

# MOUNTAIN SHEEP REINTRODUCTION IN THE CENTRAL SIERRA: A COOPERATIVE EFFORT

JEFFREY A. KEAY, National Park Service, Yosemite National Park, CA 95389

JOHN D. WEHAUSEN, University of California, White Mountain Research Station, Bishop, CA 93514

CHRISTINA D. HARGIS, USDA Forest Service, Inyo National Forest, Mono Lake Ranger District, Lee Vining, CA 93541

RICHARD A. WEAVER, California Department of Fish and Game, 1416 Ninth Street, Sacramento, CA 95814

THOMAS E. BLANKINSHIP, California Department of Fish and Game, 407 W. Line Street, Bishop, CA 93514<sup>1</sup>

## 1987 TRANSACTIONS WESTERN SECTION THE WILDLIFE SOCIETY 23:60-64

**Abstract:** Mountain sheep (*Ovis canadensis*) in the Sierra Nevada once were distributed from Jawbone Canyon to Sonora Pass. Central Sierra herds disappeared by 1880, probably because of overhunting, competition with domestic livestock for forage, and disease transmission from livestock. Efforts to reestablish sheep populations in the central Sierra began in 1983, soon after two other successful reintroductions in the southern Sierra. This effort was driven by a common goal uniting biologists from three federal agencies, one state agency, one university, and two diverse private interest groups. A formalized working group, sound data and management procedures, planning, and a supportive constituency within and outside the agencies provided the driving force to permit reintroduction.

Prior to the arrival of European man in the Sierra Nevada, mountain sheep (*Ovis canadensis*) were distributed from Jawbone Canyon (15 miles north of Mojave) to Sonora Pass (Wehausen 1979), with an isolated population in the Truckee River drainage near Reno. Sheep apparently occurred wherever appropriate rocky terrain and winter range existed. With minor exceptions, most of these populations wintered on the east side of the Sierra Nevada and spent summers near the crest.

This range included the area in and around what is now Yosemite National Park in the central Sierra Nevada Mountains. Grinnell and Storer (1924) concluded that mountain sheep were gone from the Yosemite area by the early 1880s, in spite of John Muir's indication that a few still existed in 1899 (Seton 1929). This early decline in mountain sheep probably was initiated by miners (Anonymous 1924) that prospected as early as 1852 (Russell 1947, Fletcher 1982). Large numbers of miners rushed through what is now Yosemite, over Mono Pass and into the Mono basin country from 1857 to the mid-1860s. Immediately behind the miners came domestic sheep grazing that began in the early 1860s (Fletcher 1982, Acting Superintendent's Report, Yosemite National Park, 1893) and resulted in: (1) devastation to forage (Muir quoted by Farquhar 1922, O'Neill 1984), (2) introduction of serious diseases to native sheep (Buechner 1960, Wehausen 1980), and (3) additional hunting pressure from sheepherders (Anonymous 1924). Similar declines occurred elsewhere in the Sierra (Wehausen 1987).

The first management actions affecting California's mountain sheep occurred from 1876 to 1883 when the State legislature passed bills providing mountain sheep seasonal protection followed by temporary, then permanent, full protection (Weaver

1982). The early date of these actions underlines how quickly visible decimation had occurred.

Biologists in the early part of this century expressed a desire for reestablishment of native sheep populations in the Yosemite area (Wright et al. 1932, Grinnell 1935). In the absence of effective capture and relocation technology, and fear of conflicts with remaining domestic sheep grazing, they hoped for natural recolonization. This quagmire, and a lack of knowledge regarding the limited pioneering tendencies of mountain sheep (Geist 1971), resulted in another half century without improvement in the status of mountain sheep in the Sierra Nevada.

Beginning in 1948, several efforts (Jones 1950, Riegelhuth 1965, McCullough and Schneegas 1966, Dunaway 1971) were made to locate surviving populations. Only two populations, the Mount Baxter and Mount Williamson herds (both in the southern Sierra), were documented in the 1970s, but others were suspected. In 1971, sanctuaries were established for these two herds (Dunaway 1971), and at about the same time the subspecies of mountain sheep in the Sierra Nevada was classified as Rare (currently referred to as threatened) by the state of California (Leach et al. 1974).

Plans for more active management of Sierra sheep began in 1964 when a series of interagency meetings between the National Park Service, Bureau of Land Management, Forest Service, California Department of Fish and Game, and the University of California were held to discuss reintroduction priorities. In 1972, questions remained about: (1) the existence of remnant populations, (2) the identification of suitable winter range, and (3) the taxonomic status of Sierra sheep and an appropriate source stock. The absence of adequate data led to a desire for more studies.

Intensive research of mountain sheep began in the southern Sierra in the mid-1970s. In 1978 the Mount Baxter herd was determined to be an increasing population of about 220 animals (Wehausen 1980).

<sup>1</sup> Present address: California Department of Fish and Game, 1416 Ninth Street, Sacramento, CA 95814

These accurate population data provided for a recommendation that this herd be used as reintroduction stock (Wehausen 1979). In 1979, 1980, and 1982, a total of 61 sheep were removed from the Mount Baxter herd for reintroductions to two sites within the southern Sierra Nevada (Wheeler Ridge and Mount Langley) and one in the Warner Mountains in northeastern California.

Based on surveys conducted from 1976 to 1978, Wehausen (1979) concluded that no remnant populations existed in the central Sierra. He also determined that Lee Vining Canyon, immediately adjacent to Yosemite National Park, was the only reasonable central Sierra release site, pending data on snow depths. Forest Service studies during the winters of 1983-84 and 1984-85 (Hargis, unpublished data), in combination with information from local residents, suggested snow depths would not be excessive.

In March 1986, the Lee Vining Canyon reintroduction took place when 27 mountain sheep, captured from the Mount Baxter Herd, were released. The purpose of this paper is to discuss the interagency cooperation that led to this release.

#### THE INTERAGENCY TEAM

The beginnings of interagency cooperation for this project can be traced back as early as 1964, when representatives from the National Park Service, Bureau of Land Management, Forest Service and the University of California at Berkeley first met. Interagency communication continued in the 1970s with a four-year study of Sierra Nevada mountain sheep and their habitat, jointly funded by Inyo National Forest, Sequoia, Kings Canyon and Yosemite National Parks.

An interagency team was formalized in 1981 at the request of the Director of the Department of Fish and Game. The group consisted of biologists from several agencies and an independent mountain sheep researcher. The Sierra Bighorn Interagency Advisory Group began to meet on an annual basis and has proven to be instrumental in all subsequent reintroductions.

One of the first documents produced by the Advisory Group was a Memorandum of Understanding, signed in October 1984, by the Inyo National Forest, California Department of Fish and Game, and Yosemite, Sequoia and Kings Canyon National Parks. The memorandum identified the need for, and made a commitment to, cooperation between the agencies. It also outlined specific responsibilities.

#### A COMPREHENSIVE PLAN AND PROPOSAL

The need for a recovery plan was identified when the state Fish and Game Commission listed Sierra mountain sheep as rare (Leach et al. 1974). Additionally, such a document was needed because several agencies,

each with differing management directives, were responsible for sheep management. The Interagency Advisory Group completed the Sierra Nevada Bighorn Sheep Recovery and Conservation Plan in 1984.

The first management goal of this plan was to ensure the health of native populations, especially the Mount Baxter herd, since its ability to provide reintroduction stock was integral to the overall management objective. This was to be accomplished through regular translocations from the herd, in order to keep the population below carrying capacity and promote the greatest possible health of individual animals.

The second goal was to establish at least two additional populations that were both large (about 100 sheep or more), and geographically distant from each other. The rationale behind this goal was: (1) that the size of such populations would allow their use as reintroduction stock in the event of catastrophic loss of one or more populations, and (2) that geographic isolation would help ensure that at least one such large population would survive a catastrophic event, such as a disease epizootic.

The third goal of the Recovery Plan was to return mountain sheep to all former ranges in the Sierra Nevada where it was ecologically, economically, and politically feasible. The rationale was that even small populations have value in providing stability.

An examination of potential reintroduction sites revealed only three areas that could potentially support large and geographically distant populations. These sites were Wheeler Ridge near Bishop, Great Western Divide in Sequoia National Park, and Lee Vining Canyon near Yosemite. In addition, five sites were identified that could support smaller populations. Since mountain sheep had already been released on Wheeler Ridge, the Interagency Advisory Group gave priority to Lee Vining Canyon because: (1) it appeared the only feasible site to represent the central Sierra, and would be isolated, (2) it was believed to have potential to become a population of significant size (perhaps in conjunction with neighboring Lundy Canyon), and (3) it would return a large native herbivore to Yosemite National Park.

#### EVALUATION OF THE PROPOSED CENTRAL SIERRA REINTRODUCTION

The Advisory Group recognized an immediate concern with domestic sheep grazing in Lee Vining canyon and the potential for disease transmission to mountain sheep. The obvious solution was to find alternative grazing lands for the domestic sheep. An intensive search of the Inyo and the adjacent Toiyabe National Forests yielded none.

The grazing lands in Lee Vining Canyon were under the jurisdiction of three large organizations: the





