

MORONGO BASIN ALTERNATIVE FUTURES

Desert and Nelson's Bighorn Sheep - Ovis canadensis

About the Species:

Bighorn sheep are an iconic species known for their ability to traverse steep, rocky areas in mountainous terrain. Distinct herds of bighorn sheep occur at the eastern and western edges of the Morongo Basin study area. The eastern herd moves between Joshua Tree National Park and the Marine Corps Air Ground Combat Center, while the western herd moves between Joshua Tree National Park and the San Bernardino National Forest. Males of the species roam among female "ewe groups" with smaller home ranges, and have been documented to travel up to 35 miles.



Threats:

While some populations of bighorn sheep are threatened by proximity to domestic goats or sheep that may transmit disease to wild herds, there is little threat of this type in the Morongo Basin. More critical is potential loss of habitat and habitat fragmentation from development, including the impacts of roads and possibly mining. Sheep tend to avoid roads that are heavily used, which can impact their ability to roam. Predators such as mountain lions, wolves, bobcats, coyotes and golden eagles are not generally a threat to bighorn sheep, but as desert climates become hotter and drier changes in climate may impact their habitats and their ability to find water. Recreational activities can also pose threats to the sheep (especially during breeding season) as can household pets, if not properly controlled.

Habitat:

Bighorn sheep occur in open habitat associated with steep terrain that provides security "escape" cover, which often occurs as small, discreet patches. Bighorn sheep use areas within 300 m to 1 km from escape cover. Therefore, clusters of small escape patches may represent a cumulative "meta-habitat" suitable for bighorn sheep. Vegetation types used by bighorn sheep are varied, and include low sage, pinon -juniper, desert riparian, palm oasis, and desert scrub. Sheep may locate closer to water sources in the summer. Potential habitat modeled as part of the SC Wildlands Linkage Design studies for Morongo Basin corresponds strongly with the mapped corridors for bighorn on the eastern and western edges of the basin.



Areas that could become compromised under Scenario 4. Circles highlight clusters of impact.

Potential Development Impacts:

It does not appear that bighorn sheep habitat is significantly threatened by any of the Alternative Futures modeled development scenarios; due in part to the type of terrain inhabited by the species, which does not tend to overlap with prime areas for building and development. Modeled impacts to habitat were greatest in Scenarios 1 and 4, but these were

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small and concentrated mainly in the Copper Mountain BLM Off-Road Vehicle area and the foothills southeast of the town of Joshua Tree (Figure below), in areas more likely used by bighorn sheep in the past, especially for the Copper Mountain area.

While planned development under the five Alternative Futures scenarios does not appear to present a threat to bighorn habitat, under a full build out scenario an estimated 10% of total habitat could be lost. While full build out is unlikely to be fully realized, it is useful to consider its impacts to call to attention parcels available for development that could impact habitat. Shown below are portions of the western linkage that could be significantly threatened by development around Desert Hot Springs (outside the Morongo Basin study area, but included in the linkage) resulting in a 27% increase in landscape resistance for connectivity.

Strategies for Protection:

To preserve habitat and connectivity, studies such as these can be used to Identify potential areas of development and conflict and proactively plan development. For example, an area of increased landscape resistance modeled in Scenario 2 near Desert Hot Springs (below)



Potential Change in Desert Bighorn Sheep Connectivity between Current Conditions and Scenario 2 for the Western (a) Linkage.

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Alternative Futures predictions assume that bighorn sheep traveling through linkages are protected from domestic livestock disease; however domestic pets often roam and can be a threat to wildlife. Education of the local public as well as funding of animal control, spay and neuter, and adoption programs can help reduce populations of unwanted or abandoned pets that could pose a threat.

When possible, the construction of new roads in the linkage design, and especially in bottleneck areas, should be avoided, and existing roads and recreational trails closed during reproductive seasons. Off highway vehicles should be excluded from habitat areas, with closures and exclusions well publicized and enforced.



Potential Change in Desert Bighorn Sheep Connectivity between Current Conditions and Full Build out for the Western Linkage.

Species information from SC Wildlands reports; see www.scwildlands.org. Photo Credit: USFWS.

Map Credit: Brent Brock, Craighead Institute.

The Sonoran Institute inspires and enables community decisions and public policies that respect the land and people of western North America. Founded in 1990, the Sonoran Institute is a nonprofit organization that is working to shape the future of the West.



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