



Quaking Aspen Trees

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Yes, that is me the author of this article hugging a Quaking Aspen Tree

Now for the rest of the story!

Alpine Scenic Loop



Please take a look at the above map. Do you see the green arrow in the center? Well, this is the location of the quaking aspen grove and the tree I'm standing by. It is at the summit of the Alpine Scenic Loop that is located in north-central Utah. This is one of the most beautiful spots on earth.



The Alpine Scenic Loop Summit looking through the quaking aspens towards Mt. Timpanogos

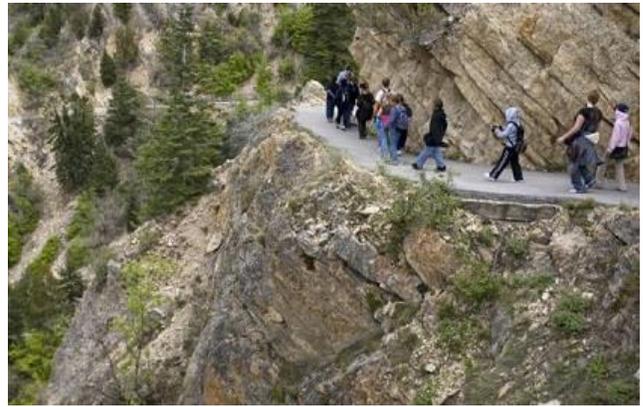
Easily the most popular scenic drive in the Uinta-Wasatch-Cache National Forest, the Alpine Scenic Loop (the red line on the map) is a 20-mile narrow, windy road famous for great scenery especially in the fall when the aspens change color. The loop begins

at the mouth of American Fork Canyon on SR-92 at 5,000 feet elevation, and follows the canyon to its summit at 8,000 feet. There you have a great view of Mt. Timpanogos through impressive quaking aspen groves. Campgrounds and picnic areas are numerous and there is a place to park near the aspen groves. If you need to go to the bathroom, there are a couple of port-a-potties but I prefer to walk into the woods to do my business.

Some of the attractions along the Alpine Scenic Loop include the Timpanogos Cave, Aspen Grove (where the trail starts for the hike up Mt. Timpanogos), trails that lead from the road into the Lone Peak Wilderness areas and Robert Redford's year-round Sundance Resort, famous for family skiing in winter and outdoor theater in summer. The road continues to wind down towards Provo Canyon and US-189.



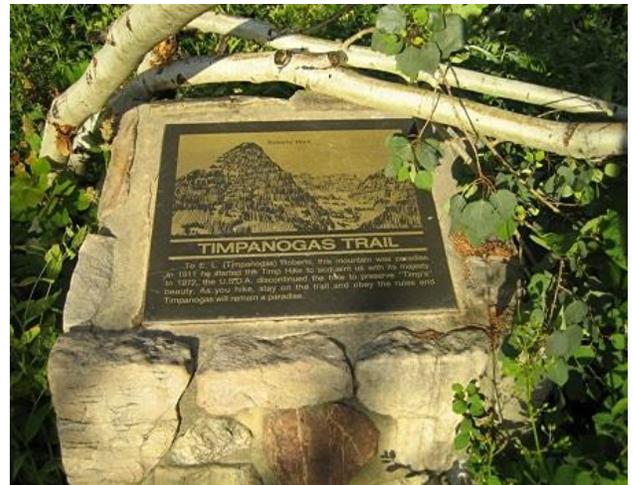
View looking up American Fork Canyon



Trail leading up to Timpanogos Cave

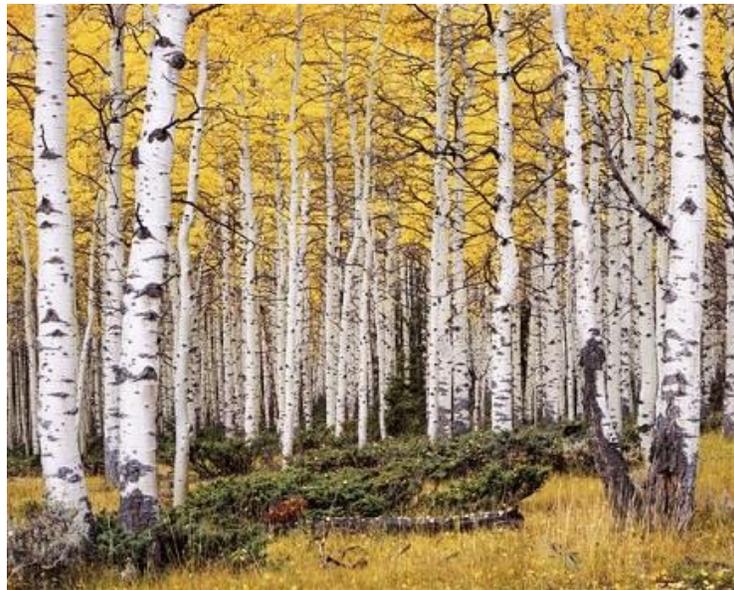


Aspen Grove is where the trail starts to hike up to the top of Mt. Timpanogos (Elevation 11,752 feet)



The Alpine Loop is a paved road, without centerline markings for most of the route. Because of the steep grades and narrow, blind curves, pulling a trailer is prohibited. The Alpine Loop is closed during the winter months because of the snow but you can get to Sundance Ski Resort from Provo Canyon.

Okay, that is a little background information. Let's get back to that aspen tree I'm standing by. I grew up in Pleasant Grove, Utah which is located at the base of Mt. Timpanogos and only a few miles from American Fork Canyon. When I was a kid, my parent used take a drive over the loop about once a year. We would always stop at the summit to enjoy the view, stretch our legs, go to the bathroom, have a bite to eat and sometimes we would go into the aspen grove and carve our names into the bark of one of the aspen trees. We tried to pick one that we could remember where it was so that we could go back and find it on future trips. Whenever I took my Hawaii family to visit family and friends in Utah, I kept this tradition going. In the mid-1980s when my son Mike Petersen was about 10 years old, he carved his name "Mike" into that quaking aspen tree. Do you see it? The picture was taken in the mid-1990s (10 years later) after I went into the aspen grove and found my son's tree. The tree had grown more than a foot since we last saw it. The trees with my name and other members of my family are still there. I plan to check on them whenever I visit Utah and take the scenic ride over the loop.



Here is a picture of the Petersen Family Quaking Aspen Grove

UTAH STATE TREE – THE QUAKING ASPEN

The quaking aspen was chosen by the Utah State Legislature in 2014 to be the new state tree. The quaking aspen replaced the Colorado blue spruce, which had held the honor of state tree since 1933. The quaking aspen, which is also known as trembling aspen, makes up about 10% of the forest cover in the State of Utah and can be found in all of Utah's 29 counties. In comparison, the Colorado blue spruce makes up about 1% of the forest cover and is primarily found in the Wasatch and Uinta mountains



Colorado Blue Spruce

The change was initiated by fourth-grade students at Monroe Elementary in Sevier County who didn't think that the blue spruce represented the State of Utah as a whole. The students chose the aspen because a colony of trees develop a singular root system. They say that reminds them of Utah where we all work together to reach new heights. Senator Ralph Okerlund sponsored S.B. 41 because "the quaking aspen provides Utah an economical, agricultural and recreational benefit." The strong root system of the quaking aspen also appealed to Senator Okerlund because of the state's emphasis on family history and genealogy. S.B. 41 passed 26 to 0 in the Utah Senate on February 10, 2014 and was sent to the Utah House of Representatives for their consideration.

Representative Brad R. Wilson, floor sponsor of S.B. 41, believes the quaking aspen is an appropriate symbol for Utah. "The aspen stems grow from roots of older trees," Wilson said. "This creates a very important metaphor that we could connect to Utah as these children of the parents grow and are very prolific." It passed 54 to 19 in the House of Representatives on February 19, 2014.

Governor Gary R. Herbert signed the bill on March 26, 2014 at Monroe Elementary in front of the students who inspired the change. The governor signed the bill with 13 pens made from quaking aspen while sitting on a chair and at a desk made from the tree, as well. On May 13, 2014, the quaking aspen officially became the Utah state tree.

I think those fourth-grade students at Monroe Elementary School are very smart. What were the Utah state legislatures thinking back in 1933 when they come up with the Colorado blue spruce as the Utah State Tree? Do you know what the state tree of Colorado is? BINGO – Yes, it is the Colorado blue spruce. It makes sense for Colorado but not for Utah.

THE QUAKING ASPEN TREE

GENERAL INFORMATION

Common Names: Quaking Aspen or Trembling Aspen
Scientific Name: Populus tremuloides

Tree Height: Average 40 to 80 feet tall (Record height is 120 feet)
Tree Diameter: Average 10 to 32 inches (Record diameter is 54 inches)

Range:



From New England through Canada and Northern US, into Alaska, and South into California and the Mountain West.

Habitat: The quaking aspen grows best with moist soils in openings or along edges of pine and spruce/fir forests.

Altitude: In the western United States, the quaking aspen rarely survives at elevations lower than 1,500 feet due to hot summers experienced below that elevation, and is generally found between 5,000–10,000 feet.

Climate: Aspen prefer cool, relatively dry summers with lots of sun, and winters with abundant snow (precipitation from 15-40 inches/year) that recharges soil for growth during spring and early summer. They don't like summer temperatures above 90 degrees F, but are fine with winters below 0 degrees F.

Bark: The bark is relatively smooth, colored greenish-white to gray, and is marked by thick black horizontal scars and prominent black knots. Parallel vertical scars are tell-tale signs of elk, which strip off aspen bark with their front teeth.

Leaves:



The name "quaking" or "tremble" comes from the fluttering action of the tree's heart-shaped leaves when blown by the wind. This fluttering action is caused by the flattened petioles of the leaves. (Petioles are the stalks that attach the leaf blade to the stem.) The color of the 1.5 to 3-inch leaf surface has an underside dull contrasting color. The edge of each leaf is finely serrated (a saw-like jagged edge).

QUAKING ASPEN ROOT SYSTEM

The aspen often propagates through its roots to form large groves originating from a shared system of rhizomes or underground roots. This type of root system allows for new shoots to grow upwards. This typically results in large clonal colonies of aspen trees derived from a single seedling, and spread by means of root suckers; new stems in the colony may appear at up to 132 feet from the parent tree. Each individual tree can live for 40–150 years above ground, but the root system of the colony is long-lived. In some cases, this is for thousands of years, sending up new trunks as the older trunks die off above ground.

Aspen trees usually do not live more than 150 years, though some have persisted for more than 200 years. It grows in many soil types, especially sandy and gravelly slopes, and is quick to pioneer disturbed sites where there is bare soil. It grows best where soils are moist and sunshine is plentiful. Aspen is intolerant of shade, and does not compete well with more shade-tolerant conifer species like the firs, junipers, pines, and spruces.

The Trembling Giant, or Pando (Latin for "I spread"), is a single clone of quaking aspen connected by one, massive underground root system. Pando's root system is estimated to be at least 80,000 years old, making it one of oldest known living organisms on earth. It encompassed approximately 106 acres, consisting of over 47,000 individual trees. It is estimated to weigh more than 13 million pounds. Pando is located 1 mile southwest of Fish Lake on Route-25 in Fish Lake National Forest in south-central Utah.



Pando Quaking Aspen Grove in Utah



Visitors from many states, as well as other nations have travelled to central Utah to see and experience Pando, especially during the fall season when the leaves turn to yellow and orange. In 2006, the U.S. Postal Service honored the Pando Clone as one of the "40 Wonders of America" with a stamp in its commemoration.

QUAKING ASPEN GROVES – FOUR SEASONS



Spring and Summer



Early Autumn



Late Autumn



Winter



Spring



Summer



Autumn



Winter

ECOLOGY (Study of interactions among organisms and their environment)

Quaking aspen propagates itself primarily through root sprouts, and extensive clonal colonies. Each colony is its own clone, and all trees in the clone have identical characteristics and share a single root structure. A clone may turn color earlier or later in the fall than its neighboring aspen clones. Fall colors are usually bright tones of yellow; in some areas, orange-red blushes may be occasionally seen. All trees in a given clonal colony are considered part of the same organism.



Quaking Aspen Flowers

Aspens can produce flowers and seeds, but seldom grow from them. The flowering season is May and June but most aspen trees rarely have flowers. Only after a severe fire and under ideal climatic conditions, will aspen reproduce sexually as a flowering plant. Pollination is inhibited by the fact that aspens are either male or female, and large stands are usually all clones of the same sex. Even if pollinated, the small seeds (three million per pound) are only viable a short time as they lack a stored food source or a protective coating.

QUAKING ASPEN AND WILDLIFE

Quaking aspen provides food and habitat for a variety of wildlife such as the black bear, deer, beaver, porcupine, elk, moose, ruffed grouse and many smaller birds and animals, including small mammals such as mice, voles, shrews, chipmunks, and rabbits. Aspen is also good to excellent forage for sheep and fair for cattle. The twigs, sprouts, bark, and buds are eaten by the animals and the birds eat the seeds. All this plus the fallen leaves are great wildlife foods.

The other aspect of their lifestyle that makes quaking aspens unique is that beneath the thin white outer bark is a thin photosynthetic green layer that allows the plant to synthesize sugars and keep growing even during the winter when all other deciduous trees (those that shed their leaves) go into dormancy. This green layer of the bark makes it survival food for deer, elk, and other animals during hard winters.

Wild and domestic animals use the quaking aspen for summer shade. Quaking aspen groves provide excellent hiding cover for moose, elk, and deer. Deer also use quaking aspen stands for their fawning grounds.

QUAKING ASPEN WILDLIFE PICTURES



Deer Love to Stay in Aspen Groves



A Tall Quaking Aspen for a Bald Eagle



An Elk Looking for a Healthy Meal



A Moose Trotting through the Aspens



Black Bear Climbing a Quaking Aspen



**Mountain
Chickadee**



Goldfinch

QUAKING ASPEN MEDICAL AND FOOD VALUE

The bark of quaking aspen was used by pioneers and American Indians as a fever remedy, an anti-inflammatory agent, as well as for scurvy. It contains Salicin (which has similar active ingredient as in aspirin). A substance similar to turpentine was also extracted and used internally as an expectorant and externally as a counterirritant.

Native Americans used quaking aspen bark as a major food source. They cut the inner bark into strips, dried and ground it into meal to be mixed with other starches for bread or mush. Strips of bark called “Catkins” were eaten raw, and the stem and roots called “Cambium” were eaten raw or in soup.



Mountain men, early fur trappers and explorers who preceded the miners and settlers by decades fed aspen leaves and bark to their horses when other forage was lacking. The quaking aspen's thin bark contains a high amount of chlorophyll, the key catalyst for photosynthesis, by which all green plants convert sunlight, carbon dioxide, and water to carbohydrates and oxygen. It is the presence of significant quantities of chlorophyll that gives aspen bark its slight green coloration. Scientists have found that aspen bark contains about 30 to 50 percent of the amount of photosynthetic capacity as the leaves. What all this means is the quaking aspen leaves, stems, twigs, bark, and roots are highly nutritious.

CURRENT USES FOR QUAKING ASPEN

Aspen's main uses have been for fence poles, firewood, lumber, pallets, crates, pulp, and matches. Recently, it has been used for paneling.

Beavers use the stems and trunks for their dams.

Quaking aspen groves provide excellent watershed protection. The soil cover and intermixture of herbaceous and woody roots protect soil except during very intense rains. Quaking aspen intercepts less snow and transpires less water than conifers, so snowpack and runoff is greater under quaking aspen trees.

Quaking aspen is valued for its aesthetic qualities at all times of the year. The yellow, orange, and red foliage of autumn particularly enhances recreational value of quaking aspen grove sites.

HOME LANDSCAPING WITH QUAKING ASPEN TREES

In the past, aspen was seldom used in home landscapes. However, the use of this tree has increased dramatically in Utah's urban landscapes. Aspen grows fast, lending the landscape an early finished look, and it provides an informal touch of Utah to the suburban home or urban landscape. Aspen is a small to medium-sized tree that won't overwhelm smaller yards so typical of today's urban subdivisions. It has attractive bark, leaves tremble in the slightest breeze and the tree can develop great fall foliage color. It has become quite popular in several high attitude towns like Park City, Utah (elevation 8,000) for home owner to landscape their yards with the quaking aspen trees. They are really pretty – don't you think?



But, after reading this article, do you think this is a good idea? Yes, these homeowners are in for BIG trouble ahead. Once the underground root system starts to spread, the following bad things will start happening: First the sidewalks will start cracking, then the water and sewer pipes will break, and then the house foundation will move and crack. And if this was not bad enough, it won't be too long until your neighbors have the same issues and they might not be too happy with your choice of landscaping trees.

WHAT DOES THE FUTURE HOLD FOR THE QUAKING ASPEN?

Because of their vegetative reproduction system, aspens are in no danger of going extinct. Many aspen forests will eventually become spruce and fir forests as the taller, more dense trees shade out the aspen underneath the canopy. However, even after 100 years or more, the dormant root system will spring back to life sprouting new trees once sunlight is allowed to reach the forest floor again. Therefore, forest fires, no matter how severe, encourage the growth of new aspen trunks in the asexual process also known as "root suckering." Aspen trees are able to survive forest fires

because the roots are below the heat of the fire, with new sprouts growing after the fire burns out.



These are tiny quaking aspen shoots sprouting up to reclaim the forest just seven weeks after a major forest fire. Every natural disaster produces some winners and some losers. The aspens are going to be winners. Their deep roots were unharmed by the flames and heat, and true to their pioneer nature, they are wasting no time taking over. In the not-so-distant future, this lunar landscape will have become a lush grove of aspens with fluttering leaves.

Aspens are so successful that curious foresters have tried everything in an effort to determine what it takes to kill an aspen clone. The only sure method is injecting tons of herbicides directly into the root system. Even "discing" (using a huge roto-tiller pulled by bulldozers) down to three feet below the soil will not kill an aspen clone. The chopped up roots keep right on growing. Heavy browsing by deer and elk is thought to be detrimental to aspens but in reality they only kill a few individual trees. Aspen tree trunks invariably become afflicted with disease after 100 years or more, but the root systems are apparently immune. The only natural force that appears to limit growth of aspen are pocket gophers, which in large numbers can chew aspen root systems back faster than they can grow.

Now for the bad news. The weather forecast doesn't look good for the aspen. On the one hand, more droughts and warmer temperatures — conditions forecasted by most climate scientists for much of the aspen's prime range — spell disaster for this moisture-loving species. There is little doubt that in marginal habitats — aspen might be on its way out. Conversely, more forest fires could open new habitat for aspen, and some studies have shown an increase in atmospheric carbon dioxide aids aspen, producing longer roots and faster growth rates. The prevailing consensus, however, is that while some areas might see more aspen in the years ahead, the overall aspen range is retracting. The quaking aspen will have a more difficult time adjusting to climate change than many other species.

But don't worry — the quaking aspen will be just fine in most areas.

CLOSING COMMENT

I wrote about trees in general a month or so ago but due to a special request from my sister in Utah, I did the research and wrote this article about the Quaking Aspen tree. As it turns out, the quaking aspen is one of the most interesting trees in the world. I would like to thank my sister for suggesting it – I learned a lot.

And besides that, if I had not written this article, I would have never thought of digging up that old photo of me hugging a quaking aspen tree!!

After reading this article, I think you will agree that the quaking aspen is a very unique tree – Right?

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