THE CACHE CREEK TULE ELK RANGE

Gary J. Ferrier
Bureau of Land Management
Yuma, Arizona

Edward C. Roberts, Jr.
Bureau of Land Management
Ukiah, California

Abstract. A herd of 110 Tule elk occupy the Cache Creek herd range, located in the oak-chaparral foothills of northcentral California. The Bureau of Land Management conducted an intensive inventory of the range during 1972 in cooperation with the California Department of Fish and Game. The objectives were to obtain basic elk habitat use information and make recommendations for future BLM elk range management. Results showing the following: (1) There are two sub-herd ranges. (2) A traditional breeding ground may exist. (3) The manner in which elk cross fences and fence design influence elk-fence interactions. (4) 71% of the elk range is privately owned and thus subject to land use changes that could adversely affect the elk. (5) Habitat management recommendations included private land acquisition, dense brush conversion, water development, minimizing human disturbance, and construction of a trial fence to study elk movement and livestock control.

INTRODUCTION

The Tule elk (Cervus elaphus nannodes) is classified as rare by the Bureau of Sports Fisheries and Wildlife. Of an estimated world population of 500 animals, approximately 110 live within the Cache Creek herd range. This oak-grassland-chaparral area of 35,000 acres is located in the coastal foothills of northcentral California, approximately 80 miles northwest of Sacramento (Figure 1). The weather is generally moderate, with dry, hot summers and cool, wet winters. Precipitation averages 30 inches, occurring primarily from October through May, and is predominantly in the form of rain.

The present Cache Creek Tule elk herd is the result of a reintroduction of 21 elk into their historical native range by the California Department of Fish and Game in 1922. They were released on the Swanson Mountain Range in the vicinity of the present junction of State Highways 16 and 20, also commonly referred to as the Payne Ranch Meadow.

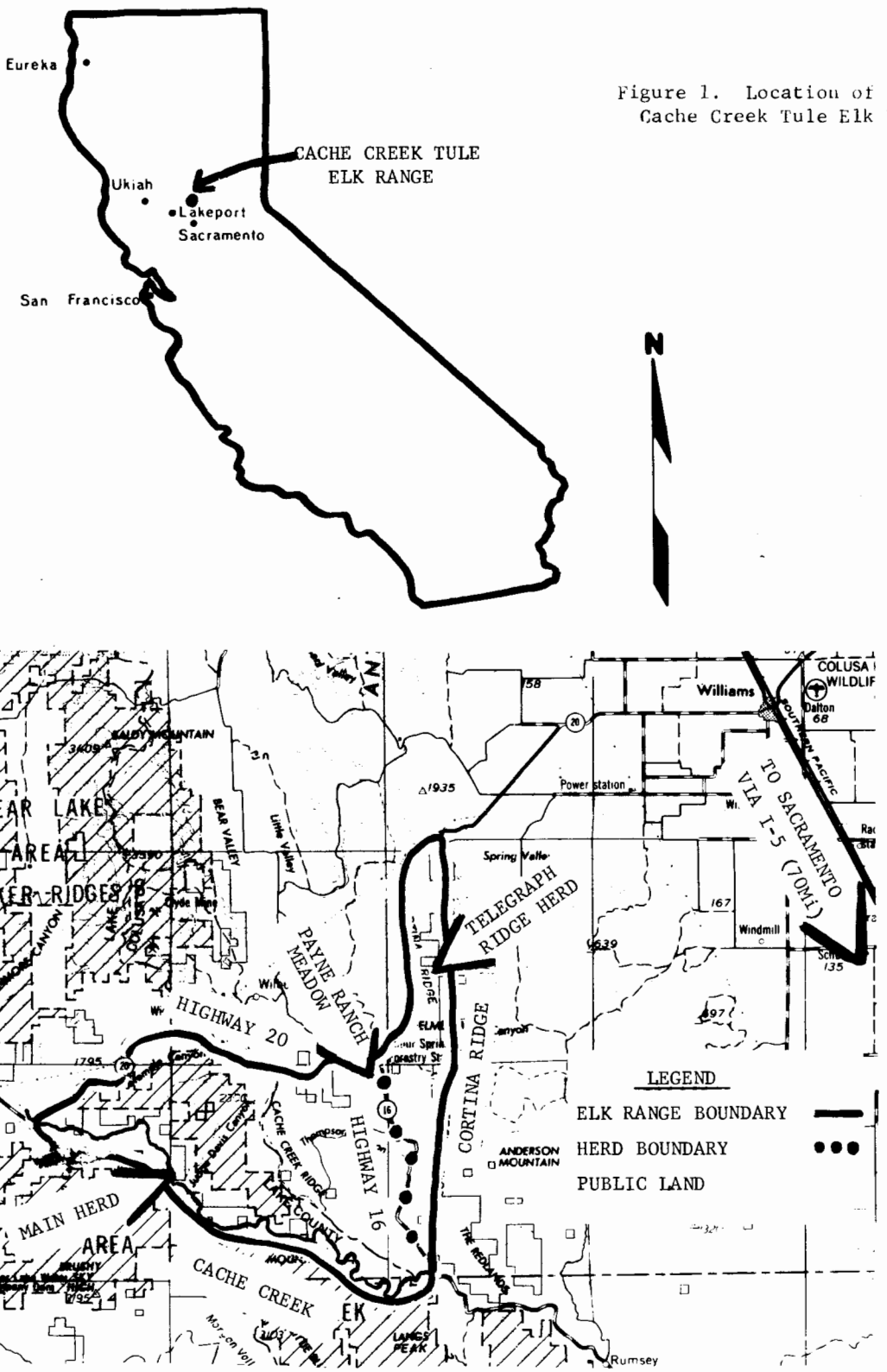


Figure 1. Location of the Cache Creek Tule Elk Range.

A doctoral thesis by McCullough (1969) analyzed the Owens Valley Tule elk herd and provided habitat and population information usable as a basis for an interagency habitat management plan. Cache Creek elk were only partially studied by McCullough, with the primary information on the herd resulting from studies by Bower (1956), Connover (1972), and Smith (1973).

Consideration for the Cache Creek elk range by the Bureau of Land Management (BLM) was initiated in April, 1969, with the completion of a preliminary habitat inventory for the 10,290 acres of public land involved. Guided by this inventory and the work of the aforementioned authors, the Ukiah BLM District began an intensive study of the Cache Creek range in June, 1972. The objective of this study was to determine specifically how the elk were using their habitat, particularly public lands, and then to make recommendations for future BLM habitat management. This paper is a summary report of the first six months of this study.

MATERIAL AND METHODS

Field procedures involved direct observation, morning and evening herd composition counts, vegetative analysis, ocular estimate transects to record forage use and pellet group transects and aerial reconnaissance to determine elk concentrations. Field data were recorded and coordinated on aerial photos and U. S. Geological Survey 7.5 minute quadrangle maps.

RESULTS

Elk Populations

Direct observations during this study indicate the existence of two separate herds with a total population of 106 Tule elk. These two herds have been designated as the Main herd and the Telegraph Ridge herd. As shown in Figure 1, the boundaries for the Telegraph Ridge herd consist of State Highway 16 on the west and south, Highway 20 to the north and the summit of Cortina Ridge to the east. The Main herd is bounded by Cache Creek on the south and west, Highway 20 to the north and Highway 16 on the east.

Based on herd observation, continued composition counts, an aerial survey, and extensive foot and horseback reconnaisance, a summary of the actual numbers and composition of both herds is given in Table 1.

The 21 elk observed within the Telegraph Ridge herd range represent the total population present. A total population of 85 elk is estimated for the Main herd. The California Department of Fish and Game has estimated the total herd population at 100-125 for the last few years.

Reliable reports indicate there are a few elk observed north and west of the presently recognized herd use areas. These elk number less than 10 and it is unclear if they remain resident there or if they are accidental wanderers from the two recognized herd groups.

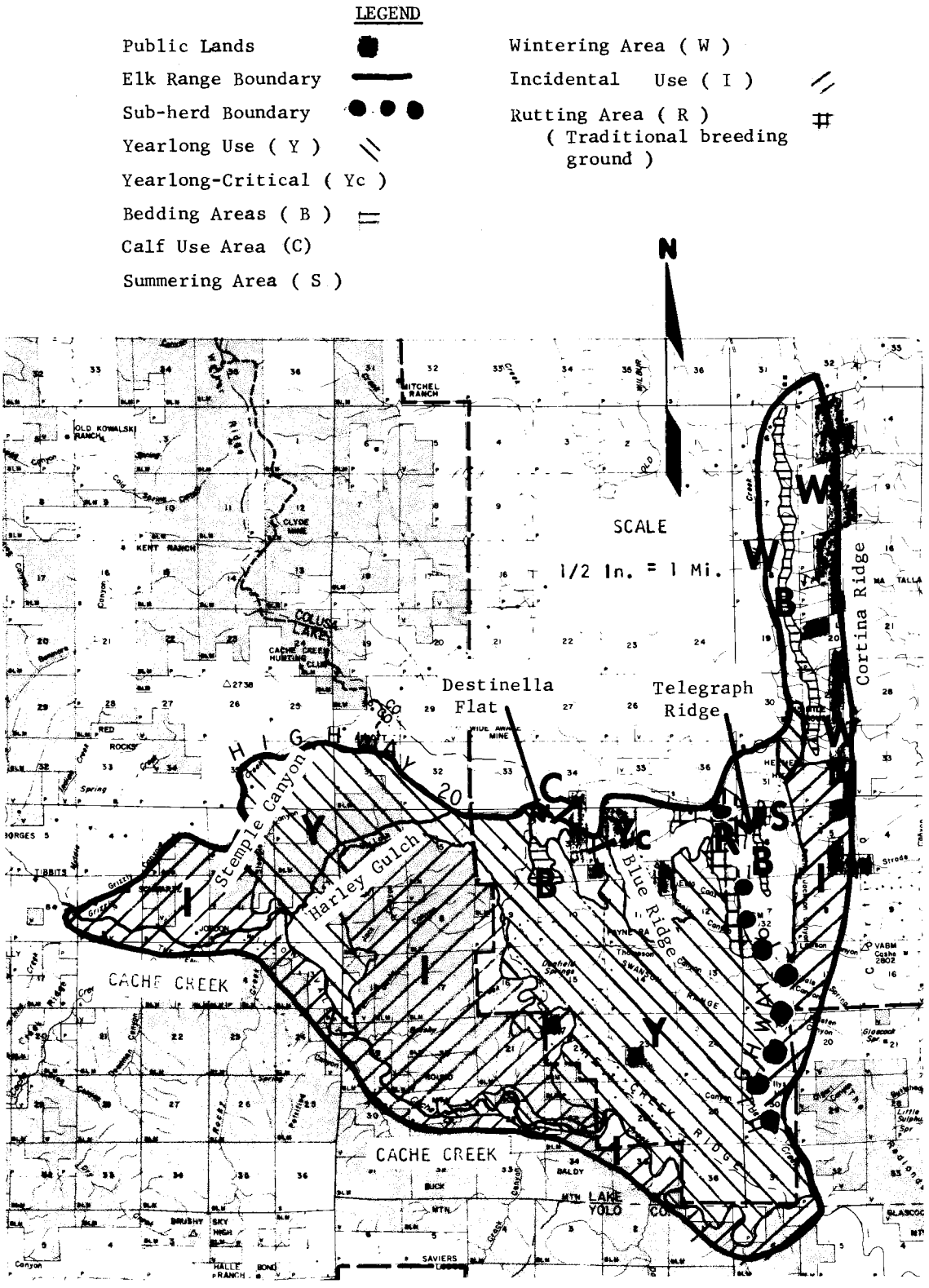
Habitat

Vegetation

Vegetative habitat types, their respective acreages, and comparative elk use are summarized in Table 2. A listing of plants observed to be eaten by elk or abundant within known feeding areas is presented in Table 3.

Preferred species include all varieties of grass and succulent aquatic plants, microseris (a forb) and the ceanothus brush species. Adult elk have been observed to strip the berries from manzanita bushes and to browse selectively on blue oak twigs and leader growth. McCullough (1969) found that the stomach contents of two Cache Creek elk contained 45% acorns, 42.5% grass, 10% filaree and 2.5% oak leaves. He also observed them foraging on new chamise sprouts and Bower (1956) reported that the elk browsed on redberry, birchleaf mahogany, wedgeleaf ceanothus and scrub oak. Browse forage is not limited in quantity

Figure 2. Major Elk Use Areas Within the Cache Creek Tule Elk Range.



but grass vegetation and wet meadow aquatic plants become extremely low in quantity during the dry, June-October drought period. The elk concentrate on such sites during this time and tend to overuse the immediately available forage present.

Water

Water availability becomes critical during the summer drought period and the elk concentrate around available water and its associated succulent vegetation until the winter rains come, generally by October 1. Permanent water for the Telegraph Ridge herd consists of a spring-seep near Highway 16 in the center of their range, a small reservoir located east of Telegraph Ridge, and a short section of Bear Creek. There are four reservoirs present that provide temporary water until July 1.

Permanent water sources for the main herd consist of four small reservoirs within the interior of the range, and Bear Creek, Cache Creek and Harley Gulch along the perimeter. There are numerous small reservoirs and pot holes scattered throughout the main herd range that provide temporary water. Water availability limits overall herd range use for both elk herds.

Elk Use Areas

Eight types of elk use areas have been identified as shown in Figure 2. These types and their respective land ownership acreages are presented in Table 4.

The Payne Ranch Meadow at the junction of Highways 16 and 20 receives the heaviest use by elk of any area within the entire herd range. Elk numbers begin to build up on the meadow with the onset of the rut, remain high during the rut, and then taper off sharply when the rut is over. The meadow might receive continual heavy use through the remainder of the year, but the elk are reported not to associate with large numbers of cattle (Smith, 1973) which are normally trucked in during October to graze during the winter and spring seasons.

Rutting activities began with antler velvet shedding which was mostly completed by the second week in August. Active rutting behavior began about July 15, reached a peak about the 15th of August, and continued at a high level until September 18. Rutting terminated October 1. The one exception to rutting behavior observed for the Tule elk by McCullough (1969) and for Roosevelt elk by Harper (1964) is that the Cache Creek spike bulls may commonly be found with some cow groups and bachelor bulls during the peak of the rut.

Rutting activities within the Payne Ranch meadow area have evolved into an apparent traditional breeding ground for the entire populations of both herds. There is no historical reference to such an area in the literature and if true, this may be an ecologically unique occurrence. The concentration of rutting into such a restricted area makes the site particularly critical to herd maintenance.

Elk and Their Environment

People

Elk interactions with people are varied. They generally accept people and their vehicles at several points along Highways 16 and 20, but often react violently to intrusions within their herd range. People stopping along the highways sometimes leave their cars to get a closer look at the elk. Given ample room, the elk will retreat 200-300 yards and casually observe the people. If someone should cross the highway fence and approach the elk, however, they often spook and leave the area, often abandoning it for up to two weeks after such an experience. The scent of humans will also cause elk to leave an area, even though they have repeatedly used it for some time before detecting the scent.

Rubber raft "float-boaters" regularly travel Cache Creek during high water periods in the spring and pass directly through riparian habitat used by the elk. The result of such interactions is unknown. Cover is abundant in this situation and the elk should easily be able to escape human detection and possible harassment.

Table 1. Number of animals observed by sex and age class.

Herd	Adult Bulls	Yearling Bulls	Adult Cows	Yearling Cows	Calves	Total
Telegraph Ridge	2	2	10	2	5	21
Herd Composition -	100 cows:	50 calves:	20 adult bulls:	40 yearlings		
Main Herd	25	3	34	3	6	71
Herd Composition -	100 cows:	18 calves:	74 adult bulls:	18 yearlings		

Table 2. Elk range vegetative types.

HABITAT TYPE*	ACREAGE Main Herd	ACREAGE Telegraph Ridge Herd	ELK USE**
Woodland-Grass	10,440	6,590	Heavy
Chaparral	11,880	440	Light (Incidental)
Grassland	2,080	610	Heavy
Riparian	60	0	Moderate
Woodland-Chaparral	1,630	0	Heavy
Wet Meadow	50	5	Very Heavy
Woodland Cutover Areas			
Clearcut	210	0	Heavy
Selective Cut	610	0	Heavy
Dryland Farming	0	205	Heavy
Gravel and Soil Slide Areas	200	0	None
TOTAL	27,160	7,850	

*Definitions of most types taken from the California Fish and Wildlife Plan (1965, Vol. 3, Part A).
**Based on elk observations, tracks, and pellet groups.

Table 4. Acreage by herd use area and ownership.

Elk Use Area Types	Main Herd Public Land	Main Herd Other	Main Herd Total	Main Herd % Public	Telegraph Ridge Herd Public Land	Telegraph Ridge Herd Other	Telegraph Ridge Herd Total	Telegraph Ridge Herd % Public
Wintering	-	-	-	-	670	2,690	3,360	20
Summer	-	-	-	-	20	1,310	1,330	2
Bedding	0	150	150	-	20	570	590	3
Rutting	-	330	330	-	-	160	160	-
Calf Use	0	70	70	-	-	-	-	-
Yearlong	2,120	14,200	16,320	13	0	210	210	-
Yearlong-Critical	510	990	1,500	34	-	-	-	-
Incidental	7,660	1,130	8,790	87	200	2,000	2,200	10
TOTAL	10,290	16,870	27,160	38	910	6,940	7,850	11

The entire elk range area is hunted for deer, but hunter numbers are severely restricted by private land closure and a lack of legal access. There were no elk observed killed by hunters during the study but some limited elk poaching has occurred historically and probably occurs now.

Livestock

On several occasions, elk have been observed in close association with up to six head of horses. Generally, they seem to ignore each other but sometimes engage in a type of play; e.g., running, kicking, tossing heads, etc.

Cattle were turned on the range after the study period and thus this relationship was not studied. Observations by Smith (1973) indicate that elk may leave an area once livestock are introduced. The reason for such a reaction has not been determined but it may be related to forage availability. Both elk and cattle would be in direct competition for available grass, particularly during the spring when both animals are seeking green forage growth.

Deer

Deer tend to avoid the elk and were repeatedly observed to abandon areas used by them. Deer will resume use of an area after the elk have left. Along Cortina Ridge, large populations of deer were found at higher ridge elevations. There was little indication of elk use here but considerable elk use existed at lower elevations, in the meadows and along lower ridges.

Fences

There are a number of references to fence damage caused by elk and to elk losses induced by fences (Rush, 1932; Craighead, 1952; Anderson, 1958; Blunt, 1960). Such incidents vary with a given set of conditions for a given time. Observations of Cache Creek Tule elk indicate that the technique of fence crossing employed by them as well as fence structure and design exert the greatest influences on elk-fence interactions.

Elk cross both over and under fences. The elk technique for crossing over fences is not a "jump" like that of a deer but rather a process of rearing up on their hind legs and then arching their body over in a type of forward push. Adults normally cross fences of only 36" in height and have not been observed to cross fences exceeding 45". Calves can jump 36" fences but prefer to go under or through them.

Fence undercrossings used by adults have ranged from 30" to 60". Bulls are required to thread their antlers under the wire during these undercrossings but are still able to negotiate the fence. Calves easily cross under or through fences when an 18" wire spacing is present.

The fences along Highways 16 and 20 appear to have created effective barriers to elk movement and have essentially produced the two sub-herd use ranges that now exist. The fence bounding the Telegraph Ridge herd is well constructed and maintained. Its height varies from 45" to 60" and it is constructed of steel posts supporting three strands of barbed wire above a base of 36" net wire. Fences along Highway 16 that create the eastern boundary for the main herd are well constructed of either six strands of barbed wire or three strands of barbed wire above 36" net wire. Both types average 60" in total height. There are a few openings in the fence along Highway 20 that could provide potential movement routes for the main herd but no elk were observed outside the fence during the study.

DISCUSSION

Cache Creek Tule elk populations and their use of habitat are influenced by vegetation, water, land ownership, people, livestock and fences. BLM habitat management recommendations resulting from this study are based on these influences and are as follows:

Table 3. Listing of plant species observed to be eaten by Cache Creek Tule elk or present within known feeding areas.

Scientific Name	Common Name	Plant Use
Grasses		
Avena barbata	wild oats	*
Bromus mollis	soft chess	*
Elymus caput-medusae	medusa head	**
Stipa pulchra	California needlegrass	*
Shrubs		
Adenostoma fasciculatum	chamise	*
Arctostaphylos spp.	manzanita	*
Ceanothus cuneatus	buckbrush	*
C. foliosus	wavyleaf ceanothus	*
C. incanus	whitethorn	*
Garrya fremontii	silktassel	*
Quercus dumosa	scrub oak	*
Q. durata	leather oak	*
Trees		
Quercus douglasii	blue oak	*
Wet Meadow Plants		
Carex spp.	sedge	**
Juncus spp.	rush	*
Typha spp.	cattails	**
Cynodon dactylon	bermuda grass	**
Forbs/Annuals		
Atriplex semibaccata	Austrailian salt bush	**
Centaurea solstitialis	yellow star thistle	**
Microseris spp.	microseris	*

*Direct observation of elk feeding on the plant.

**Plants abundant in feeding areas but not observed to be eaten by elk.

Vegetation

Dense chaparral brush covers 12,000 acres of the main herd range. Because of brush density and excessive height, elk use of chaparral is restricted to cover and browse use along the periphery. These dense brush sites should be converted to a more open type having a ground cover of grass and forbs that are known to be preferred by elk. Brush conversion techniques available include discing, chaining, and burning with subsequent reseeding.

The elk forage producing capacity of native grass vegetation could be improved by applying fertilizer during the winter and spring. Such action would increase grass vigor and overall ground cover composition.

Water

Permanent water sources for both herds are few in number and receive excessive, concentrated use by elk during the summer. Construction of large reservoirs would provide water as well as a downstream area of wet meadow vegetation. Small pot hole development would add temporary water supplies during dry years and permanent water during wet years. Overall, establishment of water would more evenly distribute elk use and possibly increase the total elk population.

Land Ownership

Approximately 71% of the entire Cache Creek elk range is privately owned and all of the critical rutting area is in private ownership. Such land status creates the potential for sudden land use changes that could adversely affect elk populations. Acquisition of private elk range lands into some type of public ownership should be a top priority objective in order to permanently guarantee future maintenance of the herd.

People

Elk conflicts with people stem from highway disturbances and use from Cache Creek floatboaters. There should be no physical access developments into the elk range that could increase this conflict. An Information and Education field program should be established at the junctions of Highways 16 and 20 and at an appropriate boat launching site on Cache Creek to caution people about disturbing the elk and simultaneously inform them about the Tule elk's rare status and use of their habitat.

Livestock and Fences

Establishment of proper livestock management practices will necessitate the construction of fences. Observations of elk conflicts with fence crossing, however, also require that fence construction consider elk movement. A 350 foot section of fence has been constructed by the BLM across the bottom of Harley Gulch having these specifications:

3 strands: top wire smooth, bottom 2 barbed

Spacing: from ground up, 18" - 8" - 10"

Total Height: 36"

This fence will be studied for its effect on elk passage and livestock control and results will be applied to future fence construction specifications.

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