

# FOREST WEEK PRESENTATION

## "THE FIRE STORY – AN UNPREDICTABLE TRUTH"

### Lesson Outline:

1. Introduction
2. Fire Requirements
3. Fire Behaviour
4. Fire in Nature
5. Why should we learn about wildfires?
6. Prevention and Suppression
7. Conclusion

### Why have we chosen fire as a topic and what will the students gain from the information?

- Many people either live near or recreate in a forest/grassland area, so we all could be affected by wildfire.
- People need to understand their responsibility when living near or recreating in a forest/grassland (1/2 of wildfires are caused by people).
- Presently (or in the near future) there is an excess of dead standing timber in and around communities due to Mountain Pine Beetle, which puts people at a greater risk.
- As BC's population continues to grow and more people build homes in or near forested and wildland areas, the interface area will continue to be the biggest challenge facing the Protection Program now and in the future.
- Fire is part of nature and natural ecosystems (fits into the curriculum).

# LESSON

## 1. INTRODUCTION:

- Briefly introduce yourself and what you do (optional: wear your field gear).
- **Hold up sample of burned wood.** Does anyone know what this is and what happened to it?
- Mention to the students that today you are going to be talking about “Wildfire” but unfortunately there will not be time to hear any personal stories. Tell them they can save their stories to share when they are back in class.
- **Ask:** Can you tell me how fire is useful to humans today? (take 1-2 answers)
  - a. Heating
  - b. Campfires
  - c. Cooking
- **Ask:** Can you tell me how fire was useful to humans in the past? (take 1-2 answers)
- **First Nations:**
  - a. Gathering – Realized many plants needed fire before they would grow. These were important plants that were harvested for eating and medicinal uses.
  - b. Hunting – Knew that after a fire burned an area, lots of new grasses and plants would grow which attracted animals to the area.
  - c. Homes – Also used fire to cook, preserve food, heat, and ceremonial purposes.

## 2. FIRE REQUIREMENTS:

Refer to the “Fire Triangle board”

- **Ask:** Can you name the 3 things that we need to have a fire?
- Put up each part of the “fire triangle” one at a time as students give answers:
  - 1) **FUEL:** things that burn in a fire (sticks, leaves, wood, paper...etc.)
  - 2) **HEAT:** things that give heat to start a fire (matches, lightning, sparks from machines)
  - 3) **OXYGEN:** just like us, fire needs oxygen too

**CANDLE DEMO:** Materials: candle, lighter/matches and jar

**Mention:** If you remove one part of the fire triangle; heat, fuel or oxygen, fire will not exist.

Place candle in the jar and light.

- **Ask:** What do you think will happen to the flame when the jar is covered with the lid? Why? (*flame uses up all the oxygen and goes out*)

## 3. FIRE BEHAVIOUR:

- **Mention:** Now that we know what is needed to have a fire, we are going to talk about some things that can change the behaviour of a fire. For example, some things can make a fire move fast or slow or make it burn hot or cool.

Put up Overhead #1

- a. **FUEL – Show Pictures: Ask:** Looking at these two pictures (open grassland and forest with debris) which one do you think a fire would move through faster? Why? Take 1-2 answers

**Answer** – Fires traveling through a heavily forested area tend to burn slower and hotter. Fires traveling through open grass areas or forests with little debris, dead branches on the ground, tend to be less hot and travel at a faster rate.

- b. **WEATHER – Refer to the top two pictures: Ask:** Looking at these two pictures (dry landscape and we forest) which one do you think a fire would move faster? Why? Take 1-2 answers.

**Answer** – Fire in a dry area will burn much hotter and faster than in an area with damp/wet conditions. **Mention:** Fire will travel much faster in windy conditions.

Put up Overhead #1A

- c. **TOPOGRAPHY: – Show Pictures: Ask:** Looking at these two pictures (flat landscape and steep hill) which one do you think a fire would move faster? Why? Take 1-2 answers.

**Answer –** Fire that burns on a steep hill will spread much faster than if it burns on flat ground because the top of the flames start burning up the hill.

#### 4. FIRE IN NATURE:

Briefly discuss the following information:

- Wildfires have been a major influence in BC forests since the glacier disappeared about 7000 years ago.
- Wildfires have always played a vital role in our forests; they renew the landscape by helping recycle nutrients back into the soil, provide space for new plants and animals to live, and can prevent the spread of insects like the MPB and diseases that are out of control.
- Many forest ecosystems and individual plants and animals depend on fire for their survival. For example:
  - Lodgepole pine trees depend on the heat from fires to open their cones allowing seeds to be released.
- Other plants have adaptations to help them survive fires. For example:
  - Douglas-fir trees have thick bark, which will withstand **low intensity** fires (fire moves slowly, less damaging, it may only scorch plants).
- Each year there are approximately 2000 wildfires in BC. One half of fires are started by lightning and the other half by people (campfires, cigarettes, matches, and machinery – refer back to fire triangle).

## Stand Maintenance and Stand Replacement – two main types of fires

- Explain: a “stand” is another word for a group of trees or forest

Put up **Overhead #2** and cover the bottom picture, discuss the following:

**Stand Maintenance Fire** – occur frequently (3-15 years) and they are usually cooler ground fires.

- These types of fires burn mostly along the ground, consuming grasses, shrubs and small trees.
- These fires rarely burn hot enough to kill the larger and older trees.
- One of the primary benefits of these fires is thinning of the forest which brings in more sunlight allowing more and different plants will grow. Animals are then drawn to these areas.
- The more often fires occur, the less intense and less damaging an individual fire becomes.
- This type of fire is historically common in the Thompson, Nicola, and Okanagan Valleys.

Uncover Stand Replacement Fire picture:

**Stand Replacement Fire** – tend to occur more infrequently (100 + years) and consume large areas of forest, which starts a new cycle (often different trees and plants will end up growing in that forest).

- The hotter stand replacing fires are fires that burn along the ground, using low branches as ‘ladders’ to climb into the canopies or tree tops.
- These fires consume grasses, shrubs, small and large trees and a large amount of the ***duff layer*** thus damaging the soils (**duff layer**: organic matter in various stages of decomposition on the floor of the forest).
- These fires usually destroy all the vegetation and trees providing the opportunity for a new stand to begin to establish itself.
- This type of wildfire is historically common at mid-elevations in Lodgepole pine stands.
- This intensity of fire may take many years or decades for the forest to recover from.

Put up **Overhead #3** and cover the bottom picture:

**Ask:** Is this a “Stand Maintenance” or a “Stand Replacement Fire”?

**Answer** – Stand Replacement Fire

- During the past century we have been putting out or **suppressing fires** to protect valuable land and timber.
- This practice has resulted in an unnatural build up of fuel on the ground which has contributed to many of the large ***catastrophic wildfires*** (catastrophic wildfires: fires that completely destroy a forest).
- Due to fire suppression, there is an increase in the food supply for Mountain Pine Beetle because there is a large amount of mature trees to host the beetles.

## 5. WHY SHOULD WE LEARN ABOUT WILDFIRES?

**Ask:** Why do you think it is important that we learn about wildfires? (take 1-2 answers)

- More people are building their homes and recreate in or near forested and wildland areas (which we call the **interface area**). This puts more people at risk.
- Right now there is an excess of fuel (e.g. dead leaves, branches etc) build-up and an excess of dead standing trees from the MPB in and around our community, which puts us at a greater risk (more fuel allows more chance of a dangerous fire).
- To understand how we can prevent wildfires and help make our communities safe.
- To understand that fire is a natural part of the forest and that it has an important role in natural ecosystems (forests).

## 6. PREVENTION AND SUPPRESSION:

Refer back to the “Fire Triangle board” – look at each part separately

Uncover bottom of Overhead #3, plane dropping retardant:

Looking at this picture, what part of the fire triangle is going to be affected by the red substance that the plane is dropping?

### a. OXYGEN

- Oxygen is very difficult to control but forest fire fighters can try to remove the oxygen from a fire to help “STOP” a forest fire from burning? (remember the candle demo we did)

**Fire retardant:** smothers a fire and helps remove the oxygen.

### b. FUEL

- There are some things that people can do to the fuel to help “PREVENT” a dangerous forest fire from happening.

Put up Overhead #4 showing controlled burn. Cover the bottom picture & discuss:

#### 1) Things that forest workers do:

- a. Remove fuel: clean the forest floor, remove lower dead branches of trees
- b. Controlled burn: starting a controlled fire to burn built-up fuels (dead leaves/branches)
- c. Cut down dead trees (MPB): chip them, make lumber with them or put in piles and burn in the winter
- d. Reduce the fuel supply on the ground

2) If a forest fire is already burning, there are some things that forest workers can do to the fuel to help “STOP” it from burning.

- a. Create a Fire Guard: remove all the fuel in an area to prevent the fire from continuing

Uncover Fire Guard picture :

- b. Back Burn: start a fire ahead of the dangerous forest fire to burn all the fuel, so when the fire reaches that spot there will be nothing for it to burn

#### 3) What are some things you can do?

- a. Clean up the dead debris (e.g. leaves and sticks) in your yard
- b. Help move the wood supply away from the house

## c. HEAT

- There are some things that can be done to the *heat* to help “PREVENT” a dangerous forest fire from happening.

### 1) Things Forest Workers do:

- ***Lightning Location System:*** This is a computer system that Foresters use to detect where lightning strikes happen. Forest Fire Fighters can then go and check to make sure that the lightning did not start a fire. (This system detects 90% of lightning strikes that hit the ground)

### 2) What are some things you can do?

- Help to build campfires in safe locations and make sure they are out when you leave
- Don't play with fire/matches
- Don't ride dirt bikes or motorcycles in the forest when the weather is very hot and dry
- Tell others not to throw cigarettes on the ground
- If you see a fire or lightning strike call (1-800-663-5555 or 911)

## 7. CONCLUSION:

- Very briefly mention that some other things that can be done to help protect your home are outlined in this “**Fire Smart Booklet**” (can be downloaded at: <http://www.bcwildfire.ca/Prevention/Property/FireSmart.htm> )
- Ask (if time permits): Are there any questions?
- Give teacher the class set of “**Fire Smart Booklets**” and resource pages
- Mention: **Primary and Intermediate – Force of Fire binders** are in most libraries in the Southern Interior, except for the East and West Kootenay (Resource Centers only)