

Adaptation, Migration, Hibernation

Overview: Wild animals evolve to guarantee their best chance of survival. Acknowledging this is crucial to understanding wild animal behaviour and recognizing the impact of humans on their survival. In this activity students learn about which BC animals engage in adaptation, migration, or hibernation and are challenged to research three animals further.

- Key Questions:**
- How do animals survive seasonal changes in the wild?
 - What is the difference between adaptation, migration, and hibernation?
 - Which animals rely on adaptation? Migration? Hibernation?
 - Can animal adaptations be or become negative?
 - How do humans affect animals' ability to survive in the wild? Think about global warming, urban sprawl, noise pollution, etc.
 - How do we value the treatment of these wild animals versus animals kept as pets?
 - How can we educate the public about wildlife and the risks they face?
 - How do we change the importance society places on these animals?

- Big Ideas:**
- Living things are diverse, can be grouped, and interact in their ecosystems
 - All living things sense and respond to their environment
 - Questioning what we hear, read, and view contributes to our ability to be educated and engaged citizens.

- Activity:**
1. Review the terms adaptation, migration and hibernation and give examples of some BC animals that employ these survival strategies. Then give the students the Adaptation, Migration, Hibernation worksheet, where they are tasked to match the word with its definition.
 2. On the second worksheet, they are to organize the animals from British Columbia in the table under the survival strategy they think they employ.
 3. Students will then choose one animal from each category and research them further; the strategies they employ and why, and how that strategy has been or is affected by human influence.

BC Examples: **Adaptation** – Artic Fox, Snowshoe Hare, Ptarmigan, Wolf, Chickadee
Migration – Beluga, Canada Geese, Grey Whale, Elk, Salmon
Hibernation – Black Bear, Squirrel, Toad, Bat, Groundhog

Questions for discussion:

- Do we use any of these survival strategies? Do we use other survival strategies?
We as humans do not hibernate, and no longer migrate depending on weather, but we do have many adaptations, including the ability to walk upright and sweat. We also employ a unique survival strategy; the creation of our own survival tools such as medicine, oxygen tanks, insulated jackets, etc.
- What other animals can you think of that use adaptation? Migration? Hibernation?
There are many animals beyond BC that engage in migration, adaptation, and hibernation. Examples: include elephants (migration), camels (adaptation), fat-tailed dwarf lemurs (hibernation).
- Are adaptations always positive? Can they be negative?
Not all adaptations are positive. A good example is bees who have developed stingers to protect themselves, but stinging results in their death.
- Can you think of any other survival strategies that animals use?
Most survival strategies employed by animals can fall under one of the 3 categories, adaptation, migration, and hibernation. Some animals have physical adaptations such as porcupine quills, venomous bites (snakes, komodo dragons, etc.), or toxic sprays (skunks, millipedes, etc.) that help them to survive.
- How do humans influence adaptation? Migration? Hibernation?
Think of pollution- light, sound and garbage, urban expansion, global warming, etc.
- What else might influence these survival strategies?
Natural disasters- wildfires, flooding, etc.
- Do we value wild animals less than animals we keep as pets?
- How can we make society care more about issues that wildlife face?

Modifications:

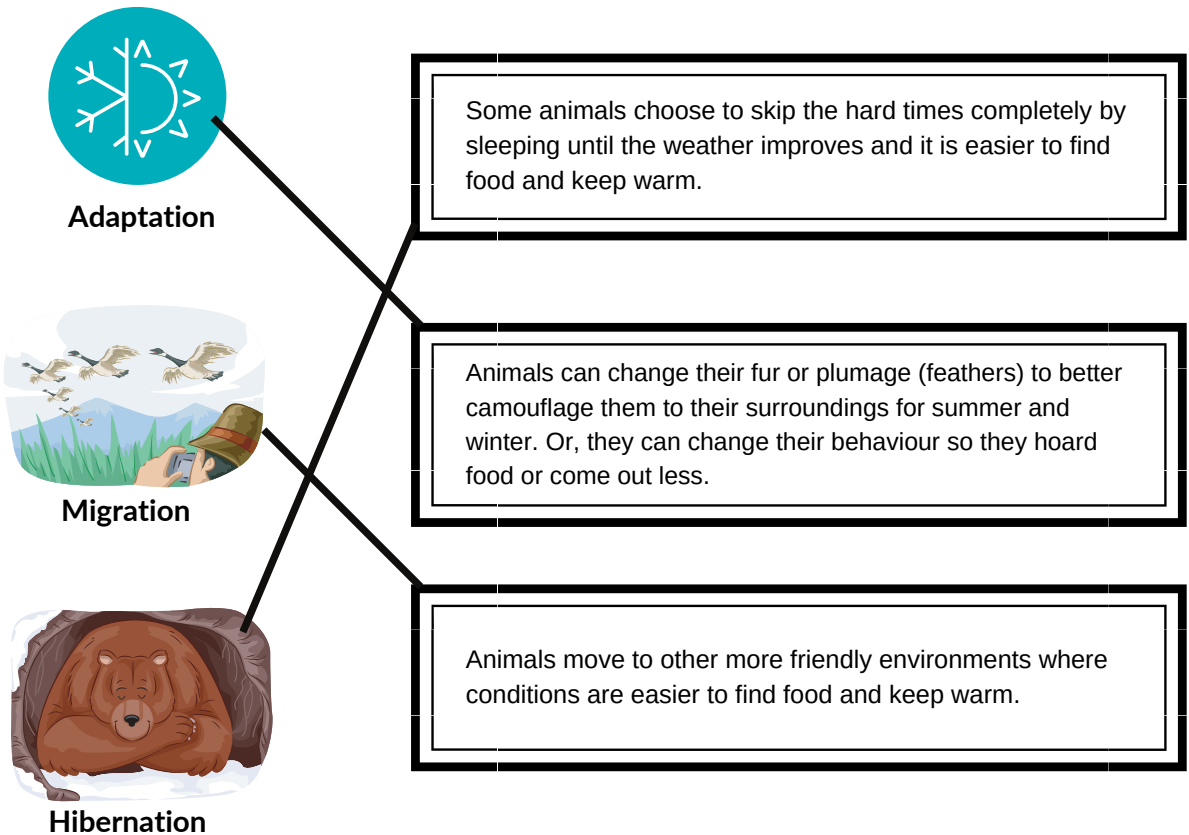
- Have your students further research an animal that employs adaptation, migration, or hibernation to survive cold weather and have them draw a picture of that animal in their environment in winter and in summer.

Extension Options:

Have each student pick one British Columbia animal that employs adaptation, migration or hibernation and compare them to an animal from another country that also employs that survival strategy.

- Have each student in the class pick one BC animal that uses either adaptation, hibernation or migration to survive changes and do a 2 minute presentation to the rest of the class.
- Have your students think of any negative adaptations that animals have evolved. Have them research: how do adaptations become negative? Why do you think they have kept these adaptations? Do humans have any negative adaptations?

Worksheet answers:



Adaptation	Migration	Hibernation
Artic Fox Snowshoe Hare Ptarmigan Wolf Chickadee	Beluga Canada Geese Grey Whale Elk Salmon	Black Bear Squirrel Toad Bat Groundhog

Adaptation, Migration, Hibernation

As temperatures drop and landscapes change from green to white, animals need to change their appearance, behaviours and/or location in order to survive the changes. There are three main survival strategies used by animals to in response to these changes: **adaptation, migration and hibernation.**

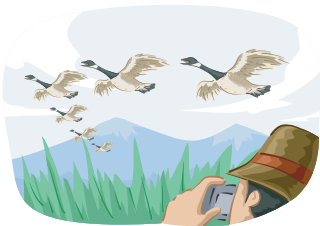
Instructions:

Match the survival strategies with their definitions. Then on the next page, organize the animals from British Columbia into the table under the survival strategy they use. Choose one animal from each category to research further.



Adaptation

Some animals choose to skip the hard times completely by sleeping until the weather improves and it is easier to find food and keep warm.



Migration

Animals can change their fur or plumage (feathers) to better camouflage them to their surroundings for summer and winter. Or, they can change their behaviour so they hoard food or come out less.



Hibernation

Animals move to other more friendly environments where conditions are easier to find food and keep warm.

Name: _____

Place each animal from British Columbia in the table under the survival strategy you think they use:

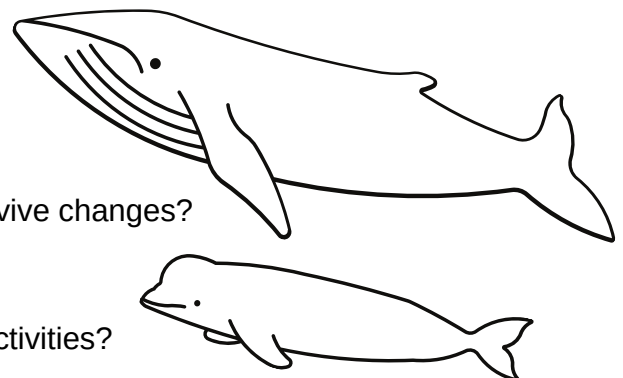
Bat	Chickadee	Snowshoe Hare	Ptarmigan
Arctic Fox	Black Bear	Squirrel	Beluga
Wolf	Grey Whale	Elk	Groundhog
Salmon	Canada Geese	Toad	

Adaptation	Migration	Hibernation

Choose one animal from each category to research further. Write 1-2 paragraphs about what you find out!

Questions to ask when researching:

- What type of environment does the animal live in?
- Which strategy does the animal use?
- Why does this animal have to use this strategy to survive changes?
- How do they employ that strategy?
- Are there other animals that do the same thing?
- Is this animal's survival strategy affected by human activities?



Adaptation, Migration, Hibernation Curriculum Links

Curricular Competencies and Content:

Science

- Demonstrate curiosity about the natural world
- Observe objects and events in familiar contexts
- Identify questions about familiar objects and events that can be investigated scientifically
- Make predictions based on prior knowledge
- Collect simple data
- Compare results with predictions, suggesting possible reasons for findings
- Make simple inferences based on their results and prior knowledge
- Demonstrate an understanding and appreciation of evidence
- Identify some simple environmental implications of their and others' actions

Social Studies

- Use Social Studies inquiry processes and skills to — ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions
- Differentiate between intended and unintended consequences of events, decisions, and developments, and speculate about alternative outcomes (cause and consequence)
- Make ethical judgments about events, decisions, or actions that consider the conditions of a particular time and place, and assess appropriate ways to respond

Core Competencies:

Thinking:

- I can think critically about how my personal decisions also affect others and the environment.