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**Cactus Moth Detection and Monitoring Network on Public and Private Lands in the United States. A partnership between USDA-APHIS, USGS, and Mississippi State University**  
Progress Report February 2008

Webpage: [http://www.gri.msstate.edu/cactus\\_moth](http://www.gri.msstate.edu/cactus_moth)

*Introduction.* Cactus moth (*Cactoblastis cactorum*), one of the most successful biological control agents in history, has been transported around the world in various prickly pear cactus control programs. By 2002, free-living populations of the moth had spread from the Florida Keys to the Florida Panhandle and South Carolina. It now poses a serious threat to native prickly pear cactus populations in the American Southwest, as well as the cactus industry and desert ecosystems in Mexico.

A research, extension, and coordination effort to monitor the spread and develop integrated control of cactus moth has been developed as part of collaborative research between USGS and Mississippi State University, with assistance from USDA-APHIS. This project has the following components: Early Detection and Reporting of Cactus Moth, Distribution of Prickly Pear Cactus, in the Region, Modeling of *Opuntia* Distribution, Cactus and Cactus Moth Extension Information, Web-Based Database of Cactus and Cactus Moth Locations, and Regional Coordination

*I. Early Detection and Reporting of Cactus Moth. Task Description:* Cactus moth detection techniques will be tested to find an optimal approach for detection, and a network of detection sites at known cactus locations will be implemented. The MSU insect collection will develop instructional information for potential volunteer monitors at the selected monitoring sites, and provide for moth species verification and vouchering.

*Summary of Objectives:*

1. Develop and test techniques for (a) detecting cactus moth infestations, (b) delimiting infested areas, and (c) determining effectiveness of control actions.
2. Develop a cactus moth detection network in the project area.
3. Develop protocols for monitoring native and ornamental cactus populations.
4. Develop protocols for reporting and verifying suspected cactus moth infestations.

*Progress this month:*

- Larvae collected from cactus pads on Isla Contoy, Mexico by Stephen Hight were identified as *Melitara* sp. Adults collected in pheromone traps were identified as *Yosemetia* sp. (probably undescribed new species), which feed on *Cylindropuntia*.
- Identification guide for screening cactus moth pheromone traps is in preparation.

*II. Distribution of Opuntia in the Region.*

*Task Description:* MSU staff, natural resource agency professionals, and volunteers will be used to search for populations of *Opuntia* cactus in the region. Native cactus populations will be located using herbarium records, contact of federal, state, and NGO biologists, and surveys. The location and description of all *Opuntia* cactus populations in the region and of cactus moth monitoring sites will be placed on a web-accessible database, as part of extension efforts listed below.

*Summary of Objectives:*

1. Develop and test methods to locate and map populations of cactus in support of surveys to detect and delimit cactus moth infestations in the region
2. Utilize professionals and volunteers to survey cactus locations in the Southeastern region.

*Progress this month:*

- Survey of southern Alabama and barrier islands in Mississippi Sound (including Petit Bois Island).

### III. Modeling of Opuntia Distribution in the Region.

*Task Description:* We will develop spatial models to predict cactus distribution in a GIS framework.



**Four scientists (Brooks, Varone, Logarzo, Ervin) during a survey for cactus moth in Argentina during February 2008.**

#### *Summary of Objectives:*

1. Develop cactus distribution prediction models

#### *Progress this month:*

- Data collection in host range of cactus moth was completed in collaboration with USDA APHIS personnel in Argentina. Sampling covered 1800 miles in two weeks.

### IV. Cactus And Cactus Moth Extension Information.

*Task Description:* We will develop web-based information to aid in the identification of cactus and the cactus moth.

#### *Summary of Objectives:*

1. Web-based educational materials on cactus and the cactus moth
2. Educational program on cactus moth, including on-line and printed fact sheets and brochures.

#### *Progress this month:*

- Brochures on the cactus moth were distributed at the Mississippi Academy of Science annual meeting in Olive Branch, MS, Feb. 21-22.

### V. Web-based database for cactus and cactus moth distribution.

*Task Description:* We will develop a web-based avenue for reporting suspected locations on the web, and web GIS database to display the movement of the moth and locations of natural cactus populations. Webpage:

[http://www.gri.msstate.edu/cactus\\_moth](http://www.gri.msstate.edu/cactus_moth)

#### *Summary of Tasks:*

1. Operational web database for locating and mapping cactus and cactus moth populations.

#### *Progress this month:*

- Due to problems with the servers, plans were made for the purchase of new servers.
- Tested ArcPad forms for recording surveys.

### VI. Coordination.

*Task Description:* A collaborative project of this size involving multiple agencies requires a concerted effort to coordinate activities and agree on the tasks to be done and data to be collected.

#### *Coordination activities this month:*

- Attended NIWAW and briefed Office of Management and Budget personnel concerning the importance of cactus moth issues and the Cactus Moth Detection and Monitoring Network.

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