

# Eco-Blitz

## The schoolyard as an ecosystem



**Contact:**

Megan McLean  
Cary Institute of Ecosystem Studies  
PO Box AB (2801 Sharon Turnpike) Millbrook, NY 12545  
(845) 677-7600 ext. 190  
mcleanm@ecostudies.org

**NY State Standards addressed**

NY State: Standards for math, science and technology:

Standard 4 (The Living Environment)

- Key Idea 1 – Living things are both similar to and different from each other and nonliving things.
- Key Idea 6 – Plants and animals depend on each other and their physical environment.
- Key Idea 7 – Human decisions and activities have had a profound impact on the physical and living environment.

Standard 4 (The Physical Environment)

- Key Idea 2 – Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.
- Key Idea 4 – Energy exists in many forms, and when these forms change energy is conserved.

Standard 6 (Interconnectedness):

- Key Idea 1 – Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.
- Key Idea 2 – Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.
- Key Idea 4 – Equilibrium is a state of stability due either to lack of change or a balance between opposing forces.

**Objectives**

- Students observe, record and synthesize data collected on living and nonliving things in their schoolyard to understand how ecosystems function.
- Students are exposed to current, relevant ecological research.

**Grade Level: 6-12**

**Duration:**

Day 1 – 40 minutes  
Day 2 – 40 minutes  
Day 3 – 40 minutes

**Vocabulary may include:**

- **ECOSYSTEM** – the relationship between biotic (living) and abiotic (non-living) factors in an environment.
- **MICROCLIMATE** – the climate of a small specific place within an area as contrasted with the climate of the entire area.
- **NUTRIENT CYCLING** - the movement of chemical food through an ecosystem, especially nitrogen (N), phosphorus (P), potassium (K), calcium (Ca) and magnesium (Mg). These chemicals come from weathering rocks, decomposing plants and animals, and fertilizers. We eat these nutrients, too!
- **DECOMPOSITION**- the breaking down of dead plants and animals into simpler nutrients.
- **ECOSYSTEM SERVICES** - resources and processes which are carried out by natural ecosystems, including the breaking down of dead plants and animals, crop pollination and clean drinking water.
- **INTERACTION WEB** – a web of the many ways that organisms’ have relationships in an ecosystem, including predator-prey, plant-pollinator, and parasite-host.
- **BIODIVERSITY** – the range of organisms present in a particular ecological community or system.

**Program Synopsis**

**Day 1:**

Introduction to Cary Institute and how our ecologists define ecosystems.	5 minutes
Review of Eco-Blitz stations	10 minutes
Students are divided into focus group stations where they collect data on living and nonliving factors in the schoolyard. Stations may include*: <ul style="list-style-type: none"> <li>• Microclimate station – students collect data on air temperature, soil moisture and temperature, wind speed and light intensity in different parts of the schoolyard</li> <li>• Soil station - students investigate what makes up soil and collect data on decomposition rates</li> <li>• Insect station – students collect, count, and identify flying and ground-dwelling insects</li> <li>• Larger animal life station – students identify, count, and record signs of birds, amphibians, reptiles, and mammals</li> <li>• Plants/Seeds station – students locate and identify trees, plants, flowers and their seeds.</li> </ul>	25 minutes

\* We have extensive experience in urban, rural, and suburban schoolyards and are able to adapt these stations to fit the nature of the schoolyard and the curricular goals of the teacher. The program can be adapted to allow students to rotate through each research station with the addition of a fourth visit to the schoolyard.

**Day 2:**

Review of project/observations/questions	10 minutes
Students report and organize data.	30 minutes

**Day 3:**

Review of project/observations/questions	5 minutes
Students analyze data. Data analysis will include biodiversity index of schoolyard.	20 minutes
Group discussion about interaction webs in schoolyard	15 minutes

**Possible extensions/adaptations for this schoolyard investigation include:**

- Conducting eco-blitz investigations during different months in the schoolyard to compare seasonal changes in interaction webs.
- Creating a long term ecological monitoring project, whereby student groups monitor their schoolyard dynamics over many years. Long term research programs provide many unique opportunities for enriching graphing and analysis exercises.
- Creating student driven investigations on interesting topics discovered during the eco-blitz investigation.