



## Ecology Explorers Lesson Plan

**Name:**

Rob Trenck

**School:**

Red Mountain High School

**Grade Levels:**

7-12

**Title:**

Bruchid Investigation: Bruchid lifecycle investigation

**Brief Description:**

This activity involves the utilization of the bruchid pods to conduct further investigations of the Blue Palo Verde (*Parkinsonia florida*) seed pods. Possible investigation is:

- A. Bruchid lifecycle investigation

**Objectives:**

The students will be able to:

- A. Collect and record data
- B. Generate a problem
- C. Generate and test hypothesis
- D. Make a prediction statement
- E. Design/setup experimental design chart
- F. List procedures
- G. Analyze data
- H. Make conclusions based on collected data





## **State Standards:**

### **Science:**

#### **Essentials:**

1SC-E1 I identify a question, formulate a hypothesis, control and manipulate variables, devise experiments, predict outcomes, compare and analyze results, and defend conclusions

1SC-E3 Organize and present data gathered from their own experiences, using appropriate mathematical concepts, analyses and graphical representations

1SC-E4 I identify and refine questions from previous investigations

#### **Proficiency:**

1SC-P1 Propose solutions to practical and theoretical problems by synthesizing and evaluating information gained from scientific investigations

1SC-P4 Create and defend a written plan of action for scientific investigation

1SC-P6 I identify and refine a researchable question, conduct the experiment, collect and analyze data, share and discuss findings

#### **Distinction:**

1SC-D1 Design and complete an advanced scientific investigation, either individually or as part of a group, and formally report results to peers, teachers and others



## Materials:

The following items may be necessary to complete the Bruchid investigations:

Bruchid pods (Labeled various types)	Rulers
Dissecting microscopes	Thermometers
Dissection kits	Lab report forms
Petri Dishes	Identification keys
Markers for labeling	Insect reference books
Computers with internet access	

## Procedure:

### Bruchid Lifecycle Investigation:

Students at this point should have already been introduced to the Ecology Explorers protocol for the collection of Bruchid data. This investigation will allow the students to develop a better understanding of the lifecycle of the Bruchid beetles that prey upon Blue Palo Verde seeds (*Parkinsonia florida*) as well as allowing them to identify the three different species of Bruchid's they can find.

By isolating adult beetles from the collected pods, students can proceed to follow the entire beetle lifecycle from egg to emerged adult. Students will have to capture emerged adults from the collected samples of *Parkinsonia* seed pods. Then while working in teams they will have to document (written and visually) the lifecycle of a Bruchid beetle through daily observations. Multiple seed samples will allow the students to dissect some of the seeds along the way to make note of larval development. The progress of the beetle's development can then be charted. Library or internet-based research on the different stages of development can coincide with the actual observations. Upon emergence of the adult beetle students can then determine how long it takes before the adult beetle mates and then lays eggs to continue the lifecycle of the Bruchid beetle. Presentation of the data can then be presented to the class.



**BRUCHID INVESTIGATIONS  
LAB REPORT**

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

**Problem:**

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**Prediction Statement:**

**If:**

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**And:**

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**Then:**

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**Experimental Design:**

**Procedures:**



Data Table:

Graph: (see attached)

Analysis:

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Conclusion:

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## Bruchid Lifecycle Investigation

DAY	OBSERVATIONS (Include Drawings)	ANY EMERGED (YES/NO)	NUMBER EMERGED