

Cactus Moth, *Cactoblastis cactorum* (Berg) (Insecta: Lepidoptera: Pyralidae)¹

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Introduction

The discovery of *Cactoblastis cactorum* Berg in the Florida Keys in October, 1989 raised to at least five the number of phycitine moth species associated with prickly pear cacti (*Opuntia* spp.) in Florida. *C. cactorum* was first identified by Mr. Terhune Dickel, Homestead, FL. The presence of *Ozamia lucidalis* (Walker) in the U.S. is also a new record. It was previously known only from Cuba, Jamaica, and the Dominican Republic (Heinrich 1956). There is further evidence that another unreported species may be attacking *Opuntia* spp. in the Florida Keys. Additional collections and rearings are needed to confirm this.

Distribution

The moth's range has continued to expand along both the Atlantic and Gulf coasts. It is now found as far north as Charleston, SC and as far west as Piney Island and the St. Mark's Wildlife Refuge south of Tallahassee, FL. Although larvae were intercepted on

infested nursery stock at a Wal-Mart Store in Pensacola, FL in July 2000, the recent findings in the St. Mark's area appear to be due to natural spread. There continues to be almost no confirmed records of inland movement. A report of the moth in Loxahatchee, Palm County, FL in June 1992 by FDACS, 24 km inland from the Atlantic Ocean, is the most inland record that we are aware of.

For more information you can access the proceedings of a workshop on *Cactoblastis cactorum* in North America at:
<http://www.fcla.edu/FlaEnt/fe844.htm>.

Please Help! We would very much like to hear from you if you know of infestations in your area or if you know of the location of *Opuntia* cactus stands that we could check, particularly if the sites are inland or in front of the leading edge. Please contact: Dr. Stephen Hight, Tel.: 850-412-7262; Fax: 850-412-7263; hight@nettally.com.

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1. This document is EENY-056 (IN213), one of a series of Featured Creatures from the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Published: August 1998. Revised: May 2002. Reviewed: March 2008. This document is also available on Featured Creatures Website at <http://creatures.ifas.ufl.edu>. Please visit the EDIS Website at <http://edis.ifas.ufl.edu>.
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Description

The wing span of the adults ranges from 22 to 35 mm. The forewings are grayish-brown, but whiter toward the costal margin. Distinct black antemedial and subterminal lines present. Hindwings white with some gray terminally. Phycitine adults are often very similar and are not easily identified since scales of specimens are usually rubbed off; however, genitalia can provide positive identification (Heinrich 1956). The larvae of *C. cactorum* are bright orangish-red with large dark spots forming transverse bands. Mature larvae are 25 to 30 mm long.



Figure 1. Adult cactus moth, *Cactoblastis cactorum* (Berg). Credits: D. Habeck and F. Bennet, University of Florida



Figure 2. Larva of cactus moth, *Cactoblastis cactorum* (Berg). Credits: D. Habeck and F. Bennet, University of Florida

Key to Florida Phycitine Larvae Associated with *Opuntia* spp.

1. Larvae gregarious, reddish or bluish-purple, feeding in cladodes (pads). . . . 2

1'. Larvae solitary, not reddish or bluish-purple, feeding in or on cladodes. . . . 3

2. Larvae orangish-red with conspicuous dark spots forming transverse bands. . . . *Cactioblastis cactorum* (Berg)

2'. Larvae dirty-white to bluish-purple with smaller dark spots not forming transverse bands. . . . *Melitara prodenialis* (Walker)

3. Larvae dirty-white, without spots. . . . *Rumatha glaucatella* (Hulst)

3'. Larvae dark. . . . 4

4. Larvae feeding singly in buds or fruit only. . . . *Ozamia lucidalis* (Walker)

4'. Larvae feeding singly on dead tissue but most often feeding on coccids. . . . *Laetilia coccidivora* (J.H. Comstock)

Biology

The female lays its eggs in the form of a chain, the first egg is attached to the end of a spine or spicule and succeeding eggs (140 or more, ave. = 75) stacked coin-like to form an egg-stick. On eclosion, the larvae crawl from the egg-stick onto the cladode or pad and burrow into it, usually within a few centimeters of the oviposition site. The larvae feed gregariously moving from cladode to cladode as the food supply is exhausted. During feeding the frass is pushed out of the pad and forms a noticeable heap on the ground. Fully developed larvae usually leave the plant and spin white cocoons in the leaf litter, in crevices in the bark of nearby trees, or in similar protected niches. Pupation occasionally occurs in the cladode. The moth emerges and the cycle is repeated. The length of the life cycle in Florida is unknown but probably shorter than in Queensland, Australia, where there are two generations per year (Dodd 1940).

Economic Importance

C. cactorum, native to South America, was introduced from Argentina into Australia in 1925 to control several North American and South American species of *Opuntia*. In Queensland 16 million acres of



Figure 3. Egg stick of the cactus moth, *Cactoblastis cactorum* (Berg), on cactus pad. Credits: D. Habeck and F. Bennet, University of Florida



Figure 4. Cactus pad dissected to show larvae of cactus moth, *Cactoblastis cactorum* (Berg), feeding within. Credits: D. Habeck and F. Bennet, University of Florida

severely infested land were reclaimed for agriculture by the action of this insect. It has also been an effective control agent of *Opuntia* spp. in other areas including Hawaii, India, and South Africa. In 1957 it was introduced into the Caribbean, in Nevis, where the control of *Opuntia curassavica* and other *Opuntia* spp. was rapid and spectacular (Simmonds and Bennett 1966). Eggs and larvae, or infested cladodes, were sent from Nevis to Montserrat and Antigua in 1962 and to Grand Cayman in 1970 (Bennett et al. 1985). By 1963 it had naturally spread from the Lesser Antilles to Puerto Rico (Garcia-Tuduri et al. 1971) and is now present in Haiti, Dominican Republic, and the Bahamas (Starmer et al. 1987).

The arrival of *Cactoblastis cactorum* in Florida was viewed with concern because of its potential for adverse impact on native *Opuntia* spp. In the Florida Keys the signal cactus, *O. spinosissima* (Martyn) Mill. and *O. tricantha* (Willdenow) Sweet are rare

and are on the "threatened" list. Other native species, *Opuntia cubensis* Britton & Rose, *O. stricta* Haw., *O. humifusa* (Raf.) Rafinesque, as well as exotic species either naturalized or grown as ornamentals in Florida are also at risk. Another concern is the probability that *C. cactorum* will spread west as far as Texas and into Mexico where the fruit and young vegetative parts of *Opuntia* spp. form part of the staple diet of humans and where chopped plants serve as cattle fodder in times of drought. In South Africa, *C. cactorum* significantly reduced growth of spineless *Opuntias* valued as cattle food (Annecke et al. 1976).

Management

No satisfactory method of chemical control of *C. cactorum* is known. The widespread use of pesticides is not recommended because of the occurrence of rare and endangered fauna such as Schaus swallowtail, Florida leaf-wing and Bartram's hairstreak butterflies. Similarly, inundative releases of egg parasites such as *Trichogramma* could have an adverse impact on other desirable Lepidoptera.

Preliminary investigations indicate an appreciable level of predation of the pupae and the occurrence of a pupal parasite *Brachymeria* sp., but these are unlikely to control *C. cactorum*.

Classical biological control should be considered. In its native habitat in South America several natural enemies are known including *Apanteles alexanderi* Brethes (Braconidae), *Phyticplex doddi* (Cushman) and *P. eremnus* (Porter) (Ichneumonidae), *Brachymeria cactoblastidis* Blanchard (Chalcididae), and *Epicoronimyia mundelli* (Blanchard) (Tachinidae). The host range of these natural enemies would have to be determined before the release of any of these for the control of *C. cactorum* could be approved.

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