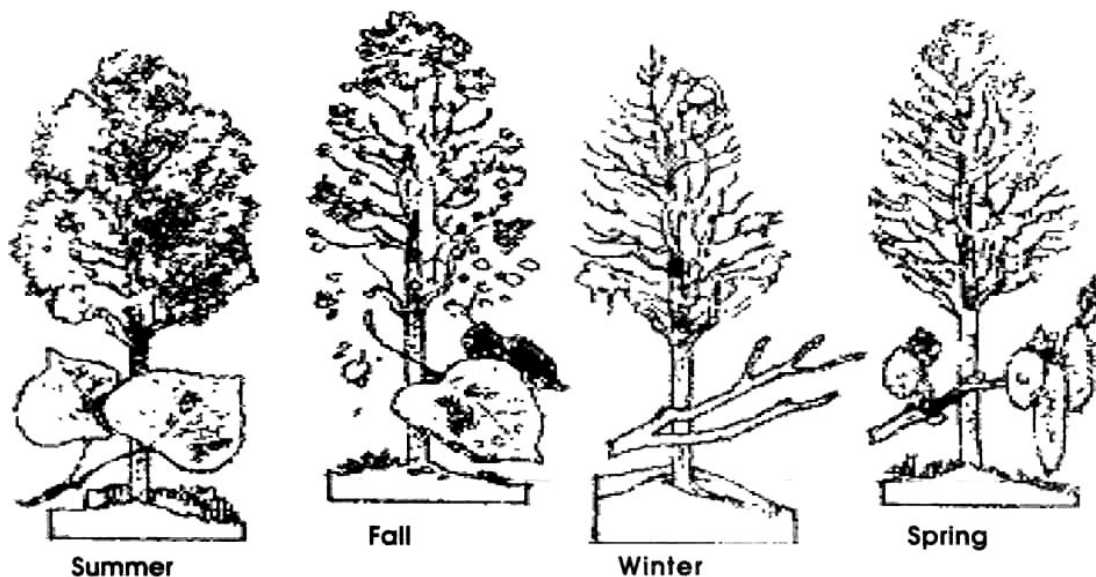




Aspen Beauty



Seasons of the Aspen

During the summer, photosynthesis is the activity that makes sugars in green aspen leaves. As temperatures fall and daylight shortens, the tree produces less green chlorophyll, and leaves lose moisture as fluid movement is reduced within the twigs, stems, and leaves. Yellow carotenoid, gold xanthophyll, and red anthocyanin pigments then begin to show, beautifying the autumn landscape. Within days of color change, a layer of tissue forms between leaf stem and twig, shutting off all fluids; the leaves turn brown and fall or are blown off of the tree. Leaf loss prevents winter desiccation from cold winds when frozen soil inhibits moisture replacement.

While bare branches readily shed snowfall, the lack of food production coupled with dehydration make survival of the long winter challenging. On some aspens there is a greenish tinge to the whitish trunks; some chlorophyll is in the trunk, permitting some photosynthesis (food production) even in winter. When higher trees shade aspens below, the aspens may self-prune low branches. Blackeye-like knobs indicate where branches detached.

Spring brings renewed moisture and warmer nights. Each catkin at the tip of twigs is formed of many flowers. While an aspen may have both male and female flowers, rarely are both present on a single tree.

An Uncommon Tree

Quaking aspen, while a common tree, has an uncommon lifestyle, especially in the semi-arid areas of the Rocky Mountains. Aspen reproduce by both root sprouts and seeds. Root sprouting, or suckering, is stimulated by high ground temperatures such as fire might cause. These genetically identical trees with a common root system are called *clones*.

In spring all the suckers from a common root system—the clones—will form buds. In the fall the clones will change color simultaneously. Neighboring clones from another common root

system are independent and have their own “schedule” for changing color and the shade of gold they turn. A grove of aspen can be one clone or several. Only a small number of aspen flowers produce fertile seeds. The tufted seeds are dispersed on air currents. Green leaves quickly follow flower production.

Aspens are succession or pioneer trees, often growing in an area disturbed by logging or fire. Aspen groves provide filtered sunlight for plants growing on the forest floor. Such light is conducive to spruce and fir seedlings that will grow and eventually replace the aspen trees.

Utilizing Sunlight

The name, “Quaking Aspen” (*Populus tremuloides*) comes from the tree’s characteristic trembling leaves. The flattened stem is perpendicular to the plane of the leaf surface causing the leaf to flutter in the wind. Photosynthesis is maximized with the increased exposure to sunlight created by the quaking leaves. This is an adaptation to the short growing season at high elevations. Another adaptation to the short growing season is found in the photosynthetic ability of the bark. If the aspen receive

insufficient light for photo-synthesis, they will self-prune, as noted above.

When the aspens become crowded by larger, shade-producing trees, such as pine, spruce, and fir, they rise higher, reaching for sunlight. This can result in spindly trees. Eventually the aspens die back and wait for a disturbance to open up the forest and allow the sunlight to warm up the forest floor, thus stimulating the roots to send up suckers.

Trees and Forest

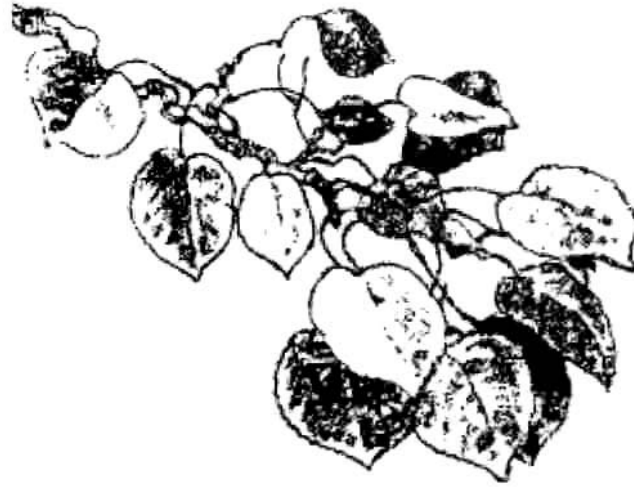
Aspen groves support a rich diversity of plant and animal life. The low acidity of aspen leaves contributes mineral nutrients useable by many invertebrates, bacteria, and fungi. Grasses and forbs (flowers) provide food and shelter for insects and mammals small and large. Ants, chipmunks, ground squirrels, and pocket gophers are plentiful in the under story. The abundance of small prey attracts predators such as coyotes, red fox, long-tailed weasels, and birds of prey. In a grove mothers hide young, and bulls remove velvet from antlers.

Deer and elk seek rest, cover, shade from the hot sun, and forage in the aspen grove. In winter elk and beaver gnaw the bark to obtain food. Bird life is abundant in aspen forests. The soft trunk wood easily yields to woodpeckers, nuthatches, chickadees, and other excavators. Abandoned nest sites are utilized by wrens, bluebirds, and swallows. Sapsuckers feed from holes they have drilled. Hummingbirds, warblers, and others glean insects from the trees.

Threats

Various human activities cause changes to aspen communities. Fire suppression may favor growth of other plants. Extirpation of large predators and expansion of homesites throughout elk habitat force elk to rely heavily on aspen shoots and bark in harsher months of the winter. Wounds on the trees from elk and deer host fungal infections. These appear as black cankers on the

tree trunks. In turn reduction of aspen habitats affect all the plants and animals that rely on them for health and survival. Rocky Mountain National Park is conducting research into the health of the aspen communities in the park. This research will lead to better management of wildlife that uses the aspen groves for their own survival.



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Park information is available at 970-586-1206 or on-line at www.nps.gov/romo

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