

“You Decide!” Kit

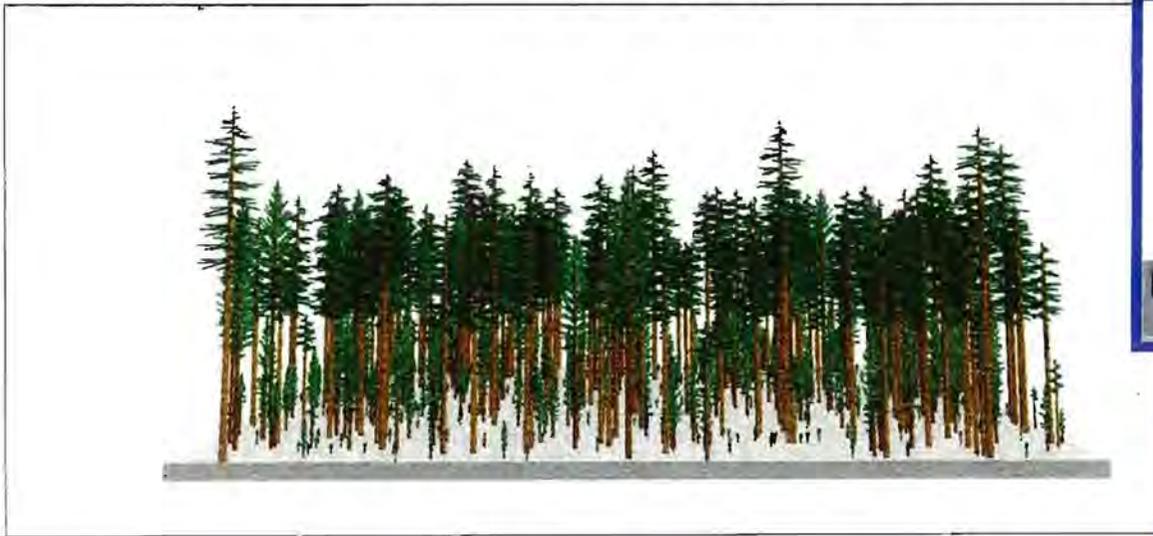
1 page of notes about the “You Decide!” brochures

5 brochures-- each 5 or 6 pages in a three-fold document protector

Home in the Pines

"You Decide!" Challenge #1

A forested area of 8 acres belongs to you.
Here is a cartoon drawing of your forested land:



Here is more information about your property:

Location: Slopes just above valley floor, surrounded by private land

Buildings: Your home, a two-car garage, an old barn, and an old *old* outhouse

Neighbors: Three small forested properties are next to your land. They are all privately owned. Each one has a nice home on it and people living there. One of your neighbors has a small barn and horses.

Trees: Your land is mostly forested, but the buildings are in a clearing.

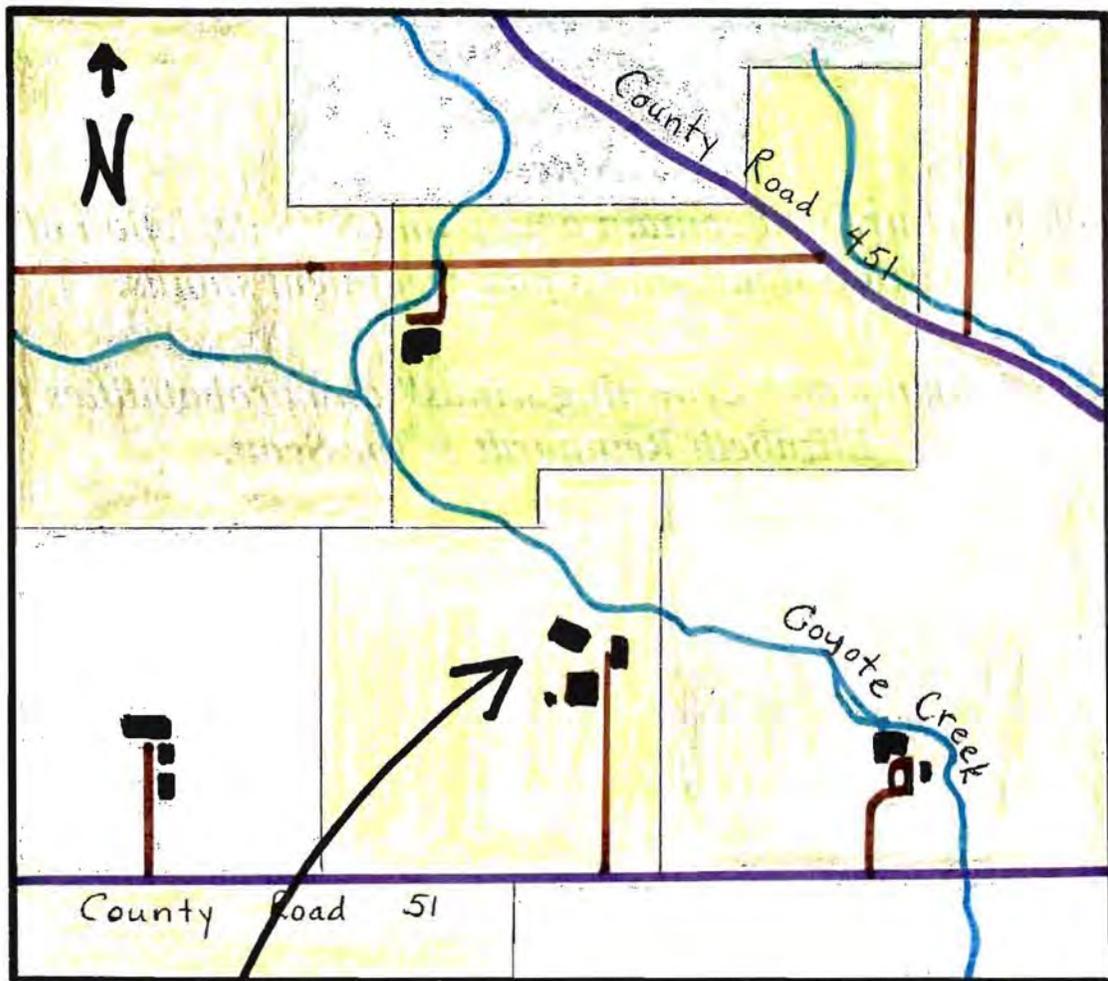
Time since Fire: 90 years. Your property has many large, old stumps, some with thick bark still attached. Many of them have fire scars.

Risk of Crown Fire: The local Fire Department tells you the likelihood of crown fire is very high in this part of the county. Look on the page to the left, to see how your forest would look if a fire started on a very dry summer day with high winds.

Other information: One of your neighbors has had two trash fires get away in the last few years.
Another neighbor harvested all the trees on her property, then planted pines for \$150/acre.

Expenses: Taxes on your forested land are \$200 a year.
You could probably sell your land in 2-hectare lots for \$10,000 profit on each one.

Here's a map of the area where you live:



your home

Here's your CHALLENGE!

1. *Decide what your goals are for your property.*

Think about goals that include some of these ideas: safety, protection of buildings, how you want the area to look, wildlife habitat, expenses, earnings. How do you feel about the risk of crown fire on your property? If a crown fire occurred there, would it have any good effects?

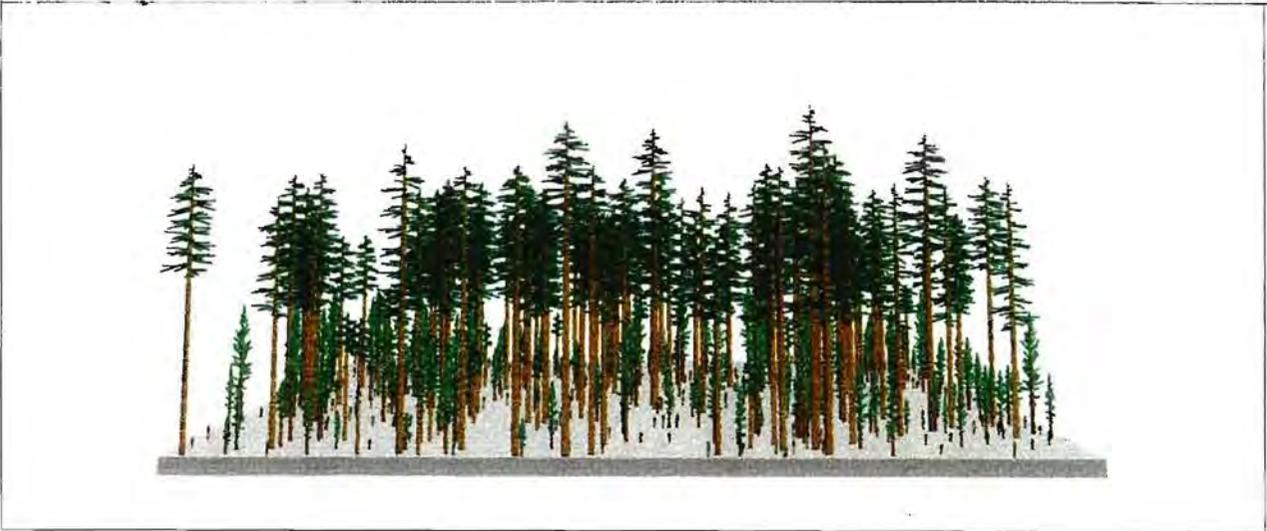
2. *How can you meet your goals? Think about the next 10 years.*

Here is some information about changes you *might* choose to make. The list shows how many trees are on your property now. Then it shows three plans for cutting trees, how many trees would remain, and what these "treatments" would cost you or earn for you. The next page shows a cartoon picture of a portion of the forest after each possible treatment.

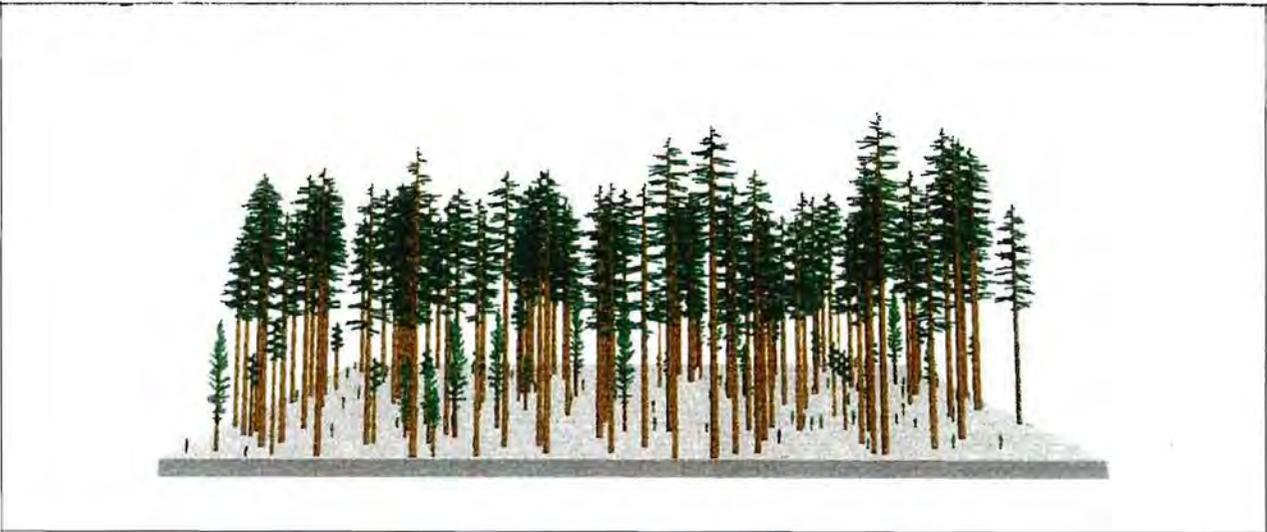
		Trees/acre remaining (grouped by diameter at breast height)				Income /acre*
		14-20 in	8-14 in	2-8 in	<2 in	
Condition right now		10	150	220	300	none
Treatment 1	Harvest to develop conditions for old growth pine	10	100	200	300	+\$390
Treatment 2	<i>After 1</i> , cut small trees that can't be sold (<10") and burn debris in piles. Leave mostly pines.	10	75	50	100	-\$150
Treatment 3	Harvest biggest trees only, leave some forest cover and get a lot of income. Leave mostly Douglas-firs.	0	30	220	300	+\$1,690

*A negative number means a logger couldn't make money on this work; you'd have to pay someone to do it.

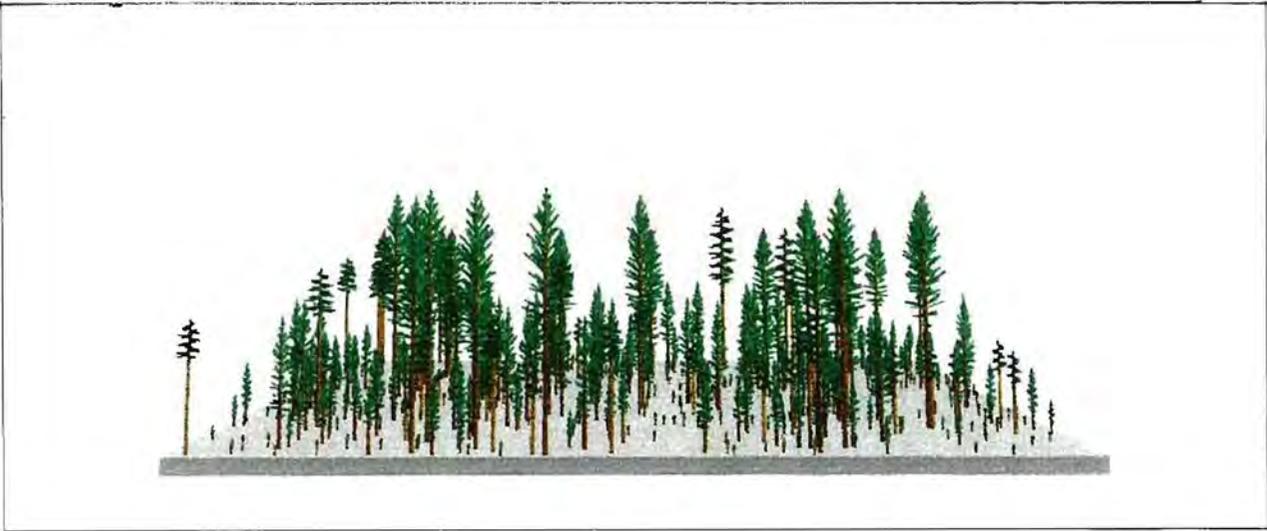
After Treatment 1:



After Treatment 2:



After Treatment 3:



What about fire? All three treatments listed in the table would protect your forest from crown fire-- at least a little bit. How strong would the wind have to be, to push a crown fire through the forest?

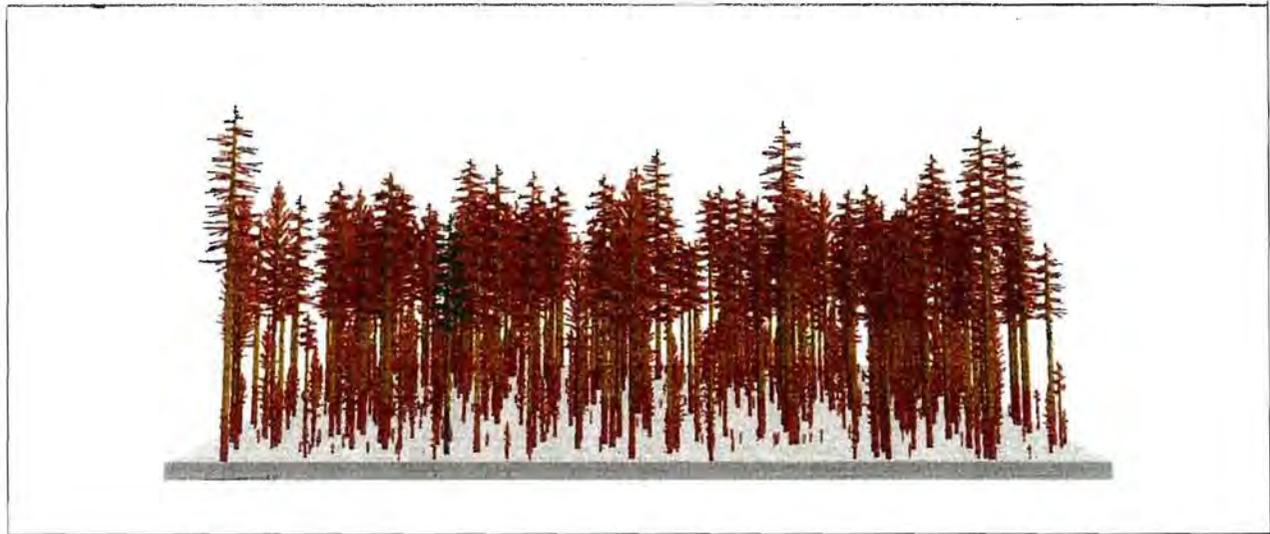
The way the land is right now, the wind would have to be 17 miles per hour or greater. Winds that strong occur every summer. At a weather station in western Montana, the wind speed is measured once a day, in the middle of the afternoon. Winds greater than 17 mph have been measured on about 7 percent of summer days.

After Treatment 1, the tree crowns are not as close together. Stronger wind would be needed to push a crown fire through the forest-- 22 mph or greater. At the same weather station, winds this strong were only observed on one or two days each summer.

If you did Treatment 2 or Treatment 3, the wind would have to be at least 27 miles per hour for a crown fire to come through. Winds this high were measured at the weather station only nine times in fifteen years.

3. Make a 10-year plan for your land. Include these ideas in your report:

- a. What are the three main goals for your property? Using these goals, show how you want your property (buildings and land) to look ten years from now. Use a drawing. For ideas, look at the drawings here, the feltboard kit for ponderosa pine (*Creepy, Crawly Fires*), and the *Pathways in Time* booklet for Ponderosa pine/Douglas-fir forest.
- b. What changes do you plan to make on your buildings and land each year for 10 years to meet these three goals? (You may plan no changes in some years.)
- c. Where do you plan to make each change? Make a map or copy the one here and make notes on it to show your plans..
- d. Will there be any costs or earnings from the changes? List them one by one and calculate the total costs or earnings over the ten years.



What if a crown fire passed through??

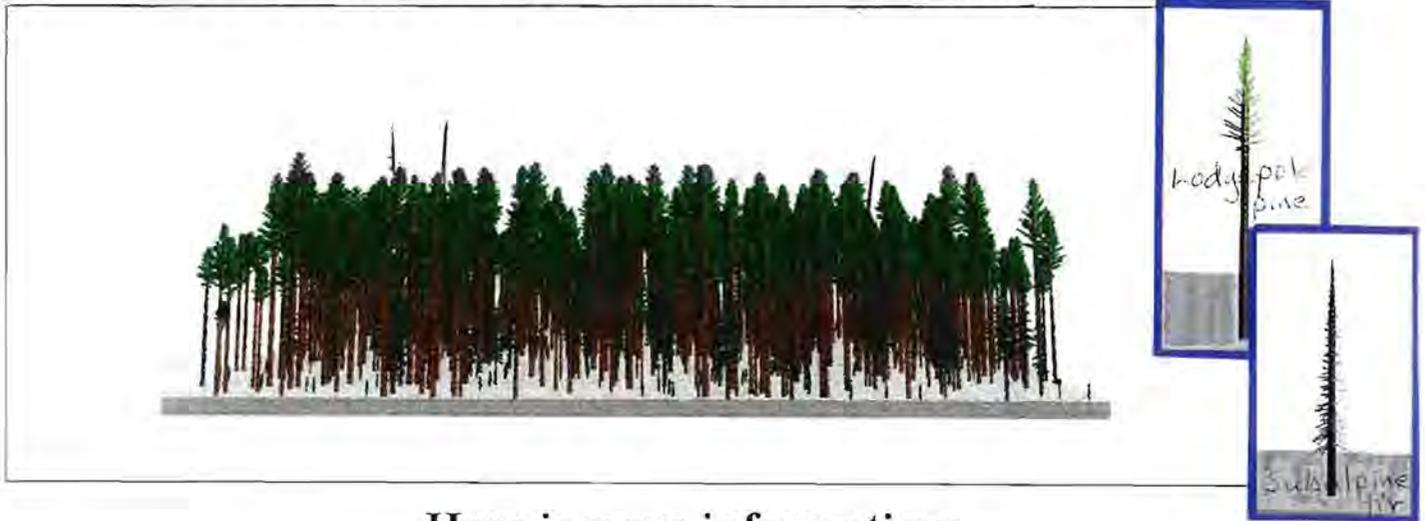
Suppose that, on a hot summer day with strong very winds, a crown fire burned through your property. Here is how it would look the next day.

Cabin in the Lodgepole Woods

"You Decide!" Challenge #2

A forested area of 25 acres belongs to you.

Here is a cartoon drawing of part of your forest:



Here is more information:

- Location:** 7 miles uphill from the valley floor, in the midst of lodgepole pine forest.
- Buildings:** A small cabin that you built yourself 25 years ago and an outhouse. The trees are very close to the house, some actually leaning over the roof.
- Neighbors:** Your property is surrounded by National Park land. Your nearest human neighbor is about 1/4 mile down the road. This neighbor also has a cabin.
- Trees:** Most of your land is covered with lodgepole pines standing close together. Most of them are about the same height. Underneath are a few spindly pines and quite a few subalpine firs. There is a 2-acre meadow not far from the cabin. Sometimes elk with calves graze there in the spring.
- Time since Fire:** About sixty years ago, most of the trees on your land and the hillsides nearby burned in a crown fire. Some patches right next to the creek, and a few on the ridge tops, did not burn. There are still some fire-killed trees on your property, sticking out like matchsticks from the forest that has grown in since the fire.

Risk of Crown Fire:

When you bought this property 25 years ago, the Park Ranger down at Milk Creek Ranger Station told you about the 1939 crown fire. He didn't think it would be likely to burn again "soon," but he also said, "This kind of forest always does burn, sooner or later."

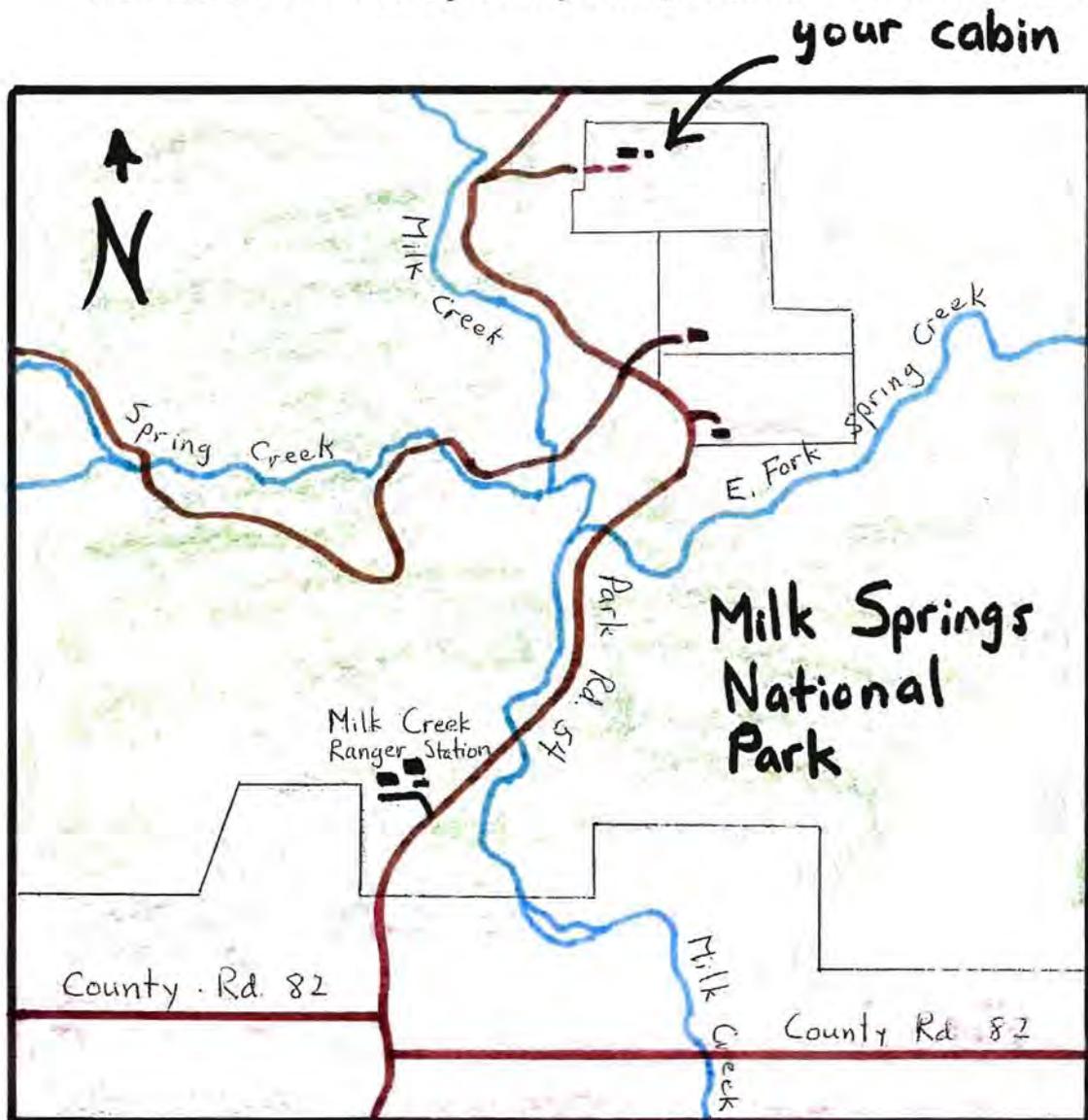
Other information:

Last year, you noticed the needles on several of your lodgepole pines turning red. When you looked closely, you saw lumps of pitch on the bark where mountain pine beetles had bored in to lay their eggs. You think the pine beetle larvae have killed the trees, and you wonder how many others will be attacked by beetles.

Expenses:

Taxes on your forested land are \$40 a year.

The Park Service would probably offer you about \$20,000 for your land.



Here's your CHALLENGE!

1. *Decide what your goals are for your property.*

Think about goals that include some of these ideas: safety, protection of buildings, how you want the area to look, wildlife habitat, expenses and earnings. How do you feel about the possibility of crown fire on your property? Do you think crown fire would produce any benefits on your forested land?

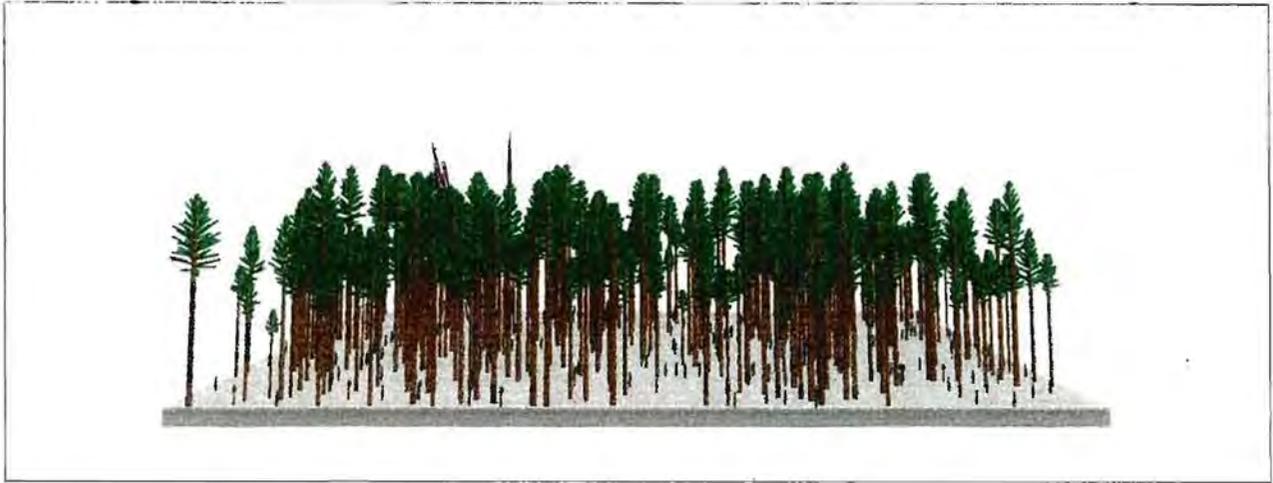
2. *How can you meet your goals? Think about the next 10 years.*

Here is some information about changes you *might* choose to make. The list shows how many trees are on your property now. Then it shows three plans for cutting trees, how many trees would remain, and what these "treatments" would cost you or earn as income. The next page shows a cartoon picture of one acre of the forest after each treatment.

		Trees/acre remaining (grouped by diameter at breast height)			Income/ acre*
		8-14 in	2-8 in	<2 in	
Condition right now		150	500	250	none
Treatment 1	Thin to reduce fire hazard & increase growth of pines.	100	200	250	+\$770
Treatment 2	<i>After 1</i> , cut many of the small trees that can't be sold (<10") and burn debris in piles.	100	50	80	-\$150
Treatment 3	Harvest only the biggest trees. Leave forest cover, mainly fir trees, and earn substantial income.	0	300	250	+\$2,070

*A negative number means a logger couldn't make money on this work; you'd have to pay someone to do it.

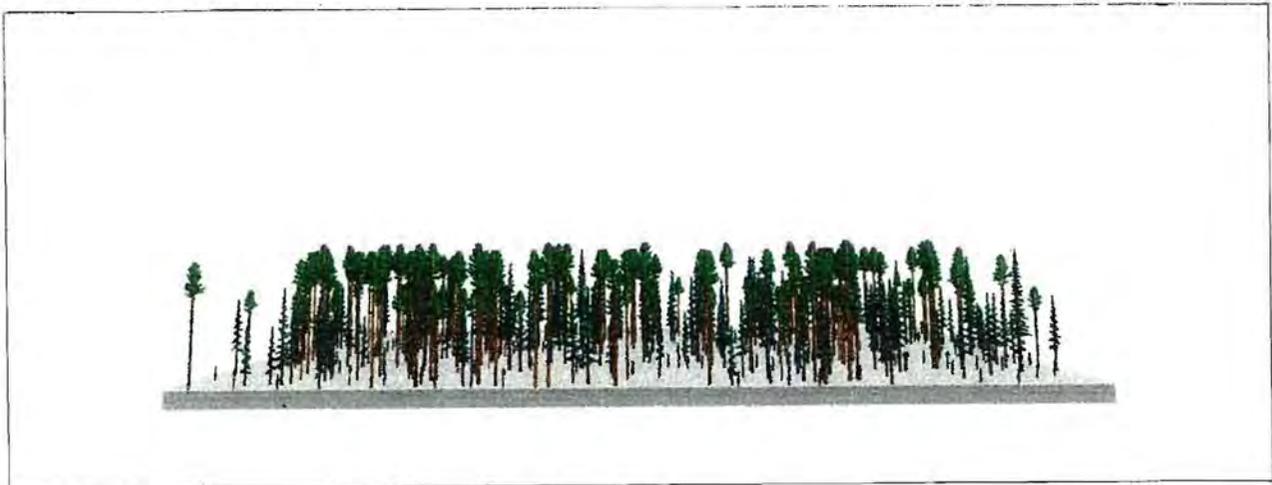
After Treatment 1:



After Treatment 2:



After Treatment 3:



What about fire? All three treatments listed in the table would protect your property from crown fire-- at least a little bit. How strong would the wind have to be, to push a crown fire through the forest?

The way the land is right now, the wind would have to be 10 miles per hour or greater. Winds that strong are quite common in the summer. At a weather station in western Montana, the wind speed is measured once a day, in the middle of the afternoon. Winds greater than 10 mph have been measured on about 20 percent of summer days.

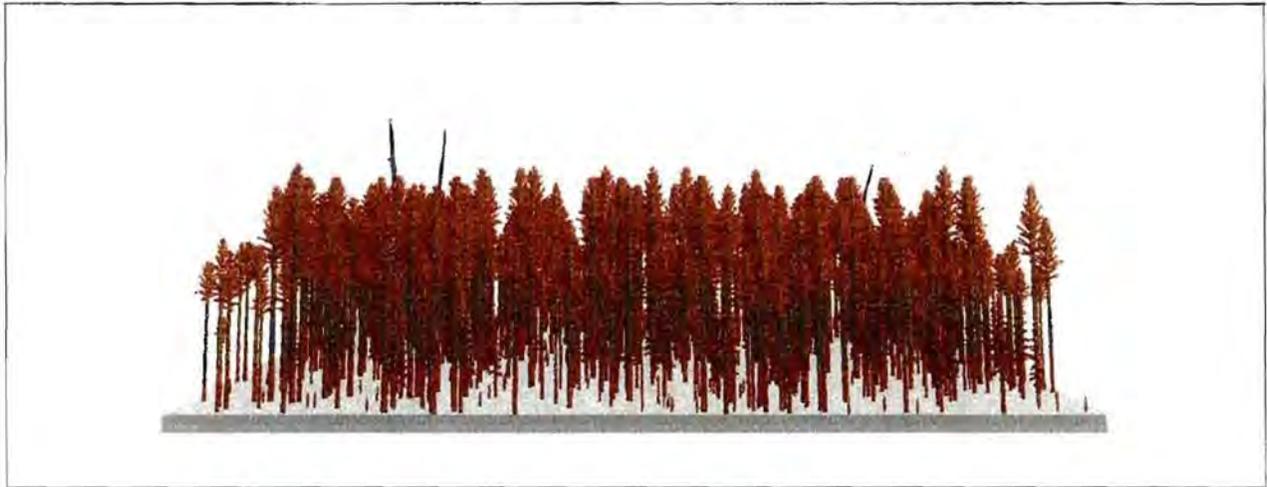
After Treatment 1 or Treatment 3, the tree crowns are not as close together. Stronger wind would be needed to push a crown fire through the forest-- 14 mph or greater. At the same weather station, winds this strong were only observed on three or four days each summer.

If you did Treatment 2, the wind would have to be at least 18 miles per hour for a crown fire to come through. Winds this high were measured at the weather station only five times in eight years.

3. Make a 10-year plan for your land. Include these ideas in your report:

- a. What are the three main goals for your property? Using these goals, show how you want the area (buildings and land) to look ten years from now. Use a drawing. For ideas, look at the cartoon forests here, the flannelboard kit for lodgepole pine (*Roaring Tree-top Fires*), and the *Pathways in Time* booklet for Lodgepole pine/Subalpine fir forest.
- b. What changes do you plan to make on the land and buildings each year for 10 years to meet your three goals? (You may plan no changes in some years.)
- c. Where do you plan to make each change? Make a map or copy the one here and make notes on it to show your plans..
- d. Will there be any costs or earnings from the changes you make? List them one by one and calculate the total costs or earnings over ten years.

What if a crown fire passed through??

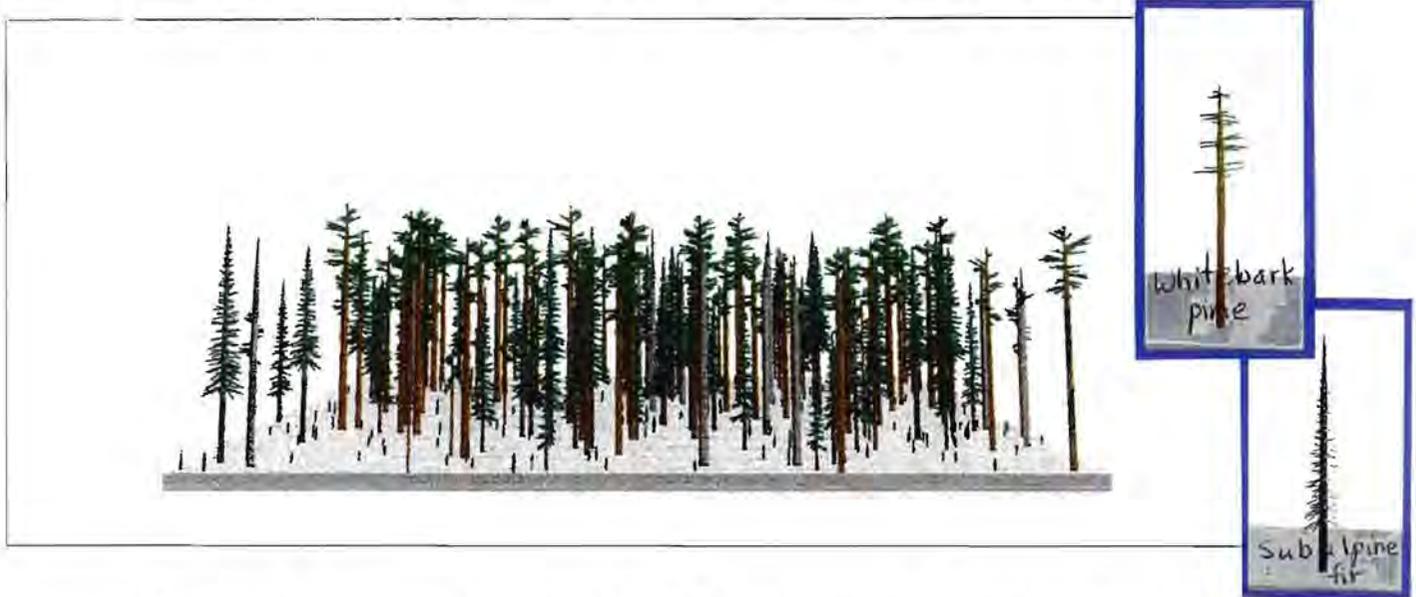


Suppose that, on a hot summer day with strong very winds, a crown fire burned through your property. Here is how it would look the next day.

Questions in the High Mountains

"You Decide!" Challenge #3

You are a wildlife biologist working in a high-elevation area in the midst of Sasquatch National Forest. Your "management area" covers about 2,000 acres.



Here is more information about your management area:

Location: About 15 miles uphill from the valley floor, all Forest Service land.

Buildings: None.

Neighbors: The nearest private land is 6 miles away.

Trees: The trees grow in clusters, with grassy patches in between.

Time since Fire: 100 years since surface fire, 250 years or longer since crown fire.

Risk of Crown Fire: Probably greater than it was 100 or 200 years ago, but not likely unless a crown fire spreads uphill from the lodgepole pine forest below.

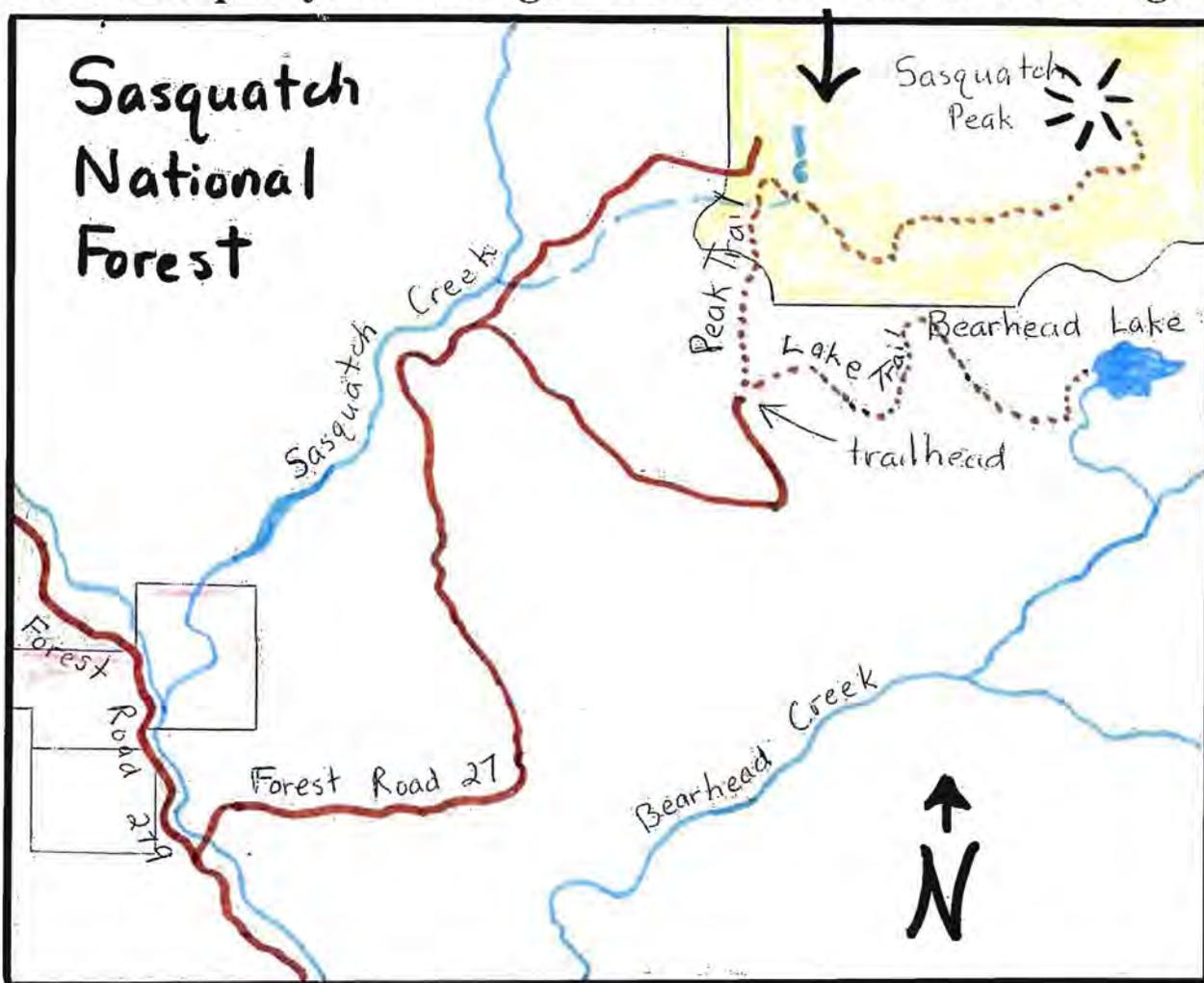
Other information: Most of your whitebark pines are infected by white pine blister rust, so they are not producing cones and will eventually die. Many are already dying because pine beetles attacked after the rust weakened them. When there is a good cone crop, Clark's Nutcrackers harvest and then bury the seed.

Every August, a small herd of elk comes to this part of the forest. They graze in the meadows and roll in muddy places near ponds and streams.

Many patches of the forest are filling in with small firs, and firs are growing into the grassy areas between patches of whitebark pines.

Expenses: The Sasquatch National Forest is willing to invest \$2,500 per year in your management area because it is good wildlife habitat and many people visit the area in summer.

Here's a map of your management area and its surroundings:



Here's your CHALLENGE!

1. *Decide what the goals are for your management area.*

Think about goals that include some of these ideas: improving conditions for whitebark pine seedlings, safety, how you want the area to look, wildlife habitat, expenses. Is there any way fire might benefit this forest? If lightning started a fire here, would you always want to put it out?

2. *How can you meet your goals? Think about the next 10 years.*

You may want to leave the stand alone and let nature take its course. Keep in mind that whitebark pines don't grow well in the shade of other trees. If you are interested in other possibilities, here is information about changes you *might* make in your management area. The list shows how many trees are present now. Then it shows three plans for cutting trees, how many trees would remain, and what these "treatments" would cost you or earn as income. The next page shows a cartoon picture of one acre of the forest after each treatment.

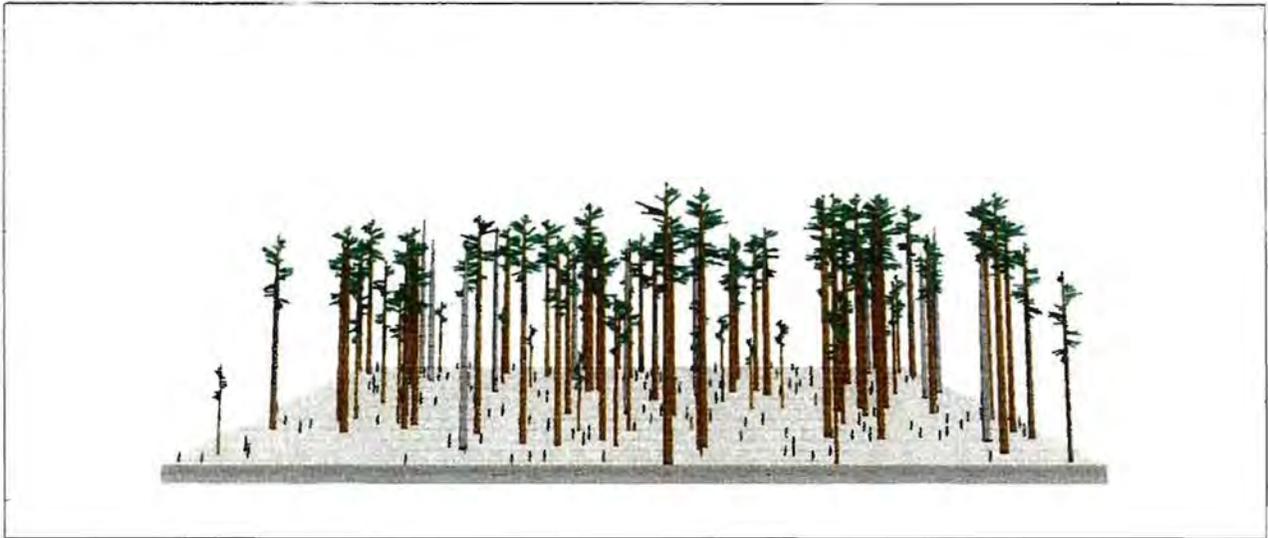
		Trees/acre remaining (grouped by diameter at breast height)				Income/acre*	
		>8 in		2-8 in			<2 in
Condition right now		Pine	Fir	Pine	Fir	150	none
		50	40	30	50		
Treatment 1	Harvest fir trees only	50	0	30	0	150	+\$260
Treatment 2	<i>After 1</i> , cut small trees that can't be sold (<10") and underburn whole area	50	0	0	0	75	-\$150
Treatment 3	Harvest biggest trees, keeping cover on site and converting to fir	0	0	20	50	150	+\$660

*A negative number means a logger couldn't make money on this work; you'd have to pay someone to do it.

What about Blister Rust? If you leave the forest alone, whitebark pine cone crops will get smaller and blister rust will continue to kill your whitebark pines. Seedlings will have trouble getting started in the shade of the growing fir trees.

If you choose to do any of the treatments above, your forest will have less shade so pine seedlings can grow, but you still may not get seedlings! You can wait for the remaining trees to reproduce-- if they survive and still produce cones. Or you can plant whitebark pine seedlings raised to have some resistance to blister rust. This would cost \$250/acre or more.

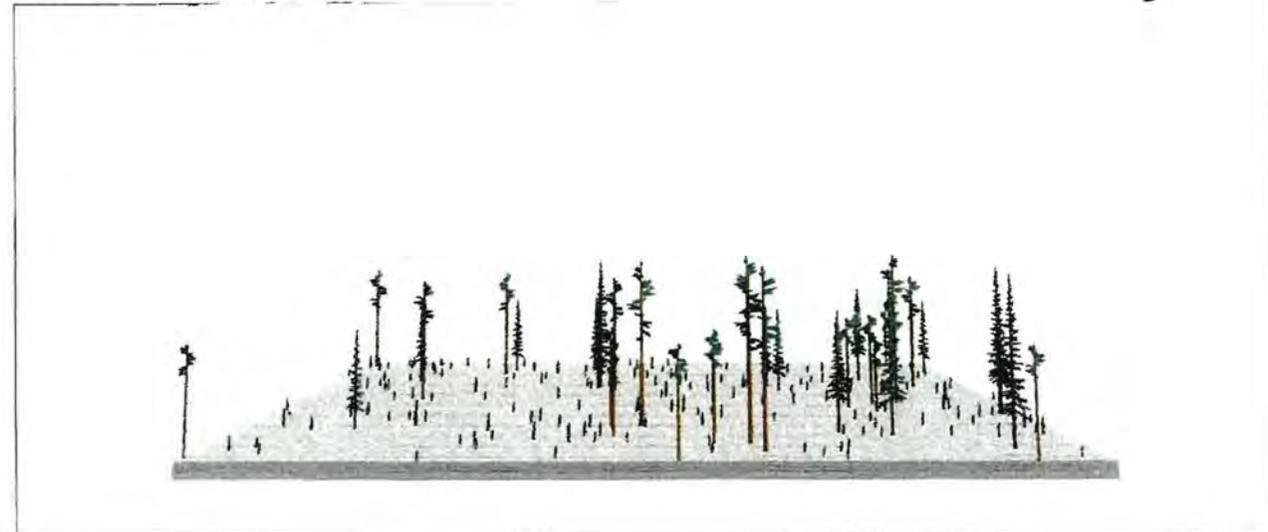
After Treatment 1:



After Treatment 2:



After Treatment 3:



What about fire? All three treatments listed in the table on p. 3 would protect your management area from crown fire-- at least a little bit. How strong would the wind have to be, to push a crown fire through this high, open forest with its clusters of trees?

The way the forest is right now, the wind would have to be 13 miles per hour or greater. Winds that strong are quite common in the summer. At a weather station located on a mountain top in western Montana, the wind speed is measured once a day, in the middle of the afternoon. Winds greater than 13 mph have been measured on about 12 percent of summer days.

After Treatment 1 or Treatment 2, the tree crowns are not as close together and ladder fuels have been removed. Wind would have to be a little stronger to push a crown fire through the forest, but the difference isn't very great. Winds 15 mph or greater could support a crown fire. At the mountain-top weather station, winds this strong have been measured on about seven or eight days in most summers.

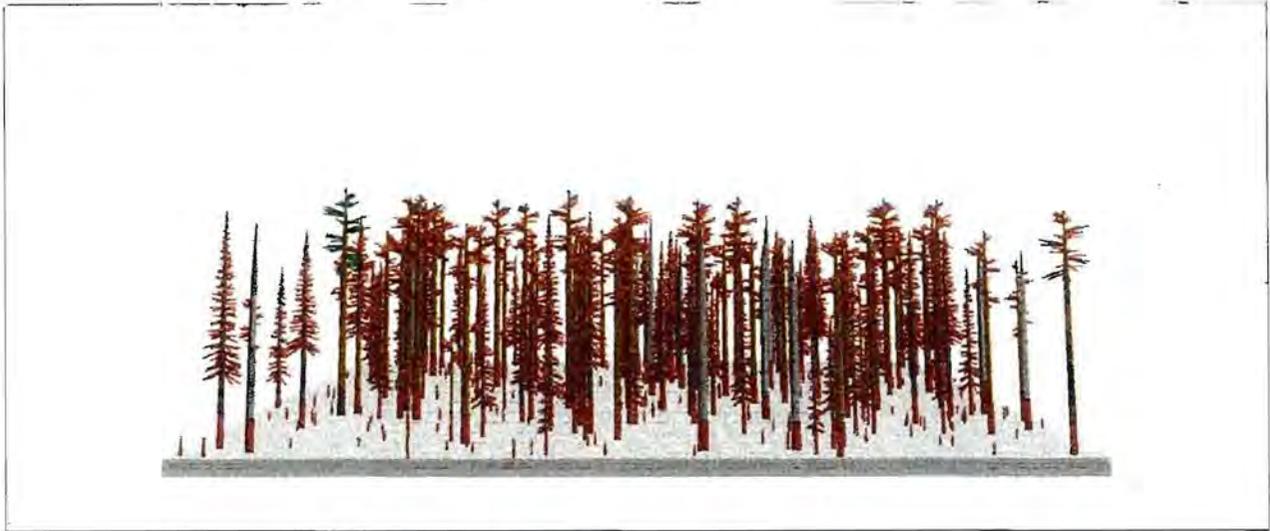
If you did Treatment 3, most of the large trees have been removed. It would be very hard for a fire to spread from crown to crown in this forest.

3. *Make a 10-year plan for your land. Include these ideas in your report:*

- a. What are the three main goals for your management area? Using these goals, show how you want the area to look ten years from now. Use a drawing. For ideas, look at the cartoon forests here, the flannelboard kit for whitebark pine (*Rollercoaster Fires*), and the *Pathways in Time* booklet for Whitebark pine/Subalpine fir forest.
- b. What changes will you try to make each year for 10 years to meet your three goals? (You may plan no changes in some years.)
- c. Where do you plan to make each change? Make a map or copy the one here and make notes on it to show your plans..
- d. Write a budget-- a list of costs and earnings-- to go with your plan. Include the \$2,500/year from the Sasquatch National Forest. Also include any costs or earnings from treatments in the area.

What if a crown fire passed through??

Suppose that, on a hot summer day with strong very winds, a crown fire burns through your management area. Here is how it would look the next day:

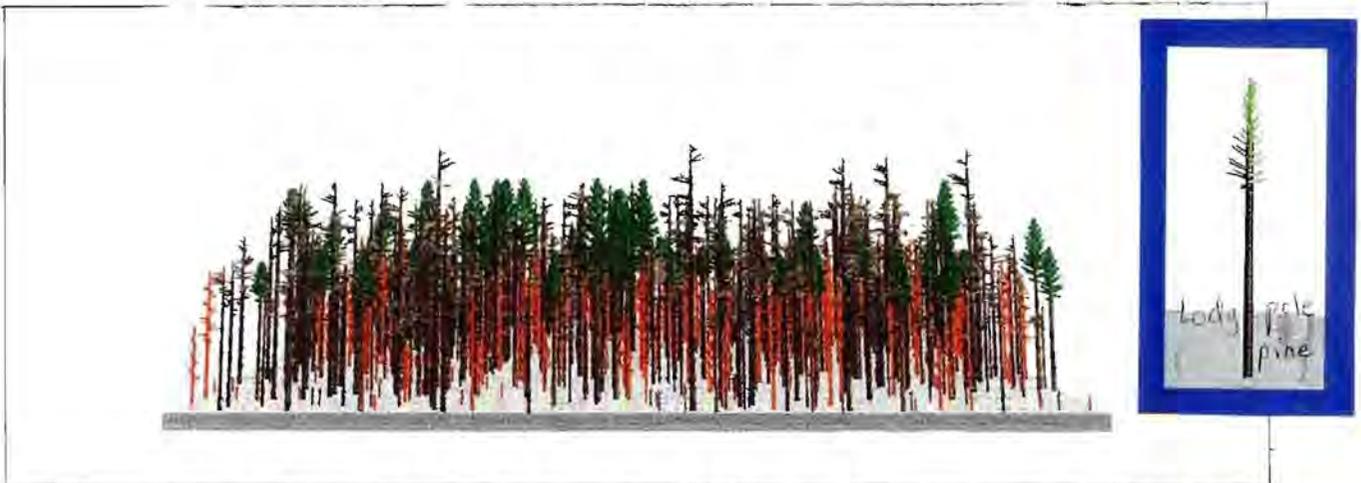


Burnt Trees: A Gift

"You Decide!" Challenge #4

You have just learned that your eccentric aunt has given you a gift: 250 acres of land in the midst of a National Forest. Your property burned in a crown fire last year.

Here is a cartoon drawing of part of your property:



Here is more information about your new property:

Location: About 10 miles uphill from the valley floor, surrounded by National Forest land.

Buildings: None.

Neighbors: Your nearest human neighbor is about 7 miles away.

Trees: Before last year's fire, your property was covered with lodgepole pines and subalpine firs. The trees stood so close together that it was hard to see through the forest. Last year's fire killed more than 90 percent of the trees. It killed all of the young trees on your land.

Risk of Crown Fire? There's practically no "crown" left to burn. In a few years, many of the burned, dead trees will be on the ground. In twenty years or so, nearly all will have fallen.

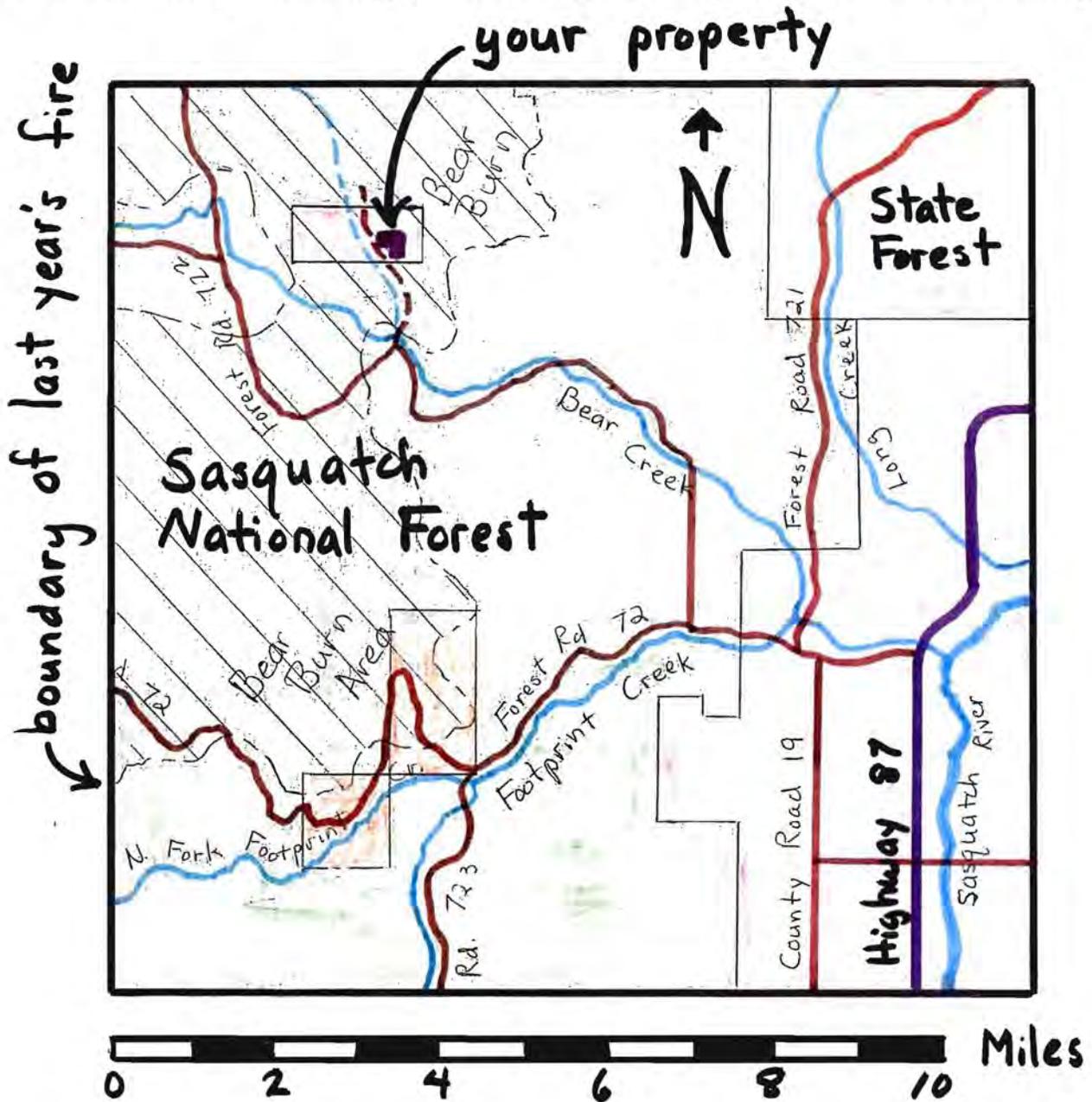
Other information:

When you hiked here last week, you noticed black-backed woodpeckers feeding every day on the burned trees. Some were nesting in burned aspen trees next to a creek. Your aunt tells you that many of the pines were killed by pine beetles before the fire.

Expenses:

Taxes on your forested land are \$200 a year. You could probably sell your land for \$300/acre.

Here's a map showing your new property and its surroundings:



Here's your CHALLENGE!

1. *Decide what the goals are for your property.*

Think about goals that include some of these ideas: safety, buildings you might construct, how you want the area to look, wildlife habitat, expenses and earnings. Do you think you should do anything to re-forest the area faster than nature would? Do you think you should plant different tree species than the ones that grew here before?

2. *How can you meet your goals? Think about the next 10 years.*

Here is some information about changes you *might* choose to make. The list shows how many trees are on your property now. Then it shows two plans for cutting trees, how many trees would remain, and what these "treatments" would cost you or earn as income. The next page shows a cartoon picture of one acre of the forest after each treatment.

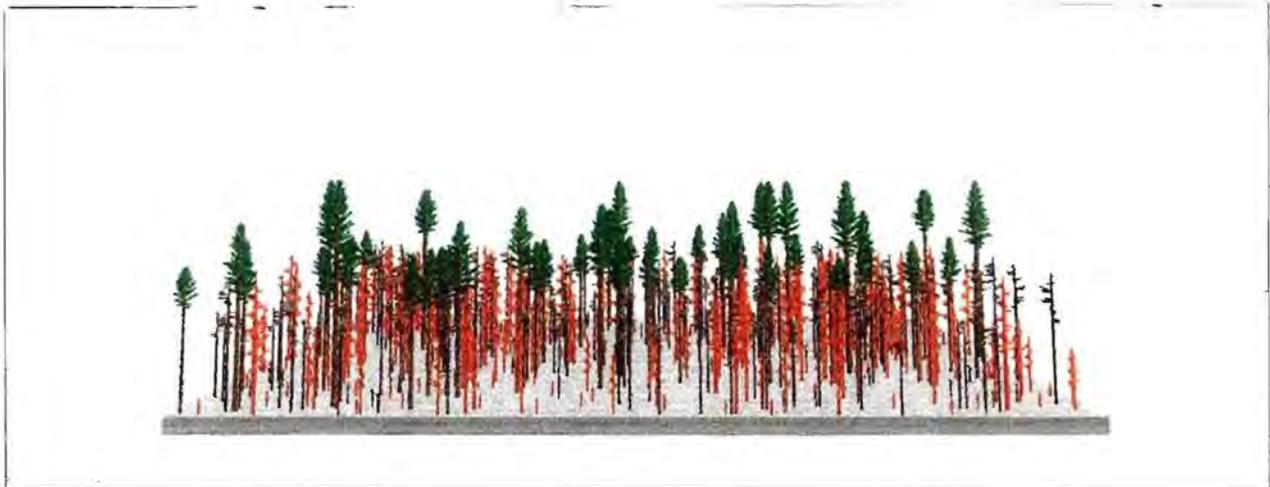
		Trees/acre remaining after treatment (grouped by diameter at breast height)					Income/ acre*
		Live		Dead			
		>8 in	2-8 in	>8 in	2-8 in	<2 in	
Condition right now		20	35	130	465	250	none
Treatment 1	Harvest some clumps of dead trees, leave others for birds	20	35	65	400	250	+\$310
Treatment 2	Harvest burned trees that can be sold (>10")	20	35	0	350	250	+\$630

*A negative number means a logger couldn't make money on this work; you'd have to pay someone to do it.

After Treatment 1:



After Treatment 2:



What about fire? Your property couldn't burn in a crown fire any time soon, but you may want to think about fire hazards as you plan. Eventually, all those standing dead trees will fall to the ground. Do you think that the wood is needed for wildlife habitat? Or are you worried that a surface fire 20 years from now would have too much fuel?

The new forest that grows in on your land could be a lot like the one that just burned. If you think you might build a home or cabin here, you may want to plan it with future safety in mind.

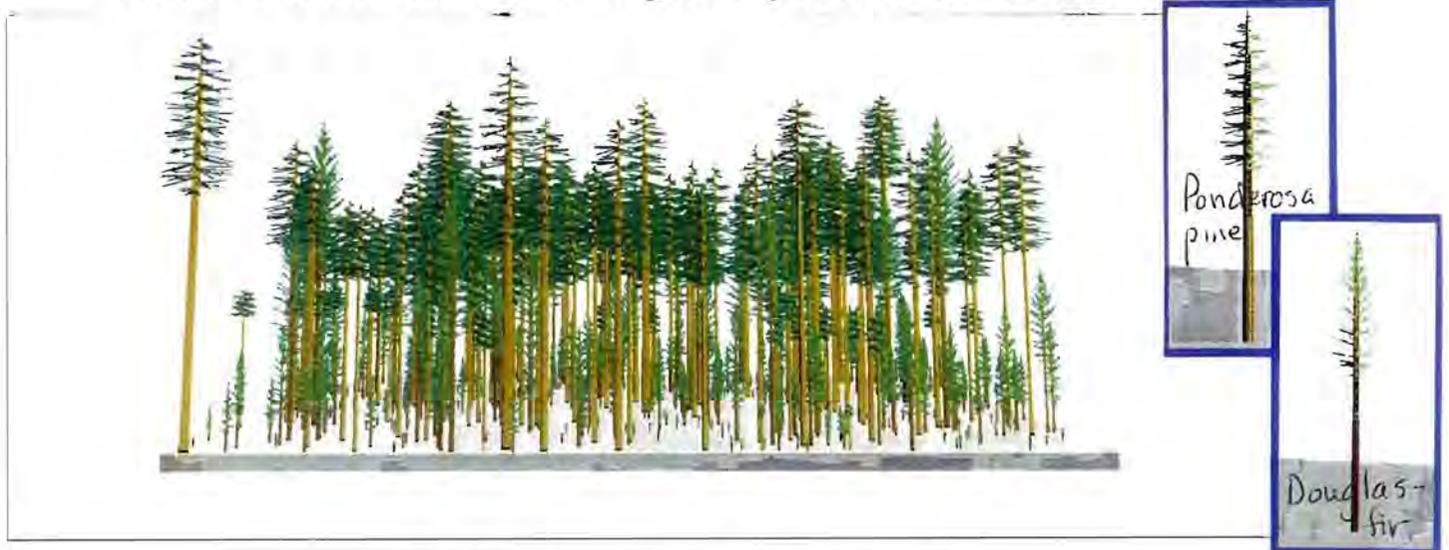
3. *Make a 10-year plan for your land. Include these ideas in your report:*

- a. What are the three main goals for your property? Using these goals, show how you want your land to look ten years from now. Use a drawing. For ideas, look at the cartoon forests here, the flannelboard kit for lodgepole pine (*Roaring Treetop Fires*), and the *Pathways in Time* booklet for Lodgepole pine/Subalpine fir forest.
- b. What changes will you try to make each year for 10 years to meet your three goals? (You may plan no changes in some years.)
- c. Where do you plan to make each change? Make a map or copy the one here and make notes on it to show your plans..
- d. Will there be any costs or earnings from the changes you plan? List them one by one and calculate the total cost or earnings over the ten years of your plan.

Caretaker of Ancient Forest

"You Decide!" Challenge #5

You work for the Nature Conservancy and are in charge of a 65-acre patch of private land called "*Heart's Content Grove*." It contains the only stand of old-growth ponderosa pines in the County. Some are more than 500 years old. Here is a cartoon drawing of a portion of *Heart's Content*:



Here is more information:

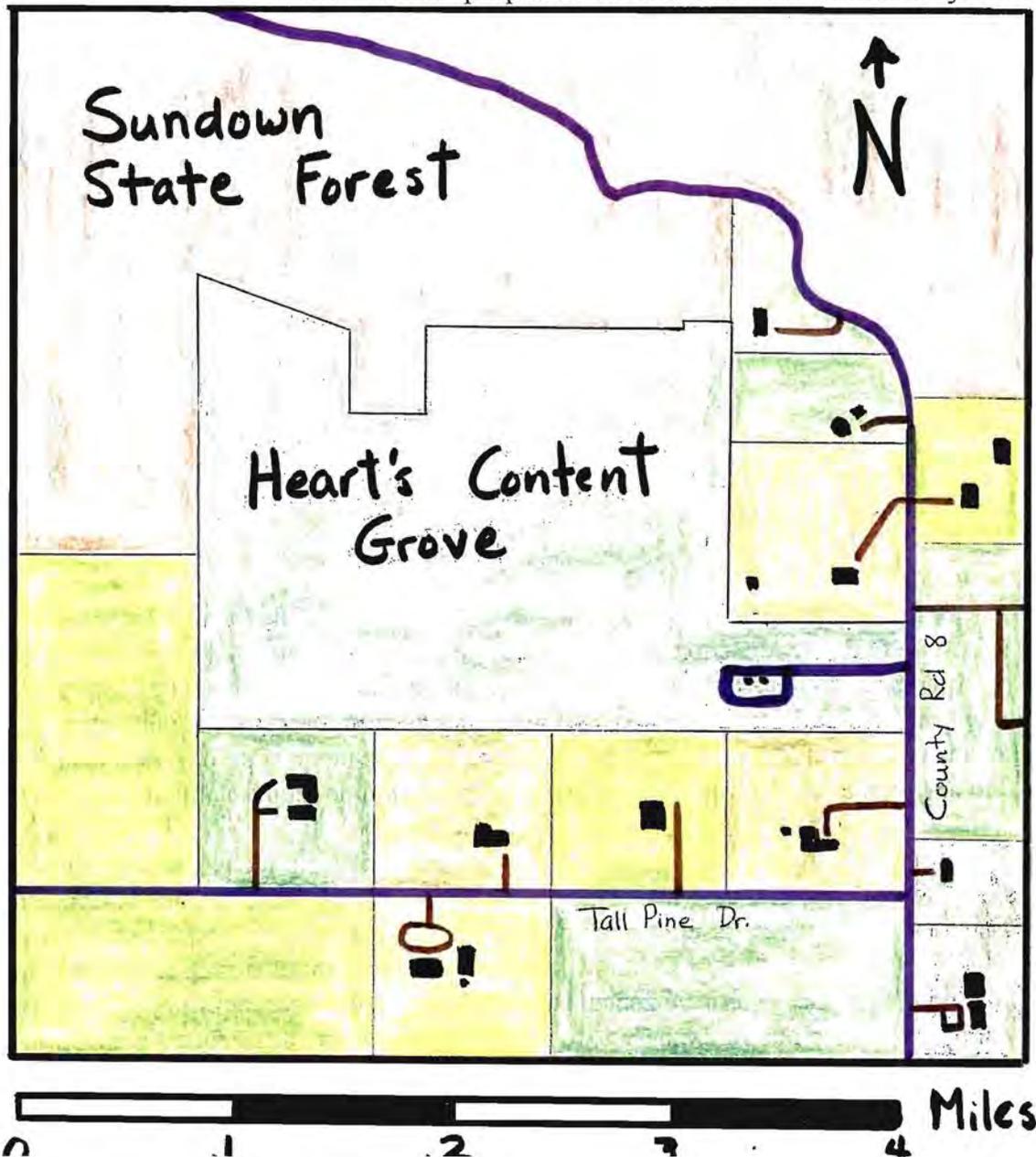
- Location:** In the middle of a wide, flat valley where forested land and private homes are intermixed.
- Buildings:** Outhouses at the visitors' parking lot.
- Neighbors:** Forested public land is on one side. It doesn't have any old pines because they were cut in 1927. On the other side is a developed area with about 50 new homes. Each is on 5 acres of forested land.
- Trees:** *Heart's Content Grove* is all forested. The trees are thick in some places, but the oldest, biggest trees are widely scattered. These are almost all pines. Most of the young trees are Douglas-firs.
- Time since Fire:** All of the big trees have fire scars. One has twelve of them! The most recent surface fire was about 85 years ago.

Risk of Crown Fire: Probably very high because there are many thickets of tree saplings. Since children bike up here from their homes, you worry that they may start fires. Look on the page to the left, to see how *Heart's Content* would look if a fire started on a very dry summer day with high winds.

Other information: Every few years, one or two of the big trees dies. Last summer, several of the biggest pines had yellow needles. You think they were not getting enough moisture because of the dense undergrowth.

A pair of Pileated Woodpeckers nested here last year. You saw them often, feeding on the carpenter ants that live in rotten trees.

Deer and elk live in the state forest next to *Heart's Content*. In winter, they graze throughout the valley bottom, even eating the landscape plants around the new homes of your neighbors.



Expenses: The Nature Conservancy is willing to invest \$4,000 a year to take care of this ancient forest. They want young pines to be able to replace the oldest ones as they die. If you want to do anything that costs more than \$4,000/year, you have to find the funds somewhere else.

Here's your CHALLENGE!

1. *Decide what your goals are for your property.*

Think about goals that include some of these ideas: protection of old trees, providing young trees to replace the old ones, safety, protection of buildings, how you want the area to look, wildlife habitat, expenses, earnings. How do you feel about the risk of crown fire at *Heart's Content*? Do you think crown fire would produce any benefits here?

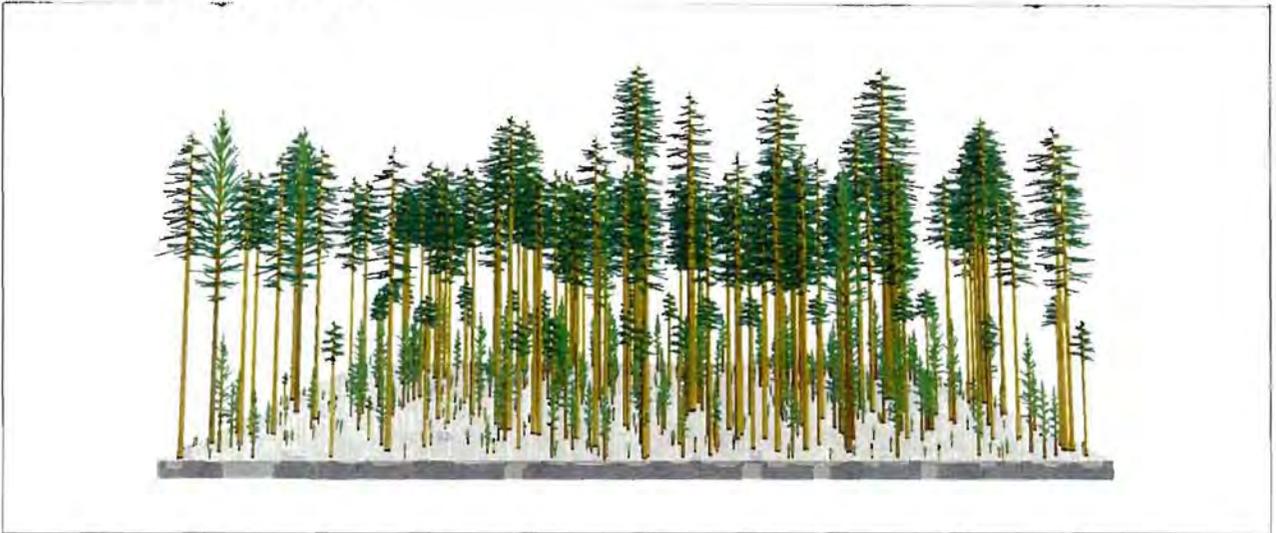
2. *How can you meet your goals? Think about the next 10 years.*

Here is some information about changes you *might* choose to make. The list shows how many trees are at *Heart's Content* now. Then it shows three plans for cutting trees, how many trees would remain, and what these "treatments" would cost you or earn. The next page shows a cartoon picture of one acre of the forest after each treatment.

		Trees/acre remaining (tallied by diameter at breast height)					Income/acre*
		>20 in	14-20 in	8-14 in	2-8 in	<2 in	
Condition right now		5	12	125	220	300	none
Treatment 1	Harvest to improve conditions for old pines & growing young pines.	5	12	75	200	300	+\$700
Treatment 2	<i>After 1</i> , cut small trees that can't be sold (<10") and burn debris in piles. Leave mostly pines.	5	12	50	50	100	-\$150
Treatment 3	Thin heavily to reduce crown fire risk and obtain income. Leave mostly Douglas-firs.	2	5	50	200	300	+\$1,780

*A negative number means a logger couldn't make money on this work; you'd have to pay someone to do it.

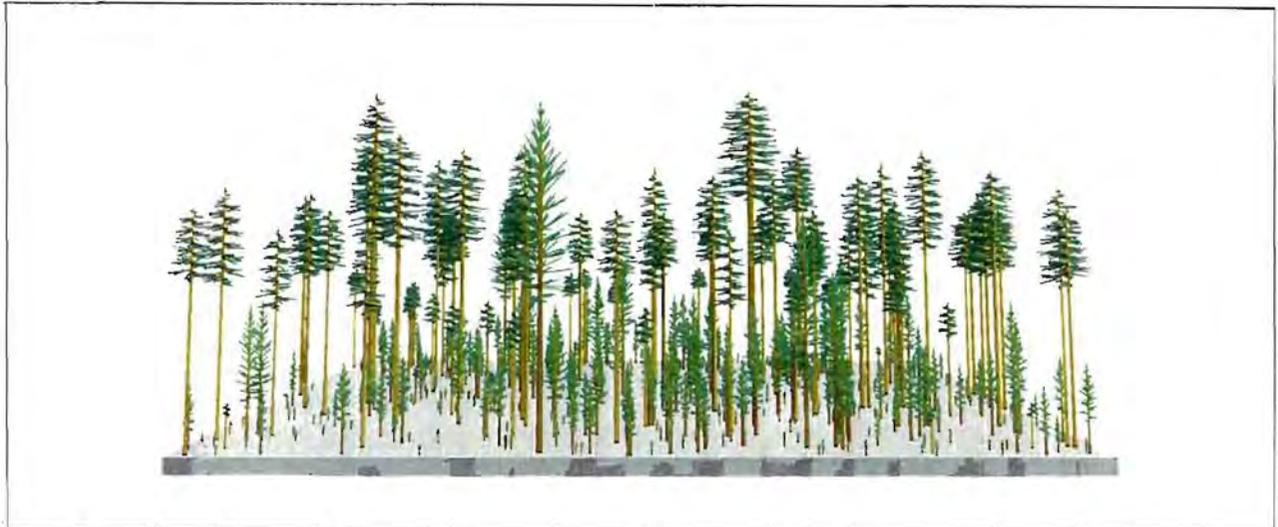
After Treatment 1:



After Treatment 2:



After Treatment 3:



What about fire? All three treatments listed in the table would protect *Heart's Content* from crown fire-- at least a little bit. How strong would the wind have to be, to push a crown fire through the forest?

The way the land is right now, the wind would have to be 19 miles per hour or greater. Winds that strong occur every summer. At a weather station in western Montana, the wind speed is measured once a day, in the middle of the afternoon. Winds greater than 19 mph have been measured on about three percent of summer days.

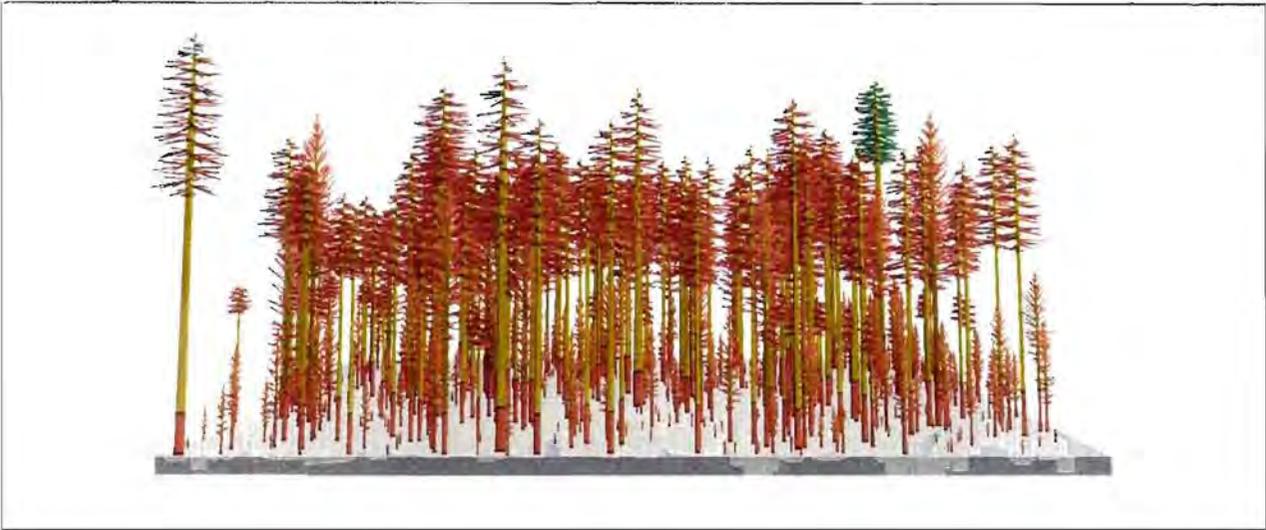
After Treatment 1 or Treatment 3, the tree crowns are not as close together. Stronger wind would be needed to push a crown fire through the forest-- 24 mph or greater. At the same weather station, winds this strong were only observed only about twice each summer.

If you did Treatment 2, the wind would have to be at least 34 miles per hour for a crown fire to come through. Winds stronger than 24 mph were measured at the weather station only nine times in fifteen years.

3. *Make a 10-year plan for your land. Include these ideas in your report:*

- a. What are your three main goals for *Heart's Content*? Using these goals, show how you want the area (buildings and land) to look ten years from now. Use a drawing. For ideas, look at the cartoon forests here, the flannelboard kit for ponderosa pine (*Creepy, Crawly Fires*), and the *Pathways in Time* booklet for Ponderosa pine/Douglas-fir forest.
- b. What changes do you plan to make on the land and buildings each year for 10 years to meet your three goals? (You may plan no changes in some years.)
- c. Where do you plan to make each change? Make a map or copy the one here and make notes on it to show your plans..
- d. Write a budget-- a list of costs and earnings-- to go with your plan. Include the \$4000/year from the Nature Conservancy. Also include any costs or earnings from treatments in the forest.

What if a crown fire passed through??



Suppose that, on a hot summer day with strong very winds, a crown fire burned through *Heart's Content*. Here is how it would look the next day.