***Results Outline***

* Things to include in results:
* graph trends (explain axis)
* What emergence weight is how calculated (heaviest that they ever are and lose weight throughout their life) and how calc percent emergence weight (mass into field/calc emergence weight)
* Difference between arboreal (less than 80% EW) and terrestrial sites (>80%EW) so to find breeding sites use well fed beetles (>80%)
* Interesting landing sites, describe (trap, tree with multiple beetles, high up in the breadfruit tree couldn’t be found by dogs) include crowns (Hawaii breeding site)
* Not significant by sex, EW, size, distance,
* how far they flew-methods

-Flight activity time and weather relatedness

-Thermogenesis before flight

-Number released, number found

-male/female ratios and activity

-%EW and activity

-Locations to which beetles flew

-difference in emergence weight, sex, size between lost and found,

-describe sites

-describe trends (Graphs here)

-%EW

-not sex dependent

-size and destination relationship?

-Distance flown

-not related to weight, sex, or %EW

***Results Rough Draft***

The tagging and radio tracking of CRB in this study led to the successful location of multiple cryptic breeding sites, both in arboreal and soil-associated microhabitats. A total of 33, out of a possible 34, tagged beetles flew during the course of this study. Of the 33 beetles that flew, 19 were successfully tracked to landing sites.

CRB were most active from approximately 19:30 to 21:00, and flight activity did not appear to be heavily influenced by the prevailing weather conditions. Transmitters did not inhibit the flight mechanics of CRB to an observable degree. Over the course of experimentation, it was observed that beetles employed thermogenesis in flight muscles directly prior to flight, allowing a reliable prediction to be made as to which beetles were about to fly by detecting thermal radiation with an infrared camera.

Landing sites of CRB could be identified as arboreal or terrestrial destinations. Arboreal destinations were most commonly the crowns of coconut palms damaged by bore holes or typhoons; however, beetles also landed in the branches of other species of damaged trees. For example, an upper branch of a large breadfruit tree damaged in a recent typhoon was the final destination of one beetle. In another instance, two beetles flew to the crown of the same highly damaged coconut tree independently of one another, supporting the tendency of CRB to congregate in specific breeding sites. It is important to note that neither of these sites could have been effectively tracked by dogs due to the height of the final landing location.

Terrestrial landing sites were defined as being at an elevation less than one meter. CRB tended to bury into the soil upon landing at depths up to approximately 15 centimeters. Typically, these sites were at the base of a tree, though CRB also landed in less predictable places as was the case with a beetle that landed beneath a trailer on parked on a grassy lawn on the outskirts of the residential area surrounding Triton Farm. Of particular interest was a beetle that was found beneath a CRB barrel trap baited with erictalure. At this landing site, other beetles were found as well as several larvae, indicating a breeding site.

In assessing the flight patterns of beetles for trends between sex and size, percent emergence weight (%EW) was calculated as an additional consideration. Percent emergence weight describes CRB mass at the time of measurement relative to its estimated mass upon emergence. This value can be estimated based upon a linear equation relating elytral measurements and emergence weight. Consideration of this value is significant in data analysis because percent emergence reflects the present life stage of a beetle and how much stored energy it has available; CRB emerge at their heaviest weight and gradually lose weight over their lifespan. When relating %EW, sex, or size to distance flown from release point to final landing site, no relationship was found. However, distinct trends were evident in %EW and the nature of the breeding site as arboreal or terrestrial. Beetles of less than 80% EW went to arboreal locations while beetles of more than 80% EW flew to terrestrial soil-associated sites (FigureXXXXX)

Explain graphs

Percent emergence weight (%EW) varied significantly by the microhabitat to which CRB were tracked (Figure 1, ANOVA: *F* = X.XXX, *P* = X.XXX). When microhabitats were further grouped as either arboreal (> 1 m above ground) or soil-associated (< 1 m above ground), the difference in mean %EW between the groups, arboreal, 74 ± 2%, soil-associated, 82 ± 3%, was found to be highly significant (t-test: *P* < 0.001). In addition, while emergence weight (EW) was significantly different between arboreal (6.5 ± 0.4 g) and soil-associated (4.9 ± 0.5 g) microhabitats (t-test: *P* = 0.020), there were no differences in weight (*P* = 0.160) or distance travelled (*P* = 0.908) between these microhabitat groupings. The numbers of male and female beetles did not vary between arboreal and soil-associated microhabitats (Fisher’s: *P* = 1.000).

No relationship was found between the distance beetles moved from the release point and beetle EW (*R2* = 0.0686), %EW (*R2* = 0.0462), or weight (*R2* = 0.0465). There was no difference in the mean distance beetles moved at the two experimental sites, Yigo, 276 ± 42 m, and Asan, 215 ± 57 m (*P* = 0.408). Additionally, no differences were found between the mean distances male (254 ± 44 m) and female (233 ± 61 m) beetles moved (*P* = 0.778).

The %EW for CRB that were successfully located, 78 ± 2%, and for CRB that were lost, 72 ± 2%, differed significantly (t-test: *P* = 0.021). However, EW (*P* = 0.822) and weight (*P* = 0.510) did not differ between CRB that were successfully tracked or lost after release. Additionally, there were no differences in the numbers of male and female CRB that were successfully located or lost (Fisher’s: *P* = 1.000).