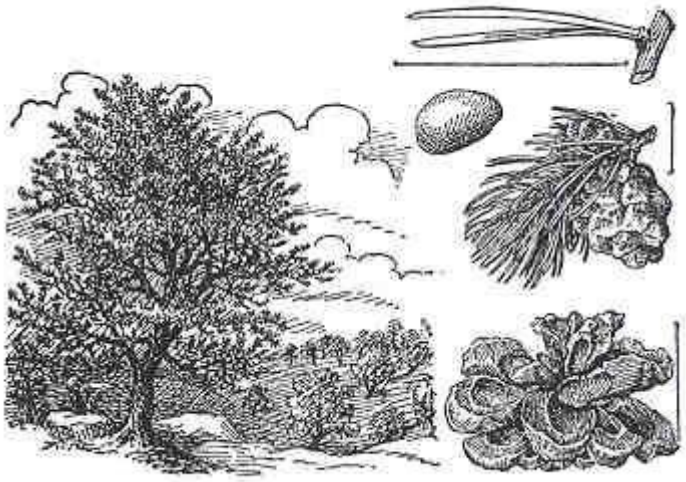
Pinyon Pine

Pinyon pine is as typical of the arid hills and mesa county of the American west as Engelmann spruce and subalpine fir are in the highest peaks. Widespread across parts of Colorado, New Mexico, Arizona, Utah, Nevada, and California, woodlands of pinyon pine plus junipers cover 150,000 square miles (390000 square km), an area larger than the state of Colorado. They generally lie between 4500 to 6500 feet (1370 to 2000 m) in elevation, above the deserts, grasslands and sagebrush, and below mountain forests, into which they merge.



Pinyon pine (*Pinus edulis*)

There are three kinds of pinyon pine in these forests. The "common" Pinyon pine, described here, also called the two-needle, New Mexico, or Colorado Pinyon pine, *Pinus edulis*, is the pinyon of Colorado, northern New Mexico and north-eastern Utah.

Pinyon usually has a widely branching trunk and a low, rounded form. It is rarely more than 20 or 30 feet (6 or 9 m) tall, and even old trees may be quite short. Sometimes it is as wide or wider than it is tall. In its lower range Pinyon trees grow widely separated. Horsemen riding in pinyon woodlands may be able to look over the top of mature trees. As elevation and moisture increase Pinyon trees grow larger and closer together. Pinyon is slow-growing: a tree may reach 100 years before producing cones. They commonly live 350 or 450 years; some trees achieve a thousand years. When young they gain trunk diameter at a rate of about an inch per decade.

In Colorado Pinyon pine grows all along the western border on dry lowlands, slopes and mesa, and on the western side of the Sangre de Cristos, in Great Sand Dunes National Monument, in the eastern foothills and plains south of Colorado Springs, well up the Arkansas River valley to the Buena Vista area, on the Palmer divide between Colorado Springs and Castle Rock, along the foothills up to Golden, and east of Trinidad.

There is an interesting Pinyon grove in Owl Creek Canyon northwest of Ft. Collins, Colorado. Pinyon does not naturally grow anywhere near this area. These trees are thought to have sprouted accidentally from cache of Pinyon nuts left by Indians about 400 years ago. Young Pinyon pines are now growing in the vicinity, so the tree is spreading naturally there.

In Colorado Pinyon pine is found from 4000 to 9300 feet (1200 to 2800 m) above sea level, most commonly below 7500 feet (2300 m). It grows in sunny locations with dry, hot summers, and is often associated with junipers. Annual precipitation is about 10 to 18 inches (25 to 45 cm) where the Pinyon grows. At high levels in its range Pinyon may be found on south-facing slopes mixed with Ponderosa pine, Douglas fir, and Gambel oak.

Pinyon timber was used in building the early pit houses of Mesa Verde, from 400 to 900 A.D. Pinyon was well known to the builders of the later cliff dwellings, too, both for wood for roof beams (now

used for tree-ring dating) and door lintels. The builders there ate the Pinyon nuts. Pinyon pitch was – and is - used to caulk native baskets, such as those made by the Navajo.

The common Pinyon is one of the main sources of the edible pine nuts of the American southwest. The "nuts" are of course the seeds found between the scales of the cones. Pinyon pine nuts were a major food source for native American Indians in the area where the nut pine grows, in some cases providing a key part of the winter diet.

The large edible nuts are essential for the tree's survival as well. In the arid setting where Pinyon grows, seeds scattered on the ground will not germinate. Small seeds eaten by animals are destroyed. But the Pinyon nut is so large and nutritious, and sometimes so abundant, that birds and animals bury caches of seeds for future use; they can't eat all the nuts at once. Many caches are eaten later, but some seeds sprout and grow.

In late summer and fall Clark's nutcracker, Steller's jay, and the Pinyon jay extract the ripe seeds from the cones and make large caches, burying them in the forest floor. The nut caches are naturally important to the birds' survival in winter. The birds' nut caches are also a key factor in the spread and

survival of the Pinyon pine, whose seeds have a better chance of germination buried in moist soil than lying on the dry surface. In Arizona a Clark's Nutcracker was seen to carry 95 pinyon seeds in its cheek pouch for 14 miles (22 km). One hundred and fifty nutcrackers can cache approximately a ton (1000 kg) of Pinyon seeds in one season: nearly four million seeds at more than 20,000 seeds per bird. The birds and the trees seem to depend on each other for their survival and propagation.

In fact the interdependency of the birds which cache Pinyon nuts and the life cycle of the nut tree itself is so pronounced that the Pinyon appears to have evolved to benefit from or adapt to the birds' behavior. It is said that “the Pinyon pine was invented by jays.” The tree developed large edible seeds, which are a key food for these birds. The birds evolved an ability to efficiently extract seeds from the cones. The Pinyon jay's beak is specialized to extract nuts from unopened cones. The birds recognize empty seed shells without bothering to crack them open, based on color and weight. They never bother to crack empty nut shells. And the birds' caching behavior is key to new tree germination.

These nuts provide an important food source for food for Pinyon jays, Clark's nutcrackers, black bear, mule deer, turkeys, woodrats, pinyon mice, porcupines, and several kinds of squirrels and chipmunks. Even the Abert's squirrel who generally spends its life in Ponderosa pine trees, can be tempted to leave the Ponderosa woods for pinyon nuts.

More than a few early exploration parties in the Rockies, both Spanish and American, were saved from starvation by Pinyon nuts. The rescue of the Donner Party from the snows of the Sierras in 1846 is an example. Several men set out to seek help, and all but one fell by the wayside due to starvation. The one remaining messenger nearly failed in his mission, but was revived by a handful of Pinyon nuts offered by native Indians who found him at the last of his strength. Many who lived or traveled in the area where Pinyon grows soon learned of the edible seeds. Pinyon nuts remain an important ingredient in southwestern cooking. They are sold as a gourmet food item, and gathered by local residents for their own use.

Large seed crops occur every four to seven years. The seeds ripen around the middle of August but the cones are still tightly closed, green, and resinous. The cones open gradually during the next several months as they dry out. The nuts are harvested, from about Labor Day to November or even later, by shaking the branches with open cones over a sheet or box, or by twisting off the cones. Closed cones will open if left to dry, spread out indoors. Do not cut trees or break branches; they take far too long to replace. Crack the shells with pliers, or with a rolling pin. A great variety of dishes can be made with this delicious nut. Refer to *The Pinyon* Pine by Ronald Lanner (University of Nevada, 1981) for more information on nut collection and recipes.

Scientific description for the common Pinyon waited until 1846 when specimens were collected by Freidrich Wislizenus, a physician and naturalist in search of new plants, while in Santa Fe. Wislizenus sent the specimens back to his colleague George Engelmann in St. Louis who wrote the first technical description of this tree and who conferred the species name edulis, edulis meaning edible. Pinyon is an English version of the Spanish pinon. In Spanish nut pines are called pinos pinoneros . The current botanical name is *Pinus edulis* Engelmann.

Pinyon is the state tree of New Mexico, and this tree is also known as New Mexican Pinyon. In every state where they grow Pinyon pines are valuable for humans, animals, and the environment, deserving our recognition and protection as key tree species where it grows.

Identifying features of Common or New Mexico Pinyon Pine

Needles

Needles mostly in bundles of two, occasionally three; rarely one; 3/4 to 2 inches long; yellow-green; slightly thicker than most pine needles (about 1 millimeter), curved, and sharp-pointed.

Cones

Rounded rather than pointed, 1 to 2 inches long; usually wider than long, opening into a rosette; scales are large and thick with no bristle. A small number of cone scales compared to other local pine cones. Bright green with beads of sticky resin when immature in midsummer. Seeds thin-shelled and wingless, brown, oval, and edible, about half an inch long. Some seed shells may be empty.

Bark

Pale to dark brown, or pale reddish brown, with rough furrows with small rough scales.