



Conifers (clade Gymnospermae) include the largest, tallest, and longest-lived organisms on Earth. They define their ecosystems, providing habitat and nutrition to other living things, and people depend on conifers for lumber, food, and other materials. Even in the desert, conifers shape the landscape and the way we interact with it. You may even enjoy a conifer's shade during your visit.

## Conifer or Evergreen?

Conifer and evergreen are two terms often used interchangeably. However, they mean different things and do not wholly overlap. "Conifer" (versus "flowering plant") is a group of plants that evolved from a common ancestor with their shared reproductive strategy, while "evergreen" (versus "deciduous plant") refers to any plants that independently evolved a similar resource conservation strategy.

**Conifers** are also called gymnosperms, meaning "naked seed." This group of plants is defined by having cone structure that produces both pollen and seeds. They are the sister group to flowering plants, evolving in parallel with a different strategy for reproduction.

**Flowering plants** – or angiosperms – account for most plants on Earth, not just familiar garden flowers. They are everything from grasses, yuccas, and cactuses to roses, asters, and oaks. Flowers are universal to this group, but not all flowers are immediately recognizable.



Most conifers have green needles or scales, not familiar leaves. Ephedras – like Nevada jointfir (*Ephedra nevadensis* – above) – have photosynthesizing sticklike structures but still produce tiny cones.



Most flowering plants have more familiar leaves than conifers. However, these leaves evolved into spines in cactuses like strawberry hedgehog (*Echinocereus engelmannii* – above) and blades in yuccas and agaves.



Evergreens are contrasted with deciduous plants. **Evergreens** retain leaves all year, but **deciduous plants** – like Gambel oak (*Quercus gambelii* – above, not a conifer) – shed leaves when they fall dormant for winter.



Most conifers are evergreens, but some – like larches (*Larix* spp.) – are deciduous. Similarly, many flowering plants are evergreens, including yuccas, scrub oaks, and creosote bush (*Larrea tridentata* – above).

## Conifers Conquered the Land

Flowering plants evolved during the Cretaceous Period (around 100 million years ago), but fossils of conifers go back to the Carboniferous Period (over 300 million years ago). Unlike seedless plants like mosses and ferns – which reproduce with water-dependent **spores** – conifers evolved a two-part reproductive strategy that let them pioneer dry environments. Cones and seeds paved the way.



**Cones** are reproductive structures that exchange pollen on the wind, letting conifers recombine genetics. This gives young a variety of survival strategies and the best chance for success in changing environments.



A **seed** is a little package that gives a plant embryo all the nutrients, water, and protection it needs to grow. Seeds support young plants during their vulnerable stages, allowing them to grow in harsh environments.



## Conifer Connections

Conifer seeds are nutrient-dense, leading to a fruitful partnership. Many conifers evolved seeds that pass through animals' guts unharmed while still providing a meal, meaning their partners can spread their seeds farther than they could by simply dropping to the base of the plant.



Single-leaf piñon pine (*Pinus monophylla* -- above) seeds provide about 190 calories per ounce, versus 170-180 per ounce in raw chocolate. They are a favorite of many birds and an important crop for Southern Paiute people.



The "berries" of Utah juniper (*Juniperus osteosperma* -- above) are modified cones! Though they may look appetizing from the outside, you will become instantly familiar with their cone-like nature if you bite into one.



Mormon tea (*Ephedra viridis* -- above) is incredibly important to Southern Paiute people because of its chemical components. It contains small amounts of pseudoephedrine, a medically recognized decongestant.



Standing dead ponderosa pines (*Pinus ponderosa*) -- called "snags" -- provide habitat and food for boring insect larvae, which, in turn, are food for woodpeckers like the ladder-backed (*Dryobates scalaris* -- above)

## Conifer Conservation

Conifers are ancient and resilient, but they still need time and space to adapt to change. According to the International Union for Conservation of Nature, 34% of conifers worldwide are endangered.



Fire can destroy stands of conifers that did not evolve with it, like junipers (*Juniperus* spp.) in mid-elevation scrub. However, we do as much damage to conifers like ponderosa pine (*Pinus ponderosa* -- above) when we suppress the fires they need to reproduce and to spread.



Habitat destruction is the greatest cause of conifer endangerment worldwide. While we need more space for homes, businesses, and infrastructure as the Las Vegas Valley's (above) population grows, we must also make smart choices about the habitats we conserve.

Help conifers in Red Rock Canyon by practicing **Leave No Trace** during your visit. Leave what you find, stay on trail, and be careful with fire to make sure these incredible organisms and their far-reaching connections remain a part of our global ecosystem for millennia to come.

## Conifers of Red Rock Canyon National Conservation Area

### Family Cupressaceae (cypresses, junipers, redwoods, etc.)

- Juniperus californica* (California juniper)
- Juniperus osteosperma* (Utah juniper)
- Juniperus scopulorum* (Rocky Mountain juniper)

### Family Pinaceae (cedars, firs, pines, larches, etc.)

- Abies concolor* (white fir)
- Pinus monophyllum* (single-leaf piñon pine)
- Pinus ponderosa* (ponderosa pine)

### Family Ephedraceae (ephedras)

- Ephedra nevadensis* (Nevada jointfir)
- Ephedra torreyana* (Torrey's jointfir)
- Ephedra viridis* (Mormon tea)