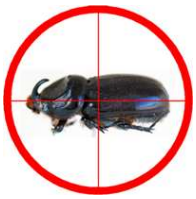
Research in Support of the Guam Coconut Rhinoceros Beetle Eradication Project



DRAFT: Relative Attractiveness of White and Ultraviolet Light Emitting Diodes Plus Oryctalure

Prepared by
Aubrey Moore
University of Guam Cooperative Extension Service

January 8, 2014*

Abstract to appear here any day now.

1 Methods

We measured the attractiveness of white light emitting diodes (LEDs) versus ultraviolet LEDs in a series of A-B selection experiments performed in two large field cages at the University of Guam Agricultural Experiment Station at Yigo on the evenings of January 2 through 7, 2014 See figure 1for the experimental setup. We tested three types of LEDs: a white LED (W) and two ultraviolet LEDs. To human eyes, one type had a blue color (B) and the other had a violet color (V). In each cage, we ran all permutations (WB, WV, BV, BW, VW, VB) in random order on consecutive nights (Table 1). Test beetles came from pheromone traps.

*Revised January 9, 2014
C:/Documents and Settings/Administrator/My Documents/LEDcolor/LEDcolor.lyx

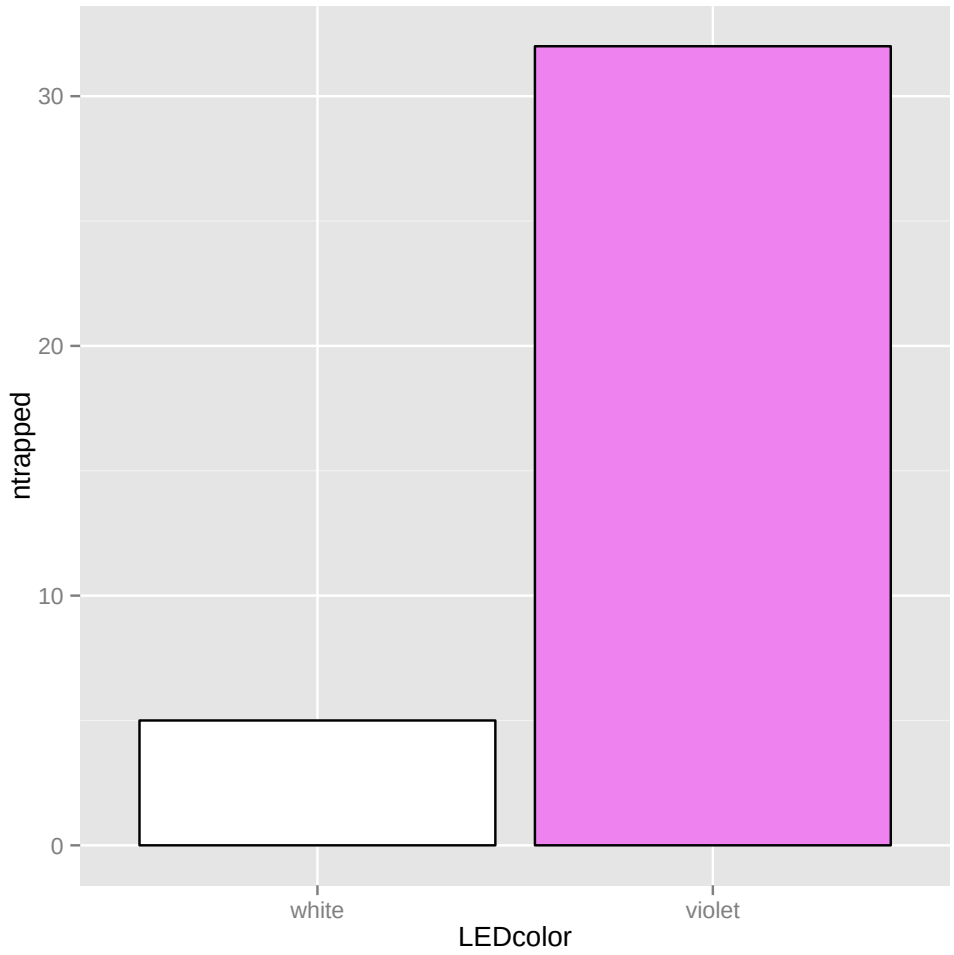
Figure 1: Experimental setup. Release site (CRB adults in peat moss) in foreground. Two barrel traps equipped with pans and LEDs in background. A single oryctalure was hung between the barrels. The experiment was performed in two large field cages (20' x 20' x 10').

2 Results and Discussion

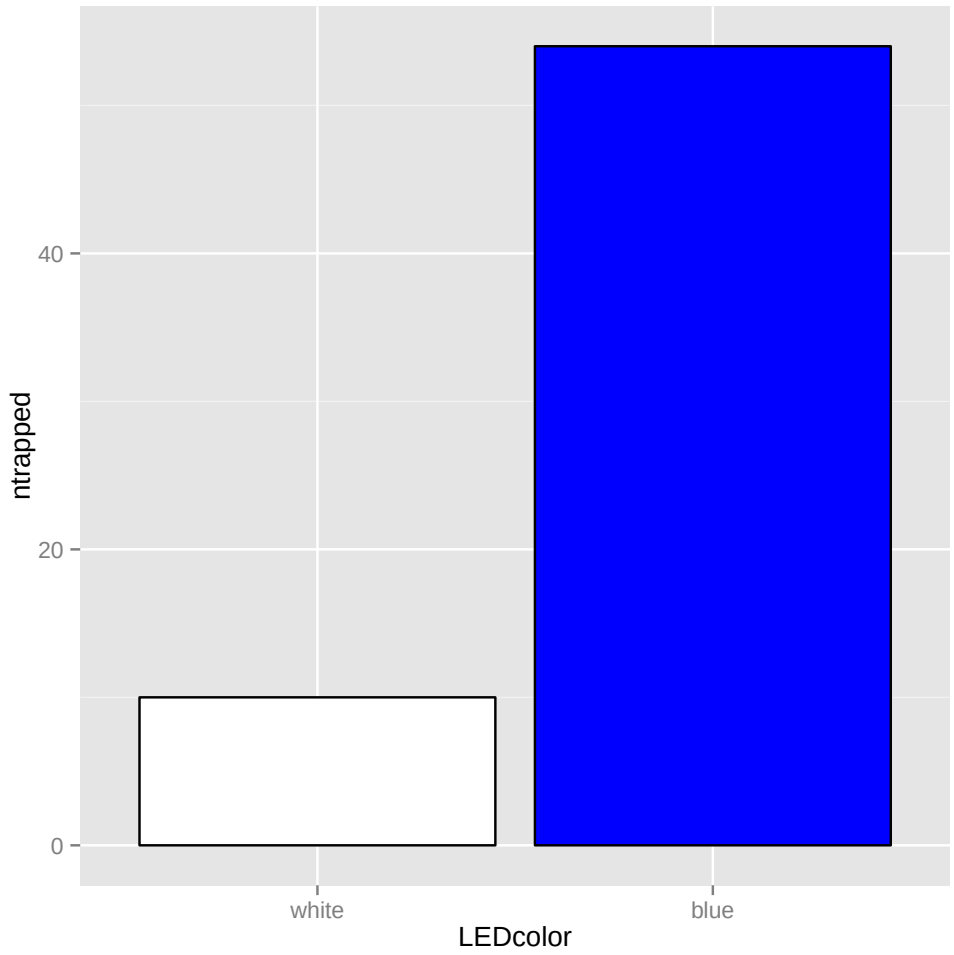
Both types of UVLEDs, when used in conjunction with oryctalure, resulted in trap catches significantly higher than those obtained with white LEDs.There was no difference in trap catch obtained using the different types of UVLEDs.

Table 1: Raw data.

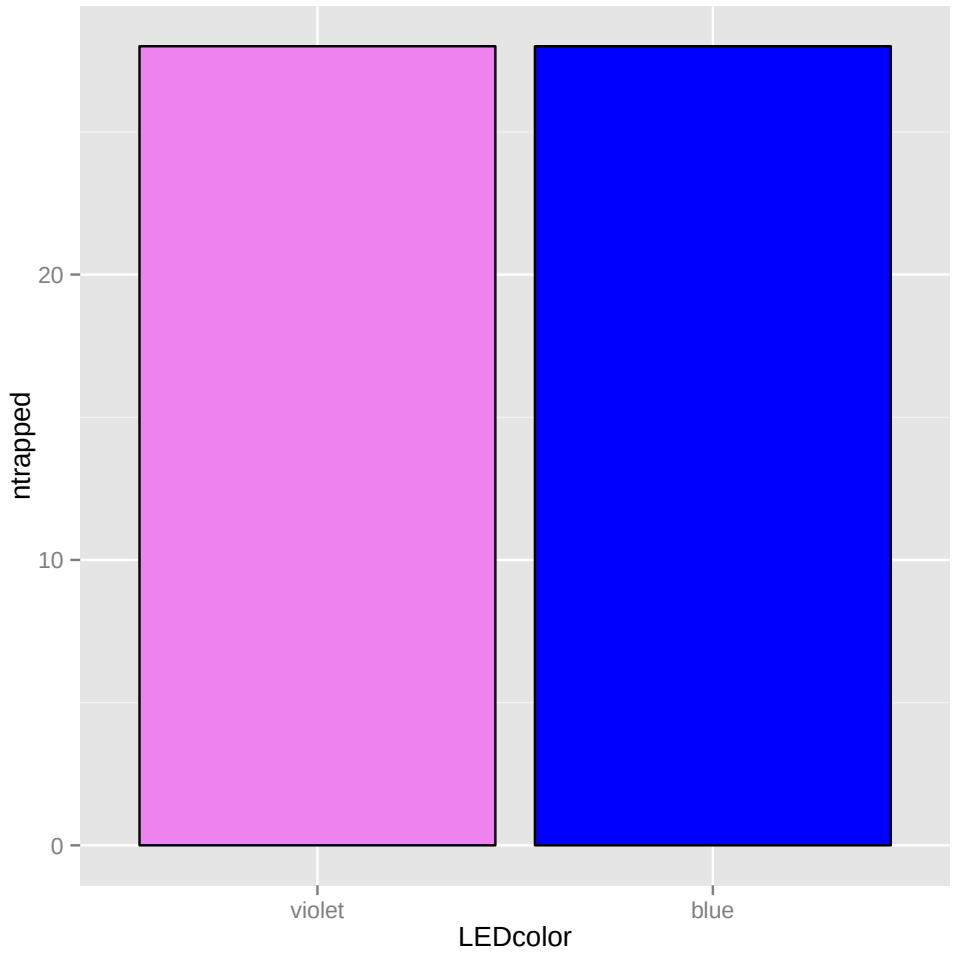
	Day	Cage	Permutation	LeftCount	RightCount	UntrappedCount
1	1	N	VW	9	1	8
2	1	S	BW	11	2	5
3	2	N	BV	8	12	7
4	2	S	VW	13	2	6
5	3	N	BW	8	1	4
6	3	S	BV	6	7	6
7	4	N	WV	1	3	9
8	4	S	WV	1	7	12
9	5	N	WB	3	13	26
10	5	S	WB	4	22	10
11	6	N	VB	7	4	17
12	6	S	VB	2	10	6




```
> binom.test(c(white,violet))

        Exact binomial test

data:  c(white, violet)
number of successes = 5, number of trials = 37, p-value = 7.428e-06
alternative hypothesis: true probability of success is not equal to 0.5
95 percent confidence interval:
 0.04537199 0.28774780
sample estimates:
probability of success
             0.1351351
```




```
> binom.test(c(white,blue))

        Exact binomial test

data:  c(white, blue)
number of successes = 10, number of trials = 64, p-value = 1.996e-08
alternative hypothesis: true probability of success is not equal to 0.5
95 percent confidence interval:
 0.07755733 0.26863424
sample estimates:
probability of success
               0.15625
```




```
> binom.test(c(violet,blue))

        Exact binomial test

data:  c(violet, blue)
number of successes = 28, number of trials = 56, p-value = 1
alternative hypothesis: true probability of success is not equal to 0.5
95 percent confidence interval:
 0.3633554 0.6366446
sample estimates:
probability of success
                   0.5
```