**Isopod Behaviour Lab** (Skills: Planning and Conducting)

**Isopods** are **crustaceans** that live on land, oceans, or freshwater. Examples include lobsters, crabs, shrimp. **All breathe with** **gills.** Terrestrial isopods are land dwelling crustaceans, commonly known as sowbugs or pillbugs (or rollypollys). They are primarily **nocturnal**, and eat decaying leaf litter and vegetable matter. They may also feed on the tips of young plants, so can be considered pests, but they also help the environment by breaking down decaying plant matter and help speed up the recycling of the nutrients they contain

While they look similar, sow bugs are different from pill bugs. **Pill bugs** are smoother, more grey, and will curl into a ball when threatened whereas **sow bugs** are flatter, more brown and will attempt to flee.

**Objectives:**

* To observe how isopods *respond to environmental stimuli*.
* To *design* and *conduct* an investigation of animal behavior.

**Plan your Experiment:**

How do isopods respond to stimulus? Does it matter which stimulus? Can you guess how they will respond? Within your group, select one variable from the list below to test their response. Ask the teacher if you are not sure how to set up the test.

|  |  |
| --- | --- |
| **Factor** | **Example Materials**  |
| Moister | Filter paper, water, eye dropper |
| Temperature | cold pack, warm pack |
| Light | lamps, flashlights, dark construction paper, aluminum foil |
| pH | low pH (HCl), high pH (NaOH), filter paper, dropper |
| Substrate (surface) | soil, sand, sandpaper, bark, paper, cedar chips, gravel |
| Odor | Ammonia, acetone, filter paper, dropper |
| Food | apple, potato, fish food, lunchmeat |
| Other Organisms  | mealworms, crickets, earthworms |

**Write a specific and testable question you want to investigate: Question:**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis**: IF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

THEN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

BECAUSE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Independent Variable (what you are changing on purpose) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dependent Variable (what you are measuring) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3 Controlled Variables (what stays the same in each side) : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Materials:** Observation chamber (two petri dishes), filter paper, scissors, 10 bugs (of the same species), variable to test.

**Procedure:**

1. Set up an observation chamber (2 petri dishes connected smoothly with tape), filter paper to fit snuggly in each chamber.
2. Add 5 isopods into each chamber, allow them to crawl around for a while so you can see their average behaviour.
3. Add your variable you would like to test into ONE chamber (this is your experimental chamber, the chamber without the new variable is the control side).
4. Set timer and make observations every minute for 10 minutes of how many bugs on each side and any other qualitative observations you might notice.

**Observations:**

|  |  |  |  |
| --- | --- | --- | --- |
| Time(min) | # in Test chamber | # in Control chamber | Other Observations |
| 0:00 |  |  |  |
| 1:00 |  |  |
| 2:00 |  |  |
| 3:00 |  |  |
| 4:00 |  |  |
| 5:00 |  |  |
| 6:00 |  |  |
| 7:00 |  |  |
| 8:00 |  |  |
| 9:00 |  |  |
| 10:00 |  |  |

**Conclude and Apply:** WRITE NEATLY WITH COMPLETE SENTENCES.

1. Make a CER Statement (Claim, Evidence, Reasoning) to summarize your results by discussing how they responded and where they ended up. Suggest a reason why you got the result you did (how might this behavior be advantageous to an isopod?)

Claim: The isopods preferred \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Evidence: The evidence for this is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reasoning: The reason they behaved the way they did might be because \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reasoning continued…

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1. What characteristics of living things did you witness today? Explain. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Why is it important to test only one variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. EVALUATE: What difficulties did you encounter problems during your experiment? Explain what effect you think this may have had on your experiment. What would you do next time?

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1. EVALUATE: This experiment was far from perfect. What are the limitations of this experiment? (How it is NOT like real life). \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_