

Information Station #1. Fire Behavior

Location: Area with substantial duff, at least in pockets, substantial surface fuel, and some thickets of seedlings and saplings (ladder fuels). Fairly steep hillside visible.

Students Tasks		Acceptable Answers
a	Show or describe to me the two parts of the Fire Triangle that are present here.	Fuel and oxygen. (Heat for ignition is missing.)
b	Show me three kinds of fuel that burn in a surface fire.	Litter, herbs, shrubs, tree seedlings and saplings (not crowns of large trees, not soil or duff).
c	Show and explain what fuels help a surface fire become a crown fire.	“Ladder fuels” are needed. This means there have to be places where fuel (usually tree foliage) is continuous from near the surface into the crowns of the large trees.
d	[Pointing to a hillside with dense forest cover] Tell me one way in which a surface fire would be likely to change if it reached that hillside over there.	On the hillside, fire will probably move faster & is more likely to crown.
e	Tell me one way you think a surface fire might benefit this forest.	Reduce risk of crown fire, increase forage, increase growth rate or improve health of large trees.

Information Station #2. Shrubs, Herbs, Pathogens

Location: a couple of shrubs obvious, also some grassy and herbaceous vegetation. Also, several mistletoe-infested trees should be visible.

Students Tasks		Acceptable Answers
a	[Pointing to shrub or herb] Show or describe to me one part of this plant that is likely to survive most fires.	Underground parts or base of stems
b	[Pointing to witches' -broom from dwarf mistletoe] Tell me one way in which this mistletoe affects the tree (besides making it look funny).	Reduces tree growth and eventually causes death; forms potential habitat for small birds and their predators—such as owls, hawks, and American martens.
c	Do you think mistletoe increases in this kind of forest without fire? Give a reason for your answer.	Douglas-fir mistletoe increases because it has lots of time to spread from tree to tree and because prevalence of its host tree increases.
d	[Pointing to a large pine] Tell me two ways in which a Pileated Woodpecker or Flammulated Owl might use this tree.	Nest in hole; roost in hole; Pileated Woodpeckers feed on insects, especially ants; Flammulated Owls perch on branches to hunt for insect prey.
e	Tell me one season of the year when elk would be more likely to use this habitat (if they live in the area and can get to it easily) than lodgepole pine or whitebark pine forest. Give one reason.	Winter or spring—because this area has less snow and melts out earlier than lodgepole pine and whitebark pine forests.

Information Station #3. Tree Taxonomy & Adaptations

Location: Near a mature ponderosa pine and a mature Douglas-fir. No cottonwood or Engelmann spruce present.

Students Tasks		Acceptable Answers
a	Show me a ponderosa pine tree.	
b	Show me a Douglas-fir tree.	
c	Show me which kind of tree is more likely to survive a surface fire. Give one reason why this is so.	Ponderosa pine; thicker bark, thicker buds, higher and more open tree crown than that of Douglas-fir.
d	Show me which kind of tree was probably most numerous here 100 years ago. Give me one reason why.	Ponderosa pine; frequent surface fires used to eliminate most Douglas-firs. In the early 1900s, most large ponderosa pines were logged out.
e	There are no Engelmann spruce trees or cottonwoods here. Why don't they grow on this particular spot?	Site is too dry. Those species need more moisture.

Information Station #4. Fire History

Location: Near a fire scarred tree or stump, preferably ponderosa pine. *Not* recently burned.

Students Tasks		Acceptable Answers
a	Show me some evidence that a fire burned here a long time ago.	Fire scarred tree.
b	[If first student didn't point out the fire scar, show it to students and say it's a scar made by fire in the past.] What kind of fire behavior is most likely to make a fire scar like this on a tree?	Surface fire, possibly combined with ground fire; not crown fire.
c	Show or explain to me how I could use this tree to figure out how many fires burned here and when they occurred.	Obtain a cross section (or possibly an increment core), count the fire scars, then count the growth rings between fire scars.
d	Tell me two ways in which this forest ecosystem looks different from the way it looked 100 years ago. [NOTE: if students come up with answers about human development, ask them to try again, focusing on the forest ecosystem.]	More young trees now—especially more young Douglas-firs; less grass now; fewer large pines, especially if the area has been logged; fewer shrubs; the shrubs present are larger, with more dead material in them.
e	Do you think fires have been less frequent here in the last 50 years than they were in the 1700s and 1800s? If so, how do you know? If not, how do you know?	Yes. We can tell from studying fire scars and from historic reports. The history of the past century tells that Native Americans were moved to reservations and that Euro-American settlers and their descendants have tried very hard to put out all fires.

Information Station #5. Homes and Fire

Location: At least one home in a forested environment.

Students Tasks		Acceptable Answers
a	[Pointing to a nearby spot with dense trees and brush] Pretend this is your land. If you were going to build your home here, tell me two things you'd do to the land to make it safer from wildland fire.	Well prepared= Within 10 m of the house (30 m on a hillside), there should be no ladder fuels, and trees and shrubs should be \geq 5 m apart. If home is on a hillside, it should be set back from top of slope. Road should be wide enough for car and fire engine to pass.
b	[Pointing to a house in a wildland setting] Tell me one way in which this house is well prepared for wildland fire—that is, one safe thing about it.	Well prepared= non-shake roof, wood stored away from home, weeds cleared from next to house, tree limbs cleared from roof and chimney area, no leaves on roof.
c	[Pointing to the same house] Tell me one way you could improve this house's protection from wildland fire.	
d	Pretend the nearest lodgepole pine forest is a mile away. If a fire starts in that lodgepole pine forest, should this homeowner worry about it? Explain—give one reason why or why not.	Yes, because fires can travel that far quite easily and quickly; and yes, because smoke from a fire that close would very likely surround this home.
e	Safety is one reason you might change a forest—cut some trees, prune branches, spray, mow or plant. Can you think of two other reasons for making changes on forest land?	Wildlife habitat quality, revenue from logs, soil and watershed protection, scenic quality, other conservation goals.

Information Station #6. Lodgepole and Whitebark Pine

Location: At least some lodgepole pine cover should be visible. If this isn't possible, at least some high slopes with dense tree cover should be visible.

Students Tasks		Acceptable Answers
a	Look at the area around here. Can you see any place around here that would be a good location for lodgepole pine to grow? Explain.	Yes—high on a ridge or cold spot. No—this area is too warm for lodgepole pine to compete with other trees.
b	Tell me one way in which the location of a whitebark pine forest would be different from the location of a lodgepole pine forest.	Higher elevation, colder, ridge top.
c	Tell me one way in which fires from a lodgepole pine forest usually differ from fires that used to happen here.	Less frequent, more severe, more likely to crown.
d	Here are cones from a pine tree that grows here. This tree's seeds would probably not survive a crown fire because the cones open as the seeds ripen, and the seeds drop out. But other pines have ways to protect their seed from crown fire. Name one of these pines and explain how its seeds are protected.	Lodgepole pine protects some of its seeds by keeping them in the cone until a fire passes through and its heat opens the cones. Whitebark pine protects its seeds by having Clark's nutcrackers bury them underground, often in recently burned places.
e	Name one kind of plant, insect, or fungus that is likely to kill a lot of trees in a lodgepole or whitebark pine forest.	Mountain pine beetle, white pine blister rust.