

# Lesson Plan

## - Forest Fires - The Good, the Bad and the Ugly -

### OBJECTIVE:

Students will:

- Identify the risks of fighting forest fires
- Determine who becomes involved when a fire is out of control
- Explain how BC manages their forests for fire prevention and suppression

### CURRICULAR CONNECTIONS:

- Science 8 - Applications of Science/Life Science: Global Ecosystems
- Biology 11 - Plant Biology (Gymnosperms and Angiosperms)
- Resource Science: Forests 11 - Forests and Society, Forest Ecology, Plants
- Resource Science: Forests 12 - Management perspectives, Fire Management
- Geography 12 - Resources of the Earth (Management of Resources)
- Socials 10 - Resource and Environmental Management
- Socials 11 – Environmental Issues
- Career and Personal Planning 11 and 12 - Career Exploration

### MATERIALS REQUIRED:

- Power Point Presentation:** Forest Fires - “The Good, the Bad and the Ugly”
- Exercise Booklet**
- Fire Fighting Crossword Puzzle**

### LESSON PLAN

#### A) Introduction (5 min)

##### Review Fire Fundamentals and Fire Behaviour

- What are the 3 general ways to put out a forest fire? (Hint: fire triangle)**
  - Remove the Fuel Source: ie. fire guards, prescribed burns
  - Remove the Heat Source: ie. mostly weather related, water
  - Remove the Oxygen: ie. smother fire with retardant, water, sand
- What 3 general things do fire fighters need to consider when they fight forest fires, if they want to remain safe? (Hint: fire behaviour triangle)**
  - Topography: ie. fire advances fast on a steep slope
  - Fuel: ie. fire advances fast in dry and dense forests
  - Weather: ie. fire is unpredictable and dangerous with high winds

#### B) Power Point Presentation (20 - 25 min)

- Go through the ppt presentation and get students to take notes
- Classroom discussion throughout the presentation

**C) Conclusion (30 - 35 min)**

**Choose one or more of the following:**

**1. Exercise Booklet**

- Get the students to use their notes to complete the exercise booklet

**2. Review of Lesson**

- Get the students to use their notes to complete the crossword puzzle

# Forest Fire

## ~The Good, the Bad and the Ugly~

### Answer Key

1. Match the following definitions with the correct terms.

2. What does the blue smoke tell us about a fire?
- ⇒ The colour of the smoke can indicate the intensity of the fire. White or blue smoke indicates a cooler, less active fire
3. Lodgepole pine and Douglas fir both have adaptations that allow them to live in fire prone ecosystems. How are they're adaptations different?
- E Vegetative Sprouting
- H Fire Stimulated Seed Release
- G Prescribed Burning
- A Rappattack
- F Initial Attack
- J Parattack
- C Unit Crew
- I Helitankers
- B Air Tankers
- D Fire Exculsion
- A. Utilize helicopters to access fires in steep remote areas
- B. Aircraft which are primarily used for initial attack
- C. 20 person crew utilized fore sustained action on larger fires
- D. Preventing fires, which allows ecosystems to build up fuel loads beyond their capacity
- E. Regeneration from buds found on roots
- F. Access fires by either truck or helicopter
- G. Intentionally starting a fire to reduce excess fuels on the forest floor
- H. Seeds which need extreme heat to be released
- I. Medium sized helicopters with a belly tank attached which are suited for direct bombing on fires
- J. Utilize fixed wing aircraft and parachute deployment to access remote initial attack fires
- ⇒ Douglas fir has thick bark (Physical Characteristic) that increases it's chance of surviving a fire. The bark protects the living part of the tree.
- ⇒ Lodgepole pine has thin bark so it will not likely survive a hot fire. However it also has fire stimulated seed

release, meaning that its seeds need hot temperatures to be released. So lodgepole pine will likely regenerate quickly after a fire.

4. What would be the advantage of having a forest fire from the perspective of a deer?

⇒ Forest fires enrich the soil with nutrients, which results in an increase in new lush vegetation (deer love).

5. What is the responsibility of the BC Forest Service Protection Program?

⇒ Wildfire suppression and prevention

6. What 3 things were improved by re-engineering the Protection Branch of the Ministry of Forests in 1994?

⇒ Efficiency, productivity, cost effectiveness

7. Number the following in the correct order based on how BC fights forest fires.

  3   Aggressive Mop-up

  1   Early Detection

  2   Fast Aggressive use of a Rappattack crew if fire is in a steep remote area

8. Write a short paragraph explaining why a firefighter needs to know and understand both the fire triangle and the fire behaviour triangle?

⇒ Need to know the fire triangle so they know what they can eliminate to

---

put the fire out. For example remove the fuel, smother the fire with

---

retardent to remove the oxygen, or spray the fire with water to reduce its

---

heat.

---

⇒ Need to know the fire behaviour triangle for their safety. They need to

---

understand how a fire will behave on different slopes, with wind, and with

---

different types of fuel.

---

---

9. Find and circle the answers to the following questions.

Questions:

- A 3-person crew that is self sufficient for 24 hours?
- The type of fire suppression crew that is used mostly in Prince George?
- The type of fire suppression crew that is used for mop-up and initial attack on large fires?
- A fire suppression resource that can carry between 700 and 2500 gallons of retardent?
- A fire suppression resource that can carry around 300 gallons of water?
- The planned manipulation of forest vegetation whether living or dead to decrease the intensity and rate at which a forest fire spreads?
- Intentionally starting a fire during snowy conditions to reduce excess fuels on the forest floor?
- What can indicate the intensity of a fire?

S	M	F	G	W	G	I	N	T	W	E	P	O	C	N	M	S	D	E	M	S
Y	T	S	H	N	P	N	I	U	N	I	P	E	R	U	T	P	A	D	F	V
H	E	O	N	A	S	D	I	P	C	A	T	C	H	S	R	F	A	I	O	C
F	I	L	N	A	O	U	N	N	R	U	E	B	S	D	E	F	K	L	U	I
E	A	G	A	E	R	P	L	A	R	C	R	T	S	C	H	O	C	T	O	G
C	B	E	K	D	D	C	T	H	G	U	W	W	D	N	M	I	A	R	C	F
D	V	O	P	P	C	T	E	W	Y	U	B	E	G	E	S	J	H	D	H	A
D	M	N	S	H	A	V	P	F	E	J	K	R	S	S	C	N	K	F	C	K
S	W	M	O	C	J	B	K	C	S	R	O	A	E	N	U	A	I	C	T	L
L	H	K	K	I	M	R	T	U	T	D	S	I	N	T	E	N	S	I	T	Y
S	G	P	K	E	T	E	X	O	Y	F	I	R	D	O	N	P	D	O	P	K
P	F	P	J	N	P	K	J	P	U	H	R	R	S	F	S	I	H	B	C	C
P	D	L	H	P	T	N	B	C	G	R	I	E	S	K	T	P	W	A	Y	A
V	S	A	C	P	X	A	B	T	T	E	T	R	K	C	R	T	E	F	I	T
T	K	C	A	T	T	T	P	P	A	R	U	T	A	N	P	C	R	U	F	T
D	P	A	S	F	N	R	M	C	I	L	Y	U	F	K	A	K	C	A	R	B
B	O	W	O	G	A	I	P	C	U	O	R	P	B	C	F	T	T	K	I	H
N	I	S	M	O	K	A	H	M	P	I	E	P	J	K	G	K	I	C	P	J
M	U	J	T	K	C	N	K	U	K	L	L	L	S	L	A	I	N	L	P	K
W	Y	T	N	E	M	E	G	A	N	A	M	S	L	E	U	F	P	C	E	P
E	T	L	A	S	E	T	Y	B	H	J	I	O	P	A	W	T	T	Y	B	H

## Forest Fire

~The Good, the Bad and the Ugly~

1. Match the following definitions with the correct terms.

- |                                  |   |
|----------------------------------|---|
| ___ Vegetative Sprouting         | a. Utilize helicopters to access fires in steep remote areas  |
| ___ Fire Stimulated Seed Release | b. Aircraft which are primarily used for initial attack   |
| ___ Prescribed Burning           | c. 20 person crew utilized for sustained action on larger fires                                     |
| ___ Rappattack                   | d. Preventing fires, which allows ecosystems to build up fuel loads beyond their capacity           |
| ___ Initial Attack               | e. Regeneration from buds found on roots  |
| ___ Parattack                    | f. Access fires by either truck or helicopter   |
| ___ Unit Crew                    | g. Intentionally starting a fire to reduce excess fuels on the forest floor                         |
| ___ Helitankers                  | h. Seeds which need extreme heat to be released   |
| ___ Air Tankers                  | i. Medium sized helicopters with a belly tank attached which are suited for direct bombing on fires |
| ___ Fire Excursion               | j. Utilize fixed wing aircraft and parachute deployment to access remote initial attack fires       |

2. What does the blue smoke tell us about a fire?

3. Lodgepole pine and Douglas fir both have adaptations that allow them to live in fire prone ecosystems. How are they're adaptations different?



9. Find and circle the answers to the following questions.

Questions:

- A 3-person crew that is self sufficient for 24 hours?
- The type of fire suppression crew that is used mostly in Prince George?
- The type of fire suppression crew that is used for mop-up and initial attack on large fires?
- A fire suppression resource that can carry between 700 and 2500 gallons of retardent?
- A fire suppression resource that can carry around 300 gallons of water?
- The planned manipulation of forest vegetation whether living or dead to decrease the intensity and rate at which a forest fire spreads?
- Intentionally starting a fire during snowy conditions to reduce excess fuels on the forest floor?
- What can indicate the intensity of a fire?

S	M	F	G	W	G	I	N	T	W	E	P	O	C	N	M	S	D	E	M	S
Y	T	S	H	N	P	N	I	U	N	I	P	E	R	U	T	P	A	D	F	V
H	E	O	N	A	S	D	I	P	C	A	T	C	H	S	R	F	A	I	O	C
F	I	L	N	A	O	U	N	N	R	U	E	B	S	D	E	F	K	L	U	I
E	A	G	A	E	R	P	L	A	R	C	R	T	S	C	H	O	C	T	O	G
C	B	E	K	D	D	C	T	H	G	U	W	W	D	N	M	I	A	R	C	F
D	V	O	P	P	C	T	E	W	Y	U	B	E	G	E	S	J	H	D	H	A
D	M	N	S	H	A	V	P	F	E	J	K	R	S	S	C	N	K	F	C	K
S	W	M	O	C	J	B	K	C	S	R	O	A	E	N	U	A	I	C	T	L
L	H	K	K	I	M	R	T	U	T	D	S	I	N	T	E	N	S	I	T	Y
S	G	P	K	E	T	E	X	O	Y	F	I	R	D	O	N	P	D	O	P	K
P	F	P	J	N	P	K	J	P	U	H	R	R	S	F	S	I	H	B	C	C
P	D	L	H	P	T	N	B	C	G	R	I	E	S	K	T	P	W	A	Y	A
V	S	A	C	P	X	A	B	T	T	E	T	R	K	C	R	T	E	F	I	T
T	K	C	A	T	T	T	P	P	A	R	U	T	A	N	P	C	R	U	F	T
D	P	A	S	F	N	R	M	C	I	L	Y	U	F	K	A	K	C	A	R	B
B	O	W	O	G	A	I	P	C	U	O	R	P	B	C	F	T	T	K	I	H
N	I	S	M	O	K	A	H	M	P	I	E	P	J	K	G	K	I	C	P	J
M	U	J	T	K	C	N	K	U	K	L	L	L	S	L	A	I	N	L	P	K
W	Y	T	N	E	M	E	G	A	N	A	M	S	L	E	U	F	P	C	E	P
E	T	L	A	S	E	T	Y	B	H	J	I	O	P	A	W	T	T	Y	B	H