Canopy Cover Data Collection

 Field Based Investigations	Use this tool if you are interested in asking investigation questions like: 1. **How much canopy cover changes over time and space in my neighborhood?** 2. **What kinds of relationships can we observe between the tree canopy, ground cover and other species?** 3. **How have humans shaped the amount of canopy cover in my neighborhood?**	**We will gather data about:** 1. how canopy affects growth of plants on the ground and provides habitat for animals: **relationships to other animals, plants, sunlight, and temperature** 2. how canopy cover varies by the types of trees 3. how canopy cover changes seasonally

Why is canopy cover important to socioe-cological systems?: Canopy cover is the amount of area covered by trees, as seen from below. Canopy cover plays an important role in ecosystems by providing habitat for animals (like birds' nests), and in regulating local temperatures, water storage in the soil, and soil health. Canopy cover impacts how much rain and sunlight reach the ground and is related to which species use and thrive in and below the trees. Scientists use a tool called a densiometer to measure canopy cover from the ground. In this activity, you will build a densiometer to measure canopy cover in your own neighborhood. You can measure canopy cover even in an area with few trees!

Why does canopy cover matter to my neighborhood--connecting to our "Should We" questions: Trees protect cities from the urban heat island effect, which is when cities experience much warmer temperatures than surrounding areas; they keep our houses and our neighborhoods cool and can reduce our use of electricity in warmer months. "Should we" questions like "Should we remove trees for new homes or playfields" or "Should we plant trees or a garden in open space" or "Should we plant native trees or ornamental trees" all relate to understanding canopy cover and its relationship to both physical and biological factors in our neighborhoods.. For example, large trees are often removed to make room for parks and housing as neighborhoods expand and grow, but there are ways to expand development without reducing canopy cover and the cooling shade it provides. For example, communities can encourage city planners to maintain forested areas in their city planning and homeowners can plant trees in their yards. To understand the role of canopy cover in your neighborhood, you might want to study how the percentage of canopy cover relates to the temperature, soil moisture, plants and animals found below the trees; or you might choose to investigate how canopy cover changes with the seasons.

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The investigation question we are asking is:

_____

The "Should We" question we are exploring is:

_____

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Materials needed:	Directions:
❏ empty toilet paper or paper towel roll ❏ string ❏ tape ❏ hula hoop ❏ pencil ❏ this sheet or blank paper	**Create a densiometer** ❖ Use an empty toilet paper or paper towel roll. ❖ Lay two pieces of string across one of the open sides to create four equal quadrants (see image) ❖ Tape the string to the sides of the toilet paper roll.  **Find two places to observe** ❖ Find two phenomena/observation spots that you will observe with your densiometer (for canopy cover) and hula hoop (for ground vegetation) **Measure Canopy Cover (above your site)** ❖ Look into your densiometer straight up at the tree canopy to observe how much tree canopy is covering our observation spot today. ❖ Shade in the amount of canopy coverage you notice in each place (below is an example of how you draw it). **Measure Ground Cover (below your site)** ❖ Place the hula hoop on the ground below where you used your densiometer. If you don't have a hula hoop, you can use string or any other large round object for your measurements. ❖ Shade in the amount of ground cover that you see in your hula hoop. Shade areas with dense vegetation darker than areas with less coverage.

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How much canopy coverage is above our observation location?

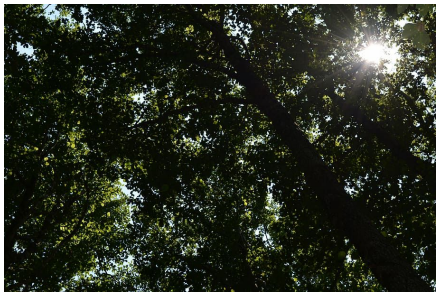
This data collection tool helps us gather data about:

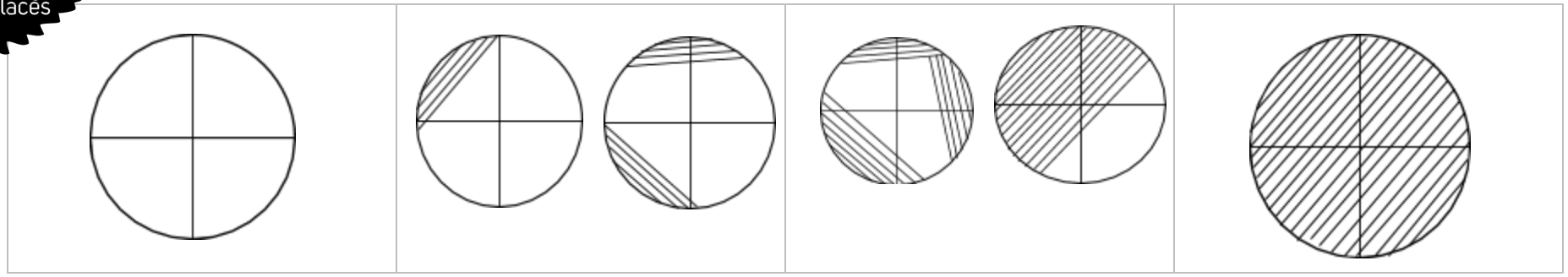
1) how much sunlight reaches the forest floor and the other living organisms below it
2) how much the trees in the canopy has leaf growth (leaf out); or falling
3) how tree canopies change over time by species

Scientist:_____ Date_____ The Season is _____

Today's Weather

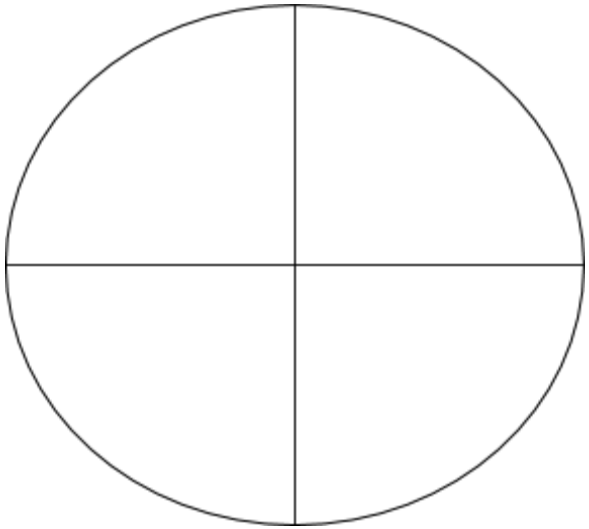
Example of what you might see in your densiometer:

No Coverage	Partially Covered	Mostly Covered	Fully Covered
No coverage is an area without trees or with trees that give little coverage (such as small or narrow trees). Looking up you would see all sky.	Partial cover is when there is only some canopy cover, which might be at the edge of a canopy or under small or narrow trees. Looking up you would see a lot of sky.	Mostly covered means that you are seeing a lot of the tree canopy and only some sky when you look up.	Full canopy coverage is usually under a forested area or a large tree. You would see very little or no sky when looking up.
			



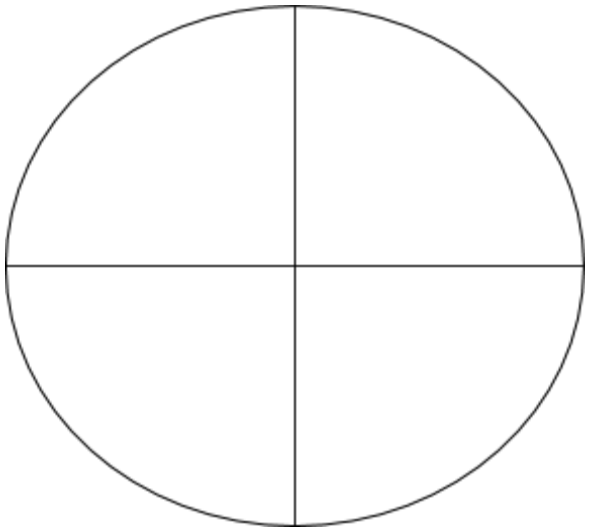
Step 1: Use your densiometer to look above to measure canopy cover.

Site 1



Shade in the amount of canopy coverage over your observation spot.

Site 2



Shade in the amount of canopy coverage over your observation spot.

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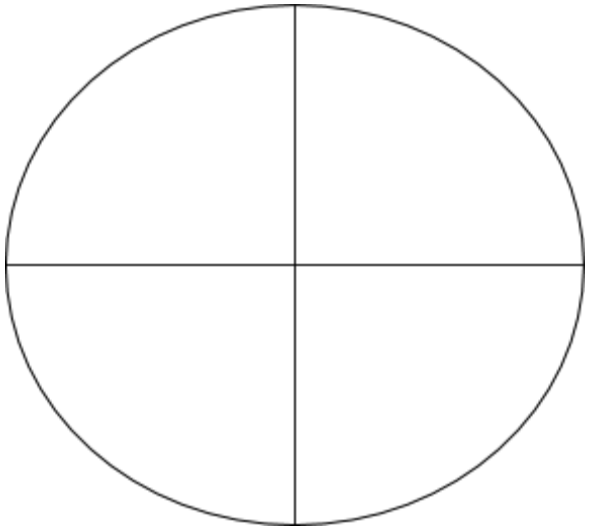
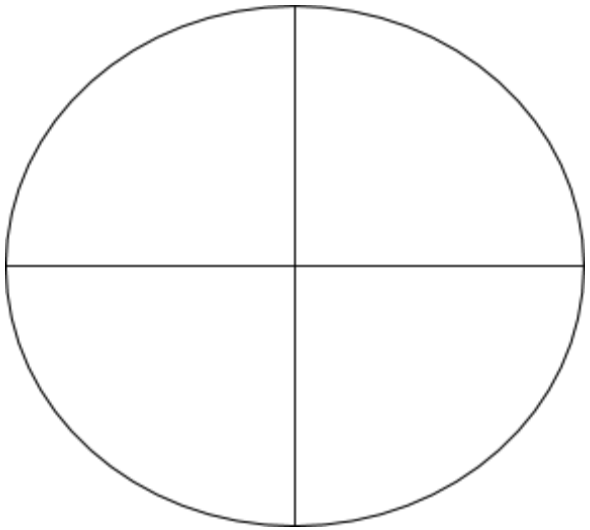
Step 2: Measure the ground cover (such as grass, bushes, and other vegetation) below your observation sites.

Site 1	Site 2
	
Shade in the amount of ground cover below your observation spot.	Shade in the amount of ground cover below your observation spot.

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