



WILDLIFE MANAGEMENT AND TEK (Part II)

GRADE Grade 5

PART 2 of 3

TOPICS Wildlife, story, traditions, treaties, culture, conservation

CURRICULAR CONNECTIONS

Grade 5 Social Studies

Topic 2 – Histories and Stories of Ways of Life in Canada

1. Appreciate the complexity of identity in the Canadian context:
 - Acknowledge oral traditions, narratives and stories as valid sources of knowledge about land and diverse Aboriginal cultures and histories
2. Examine, critically, the ways of life of Aboriginal peoples in Canada by exploring and reflecting upon the following questions and issues:
 - What do the stories of First Nations, Métis and Inuit peoples tell us about their beliefs regarding the relationship between people and the land?

OVERVIEW

“The Elders believe we must teach all of our brothers and sisters that life is interrelated, and we must live in harmony in the renewal process of the seasons.”

Chief John Snow, *“These Mountains are our Sacred Places”*

Building upon what students learned about Traditional Ecological Knowledge in Part I, this lesson will ask students to look at some of the similarities and differences between TEK and Western science. An examination of the strengths of both ways of knowing will lead to a look at some different examples of how TEK and Western science provide complementary lenses for tackling conservation challenges.

OBJECTIVES

- Students will understand some of the similarities and differences between Traditional Ecological Knowledge and Western science
- Students will understand that all organisms are interconnected to one another
- Students will be familiar with an example of how TEK is contributing to improved wildlife management in Kananaskis Country

KEY TERMS

- **Food chain** – a sequence of plants and animals that depend on each other for food
- **Food web** – the whole group of interacting food chains in a community
- **Western science** – a system for learning about the natural world through experiments and observation
- **Etuaptmunk (Two-Eyed Seeing)** – a Mi’kmaq term describing the ability to view the world with the strengths of both Indigenous and Western knowledges

GUIDING QUESTIONS

- What are strengths of TEK? What are strengths of Western science?
- What is an example of a Western science approach to conservation creating long-term problems for ecosystems?

BACKGROUND ESSAY

Traditional Ecological Knowledge (TEK) is one way of looking at the world around us. Another way of learning about the world is through **Western science**, a name given to the type of science with which many people are most familiar. Broadly speaking, Western science tries to understand the natural world by studying individual parts. It is called Western science because it originated in Western Europe, and is distinct in many ways from Indigenous science or TEK. Traditional Ecological Knowledge on the other hand seeks to understand the



world as an interconnected system. The table below shows some of the differences between TEK and Western Science.

Traditional Ecological Knowledge	Western Science
Acquired over a long period of time	Acquired over shorter periods of time
Long-term wisdom	Short-term prediction
Explanations based on examples and anecdotes	Explanations based on hypothesis, theories and laws
Includes the natural and the supernatural	Excludes the supernatural
Context and community based	Controlled experiments
Values-based	Objective
Locally valid	Universally valid
Humans part of the environment	Humans separate from the environment
Oral or visual	Written
Interconnectedness	Separate areas of study

Adapted from Alaska Native Science Commission

The Mi'kmaq word *Etuaptmunk* describes a principle known as Two-Eyed Seeing which comes to us from Mi'kmaq elder Albert Marshall from Eskasoni First Nation and the Institute for Integrative Science and Health in Cape Breton, Nova Scotia. In the words of the Institute:

“We often explain Etuaptmunk/Two-Eyed Seeing by saying it refers to learning to see from one eye with the strengths of Indigenous knowledges and ways of knowing, and from the other eye with the strengths of Western knowledges and ways of knowing ... and learning to use both these eyes together, for the benefit of all.”

Given the differences between the two ways of knowing, Traditional Ecological Knowledge and Western science can be complementary to one another and help us better understand the natural environment. While there are many differences between these two ways of knowing, there are also many similarities between TEK and Western Science.

Similarities between TEK and Western Science
Both explain complex systems
Both seek to understand the physical world
Both are based on observation
Both bodies of knowledge change over time
Both verify through repetition



Adapted from Baker, Rayner & Wolowic (2011)

Increasingly, Western science is adopting a more holistic view towards nature. This transition is more closely aligned with Indigenous worldviews, which recognize the interconnectedness of all things. Integrating these two bodies of valuable knowledge is crucial for addressing modern challenges in resource conservation and ecosystem health. When one thing changes in an ecosystem, all other things are affected. The interconnected nature of ecosystems can be represented through **food chains** and **food webs**.

DURATION 20-30 minutes

MATERIALS

- Ball of yarn
- Food web cards

ACTIVITY – BUILD A FOOD WEB

Students will understand how all living things are connected within an ecosystem through this hands-on activity. They will explore the ripple effect that is created when a link in a web is removed.

1. Begin by leading a discussion about the interconnectedness of ecosystems. What are examples of predator/prey relationships in an ecosystem? Encourage students to think beyond animal-to-animal interactions and to consider what plants need to survive and what happens to animals after they die.
2. Distribute food web cards to students. The cards will say what the organism eats/needs to survive and what eats/preys upon that organism.
3. Review the rules of the game: do not pull on the string, do not let go of the string unless you are instructed to do so by the instructor. Hold your card up so that everyone can see what card you have.
4. Choose one student to start. They will read what organism they have and what they eat. Holding onto the yarn, they will pass the ball of yarn to one of the organisms that they eat (or one of their needs in the case of plants and mushrooms).
5. Encourage the students to try to pass the yarn to organisms that have not been included yet. Once all of the organisms have received the yarn, pause the activity. Lead a discussion about the connections that the students see. What does the yarn resemble? Do some organisms have more connections than other? What impact does this have on their response to changes?
6. Illustrate the impact that a change can have on the entire system by reading out an ecosystem scenario. The student holding the organism in question will drop their string. Any animal that eats that organism will drop the string connected to them. If it is the only string they are holding, they die. Continue with this chain of reaction.



7. Compare the effect of removing an organism with few connections versus one with many. Compare the impact of losing a producer versus a consumer. What happens when soil is removed?

This activity has been adapted from “The Food Web” from Pollinator Partnership. View the original lesson plan at www.pollinator.org.

BACKGROUND ESSAY

Across North America, Indigenous people have protected and cared for the land, plants, and animals that have sustained them since time immemorial. For example in the region that we now know as Alberta, Indigenous Peoples used controlled burns to manage forests. The time and location of the burns were based on Traditional Ecological Knowledge and represented an important element of stewardship of the land. The reasons for burning were numerous and included maintaining grazing land for game animals and stimulating the productivity of food and medicinal plants. These burns were carefully monitored and took place during low risk conditions such as early spring or late fall.

As European settlers arrived and introduced policies that removed Indigenous people from their traditional territories, the practice of controlled burns became less common. European settlers brought with them a very different attitude towards fire and stewardship than the Indigenous worldview.

Parks and protected areas—such as Banff National Park, Canada’s oldest national park which was established in 1885—were created with the stated goals of preserving wildlife and spaces for settlers to recreate. Early ideas of preservation and conservation did not take into consideration the important role that Indigenous people had in the stewardship of the land. Management policies were informed by Western science and often prioritized one species over another, without considering the effects that changes could have on ecosystems as a whole.



KEEP WATCHING

“How Wolves Changes Rivers” (Run Time – 4:33) describes how the reintroduction of wolves to the Yellowstone National Park transformed the landscape from the presence of the smallest creatures to the configuration of the rivers.

youtu.be/y5a50BhXz-Q

Perhaps the best known example of the problems that can arise with a simplified Western approach to conservation is the wolves of Yellowstone National Park in the United States, which was established in 1872. The park has a long history of removal of wolves, which were viewed as a threat to deer and livestock. Not long after the last wolves were killed in 1926, elk populations began to rise significantly. This led to lasting impacts on other species and the whole landscape, including shrubs, trees, fish and rivers. In 1995 wolves were reintroduced to the area, and over time the entire ecosystem rebounded.

Today, conservation science in Canada is changing. Increasingly the importance of Traditional Ecological Knowledge is being acknowledged and incorporated into the conservation and stewardship of lands, including Canada’s parks and protected areas.



TEK in Action: Stoney Nakoda Grizzly Bear Cultural Monitoring

In the Bow Valley, the Stoney Nakoda Nations are helping to improve grizzly bear management through the use of Traditional Ecological Knowledge. This single year project used cultural monitoring as a tool to improve conservation in areas of cultural importance to the Stoney Nakoda. The Traditional Knowledge specific to this landscape that is held by Elders is being shared in order to better understand conservation concerns from a cultural viewpoint.

“As with most wildlife management today, grizzly management has become a process that relies heavily on Western science to inform management strategies and policies. There is, however, an alternate view that incorporates cultural values, intuition and ancient relationships that are inseparable from the place and space in which they were born.”

This project involved extensive interviews and field visits with Elders to Kananaskis Country in order to document local perspectives and to develop recommendations for grizzly bear conservation planning. The finished report includes written interviews from Stoney Nakoda elders and can be accessed at bit.ly/2YNapVj.

REFERENCES

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