

**Memorandum**DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
Cedarville, California6-13-88  
IN REPLY REFER TO:  
4120(CA-028)  
Tuledad AMP

To : Tuledad AMP File (Evaluation)

FROM : Roger Farschon, Wildlife Biologist

SUBJECT : Mule Deer Habitat In Tuledad

Date: June 13, 1988

The decline stands in as documented in bitterbrush along Buckhorn road, on Cottonwood Mountain and in the Coppersmith Hills is real and requires management attention by BLM, and the state wildlife agencies. What is not clear from the existing studies is an understanding of the causes of the decline, the studies set up by the Bureau in the fall of 1987 in all three areas should begin to give some indication to the cause of the decline in formclass. The management response to this identified problem needs to also consider a number of other factors in developing effective habitat and population management in the Tuledad Allotment.

LIVESTOCK MANAGEMENT

The existing livestock use in the allotment is at an all time low. Case file records and information from the permittees indicate that the pre-Taylor Grazing Act number were at least double existing levels. Also, stocking levels were significantly increased during World War II and were not reduced to present levels until the adjudications of the 1960's. What should also be considered is the cattle season of use is presently at its most restricted season of use historically. During the evaluation period, one month, was taken off the fall and a half a month off the spring. The present season is significantly less than the eight to ten month seasons commonly used prior to effective use supervision developed in the 1960's. Another factor indirectly contributing to the stocking rate/season of use issue is water availability. Prior to the mid sixties, the only waters available were the naturally occurring springs, streams and ephemeral lakes. Since then, at least 20 new water sources in the form of small reservoirs have been constructed. Although there is no data for use levels or distribution from the pre-evaluation period it is logical to assume that livestock use was much more intense prior to the sixties and that water source concentration areas were severely utilized annually.

The restrictions imposed during the sixties coupled with additional water development almost certainly resulted in improvement in the vegetative community in the grazed areas. Some poorly watered zones declined in condition as livestock had better access.

HABITAT CONDITIONS AND TRENDS

Based upon the SCS range sites for Tuledad, archaeological evidence, historical information and a knowledge of the allotment, a generalized description of plant communities prior to livestock grazing can be formulated. This "pristine" Tuledad was dominated by bunchgrasses, including extensive stands of ryegrass in the lower elevations. Juniper and mahogany was confined to isolated rocky ridges. Dense brush fields were only found on steep north facing slopes. The remainder of the topography burned frequently enough that brush fields of large size were rare. The landscape was dominated by bunchgrasses with scattered brush species.

Bitterbrush was a rare shrub due to its sensitivity to fire, and complex seed dispersal biology and competition with herbaceous species.

After the introduction of livestock significant changes begin to occur. The bunchgrasses were selectively removed opening the community for additional shrubs to become established. The reduction in bunchgrasses and litter due to grazing also significantly reduced the frequency of burning through reduced fine fuels. Juniper and mahogany started moving out of their traditional rocky enclaves. The seasonal availability of water allowed palatable shrubs such as bitterbrush, mahogany, chokecherry and service berry to establish since the sites were only grazed heavily during the spring. This process was not continuous over time due to fluctuations in livestock numbers, weather variations and infrequent fires. Over a long period of time however, the landscape was effectively transformed from a grassland with scattered brush to brush lands with active tree invasion. The changes initiated in the 60's adjudications slowed the brush trends and in some cases may have reversed the process to favoring grasses over brush. The development of an effective fire suppression program has prevented significant trends back to grass domination and has allowed significant expansion of western juniper into brush fields.

At present, most vegetative communities remain dominated by brush species which generally are found in old aged stable stands. Reductions in livestock use and changes in season of use and seasonal grazing patterns has increased the competitive ability of the grass species and reduced seedling success of all species. The fire suppression regime has in some cases resulted in sites becoming totally dominated by western juniper and subsequent decreases in grasses and brush species.

Based upon projections of livestock grazing remaining in the area and continuing fire control practices, future trends in vegetative community structure can be predicted with moderate confidence. The moderate grazing pressure will allow approximately equal replacement opportunity for both brush and grass species when space in the vegetative community becomes available. Locally, this will mean that sites will retain roughly the proportions of grass and brush occurring presently. If a site contains juniper or is in proximity to juniper then juniper will also compete for the few openings in the community. As juniper becomes established and matures, the effects of shading and juniper allelopathy on other species will result in the community structure becoming dominated by juniper. Fires that do occur will initially tend to change grass-brush-juniper sites back to grass/forb dominated sites with a limited brush component. However, as juniper increase in an area and density to the point that grass and brush are significantly reduced, fire will only occasionally burn more than single trees and the few larger fires will be so hot that post fire succession will be dominated by early successional annual forb/grass sedges.

#### WILDLIFE TRENDS

The pre livestock wildlife community was significantly different than that which exists now. The grassland-scattered shrub communities were much more open and average vegetation heights were much lower than exist today. The major big game species was the pronghorn antelope. Bighorn sheep most likely were the dominant species on the steep upland slopes. Mule deer were rare, associated with juniper and mahogany of rocky outcrops and ridges and the brush fields of steep north slopes. The major herbivores were rodents, lagomorphs and insects. As livestock grazing changed the community structure to favor brush fields and increased forb densities both deer and antelope populations began to expand. Bighorn sheep were rapidly eliminated by disease and hunting. As brush fields began to be the dominant community structure, antelope were reduced to low sagebrush sites and burned areas. Mule deer however, greatly expanded

and became the most common big game species. The heavy grazing pressure also significantly reduced small herbivore populations and diversities favoring species with affinities to disturbed sites. During the 50's and early 60's, brush populations reached maturity on wide areas. The increased mobility that 4-wheel drive vehicle afforded hunters increased the harvest of deer. Deer populations began a decline. The livestock reductions of the 60's probably slowed the decline by increasing availability of herbaceous forage, but the aging of brush fields and forage losses caused by juniper invasion continued. Declines had reduced hunting success to the point that by the early 80's both California and Nevada had put highly restrictive hunting quotas on mule deer harvest in much of the Tulead Allotment. Hunter success is currently high and resident deer populations are now at a long time high. However, vegetative trends will continue to degrade mule deer and antelope habitat quality and long term population reductions are inevitable as brush fields become decadent and juniper densities increase.

#### MANAGEMENT CONSIDERATIONS

1. Long term trends in vegetative communities directly affect mule deer populations. Trends initiated during livestock forage adjudications may still be affecting habitat. Actions initiated during Tulead Allotment implementation may just be beginning to affect mule deer habitat. Increased water availability on mule deer late summer/fall areas may increase forage on those areas by all classes of ungulates. This in turn may result in declines in brush vigor due to increased browsing.
2. Increased rest and deferment by livestock may benefit grass species to the detriment of browse species by increasing the competitiveness of the grass component of the community.
3. The few fires which escape initial attack are most likely in the best quality mule deer habitat due to higher fuel levels. This is likely to occur more frequently as livestock grazing techniques favors grass production. Recent fires on Cottonwood Mountain and near Big Spring (Cal-Neva) have significantly reduced browse availability at least 4,000 acres of high quality mule deer browse habitat.
4. Without significant management action the dominant vegetative trend, juniper encroachment will continue. Prescribed burning is currently the only management technique which could be applied economically of wide areas. Dense juniper areas are probably beyond the point where prescribed fire will be an effective technique. On other sites, burning will reduce the juniper densities but will also reduce brush field and favor grasses. This will further reduce deer habitat. The important long term management question is whether the slow long term decline in mule deer habitat and populations is preferable to short term steep declines in populations and the long term maintenance of deer habitats and moderate populations.
5. Short term management should be directed to identifying and correcting factors which hasten mule deer habitat declines.

*Roger*