

Cactus Moth

Cactoblastis cactorum

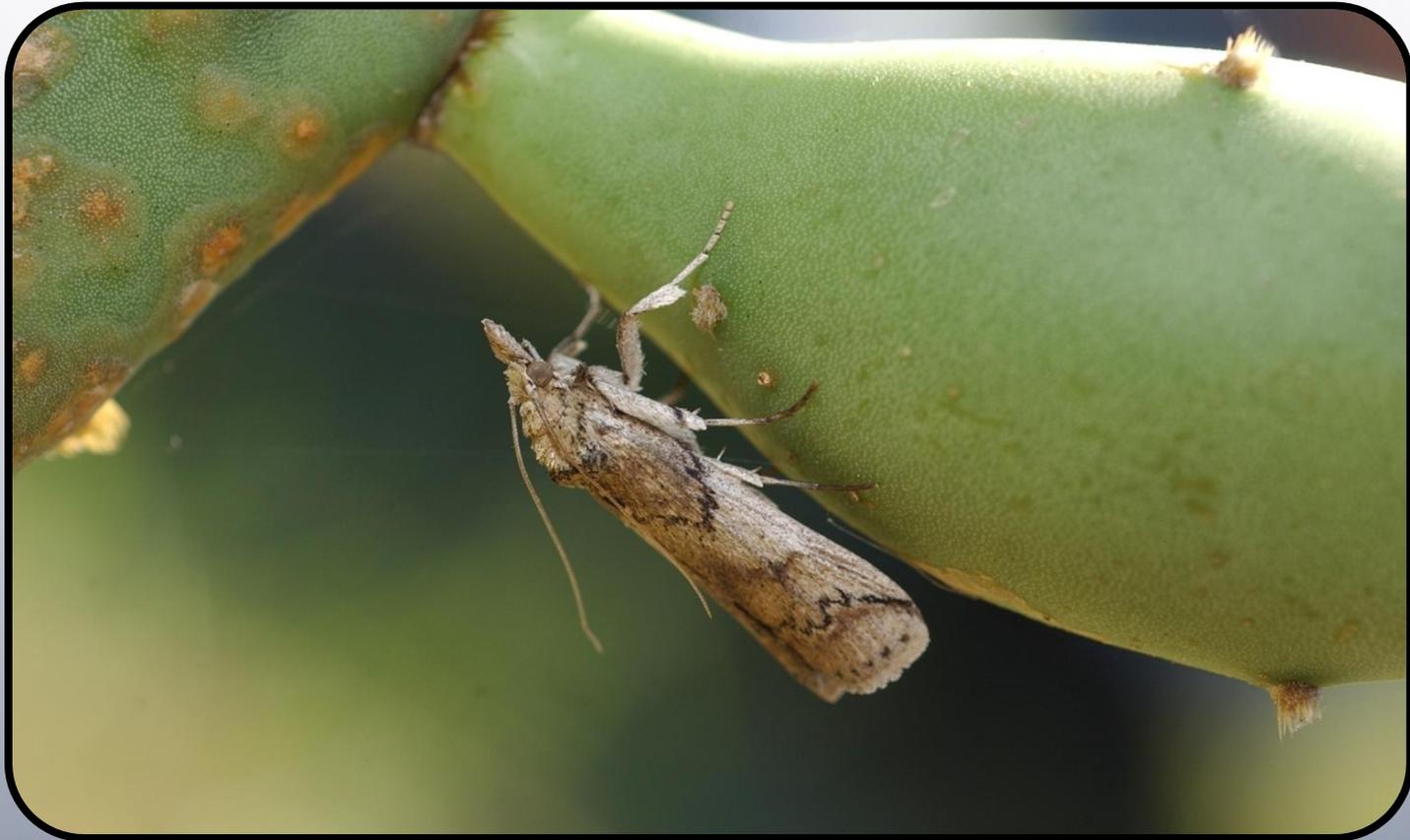


Image credit: Ignacio Baez, USDA Agricultural Research Service, Bugwood.org, #5015068



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Introduction

- Native region: South America
- Used as biological control agent in multiple countries for prickly pear cactus
 - Which is considered an invasive plant
- Considered an invasive species in the United States



Image credit: Jeffrey W. Lotz, Florida Department of Agriculture and Consumer Services, Bugwood.org , #5199023



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History of the Cactus Moth

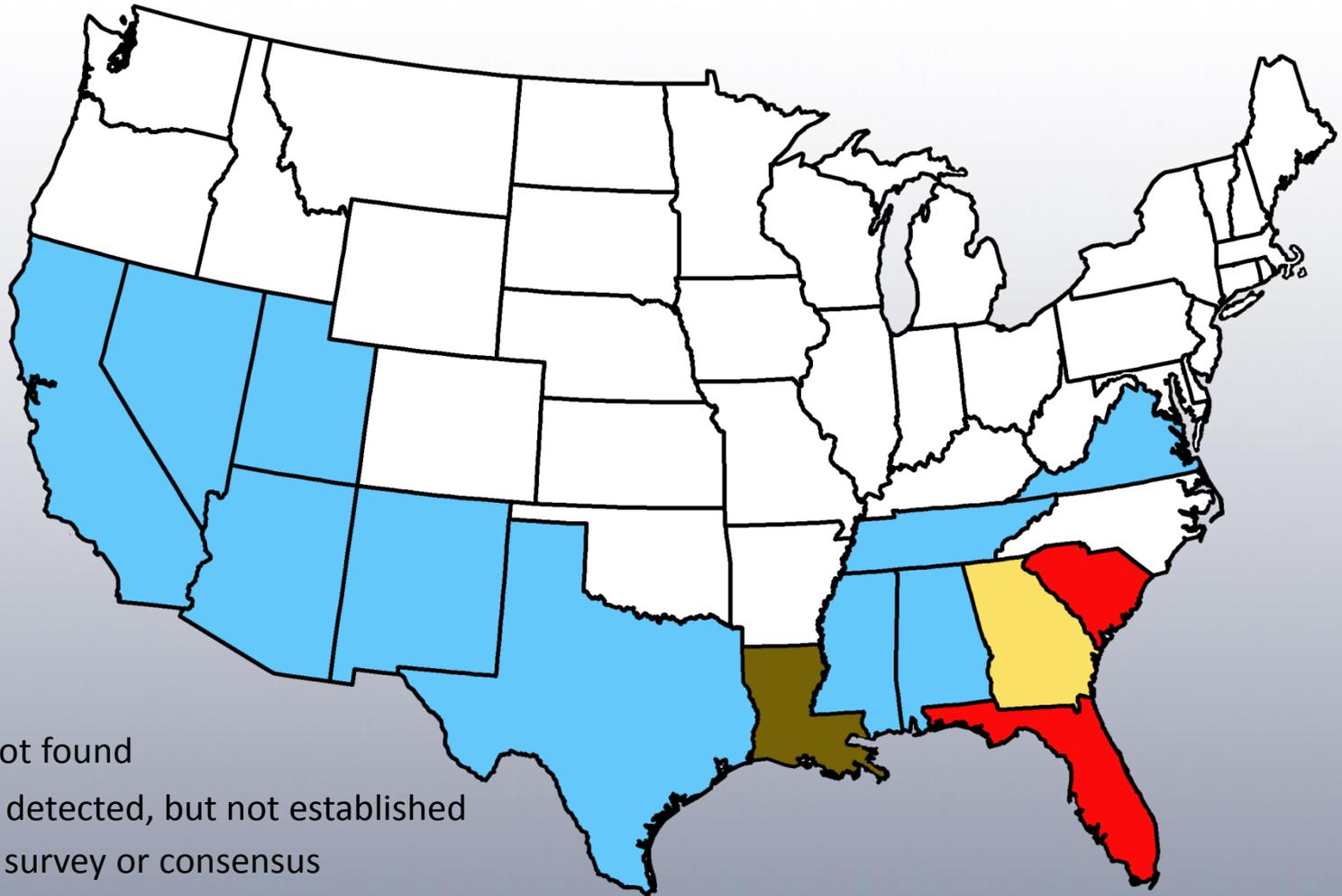
- Australia
 - Prickly pear cactus infested over 60 million acres
 - Cactus moth introduced as biocontrol agent (1920s)
 - Highly successful (16 million acres reclaimed)
- Other countries
 - South Africa (1933), Hawaii (1950), Caribbean (1957)



Australia before introduction of cactus moth, 1940



Distribution in the U.S.



- No sampling
- Sampled but not found
- Intercepted or detected, but not established
- Established by survey or consensus
- Under eradication

Map based on NAPIS Pest Tracker, accessed 1/16/2014



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The Threat

- Major economic & environmental threat in the U.S. and Mexico
 - Agricultural
 - Economical
 - Ecological
 - Cultural
 - Ecotourism and recreational industries



Damage to cactus and cactus moth larvae

Image credit: Stephen Davis, USDA APHIS PPO, Bugwood.org, #2130067



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Identification

- The best stage for identification of the cactus moth is the larva
 - Orange or red & black bands
 - 25 mm to 30 mm in length



Younger larva



Mature larva

Image credit: top- Jeffrey W. Lotz, Florida Department of Agriculture and Consumer Services, Bugwood.org , #5199049; bottom - Susan Ellis, USDA APHIS PPQ, Bugwood.org, #1267002



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Identification



- Adult
 - Non-descript gray-brown
 - Translucent hind wings
 - 22 to 40 mm
 - Females slightly larger than males



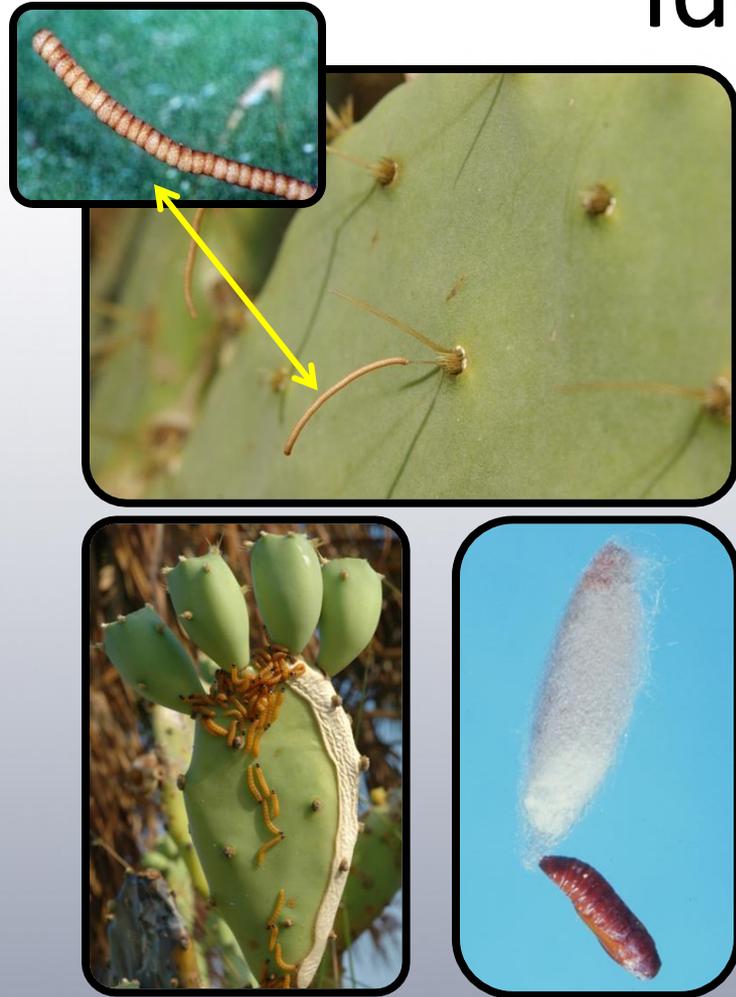
Image credit: top - Ignacio Baez, USDA Agricultural Research Service, Bugwood.org , #5015059; bottom - Jeffrey W. Lotz, Florida Department of Agriculture and Consumer Services, Bugwood.org, #5199016



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Identification



- Females deposit “egg sticks”
 - chain of 70–90 eggs, 2.4” long
- Larvae feed and develop within the cactus pad (cladodes) until maturation
 - Up to 1.3 in long (33 mm)
- Larvae form white cocoons and pupate in leaf litter or at base of host cactus

Image credit: Top – Egg sticks resemble cactus spines: Ignacio Baez, USDA Agricultural Research Service, Bugwood.org, #5015066; insert - Susan Ellis, USDA APHIS PPQ, Bugwood.org, #1267053; Bottom left - Larvae invading new cladode: Ignacio Baez, USDA Agricultural Research Service, Bugwood.org, #5015065; Bottom right – Cocoon & pupa: Jeffrey W. Lotz, Florida Department of Agriculture and Consumer Services, Bugwood.org, #5199060



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Life Cycle

- Three generations per year in U.S.
- Adult flight and mating periods
 - Late March to May
 - July to August
 - Late September to mid-November
- From egg to adult: 9 – 12 weeks
 - Egg: 3 - 4 weeks
 - Larvae: 4 – 5 weeks
 - Pupa: 15 – 20 days
 - Adult: about 9 days



Host Plants

- Specific to prickly pear cacti (*Opuntia* spp.)
 - Flat-pad stem forms (or cladodes)
- Threatened species in Florida
 - *Opuntia stricta*
- Endangered species in Florida
 - *Opuntia corallicola*
 - *Opuntia triacanthos*



Opuntia stricta, “erect prickly pear”

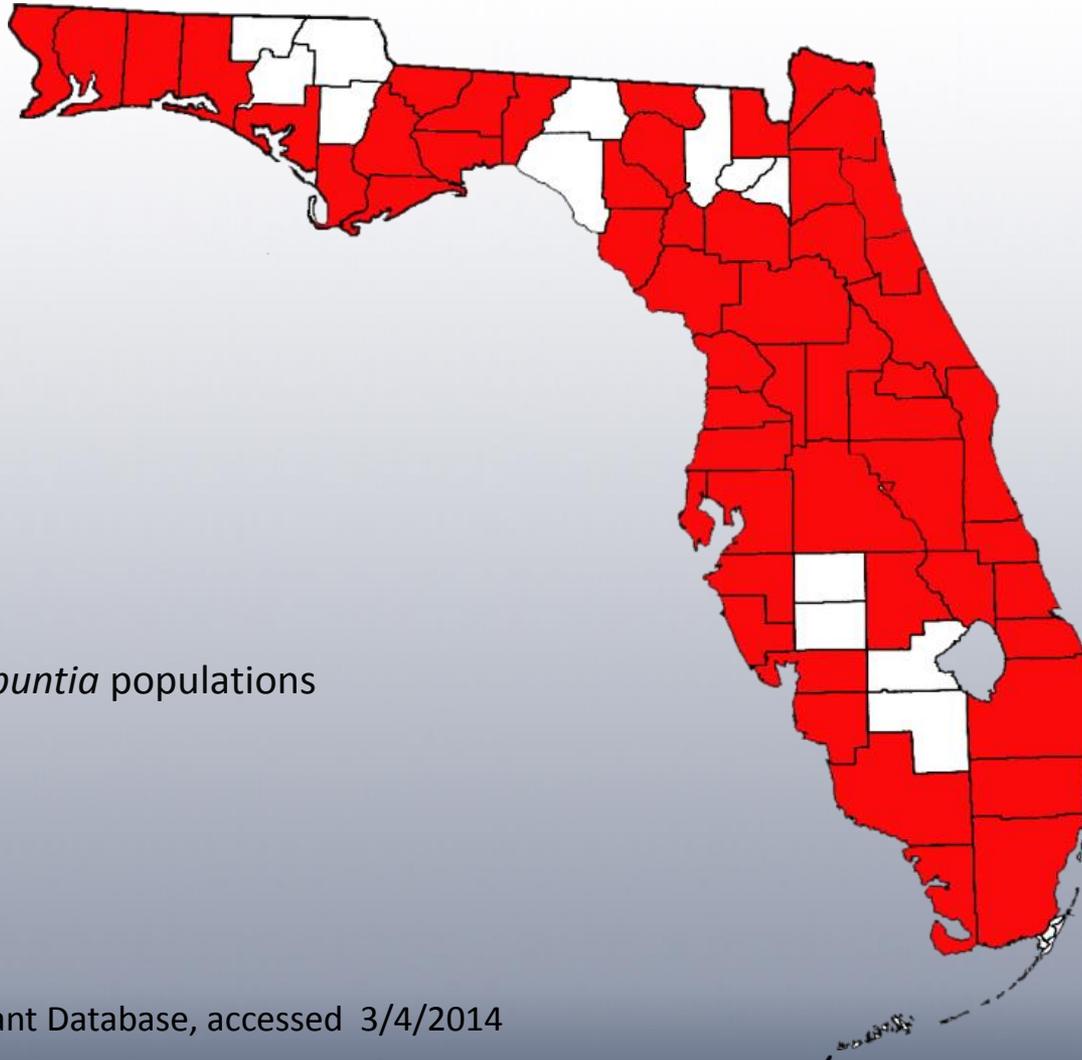
Image credit: Dan Clark, USDI National Park Service,
Bugwood.org, #UGA5281070



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Host Distribution in Florida



■ Counties with *Opuntia* populations

Map based on USDA Plant Database, accessed 3/4/2014



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Damage Caused by Larval Feeding

- Larvae feed and develop in cladodes
- Plant tissue may become yellow; frass and plant fluids are pushed out of the cladodes
- Eventually, larvae hollow out the cactus pad



Damage by larvae feeding

Image credit: Left to right - Rebekah D. Wallace, University of Georgia, Bugwood.org, #5427921 and #5427919



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Look-Alike Species

Cactus Moth

Cactoblastis cactorum

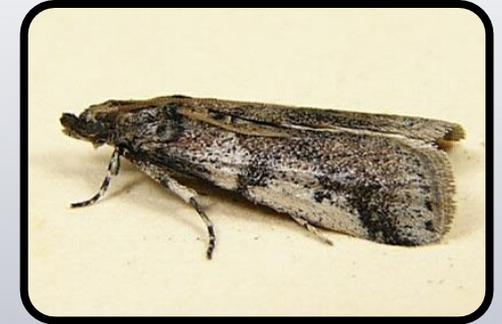


Melitara prodenialis



Scale-feeding snout moth

Laetilia coccidivora



Dissection and microscopic examination of male genitalia are required for identification of adult specimens.

Image credit: Left to right - Jeffrey W. Lotz, Florida Department of Agriculture and Consumer Services, Bugwood.org, #5199029; Whitney Cranshaw, Colorado State University, Bugwood.org, #5422246; Bob Patterson, bugguide.net



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Look-Alike Species

Cactus Moth
Cactoblastis cactorum
(on the left)

Melitara prodenialis
(on the right)

Scale-feeding snout moth
Laetilia coccidivora



Image credit: Left to right- Ignacio Baez, USDA Agricultural Research Service, Bugwood.org, #5015058; Ron Hemberger, Moths of Orange County, California



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Management

- No method of chemical control
- Sterile insect release
 - Prevent spread into western U.S. and Mexico
- Manual removal



Female *C. cactorum* laying eggs on a cladode



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Collaborating Agencies

- U.S. Department of Agriculture, Animal and Plant Health Inspection Service (USDA-APHIS)
- Cooperative Agricultural Pest Survey Program (CAPS)
- Florida Department of Agriculture and Consumer Services (FDACS)
- National Plant Diagnostic Network (NPDN)
- Sentinel Plant Network (SPN)
- Protect U.S.
- University of Florida Institute of Food and Agricultural Sciences (UF-IFAS)



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