

USE OF MOSQUITO MAGNET PRO FOR REMOVAL TRAPPING OF MOSQUITOES ON ATSENA OTIE KEY: PHASE II



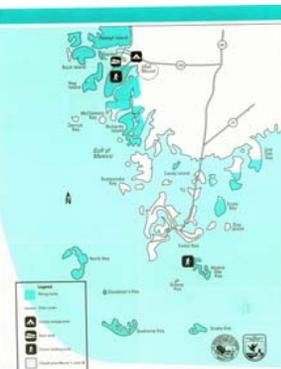
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1. USDA-ARS/ CMAVE, Gainesville, Florida; 2. Lower Suwannee Wildlife Refuge, Cedar Key, Florida

Protection of Selected Areas With Mosquito Attractant Traps

- **OBJECTIVE:** To determine if attractant-baited traps can reduce natural populations of mosquitoes below the nuisance level in an isolated area, like an island, where most of the breeding is believed to be local.
- **TEST SITE:** Atsena Otie Key, an island located ca. 1 mile west of Cedar Key, Florida. This island is managed by the Lower Suwannee Wildlife Refuge (LSWR). It is the original location of the town of Cedar Key, but was destroyed by a hurricane in the late 1800's. Atsena Otie actually consists of several small islands. The vegetation on the upland is mainly that of a live oak forest with a palmetto understory. The lower part of the islands consist of intertidal salt marsh. The island is famous for its production of huge numbers of the black salt marsh mosquito, *Ochlerotatus taeniorhynchus*. Local residents say that from June through the end of September that the mosquitoes make visiting Atsena Otie impossible without being drenched in repellent. Unfortunately, there are no historical scientific studies of seasonal mosquito abundance on these islands. We chose to place 21 treatment traps on the largest of the three islands which is about 22 acres large. Most commercial traps claim that they can clear mosquitoes from an acre lot. There is a trail that goes the length of the island from a boat dock to a cemetery. The traps were spaced evenly along this trail in such a way that each trap covers approximately one acre.
- **TRAPS:** Twenty-one Mosquito Magnet Pro traps supplemented with octenol were placed ca. 150 ft. apart alternately on either side of the nature trail. This trap model was selected because of its portability and ability to generate its own carbon dioxide (CO₂) and electricity to power the trap's fans. Once turned on the traps were operated 24/7 from May 20 through October 14, 2003. Collections were made every 7 days. MM-X (aka pickle jar, CFG) traps were used as our surveillance traps to monitor mosquito/biting midge population abundance. Two MM-X traps were placed along the trail (1/3 and 2/3 distance down the trail); one MM-X trap was placed on each of the two smaller adjacent untreated islands; 2 MM-X traps were placed on the mainland part of the LSWR, located ca. 10 miles north of Cedar Key. The LSWR was designated as our check area. Each MM-X trap was baited with 350 ml/min CO₂ supplied from 20 pound compressed gas cylinders. Octenol was used as an additional attractant. Traps were operated 24/7. Traps were collected twice per week; weather permitting on Tuesday and Friday. Collections were placed in the freezer for killing and storage. Aliquots were identified and total numbers extrapolated.



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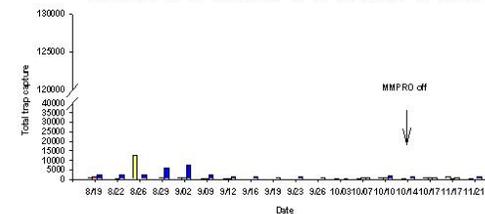
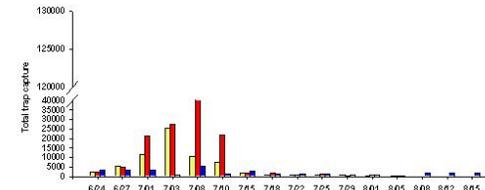
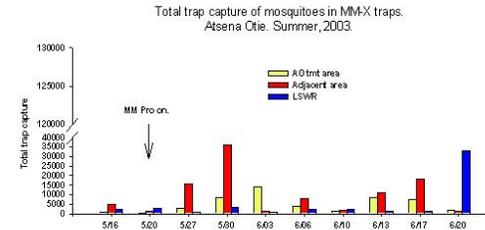
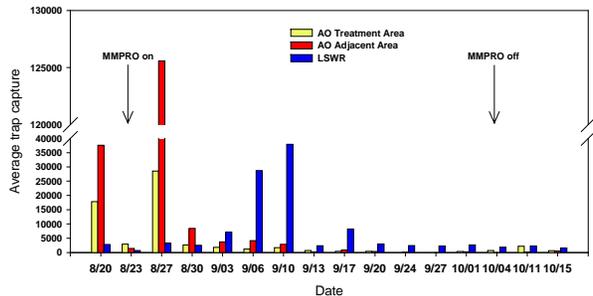


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RESULTS AND DISCUSSION

- Overall these data indicate that population reduction below the nuisance can be achieved with a sufficient number of strategically placed effective traps on an isolated island known for horrendous broods of mosquitoes. Initially the rainfall patterns were spaced ca. 3-4 days apart, which resulted in several broods of the salt marsh mosquitoes emerging every few days. During this time it appeared as if the traps struggled somewhat to achieve the comfortable level reached in the late August-September period of 2002. In late August-September 2002 an individual could walk the length of the trail without wearing any repellent and receive few (1-2) or no bites. This level was not reached in 2003 until mid-June when the rainfall pattern changed.
- The lack of historical records makes drawing definitive conclusions about the effectiveness of these traps in reducing natural populations on Atsena Otie to a tolerable level very difficult. It is obvious when comparing the 2003 data with the 2002 data that the mosquito populations were not as abundant in any of our study areas in 2003. Mosquito abatement personnel in the adjacent counties reported that the salt marsh mosquito populations were generally lower in 2003. We plan to obtain their historical records in order to make further comparisons.
- The general feeling of the local population and the wildlife rangers is that these traps did have a very significant impact on the mosquito populations on Atsena Otie. Many said that they did not remember a time, even during periods of drought that they could visit Atsena Otie during this period of time without needing some repellent for protection.**
- We feel that removing the huge numbers of mosquitoes in 2002 had to have an enormous negative impact on the islands "egg bank". If this is indeed a locally produced mosquito problem, then when females seeking a bloodmeal are removed from the population the impact on the "egg bank" must be dramatic. If the caught female is seeking her first bloodmeal then several potential egg batches are eliminated. As increasingly higher areas are flooded and these females are captured before laying any eggs, it won't be too long before a state of egg bankruptcy occurs. We plan to investigate this aspect more closely in 2004.

Total trap capture of mosquitoes in MM-X traps. Atsena Otie. Summer, 2002.



ACKNOWLEDGMENTS

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MOSQUITO MAGNET