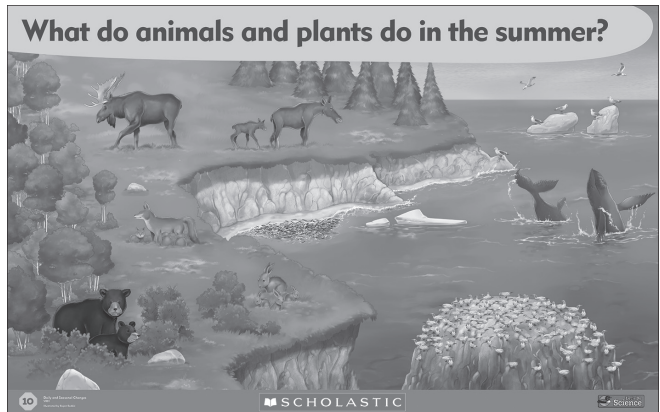


How Do Animals and Plants Prepare for the Seasons?



Focus: Students will explore seasonal changes in the behaviours, characteristics, and locations of animals and plants.

Specific Curriculum Outcomes

Students will be expected to:

- 14.0 investigate seasonal changes in the characteristics, behaviours, and location of living things [GCO 1/3]

Performance Indicators

Students who achieve this outcome will be able to:

- identify and describe seasonal changes in the behaviour, characteristics, and locations of some wild animals and plants

NOTES:

Attitude Outcome Statements

Encourage students to:

- willingly observe, question, and explore [GCO 4]
- work with others in exploring and investigating [GCO 4]
- be sensitive to the needs of other people, other living things, and the local environment [GCO 4]

Cross-Curricular Connections

English Language Arts

Students will be expected to:

- speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings, and experiences [GCO 1]
- interpret, select, and combine information using a variety of strategies, resources, and technologies [GCO 5]
- use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learnings; and to use their imaginations [GCO 8]

Getting Organized

Program Components	Materials	Before You Begin	Vocabulary
• <i>First Snow in the Woods</i> (Read Aloud) • Science Card 9 • Science Card 10 • BLMs <i>Pond Life 1</i> and <i>Pond Life 2</i> • Science Card 1 (optional) Literacy Place: • <i>What Do You Do in the Cold?</i> (Shared Reading–Changes Inquiry Unit) • <i>Winter Animals Are Sleeping</i> (Guided Reading, Level E)	• reference material related to — seasonal changes in animals of Newfoundland and Labrador — seasonal changes in pond life — seasonal activities of people who work with animals • digital camera and printer (optional)	• Invite an elder to talk to the class about how life on the land changes with the seasons.	• characteristic • hibernation • migration

Science Background

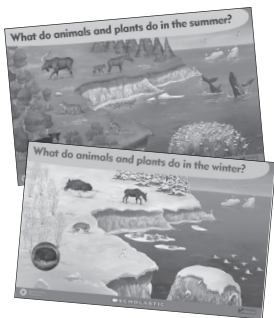
- The scientific group *Anamalia* (animals) includes mammals, reptiles, birds, fish, and insects, among others.
- Seasonal cycles in animals and plants are linked primarily to changes in day length. Day length is longest at the summer solstice (around June

For specific examples of seasonal changes, see the charts on pages 59–62 and 64.

21), decreases until the winter solstice (around December 21), and then increases to the next summer solstice.

- Common seasonal cycles in animals include reproductive activities, denning, metabolic activity, migration, hibernation, and coat changes. Seasonal cycles in plants include reproduction, leaf production, growth, and dormancy. Seasonal cycles help organisms survive seasonal environmental changes, and increase the chances that their offspring will survive.
- During hibernation, animals have a low body temperature and metabolic rate. Black bears can hibernate up to 100 days without eating, drinking, urinating, or defecating.
- Traditionally, the activities of Indigenous peoples who lived off the land followed a seasonal cycle. For example, they followed the migration of animals they hunted, often having winter and summer camps located accordingly. Many foods were available only seasonally, such as berries in the summer or salmon in the fall.
- In general, humans do not have strong biological seasonal cycles though some individuals do experience some seasonal changes, such as in hair thickness or appetite. Seasonal affective disorder, which is depression that appears in the winter and lifts by itself in the spring, is thought to be a disorder in a biological seasonal cycle. However, our artificial environment protects us from most cues to seasonal changes in the natural environment, such as changes in light and temperature. This may mean that we miss the environmental triggers that would regulate any biological seasonal cycles that do exist.

Possible Misconceptions



Students may think that changes in temperature, rather than in light, cause seasonal cycles in plants and animals. Address this in the general discussion of the changes depicted on Science Cards 9 and 10. Discuss how the changes begin before the season changes, much as we buy winter clothes before the first snow fall. Tell students that changes in light levels prompt these changes in living things. They may also believe that all animals migrate or hibernate in winter. Point out the herring gulls and red fox on Science Card 9 and Science Card 10 to challenge this view.

ACTIVATE

Read Aloud: *First Snow in the Woods*



Summary

With enchanting photographs and lyrical prose, this book tells the story of a fawn's first experience of seasonal changes from fall to winter.

Before Reading

ESL Note:

To help ESL learners develop appropriate vocabulary, begin the lesson with a picture walk of the text. Focus on the images for each page and discuss the various animals, plants, and weather depicted.



Show students the cover of *First Snow in the Woods* and ask:

- **What is the weather like in this picture? (*snowy, cold*)**
- **What season is this? (*winter*)**

Wonder aloud about how the deer survive winter:

- **I wonder how the deer stay warm.**
- **I wonder what they eat in the winter.**

Add these to the I Wonder Wall. Explain that the book has lots of information about what happens in a forest as winter comes and how the various animals prepare for winter. Provide prompts for discussion such as:

- **What is different in a forest in the winter compared to the summer?**
- **Do you think that deer prepare for the winter? How about other animals?**
- **Do you wonder about anything else about life in the forest when winter starts?**

Add students' questions to the I Wonder Wall. Ask them to listen as you read for any answers to their questions.

During Reading

As you turn to each new page, read the text and clarify any new vocabulary or concepts. Then ask students if they can tell what season it is. You may want to point out details that show or talk about seasonal changes. For example, you might ask:

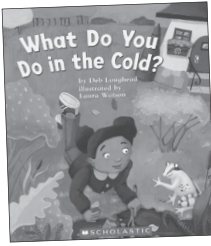
- **Is it summer, fall, or winter? What clues are there in this picture?**
- **Can you tell if it is warm or cool? How?**
- **What do you notice about the plants? When have you seen plants look like/do that?**
- **Are there any changes in the animals/birds/insects?**
- **What else do you notice?**

Take the time to stop and allow students to share their ideas and questions that arise on a particular page before moving ahead.

After Reading

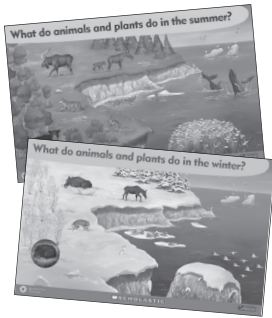


Have students work in small groups or individually to draw pictures showing how the fawn got ready for winter. Some students may prefer to illustrate another one of the living things shown in the book. Make the book available for students to refer to. Post students' work in the classroom and review it as a class, referring back to questions on the I Wonder Wall when possible.



Literacy Place Connection:

Revisit or read *What Do You Do in the Cold?* by Deb Loughead with the students. Discuss what the little frog finds out about the changes some animals, a tree, and a little girl go through to prepare for the winter. Create a chart together to show what each of the characters does to prepare for winter.



Winter and Summer

Show Science Card 9. Have students find animals and plants and then tell you what they know about each and what it is doing or what is happening to it in the picture. Ask about the season/month it happens. Wonder aloud why that happens. Let students give answers. Then, show them Science Card 10. Let students explore and find all the differences they can between the two cards. Record the differences in a chart with the headings *Summer* and *Winter*. As they work, ask questions such as:

- **Why do you think the plants and animals do different things in winter and summer?**
- **How do the plants and animals know when the seasons are changing?**
- **What else are you curious about?**



During the discussion, introduce and use the terms “characteristic,” “hibernation,” and “migration.” Add these to the Word Wall.

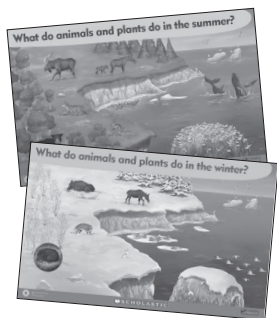
Seasonal changes for the living things shown on Science Cards 9 and 10 are noted in the chart below. (Changes shown on the Science Cards are in bold.)

Living Thing	Winter	Spring	Summer	Fall
Arctic Hare	white coat; active; digs holes in snow for warmth	moults winter coat and grows to brown or grey one; active; young are born (leverets)	brown coat; active; young grow and mature	moults winter coat and grows white one; active
Black Bear	hibernates; pregnancy and birth (every 2–3 years)	becomes active and leaves den with young	active; cubs grow (stay with mother 2 years); breeding season; gains weight for hibernation	gains weight and makes den for hibernation; begins hibernation; pregnancy
Black Spruce	keeps leaves (needles) but does not grow	keeps leaves (needles), new growth starts; male and female buds form	keeps leaves (needles), growth continues; seeds form and ripen in cones, cones drop	keeps leaves (needles), growth stops, seeds go dormant

Continued on next page...

Living Thing	Winter	Spring	Summer	Fall
Blueberry	dormant: no leaves, sap below ground	sap rises, buds form and open for new leaves and white flowers	full leaf, berries form and ripen, seeds in berries dispersed when eaten by animals and birds	leaves turn red and drop; sap falls
Capelin	feeds in deep ocean	feeds in deep ocean	moves inshore for spawning season	moves to deeper ocean; feeds
Grasses	dormant roots or seeds only (depends on species)	new leaves form or seeds germinate; may flower	full leaf, produces flowers (seed heads) and/or seeds; seeds may disperse	dies off or loses leaves and goes dormant; seeds disperse
Harp Seal	breeding season, pups are born on pack ice	migrates north with pack ice to Arctic Ocean	moults coats; feeds in Arctic waters	migrates south with pack ice to NL
Herring Gull	feeds anywhere food is abundant; eats fish, rodents, garbage	does not migrate; breeding season; feeds anywhere food is abundant; eats fish, rodents, garbage	feeds anywhere food is abundant; eats fish, rodents, garbage	does not migrate; feeds anywhere food is abundant; eats fish, rodents, garbage
Humpback Whale	feeds and breeds; gives birth	migrates north	moves inshore; feeds (especially capelin) and grows	migrates south
Moose	males shed antlers; males and females active; females may be pregnant; both have heavy winter coat	females give birth; males and females active; males and females moult winter coats and summer coats grow	males grow antlers and have full antlers without velvet by late summer; females raise young; active; have lighter summer coat	mating season; young leave mother; males and females moult summer coats and grow winter coats
Red Fox	no coat change; active; mating season; den for mating only; uses tail for warmth	no coat change; active; kits are born	no coat change; active; kits grow	no coat change, active; kits mature and leave
Northern Gannet	completes migration; feeds on fish by deep diving	migrates north to NL and Gulf of St. Lawrence	nects and breeds on rocky outcrops and cliffs; feeds on fish by deep diving	migrates south to southeastern US
White Birch	dormant: no leaves, sap below ground	sap rises, buds form and open for new leaves and catkins (flowers)	full leaf, winged seeds (nutlets) ripen and are released	leaves turn yellow and drop, sap falls

CONNECT



Tracking Weather

Have students continue to fill in the weather chart over the day. Connect to seasonal changes by pointing to a plant or animal on Science Card 9 or Science Card 10 and asking:

- I wonder what this [plant/animal] would do in this weather?
- What do you know about what plants or animals do in [this season]?
- What do you wonder about plants or animals and the weather in different seasons?

Nature Gets Ready

Wonder aloud about seasonal changes in other animals and plants by saying something such as:

- I wonder how caribou get ready for changes in the seasons? Are they like moose?

Ask students to name any animals or plants they wonder about. Record students' suggestions on the I Wonder Wall. Alternatively, provide pictures or a list of species native to Newfoundland and Labrador and ask students which of these they would like to learn more about. The list could include: caribou, puffins, polar bears, tiger beetles, lupines, and pitcher plants. Seasonal changes for these animals and plants are:

Living Thing	Winter	Spring	Summer	Fall
Caribou	females shed antlers late winter; feed in heavy forest	gives birth; feeds and grows	feeds and grows	mating season; males shed antlers; mainland: migrates to heavy forest of Quebec and Labrador; Newfoundland: no migration
Lupin	dormant	begins growth; forms new leaves; flower buds	blooms and forms seeds; grows	sheds seeds; goes dormant

Continued on next page...

Living Thing	Winter	Spring	Summer	Fall
Tiger Beetle	larvae hibernate in underground burrows; at second instar (year one) or third instar (year two) larval stage tiger beetles have a two-year life cycle with four stages—first, second, third instar (larval stages) and adult	larvae break hibernation; hunts and feeds on other insects from their burrows; larvae at second instar continue to develop to third instar, in which stage they will hibernate the next year; larvae at third instar continue to develop into adults	larvae at third instar moults to adult stage and emerges (beetles); beetles mate; females lay eggs in shallow holes in soil; eggs hatch into first larval stage “doodlebug” which digs a burrow; both adults and larvae hunt and feed on other insects; adults usually found in sandy areas, especially near lakes and streams; very fast runners; can fly	adults die off; larvae at second instar continues to feed until they enter hibernation
Pitcher Plant	dormant	begins growth; forms new leaves; flower buds	blooms and forms seeds; grows	sheds seeds; goes dormant
Polar Bear	active (do not hibernate); pregnant bears den and give birth	active; migrate with pack ice; females with cubs leave dens; mating season	active; feeds and grows	active; migrates with pack ice
Puffin	lives and feeds in open ocean	migrates to breeding colony; beak, head feathers and feet change colour to give distinctive “clown” appearance	breeding season; feeds and grows	sheds feathers and part of bill, so face becomes dark (so different was once thought to be another species) migrates to open ocean

Divide the class into small groups, and assign or allow each group to choose one of the organisms to investigate. Provide pictures, books, websites, videos, or other sources that they may need. If students choose an animal that is a common sight around the school, plan an outing so that students might observe it themselves.

As students are working, model asking deeper questions. Ask:

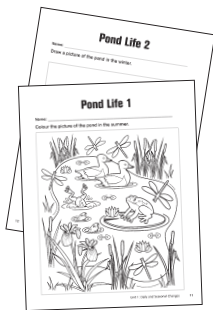
- **What things are different outside in this season?**
- **What do you think the [living thing] does differently in this season?**

Provide paper, pencils, and any other tools that students might use to record their research results, such as access to a printer or a digital camera.

Encourage students to come up with creative ways to communicate their findings. For example, students might dress up as an animal in two different seasons, act out an animal preparing a den for hibernation, create a dance to show falling leaves, or draw a picture.

A black and white illustration titled "Winter Animals Are Sleeping" showing a winter scene with snow, trees, and various animals. Callouts identify: a turtle in a pond, a beaver in a den, a bear in a den, a chipmunk in a den, a rabbit in a den, and a fox in a den. The Scholastic logo is at the bottom.

Literacy Place Connection:
Winter Animals Are Sleeping (Guided Reading, Level E) shows some animals who hibernate and some who are active in the winter. Discuss with students any seasonal changes that take place for the animals who are active in the winter.



Pond Life

Divide the class into small groups. Hand out one copy of both pages of BLM *Pond Life 1* and *Pond Life 2* to each group. Tell the students that they are going to create pictures showing how some of plants and animals that live in the pond change from summer to winter. As they are colouring in the summer image, prompt thinking about season-specific aspects of characteristics, behaviour, and location by asking questions such as:

- **What does this [living thing] look like in the winter?**
- **Does any of these [living things] go somewhere else in the winter?**
- **Does any of these [living things] hibernate in the winter?**

Keep a record of students' ideas. When colouring is complete, review the ideas and ask:

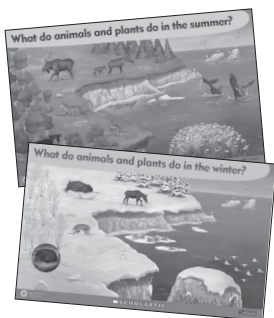
- **How can we find out which of our ideas is correct? Where would we get more information?**

Provide photographs, books, and/or access to websites that illustrate the winter adaptations of the living things in the summer pond drawing (i.e., ducks, fish, frogs, dragon flies, water lilies, irises, and cattails). Have students use this material to draw a picture of the same pond in the winter on BLM *Pond Life 2*. You might assign one organism to research per group member. Display the finished summer and winter images in the classroom, and discuss any differences.

Seasonal changes for plants and animals on BLM *Pond Life 1* are:

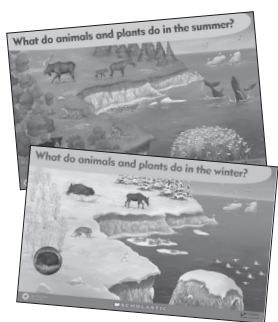
Living Thing	Winter	Spring	Summer	Fall
Blue Flag Iris	dormant; rhizomes remain under soil	produces new leaves; rhizomes (underground roots) spread	blooms; produces seeds; continues to spread via rhizomes	upper portions of plants die back; goes dormant
Common Cattail	dormant, usually still visible, brown rushes	breaks dormancy, grows leaves and flower heads	grows; produces seeds; produces new plants asexually	foliage dies; goes dormant; usually still visible, brown rushes
Fragrant Water Lily	dormant	breaks dormancy; grows leaves and flowers (blooms)	grows leaves and flowers (blooms); produces new plants asexually	foliage dies; goes dormant
Lake Trout (*Labrador only)	has very low metabolism; stays in deeper regions below ice; does not hibernate but does not need food; eggs hatch under ice; young feeds off yolk sac	eats and grows	eats and grows; spawning may begin late summer	spawning; females lay eggs
Mink Frog	tadpoles and adults hibernate, adults underwater usually on top of mud at pond bottom, tadpoles in water	wakes from hibernation as temperature increases; overwintering tadpoles become adults	breeding season; females lay eggs that become tadpoles	tadpoles and adults enter hibernation, adults underwater, usually on top of mud at pond bottom, tadpoles in water
Ring-Necked Duck	feeds	migrates north; breeding season	raises young; feeds	migrates south
Zigzag Darner Dragon Fly	nymphs may metamorphose into adults; feeds and grows	migrates north; breeds (eggs that hatch into nymphs that live in the water)	nymphs may metamorphose into adults; feeds and grows	migrates south; breeds

CONSOLIDATE



My Wild Animal

Have students communicate their learning about an animal (or plant), either from their own research or from Science Card 9 or 10, by creating an art project that shows what the animal does in at least two different seasons. For example, students might create a mobile, a drawing, or modelling clay models.



Spring and Fall

Post Science Cards 9 and 10 somewhere where students can see them clearly. If necessary, prompt recall of the characteristics of the four seasons by posting Science Card 1 as well. Point to either Science Card 9 or 10, then ask:

- **How would this scene be different if it showed the spring? How about the fall?**

Listen to students' responses and record their ideas and questions. Prompt deeper thinking by pointing to a specific organism and asking:

- **Are any characteristics of this [plant/animal] different in the [spring/fall]?**
- **Do any of these animals migrate in the [spring/fall]? Where do they go?**
- **Do any of these animals hibernate in the [spring/fall]? Why do you think so?**

Divide the class into small groups. Have each group choose one of the living things in Science Cards 9 and 10 and draw how it would change in the spring and the fall. Provide photographs, books, or websites for students to refer to.

EXPLORE MORE

Working With Animals

Challenge groups of students to brainstorm a job that involves working with animals, such as dog walkers, veterinarians, or a trapper. Provide reference materials (videos, books, websites) so that students can find out more about the job they are most interested in. Invite students to communicate their finding with the class in a manner of their choosing.

Life on the Land

Invite an elder to talk to the class about how life on the land changes with the seasons. Have students add ideas to the I Wonder Wall ahead of time. If necessary, start them off by adding things such as:

- **I wonder how the people who live on the land get ready for winter.**
- **I wonder what they do when the animals migrated?**
- **I wonder if they plant things in the spring?**



WRAPPING UP THE UNIT



Revisit any remaining questions posted on the I Wonder Wall and have students discuss answers in small groups or with a partner. If there are questions which cannot be answered at the time, these can remain on the I Wonder Wall for students to research independently. Discuss what the students have learned about the seasons; daytime vs. nighttime; the daily cycles of people, animals, and plants; and how people, animals, and plants prepare for the seasons.

Pond Life 1

Name: _____

Colour the picture of the pond in the summer.



Pond Life 2

Name: _____

Draw a picture of the pond in the winter.

