MANAGEMENT PLAN FOR THE GOODALE DEER HERD

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INTRODUCTION

Deer herds throughout most of California exhibited serious long-term declines during the late 1960's and early 1970's. The Department of Fish and Game has initiated a program designed to address this problem. Through the efforts of Department personnel and through public input, a statewide plan for California deer was developed in 1976. Emphasis was added to the program by legislative mandate (AB-1521, Sept. 1977). A new deer management policy was subsequently adopted by the Department and the Fish and Game Commission specifying that: 1) planning for deer be on a herd basis; 2) selected program elements be included in each herd plan; and 3) herd plan goals generally conform to the goals of the statewide plan.

This document is intended to satisfy the legislative mandate and policy commitment to plan for the management of the Goodale deer herd. Organization of the plan follows a format including: 1) description of the deer population and physical environment which constitutes its range and habitat; 2) management unit goals; 3) problems and potential solutions; 4) management programs, objectives, and recommended prescriptions; 5) alternatives; 6) references; and 7) an appendix containing supporting information. Since herd plans are dynamic, periodic review and updating are integral parts of the planning process. As additional information is obtained the plan will be revised as appropriate.

The general goals of the statewide plan are to restore and maintain healthy deer herds at a desirable level and to provide for high quality and diversified use of the deer resource. This desirable level for the Goodale herd is characterized by a population with high buck ratios, reasonably high buck harvest (including a relatively high proportion of large bucks), and deer numbers in balance with the capacity of all seasonal ranges. Based on recent helicopter counts, the Goodale herd is presently estimated to contain 2,600 deer. This is felt to be a conservative figure.

DESCRIPTION OF THE DEER HERD MANAGEMENT UNIT

DEER HERD DEFINITION AND HISTORY

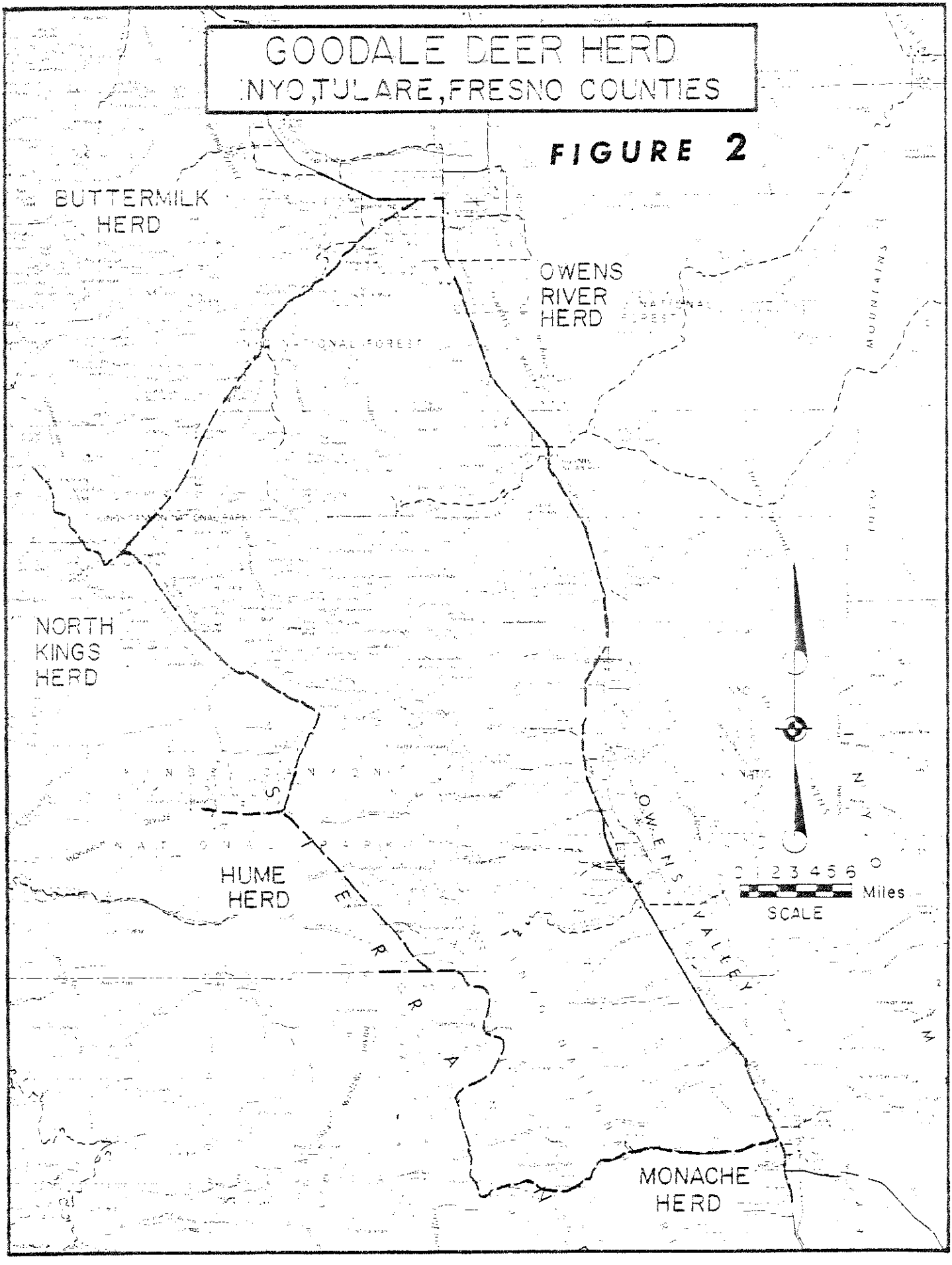
The Goodale herd inhabitats an area within Fresno, Inyo and Tulare Counties (Figure 1). This area is bounded by Bishop Creek on the north and Lone Pine Creek on the south. For administrative purposes, Highway 395 is considered the eastern boundary. The western boundary is not well defined, but is generally between the 7,000 and 8,000 foot level on the west slope of the Sierra Nevada Mountains (Figure 2).

For management purposes, the Goodale herd area has been divided into northern and southern sub-herds. The northern portion extends from Bishop Creek to Taboose Creek, a distance of about 22 miles. The southern portion, from Taboose Creek to Lone Pine Creek, covers about 28 miles.

There are several characteristics that prompted this division. Perhaps the greatest difference between the two areas is that the majority of the deer that winter in the southern portion summer over the crest of the Sierra Nevada, within Sequoia and Kings Canyon National Parks. This means in most years, that they are unavailable to hunters during the regular deer season (before the fall migration). Consequently, the buck/doe ratio in the southern portion is higher than in the northern portion, where a larger percentage of the population is exposed to hunting pressure. Also, since nearly all of the summer range in the southern sub-herd that is not in a park is within a wilderness area, access is more limited. A large proportion of the annual deer harvest in the northern sub-herd occurs on Coyote Ridge, an area with numerous roads and good hunter access.

Jones (1953) summarized the general history of deer populations in the Goodale and nearby herd areas. He noted that early explorers found very few deer on the east side of the Sierra Nevada in the 1830s and 1840s, except for limited populations in local areas. Even these local populations were severely reduced by livestock competition. Unregulated livestock grazing from the 1850s to the early 1900s greatly affected vegetation, and reduced carrying capacity for deer.

Figure 1. Location Map Goodale Deer Herd


GOODALE DEER HERD
INYO, TULARE, FRESNO COUNTIES
FIGURE 2
BUTTERMILK HERD
OWENS RIVER HERD
NORTH KINGS HERD
HUME HERD
MONACHE HERD
SIERRA
OWENS VALLEY
0 1 2 3 4 5 6 0
Miles
SCALE

Inyo National Forest reports, annual Department of Fish and Game (DFG) reports, and accounts of early residents indicate that deer were scarce up to the late 1920s in the Owens Valley herd areas. A general increase took place during the period of 1920 to 1950. Estimates for the Inyo National Forest increased steadily to 10,000 in 1930; 20,000 in 1942; 30,000 in 1944; and 38,000 in 1948 (Jones, 1953).

In 1936 Ranger E. L Shellenbarger conducted a survey of all winter ranges from the south end of the forest north to Sherwin Summit. Shellenbarger's survey resulted in subsequent annual counts as shown in Table 1. Although survey methods for these counts are unknown, this information indicates a large increase in deer numbers during the 1940s.

Hunting Harvest

Reported buck take in the Goodale herd from 1960 through 1982 and for four years in the 1950s for which information is available is presented in Table 2. The extreme fluctuations in earlier years likely were due to changes in migration times in response to weather conditions. In general, if a major storm occurred before the close of the season in mid-November, deer were more available to hunters, and the kill was high. With the present season closure in mid-October, weather plays a much smaller part in the deer harvest, except during an unusual year, since little migration normally occurs before this time. During the years 1960-1982, the average reported buck take during the regular season has been 98. An early storm did occur during the 1981 season, however, and 386 bucks were taken in the Goodale herd area.

Antlerless hunts were held in the Goodale herd area (Red Mt. Creek to Bishop Creek) for three years in the 1950s. Results were as follows:

1955 - 167 deer taken
1956 - 182 " "
1957 - 163 " "

Because most deer in the southern portion of the Goodale herd summer west of the Sierra crest (within Kings Canyon National Park), they are unavailable to hunters during most regular seasons. Consequently, a special late season hunt was initiated in 1978. Twenty-four permits were distributed, by drawing, for bucks 3-point or better. In 1979, 25 permits were issued. Hunter success was 100 percent both years. In both 1980 and 1981, 25 hunters took 24 bucks, and in 1982, 25 hunters took 23 bucks.

Table 1. Deer survey data collected on the Inyo National Forest during the period 1936-1950. (From Jones, 1953)

TABLE 1
INYO NATIONAL FOREST DEER CENSUSES

Area	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
North Fork Oak Creek	71	48	92	115	106	126	136	126	126	--	214	--	--	65	19
Taboose	98	69	231	138	100	275	117	261	305	--	494	--	--	311	509
McMurray Mdws.	188	487	795	780	1004	1201	1050	1384	1007	--	1324	--	--	798	1074
TOTAL	357	604	1118	1033	1210	1602	1303	1771	1438		2032			1174	1602

Table 2 - Reported Deer havest in the Goodale herd area (Buck harvest: 1960-1985 antlerless: 1955-1957).

Year	Bucks Taken-Regular Season	Bucks Taken-Special Late Season Hunt	Antlerless Deer Taken
1955	*		167
1956	*		182
1957	*		163
1960	93		
1961	124		
1962	42		
1963	31		
1964	122		
1965	41		
1966	143		
1967	25		
1968	100		
1969	54		
1970	83		
1971	62		
1972	128		
1973	60		
1974	79		
1975	83		
1976	106		
1977	104		
1978	103	24	
1979	115	25	
1980	97	24	
1981	386	24	
1982	75	23	
1983	85		
1984	65	25	
1985	173	45	

* Data not available for these years.

Herd Sex Ratios and Age Classes

Winter and spring herd composition count data are summarized in Table 3. Buck ratios are higher in the southern subunit. During the years 1976-1980, the ratio averaged 63 bucks per 100 does in the southern subherd and 35 bucks per 100 does in the north. After the very high buck kill of 1981, however, the buck ratio in the southern portion dropped to 36 per 100 does and the ratio in the northern portion was reduced to 24 per 100 does. The higher buck ratio in the southern portion is a reflection of the lower hunting pressure that occurs there. Although no information is available on age classes of adult deer in the Goodale herd, more older-aged bucks can be observed than in the heavily hunted herds to the north.

Mortality

There is a large loss of fawns before arrival on the winter range. Data available for recent years indicate that survival of fawns on the winter range is relatively high in most years (Table 3).

It is interesting to note the very high summer range fawn mortality during 1980 (severe enough to cause a fawn ratio of only 22 per 100 does arriving on the winter range in the southern subunit). A possible explanation for this is that the winter of 1979-80 produced an unusually heavy snowpack; about 150 percent of normal. Some of the popular passes used by hikers to cross over the crest of the Sierra were not passable to pack stock even in late August. It is possible that a substantial number of does could not reach their normal fawning areas, and gave birth to fawns in less suitable sites, where they were more susceptible to predation.

Unusually deep snow can be detrimental on east Sierra winter ranges as well. Heavy deer losses occurred on the adjacent Buttermilk winter range during the very heavy snowfall of 1968-69. No counts were made for the Goodale herd, but since snowfall was lighter in this herd range, losses were probably lower than in the Buttermilk.

The relative importance of predation, disease, parasitism, starvation and accidents is unknown. No widespread diseases have been noted and few road kills occur due to the lack of roads. However, some road kills have been reported along the Big Pine Creek road and on the Bishop Creek road, which forms the boundary between the Goodale and Buttermilk herds.

Table 3. Herd composition data for the Goodale deer herd, 1976-1980
Data expressed as bucks: 100 does, fawns: 100 does and number of deer classified (N).

Subherds	Northern					Southern					Combined				
	Fall*			Spring*		Fall			Spring		Fall			Spring	
Year*	bucks	fawns	N	fawns	N	bucks	fawns	N	fawns	N	bucks	fawns	N	fawns	N
1976-77	25	55	79	53	53	58	37	131	42	190	46	45	210	44	243
1977-78	44	51	189	43	139	87	35	231	40	207	68	42	420	41	346
1978-79	30	42	132	40	146	67	27	161	27	306	49	34	293	29	452
1979-80	44	25	242	27	159	51	51	426	36	140	48	41	668	31	299
1980-81	33	33	60	35	266	51	22	324	21	367	48	24	384	27	633
1981-82	24	30	458	32	133	36	40	794	29	200	31	36	1,252	30	333
1982-83	32	38	819	37	273	34	34	1,152	23	317	33	36	1,971	29	590
1983-84	39	56	312	53	116	53	34	499	33	170	48	42	811	41	286
1984-85	25	34	671	32	134	40	38	617	38	150	32	36	1,288	35	284
1985-86	23	31	306	30	84	32	32	792	34	231	29	32	1,098	32	315

* Spring is that of later year shown. Fall is that of earlier year shown.

HERD RANGE AND HISTORY

Climate, Topography and Soils

Climatic conditions on the Goodale herd range vary from semi-arid on the winter range to relatively moist in the higher mountains. There is a gradient of annual precipitation in the Owmes Valley resulting in drier conditions in the southern end. Precipitation comes chiefly between October and February as rain and snow in the valley, and as snow in the mountains. Summer thunderstorms are common in the mountains.

The annual average precipitation is 5.64 inches at Bishop Airport and 2.98 inches along the shore of Owens Lake. Precipitation generally increases with elevation and averages between 15 and 20 inches at 9,000 to 10,000 feet.

The Sierra Nevada escarpment rises abruptly from alluvial fans, at an elevation of 5,000-6,000 feet, to the jagged peaks of the crest at elevations over 14,000 feet. A 7,000 foot increase in elevation within a horizontal distance of five miles is not uncommon.

Soils in the Sierra Nevada are shallow to moderately deep (10 to 40 inches deep) and are typically a loamy sand texture. On the steeper slopes, soils are shallower and have higher content of rock than those on surfaces of lower relief. Soil material is very shalow and often nonexistent on the lava flows between Big Pine and Independence.

Vegetation - Winter Range

The Goodale winter range exists chiefly between 4,500 and 8,000 feet elevation and supports Great Basin type vegetation. The winter range contains the "Sagebrush Scrub" and "Pinyon-Juniper" plant communities described by Munz (1968). This includes big sagebrush (Artemisia tridentata), bitterbrush (Purshia tridentata and Purshia glandulosa), rabbitbrush (Chrysothamnus sp.), buckwheat (Eriogonum sp.), mormon tea (Ephedra sp.), and bunch grasses (Stipa sp., Oryzopsis sp., Elymus sp.). Black brush (Coleogyne ramosissima), dalea (Dalea sp.) and saltbush (Atriplex sp.) are some of the species commonly occurring at lower elevations. Pinyon pine (Pinus monophylla) occurs at the higher winter range elevations. Principal browse species on the Goodale winter range include bitterbrush, big sagebrush and buckwheat (Jones 1953 and Longhurst et al 1952).

Vegetation - Summer Range

Summer ranges east of the Sierra crest are limited, although some areas such as Bishop Creek, Coyote Flat, and Birch and Kid Mountains provide significant summer range. Summer ranges on the western slope include high sub-alpine basins and lower timbered areas with associated small meadow.

These areas support Jeffery pine (Pinus jeffreyi) and aspen (Populus tremuloides) to 10,000 feet, and foxtail pine (Pinus balfouriana), whitebark pine (Pinus albicaulis), and limber pine (Pinus flexilis) to timberline at about 11,400 feet. There is an understory of big sagebrush, bitterbrush, curl-leaf mountain mahogany (Cercocarpus ledifolius), cream bush (Holodiscus microphyllus), willow (salix sp.) mountain white thorn (Ceanothus cordulatus), manzanita (Arctostaphylos sp.), and chinquapin (Castanopsis sempervirens). Major plant communites on the summer range are "subalpine forest", "alpine fell-fields" and "sagebrush scrub" (Munz, 1968).

Water Distribution

Water is relatively abundant on summer ranges. Rivulets from melting snow as well as larger streams are common and well dispersed.

On winter ranges, streams and springs are less common, but are well dispersed. Snow is often available. Lack of water is not considered a limiting factor on either summer or winter ranges.

Land Ownership

The range of the Goodale deer herd is essentially all public land. Much of the summer range occurs on Kings Canyon and Sequoia National Parks, west of the crest of the Sierra. The summer range on the east side is within the Inyo National Forest, mostly in the John Muir Wilderness.

The winter range is primarily on the Inyo National Forest, although some occurs on land owned by the U. S. Bureau of Land Management (BLM), and a small amount is owned by the Los Angeles Department of Water and Power.

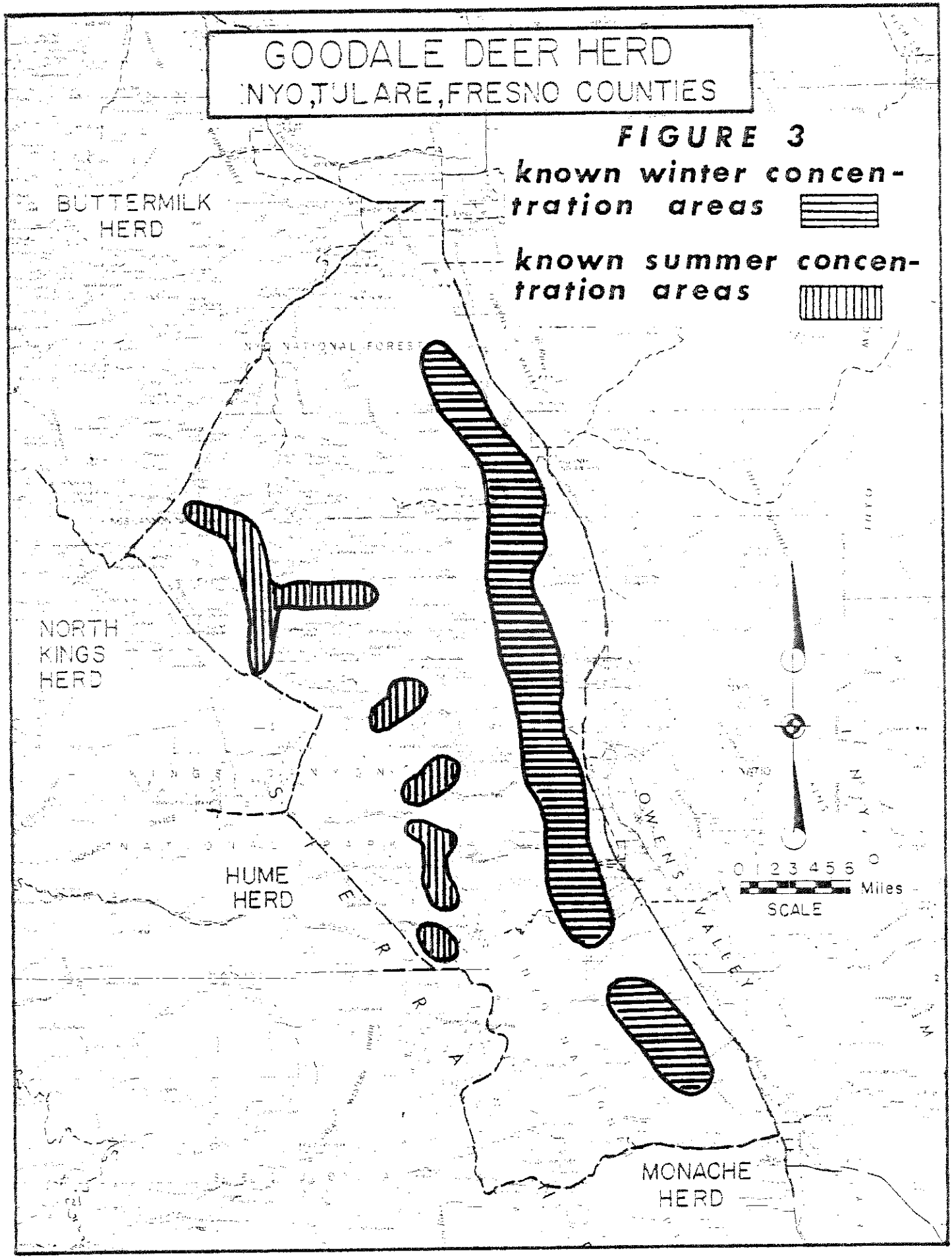
Of the private land within areas occupied by deer, there are approximately three square miles on Coyote Ridge (some of which is in the process of being acquired by the USFS), one square mile at the juncture of Tinemaha and Red Mountain Creeks, and three square miles in scattered parcels from Sawmill to Lone Pine creeks. Some of the lower portion of the herd range is owned by the L.A. Department of Water and Power. Lands owned by the Department of Water and Power are managed in a similar fashion to BLM and USFS lands. That is, little development occurs and public access is allowed. For the purposes of this report, this will be considered a public agency. Approximately 30% of the Goodale herd range is within Kings Canyon and Sequoia National Parks, 50% is within the Inyo National Forest, and more than 15% is managed by the Bureau of Land Management. Less than 5% is either privately owned or belongs to the L.A. Department of Water and Power.

Locations of Seasonal Ranges

Locations of known summer and winter concentation areas are shown on Figure 3. Locations of intermediate or holding areas, as well as known migration routes over the Sierra crest, are shown on Figure 4. Generally, winter ranges exist on alluvial fans at elevations of 4,500 to 6,000 feet. In years of little snow, however, many deer in the Goodale herd spend much of the winter at elevations as high as 8,000 or even 9,000 feet. The portion of the winter range with the greatest concentration of deer is that area from Big Pine Creek to Oak Creek, where over 1,500 deer were observed during a helicopter count in 1983. Summer concentration areas (including fawning areas) are smaller than winter ranges, numerous and quite widespread. A relatively small percentage of fawning occurs on the east side of the Sierra. Coyote Flat, Kid and Birch Mtn., and certain areas in Big Pine Canyon are known important fawning areas on the east side. Known fawning areas on the west slope are LeConte Canyon, Palisades Canyon, Upper Basin, the Bench Lake area, Woods Lake Basin, Sixty Lakes Basin, Vidette Meadow and Junction Meadow, all within national parks.

Although Figure 3 shows summer ranges less extensive than winter ranges, more complete information probably would greatly expand summer ranges.

Intermediate ranges of holding areas are those sites where migrating pause for a time when traveling from one seasonal range to another. Use of holding areas by the Goodale deer herd varies greatly from year to year depending on the amount of snow. Some deer will remain on these areas until forced down by deep snow, while others travel to lower elevation winter ranges before any


GOODALE DEER HERD
INYO, TULARE, FRESNO COUNTIES
FIGURE 3
known winter concentration areas
known summer concentration areas
BUTTERMILK HERD
NORTH KINGS HERD
HUME HERD
MONACHE HERD
SIERRA
OWENS VALLEY
0 1 2 3 4 5 6
Miles
SCALE

substantial snowfall has occurred. Known intermediate ranges are Stecker Flat, Shinglemill Bench, the area above Scotty Spring and the ridges east of Logging Flat (Figure 4). In years of little snow, significant numbers of deer remain on these areas through January. This may be important in reducing use on browse plants on key winter ranges at lower elevations during some years. The major mountain passes are used extensively by deer as migration routes. Their probable order of use by numbers of deer is Taboose, Sawmill, Bishop and Kearsarge. Some use has been noted over Shepard and Vacation passes (Figure 4).

As they reach the west slope in the spring, deer spread out to their respective summer ranges. In the fall the deer follow specific routes from the passes to their intermediate ranges and from there to the winter ranges in response to weather changes.

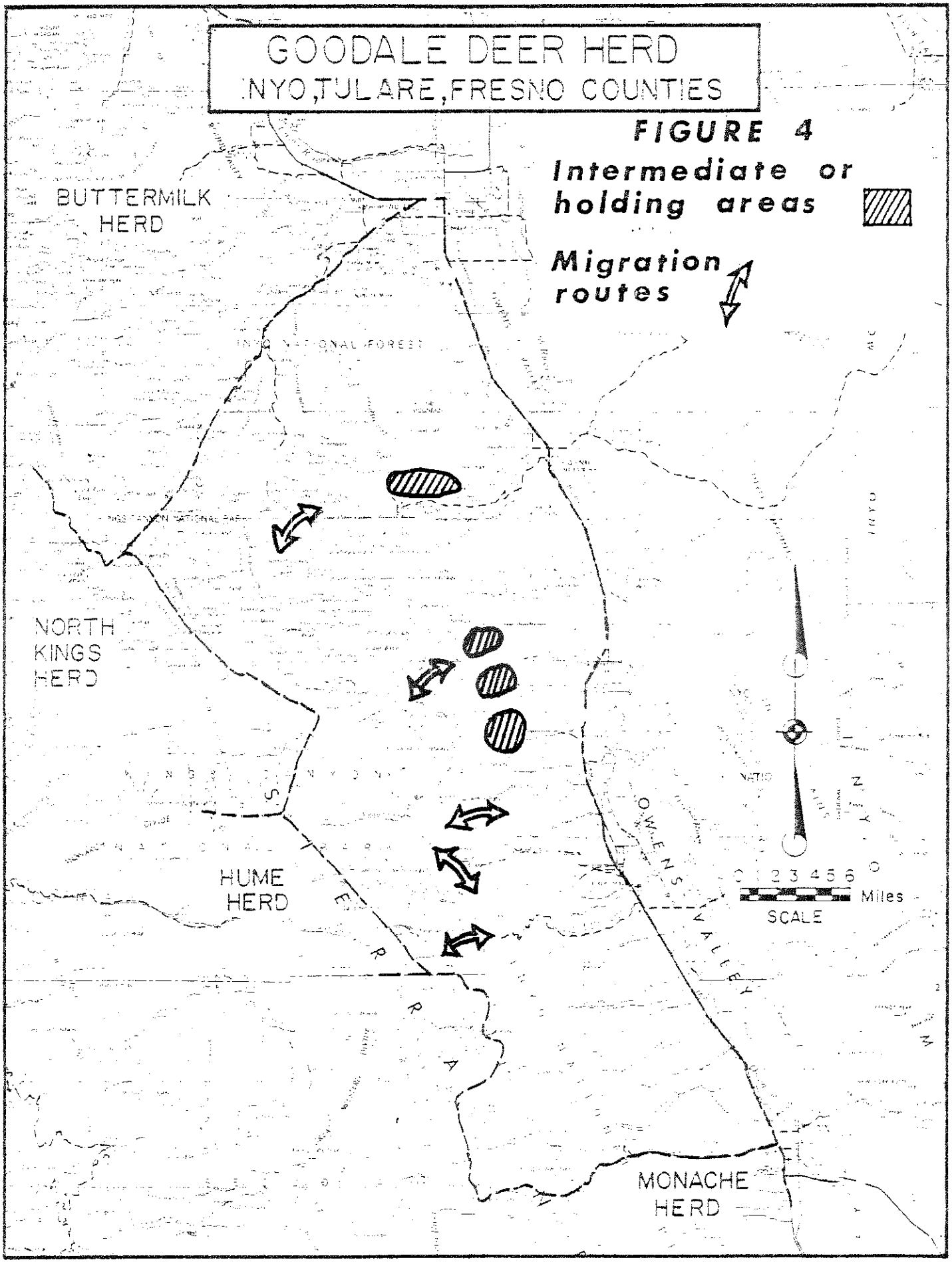
Winter Range Forage Utilization Data

The most important winter range forage species, by volume, in order of importance, for the Goodale herd are sagebrush, bitterbrush and buckwheat (Jones 1953). All are common on much of the winter range.

Work involving condition and trend plots, bitterbrush leader growth and utilization surveys, and pellet counts has been done on selected sites on the winter range. Utilization of bitterbrush varies greatly from year to year and from one location to another. During four recent years for which data are available, bitterbrush utilization averaged 35 percent on all plots. Appendix I contains information on utilization of bitterbrush leaders, deer and elk use as shown by pellet counts, and range condition and trend.

Bitterbrush stands in the Division Creek and Goodale Creek areas are not in as good condition as in other areas in the Goodale herd range. This is due partially to the fact that these plants are used by both deer and elk. In some years, much of the available bitterbrush forage at these sites is taken by elk during the summer before deer arrive in the fall.

In general, however, bitterbrush stands in the Goodale herd winter range are in much better condition than those in key areas of the Buttermilk herd's winter range, which borders the Goodale herd on the north. Buckwheat and sagebrush are abundant and not thought to be limiting.


GOODALE DEER HERD
INYO, TULARE, FRESNO COUNTIES
FIGURE 4
Intermediate or holding areas
Migration routes
BUTTERMILK HERD
NORTH KINGS HERD
HUME HERD
MONACHE HERD
INYO NATIONAL FOREST
SEQUOIA NATIONAL PARK
OWENS VALLEY
SIERRA NEVADA
0 1 2 3 4 5 6 0
Miles
SCALE

Fire History

Two major fires are known to have occurred on the Goodale herd winter and transition range in the early 1960's, totalling about 15,000 acres (Figure 5). Most of the burned areas are now predominantly Greg's ceanothus (Ceanothus greggi), desert peach (Prunus andersoni), California buckwheat (Eriogonum fasciculatum), Morman tea (Ephedra viridis and E. nevadensis), desert bitterbrush (Purshia glandulosa) and rabbitbrush (Chrysothamnus teretifolius), with an understory of annual forbs and grasses including desert needle grass (Stipa speciosa), cheatgrass (Bromus tectorum), and Indian ricegrass (Oryzopsis hymenoides). The area north of Baker Creek has come back to a stand dominated by desert bitterbrush.

Bitterbursh regeneration on this burn has been by sprouting from root stocks. Vigor and forage production of these bitterbursh stands has been greatly increased as a result of this burn. Controlled use of fire is one viable possibility for winter range habitat improvement on the Goodale herd area. This requires more experimentation, since desert bitterbrush sprouts after fires only in some locations and under variable conditions. In some situations, nearly all plants have been killed by fire. Consequently, use of fire must be carefully controlled and applied to only small plots initially.

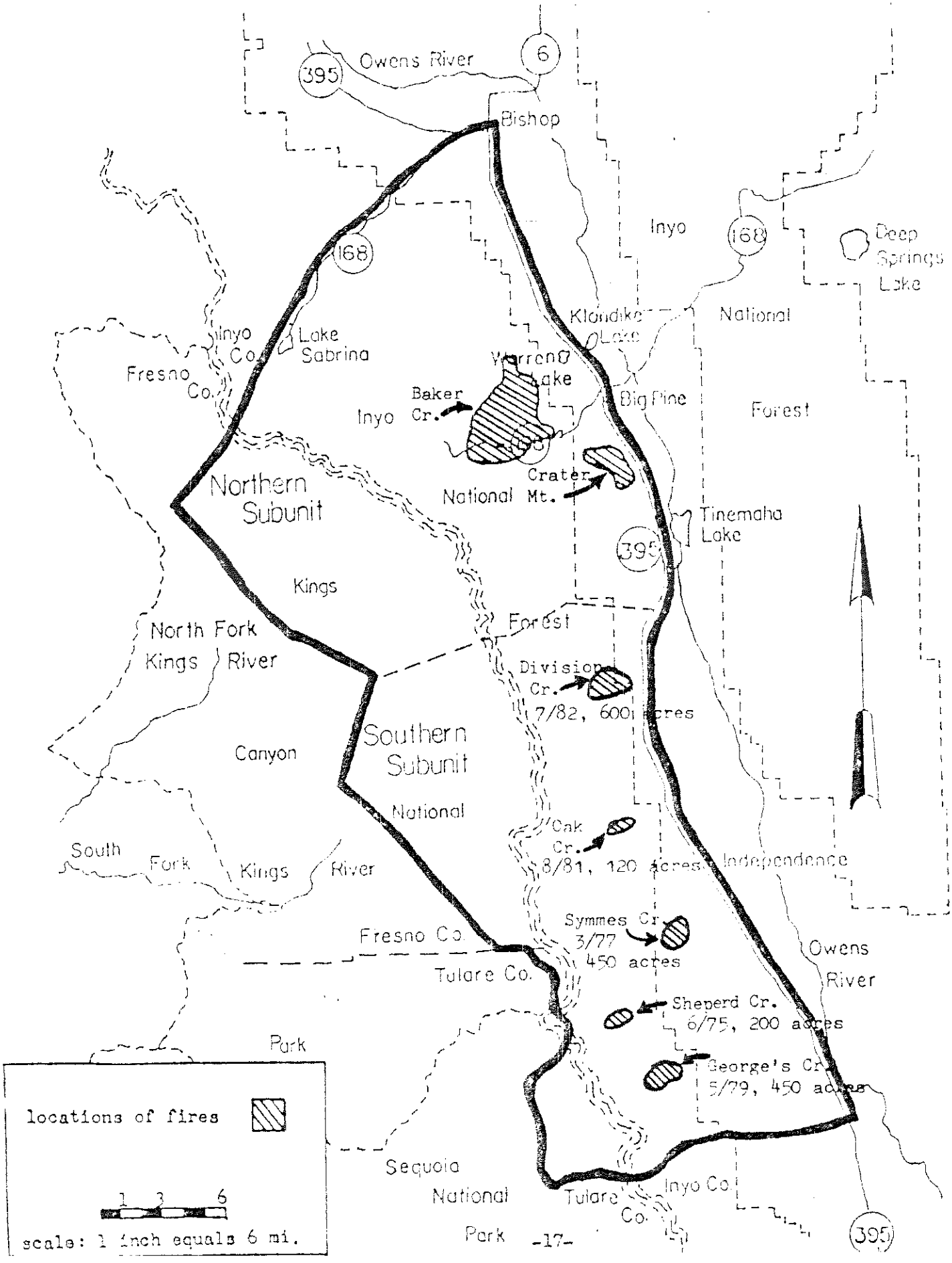
Livestock Grazing

Historical information indicates that overuse by cattle and sheep in the nineteenth century had a devastating effect on the productivity of deer ranges in the Sierra Nevada (Longhurst et al, 1952). "By 1876 there were 6,000,000 head of sheep in California and equally impressive numbers of cattle and horses. For a time the unexploited grasslands and meadows supported these animals adequately, but as the ranges became overgrazed, the carrying capacity for both livestock and deer decreased rapidly."

Historical records of this destruction by uncontrolled livestock grazing exist for specific areas, including the Goodale herd range. "According to Game Warden Roswell of Porterville a party traveling from Kernville to Mount Whitney in the 1890's found the land completely desolated by overgrazing by sheep. They saw no game during their entire trip." (Longhurst et al, 1952).

FIGURE 5

KNOWN FIRES ON THE GOODALE HERD RANGE



According to Jones (1950), hundreds of thousands of sheep made the great circle from Bakersfield across the mountains to Owens Valley. Many of the sheep were taken into the Sierra in the sumer (in some cases into the highest meadows), then along the east side of the Sierra to the Sonora Pass country. They then crossed over the mountains and traveled through the San Joaquin Valley. John Muir reported that by 1894 sheep had cleaned out the meadows in the high country of the Sierra Nevada (Muir, 1894).

In the late 1800s, cattlemen forced most sheepmen from the Sierra. Thousands of cattle were grazed in some of the same areas previously over-grazed by sheep.

the USFS was established in 1905 and some degree of grazing control was initiated. As time went on, allotments were reduced. Allotments now make up only a fraction of the number of livestock that once grazed on the eastern side of the Sierra before controls were in effect.

Presently within the Goodale deer herd range, there are 16 cattle grazing allotments totalling 4,975 Animal Unit Months (AUMs) on the Inyo National Forest (and waived private land within the National Forest) and BLM lands. In addition, there are three special use horse and mule pastures (55 AUMs), one administrative pasture (113 AUMs), and two "Forest at Large" recreation stock allotments (108 AUMs) occuping parts of the Goodale deer herd range (Figure 6 and Table 4).

Present grazing methods on USFS lands - In the Coyote area (Sanger, Baker Creek and Peterson Mill allotments), most livestock use occurs at the higher elevations on the deer summer range. On the Peterson Mill allotment, even distribution is attempted through the use of salting and herding. The Sanger and Baker creek allotments have been combined in a system of deferred rotation. Under this system, grazing is deferred on each unit every other year until plant maturity is attained.

The McMurray Meadows allotment lies at lower elevations and is divided into three units. The wet meadows within these units provide the bulk of the forage. Currently the grazing system there also consists of a deferred rotation system.

FIGURE 6
GRAZING ALLOTMENTS on the GOODALE DEER HERD RANGE

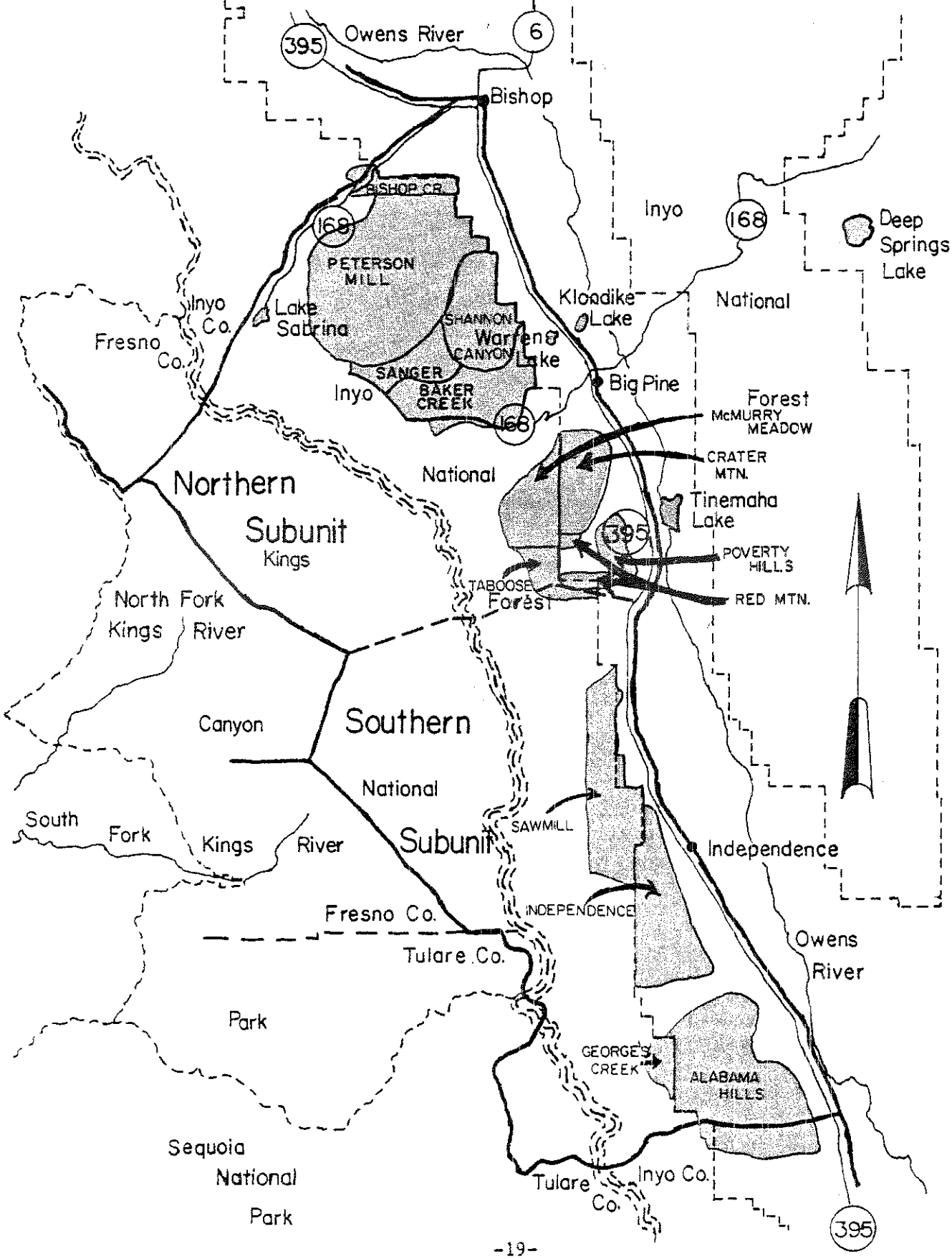


Table 4. Livestock Use on USFS and BLM lands within Goodale deer herd area.

Allotment Name	Landowning Agency	Type of Stock	Number of AUMs	Time of Use	Size (Acres)
Bishop Cr.	BLM	cattle	274	4-1 to 5-31	4,640
Peterson Mill	USFS	cattle	500	7-1 to 9-15	
Sanger	USFS	cattle	400	7-1 to 9-15	
Baker	USFS	cattle	250	7-1 to 9-15	
Shannon	USFS	cattle	200	3-1 to 5-15 10-15 to 12-30	
Shannon-Baker	BLM	cattle	24	3-1 to 5-15 10-15 to 12-30	2,920
McMurray Mdw.	USFS	cattle	175	6-1 to 9-15	
Crater Mt.	BLM	cattle	375	3-1 to 6-30	9,960
Taboose	USFS	cattle	154	3-1 to 6-15	
Red Mt.	BLM	cattle	330	3-1 to 6-15	4,640
Poverty Hills	BLM	cattle	44	12-1 to 5-31	4,560
Sawmill (Admin. pasture)	USFS	horses	113	3-15 to 5-30	
Sawmill	BLM	cattle	100	3-1 to 4-30	2,050
Independence	USFS	cattle	239	5-1 to 6-30 7-1 to 8-30	
Independence	BLM	cattle	420	4-1 to 6-30	16,640
Georges Cr.	USFS	cattle	126	3-1 to 5-31	
Alabama Hills	BLM	cattle	1364	2-1 to 5-31	47,160
South Lake (spec. use pasture)	USFS	horses	15	7-1 to 11-15	
McMurray Mdw. (spec. use pasture)	USFS	horses	40	6-16 to 11-15	
Table Mt. ("Forest at large")	USFS	horses	64	7-1 to 10-30	
Glacier ("Forest at large")	USFS	horses	44	7-1 to 10-30	
			5251		

The Shannon Canyon, Taboose Creek, and Georges Creek allotments are winter and spring browse ranges adjoining BLM and LADWP leases. Their season of use is determined by the season of the adjoining lease.

Special use pastures are fenced for commercial packstock during summer months. McMurray Meadows consists of mostly wet meadow. One pasture at South Lake consists of wet meadow, while the other is a combination of meadow, aspen, mountain mahogany and sagebrush. A deferrd rotation system is planned for the South Lake pastures.

Forest-at-large allotments are used by commerical packstock on overnight trips and for fall herd grazing in special areas of the allotment. The Table Mountain allotment is used occasionally for fall grazing, mostly in the vicinity of Long Lake. The Glacier allotment is generally used either for overnight or fall grazing. These patterns of use are subject to change.

Approximately 18,000 acres of deer and bighorn sheep winter range on USFS land from Division Creek to Thibaut Creek is fenced to exclude cattle. A portion of this is designated as the Sawmill Administrative Pasture, and USFS pack and saddle stock are grazed there in various years when grass production is high.

Present grazing methods on BLM lands - The BLM presently does not use a rest rotation grazing system. Use is controlled by setting periods when grazing is allowed, and by limiting the number of animals on each allotment. These numbers or time periods are changed when BLM range specialists determine they are no longer appropriate.

In summary, the effects of uncontrolled livestock grazing in the late 1800's were detrimental to deer populations. However, there is speculation that extensive livestock use caused ecological changes that eventually were beneficial for deer, once livestock numbers were reduced (Leopold, 1950). Longhurst (1952) supports this same theory. "In bunchgrass areas such as Modoc County the process of over-grazing by livestock makes possible the subsequent invasion of woody species, valuable as winter deer browse, into areas that had previously a low capacity for deer. Similar effects of overgrazing of grasslands are reported from other areas." Thus, deer carrying-capacity was likely increased as livestock use lessened, following livestock-induced vegetation changes.

Logging, Agriculture, Urbanization and Mining

The only logging known to have occurred within the range of the Goodale deer herd was on Logging Flat in Big Pine Canyon, Shingle Mill Bench near Taboose Creek, and Sawmill Meadow on Sawmill Creek. These activities occurred around the turn of the century. Their impacts no longer affect the deer range. No agriculture takes place within areas used significantly be deer in the Goodale herd. Lakewise, no significant housing development has occurred or is expected in the near future.

Areas of current or recent mining operations within the Goodale herd range include upper Shannon Canyon, Long Lake, Coyote Ridge, Lower Baker Creek and Sardine Canyon. Impacts so far are insignificant. With the increase in mineral prices, the potential for mining activities destructive to deer habitat does exist, however.

MAJOR FACTORS REGULATING THE POPULATION

Weather

Little detailed information is available on factors regulating the population of the Goodale herd. Weather patterns definitely have had an effect. Extremely heavy snowfall has been reported in a number of years, dating back to 1870. The winter of 1951-52 was an exceptionally severe one. Large numbers of carcasses were found by Jones (1953) in a survey of several east side winter ranges. Although 104 dead deer were found on the Buttermilk winter range, only 17 were found on the Goodale range, so the Goodale herd apparently suffered a much smaller loss than other nearby herds. Jones estimated that during this severe winter, the Buttermilk herd lost 41% of its population, the Tunawee herd 40%, and the Goodale herd 20%. He attributed this lower loss to "the better protection afforded by the lower ridges" on the Goodale herd area. An additional heavy loss occurred on herds north of the Goodale in the winter of 1968-69. Losses on the Goodale herd were not documented.

Competition

Effects of interspecific competition on the Goodale deer herd are not known precisely. Cattle use is extensive on the summer range on Coyote Flat, but its impact on deer is unknown. The presence of cattle has been found to be detrimental to fawning habitat in other areas in Califonria (Ashcraft, 1977).

Cattle have been shown to displace does with fawns from meadows and riparian areas by their presence alone. Also, once cattle have been in such a location for a period of time, forage and hiding cover are greatly depleted. This elimination of hiding cover makes it less likely that a fawn will escape predation. Since only a relatively small portion of the Goodale herd's summer range is grazed, however, this reduction in quality of fawning habitat by grazing is not considered to be a major factor regulating the herd.

In a few localized areas, there may be competition for forage between deer and elk on the Goodale deer herd range. Elk summer on some deer winter and intermediate ranges. Both species utilize some of the same forage plants. The locations where competition may occur are on the Goodale, Division, and Sawmill Creek areas, as well as on Shinglemill bench. In some years, much of the available forage on bitterbrush plants on transects near Goodale Creek is taken by elk during the summer, before deer arrive on that portion of their winter range. This level of competition may have some effect on the population of the Goodale herd, but this effect is not considered substantial. Fewer than 100 tule elk occur in areas used by deer from this herd.

There are approximately 250 California bighorn sheep within the range of the Goodale herd. Competition between deer and bighorn for forage undoubtedly occurs to some slight extent, but it is probably insignificant.

Effects of intraspecific competition are unknown, but probably are substantial. Removal of some does could be expected to increase fawn survival in a deer herd at the carrying capacity of its range. This has been found to be true in many different habitat types, with both white-tail and mule deer. Connally (1981) does an excellent job of summarizing available data on this issue.

One aspect of intraspecific competition that may well exist with the Goodale herd is competition for fawning sites. Work by Ashcraft (1979) on the west slope of the Sierra indicates that does are territorial when they are about to fawn or have young fawns. In addition, they instinctively choose fawning sites where fawns will have the best chance of escaping predation. (In this herd, these are often riparian areas, where sufficient food, water and cover exist for the doe, and appropriate hiding and escape cover exist for the fawn.) Since there are a limited number of such sites, and does may drive others from them, only a limited number of fawns can be expected to survive.

Predation

Considering the fact that, over the last five years, numbers of fawns arriving on the winter range have varied from 45 to 24 per 100 does, predation may play an important role in regulating the population. Longhurst (1976) estimates that over 150 fawns are born per 100 does in migratory herds in California. The question is, of course, how many of these 100+ fawns per 100 does that are eliminated before the herd reaches the winter range die of factors other than predation. Sufficient information is not available to adequately answer this. It is likely though, that coyotes, bobcats, and mountain lions take a large number of deer each year, prarticularly fawns. Numerous studies, both in California and elsewhere, have shown that predators take many apparently healthy fawns from study populations. In a study of fawn mortality in the North Kings deer herd, Neal (1981), found that, of 14 fawns monitored, 8 did not survive the summer period, and 4 of these were killed by mountain lions. Siperek (1982) found that lions killed 6 of 52 radio-collared deer in Tehama County.

There are cases where coyote control has increased fawn survival greatly. In a study at Fort Sill, Oklahoma, Stout (1982) showed that removal of coyotes from 3 study sites increased fawn production an average of 154 percent.

Although it seems likely that predator control would, at least temporily, increase fawn survival, it is not being considered in this case for several reasons. It is quite possible that the Goodale deer herd is at the carrying capacity of its range. That is, no more deer can be supported there. Until plans exist to heavily harvest antlerless deer, there would be no point in controlling predators. Another reason predator control is not considered here is that most of the fawn loss is occurring on the summer ranges, which are nearly all within national parks or the John Muir Wilderness Area. Policies governing the management of these areas recognize the value of all wildlife species, and predator control would not be allowed.

Habitat

Habitat limitations are almost certainly the most important factors regulating the population of the Goodale deer herd. This is true of most deer herds throughout the state (Longhurst 1976).

Although some portions of the Goodale winter range appear to be in poor condition, overall this deer range is much less overused than some of those to the north. The high fawn loss that occurs each year implicates summer range habitat deficiencies as the major factor controlling the population at this time. As described previously, this may well be a lack of sufficient fawning sites with appropriate concealing cover, so that a very high percentage of fawns are caught by predators. Displacement of does from some suitable fawning sites by backpackers may also be a problem in a few areas.

Hunting

At the present level, hunting is not a major factor in regulating this deer herd, although hunting does alter the buck: doe ratio.

Illegal Take

The precise level of illegal take is unknown, but is not though to be sufficiently high to be important in regulating the Goodale herd. The number of reports of evidence of illegally taken deer is small, compared to those from many other locations in California. Patrol efforts presently are sufficient to allow only a small amount of illegal take. One of the reasons for the relatively low level of poaching on this herd is the very open terrain of their winter range. People, vehicles and lights are visible from a long distance.

MANAGEMENT UNIT GOALS

The statewide plan for the management of deer in California has general goals of maintianing healthy deer herds and providing for high quality diversified use of deer. Goals for the Goodale herd will conform to these general goals, but are more specific, based on characteristics of the herd and its range.

HERD GOALS

The most complete census to date was a helicopter count made during January, 1983. During this census, 2,186 der were observed. The population is estimated to be approximately 2,600. Because this figure is only an estimate, herd goals will be stated in terms of buck, doe, and fawn ratios. Because of circumstances described earlier, for purposes of management the Goodale herd is divided into northern and southern subunits.

Northern subunit - This portion of the herd will be maintained to maximize recreational hunting opportunity. Fall buck ratios will be maintained at a level of at least 20 bucks per 100 does. Fawn ratios should average at least 35 per 100 does in the spring (over the past 7 years, fall buck ratios have averaged 33, and fawn ratios have averaged 38).

Southern subunit - This portion of the herd will be managed to allow a late season quota hunt that affords what is perhaps the best deer hunting opportunity available in California and to provide older age-class bucks with large antlers for viewing. A post-season buck ratio of at least 35 bucks per 100 does will be maintained, with at least half of these bucks three-point or better. As with the northern sub-herd, spring fawn ratios should average at least 35 fawns per 100 does. This portion of the Goodale herd offers an excellent opportunity for non-consumptive use. In addition, the opportunity to observe a deer population with a high proportion of large bucks is considered extremely valuable by a number of back-country users in this area.

RANGE AND HABITAT GOALS

The range of the Goodale herd is virtually entirely within public ownership (Inyo National Forest, Bureau of Land Management, and Kings-Canyon and Sequoia National Parks). Although the USFS is currently involved in some experimental bitterbrush burning and pruning, extensive habitat manipulation methods that would have major value to the winter range, and yet be economically feasible,

are presently unknown. Additional investigation and experimentation is necessary before major winter range improvement projects will be undertaken. Nearly all of the summer range is within national parks, USFS Wilderness Areas or RARE II study areas, where habitat improvement projects are not allowed. Therefore, the most important goal for the habitat of the Goodale herd, with the exception of some experimental projects at selected sites on the winter range, will be to proserve the current quality and quantity of habitat, and prevent deleterious impacts from other land uses.

PROBLEMS AND CONSTRAINTS IN HERD MANAGEMENT

This section identifies major problems and limitations relating to management of the Goodale deer herd and its habitat.

1. Specific causes for low pre-fall fawn survival have not been documented.
2. Little is known about specific winter range capacities.
3. Methods of maintaining and improving winter range forage stands (primarily bitterbrush) are not well known.
4. A segment of the public is opposed to the harvest of antlerless deer, which constains management options for the herd.
5. Management policies for national parks and USFS wilderness areas limit potential habitat management options on the summer range.
6. Current grazing policies of land mangement agencies may reduce herd carrying capacities in some locations.

MANAGEMENT PROGRAMS, OBJECTIVES AND RECOMMENDED PRESCRIPTIONS

INVENTORY AND INVESTIGATION ELEMENT

Objective: Collect information that allows for reasonably effective management of the Goodale deer herd at the levels of the stated goals.

Recommended Prescriptions

1. To provide more accurate information on herd composition counts and total numbers, eight hours of helicopter time will be required every other year. Data provided by these helicopter surveys may be used to justify issuing additional permits in the late season hunt, and will yield better over-all knowledge of the population.
2. When no helicopter is available for spring counts, they will be made from the ground with sample size goals of at least 150 in the northern subunit and 250 in the southern subunit, when possible.
3. Where blood samples are available, they will be submitted to the DFG Wildlife Investigations Laboratory for continued monitoring. Obviously diseased animals will be collected for examination.

HABITAT ELEMENT

Objective: Preserve existing habitat against encroachment and improve habitat as methods become available.

Recommended Prescriptions

1. Increases in grazing allotments will not be allowed, where such increases might impact deer habitat; and reduction in levels or changes in grazing schedules will be examined by land management agencies if conflicts with deer are identified.
2. New roads or trails into important deer areas will not be allowed.
3. Mining, residential development or agriculture will not be permitted where these activities might affect areas used significantly by deer.
4. Hydro-electric projects will not be allowed where the resulting riparian habitat destruction could be expected to impact deer.
5. Tule elk capture efforts will be directed toward areas where it appears that elk compete with deer for forage.
6. Experimental habitat improvement projects consisting of burning and pruning bitterbrush stands are being done and evaluated by the USFS, and will continue to be conducted in the future if results are promising.

UTILIZATION ELEMENT

Objectives: Provide an average annual buck harvest of at least 100 animals during the regular season. Provide a high quality late-season quota buck hunt. Provide one of the best opportunities in the state for non-consumptive use of deer.

Recommended Prescriptions

1. Hunting on the Goodale herd range that is not within national parks should continue to be permitted during the regular X-9 season. New hunting zones should be delineated on the Goodale range only when sound biological information indicates their necessity. As other X zones get more restrictive seasons and quotas, it may be necessary to shorten the regular season in zone X-9, to prevent the kind of heavy harvest that occurred because of an early migration in 1981.
2. A special late season quota buck hunt will be held during years when the previous season's buck ratio exceeds 35 per 100 does. The number of animals to be harvested will depend on previous buck and spring fawn ratios.
3. Limited antlerless hunting may be recommended in the future.

4. Individuals interested in viewing and photographing an easily accessible deer herd with a high percentage of large bucks will be directed to specific sites (particularly Goodale and Division creeks) within the southern portion of the Goodale winter range.

LAW ENFORCEMENT ELEMENT

Most illegal kills on that portion of the Goodale herd range from Bishop Creek to Birch Mountain are reported during the deer season, although some deer certainly are taken in this area during the winter. On the southern portion of the herd range, most illegal kills are reported during the winter. The majority of deer in this area are not accessible during the summer or during the regular hunting season.

Presently, illegal kill is being deterred to the point where it does not prevent attainment of herd objectives and is not seriously affecting the population.

Objective: Prevent poaching to the extent possible.

Recommended Prescriptions

Patrol effort will be continued to assure as little poaching as possible. When routine patrol or citizen reports indicate illegal kill is occurring, patrol efforts will be increased in that location.

MORTALITY CONTROL ELEMENT

As discussed previously in this herd plan, mortality control depends largely on providing appropriate habitat. Evidence is lacking to indicate that, where suitable habitat exists, hunting or disease limits the Goodale deer herd. Although predators apparently take a number of fawns, this likely is a reflection of fawning habitat limitations. In addition, control of predators on public land is not recommended under present circumstances, and would not be allowed by the National Park Service, which controls much of the fawning habitat of this herd.

Fall fawn counts indicate that the greatest mortality in this herd occurs with fawns on the summer range. For the years 1976-1983, the fall count has been from 45 to 24 fawns per 100 does. Work done by Jones (1953) and Longhurst (1952) indicates that there are about 150 fawns born per 100 does each year in the Goodale herd. Obviously, the majority of the fawns are dying before they reach capacity of its habitat.

Objective: Reduce fawn mortality when methods to accomplish this become available.

Recommended Prescriptions

1. If it can be demonstrated with nearby deer herds that fawn survival can be substantially increased by removal of some antlerless deer, antlerless hunts will be held in the Goodale herd.

PUBLIC INFORMATION ELEMENT

Objective: Increase amount of information distributed to the public regarding the Goodale deer herd, so that they can gain an understanding of options available in its management.

Recommended Prescriptions

1. A management plan summary will be prepared and distributed to interested individuals and groups.
2. Presentations on the Goodale deer herd will be given to local groups, as public interest indicates.
3. Public seminars on management alternatives (including harvest strategies) and habitat requirements of deer will be held.

REVIEW ELEMENT

Objective: The Goodale herd management plan will be reviewed and updated as necessary.

1. Input from the Department of Fish and Game, Inyo National Forest, and Bureau of Land Management will be incorporated into the plan as additional information becomes available.
2. Input from the public will be sought continually. Attitudes toward late season buck hunts and antlerless hunts will be assessed.

Appendix 1. Utilization of bitterbrush leaders on selected sites on the Goodale herd range (in percent).

Area	1974-75	1975-76	1976-77	1978-79	1979-80	1980-81	1981-82
McMurray Meadows		33	16	7	5	15	24
Goodale Creek	29	100	30	24	13	25	41
Division Creek	67	51	41	37	36	34	53
Oak Creek		18	30	0	0	3	12
Sawmill Creek		100	26	41	25	31	43

(Data not available for 1977-78 and some locations in 1974-75.)

	1982-83	1983-84	1984-85	1985-86
McMurray Mdws.	8	16	15	
Goodale Creek	5	2	3	
Division Creek	30	18	26	
Oak Creek	9	26	24	
Sawmill Creek	26	25	24	

Appendix 2. Use (in days/acre) by deer and elk on transects on the Goodale herd range.
(Figures derived from pellet counts.)

Area	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83
Goodale Cr. (deer)	4	5	12	10	9	28	39	19	5
Goodale Cr. (elk)	11	8	4	9	6	7	47	9	2
Div. Cr. (deer)	11	22	32	26	74	98	89	48	51
Div. Cr. (elk)	3	4	7	2	7	10	47	4	4
Sawmill Cr. (deer)	*	23	26	14	32	61	43	28	15
Sawmill Cr. (elk)	*	1	0	0	0	4	0	0	0
Oak Cr. (deer)	*	*	19	10	4	4	6	10	25
McMurray Meadows (deer)	*	*	4	5	1	2	0	15	16

*(Information not available)

Appendix 3. Form class of bitterbrush plants in the Goodale herd range.

Area		Light Hedging	Moderate Hedging	Heavy Hedging
McMurray Mdws.	1975	0%	16%	84%
" "	1967	50%	43%	7%
Goodale Creek	1975	1%	3%	16%
" "	1967	0%	27%	73%
Division Creek	1975	0%	7%	93%
" "	1967	7%	25%	68%
Oak Creek	1975	4%	57%	39%
" "	1967	8%	32%	53%

Appendix 4. Condition of bitterbrush plants in the Goodale herd range.

Area		Seedlings	Young Plants	Mature	Decadent
McMurray Mdws.	1975	0%	0%	77%	23%
" "	1967	0%	0%	72%	28%
Goodale Cr.	1975	0%	1%	72%	27%
" "	1967	0%	1%	65%	34%
Division Cr.	1975	0%	7%	75%	18%
" "	1967	0%	0%	59%	41%
Oak Cr.	1975	0%	6%	91%	3%
" "	1967	0%	2%	79%	19%

State of California

The Resources Agency

Memorandum

To : Earl Lauppe
Region 5, Long Beach

Date : September 15, 1986

From : Department of Fish and Game - Tom Blankinship

Subject: Update of the Goodale Deer Herd Plan.

The following is updated information for this herd plan. No major changes are included.

I. Update of Biological Data

Page 5 (Hunting Harvest), first sentence. 1982 should be changed to 1985.

Table 2. Reported deer harvest. Should be changed as shown on the enclosed page.

Page 8. (Mortality), first paragraph, second sentence. Should read "Data available for recent years indicate that survival of fawns of the winter range is relatively high in most years (Table 3)."

Table 3. Herd composition data. Should be changed as shown on the enclosed page.

Appendix L. Utilization of bitterbrush leaders. Should be changed as shown on the enclosed page.

II. Update of Habitat Improvement Projects. No change.

III. Other Major Changes.

Page 29. (Inventory and Investigation Element, Recommended Prescriptions). Number 1 should read "...eight hours of helicopter time will be required every year." Number 2 should read "When no helicopter is available for spring counts, they will be made from the ground with sample size goals of at least 150 in the northern subunit and 250 in the southern subunit."

Page 30. (Utilization Element, Recommended Prescriptions). Number 3 should read "Limited antlerless hunting may be recommended in the future."

Tom Blankinship
Wildlife Biologist

cc: file, Jim Cave

Appendix 1. Utilization of bitterbrush leaders on selected sites on the Goodale herd range (in percent).

Area	1974–75	1975–76	1976–77	1978–79	1979–80	1980–81	1981–82
McMurray Meadows		33	16	7	5	15	24
Goodale Creek	29	100	30	24	13	25	41
Division Creek	67	51	41	37	36	34	53
Oak Creek		18	30	0	0	3	12
Sawmill Creek		100	26	41	25	31	43

	1982–83	1983–84	1984–85
McMurray Meadows	8	16	15
Goodale Creek	5	2	3
Division Creek	30	18	26
Oak Creek	9	26	24
Sawmill Creek	26	25	24

(Data not available for 1977–78 and some locations in 1974–75.)

Table 3. Herd composition data for the Goodale deer herd, 1976-1980

Data expressed as bucks: 100 does, fawns: 100 does and number of deer classified (N).

Subherds	Northern					Southern					Combined				
	Fall*			Spring*		Fall			Spring		Fall			Spring	
Year*	bucks	fawns	N	fawns	N	bucks	fawns	N	fawns	N	bucks	fawns	N	fawns	N
1976-77	25	55	79	53	53	58	37	131	42	190	46	45	210	44	243
1977-78	44	51	189	43	139	87	35	231	40	207	68	42	420	41	346
1978-79	30	42	132	40	146	67	27	161	27	306	49	34	293	29	452
1979-80	44	25	242	27	159	51	51	426	36	140	48	41	668	31	299
*1980-81	33	33	60	35	266	51	22	324	21	367	48	24	384	27	633
1981-82	24	30	458	32	133	36	40	794	29	200	31	36	1,252	30	333
1982-83	32	38	819	37	273	34	34	1,152	23	317	33	36	1,971	29	590
1983-84	39	56	312	53	116	53	34	499	33	170	48	42	811	41	286
1984-85	25	34	671	32	134	40	38	617	38	150	32	36	1,288	35	284
1985-86	23	31	306	30	84	32	32	712	34	231	21	32	1,098	32	315

* Spring is that of later year shown. Fall is that of earlier year shown.

Table 2- Reported Deer Harvest in the Goodale herd area (Buck harvest: 1960-1985, antlerless: 1955-1957).

Year	Bucks Taken- Regular Season	Bucks Taken-Special Late Season Hunt	Antlerless Deer Taken
1955	*		167
1956	*		182
1957	*		163
1960	93		
1961	124		
1962	43		
1963	31		
1964	122		
1965	41		
1966	143		
1967	25		
1968	100		
1969	54		
1970	83		
1971	62		
1972	128		
1973	60		
1974	79		
1975	83		
1976	106		
1977	104		
1978	103	24	
1979	115	25	
1980	97	24	
1981	386	24	
1982	75	23	
1983	85		
1984	65	25	
1985	173	45	

*Data not available for these years.

Table 2 - Reported Deer harvest in the Goodale herd area (Buck harvest: 1960-1985, antlerless: 1955-1957).

Year	Bucks Taken-Regular Season	Bucks Taken-Special Late Season Hunt	Antlerless Deer Taken
1955	*		167
1956	*		182
1957	*		163
1960	93		
1961	124		
1962	42		
1963	31		
1964	122		
1965	41		
1966	143		
1967	25		
1968	100		
1969	54		
1970	83		
1971	62		
1972	128		
1973	60		
1974	79		
1975	83		
1976	106		
1977	104		
1978	103	24	
1979	115	25	
1980	97	24	
1981	386	24	
1982	75	23	
1983	85		
1984	65	25	
1985	173	45	

* Data not available for these years.

Appendix 1. Utilization of bitterbrush leaders on selected sites on the Goodale herd range (in percent).

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Goodale Creek	29	100	30	24	13	25	8 41
Division Creek	67	51	41	37	36	34	30 53
Oak Creek		18	30	0	0	3	8 12
Sawmill Creek		100	26	41	25	31	28 43

(Data not available for 1977-78 and some locations in 1974-75.)

1992-93 1993-94 1994-95 1995-96

McMurray Mdws.	8	16	15
Goodale Creek	5	2	3
Division Creek	30	18	26
Oak Creek	9	26	24
Sawmill Creek	26	25	24

Southern Subherd (Taboose Creek to Lone Pine Creek)

	Fall			Spring	
Year	Bucks	Fawns	N	Fawns	N
1984-85	40	38	617	38	150
1985-86	32	32	712	34	231
1986-87	37	31	910	34	412
1987-88	47	27	924	20	242

antler class of bucks: Spikes 34, 2 pt. 64, 3pt:76, 4 pt:75

Combined Herd

	Fall			Spring	
Year	Bucks	Fawns	N	Fawns	N
1984-85	32	36	1288	35	284
1985-86	21	32	1018	32	315
1986-87	34	29	1195	31	586
1987-88	43	27	1220	21	278

C. Utilization of Bitterbrush Leaders

No bitterbrush leader surveys were conducted on the 5 units within the Goodale herd area.

II. Habitat Improvement Projects

No habitat improvement projects were completed.

III. Other Changes to the Deer Herd Plan

A new hunting zone (X-9B) was initiated. This put better control of hunter distribution and pressure to stimulate increases in buck ratios. By creating the new zone, tags issued were capped at 2,500, as compared to 9,000 for X-9 before the split.

Donald W. Jacobs
Wildlife Biologist

cc: Davis
Bleich

1989 Deer Herd Management Plan Update

County: Inyo - Goodale Deer Herd

A. Description of the Deer Herd Management Unit

1. Herd Condition

Fair

a. No available information.

b. Herd Health

Post season fawn ratio = 31/100 does
Spring fawn ratio = 14/100 does

This herd is managed as two subunits, the south zone, from Taboose Creek south to Lone Pine Creek, and the north zone, from Taboose Creek north to Bishop Creek. The south zone has a special 3-pt. or better hunt when the buck ratio does not drop below 35/100 does, and at least 50% of these are 3 pt. or better. The post-season fawn count was calculated for each zone, the spring count was lumped together.

Fawn counts are as follow:

January 1989

South zone (special hunt)	28:100 does
North zone	37:100 does
Total	31:100 does

Spring 1989 (combined) 14:100 does

Reference: Annual winter and spring herd composition counts

2. Population Size

The most recent estimate is 2,600 deer based on helicopter counts. When this deer herd plan was completed (1983) this was felt to be a conservative figure.

3. Herd Statistics

Year	Harvest Bucks	Harvest 3 pt. Special Hunt	Fall Bucks	Fall Fawns	Spring Fawns
1989 Total	-	-	34	31	14
1989 South	-	-	41	28	-
1989 North	-	-	22	37	-
1988 total	26	-	43	27	21
1988 South	-	44	47	27	20
1988 North	-	-	32	26	18
1987 Total	42	-	34	29	31
1987 South	-	20	37	31	34
1987 North	-	-	28	23	29
1986 Total	48	-	29	32	32
1986 South	-	No hunt	32	33	34
1986 North	-	-	23	31	30
1985 Total	172	-	32	36	35
1985 South	-	45	40	38	38
1985 North	-	-	25	34	32
1984 Total	65	-	48	42	41
1984 South	-	No hunt	53	34	33
1984 North	-	-	39	56	53

4. Deer Hunting

a. Past and current hunting strategies' effects on:

1. Deer numbers

The division of this herd into two subunits was done to separate out two different groups of deer wintering in the same general area. The southern subunit deer summer in Sequoia and Kings Canyon National Park and are not accessible during the regular season. The Special Hunt was set up to provide an opportunity for hunters to kill larger bucks without negatively impacting the population. The early season also keeps the take of this whole herd down to levels which do not negatively impact the population.

2. Herd composition

Allowing the Special Hunt only in years when the buck ratio exceeds 35:100 does allows for management of buck ratios. Overall buck ratios appear stable.

3. Herd health

Most of the deer are inaccessible to hunters during the regular season; therefore, harvest is relatively light. The exception to this is in the Coyote Ridge area, which receives intense hunter pressure.

b. Future and proposed hunting strategies' effects on:

1. Deer numbers

A proposal has been submitted to move the boundary of X9a-X9b south to Bishop Creek. This would make the Goodale herd the only herd in the eastern Sierra in X9b. A reduction in tags in the new X9a is also proposed; therefore, we have proposed a reduction in tags for X9b. This will present an increase in hunting pressure in those localized pockets (like Coyote Ridge) which could negatively impact deer numbers in that area.

2. Herd composition

The reduction in tags discussed in #1 above would also keep the buck ratio stable.

3. Herd health

The reduction in tags should keep the numbers of deer and composition of the herd in a healthy state.

5. Illegal Harvest

Poaching does not seem to be a problem regulating the population at this time, although it undoubtedly does occur.

B. Non-human Effects on Deer

1. Weather

a. Drought

Forage is in extremely limited supply. Leader growth on bitterbrush transects averaged 0.15" in 1988, and preliminary estimates for this year are indicating that the bitterbrush growth is not any better.

b. Early storms

Early storms could bring these deer into an area accessible to hunters as in 1985 when 173 bucks were killed and 1981 when 386 bucks were killed. The season has been moved up so the chances of this happening again are lessened.

c. Mild winters

If precipitation is not adequate to provide for growth of forage, mild winters negatively impact the herd. A very wet, yet mild temperature winter would positively impact this heard.

2. Predators

No specific data has been collected, although mountain lions are not uncommon. Fawning cover could be a problem, as the back country is heavily used by backpackers. However, no specific studies have documented this problem.

3. Disease and Parasitism

No information.

C. Effects of Current Deer Hunting and Proposed Hunting Strategies

1. Effects Upon Species of Special Concern

a. Changes in local populations

Eight State or Federally listed species and one State rare species occur or could occur in the Goodale herd range. They are: Sierra Nevada red fox, Vulpes vulpes necatar, State Threatened; wolverine, Gulo gulo, State Endangered; California bighorn sheep, Ovis canadensis californiana, State Threatened; bald eagle, Haliaeetus leucocephalus, State and Federally Endangered; Swainson's hawk, Buteo swainsoni, State Threatened; western yellow-billed cuckoo, Caccyzus americanus occidentales, State Endangered; least bell's vireo, Vireo bellii pusillus, State and Federally Endangered; Owens Valley checkerbloom, Sidalcea covillei; State Endangered; and Father Crowley's lupine, Lupinus padre-crowleyi, State Rare. Fourteen additional mammal and bird Species of Special Concern occur or could occur in the area. They are: Townsend's big-eared bat, Plecotus townsendi; pygmy rabbit, Brachylagus idahoensis; western white-tailed hare, Lepus townsendii townsendii; Pacific fisher, Martes pennanti pacifica; American badger, Taxidea taxus; merlin, Falco columbarius; marsh hawk, Circus cyaneus; osprey, Pandion haliaetus; burrowing owl, Athene cunieularia; northern goshawk, Accipiter gentiles; sharp-shinned hawk, Accipiter striatus; Cooper's hawk, Accipiter cooperi; golden eagle, Aquila chrysaetos; and prairie falcon, Falco mexicanus. None of these species would be affected by present or proposed deer hunting activity. This herd occupies a range which is nearly all in public ownership. It receives use from other recreationists such as hikers, photographers, naturalists and skiers as well as livestock grazing. The majority of the 2,500 tag holders for Zone X9b hunt in the northern portion of the zone, in the Buttermilk and Sherwin Grade herd areas. Those who do hunt in the Goodale area make up a small proportion of the total recreational users of the area. The Inyo National Forest receives more visitor use days than the combined visitation of Grand Canyon and Yellowstone National Parks. Loss of habitat, improper livestock grazing, and human disturbance from ORVs pose greater threats to these species than the small proportion of hunters do.

Wolverines have been reported in the Goodale herd area on a few occasions (NDDB). Wolverines rely on carrion as one of the food items in their diet. It could be argued that hunting mortality replaces some of the natural mortality in the deer herd, thus leaving ewer dear carcasses in the field upon which the wolverines feed. However, the number of deer shot each year is not likely to affect the amount of food available for wolverines, as they eat a variety of other small mammals.

Sierra Nevada red fox are extremely secretive. They are mainly found between 5,000-7,000 feet elevation. They prey chiefly on marmots, ground squirrels, mice, woodrats, pikas, hares, birds, insects and berries. They are threatened by logging, cattle grazing, and ski area development. Due to their secretive nature, very few are ever seen by hunters or others. There is no competition between hunters or deer and prey species of the Sierra Nevada red fox.

California bighorn sheep are found in five populations in the Sierra Nevada. Three of those are within the Goodale herd range. They were nearly extirpated from this part of their range by disease spread from domestic livestock and over hunting. They are not affected by deer hunting because they are found in very different habitat types than deer. Bighorn sheep use rugged, steep, rocky terrain with sparse vegetative cover. Deer do not use the steep, rocky areas that bighorn sheep do. These two species do not use the same forage species, so there is no competition for food.

Swainson's hawks are found in the Owens Valley and also occur in juniper sagebrush habitats in Great Basin mountain ranges. They nest in or adjacent to riparian areas consisting of valley oak, cottonwood, walnut, and willow trees. They forage in open grasslands or lightly grazed pastures and alfalfa fields. This habitat is present in the Owens Valley and lower elevations of the Goodale herd range. Hunting season does not occur during nesting season, so it is extremely doubtful these hunters would negatively impact this species.

Bald eagles winter in the valley and forage in the Sierra Nevada. Threats to this species include illegal shooting. However, no incidents of illegally shooting eagles have been reported in this area. This species is primarily dependent on aquatic resources, therefore, there is no competition with hunters for food or habitat.

The western yellow-billed cuckoo and least bell's vireo have been known to nest in mature riparian habitat within the Goodale herd range. A recent search for these species did not reveal any individuals, however. These species use different habitats than deer do during the hunting season. They are found at lower elevations near the valley floor. During the hunting season, deer are found at higher elevations in pinyon woodland or sagebrush scrub. Least bell's vireos are migratory and would only be in the project vicinity from April-September. There could be some overlap at the beginning of hunting season, but nesting would have been completed by August. Neither of these species would be affected by the sport hunting of deer.

Owens Valley checkerbloom is found in wet meadow habitats in the Owens Valley and on the alluvial fans of the eastern Sierra. It is an annual which blooms in May. Seed set has occurred by September; therefore, this species would not be affected by any trampling by hunters, should it occur. This species is threatened by livestock grazing and drawdown of the water table through groundwater pumping. It is not a food item of deer.

Father Crowley's lupine is found in isolated occurrences in avalanche chutes and sagebrush scrub. It is affected by mining, logging, grazing and ORVs. It is classified as a Rare species, but not threatened with extinction. The few hunters in the field compared to hikers and compared to hikers and photographers do not have any effect on this species. It is not a forage item of deer.

For several of the species mentioned above, human disturbance is known to be a potential threat to the local population. However, the critical period is during breeding season, in spring and early summer. Since deer hunting takes place in the fall after breeding season is finished, disturbance by deer hunters is not likely to be a factor.

2. Effects Upon Other Wildlife Species

a. Changes in local populations

The Goodale deer herd shares a portion of its winter range with two tule elk herds, the Goodale herd and the Whitney herd. The Goodale elk herd has undergone recent mortality and emigration and now fluctuates between 1-10 animals (annual tule elk aerial census). The Whitney herd contains 30-40 animals. Competition between deer and elk has not been documented to be a problem in California (Final Environmental Document Regarding Tule Elk, DFG, April 1989). Key forage

species for the two species are different. There is no scientific evidence to indicate that removal of deer through a sport hunting program will impact the local or Statewide elk resource. The Department is funding a research program conducted by the University of California to investigate deer and elk interactions in the Goodale herd area.

Coyotes, black bears and mountain lions prey on deer. It is possible that if deer hunting were discontinued, fawn production would drop, reducing potential food for predators.

b. Changes in regional and Statewide populations

No effect.

c. Changes in health, condition and age class structure of populations

Increased fawn production resulting from the harvest of adults could potentially provide more food for predators. These species could, in turn, experience increased recruitment into their populations, changing the age class structure of the population.

d. Changes in mortality factors

No effect.

3. Changes in Public Use/Recreation

a. Hunting

The action of deer hunting positively impacts the hunting public of the State by providing hunting opportunities consistent with Sections 332 and 3951 of the Fish and Game Code as well as the State's wildlife conservancy policy contained in Section 1801 of the Fish and Game Code. Two thousand, five hundred tags are issued for Zone X9b. The majority of these hunters hunt in the northern portion of the zone. We estimate that 1,000 hunters or less hunt in the Goodale hunt zone. Also, 50 Special 3 pt. or better tags are issued in those years when buck ratio meets or exceeds 35/100 does. Therefore, approximately 1,050 hunters are positively impacted by the sport hunting of deer in the Goodale herd area.

b. Nonconsumptive

Many local and out-of-town visitors enjoy viewing and photographing large bucks in the Goodale herd area. These activities are not negatively affected by the sport hunting of deer, because if the buck ratio drops below 35/100, and less than 50% of these bucks are 3 pt. or better, the Special Hunt does not take place.

4. Effects Upon Human Populations

a. Housing

The existing deer hunting program does not affect housing in the Region. Most of the hunting in the Goodale herd area takes place on public land. This land would remain in public ownership regardless of whether or not deer hunting takes place on it.

b. Transportation

It is conceivable that if deer hunting were discontinued, traffic volume would decrease along Highway 395 north to Bishop, especially during opening weekend. This decrease would be minor and probably would not affect traffic patterns in the area.

c. Public services

It is possible that local law enforcement agencies such as the County Sheriff or Police Departments must beef up patrols or manpower during opening weekend when the possibility of violations is higher than the rest of the season. This would also apply to DFG Wildlife Protection, as well as Forest Service and BLM.

d. Energy

Perhaps additional gasoline is consumed by hunters traveling away from home to hunt. However, this is a small percentage of total recreationists such as hikers, backpackers, anglers and ORV users.

e. Human health

Occasionally hunting-related accidents occur, but they are not numerous. These accidents can be lessened through hunter education.

f. Aesthetics

Some non-hunting members of the public are offended when they see hunters in the field. However, this only occurs three weeks of the year. Additionally, some members of the public find it offensive to see deer carcasses strapped on top of vehicles, etc. This practice can be reduced through hunter education.

g. Cultural resources

No effect.

D. Range Landownership

Ninety-eight percent of Inyo County is held in public ownership. The Goodale herd area covers National Park Service, Forest Service, BLM and L. A. Department of Water and Power lands. No changes have occurred since preparation of the deer plan, and no changes are anticipated.

E. Range Vegetation

1. Fire

The onion burn south of Independence Creek burned 800 acres of bitterbrush/sagebrush winter range. New transects established this year reveal that the leader growth on unburned desert bitterbrush, Purshia ofavdulosa, averaged 5.6 cm, while the burned plants averaged 75.8 cm. The burned plants are crown-sprouting and new seedlings are becoming established. This fire was a hot wildfire which burned in July.

See recent memo on habitat changes in the Inyo Unit for information on other minor burns.

WMD

State of California **The Resources Agency**

MEMORANDUM

Date: January 22, 1990

Disk:DEER
Filename:Compct90.mem

To: Files

From: Department of Fish and Game -- Denyse Racine, Inyo Unit

Subject: Deer Herd Composition Counts, January 1990

Composition counts were conducted on Inyo County deer herds January 3-5, 1990. The Goodale Herd was counted on January 3, the Inyo Mountains on January 4-5, and the Buttermilk herd was counted on January 5, 1990. A Bell Jet Ranger helicopter was used, piloted by Brian Novak of Landells Aviation. Observers included Jim Davis, Denyse Racine, Tom Lipp, Ron Thomas, Jim Landells, and Charlie Vandemoer (USFS). Approximately 4 hours of helicopter time was used to survey the Goodale herd, 3.5 hours for the Buttermilk herd, and 6 hours in the Inyo Mountains. The weather was clear with light breezes. Snow cover was sparse, and deer were generally scattered at primarily upper elevations. These conditions prevented a total count in Round Valley.

This year we began surveying the Inyo Mountains at New York Butte and worked north to Highway 168. The Piper Mountain/Soldier Pass area was not surveyed due to lack of time. Very few deer could be found. Some areas, such as Squaw Springs, Squaw Flat, and Seephole Spring, had a fair amount of fresh trailing in the snow, but despite intensive surveying, we found few or no deer.

We observed two groups of bighorn sheep on the east side of the Inyos. One lone ewe was observed in the vicinity of the Craig Canyon drainage, 36°39.73, 117°53.75, in light snow cover, SW slope. Two ewes were seen near Willow Springs. Very few chukar were seen. One group was seen above Sidehill Spring, and a few were located in the Saline Range NE of Waucoba Spring.

Results of the composition counts are as follows:

Goodale Herd South (Taboose Creek to Lone Pine Creek)
SPECIAL HUNT ZONE

	Numbers	1990 Ratios	Previous (1989) Seasons Ratios	1988 Ratios
Does	152	100	100	100
Fawns	28	18	28	27
Bucks	34	22	41	47
Sample Size	214			

Antler Class of Bucks

Spikes	2	(10%)
2 pt.	7	(35%)
3 pt.	9	(45%)
4 pt.	2	(10%)
Unclassified:	14	

Goodale Herd North (Bishop Creek to Taboose Creek)

	Numbers	1990 Ratios	Previous (1989) Seasons Ratios	1988 Ratios
Does	97	100	100	100
Fawns	28	29	37	26
Bucks	44	45	22	32
Sample Size	169			

Antler Class of Bucks

Spikes	6	(14%)
2 pt.	9	(20%)
3 pt.	21	(48%)
4 pt.	8	(18%)

Goodale Herd (Total)

	Numbers	1990 Ratios	Previous (1989) Seasons Ratios	1988 Ratios
Does	249	100	100	100
Fawns	56	22	31	27
Bucks	78	31	34	43
Sample Size	383			

Antler Class of Bucks

Spikes	8	(12%)
2 pt.	16	(25%)
3 pt.	30	(47%)
4 pt.	10	(16%)
Unclassified:	14	

Buttermilk Herd

	Numbers	1990 Ratios	Previous (1989) Seasons Ratios	1988 Ratios
Does	545	100	100	100
Fawns	121	22	38	34
Bucks	68	12	15	9
Sample Size	734			

Antler Class of Bucks

Spikes	11	(16%)
2 pt.	34	(50%)
3 pt.	16	(24%)
4 pt.	7	(10%)

Inyo Mountains Herd

	Numbers	1990 Ratios	Previous (1989) Seasons Ratios	1987* Ratios
Does	41	100	100	100
Fawns	11	27	21	74
Bucks	3	7	17	26
Sample Size	55			

* Herd Plan goals call for this herd to be surveyed only every other year. The herd was surveyed this year because we are concerned with the apparent drop in buck ratios and wish to collect as much information on this herd as possible.

Sincerely,

Denyse Racine

Denyse Racine
Wildlife Biologist

cc: WLM, Region 5
Davis, J.
Thomas, R.
Bleich, V.
Lipp, T.
Wolter, M.
Vandemoer, C. USFS
Tillemans, B. LADWP
Russi, T. BLM
WMD, Sacramento

DEER HERD COMPOSITION DATA

INYO COUNTY HERDS

Year	Post-season (fall) buck per 100 does	Post-season (fall) fawns per 100 does	Spring fawns	Fall Sample	Spring Sample
		Buttermilk Herd			
1980-81	26	39	37	331	354
1981-82	13	39	27	491	323
1982-83	8	35	28	2712	524
1983-84	15	38	37	892	629
1984-85	12	42	38	2231	584
1985-86	7	35	26	906	653
1986-87	7	25		767	
1987-88	9	34	16	854	274
1988-89	15	38	25	1175	241
1989-90	12	22	18	734	623
-----Revised X9a Zone Boundary to include Buttermilk Herd-----					
1990-91	10	19	12	421	385
1991-92	17	20	24	383	363
1992-93	Now reported as Buttermilk/Sherwin Herd				
		Gondale Herd			
1980-81	48	24	27	384	633
1981-82	31	36	30	1252	333
1982-83	33	36	29	1971	590
1983-84	48	42	41	811	286
1984-85	32	36	35	1288	284
1985-86	29	32	32	1098	315
1986-87	34	29	31	1195	586
1987-88	43	27	21	1220	278
1988-89	34	31	14	1290	600
1989-90	31	22	24	383	328
--------X9b Boundary Revised to Exclude White Mountains---------					
1990-91	21	19	9	310	206
1991-92	32	26	21	441	304
1992-93	41	41		534	

Inyo Mountains Herd

1986-87	26	74	no sample	186	no sample
1988-89	17	21	no sample	91	no sample
1989-90	7	27	"	55	"
1990-91	0	13	"	23	"
----Zone X9c Created to Include Inyo and White Mountains----------					
1991-92	*10	68	"	110	"
1991-92	15	18	"	37	"
1992-93	0	68		32	

* Pre-season buck ratio based on deer observed and classified during collaring effort October 1991.

Goodale Deer Herd Plan Summary

I. Introduction

This brochure summarizes a detailed management plan for the Goodale deer herd recently completed by the California Department of Fish and Game (CDFG). Deer populations throughout California and many other western states exhibited a substantial decline in numbers from the early 1960's through the mid-1970's. In response to that phenomenon CDFG developed a statewide strategic deer management plan in 1976 which recommended overall objectives and procedures to be adopted as policies. The objectives were to restore and maintain California deer herds and provide for diverse, high-quality public utilization of them. Procedures to be applied for meeting those objectives involved a comprehensive planning effort on a herd-specific basis to identify appropriate management programs for seven major categories: inventory and investigations, mortality control, habitat improvement, utilization, law enforcement, communication of information, and periodic review and updating. The overall objectives and policies recommended by that plan were later officially enacted into law by state legislation which applied to both CDFG and the Fish and Game Commission (A.B. 1521, Perino, 1977).

The recently completed plan for the Goodale herd in eastern central California satisfies the official policies and legislative mandate. It contains a description of the deer herd and geographic range, identifies specific management goals and problems for the herd, recommends action programs within the seven major planning elements and discusses possible alternative courses of action. Currently the Goodale herd is conservatively estimated at about 2,600 deer, and is thought to be in good condi-

tion compared to other similar herds. Large portions of the range are under Federal National Park or Wilderness Area designations with limited road access and few conflicting land uses. Opportunities for range improvement for deer are also somewhat restricted, however. General herd management objectives are aimed at preserving and maintaining existing habitat conditions and continued provision of diverse, high-quality public uses. The intended term of the plan is approximately ten years for goal attainment, but continual review and updating as management implementation proceeds insures the flexibility to adjust programs as new information may indicate.

II. Description of the Herd Unit

Deer Herd

The Goodale herd occurs primarily south of Bishop in ~~northeastern Mono~~ northwestern Inyo county but also partially in eastern Fresno and Tulare counties. The deer are primarily migratory Inyo mule deer (Odocoileus hemionus inyoensis) but there is intermingling with California mule deer (O. h. californicus) on the high mountain summer ranges. The summer ranges are generally on both sides of the crest of the southern Sierra Nevadas and winter ranges are eastward along the western edge of the Owens Valley. The herd is divided into northern and southern subunits for management because of differences in hunting access and landownerships.

Deer were not abundant in the area before the coming of European man around 1850, and market hunting combined with overgrazing and some very harsh winters to make them very scarce up through about 1920. After that favorable habitat trends and increasing game law enforcement caused deer populations to grow considerably ~~larger and peak at high levels around~~

1950. Deer numbers fluctuated at high levels up through about 1960, periodically dying off in heavy winters. Numbers declined gradually after that and reached a low in about 1969 after another severe winter. Since then the herd appears to have increased somewhat but has remained fairly stable in recent years. Harvest trends generally reflect population trends, but occasionally there are years with exceptionally high kills which result from early winter snowstorms that drive the deer down to hunter accessible areas. The average annual take during the regular fall season averaged 82 from 1966-1975 and increased to about 125 since then. A late season special trophy held in the southern subunit since 1978 has yielded an average of 24 additional bucks annually.

Deer in the southern subunit are mostly unavailable to hunters during the regular season because they remain in the protected Kings Canyon National Park unless forced out by early heavy snowfall. As a result there is a relatively-high late fall buck ratio, which averaged 63 per 100 does in 1976-80 but dropped to an average of 36 per 100 does after an all-time high harvest in 1981. The northern subunit averaged 35 per 100 does before 1981 and only 24 per 100 does since. These buck ratios are actually higher than in many other similar herds, and are not cause for concern. However, herd composition counts have indicated problems with high fawn mortality. Breeding occurs in late fall during November and December, and fawning normally occurs in June and July on summer ranges after the spring migration. While about 150 fawns per 100 does are born then, by late fall when the deer are back on winter ranges only about 35 fawns per 100 does remain on the average. The precise causes of fawn losses are not known but the low level of fawn survival certainly limits herd growth.

The Range

The climate in the herd unit is semi-arid on winter ranges and moist on summer ranges. Most precipitation comes in winter snowstorms but summer thunderstorms are common at high elevations. The eastern Sierra Nevada escarpment bisects the herd unit, creating a steep, abrupt transition from winter ranges at 4,500 to 7,000 feet elevation to high summer ranges from 8,000 to 14,000 feet. Soils in the area are mostly 1 to 3 feet deep and coarse-textured with frequent rocky outcrops. Vegetation on the winter range is typical of the Great Basin province: the sagebrush-bitterbrush plant community predominates interspersed with pinyon-juniper woodland. Summer ranges and intermediate ranges used during migrations have a greater variety of vegetation types, predominantly coniferous forests of variable densities and species of pines and firs interspersed with montane brushfields, mountain meadows and riparian zones. Water is abundant on summer ranges and common on winter ranges ~~except during drought~~, and is generally felt to be nonlimiting to the herd.

Nearly all land in the herd unit is public land administered by the federal government. Most summer ranges west of the Pacific Crest are in the Kings Canyon National Park, and summer ranges east of there are within the Inyo National Forest, making up about 30% and 50% of the total herd area, respectively. On winter ranges an additional 15% is managed by the Bureau of Land Management and only 5% by private landowners or the Los Angeles Department of Water and Power. Current land uses include livestock grazing, dispersed recreation and some mining. Agriculture and residential development are practically nonexistent. Land uses that may conflict with the herd are grazing, recreation and mining in order of potentially

importance. Grazing is fairly well managed by systems of deferment or rotation, and control of animal numbers. Also, much area is excluded from grazing, notably summer ranges in National Parks. Dispersed recreation by backpackers and pack outfits occurs mainly on summer ranges where fawning areas may be affected in some locations. Mining occurs mostly on winter ranges and is currently ~~limited in scope~~ of no concern, but could possibly increase in the distant future.

Major Factors Affecting The Herd

A number of factors cause direct losses of deer each year. These include predation, adverse weather, legal and illegal hunting, accidents, parasites and diseases. Only predation and weather are thought to be significant in mortality, and all factors vary annually and are very difficult to quantify. Ultimately, the carrying capacity of the range is thought to regulate deer populations and can influence the impacts of other factors such as weather or disease.

III. Management Unit Goals

Specific goals for the Goodale herd were developed in accordance with the general objectives of the statewide strategic deer management plan and official policies. These relate to population characteristics in each herd subunit and to the habitat condition throughout the range area.

Herd Goals

It is CDFG's intent to maintain an average herd size of approximately 2,600 deer. In the northern subunit, the harvest will be managed to allow for a post-season buck carryover of at least 20 per 100 does in late fall. In the southern herd subunit where hunter access during the regular season

is poor, a post-season buck ratio of at least 35 per 100 does will be sought. In addition to regular season hunting the current late-season, trophy-buck special hunt also will be continued in the southern subunit. In the entire herd a minimum average spring fawn ratio of 35 per 100 does is considered appropriate to maintain herd stability.

Habitat Goals

Over most of the summer range, habitat improvement opportunities are limited by land ownership. However, there are not severe problems or conflicts with the herd on summer ranges at the present time anyway. Winter ranges have the greatest potential for improvement both because of administrative ownership and sub-optimal condition. However, while prescribed burning has potential as a winter range rejuvenation technique, current knowledge is inadequate for application. Therefore, overall habitat goals are to preserve the existing quality and quantity of vegetation and prevent any increases in deleterious impacts from other land uses.

IV. Problems in Management

1. Specific causes of high young fawn mortality have not been identified, and current levels of recruitment as adults are barely adequate to maintain the population.
2. The overall condition and capacity of the range is poorly known, especially in various winter range locations.
3. Methods of improving and maintaining winter range vegetation, particularly good forages like bitterbrush, are poorly developed.
4. An influential segment of the public opposes the harvest of antlerless deer, constraining utilization management options for the herd.

5. Administrative policies for National Parks and U. S. Forest Service Wilderness Areas limit habitat management potential on summer ranges.

6. Livestock grazing may reduce herd carrying capacities in some locations.

V. Herd Management Programs

Inventory and Investigations

Objective - Collect information adequate for effective management of the Goodale deer herd to achieve the stated goals.

Recommendations

1. Obtain more accurate herd composition counts and population estimates by providing ~~fifteen~~ eight hours of helicopter time ~~biennially~~ annually.

2. ~~When~~ If helicopter surveys are not made, continue standard ground surveys of herd composition in fall and spring sufficient for valid annual sample sizes.

3. Necropsy animals as they come available from hunting, accidents or special collections to determine body condition, parasite loads, diseases, nutritional status, reproductive rates, etc., to identify problems and performance in the herd.

4. Analyze harvest information from tag returns and at hunter check stations to monitor age class structure, kill locations, hunting pressure and success rates.

5. Evaluate range condition and trends, especially in key areas on all seasonal ranges, and assimilate information about range improvement practices that could benefit the herd.

Habitat Management

Objective - Preserve existing habitat against encroachment and improve habitat as appropriate methods become available to adequately provide for the population goal.

Recommendations

1. Prevent increases in grazing intensity where detrimental to deer habitat, and reduce or otherwise modify grazing practices as conflicts with deer are identified.
2. Recommend against proposals for new roads, trails, mining, hydroelectric projects, agriculture or residential developments in areas of important deer habitat.
3. Direct Tule elk capture efforts for relocation into areas where the greatest forage competition with deer exists.
4. Support and assist ongoing experimental habitat improvement by the U. S. Forest Service involving burning and pruning of bitterbrush, with the intent of using such methods on a wider scale in the future.

Utilization

Objective - Continue to provide for an average annual harvest of at least 100 bucks during the regular season, a late-season trophy hunt, and excellent nonconsumptive use opportunities.

Recommendations

1. Adjust the annual hunting season timing and length, and hunter quotas, as necesary based on herd composition ratios identifying buck carryover and recruitment annually.

2. Continue to hold a special late-season trophy hunt when the buck ratio in the southern herd subunit exceeds 35 per 100 does the previous year.
3. Recommend controlled antlerless hunting when the herd exceeds range capacity to eliminate excessive competition between adults and fawns.
4. Direct individuals interested in viewing and photography to appropriate accessible areas such as near Goodale and Division creeks on the southern herd subunit winter range.

Law Enforcement

Objective - Reduce poaching and other noncompliance with wildlife laws to the lowest possible levels.

Recommendations

1. Continue current warden patrols which have been effective in keeping illegal hunting at low levels.
2. Seek citizen involvement in game law enforcement through publicity of the CalTIP secret-witness, phone-in reporting program (800-952-5400).
3. Improve cooperation by other law enforcement agencies including the U. S. Forest Service, BLM, county sheriffs, etc., in apprehending poachers.

Mortality Control

Objective - Reduce excessive mortality in the herd as much as feasible, particularly that affecting fawns early in life.

Recommendations

1. Work to insure adequate habitat components of forage, cover and water so that the population remains healthy and young fawns have all necessary requirements.
2. Recommend antlerless hunting at specified levels if the herd exceeds habitat capacity and fawn survival can be increased.

Communication of Information

Objective - Increase the distribution of accurate, up-to-date information about the herd and ongoing management programs to improve their knowledge and support.

Recommendations

1. Provide this management plan summary to all interested parties as necessary.
2. Develop an informational presentation to give to educational groups, service organizations, etc. as public interest indicates.
3. Hold public seminars about management programs and alternatives to generate feedback and improve public understanding of them.

Review and Update

Objective - Review and update the Goodale herd management plan periodically to keep information and actions current.

Recommendations

1. Incorporate annual herd monitoring data to the plan and review progress towards goals.

2. Seek review and input by other appropriate agencies (U. S. Forest Service, BLM, etc.) and the public into management planning and actions to insure their knowledge and consideration of herd needs and improve acceptance of CDFG programs.

Sources of Additional Information

The appropriate regional reviewer in Bishop should provide the names, addresses and phone numbers of other cooperators for this section.

Inyo National Forest
871 North Main St.
Bishop, CA 93514

Bureau of Land Management
271 North Main St
Bishop, CA 93514