

(My name)
Co: (partner name)
September 5, 2014

Habitat Choice of Isopods

Safety:

The insects used in this investigation cannot injure you. Always wash your hands before leaving the lab.

Introduction:

Shrimp, crayfish, crabs, and lobster are examples of aquatic crustaceans. Terrestrial, or land-dwelling crustaceans, are called *isopods* and are commonly known as sowbugs or pillbugs (or rolypollys, or potato bugs). While they look similar, sow bugs are different from pill bugs. Pill bugs will curl into a ball when threatened whereas sow bugs will attempt to flee. Both pillbugs and sowbugs are terrestrial.

Because all of these animals are arthropods, or insects, they have many similar body parts such as exoskeletons and jointed appendages. Lobsters, crayfish, crabs, and shrimp must breathe with gills because they live mostly or entirely underwater. The first five abdominal segments each bear a pair of biramous (branching in two) pleopods. Pleopods are lamellar structures which serve the function of gas exchange. In aquatic species, pleopods serve as gills and are used for propulsion.

Ethology is the study of animal behavior. Behavior is an animal's response to sensory input and falls into two basic categories: learned and innate (inherited). Innate behaviors allow populations to survive by making beneficial choices. Some innate behaviors involve movement of the animal within its environment. In this exercise, you will investigate some innate behaviors of isopods in their choice of damp or dry environment in an apparatus known as a choice chamber.

If the isopods move toward the damp part of the choice chamber, the behavior is likely innate, or inherited. If the isopods move randomly in all directions, some will likely end up in the damp part of the choice chamber, but some will not. If the behavior is innate, the isopods would be expected to move towards the damp part of the choice chamber with moisture as their stimulus, presumably because they need the moist environment for gas exchange (breathing.)

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Observations and Sketch:

Materials

Equipment

- 8-10 isopods
- Petri dish and cover
- plastic spoon
- filter paper
- choice chamber

Chemicals

3-5 mL water

Procedure:

1. Use the plastic spoon to gently lift 8-10 pillbugs and a SMALL amount of bedding material and place them in a Petri dish. Pillbugs generally do not climb, but if they do, you may cover the dish with plastic wrap or the Petri dish cover.
2. Observe the pillbugs for 5 minutes. Make notes on their general appearance, movements about the dish, and interactions with each other.
3. Make a rough sketch of the dorsal and ventral sides of 1 isopod. Observe the ventral side by holding the Petri dish, carefully level, off the table and observing from the bottom.
4. Set up your behavior chamber so that you have one side moist and one side dry by placing filter paper on either side. Make sure the moist filter paper does not touch the dry filter paper to keep the dry side dry.
5. Carefully put an equal number of isopods on either side so there is a total of 8-10 isopods in your choice chamber. Cover each side with an upside down Petri dish. Be careful, the isopods are likely to try to escape during your experiment if you leave any gaps.

Data Table:

Time (min)	# insects dry	# of insects damp	Observations
0			
2			
4			
6			
8			
10			
12			
14			

Instructor initials _____

Date _____

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Analysis of Data:

1. Graph the number of isopods vs. time on a piece of graph paper. Use a sharp pencil to plot the points for the dry chamber first and draw a small circle around each point, then plot the points for the damp chamber and place a small square around each point. You should have 2 sets of points. Label the axes, title, and date your graph.

Write your responses in complete sentences that tell the question.

2. Describe the trend you see over time for the number of isopods in the wet chamber vs. the dry chamber.

3. Would it be more appropriate to draw a best-fit line through each set of data points, or to simply connect the dots? Why?

3. Why might the isopods have moved in the direction that they did? Explain.

4. Did you use pillbugs or sowbugs in this investigation? How could you tell?

Procedure, continued

6. Count how many isopods are on each side of the choice chamber every 1 minute for 10 minutes, and then record your data in Table 1. Continue to record even if they all move to one side or stop moving. If anything unusual happens (some isopods stop moving for a long time, some escape, etc), be sure to record it in the table.
7. Handling them gently, return the isopods to the habitat. Clean and stow your materials as per instructor direction.

Conclusion

State the goal of the lab.

Briefly summarize your findings. Use the data you collected and your graph to support your summary. (This means you will use numbers and describe your graph.)

Discuss at least one implication of your findings. (These data imply that.....)