

Lesson 3: Define the Question and Conduct Background Research

Essential question: What is the purpose of this investigation? How is this investigation important to people in my community and across the region?

By the end of this activity I will be able to...

NGSS SEP 1	Level 1	Level 2: <i>all of level 1 and...</i>	Level 3: <i>all of level 2 and...</i>	Level 4: <i>all of level 3 and...</i>
Asking questions and defining problems.	Define the research question and why it is important.	Describe how my work connects to the research of other students and scientists.	Explain how the data I will collect will help to answer the research question.	Identify gaps in existing information about my topic and explain how my investigation might help to address them.

Once you have completed the activity, circle the highest level that you achieved. Draw a star next to the evidence in the student notebook that shows that you did this.

Mission: Native vs. Invasive Shrub Phenology Investigation Overview

My Research Question:

This question is important to the science community because...

This question is important to my local community because...

In order to answer this question my class is going to...

Members of my fieldwork team...

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1. Choose a shrub species that you will research in preparation for your investigation, or write down the species that is assigned to you by your teacher.

2. Use the following resources to help you gather information:

Vital Signs Species ID cards: <http://vitalsignsme.org/species-identification-resources#U>
Look through the list of Upland Native Species Cards or Upland Invasive Species Cards):

Vital Signs Existing Data: <http://vitalsignsme.org/explore/map>
If you need help searching the map, use the guide, "How Do I Find Things On The Map?" <http://vitalsignsme.org/guides>

USDA Plants Database: <https://plants.usda.gov/java/>
Search for your species by typing in the name in the top left corner of the page. Make sure you select "Common name" from the search options.

Find your own resources by searching the internet. Be sure to record any sources that you use.

3. Share the information that you gather with your classmates so that you will be able to work together to identify this species in the field.

Phenology Mission Shrub Fact Sheet

Species you are researching:

Is this shrub native or invasive in Maine?

Identifying characteristics: How will you know you have found it?

What makes this plant different from other plants?

Photos or sketches of these identifying characteristics:

Identifying characteristics *in this season*: What does this shrub look like in this time of year?

Around when does this plant typically grow or lose its leaves

(optional)? Photo of sketch in this season:

Impacts: Why should we care about this shrub? What impacts does it have on other species in the ecosystem?

What impacts does it have on humans?

Existing data: What other locations that are close or similar to our field site has it been found?

Sources I used:

Assess: Complete the summary on page one of your notebook.

Reflect: What did you learn that you think will be most helpful in your investigation? What do you still need to find out?

Think ahead: Based on your research, do you think you will find your shrub? In what phenophase? What evidence supports your prediction?

