


Biodiversity: Species Type and Abundance

 <p>Field Based Investigations</p>	<p>Use this tool if you are interested in asking investigation questions like:</p> <ol style="list-style-type: none"> 1. What types of plants, animals and fungi live in my neighborhood? 2. How do the types and density of these species differ by location? 3. How do physical environmental factors affect species types and densities? 	<p>We will gather data about:</p> <ol style="list-style-type: none"> 1. types and abundance of species in three different locations. 2. The relationships between species and their abundance, as well as the relationship between species type and abundance and the physical environment.
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Why are the types and abundance of species important to socioecological systems?: All species live in a web of interdependent relationships that shift across time and space. By observing three different areas, we are able to observe which species interact with each other and which species prefer different types of habitats. For example, some insects and birds next and feed in snags (dead trees), while other species may thrive in grassy fields. The way humans use and alter these space can change the types and abundance of species found. For example planting flowers can attract and support pollinators, and mowing grass very short and creating more grassy areas can reduce species diversity.

Why does types and abundance of species matter to my neighborhood--connecting to our “Should We” questions:

Observing species across different sites and over time can help us understand how to create environments that attract and support more species. “Should we” questions like “should we allow some grass to grow longer or “Should we plant wildflowers around our garden” or “Should we weed the alley way” all relate to species diversity and abundance! For example, even very developed neighborhoods support a wide range of plant and animal life. We can support that diversity and abundance by creating box gardens, leaving weeds as they bloom, and allowing birds to nest on windowsills and rooftops. At your three sites, explore how environmental and human factors influence the type and abundance of species you see, and then identify variables that seem to support more biodiversity in your neighborhood!



The investigation question we are asking is:

The “Should We” question we are exploring is:



Materials needed:	Directions:
<ul style="list-style-type: none"><input type="checkbox"/> pencil<input type="checkbox"/> this sheet or blank paper<input type="checkbox"/> optional: binoculars<input type="checkbox"/> optional: field guide for plant and animals in your area	<p>Locate three places where you would like to observe and count species.</p> <p>Notice the diversity of species in the area, and list all that you can identify.</p> <ul style="list-style-type: none">❖ If you're not sure of a species name, you can write "5 different types of trees" or "3 different birds" <p>Count the number of each species that you see in each location.</p> <ul style="list-style-type: none">❖ When you are not sure of species name, you can list them as "confer tree #1" or "brown bird with red belly" plus the counts for each.

To calculate the species density in addition to abundance, use the equation below. Calculating species density will help you compare the three sites, but is not necessary for finding out more information to answer your should we question!

$$\frac{\text{\# of species A (or B or C)}}{\text{Total \# individuals for all species counted}} = \text{Species Density}$$



Location 1 _____

Time_____ Temperature_____

Step 1: Species Variation: Write or draw all of the different types of living things you find in your observation location.

Step 2: Species Density: Next to your list or drawing, count the number of each living thing you found in your observation location.

Location 2 _____

Time_____ Temperature_____

Step 1: Species Variation: Write or draw all of the different types of living things you find in your observation location.

Step 2: Species Density: Count the number of each living thing you found in your observation location.

Location 3 _____

Time_____ Temperature_____

Step 1: Species Variation: Write or draw all of the different types of living things you find in your observation location.

Step 2: Species Density: Count the number of each living thing you found in your observation location.