

## Post 13: Dried Annuals and Grasses

Tortoises eat dried annual plants and grasses from late Spring through early Fall. Such species as split grass, blazing star, gilijs, desert dandelion, filaree, and many others provide important dry forage when live plants are no longer available.

## Post 14: Paperbag Bush (*Salazaria Mexicana*)

The inflated seed pods of this shrubby member of the mint family resemble tiny paper bags. As a water conservation adaptation, this shrub has very small leaves and loses most of them during the 'drought rest' of the Summer.

## Post 15: Peach thorn or Cooper's Thornbush (*Lycium Cooperi*)

This is another shrub that is favored by birds for nesting. Loggerhead shrikes and mockingbirds frequently use the dense green leaves and thorny branches to conceal and protect their nests. As do many other desert plants, the peach thorn loses most of its leaves during Summer drought conditions, displaying conspicuous thorny, blackish branches. Notice the Woodrat nest beneath this Peach thorn.

## Post 16: Creosote Ring

The creosote bush goes through several forms during its life. It begins as a single-stemmed plant and may live in this form for 50 to 200 years. Gradually, as the shrub ages, the center stems die out, leaving dead branches in the center of the plant while the edges continue to grow outward. As the center dies it fills with sand. After hundreds (and thousands) of years, the edges of the growing plant will form a ring of small creosote bushes with a radius of several meters. By estimating the rate the radius of a ring increases, scientists are able to age rings.

## Post 17: Golden or Silver Cholla (*Opuntia echinocarpa*)

The cholla (ch-OY-a), which may grow to a height of two to five feet, has yellowish flowers and a dry, spiny fruit. It is one of three species of cactus found on the Desert Tortoise Research Natural Area. Note the unique skeleton of the dead cholla stem.

## Post 18: Winter Fat (*Krascheninnikovi lanata*)

Even from a distance winter fat can be identified by the white, hairy seeds that tip the branches of the plant. It is in the same family as the spiny hop-sage. Winter fat is valued as a winter grazing plant by ranchers throughout the western United States. Indians made a tea from the plant to drink and to wash hair. The Zunis chewed the fresh root and used them as a burn remedy. Birds collect the soft hairy seed to line their nests.

## Post 19: Single-stemmed Creosote

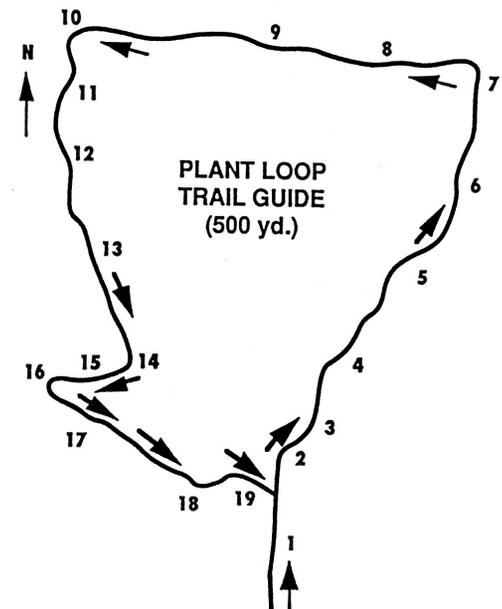
At site number 16, the single-stemmed growth form of the creosote bush was described. How old do you think this individual might be?

Trail guide provided by the  
**Desert Tortoise Preserve Committee**  
[www.tortoise-tracks.org](http://www.tortoise-tracks.org)

PLEASE RETURN THIS TRAIL GUIDE TO THE  
BOX WHEN YOU ARE FINISHED



This trail offers an introduction to the flora and fauna of the western Mojave Desert. Follow the arrows on the map along the 0.4-mile loop trail of 19 numbered interpretive posts.



## Post 1: Plants of the Mojave

There are over 200 species of perennial and annual flowering plants in the Desert Tortoise Research Natural Area. Many of these plants provide food and shelter for the desert tortoise and the other animals that live here. Xeric adapted plants have evolved many strategies to deal with the harsh realities of life in the desert. The plants selected here illustrate some of these adaptations.

## Post 2: Creosote Bush (*Larrea tridentata*)

The Creosote bush is the dominant perennial plant over much of the deserts in California. It is important to wildlife by providing shade, shelter and food. This hearty shrub displays many adaptations for moisture conservation:

- its small leaves are covered by a wax that inhibits moisture loss;
- the leaflets fold together to decrease surface area which also decreases water loss;
- and during extremely dry times the leaves are shed to further conserve moisture.

Recent studies indicate that some creosotes may be over 11,000 years old!

Here the trail veers right

## Post 3: Spiny Hop-sage (*Grayia spinosa*)

The distinctive gray-tipped leaves and striated bark distinguish this shrub, The Hop-sage is dioecious, with male and female flowers found on separate plants. This female plant displays showy pinkish bracts (flat fruits) in the spring.

## Post 4: Cheesebush (*Hymenoclea salosola*)

The Cheesebush commonly grows in disturbed areas such as washes, along roads, in cleared fields and in areas heavily grazed by livestock. It's named for the cheesy odor given off when the leaves and flowers are crushed. The Cheesebush is in the aster or daisy family.

## Post 5: Mojave Horsebrush (*Tetradymia stenolepis*)

Another member of the aster family, the Mojave Horsebrush or felt-thorn is heavily branched, is covered by short white wool, and has abundant sharp spines that extend at right angles from the branches. This is one of several species that prefers washes and often is selected as a protective nesting site by birds.

## Post 6: Creosote Galls

The round spiny balls on the stems of Creosote bushes are caused by the Creosote gall midge (*Asphondylia aurinila*),. The midge is a small, gnat-like insect, whose larvae live in the protective mass of tissue. Recent galls often appear green and those from past years are brown.



## Post 7: Anderson's Thornbush (*Lycium andersonii*)

This heavily branched shrub is in the same family as the tomato, has short needle-like spines, and has small succulent leaves. Its tiny light lavender blooms result in small red fruits that resemble tomatoes. Birds and even coyotes are known to eat these juicy berries.

## Post 8: Goldenhead (*Acamptopappus sphaerocephalus*)

The low, rounded Goldenhead has whitish bark. Pale yellow flower heads can usually be seen from May through June. Each head is composed of many tubular disk flowers with no "petal" or ray flowers. Goldenhead is another member of the highly diverse sunflower family.

## Post 9: Burrobush (*Ambrosia dumosa*)

This low rounded shrub is another member of the aster family and is commonly associated with the Creosote bush in many desert plant communities. In the Spring and after Summer rain, the lacy leaves are green, otherwise the ashy gray foliage contrasts conspicuously with the green of the Creosote. Although bitter, it is among the preferred foods of domestic sheep and feral burros. Notice that this plant has died; another fatality resulting from the recent drought.

## Post 10: Annuals

Germination of annual wildflowers occurs only when moisture is abundant enough to ensure the plant time to flower and produce seeds. In this part of the desert, most annual wildflowers germinate after the winter rains. Annual wildflowers most frequently bloom during the spring months providing necessary food for the tortoise and other wildlife.

## Post 11: Lichen

A lichen is two different organisms, an algae and a fungus, living together as a single unit in a symbiotic relationship. The algae provides food through photosynthesis and the fungus absorbs necessary water. Lichens have four growth forms; this represents the crustose form.

## Post 12: Mojave Aster (*Xylorhiza tortifo-*

The flower of this hardy desert perennial can vary from violet to lavender to white on different plants. Usually found on rocky slopes, it can be seen occasionally on flat areas such as this. In April and May a plant may produce as much as 20 blooms.

