

# Pines of the Rockies: Ponderosa Pine

## Ecology • Native-American Folklore, Food & Medicine

*Elmora A. Old Coyote*

From the top edge of the forest and on above timberline in the Rocky Mountain Region, throughout the forest zone and down mountain to the bottom edge, challenging the grasslands, pine trees grow. Pine trees are evergreens with needle-like leaves, 2, 3 or 5 flat needles in a bundle with straight, unbranched, cylindrical trunks, whorled spreading branches and seeds in cones—conifers.

The pines are monoecious—male, pollen producing flowers consist of spirally arranged, sessile anthers, yellow, orange or scarlet. The female flowers, often red or purple, are small conelike bodies made up of many spirally arranged scales, each subtended by a small bract; these tiny cones become the larger ones that are seed producing with 1 or 2 ovules (seeds) in each scale.

Most pines are not shade-tolerant, hence grow in drier, sunnier places. On most of the pines, rows of stomates are on the under sides of the needles, hence reducing evaporation of water; so the tree is more drought-enduring.

The wood of pines is soft in white pines, hard in pitch or yellow pines, easy to cut, shape, and use in construction, for posts and poles, mine timbers,

in house building as tongue-and-groove boards. And all scraps left over can be pressed into fiber board, particle board, and paper products or used for fuel.

The ponderosa pine is the official tree of the state of Montana. It has been chosen as a typical model, an index species, for all pines in the Rocky Mountains and Great Plains, hence it will be treated here with more detail.

### PONDEROSA PINE

*(Western Yellow Pine)*

~ Indian Names ~

**Cree:** *in-to-mi-nah-i-kwah-tik*

**Northern Cheyenne:**  
*SESTOT' E*

**Crow:** *báachiia* (generic name for all pines)

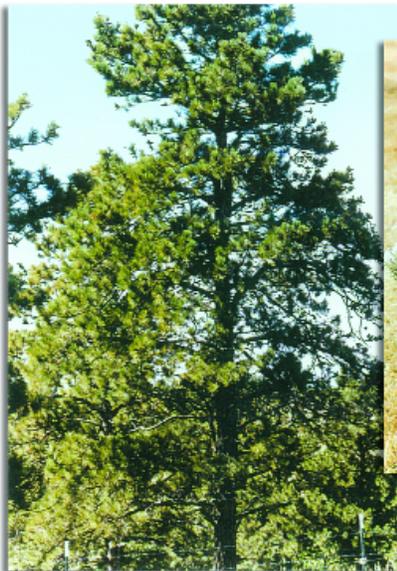
*Regiments of staunch, time-toughened trees stand at will on the crowns of buttes and hills.*

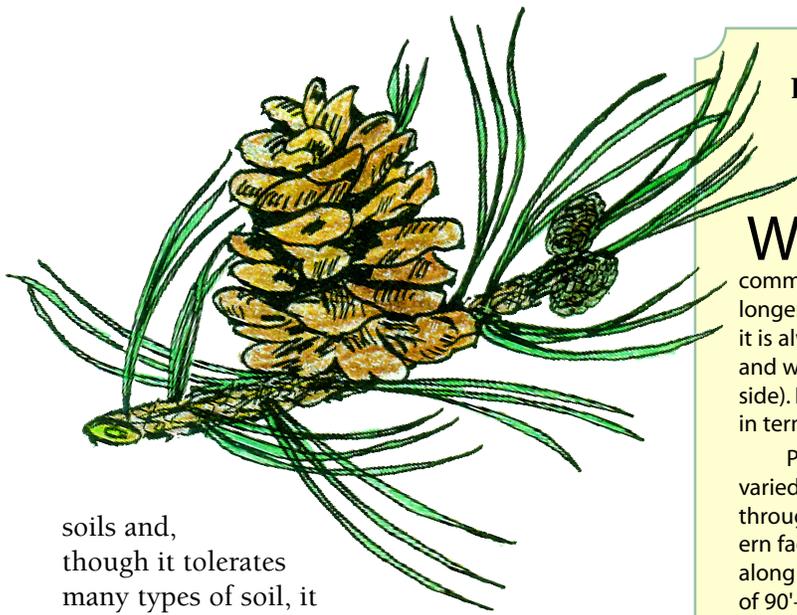
*Feet entangled among juniper*

*and sagebrush, forests of yellow pine, dark and greenlike—sentinels posted to keep vigil over valleys below.*

~ ECOLOGY ~

Ponderosa pine grows over a wider range than any other pine in North America, from altitudes of 2000 feet in transitional zones between grassland and forest edge, on all foothills of the higher mountain ranges, and as high as 8000 feet in the Northern Rocky Mountains. Ponderosa pine is not shade tolerant, grows best in open stands, in drier





soils and, though it tolerates many types of soil, it flourishes in more sandy, gravelly soil, where its taproot grows very deep.

Throughout the foothills of the Rocky Mountains, ponderosa pine is often a part of the other stands of conifers; in more exposed and sunny areas, it may be the dominant tree in pure stands. With care and enough water to dilute the salts until the tap root penetrates far enough down to extend below the surface saline soils, ponderosa pine will even grow in alkaline areas.

The growth pattern of yellow pine differs greatly from one ecological area to another, slow in maturing, shrubby (perhaps no more than 30'-40' tall, with 8"-14" trunks) and distorted in the drier areas on the foothills of the Rocky Mountains, edging out onto the Great Plains; taller, from 150'-180' with 3'-4' trunks, higher in the mountains, just above the sage and juniper zones, and up to 230'-250' tall with trunks as big as 9' in diameter on the Pacific Coast in the rain forest areas.

Vast areas of ponderosa pine cover the tops of sandstone rimrocks, especially predominant on exposed Cretaceous sandstone bluffs, promontories in the Northern Rocky Mountain/Great Plains areas from 2500-3000 feet starting above the sage-juniper zones and growing on up to 3500 feet, like forest caps atop all buttes, mesas, and other foothills.

One of the reasons for the dominance of this pine species is that it produces an abundance of very viable seeds from which very vigorous young trees grow, extending long tap roots into the soil early in life and growing an extensive well-developed lateral root system as the trees

## PONDEROSA (WESTERN YELLOW) PINE

*PINUS PONDEROSA DOUGL.*  
PINACEAE PINE FAMILY

**W**estern Yellow or Ponderosa Pine is sometimes called the Jack, Bull, Pitch, Scrub or Blackjack Pine. It has this variety of common names probably because, though it is always a pine of longer, yellowish needles, mostly 3 in a bundle but sometimes 2, it is always with a large 3"-4" cone with woody scales, resinous, and with a definite sharp spine on the back of each scale (underside). It is also a pine which responds to many habitats that differ in terms of variations in climactic and soil factors.

Ponderosa pine grows short, 20'-30' tall, scrubby, tough, varied in its shape, more shrub-like on dry, sandstone soils throughout the Great Plains and adjacent Rocky Mountain eastern facing slopes to tall 150'-232' with trunks 3'-4' in diameter along the Pacific Coast where moisture is greater, and to heights of 90'-180' in valleys running down out of the higher Rocky Mountains and Great Plains.

Because of this response to different environmental situations, it has been said to be three, at least, different geographic varieties; however, when transplanted from one habitat to another, ponderosa pine takes on the appearance according to habitat and pollinates with the endemic variety, hence coming to be considered one species only—*Pinus ponderosa Dougl.*—with many common names fitting the description of the tree in its different locales.

It has become one of the preferred trees for landscaping in the entire Rocky Mountain and Great Plains regions as well as along the Pacific Coast, and seeds taken from one region to another grow typically like pine trees already growing in that region.

Cones (fruits) are always conical, open when mature with heavy, woody scales with a sharp spine on the underside tip of each scale. Male (staminate) flowers are yellow; female (pistillate) flowers, clustered or paired are purple or red; seeds 1/4" long are brown-purple, often mottled, with a 1" long wing.

Leaves are stout needles, 2-3 (mostly 3) in a bundle, 4-11" long dependent on moisture and other climactic conditions, 4"-5" in extra dry, sunny areas, 5-7" long in wet areas with less intense sunlight on north-facing mountain slopes and hills, or in valleys. A cross-section of a leaf shows 2-5 resin ducts; the basal sheath is persistent and 1/4"-3/4" long.

Twigs and branches are tough, stout, orange-colored, becoming almost black, hence the common name blackjack pine, and shortened to jackpine. When crushed, the branchlets smell like turpentine. The winter buds are 1/2"-1" long, oblong to ovoid and frequently resin-covered, resulting in the pitchpine label.

The bark is black and deeply furrowed on young trees; 2"-4" thick, yellow-brown to cinnabar-red on old trunks and broken into large, flat, diamond-shaped plates, a characteristic that renders Ponderosa easily spotted by its trunk at a long distance throughout a forest of trees.

The wood is variable from soft, light-weight and fine-textured to heavy, hard, and coarse, partly due to age, partly to climactic conditions. Sapwood is light to white; heartwood is brownish. Ponderosa, yellow pine is a very important tree to harvest for use in construction of all kinds, railroad ties, planing mill products, and mine timbers.

## Identifying Pines of the Rocky Mountains/Great Plains

I. **Needles in bundles of 2 or 3**; leaf sheath persisting, cone scales with prickles or spines on back of each scale:

A. **Needles 2 in a bundle**, 1–3" long, Cones 1–1 1/2" long, usually not symmetrical, usually closed, needles:

**LOGSPOLE PINE** (*Pinus contorta*)

B. **Needles 3 in a bundle**, 4–7" long, Cones 3–6" long, usually open:

**PONDEROSA (YELLOW) PINE**

(*Pinus ponderosa* Dougl.)

II. **Needles 5 in a bundle**:

A. **Cone 5–11" long**, scales thin, unarmed, long-stocked:

**WESTERN WHITE PINE** (*Pinus monticola*)

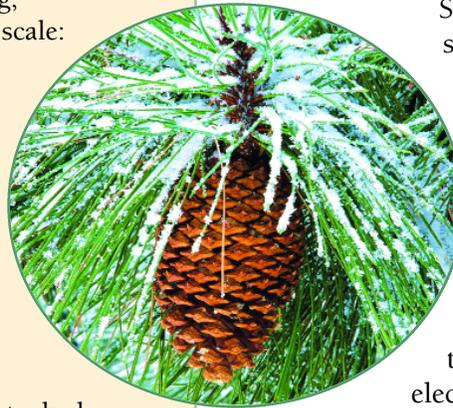
B. **Cone scales thick**, without prickles, seeds longer than wing

1. Cones 1 1/2–3" long, closed:

**WHITEBARK PINE** (*Pinus albicaulis*)

2. Cones 3–10" long, opening:

**LIMBER PINE** (*Pinus flexilis*)



juniper zone exists at the feet of the pine, down the slopes and into the bunchgrass/sagebrush zones.

Since pines are softer wood, but with tough, pliant stems, they are useful for building materials, fence posts and poles, mine timbers, telephone and electric poles, and

have become more desirable for furniture and decorative uses in buildings, homes and commercial buildings.

Fire and bark beetles cause great damage to ponderosa pine; mistletoe and other fungi are also destructive.

### ~ FOLKLORE, FOOD & MEDICINE ~

mature. The number of survivors to mature trees may be spindly with leaves only on the tops, or fewer since this pine does not reproduce in shade conditions and only grows well in response to intensive sunlight.

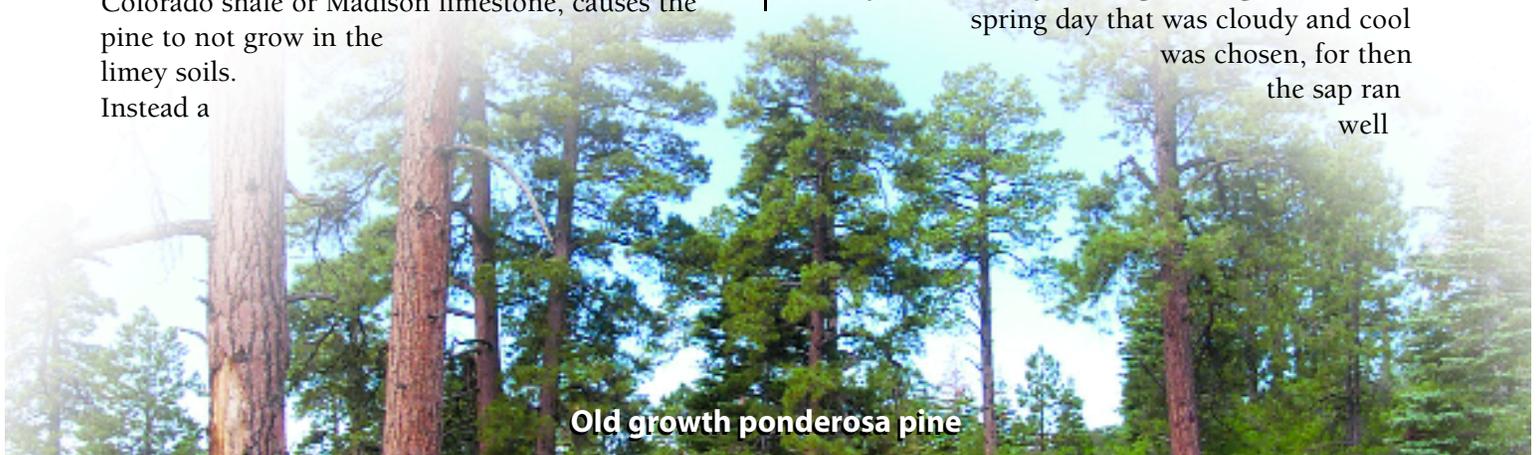
Most pines are not shade tolerant, hence once a canopy occurs, other more shade-tolerant trees, such as douglas fir and Engelmann spruce, develop under that canopy and may even replace ponderosa pines, except for surviving tall trees which age and persist because of tops high enough to continue to take advantage of the sunlight. Drought or low rainfall areas also favor yellow pine which is an extremely drought resistant species.

A change in soil where the cap rock is sandstone and below is a more calcareous soil, such as Colorado shale or Madison limestone, causes the pine to not grow in the limey soils. Instead a

The ponderosa pine occupies that space between forest and brushy grasslands and in open, beautiful park-like stands. Long before there were states in the Rocky Mountains and Northern Plains regions, ponderosa pine was valuable to all of the Plains Tribes of Indian people.

By far the most important use of ponderosa pine was the harvesting of the bark for food. Almost all of the tribes peeled the bark for food. Usually the harvesting was done in the spring when the sweet bark was especially relished after the long winter. The women did the peeling. Before they collected the bark, they would sample a tiny piece of inner bark until it was found to be at its sweetest. When the bark was "ready," some tribes even made a holiday and feast day out of gathering bark. A

spring day that was cloudy and cool was chosen, for then the sap ran well



Old growth ponderosa pine



and filled the inner bark.

Indian women in early times used a special stick of Juniper, a very hard wood, which was flattened on the end so it was chisel-like. It was a strong, flexible tool that easily ran along the curvature of the pine tree when pushed along under the bark, thus digging up a strip of bark. The rib-bone of an elk or buffalo to run under the bark was also used. Once the bark was removed, the women used a special kind of sharp scraper made of bone, or horns of mountain sheep, or a sharp-edged stone to remove the moist, sweet inner bark from the outside tough bark layer.

The Kootenai Indians harvested the bark when the bitterroot plant was ready to dig at flowering time and held a prayer ceremony before the harvesting and a feast of the sweet inner pine bark and boiled bitterroot roots.

Generally, pitch,

warmed over campfire, or later stove or candle, applied to skin could be used to remove splinters of glass, wood and rosebush thorns by allowing the pitch to harden on the skin and then pulling it off. Care had to be taken not to get the pitch too hot when placing it on the skin. Also, heated, softened pitch placed over a boil or carbuncle and left to cool could cause the skin over the boil to rupture and the infection and core of the boil to be removed when the pitch hardened and was peeled off. This was thought to be less painful than lancing the boil.

Ponderosa pine needles contain materials toxic to animals if eaten in quantity.

### ~ OTHER USES ~

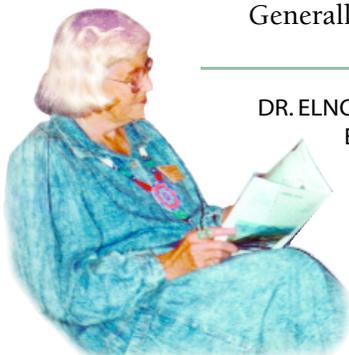
Another use for ponderosa pine by early people was for heating fires. Often yellow pine was drier wood because it simply grew under drier conditions and, because it is not a shade-tolerant tree, lower branches dried up and lost their needles, leaving bare branches that were easily snapped from the trees by wind or by hand. Since there is usually a quantity of pitch on the wood, pine wood makes a quick, hot fire. Also, because pine is soft, but tough wood, it was used much for posts and poles.

Ponderosa pine, and pines generally, are not the best tree for a Christmas tree. Though young pines are symmetrical and conical, as they grow older, they become more scraggly and asymmetrical, hence are not aesthetically pleasing. But the biggest drawback to using these pines for Christmas trees is the large amount of pitch (resin) on needles, cones and bark, which makes the tree too flammable and too dangerous as a tree for Christmas decorating indoors. ■

### **Pines of the Rockies:**

- 1) **Ponderosa Pine**  
*(Western Yellow Pine)*
- 2) **Whitebark Pine**
- 3) **Western White Pine**
- 4) **Limber Pine**
- 5) **Lodgepole Pine**

**Ponderosa Pines** are featured here. **Whitebark, Western White, and Limber Pines** will be covered in upcoming issues. "**Lodgepole Pines: Dependable for Structures, Indian Food & Medicine, Sentinel of New Growth**" was published in our Sept-Oct 2009 issue, available in the archives at [NaturalLifeNews.com](http://NaturalLifeNews.com).



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