

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Pest Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants			90%	
215	Biological Control of Pests Affecting Plants			10%	
	Total			100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.5	0.0
Actual	0.0	0.0	0.2	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	19756	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	25179	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The breeding juvenile hormone (JH) profiles of several species of burying beetles and a carrion beetle, males and females, paired and single, were compared to understand the evolution of the role of JH in orchestrating the changes in physiology and behavior that occur during a breeding bout. The ultimate

2010	1	1
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Output #2

Output Measure

- Number of graduate student directly involved in the projects

Year	Target	Actual
2010	1	2

Output #3

Output Measure

- Number of non-peer-reviewed publications (theses, abstracts, newsletters, fact sheets, articles, etc)
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of websites in which project results have been incorporated
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of peer-reviewed publications
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase in knowledge about hormonal control of reproduction and parental care in beetles (qualitative outcome statement)
2	Number of graduate students involved and trained
3	Number of undergraduate students involved and trained

Outcome #1

1. Outcome Measures

Increase in knowledge about hormonal control of reproduction and parental care in beetles
(qualitative outcome statement)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	0	2010

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many beetles are agricultural pests but in spite of the number of beetles species, the hormonal control of their reproduction and reproductive behavior is relatively little studied. Burying beetles, although not pests, are a good model system to better understand the roles of juvenile hormone (JH).

What has been done

The breeding JH profiles of five carrion and burying beetles were characterized to understand the evolution of hormonal regulation. JH titers of the burying beetles with the most elaborate parental care showed dramatic changes during a reproductive bout. These hormones, among other effects, facilitate mate recognition so individuals can recognize intruders vs. mates, and aggressive responses to intruders. These beetles use a breeding resource (carcass) that must be defended. The strength of the response (increase in JH) correlated with the expected degree of competition for the breeding resource and its defensibility.

Results

Resulting knowledge of the role of juvenile hormone in reproductive behavior of these beetles can be used to develop potential management strategies for beetles which are agricultural pests.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #2

1. Outcome Measures

Number of graduate students involved and trained

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of undergraduate students involved and trained

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- During (during program)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}