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Introduction

Children are excellent and inquisitive observers of the natural world. Taking students outside to experience using their senses to explore, identifying living things, and investigating the habitat in the school yard can be a great way to reinforce understanding of concepts.

As a part of the CNC education toolkit, a group of educators at institutions around the world has gathered and reviewed hundreds of resources about biodiversity and citizen science that are relevant to the City Nature Challenge. These resources are our recommended activities for ages 8-11.

This progression of activities is designed to introduce the concept of biodiversity and build observation and other field skills for the City Nature Challenge. At least some activities include outdoor and field components. See 'modifications' section below for ideas on how to make these activities work for you, whether you work with students in a formal classroom or a museum, nature center, after school program, homeschool, or other informal environment. See standards at the bottom for how these activities connect to Next Generation Science Standards (U.S.). You can search through the [full set of age 8-11 resources](#) for educator guides, classroom and field activities, media, and more!

New to taking students outside? Be sure to read through our [Guide to Teaching Students Outside](#) for tips on outdoor group management and teaching strategies.

Background + Considerations

The City Nature Challenge requires observations of living things to be uploaded to your city's chosen platform (iNaturalist or others). With young students, consider using the recommended worksheets for student observation. When you or other adults are checking in with your student groups, photograph the living things they are documenting on paper. Then, upload the observations of your class observations for the City Nature Challenge. You can choose to revisit these observations throughout the year by printing them out or viewing them on the iNaturalist.org map feature. Read the [Guide to using iNaturalist with Students](#) for links to tutorial videos and more.

Objectives: Students will...

- Classify and differentiate major groups of plants and animals
- Compare observations of species among different areas in the school yard or outdoor space
- Design investigations to explore student- or instructor- driven questions

Activities

Activity 1: [Encyclopedia of Life: Classification of Plants and Animals](#)

- **Type:** Lesson Plans (4 activities)
- **Activity Time:** Varies, 15-90 minutes per activity
- **Focal Science Practices:** Making Observations, Planning and Carrying Out Investigations, Analyzing and Interpreting Data, Drawing Conclusions and Communicating Information
- **Recommended Use:** Series of activities that build on one another focused on developing skills and knowledge related to classification of plants and animals. Includes vocabulary and recommended readings.
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Activity 2: [Get to Know Nature](#)

- **Type:** Field Investigation, Lesson Plan, Media
- **Activity Time:** Three 60-min lessons
- **Focal Science Practices:** Making Observations
- **Recommended Use:** Detailed lesson about biodiversity and habitats by building a nature guide for their neighborhood. Includes multiple links and resources, some with Spanish translation.

Activity 3: [Looking at Lawns](#)

- **Type:** Activity
- **Activity Time:** 45 minutes
- **Preparation:** Requires several weeks of letting a small section of the school lawn grow
- **Focal Science Practices:** Making Observations, Planning and Carrying Out Investigations, Drawing Conclusions and Communicating Information
- **Recommended Use:** This activity allows students to observe and compare the biodiversity of maintained lawn and a portion of taller grass. Prep includes fencing off a part of lawn to let grow undisturbed so participants can hone observation and classification skills by “bioblitzing” this small section. Also includes instructions and resources for schoolyard naturalization.

Activity 4: [Encyclopedia of Life: Species Cards](#)

- **Type:** Media & Activity
- **Activity Time:** Varies
- **Focal Science Practices:** Making Observations, Drawing Conclusions and Communicating Information
- **Recommended Use:** Explore the characteristics and behaviors of species using EOL’s free species cards. Both premade species cards and template for participants to make new species cards from their own observations. Includes links and resources to multiple games and lessons/activities using the cards. If you have access to a color printer, print cards and laminate (optional) to play games and or bring into the field as a guide. If you do not have a color printer, print the blank species card templates and have students draw real species they observe outside or even create their own species.

Modifications

- All activities can be modified for informal settings.

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- If you do not have access to a green outdoor space or do not have a schoolyard with grass, consider putting window boxes outside your classroom or if possible building a small raised bed garden.
 - Most activities include materials for printing, however you have students design their own data sheets or species cards.

Extensions

- Analyze results from the City Nature Challenge by modifying this [Analyzing Bioblitz Data](#) activity from National Geographic.
- Extend exploration throughout the year:
 - Begin the observations early to draw comparisons between seasons.
 - Encourage students to explore with their families at home.
 - Build a class bird feeder to increase the biodiversity you can see from the window.
- Explore the [full set of resources for age 8-11 here](#).

Relevant Science Standards

Next Generation Science Standards (U.S.)

Performance Expectations:

- 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.
- 3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
- 3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.
- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Disciplinary Core Ideas

- LS1.A: Structure and Function
- LS2.A: Interdependent Relationships in Ecosystems
- LS2.C: Ecosystem Dynamics, Functioning, and Resilience
- LS4.C: Adaptation
- LS4.D: Biodiversity and Humans

Science and Engineering Practices

- Asking Questions and Defining Problems
- Developing and Using Models
- Planning and Carrying Out Investigations
- Obtaining, Evaluating, and Communicating Information
- Analyzing and Interpreting Data

Crosscutting Concepts

- Patterns
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- Systems and System Models
 - Structure and Function