U.S. Fish & Wildlife Service

# Balance in the Desert

## *Cabeza Prieta National Wildlife Refuge*

### Balance in the Sonoran Desert

The Sonoran Desert Ecosystem is a complex orchestra of plants, animals, geology and climate. All members of this community depend on each other for a harmonious and balanced existence.

Here, wildlife has adapted to, and depends on, daily heat and seasonal rain cycles. The dramatic landscape is the result of the arid climate and the geological history.

This field guide is an introduction to the Sonoran Desert Ecosystem. We hope it will help you fall in love with this beautiful area and learn to respect its delicate balance.

The six plants discussed in this guide can be found throughout the Sonoran Desert and in the garden area in front of the Visitor Center at the Cabeza Prieta National Wildlife Refuge.

*Caution*: Please watch your step! Venomous snakes and lizards in the area.

### *Creosote is Everywhere!*

The creosote bush is one of the most prolific plants of North American deserts. Many animals depend on this bush for food and shelter. The creosote grasshopper lives and feeds exclusively on this plant. It eats the small resinous leaves that creosote has developed to conserve water. The threatened* California leaf-nosed bat will descend upon a creosote in search of large night flying insects.

The creosote bush is an ideal place for small burrowing animals to excavate their homes. The branches hide burrow entrances of desert pocket mice and western whip-tail lizards from their predators, bobcats and American kestrels. The creosote's broad and shallow root system is well adapted to the desert's infrequent and light rains. The roots also support the soil around the animals burrows, which increase the water and air supply to the creosote's roots. Any material that accumulates in the burrow, such as scat or grass used for nests, will eventually decompose and enrich the soil.

### *Saguaro: A Desert Giant*

The saguaro is the most conspicuous cactus of the Upper Sonoran Desert and bears the state flower of Arizona. The lesser long-nosed bat, an endangered species, has developed a codependent relationship with the saguaro. Each spring, while drinking the nectar from the blossoms, the bat pollinates the flowers with pollen collected from previous visited saguaros. During the summer, the bats eat the saguaro's fruit and distribute its seed in their guano.

The Gila woodpecker carves pockets in the thick flesh of the saguaro to use as safe nesting places. The saguaro lines these wounds with scab-like crusts, called boots. When the woodpeckers abandon their cavities, elf owls will nest and seek refuge there.

A young saguaro depends on shrubs and trees for shelter. These nurse plants protect the saguaro seeds, and young plants from intense desert floor heat and trampling. Most mature saguaros have outlived their nurse plants. Saguaros may live to be 200 years old.

### *Foothill Palo Verde: Leaf or Leafless?*

The foothill palo verde, from a distance, may appear to have been stripped of its leaves and dipped in paint. Actually, the tiny leaves and photosynthetic bark are the tree's adaptations to conserve water. Under a palo verde is a good place to find a black-tailed jack rabbit feeding on the tree's leaves and seed pods. While the jack rabbit eats or rests, it hides amongst the tree's branches from its sly and quick predator, the coyote. Look for jack rabbit signs, their pellets are larger than the desert cottontail's. A moist greenish pellet is a sign that the animal has been here recently.

Once the seed pods are opened by the jack rabbit, Merriam's kangaroo rat will collect the seeds that the rabbit missed, eat some, and store the rest in caches up to 200 feet away. Later, the rat returns for the remainder of its collection - if it can find it. Often, all of the seeds are not recovered; a few of the ones left behind may germinate and grow into new trees.

### *Bursage: A Stabilizing Savior*

When it rains, water runs down the mountain slopes and carries with it loose rock material. As the speed and force of the water decreases toward the base of the mountain, rocks, gravel and sand are deposited in graceful sweeping fan shapes at the mouths of the canyons. These formations are called alluvial fans. Over time the fans grow, merge together and fill the valley floor, creating the ever-changing and shifting, wash-creased bajadas. Bursage grows on the bajadas, and is one of the most important soil stabilizers in the Sonoran Desert. Its roots help to keep the loose soils from washing away during rain. Bursage is often one of the first plants to take root in a disturbed area. It is also an important browse plant for the desert cottontail and the endangered Sonoran pronghorn.

### *A Thorny Fortress of Chainfruit Cholla*

The chainfruit cholla is one of many chollas found in the Sonoran Desert. The cactus wren builds its nest between the chainfruit's branches. Even the bush climbing Sonoran whipsnake avoids the thicket of spines guarding the nest and hatchlings.

Although the cholla's spines make the plant difficult to eat, the Harris antelope squirrel feeds easily on its fruit. Like other chollas, the chainfruit has jointed stems that detach easily and take root when they fall to the ground. Some of these joints are collected by white-throated wood rats, which eat the juicy flesh and use the spines to build fortresses around their homes. The spines help to ward off predators.

### *Desert Ironweed: A Hardy Host*

The desert ironweed provides many plants and animals with food, shelter and nesting places. Phainopeplas nest in the ironweed and eat the juicy berries of the desert mistletoe, which grows on the tree's branches. When these birds fly from tree to tree, they distribute the sticky mistletoe seeds in their droppings. In winter, mule deer also feed on mistletoe. The dry and relatively ice-free climate in the Sonoran Desert makes decomposition a slow process. Generations of termites and desert millipedes will gnaw, sometimes for hundreds of years, at a majestic deadwood snag, making the nutrients of the dead tree available for the organisms in the ecosystem. Now that you have had a brief glimpse at this ecosystem, we hope you will soon find a chance to sit, watch, and listen to the wildlife, plants, landscape, and climate of remote areas of the Sonoran Desert. If you have any questions or comments, please come see us in the Visitor Center.

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