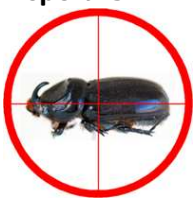
Guam Coconut Rhinoceros Beetle Project

Technical Report CRB-2014-09-11



Adding CRB Breeding Site Material to Barrel Traps Does Not Increase Trap Catch

Prepared by
Aubrey Moore and Roland Quitugua
University of Guam Cooperative Extension Service

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Addition of CRB breeding material substrate to barrels supporting pan traps equipped with lures, UVLEDs and cones did not increase trap catch.

1 Introduction

This experiment was run to test the idea that CRB breeding site material added as substrate in a barrel benath a pan trap will increase attractiveness of the trap, resulting in increased trap catch.

2 Methods

We used 31 pan traps sitting upon empty barrels already in operation at the Yigo experiment station. These traps were equipped with lures, UVLEDs and cones. For substrate, we chipped decaying coconut material from sanitation of the station, including a dead standing coconut which was generating adults. The pile of chipped substrate was thoroughly mixed using a back hoe. About half of the barrels were filled with substrate. These were selected by ordering trap locations by trap catch over the month previous month and then selecting all the odd ranked locations. Barrels at these locations were filled with substrate.

The experiment was run from July 22 to October 1, 2014. Beetles in pan traps were counted on August 2, August 17, August 24, August 31, September 8, September 18, September 24, and October 1.

Analysis was done using an IPython notebook (Listing 1).

3 Results

Addition of breeding material substrate beneath pan traps did not change the trap rate (Figure 1). Mean number of beetles captured per day was 0.27 for pan traps above empty barrels and 0.25 for pan traps above barrels filled with substrate. The difference was not significant (t-test; $t = 0.3670$; $p = 0.7163$).

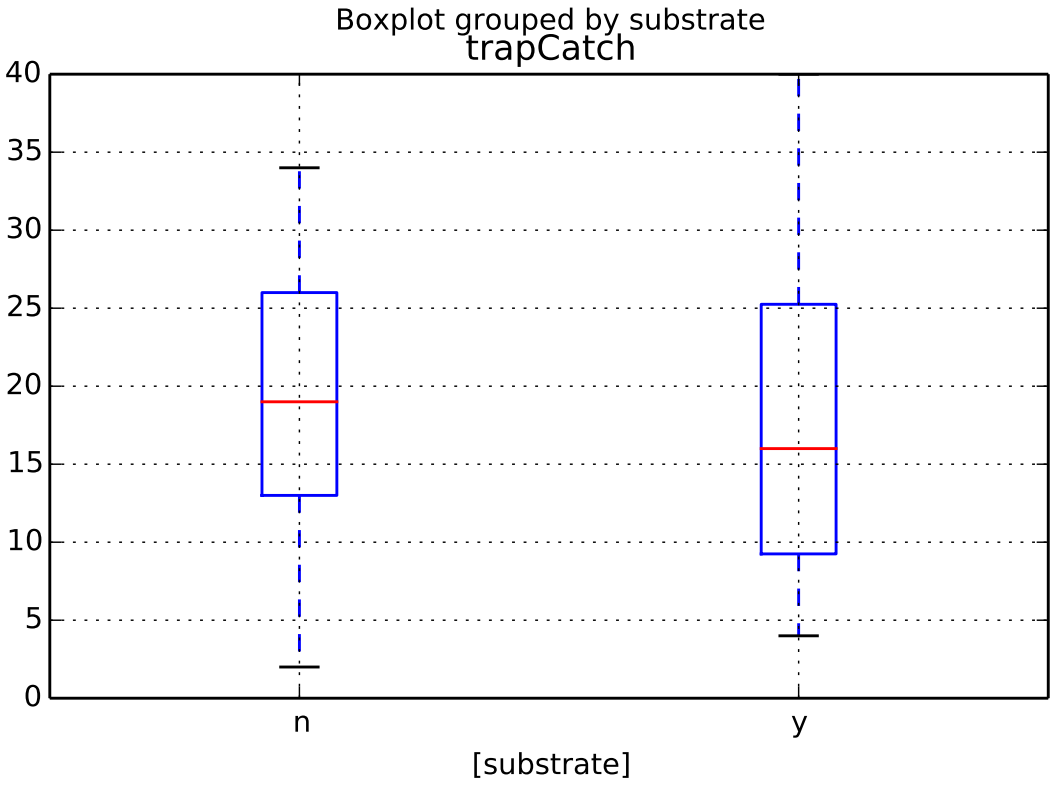

Figure 1: Number of beetles caught per trap between July 22 and October 1, 2014.

Listing 1: ipynb

```
# coding: utf-8

# In[1]:

import pymysql
import pandas
import matplotlib.pyplot as plt
get_ipython().magic(u'matplotlib inline')

conn = pymysql.connect(host='mysql.guaminsects.net',user='readonlyguest',passwd='
    readonlypassword',db='oryctes')
sql = """
SELECT barrelID, substrate, SUM(males+females) AS trapCatch from YigoBarrelObs
WHERE startdate >= '2014-07-22' AND endDate <= '2014-10-01'
GROUP BY barrelID
ORDER BY substrate, barrelID;
"""
df = pandas.io.sql.read_frame(sql, conn)
df.tail()


# In[2]:

df.boxplot(column='trapCatch', by='substrate')
plt.savefig('boxplot.pdf')


# In[3]:

from datetime import date
d0 = date(2014, 7, 22)
d1 = date(2014, 10, 1)
delta = d1-d0
days = delta.days


# In[4]:

from scipy.stats import ttest_ind

cat1 = df[df['substrate']=='n']
cat2 = df[df['substrate']=='y']

print cat1['trapCatch'].mean()/days
print cat2['trapCatch'].mean()/days

ttest_ind(cat1['trapCatch'], cat2['trapCatch'])
```