

COMPARATIVE SPECIES & NUMBERS CAPTURED BY B&G SENTINEL, NZI, MOSQUITO MAGNET X AND STINGER MK-100 MOSQUITO TRAP CONFIGURATIONS



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ABSTRACT

The MMX+CO₂+octenol and BG Sentinel+CO₂+BG Lure captured the most species (14 and 12, respectively) and a significantly greater mean number of mosquitoes (5.5X and 4.0X, respectively) compared to the other trap configurations. There was no significant difference in numbers captured between these two traps.

INTRODUCTION

New traps are constantly being introduced into the mosquito surveillance and control market. Third party testing is needed to assess performance as a guide for trap developers and users.

OBJECTIVE

The aim of this study was to compare the mosquito-trapping prowess of the Kaz Stinger MK-100, BG Sentinel, Mosquito Magnet X, and NZI traps arranged in six configurations.

MATERIALS & METHODS

Study Site

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

Experimental Design

The following trap configurations were randomly assigned in a Latin-square one trap/location to six sites spaced over 91 m (300 ft) apart:

1. Kaz Stinger MK-100+Nosquito Lure
2. Mosquito Magnet X (MMX)+CO₂+octenol
3. BG Sentinel +CO₂+BG Lure
4. BG Sentinel+BG Lure
5. NZI+CO₂+octenol
6. NZI+octenol

Weather permitting, traps were operated daily Monday through Thursday for 24 hrs starting at 8:00 a.m. Between operations, collections were removed and traps were rotated clockwise to the next site. Three complete rotations (i.e. repetitions) through all sites were conducted so each trap operated a total of 18 times, three times at six trap sites. Trap runs were repeated when equipment failed or when unsuitable weather or poor/excessive trap catches occurred. Eighteen "good" trap runs were conducted on: July 14-16, 21, 22, 29, August 10, 18, 20, and September 1-3, 8, 16, 22-25, 2009.

Pressurized CO₂ was provided to traps 2, 3 and 5 via 9 kg (20 lb) cylinders equipped with 15 psi Norgren regulators, 0.3 cm (1/8") black polyethylene hoses fitted with 10 micron filters and .007 flow restrictor orifices. This hose system was attached directly to the manufacturer provided CO₂ needle attachment in the BG Sentinel. CO₂ was delivered at 500 ml/min to the MMX as controlled by a Hock 12v trap/CO₂ photocell controller board (1.5-2.0 lbs/run). The NZI and BG Sentinel received continuous CO₂ at a rate of ca. 500 ml/min (2 lbs/run). Attractants (Nosquito lure, BG lure and octenol) were supplied according to manufacturer directions. Trap contents were sorted, identified to species, counted and entered into an EXCEL database.

Statistical Analysis

Experimental variables were tested for departure from the normal distribution and x + 1 log transformed where necessary. Analysis of variance (Sokal and Rohlf 1981) and Newman-Keuls post hoc tests (Winer et. al 1991) were conducted with Statistica Version 9.0 (StatSoft, Inc. 2009) to determine differences among trap means.

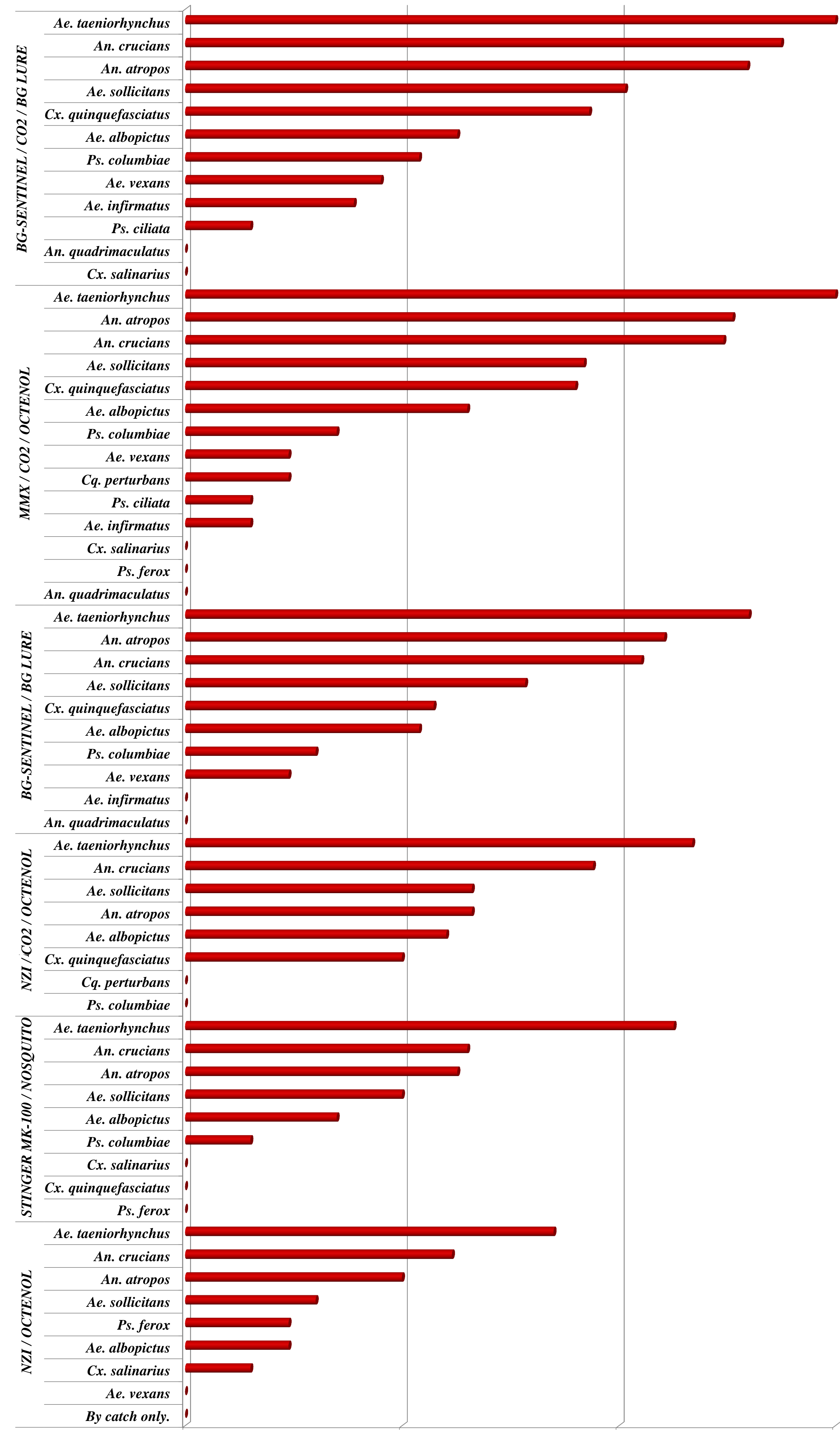


Fig. 1. Logarithmic scale of total number of mosquitoes collected by species and trap.

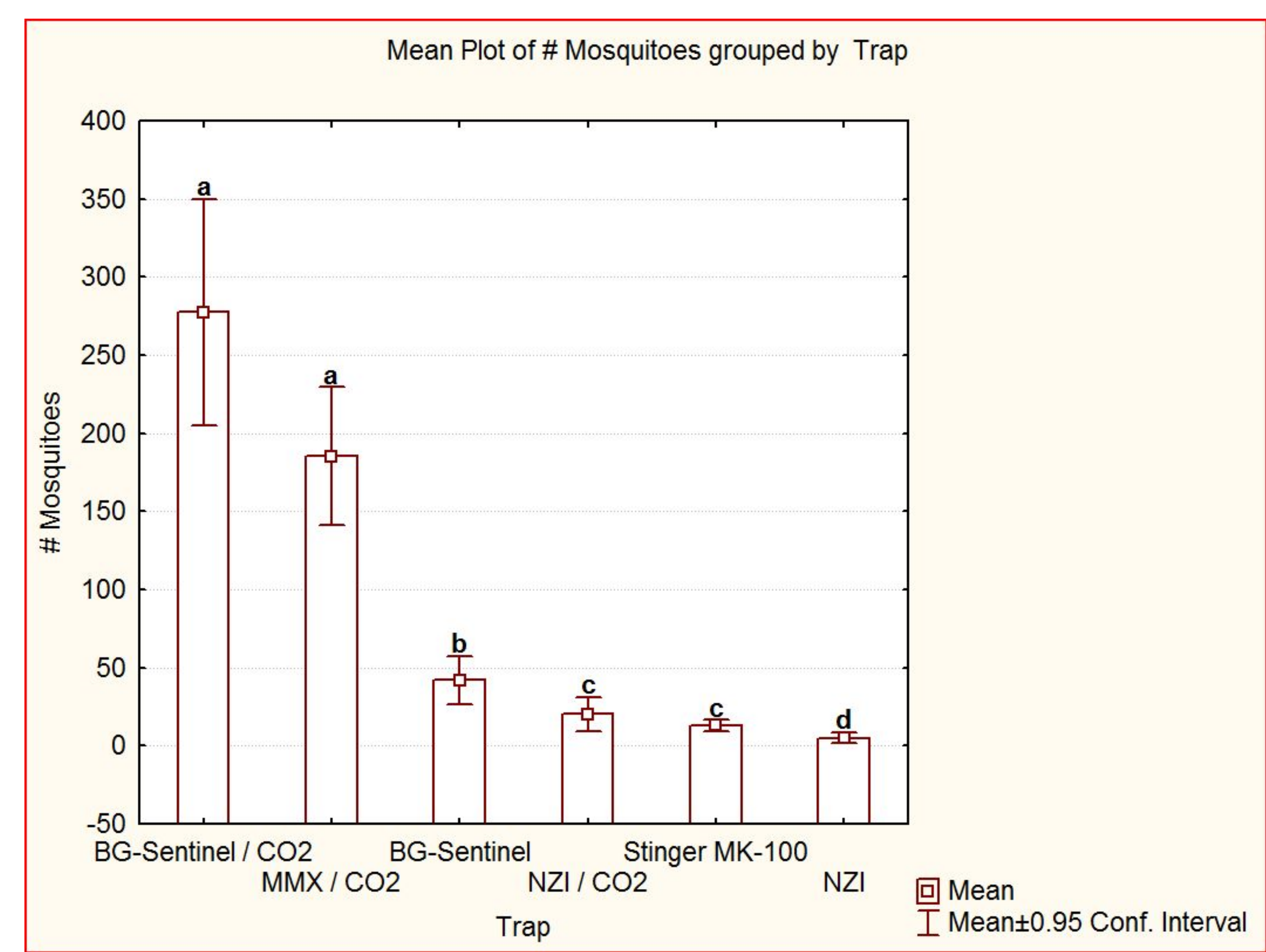


Fig. 2. Mean number of mosquitoes caught and 95% confidence limits by trap configuration (different letters represent statistically significant differences a=0.5).

RESULTS

Aedes taeniorhynchus, the salt marsh mosquito, was the most abundant species collected in all traps (Fig. 1). The MMX and BG Sentinel captured the most species with 14 for the MMX+CO₂+octenol and 12 for the BG Sentinel+CO₂+BG Lure. *Aedes taeniorhynchus*, *Anopheles crucians*, *Anopheles atropos*, *Aedes sollicitans* and *Aedes albopictus* were collected in all traps. *Culex quinquefasciatus* was collected in all except the NZI+octenol. *Coquilletidia perturbans* was recovered only in the MMX+CO₂+octenol and NZI+CO₂+octenol. *Culex salinarius* was captured in all except the BG Sentinel+BG Lure and NZI+CO₂+octenol. *Aedes vexans* was also not collected in the latter trap and the Stinger MK-100+Nosquito, but was trapped in all others.

The BG Sentinel+CO₂+BG Lure, and the MMX+CO₂+octenol caught significantly more (4.0 and 5.5X, respectively) mosquitoes on average than the other trap configurations (Fig. 2). There was no significant difference in numbers captured between these two traps. The BG Sentinel+BG Lure with no CO₂ collected significantly more mosquitoes than the three remaining trap configurations. There was no significant difference between the NZI+CO₂+octenol and the Stinger MK-100+Nosquito Lure. The NZI+octenol and no CO₂ caught significantly fewer mosquitoes than any of the other traps.

LITERATURE CITED

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 StatSoft, Inc. 2009. STATISTICA (data analysis software system), version 9.0. www.statsoft.com.
 Winer, B. J., Brown, D. R., Michels, K. M. (1991). *Statistical principals in experimental design. (3rd ed.)*. New York: McGraw-Hill.

MORE INFORMATION

This and similar studies with other trapping systems can be viewed at <http://pherec.org/decs> and clicking on "Trapping Systems".

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