

## Invasive Plant Survey

What invasive plants live in and around your school, neighborhood, or park? After completing this survey, you should have a better idea of what plants exist, and how many, in your area.

**Step 1: Identify your survey area with your class.** 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.

**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 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 quadrant along the transect. Depending on the number of groups in your class, you may have to do more than one quadrant (or transect!). Your class should sample at least 6 quadrants along a 25 meter length (at 0m, 5m, 10m, 15m, 20m, and 25m). Each quadrant along the transect should measure at least 50cm on each side.

Which invasive plants are in your quadrant, if any?

- |  |   |
|--|---|
| <input type="checkbox"/> <b>Dames Rocket</b> ( <i>Hesperis matronalis</i> )          | <input type="checkbox"/> <b>Japanese honeysuckle</b> ( <i>Lonicera japonica</i> ) |
| <input type="checkbox"/> <b>Shrub/Bush Honeysuckle</b> ( <i>Lonicera spp.</i> )      | <input type="checkbox"/> <b>Russian olive</b> ( <i>Eleagnus angustifolia</i> )    |
| <input type="checkbox"/> <b>Garlic Mustard</b> ( <i>Alliaria petiolata</i> )         | <input type="checkbox"/> <b>Mile-a-Minute</b> ( <i>Persicaria perfoliata</i> )    |
| <input type="checkbox"/> <b>Oriental Bittersweet</b> ( <i>Celastrus orbiculata</i> ) | <input type="checkbox"/> <b>Multiflora rose</b> ( <i>Rosa multiflora</i> )        |
| <input type="checkbox"/> <b>Japanese Knotweed</b> ( <i>Polygonum cuspidatum</i> )    | <input type="checkbox"/> <b>Purple Loosestrife</b> ( <i>Lythrum salicaria</i> )   |
| <input type="checkbox"/> <b>Japanese Barberry</b> ( <i>Berberis thunbergii</i> )     | <input type="checkbox"/> <b>Common Buckthorn</b> ( <i>Rhamnus cathartica</i> )    |
| <input type="checkbox"/> <b>Pale Swallowwort</b> ( <i>Cynanchum rossowii</i> )       | <input type="checkbox"/> <b>Tree-of-heaven</b> ( <i>Ailanthus altissima</i> )     |
| <input type="checkbox"/> <b>Norway Maple</b> ( <i>Acer platanoides</i> )             | <input type="checkbox"/> <b>Spotted Knapweed</b> ( <i>Centaurea maculosa</i> )    |
| <input type="checkbox"/> other: _____  |   |



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

With your student group, find two invasive plants and two native plants (depending on your class, this may be done within your quadrant or in another area).

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

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

Randomly select ten leaves from each plant. Place the ten leaves in separate, labeled bags 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 below.

| 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                           |                          |
| 6                             |                          | 6                             |                          | 6                           |                          | 6                           |                          |
| 7                             |                          | 7                             |                          | 7                           |                          | 7                           |                          |
| 8                             |                          | 8                             |                          | 8                           |                          | 8                           |                          |
| 9                             |                          | 9                             |                          | 9                           |                          | 9                           |                          |
| 10                            |                          | 10                            |                          | 10                          |                          | 10                          |                          |
| <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 there are 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: \_\_\_\_\_

**Step 5: Questions**

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

1. How many invasive plants did you see in your survey area? How many did your classmates observe?
2. Which invasive plant was the most common? Do you think this would change depending on your location? Why or why not?
3. Is there anything you observed about this invasive plant that makes it more likely to be successful? For instance, does it have any morphological characteristics that might increase its chance for survival?
4. 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.
5. Which plants had more evidence of herbivory-the native plants or the invasive plants? Did other groups in your class obtain the same results? Were you surprised by the findings? Why or why not?
6. If you were going to conduct this lab activity again, what would you do differently?