

### Data Collect Tools Overview

These data collection protocols are designed to support your field-based science investigations. As you plan your field-based science investigation, review these tools to see which one(s) support research your focal phenomena and “Should We” question. Throughout the year, you may choose to do multiple protocols to collect more data to answer the “Should We” question.

<b>Name of Data Collection Tool</b>	<b>Example Investigation Questions (but there are many more!)</b>	<b>Types of Data Collected</b>
1. Invertebrates (Critters) Biodiversity Tally Sheet	Where do we find the most bugs/invertebrates (under rocks, in the sun, by water, etc.)?  Do bugs like sunny or shady spots, moist or dry soil?	Quantitative: number of invertebrates  Qualitative: species of invertebrates
2. Biodiversity Species Type and Abundance	The type and abundance of species in an area	Quantitative: number of types of species and how many of each  Qualitative: types of species, maybe also details about them (juvenile, adult, male, female, etc.)
3. Species Behavior	What do species do in our neighborhoods?  How do species interact with each other and kinds?  How does species behavior change with weather, time of day, etc.?	Quantitative: number of different species, number of each species  Qualitative: behavior and relationship observations

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4. Leaf Observations	<p>How do leaves change after they have fallen off of a tree?</p> <p>How does weather affect the look and feel of leaves?</p> <p>How are leaves similar and different?</p>	<p>Quantitative: Relative number of leaves on the ground. Size of leaves.</p> <p>Qualitative observations: Changes to leaf structures based on conditions (time, weather, etc.)</p>
5. Canopy Coverage	<p>How does canopy cover affect species on the ground?</p> <p>How does temperature change under canopy cover?</p> <p>How does canopy cover change by season?</p>	<p>Quantitative: Densiometer shadings (see tool for details), corresponding species or temperature data</p> <p>Qualitative: Quality of canopy cover/health in different areas. Behavior of species/ response of plants related to canopy cover. Feeling of air temperature, moisture related to canopy cover.</p>
6. Soil Observations	<p>What organisms are found above, below the soil?</p> <p>How are organisms in the related to each other?</p> <p>Relationships between species and kinds.</p>	<p>Quantitative: relative soil moisture, soil temperature, species counts.</p> <p>Qualitative: species-kind, species-species relationships, behaviors, etc.</p>
7. Soil Moisture	<p>What types of soil are around my school or in my neighborhood?</p> <p>How does soil type relate to moisture, species diversity, abundance, rain</p>	<p>Quantitative: Soil moisture levels approximated through paper towel "test"; soil temperature readings (and then identification of soil type)</p>

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	runoff, etc.?	Qualitative: Soil type, feel, relationship to runoff, etc.
8. Density of Coverage	<p>How does the density of species vary in different places?</p> <p>How does the physical environment (soil, leaf coverage, weather) affect the density of species?</p>	<p>Quantitative: grid shavings or density coverage (density observations vary by questions). Count of types of species observed.</p> <p>Qualitative: species behaviors</p>
9. Observing Relationships at Scales	<p>How species are related to each other in a place.</p> <p>How organisms interact with their physical environment in a place.</p> <p>How we can notice different types of relationships by observing them at different scales (i.e. zooming and zooming out)</p>	<p>Quantitative: numbers of species and counts.</p> <p>Qualitative observations at different scales (zoomed out and zoomed in)</p>
10. Daily (monthly/seasonally) Time & Temperature Readings	<p>How does temperature change throughout the day?</p> <p>How do species (plants and animals) and kinds (water and soil) respond to daily changes in temperature?</p>	<p>Quantitative: Time and temperature</p> <p>Qualitative: (optional) The relative feel of the temperature throughout the day (when sun is high/low)</p>

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11. Daily (monthly/seasonally) Weather Documentation	What is the weather like where I live?  How does the weather change on a weekly and/or monthly basis?	Quantitative: Dates, months, and temperature (optional)  Qualitative: Identification of weather (sunny, cloudy, etc)
12. Daylight by Season	How does the amount of daylight change throughout the year?  How does the amount of daylight relate to other things I observe in my neighborhood, like species abundance and behaviors, bloom times, leaf fall, and temperatures.	Quantitative: Amount of daylight (documenting time of sunrise and sunset)  Qualitative: Seasonal data and optional data