

Urban Biodiversity Survey - Gr. 1-5

Essential Questions

What is biodiversity and why is it essential for healthy ecosystems?

Objectives:

Students will

- Understand biodiversity and explain the importance of biodiverse habitats.
- Create a school map to identify places to conduct surveys.
- Develop an inventory of the species within a defined area through observation.
- Collect, organize, and analyze data.
- Describe a factor that could change the diversity found in their plot.

Timeline:

4 Lessons

Four to Five 50-minute periods. Fieldwork preferably done during the cooler hours of the day if being done in the hotter months. Doing surveys at different times of the year could lead to different results and to data comparisons.

Vocabulary: Ecosystem, Habitat, Biodiversity, Species, Organism, Observation, Survey, Data, Metadata, Plot

Materials:

Paper or journals

Think, Puzzle, Explore, or something similar

Data Collection sheet

Clipboards

Field guides or laminated cards of possible species (optional)

Standards:

1.L2U1.8 Construct an explanation describing how organisms obtain resources from the environment including materials that are used again by other organisms.

2.L2U1.9 Obtain, analyze, and communicate evidence that organisms need a source of energy, air, water, and certain temperature conditions to survive.

3.L2U1.8 Construct an argument from evidence that organisms are interdependent.

4.L4U1.11 Analyze and interpret environmental data to demonstrate that species either adapt and survive or go extinct over time.

5.L4U3.11 Obtain, evaluate, and communicate evidence about how natural and human-caused changes to habitats or climate can impact populations.

Lessons

Lesson 1: Introduce Biodiversity

Have students create a Think, Puzzle, Explore table in their journals.

- Begin by asking, “Who has heard the word biodiversity?” and then ask “What do you think of when you hear the word biodiversity?”
 - Students write responses in their Think section. Ask students to write down any questions they may have in the Puzzle section, and how they might explore those questions in the Explore section.
 - Share responses.

Read aloud [*Cactus Hotel*](#).

- What plants or animals did you notice in the story?
- What plants and animals have you noticed in Tucson/your backyard/neighborhood/school?
 - Write down the responses on the board. Write all repeat responses. Save this - you'll come back to it.

Why might it be important for us to know what types of plants and animals are in our area?

- Define biodiversity as the variety of plants and animals in a particular habitat.
 - Students will record Biodiversity is_____ in their journals.
- What factors could affect the biodiversity of a place?
 - Which places at school do you think will have the most or least biodiversity? Why?

Lesson 2: Create a map of school

Students will create their own maps of the school and grounds to determine where to conduct the surveys.

Tell students that they are going to be making a map of the schoolyard and the different habitats that can be found there.

- Give students a blank sheet of paper, a pencil, and a clipboard or other writing surface that can be used outside.
 - Draft the Base Map (In Classroom)
Using Google Maps of the school site, model how to draw a top-down, bird's-eye view outline of the school grounds on their paper. Mark major landmarks like the school building, fences, walkways, and large trees. Students will draw their own map.

- Field Investigation (Outdoor Fieldwork)
Take students outside with their clipboards and maps. Students will add anything they didn't see from the Google Maps image.
- What features did you notice about the school? Field?
 - Compare different areas of the schoolyard and discuss how they are similar and different. Try to get students to outline different habitats. E.g., how is a parking lot the same or different from a field?

Lesson 3: Biodiversity survey

Introduce biodiversity survey inventory

- A biodiversity survey inventory template helps you record all the living things in a specific area.
 - It tracks **species names** and **how many**. This helps you see if a local environment is healthy and full of life.
 - Model how to use an inventory sheet.

Select a site that has multiple habitat types (or at least two distinct types such as a dirt area and a vegetated area).

- Create groups of 3-4. Each group will sit/stand together to complete their survey.
 - Instruct students to work with their group so they record ALL group observations on their sheets.
- Remind students "Record all the different living things that you find in your sample area. If you don't know its name, record it with a drawing instead. If you see 3 plants that are the same, make 3 tally marks. If you see 3 plants that are all different, write them as 3 different plants on your survey sheet."
 - For younger students, pre-filled in categories on the survey may help: Flowers, Bushes, Birds, Lizards, Bugs, Spiders, Trees, etc...

Lesson 4: Analyze data, tally species observed

Have students compare their data in their groups.

- Do the tallies match?
- Assist groups in coming to a consensus on the number of species observed. Tell them to add a number total for each line.

Whole class data

- Ask groups to share what they saw. Record their answers on a chart or slide, using the same inventory sheet layout.

Data Analysis

- **Compare Zones:** Ask students: *Which zone had the highest biodiversity? Which had the lowest? Why?*

- **Human Impact:** Discuss how human structures (like concrete or artificial turf) affect the variety of local plants and wildlife.