



---

**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 April 2006

*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:*

- To date, a total of 44 Cactus Moth Sentinel Sites have been established in the Carolinas and Connecticut, and officially registered on the National Cactus Moth Detection and Reporting Network Website.
- In April, new sentinel sites were established at Camp Lejeune, NC, and in Columbus County, NC.
- Currently, we are working with biologists to establish sentinel sites at Ft. Bragg (Fayetteville, NC), and on other public lands across the South from NC to CA.
- Identified four *Cactoblastis cactorum* males captured in five pheromone traps from Puerto Rico.
- Received nine *Cactoblastis cactorum* larvae from Bani, Dominican Republic for DNA examination.
- Consulted with official of Bon Secour National Wildlife Refuge concerning any potential adverse impacts of releasing sterile cactus moths relative to Refuge policy of non-release of living animals.

*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:*

- Working with campus landscaping to set aside a native cactus area that will be used as a demonstration/education project.
- Submitted voucher specimens of potential *O. macrorhiza* or *O. humifusa* prairie-specific variety to Dr. Donald Pinkava (AZ State Univ) for identification.
- 46 Sentinel sites established in database.
- Data entry for San Antonio-Corpus Christi, TX and Jackson Co., FL data collection trips completed.

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

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

*Summary of Objectives:*

1. Develop cactus distribution prediction models

*Progress this month:*

- Additional statistically-based data collection initiated.

*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:*

- Attended Gardener's Day Out on April 11 and distributed cactus moth information to the public.

*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.

*Summary of Tasks:*

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

*Progress this month:*

- Performed some maintenance on the detection network. Added additional associate species to the system as well as added some *Opuntia* species to the states list.
- Worked on the ArcPad forms and the connection between the forms and the database system.

*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:*

- Completed and sent abstract to present project at the NAA annual meeting in Flagstaff, AZ.
- Participated in NBII Invasive Species Working Group teleconference.

For more information, contact: Dr. John D. Madsen, ph. 662-325-2428 or [jmadsen@gri.msstate.edu](mailto:jmadsen@gri.msstate.edu)