Species Interactions Lab

Name _____

Date _____

Period _____

mrsajdak.com/interactions · © Ryan Sajdak · CC BY-NC-SA 4.0

No species lives alone. To find out what one species does to another, scientists compare two places: one with both species, and one where a species is gone. You will do the same thing in a model. Use this code for each species:

+ does better with the other one | **−** does worse with the other one | **0** no change

☐ I can name the five ways species interact, with their signs and an example of each.

☐ I can use a model's numbers to explain how predators, prey and competitors change each other's populations.

Part 1. Take one away (Tab 1)

SEP 3, 4 · CCC Cause and Effect

Pick a pair. Press **Skip to the end** with both species checked. Then uncheck one species and run again. Then check it, uncheck the other, and run again. The **Your runs** box keeps the numbers.

1. Fill in the table. **Alone** is the number when the other species was taken away.

Pair	Species	Alone	With the other	Sign (+, −, 0)	Name of the interaction (after Learn It)
Lady beetles + aphids	Lady beetles				
	Aphids				
Bumblebees + coneflowers	Bumblebees				
	Coneflowers				
Sea lampreys + lake trout	Sea lampreys				
	Lake trout				
Robins + street maples	Robins				
	Street maples				
Purple loosestrife + cattails	Purple loosestrife				
	Cattails				

2. The street maples ended at the same number with robins and without them. What does that 0 tell you?

3. Loosestrife and cattails both did worse together. Which one was hurt more? Use numbers from your table.

READ FIRST. In the lab, find the green **Learn It** box and read it. Then fill in the Name column in Q1 and answer 4.

4. Lady beetles and sea lampreys both get + and −. Press **Run** and watch. What does a lady beetle do to an aphid? A lamprey to a trout? So which pair is **predation** and which is **parasitism** ?

Part 2. Boom and crash (Tab 1, lady beetles + aphids, both checked)

SEP 4, 5 · CCC Stability and Change

Press **Run** and watch the graph. The dashed lines are your runs with one species taken away.

5. Most aphids: _____ on day _____. Most lady beetles: _____ on day _____. First to peak: _____

6. Lake trout alone: _____ With sea lampreys: _____ What percent did the lampreys cost? Show your work.

READ FIRST. In the lab, find the green **Learn It: boom and crash** box and read it. Then answer 7 and 8.

7. Use the words **predator** and **prey** to explain why lady beetle numbers go up only after aphid numbers go up.

8. Aphids alone stop at _____. Use **carrying capacity** to finish: The predator keeps the aphid population

Part 3. Mystery pairs (Tab 2)

SEP 3, 7 · CCC Patterns

Two real species with their names hidden. Do all three runs: both together, X alone, Y alone. Make your call before you press **Reveal**. Then press **New mystery pair** for trial 2.

9. Fill in the table.

Trial	X alone	X with Y	Y alone	Y with X	Signs X, Y	My call	It was (names)
1							
2							

10. Pick one trial. **Claim:** The interaction was _____. **Evidence:** Which numbers show it? **Reasoning:** Why do those numbers prove it?

11. Predation and parasitism both have the signs + and –. Can the numbers alone tell them apart? What else would a scientist need to see?

Part 4. Sharing a tree (Tab 3)

SEP 2, 6 · CCC Structure and Function

Three kinds of warbler eat insects in the same spruce trees. Keep all three checked. Press **Skip to the end** with **Anywhere in the tree**. Then do it again with **Each in its own part**.

12. Write the numbers at year 50.

How they feed	Cape May warblers	Bay-breasted warblers	Yellow-rumped warblers
Anywhere in the tree			
Each in its own part			

READ FIRST. In the lab, find the green **Learn It** box and read it. Then answer 13 and 14.

13. When all three feed anywhere in the tree, what happens to two of them? Use the word **competition** to explain why.

14. Use **resource partitioning** and your numbers to explain how all three warblers can live in the same tree.

Wrap it up

SEP 2, 7 · CCC Cause and Effect

15. Since 1958, crews have treated the streams where sea lampreys hatch, to kill the young lampreys. Use the model to predict what happens to the lake trout if all the lampreys are gone. Then test it in the lab. Were you right?

16. A classmate says, "In every interaction, one species wins and one species loses." Use two pairs from today to argue against this claim.

NYSSLS: building toward HS-LS2-1, HS-LS2-2 and HS-LS2-6 (DCI LS2.A Interdependent Relationships in Ecosystems; LS2.C Ecosystem Dynamics). Environmental Science, Chapter 5, Lesson 5.1: How Do Species Interact? Tags: SEP = Science and Engineering Practice, CCC = Crosscutting Concept.