



Plants



A view of the Great Sage Plain, which covers much of the landscape around Hovenweep National Monument.

The Desert Landscape

Hovenweep is located on Cajon Mesa in the heart of the Great Sage Plain which stretches from Cortez, CO to Blanding, UT. As the name of the area suggests, abundant sagebrush is one of the vegetative features of this arid high desert zone. The highest and wettest point on Cajon Mesa is northeast of Cutthroat Castle at 6,800 feet with an average annual precipitation of 15 inches. From there the mesa's elevation drops 1,900 feet, sloping gently to the southwest and reaching its lowest and driest point near Cajon Ruin where average annual precipitation is about 6 inches. Four distinct vegetative groups can be identified at Hovenweep: pinyon-juniper forests blanket Cutthroat Castle; sagebrush dotted with juniper is found around Holly, Horseshoe and Hackberry; sagebrush is dominant at Square Tower; and Cajon is surrounded by scrubland.

For many, the word 'desert' conjures up images of a barren, lifeless expanse of sand, but this desert actually supports a surprising diversity of flora (and fauna) that can be seen by the careful observer. Shrubs and trees are the most visible plant life at Hovenweep, but spring and summer rains can bring impressive wildflower blooms and low-lying cacti may surprise the careless hiker! In this arid environment, plants have developed a variety of strategies to survive the scarce moisture and harsh temperature extremes that characterize this desert climate.

At Hovenweep you will find three different strategies being employed by plants in order to

survive the harsh desert conditions. **Drought escapers** make use of favorable growing conditions when they exist but go dormant when those conditions disappear. They are usually annuals, growing only when enough water is available. Seeds produced under good conditions can lie dormant for years if conditions are not favorable for germination.

It may take a bit of luck and/or the right season of the year to spot these ephemeral wildflowers, though bright red desert paintbrush (*Castilleja chromosa*) can often be spotted at Hovenweep in spring. This plant has a special strategy for obtaining the food and water that it needs; it sends out roots to encroach on nearby plants, helping itself to its neighbors' moisture and nutrients.

Drought resistors adapt their leaves to reduce water loss. They may have spiny, waxy or hairy leaves that reduce the impact of solar radiation or they may ooze light-colored salt onto the surfaces of their leaves to reflect the light. Look for claretcup cactus (*Echinocereus triglochidiatus*) whose waxy coating is thickest on the plant's sunny side helping minimize water loss. The spines provide small amounts of shade on the cactus' surface reducing its temperature and keeping moisture loss to a minimum. Instead of leaves, this plant uses its stems to photosynthesize. It only opens its pores during the cooler hours of the night to exchange oxygen for carbon dioxide to conserve moisture. Mormon tea (*Ephedra viridis*) is another plant

found at Hovenweep that photosynthesizes through its stems instead of its leaves.

Because leaf structures are often associated with water loss, some plants simply drop their leaves if water is unavailable as in the case of blackbrush (*Coleogyne ramosissima*) found at Cajon. The abundant Utah juniper tree (*Juniperus utahensis*) will stop water flow to certain parts of itself when moisture is scarce, thus allowing some outer branches to die, and giving the tree itself a better chance for survival.

Another strategy utilized by drought resistors is the establishment of elaborate root systems. When mature, the root system of the pinyon pine (*Pinus edulis*) is at least as large as the above-ground portion of the tree with tap roots stretching 40 or more feet down and lateral roots stretching just as far horizontally. Can you find the nuts of the pinyon pine resting inside its cones or on the ground below its branches? These nuts have the same amount of protein per pound as steak and were a very important part of the ancestral Puebloan diet.

Drought evaders are a distinct group of plants only able to survive in wetter “micro-climates” such as riparian areas. At Hovenweep some common drought evaders include Fremont’s cottonwood (*Populus fremontii*), coyote willow (*Salix exigua*), and singleleaf ash (*Fraxinus anomala*). Singleleaf ash takes advantage of rock cracks where runoff from the surrounding area provides the plant with increased moisture. Cottonwood and coyote willow all thrive in riparian areas and can be seen up close at Cutthroat Castle.

Cryptobiotic soil crusts are vital to plant life by giving seeds a greater chance of germinating.

Made up of a complex network of cyanobacteria, algae, fungi, lichens, and mosses, this living soil enables plant growth by retaining moisture, preventing erosion, and adding essential nutrients such as nitrogen and carbon to desert soils. Look for this dark textured soil along the trails but don’t step on it! Cryptobiotic soil crusts can take decades to fully regenerate from the damage done by a careless footstep.

Plants fill a number of important roles in all ecosystems and deserts are no exception! Without plants there would be no animals because plants are the foundation of the food web supporting everything above them. In other words, without the desert shrub there would be no deer to support the mountain lion’s diet. In many cases plants provide important animal habitat as well, whether it is a shrub providing a rattlesnake with a cool place to hide, a narrowleaf yucca (*Yucca angustissima*) providing a woodrat with nest-building materials, a snag serving as a perch for a hawk searching out its prey, or a ringtail sleeping in a tree hollow.

Humans depend on desert plants so much that without them it would be much too hot here to live! In the dry sandy desert, plants can capture dust and filter pollutants, making the air we breathe cleaner. But plants not only clean the air, they also convert carbon dioxide to oxygen in an energy producing process called photosynthesis. This conversion accounts for a major reduction in CO₂ which is considered a primary “greenhouse” gas. In other words plants help control our global climate! Plants are also vital to humans for the food, medicine, and raw materials with which we make clothing and build houses.

Protect the past for the future

- Stay on designated trails and away from fallen walls and mounds of stone. Walking on or near walls weakens them, accelerating their decay.
- Do not eat or leave trash at or near archeological sites.
- Pets are allowed on trails, but must be on a leash.
- Any person who excavates, removes, damages, alters, or defaces any archeological resource on federal lands is subject to arrest and felony prosecution as dictated by the Archeological Resources Protection Act of 1979.

Protect Yourself

- Bring enough water for yourself and your pets.
- Wear sunscreen and hat; rest often.
- Respect the wildlife. Venomous insects and snakes live in the Southwest.
- Do not eat plants. Some may be poisonous.