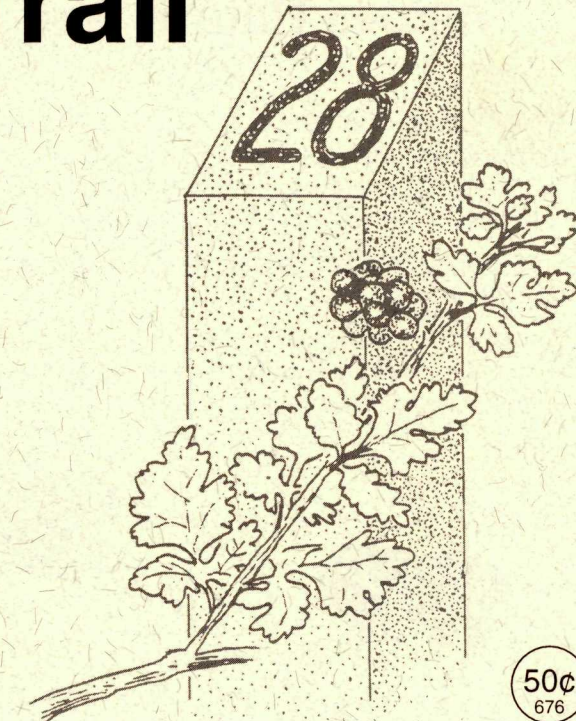
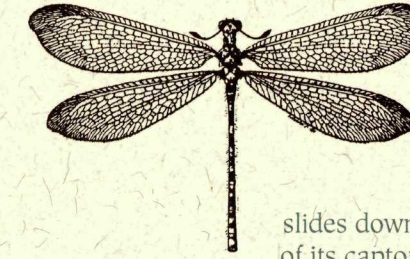


# Alcove Nature Trail



**29.** The small conical depressions in the fine sand beneath the overhang are antlion traps. Buried just out of sight at the bottom of each is a hungry little antlion larva. When an unsuspecting ant or other insect blunders in, the steep walls of the trap yield just enough to prevent its escape, and the hapless victim soon slides down into the waiting jaws of its captor.



**30.** In this desert environment, the competition for water is intense. Even plants of modest size will send out roots for impressive distances to find the moisture they need. You can easily trace the small tree roots at your feet back to their parents, but what about that large, flat root exposed in the narrow crack at the base of the cliff?

**31.** Here, surface weathering reveals a graceful pattern etched in stone. Evidence of cross-bedding, it evokes an image of restless winds and shifting sands. The Entrada Formation was deposited in Jurassic times, about 170 million years ago. From this intimate little alcove, retrace your steps to the beginning of the trail. Along the way, remember that no numbered guide posts will point out the desert cottontail's sudden dash for cover, the swallowtail butterfly's buoyant flight, the sagebrush lizard basking in the sunlight, or the sweet cascading song of the canyon wren. These and other wonders are yours to discover if you remain alert.

**25.** We just became acquainted back at Stop 22. Can you still recall my name?

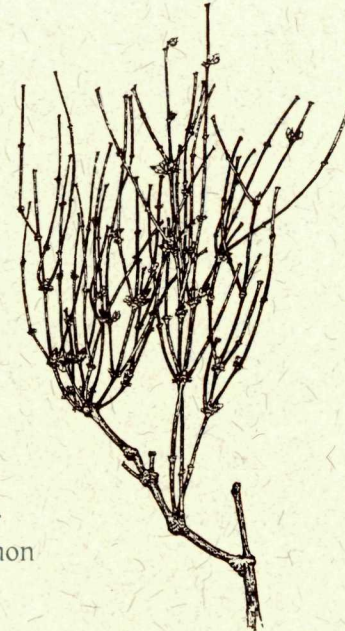
**26.** Porcupines are common, but seldom-seen, residents of the pinyon forest. Slow and awkward on the ground, these large rodents either rely on their thousands of sharp quills for protection, or they seek refuge in the treetops. Tender twigs, leaves and succulent plants are favored foods, but when times are hard, porcupines can subsist on the soft inner bark of trees like the pinyon pine, whose trunks are often severely scarred by their gnawing.

**27.** Generations of bushy-tailed woodrats have occupied this natural rock shelter, as evidenced by the great collection of droppings, seeds, twigs and other debris stored here. Such packrat "middens" may accumulate, layer upon layer, for centuries. Because materials at the bottom of the deposit may be quite old, scientists like to sample and analyze them for clues to the past. The presence of unusual plant matter will attest to ancient changes in local climate and vegetation.



**28.** Skunkbush is so-named because its foliage gives off a peculiar odor when bruised. As if to compensate, its leathery, three-lobed leaves turn a brilliant scarlet early in the fall, adding a welcome splash of color to the desert landscape. The plant's sticky red berries are edible, though quite tart, and are eagerly sought by birds and small mammals.

**22.** Ephedra's rather inconspicuous leaves, which appear as pairs of tiny brown scales, are reduced in size to help retard moisture loss, but its jointed green stems contain all of the chlorophyll the plant needs to manufacture food. Pioneers in the inter-mountain West often boiled the stems to prepare a medicinal drink, giving cause to the familiar names "Settler's" or "Mormon Tea."



**23.** Most of the time this streambed is dry, but with so much exposed rock around, the runoff from even a brief rain can quickly fill the empty channel. Loaded with abrasive sediment, the resulting torrent acts like liquid sandpaper to slowly wear away the land. Through countless millennia, running water has thus shaped the monument's mesas and canyons.

**24.** Those scraggly, yellow-orange growths overhead are dwarf mistletoe plants, parasites that draw all of their sustenance directly from the limbs of pinyon pines and other trees. Their small, compressed berries "explode" at maturity to scatter sticky seeds that, quite by chance, may adhere to the branches of potential hosts and eventually take root.

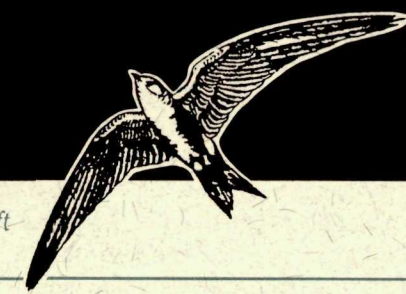
**18.** Mountain mahogany's seeds are adorned with long, feathery tails that alternately coil and straighten in response to changes in the weather. On the ground, this action helps auger the self-planting seeds into the soil. The shrub's tasty leaves are prized by deer, who often browse it heavily. Hence, many specimens here appear clipped and stunted.



**19.** Silica has replaced about ten percent of the weaker and more soluble calcite that cements the Kayenta Formation's sediments. As a result, it's one of the tougher rock units exposed around here. Resistant caps of Kayenta sandstone retard the erosion of softer underlying rocks and thus help protect the monument's towering spires and monoliths from the ravages of time and weather.

**20.** Pinyon pines are far more numerous above 6000 feet, but they may also thrive at lower elevations. This sheltered canyon, for example, favors their occurrence because it simulates a relatively higher, cooler and moister locale.

**21.** West of here, the Entrada Formation is much thicker. At Arches National Park, it has been sculpted to form hundreds of large, natural spans. Only a few small arches, mostly of the "jug-handle" variety, occur at Colorado National Monument, and none exist in the immediate area. But look around. Can you see any features that somehow exhibit arch-like tendencies?



White-throated Swift

This guide booklet has been made available for your use by the Colorado National Monument Association, a private, non-profit organization dedicated to the support of the monument's scientific, educational and interpretive programs. Supplies are limited. You may use this copy with the Association's compliments if you return it to the dispenser or Visitor Center desk when you are finished with it. If you'd like to keep it for future reference, the small cash donation helps defray printing costs and is greatly appreciated.

A variety of books and materials that will enrich your understanding of the monument's natural and cultural resource values is available for purchase at the Visitor Center.

Colorado National Monument Association  
970-858-3617



All natural and cultural features within Colorado National Monument are protected. Your thoughtful compliance with National Park Service regulations will help ensure an attractive setting for your future use and enjoyment.

Trail text continued on next panel →



## Welcome to the Alcove Nature Trail

If you go clear to the end of the trail and return, you will have walked about a mile over gently rolling terrain and invested perhaps forty-five minutes of your time.

Your reward? A closer look at just one small corner of a very special place.

We hope your enjoyment of the trail inspires you to seek and explore paths of your own in other parts of Colorado National Monument.



Mule Deer tracks

1. Rising in front of you is an exposure of Entrada sandstone. The lower, massive parts of the outcrop were once deposited as dunes on dry land, perhaps near an ancient coastline. Just above, thin horizontal ledges record a later encroachment of the neighboring sea.

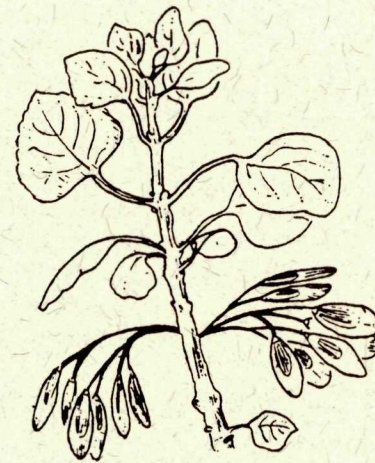
2. As the Entrada weathers, its fine grains are liberated to form a sandy soil. Grab a small handful and let it sift through your fingers. Such soils lack structure and retain moisture poorly. Thus, the vegetation here is rather sparse.

3. In some places, the surface of the soil is obscured by a dark, lumpy crust. Look closely, and you'll see that this covering is actually a living carpet of tiny organisms - algae, mosses, fungi and the like - that combine to bind and anchor the loose grains of sand. Such features are of great importance in arid regions because they promote the eventual development of more mature soils and more complex plant communities. Soil crusts may endure for centuries, but they are fragile and take years, even decades, to recover if damaged. You can help protect them by staying on the trail.

4. Rabbitbrush yields a milky sap that can be processed to make rubber, but attempts to do it on a commercial basis have failed. This matters little to the rabbits, deer and other browsing animals that feed on the plant, or to people who appreciate its showy display of yellow flowers in the late summer and early fall.

5. As it falls to the earth, rainwater absorbs carbon dioxide from the atmosphere to form a weak acid, the same one that gives carbonated beverages their sharp taste. Here, it has slowly dissolved the mineral cement that binds the insoluble grains of the Entrada to produce an intricate pattern of small cavities on the face of the cliff. The effect favors certain strata because the mildly erosive water seeps more readily through layers of relatively porous, lightly cemented rock.

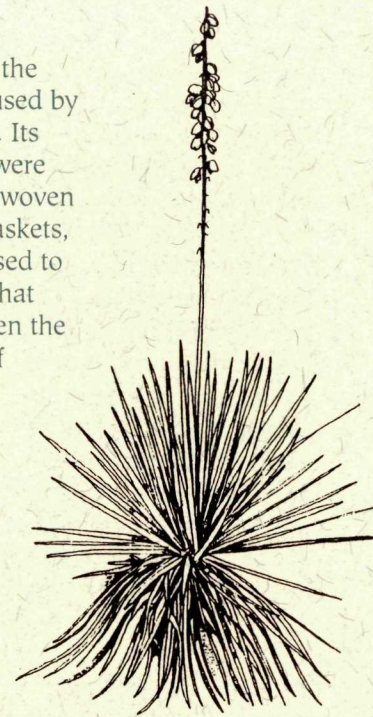
6. As its scientific name suggests, single-leaf ash (*Fraxinus anomala*) is rather unusual. It's the only ash that doesn't have compound leaves, but like its cousins, it typically produces dense clusters of seeds that resemble fat little canoe paddles. Ash seeds are consumed by all manner of rodents and birds, but a few always find their way into cracks and crevices where they germinate to ensure the perpetuation of the species.



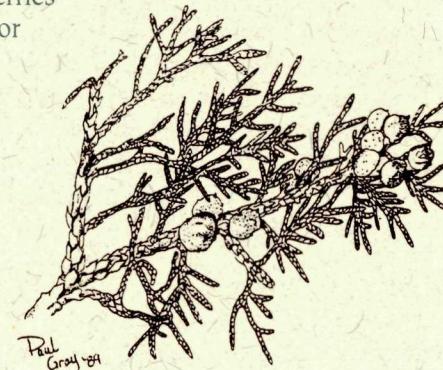
7. Iron oxide is the pigment that gives the Entrada sandstone its reddish cast. You might expect the color to be rather uniform, but in some places, the Formation is mottled by large, irregular patches of white. A likely explanation? Long ago, some of the oxide was chemically altered by acidic groundwater to a more soluble compound, which then slowly leached out of the rock.

8. Standing here 200 million years ago, you might have been knee-deep in running water. These are ancient stream deposits beneath your feet - poorly sorted muds, silts, sands and gravels washed down from a once-imposing highland to the East. Now preserved as the Kayenta Formation, they exhibit a variety of colors and textures. Here a light pinkish-gray sandstone is exposed. Elsewhere, the Kayenta may be quite coarse and dark.

9. Almost all parts of the yucca plant were used by this area's native peoples. Its flowers, fruits and seeds were eaten, its leaf fibers were woven into sandals, mats and baskets, and its roots were processed to yield a soapy substance that served as a shampoo. Even the sharp spines at the tips of the long, narrow leaves were valued. With leaf fiber still attached, they provided a handy, natural needle and thread.



10. Like living sculpture, the twisted, gnarled forms of Utah juniper pose before a backdrop of red sandstone. Clusters of frosty-blue berries and evergreen foliage offer even more visual interest. Early people gathered and dried the berries, and ground the tiny seeds to yield an edible flour. Juniper cakes probably wouldn't appeal to modern palates, but an extract from the berries is still used to flavor gin. You may recognize its distinctive odor if you crush a berry between your fingers.



11. Russian olive and tamarisk are not native to this continent. They were introduced, perhaps inadvertently, by early explorers and settlers. Lacking natural enemies in their new surroundings, such species often crowd out more desirable natives and become well established, particularly in disturbed areas. Efforts to control or eradicate them are seldom successful. Mechanical methods may actually stimulate their further spread, and the use of chemical agents is inappropriate in the protected environment of a national monument.



12. Various adaptations enable desert plants to conserve the limited amount of water available to them. Some produce a thin waxy coating on their tiny leaves to retard moisture loss; others have done away with leaves altogether. Cactus leaves have been modified to form sharp spines. These serve a dual purpose: they discourage animals from eating the soft, fleshy stem and they help shade tender plant tissues during the heat of the day.



13. All plants and animals must eventually yield their places to others. It may take a century or more for a dead tree to topple and decay in the desert, but even here the release of its stored nutrients is inevitable and complete. So, too, is the benefit derived by its living successors. Everything is recycled; nothing is wasted.

14. Sagebrush roots emit potent chemicals that discourage the growth of other plants. Called phytotoxins, they influence the local distribution of plants so that competing members of the community are assured adequate supplies of water and nutrients. Sagebrush's fresh, spicy odor is most noticeable right after a rain, but even on dry days you can experience its delightful fragrance by rubbing a few leaves between your fingers. This plant is not at all related to culinary sage, which is a member of the mint family.

15. Have you noticed the number of trees growing right along the base of the Entrada cliff? Even after light rains, a great deal of water quickly collects there after running off the smooth sandstone above - a real bonus for thirsty plants in a land that receives only about eleven inches of rain a year.

16. Different rock units erode at varying rates. In its more rapid retreat from the rim, the softer Entrada has exposed a broad surface of Kayenta sandstone to create the prominent natural benchland upon which you are standing. Level and fairly continuous, it makes an ideal travel route. Mule deer knew this long before there were constructed roads and trails, and they still move about on the bench today. Since deer are least active in the daytime, you may not encounter any. Watch for their heart-shaped tracks in the soft earth.

17. The uplands rising above the Entrada are capped here by the Summerville and Morrison Formations, whose variegated strata form the rounded hill-slopes you can see at higher elevations across the canyon. Morrison beds in the nearby Grand Valley have yielded spectacular fossil remains of both dinosaurs and early mammals, excavated there because of their proximity to railways. Nothing comparable has yet been found inside the monument boundaries.