



FORESTS OF CHANGE (Part III)

GRADE Grade 6

PART 3 of 3

TOPICS Wildfire, climate change, greenhouse effect, FireSmart, carbon footprint

CURRICULAR CONNECTIONS

Grade 6 Science

Topic E – Trees and Forests

1. Identify reasons why trees and forests are valued. Students meeting this expectation should be aware that forests serve as habitat for a variety of living things and are important to human needs for recreation, for raw materials and for a life-supporting environment
3. Describe the role of trees in nutrient cycles and in the production of oxygen.
8. Identify human uses of forests, and compare modern and historical patterns of use
9. Identify human actions that enhance or threaten the existence of forests
10. Identify an issue regarding forest use, identify different perspectives on that issue, and identify actions that might be taken

OVERVIEW

In this final lesson of Forests of Change, students are introduced to the concept of root cause versus symptoms of a problem. With these concepts in mind, they will explore ways that people can manage both the root causes and the symptoms of wildfires. Students will also explore ways in which they can make lifestyle changes to minimize their personal contribution to climate change by using a footprint calculator tool.

OBJECTIVES

- Students will understand the difference between the root causes and the symptoms of a problem and learn ways of addressing both
- Students will understand that all activities contribute to their carbon footprint
- Students will explore strategies to reduce their personal carbon footprint

KEY TERMS

- **Carbon footprint** – the amount of greenhouse gases (especially carbon dioxide) given off by a person’s activities during a given period
- **FireSmart** – resources and programs designed to increase community resilience to wildfire
- **Mitigate** – make less serious, as in a problem
- **Resilient** – able to withstand or recover quickly from difficult conditions
- **Root cause** – the main underlying reason for a problem
- **Symptom** – the reaction to a problem

GUIDING QUESTIONS

- How can people understand the impact that their activities are having on the Earth? What can they do to minimize or **mitigate** these impacts?
- What are some ways that we can make our communities more **resilient** to wildfires?

BACKGROUND ESSAY

Throughout this lesson, we have learned about two factors that contribute to larger, more intense and more frequent wildfires in Alberta and around the world: a long history of wildfire suppression and climate change. While there may be limited opportunities for students to directly impact forest management practices or to fight wildfires, they are in a position to learn, teach about, and act on climate change.

Climate change is what is called a **root cause**, while wildfires are the **symptom**. Root causes are the main underlying reasons for a problem, while symptoms are the reaction to that problem. If we imagine a tree,



the trunk, branches and leaves – the part that we see – are the symptoms. The root causes are the roots of the tree, which are often hidden from sight until we dig deeper.

One way of thinking about how we can reduce our personal contribution to climate change is to think about our **carbon footprint**. Our carbon footprint is the amount of greenhouse gases (especially carbon dioxide) given off by a person’s activities during a given period. Everything that we do requires energy and a lot of this energy comes from burning fossil fuels. Most of the food that we eat requires fossil fuels to grow and transport. The clothes that we wear are made from materials that come from oil. Electricity that we need in order to power the lights may come from burning coal and many of us heat our homes with natural gas. As we learned in Part II, burning fossil fuels is contributing to climate change.

For some activities it is more obvious to us how we are contributing to climate change, such as driving a car or throwing away trash. Others, like eating meat, are not always as clear. By gaining a better understanding of which of our activities contribute the most greenhouse gases, we can focus our personal efforts on reducing our impact on the Earth where they matter most and treading more lightly.

DURATION 20+ minutes

MATERIALS

- Computer (with Internet access)

ACTIVITY – CARBON FOOTPRINT CALCULATOR

Students use an online tool to calculate their carbon footprint. After learning which activities produce more greenhouse gases, they will brainstorm ways to reduce their personal carbon footprints and therefore mitigate climate change impacts.

There are many different online carbon footprint calculators. Some provide a score while more complicated ones provide an estimate of the amount of carbon dioxide produced per year. Below are just a few examples.

Zerofootprint

Zerofootprint Youth Calculator is a free online carbon footprint calculator that is specifically designed for youth. Topics include transport, food, home, energy use and waste. Once students have completed the questionnaire, they can compare their results to other students in other schools and countries. The calculator also allows students to see how many earths would be required if everyone in the world produced the same amount of carbon as their lifestyle.

Available at <https://calc.zerofootprint.net/>

World Wildlife Federation Footprint Calculator

The World Wildlife Federation Footprint Calculator is an in-depth calculator based on the United Kingdom, but is transferable to anywhere. Students might not know the answers to some of the



questions so it may be a good activity to complete as a class or assign for homework to complete with families.

The results that are generated compare your carbon footprint with the world average. They also break down your results by topic (food, home, travel and stuff) so that you can see where you can make the most significant reductions. For each topic they offer tips for reducing your carbon footprint and information about how the different topics contribute to your carbon footprint.

Available at <https://footprint.wwf.org.uk/>

Energy Star Carbon Footprint Survey

This highly visual activity gets students to colour rings around a footprint based on their lifestyles to represent the size of their carbon footprint. It is downloadable in PDF format, so can be completed without a computer. It also provides many useful tips and actionable items for students to reduce the size of their carbon footprint.

In addition to the Carbon Footprint Survey, this guide features a number of additional activities to get students thinking about their carbon footprint and their family's energy efficiency practices.

Available at <https://bit.ly/2UkEMz5> or by searching "GoGreen_Activities 508_compliant_small.pdf"

DURATION 60+ minutes

MATERIALS

- FireSmart BC Education Package (FireSmart Ambassador or FireSmart Leader)

BACKGROUND ESSAY and ACTIVITIES

The past decade has been the warmest on record across North America. These warmer temperatures have led to more intense wildfire seasons, which pose a risk to human communities. **FireSmart** Canada leads the development of resources and programs designed to empower the public and increase community resilience to wildfire across Canada.

In the Bow Valley, communities have been taking proactive measures to manage the threat from wildfires. In Canmore, FireSmart thinning has taken place around the town over the past few years. This involves selectively clearing trees from forests, therefore reducing the amount of fuel that is available (think back to the fire triangle from Part II). Canmore Fire-Rescue and the Banff Fire Department offer free home/property visits to residents in order to help them recognize the simple steps they can take to reduce the impact of wildfires before they occur.

Another strategy that is employed is to remove flammable tree species and replace them with less flammable species. An example of this is replacing conifers with deciduous species. Which type of tree is more common around your home? Which type of tree is more common in the Bow Valley?



FireSmart BC has a range of educational materials available for students from Grades K-12. Teachers can access these activities in their entirety by visiting www.firesmartbc.ca/resource-types/education-materials/.