

THE WEST WALKER DEER HERD MANAGEMENT PLAN

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by

Ron Thomas
Wildlife Biologist

Under the Supervision

of

Vern Kcontz
Associate Wildlife Biologist

and

Clyde Edon
Wildlife Management Supervisor

California Department of Fish and Game
in Cooperation with the Toiyabe National
Forest and the Bakersfield District BLM

Approved

Fred A. Wathley Jr.
Regional Manager, Region 5
California Department of Fish and Game

July 18, 1985
Date

Forest Supervisor, Toiyabe National Forest

Date

Bakersfield District
Bureau of Land Management

Date

Carson City District
Bureau of Land Management

Date

Nevada Department of Wildlife

Date

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I. INTRODUCTION

A long-term decline in deer numbers has occurred throughout California during the past 20 years. Concern over this decline prompted the decision in 1975 to formulate a general plan to restore and maintain healthy deer herds at levels compatible with their habitat, to increase the quantity and quality of deer habitat, and to provide for diversified recreational use of deer.

In 1977 the Legislature mandated the California Department of Fish and Game (CDFG) (AB 1521) to develop plans for deer herd management units containing specified program elements. This means that a geographical unit of deer range will be considered distinct from adjacent ranges and that a management plan for that unit will be designed for that herd alone. This document complies with the CDFG policy commitment and legislative mandate.

The purpose of this deer plan, then, is to describe the status and trend of the West Walker deer herd and to formulate a management program which will, if implemented

- (1) increase overall deer numbers;
- (2) improve the condition of the range; and
- (3) provide for high quality and diversified use of West Walker deer.

To achieve these goals, the plan incorporates ecologically sound management concepts. Such concepts provide the basis for specific program elements relating to herd size, production and survival, research needs, habitat maintenance and improvement, and all other facets of herd management. Organization of the plan follows a format including:

- (1) Description of the deer herd management unit, including boundaries, environmental characteristics, history, basic herd biology, etc.
- (2) Management unit goals.
- (3) Management problems and solutions.
- (4) Specific management programs.
- (5) Alternatives.
- (6) References.
- (7) Appendices.

Since deer herds are continually changing, herd plans must be dynamic. Much information is lacking. As additional information is obtained, this plan will be revised as appropriate.

This plan was formulated with input from the Nevada Department of Wildlife (NDOW) and is intended to be used in the coordination of management activities between the states.

The herd is located in an area with a high demand for multiple commercial and recreational land uses, some of which tend to affect the deer herd adversely. This plan is intended to provide guidance to land management agencies and local governments in making resource allocations which will dictate the future condition of the West Walker deer herd. There are several major issues and concerns related to management of the West Walker herd, including the following:

- (1) demand for increased hunting opportunity and increased deer harvest;
- (2) high demand for multiple resource use on public lands (recreation, grazing, etc.);
- (3) increasing demands for water impoundments for power production;
- (4) long-term deer habitat deterioration; and

(5) opportunities for deer habitat enhancement in conjunction with other resource management programs.

These factors, in combination with appropriate laws, regulations and policies, were used in evaluating goals for the West Walker herd. Since the attainment of these goals is a long-term process, this plan is intended to be effective for a period of 10 years. The target date for the goals described herein is 1994.

II. DESCRIPTION OF THE HERD AND MANAGEMENT UNIT

A. Deer Herd Definition and History

1. Herd Definition

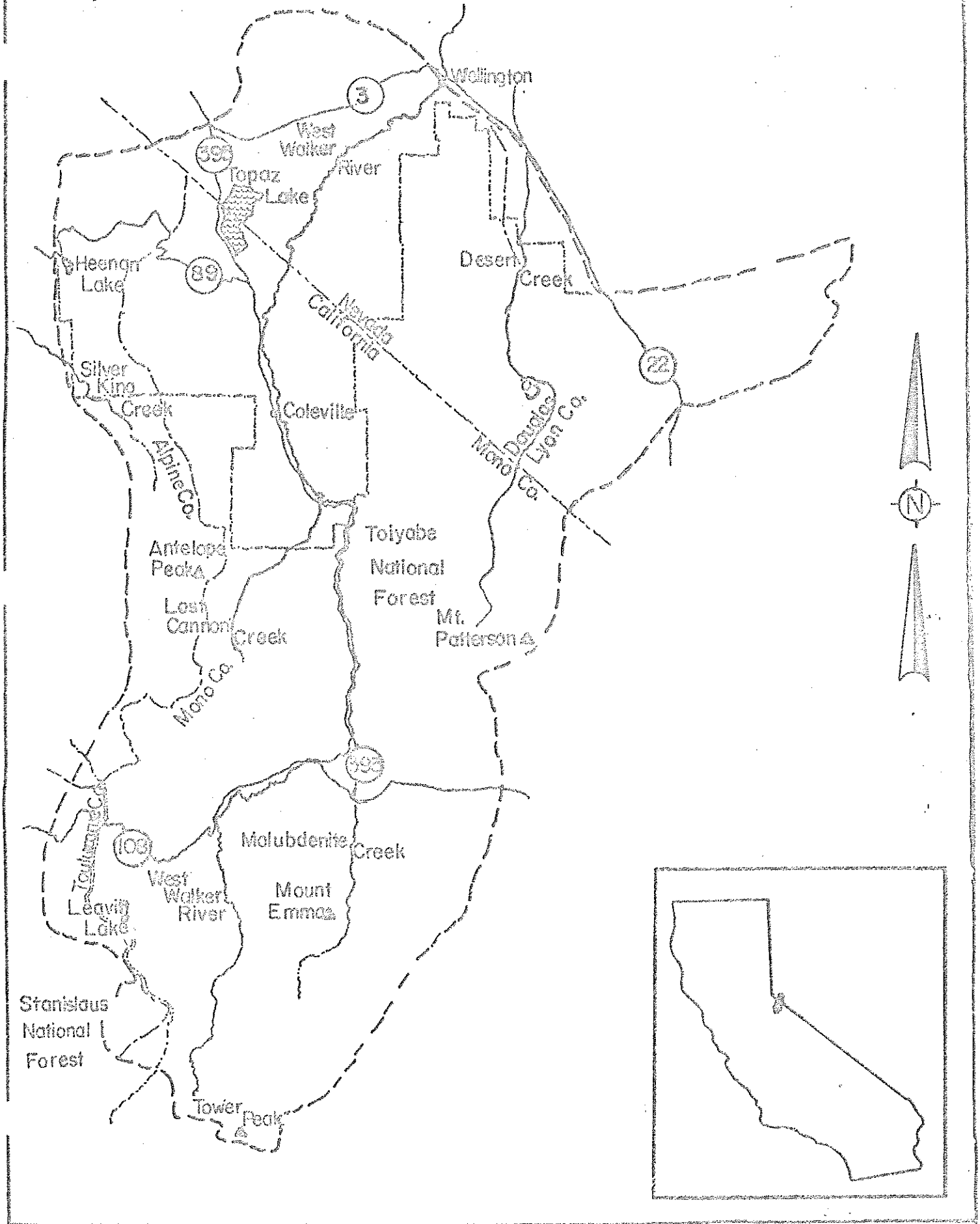
The West Walker herd occupies the northern part of Mono County with significant portions of the herd summering in Alpine and Tuolumne counties and wintering in Mono County and in the State of Nevada (Figure 1). The herd occupies an area of approximately 900 square miles (576,000 acres). Approximately 400 square miles (256,000 acres) are considered to be winter range, and the remaining 500 square miles (320,000 acres) are summer/intermediate ranges. About 200 square miles (one-half of the winter range) is in the State of Nevada.

Recent telemetry tracking has demonstrated that some West Walker deer summer west of the Sierra crest, beyond the traditionally recognized herd boundary which is delineated in Figure 1. The extent of the herd's summer habitat west of the crest is unknown at present. The West Walker herd is made up of Rocky Mountain mule deer (Odocoileus hemionus hemionus). A portion of this herd shares summer range with California mule deer (O. h. californicus) which winter on the Sierra west slope.

2. Herd History

Before settlement by white men, deer were scarce in the unit area. Between 1910 and 1930, deer numbers increased slowly (see range history for details). Deer tags were first issued by the CDFG in 1927. In that year only 36 deer were reported killed in all of Mono County. Herd increases occurred during the 1940's and 50's. Hunter success was high during that period (Britton 1970). By the late 1950's deer had increased to a population of nearly 25,000 deer by some estimates. This was clearly beyond the carrying capacity of the winter ranges.

FIGURE 1. Traditionally Recognized Herd Boundary.



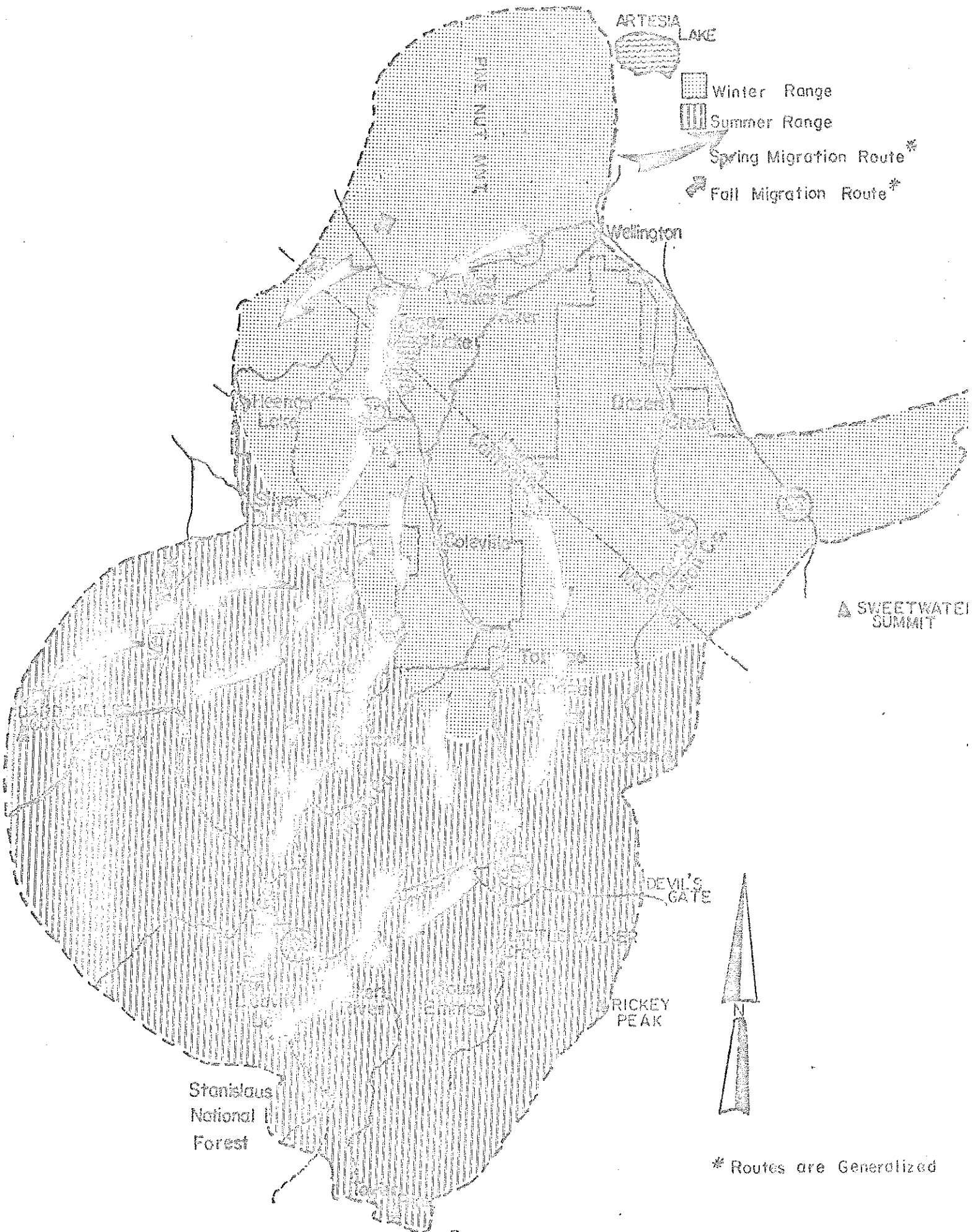
Antlerless hunts were held in 1955 to reduce excessive deer numbers in Mono County. Antlerless tag quotas were set using the three-year average buck kill. However, too few deer were taken to relieve winter range abuse. In the mid-sixties, the number of antlerless tags was increased and doe harvest approached buck harvest in number. This high harvest rate and other deer losses reduced the pressure on the range. However, a combination of declining range conditions, intensive doe harvest, and the severe 1969 winter discussed below appear to have reduced certain segments of the West Walker herd.

In 1969, 259% of the average annual snow fell on the West Walker range (Department of Water Resources 1969), creating extreme winter stress on deer. These severe conditions resulted in a loss of approximately 23% of the West Walker deer herd, mainly fawns and extremely old age animals. To allow deer numbers to increase, no antlerless hunts have been recommended since 1968. Increases have been slow, and the most recent data suggests a static population fluctuating around 5,000 animals in the last 5 years. Actually, population estimates vary with the method of calculation as shown in Appendix 1.

3. Seasonal Ranges and Migration

Winter and summer ranges and generalized migration corridors for the West Walker herd are shown in Figure 2. From 1974 to 1976 a cooperative study of the Carson River deer herd was conducted by CDFG and NDOW. A total of 279 deer were trapped and tagged in an effort to delineate the range of the Carson River herd. West Walker deer were tagged as part of the study; limited data on West Walker deer and movement patterns resulted (Appendix 2).

Specific migration routes, summer ranges, and holding areas are currently being defined through the use of radio telemetry. The latest information on deer migration is presented in Appendix 3.



4. Harvest history

Harvest has been recorded since 1953 in both California and Nevada (Table 1). Total kill averaged about 1,000 deer in the 1950's and rose to a peak of more than 2,000 in 1964. This included a considerable antlerless kill up through 1968, after which few antlerless deer have been taken. Buck harvest also peaked in the early 1960's, averaging about 800, but declined beginning in 1967 to a 10 year annual average of about 300 up through 1976.

Recent increases in reported harvest reflect limited increases in survival and carryover rates. These increases are viewed as short-term, influenced by weather patterns and reduced harvest in previous years. Buck hunting seasons were set earlier and shorter during recent years, affecting the overall harvest (Figure 3). In 1981, a storm occurred during the month-long hunting season, resulting in an unusually high buck harvest because essentially all bucks became available to hunters. Subsequently, buck numbers and the 1982 harvest were reduced.

5. Herd composition records

West Walker herd composition counts have been taken in late fall and spring since 1952 (Table 2). Fall counts are taken after the close of the hunting season and have exceeded 300 deer since 1962. Spring counts have resulted in larger samples involving 600 to 1,400 deer. Samples involving more than 250 total deer are generally considered adequate.

Fall buck ratios have varied from a low of 7 to a high of 27 since 1969. It seems likely that earlier and shorter seasons resulting in a smaller harvest tend to increase buck ratios, but there is no consistent trend. From 1960 to 1969, the closing date averaged the sixth of November, harvest was generally high and buck ratios averaged 12BB:100DD. In the 1970's, the season

TABLE 1

Harvest Data - West Walker Deer Herd

Year	California			Nevada			West Walker Herd		
	Buck	Ant.	Total	Buck	Ant.	Total	Buck	Ant.	Total
1953	555	-	555	-	-	-	555	-	555
1954	726	-	726	-	-	-	726	-	726
1955	665	380	1045	-	-	-	665	380	1045
1956	491	454	945	-	-	-	491	454	945
1957	728	364	1092	36	13	49	764	377	1141
1958	646	304	950	15	12	27	661	316	977
1959	1199	-	1199	96	300	396	1295	300	1595
1960	597	398	995	58	371	429	655	769	1424
1961	571	-	571	45	240	285	616	240	856
1962	544	330	874	146	163	309	690	493	1183
1963	851	-	851	205	229	434	1056	229	1285
1964	1047	642	1689	201	354	555	1248	996	2244
1965	661	552	1213	9	42	51	670	594	1264
1966	758	696	1454	24	131	155	782	827	1609
1967	276	381	657	6	57	63	282	438	720
1968	407	-	407	44	260	304	451	260	711
1969	195	-	195	2	45	47	197	45	242
1970	327	-	327	17	-	17	344	-	344
1971	207	-	207	12	-	12	219	-	219
1972	328	-	328	32	19	51	360	19	379
1973	216	-	216	57	41	98	273	41	314
1974	223	-	223	30	45	75	253	45	298
1975	275	-	275	37	47	84	312	47	359
1976	258	-	258	46	-	46	304	-	304
1977	298	-	298	45	-	45	343	-	343
1978	252	-	252	99	-	99	351	-	351
1979	279	-	279	66	-	66	345	-	345
1980	368	-	368	53	-	53	421	-	421
1981	657	-	657	90	-	90	747	-	747
1982	250	-	250	-	-	-	-	-	-

FIGURE 7
 DEER SEASON DATES and BUCK HARVEST

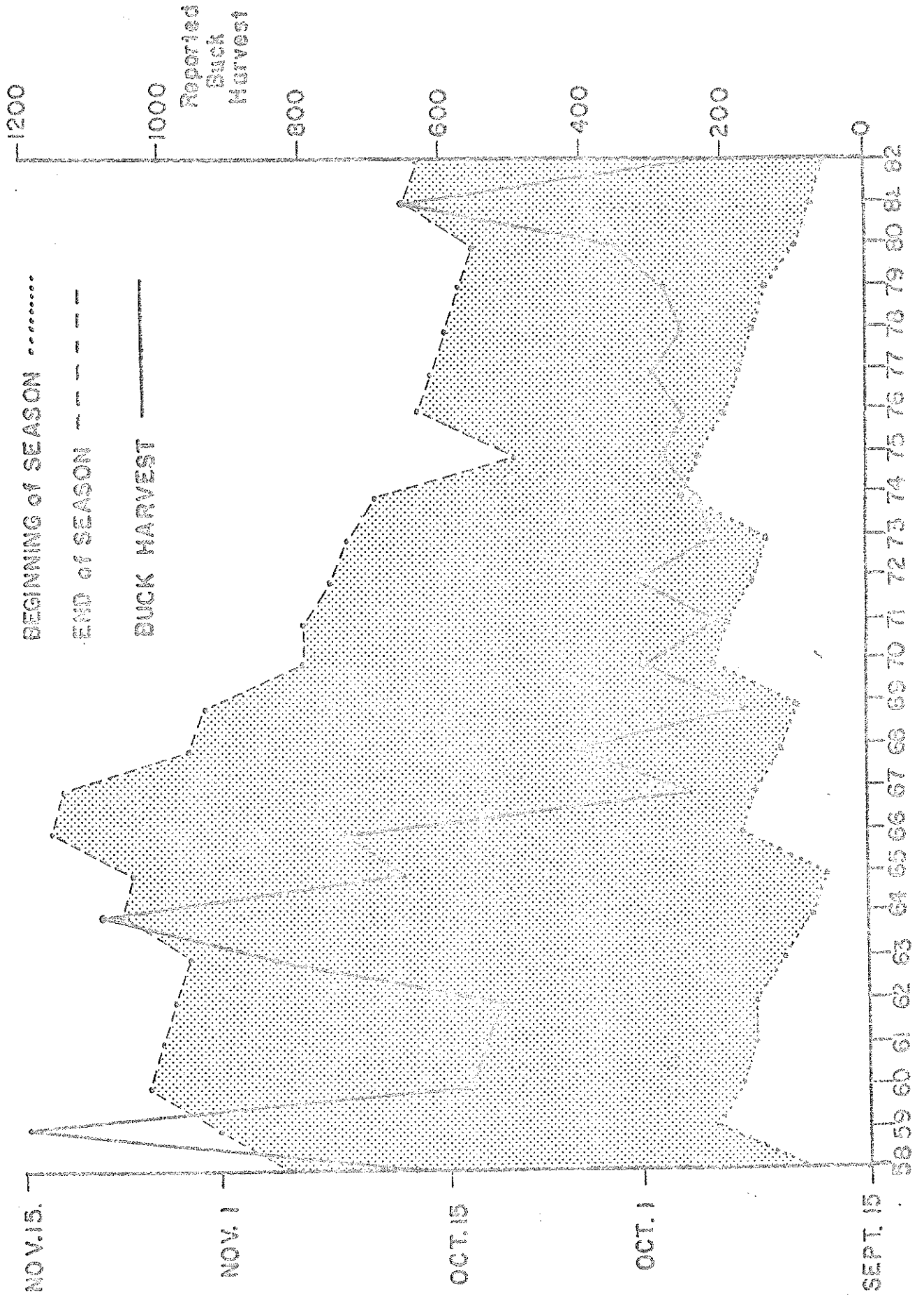


TABLE 2

West Walker Herd Composition Counts Expressed/100 Does

Year	Fall Bucks	Fall Fawns	Sample Size	Spring Fawns	Mean of Previous 3 years	Sample Size
1952-53	17	58		45		
1953-54	18	84		61		
1954-55	20	63		35		
1955-56	14	42		34	47	
1956-57	11	76		53	43	
1957-58	13	74	207	40	41	606
1958-59	16	63	512		42	929
1959-60	18	57	355	47	47	624
1960-61	15	57	295	37	44	626
1961-62	12	46	213	25	42	378
1962-63	7	47	404	45	35	490
1963-64	13	63	475	51	36	656
1964-65	16	60	514	35	40	645
1965-66	11	42	606	41	44	665
1966-67	11	62	809	44	42	949
1967-68	12	56	529	45	40	654
1968-69	11	64	804	40	43	879
1969-70	7	50	355	47	43	901
1970-71	8	59	673	44	44	899
1971-72	19	45	552	35	44	775
1972-73	9	56	551	41	42	697
1973-74	24	62	353	42	40	1091
1974-75	27	68	427	52	39	530
1975-76	15	53	331	52	45	631
1976-77	19	62	363	52	49	730
1977-78	21	54	379	38	52	1416
1978-79	11	53	444	40	47	1314
1979-80	17	48	536	49	43	1239
1980-81	22	54	469	44	42	1182
1981-82	11	62	478	34	44	1072
1982-83	15	50	459			

was closed around October 16, harvest was lower and buck ratios rose to an average of 17BB:100DD. Even though these averages differ, the fluctuation between years remained high. Also, data indicate low proportions of older bucks (4 years or older) in the harvest or observed in the field, averaging less than 20% of all bucks (Tables 3 and 4). The fact that lower proportions of older bucks are killed (Table 3) than observed in herd composition counts (Table 4) is because hunting season closes before the rut, while herd composition counts are usually during the rut when the bucks are more visible.

Herd composition counts also indicate proportions of fawns in the population in fall and spring. They are also indices of the amount of fawn survival in various seasons. From limited data on doe reproduction presented in the next section, it is estimated that nearly 150 fawns are born per 100 does. Only about 55FF:100DD remain by fall, indicating a high fawn loss on summer ranges. Over winter loss is relatively light as shown by spring fawn counts averaging 44FF:100DD since 1969. This represents a loss of 20% of the fawns between fall and spring.

6. Reproduction data

The best data on deer reproductive rates is embryo counts gathered by examining road killed females. The average number of embryos per 100 does found in annual samples are shown in Table 5. A range of 100 to 200 embryos per 100 does was found, with an overall average of 153 per 100 does. Samples have been small or lacking in some years, masking trends in breeding success.

Samples shown in Table 5 do not include yearling females. However, 10 yearlings were examined for embryos since 1965. Three animals had a single embryo, resulting in a yearling production rate of 30FF:100does.

TABLE 3

West Walker herd, age class structure of kill
in percent by year¹

Year	One	Two	Three	Four Plus	Sample Size
1958	22	47	16	15	101
1959	36	44	15	5	89
1960	25	44	24	7	134
1961	15	45	30	10	108
1962	32	27	21	20	77
1963	62	13	11	14	94
1964	51	29	14	6	98
1965	23	46	22	9	101
1966	20	37	22	21	86
1967	23	39	19	19	69
1968	42	29	19	10	77
1969	26	63	11	0	27
1970	45	34	13	8	73
1971	32	44	20	4	41
1972	35	31	26	8	91
1973	26	33	33	8	58
1974	27	35	23	16	83
1975	40	28	21	11	92
1976	50	34	11	5	92
1977	58	37	4	1	99
1978	29	36	32	3	59
1979	26	61	12	1	73
1980	-	-	-	-	-
1981 ²	47	21	32	0	116
1981 ³	16	25	31	28	64
1982 ⁴	26	55	11	8	73

1 - Data collected on opening weekend.

2 - Data collected on opening Weekend.

3 - Data collected in last nine days of season.

4 - Data combined from first and last weekends.

TABLE 4

Percentages of Spike and Four-Point Bucks in
Fall Composition Samples

Year	Spikes (%)	Two and Three Years Old (%)	Four Points or more (%)	Sample Size
1960	62	26	12	26
1961	50	50	0	16
1962	39	50	11	18
1963	56	32	12	34
1964	53	36	11	46
1965	32	61	7	44
1966	55	25	20	51
1967	29	66	5	38
1968	41	37	22	49
1969	67	33	0	15
1970	70	18	12	33
1971	49	45	6	63
1972	39	51	10	31
1973	53	45	2	45
1974	60	37	3	60
1975	37	50	13	30
1976	34	49	17	38
1977	41	32	17	46
1978	48	39	13	31
1979	36	48	16	56
1980	41	19	40	15
1981	41	51	8	3
1982	51	32	7	43

TABLE 5

Embryo Count Data

<u>Year</u>	<u>Embryos/100 does</u>	<u>Sample size</u>
1965	125	12
1966	166	33
1970	162	13
1971	139	18
1972	175	8
1973	142	12
1974	133	3
1975	100	5
1976	200	8
1978	<u>143</u>	7
Overall Mean	153	

Composition counting and other field observations provide information on breeding and fawning periods. Breeding occurs from mid-November to mid-January, and peaks during December. Weather conditions appear to have little effect on time of breeding; the period of fawn drop remains the same each year, peaking in July and completed in the last two weeks in August.

7. Mortality Factors

a. Road Kill

A large percentage of West Walker deer cross Highway 395 annually during migration. Many cross more frequently, even daily, during the winter for feed and water. Thus, many are killed accidentally on the highway. Road kills occur at all times of year, but peak during fall and spring migrations. The known loss averaged 134 per year during the 1966-76 period and 105 per year since. Of this total, approximately 60% are adult does, 30% are fawns, and 10% adult bucks, reflecting the age and sex ratios in the herd.

These figures only indicate the minimum kill, since many injured animals leave the right-of-way and die, and others are removed by the public and are not counted. In the spring, many pregnant does are killed. An unknown number of animals are killed on other roads and highways in the unit and are not tallied. Total road kill is probably about twice the recorded count.

An annual loss of approximately 200 animals is recognized to affect the herd. During the period 1966 through 1976, the known (recorded) road kill amounted to 42% of the reported legal buck harvest.

b. Predation

Mountain lions and coyotes are the common predators inhabiting the West Walker deer range. Mountain lions, or their sign, are commonly seen in association with concentrations of deer. Lion numbers probably have increased

under recent protective regulations, but no reliable estimates of lion numbers within the West Walker deer range are available.

Various researchers have come to different conclusions on the effects of lion predation on deer populations in different areas. For example, one study of mountain lions in northwestern Arizona during 1971-75 concluded that lions were a major factor contributing to the low deer population, but speculated that the seasonal availability of domestic calves helped maintain an artificially high lion population (Shaw 1977). Hornocker (1970), on the other hand, felt that lion predation on mule deer and elk in the Idaho Primitive Area was beneficial to prey populations and habitat. In the West Walker herd, it is certain that lions take a number of deer each year, but the overall effect on total deer numbers is unknown.

Coyotes are numerous on much of the West Walker deer range. Deer losses to coyotes are believed to fluctuate considerably in relation to other factors such as relative abundance of other prey, quality and quantity of cover and forage for deer, and the nature of weather patterns. Studies on Steens Mountain, Oregon (Trainer 1975; Trainer et al. 1978; Lemos et al. 1978) employing moderate levels of coyote control, showed that poor fawn survival was due to predation and that fawn survival could be increased by coyote control. This work did not determine whether such control could increase deer available to hunters, or if increases could justify costs.

Even though the mountain lion is largely a deer specialist, coyotes are probably the major cause of predation mortality on West Walker deer, simply because of the far greater number of coyotes on the range.

This is especially true on West Walker summer ranges where reduction of cover and forage by livestock may compound the effects of coyote predation on fawns. Many key fawning habitats, especially aspen groves, are devoid of understory shrubs and seedlings; cover for young fawns is insufficient in these cases. Similarly, reduction of herbaceous forage by grazing in favored fawning habitats may move lactating does to marginal areas with less forage and, poor cover. These interrelations of predation and livestock have been postulated by previous researchers (Mackie 1978; Pyrah 1974)

Although bears, eagles and bobcats also occupy the range of the West Walker herd, none are particularly abundant. While it is certain that they feed on deer when available, the effect on the population is believed to be minor.

An unknown number of deer are killed by domestic dogs each year, and many more are harassed on some areas of the winter range. The stress on wintering deer created by dogs can be significant, especially during harsh conditions when nutrition and temperatures are stressful. Domestic dogs can contribute to road kill and fence entanglement by such pursuit. Uncontrolled dogs accompanying backpackers impact deer in the summer. This impact may be particularly significant to does either pregnant or nursing fawns. Dogs associated with livestock operations probably disturb does to a lesser extent.

c. Winter kill

Losses of fawns and adults are to be expected during severe winters, but unexplained fawn losses occur during relatively mild winters also (e.g., 21% in 1980-81). Causes are unknown.

d. Summer fawn loss

Fall composition counts have indicated summer fawn loss averaging 90 fawns per 100 does. This figure indicates a high loss (61%) of fawns,

either prenatally, at birth, or during the first few months of life. Essentially nothing is known about cause(s) or timing of this mortality.

e. Disease and Parasites

There are no records of diseased deer in the West Walker herd. However, there is also no record of any blood sampling, necropsy, or other forms of disease investigation, so the presence of diseases cannot be discounted. Work in other parts of California has revealed the presence of blue tongue and epizootic hemorrhagic disease (EHD) in deer.

Heavy parasite loads have not been observed in West Walker deer. There has been no specific investigation of parasitism in West Walker deer. However, some factor or factors (possibly nutrition) have resulted in weak stressed animals. These factors could theoretically predispose deer to infection by disease or parasites.

f. Nutrition

Summarizing the nutritional needs of mule deer, Short (1981) says "Summer forage should allow adequate milk production by does and permit all deer to achieve adequate growth and fat storage. Autumn forage should be abundant and of good quality to delay the depletion of fat stores. Winter range should provide forage that minimizes energy deficits and fat depletion. Spring range should offer feed that permits early recovery from stresses of winter. Thus, all ranges are important to deer and must be managed carefully to provide quality nutrition in order to maintain healthy and productive deer populations." Information on the location and forage quality of such seasonal habitats of West Walker deer is limited.

Smith (1981) has cited the need to address nutritional aspects of West Walker deer and habitat. Spring field surveys and composition counts in recent years have revealed deer in very poor condition on winter ranges.

Feeble and emaciated fawns and does have been noted. One anemic animal was found soon after dying. The animal was necropsied to determine the cause of death; selenium and/or other mineral deficiency was indicated. Subsequently, captured deer from several areas of winter ranges were tested. Mineral deficiencies were again indicated on some winter range areas. Fawn losses on all winter ranges, even during mild winters, raise questions on other aspects of nutrition, as well.

These facts suggest nutritional problems on the winter range. In addition, low fall fawn ratios (57 fawns per 100 does, 10 year average; 65% mortality) suggest the possibility of prenatal, neonatal or summertime fawn losses. Specific migration routes and holding areas are now being identified, but little is known about forage quality and quantity on summer or intermediate habitats.

Water distribution and availability limits the carrying capacity of West Walker winter ranges during some years. Where deer are forced to concentrate near limited available water, forage supplies dwindle to low levels. If livestock competition for forage exists, the nutritional problem can be compounded. Water availability is of particular concern in the Blackwell Canyon and Jackass Spring areas, key winter range areas.

g. Illegal kill

The relatively sparse human population and limited road access into much of the range suggest a low probability of poaching activity. Reports from the public and knowledge of various enforcement agencies tend to substantiate a relatively low illegal kill. However, several studies (Vilkitis 1968; Pursley 1977; Simpson 1978) have demonstrated a low chance of a poacher being detected and reported.

The local warden reports evidence of illegal deer kills near the Nevada-California border each winter. In addition, an unknown number of illegal deer are killed and left in the field during hunting season. The total of such in-season illegal kills is believed to equal or exceed the out-of-season kill. It is difficult to determine how many West Walker deer are killed illegally each year or the total effect of such kills on the population.

h. Human disturbance and encroachment

Visitor use of public lands has risen and continues to increase. Much of the West Walker deer herd range is closed to off-road vehicles, although snowmobiling is popular on some winter ranges (e.g. Jackass Flat area). Harassment by snowmobiles may create a severe energy drain on deer.

Backpacking into remote areas of the summer range has increased to the point that many trails now receive heavy and almost continuous traffic. Many backpackers have dogs which are allowed to run freely, disturbing deer and other wildlife. The effect of such frequent intrusions on deer, especially does pregnant or with young fawns, is unnatural and probably stressful.

The number of residential developments is increasing in the range of the West Walker herd. Light industry is moving into the Carson Valley area, with an attendant population increase. The demand for rural housing and increasing real estate values in Antelope Valley and adjacent areas results in land subdivision. These areas are major migration routes and winter ranges for a large portion of the West Walker herd. The impacts of such habitat loss extend beyond the actual residential units. Dogs, livestock, and recreational vehicles associated with the developments displace deer from large areas of traditional habitat.

The development of a military housing complex in Antelope Valley is of immediate concern. The exact location of this tract has not been disclosed

as of this date (January, 1983). However, it is known that one area under consideration (West Antelope Valley) is prime winter range and also a major migration route.

There is some interest in mining some portions of the winter range. Information on the potential impact of mining to deer habitat will be added to the plan when it becomes available.

B. Herd Range Description and History

1. Topography, soils, climate

The range of the West Walker herd extends through elevations of about 4,500 feet on the Nevada winter range to over 11,000 feet on the summer range in California. The winter range is valley edges and low hills bisected by steep canyons, a rugged remnant of both granitic extrusion and volcanic activity in the Lahontan Basin. Much of the intermediate and summer range topography is very steep and rocky.

The soils of the Sierra Nevada summer range are described as being shallow to moderately deep (10-40 inches) and generally having a sandy loam texture. Rock content varies from 0-35%; the steeper slopes are usually more rocky. Water retention capability tends to be low and in inverse proportion to rock content. Granite barriers are distributed sporadically through the summer range.

Soils on the winter range are generally of volcanic or granitic origin and are highly erodable decomposed granites and sandy loams. Soil depth ranges from very shallow and rocky to deep alluvium. Soils in Antelope and Smith Valleys are higher in quality, but are devoted to agriculture and are generally unavailable for deer forage production.

The climate of the West Walker unit is characterized by heavy snowfall, low temperatures, and high winds during the December-April period.

not fire adapted and do not sprout back. Instead, low value species such as cheat grass, desert peach, rabbit brush and ephedra are the first to become established. Under certain conditions, however, fire can benefit wildlife habitats.

Some prescribed burning experiments have caused sprouting of bitterbrush on deer winter ranges in other Great Basin locations. Uncontrolled factors such as the season when burned, amounts of rainfall before and after burning, and/or soil type have influenced the success of such burns. Currently, experiments are being conducted by the Inyo National Forest to develop more reliable prescriptions that would rejuvenate decadent bitterbrush communities.

Deer range improvement by prescribed burning also has potential on intermediate and summer ranges. This is particularly true in montane brushfields dominated by species of Ceanothus. Seed germination of these plants is aided by fire. Currently, no prescribed burning occurs on West Walker hard ranges, but as experimentation in other similar areas continues to provide more knowledge it may be applied.

Since 1964 only seven wildfires larger than 100 acres have occurred on the West Walker deer ranges (Table 6 and Figure 4). A total of 785 acres of summer range and 2,853 acres of winter range were affected. This is less than one percent of the summer range, and only 1.1% of the winter range, so that the overall influence of fire has been relatively insignificant.

5. Land ownership and use

a. Winter range

The winter range lands are owned or managed by the Bureau of Land Management (BLM), private individuals or companies, the State of California (Little Antelope-Slinkard Wildlife Management and the U.S. Forest Service.

TABLE 6.

Wildfires occurring on the West Walker Deer Range since 1964

Rickey Peak, 1964, 240 acres - summer range

Little Antelope, 1970, 133 acres - winter range

Rock Creek, 1972, 360 acres - winter range

Little Antelope, 1973, 425 acres - summer range

Wheeler Bench, 1974, 120 acres - summer range

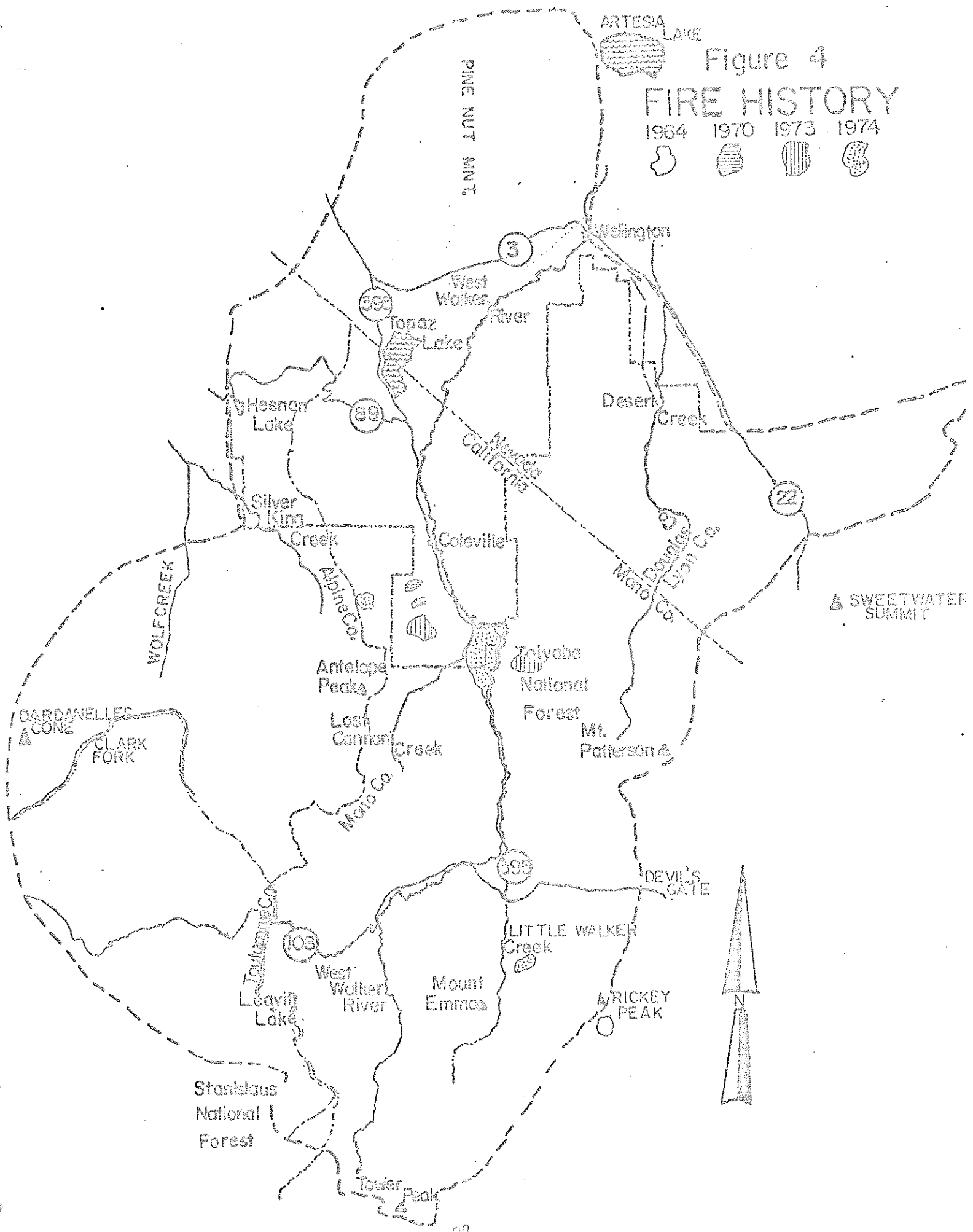
Golden Gate, 1974, 650 acres - winter range

China Garden, 1974, 1710 acres - winter range

Figure 4

FIRE HISTORY

1964 1970 1973 1974



Land uses of the winter range include livestock grazing and trailing, housing, alfalfa hay production and woodcutting.

b. Summer range

&

The summer range is almost entirely public land administered by the USFS. Livestock grazing is the primary economic use of the the summer range. Certain preferred habitats are intensely grazed by cattle or sheep during the late spring, summer and early fall.

Logging has not been a major use on this summer range, since large stands of marketable timber do not exist. Timber harvesting and associated reforestation may increase somewhat, however, because of federal mandates for greater timber production. A sale of timber on private land in the Lost Cannon Creek drainage will affect habitat, watershed, and access there, and some marketable timber exists on USFS lands there as well.

There have been few major habitat conversions on the summer range, most of which is managed by the USFS. The pattern of land ownership on the West Walker deer range is shown in Figure 5.

6. Current Grazing Utilization

The demand for grazing use on the West Walker Unit is high and stable. Essentially all suitable land within the deer herd range is used for cattle or sheep grazing and sheep trailing. Currently, the USFS is preparing grazing plans for the various allotments; the aim is to bring livestock quotas in line with surveyed forage supplies. At present there are 26 active USFS grazing allotments on the West Walker herd range, producing nearly 10,000 AUM's annually (Table 7).

7. Range Surveys

In 1952, 53 winter range transects were established. The transects have been read twice annually for growth and utilization, and every 5 years for condition and trend. The data indicate an improving trend of winter range

Land Ownership of the West Walker Deer Herd Range

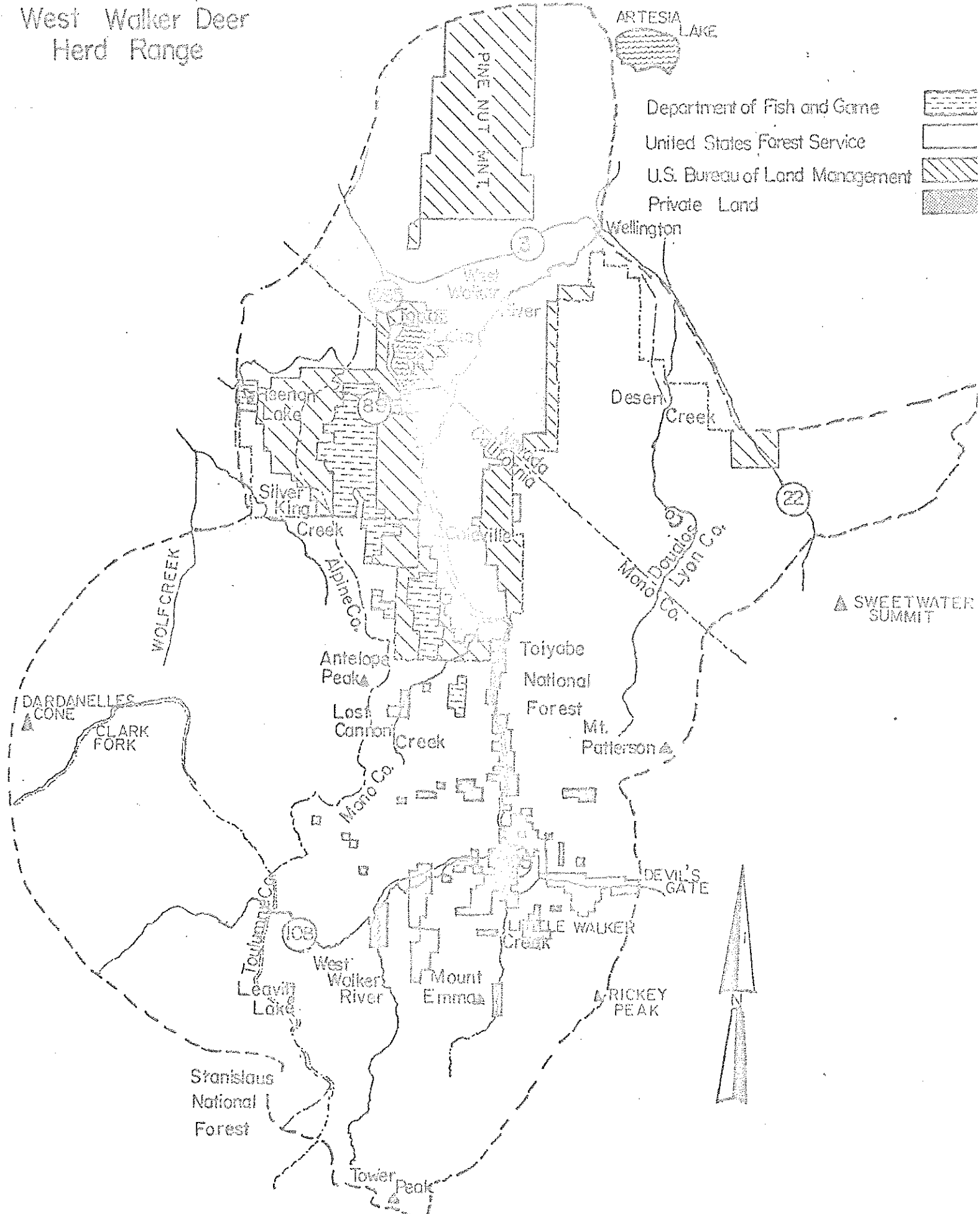


TABLE 7.

West Walker Deer Herd
Livestock Allotments (Calif. Only)

	<u>Season</u>	<u>Number of heads</u>
1. Slinkard - C & H	6/1 - 9/30	264
2. Sweetwater - C & H	6/16 - 10/15	5200
3. Lost Canyon - C & H	7/15 - 10/15	647
4. Mill Canyon - Sheep	6/1 - 6/30	300
5. Cottonwood - S & G	7/1 - 9/15	678
6. Burcham - S & G	7/1 - 9/15	578
7. Silver Creek - S & G	7/1 - 10/15	1578
8. Junction - C & H	5/16 - 11/15	1188
9. Sardine - C & H	7/16 - 9/15	494
10. Piute Meadows - C & H	7/16 - 9/30	462
11. Beartrap - S & G	7/16 - 8/31	406
12. Poison Creek - S & G	6/21 - 9/22	945
13. Little Walker - C & H	6/16 - 9/30	3659
14. Judge Chambers - C & H	6/15 - 10/15	66
15. Spring Gulch - S & G	4/16 - 5/15	93
16. Risue - S & G	4/16 - 5/31	207
17. Simpson - C & H	11/15 - 12/31	39 (Vacant at present)
18. Desert Peak - S & G	5/22 - 6/15	256
19. Sulpher - S & G	1/1 - 3/15	297
20. Nye Canyon - C & H	6/16 - 9/15	20
21. Pine Grove - S & G	5/5 - 6/3, 1/1 - 3/15	590 Total
22. Wellington Springs - S & G	12/21 - 2/20, 4/16 - 5/5	200 Total
23. Red Peak - S & G	8/1 - 9/10	570

habitat. Since 1952 there has been an increase in bitterbrush and a decrease in sagebrush. Bare ground has decreased and litter has increased. Thirty-six percent of the bitterbrush showed "little or no hedging" in 1972; in 1967, zero percent had little or no hedging. In 1967 there was zero percent use on young bitterbrush, but by 1972 there were 7% young bitterbrush plants. All were classed as mature by 1977. The increasing age of bitterbrush on the winter range, coupled with low recruitment of young plants forecasts a probable decline in habitat quality. Transects have not been read in recent years.

C. Major Factors Regulating the Population

Factors which regulate a deer population cannot be considered as separate aspects. They are complex and interrelated, and the additive effects of several can combine to produce a markedly favorable or unfavorable set of circumstances for deer survival and production. However, these complex factors can be classified into two general categories, human influences and environmental influences. Undoubtedly, the most profound influences fall into the first category.

1. Human Influences

a. Livestock

Field reconnaissance of the summer range shows many degraded key deer use areas, especially fawning sites. Competition with livestock for early herbaceous forage especially in dry years, on critical habitats, can and does impact deer on the summer range. Examples of such degraded habitats include Lost Canyon creek drainage, where headcutting exists, the Sweetwater range, where soil movement is common, and Piute Meadows, where madow/riparian habitats are severely impacted by livestock. On the other hand, some areas of the upper West Walker drainage are currently in good condition for deer due to late wet spring weather preventing cattle grazing. In addition, early arrival of cattle

or sheep on meadows or riparian zones depletes early-maturing herbaceous feed needed by pregnant or lactating does (Mackey 1981).

According to recent research on the North Kings deer herd in Fresno County, deer show little tolerance of livestock and are forced out of favorable habitats by the more aggressive domestic animals (Ashcraft 1978). This research found deer use to be inversely proportional to cattle use, and that pregnant and lactating does are particularly affected. When forced to use more marginal habitats, does and fawns are subjected to nutritional stress and presumably to increased predation; fawning success is reduced accordingly.

Distribution patterns and timing of arrival of livestock are of primary concern in maintaining deer populations and perpetuating the long-term health of the ecosystem. Even when total livestock quotas are within the carrying capacity of an allotment, cattle concentrate on favored areas including meadows, stream banks, and aspen groves while adjacent areas are only lightly used. Similarly, sheep are herded to the same best forage types and sometimes remain until forage and cover is seriously depleted, and sometimes soil damage and erosion follow. When livestock arrive on fawning grounds (most riparian types with associated aspens and browse) before July 30, disturbance associated with livestock, men, and dogs can impact fawn production.

Livestock grazing impacts on winter ranges are not well known. However, on the slopes bordering the eastside of Antelope Valley, heavy sheep use (especially prolonged trailing) has reduced available forage drastically. Poor physical condition of wintering deer is evident on this key area, and depredation on adjacent alfalfa is accentuated. Other problem areas may exist.

The literature provides many examples of the negative effects on deer of improper grazing programs. McKean and Bartman (1971) found mule deer

mortality to be two to three times greater in controlled study pastures heavily stocked with livestock than in pastures grazed at light or moderate rates. Knowles (1976) suggested depressed fawn production and survival in heavily grazed pastures. On the ungrazed Three Bar Wildlife Area in Arizona, mule deer density was much higher than on all adjacent grazed areas (Galliziolli 1977). McMahan (1964) and McMahan and Ramsey (1965) reported satisfactory deer reproduction and survival only in areas with little or no livestock competition. In their study area, no fawns ever survived in pastures heavily grazed by livestock.

Elimination of livestock grazing from public lands is not feasible, nor is it the aim of this discussion. Evaluation of grazing practices can and should be undertaken, however, with the welfare of other resources such as deer in mind. Generally speaking if range managers and users place continued emphasis on maintaining the long-term productivity and health of the ecosystems, sustained yield of all resources can be realized.

b. Hunting

Hunting of bucks is presently the major consumptive utilization of West Walker deer herd and is a major factor reducing the buck population both in California and Nevada. Annual buck seasons have varied in the past from 3 to 6 weeks. Three-week seasons ending before any stormy weather have tended to reduce harvest somewhat. The 1981 season of 4 weeks had an early storm, causing an early migration and a dramatic increase in hunter take.

Antlerless hunts were conducted during the years 1955 through 1967. Antlerless seasons varied from 3 days to 6 weeks. The shorter seasons resulted in a higher take of fawns, while the longer seasons allowed hunters to be selective and older deer were taken. During 1968-69 and 1972 through 1975, Nevada conducted antlerless hunts of West Walker Deer (Table 1).

The concept of sport hunting is based on the premise of an annual harvestable crop of deer which can be removed without detriment to the breeding population. Further, researchers have cited the actual need for harvests to maintain range quality by preventing overuse by deer (Dasmann 1971; Robinette et al. 1977). Past survey data for the West Walker winter ranges portray a condition of excessive deer use. The antlerless hunts here were aimed at reducing overuse on critical winter ranges.

On the other hand, some researchers have recognized that sport hunting has the potential for deleterious effects on deer populations. Connolly (1981) cites the intensively managed deer herd on the National Bison Range in Montana. Though not sport hunted, this herd was heavily cropped (30-35% annually) for many years and the population remained stable. In 1972, the harvestable surplus vanished. For 4 years, only few deer were taken for research purposes, and no herd increase occurred. The reason(s) for this phenomenon have never been determined, illustrating that unexplained aspects of herd and harvest biology can develop. It raises the question of unknown factors acting to suppress a deer herd. When this takes place, excessive hunting harvests are possible if a population decline goes undetected.

Wolfe (1976) postulated that lack of reliable population estimates may account for failure of some states to recognize early the steady and almost universal deer decline in the western states during the 60's and 70's. He suggests that excessive harvests resulted and contributed to the decline.

In describing the population dynamics of the West Walker herd since 1969, Anderson (1978) wrote: "Deer are increasing, but at a slower rate than anticipated.....in the West Walker herd area the increase has been approximately 50% of the anticipated increase."

The age structure of bucks in the herd is cause for concern to some professionals and members of the public familiar with the West Walker herd. As indicated by bag check samples and fall composition counts, the overall percentage of older bucks is 10-20% (age 4+) and a preponderance of yearlings exists (Tables 3 and 4). Nevada Department of Wildlife biologists share the concern about this preponderance of yearlings, believing that genetic advantages result from breeding by older, robust, more mobile bucks, known to have traits for large body and antler size. Recent studies of the genetics and nutrition of white-tailed deer substantiate this premise (Mott 1980).

Further, breeding by yearlings within their own family group might produce genetic problems and/or reductions in health or vigor of the herd. Hunters have expressed the desire to see some older, bigger, trophy class animals.

The high level of hunting pressure and take is the major cause of the existing age distribution of the buck population. The fact is that few bucks survive past 2 or 3 years of age and yearlings make up a high percentage of surviving bucks each year.

Crippling loss of legal deer must be considered, since various researchers estimate crippling loss at between 26% and 72% of the recorded legal take. This loss is added to the recorded kill when population estimates and harvest strategies are formulated, and may be a factor in influencing the sex ratio of the herd.

c. Encroachment on Habitat

Residential Development

The subdivision of winter ranges for residential development is a substantial threat to the future of the West Walker herd. A large and important winter range has already been lost to housing on the south slope of the

Pinenut range in Nevada. The U. S. Marine corps is currently investigating sites for a subdivision to house the increased staff of the Mountain Warfare Training Center at Pickel Meadows. The site under primary consideration is a key winter range as well as a major migration corridor. Increasing land values in Antelope Valley suggest the probability of key habitat loss there, particularly in brush fields on the east side of the valley.

Hydroelectric Projects

There are currently several applications on file for the construction of small hydroelectric projects within the range of the West Walker herd. Potential impacts to the deer herd vary from nearly negligible to significant, depending on type, size, and location of the project. Coordination with land managing agencies and local governments is ongoing to attempt to minimize adverse effects. Careful evaluation of each site will be necessary to protect wildlife resources.

Human Disturbance

The disturbance created by backpackers and their dogs was mentioned previously. Another impact to deer on the summer range is the disturbance of Marine training associated with the Mountain Warfare Training Center at Pickel Meadow. Large areas of habitat surrounding the Center are used for training activities throughout the year, including fawning periods during summer months. This disturbance factor will increase in the future as staff and training efforts are scheduled to double within two years.

d. Road Kill

Since a significant level of road kill is known to occur, this factor is assumed to exert an influence on the deer population. It is not known whether this mortality is compensatory or additive to natural mortality, so the full effect on the population is not known.

2. Environmental Influences

a. Weather

It is known that prolonged deep snow cover on the winter range creates a stressful situation and many deer are lost in such conditions. In Wyoming, crusted snow .3 meter (1.0 feet) deep caused deer to move to other areas with less snow (Strickland 1975). Late, persisting snow on intermediate and summer ranges can delay spring migrations; such a delay may create stress which could influence fawning or recruitment that year.

Other, more subtle effects of weather are less dramatic and not well understood. For example, early precipitation during the 1981 fall prompted the growth of grasses and forbs during October and November. Deer arrived early on the winter range, because of the early storm system, and found good herbaceous feed. This weather pattern appears to have created a (short-term) favorable feed situation which sent the deer into winter in good condition.

The influence of weather can affect timing of migration. Migrations, in particular, generally held to be habitual, may be accelerated or delayed by unseasonable snowfall or cold (Geist 1981). The effects of such a weather pattern were graphically illustrated during the 1981 West Walker deer hunting season. An early storm, coupled with a lack of feed at higher elevations due to low precipitation the previous year, prompted deer to migrate to such an extent that essentially the entire herd was accessible to hunters. An exceptional harvest of mature bucks resulted.

Inclement weather prolonged into late spring can delay migration to summer ranges, preventing pregnant does from reaching traditional fawning grounds. It is believed that reduced fawn production can result, as in the 1982 season.

Free water is abundant throughout most of the range of the West Walker herd, but prolonged drought can reduce availability of water. Another pronounced effect of drought conditions is reduction or absence of annual browse and forb production. Summer thunderstorms can be locally important to West Walker deer by providing for young herbaceous forage through the summer months and even into fall.

Weather can affect predation. It has been theorized that dry years reduce alternative prey for coyotes, so fawns are subjected to heavier predation. Cover for fawns is reduced by dry years; this would increase their vulnerability.

b. Predation

The precise influence of predation on the West Walker herd is not known. It is known that predators kill substantial numbers of deer on many western ranges (Connolly 1981). Only careful study would define the true effect on the population. Conversely, predation by coyotes or mountain lions has never been documented as the principal cause of a mule deer decline (ibid).

Since fall fawn ratios are low, it is probable that predation has some effect on fawn recruitment. However, predation losses can be caused or accentuated by poor fawning habitat, grazing practices, weather, poor nutrition, etc. Only through complete analysis of these factors can it be determined if predation caused deer to be less numerous than they would be in the absence of predation (Connolly 1981).

III. POTENTIALS FOR RESTORATION AND MANAGEMENT UNIT GOALS

A. Potentials for Restoration

The statewide goal for California deer herds is to restore and maintain healthy deer populations and to provide for high quality, diversified use of the deer resource. However, before one can begin to state specific objectives and programs to implement those objectives, several fundamental determinations must be made, including: (1) possible mechanisms for restoration; (2) the factors which inhibit or conflict with deer herd restoration; (3) the overall potential levels for restoration; (4) potential harvest strategies and intensities of utilization; and (5) considering the mix of all major issues and concerns, the preferred level of restoration and utilization.

The NDOW arrived at a goal of reasonable deer numbers for the herd in their 1978 report, "Wildlife Habitat Plans for the Future; Walker-Mina Planning Units" (which encompasses the West Walker winter range). This goal was developed with the use of average and extreme population figures, and was in agreement with the California Department of Fish and Game at that time. The goal was 9,000 animals which represents about a 60% increase in the average number.

Considering the high demand for use of the herd, this goal is still reasonable today. The Nevada report states "Justification for this upward adjustment (the 60% increase) can be found in the fact that (winter) ranges in this portion of the planning unit appear to be improving, and no serious loss of habitat through urbanization presently exists. In this regard, this planning unit offers one of the last remaining opportunities to both protect and expand an inter-state herd in this region."

The NDOW's goal is still a viable alternative. Deer numbers have increased slightly since the report was prepared, even without significant

habitat improvements. Further increases will require more and better habitat management, however, since the herd is near the carrying capacity of current (1983) range conditions. Increases can only be accomplished through improved habitat condition, reduced livestock competition for forage, and improvements in sex and age ratios in the herd. With improvements in these factors and in the general health of the herd, the impacts of severe winters or other negative factors will be moderated.

It is generally recognized by the land managing agencies, wildlife managing agencies, and the public that many key areas of the range are in poor to fair condition at present. A goal of general improvement of deer habitat is in line with multiple-use principles of public land management. Public sentiment supports habitat improvement for wildlife on public lands. Economic stability in Mono County depends to a large extent on viable fish and wildlife resources, so improving habitats is in the best interest of that stability.

A diverse and comprehensive ground cover that serves to protect soils is basic to habitat improvement. Grazing programs aimed at preserving these basic resources are essential. Control of off-road vehicle use is also important in this respect. We cannot realistically hope for improvement of the entire northern end of Mono County, however. Priorities must be placed on maintenance and improvement of key habitats vital to the deer resource. As areas are identified, information on their values, deficiencies and needs are provided to the land managers on an ongoing basis.

B. Attainable Levels of Restoration

In order to evaluate restoration levels, reasonable estimates of current and historical population levels are needed. The current population is estimated to be approximately 6,000 deer (Appendix 1). This would require a

density of about 12 deer per square mile on summer range and 15 deer per square mile on winter range. If 20,000 deer is used as an historical peak population estimate, this implies 40 deer per square mile of summer range and 50 deer per square mile of winter range during the mid-sixties. Since then, some habitat losses have occurred and habitat quality of some winter ranges is declining. Considering these factors, it is reasonable to assume that 12,000 deer is now the maximum attainable population size. Since the Department is committed to maintenance and restoration of deer herds, the above figures indicate 9,000 deer as a reasonable, attainable population sizes. The Nevada Department's goal of 9,000 deer agrees with this goal.

C. Utilization Levels and Alternative Strategies

Currently, only bucks (forked-horn or better) are harvested with only minor limits on hunting pressure. Post season buck ratios in recent years indicate that near-maximum buck take is being achieved.

Such intensive harvest of bucks has certain drawbacks. The average age of animals killed is related inversely to the size of the harvest (Connelly 1981). Large, older animals are scarce in the harvest, since nearly all bucks killed are less than 4 years of age. Field study (Brownlee 1975) and computer modeling (Gross 1973; Anderson et al. 1974) have demonstrated this decline in older bucks with increasing harvest. An intensive rate of buck harvest also depresses the buck-dee ratio in the herd. Again, field study (Robinette 1956) and computer modeling (Anderson et al. 1974) attest to this fact. The low buck/dee ratio and resultant low percentage of older bucks in the herd concerns some professionals and the public.

At the present population level, good biological management of the West Walker herd would involve a reduction in buck harvest and limited,

controlled antlerless harvest. Improvements in buck-doe ratio, buck age structure, and utilization of the resource would be the goals of such a harvest strategy. Antlerless harvests could also benefit deer health and fawn recruitment by reducing intraspecific competition. If closely controlled, antlerless harvest conceivably could reduce the level of highway mortality and the associated hazards and expense, by selectively harvesting near Highway 395.

Public response to previous antlerless harvests has been highly polarized. Even limited, closely controlled antlerless harvest proposals are likely to arouse strong opposition from the local public. Some hunters, however, have expressed desire for antlerless harvest to reduce the high doe ratio.

At the current population level, buck ratios can be increased by reducing buck harvest. Current recommendations call for a shortened (two-week) season to attempt to reduce harvest.

Another alternative to reduce buck harvest is the quota permit system, so that hunter numbers could be adjusted annually. Hunter pressure would decrease initially while the success rate would rise. This system is already in use on the Nevada portion of the West Walker herd range, as well as all other Nevada herds. Hunter success rates and buck sizes have risen there.

A uniform harvest system is highly desirable for the entire herd, since harvest of this interstate herd must be allocated between states. However, the final choice of a preferred harvest strategy is largely dependent on public and political acceptability.

D. Preferred Levels of Restoration and Utilization

The Department's policy commitment and legislative mandate (AB 1521) are directed toward restoration and maintenance of deer herds. Further, the economic contribution of deer, other wildlife, and fish to Mono County encourages enhancement and maintenance of these resources.

In formulating the preferred goals, a number of criteria were considered: (1) social acceptance and support; (2) economic factors, both costs and benefits of implementing restoration; (3) tradeoffs with other land uses; (4) current and projected demand for uses of deer.

1. Herd Goals:

	<u>Current Level</u>	<u>1993 Target</u>
a. Fall Population Size	5,500-6,500	8,500-9,500
b. Herd Composition		
Bucks/100 Does	11-16	20-25
Spring Fawns/100 Does	40	50-60
c. Total Hunting Harvest		
Bucks	350-400	700-800
Antlerless	-0-	350-400
	(6% harvest)	(12% harvest)
d. Flexibility in harvest level to attain and maintain the stated goals. Variability in season timing, length, and/or hunter numbers required to achieve such flexibility. Harvest goals/quotas to be adjusted annually in cooperation with Nevada Department of Wildlife.		

2. Habitat Goals

	<u>Current Level</u>	<u>1993 Target</u>	<u>% Increase</u>
a. Summer Range (500 sq. mi.)			
Average Deer Density	12/sq. mi.	18/sq. mi.	50%
b. Winter Range (400 sq. mi.)			
Average Deer Density	15/sq. mi.	22.5/sq. mi.	50%
c. Improve current habitat conditions and reduce competition on key summer/intermediate habitats.			
d. Maintain or improve current habitat conditions and reduce competition on the winter range.			
e. Minimize residential development on key winter ranges through the county planning process and acquisition.			

IV. MANAGEMENT PROBLEMS

1. Fall composition counts are difficult on inaccessible portions of the winter ranges.
2. Summer range composition counts are lacking.
3. Summer range forage quality and quantity is unknown.
4. Competition between deer and other herbivores on the summer range is poorly understood.
5. The reported age structure of the animals harvested during the hunting season is inaccurate as these data are gathered only during the opening weekend and may be biased toward younger bucks.
6. Key habitats on all seasonal ranges are not identified.
7. High fawn mortality occurs during the summer, fall and winter.
8. Deer appear to be in nutritional stress during the winter.
9. On certain areas water is poorly distributed on the winter ranges.
10. Excessive deer losses occur on the highways within the herd range.
11. An unknown number of deer are harvested illegally year around.
12. Encroachment of the pinyon-juniper woodland reduces forage abundance on the winter range.
13. Livestock numbers result in excessive forage utilization in some areas and under present management strategies.
14. Conflict between deer and livestock seasons-of-use occur on some summer and winter ranges.
15. Low buck ratios reduce hunting success and may affect breeding success.
16. Future residential-developments-will reduce winter range, and funds for land acquisition are not consistently available.
17. Future hydro-power projects may impact summer and intermediate habitats.

18. Uncontrolled domestic dogs harass deer on winter ranges and in remote portions of the summer range where backpackers have unleashed dogs.
19. Past California hunting programs involved unrestricted hunter numbers, so that mature bucks in the herd have diminished.
20. Funds are not consistently available to conduct aerial herd composition surveys.
21. Little or no regeneration of bitterbrush is occurring on winter ranges. A key forage species, the increasing decadence in old, even-aged stands is reducing winter range quality.
22. Existing access roads present an unknown level of harrassment impact in key deer habitats; increased road access should be avoided.
23. Increasing activities associated with military training increases deer harrassment and reduction at quality of outdoor experience on USFS lands.

V. MANAGEMENT PROGRAMS, OBJECTIVES, AND PRESCRIPTIONS

A. Inventory and Investigative Element

1. Routine data collection and application

Basic data indicating herd performance has been collected annually for many years. Fall and winter herd composition count samples have been of adequate size to determine age and sex ratios in the herd. Also, excellent winter herd composition counting has been accomplished using helicopter flights provided by Nevada Fish and Game. Loss or reduction of this cooperative effort would seriously impair data quality. Periodic (once in 3-5 years) fall helicopter counts of inaccessible California winter ranges is also needed to improve accuracy of post-season buck ratio information. Surveys of summer ranges investigating fawn production and survival, range quality, competition, and key habitat data are sorely needed. The lack of roads in rugged, inaccessible terrain, inhibits such data collection.

Routine harvest data has been collected for many years. Total reported kill is compiled by tag returns each year and is a good indicator of harvest trend. Hunter success and total harvest on opening weekend can be estimated by tag collection by validating officers. Spot kill maps are developed each year.

Hunting pressure information is obtained in three ways: (1) total tags sold in the hunt zone, (2) opening weekend car counts, and (3) observations by personnel in the field. Best information is probably obtained by the combination of methods. In recent years car count data could be viewed with some skepticism since rising fuel prices are resulting in more hunters per vehicle.

Age class structure of the buck kill has been collected since 1958. However, this data has been collected only on the opening weekend of the sea-

son. More valid data would result from aging animals throughout the season, or at least on the last weekend, since a high proportion of older animals are not easily available to hunters on opening weekend. Deploying a crew of Department biologists on closing weekend would provide more representative data.

Winter range surveys were initiated in 1952 and have been read twice yearly for growth and utilization and every 5 years for condition and trend. Such surveys provide valuable data on habitat trends, but would be even more graphic if reinforced by photo plots. The general public and decision makers are often not receptive to tables of figures on percentages; pictures could be more effective in relating information.

2. Research Needs

a. Key Habitats

The well-being of a migratory deer herd depends on habitat quality on all seasonal ranges. Problems on any key habitat may affect the reproductive ability and health of the animals. The first step in preserving or improving habitat quality is identification of all habitats and their condition.

Major winter range areas have been identified. Other seasonal habitats such as migration routes, holding areas, and fawning sites are not well defined. Effective herd and habitat management will require more specific information on these habitats.

Radio telemetry offers the latest technology available to follow animal movements and to define habitat use. Deer are readily captured on winter ranges where terrain and cover are favorable and animals are concentrated. Using set nets and helicopter, tranquilizing equipment, or traps, animals from different areas of a winter range are captured, examined, and fitted with telemetry collars. By marking animals at various locations, a

broad range of data on herd movements and habitats can be obtained. Habitat quality is then determined by site specific surveys.

b. Summer Fawn Losses

For many years, data has indicated a high loss of fawns before fall composition counts (average fall count; 43 fawns per 100 does). There are several possible causes of this loss; intensive research is needed to identify specific cause(s). Scientifically designed assessment of range quality and fawn survival under varying levels of livestock grazing is needed to define that impact. Radio collaring fawns and adults to reveal movement patterns and home range sizes under varying grazing systems could answer questions. A current D.F.G. UC Berkeley study in the Dardanelles Basin, (Alpine Co.) where some West Berkeley Walker deer summer is directing attention on this question. Information about fawns may shed light on the impact of predation when cover and forage are varied by grazing. Is there direct competition for forage? Do some habitat types favor successful fawning? Are winter or intermediate range conditions involved in summer fawn losses. Predation and livestock competition are facts of life in present-day deer management. Managers need answers to design systems to favor deer production. Such study could best be accomplished with outside assistance such as university students. Costs could thereby be held to a minimum.

c. Nutrition

There are indications of nutritionally stressed deer on West Walker winter ranges from sightings, carcasses, and initial blood sampling. Collection and necropsy of debilitated animals is needed. Food habits determination from stomach analysis and range quality assessments in problem areas would be useful. Identifying deficiencies and causes of these problems would suggest measures to relieve stresses and benefit herd vigor and recruitment.

3. Public Attitudes

It should be noted that concern by the hunting and local publics for the welfare of the deer herd reinforces the need for research on this valued resource.

4. Inventory and Investigative Programs

Objective: Gather and evaluate herd life history and trend data, and locate key habitats and evaluate vegetative trend. This would allow formation of ecologically sound, and socially acceptable management recommendations.

a. Inventory:

(1) Continue to monitor basic herd and habitat performance indicators:

(a) Herd composition: Fall and spring using ground and aerial counts in cooperation with NDOW.

(b) Size of hunting harvest: Field checks, tag tally.

(c) Opening weekend age class structure of buck kill.

Field survey by DFG crew.

(d) Hunting pressure. Car counts, and field reconnaissance on opening weekend.

(2) Additional monitoring recommended:

(a) Aerial summer composition counts and habitat surveys.

U. S. Forest Service or contract helicopter recommended.

(b) Periodic aerial fall composition counts in California, using helicopter on inaccessible intermediate and winter ranges.

(c) Age class of buck kill throughout the season.

Intermittent checks by unit personnel, and intensive survey on closing weekend.

hunting pressure as well. Additional off-road and back country enforcement would help also, by putting wardens at the scene of illegal kills.

Predation is a major mortality factor. The effects of mountain lion and coyote predation were discussed previously. It is believed that addressing and correcting habitat deficiencies are the most effective means of moderating any adverse effects of predation on the herd.

5. Herd Management and Mortality Control Programs

a. Herd size

(1) Objective: Attain and maintain an increased herd size to an average pre-season population of 9,000 animals. This figure represents an attainable goal based on historical deer numbers. Again, any increase must be in concert with habitat conditions.

(2) Methods:

(a) Identify and enhance key habitats to improve fawn survival and recruitment

1. Reduce of competition and disturbance.
2. Improve herbaceous vegetation used for forage and fawning cover.

(b) Attempt to reduce highway kill.

b. Sex ratio of the breeding population.

(1) Objective: Attain and maintain a post-hunt buck:doe ratio of 20:100 over the long term.

(2) Methods:

(a) Vary season length and timing, or hunter quota levels, to reduce buck harvest and increase post season buck ratio to 25:100 initially. By aiming for an initial post season buck ratio of 25:100, it is believed that a better age class distribution will be attained.

(3) Subsequently, adjust harvest annually based on herd composition data to maintain a minimum post season ratio of 20:100.

(4) Strive for controlled antlerless harvest of varying quota based on herd composition data.

c. Age Class Structure of the Population

(1) Objective: Attain a pre-hunt buck population containing a minimum of 40%, 3 year and older animals, provide a reasonable opportunity for 30 percent harvest of these animals, and achieve a more uniform age distribution of does.

(2) Methods:

(a) Initial reduction of buck harvest to attain goal.

(b) Subsequent annual adjustments in harvest to maintain goal level.

(c) Strive for controlled antlerless hunts suitable to herd conditions.

d. Fawn Recruitment Rate

(1) Objective: Strive for an average spring fawn:doe ratio of 60 fawns per 100 does.

(2) Methods:

(a) Identification and enhancement of key habitats.

(b) Identification of disturbance or other factors reducing fawning success.

(c) Fawn survival study to define causes and magnitude of early fawn mortality, and application of this new information.

(d) Improvement of key winter habitat on east side of Antelope Valley by control of sheep overgrazing. Interagency coordination will be required.

e. Alleviation of Acute Mortality

(1) Objective: To reduce highway mortality.

(2) Methods:

(a) Improvement of warning measures.

(b) Reduction of speed limits.

(c) Removal of roadside vegetation at major crossings.

(d) Negotiate acquisition of key crossing habitat
along Highway 395 near Topaz-Walker.

f. Control of deer depredation.

(1) Objective: To minimize depredation by deer in Smith and
Antelope Valleys.

(2) Methods:

(a) Improve winter habitat on eastside of Antelope Valley
by control of sheep overgrazing, water developments and pinyon
control.

(b) Improve winter habitat in Wellington Hills by control
of sheep overgrazing and water development.

(c) Provide antlerless hunts in problem areas.

(d) As a last resort, issue depredation permits.

C. Habitat Management Element

1. Vegetative Succession

The pinyon-juniper woodland plant community has spread extensively
into other habitat types during the past century. This expansion has been
attributed to grazing, protection from fire, and/or climatic shifts (Burkhart
and Tisdale 1976). This generally occurs at the expense of low growing
vegetation used heavily by deer (Folliott and Clary 1972).

While little forage is produced in dense pinyon-juniper, this type provides valuable cover, especially thermal cover during harsh winter conditions. Tree removal increases the production of grass, forbs, and shrubs. This improves livestock carrying capacity for a period of 15-40 years, but unequivocal proof of benefits to deer are not found in the literature. Studies to date have concluded that pinyon-juniper control has had neutral effect on deer use (Terrell and Spillett 1975; Clary 1974; McCulloch 1973). These studies reported that while more forage is actually produced on cleared areas, reduced cover decreased overall habitat quality for deer. However, in the opinion of the West Walker deer committee, properly designed and located pinyon-juniper manipulation can slow the loss of grass-browse habitats and immediately benefit deer habitat on some areas of West Walker range.

Pinyon-juniper control for deer has been found to be marginally efficient in cost-benefit ratio, even under 1972 economic conditions (Clary 1974). Public cutting of fuelwood and Christmas trees should be encouraged as a moderate pinyon control measure. Fire management policy could also benefit deer in pinyon-juniper types.

Antelope bitterbrush and sagebrush are key forage species for deer on West Walker winter ranges. The abundance of these and other shrubs in the unit is commonly believed to be the result of heavy livestock grazing and drought conditions around the turn of the century (Britton 1971). If this is true, the age of the bitterbrush stands is about 80 years. Establishment of younger plants has been limited in recent years.

A recent study on bitterbrush productivity in Oregon indicated that forage yields increased to a maximum at the age of 60-70 years and decreased rapidly thereafter (McConnell and Smith 1977). Much of the bitterbrush on the

West Walker unit appears to be reaching the age of decreasing productivity. The low establishment of young plants, coupled with decadence and loss of older plants will reduce the range carrying capacity for deer.

Research on bitterbrush and other shrub planting is being conducted by the U.S. Department of Agriculture, Science and Education Administration. Techniques to artificially establish bitterbrush could relieve this threat to deer habitat. Unfortunately, livestock, deer and many other wildlife species must be excluded from planted sites or all seedlings will be eaten. This creates another major hurdle for researchers seeking means of establishing stands of forage plants on large acreages.

2. Conflicts With Other Resource Management Programs

Current livestock grazing practices inflict very severe impacts upon West Walker deer habitat. Livestock are grazed on all seasonal ranges of the herd, and generally, at times or in numbers or concentrations which lower the carrying capacity of the habitat for deer and other wildlife.

Previous work has recognized the potential negative impacts of grazing on key deer habitats. The 1971 Toiyabe Forest plan for the herd recommended "Closing areas of key winter range to livestock grazing where severe competition exists between deer and livestock - especially between sheep and deer." (Britton 1971). Under current grazing management, summer range habitats need relief from livestock pressure as well.

Livestock - deer competition on summer ranges was discussed previously. Identification of key fawning habitats is needed to influence USFS management programs there. When key habitats and their condition are known, specific recommendations on livestock management can be developed. Possible modifications in grazing programs to benefit habitat for deer and other

wildlife includes: (a) delaying arrival of livestock on key habitats to provide for early forage and cover needs of fawning does, (b) discouraging or preventing livestock concentrations in key habitats, (c) reducing allotment quotas.

Identification of migration routes and key holding areas is needed to formulate recommendations for these habitats. Locations, conditions, and impacts to these critical ranges are little known at present.

Locations of key winter ranges are better known. Severe degradation by sheep to key wintering habitat on the east side of Antelope Valley was previously discussed. Strict enforcement of BLM trailing regulations is needed to improve that area. Much of the remainder of the herd's winter range is under USFS grazing allotment. Surveys to determine current habitat conditions are needed and will be conducted with Nevada Department of Wildlife. Recommendations to relieve any livestock-wildlife conflict will be formulated at that time.

Road building on deer ranges is another major conflict in resource management. Though marketable timber is not abundant in the unit, some future harvesting is anticipated in view of Federal mandates for increased production. All timber harvest plans should provide for obliterating or managing roads to prevent increased access which would impact the deer resource.

Demand for recreational use of the herd's range is increasing each year. To safeguard wildlife resources, no new means of access to key deer habitats should be developed for recreational purposes. Any new campgrounds or other facilities should be carefully planned to avoid key deer areas.

Currently, USFS planners are examining the roadless status of much of the summer range. Planners will soon decide whether to continue the roadless designation of the area, or change management to allow increased road access.

Preservation of wildlife values makes new road development undesirable, while restriction of use of existing roads can minimize adverse impacts on wildlife.

3. Land Use Conversions

Housing development continues to encroach on deer habitat. Although a large portion of the West Walker range is publicly owned and administered by USFS, BLM and CDFG, some important winter range areas are privately owned (especially in Antelope and Smith Valley and on adjacent slopes). Expansion of the communities of Walker, Coleville, and Wellington is occurring at present, because the rural setting and scenic qualities of this area provide incentive for further increase in human population. Bitterbrush-sage habitats immediately west of Highway 395 in Antelope Valley and on the east slopes bordering Antelope Valley are particularly concerning.

The valley is critical as deer migrate across it to obtain winter feed. Two avenues offer potential solutions: (1) further acquisition of key areas by federal or state agencies and (2) influencing the county planning bodies to favor preservation of key habitats. Efforts with county planners have had limited success because of economic incentives to develop. Acquisition of extensive areas will be difficult because of rapidly rising land market values and increasingly limited government budgets.

4. Private Lands

As more privately owned lands are developed into residences or small ranches, other problems ensue. Depredation on alfalfa is now occurring in Antelope and Smith Valleys. Displacement of deer from key winter ranges will compound the problem, as wintering deer will readily take cultivated shrubbery, gardens, or crops at new residences or ranches.

Most people living in a rural area will have dogs. All too often these dogs are allowed to roam freely, harrassing deer which are already

subject to the stresses of winter. Off-road vehicle use will increase on public lands as the human population rises, so impacts to wintering deer will increase proportionately. Increases in domestic livestock numbers are expected as rural population increases.

The most obvious solution to these private land problems is to prevent further residential development. Since this may not be possible, other measures can provide at least partial solutions. The county planning process must be reviewed on a continuing basis and enforced. Dog ordinances can be passed in the county, and state laws regarding dog harassment of deer can be enforced. Closure of key habitats to off-road vehicles by federal land agencies would be helpful. Increased federal enforcement of livestock trespass will be required. Depredation problems can be reduced by known methods; fencing, repellents, contained dogs, and other possible methods.

5. Habitat Quality

Summer habitat quality could be heightened by improved livestock management. Lack of forage occurring on winter ranges are known to be partially related to sheep trailing impacts on the habitat. Necropsy data suggests mineral deficiencies on the Little Antelope WMA. Research is needed to define the extent of this problem.

Proposed hydro-power projects may remove deer habitat. Review of proposals, on-site surveys, and mitigation recommendations will be required on a site-specific basis to minimize impacts to deer and other wildlife.

6. Habitat Management Programs

a. Objective: To attain and maintain habitat quality sufficient to achieve the stated herd management objectives.

b. Methods:

(1) Identify key seasonal habitats and any deficiencies therein

(2) Identify water-deficient areas of winter range and outline water developments needed.

(3) Pursue acquisition or zoning protection of threatened key winter ranges, especially key lands on the eastside of Antelope Valley. Legislative change is needed in California and Nevada.

(4) Create a deer management committee to relay information and to coordinate habitat improvement with other land uses. A minimum of three meetings per year should be held.

(5) Where lack of habitat exists, rehabilitate aspen groves by reducing or eliminating livestock impacts. Changes in season-of-use and fenced enclosures offer means of aspen rehabilitation.

(6) Where problems exist, rehabilitate meadows by reducing or eliminating livestock impacts. Changes in season-of-use, herding, reduction of grazing quotas, and exclusion are available means.

(7) Formulate other habitat improvement techniques such as pinyon thinning, browse planting, grazing manipulation, tree felling, fencing, etc. as needed on a site-by-site basis.

(8) Evaluate existing areas where pinyon has been treated in order to formulate recommendations for slash burning, thinning, plantings, etc.

(9) Recommend total removal of pinyon in thinning areas on BLM lands by eliminating the 8" minimum cutting size, to create a more complete clearing.

(10) Review all hydro-power proposals, conduct surveys, and provide recommendations to minimize impacts.

D. Utilization Element

1. Harvest Strategies and Public Attitudes

Currently, only bucks (forked horns or better) are harvested with no

restriction of hunting pressure. Composition counts and age data indicate that a near-maximum buck take is being achieved. In fact, an indicated goal of this plan is to increase the buck ratio and to attain a more balanced age class distribution in the buck population. At the current population level, buck ratios can be increased by reducing buck harvest, in the short term at least. Antlerless harvest would also tend to increase the buck ratio.

Variations in season length and timing are currently being employed to attempt to reduce the harvest. Another alternative is a herd specific quota system. Under this system, fewer hunters are permitted to hunt each year, in order to improve of the "quality" aspect of such hunting. As management programs succeed in increasing West Walker deer numbers, future harvest strategy can allow increased buck take while maintaining healthy buck ratios.

The public expresses a variety of attitudes relative to harvest. Opinions range from adamant approval to opposition against changes in strategies. Public meetings are scheduled for 1983 to further explore attitudes.

2. Nonconsumptive Utilization

Casual viewing of deer at all seasons, but especially on winter ranges, constitutes a significant non-consumptive use of the herd. This is especially true of the West Walker herd because of its winter proximity to Highway 395. Additionally, numerous visitors view and photograph deer and other wildlife on the Slinkard-Little Antelope WMA. Total day use figures or economic value of these uses are not known, but are substantial and apparently increasing.

At present, no problems relating to such non-consumptive uses are known to exist. The open and scenic qualities of the winter range provide natural benefits for casual users of the resource.

3. Utilization Program

a. Objectives:

(1) Provide for maximum consumptive utilization of West Walker deer consistent with sustained yield and with achievement of stated herd management goals. Increases in herd size by habitat enhancement will provide proportionate increases in harvest when sex ratio and age ratio goals are attained. This will increase bucks in the bag. Antlerless harvest will increase herd utilization and improve sex ratio.

(2) Continue to provide for a level of non-consumptive use which satisfies demand.

b. Methods:

(1) Provide means for annual structuring of hunting season to respond to annual variations in herd performance. Season length, timing, and hunter quotas should be changed as needed.

(2) Increase deer available for harvest by increasing fawn survival through habitat improvement.

(3) Establish criteria for recommending antlerless hunts including sex and age structure, herd size, recruitment level, range condition, etc. Develop public education programs to increase public acceptance of antlerless harvest.

(4) To maintain hunting quality and minimize disturbance to deer, support control of ORV travel both on and off developed roads in key habitat areas. Provide recommendations to USFS regarding roadless management of Forest Service lands and construction of ORV travel plan.

E. Law Enforcement Element

Enforcement personnel feel that illegal kill during hunting season is the major law enforcement problem in this herd. Out-of-season poaching is

believed to be relatively minor at present. Increasing off-road enforcement activity in the field during the hunting season is recommended to put the warden at the scene of such illegal kills. As always, increased numbers of wardens throughout the season are desirable in such large areas of deer habitat.

Enforcement personnel encourage public education to improve hunter ethics, as in Hunter Safety Classes. Public meetings could increase public awareness of problems of illegal kill and general hunter ethics.

1. Law Enforcement Program

a. Objective: To improve the level of compliance with deer hunting laws.

b. Methods:

(1) Continue the intensive opening weekend patrol effort using wardens from other districts.

(2) Extend the intensive patrol effort to include other periods of peak hunting activity like the last weekend of season.

(3) Educate the public and military of wildlife laws through formal presentations and informal contacts.

(4) Maintain and increase as needed coordination with other enforcement agencies (county sheriff, USFS, etc.)

(5) Expand patrol efforts to include back country areas.

F. Communication of Information Element

Communication of information regarding the herd has been conducted through regional and statewide press releases describing general hunting conditions and herd trends. In addition, articles in outdoor publications prompted public response on herd management during 1977.

When this herd plan is finalized, copies will go to land management agencies and key factions of the public. Announcement of plan availability in local newspapers is recommended. Future updated information from research results could be announced as well. Other means of communication and soliciting public response can be developed such as the leaflet summary plan for widespread distribution.

1. Communication of Information Program

a. Objective: To provide the public with as much information as practical regarding the West Walker deer herd.

b. Methods:

(1) Utilize local media and/or regional outdoor publications to publicize newsworthy information.

(2) Develop a summary of the herd plan for public distribution.

(3) Attend governmental meetings and conduct public briefings to convey information on the herd and plan.

(4) Place copies of completed plan in local libraries.

(5) Inform public of CALTIP program.

G. Review and Update

1. Objective: To annually review and update the herd plan to maintain a current data base, evaluate progress, and prioritize future management steps.

2. Methods:

a. Conduct 3 annual deer management committee meetings to discuss progress, new information, direction.

b. File annual data for future compilation.

c. Use new information from research results, herd performance data, etc. to update plan text as needed.

VI. ALTERNATIVES

Explicitly stated in the legislative mandate and policy commitment for deer herd planning is the requirement to address alternatives to preferred goals.

A. Deer Management as Currently Exists

The aim of this alternative would be to maintain the status quo in management of the West Walker herd. Current data collection would continue; no new research or data collection efforts would be undertaken. No new habitat programs would be instituted. The herd would remain at current size or would decrease in response to habitat losses. The harvest strategy would remain bucks only, 2 point or better, with unlimited hunter numbers. Such buck harvest would continue to cause low buck ratios.

This alternative was not selected for the following reasons:

1. The alternative does not meet the long-standing herd goal agreed upon by the Nevada and California wildlife management departments.
2. The restoration and maintenance of California deer herds is mandated by the Legislature (AB 1521). Even partial restoration to former herd size will require intensified management.
3. Public opinion, demand (present and projected), and economics dictate emphasis on deer management and enhancement of this herd. Deer are a valuable resource which contribute significantly toward the quality of life and economic stability of Mono County.

B. Management for Maximum Habitat Productivity and Maximum Sustained

Deer Yield

Attainment of the goals of this alternative would yield a dramatic increase in habitat quality for deer and many other wildlife species. Fawn survival and recruitment could double or triple. Deer numbers could

increase dramatically, as much as 100 percent. Hunter capacity and success would soar. Either sex hunts would be necessary.

This alternative was not selected for the following reasons:

1. Designating the deer resource or any other single resource to receive top priority in all land management decisions would be in direct conflict with BLM and USFS multiple use policies.
2. The costs associated with such an intensive habitat program would be prohibitive.

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APPENDIX 1

1. Methods for Estimating Herd Size

a. Selleck-Hart Method

The Nevada Department of Wildlife has calculated numerical population estimates for the herd since 1962, using the Selleck-Hart method (1957). The method is extremely sensitive to inaccuracies in buck:doe ratios calculated from herd composition surveys. Low buck:doe ratios can result when composition surveys are conducted after the peak of the rut, when some bucks may be missed. For this reason and because of other assumptions inherent in the method, these population estimates are known to be conservative, and can be viewed only as trend indicators (Appendix 1, Figure 1).

b. Dasmann Method

This method of obtaining very rough population estimations is applicable to areas where only two-year old or older bucks are legally taken. Since a high percentage of bucks harvested in the West Walker herd are yearling forked horns, the method is not usable here.

c. Salwasser Method (modified Selleck-Hart, Dasmann, Lauckhart methods)

This method uses a simplified formula based on the above methods. Like the other methods, it assumes an equal sex ratio of fawns, and an equal winter loss of both sexes of fawns and adults. West Walker population estimates using this method are shown in Figure 1. Often the calculated estimates are known to be liberal and are reliable only as trend indicators.

d. Reconstructed Buck Population Method

This method, a life-table approach described by Smith (1976), uses the age class structure of buck harvest. The method will not yield accurate

estimates for the West Walker herd, since post harvest age-class data was gathered on opening weekend only. It is known that this data does not represent the true age structure of the herd, since a high percentage of bucks taken on opening weekend are the vulnerable younger animals.

e. Andereson (et al) Method

This method uses the estimated actual buck kill, the proportion of all legal bucks killed each year, and the portion of the total population consisting of legal bucks, to yield a population estimate. Annual removal percentages were estimated using the post-season buck ratios. The ratio of legal: sub-legal bucks in the post-hunt population is known from annual herd composition data. This method is less sensitive to errors in herd composition than the above methods, but is sensitive to variation in hunter harvest independent of herd size (e.g. early storms). Estimates are graphed in Figure 1.

2. Analysis of Computations

Comparison of the results of the three methods reveals wide variances in estimates in many years. These variances attest to our inability to accurately calculate precisely the number of deer in the herd. Calculated estimates do provide valuable insight into trends in population size, however. In addition, rough estimates of herd size may be inferred by averaging figures derived from several calculation methods.

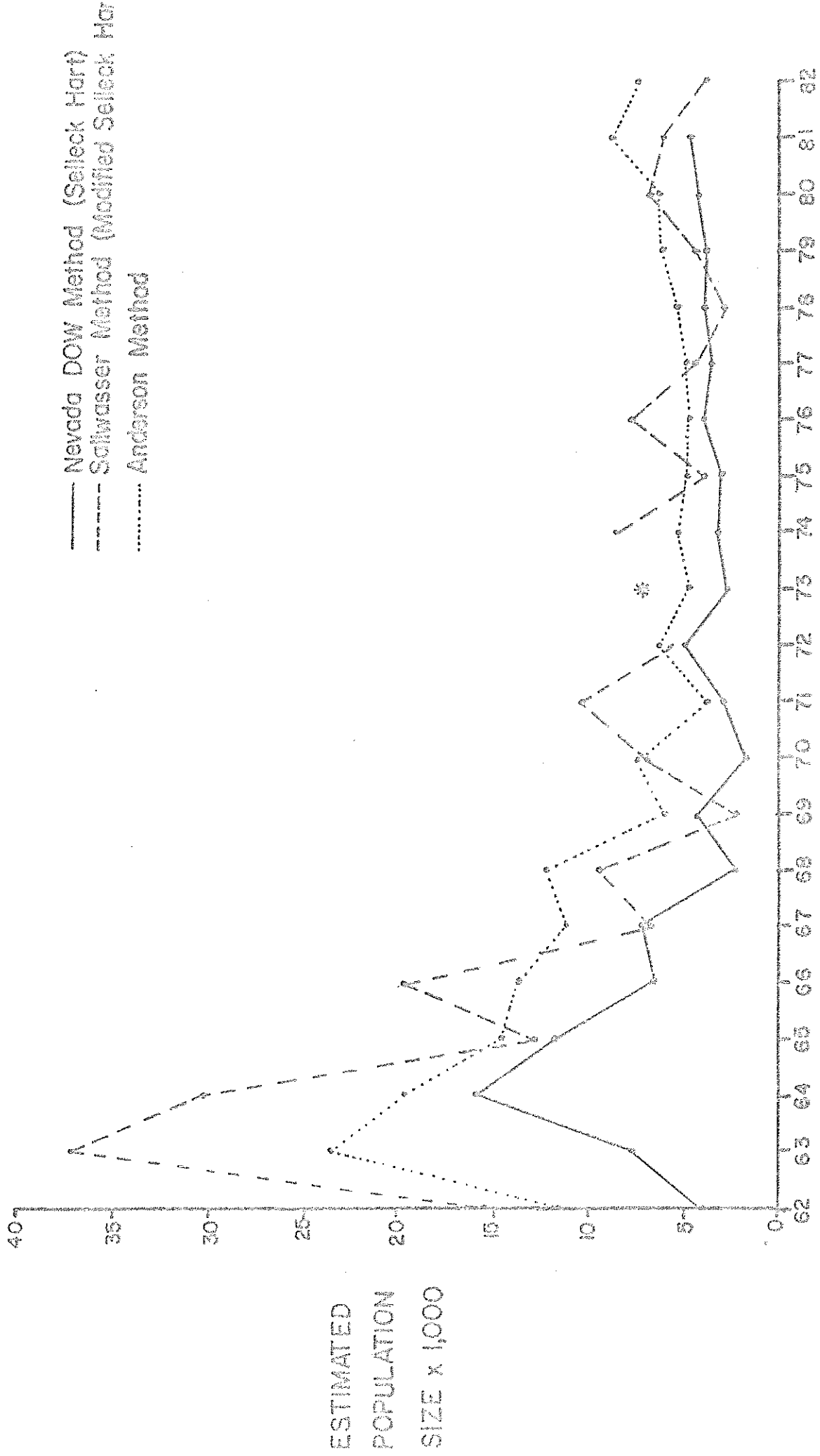
APPENDIX I

Comparison of Population
Size Estimates
West Walker Deer Herd

METHOD			
Year	Nevada (Selleck-Hart)	Salwasser	Anderson et al.
1962	4455	15938	10925
1963	7558	37164	23466
1964	15959	30293	19669
1965	11917	12852	14666
1966	6510	19981	14033
1967	7241	6621	11280
1968	2031	9486	12257
1969	4433	2239	6268
1970	1835	7468	7400
1971	3531	11972	3650
1972	5112	5679	6433
1973	2759	*	4550
1979	3343	8564	5060
1975	3104	3941	4952
1976	3888	7623	4606
1977	3509	4599	4900
1978	3977	2899	5214
1979	3852	4475	6033
1980	4061	6663	6314
1981	5396	6028	8700
1982		4107	7222

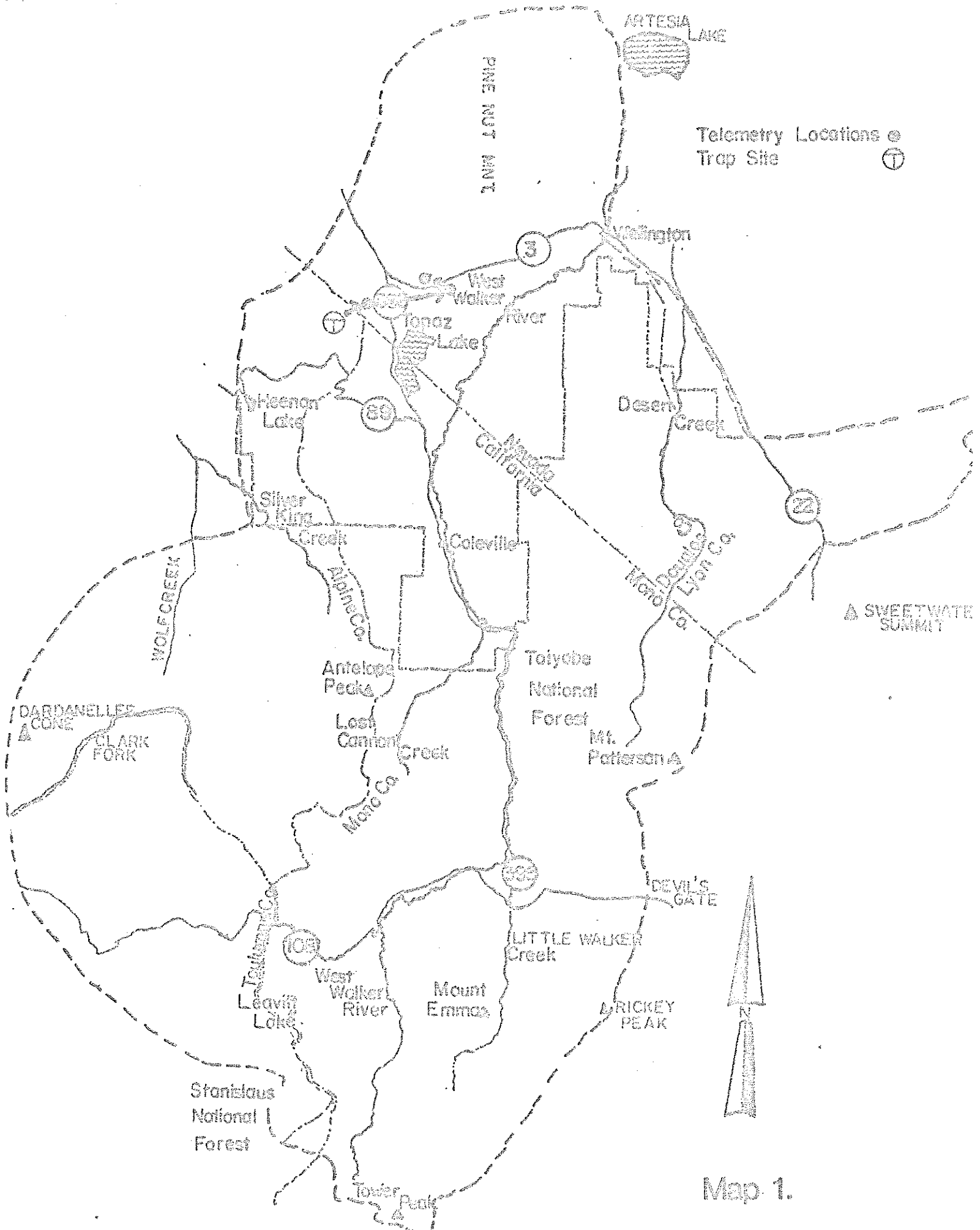
* Insufficient data.

APPENDIX I, FIGURE I POPULATION SIZE ESTIMATE COMPARISON



* Source: Bureau of Economic Analysis

Appendix 2. Seasonal Deer Movements, 1974-1976.



Map 1.

collared 12 does in the Dardanelles Basin (Sierra west slope, Alpine County). Three of those were West Walker Rocky Mountain Mule Deer which migrated eastward over the Sierra Crest and wintered in Slinkard Valley and in Nevada, adding to the data gained by this Region 5 study.

Results

Animals were given cursory external examination for parasites and abnormalities. Parasites were scarce or absent on all animals. One doe had a swollen area on the left rear shinbone, possibly the result of an old injury. No other abnormalities were noted. Ages of all animals were estimated. Blood samples were taken from all animals for disease and nutritional analysis. Samples were analyzed by the Veterinary Extension Service, UC Davis and the California Department of Food and Agriculture Laboratory for eight common infectious diseases of wildlife and livestock. Selenium levels were determined also, since selenium deficiency is known in cattle in the area. Selenium levels were found to be marginal or deficient in three of the four areas sampled. Disease testing has not yet been completed.

Aerial monitoring of the animals was conducted twelve times during the year using CDFG airplane. Supplemental ground monitoring was done between flights as opportunity permitted. General surveys of winter habitats of all animals was conducted during the baiting-trapping period. Summer ranges of four animals were closely examined.

The attached maps illustrate migration and key habitat information gained during this first year.

1. Migration Routes

Due to the inaccessible nature of the terrain, snow conditions, and the cost of aerial surveys, gaps in information of migration routes exist after one year of monitoring. One additional year of monitoring is needed to fill those gaps. However, much new information was gained this past year.

Both does collared on the east side of Antelope Valley migrated on the west slopes of the Sweetwater Mountains, following closely a portion of the stock drive (Maps 1 and 3).

Marked animals and observations have indicated the movement of deer through the corridor between Highway 395 and the Sierra escarpment from Topaz Lake to Little Antelope Valley (Map 5).

Several animals moved through some portion of the Wildlife Management Area (see Key Areas, below). Various animals crossed the Sierra Crest at various points (e.g. Sonora Pass, Wolf Creek Pass, Boulder Peak area).

The Silver King and Wolf Creek drainages are used as migration routes and holding areas (Maps 2 and 5).

2. Key Areas

Monitoring has emphasized the high value of the Slinkard-Little Antelope Wildlife Management Area to West Walker deer. A high percentage of the herd, from a variety of summer and winter ranges, use WMA lands during some portion of the fall-winter-spring. Rodriguez Basin, above Little Antelope Valley, is a small area of especially high value as a staging area for migrating animals. The area of Indian Flat, Salmon Flat, and Indian Valley provided fall, winter, and spring habitat for both does collared on the east side of Antelope Valley, and for many other deer also (Maps 1 and 3).

It was learned that West Walker deer winter on the east slope of the Pinonut Mountains, a key Nevada winter range west of Artesia Lake. Carson River herd deer probably share that winter range, since several hundred deer are found there at times.

Many deer were known to utilize the narrow strip of browse habitat between Highway 395 and the Sierra escarpment extending from Topaz Lake to Walker (Map 5).

Telemetry data strongly suggests migration movement through this strip, as well as concentrated winter-long use.

The benches above north and south Rock creeks provide holding habitat in both spring and fall (Map 3).

Cottonwood meadow (west slope, Sweetwater mountains) is on the migration route and provides holding habitat as well. (Maps 1 and 3)

Deer migrate through, stage (hold) in, and summer in the vicinity of Sonora Junction. Public and private lands there support a large fraction of the herd at some time during the annual cycle. Doe #255 successfully fawned at the Twin Bridges nearby (Map 3).

The benches around Kaamen Lake provide feed for many migrating deer. The higher ridges nearby to the south are fawning habitats where aspen-brush mosaics exist (Map 5).

The area of the junction of Silver King and Snodgrass creeks is a major intermediate habitat used extensively in spring and fall. This key habitat is relatively inaccessible and lies within the Stanislaus N.F. in Alpine County (Maps 2 and 4).

The Bardenelles Basin and nearby Clark Fork of the Tuolumne River were found to be important summer habitat for West Walker deer (Map 2).

3. Summary of Findings

a) Movement Summary Conclusions

Many different migration routes are used by West Walker deer; no two marked animals used the same route entirely.

A large percentage (35% in these studies) of the West Walker deer cross the Sierra crest and summer with California Mule Deer on the west slope.

Some animals move through a series of winter ranges and do not spend the entire winter on a single area. Poorer quality winter ranges are involved where wintertime movements occur.

Many areas of winter range, large and small, are used by West Walker deer. Key areas exist where deer concentrate and hold for varying periods during spring and fall migrations.

Key summer use areas are widely dispersed throughout the middle to higher elevations of the range.

b) Habitat Evaluations

As previously noted, habitats of all marked animals were not surveyed last summer. General comments can be made regarding habitat conditions in those areas surveyed.

The Clark Fork habitat where doe #436 summered was in excellent condition last summer. The area had been logged in the past and much browse and some herbaceous feed was available. Deer use was heavy; fawning success appeared to be high. The area was ungrazed.

Doe #225 was in lower Kennedy meadow during fawning time. She subsequently moved to Relief Reservoir, possibly in response to increasing summer disturbance by people, pack animals and livestock. The summer habitat at Relief Reservoir is ungrazed and rugged; human disturbance is minimal and feed and cover excellent. Fawning success appears high.

Doe #316 was in Piute Meadow at fawning time. She migrated from the meadow soon after the first sheep band passed through and just before the arrival of cattle on the allotment. She moved several miles back down to Leavitt Creek at peak fawning time and was subsequently located miles uphill at Walker River headwaters (Map 4). No fawn was ever observed with this doe. No other does with fawns were observed in the heavily grazed Piute Meadow area.

The Sonora Junction area is good deer habitat but is heavily grazed (especially the private lands) and heavily disturbed by human activity.

Forest Service efforts at land exchange will protect some key deer areas there, trade off others. Exchanges should fully consider wildlife resources.

Heavy sheep use is seriously reducing deer capacities on several winter ranges: Spring Gulch, East Slope Pinenut Mountains, Smith Spring Canyon area, East Side Lane.

The ungrazed, undeveloped, and largely unused Wild Cat Mountain provides excellent deer winter habitat. The area is critical and should be retained as a priority deer range.

Shrub habitats along Highway 395 (Walker-Topaz) are critical and threatened by housing development.

Heavy use of CDFG lands in Rodriguez Basin necessitates the exclusion of livestock there during migration periods.

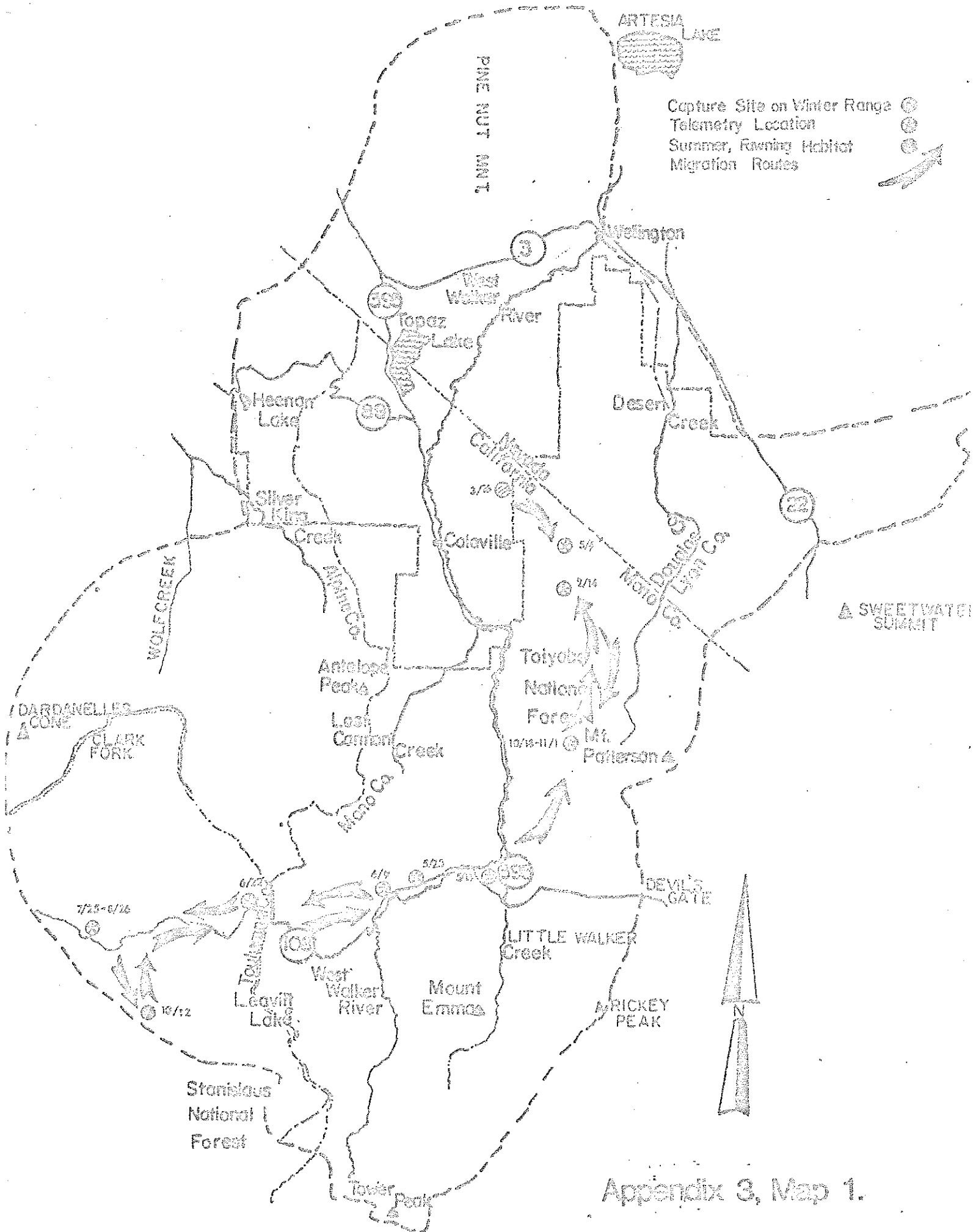
Feral horses are increasing in the Pinenut Mountains and are adversely affecting forage for deer.

Study Recommendations

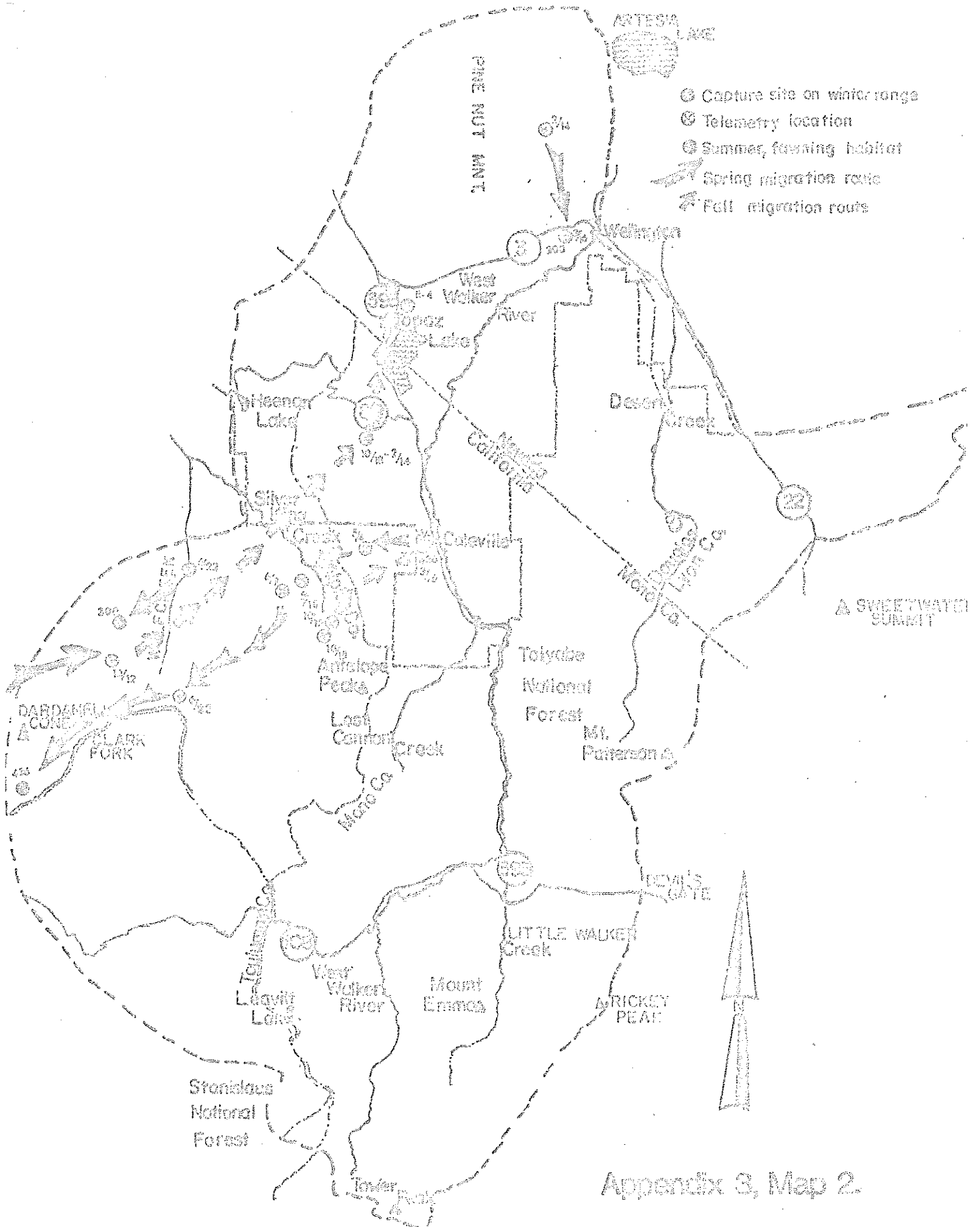
1. Monitor movements of collared deer through one more yearly cycle.
2. Capture and collar two animals on Wheeler Bench area to fill information gap.
3. Cooperative CDFG-USFS summer range helicopter surveys.
4. Ground surveys of remaining summer and intermediate habitats (by vehicle, horse, foot, helicopter).
5. Coordinate efforts with Region 4 study.
6. Two-year final report, additional information as it becomes available.

Submitted by

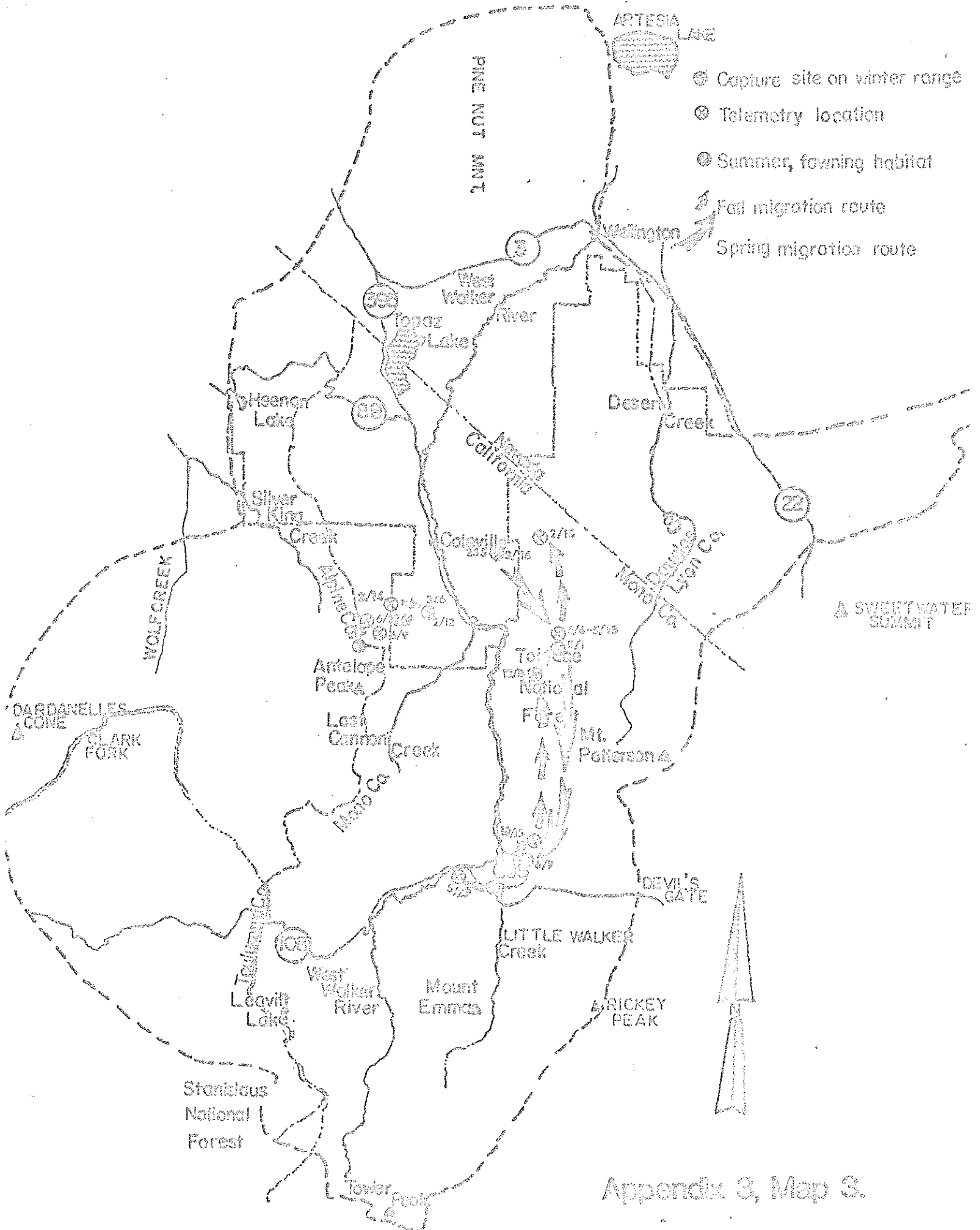
R. D. Thomas
Wildlife Biologist



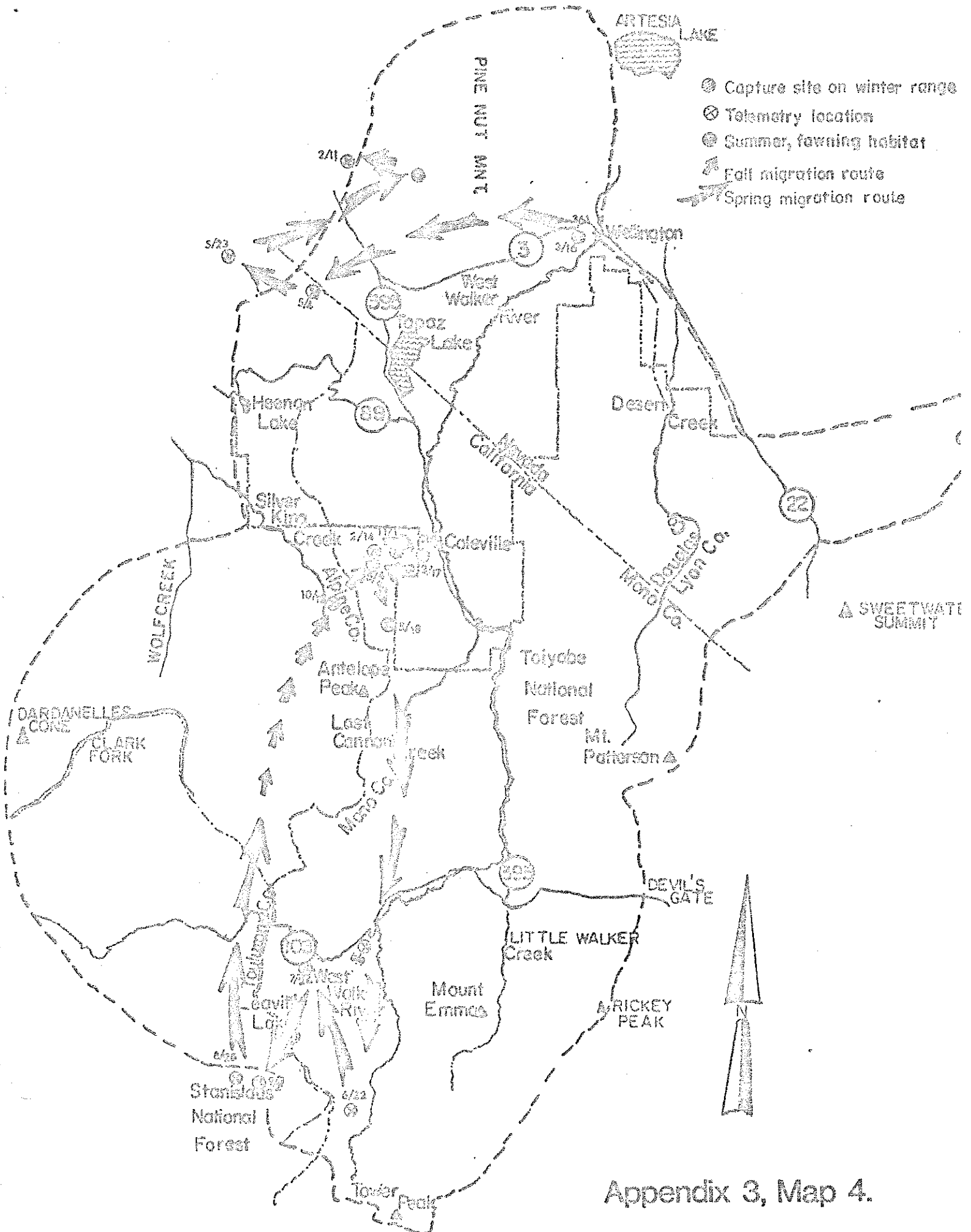
Appendix 3, Map 1.



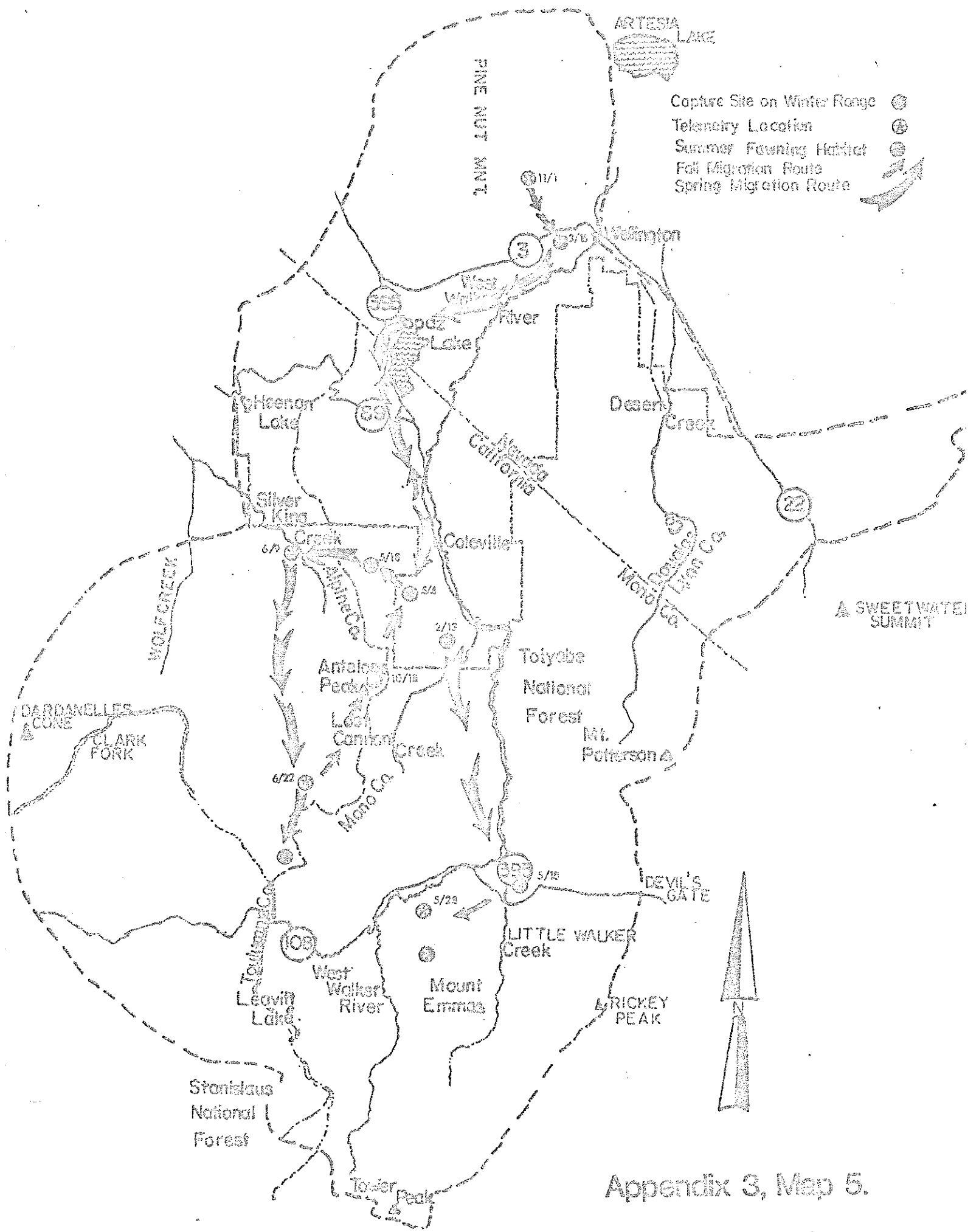
Appendix 3, Map 2.



Appendix 3, Map 3.



Appendix 3, Map 4.



Appendix 3, Map 5.

Appendix 4 - West Walker Deer Herd

Telemetry Study Results: Key Area Definitions

March, 1982 - March, 1983

Introduction

As recommended in the March 1983 report, the 9 collared does were monitored through an additional yearly cycle.

Methods

Aerial and ground monitoring were conducted on an opportunity basis. Efforts to bait and capture additional animals were conducted.

Results

Two collared does were killed and their transmitter collars were recovered during the 1983 spring. One was killed and eaten by a mountain lion in the Pinenut Mountain range, Nevada. The other was apparently killed by human predators, since no carcass was present and the collar was neatly cut. This occurred on Indian lands, Pinenut Mountain range, Nevada.

New growth of annuals began at about the same time prebaiting for trapping was begun. Consequently, bait acceptance was nil and no trapping of deer was possible during 1983. Prebaiting on east slope winter ranges should begin about January 1 to avoid this problem.

Limited efforts of chemically capture does on the Wheeler Bench key habitat were unsuccessful due to adverse weather, time constraints, and other factors. However, even without additional collared animals, knowledge of winter ranges and other key areas was expanded:

- A. Bridgeport District, Toiyabe National Forest
- 1. The high value of the winter and migration range west of HWY 395 from Topaz Lake to Walker was emphasized, since radio-collared deer were found

to remain on small areas throughout the winter. Deer on poorer quality winter ranges (e.g. Spring Gulch area and the Pinenut mountains) moved from one area to others during the course of the winter, apparently seeking forage (Number 1 on map).

2. A large area of important winter range extends throughout much of the Pinenut Mountains and across the West Walker River into the Spring Gulch - Boulder Hill area (#2).
3. Wild Cat Mountain and the Gray Hills are heavily used key winter ranges (Numbers 23 and 24 on map).
4. The boundaries of the Jackass-Risue winter range are shown as area 3 on the map.
5. Both does collared on the east side of Antelope Valley (key winter range: area 4) used the Indian Flat-Indian Valley area as late winter range (area 5). Aerial track survey showed large numbers of deer to be present there in February.
6. One east-side doe (255) used the Deep Creek-Cottonwood Creek-Rock Creek area as extended fall holding area (Sept. 19 - Nov. 8, minimum; area 6). Ground reconnaissance of this area is needed to determine degree of deer use, habitat quality, etc.
7. East-side doe (225) used the upper North Fork Cottonwood - Deep Creek drainage as extended fall holding area (area 7). Ground survey of the area showed several hundred deer in the good quality habitat existing in November, 1983. Sign indicates heavy spring-time use here also.
8. Again this year, doe 255 summered in the Sonora Junction (Twin Bridges; area 8). Numerous other does use the area for fawn rearing also. Shortly after the beginning of hunting season, the collared doe retreated from disturbance to holding area 7.

9. Collared doe 422 summers south of Kirman Lake, above the head of Cow Camp Creek. That summer range was not examined on the ground, but the intermediate habitat in the area of Pickel Peak and Kirman Lake (area 9) is a key use area for many deer in spring, summer and fall.
10. Number 316 is the wanderer, moving up the West Walker drainage during the summer fawning period. Her unusual movement patterns may be attributed to disturbance of livestock and people in this heavily used habitat; other factors may be involved as well. Nevertheless, her movements helped to define key use areas utilized by numerous animals. Deer use is heavy in the Leavitt Falls area (#10) a steep, rocky, heavily forested area of difficult access to people and domestic animals. The Walker Meadows (area 11) a favored deer use area where human and livestock use is very heavy throughout the summer. This is one area of rather concentrated deer summer use, especially in portions receiving lighter human and livestock use, e.g. rocky ridges away from meadows and riparian types. In general, however, deer use is comparatively dispersed throughout the summer range; it is difficult to pinpoint distinct key area types (interspersed meadows, brush, aspens) are scattered throughout.
11. In 1983 number 330 migrated into Mill Creek and across the Lost Cannon drainage (Area 19). Mill Creek is an important transition range/migration route, used by number 422 also.
12. Doe 225 travels one of the longest migration routes of any deer marked; Round Mountain (east Antelope Valley) through Sonora Junction, holding in the Silver and Wolf Creek drainages (key area #20), then over to crest to summer at Relict Reservoir.

13. Important summer ranges are utilized by hunters and are revealed by spot kill maps compiled over the past 25 years:

- a) Lobdell - Desert Creek (#11)
- b) Burcham Flat - creek (#12)
- c) Devils Gate - Pales (#13)
- d) Buch Mtn. - Long Valley-Doe Cyn. (#14)
- e) Mt. Emma-Emma Lake (#15)
- f) Leavitt Lake and Creek (#16)
- g) Sonora Pass - Sardine Creek (#17)
- h) Upper Mill and Grouse Creek drainages (#18)

Spot kill maps also depict the dispersed deer use of the summer range; kills are scattered throughout but are relatively concentrated in the areas specified above.

B. Carson District, Toiyabe National Forest

Two heavily used transition habitats on the Carson District were defined by the current study:

- 1. Silver King - Snodgrass Junction (#21); a long-term holding area used by many deer during both spring and fall migrations. Used by 436, 316 and Dardanelles 435.
- 2. Fish Valley and tributaries (#22); a vital spring migration holding area which appears to have been used for fawning by 330 during 1983 because of late persisting snow.

C. Stanislaus National Forest

This study and the work done by CDFG Region 4 on the Sierra west slope have demonstrated that many east side deer summer over the Sierra crest. These study efforts have defined the areas of the Dardanelles, the Clark fork of the Stanislaus River, and Relief Reservoir as valuable deer summer-fawning habitat.

D. California Department of Fish and Game

The Slinkard Valley (area S-1) and Little Antelope Valley (area S-2) properties received very heavy use by many marked and unmarked West Walker deer.

Conclusion

It must be noted that the key areas described above represent only what has been learned from a very small sample of marked animals, generalized spot kill locations and cursory field surveys and that key area boundaries are subject to revision as information increases. It is hoped that future field work will further define these boundaries and assess habitat quality. It is likely that future field work will reveal additional key habitats of equally critical value to the herd.

2-5
West Walker Deer Herd
Summary Plan

Corrected copy sent to
region

Pats
Diskette

I. Introduction

This brochure summarizes a detailed management plan for the West Walker deer herd. The plan was developed recently by the California Department of Fish and Game (CDFG) in accordance with a 1977 legislative mandate (AB 1521; Perino) to plan management of deer on a herd-by-herd basis. Basic objectives of the West Walker herd plan include increasing overall deer numbers, improving the condition of the range and providing for high quality and diversified use of the herd. These are in accordance with guidelines expressed in the general statewide deer management plan.

The plan is made up of several major components, including a description of herd history and biological information, development of management goals, discussion of problems affecting the herd, recommendations for management programs addressing several specific elements and a portrayal of alternative management strategies. Major program elements involve inventory and investigations, mortality control, habitat management, utilization, law enforcement, communication of information, and future review and update. The herd is located in an area with a high demand for multiple commercial and recreational land uses, some of which adversely affect deer. This plan is intended to guide land management agencies and local governments to make resource allocations compatible with maintenance of a healthy deer herd. Attainment of herd planning goals is viewed as a long-term process with an initial achievement horizon of about 10 years.

II. Description of the Deer Herd Management Unit

Deer Herd

The West Walker herd occurs mostly in northern Mono county and portions of eastern Tuolumne and Alpine counties near the Sierran Crest in California. It is a migratory interstate herd also, with nearly half of the winter range located south and east of Wellington in Douglas county, Nevada. These mule deer are primarily the Rocky Mountain subspecies (Odocoileus hemionus hemionus), but

there is some mixing with the California mule deer subspecies (O. h. californicus) on summer ranges west of the Sierran Crest. Migrations occur twice annually with deer moving south and east up from winter ranges at about 5,000 feet in spring to high Sierran summer ranges (8,000 to 11,000 feet), and returning in the fall. Breeding season peaks in December and fawns are generally born on summer ranges in June and July.

Harvest is shared by California and Nevada and records date back to 1953. The total kill averaged about 1,000 in the late 1950's and peaked at over 2,000 in 1964. From 1955 through 1968 nearly 40% of the total harvest was made up of antlerless deer. A severe winter in 1969 killed nearly 1/4 of the population so antlerless hunts were discontinued to allow herd increases. However, range conditions continued to degrade and herd increases have been slight.

Herd composition inventories of the proportions of bucks and fawns in the herd have been taken in late fall (post-harvest) and in spring (about March) since the early 1950's. In the last twenty years, these were fairly stable as indicated by five-year averages, rising to highs in the mid-1970's of about 21 bucks and 60 fawns per 100 does in late fall. Recently these ratios receded somewhat to an average of 15 bucks and 53 fawns per 100 does in fall. In spring, only fawns are counted and those ratios showed a similar trend recently, dropping from an average of 49 per 100 does in 1973-77 to about 41/100 does from 1978-82. Spring fawn ratios indicate recruitment of young into the herd adequate to maintain a stable or slightly increasing herd which appears consistent with population estimates.

Range Conditions

The total range area of about 900 square miles (576,000 acres) is composed of about 500 square miles (320,000 acres) of summer/intermediate range and 400 square miles (256,000 acres) of winter range. The Sierra Nevada summer ranges consist mainly of alpine forb and coniferous forest plant communities interspersed with meadows and riparian stream courses. Winter ranges encompass Great Basin vegetation in two major plant communities, sagebrush-bitterbrush and pinyon-juniper types.

The topography is fairly rugged with steep peaks and rocky canyons on summer ranges but more rolling hills and valley edges on winter areas. Water is plentiful on summer ranges which receive about 50 inches of precipitation annually, but is more limited on winter ranges at only 10 - 15 inches. It falls mostly as snow during the cold, windy winter period (December-April) usually with additional summer thunderstorms at the higher elevations.

Summer range lands are mostly public, administered by the U. S. Forest Service (USFS), while winter ranges are a mixture of private, state and federally owned lands. The latter are managed by the Bureau of Land Management (BLM) and USFS. Major land uses are grazing, dispersed recreations and some logging on summer range and grazing, agriculture and rural housing on winter ranges. Habitat conditions have generally declined in the last two decades from maturation of key browse plants. Fires have not affected much land and there is good potential for range improvement by prescribed burning, especially in decadent summer range brushfields.

III. Major Factors Affecting the Herd

A number of factors cause mortality or otherwise affect the West Walker deer herd. A substantial number of deer are hit by cars annually, mainly on Highway 395 which bisects the herd range north to south. Other acute mortality factors include predation from mountain lions, coyotes and dogs, both legal and illegal harvest, and periodic losses from severe winter weather. Other factors detrimental to the herd include activities of man (recreation, grazing, various developments, etc.), diseases and parasites and poor range forage and/or cover conditions.

IV. Management Unit Goals

General statewide deer management goals involve restoring and maintaining healthy populations and providing for high quality, diversified use opportunities of the resource. Since this is an interstate deer herd, specific herd goals were developed in cooperation with Nevada Department of Wildlife. The following goals encompass about a 60% increase in herd size and range rejuvenation to accommodate increased deer densities. Improved harvest

regulations regarding hunter quotas, seasons and take of antlerless deer will be developed to increase herd value for public utilization.

1. Herd Goals:

	<u>Current Level</u>	<u>1993 Target</u>
a. Fall Populations Size	5,500-6,500	8,500-9,500
b. Herd Composition		
Buck/100 Does	11-16	20-25
Spring Fawns/100 Does	40	50-60
c. Total Hunting Harvest		
Bucks	350-400	700-800
Antlerless	-0-	350-400

2. Habitat Goals

	<u>Current Level</u>	<u>1993 Target</u>
a. Summer Range (500 sq. mi.)		
Average Deer Density	12/sq. mi.	18/sq. mi.
b. Winter Range (400 sq. mi.)		
Average Deer Density	15/sq. mi.	22.5/sq. mi.
c. Improve current habitat conditions and reduce competition in key habitats on all yearlong ranges.		
d. Minimize residential development on key winter ranges through the county planning process and acquisition.		

Problems of Management

1. Knowledge of herd composition is limited by inaccessible terrain and limited helicopter funding, examination of harvested deer is not comprehensive and the condition of the range and influence of livestock competition.

6. Attempt to determine public attitudes about management programs by holding public seminars and attending other public meetings.

Herd Management and Mortality Control

Objectives: Attain a stable herd size of about 9,000 animals, a post-hunt buck ratio of 20 per 100 does with a high proportion of three-year or older bucks and increased fawn recruitment. Also, take measures to alleviate mortality as well as agricultural depredation.

Recommendations

1. Identify and enhance key habitats to improve fawn survival and recruitment by reducing competition for forage and increasing cover. This would also be useful in alleviating agricultural depredation on winter ranges.
2. Vary hunting season length and timing, and hunter quotas to achieve desired buck ratios, age class structure and rates of hunter success.
3. Strive for controlled antlerless harvests to balance the population with available forage, adjust herd sex and age class structures and alleviate deer depredation when necessary.
4. Reduce highway mortality by improving warnings, reducing speed limits and vegetation management at major crossings.

Habitat Management

Objective: Attain and maintain habitat if sufficient quantity and quality to accommodate the desired herd management objectives.

Recommendations

1. Identify key seasonal habitat deficiencies and areas with limited water. Target deficient areas for treatments.
2. Pursue acquisition or zoning to protect threatened key winter ranges.
3. Meadows and aspen groves could be rehabilitated by reducing or eliminating livestock impacts.
4. Formulate habitat improvement prescriptions

for pinyon thinning and clearing, browse plantings and manipulations, and controlled livestock grazing.

5. Review all hydro-power proposals, conduct surveys and develop recommendations to minimize impacts.

Utilization

Objectives: Provide for maximum consumptive utilization of West Walker deer consistent with sustained yield and achievement of stated herd management goals, and continue to provide for a level of nonconsumptive use which satisfies demand.

Recommendations

1. Provide means for annual structuring of hunting season to respond to annual variations in herd performance. Season length, timing, and hunter quotas should be changed as needed.
2. Increase deer available for harvest by increasing fawn survival through habitat improvement.
3. Establish criteria for recommending antlerless hunts including sex and age structure, herd size, recruitment level, range condition, etc. Develop public education programs to increase public acceptance of antlerless harvest.
4. To maintain hunting quality and minimize disturbance to deer, support control of ORV travel both on and off developed roads in key habitat areas. Provide recommendations to USFS regarding roadless management of Forest Service lands and construction of ORV travel plan.

Law Enforcement

Objective: Improve the level of compliance with deer hunting laws.

Recommendations

1. Continue the intensive opening weekend patrol effort using wardens from other districts. Also, expand patrol efforts to include backcountry areas.

2. Extend the intensive patrol effort to include other periods of peak hunting activity like the last weekend of season. In addition, maintain and increase as needed coordination with other enforcement agencies (county sheriff, USFS, BLM, etc.).

3. Educate the public and military of wildlife laws through formal presentations and informal contacts, publicize the CalTIP toll-free, phone-in secret witness reporting program (1-800-942-5400).

Communication of Information

Objective: Provide the public with as much information as possible regarding the West Walker deer herd.

Recommendations

1. Utilize local media and/or regional outdoor publications to publicize newsworthy information.
2. Attend governmental meetings and conduct public briefings to convey information on the herd and plan and place copies of completed plan in local libraries.

Review and Update

Objective: Annually review and update the herd plan to maintain a current data base, evaluate progress and prioritize future management actions.

Recommendations

1. Compile annual inventory data and use new information from this and research efforts to update the deer herd plan as necessary.
2. Establish an interagency deer management committee made up of representatives from all government agencies whose actions affect the herd, including the USFS, BLM, Nevada Department of Wildlife and county planning agencies. Conduct three annual committee meetings to discuss management progress and future direction.

Plan preparation was supported by Federal Aid in Wildlife Restoration Project W-51-R, Big Game

Investigations.

Sources of Additional Information

1. California Department of Fish and Game
Region 5
245 W. Broadway, Suite 350
Long Beach, CA 90802
Phone: (213) 590-5132
2. Toiyabe National Forest
1200 Franklin Way
Sparks, NV 89431
Phone: (702) 784-5331
3. Bureau of Land Management,
Bakersfield District
800 Truxtun Avenue
Bakersfield, CA 93301
Phone (805) 861-4191 ✓
4. Bureau of Land Management,
Carson City District
1050 E. Williams Street
Carson City, NV 89701
Phone: (702) 882-5263
5. Nevada Department of Wildlife
1100 Valley Road
Reno, NV 89503
Phone: (702) 789-0500

West Walker Deer Herd Plan

Annual Update - 1985

Standard routine data collection was performed during 1985 including post-season and spring composition counts, harvest data, opening weekend buck age composition, balance-of-season buck ages, and relative hunting pressure indicated by car counts.

Composition Counts

<u>Year</u>	<u>Post-Season bucks:100 does</u>	<u>Post Season fawns:100 does</u>	<u>Post-Season Sample</u>	<u>Spring fawns</u>	<u>Spring Sample</u>
1983-84	8	35	432	30	990
1984-85	14	56	444	51	1119
1985-86	10	51	732	32	2173

Harvest

<u>Year</u>	<u>California</u>		<u>Nevada</u>		<u>Buck</u>	<u>Herd Total</u>		<u>Total</u>
	<u>Buck</u>	<u>Antlerless</u>	<u>Buck</u>	<u>Antlerless</u>		<u>Antlerless</u>		
1983	263	-	45	-	308	-	-	308
1984	383	-	83	-	466	-	-	466
1985	422	-	118	-	540	-	-	540

Buck Age Composition (Opening Weekend)

	<u>Yearling</u>	<u>2 Years</u>	<u>3 years</u>	<u>4+ years</u>
1985	16 (20%)	42 (54%)	17 (22%)	3 (4%)

Buck Age Composition (Balance of Season)

	<u>Yearling</u>	<u>2 years</u>	<u>3 years</u>	<u>4+ years</u>
1985	7 (14%)	25 (51%)	11 (22%)	6 (12%)

No habitat improvement projects undertaken in 1985.

III. No major changes to the plan in 1985.

TABLE 1

Harvest Data - West Walker Deer Herd

Year	California			Nevada			West Walker Herd		
	Buck	Ant.	Total	Buck	Ant.	Total	Buck	Ant.	Total
1953	555	-	555	-	-	-	555	-	555
1954	726	-	726	-	-	-	726	-	726
1955	665	380	1045	-	-	-	665	380	1045
1956	491	454	945	-	-	-	491	454	945
1957	728	364	1092	36	13	49	764	377	1141
1958	646	304	950	15	12	27	661	316	977
1959	1199	-	1199	96	300	396	1295	300	1595
1960	597	398	995	58	371	429	655	769	1424
1961	571	-	571	45	240	285	616	240	856
1962	544	330	874	146	163	309	690	493	1183
1963	851	-	851	205	229	434	1056	229	1285
1964	1047	642	1689	201	354	555	1248	996	2244
1965	661	552	1213	9	42	51	670	594	1264
1966	758	696	1454	24	131	155	782	827	1609
1967	276	381	657	6	57	63	282	438	720
1968	407	-	407	44	260	304	451	260	711
1969	195	-	195	2	45	47	197	45	242
1970	327	-	327	17	-	17	344	-	344
1971	207	-	207	12	-	12	219	-	219
1972	328	-	328	32	19	51	360	19	379
1973	216	-	216	57	41	98	273	41	314
1974	223	-	223	30	45	75	253	45	298
1975	275	-	275	37	47	84	312	47	359
1976	258	-	258	46	-	46	304	-	304
1977	298	-	298	45	-	45	343	-	343
1978	252	-	252	99	-	99	351	-	351
1979	279	-	279	66	-	66	345	-	345
1980	368	-	368	53	-	53	421	-	421
1981	657	-	657	90	-	90	747	-	747
1982	250	-	250	-	-	-	-	-	-
1983	263	-	263	45	-	45	308	-	308
1984	383	-	383	83	-	83	466	-	466
1985	422	-	422	118	-	118	540	-	540

TABLE 2

West Walker Herd Composition Counts Expressed/100 Does

Year	Fall Bucks	Fall Fawns	Sample Size	Spring Fawns	Mean of Previous 3 years	Sample Size
1952-53	17	58		45		
1953-54	18	84		61		
1954-55	20	63		35		
1955-56	14	42		34	47	
1956-57	11	76		53	43	
1957-58	13	74	207	40	41	606
1958-59	16	63	512		42	929
1959-60	18	57	355	47	47	624
1960-61	15	57	295	37	44	626
1961-62	12	46	213	25	42	378
1962-63	7	47	404	45	35	490
1963-64	13	63	475	51	36	656
1964-65	16	60	514	35	40	645
1965-66	11	42	606	41	44	665
1966-67	11	62	809	44	42	949
1967-68	12	56	529	45	40	654
1968-69	11	64	804	40	43	879
1969-70	7	50	355	47	43	901
1970-71	8	59	673	44	44	899
1971-72	19	45	552	35	44	775
1972-73	9	56	551	41	42	697
1973-74	24	62	353	42	40	1091
1974-75	27	68	427	52	39	530
1975-76	15	53	331	52	45	631
1976-77	19	62	363	52	49	730
1977-78	21	54	379	38	52	1416
1978-79	11	53	444	40	47	1314
1979-80	17	48	536	49	43	1239
1980-81	22	54	469	44	42	1182
1981-82	11	62	478	34	44	1072
1982-83	15	50	459			
1983-84	8	35	432	30		990
1984-85	14	56	444	51		1119
1985-86	10	51	732	32		2173

TABLE 3

West Walker herd, age class structure of kill
in percent by year¹

Year	One	Two	Three	Four Plus	Sample Size
1958	22	47	16	15	101
1959	36	44	15	5	89
1960	25	44	24	7	134
1961	15	45	30	10	108
1962	32	27	21	20	77
1963	62	13	11	14	94
1964	51	29	14	6	98
1965	23	46	22	9	101
1966	20	37	22	21	86
1967	23	39	19	19	69
1968	42	29	19	10	77
1969	26	63	11	0	27
1970	45	34	13	8	73
1971	32	44	20	4	41
1972	35	31	26	8	91
1973	26	33	33	8	58
1974	27	35	23	16	83
1975	40	28	21	11	92
1976	50	34	11	5	92
1977	58	37	4	1	99
1978	29	36	32	3	59
1979	26	61	12	1	73
1980	-	-	-	-	-
1981 ²	47	21	32	0	116
1981 ³	16	25	31	28	64
1982 ⁴	26	55	11	8	73
1983					
1984					
1985	14	51	22	12	

Memorandum

To : Wildlife Management

Date : September 24, 1987

From : Department of Fish and Game

Ron Thomas

Subject: West Walker Deer Herd Plan Update - 1986

- I. Zone X-12 (East Walker and West Walker Herds) hunting pressure was reduced in 1985 to 3,000 tags. This quota was unchanged in 1986. West Walker hunting pressure, as measured by comparable ear counts, was found to be unchanged by the 3,000 tag quota, when compared to pre-quota years. Consequently, buck ratios have not responded significantly.

Composition Counts

Year	Post Season Bucks/100 Does	Post Season Fawns/100 Does	Post Season Sample	Spring Fawns	Spring Sample
1985-86	10	51	732	32	2,173
1986-87	14	54	207	31	999

Harvest

Year	Calif.		Nevada		Herd Total		Total
	Buck	Ant.	Buck	Ant.	Buck	Ant.	
1985	422	--	118	--	540		540
1986	499		50	22	549	22	571

Buck Ages

Yr	2yr	3yr	4+
14(15%)	65(69%)	12(13%)	3(3%)

- II. No habitat improvement projects undertaken in 1986.

- III. Major changes to the Plan:

Recommendations have been formulated for a 50% tag reduction (to 1,500 for Zone X-12) to attempt to reduce harvest and stimulate significant buck ratio increases. The reduction would be effective in 1987.

Ron Thomas

Ron Thomas
Wildlife Biologist

cc: V. Bleich, J. Davis

Memorandum

, : Wildlife Management, Region 5

Date. : October 14, 1988

From : Department of Fish and Game --Ron Thomas

Subject: West Walker Deer Herd Plan Annual Update, 1987-88

- I. Zone X-12 (East Walker and West Walker Herds) hunting pressure was reduced from 3,000 tags to 1,500 tags in 1987. West Walker hunting pressure, as measured by car counts, was reduced by 50%. The buck ratio rose by four points.

<u>Year</u>	<u>Post Season Bucks/100dd</u>	<u>Post Season Fawns/100dd</u>	<u>Post Season Sample</u>	<u>Spring Fawns</u>	<u>Spring Sample</u>
1986-77	14	54	207	31	999
1987-88	18	40	457	21	1421

Fawn ratios declined largely due to current drought conditions.

Harvest

<u>Year</u>	<u>California</u>		<u>Nevada</u>		<u>Herd Total</u>		<u>Total</u>
	<u>Buck</u>	<u>Ant.</u>	<u>Buck</u>	<u>Ant.</u>	<u>Buck</u>	<u>Ant.</u>	
1986	499	-	50	22	549	22	571
1987	206		113	41			

Increases in Nevada harvests somewhat offset the benefits of reduced California take.

Buck Ages - 1987 () - 1986

<u>Year</u>	<u>2 Years</u>	<u>3 Years</u>	<u>4+ Years</u>
17 (14)	37 (65)	15 (12)	4 (3)
23% (15%)	51% (69%)	21% (13%)	5% (3%)

- II. No habitat improvement projects undertaken in 1987.

- III. Major changes to the Plan: 50% tag quota reduction to 1,500.

Ron Thomas

Ron Thomas
Wildlife Biologist

RT:lp

cc: J. Davis]

Deer Herd: West Walker

County: Mono

A. Description of Deer Herd Management Unit

1. Herd Condition - Fair

a. Animal condition - No current herd data is available. At present, individuals in the field appear to be in only fair condition, likely due to drought stress. This impression is substantiated by examination of bucks killed by hunters and by necropsy of a small number (~5/yr) of road killed animals.

Reference: Field surveys, necropsies of road kills

b. Herd health - Due to the facts of low recent fawn recruitment and little doe hunting, it is believed that doe age structure in the herd is skewed toward older animals. No hard data is available, except few necropsies of road kills.

Reference: Annual Composition count, necropsies of road kills.

2. Population size - Averaging three estimation methods (Selleck-Hart, Modified Selleck-Hart, Anderson) indicates a population peak at about 25,000 animals in 1963. When the herd plan was finalized in 1982, the estimate was 5,083 animals (Selleck-Hart; NDOW). The 1989 estimate is 3,874 (Selleck-Hart; CDFG)

3. Herd Statistics

Year	(CA)Bucks	Harvest		Fall		Spring
		(NV) Antlerless	(NV)	Bucks	Fawns	Fawns
1983-84	263	45	-	8	35	30
1984-85	363	83	-	14	56	51
1985-86	422	118	-	10	51	32
1986-87	499	50	22	14	54	31
1987-88	254	113	41	18	40	21
1988-89	237	48	33	9	23	17

4. Deer Hunting

a. Past and current hunting strategies' effects on:

1. Deer numbers - Due to the small percentage of the population taken through bucks-only hunting, regulated by tag sales, it is extremely unlikely that recent past and current hunting strategies have affected overall deer numbers in the herd. The low Nevada doe kill is unlikely to significantly affect total population level.
2. Herd composition - In 1981, the combined affects of hunting during the migration period and unlimited tag sales resulted in a high harvest, reducing buck ratios from 22 to 11 per 100 does. The current season dates and quota tag system are designed to increase these ratios by limiting harvest. Recovery has been difficult and sporadic due to drought conditions and poor fawn recruitment.
3. Herd health - Studies and collection data suggest that the recent low buck ratios do not have a significant effect on breeding or overall herd health. No other possible effects of hunting on herd health are known or suspected.

b. Future and proposed hunting strategies' effects on:

1. Deer numbers - Continued bucks-only hunting cannot be expected to affect total deer numbers.
2. Herd composition - Proposed seasons and quota levels are designed to increase buck ratios through carefully regulated harvest. Increased precipitation, improved forage, and increased fawn survival are essential to effect this increase, however.
3. Herd health - Continued bucks-only hunting will not affect overall herd health. Since harvest and buck ratios are regulated by flexible quota tag sales.

5. Illegal Harvest

No known changes in the level of illegal kill have occurred since the herd plan was written.

6. Other

An estimated 75-120 deer are killed each year on Highway 395. Research and negotiations with CalTrans are underway to attempt to reduce highway kill.

B. Non-human Effects on Deer

1. Weather

- a. Drought - The current drought is creating a pronounced impact on the herd's range and forage and is the primary factor in the current decline in total deer numbers. The drought's effect on forage and deer is seriously amplified by the additive effects of poor grazing practices in all seasonal deer ranges. A small number (but substantial percentages) of necropsied deer have been found to be near starvation, as indicated by bone marrow condition.
- b. Early storms - Early storms in September and October have improved fall forage and benefitted deer in 1988 and 1989.
- c. Severe winters - During the 1987-88 and 1988-89 winters, temperatures as low as -30°F created stressful conditions on winter ranges, persisting for several weeks each year. The extreme cold and poor forage conditions created by consecutive drought years combined to produce conditions very unfavorable for wintering deer. Fawn survival and the total population suffered losses.

2. Predators

During telemetry studies of other eastern Sierra deer herds, mountain lions have taken up to 20% of marked adult deer during a single year. This may or may not be generally representative but suggests a high level of predation which may be a significant factor affecting total deer numbers. Coyotes are very numerous and undoubtedly take a large number of deer, especially fawns.

3. Disease and Parasitism

Adequate seriology testing and necropsy effort has not revealed significant disease or parasite problems in the herd. It is known that the herd suffers from very low selenium levels which has been demonstrated to affect animal vitality. An experimental selenium application will be undertaken during the 1989-90 winter.

- C. Effects of Current Deer Hunting and Proposed Hunting Strategies
1. Effect Upon Species of Special Concern
 - a. Changes in local populations - Due to the lack of intensive disturbance, lack of habitat degradation, and the short duration of the hunting season, it is not logical to expect any significant effects to any species of special concern.
 - b. Changes in regional and statewide populations - Due to the lack of intensive disturbance, lack of habitat disruption or degradation, and the short duration of the hunting season, it is not logical to expect any significant effects to any species of special concern.
 2. Effects Upon Other Wildlife Species
 - a. Changes in local populations - Due to the lack of intensive disturbance, lack of habitat disruption or degradation and the short duration of the hunting season, it is not logical to expect any significant effects to other wildlife species.
 - b. Changes in regional and statewide populations - same as above.
 - c. Changes in health, condition and age class structure of populations - same as above.
 - d. Changes in mortality factors - same as above.
 3. Changes in Public Use/Recreation
 - a. Hunting - The current and proposed hunting strategy provides substantial public recreational opportunity to hundreds of hunters each year. Loss of this opportunity would constitute a significant negative impact to public recreation in California.
 - b. Nonconsumptive - Ample opportunities exist for non-consumptive use of West Walker deer (i.e. viewing, photography, study). Minor and insignificant effects to this use may be caused during the hunting season, especially for those persons who are offended by hunting activity. No significant effects to non-consumptive use are known or anticipated. Conversely, to the extent that hunting-funded deer management and habitat programs are effective, deer populations benefit for all users.
 - c. Nonhunting - same as above.

4. Effects Upon Human Populations

- a. Housing - No effects on housing are known or anticipated.
 - b. Transportation - No effects on transportation are known or anticipated.
 - c. Public Services - No effects on public services are known or anticipated.
 - d. Energy - No effects on energy are known or anticipated.
 - e. Human health - No effects on human health are known or anticipated.
 - f. Aesthetics - To the extent that non-hunting or anti-hunting members of the public may be offended by the concept and activity of hunting, and if these persons are in Mono County during the three week hunting season, their aesthetic sense may be affected to some unknown degree. The mere presence of hunting in the field could represent a minor impact to aesthetics of others.
 - g. Cultural resources - No effects on cultural resources are known or anticipated.
- D. Range Landownership - Land ownership as described in the herd plan is mostly unchanged since that time. Notable exceptions are the addition of three parcels (820 acres) of winter habitat to the Slinkard-Little Antelope WMA, and the acquisition of 1,332 acres of migration, summer and potential fawning habitat at Pickle Meadow on the West Walker River. These acquisitions will benefit the herd to an unknown degree.
- E. Range Vegetation
1. Fire - There have been no substantial fires on this herd's range since the herd plan was written.
 2. Grazing - The effects of continued poor grazing practices, coupled with serious drought impacts, continue to degrade all seasonal deer habitats. Application of the new Toiyabe National Forest Land Management Plan is hoped to alleviate some impacts over the long term (next 5-20 yrs).

THE WEST WALKER DEER HERD MANAGEMENT PLAN 1990 UPDATE

I. Update of biological data

A. Composition Counts

Year	Post-season bucks/100dd	Post season fawns/100dd	Spring fawns	Fall sample	Spring sample
1985-86	10	51	32	732	2173
1986-87	14	54	31	207	999
1987-88	18	40	21	457	1421
1988-89	9	23	17	715	1042
1989-90	13	21	17	606	1169

B. Buck kill

Year	1985	1986	1987	1988	1989
	422	498	254	237	177

II. Update of habitat improvement projects

Long-standing local knowledge and recent past sampling have shown that selenium is deficient on West Walker herd winter ranges, particularly on the Little Antelope WMA. This condition has manifested as "white muscle disease" in cattle and deer, and is known to result in reduced body condition and poor reproduction and death. In an experimental attempt to address the problem, a Hill Bill funded helicopter application of sparsely distributed selenium prellis was conducted during January, 1990. The experiment is being monitored by the Animal Science Department at U.C. Davis through plant and water sampling and the unit biologist has live captured does on the area for blood sampling in an effort to determine the uptake of the mineral by the animals. Area-specific herd composition counts will be done and analysed to attempt to gauge any effects on reproductive success.

III. Other changes/additions to the herd plan

The effects of the ongoing 4-year drought, heavy mountain lion predation (as indicated by telemetry study of adjacent herds), continuing developments on key ranges, heavy grazing pressure, and road kills are combining to depress deer numbers and productivity as evidenced by field surveys and fawn ratios which are far lower at present than at any time since data collection began in 1952.

DEER HARVEST TREND

<u>Year</u>	<u>Zone</u>	<u>Quota</u>	<u>Tag Sales</u>	<u>Harvest</u>	<u>Success Rate</u>
1985	X-12	3000	3000	750	25%
	X-9	9000	8880	1265	14%
1986	X-12	3000	3000	724	24%
	X-9	9000	9000	742	8%
1987	X-12	1500	1500	375	25%
	X-9A	1500	1500	236	16%
	X-9B	2500	2500	245	10%
1988	X-12	1500	1500	384	26%
	X-9A	1500	1500	216	14%
	X-9B	2500	2500	190	8%
1989	X-12	1000	1000	342	34%
	X-9A	1500	1500	308	20%
	X-9B	2500	2500	165	7%

Based on telemetry data which has provided specific herd boundary information and on the similar performance of the Buttermilk, Sherwin Grade, and Casa Diablo herds, the X-9A/X-9B zone boundary has been realigned in 1990 to create a zone X-9A which incorporates these herds. It is hoped that the new zone alignment will provide sufficient control of hunter pressure and distribution to result in increased buck ratios particularly in the Sherwin Grade herd.

DEER HARVEST: Mono County Herds

West Walker Herd

Year	Ca. Kill	Nevada		Total	
		bucks	does	bucks	does
1980	368	57		425	
1981	657	90		747	
1982	250	50		300	
1983	263	45		308	
1984	372	83		455	
1985	431	118		549	
1986	499	50	22	549	22
1987	254	113	40	367	40
1988	237	48	33	285	33
1989	177	68	29	245	29
1990	209 (Archery:30 of 209)	97	80	386	80
1991	175 (Archery:47 of 175)				
1992	250 (Archery:39 of 250)				

East Walker Herd

1980	352	33		385	
1981	502	40		542	
1982	208	20		228	
1983	226	6		232	
1984	348	30		378	
1985	319	44		363	
1986	399	29	22	428	22
1987	164	61	31	225	31
1988	208	31	21	239	21
1989	165	10	2	175	2

Mono Lake Herd

1980	258	44		299	
1981	374	54		428	
1982	202	43		245	
1983	213	20		233	
1984	378	44		422	
1985	363	79	83	442	83
1986	300	47	21	347	21
1987	135	72	21	207	21
1988	67*	41	15	108	15
1989	107	32	21	139	21

* This marked decline is partially due to increased allocations of kills to the Casa Diablo herd based on new knowledge gained through recent telemetry research.

	<u>East Walker/Mono Lake Herd**</u>	<u>Nevada</u>		<u>Total</u>	
		<u>bucks</u>	<u>does</u>	<u>bucks</u>	<u>does</u>
1990	244 (Archery:30 of the 244)	41	140	425	140
1991	179 (Archery:20 of the 179)	170*	182*	N.A.	
		(*includes W. Walker Herd)			
1992	260 (Archery:39 of the 260)				

*Hunting kill of deer in these "herd units" will now be considered and reported as one, since, based on recent telemetry research data, the populations of the two are now known to be homogenous on the summer range where hunting occurs in California.

Casa Diablo Herd

1980	77	
1981	150	
1982	64	
1983	57	
1984	117	
1985	144	
1986	100	
1987	140	
1988	175*	
1989	201*	
1990	175	(Archery:11 of the 175)
1991	177	(Archery:10 of the 177)
1992	195	(Archery:21 of the 195)

These increases reflect the changes in kill allocations from the Mono Lake Herd based on new research results.

Sherwin Grade Herd

1980	120	
1981	466	
1982	133	
1983	178	
1984	157	
1985	314	
1986	127	
1987	140	
1988	122	
1989	109	
1990	75	(Archery:9 of the 75)

Round Valley Herd *

1991	25	(Archery:3 of the 25)
1992	57	(Archery:7 of the 57)

Beginning in 1991 Buck kill data will combine Buttermilk and Sherwin herd kills and will be denoted as the Round Valley Herd.

White Mountain Herd

1980	58
1981	50
1982	30
1983	33
1984	43
1985	56
1986	56
1987	37
1988	36
1989	31
1990	38
1991	33
1992	32

Composition Counts: Hunt Zone Totals

Zone X-12*

<u>Year</u>	<u>Post Season bucks/100dd</u>	<u>Post-season fawns/100dd</u>	<u>Spring fawns</u>	<u>Fall sample</u>	<u>Spring sample</u>
1989-90	16	20	16	1225	1859
1990-91	13	28	25	1023	1563
1991-92	22	38	25	1069	2131
1992-93	12	36		923	

Zone X-9A**

1989-90	12	22	20	1479	1711
1990-91	10	26	13	622	727
1991-92	15	24	24	909	1248
1992-93	14	42		974	

* Includes West Walker, East Walker, and Mono Lake Herds.

** Includes Casa Diablo, Sherwin Grade, and Buttermilk herds.

WEST WALKER DEER HERD PLAN UPDATE

1993/94

I. Update of biological data

A. Composition counts

<u>year</u>	<u>Post-season bucks/100dd</u>	<u>Post-season fawns/100dd</u>	<u>Spring fawns</u>	<u>Fall sample</u>	<u>Spring sample</u>
1985-86	10	51	32	732	2173
1986-87	14	54	31	207	999
1987-88	18	40	21	457	1421
1988-89	9	23	17	715	1042
1989-90	13	21	17	606	1169
1990-91	10	26	22	522	520
1991-92	18	37	25	643	1229
1992-93	10	33	20	657	1598
1993-94	16	18	18	481	1058

B. Buck Kill (Calif. kill only)

<u>Year:</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
	422	499	254	237	177	209	175	250

1993

217 (This figure is a very preliminary X-12 zone-wide figure based on tags reportedly returned to Sacramento by Feb 30. No tags have been recieved in the unit office, precluding comparable data.)

C. Telemetry study

Additional animals were captured in March, 1994, to refit collars retrieved from dead marked animals. This work is continuing into its third year and progress reports are on file and available.

Hill Bill funding is being used to employ a contract researcher for this effort which will include food habits, nutrition, measurements of reproductive performance, habitat quality analysis, and management recommendations.

III. Other changes/additions to the herd plan

The severe winter of 1992/93 caused stress and high fawn losses in the herd. It is likely that adults animals also were affected and a reduction in total population is indicated. Accordingly, buck hunt tag quotas for the 1993 season were reduced by 50%. Recommendations for the 1994 season will provide a small increase in tags based on small incremental increases in buck ratios last winter.

The effects of unlimited numbers of archers hunting this population has been addressed this year through implementation of an archery quota of 500 tags in zone X-12 to control intense hunting pressure which has been increasing rapidly, especially with reduced rifle quotas. It is hoped that meaningful management of buck ratios can now be attained through positive control of total buck harvest.

MEMORANDUM

To : File

Date : January 25, 1993

From : Department of Fish and Game, Mono Wildlife Unit

Subject : Deer herd Composition Data

Sherwin Grade Herd Composition

year	Post-season bucks/100dd	Post-season fawns/100dd	Spring fawns	Fall sample	Spring sample
1985-86	7	35	19	691	794
1986-87	7	28	15	706	400
1987-88	10	34	12	718	307
1988-89	11	22	15	936	294
1989-90	12	21	18	572	622
1990-91	12	27	13	468	343
1991-92	12	22	22	289	378

Round Valley Herd Composition

(Beginning in 1993, herd composition data of the Sherwin and Buttermilk herds will be combined and reported as the Round Valley herd, based on current knowledge of herd parameters.)

1992-93	15	36		462	
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Casa Diablo Herd Composition

1985-86	15	61	21	444	153
1986-87	6	60	39	293	602
1987-88	6	36	18	940	406
1988-89	12	18	15	159	349
1989-90	9	22	26	172	628
1990-91	6	22	13	154	279
1991-92	17	38	29	206	507
1992-93	13	49		512	

Mono Lake Herd Composition

1985-86	6	52	20	257	272
1986-87	no sample obtained				
1987-88	17	41	35	317	285
1988-89	22	31	--	250	---
1989-90	12	26	16	388	350
1990-91	14	29	34*	238	239
1991-92	18	38	24	175	472
1992-93	no sample obtained				

East Walker Herd Composition

1985-86	15	44	28	456	469
1986-87	11	48	35	170	573
1987-88	22	37	21	239	234
1988-89	9	20	17	227	333
1989-90	19	19	15	231	340
1990-91	19	30	25*	263	265
1991-92	36	39	24	251	636
1992-93	18	46		266	

West Walker Herd Composition

1985-86	10	51	32	732	2173
1986-87	14	54	31	207	999
1987-88	18	40	21	457	1421
1988-89	9	23	17	715	1042
1989-90	13	21	17	606	1169
1990-91	10	26	22*	522	520
1991-92	18	37	25.5	643	1229
1992-93	10	33		657	

* These spring fawn ratios are believed to be unrealistically inflated since the "spring" counts were conducted on February 28, before the only severe storms of the '90-91 winter which occurred in March and persisted for about three weeks.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
CARSON CITY DISTRICT OFFICE
1535 Hot Springs Rd., Ste. 300
Carson City, Nevada 89701

NOV 02 1988

5000
(NV-03580)

Mr. Fred A. Worthley, Jr.
Regional Manager
Region 5
California Department of Fish and Game
245 W. Broadway, Suite 350
Long Beach, CA 90802

Dear Mr. Worthley:

As a follow-up to my letter of September 26, 1986, (copy enclosed for ready reference), I must inform you that legislation signed by President Reagan on October 28, 1988, will impact any revisions you have been considering for the West Walker Deer Herd Management Plan. This legislation, apparently designated the Omnibus National Parks and Public Lands Act of 1988, transfers the BLM-administered land in Nevada that lies west of U.S. Highway 395 and south of State Highway 208 to the U.S. Forest Service. This transfer will become effective within six months.

I've enclosed a news release, a copy of the Congressional Record pertinent to the legislation and a copy of a map from the Herd Management Plan that depicts the administrative boundary changes within the West Walker deer herd area. We remain ready to work jointly on the plan despite our diminished role. If you have questions regarding the pending land transfer, I can be reached at the Carson City District Office (telephone number 702-882-1631).

Sincerely yours,

John Matthiessen
Area Manager
Walker Resource Area

4 Enclosures

1. Letter Dated 9/26/86
2. News Clipping Dated 10/30/88
3. Cong. Record Dated 9/26/88
4. Map from W.W.D.H.M. Plan

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1988
FISH AND GAME
LONG BEACH, CA

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IN REPLY REFER TO:

SEP 26 1986

Fred A. Worthley, Jr.
Regional Manager
Region 5
California Department of Fish & Game
245 W. Broadway, Suite 350
Long Beach, CA 90802

Dear Mr. Worthley:

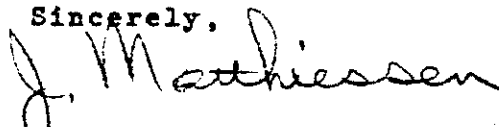
The West Walker Deer Herd Management Plan, prepared May, 1984 and received in this office on March 21, 1986, has been reviewed. While the plan is intended to reflect cooperation across state lines to benefit the interstate deer herd, the plan itself seems to focus and concentrate on California with emphasis on the role of California Dept. of Fish & Game and the Toiyabe National Forest.

The Carson City District, Bureau of Land Management (BLM) is asked to be a signatory to the plan, but basic facts pertinent to the land administered by this District are in error. The prevailing impression left by the plan is one of lack of understanding of where the BLM administered land is. Evidence of this is provided by the accompanying map which is Figure 5 in the plan and Appendix 4 which discusses findings relevant to the Carson City District, BLM under the heading "Bridgeport District, Toiyabe National Forest." We are also surprised that while the studies (dated 1982-1983) comprising Appendix 3 and 4 of the plan discuss findings potentially relevant to management of public land in the Carson City District, neither of these studies have been provided to this office other than as inclusions to the plan.

None of this would be alarming except for the stated importance of the West Walker Deer Herd winter range, one half of which is in Nevada and administered by this District. If the BLM administered land is, in fact, important to the deer herd, then it is equally important to have the plan reflect the facts, the opportunities and the problems in Nevada both clearly and accurately.

I am prepared to work with you to alleviate the deficiencies that I believe the plan has. Toward this end, I have made specific comments on a copy of the plan for your consideration.

Sincerely,



John Matthiessen
Area Manager
Walker Resource Area

Enclosure
As stated

JMatthiessen:sb - 9/24/86

More forest land handed to Nevada

By DAVID KOENIG
Associated Press

WASHINGTON — It's official: the U.S. Forest Service has now the owner of 662,000 more acres in Nevada.
President Reagan on Friday signed a bill transferring the land from the U.S. Bureau of Land Management to the Forest Service.

About 20,000 acres will be swapped the other way. The bill in California, according to a White House spokesman.

The White House did not issue a statement on the event, although it often does for more controversial measures.
Reagan faced a Monday deadline to sign the bill, or it would have died.

"It's a great victory for the people who've been behind this for two-and-a-half years," said state Sen. Sue Wagner, R-Reno, referring to the long drive to get the bill passed.

"It's great for the state of Nevada, and to think we did a 360 from the original proposal of wiping out almost all the Forest Service land in Nevada," Wagner said.

The idea for a land swap between the two mammoth federal agencies originated in the

Reagan administration.

But that 1985 plan, which covered 25 million acres of public land throughout the West, went nowhere in Congress.

The administration plan would have cut the Forest Service's stake in Nevada from 5.1 million acres to less than 1 million, and eliminated 53 jobs.

Nevada's congressional delegation, with prompting from Wagner, Sen. Thomas Wilson, D-Reno, and others in the state, then introduced legislation to increase the Forest Service's holdings by more than 500,000 acres.

That bill was the genesis of the measure Reagan signed on Friday.

The land covered by the final version of the bill is around Mount Charleston and along the eastern front of the Sierra Nevada, and will be added to the Inyo and Toiyabe national forests, Sen. Clark Bechtel, R-Nev., said in a statement that the bill increases year-round recreation opportunities at Mount Charleston.

Wagner said the long wait for the bill was frustrating. "But I'm just thrilled. It's worth it."

Although the measure had the support of many government officials in Nevada, environmental

groups were generally cool about its effect. They had pushed unsuccessfully for a Nevada wilderness bill this year.

Rose Strickland of the Sierra Club's Toiyabe chapter in Reno said, when Congress approved the land swap, "I don't think it's any terrific victory or anything great for the environment."

Forest Service and BLM officials have downplayed the importance of the exchange, saying it will have little effect on either employees or the public.

But Wagner, noting that the Forest Service's budget per acre is about twice that of the BLM, said the 662,000 acres being turned over to the Forest Service will now get better attention.

"That's not meant to denigrate the BLM," she said. "They just don't get that kind of budget. A lot of the land they manage probably doesn't warrant the attention some of the special forest service lands do."

Much of the land under BLM control in the West is desert, but wilderness advocates also say it is some of the most beautiful and fragile land.

OMNIBUS NATIONAL PARKS AND PUBLIC LANDS ACT OF 1988

Mr. VENTO. Mr. Speaker, I move to suspend the rules and pass the Senate bill (S. 1693) to amend the National Trails System Act to provide for a study of the Coronado Trail, and for other purposes, as amended. The Clerk read as follows:

S. 1693

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE AND TABLE OF CONTENTS. This Act, together with the following table of contents, may be cited as the "Omnibus National Parks and Public Lands Act of 1988".

TABLE OF CONTENTS

Sec. 1. Short title and table of contents.

TITLE I—PUBLIC LANDS

Sec. 101. Public lands and national forest adjustments.

Sec. 102. Desert land entry in the vicinity of Dinosaur National Monument.

Sec. 103. Improvement in management of certain public lands in the State of Michigan.

Sec. 104. Lands in Riverside County, California.

Sec. 105. Reinstatement of canceled entry in Lamar County, Alabama.

Sec. 106. Land claim in Sumter County, Alabama.

Sec. 107. Declaration of abandonment of right-of-way.

Sec. 108. Enhancement of National Forest and public lands of Nevada.

Sec. 109. Temporary use by military departments of certain public lands in Alaska.

Sec. 110. Issuance of patents for lands devoted to solid waste disposal.

Sec. 111. San Pedro Riparian National Conservation Area, Arizona.

TITLE II—RIVERS AND TRAILS

Sec. 201. Wildcat River, New Hampshire.

Sec. 202. Access across certain Federal lands in Arkansas.

Sec. 203. Study of Coronado Trail.

Sec. 204. Hanford Reach of Columbia River.

TITLE III—NATIONAL PARK SYSTEM

Sec. 301. Congaree Swamp National Monument.

Sec. 302. Zuni-Cibola National Historical Parks.

Sec. 303. Mississippi National River and Recreation Area.

Sec. 304. Natchez National Historical Park.

Sec. 305. Canaveral National Seashore.

Sec. 306. Antietam National Battlefield.

Sec. 307. Hamilton Grange.

Sec. 308. Poverty Point.

Sec. 309. Dams in Yosemite Park.

Sec. 310. Delaware and Lehigh Navigation Canal National Heritage Corridor.

Sec. 311. New Jersey Coastal Heritage Route.

Sec. 312. National Park of American Samoa.

Sec. 313. Pinelands.

Sec. 314. Heritage Preservation Commission; Southwestern Pennsylvania Industrial Heritage Route.

Sec. 315. Guadalupe Mountains National Park.

Sec. 316. Salinas National Monument, New Mexico.

Sec. 317. Boundary change for John Muir National Historic Site.

Sec. 318. Authorization for Acquisitions at Women's Rights National Historic Park.

TITLE IV—MISCELLANEOUS PROVISIONS

Sec. 401. Lewis and Clark National Historic Site, Montana.

Sec. 402. Amendments to Archeological Resources Protection Act of 1979.

Sec. 403. National Park Wilderness in Washington State.

Sec. 404. Federal cave resources protection.

TITLE I—PUBLIC LANDS

SEC. 101. PUBLIC LANDS AND NATIONAL FOREST ADJUSTMENTS.

(a) PHILLIPS COUNTY, MONTANA.—

(1) AUTHORIZATION OF EXCHANGE.—Notwithstanding the order of the United States District Court for the District of Columbia dated February 10, 1985, in Civil Action No. 85-2238, the Secretary of the Interior (hereafter in this subsection referred to as "the Secretary") is hereby authorized to revoke applicable public land orders, to revoke withdrawals, to terminate classifications, and to take such other actions as the Secretary determines necessary in order to consummate, in accordance with applicable law, an exchange of lands with Phillips County, Montana, as described in Bureau of Land Management Land Report Serial Number M-66965, dated May 8, 1986, if the Secretary determines such exchange to be in the public interest.

(2) CONDITIONS OF EXCHANGE.—

(A) MANAGEMENT.—Nothing in this subsection shall be construed as enlarging or diminishing the extent to which the United States or any other party may be responsible, under applicable laws of the United States or the State of Montana, for proper management of lands involved in the exchange described in paragraph (1) (including control of public access to such lands) or for management, control, removal, or other actions related to any hazardous substances or other materials located on such lands.

(B) HAZARDOUS SUBSTANCES.—Prior to consummating the exchange described in paragraph (1), the Secretary shall advise the county and appropriate officials of the United States and the State of Montana concerning any information, from inspection or otherwise, the Secretary has concerning hazardous substances or other materials (including, but not limited to, industrial solvents or wastes) located on such lands.

(b) VETERAN, WYOMING TOWNSITE.—

(1) SURVEY AND PLAT.—As soon as possible after the date of enactment of this Act, the Secretary of the Interior (hereafter in this subsection referred to as "the Secretary") shall resurvey and prepare a new plat for the townsite of Veteran, Wyoming, to take into account the actual and common use of streets and alleys on such lands for designation as public reservations in accordance with the Act of April 16, 1906 (34 Stat. 116).

(2) PATENT AND SALE.—

(A) PATENT.—(i) After completion of the work required to complete the survey and plat required under paragraph (1), the Secretary shall patent the title of the United States in and to the public reservation lands referred to in paragraph (1) to Goshen County, Wyoming.

(ii) Title of the United States in and to a 90 feet by 75 feet lot of approximately 0.15 acres which is described in the records of the Goshen County, Wyoming, clerk's office as "a tract in southwest corner of town of Veteran, Block 40 in the original town of Veteran," shall be patented to Goshen County United School District Number One.

(B) DISPOSAL, ETC.—The Secretary, acting through the Commissioner of Reclamation, is authorized to dispose of Federal lands within the townsite area for fair market value, by negotiated or public sale, and to

revoke withdrawals, terminate classifications, and take other steps necessary to implement this subsection, notwithstanding the order of the United States District Court for the District of Columbia dated February 10, 1985, in Civil Action No. 85-2238.

(c) MATTERS INVOLVING LANDS IN THE STATE OF UTAH.—

(1) FARMINGTON CITY EXCHANGE.—

(A) EXCHANGE.—(i) Subject to valid existing rights if Farmington City, Utah (hereafter in this paragraph referred to as the "city"), transfers to the United States all right, title, and interest of the city in and to the land described in clause (iii)(1) of this paragraph, the Secretary of Agriculture (hereafter in this paragraph referred to as the "Secretary") shall transfer to the city all right, title, and interest of the United States in and to the land described in clause (ii)(1). Any land acquired by the United States under this paragraph shall be added to and managed as part of the Wasatch National Forest.

(iii)(1) The land referred to in clause (i) to be transferred by the city is that land depicted as parcels Ai, Aii, and Aiii on the map entitled "Farmington Exchange" and dated May 1988.

(ii) The land referred to in clause (i) to be transferred by the United States is that land depicted as parcel Bi on the map referred to in subclause (i).

(iii) Before transferring land to the city pursuant to this subparagraph, the Secretary shall appraise the values of the lands described in subclauses (i) and (ii) of clause (ii). If, based on such appraisal, the fair market value of the lands being transferred to the city is not equal to the fair market value of the lands to be transferred to the United States, the Secretary shall require the city to pay, or shall pay to the city, an amount sufficient to equalize such values.

(B) CITY OR STATE LANDS WHICH MAY BE EXCHANGED.—(ix)(1) Within the 3-year period beginning on the date of enactment of this Act, the Secretary, in conjunction with the city and the State of Utah, shall identify city or State lands which are suitable for transfer to the United States for national forest purposes in exchange for the Federal lands depicted as parcels Bii, Biii, Biv, Bv, and Bvi on the map referred to in subparagraph (A)(ix)(1).

(ii) Subject to valid existing rights, if within such period Farmington City or the State (as the case may be) transfers to the United States the city or State lands identified pursuant to subclause (i), the Secretary shall transfer the appropriate Federal lands depicted as parcels Bii, Biii, Biv, Bv, and Bvi on the map referred to in subparagraph (A)(ix)(1) to Farmington City or the State, as appropriate. The values of lands exchanged under this section shall be of equal value as determined by the Secretary, or, if they are not of equal value, the values shall be equalized by payment to or by the Secretary so long as the payment does not exceed 25 percent of the total value of the lands transferred out of Federal ownership.

(ii) In lieu of an exchange under clause (i), the Secretary may transfer by sale for fair market value the Federal lands depicted as parcels Bii, Biii, Biv, Bv, and Bvi on the map referred to in subparagraph (A)(ix)(1) to the city or the State of Utah, as appropriate.

(2) KANAB CITY TRANSFER.—

(A) WITHDRAWAL.—Subject to valid existing rights, all public lands located within the city limits of Kanab City, Utah (as such limits stood on April 1, 1988) are hereby withdrawn from all forms of entry and appropriation under the public land laws, including the mining laws, and from operation

such right, title, or interest of the United States in such real property as of the date of enactment of this Act.

(c) DESCRIPTION OF PROPERTY.—

(1) IN GENERAL.—The property referred to in subsections (a), (b), and (d) is certain real property situated in the County of Alameda, State of California, forming a part of the right-of-way granted by the United States to the Central Pacific Railway Company in the Act entitled "An Act to aid in the Construction of a Railroad and Telegraph Line from the Missouri River to the Pacific Ocean, and to secure to the Government the Use of the same for Postal, Military, and Other Purposes", approved July 1, 1862 (12 Stat. 489).

(2) SPECIFIC DESCRIPTION.—The real property referred to in paragraph (1) involves certain real property situated in the unincorporated townships of Murray, Pleasanton, and Washington, and in the incorporated area of the cities of Union City and Fremont, and is more particularly described as follows:

(A) PARCEL 1.—A strip of land, 400 feet in width, acquired by the Central Pacific Railway Company by an Act of Congress dated July 1, 1862 (as shown on the map entitled "C.P.R.Y. Co. Oakland to Sacramento Main Line Via Niles and Tracy Map of Real Estate and Right of Way Properties through Alameda County, California" dated 1914 in Alameda County Road Department Files numbered A 77-32, A 77-33, and A 77-34), lying equally 200 feet on each side of the center line more particularly described in that certain Quitclaim Deed from the Southern Pacific Transportation Company, a Delaware corporation, to the County of Alameda, dated March 15, 1985, and recorded April 23, 1985, as Series No. 85-077990, Official Records of Alameda County, California.

(B) PARCEL 2.—Those strips of land varying in width acquired by the Central Pacific Railroad Company by an Act of Congress, dated July 1, 1862 (as shown on the map entitled "C.P.R.Y. Co. Oakland to Sacramento Main Line Via Niles and Tracy Map of Real Estate and Right of Way Properties through Alameda County, California" dated 1914, in Alameda County Road Department Files numbered A 77-26, A 77-27, and A 77-28), the center line of said strips of land being more particularly described in that certain Quitclaim Deed from the Southern Pacific Transportation Company, a Delaware corporation, to the County of Alameda, dated March 15, 1985, and recorded April 23, 1985, as Series No. 85-077991, Official Records of Alameda County, California.

(C) PARCEL 3.—Those strips of land varying in width acquired by—

(i) the Central Pacific Railroad Company under the Act referred to in subsection (a) (as shown on the map entitled "C.P.R.Y. Co. Oakland to Sacramento Main Line Via Niles and Tracy Map of Real Estate and Right of Way Properties through Alameda County, California" dated 1914, in Alameda County Road Department Files numbered A 77-26, A 77-27, and A 77-28);

(ii) the Western Pacific Railroad Company by Order and Declaration dated June 22, 1868, concerning the Report of Commissioners in the matter of the Western Pacific Railroad Company against Matthew W. Dixon, et al., in the District Court of the Third Judicial District in and for the County of Alameda, State of California, a certified copy of the Order recorded September 7, 1869, in Book 43 of Deeds at page 262, Records of Alameda County, California; and

(iii) the Western Pacific Railroad Company by deed dated April 18, 1870, from Jonas G. Clark, recorded June 14, 1870, in Book 55

of Deeds at page 342, Records of Alameda County.

(d) RESERVATION AND RESTRICTIONS.—

(1) RESERVATION.—Any and all rights of the United States in and to all oil, coal, and other minerals in the real property described in subsection (c) shall be retained by and reserved to the United States, together with the right to prospect for, mine, and remove such oil, coal, and other minerals under applicable law.

(2) RESTRICTIONS.—Any portion of the real property described in subsection (c) embraced in a public highway in a manner meeting the requirements of the Act of March 8, 1922 (43 U.S.C. 912) shall be used only for such purposes (including but not limited to public recreational purposes) as may be authorized under laws of the State of California applicable to property forming part of such public highway. In the event that any portion of such real property should be used for any other purpose, or in the event that an attempt should be made to transfer ownership of any portion of such real property to any party other than the State of California or a political subdivision thereof, there shall revert to and be vested in the United States all the right, title, and interest in such real property which the United States possessed on the date of enactment of this Act.

(e) MOUNTAIN WARFARE TRAINING CENTER.—Unless otherwise provided by law, the lands within the Toiyabe National Forest, in California, which have been used for purposes of the United States Marine Corps Mountain Warfare Training Center, shall be retained as part of such National Forest. The Secretary of Agriculture shall continue to make such lands available to the United States Marine Corps for purposes of such training center, subject to such restrictions as the Secretary of Agriculture finds appropriate to protect the natural, environmental, aesthetic, scientific, cultural, and other resources and values of such lands. So far as possible, consistent with use of such lands by the United States Marine Corps for purposes of the Mountain Warfare Training Center, the affected lands shall be open to public recreation and other uses.

SEC. 104. ENHANCEMENT OF NATIONAL FOREST AND PUBLIC LANDS OF NEVADA.

(a) FINDINGS AND PURPOSES.—

(1) FINDINGS.—The Congress finds that: (A) The public lands transferred by this section contain valuable natural resources (such as watershed, range, outdoor recreation, and wildlife habitat) which will be enhanced by the professional, multiple-use management of the Forest Service; and that certain national forest lands would be enhanced by the professional multiple-use management of the Bureau of Land Management.

(B) The public which uses these natural resources will be benefited by such adjustments in management.

(C) The public lands transferred by this section to the jurisdiction of the Forest Service are adjacent to existing national forests and, in many cases, are part of the same watersheds and mountain ranges, and placing the management of these lands under the administration of one agency, the Forest Service, will improve efficiency and be cost effective; that similar efficiency and cost effectiveness will result from transferring jurisdiction of certain national forest lands to the Bureau of Land Management.

(D) There is a consensus in Nevada that certain lands should be added to the national forest system and that certain national forest system lands should be transferred to the Bureau of Land Management for management.

(2) PURPOSES.—The purposes of this section are as follows:

(A) To transfer to the jurisdiction of the Forest Service, United States Department of Agriculture, certain public lands in Nevada currently administered by the Bureau of Land Management, United States Department of the Interior. These public lands are contiguous to the Toiyabe and Inyo National Forests and will become National Forest System lands.

(B) To transfer to the jurisdiction of the Bureau of Land Management, United States Department of the Interior, certain lands in Nevada currently administered by the Forest Service, United States Department of Agriculture. These lands are contiguous to other public lands and will be managed as such.

(b) DEFINITIONS.—As used in this section—

(1) The term "public lands" means the lands administered by the Bureau of Land Management, United States Department of the Interior, as defined in section 103(3) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701(e)).

(2) The term "National Forest lands" or "National Forest System lands" means the lands administered by the Forest Service, United States Department of Agriculture, as defined in section 11 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1609(a)).

(c) TRANSFER OF LANDS.—

(1) TRANSFER OF PUBLIC LANDS TO THE FOREST SERVICE.—Effective 180 days after the enactment of this Act, the approximately 662,000 acres of public lands designated for inclusion in the National Forest System on 3 maps entitled "Nevada Interchange-A", dated January 1987, "Nevada Interchange-B", dated February 1988, and "Nevada Interchange-C", dated August 1988, are hereby withdrawn from the public domain, transferred to the jurisdiction of the Secretary of Agriculture, and shall become part of the Toiyabe National Forest or the Inyo National Forest, as appropriate.

(2) BOUNDARIES OF TOIYABE AND INYO NATIONAL FORESTS.—

(A) The boundaries of the Toiyabe National Forest and the Inyo National Forest are hereby modified to reflect the transfer of lands under paragraph (1).

(B) For the purpose of section 7 of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 4601-9), the boundaries of the Toiyabe National Forest and the Inyo National Forest, as modified by this subsection, shall be treated as if they were the boundaries of those National Forests as of January 1, 1965.

(3) TRANSFER OF FOREST SERVICE LANDS TO THE BUREAU OF LAND MANAGEMENT.—Effective 180 days after the enactment of this Act, approximately 23,000 acres of national forest lands identified for management by the Bureau of Land Management on a map entitled "Nevada Interchange-A" and dated January 1987, are hereby transferred to the Secretary of the Interior.

(4) MAPS.—The maps referred to in paragraphs (1) and (3) shall be on file and available for public inspection in the offices of the Governor of Nevada, the Supervisors of the Toiyabe and Inyo National Forests, the Nevada State Director of the Bureau of Land Management, the Chief of the Forest Service, and the Director of the Bureau of Land Management. The Secretaries of Agriculture and the Interior may make minor changes to the maps to correct technical errors.

(5) PLANS.—Effective 180 days after enactment of this Act, lands transferred by paragraph (1) to the jurisdiction of the Secretary of Agriculture shall be subject to the

iii. Other changes/additions to the herd plan

The 1995 hunting season will see an X-12 tag quota of 750, no change from the 1994 quota.

The effects of unlimited numbers of archers hunting this population was addressed last year through implementation of an archery quota of 500 tags in zone X-12 (archery zone A-20) to control intense hunting pressure which has been increasing rapidly, especially with reduced rifle quotas. This quota is unchanged for the 1995 season. It is hoped that meaningful management of buck ratios can now be attained through positive control of total buck harvest.

It is anticipated that the 1995 increase in fawn ratios may result in an increase in herd deer numbers. Currently, feed, water and cover conditions are excellent on all portions of this herd's range. Weather patterns and precipitation patterns next winter will again be crucial to herd performance.