ZION
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Bryce Canyon

Trees of Zion and Bryce Canyon National Parks

One of the striking features of Zion and Bryce Canyon National Parks is the abundance of dense green foliage intermingled with the varicolored rocks so characteristic of these areas. The native trees include both evergreens, or conifers, and broad leaf or deciduous trees. In the first class are the pines, firs, spruce and junipers; in the second class the most common are the oaks, cottonwoods, aspen, ash, maples, blackberry, and the Southwestern Mesican locust. By observing the leaves (needles) of the conifers, one can easily identify the various groups. The pines, with a single exception (Pinus monophylla), have their leaves in clusters of two or more, whereas the firs and spruce have them arranged singly on the twigs. The needles of the firs are soft, flat, and blunt, while those of the spruce are stiff, angular, and sharp-pointed. Douglas fir, which is not a true fir, can be identified by the three pointed bract extending from each scale of the cone. Junipers have very small, scale-like leaves, quite different from the needle type. Variations in the leaves, fruit, and bark of the broad leaf types make for easy identification of these trees.

Within the half mile gorge of Zion, and the hundreds of deep secondary canyons of Bryce, are many conditions that modify the climate of the region. Some cliffs face the south and are exposed directly to the intense heat of the sun, producing a hot, dry condition; those facing the north receive very little sun, if any, and are always cool and moist. From these extremes all intermediate grades of exposure result. These variations in exposure and habitat produce a great variety of tree forms. The trees on the floor of Zion Canyon are in nearly every case of the broad leaf type, while those of the plateau, 2,000 to 3,000 feet above, are cone bearing (conifers). The rim of Bryce, with an elevation of between 8,000 and 9,000 feet, supports a coniferous forest.

Four life zones are represented in Zion and Bryce. The upper limits of the Lower Sonoran Zone are represented in the lowest altitude of Zion (3,700

the lowest portions of Bryce. The Transition, or Yellow Pine Belt, occurs on the plateaus of both Zion and Bryce. At Rainbow Point, in Bryce Canyon Park, spruce and fir replace the yellow pine, thus indicating the beginning of the Canadian Life Zone. However, trees that ordinarily grow and respond to one life belt may descend or advance into the next life belt, depending upon the extent to which the climate of these belts is modified by existing conditions.

According to their size and their character of producing broad or needle-like leaves, the forests of Zion and Bryce Canyon National Parks may be divided into three groups: pygmy or dwarf; deciduous; and coniferous.

Pygmy Forest. In both parks there are many talus slopes that are exposed to the sun during most of the day. The shortage of moisture and the intense heat have produced severe environmental factors to which the trees have had to adapt themselves. The result has been trees of a stunted growth. Trees common to these talus slopes are Utah juniper (Juniperous utahensis), live oak (Quercus turbinella, and Q. undulata), and the single leaf ash (Fraxinus anomala).

Deciduous Forest. The deciduous forest is found principally in Zion, although in the bottom of Bryce Canyon and through Tropic Canyon, leading into the Paria Valley, several broad leaf trees occur. Trees making up this association have leaves that are flat and thin, so that great quantities of moisture evaporate from the surface. Consequently the roots must always be supplied with water in quantity sufficient to take care of this loss by evaporation. They differ from the dwarfed trees on the talus slopes in that they cannot endure drought. However, certain types, such as the cottonwoods, willows, ashes and boxelders, seem able to endure the intense heat of the sun, for they have advanced for miles out on the desert along water courses. When the water supply is cut off they soon die, as shown by cottonwoods along the abandoned canals leading to flats that were once under cultivation near the south entrance to Zion Canyon. This forest type is not confined entirely to the canyon floor. A beautiful stand of cottonwood,

Weeping Rock and other springs in Zion, wherever seeps issuing from the base of the vertical walls furnish the necessary water for their growth.

The deciduous trees of major importance which can be seen growing in Zion National Park, particularly on the floor of the canyon, are as follows: Fremont cottonwood (Populus fremonti), narrow-leaved black willow (Salix caudata), wide-leaved black willow (Salix laevigata), boxelder (Acer iterius negundo), desert ash (Fraxinus coriacea), and Utah oak (Quercus utahensis). Those of secondary nature and not so conspicuous because of size are hackberry (Celtis reticulata) and big-tooth maple (Acer grandedentatum).

Coniferous Forest. At the higher elevations - on the plateau of Zion, and along the rim highway at Bryce - the coniferous forest occurs. The Western Yellow Pine, being the plant indicator of the Transition Life Zone, is the most abundant species. It occurs in pure stands and makes up fully sixty per cent of the forests of the plateau. In shaded ravines within the canyons and at the higher elevations near the Natural Bridge and Rainbow Point at Bryce, the Yellow Pine is replaced, for the most part, by the White Fir (Abies concolor) and the Douglas fir(Pseudotsuga taxifolia). Bristlecone (foxtail) pine (Pinus aristata) and limber pine (Pinus flexilis) are also common at Bryce. Both species have five needles in a bundle and are particularly adapted to the severely eroded portions of the canyon. Bristlecone pine is the pioneer tree, growing not only on the rim of the canyon but also in the older, more level areas within the canyon proper.

Special mention should be made of the large Douglas fir growing within the gorge on the Navajo Trail. This tree is about 125 feet tall and five feet in diameter at the base. It has lived, because of its location, five or six centuries. This shaded gorge duplicates the climate of Oregon or Washington probably better than any other place in Bryce Canyon Park, and as a result the tree appears as if it were growing in the humid Northwest instead of in the semi-arid Southwest of the Bryce region.