



University of Guam Coconut Rhinoceros Beetle Biological Control Project  
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# Bioassay Report: DUG42

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## Contents

<b>1</b>	<b>Summary</b>	<b>2</b>
<b>2</b>	<b>Description</b>	<b>2</b>
2.1	Replicate 1 . . . . .	2
2.2	Replicate 2 . . . . .	2
<b>3</b>	<b>Mortality</b>	<b>3</b>
<b>4</b>	<b>Change in Mass</b>	<b>4</b>
<b>5</b>	<b>Post Mortem Images</b>	<b>5</b>
5.1	control . . . . .	5
5.2	heat inactivated . . . . .	15
5.3	virus . . . . .	25

## **1 Summary**

## **2 Description**

Adult beetles incubated at 30°C and 80% RH for more than 2 weeks to observe possible contamination from green muscardine fungus infection were employed in a bioassay to determine the susceptibility of adults to infection by a virus isolate collected from the Philippines (**Dug42**). Treatment 1 consisted of 10-20 µl sterile filtered water injected at a point on the ventral surface at the junction of the hind leg and the thoracic using a sterile needle. Treatment 2 consisted of 10-20 µl heat-inactivated virus injection while in the treatment 3, beetles were injected with 10-20 µl of untreated virus preparation. Adults were then placed in clean glass mason jars (bleach-treated) with a piece of banana added for food. Beetles were incubated at 30°C and 80% RH in a Percival incubator. All beetles were weighted every other day but monitored daily for four weeks to observe any possible signs of mortality.

### **2.1 Replicate 1**

A total of 10 adult females and five adult males distributed among the three treatments were employed in this replicate.

### **2.2 Replicate 2**

A total of seven adult females and eight adult males distributed among the three treatments were employed in this replicate.

### 3 Mortality

	bioassay_treatment	n <sub>total</sub>	n <sub>dead</sub>	mortality	adjusted_mortality	significance
0	control	10	5	0.5	0.0	1.000000
1	heat inactivated	10	7	0.7	0.4	0.649917
2	virus	10	7	0.7	0.4	0.649917

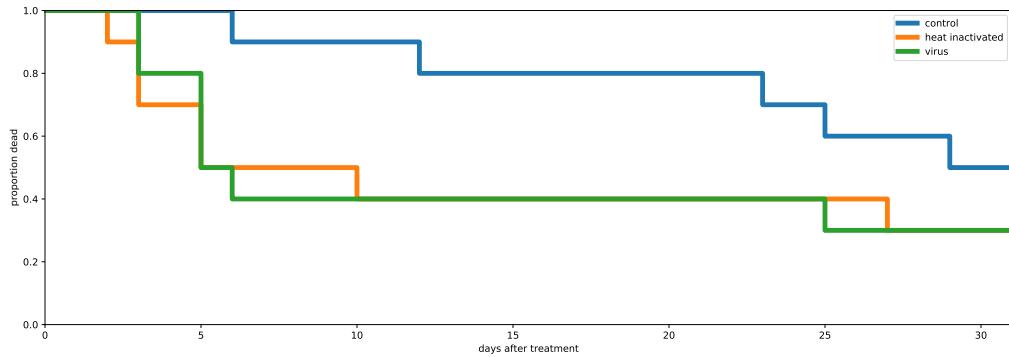
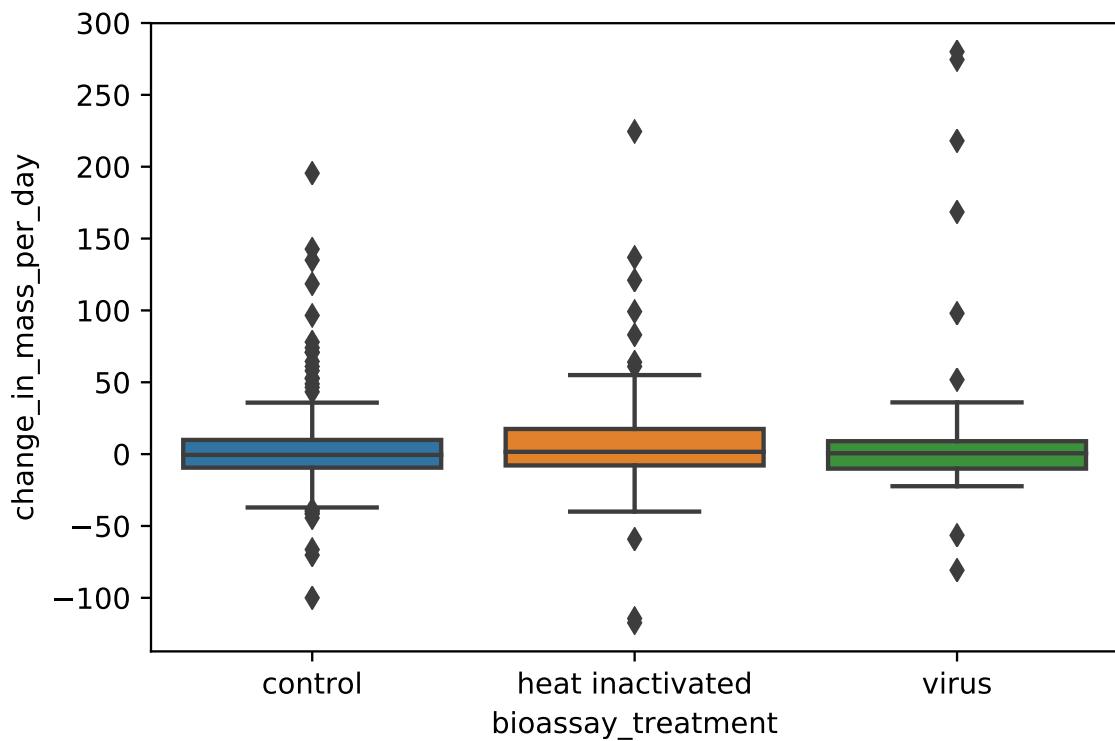


Table 1: Pairwise differences among mortality curves.

		test_statistic	p
control	heat inactivated	1.920677	0.165782
	virus	2.020872	0.155150
heat inactivated	virus	0.007094	0.932879

## 4 Change in Mass

Change in mass section goes here.



	control	heat inactivated	virus
control	-1.000000	0.901325	1.0
heat inactivated	0.901325	-1.000000	1.0
virus	1.000000	1.000000	-1.0

## 5 Post Mortem Images

### 5.1 control



Figure 1: Bioassay: DUG42-1; Treatment: control; Beetle ID: 46



Figure 2: Bioassay: DUG42-1; Treatment: control; Beetle ID: 47

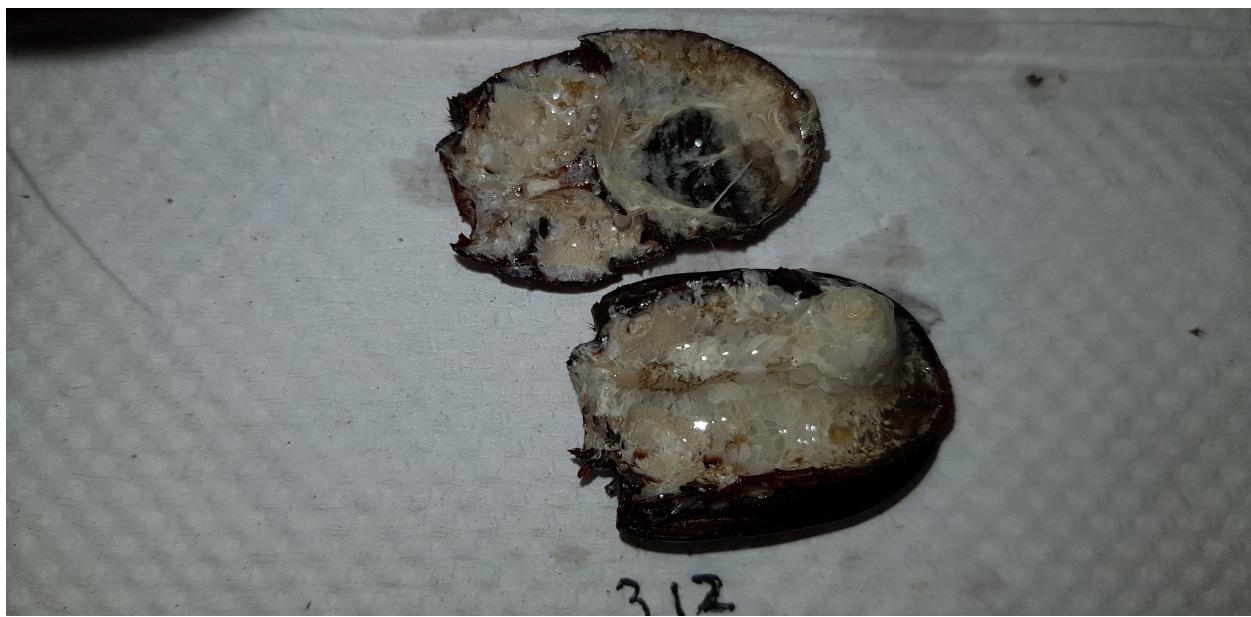


Figure 3: Bioassay: DUG42-1; Treatment: control; Beetle ID: 48



Figure 4: Bioassay: DUG42-1; Treatment: control; Beetle ID: 49



Figure 5: Bioassay: DUG42-1; Treatment: control; Beetle ID: 50



Figure 6: Bioassay: DUG42-2; Treatment: control; Beetle ID: 61



Figure 7: Bioassay: DUG42-2; Treatment: control; Beetle ID: 62



Figure 8: Bioassay: DUG42-2; Treatment: control; Beetle ID: 63



Figure 9: Bioassay: DUG42-2; Treatment: control; Beetle ID: 64

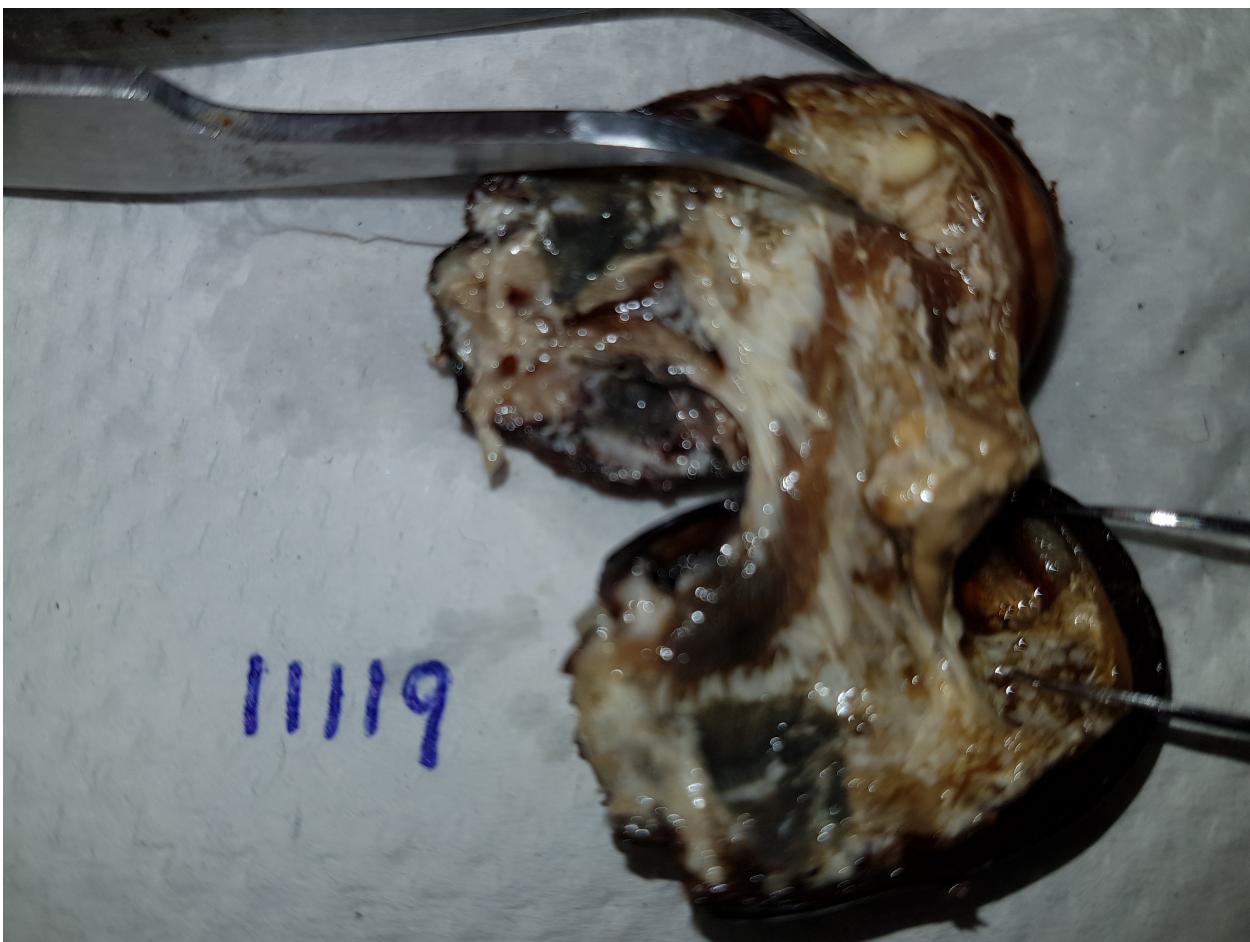


Figure 10: Bioassay: DUG42-2; Treatment: control; Beetle ID: 65

## 5.2 heat inactivated



Figure 11: Bioassay: DUG42-1; Treatment: heat inactivated; Beetle ID: 51



Figure 12: Bioassay: DUG42-1; Treatment: heat inactivated; Beetle ID: 52



Figure 13: Bioassay: DUG42-1; Treatment: heat inactivated; Beetle ID: 53



Figure 14: Bioassay: DUG42-1; Treatment: heat inactivated; Beetle ID: 54



Figure 15: Bioassay: DUG42-1; Treatment: heat inactivated; Beetle ID: 55



Figure 16: Bioassay: DUG42-2; Treatment: heat inactivated; Beetle ID: 66



Figure 17: Bioassay: DUG42-2; Treatment: heat inactivated; Beetle ID: 67



Figure 18: Bioassay: DUG42-2; Treatment: heat inactivated; Beetle ID: 68



Figure 19: Bioassay: DUG42-2; Treatment: heat inactivated; Beetle ID: 69



Figure 20: Bioassay: DUG42-2; Treatment: heat inactivated; Beetle ID: 70

### 5.3 virus



Figure 21: Bioassay: DUG42-1; Treatment: virus; Beetle ID: 56



Figure 22: Bioassay: DUG42-1; Treatment: virus; Beetle ID: 57



Figure 23: Bioassay: DUG42-1; Treatment: virus; Beetle ID: 58



Figure 24: Bioassay: DUG42-1; Treatment: virus; Beetle ID: 59



Figure 25: Bioassay: DUG42-1; Treatment: virus; Beetle ID: 60

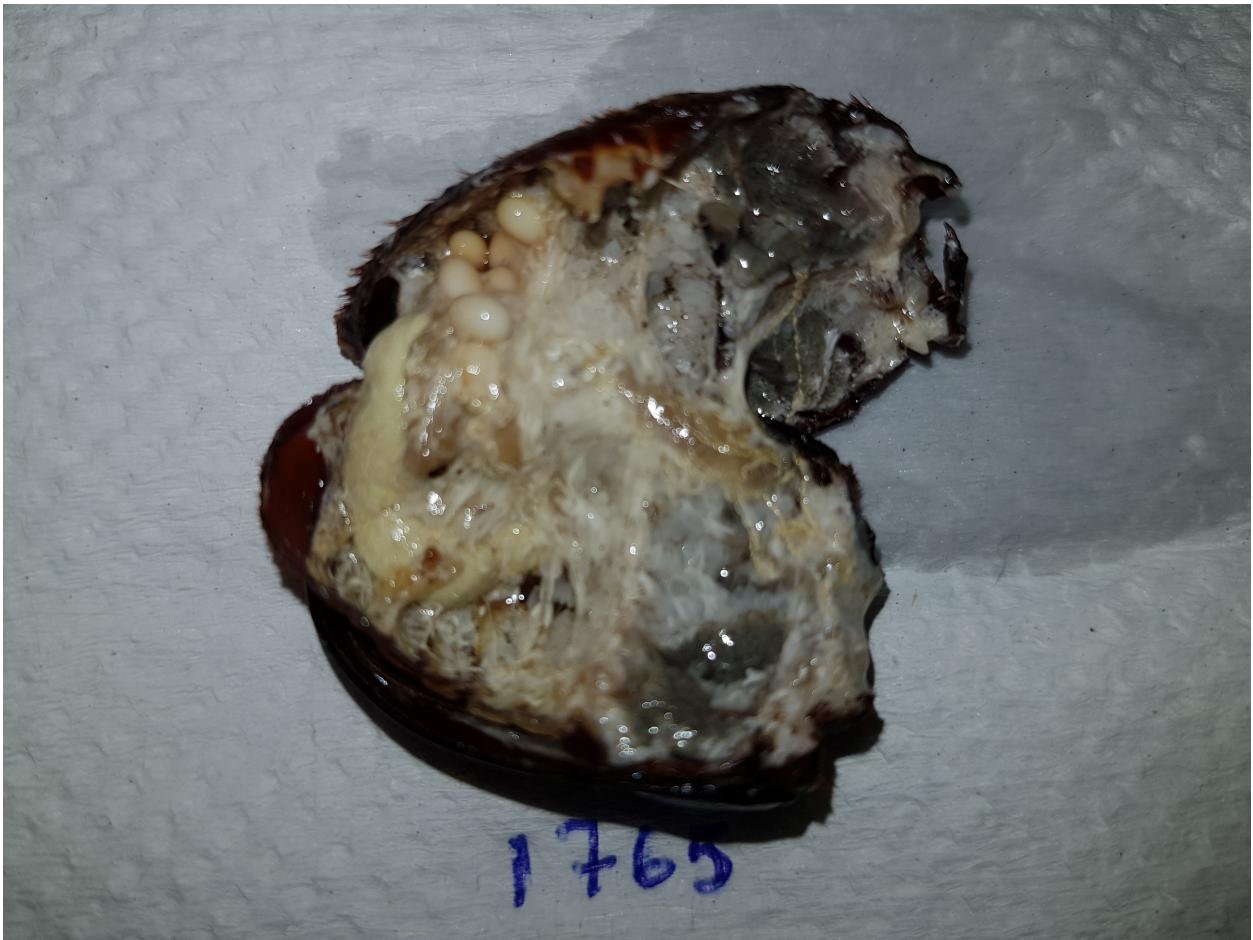


Figure 26: Bioassay: DUG42-2; Treatment: virus; Beetle ID: 71



Figure 27: Bioassay: DUG42-2; Treatment: virus; Beetle ID: 72



Figure 28: Bioassay: DUG42-2; Treatment: virus; Beetle ID: 73



Figure 29: Bioassay: DUG42-2; Treatment: virus; Beetle ID: 74



Figure 30: Bioassay: DUG42-2; Treatment: virus; Beetle ID: 75