

## ***Cactoblastis cactorum* Activities Report for December 2006**



For past reports and more information, see the PPQ Cactus Moth website at: [http://www.aphis.usda.gov/ppq/ep/emerging\\_pests/cactoblastis/index.html](http://www.aphis.usda.gov/ppq/ep/emerging_pests/cactoblastis/index.html)

### **Joel Floyd, USDA-APHIS-PPQ-EDP, Riverdale, MD**

**MEETINGS:** A meeting was held in Gainesville, FL between APHIS, ARS, and the Florida Department of Agriculture and Consumer Services at their Division of Plant Industry (DPI) building. Program and research priorities were discussed along with budget needs for the coming year. A tour of the DPI rearing facility was given, where a start-up colony of *C. cactorum* is being rearing on cladodes shipped from the APHIS–CPHST laboratory in Edinburg, TX. Also in attendance was Ian McDonnell, the executive director of the North American Plant Protection Organization (NAPPO). A conference call was held with Gustavo González of SAGARPA in Mexico City to discuss budgets and the transfer of additional funds from Mexico to NAPPO for use in the USDA program for research and control of *C. cactorum* along the US Gulf Coast. These monies were successfully transferred in December with an agreement between NAPPO and SAGARPA. USDA is now in the process of getting their agreement with NAPPO approved and signed to secure the funds for the 2007 USDA-SAGARPA Cooperative Cactus Moth Program.

**PPQ FIELD ACTIVITY:** Environmental compliance documents were developed and approved by the US Fish and Wildlife Service for Fort Morgan and Bon Secour NWR (see below). Craig Hinton continued to help Stephen Hight with host removal at Dauphin Island and Little Dauphin Island, AL. Additional assistance was provided by Robert Smith, Joe Dawson and Gene Bohannon of APHIS-PPQ, Gulfport, MS.

**OUTREACH:** Articles appeared in several cities originating from an AP wire service story regarding the discovery of cactus moth on Isla Mujeres last August. Articles appeared in Scotsman and The Guardian Unlimited in the United Kingdom <http://www.guardian.co.uk/international/story/0,,1970682,00.html?gusrc=rss&feed=12> And in newspapers in Denver, Washington, Philadelphia and San Jose: <http://www.mercurynews.com/mld/mercurynews/news/world/16213051.htm> The Nature Conservancy distributed an article for Texans distributed by a Del Rio service in Southwest Texas: <http://www.swtexaslive.com/node/2690>. This article prompted other Texas newspapers to do their own versions of the story including these: <http://www.mysanantonio.com/news/metro/stories/MYSA122106.01B.mothsex.2d70420.html>, [http://www.dfw.com/mld/dfw/news/state/16390067.htm?source=rss&channel=dfw\\_state](http://www.dfw.com/mld/dfw/news/state/16390067.htm?source=rss&channel=dfw_state)

**ENVIRONMENTAL COMPLIANCE:** Consultations continued with the US Fish & Wildlife Service due to critical habitat issues with the Alabama beach mouse (ABM), a federally listed endangered species. A proposal was submitted and letter issued allowing mechanical removal of host material from areas around the Fort that are not occupied, or that have habitat suitable to the ABM. The APHIS Environmental Services staff completed a Biological Assessment for the area and a concurrence letter was obtained from USF&WS to allow the removal of 400 tons of *Opuntia* from the area with permission from the operators of Ft. Morgan National Historic Park.

**SURVEY:** Richard Brown identified moths captured in 30 pheromone traps in Arizona and Puerto Rico. All were negative for cactus moth except those present in traps from Puerto Rico.

**REGULATION:** A technical panel was formed to evaluate the possible methods to implement a nursery stock certification program for Florida nurseries who wish to ship host plants to non-infested states. The technical panel's evaluation will provide information and justification to write the requirements into the domestic regulation being developed.

**TECHNICAL LIAISON:** Stephanie Bloem collected and compiled all reports for December program activities and continued to facilitate communication with SAGARPA.

**George Schneider, FDACS-DPI, Gainesville, FL**

**Accomplishments and activities:** The BCRF reared 1,093 cactus moth pupae during December using cladodes from Edinburg, Texas and egg sticks from Tifton, Georgia. Pupae were shipped to Tifton for use in the SIT program. The yield for this batch of egg sticks was low, approximately 15%. We continue to view this as a problem related to the thickness of the cactus cladodes being used. We are expecting a new shipment of thinner cladodes from Texas to arrive at the end of January. Modification of the 400 larval development containers is nearly complete, the first set of adult moth eclosion cages will be delivered from the manufacturer shortly, the adult environmental chamber has been ordered, and the design of the adult moth scale collection unit is progressing.

**Stephen Hight, USDA-ARS-CMAVE Tallahassee, FL**  
**Jim Carpenter, USDA-ARS-CPMRU, Tifton, GA**

**SIT VALIDATION.** Traps were serviced weekly in December at Ft. Morgan, but only the first 2 weeks of December at Pensacola Beach, Dauphin Island, and Little Dauphin Island. A single wild male was captured at Ft. Morgan the second week of December (Table 1). No releases of sterile moths were made in December. Weekly captures at Ft. Morgan is presented in Table 2 and Figs. 1 and 2.

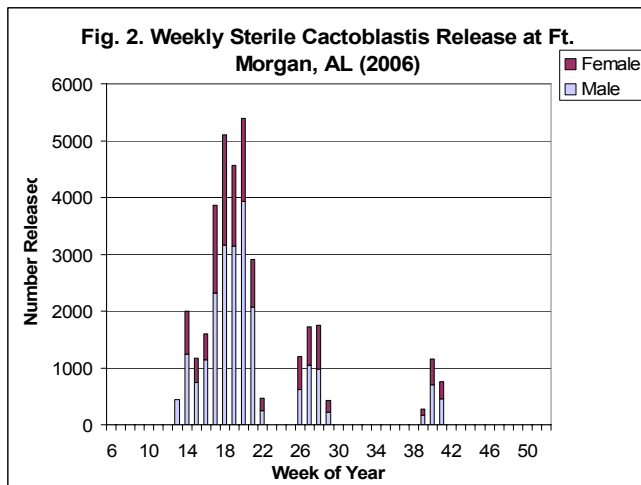
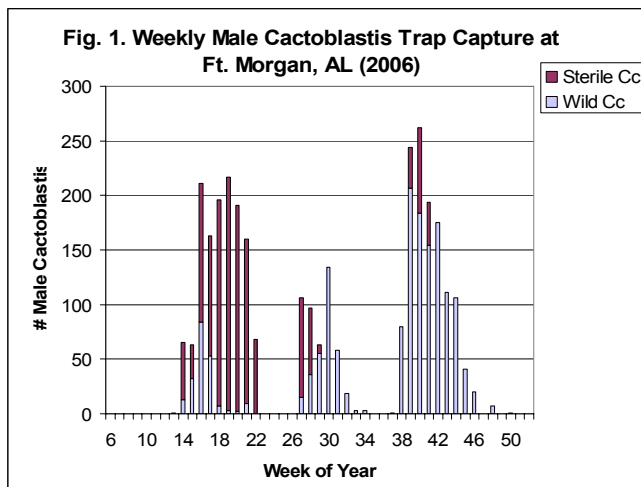
Table 1. Wild *Cactoblastis cactorum* (Cc) caught in traps during December 2006.

Location	Dauphin Is., AL	Little Dauphin Is., AL	Ft. Morgan, AL	Pensacola Beach, FL
# Traps	53	5	16	69
# Wild Cc	0	0	1	0
Avg. # Wild Cc/Trap	0	0	0.02	0

Table 2. Weekly male *Cactoblastis cactorum* (Cc) trap capture, number of male and female sterile moths released, and percent sterile males released that were recaptured at Ft. Morgan, AL, February - December 2006. ns\* = traps were not serviced during the week.

MONTH	WEEK OF YEAR	Cc CAPTURED		STERILE Cc RELEASED		% STERILE ♂ Cc RECAPTURED
		WILD ♂ Cc	STERILE ♂ Cc	♂	♀	
February	8	0	--	--	--	--
March	12	0	--	--	--	--
March	13	1	0	443	0	--
April	14	13	52	1236	758	3.1
April	15	32	31	747	422	4.2
April	16	84	127	1144	456	11.1
April	17	52	110	2312	1547	1.5
May	18	7	189	3163	1942	6.0
May	19	3	214	3139	1433	6.8
May	20	2	189	3925	1475	4.8
May	21	9	151	2073	836	7.3
June	22	0	68	245	226	27.8
June	23	0	0	0	0	0
June	24	0	0	0	0	0
June	25	0	0	0	0	0
June	26	0	0	616	578	0
July	27	15	91	1044	680	5.5
July	28	36	61	975	782	6.3
July	29	55	8	220	206	3.6
July	30	134	0	0	0	0
August	31	58	0	0	0	0
August	32	19	0	0	0	0
August	33	3	0	0	0	0
August	34	3	0	0	0	0
August	35	0	0	0	0	0
September	36	0	0	0	0	0
September	37	1	0	0	0	0
September	38	80	0	0	0	0
September	39	207	37	172	110	21.5
October	40	184	78	703	449	11.1

October	41	154	40	458	306	8.7
October	42	175	0	0	0	0
October	43	111	0	0	0	0
November	44	106	0	0	0	0
November	45	41	0	0	0	0
November	46	20	0	0	0	0
November	47	ns*	ns*	ns*	ns*	ns*
November	48	7	0	0	0	0
December	49	0	0	0	0	0
December	50	1	0	0	0	0
December	51	0	0	0	0	0
December	52	0	0	0	0	0



**CLADODE AND DIET REARING.** Mass rearing on cladodes experienced a decline during late November and December due to the extensive use of cladodes sent from the USDA-APHIS facility in Edinburg, Texas. The DPI in FL reported in November that their production was low (18-19%) because these cladodes turned excessively mushy and

created too much exudate in the bottom of the containers. We experienced the same results and have since returned to our original source (field-collected material). Nevertheless, the high mortality due to the use of the Texas cladodes resulted in a 50% reduction in our laboratory colony. We are continuing with diet trials and with selection of microsporidia-free eggsticks through single-pair matings. A shipment of 2,060 pupae was sent to Miami for pheromone studies and 1,472 pupae to Zurich for mobility/flight studies.

**S. Dorn, M. Sarvary, ETH Zurich, Switzerland**

**STUDIES ON DISPERSAL ABILITY.** Flight performance and diel activity of mated *C. cactorum* was measured using flight mills. Moths were placed in mating chambers and allowed to mate. Dissection following flight tests showed that 30% of moths were mated. Since mating status can only be checked after the moths were flown, a higher number of trials is needed with mated than with unmated moths to reach the required same sample size. *Opuntia* cacti will now be placed into the mating chamber, as host plant volatiles may increase mating success. We have initiated data analyses, and the software to analyze very large data sets was prepared by an informatics expert. The formal report entitled “Laboratory studies of *Cactoblastis cactorum* flight capacity”, was submitted to Dr. Ken Bloem.

**R. Heath, N. Epsky, USDA-ARS-SHRS Laboratory, Miami, Florida**

**Accomplishments and activities.** Five shipments of cactus moth pupae were received from Tifton. Number of females and males, and percent female eclosion for the shipments were:

- Nov. 08 - 514 females (34% eclosed), 510 males
- Nov. 16 - 1,126 females (10% eclosed), 1,206 males
- Nov. 22 - ~1,000 females (57% eclosed), ~1,000 males
- Nov. 28 - 792 females (25% eclosed), 1,034 males
- Dec. 05 - 133 females (% eclosed not available), 133 males

Seven sets of gland extracts were obtained, which consisted of 41, 11, 24, 23, 52, 26, and 18 glands. Collections of volatile chemicals were made from sets of 40, 30 and 30 females. All collections were obtained from females that were within 48 hr of adult emergence. We completed 44 GC-MS runs to analyze the gland and volatile chemical collections, as well as runs of synthetic standards to evaluate the sensitivity of the newly installed GC-MS.

The following paper is in print and available as a free pdf download at:

<http://puck.esa.catchword.org/vl=3748736/cl=36/nw=1/rpsv/cw/esa/0046225x/v35n6/s2/p1469>

Heath et al. 2006. Pheromone-based attractant for males of *Cactoblastis cactorum* (Lepidoptera: Pyralidae). Environ. Entomol. 35: 1469-1476.