

Biodiversity NorthBay

Name:

Date:



Click to watch: [Introduction to Biodiversity with Ms. Torrey](#)

Reflect

Before you explore biodiversity, in the space below, tell us five ways biodiversity is supporting you today. Please don't use our examples, come up with new and fresh (and scientifically accurate) ones!

There is diversity in your communities as well. Before we move to our investigation: think about all the different roles people play in your community and let us know one way that diversity in your community supports you.

Video references

1. Source: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/>
2. Source: <http://millionpollinatorgardens.org>



Investigate!

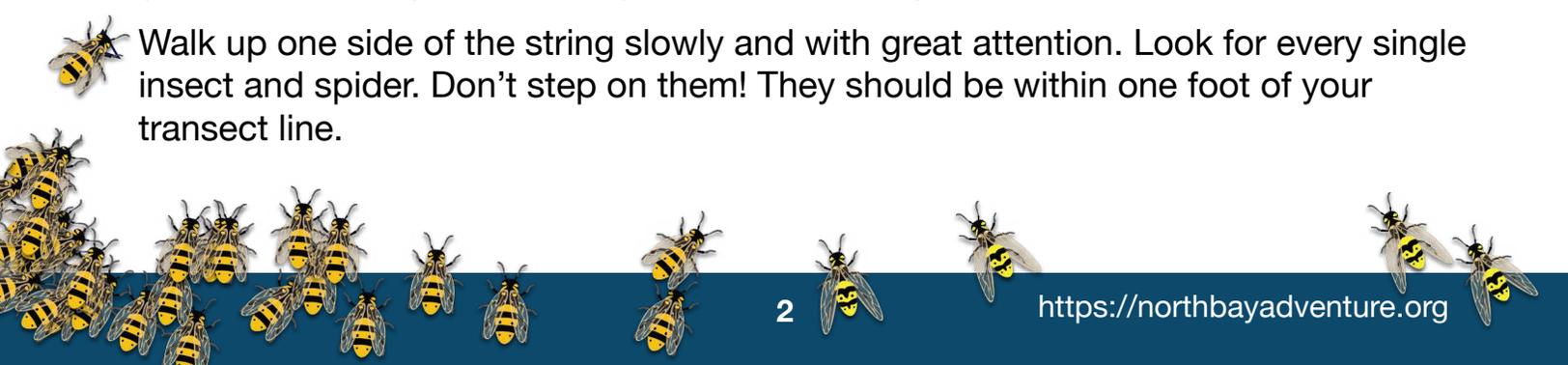
Here is the question we invite you to research: *To what extent does insect and spider biodiversity exist where you live?*

The systematic, thoughtful steps you follow to answer the question is your **Procedure**:

- ▲ Get your journal and a pencil (or your electronic device).
- ▲ Go outside and count every single living thing you see on every square inch of land including on every single blade of grass, tree, shrub, etc. *Are you shaking your head? We hope you are! We can't do this! No one can.* And so, we “sample.” Sampling is a scientific technique where we look at a representative small area or population very methodically to figure out what is happening in the larger area or population. Make sense?

Now we'll give you some sampling directions that are more reasonable and doable. We'll use a “transect line” for our sample, and we will only look for insect and spider biodiversity. E.O. Wilson, a very famous biologist, says invertebrates are, [“The little things that run the world.”](#) So we'll begin with them.

- ▲ Find a tape measure or a piece of string at least five foot long. If you are using a piece of string and can't measure it, estimate five feet based on your own height.
- ▲ We are going to conduct a comparative study for insect and spider biodiversity in TWO locations.
- ▲ Choose TWO locations close to one another. ONE should be a lawn or sidewalk, *really investigate the cracks and crevices*. The other can be one tree, or a collection of shrubs, or a weedy patch. Be sure to keep yourself safe, wherever you are.
- ▲ Lay out your transect line (measuring tape or string) on the ground in **Site 1** (lawn or sidewalk). Place it so you can walk along both sides.
- ▲ Walk up one side of the string slowly and with great attention. Look for every single insect and spider. Don't step on them! They should be within one foot of your transect line.

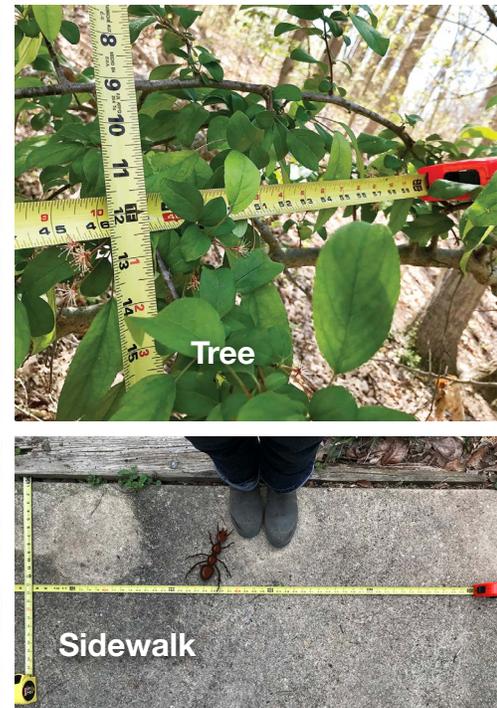
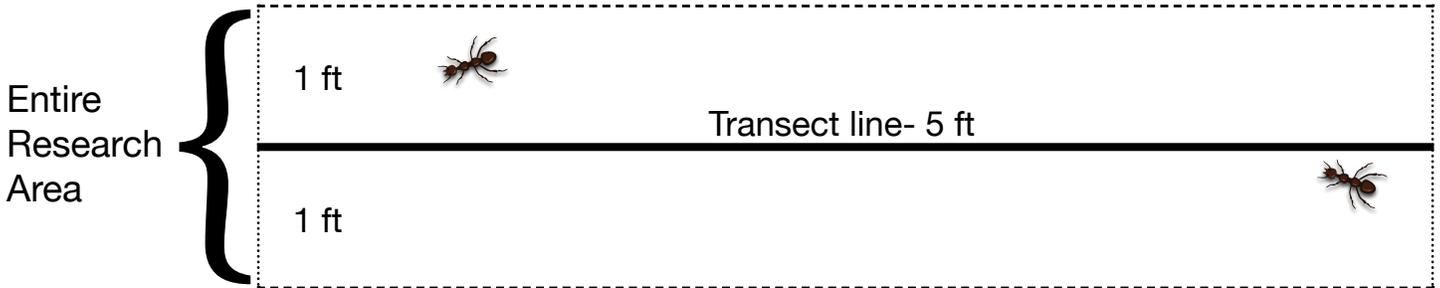


Biodiversity

Tips for SUCCESS

- Look very carefully and closely. Move slowly.
 - Signs of insects count too, like an anthill can be counted as one species. A spider web can be counted as one species.
 - Remember to look at living and fallen leaves.
 - Turn over leaves carefully, looking for insect and insect signs, like cocoons and small holes and even galls (abnormal plant growth) which are temporary homes for insect eggs and young that the plant creates! Crazy amazing, huh?!
- ▲ Count every DIFFERENT species you see. Please don't worry HOW many of each kind, just count the different species. We are investigating species diversity not populations. Each time you see a NEW kind of insect or spider, make a tally mark in the chart on page 4.

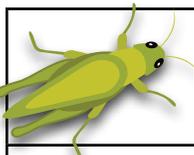
Now walk back on the other side, counting every insect and spider species on this side of the string.



▲ REPEAT these instructions for Site 2. If you are using one tree, look carefully at every branch and leaf and bud along your transect. The transect can be draped on reachable tree branches and you should be firmly anchored to the ground.

Species Diversity of Insects and Spiders Using a Five Foot Transect Line

Date: _____ Weather: _____ Temperature: _____

	Example Site 1	Example Site 2	SITE 1 :	SITE 2:
Insect species	IIII	IIII IIII		
Spider species	III	III		
TOTAL Number of Species	7	13		

▲ Send us your data using this [GOOGLE FORM](#) and we'll track biodiversity by habitat type LIVE!

▲ If you cannot safely go outside, we invite you to look out your window. You can observe insects, birds, and plants and maybe squirrels too. There is another possibility, and that is, you can ask the people near you what they know about biodiversity. Record their answers.

▲ More Challenges: Now that you know how to use a transect line, experiment with it. Here are some ideas:

-  Make the line longer and look for different kinds of vertebrate and invertebrate animals like worms, small mammals, birds.
-  You can also look for plants.
-  You can measure species diversity AND species populations.
-  To measure populations, just count the number of individuals you find and write them in parentheses next to each species tally mark.
-  You can conduct the same study multiple times to see how it changes over the year, or in different weather.

Analysis

Now, begin your **Analysis** to better understand what your data means.

Keep in mind as you look at your data that the healthiest places on earth are the most biodiverse places.

Which site had higher overall species diversity? _____

Which site had more spiders? _____

Which site had more insects? _____



FUN Facts about biodiversity: 990,000 species of invertebrates have been described by scientists, compared to 42,580 vertebrates species, and many more are yet to be discovered, maybe as many as 30 million species!³

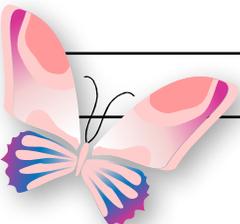


Reflection questions

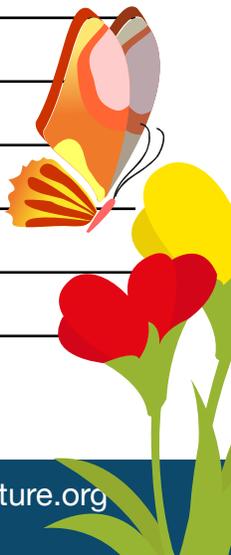
Now, please tell us what you found. Write your conclusion and include responses to:

▲ What did you do?

▲ What did you discover? Which site had higher species diversity? (Use your data to explain. This is your evidence)



3. Wilson, E.O. (1987). The Little Things that Run the World: The Importance of Conservation of Invertebrates. Conservation Biology 1(4) 344-346.



Reflection questions

▲ Why do you think you found this data?

▲ Why is it important to have high insect and spider biodiversity?

▲ What else are you wondering about biodiversity?

Character

Diversity - A variety of organisms is important in an ecosystem because everything has a specific niche that it fills.

▲ Describe what your community would be like if everyone was a doctor. What important roles would not be filled?

▲ Why is diversity important in people's lives and communities?

▲ Describe a time when your uniqueness helped you to thrive in the face of adversity.

▲ How can you encourage others to support diversity in your community?

And now it is time for **ACTION!** What will you do?

Here are some ideas. Give one or more a try and then tell us about it by emailing us at: nbmedia@northbayadventure.org; follow us on social media & #NorthBayEducation your posts.



▲ Boost habitats where you live and in your schoolyard repurposing materials you find:

- ✿ Find and collect acorns in the fall (before the squirrels do!) and plant them where you want oak trees to grow
- ✿ Install a birdbath
- ✿ Install a bird feeder
- ✿ Make your own wildflower seed bombs
- ✿ Build a mason bee house and/or a bluebird house [Bee Nest box and Bluebird Nest Box Plans](#)
- ✿ Plant a pollinator garden [National Wildlife Federation Garden for Wildlife](#)
- ✿ Replace lawn with native plants (which animals really need). Even a tiny patch will help!
- ✿ [National Wildlife Federation Native Plant Finder \[BETA\]](#)
- ✿ [Native Plant Suppliers](#)
- ✿ [Chesapeake Bay Watershed Native Plants](#)

▲ Teach someone about everyday biodiversity like we taught you

▲ Consumerism is one driver of the biodiversity crisis. Products with these labels offer safer alternatives to traditional products:

- ✿ [Palm Oil Free Certification products](#)
- ✿ [USDA Certified Organic](#), [Oregon Tilth](#), [NON GMO Project](#), for foods
- ✿ [Rainforest Alliance Certified](#) products for sustainable crops and workers rights
- ✿ [Fair Trade Certified](#) food, clothing
- ✿ [Marine Stewardship Council Certified](#) seafood
- ✿ [Certified Wildlife Friendly](#) for conservation of animals

KEEP your journals and share with your teachers/mentors/friends!



Click to watch: [Biodiversity Wrap Up](#)