphinx Moth adults have been documented feeding on nectar of the native Hawaiian morning glory species, *Ipomea indica*. It is expected that the Hawaiian native caper, *Capparis sandwichiana*, and wild leadwort (*Plumbago zeylanica*) are also likely food sources. All three plant species bear flowers that possess some characters suggestive of moth pollination, including opening at night, pale coloration, or a strong fragrance.

DISTRIBUTION

Historically 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 meters (5,000 feet) elevation. Most historical records were from coastal or lowland dry forest habitats in areas receiving less than 127 centimeters (50 inches) annual rainfall.

By the 1970s Blackburn's Sphinx Moth was thought to be extinct. It was rediscovered on Maui when a single population was found in 1984. Subsequently, populations have been discovered on two other islands, Kaho'olawe and Hawaii.

THREATS

Threats to Blackburn's Sphinx Moth can be placed in two categories, impacts on habitat and direct impacts on moths themselves. The moth's habitat is being lost and degraded by urban and agricultural development, invasion by non-native plant species, habitat fragmentation and degradation, increased wildfire frequency, and grazing and trampling by cattle. Direct impacts to the moth are from non-native parasitoids and insect predators. These have reduced populations and have significantly reduced the species' range.

Because of the small sizes of known populations, Blackburn's Sphinx Moth is also susceptible to over-collection for personal collections or for trade.

CONSERVATION STATUS

Reports by early naturalists suggest this species was previously widespread and abundant, at least during European settlement, on nearly all the main Hawaiian Islands. More recent sampling results indicate that moth population numbers are small. However, at this point, no reasonably accurate estimate of population sizes have been possibly due to the adult moths' wide-ranging behavior and it's the species overall rarity.

Blackburn's Sphinx Moth is federally listed as endangered. None of it known populations are entirely protected from the numerous factors threatening the species' recovery, and the moth is endangered throughout its range. Critical habitat has been designated for the moth and a draft recovery plan has been developed.

CONSERVATION NEEDS

The principal conservation need for this species is protection of habitat. The U.S. Fish and Wildlife Service is currently a partner in a dry forest restoration project on State lands in the same area that the North Kona population of the moth occurs. While no conservation efforts specifically for the moth are currently underway on Kaho'olawe, the State of Hawaii, the Kaho'olawe Island Reserve Commission, and the U.S. Navy are aware of the presence of this species and have sponsored surveys to identify the distribution of the moth on the accessible parts of the island.

RESEARCH NEEDS

The US Fish and Wildlife Service is currently funding research examining the life history, captive rearing, and conservation biology of Blackburn's Sphinx Moth.

RESOURCES

CONTACTS

U.S. Fish and Wildlife Service: Field Supervisor, Pacific Islands, Fish and Wildlife Office, 300 Ala Moana Boulevard, Room 3-122, Box 50088, Honolulu, Hawaii 96850. Telephone: (808) 541-3441.

REFERENCES

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