FINAL REPORT

ABC TRAP EVALUATION PROJECT

Sponsored by:

American Biophysics, Corp. (ABC)

Prepared by:

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Goal

This study was performed at the request of Mr. Alan Grant and Ms. Emma Durand to compare the mosquito-trapping prowess of the ABC Mosquito Magnet Pro (MM-P), ABC Mosquito Magnet Residential (MM-R), ABC Mosquito Magnet X trap (MM-X) and Flowtron Mosquito Powertrap (FMP).

Materials and Methods

Study Site: The project was performed on the 10-acre campus of the Florida A&M University, Public Health Entomology Research & Education Center (PHEREC) located on a peninsula of the St. Andrews Bay surrounded by salt marsh in Panama City, Florida.

Protocol: The four traps identified above were randomly assigned one trap/site to four locations on the south, central, north and east ends of PHEREC property. Traps were operated simultaneously from 3:30 p.m. until 7 a.m. on the following dates: 9/18-21, 9/23, 9/26-28, 10/1-2, 10/4, 10/8 and 10/9. After each night's operation, trap contents were collected, sorted, identified to species and counted. The traps were rotated clockwise until each trap had operated at all four locations. A complete rotation through the four locations was considered a replication. Three "good" replications were performed (i.e., mechanical failures invalidated a night's testing). Thus, trap counts presented in the results were based on three collections/location/trap. Traps were operated only during times when weather conditions remained suitable for mosquitoes. Weather data was recorded during the study.

Trap Configurations: The MM-P, MM-R and FMP traps operated with CO_2 converted from propane and were supplemented with a solid formulation of octenol as provided by the manufacturer. The MM-X trap was powered by two serially connected 6-volt, 9-amp-hr gel cell batteries and employed only CO_2 as an attractant pulsed at 500 ml/min from a 20# cylinder. The base of MM-X trap was set 18" from the ground. The FMP trap was set to operate continuously on the manual setting and was installed according to the manufacturer's instructions using the provided post.

Data Analysis: Total mosquito collection (male + female) by trap and species abundance by trap was charted using Microsoft Excel 2000 pivot tables and charting functions. Analysis of variance and mean separation tests were conducted on log-transformed data and tested for statistical differences among traps using SAS PC.

Results and Discussion

Environmental Data: Conditions during the study are presented in Table 1. Temperatures were very mild at the beginning of the study averaging in the mid-70s to lower 80s. Cooler temperatures with averages in the mid to upper 60's and lower 70s prevailed at the halfway point.

Table 1. Weather data on days of trapping.

Date 2001	Max Temp	Min Temp	Avg Temp	Avg Wind Speed	Wind Direction (degrees)	Precip
9/18	87	63	75	3.1	80	0
9/19	85	67	76	4.0	250	0
9/20	87	72	80	3.3	320	0.07
9/21	89	72	81	5.6	20	0
9/23	88	73	81	5.4	60	0.01
9/26	73	55	64	6.3	40	0
9/27	81	52	67	4.8	20	0
10/1	78	51	65	2.3	280	0
10/2	83	54	69	2.6	110	0
10/4	84	61	73	5.5	230	0
10/8	N/A	N/A	N/A	11.3	80	0
10/9	80	59	70	11.9	80	0

Total Mosquito Trap Counts:

Except for one location (i.e., the storage site), statistically ($p<0.05$) more mosquitoes were collected in the MM-P and MM-X than the other traps (Figure 1). Further, the MM-R caught significantly ($p<0.5$) more mosquitoes than the FMP trap. There was no significant difference between the MM-P and the MM-X. Collection counts for these two traps totaled between fewer than 200 to almost 600 mosquitoes per location over three trap nights. Collections were lower than expected because the study was performed after the peak mosquito season.

Species Abundance & Composition:

Species abundance is presented on a logarithmic scale for the various traps in Figure 2. *Ochlerotatus taeniorhynchus* and *Anopheles crucians* made up the vast majority of mosquitoes collected. A total of eleven species were recovered. The MM-X trap collected the most (10), followed by the MM-P (8), MM-R (7) and the FMP (6). The FMP trap collected noticeably fewer mosquitoes and more “trash” insects (i.e., moths, lacewings, ants, etc.) This trap also malfunctioned three times during the study. Conversely, there were no problems with any of the ABC traps. Lastly, it did not appear octenol enhanced either species composition or the numbers collected as evidenced by the MM-X trap results.

Figure 1. Total mosquitoes collected per trap over three collection nights at four locations within the PHEREC campus.

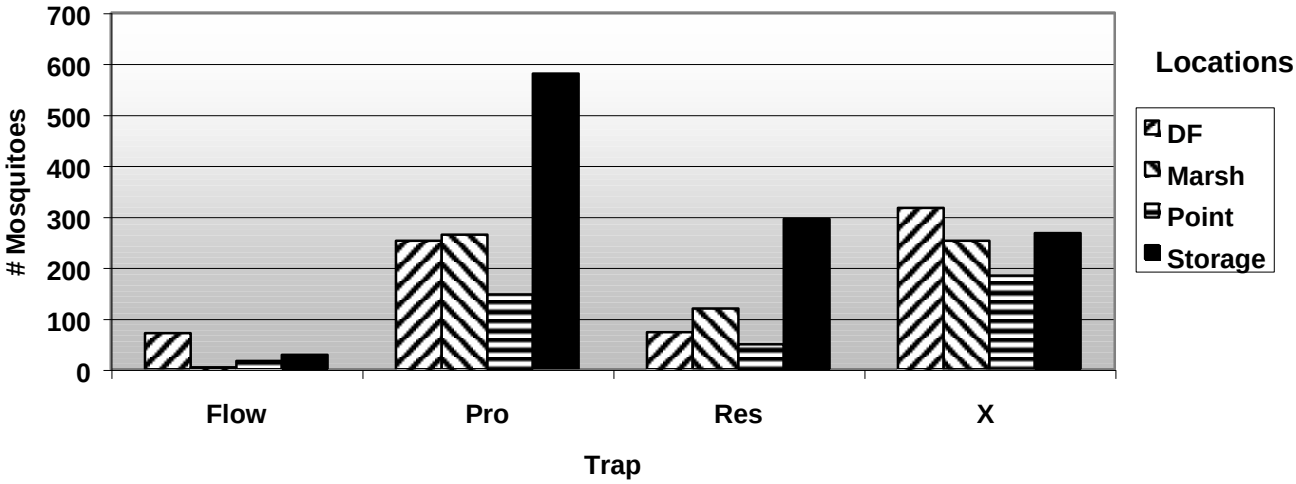

Figure 2. Species composition & abundance collected in ABC vs. Flowtron mosquito traps; Sept & Oct., 2001.