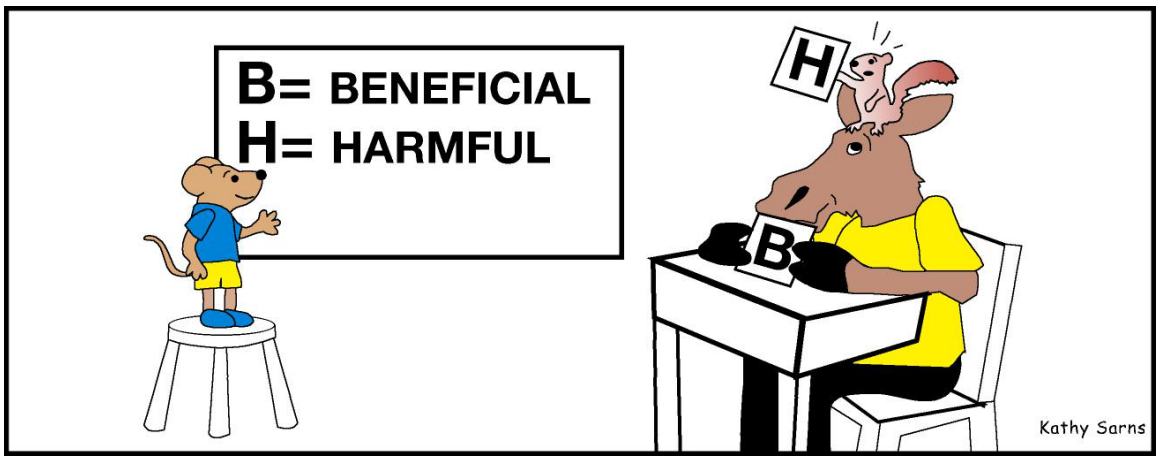
GOOD OR BAD EFFECTS OF FIRE IN THE TUNDRA OR FOREST – WHO IS TO SAY?



Grade Level: 8-12
Alaska State Content Standards: LB3, LD1, LD4, LE2, SA14, GeoE4, GeoE6
Subject: Language Arts, Science, Geography
Skills: Analysis, Application, Generalization, Problem-Solving
Duration: 2 class periods
Group Size: 8-12
Setting: indoors
Vocabulary: short term effects, long term effects

OBJECTIVE
Students will describe some of the differing viewpoints about tundra and boreal forest fires.

TEACHING STRATEGY
Students will individually evaluate effects of fires and compare them to group evaluations. Students will discuss how different views and opinions are generated.

MATERIALS
- "Effects of Fire on the Tundra Game Cards" or
- "Effects of Fire on the Boreal Forest Game Cards", cut into cards

TEACHER BACKGROUND
Refer to the "Facts about Fire, Unit 2, Effects of Fire" for background information.

ADVANCED PREPARATION
Cut out and laminate game cards from "Effects of Fire on Tundra" or "Effects of Fire on the Boreal Forest", depending on your location.

PROCEDURE

1. Discuss with students that people perceive the effects of fires differently.

2. Divide the class into groups of 8-12 students.

3. Have students number a piece of paper 1-18 down the left side. Label two horizontal column headings across the page as "My Vote" and "Group Vote." For the student's reference, write the following answer code on the board: B = Beneficial, H = Harmful.

4. Have one student in each group read each of "Effect of Fire on the Forest or Tundra" cards to the group. Do not read references to ST(short-term) or LT(long-term). Have students write whether they think the effect is beneficial (B) or harmful (H) in the "My Vote" column.

5. When individual students have voted on **all** the effects, give each student one or two "Effect of Fire on the Forest or Tundra" cards.

6. In numerical order, have students read their cards aloud to the group and have the group vote. The group is to vote by a show of hands whether they thought the effect was beneficial or harmful. Have students record the results in the "Group Vote" column. They should record both the "beneficial" and "harmful" votes for each card.

7. Have the student who read the card tell why he or she decided the effect was beneficial or harmful. Remember that it may be difficult to determine whether an effect was beneficial or harmful.

8. Bring the class back together to discuss the following questions with the students:
    a. How did individual student answers compare with class answers?
    b. Was it difficult to decide if some effects were beneficial or harmful?
    c. If you were a developer would you have a different view than if you were a hunter or a trapper?
    d. What are some important things to remember when facing an issue with many opposing views and interests?

9. Opinions about fire effects may be influenced by whether a person perceives the effects to be short-term or long-term. Each card is coded ST (short-term effect in 0-8 years), LT (long term effect in 9 or more years), or a combination. Write the headings "short-term," "long-term," and "combination" on the board. List each effect card under the appropriate heading (or headings). Have the class brainstorm other fire effects third write them on the board under the appropriate heading.

EVALUATION

Select several of the questions above for students on which the students should write.

EFFECTS OF FIRE ON THE TUNDRA
Game Cards

Cut each game card.

Smoke causes delays in airplane flights (ST)	Fire increases the depth of the active layer (the soil that seasonally thaws above the permafrost (ST)
Ash from both prescribed burns and wildland fires adds to the greenhouse effect (LT)	Some species of lichens take as long as 100 years to recover after a burn (LT)
Fire removes above ground vegetation and blackens soil so the soil can be warmed by the sun for better plant growth (ST)	Food for wildlife and humans is destroyed by fire (ST)
Fire returns nutrients to the soil (ST)	Fire creates plant diversity and vegetation mosaics (ST & LT)
Hot, intense fires destroy underground plant parts, making revegetation very slow in the area (ST)	Re-sprouting of grasses, sedges, and shrubs provides food and cover for some wildlife after a fire (ST & LT)

In very old growth tundra, lichens do not grow well. Light fires have been known to stimulate regrowth of lichens (ST & LT)	Caribou will forage on a recent burn for 1-2 years and then may not use the area for a number of years (ST)
Recent burn areas are good hunting grounds for some predators (ST)	Fire fighting requires the purchase of local goods and services (ST)
Trapping and hunting are better in recently burned areas (within 5-10 years after burn) (LT)	Fires burn cabins and trap lines (ST)
Smoke from fires makes your eyes and throat burn (ST)	Fires provide fire suppression jobs (ST & LT)

EFFECTS OF FIRE ON THE BOREAL FOREST
Game Cards

Cut each game card.

Fire removes vegetation and blackens soil, so the soil can be warmed by the sun for better plant growth (ST)	Recent burn areas are good hunting grounds for birds of prey (ST).
Fire returns nutrients of plants and animals to the soil (ST).	The shrub stage of a burn area provides abundant cover for small mammals such as mice, which are food for larger mammals such as fox (LT)
Bare, burned soil erodes easily (ST & LT)	There is little, if any, food and cover for most wildlife immediately after a fire (ST)
Some plants, like black spruce, depend on fire to reproduce (LT)	Fires provide fire suppression jobs (ST & LT)
Fire sometimes helps to prevent insect attacks since it often encourages plant diversity in an area (LT)	Trapping and hunting are better in recently burned areas (within 5-10 years after burn) (LT).
Food for wildlife and humans is destroyed by fire (ST)	Fires burn cabins and trap lines (ST)
Smoke from fires makes your eyes and throat burn (ST) Burn areas have dead trees (snags) for cavity-nesting birds, including woodpeckers and some ducks such as goldeneye and bufflehead (ST & LT).	Ash from both prescribed burns and fires adds to the greenhouse effect (LT).