Lessons in a Backpack

United Nations Educational, Scientific and Cultural Organization

LONG POINT BIOSPHERE REGION

Schoolyard BioBlitz

Citizen Science

At a Glance

Grade Level: 4

Learning Environment: Indoor classroom and any schoolyard/trail/natural wildlife area (NWA)

Prep Time: 15 minutes

Length of Lesson: 2 Hours

Key Vocabulary: Biodiversity, biodiversity threats, invasive species, sustainability, stewardship, species at risk

Staffing: 1 educator

Materials: Smart device/ computer/smartboard, field guides

Groupings: Create groups of 4

Teaching/Learning Strategies: observations /photography/ graphing

Description of Lesson

You could refer to a Bioblitz as a scientific scavenger hunt that goes further than just finding objects. Through a Bioblitz, students can share and contribute to data monitoring and collection programs here in Ontario. The class will make observations in the schoolyard or area of choice. This activity is a great introduction to citizen science. The Seek or iNaturalist App will help with this collection of data.

Connect with the Long Point Biosphere Region

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LONG POINT BIOSPHERE REGION

Lesson Outline

TIME	ACTIVITY	LOCATION	MATERIALS
Lesson 1 30 minutes	Download Seek/iNaturalist App, review instructions	Class	Smart device/camera
Lesson 2 1.5 hours	Set up your groups, go outside and make your observations	Field	Smart device/camera, field guides
Lesson 3 30 minutes	Review the outcome report of the class's observations/ tally time	Class	Smart board/tablet
Extensions	Invasive species	Class	Smart board/tablet

Curriculum Expectations Grade 4 - Science Curriculum

UNDERSTANDING LIFE SYSTEMS: HABITATS AND COMMUNITIES

1.0 Analyze the effects of human activities on habitats and communities.

1.1 Analyze the positive and negative impacts of human interactions with natural habitats and communities (e.g., human dependence on natural materials), taking different perspectives into account (e.g., the perspectives of a housing developer, a family in need of housing, an ecologist), and evaluate ways of minimizing the negative impacts.

1.2 Identify reasons for the depletion or extinction of a plant or animal species (e.g., hunting, disease, invasive species, changes in, or destruction of, its habitat), evaluate the impacts on the rest of the natural community, and propose possible actions for preventing such depletions or extinctions from happening.

3.0 Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them.

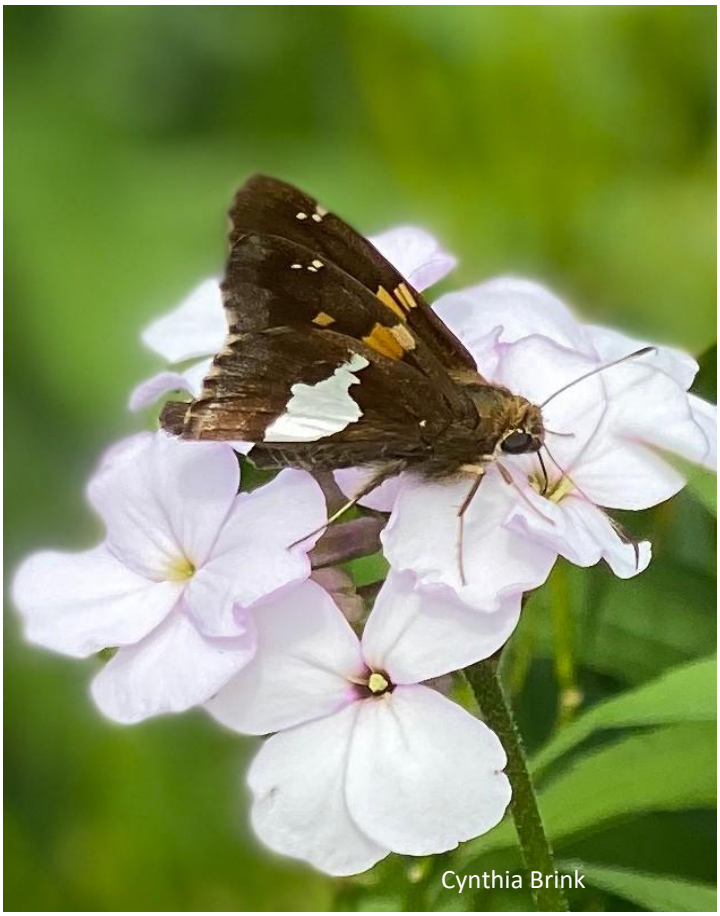
3.1 Demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life (e.g., food, water, air, space and light).

Background

Sustainability is the concept of meeting the needs of the present without compromising the ability of future generations to meet their needs. Conserving and restoring natural wildlife areas to the same as we have today, or better, helps create sustainability. Maybe to help in the effort your schoolyard could be considered in the big picture. In order to promote sustainability one must learn to steward places to achieve sustainability.

Stewardship involves understanding that we need to use and care for the natural environment in a responsible way and make the effort to pass on to future generations no less than what we ourselves have access to. Values that are central to responsible stewardship are: using non-renewable resources with care; reusing and recycling what we can; switching to renewable resources wherever possible.

Focus: citizen science, data collection, informal environmental assessments, species identification and species monitoring.



Silver Spotted Skipper

(**Science focus**: Biodiversity, ecology, classification, species at risk, invasive species.)

Connect with the Seek App and share with the iNaturalist scientific community, upload observations to our NatureHood project.

- Observe statistics and how observations give us a better perspective of the decline or increase year to year of indicator species.
- Biodiversity is a measure of the number or variety of species present in an area or areas close to species-specific habitats.
- Consider road ecology and safe roadside observations when reptiles and amphibians are on the move.
- Species at risk reporting.
- Invasive species newly introduced to an area.

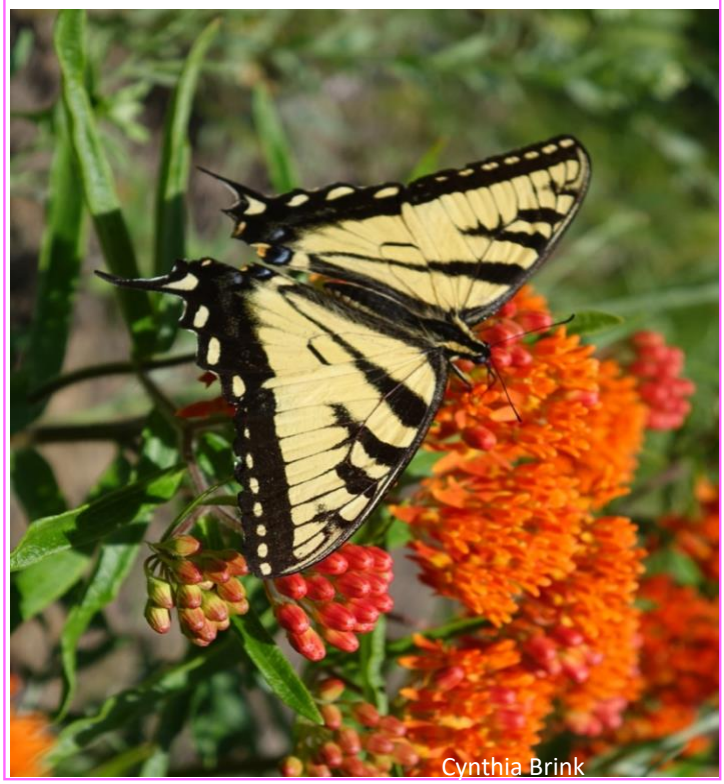
(*Focusing on only a couple of the above mentioned concepts can often be more productive. Choose your concepts before you embark on you adventure on the trails. So much is dependent on which habitat you choose to visit.)*

Teaching and Learning

Seek by iNaturalist uses the power of image recognition technology to identify plants and animals around you. It connects you and your class with a community of over 750,000 scientists and naturalists that curate your observations helping you learn about nature on the go.

Sharing your observations through Seek to iNaturalist helps create quality data for scientists working to better understand and protect biodiversity. Seek is a joint initiative by the California Academy of Sciences and the National Geographic Society.

Referencing millions of wildlife observations on iNaturalist, Seek shows you lists of commonly recorded insects, birds, plants, amphibians, and more in Norfolk County. Find out more about biodiversity in our area by checking those lists on the app by picking the geographical area and species for which you may be curious about.



Butterfly Weed / Swallowtail Butterfly

Getting Ready for a BioBlitz

Lesson 1

You, as a teacher, can setup a classroom iNaturalist account which requires registration or you can have the students download the Seek App on their smart devices which requires no registration. Decide to do both whatever works best for your class.

Download the App!

Before heading outside to your chosen area to use the App, there are a couple things you should take the time to do with your class first.

Some rules are very important for the class to understand before you start your schoolyard BioBlitz. Seek is the perfect blend of science and mobile technology, but misused in the classroom, results in poor observations and observations that are obscure and hard to curate. In order to help you avoid some common problems, here are some pointers to use Seek with your class prior to setting out into the school yard.

- Add you're observations to **Projects**. Projects let you pool your observations with other people on iNaturalist.
- **iNaturalist NatureHood Project** – LPBR project is to identify plants and animals or act as a way of collating data about the diversity of plants and animals in our area.

Rules of Engagement

Important field rules:

Take identifiable photos that are clear and up close. Make sure that you fill your frame with the specimen and that the photo is in focus. For flowers and plants you can use your hand to hold the flower or plant that an insect is on. This can be challenging at times as some insects are quick. Be sure that the plant is not poison ivy or anything that could irritate sensitive skin. A quick lesson on how to use focus, enlarge, light level adjustment, and any other features the smart device might have would be helpful. Use some objects you have around the classroom to practice.

Take more than one photo because some plants and insects cannot be identified to species from a single photo. Have students take multiple photos from the top, bottom, side, front and back if they can.
Capturing different features of the organism helps with the identification process. If the students are making observations of plants, take pictures of flowers, leaves, stem and/or fruit. Be sure that multiple photos of the same organism are added to the same observation. Refrain from doing multiple observations of the same subject.

Try to focus on wild organisms. It's easy to get carried away with cultivated plants and animals that can be found in the school yard. The iNaturalist community focuses on wild organisms, and will respond more to pictures of weeds and bugs. Help your students understand the difference between cultivated organisms and wild organisms. If your class is finding it difficult to find wild organisms, this could be a great opportunity to discuss the environmental concern around not finding wild organisms.

Be sure that when photos are uploaded that they have the proper GPS information. Sometimes this information is lost if the photos are not uploaded in the field. This information is an important part of the observation. You may need to help your students confirm this information before submitting their observations.

Life Science Inventory

Lesson 2

Once the class understands the rules of engagement make sure to give them a timeline of 1 hour to do as many observations as possible. Designate a specific area of the schoolyard that each group must stay within so that there is no cross over between them. Ensure that observations are only made once of each species encountered.

During the one hour BioBlitz if students don't have access to data, observations can be uploaded once they are back in a class setting. Take 30 minutes to load and verify data once students have access to data or WIFI. Have students pay attention to details such as species and location.

Tally Time

Lesson 3

Write “Tally” at the top of your smart-board/flipchart. Have students refer to their observations of the different species they uploaded during the BioBlitz. Make a list of all the species observed and write the observations on the smartboard/ flipchart. Once you have your list completed review all the different species you have on your list. Ask students to contribute a few interesting facts about the species they have observed during the BioBlitz.

Give students time to examine their observations and remove any that may not be within the rules referred to above. Then have students tally the total number to conclude how many observations were successfully uploaded.

Analyze BioBlitz observation data

Review the observations and create a graph that will track how many of each species of flora and fauna were observed. Using the same groups that made their observations together, have them organize their observations using the chart below. These groups will then analyze the observation data based on species. Once the species have been organized by each group add them all together on your smart-board/flipchart in a graph format of your choice. Add more species if they are not in the list below. The list was created just as a starting point.

- Insect
- Bird
- Amphibian
- Reptile
- Tree
- Plant
- Arachnid

As groups add their species on the class graph, explain to them that they should be prepared to share information regarding defining characteristics, total number of species and number of observations, the five most common observations, and any unexpected observations, as well as introduced species, and any endangered species.

Related discussion topics

Does it look like you have and abundance of species? Do you have a lack of species? Why do you think you have either an abundance or a lack of species? What could you do to improve the schoolyard to improve your numbers of native species?

Have a serious discussion about very simple changes, and consider doing the extensions included below, to encourage positive stewardship.

Extention 1:
Invasive species are spreading quickly, and you can report their location using the Early Detection and Distribution Mapping System EDDMapS.
You can submit invasive species sightings using either a smartphone or a computer. Sightings are uploaded to **EDDMapS** and emailed directly to reviewers to confirm. The maps and information are freely available to everyone. Having good data on invasive species and their locations improves our ability to manage and respond to them.

Extension 2:
Start small by adding native wildflowers to your garden, yard or balcony. Join forces with friends and neighbours to share seeds and plants. Next, encourage schools, businesses and institutions to add pollinator-friendly plants to their gardens and properties. Stitch this network of pollinator patches together and you've created your own **Butterflyway!**

The Long Point Biosphere Region would like to thank the Ontario Trillium Foundation for making this project possible

Ontario Trillium Foundation
Fondation Trillium de l'Ontario

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