

GRADE 5 SCIENCE AND SOCIAL STUDIES:

EXPLORING SUSTAINABLE MANAGEMENT
OF SOUTHERN LAKES CARIBOU



ILLUSTRATED BY VIOLET GATENSBY, 2022.

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SOUTHERN LAKES CARIBOU IN THE SCHOOLS: A COMMUNITY-BASED LEARNING RESOURCE

Compiled and edited in 2022 by:

Rivers to Ridges
2180 2nd Avenue
Whitehorse, Yukon
Canada Y1A 5N6

Cover art by:

Violet Gatensby
[instagram.com/violet.gatensby](https://www.instagram.com/violet.gatensby)

All interior art by:

Tedd Tucker,
Berwin
www.berwin.ca

**Elder facilitation and
leadership provided by:**

Copper Joe Jack (Go' gon'),
Land and Peoples Relationship Model
www.respectcareshare.ca

www.southernlakescaribou.com/educators

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Southern Lakes Caribou in the Schools:
your local Southern Lakes Yukon First Nation
Community Booklet or Southern Lakes Caribou
in the Schools: Learning Resource

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BIG IDEAS

- Social Studies: natural resources continue to shape the economy and identity of different regions of Canada
- Science: multicellular organisms have organ systems that enable them to survive and interact within their environment

CONTENT	CURRICULAR COMPETENCIES
<p>Social Studies</p> <ul style="list-style-type: none">• First Nations land ownership and use<ul style="list-style-type: none">• housing• hunting and fishing• land claims disputes <p>Science</p> <ul style="list-style-type: none">• First Nations concepts of interconnectedness in the environment	<p>Social Studies</p> <ul style="list-style-type: none">• Sequence objects, images and events, and recognize the positive and negative aspects of continuities and changes in the past and present <p>Science</p> <ul style="list-style-type: none">• Identify some of the social, ethical and environmental implications of the findings from their own and others' investigations• Express and reflect on personal, shared or others' experiences of place• Make observations in familiar or unfamiliar contexts
LEARNING TARGETS	
<ol style="list-style-type: none">1. I am able to demonstrate understanding of the ways in which Caribou and people are interconnected with the surrounding environment.2. I am able to identify human impacts on the Southern Lakes Caribou seasonal movement and how the Southern Lakes Caribou Recovery Plan has mitigated negative impacts over time.3. I am able to explain how First Nations and non-First Nations people continue to protect the wellbeing of the Southern Lakes Caribou through joint management.	

PRIOR LEARNINGS

Prior to teaching the following activities and games, it would be helpful if the students had a basic overview of Caribou and their life cycle, diet and seasonal movement patterns. Some helpful resources to teaching the life cycle of Caribou are listed below:

- C. (n.d.-a). *Southern Lakes Caribou* | <https://southernlakescaribou.com>
- *Caribou in the Schools: Community Booklet (for your community)*
- *Caribou: Species Features, Facts, Info & More.* (2021, April 30). WWF.CA. <https://wwf.ca/species/caribou/>
- *Life Cycles of Caribou.* (n.d.). Inhabit Media. <https://inhabitbooks.com/products/life-cycles-of-caribou>
- N. (2022, February 14). *Southern Lakes Caribou.* ArcGIS StoryMaps. <https://storymaps.arcgis.com/collections/9849a0b2f05a47a2a190d49d74b56f9f>

PART 1: OPENING CIRCLE AND EXPLORING INTERCONNECTION

LEARNING TARGET:

I am able to demonstrate understanding of the ways in which Caribou and people are interconnected with the surrounding environment.

MATERIALS

- **Ball of string**
- **Caribou Web of Life cards printed and cut out (Appendix 2E)**
- **Community Booklet (for your community)**

TIME: ~45 MIN

OPENING: WHAT DO CARIBOU EAT? WHO EATS CARIBOU?

Gather in a circle. Invite students to share what they know about Caribou life cycle, diet and Caribou dependence on—and contributions to—the surrounding environment. Who has tasted Caribou?

- Caribou are herbivores, and eat at least three kilograms of vegetation every day, the equivalent of about two garbage bags of food!
- Caribou eat different types of plants, depending on the season. Lichen is the most important part of the Caribou diet.
- During the winter months, Caribou depend on the lichens found under the snow.
- In the summer there is a lot more food available for Caribou: grasses, sedges and dwarf willow or birch leaves.
- In the fall, Caribou return to eating lichens, as well as mushrooms (if available)

(Madsen, 2018)

ACTIVITY: WEB OF LIFE

Gather in a circle.

ASK STUDENTS

- What does interconnectedness mean to you?

Share ideas.

Distribute Caribou web of life cards, one to each student. Each student will have a turn to connect their card (their part of the Caribou ecosystem) to another classmate's card. Use the names in Southern Tutchone, referencing the online dictionary for pronunciation. Components of Caribou web of life could include: **sun**, **lichen/udzí njí**, **willow/k'ày**, **nose bot fly**, **raven/ts'úrk'i**, **Caribou/Udzí**, **mosquito/Tth'j**, **wolf/ägay** and **grizzly bear/Átsi shāw**.

- Caribou share their habitats with an astonishing variety of creatures. They are all part of the ecosystem, and support and sustain themselves to mutual benefit. A naturally functioning ecosystem is more than a food chain. Predators chase Caribou, and so do tiny insects, whose larvae grow inside a Caribou host. Caribou scour the tundra and forest floors to devour lichen, but their travelling hooves help other plants spread and take root elsewhere. Their fecal pellets return nutrients to feed such things as mosquito larvae in wet areas and plants. (Madsen, 2018, p. 9)
- One student starts the web, holding one end of the ball of string in their hand, and passes the string to a classmate with a card they feel is connected to their own.

- Each student describes their connection to the student they pass to on their turn
- (e.g., student with “sun” card passing to student with “plant” card could say “The sun provides energy to plants”)
- Students continue to pass the string to someone they are connected to, holding their portion of it, and describing why these two parts of the Caribou ecosystem are connected.
- Repeat until everyone in the circle has received the string. Students may receive the yarn more than once, highlighting the importance of their part of the ecosystem.
- Invite students to reflect on what their web represents (a Caribou Web of Life).

ASK STUDENTS

- Can you predict what would happen if one component was removed from the ecosystem?
- How might this happen? (Hunting, highways and high predatory populations)

Share ideas.

- Invite students to lift the string, all together, over their heads. Observe the web from underneath. Discuss how this web highlights the tight, interconnected nature of the ecosystem. What happens to one part of the web happens to the whole thing.
- Choose one card to remove from the web. Discuss what might remove this from the web (human activity). On the count of three, with the web pulled taut, have that student drop their string(s).

ASK STUDENTS

- Who felt their string(s) go slack as a result?

CLOSING: CONNECTING THE WEB

Continue until the web has fallen apart. Reflect together on connections and shared impacts of the web of life. Encourage students to share something that they noticed during the activity.

ASK STUDENTS

- What connections surprised you most from the web?

- In what ways is your life connected with Caribou? Does this change with seasons?
- How does a change in one part of the web affect the rest of the ecosystem?

EXTENSIONS: ZOOM IN

Invite students to choose one element of the Caribou Web of Life. Students, in pairs or independently, can create a “profile” for their focus element of the web. In focusing in, encourage students to imagine what would happen to that element if there were very low numbers of Southern Lakes Caribou (SLC). Encourage them to expand that further, and create hypotheses of the larger reaching impact.

For example, lichen are slow-growing and sensitive to change. If a forest fire wiped out a large amount of lichen, it could take many years for it to grow back. Caribou may have to move to new locations in order to find enough food to eat.

Create a display for the Caribou Web of Life, featuring each of the “zoomed in” elements. Together, decide on a way to highlight the interwoven, intertwined connections of the web.

ASSESSMENT OPPORTUNITIES

Are students able to:

- Identify ways in which Caribou are connected with the land/water around them?
- Identify ways that the local First Nations and/or they themselves are connected with the SLC?



PART 2: WALKING IN THEIR HOOVES: SEASONAL MOVEMENT AND HUMAN IMPACTS ON SOUTHERN LAKES CARIBOU (SLC)

LEARNING TARGET:

I am able to identify human impacts on the seasonal movement of the SLC, and how the Southern Lakes Caribou Recovery Plan (SLCRP) has mitigated negative impacts over time.

MATERIALS

- Hula hoops/ropes/pylons—as “habitat havens”
- Soft foam balls/bandanas tied in knots—tossed as “seasonal dangers”
- Seasonal Movement Cards, sharing facts about Caribou seasonal movement, printed and cut out (Appendix 3A)
- On the journey cards, added challenges facing Caribou during seasonal movement (e.g., highways cutting across movement corridors, and overhunting), printed and cut out (Appendix 3A)
- Caribou commitment sheet, printed (Appendix 3B)
- Community Booklet (for your community)

TIME: ~60 MINUTES

OPENING: SHARING WHAT WE KNOW

Gather in a circle. Invite students to share what they know about seasonal movement, and more specifically about the seasonal movement of the SLC. **Note:** The SLC do not migrate like other Caribou herds.

ASK STUDENTS

- Where do Caribou travel?
- Why do Caribou travel throughout the seasons?
- What might affect Caribou seasonal movement paths?

FACTS ABOUT CARIBOU

- Caribou are wary of unusual linear structures. Northern hunters used to use antler fences, or rows of stone piles to guide Caribou for hunting.
- Roads, high-use hunting and recreation trails and human development (structures and houses) have several major effects on Caribou:
 - Increased access for hunters, where previously herds were only available to small groups of hunters travelling on the land who depend on caribou as nourishment.
 - Creating hunting corridors for wolves, who use the cleared surface to travel, surveying prey from the road
 - Disruption from and possible collisions with vehicles and people travelling along the roads (Madsen, 2018).
- Human disturbance from machines and from non-motorized activities have a negative impact on the wellbeing of Caribou. They may avoid or abandon areas in response to human disturbance.

ACTIVITY: SEASONAL MOVEMENT EXPLORATION

Students will be undertaking the SLC Seasonal Movement (adapted from [Migration mishaps](#)); this is not an easy journey.³

³ “Game: Migration Mishaps.” *Green Teacher*, 8 Jan. 2015, <https://greenteacher.com/game-migration-mishaps/>.

- In a large, open space, designate a space as the spring calving area, the other as the lowland winter ranges. Note: Mountain Caribou do not have identifiable calving grounds. Rather, they spread out on the landscape to avoid predation.
- Spread “habitat havens” (hula hoops) throughout the space, extras in the spring calving area and winter ranges.
- Set a timer for five to ten minutes per round.
- Gather all students to begin in the winter ranges. To remain safe from dangers, students must gather around a habitat haven—only three students per haven. When they hear “Time to move!”, students are to attempt crossing the space, moving to the calving area across the space and finding a habitat haven.
- For each round, share a Seasonal Movement card, adding or removing habitat havens according to the card. For example, **mining exploration starts up in the calving area of the SLC. Remove two habitat havens from the calving area.**
- Remind students there are only three students per habitat haven. Students who cannot find a safe space become Caribou who do not make it on the seasonal journey. These students move to the side of the calving area temporarily, waiting as unborn calves until cards call them back into the game. Highlight how Caribou who die cycle back to the Earth, feeding into the web of life.
- Students on the side of the calving area will return to the game as calves when a seasonal movement card describing favourable conditions are read. For example, **hunting restrictions put in place, add two habitat havens to winter ranges. The number of calves born to the herd increases significantly!**
- After a few rounds moving between spring and winter habitats, add on the journey cards to the mix. These add extra dangers that Caribou experience during their seasonal journey.
- For example, highway development cuts directly across the SLC movement route. Many Caribou are killed by collisions with vehicles.
- Students on the sidelines take turns tossing the knotted bandanas at the students moving. Any students hit with a human hazard join the sidelines until conditions are favourable for a surge in Caribou numbers.

- Play until the timer is up. Students can repeat the game from the top, reintroducing all students back into the seasonal movement.

Gather in a circle again. Discuss how it felt to attempt the seasonal movement with so many uncertain factors.

ASK STUDENTS

- What impact do humans have on Caribou’s seasonal movement? What changes made a difference to the safety and numbers of Caribou?

CLOSING: CARIBOU COMMITMENT

- Discuss what impact human actions can have on the seasonal movement of Caribou (**Udži** in Southern Tutchone). How can human actions have a positive impact? Brainstorm how, as an individual and as a class, students can carry out these commitments. Record ideas shared. Examples could include: encouraging people to drive slowly through caribou winter range to reduce vehicle collisions, staying on the trail in the bush and not creating new trails.
- Using the Caribou commitment sheet provided, or through a medium chosen by the students, each student will create an individual pledge, a Caribou commitment.
 - In their caribou commitment, students will outline steps they can take as an individual, and as a community member, to protect the SLC.
- Draw a large Caribou silhouette on the wall with chart paper. Every student can write down their pledge, and stick it onto the Caribou. This makes the commitment visible for the duration of the lesson or unit. Consider creating a class commitment to add in as well.
- Encourage students to express this commitment creatively, creating a poem, a short story or designing a poster.

ASSESSMENT OPPORTUNITIES

Are students able to:

- Share a closing reflection or insight about their experience of Caribou’s seasonal movement that demonstrates active listening?
- Identify concrete ways in which they can help protect and respect Caribou in their community?

PART 3: MONITORING THE SOUTHERN LAKES CARIBOU HERD

LEARNING TARGET:

I am able to explain how First Nations and non-First Nations people continue to protect the wellbeing of the SLC through joint management.

MATERIALS

- iPads, class computers or projector to share the arcGIS Story Map⁴
- Paper, pencils, coloured pencils for reflections/ drawings of No Voice perspective
- Community Booklet (for your community)

TIME: ~60 MINUTES

OPENING: KEEPING TRACK OF CARIBOU

Invite students to share stories and own experiences with Caribou on the land and/or near water.

ASK STUDENTS

- Have you ever seen Caribou on the land with your family?
- Have you seen any Caribou near our community? What about signs they have been here?

Recap why Caribou may not be easily spotted close to community centres (human activity, traffic and roads)

Invite students to think how the SLC might be tracked without this ease of proximity. Introduce arcGIS Story Map of SLC: Recent herd activity.⁴

Explore arcGIS Story Map, looking at how Caribou are captured, collared and released, and how this process allows Caribou to be tracked, numbers recorded and information to be gathered. Highlight how this type of data can be enhanced by local knowledge.

ASK STUDENTS

- Do you think this program is important for Yukon communities? If so, why?

Share quote from SLC Story Map:

“Ongoing monitoring of these herds is important to understand how they are responding to recovery efforts, their population numbers and health, and how human disturbances such as development, harvest, and other activities impact the herds and their range.”

Inform students that they will get to speak with an Elder or specialist with direct connection to the Southern Lakes Caribou Recovery Program (SLCRP).

Brainstorm and record questions to ask the visiting Elder or visitor. Topics for questions could include:

- Involvement in SLCRP
- How the work is being continued today
- What students and community members can do to become stewards of Caribou habitat
- How to share important information about Caribou populations with community members

Note: the special visitor may also be connected through a video or recording of an Elder or visitor sharing their story and experience of working with the SLCRP.

⁴ Fish and Wildlife, 2021, Southern lakes caribou: Monitoring a recovering woodland caribou herd in yukon, Yukon government, <https://storymaps.arcgis.com/stories/f37506914b3643bc919321a2bd53b628>.

ACTIVITY: SPENDING TIME WITH ELDERS

Gather in a circle. Invite the students to acknowledge the Yukon First Nations Traditional Territory that the activity is taking place on. If they are present, introduce and welcome the visiting Elder or visitor. Go around the circle and have students introduce themselves.

Invite the visiting Elder or visitor to share their story about and connection to the SLCRP. Ensure time for students to ask questions.

One or more students can present the guest with a homemade card and gift (craft made by students or wild-harvested flowers) to show gratitude for the time and/or teachings shared with the students.

If an Elder is not present, ask the students if they know of any Elders in their communities or lives that are important to them. Invite students to share any teachings they have learned about how to treat Caribou and how to act when out on the land in relation to Yukon First Nations ways of Knowing, Doing and Being (e.g., sustainable or respectful harvesting practices, respect for the land and waters and seasonal activities).

CLOSING: NO VOICE PERSPECTIVE

Gather in a circle, outdoors if possible, once more. Use something (e.g., a mat, chair or small table with Caribou artifact or something to represent Caribou) to show that a space is being held in the circle for a non-human ‘voice’.

Tell students that the **No Voice** perspective is a way for humans to give a “voice” to the entity being talked about—in this case, Caribou. This is done by leaving an open seat for Caribou to “sit at the table” with those making decisions. This helps foster a sense of cooperation and unity between stakeholders at the table, reminding everyone that the common goal is to make the best decisions on behalf of the Caribou in our care.

Give students a piece of paper on which to draw or write. Invite students to consider what the Caribou might want to share with the group at this time. Some questions to pose to

students to answer on behalf of Caribou could include:

- We share the land with the SLC. What messages might they want to share with our community?
- What do the SLC need in order to stay healthy in the years to come?
- What questions would the SLC ask us if they could speak?

EXTENSIONS

Together as a class, decide how to share these **No Voice** reflections within the school and with the wider community. This could take the form of:

- A letter to your local government official, highlighting the importance of including the voice and perspective of Caribou in decision making
- An artistic representation (mural, poem or photo exhibit)
- A news article written from the voice of the Caribou

ASSESSMENT OPPORTUNITIES

Are students able to:

- Show their perspective on the SLCRP through small-group discussion, drawing and writing?
- Ask questions about the history and achievements of the SLCRP?
- Share a closing reflection (in small groups, in writing or creatively) about their experience with the **No Voice** perspective that demonstrates active listening?
- Acknowledge differing viewpoints respectfully?

ASSESSMENT

GRADE 5 SCIENCE AND SOCIAL STUDIES: EXPLORING SUSTAINABLE MANAGEMENT OF SOUTHERN LAKES CARIBOU

Formative and self-assessment opportunities are listed throughout the activity plans. The rubric below can be used or adapted as necessary for summative assessment. It may be used to assess the learning targets set out on the previous pages.

ASSESSMENT FRAMEWORK	1 EMERGING	2 DEVELOPING	3 PROFICIENT	4 EXTENDING
PART 1: I am able to demonstrate understanding of the ways in which Caribou and people are interconnected with the surrounding environment.	Is not yet able to demonstrate ways in which Caribou and people are interconnected with the surrounding environment	Demonstrates initial/partial understanding of the ways in which Caribou and people are interconnected with the surrounding environment	Demonstrates good understanding of the ways in which Caribou and people are interconnected with the surrounding environment. Can identify several connections in the Web of Life	Demonstrates deep understanding of the ways in which Caribou and people are interconnected with the surrounding environment. Can identify multiple connections in the Web of Life
PART 2: I am able to identify human impacts on the seasonal movement of SLC and how the SLCRP has reduced negative impacts over time.	Not yet able to communicate any human impacts on the seasonal movement of SLC and how the SLCRP has reduced negative impacts over time	Can identify some human impacts on the seasonal movement of SLC and how the SLCRP has reduced negative impacts over time	Can identify several human impacts on the seasonal movement of SLC. Is able to identify several ways that the SLCRP has reduced negative impacts over time	Can identify multiple human impacts on the seasonal movement of SLC. Is able to identify many ways that the SLCRP has reduced negative impacts over time
PART 3: I am able to explain how First Nations and non-First Nations people continue to protect the wellbeing of SLC through joint management.	Is not yet able to explain how First Nations and non-First Nations people continue to protect the wellbeing of the SLC through joint management	Demonstrates initial/partial understanding how First Nations and non-First Nations people continue to protect the wellbeing of the SLC through joint management	Demonstrates an understanding of how First Nations and non-First Nations people continue to protect the wellbeing of the SLC through joint management. Has a concrete idea of how to take on the role of steward for SLC	Demonstrates a clear understanding of how First Nations and non-First Nations people continue to protect the wellbeing of the SLC through joint management. Has multiple or complex ideas of how to take on the role of steward for SLC

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WEB OF LIFE CARDS

Appendix 2E

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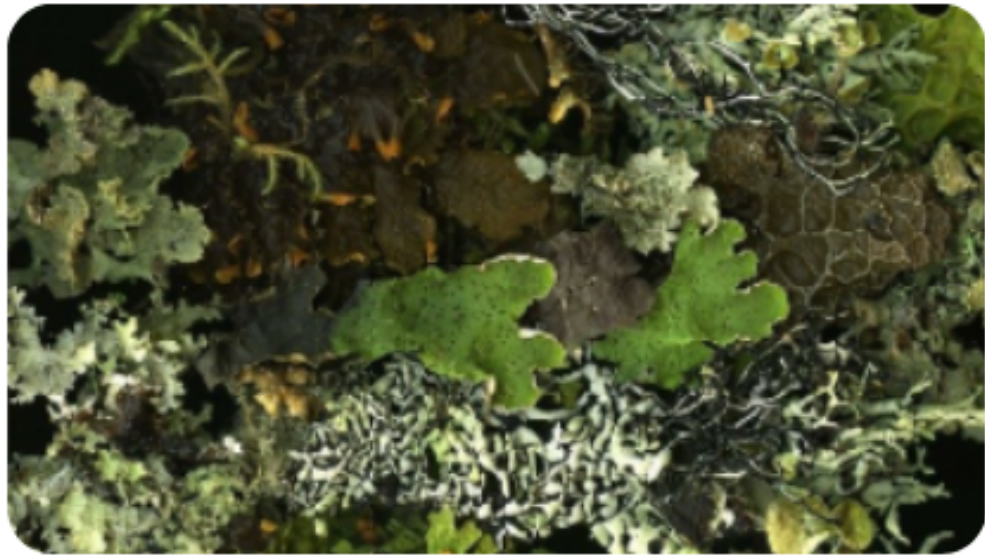
WILLOW

NOSE BOT FLY





SUN



LICHEN



WOLF



GRIZZLY BEAR



RAVEN



CARIBOU

SEASONAL MOVEMENTS & ON THE JOURNEY CARDS

Appendix 3A

Adapted from: Project Caribou, 2018. Checks and Balances activity, p. 66-72

SEASONAL MOVEMENTS

Accidents can occur in a Caribou herd, especially during seasonal movement. Spring flooding, high river levels and strong currents pose drowning risks to young calves.

Remove two habitat havens from the seasonal movement route.

Human impacts dramatically affect Caribou seasonal movement. Fencing, roadways and high-use trails can cause Caribou to avoid or abandon important habitat areas.

Remove two habitat havens from the seasonal movement route.

Calving areas are usually more secluded, and allow calves to be hidden from predators. You reached the calving area!

Calves are born, students can join the game again!

Cold, wet conditions can cause calves to weaken and die.

Remove one habitat haven from the calving area.

An increase in the wolf population is affecting the numbers of the Caribou.

Remove two haven habitats from the calving area.

The snow is not too deep this winter. Caribou are able to dig down and find enough food to fill their bellies this season.

Add two habitat havens to the lowland winter ranges.

ON THE JOURNEY

Buzzing insects overwhelm Caribou on the move. They climb uphill and find relief on a nearby ice patch, but the warming climate means there is no space for the whole herd.

Students tagged by oncoming human hazards move to the sidelines.

Fast-moving traffic alongside traditional movement corridors is increasing collisions and disrupting seasonal movement patterns.

Students tagged by human hazards move to the sidelines.

Caribou need to conserve their energy levels. Any sudden aircraft sounds can cause a stampede in the herd, causing injury, abandonment and possibly death of young calves. (p.16) Low-flying planes have started flying over the seasonal movement route of the Caribou.

Students tagged by human hazards move to the sidelines.

A forest fire has wiped out a large area of habitat that used to provide lots of lichen to eat. The Caribou have to continue moving to find food.

Students tagged by human hazards move to the sidelines.

A forest fire has wiped out a large area of habitat that used to provide lots of lichen to eat. The Caribou have to continue moving to find food.

Students tagged by human hazards move to the sidelines.

TEMPLATE:
CARIBOU COMMITMENT

Appendix 3B

Name: _____

I care about the Southern Lakes Caribou.

I understand humans can have a negative effect on Caribou by:

I commit to doing the following to help protect the Southern Lakes Caribou:

Date: _____ Signature: _____