

Name \_\_\_\_\_

Date \_\_\_\_\_

## Invasive Plant Survey

Which invasive plants live in and around your school, neighborhood, or park? After completing this survey, you will have a better idea of which invasive plants are in your area and how extensively they have invaded.

**Step 1: Identify your survey area.** Each student group will have a different survey area. If you have a map of your survey area, you can use that to mark where you see invasive plants.

**Before you begin:**

- A. Make a prediction about whether you will find more native or invasive plants in your survey area.

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- B. Make a prediction about whether you will find more evidence of predation on native or invasive plants in your survey area.

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**Step 2: Identify the plants in your survey area.**

Use the Invasive Plant cards to find out what plants you see. Remember, depending on the time of year you complete the survey, you may not have flowers or fruits, so make sure to read the description of the plant along with using the photos. Keep track of how many of the plants you see in your survey area.

Invasive Plant	# Observed	Invasive Plant	# Observed

### Step 3: Invasive vs Native Plant Abundance Along a Transect

Using a measuring tape, your class will measure out a transect line of at least 25 meters in the woods or in a field. Each group of students will sample plants in at least one quadrat along the transect. Depending on the number of groups in your class, you may have to do more than one quadrat (or transect!). Your class should sample at least 6 quadrats along a 25 meter length (at 0m, 5m, 10m, 15m, 20m, and 25m). Each quadrat along the transect should measure at least 50cm on each side.

Use the information below to complete the table.

**Abundance** of the invasive plant within the quadrant:

- A. Single plant
- B. Scattered single plants
- C. Dense monoculture (many plants grow together in one large patch or clump)
- D. Scattered dense patches (many smaller patches or clumps of plants)

**Infested Area:** Estimate the **infested area** within your quadrant (that is the amount of ground covered by the invasive plant).

**Habitat Types**

- A. Edge
  - 1. Upland/wetland
  - 2. Field/forest
  - 3. Lake/River edge
  - 4. Roadside
- B. Forest
  - 1. Pine (evergreen trees with needle-like leaves)
  - 2. Hardwood (Oaks, maples, etc.)
  - 3. Mixed
- C. Wetlands
  - 1. Marsh (wetland with primarily herbaceous plants such as cattails, rushes, and sedges)
  - 2. Swamp (wetland with trees growing in it)
  - 3. Bog (special type of acidic wetland)
- D. Dune
- E. Meadow (open field dominated by grasses and herbaceous plants)
- F. Old field (grassy field formerly used for agriculture or development)
- G. Stream bank
- H. Yard/garden
- I. Park
- J. Right-of-way (long strip of mowed/treecut areas around powerlines)
- K. Rocky outcrop
- L. Other \_\_\_\_\_

Name of Invasive Plant	Abundance	Infested Area- 0%, 25%, 50% 75%, 100%	Habitat Type
<i>Example: Spotted knapweed</i>	D.	25%	A2
<i>Example: Mugwort</i>	C.	50%	A2

% Native Plants in Survey Quadrat: 25% (75% is knapweed and mugwort)

Name of Invasive Plant	Abundance	Infested Area- 0%, 25%, 50% 75%, 100%	Habitat Type

% Native Plants in Survey Quadrat: \_\_\_\_\_

#### Step 4: Estimate Invasive Plant vs Native Plant Herbivory

With your student group, find two invasive plants and two native plants that have at least 20 leaves on each plant (depending on your class, this may be done within your quadrant or in another area).

Invasive plants: \_\_\_\_\_ , \_\_\_\_\_

Native plants: \_\_\_\_\_ , \_\_\_\_\_

Randomly select five leaves from each plant. Place the leaves in separate, labeled bags (invasive 1, invasive 2, native 1, native 2) and take them back to the classroom.

In the classroom, estimate the amount of herbivory of each leaf by using the plastic overlay with the gridlines. Count the number of total squares that show any evidence of herbivory (make sure you don't count damage to the leaf from fungal activity). Record your data on the next page.

Leaves from invasive plant #1	# squares with herbivory	Leaves from invasive plant #2	# squares with herbivory	Leaves from native plant #1	# squares with herbivory	Leaves from native plant #2	# squares with herbivory
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	
<b>Average</b>		<b>Average</b>		<b>Average</b>		<b>Average</b>	

How many total squares are in your grid? \_\_\_\_\_

You should now be able to calculate the average % herbivory by taking the average # of squares showing some signs of herbivory, and dividing that by the total number of squares in the grid you used. For example, if an average of 12 squares damaged out of a grid of 24, the % herbivory for that plant is 50%.

**Percent herbivory:**

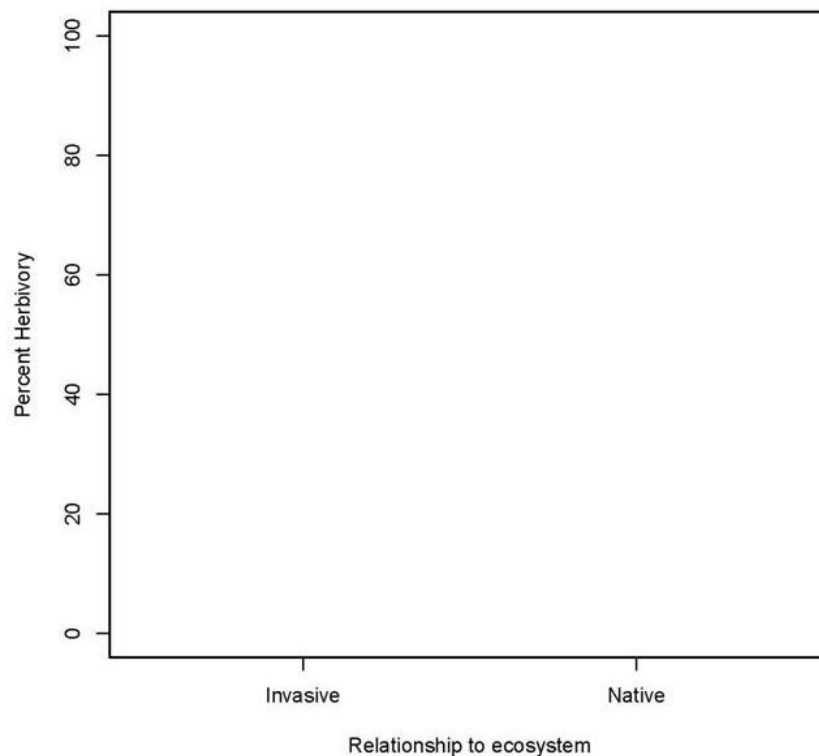
Invasive #1: \_\_\_\_\_

Native #1: \_\_\_\_\_

Invasive #2: \_\_\_\_\_

Native #2: \_\_\_\_\_

**Combine your data with your classmates' data to plot the % herbivory below.**



**Step 5: Questions**

Using the data you collected and the data shared by your classmates, answer the following questions.

1. How many invasive plant species did you see in your survey area? How many did your classmates observe?

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2. Which invasive plant was the most common? Do you think this would change depending on your location in the schoolyard? Why or why not?

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3. Conduct some basic research on the most common invasive species in your schoolyard. Find out:

- a. How did this plant originally come to the U.S.?

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- b. How is this species generally spread?

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- c. Do you think this invasive plant arrived in your survey area in the same manner as described in (b), or in another way? Explain your answer.

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- d. Where is this species currently found?

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- e. What are some concerns about this invasive?

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4. Is there anything you observed about the most common invasive plant in your class that makes it more likely to be successful? For instance, does it have any morphological characteristics that might increase its chance for survival?

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5. Give at least one example of a way that the most common invasive plant might be more successful than a native plant that you **can't** observe. Explain how you would set up an experiment to test whether you are correct.

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6. Based on your class results, were there more native or invasive plants in your quadrats?

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7. Imagine you return to your survey quadrat in 15 years. Do you expect the ratio you found to be the same? Why or why not?

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8. Based on your results only, which plants had more evidence of herbivory—the native plants or the invasive plants?

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9. Based on the entire class's results, which type of plants had more evidence of herbivory?

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10. If you return to your schoolyard in 15 years, explain how you think the plant community might be the same, and how it might be different.

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11. If you were going to conduct this lab activity again, what would you do differently?

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