



---

**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 May 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:*

- Sentinel sites will be set up in the next month in Louisiana and Texas on USFS lands.
- Received 6 pheromone traps from Padre Island NWR, Texas. Cactus moth was not present; non-target Lepidoptera was recorded.
- Received 3 pheromone traps from Puerto Rico and identified two *Cactoblastis cactorum* specimens.
- Received *Cactoblastis cactorum* larvae from South Africa and forwarded to Thomas Simonson, Univ Alberta, for DNA analysis.
- Reared native species of cactus moths, *Melitara prodenialis*, for preservation of adults and larvae for future identification keys.
- The Carolinas Cactus Moth Detection Network now has about 15 active members. So far, the Carolinas Cactus Moth Network has established and is monitoring 44 Cactus Moth Sentinel Sites have been set up in the Carolinas and in Connecticut. A new Sentinel Site is now being set up at Ft. Bragg, in Fayetteville, North Carolina.

*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:*

- Horn Island in Mississippi Sound was surveyed and found to have no *Opuntia*.
- Mapping of cactus performed in Florida, Alabama, Mississippi, Louisiana, Texas and Arkansas.

*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:*

- No additional progress.

*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:*

- An annual report on all of the invasive species research has been completed. "Madsen, J.D., C. Abbott, R. Brown, L. Bruce, J. Byrd, E. Dibble, G. Ervin, J. Fowler, V. Maddox, D. McBride, D. Shaw, R. Westbrook. 2006. Research to Support Integrated Management Systems of Aquatic and Terrestrial Invasive Species. GRI #5004. April, 2006." is available at the website: <http://www.gri.msstate.edu/information/pubs/lwa/invspec/2006/index.php>
- In early May, the News Reporter, in Whiteville, NC, ran a full feature story on the Cactus Moth Project. This led to a story on the Cactus Moth Project by News Channel 3 – WWAY, in Wilmington, NC. USGS Invasive Species Specialist, Randy Westbrook, was interviewed on the project at the Cactus Moth Sentinel Site at Carolina Beach, NC.

*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 maintenance and improvements on the Cactus Moth Detection & Monitoring Network.
- Added the ability to generate reports and subset those reports based on certain attributes.

*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:*

- Will participate in the monthly NBII ISWG teleconference.

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