

# NATURE DETECTIVES

Winter 2005

## Ponderosa Pine Forest: mmmm smells like ice cream

Butterscotch, vanilla, chocolate...with such smells you might imagine you are standing in an ice cream shop, not walking in a sunny forest surrounded by trees. Surprisingly, the trees are the source of the sundae aromas, and their smells tell you that the trees are ponderosa pine trees (*Pinus ponderosa*).

Sniff the bark of a sun-warmed ponderosa; do you smell butterscotch or vanilla? Sometimes there is even a whiff of chocolate. The various scents are in the ponderosa tree sap, and they make a walk through the woods a sweet treat.

### Pondering Ponderous Ponderosa Pines

Ponderosa pines can grow up to 150 feet tall with trunks that measure 3 to 4 feet across. In the days before people cut them down to build houses or to hold up the roofs of mines or to burn for heat, many old trees stood this big or bigger.

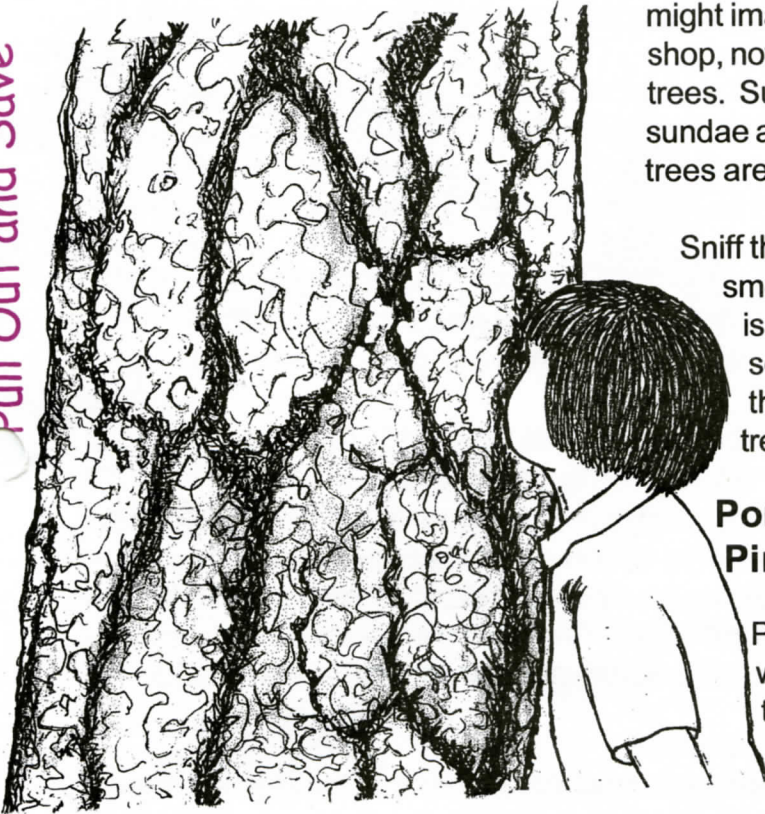
Ponderosa trees have the longest needles of any native conifer tree in our area. The needles grow in bunches of 2 or 3. Trees that get plenty of water and sunshine grow needles up to 7 inches long. Crowded trees or trees in less sunny or less moist areas still grow 4 inch needles. Their roots are long, too, reaching far and deep to soak up the meager amount of moisture from snow and summer showers. The central tap root sometimes grows down 40 feet in rocky ground, and side roots can spread out 100 feet around the tree.

The scientist who first named the big conifers must have pondered, or considered seriously, the best name for these sizeable, ponderous trees before he came up with the perfect name of ponderosa.



PONDEROSA PINE  
NEEDLES

Pull Out and Save



## Finding Ponderosa Pines

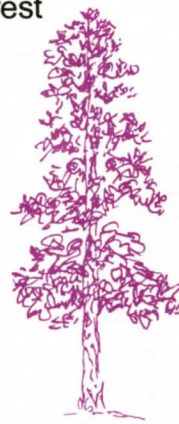
Since our foothill forests are mostly ponderosa forests, it is not hard to find the trees when you are at 5,500 to 9,000 feet elevation. You'll find them usually in sunny, dry areas, often on south-facing slopes. (Douglas firs are the ponderosa pines' neighbors, and they grow in shady, moister areas such as north-facing slopes.)

Young ponderosa trunks grow slowly because the baby trees are busy growing their major root system. The young trees have a pointy top or crown and rough black bark. Lumbermen call them blackjacks. Fire sweeping through the forest will kill these young trees and keep them from crowding the forest.

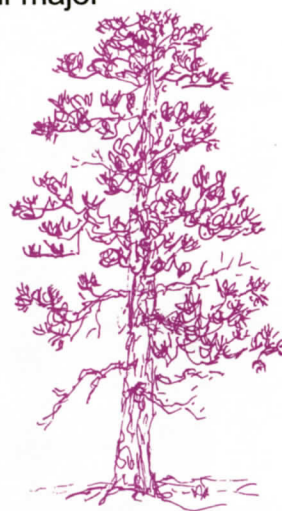
Where conditions are favorable, the young trees will mature to middle age, developing thicker, lighter colored bark, and a round-looking crown. In a healthy forest, the trees are widely spaced, allowing each tree to get the sunshine and moisture it needs to keep growing.



YOUNG



MIDDLE AGE



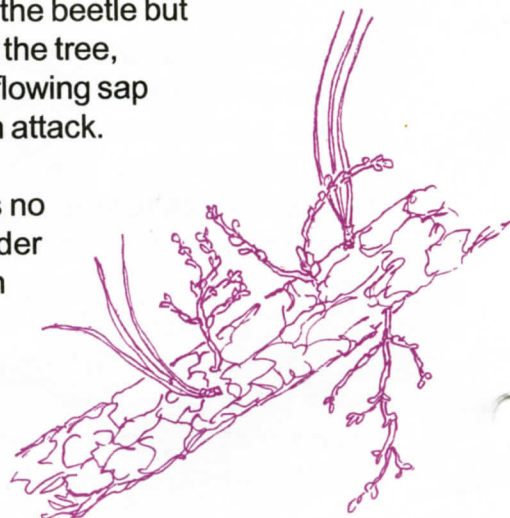
OLD

The oldest trees have flat tops and very thick cinnamon-colored bark that looks like giant reptile scales. Thick bark can protect the tree from a fast-moving ground fire. Under natural conditions, lightning-caused fires start in ponderosa forests every few years, thinning out the youngest trees and keeping the trees spaced wide apart and healthy. If the forest is too crowded, a fire can climb the branches on the younger trees into the tree tops, and the hot flames will reach the crowns of the old trees where their bark cannot protect them.

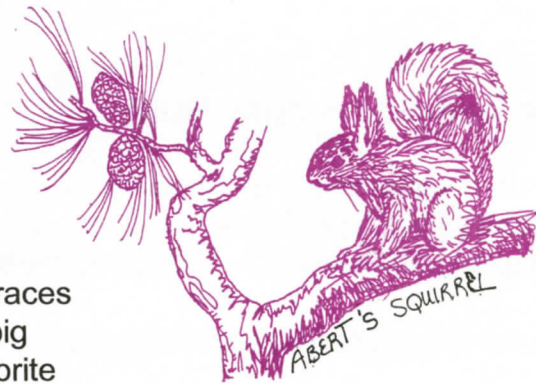
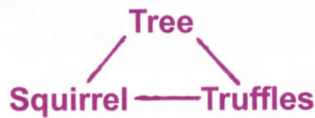
## Forest Enemies

Pine beetles and dwarf mistletoe are two enemies of ponderosa pines that thrive when trees are crowded closely together. Pine beetles bore into the bark of weak trees, spreading a blue fungus as they go. This deadly fungus simply hitches a ride on the beetle but soon spreads and plugs the pathways for water and nutrition in the tree, quickly starving and killing the tree. A healthy tree has forceful flowing sap that pushes the beetle right out of the bark, saving the tree from attack.

Mistletoe is a plant that can't make its own food because it has no leaves on its rubbery yellow-orange twigs. It sends its roots under the ponderosa's bark and steals nutrients and water away from the tree. Eventually, though it might take 20 years, the weakened tree dies. The mistletoe causes weird growth on the tree – the tree bark swells, and stubby curly twigs grow in a thick cluster looking a bit like the sweeping part of an old broom. Such growths are called "witches' brooms."



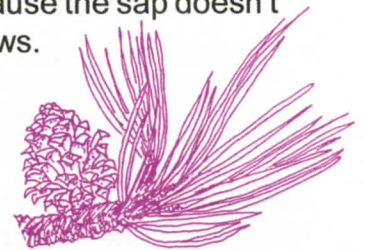
DWARF MISTLETOE



The dark-colored, tassel-eared, Abert's squirrel races down the tree trunk away from her nest built in a big witch's broom and leaps to a nearby tree, her favorite feeding tree. She enjoyed eating the seeds from this ponderosa's pine cones as soon as they were ripe last summer; but, like the other Abert's squirrels, she didn't store any of those seeds. Now, it's winter and the seeds are gone, eaten by her and other squirrels, birds and chipmunks.

The hungry squirrel gnaws off a ponderosa twig and bites off the end needle cluster, which falls to the ground. Carefully, holding the small twig in her paws, she scrapes off the outer bark and eats the inner, more nutritious bark. The feeding tree is a good one because the sap doesn't taste too strong or ooze too fast and too sticky all over her mouth and paws.

Later, she digs down to the roots of the tree to find some truffles for a snack. Truffles are the fruiting bodies of a helpful-type of fungus. She smells the yummy scent of the truffles even under a foot of snow.



The Abert's squirrel, the truffles, and the ponderosa trees are all dependent on each other. White threads of the helpful fungus grow down into the roots of the tree. The fungus absorbs sugars from the ponderosa roots, and the tree roots absorb water and minerals from the fungus. The fungus is much better at getting water from the soil than the tree so without those fungus threads, the tree might have died, especially when it was younger and didn't have the long tap root and many side roots. The squirrel eats the truffles and in her droppings she spreads the spores that will become new truffles.



STELLAR'S JAY  
STELLAR'S JAY EATING PINE SEED

When spring comes, the Abert's squirrel will add ponderosa pine buds to her diet, and a little later, she will feast on pine pollen.

## Ponderosa Forest Habitat

Many birds and animals make their home in the ponderosa forest. Little brown creepers circle down the trunk looking for insects. These tiny birds make their nests in loose bark crevices. Pygmy nuthatches forage for bugs among the needle clusters while white-breasted nuthatches search

for insects along branches. Red crossbills with their odd, x-shaped bills fill the forest with their cheeps during summers with bountiful seed crops. Hairy woodpeckers, owls, ravens, and jays can all be found here. Mule deer browse beneath the trees and porcupines gnaw the bark in a ponderosa forest.



GREAT HORNED OWL NEST



BROWN CREEPER

## Ponderosa Scavenger Hunt

Pick a sunny winter day to try a ponderosa scavenger hunt at Heil Valley Ranch or Betasso Preserve or Walker Ranch Open Space Park. (See map on back cover.) Check off the things you find.

\_\_\_ Old flat-topped ponderosa with cinnamon-colored bark

\_\_\_ Young pointy-topped ponderosa with dark bark

\_\_\_ Butterscotch aroma ponderosa

\_\_\_ Vanilla aroma ponderosa

\_\_\_ Abert's squirrel

\_\_\_ Pygmy nuthatch

\_\_\_ Steller's jay

\_\_\_ Mule deer

\_\_\_ Hairy woodpecker

\_\_\_ Ponderosa twig, 1-8 inches long, with bark gnawed off

\_\_\_ Ponderosa needle cluster with two needles in bunch

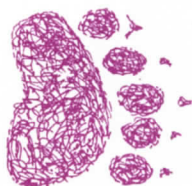
\_\_\_ Ponderosa needle cluster with three needles in bunch

\_\_\_ Dwarf mistletoe

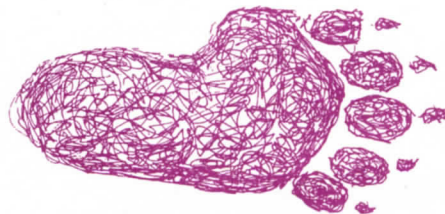
\_\_\_ Witch's broom

\_\_\_ Animal tracks (Do you know what animal?)

\_\_\_ One more interesting thing (What is it?)



BEAR TRACKS



Pygmy NUTHATCH



PONDEROSA PINE  
NEEDLES



PORCUPINE TRACKS

Remember, take only pictures,  
leave only footprints in the forest.



STELLAR'S JAY