

# EFFICACY OF THE ABC MOSQUITO MAGNET LIBERTY TRAP FOR CONTROL IN A RESIDENTIAL ENVIRONMENT – YEAR I

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**ABSTRACT:** A single Mosquito Magnet Liberty trap failed to reduce mosquito populations below natural background levels.

**INTRODUCTION:** A large variety of traps have been marketed for the control of mosquitoes. We have conducted previous studies comparing the species and numbers caught for several of the most popular traps. The Mosquito Magnet Liberty (Fig. 1) has been found to catch 2X-6X more mosquitoes than most other commercial traps. The purpose of this study was to determine if the Liberty could effectively reduce mosquito populations in a residential backyard environment.

**MATERIALS & METHODS:** The study was conducted in the summer and fall of 2003 in a large residential subdivision located in Sunny Hills, Washington Co., in the Florida NW Panhandle.

Eight CO<sub>2</sub>-baited ABC light traps (Fig. 2) were positioned in the backyards of four homes (two traps/yard) to measure mosquito populations twice weekly throughout the study. Two yards were randomly assigned as "treatments" and two were maintained as non-treated "controls". Liberty traps were operated 24/7 in treatment yards according to manufacturer's directions. The traps were turned on after a one month pre-treatment monitoring period and removed prior to a one month post-treatment monitoring period. Biting counts were conducted once per week between 8-10 a.m. C.S.T. at all yards. Precipitation was measured twice weekly in rain gauges posted in each yard. Efficacy was measured by averaging populations during the pretreatment, treatment and post-treatment periods in both the treatment and control sites. Percent change in population during the treatment period was calculated for treatment and control sites via the following formula:

$$\frac{\text{Pretreatment } \bar{x} - \text{Treatment } \bar{x}}{\text{Pretreatment } \bar{x}} \times 100 = \% \text{ Change}$$

Percent reduction (i.e., efficacy) attributed to the Liberty trap was calculated by subtracting the % change in the treatment from the control. Percent change and reduction was calculated similarly between the treatment and post-treatment periods.

**RESULTS:** *Anopheles crucians* and *Culex nigripalpus* were the predominant species followed by *Oc. atlanticus* as measured by light traps (Fig. 5). *Aedes albopictus* was the primary biting species, followed by *An. crucians* and *Oc. atlanticus*. All but one yard had very low to no biting activity. Biting counts in this yard were very similar to overall populations measured by the light traps (Fig. 6). Precipitation was greatest during June-Sept with several rain events exceeding 1" (Fig. 7). Thereafter, rainfall was less frequent and did not exceed 0.5"/event. Light traps at both the treatment and control yards exhibited similar abundance (Figs. 8 & 9). Populations started relatively high and gradually reduced throughout the season. Percent change attributed to the Liberty trap was 46% from the pre-treatment to the treatment period; however, when adjusted by % change in the control (46%) the percent reduction was 0%. Percent change from the treatment to the post-treatment period in the treatment sites was 34% and 49% in the controls.

**CONCLUSIONS:** A single Mosquito Magnet Liberty trap did not control mosquitoes in backyard residential environments. Multiple traps may be required to produce the desired effect. We will likely explore this in Year II studies.

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Fig. 1. ABC Mosquito Magnet Liberty Trap.



Fig. 2. ABC Light Traps for population monitoring.



Fig. 3A & B. Treatment sites.



Fig. 4C & D. Control sites.

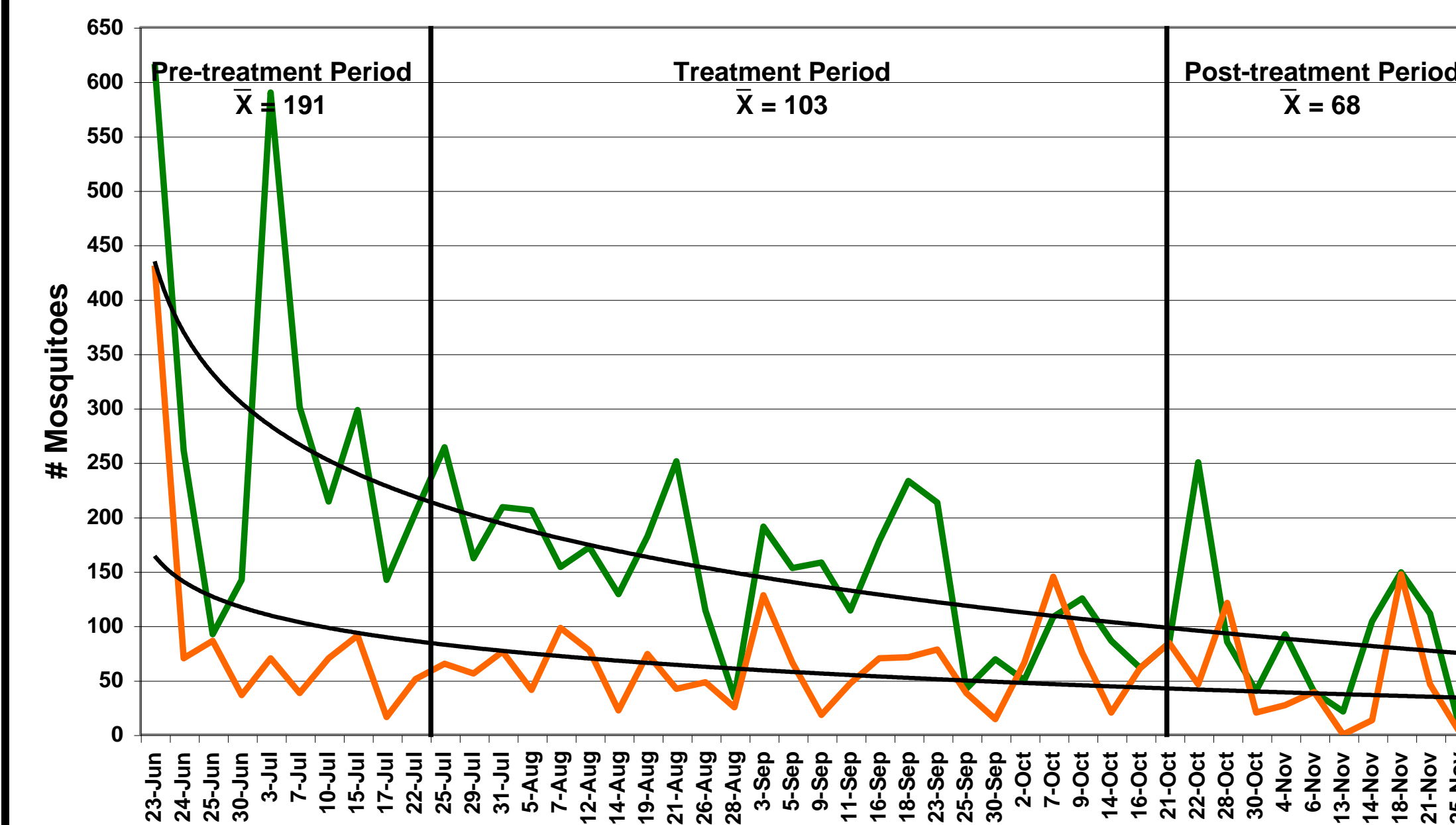


Fig. 8. Mosquito population and logarithmic trend lines at two homes each treated with a Mosquito Magnet Liberty trap.

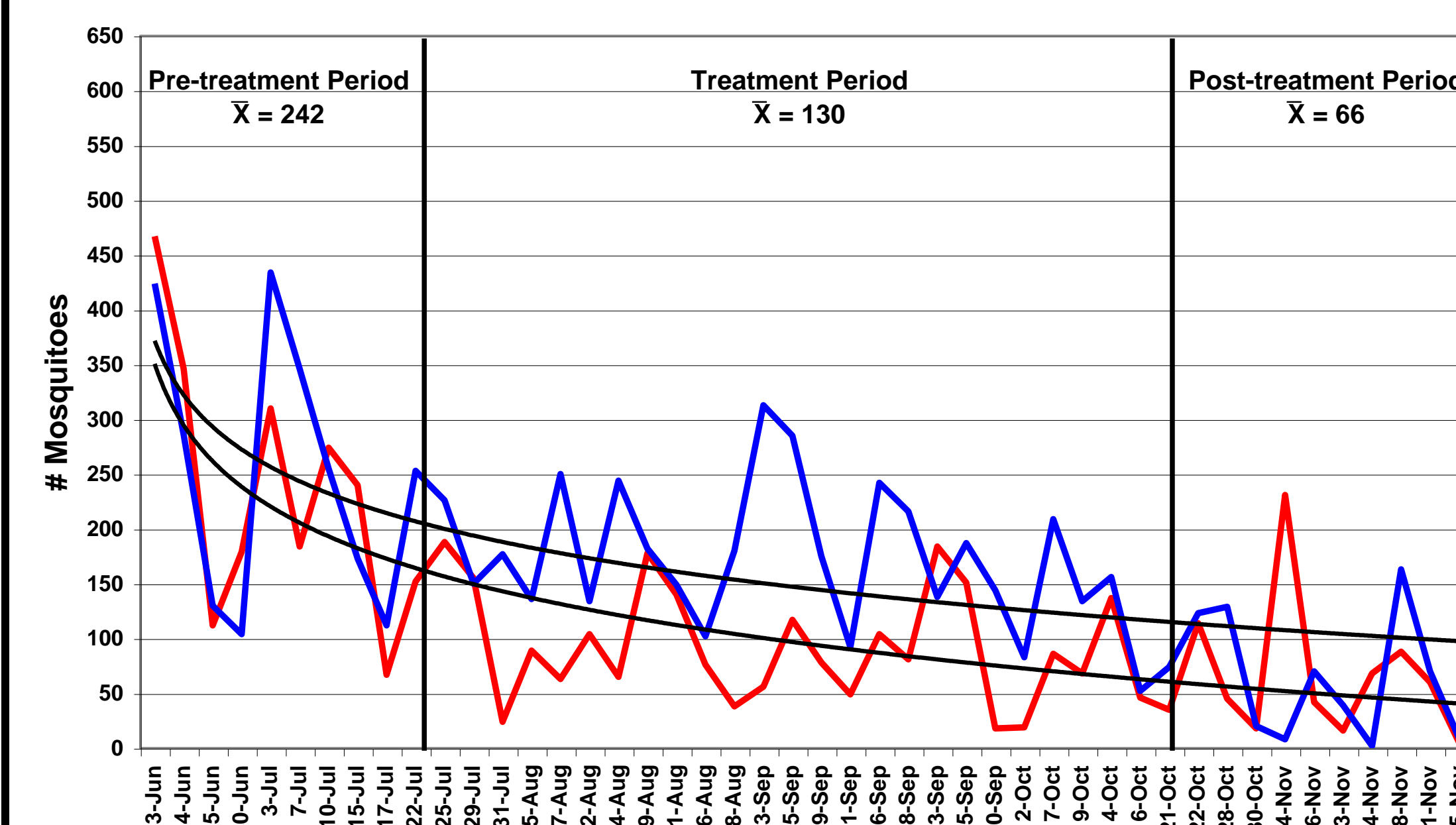


Fig. 9. Mosquito population and logarithmic trend lines at two non-treated "control" homes.

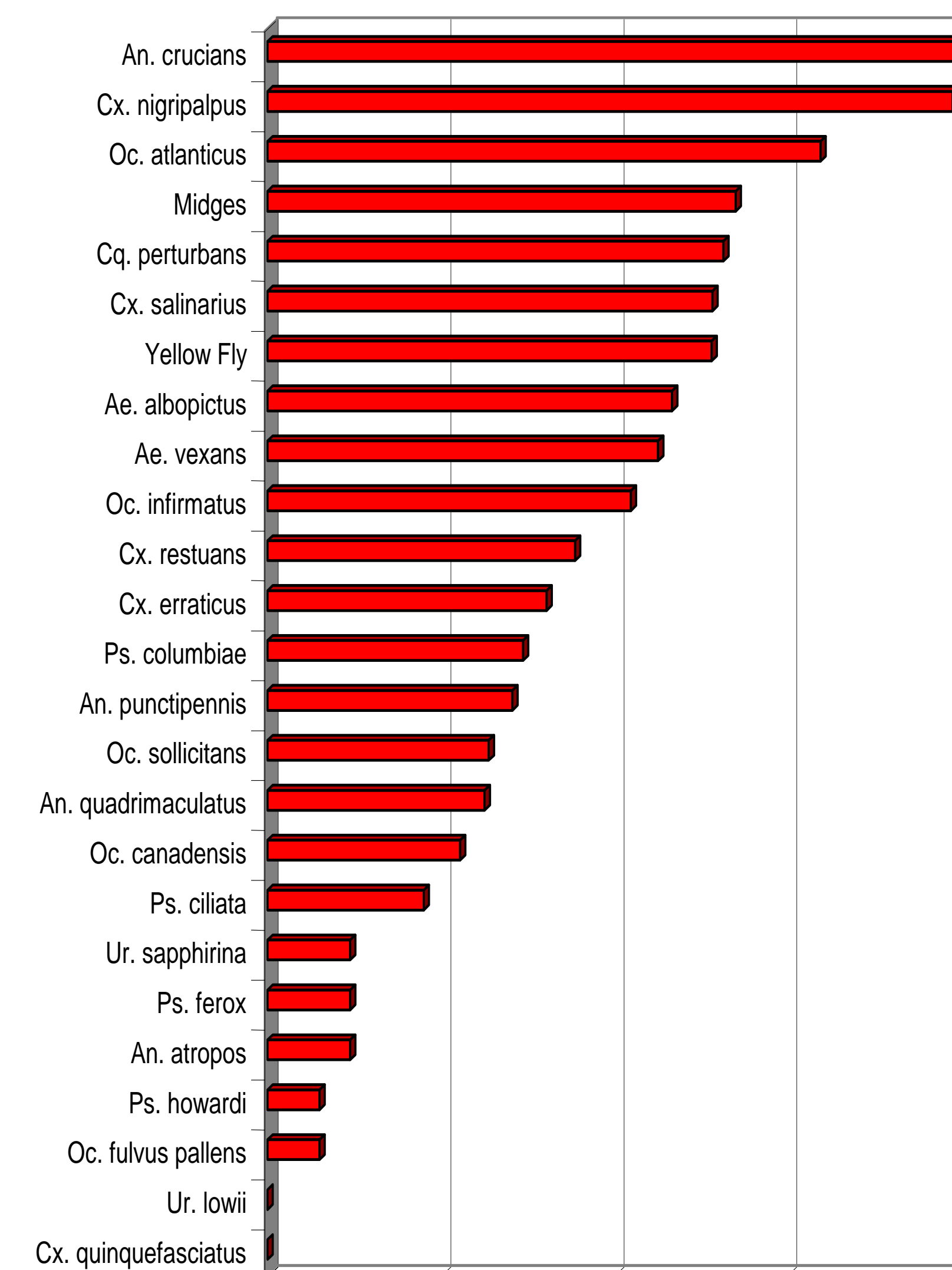


Fig. 5. Species composition and abundance at study sites.

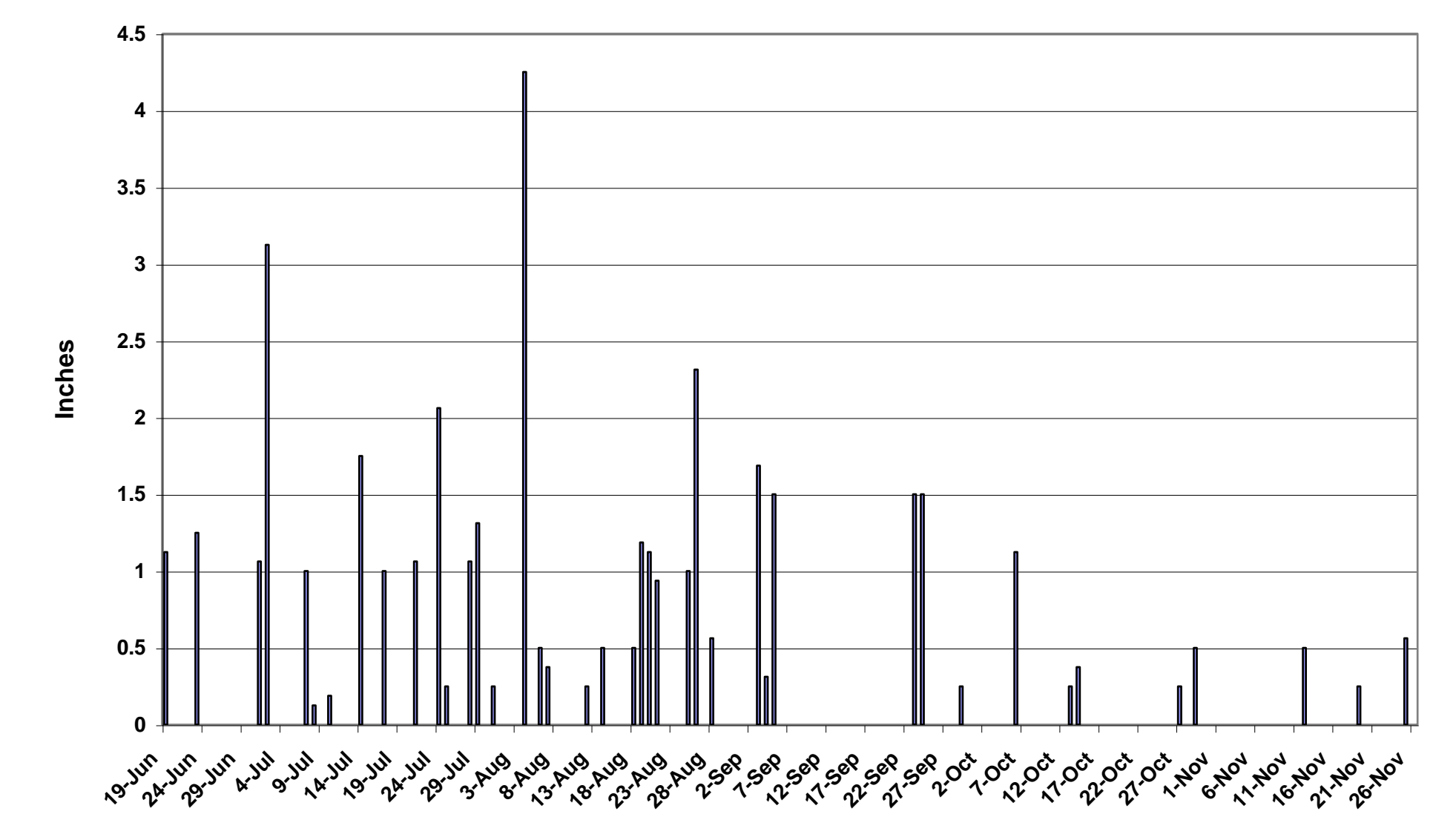


Fig. 7. Average biweekly rainfall at four backyard home sites.

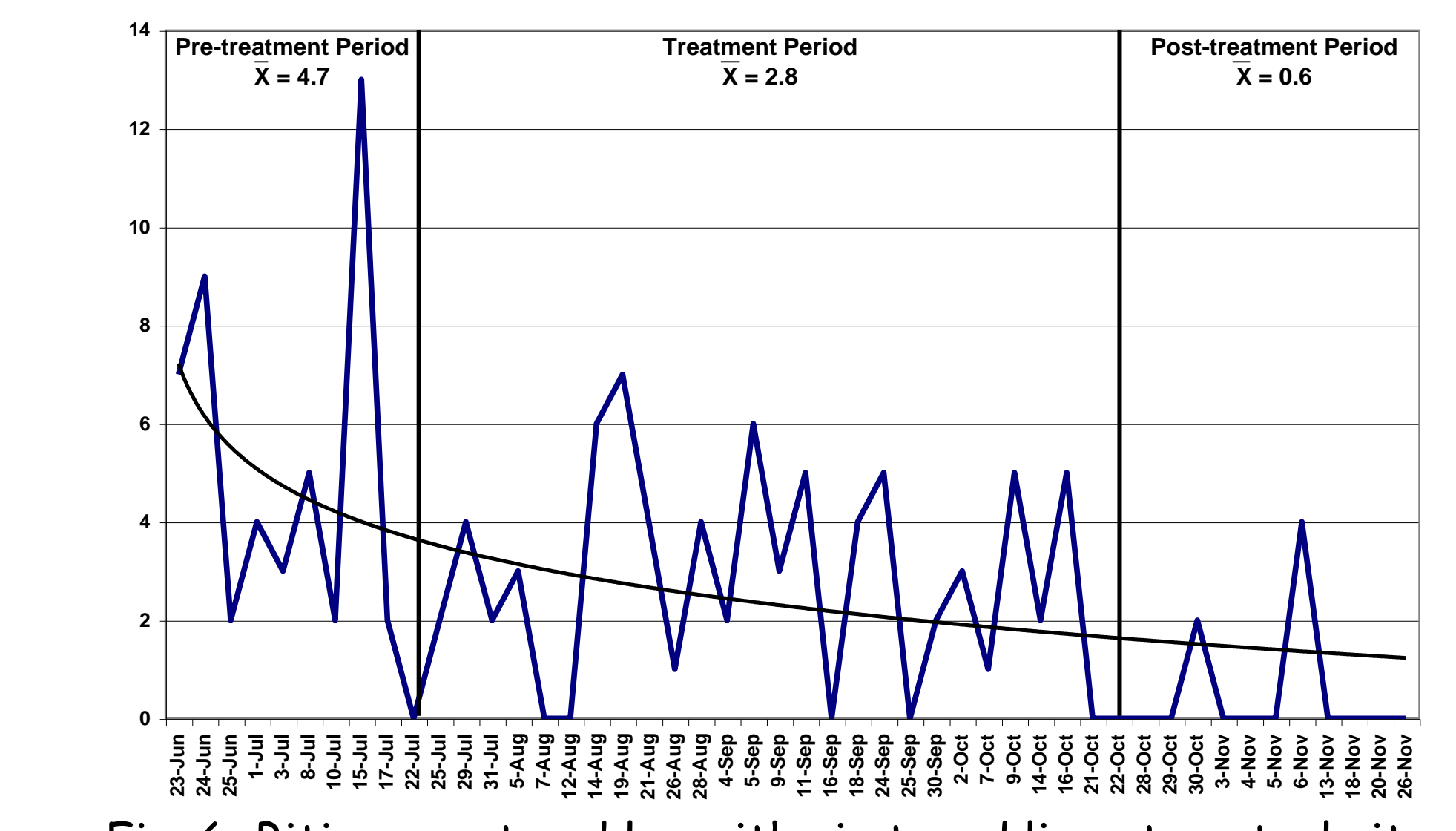


Fig. 6. Biting count and logarithmic trend line at control site pictured in Fig. 4D.