FLUTTER BY:
DESIGNING A BUTTERFLY HABITAT

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Science and Technology/Mathematics - Grades 2-4

Source: Adapted from learning activities created by the Peel EcoSchools Writing Team, made possible by support from The Region of Peel and Toronto and Region Conservation.

DESCRIPTION

This learning activity provides students with the opportunity to explore the life cycle of a monarch butterfly and begin an inquiry investigation into why their population numbers are decreasing. Students will apply their knowledge and understanding by designing a butterfly habitat that includes appropriate plant species. This activity can be taught over the course of a week, or extended for a more in-depth exploration.

CONNECTIONS TO ONTARIO ECOSCHOOLS

- **School Ground Greening:** Actively engage students in the care of the natural environment and encourage outdoor teaching and learning.
- **Curriculum:** Create lessons that allow students to learn in, about, and for environment.

CURRICULUM LINKS - SCIENCE AND TECHNOLOGY/MATHEMATICS, GRADES 2, 3, 4

OE = Overall Expectation

GRADE 2

Science and Technology *Understanding Life Systems: Growth and Change in Animals (2007)*

OE1. asses ways in which animals have an impact on society and the environment, and ways in which humans have an impact upon animals and the places where they live;

OE2. demonstrate an understanding that animals grow and change and have distinct characteristics;

Specific Expectations: 1.2, 2.3, 2.4

Mathematics *Measurement (2005)*

Specific Expectations: *Attributes, Units and Measurement Sense* - estimate measure, and record area, through investigation using a variety of non-standard unit

GRADE 3

Science and Technology *Understanding Life Systems: Growth and Change in Plants (2007)*

OE1. assess ways in which plants have an impact on society and the environment, and ways in which human activity has an impact on plants and plant habitats;

Specific Expectations: 1.1, 3.6

Mathematics *Measurement (2005)*

Specific Expectations: *Attributes, Units and Measurement Sense* - estimate measure, and record area

GRADE 4

Science and Technology *Understanding Life Systems: Habitats and Communities (2007)*

OE2. investigate the interdependence of plants and animals within specific habitats and communities;

OE3. demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them;

Specific Expectations: 2.3, 3.1, 3.3

Mathematics *Measurement (2005)*

Specific Expectations: *Attributes, Units and Measurement Sense* - estimate measure using a variety of tools and strategies, and record the perimeter and area of polygons

PLANNING NOTES

Background Information

Monarch butterflies are easily identified by their distinct orange, black, and white markings. Every fall, North American monarchs **migrate** south and spend the winter among the trees of Southern California or central Mexico. At the end of the winter, the monarchs **mate** and the females lay **eggs** on milkweed plants as they fly home – the **insects** also lay eggs on milkweed at other points during the year. It takes about a month to transform from an egg into a butterfly though **metamorphosis**. The eggs hatch into **caterpillars** (**larva** stage) that turn into **chrysalis** (**pupa** stage) two weeks later when they use silk to attach themselves to a plant. They spend 9-15 days in their hard shell before emerging as a butterfly. Butterflies are losing their natural habitats as more trees are cut down in their overwintering habitat and milkweed is removed for farming, housing, roads, etc. Milkweed plants and nectar producing plants (i.e. daisy) are **primary food sources** for caterpillars and butterflies respectively.

Did You Know...
That a group of butterflies is called a flutter?

Key Terms

The following terms can all be in found in bold in the paragraph above. They include: migrate, mate, eggs, insects, metamorphosis, caterpillars, larva, chrysalis, pupa and primary food source.

Materials

- Paper plates
- Craft materials including twigs and uncooked pasta
- Sticky notes
- Pencil crayons
- *Butterfly Habitat Plant List* (Appendix 1)
- *Butterfly Habitat Legend* (Appendix 2)
- *Butterfly Habitat Grid* (Appendix 3)
- Book: Monarch Butterfly by Gail Gibbons
- Book: Monarch and Milkweed by Helen Frost

Learning Skills & Work Habits

Collaboration, design, inquiry, critical thinking

TEACHING/LEARNING STRATEGIES

Minds On

1. **Whole Class:** Begin a class discussion by asking students what word comes to mind when they hear "butterfly" and have them share with a partner. As a class, record all the responses.
2. **Whole Class:** Watch a video clip or explore the online photo galleries at National Geographic/ National Geographic Kids and ask students to share what they noticed about monarch butterflies with their partner, before discussing as a whole class.
3. **Pair Share:** Distribute sticky notes to each pair and ask students to record any questions they have about butterflies. When they are finished, place sticky notes on the class Know Wonder Learn (KWL) chart or inquiry wall.

Action!

4. **Whole Class:** Read an informational text, such as *Monarch Butterfly* by Gail Gibbons or *Monarch and Milkweed* by Helen Frost, and begin a class discussion about the life cycle of a monarch butterfly. Explain the four stages (egg, larva, pupa, adult) and create a class diagram.
5. **Individual Exploration:** Distribute paper plates and various materials (pasta, twigs, glue, etc.) to each student for them to design their own butterfly lifecycle.
6. **Whole Class:** Now that students are familiar with the lifecycle, discuss the following questions and record answers on the class KWL chart or inquiry wall.

- What do monarch butterflies need to survive?
- Are any of those items threatened by climate change, habitat loss, or human behaviour?
- Why are monarch butterflies important?
- How can we help monarch butterflies?

Consolidation

7. **Whole Class:** As a whole class, examine more images and videos of butterfly habitats. Highlight the habitats' milkweed plants (caterpillar food source), nectar-producing plants for butterflies (i.e. aster and daisy), and the way the plants are arranged.
8. **Pair Share:** With a partner, discuss why certain plants are important for a butterfly habitat. Ask students to come up with a list of plants to use in a butterfly habitat. Record their responses, and then as a class, go over the *Butterfly Habitat Plant List* (Appendix 1).
9. **Whole Class:** Explain that all students will be designing their own butterfly habitat and model using the grid as a template (Appendix 3). Place taller plants in the middle or along a wall and smaller plants at the edges in small groups. Each type of plant is represented by the number of squares it will take up on the grid, for example a lilac bush takes up 9 squares (Appendix 1).
10. **Group Work:** In a small group or with a partner, students will design their own butterfly habitat using a square grid (Appendix 3) and legend (Appendix 2). Ensure that each habitat has at least one food source for caterpillars and one nectar producing plant for butterflies.
11. **More Group Work:** After completing the butterfly habitat design, ask each group to share their designs with another group and explain their layout. Students will provide feedback to their peers and incorporate relevant suggestions into their own work. They can then colour in their design and legend.
12. **Whole Class:** Ask all groups to share their designs with the class and create a class butterfly display. Engage in a habitat gallery walk and provide students the opportunity to ask each other questions. Update the class KWL chart or inquiry wall with any new information.

DIFFERENTIATED INSTRUCTION

The learning activity can be adapted to meet a variety of learning styles and specific needs. For example, the paper plate life cycles can be created using a combination of pictures and words, just words, or just pictures. The size of the butterfly habitat grid can vary by student and students can also incorporate irregular shapes instead of squares (i.e. using two right angle triangles, instead of one square to represent blanketflower).

= 2 blanketflowers

ASSESSMENT OPPORTUNITIES

Anecdotal evidence can be collected throughout the learning activity to identify gaps in knowledge or misconceptions to ensure that they are addressed. Student understanding can be monitored and assessed by their ability to explain and represent the butterfly's life cycle changes. Their butterfly habitat designs can be assessed on following criteria: appropriate plants for both caterpillars and butterflies, thoughtful layout and design, and student collaboration and group work.

EXTENSION ACTIVITIES

Classroom Butterflies: Raise butterflies in the classroom and have students document their life cycle changes. Eggs can be purchased online and caterpillars can be found on the underside of milkweed plants in late August/early September.

Build a Butterfly Habitat: Turn student butterfly habitat designs into reality and plant a garden on school grounds. Encourage active participation form other members of the school and broader community. Students can create outdoor informational material to display in the garden.

Explore Mealworms: Consider having mealworms in the class to explore the life cycle of another insect. Students can observe and track their development from larva to pupa to beetle. Mealworms can be purchased at most pet stores.

APPENDICES

Appendix 1 - *Butterfly Habitat Plant List*
Appendix 2 - *Butterfly Habitat Legend*
Appendix 3 - *Butterfly Habitat Grid*

APPENDIX 1

BUTTERFLY HABITAT PLANT LIST

Source: WikiCommons - commons.wikimedia.org

Plant Name: Lilac
# of Squares: 9
Height: 300 cm Spread: 300 cm

Plant Name: Butterfly Bush
# of Squares: 4
Height: 100 cm Spread: 100 cm

Plant Name: Ox-eye Daisy
# of Squares: 2
Height: 100 cm Spread: 50 cm

Plant Name: Coneflower
# of Squares: 2
Height: 75 cm Spread: 50 cm

Plant Name: Red Yarrow
# of Squares: 2
Height: 75 cm Spread: 50 cm

Plant Name: Phlox
# of Squares: 2
Height: 40 cm Spread: 50 cm

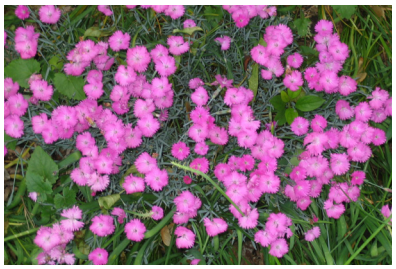
Plant Name: Aster
# of Squares: 2
Height: 40 cm Spread: 50 cm

Plant Name: Beebalm
# of Squares: 2
Height: 40 cm Spread: 50 cm

Plant Name: Milkweed
# of Squares: 2
Height: 100 cm Spread: 50 cm

Plant Name: Coreopsis
# of Squares: 1
Height: 40 cm Spread: 25 cm

Plant Name: Blanketflower
# of Squares: 1
Height: 40 cm Spread: 25 cm



Plant Name: Pinks
# of Squares: 1
Height: 30 cm Spread: 25 cm

APPENDIX 2

BUTTERFLY HABITAT LEGEND

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BUTTERFLY HABITAT LEGEND	
Colour	Plant Name
☐	
☐	
☐	
☐	
☐	
☐	
☐	
☐	
☐	
☐	
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APPENDIX 3

BUTTERFLY HABITAT GRID

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