Community Science

Pollinators – Grade 3

Lesson 10: Quadrant Study

Duration: 1 – 2 hours **Location:** Outdoor

Overview

In this lesson students will become familiar with the quadrant method of surveying to better understand the abundance and diversity of pollinators in their local community. Students should be familiar with what a pollinator is and know 5 examples of pollinator species.

Learning objectives

By the end of the session, students will be able to:

- Repeat 5 different pollinator species living in their local community,
- Highlight the food/shelter needs of different pollinator species,
- Identify how humans have impacted local pollinator habitat, and
- Comment on how student action can help build better pollinator habitat in their community.

Curriculum links

Grade: 3

Science, Animal Life Cycles

- Demonstrate awareness that animals require different habitats in order to meet their basic needs of food, water, shelter and space.
- Identify the food needs of at least one animal from each of the following groups: mammals, birds, fish, reptiles, amphibians, insects; and describe changes in how each animal obtains food through different stages of its life.

- Identify examples of environmental conditions that may threaten animal survival and identify examples of extinct animals. Recognize that habitat preservation can help maintain animal populations and identify ways that student actions can assist habitat preservation.

Equipment required

- ☐ Rope
- ☐ Tent pegs
- ☐ Magnifying glasses
- ☐ Magnifying cubes
- ☐ Bug nets
- ☐ Nature journals or observation sheet
- ☐ Tablets
- ☐ Guidebooks
- ☐ Clipboards (optional)
- ☐ Writing utensils
- ☐ Beating sheet
- ☐ Stick

Additional information

A quadrant is a sampling plot used to survey a selected area. Each quadrant can vary in size and may be any shape. However, all quadrants should be the same size and shape within each study. Students should also be comfortable using SEEK by iNaturalist.

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Lesson plan

Time	Activity	Equipment needed
10 minutes	Create transects using your own materials or the rope and tent pegs provided. Each transect should be the same size. Attempt to have the transects large enough to accommodate all group members. For example, smaller groups can use a 1meter by 1 meter quadrant, while a larger group can have a quadrant up to 3 meters by 3 meters. Select transect locations which are biodiverse. For instances, areas with many bushes, trees, wildflowers, etc. Label, or make each quadrant identifiable from the others (number them, colour code, etc.) Ensure that you have one transect per group.	• Flagging tape • Tent pegs
5 minutes	Divide class into groups. It is recommended to have at least 2 and maximum of 5. Have each group divide into different roles, - Observers & note takers. During the quadrant study, the observers will be going through the study area to look for and identify any pollinators while the note takers will be either drawing and/or writing down the pollinators found and identified. Each group should have the following materials to help them locate, capture and identify pollinators: magnifying glasses, magnifying cubes, bug nets, bug containers, and a tablet/iPad. There are additional materials in the kit you may use, such as guidebooks. You can hand these out to each group or place materials at the quadrant for pick up.	• Magnifying glasses • Magnifying cubes • Bug nets • Nature journals or observation sheet • Tablets/iPads • Guidebooks • Clipboards (optional)

		• Writing utensils
30 - 60 minutes	Give each group a clip board (optional) and ensure the note takers have their nature journal or the Quadrant Study observation sheet. Have note takers fill out the metadata (dates, time starting the observations, location) at the top of their sheets. Designate each group to a quadrant. Allow them to start their observations. During observation times, visit each quadrant and give assistance for how to use SEEK, identify pollinators found, and where to look. After 10 minutes have all groups rotate to the next quadrant. When groups move to another quadrant, students should switch roles. Note takers will be observers and observers will be starting a new Quadrant Study observation sheet or page in their nature journal and inputting the metadata again (dates, time starting the observation, location). Repeat as time and attention allows. Attempt to use the teachers' beating sheet with each group. It is ideal to use this tool in a quadrant that has a tree or bush. To use the beating sheet, place it under a branch or leafy section of a plant. Gently, hit the branch or section with the stick, having all falling debris land on the sheet. This will help students find species they may have missed. As well, the sheet acts as a good background to observe and identify smaller animals.	• Magnifying glasses • Magnifying cubes • Bug nets • Nature journals or observation sheet • Tablets/iPads • Guidebooks • Clipboards (optional) • Writing utensils • Beating sheet • Stick

10 minutes	At the end of your observation time, bring the groups together and share findings. As students are sharing their animal sightings, start to create a class list, being careful to not count species/individuals twice. Submit pollinator findings through a tablet/iPad using the iNaturalist app.	• Nature journals or Quadrant Study observation sheet • Tablet/iPad
10 minutes	Use some of the recommended debrief questions below to review learning. 1. What were the pollinators doing while we were observing them? Were they looking for food? If so, what are the food needs of different pollinators? 2. Did we see animals in different life stages (egg, larva, adult)? If so, what are some examples? How did these pollinators eat differently in these different stages of life? 3. (If) We didn't find many pollinators; why would that be? Is this area a good home/habitat for pollinators? Why and why not? 4. How have human's impacted pollinators homes in this local area? What actions could we take to help build a better home/habitat for pollinators in our community?	

Extension

1. Based on the species and number of each species observed during the Quadrant Study activity, have students create a graph showing their data.