U.S. Fish & Wildlife Service

Desert Bighorn Sheep
Kofa National Wildlife Refuge

Kofa National Wildlife Refuge's Desert Bighorn Sheep

To many of our visitors, the desert bighorn sheep is the epitome of Kofa National Wildlife Refuge's desert wilderness. Bighorn are a true sheep distantly related to domestic sheep. The name "desert bighorn sheep" applies to those bighorn inhabiting hot and dry mountain ranges with sparse vegetation. Biologists recognize four desert bighorn sheep subspecies, including the Mexican bighorn sheep (*Ovis canadensis mexicana*) found on the refuge.

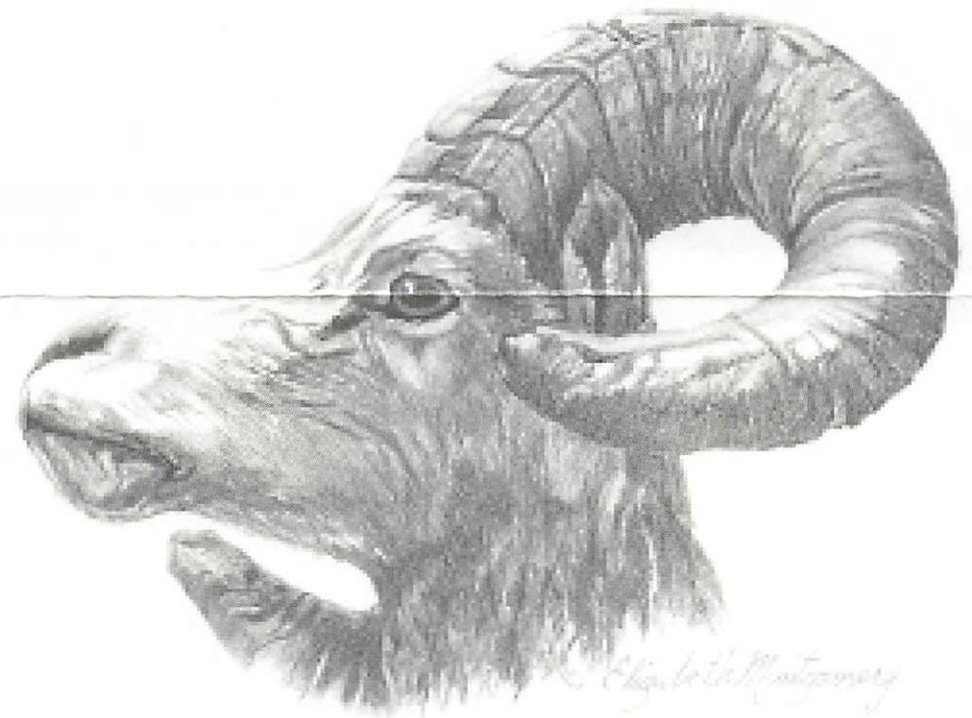
Characteristics

Desert bighorn are stocky, heavy-bodied sheep, similar in size to mule deer. Weights of mature rams range from 125 to 200 pounds, while ewes are somewhat smaller. Due to their unique padded hooves, bighorn are able to climb the steep, rocky desert mountains with speed and agility. Bighorn rely on their keen eyesight to detect potential predators and use their climbing ability to escape.

Both sexes develop horns soon after birth with horn growth continuing throughout their lifetimes. Older rams (males) have impressive sets of curling horns measuring over three feet long with a circumference of more than a foot at the base. The head and horns of an adult ram may weigh more than 30 pounds. The ewes' (females') horns are much smaller and lighter and do not tend to curl. Both rams and ewes use their horns for fighting and as tools to remove the spines from and break open cacti, which they then consume. Desert bighorn sheep live to be between 10 and 20 years old. Their age is indicated by annual growth rings in the horns.

Desert Adaptations

Desert bighorn sheep are well-adapted to the climate of the Sonoran Desert. They are able to survive the extreme heat of summer and the cold of winter because their body temperature can safely fluctuate several degrees. Bighorn also escape the heat by resting in the shade of trees and caves during the day.



Desert bighorn at Kofa National Wildlife Refuge. / © Illustration by Elizabeth Montgomery

Unlike most mammals, desert bighorn sheep have the ability to lose up to 30% of their body weight in water (more than a camel) and still survive. Bighorn may go without drinking for weeks or months during the cooler parts of the year, although lactating ewes need water more often. During the hot, dry summer months, bighorn often go three to seven days without drinking, sustaining their body moisture from their food alone. After drinking up to two gallons of water in just a few minutes, they recover from their dehydrated condition.

Food

Bighorn feed on a wide variety of leaves, twigs, flowers, forbs, grasses, and cacti. On Kofa National Wildlife Refuge, plants that bighorn are known to forage include ironwood, palo verde, jojoba, Mormon tea, brittlebush, and barrel cactus.

Social Life

Mature bighorn live in separate ram and ewe bands most of the year. They gather together during breeding season (usually July-October), though breeding may occur anytime in the desert due to suitable climatic conditions.

Rams battle to determine the dominant animal. They face each other and charge head-on from distances of twenty feet or more, crashing their massive horns together with tremendous impact until one animal ceases. The winning males are able to breed with the ewes.

Gestation lasts about six months and the lambs are typically born in late winter.

Historic Population Declines and Conservation

In the early 1900s, desert bighorn populations gradually declined. Competition from introduced animals and human activities were primarily responsible for the population decrease. Domestic cattle and sheep, as well as feral horses and burros, compete with bighorn, especially at water sources. Native herbivores, like the mule deer, do not generally adversely affect bighorn. Domestic stock also introduced diseases

to bighorn populations. Kofa National Wildlife Refuge's bighorn, like other Arizona bighorn, suffer occasionally from chronic sinusitis (caused by a bot fly) which may ultimately be fatal.

Human activities influencing bighorn numbers include habitat loss from development and habitat encroachment, such as roads, fences, canals, mining, and military and recreational activities. Individual bands and eventually whole populations have been lost as useable habitat decreases.

Conservation efforts beginning in the 1930s have resulted in population increases and the restoration of desert bighorn sheep into historic habitat. Bighorn are found today in many parts of their historic range, including Arizona, California, Nevada, Utah, New Mexico, Texas, Baja California, and Sonora. Kofa and Cabeza Prieta National Wildlife Refuges in Arizona, Desert National Wildlife Refuge in Nevada, and San Andres National Wildlife Refuge in New Mexico are all federally established areas for the conservation of desert bighorn, among other wildlife.

The reintroduction of bighorn to parts of their historic range is accomplished by capturing bighorn sheep in healthy, thriving populations and transporting them to a new location. Transplant funding comes from donations from the Arizona Desert Bighorn Sheep Society and proceeds from the sale and auction of special bighorn sheep hunting permits.

Kofa NWR Bighorn Conservation

The number of desert bighorn sheep estimated to be on Kofa National Wildlife Refuge declined from over 800 animals in 2000 to less than 400 in 2006. Subsequent surveys from 2007 to 2012 showed little increase has since taken place. As a result, transplants of bighorn sheep from Kofa National Wildlife Refuge were suspended in 2005. The U.S. Fish and Wildlife Service, working closely with the Arizona Game and Fish Department, has undertaken an effort to increase the number of bighorn by investigating the causes of mortality, controlling predation of bighorn, maintaining permanent water sources in critical locations, reducing the number of hunting permits issued annually, and identifying lambing areas that may potentially be closed to human entry during the peak of lambing season.

Sheep population surveys conducted in October 2014 indicate that numbers have rebounded somewhat to an estimated 500 to 600 animals.

Suggested Reading List

Aldo Leopold, "*A Plea for Wilderness Hunting Grounds*," Outdoor Life, November, 1925.

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Raymond M. Lee, editor, The Desert Bighorn Sheep in Arizona, Arizona Game and Fish Department, 1989.

Karl Lumholtz, New Trails in Mexico (reprinted Glorieta: Rio Grande Press, 1971).

Gale Monson and Lowell Sommer, editors, The Desert Bighorn, Its Life History, Ecology, and Management, University of Arizona Press, 1990.

Gary P. Nabhan, editor, Counting Sheep, 20 Ways of Seeing Desert Bighorn, University of Arizona Press, 1993.

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