



BRITISH COLUMBIA
FireSmart™

Education Program

(Grades 7-9)



Lesson Two

In this lesson, students will identify and rate the important effects that prescribed fire can have on ecosystem health. To demonstrate their learning, students develop a public service announcement to communicate important messages about the roles that prescribed fire can play in supporting ecosystem health.



Lesson Question:

What are the most important effects of prescribed fire on ecosystem health?

Lesson Challenge:

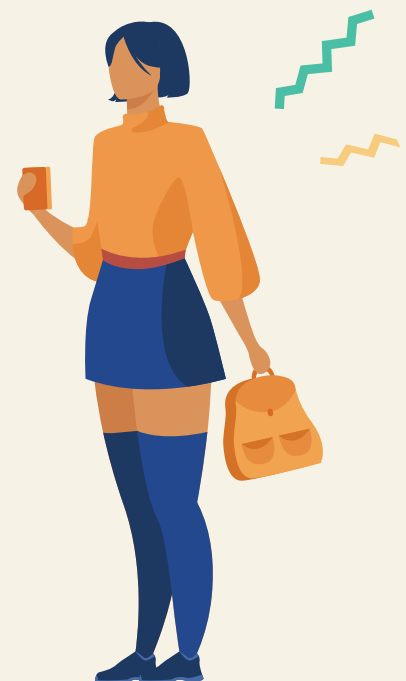
Develop an informative public service announcement that explains the most important effects that prescribed fire has on ecosystem health.

Big Ideas

- Evolution by natural selection provides an explanation for the diversity and survival of living things. (Grade 7 Science)
- The behaviour of matter can be explained by the kinetic molecular theory and atomic theory. (Grade 8 Science)
- The biosphere, geosphere, hydrosphere, and atmosphere are interconnected, as matter cycles and energy flows through them. (Grade 9 Science)
- Exploring stories and other texts helps us understand ourselves and make connections to others and to the world. (Grades 4–9 English Language Arts)

Suggested Materials

- **Activity Sheet A:** Rating the Importance of Prescribed Fire on Ecosystem Health (at least one copy for each small group)
- **Activity Sheet B:** Exploring the Effects of Prescribed Fire on Ecosystem Health (at least one copy for each small group)
- **Activity Sheet C:** Creating a Public Service Announcement (one copy for each student)



Before Starting the Lesson



Consider beginning this lesson by acknowledging the traditional territories upon which your class is learning. Your school or district likely has an acknowledgment you may share with students. Model for students the importance of taking time to think about what acknowledgment means. Share with students how you show respect and honour for the people and the land and invite them to do the same.

While this lesson includes some examples of Indigenous Peoples' perspectives and knowledge about fire, please be mindful of the following:

- Students can use the thinking strategies in this lesson to learn more from local Indigenous Peoples. Consider inviting Elders and Knowledge Keepers to provide local examples as content for this lesson, remembering to respect that not all Indigenous Peoples' knowledge can be shared.
- Follow proper protocols when inviting an Elder or Knowledge Keeper to your classroom. Your school or district likely has guidelines for collaborating with local First Nations.

Start the Thinking



1. Organize students into pairs or small groups. Begin the lesson by asking groups to suggest what signs, indicators, or measurements a doctor would use to decide whether a person was healthy or ill. Groups might suggest ideas such as temperature, blood pressure, heart rate, and others.
2. Briefly explain that similarly to how a doctor can use indicators to determine a person's health, we can also use a variety of indicators to determine the health of an ecosystem. Ask groups to suggest the signs or indicators of a healthy ecosystem: what would we see or notice in a healthy ecosystem? To inspire their thinking, consider showing images of a variety of ecosystems or, if feasible, take students on a walkabout of the school neighbourhood, a local park, or another local ecosystem. Encourage students to bring materials and equipment to help them observe and record their thinking such as notepads and pencils, devices to record pictures or video, and/or tools such as tablets, field microscopes, and measuring tapes.
3. Invite groups to share their suggestions with the class. As they share, guide the class in grouping common ideas into four or five categories. Have students create a word or phrase to describe the main idea of each category. This word or phrase will represent a key indicator of ecosystem health. These indicators can include the following:
 - **Biodiversity:** diversity of plants and animals; balance of species: few or no invasive species; abundant native species



- **Resilience:** wildlife is able to come back from disturbances such as fire, floods, insect infestation, windstorms, and human activity
 - **Sufficient habitat for native species:** abundant resources and space for all plants and animals to find food, find shelter, and move about
 - **Clean/healthy water, air, and soil:** few or no contaminants; clear water; evidence of pollution-intolerant species; nutrient-rich soil
4. Introduce the lesson question and challenge to students and briefly explain that in this lesson, they will be deciding the most important effects that prescribed fire has on ecosystem health. To demonstrate their learning, they will create an informative public service announcement (PSA) that explains the most important effects that prescribed fire has on ecosystem health.
 5. If necessary, review the concept of prescribed fire with students. Explain that prescribed fire is a practice that has gained recent attention for its potential to reduce the negative impacts of dangerous wildfires and to improve the health of ecosystems. Cultural burning is a form of prescribed fire and has been practised by Indigenous Peoples since time immemorial. Long dismissed and even made illegal, Indigenous Peoples' knowledge and practices of using carefully set fires are being recognized as having important benefits and value in nurturing ecosystem health and preventing or mitigating wildfires.
 6. Provide each group with at least one copy of Rating the Importance of Prescribed Fire on Ecosystem Health (Activity Sheet A). Prompt groups to use the rating scale to make an initial decision about how prescribed fire affects the health of ecosystems, reminding them to use the indicators of ecosystem health to guide their decision.

Grow the Thinking



1. Guide students' attention back to the initial decisions that they made on Activity Sheet A and invite groups to share their initial decisions with the class. Ask them to suggest how they decided which indicator would be most affected by prescribed fire. As they share, use their ideas to co-develop or present the criteria for measuring effects or impacts. The importance of impacts can be measured by examining the following:
 - **Breadth of effect:** How many parts of the ecosystem will be affected by prescribed fire? How many other indicators of ecosystem health are affected?



- **Depth of effect:** How deeply felt or serious is the effect on ecosystem health?
- **Duration of effect:** How long will the effect on ecosystem health last?

2. Provide each group with a copy of Exploring the Effects of Prescribed Fire on Ecosystem Health (Activity Sheet B). Guide students' attention to the left-hand column and ask them to note the indicators of ecosystem health developed or presented earlier in this lesson. Briefly explain that the task is to explore the following (and other) sources for ideas and information that describe how prescribed fire affects the health of ecosystems:

- **Cultural Burning & Prescribed Fire: What Is Prescribed Fire?**
<https://prescribedfire.ca/> (multimedia)
- **FireSmartBC: Introduction to Cultural Burning & Prescribed Fire**
https://vimeo.com/708338114?embedded=true&source=vimeo_logo&owner=93909388 (video)
- **Cultural Burning & Prescribed Fire: Why Prescribed Fire?**
<https://prescribedfire.ca/why-prescribed-fire/> (multimedia)
- **BC government: Cultural and Prescribed Fire**
<https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/prescribed-burning>
- **BC Wildfire Service: How Cultural Burning Enhances Landscapes and Lives**
<https://blog.gov.bc.ca/bcwildfire/how-cultural-burning-enhances-landscapes-and-lives/> (blog)
- **Frontiers for Young Minds: How does cultural burning impact biodiversity?**
<https://kids.frontiersin.org/articles/10.3389/frym.2022.734864> (Article)
- **The Conversation: How Indigenous burning practices can help curb the biodiversity crisis**
<https://theconversation.com/how-indigenous-burning-practices-can-help-curb-the-biodiversity-crisis-165422> (Article)
- **Cultural Burning & Prescribed Fire: Case Studies**
<https://prescribedfire.ca/case-studies/> (Videos)
- **BC government: Prescribed Burning in Action**
<https://www.youtube.com/watch?v=uKyz2JDzGyM> (Video)





3. After students collect information about the effects of prescribed fire on the health of local ecosystems, invite them to rate each effect using the criteria. Encourage students to share their ratings and thinking, and to reflect on the importance of prescribed fire by exploring questions such as the following:
 - What do your ratings reveal about the most important effects of prescribed fire on ecosystem health?
 - What other questions might we ask to discover more about the importance of prescribed fire on the health of ecosystems? How might we explore these questions?
 - What images, words, or phrases best describe the most important effects of prescribed fire on ecosystem health?

Reflect on the Thinking



1. Invite students to revisit Activity Sheet A and to rate the importance of prescribed fire on ecosystem health, this time using what they have learned in this lesson to guide their thinking.
2. Distribute Creating a Public Service Announcement (Activity Sheet C). Have students use their decisions from Activity Sheets A and B and their reflection on questions to create a PSA that explains the most important roles prescribed fire plays in improving ecosystem health. Encourage students to include up to three important ideas based on their ratings.
3. To conclude the lesson, encourage students to share their PSAs and discuss how they might use and more widely share their PSAs to inspire the public to care about prescribed fire and the health of their local ecosystem.

Activity Sheet A: Rating the Importance of Prescribed Fire on Ecosystem Health

How important is prescribed fire to the health of ecosystems?

Use the rating scales below to show your thinking.

Our Initial Thinking



Very important because it
hurts ecosystem health

Not important

Very important because it
helps ecosystem health

Reasons for our decision:



Our Final Thinking



Very important because it hurts ecosystem health

Not important

Very important because it helps ecosystem health

Reasons for our decision:



After learning more about prescribed fire, our rating

- Changed
- Stayed the same

Because _____

Activity Sheet B: Exploring the Effects of Prescribed Fire on Ecosystem Health

Steps for Exploring the Effects of Prescribed Fire on Ecosystem Health

1. Note the indicators of ecosystem health in Column A.
2. Look for information that provides evidence of how prescribed fire can affect the health of ecosystems. Write your findings in Column A.
3. Rate the impact of each effect in Column A by giving it a rating out of three (0 = very low, 3 = very high) in Column B (you can find the criteria at the bottom of this table).
4. After you use the criteria to rate the breadth, depth, and duration, give each effect a total impact score out of 9.

Column A

What is the **evidence** of the effects of prescribed fire on each of the following indicators of ecosystem health?

Column B

Rate the impact of each effect

Column C

Impact score

	Breadth	0 1 2 3	
	Depth	0 1 2 3	
	Duration	0 1 2 3	

Column A

What is the **evidence** of the effects of prescribed fire on each of the following indicators of ecosystem health?

Column B

Rate the impact of each effect

Column C

Impact score

	Breadth	0 1 2 3	
	Depth	0 1 2 3	
	Duration	0 1 2 3	
	Breadth	0 1 2 3	
	Depth	0 1 2 3	
	Duration	0 1 2 3	
	Breadth	0 1 2 3	
	Depth	0 1 2 3	
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Steps for Exploring the Effects of Prescribed Fire on Ecosystem Health

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3. Rate the impact of each effect in Column A by giving it a rating out of three (0 = very low, 3 = very high) in Column B (you can find the criteria at the bottom of this table).
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Column A

What is the **evidence** of the effects of prescribed fire on each of the following indicators of ecosystem health?

Column B

Rate the impact of each effect

Column C

Impact score

	Breadth	0 1 2 3	
	Depth	0 1 2 3	
	Duration	0 1 2 3	
	Breadth	0 1 2 3	
	Depth	0 1 2 3	
	Duration	0 1 2 3	

Column A

What is the **evidence** of the effects of prescribed fire on each of the following indicators of ecosystem health?

Column B

Rate the impact of each effect

Column C

Impact score

	Breadth	0 1 2 3	
	Depth	0 1 2 3	
	Duration	0 1 2 3	
	Breadth	0 1 2 3	
	Depth	0 1 2 3	
	Duration	0 1 2 3	



Criteria for Rating Significance

- Breadth of effect: How many parts of the ecosystem will be affected by prescribed fire? How many other indicators of ecosystem health are affected?
- Depth of effect: How deeply felt or serious is the effect on ecosystem health?
- Duration of effect: How long will the effect on ecosystem health last?

Activity Sheet C: Creating a Public Service Announcement

A public service announcement (PSA) is a special kind of ad created to raise awareness and understanding about an important topic or issue. Often with a powerful message, a PSA can be in social media, print, audio, or video format.

Your task is to create a PSA to raise awareness and understanding about the important roles prescribed fire can play in supporting healthy ecosystems.

The criteria for an effective PSA include the following:

- **Memorable:** The PSA should include information that is both important and easily remembered.
- **Appropriate for the intended audience:** PSAs are often designed to send messages to specific audiences (for example, K–12 students or people living near forested communities). The design of the PSA must match the intended audience.
- **Relevant, concise, and accurate information:** PSAs are usually very brief (often taking less than 30 seconds to read, watch, or listen to), and include the two or three main points of the most useful and accurate information.

Use the space below to plan your PSA.

Main message of my PSA:

My intended audience:

Format of my PSA:

My main points:

Other important content
(for example, images, key words,
ideas for audio):

