

## Activity 27

# Mating Size

**Rationale:** Do worms select a particular size mate? This activity will attempt to determine the answer to this question. The activity is adapted from “Size-Assortive Mating in the Earthworm, *Eisenia fetida*”, Japan Ethnological Society, Springer Verlag, October 6<sup>th</sup> 2004, (on-line), Fernando Monroy, Manuel Aria, Alberto Veland, and Jorge Dominguez.

### Objectives

- 1) Design an experiment to determine if mate selection is random.
- 2) Design the experimental set up.
- 3) Construct the Data Table.
- 4) Design the method of analysis.

### PDE Standards

#### Science and Technology

3.1.7. A,B,C

3.2.7. A,B,C,D,E,F

3.6.7. A,B

3.7.7. A,B,C,D

#### Environment and Ecology

4.1.7. A,B,C

4.2.7. A,C

4.6.7. A,B,C

#### Math

2.1.8. A,B,D,G

2.2.8. A,B,F

2.3.8. A,B,D

2.4.8. A,B,D,F

2.5.8. A,B,C,D

2.6.8. A,B,C,E,F

2.7.8. B,C,D

2.8.8. F,G,H,I,J

2.11.8. A,B

### Materials

50 sexually mature worms from the Habitat

2-L container or larger

Balance

Rulers

Clear plastic soda straws

TI 83/84

Graphical Analysis

Computer

### Introduction

This is a very good inquiry approach activity with moderate coaching. Do potential mates, before they mate, make a selection based on similar size or is the

mating random? When two sexually mature worms meet, the head end (with mouth and light sensors) touch each other for some time before mating occurs, if it occurs. Is this sensory session merely a greeting or is it a means to establish the size difference?

### **Strategies**

The idea is to catch naturally mating pairs in the habitat and measure their weight and length. Record these measurements as well as the differences. To establish the mass and length of randomly paired worms, the students will collect 50 mature worms and randomly select two worms and take measurements. The mass and length of each are recorded, as well as the difference. This is done until all 25 pairs are measured. In the analysis of the data, the average difference can be noted and discussed. However, the data can be a difference value with pair data entered into List 1 and List 2. The students can complete a 1-Var Stat and look at the average, variance, and standard deviation.

### **Procedure**

- 1) Select 25 pairs of mating worms. This may take several weeks and requires patience.
- 2) Record the length and mass of each.
- 3) Collect 50 mature worms.
- 4) Select 25 pairs, one pair at a time. Measure the length and weight.
- 5) Record all measurements in the journal and Data Table 1.
- 6) Complete Data Table 1.
- 7) Draw conclusions from the results.

### **Expectations**

The students should be able to:

- 1) design an experiment to determine if mating size is random.
- 2) design and set up the experimental equipment.
- 3) determine and collect appropriate measurements.
- 4) complete Data Table 1.
- 5) complete an analysis of the data.

**Data Table 1** (*Typical Student Data Table*) **Random Pairs**

<b>Pair #</b>	<b>Mass of A</b>	<b>Mass of B</b>	<b><math>\Delta</math> Mass</b>	<b>Length of A</b>	<b>Length of B</b>	<b><math>\Delta</math> Length</b>
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<b>Averages</b>	<b>XXXX</b>	<b>XXXX</b>		<b>XXXX</b>	<b>XXXX</b>	

**Data Table 1** (Typical Student Data Table) **Mating Pairs**

<b>Pair #</b>	<b>Mass of A</b>	<b>Mass of B</b>	<b><math>\Delta</math> Mass</b>	<b>Length of A</b>	<b>Length of B</b>	<b><math>\Delta</math> Length</b>
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<b>Averages</b>	<b>XXXX</b>	<b>XXXX</b>		<b>XXXX</b>	<b>XXXX</b>	