

GRADE TWO: SEASONAL CHANGE IN ANIMALS BOOKLET

TO THE TEACHER

Welcome! This booklet has been designed to help teachers enhance the educational value and enjoyment of the Seasonal Change in Animals workshop. We recommend that workshop visits coincide with classroom studies of animal adaptations. This collection of activities has been designed to meet several expectations of the Grade Two Science Curriculum. Our pre-visit activities have been designed to help students gain a foundation to help them more thoroughly understand what they will experience during the workshop. Additionally, follow-up activities have been provided to help students synthesize their observations and experiences. Most of the activities include working in cooperative groups, hands-on elements or provide a variety of choices in order to accommodate the needs of diverse learners. We hope you find this information useful and easy to incorporate into your classroom.

WHERE DOES IT FIT IN?

Strand: Life Systems
Topic: Growth and Changes in Animals
Specific Expectations Met:

Understanding Basic Concepts

- ◆ identify and describe behavioural characteristics that enable animals to survive
- ◆ compare ways in which animals use their environment to meet their needs
- ◆ describe ways in which animals respond and adapt to their environment

Developing Skills of Inquiry, Design, and Communication

- ◆ ask questions about and identify some needs of different animals with which they are familiar, and explore possible answers to these questions and ways of meeting these needs
- ◆ use appropriate vocabulary in describing their investigations, explorations, and observations

Relating Science and Technology to the World Outside the School

- ◆ describe features of the environment that support the growth of familiar animals
- ◆ identify and compare the effects of the seasons on animals
- ◆ describe ways in which humans can help or harm other living things
- ◆ demonstrate an understanding of the requirements of small animals for survival
- ◆ describe the life processes of an animal that they have observed



AGENDA

Please note that the order or location of some of these activities may change due to construction, weather or animal health concerns. We can adapt the afternoon activities according to your priorities.

10:00	Welcome to the Toronto Zoo & outline of agenda Identify physical and behavioural characteristics/adaptations that enable wildlife to survive harsh winters.
10:15	Canadian wildlife, adaptations to winter
10:40	Winter adaptations activities (outdoors), we may play some learning games depending on the weather and time available.
11:30	Americas Tour (e.g. polar bear, frogs, snakes, fish etc.) physical adaptations to the cold.
12:00	Lunch. Please have everyone bring a lunch. <u>There will be no opportunity to go to the restaurant</u>
12:30	Living through winter activity as a review
12:45	Eurasia Tour (camel, reindeer, snow leopard, Japanese macaque etc.) or (gorillas, elephants, etc., for simple classification)
1:50	Certificate presentation and close of program

PRE-WORKSHOP ACTIVITIES

1. WHAT DO WE KNOW?

This activity will encourage students to practice making predictions and communicating their ideas. It will also provide the teacher with the opportunity to assess the prior knowledge that students have regarding concepts covered in the workshop.

As a whole class, discuss what students know and would like to know about seasonal change in animals (e.g. physical and behavioural adaptations such as migration, hibernation, molting, dormancy, coat colour, coat thickness, change in diet). Record students' ideas on a large K-W-L chart. After finishing the workshop, revisit and complete the K-W-L chart.

K-W-L Chart:

What We Know	What we Want to Know	What We Learned

Tying It All Together

Language Strand: Oral and Visual Communication

-participate in group discussions, demonstrating a sense of when to speak, when to listen, and how much to say

Mathematics Strand: Data Management

-organize data using graphic organizers



2. READ A BOOK!

Select a book from the Resource List to introduce some workshop concepts to your students.

Tying It All Together

Language Strand: Oral and Visual Communication

-view, read, and listen to media works with simple messages or factual information and describe what they have learned

-talk about characters and situations in stories, and information in non-fiction materials, and relate them to their personal experience

FOLLOW-UP ACTIVITIES

1. WACKY ANIMALS

This activity will allow students to produce pieces of work to show their understanding of how animals physically adapt to their environment.

Divide the class into three groups and assign each group one habitat/environment:

- dark, cold, mountainous/rocky, rainy
- dry, hot, flat, very sandy, sunny
- wet, hot, covered by forests, rainy

Within each habitat/environment group, students will individually write a description of their imaginary animal. The animal should be well-adapted to the assigned habitat, and should consider at least two of the following elements:

- size of animal
- diet of animal
- how will it catch food?
- how will it get water?
- how will it keep warm/cool?
- how will it defend itself from attackers?



Rainforest Animal

Umbrella-shaped head for protection from rain and shelter for babies, big eyes to see in the dark rainforest, elephant-like nose to drink while standing (so babies remain protected), spiky tail for defense, suction on feet to walk up trees in the forest.

Once their descriptions are complete, students will create an illustration of their animal (using markers, pencil crayons, etc). In groups of six (two students from each habitat), students will present their animal and describe their adaptations. See above for a sample animal.

Tying It All Together

Language Strand: Writing

- communicate ideas for specific purposes
- begin to write more elaborate sentences by using adjectives and adverbs
- use words from their oral vocabulary, personal word lists, and class lists compiled through brainstorming

Language Strand: Oral and Visual Communication

- communicate messages, and follow instructions and directions

Visual Arts

- produce two-dimensional works or art that communicate ideas for specific purposes and to familiar audiences

Feeling Bold?

If you would like to link this activity to the Social Studies curriculum (where students must learn about different countries and climates) you can have students make predictions of where their imaginary animal would live in the world. When they have achieved a better understanding of location and climate, students can check the accuracy of their predictions.

How to Assess

When assessing this activity you may consider the following:

- students considered two of the required elements in their design (for example, size, diet, shelter)
- the three elements are appropriate for the assigned habitat
- each student contributed to the group
- student communicated ideas clearly
- student used appropriate vocabulary

2. WHAT ANIMAL AM I?

This activity will help students practice questioning skills, knowledge of animal adaptations, and an awareness of details.

Label each corner of the room one of four adaptations (e.g. fur, scales, feathers, shells, fat/blubber, or webbed/clawed feet). Tape the name/picture of an animal that has one of the four adaptations on students' backs. The group will begin to mingle. Students must guess the animal that they have 'become' by walking from person to person and asking each person one 'yes' or 'no' question about the animal. Once students have discovered who they are, they must decide which adaptation their animal has and go to the respective corner of the room. Students in each corner will discuss why their animals need the adaptation. Each corner will present their main points to the class.

Tying It All Together

Language Strand: Oral and Visual Communication

- ask relevant questions
- communicate messages, and follow instructions and directions
- use appropriate vocabulary

3. CHANGING SEASONS

This activity will revisit and reinforce how animals respond to seasonal changes.

Before beginning the activity, create a large chart with three headings: season, influences on humans, and animal adaptations. As a whole class, generate ideas for each heading and fill out the chart.

Students will then be given the option to:

- Working with a partner, select an animal and either illustrate or write about the changes that occur in the animal as a result of seasonal changes. They can organize their work by folding a paper into fourths, with each fourth representing a different season.
- In groups of three, select an animal and create a series of tableaux (i.e. frozen scenes) highlighting the changes that occur in the animal as a result of seasonal changes. One student should narrate the series while the rest present the tableaux.

Once completed, students will present their products.

Tying It All Together

Mathematics: Data Management and Probability

- organize data using graphic organizers

Social Studies: Canada and World Connections

- identify factors that influence choice of clothing
- interpret data and draw simple conclusions
- construct and read a variety of graphs, charts, diagrams, maps, and models for specific purposes
- communicate information, using media works, oral presentations, and written notes and descriptions

Language: Writing

- use words from their oral vocabulary, personal word lists, and class lists compiled through brainstorming
- communicate ideas for specific purposes

Drama and Dance

- demonstrate the ability to move and control their bodies in space and time
- use language and non-verbal means of communication effectively for a variety of purposes both in and out of role

Visual Arts

- produce two-dimensional works of art that communicate ideas for specific purposes and to familiar audiences

How To Assess

When assessing this activity you may consider the following:

- Student demonstrated an understanding of differences between the four seasons
- Students work cooperatively in a group
- Student used appropriate vocabulary
- Presentation clearly illustrated the seasonal changes in their animal (e.g. physical and behavioural adaptations)
- Student shows an understanding of animal adaptations
- Student used class time effectively

4. CAMOUFLAGED CREATURES



This activity will help students understand how animals use their physical adaptations to hide from predators.

Scatter coloured toothpicks over a large grassy area. Tell students that during this activity they will be birds. The coloured objects will represent worms and insects. In pairs, students will take turns going out into the field to collect the worms and insects. On each trip, they may only bring back one food item. As well, they must pick up the food immediately after spotting it (birds cannot run their hands over the ground). After several flights, stop the activity and determine how many food items of each colour were collected. After returning indoors, record this information on a graph (e.g. bar graph) as a class. Students will make inferences to explain why some colours were more difficult to spot. Have students brainstorm a list of animals that use camouflage as their main protection against predators. Discuss other types of physical adaptations that animals use to protect themselves against predators.

Tying It All Together

Mathematics Strand: Data Management and Probability

- sort and classify concrete objects, pictures, and symbols according to two specific attributes
- organize data using graphic organizers and various recording methods
- construct and label concrete graphs, bar graphs, and pictographs using one-to-one correspondence



5. MY ANIMAL SHELTER

This activity will allow students to apply what they have learned about how animals use their environment to meet their needs.

Divide students into groups of four. Each group will be given a different set of materials. Each set should contain materials of a variety of textures, colours, shapes and sizes. Students must use the materials provided to create a shelter for an animal that lives in either a hot or cold climate. Groups will present their shelters to the class. As a class students can discuss their favorite shelter characteristics, the importance of shelters, and the differences between shelters of warm and cold climates. Suggested materials include: plasticine, yarn, popsicle sticks, toothpicks, recycled paper, foil, wax paper, etc.

Tying It All Together

Visual Arts

- produce two and three-dimensional works of art that communicate their thoughts and feelings on familiar topics.
- identify and describe a variety of textures
- make artistic choices in their work, using at least two of the elements of design
- identify and explain the specific choices they made in planning, producing and displaying their own art work

Language: Oral and Visual Communication

- participate in group discussions, demonstrating a sense of when to speak, when to listen, and how much to say

Feeling Bold?

Students can create an advertisement for their shelter. This could take the form of either a commercial or a poster.

Language Strand: Oral and Visual Communication

- create some simple media works

How To Assess

When assessing this activity you may consider the following:

- Student worked effectively within their group
- Student demonstrates an understanding of the needs of animals living in either warm or cold climates
- Student understands the difference between warm and cold climates
- Student used at least two elements of design in their shelter
- Shelter is three-dimensional
- Student able to explain the choices they made in planning and producing their shelter



6. MIGRATING MONARCHS

This activity will help students better understand the behavioural characteristics that enable animals to survive (e.g. migration). As a class, read a picture book about migration.

Discuss why migration is important (why animals such as birds and butterflies need to migrate). Introduce monarch butterfly migration to the students (see resource list for migration websites). On a large map locate the counties that the monarchs pass along their migration route. Mark the routes with yarn.

Tying It All Together

Social Studies: Canada and World Connections

-demonstrate an understanding that the world contains many countries including Canada

-locate their local community, as well as Toronto, Ontario, Canada, and the various countries studied on a globe or map

Language: Oral and Visual Communication

-participate in group discussions, demonstrating a sense of when to speak, when to listen, and how much to say

Materials

Picture book (see Resource List for a list of relevant books)

Large world map

Yarn

Tape

SUMMARY

The following is a general summary of the major concepts covered in the workshop.

Migration

Migration can be defined as a behavioural adaptation of some species that relocate to warmer locations in response to colder temperatures or changes in food supply. Some of the migrating species observed during the workshop include the Monarch Butterfly, Trumpeter Swan, and the Canada Goose, Reindeer/Caribou, Snow Leopard, Humming Birds, Common Green Darner dragonfly. Migrating birds depend on wetlands during their journey for food, shelter and rest. Students discussed the importance of wetlands to migratory species and explored need for the conservation of these fragile habitats.

Hibernation/Dormancy

Hibernation and dormancy are behavioural responses to seasonal changes in temperature, availability of water, or food supply. During these states organisms experience a slower heart rate and lower metabolism. During the workshop students observed animals that have this adaptation such as the Common Snapping Turtle, the Stinkpot turtle, Bullfrog, Eastern Massasauga Rattlesnake, crayfish, and Pumpkin Seed sunfish.

Physical Adaptations

Physical Adaptations to seasonal changes include increased fur thickness, change in fur colour, changes in fat reserves, and increased number of feathers. Examples in animals include:

- a) Reindeer
 - ~ thick coat protects against arctic air, and is shed in the summer
 - ~ coat colour changes from dark brown in summer, to light beige in winter
 - ~ extra long hooves and tufts of hair grow quick between hooves to protect foot pads from freezing
- b) Great Horned Owl
 - ~ inner downy feathers to keep body heat in and outer flight feathers to cold and snow out

VOCABULARY LIST

adaptation	a process by which an organism becomes better suited to its environment
conservation	the protection, improvement, and wise use of wildlife species and their habitats
dormancy	state of reduced physiological activity such as that occurring in seeds and buds; a seasonally recurring period in life cycle of an organism during which growth, development and reproduction are suppressed; aestivation - summer; autumnal dormancy - fall; hibernation - winter; vernal dormancy - spring
environment	internal or external surroundings
habitat	the place where an organism normally lives, or where individuals of a population live and can obtain food, water, shelter and space.
hibernation	the dormant state in which some animals spend the winter
migration	the seasonal movement of some animals from place to place
shelter	something that provides protection or cover (e.g. from the weather, or predators)
wetland	a general term used to describe areas which are neither fully terrestrial nor fully aquatic

RESOURCE LIST

S = student friendly site / T = teacher appropriate site

General

<http://www.pbs.org/kratts/world/index.html> (T)

This site contains an interactive world map that links to animals that live in different parts of the world. Animal descriptions include general profile, adaptations, interesting facts, and colour pictures. Extremely easy to read.

<http://www.ontarionature.org/educate/activities.html> (T)

This site includes ideas and activities if your class wants to get involved in conservation.

<http://www.cws-scf.ec.gc.ca/hww-fap/agfinch/agfinch.html> (T)

This is the Canadian Wildlife Service webpage. It includes fact sheets and colour photographs of several species of birds and mammals.

<http://school.discovery.com/teachingtools/teachingtools.html> (T)

Quick and easy-to-use worksheet generators.

Animal Pictures

http://www.enature.com/guides/select_group.asp (T)

This online field guide with over 4000 photographs of North American animals and plants. Site is very well organized.

Adaptations

<http://www.seaworld.org/arctic/index.html> (S&T)

This site includes a description of arctic adaptations, crossword puzzles, vocabulary list, and various activities. The site is easy to read and understand.

<http://octopus.gma.org/surfing/antarctica/index.html> (T)

This site contains a collection of hands-on activities that help students understand physical adaptations to cold climates. See especially the blubber glove experiment.

Migration

<http://www.learner.org/jnorth/orientation/>

Journey North allows you and your class to participate in the North America wide reporting on the migration of many wildlife species on-line.

<http://www.madison.k12.wi.us/tnl/detectives/kids/KIDS-991109.html#4> (S&T)

This site includes links to student friendly sites about butterflies. The links include pictures, teacher guides, FAQs, and suggested activities.

Books

Adelson, Leone (1955). All ready for summer. New York: David McKay Co.

Let's watch different animals come out of hibernation and observe the changes in nature during spring and summer.

Cole, Joanna, Bruce Degen, and Nancy Krulik (1997). Magic School Bus Goes Upstream: A Book about Salmon Migration. Scholastic Trade.

Fishing for food to share at the school's annual fish fry picnic, Ms. Frizzle's class is astonished when the Magic School Bus turns into a giant salmon and takes them all on an incredible journey upstream.

Grindley, Sally (1999). What Will I Do Without You? Larousse Kingfisher Chambers.

This is a sweet tale of 2 animals who would not normally get along. A fox and a bear are best friends and he hibernates for the winter. It teaches the fox how to be patient and realize how much he misses his friend.

Sayre, April Pulley (1998). Home at Last: A song of Migration. Henry Holt and Company.

This book contains unique illustrations of a variety of migrating animals from butterflies to blue whales. It seeks to create a reverence for migrating animals' journeys. The last pages of the book include factual information about each animal's life and habits.