

MENDOCINO DEER HERD
MANAGEMENT PLAN

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by

JACK BOOTH
Wildlife Manager Biologist
California Department of Fish & Game

and

PAUL YULL
District Wildlife Biologist
Bureau of Land Management


and

LYNN MURRAY
Resource Officer, Mendocino National Forest

Under the Supervision of

MANLEY INLAY
Associate Wildlife Biologist
Region 3, California Department of Fish & Game

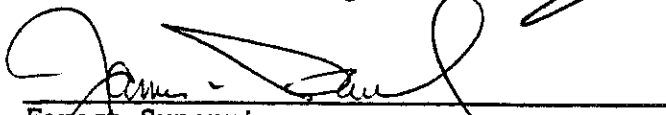
APPROVED


Regional Manager, Region 3
California Department of Fish & Game

9-2-82
Date


District Manager, Ukiah District
Bureau of Land Management

8/13/82
Date


Forest Supervisor
Mendocino National Forest

7-28-82
Date

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MENDOCINO DEER HERD MANAGEMENT PLAN

I. INTRODUCTION

A persistent and significant decline in deer numbers throughout most of California influenced the Department of Fish and Game to develop "A Plan for California Deer", in March, 1976. Assembly Bill 1521 (September, 1977) incorporated the Plan into law, specifying that:

- A. Each California deer herd shall have a specific management plan;
- B. Selected management program elements shall be included in each herd plan;
- C. Each specific herd plan must generally conform to the goals of the State-wide Strategic Plan.

Mendocino County usually has the highest reported buck kill of any California county. Deer are an important resource to both the County and California, attracting hunters from the San Francisco Bay area, Santa Rosa and the Sacramento Valley. The bag limit is two bucks and Mendocino County offers both coastal (early) and inland (late) hunting seasons. At this time, based on reported kills, the Mendocino deer herd population is estimated at less than half its known historic peak (mid to late 1960's). This plan analyzes the existing and historical situation and sets direction for future management.

II. DEER HERD MANAGEMENT UNIT

A. Deer Herd Definition and History

The Mendocino Deer Herd is mostly resident and short range migratory Columbian black-tailed deer inhabiting Mendocino County, excluding the area south of Highway 20 and east of the Russian River (Figure 1). This part of Mendocino County is more similar to Lake County and was included within the Clear Lake Deer Herd Management Plan (1981). For management reasons, Mendocino County is divided into three subunits as follows (Figure 2):

The Navarro subunit covers approximately 1,320 square miles in southern Mendocino County (south of Highway 20 and west of the Russian River). This area is essentially an oak-grass type with scattered woodlands and/or brush pockets in the eastern part of the subunit (from Hwy 101 to Anderson Valley). This part is essentially privately owned livestock ranches with limited public hunting opportunity. The western portion of the subunit is mostly timberland in private ownership, except for the south half of the Jackson State Forest (25,000 acres). The subunit is totally in the coastal season and is occupied by resident deer only.

The Noyo subunit covers approximately 715 square miles in northwestern Mendocino County, (north of Highway 20 and west of Highway 101). This subunit is almost totally commercial timberland, over half owned by large timber companies. It also includes approximately 11,000 acres of Bureau of Land Management and the north half of Jackson State Forest (29,000). This subunit is also in the coastal season and occupied by resident deer.

The Covelo subunit covers 1,335 square miles in the northeastern portion of Mendocino County (east of Highway 101, north of Highway 20). This subunit is both resident and migratory deer. The summer range of the migratory herd is mostly on the Mendocino National Forest with the winter range on Bureau of Land Management or private ownership. Habitat types are diverse. This subunit was changed from the coastal to inland season in 1980.

1. Estimated Herd Size

The Mendocino deer herd has been one of the largest and most productive in California. This herd population, using the method developed by Anderson et al (1974) based on reported harvest and other measured herd characteristics, has been estimated from 1958 to the present and averaged 195,000 deer per year over the 1960-69 (peak) period. Longhurst, et al, 1952 estimated a population ranging from 126,000 to 236,000 in 1969, based on a different system, estimates of deer/square mile by habitat type. These population estimates are provided for historical perspective, but are only general estimates. However, by any method, from all known data, the population level of the 1960's has steadily declined during the 1970's to about half its peak level. This Plan will emphasize deer density per habitat type (rather than total population size) and habitat management and improvement (rather than a significant change in harvest strategy). The decline has, in general, been county-wide (Table 1) and undoubtedly is associated with many factors (as later analysed).

37/mi²
70/mi²

TABLE 1: HARVEST PERCENT BY SUBUNIT (1970-1980)

<u>Subunit</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
Noyo	(39%) *	(16%)	(15%)
Navarro	(35%) *	(45%)	(43%)
Covelo	(26%) *	(39%)	(42%)

* Percent of total county harvest. Does not include southeastern portion included with Clear Lake Deer Herd.

2. Breeding and Fawning

The breeding season among resident deer usually begins in mid-October and extends through November with the peak occurring in mid-November. Fawns are generally born from mid-April through mid-June (Taber and Dasmann, 1958). Synchrony of breeding is directly related to nutritional plane of does (Mansfield, 1974) and probably correlates most strongly with acorn production (Moon, 1975). In acorn years, most does are better nourished and tend to conceive on their first estrous cycle, producing the majority of fawns during a short interval in the spring. Buck ratios have remained at levels that assure breeding of most does and breeding success should correlate closely with the over 90% pregnancy rates measured at Hopland (Anderson, 1974). Fawn production may approach 150 per 100 does in a well nourished resident herd (Longhurst, et al, 1976).

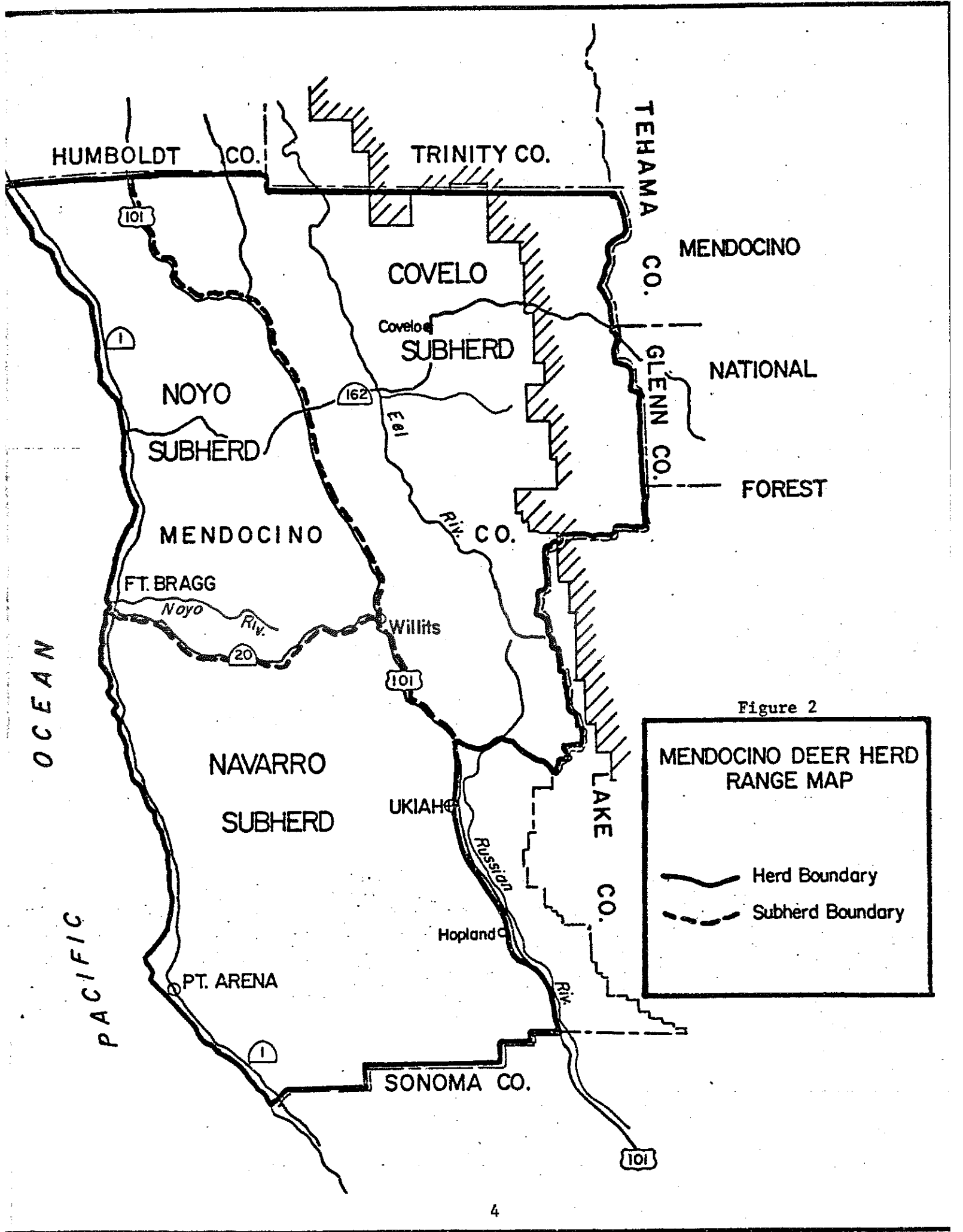




Figure 2

MENDOCINO DEER HERD RANGE MAP

-  Herd Boundary
-  Subherd Boundary

The migratory portion of the Covelo subherd generally breed up to one month later than the resident deer. Breeding usually begins on the intermediate ranges in early November and completes on the winter range in December. Fawns are generally born on the summer range in late June or July. Acorn production is probably not as important year-after-year as with the resident herd. Fawn production is generally higher in migratory herds, usually exceeding 150 per 100 does.

3. Herd Composition Data

Deer herd composition data has been collected since 1958 with the sample data heavily weighted toward the Covelo and Navarro subunits. The denser vegetation type (redwood - Douglas-fir forest) of the Noyo subunit limits data collection ability. In 1980, Mendocino County was changed from totally coastal season (A Zone) to include the inland season (Zone B1 and B3). Herd composition data was separated at that time and is now reported by hunting zone. Tables 2 and 2A summarize the data.

Buck/doe ratios have ranged from 13/100 to 34/100 with a mean of 24/100 over the period 1958 to 1979. During the high populations associated with 1958-1965, the herd exhibited an average buck ratio of 29/100. From 1966-1979, when the population was declining, the average buck ratio declined to 21/100, a decrease of 28%.

Fall fawn ratios have varied from 25/100 to 78/100 with a mean of 57/100 over the 1958-1979 survey period. Spring fawn ratios have ranged from 15/100 to 62/100 with a mean of 44/100, reflecting an average overwinter loss of 23%. The average fall fawn ratio for the high population period (1958-1965) was 64/100; reduced to 53/100 for the declining years (1966-1979). Spring fawn ratios were 48/100 (1958-1965) and 42/100 (1966-1979).

Summer fawn mortality is more severe than over winter loss. Charley Moon (Willits Unit Biologist, 1954 to 1978) believed that acorn production and timing of fall rains were the most significant factors controlling fawn survival (Table 2B). This data offers interesting correlation with fawn survival data but comparison is not totally consistent, indicating that other factors are also operational.

TABLE 2. MENDOCINO COUNTY HERD COMPOSITION DATA (1958-1979)

YEAR	ESTIMATED POPULATION	HERD COUNT		
		FALL		SPRING
		fawn/100	deer/bucks	fawn/100 deer
1958	168,930	78	29	N/A
1959	164,480	65	30	40
1960	199,170	76	31	51
1961	206,330	52	34	54
1962	180,090	69	34	46
1963	196,520	69	22	59
1964	210,650	57	33	40
1965	219,110	48	19	44
1966	199,220	51	20	23
1967	149,180	62	20	32
1968	189,990	61	25	46
1969	201,290	77	24	52
1970	187,110	52	20	62
1971	151,610	36	20	35
1972	141,300	25	17	22
1973	134,340	35	13	15
1974	94,590	49	21	26
1975	105,440	53	17	52
1976	130,640	58	16	56
1977	129,240	60	27	59
1978	132,530	61	31	50
1979	102,960	61	21	56

TABLE 2A - MENDOCINO COUNTY HERD COMPOSITION DATA
BY HUNTING ZONE (1980-81)

Year	Estimated Population	Early Season		Late Season			
		Fall fawn/100	Spring deer/buck	Fall fawn/100	Spring deer/buck	Spring fawn/100 deer	
1980	83,750	73	26	49	91	39	49
1981	99,000	64	26	61	61	20	54
1982							
1983							
1984							
1985							
1986							
1987							
1988							
1989							

TABLE 2B. MENDOCINO COUNTY BIOLOGICAL FACTORS
AFFECTING FAWN SURVIVAL

YEAR	FORAGE					OVERWINTER FAWN LOSS:100does		
	GRASS		ACORNS					
	SPRING	FALL	BL	WH	LO			
1958	G	P	F	F	F	N/A		
1959	P	P	E	E	E	38	(49%)	
1960	P	F	P	P	P	14	(22%)	
1961	G	P	F	F	G	22	(29%)	
1962	F	E	P	G	F	6	(12%)	
1963	E	E	G	F	G	10	(14%)	
1964	P	P	G	G	G	29	(42%)	
1965	F	P	P	P	F	13	(23%)	
1966	P	P	F	G	F	25	(52%)	
1967	E	E	P	P	F	19	(37%)	
1968	F	G	E	E	G	16	(26%)	
1969	G	G	P	F	P	9	(15%)	
1970	P	G	F	P	G	15	(19%)	
1971	G	P	P	P	P	17	(33%)	
1972	G	P	P	P	P	14	(39%)	
1973	F	G	P	P	P	10	(40%)	
1974	E	G	G	E	G	9	(26%)	
1975	G	G	G	G	G	0	0	
1976	G	P	G	F	F	0	0	
1977						0	0	
1978						10	(17%)	
1979	Not available						5	(8%)
1980						12	(20%)	
1981								

P = poor
F = fair
G = good
E = excellent

BL = Black oak
WH = White fir
LO = Live oak

4. Harvest and Mortality Data

Harvest data are collected primarily by the use of deer tags which by law are filled out when a deer is legally killed. The number of tags mailed to the Department of Fish and Game constitute the reported buck harvest (Table 3), and provide a general index to deer abundance (total population). Barring significant change in season, bag limit, and/or hunting pressure, the data most reliably indicate trends affecting the total population (Figure 3).

Mendocino County reported an average annual harvest of 3,498 bucks for the period 1958-1981 (Table 2 & 2A). During the period 1958-1965 (high populations) the reported kill averaged 4,292 bucks/season. In the 1966-1981 period of declining population, the average reported kill was 3,101 bucks/season, a 28% reduction.

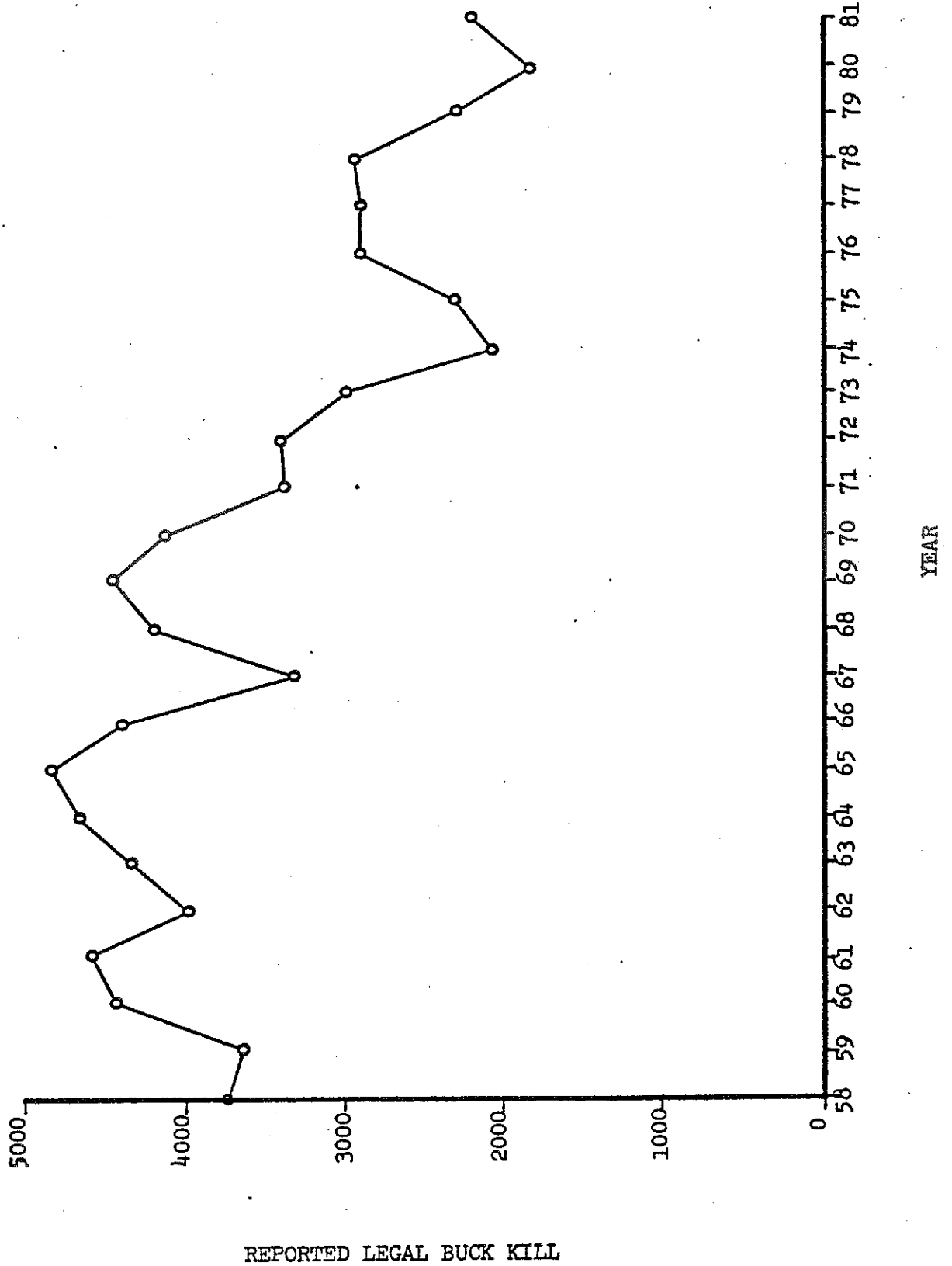
Mendocino County was entirely within the coastal season with a two buck bag limit through 1979. The change of the Covelo subunit to an inland season (Zone B1, B3) resulted in a decrease in hunter pressure during the 1980 hunting season. Hunting pressure returned to a more normal level in the 1981 season.

TABLE 3. MENDOCINO COUNTY REPORTED BUCK KILL

YEAR	REPORTED KILL *	AGE OF KILL PERCENTAGE			
		1 Yr.	2	3 Yr.	4+
1958	3,754	1	33	14	52
1959	3,655	—	31	24	45
1960	4,426	5	28	20	47
1961	4,585	1	36	21	42
1962	4,002	1	28	29	42
1963	4,367	2	28	26	44
1964	4,681	2	34	26	38
1965	4,869	1	30	30	39
1966	4,427	1	29	28	42
1967	3,315	2	29	24	45
1968	4,222	6	23	19	52
1969	4,473	3	31	23	43
1970	4,158	2	23	31	44
1971	3,369	1	22	32	45
1972	3,140	1	26	26	47
1973	2,985	3	20	23	54
1974	2,102	2	27	26	45
1975	2,343	6	36	20	38
1976	2,903	9	34	28	29
1977	2,872	11	36	24	29
1978	2,945	1	38	18	43
1979	2,288	No Data available			

* Includes portion of county included in Clear Lake Herd Plan.

FIGURE 3: REPORTED BUCK HARVEST



3A. MENDOCINO COUNTY REPORTED BUCK KILL

Year	COASTAL SEASON				INLAND SEASON				Total Kill
	Age of Kill (%)				Age of Kill (%)				
	1 Yr.	2	3 Yr.	4+	1 Yr.	2	3 Yr.	4+	
1980	0	22	30	48	0	36	28	36	1,881
1981	0	24	14	62	4	50	14	32	2,197
1982									
1983									
1984									
1985									
1986									
1987									
1988									
1989									

Other mortality data has been kept over the years by the Unit Biologist and is reproduced in Table 3B. The reliability of this reported data is unknown, but two conclusions can be drawn from it. First, the Mendocino County highway kill at peak historical populations (1964-1969) was larger than the legal harvest for most California counties, and is still at a relatively high level. Secondly, data from all three surveys supports the decrease in overall population calculated from tag return data.

TABLE 3B. MORTALITY DATA (1958-1981)

YEAR	CARCASS COUNTS	HIGHWAY KILL	DEPREDATION KILL
1959	25	N/A	88
1960	5	N/A	43
1961	14	N/A	53
1962	21	N/A	75
1963	10	N/A	68
1964	25	1,129	76
1965	23	1,223	145
1966	25	1,329	200
1967	38	592	72
1968	3	949	49
1969	5	1,088	42
1970	10	930	79
1971	25	776	78
1972	15	817	54
1973	22	689	38
1974	discontinued	409	36
1975		344	9
1976		778	30
1977		696	30
1978		603	18
1979		389 *	20
1980		489 *	19
1981			14
1982			
1983			
1984			
1985			
1986			
1987			
1988			
1989			

* May be incomplete (Caltrans, 1981)

B. Herd Range and History

1. Terrain

Mendocino County extends approximately 80 miles north and south along the coast bordering the Pacific Ocean. The county varies from 30 to 50 miles in width, and is mountainous over the entire area. Within 20 miles of the ocean the land rises to approximately 3,000 feet in a series of ranges that parallel the coast, then drops to lower elevations in the Eel River and Russian River Valleys.

These narrow and irregular valleys are 1,500 to 2,000 feet in elevation in the central part of the county and drop to near 500 feet at points where the rivers leave the county. The Eel river flows northward, draining the northern half of the county, while the Russian River, flowing southward, drains the southern half.

East of these streams the land rises again to about 4,000 feet along much of the eastern county line, with Anthony Peak near the northwest corner reaching 6,963 feet. Most of the ridges are oriented in a north-northwest, south-southeast direction. Several smaller rivers including the Noyo, Navarro, Big, Albion and Garcia flow westward to the ocean on the west side of the county.

2. Climate

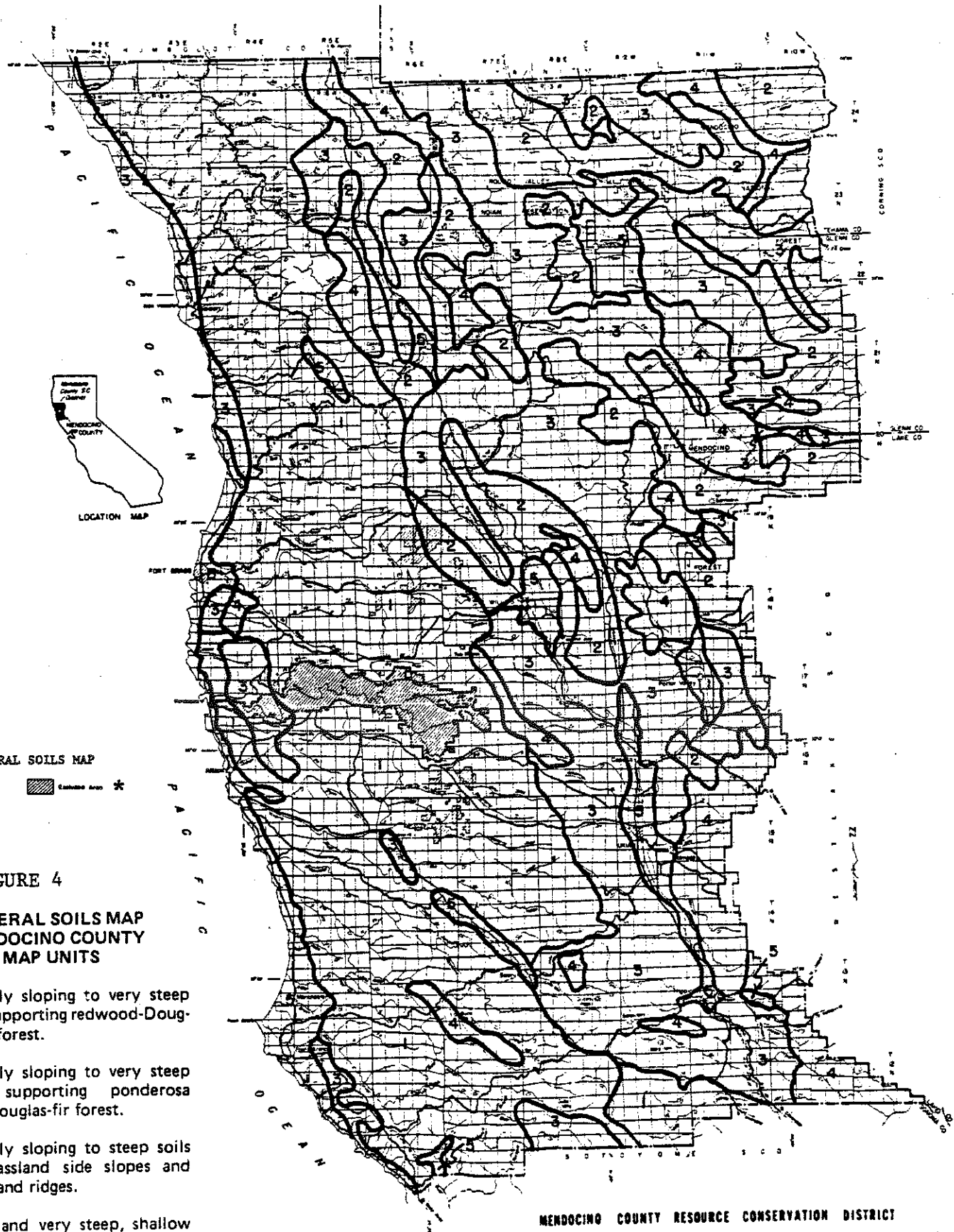
The climate of Mendocino County can be characterized as mild. Extremes of temperature at inland points range from lows of 10° to 20° to highs of 110° or more while coastal areas have range from the 20's to the 80's. Record lows of 7° and 24° above zero have been recorded at Covelo and Fort Bragg respectively. Highs have reached about 114° at Ukiah, Covelo and Potter Valley. The maximum at Fort Bragg has been recorded at 90°.

The county comprises an area of considerable rainfall with annual totals ranging from about 35 inches in the southeast to 80 inches in the redwood Douglas-fir forests of the northwest. Rainfall amounts can be erratic and averages deceiving. For example, annual rainfall recorded at Laytonville has gone as low as 39 inches and as high as 135 inches. Willits has been as low as 19 inches with a high of 98 inches. Fort Bragg on the coast and the Ukiah Valley have similar rainfall averages. Approximately 85-90% of the annual precipitation occurs in winter.

Snowfall is very light at low elevations of the county but builds up in the mountains. Some of the higher elevations report seasonal totals in excess of 20 inches. In these areas snowfall is not uncommon as early as November and as late as April. In some mountain valleys storms may bring 5 to 10 inches of snow but seldom does the snow remain on the ground for more than a few days.

3. Geology and Soils

Geologically, Mendocino County is relatively young and unstable. It has been described as having deeply incised canyons due to recent uplifts. The major groupings of geologic types in the county as they affect the soil-vegetation types are: (a) a coastal terrace area of the western edge of the county; (b) a group of cretaceous sedimentary rocks west of the San Andreas fault in the southwest; (c) a large area of Jurassic sedimentary rocks and interbedded volcanics, the Franciscan formation, forming the main central area; and the (d) an area of increasing grade of metamorphism, resulting in schists and shales near the eastern edge. The Soil Conservation Service U.S.D.A. is currently conducting a comprehensive soil survey for the entire County. A generalized county soils map relating to terrain and vegetation is depicted in Figure 4.



GENERAL SOILS MAP

 Formerly Union Lumber Co. lands *

FIGURE 4

**GENERAL SOILS MAP
MENDOCINO COUNTY
MAP UNITS**

1. Strongly sloping to very steep soils supporting redwood-Douglas-fir forest.
2. Strongly sloping to very steep soils supporting ponderosa pine-Douglas-fir forest.
3. Strongly sloping to steep soils on grassland side slopes and woodland ridges.
4. Steep and very steep, shallow soils with chaparral vegetation.

Nearly level to moderately steep, deep soils.

* Formerly Union Lumber Co. lands excluded from Resource Conservation District

**MENDOCINO COUNTY RESOURCE CONSERVATION DISTRICT
MENDOCINO COUNTY, CALIFORNIA**

SCALE IN MILES

4. Habitat

Mendocino County includes an excellent diversity of habitat types. Almost all of the County is useable habitat for deer. Anderson, et al (1974), using vegetation as a guide, rated 32% of the County as excellent habitat, 52% of intermediate value, 15% of low value and 2% unuseable (Table 4). At present, chaparral/brush and grasslands have remained relatively unchanged, and amount to about 10% and 13% of the County respectively. Approximately 1,000 acres/year have been converted to intensive agricultural uses since the early 1979's and amount to about 1% of the County at this time. Timber harvest of conifers has increased the hardwood type or hardwood/conifer mixtures by approximately 25%. Forests (both conifer and hardwoods) still occupy about 70% of the County at this time. Unuseable habitat (barren, water, urban/residential) has increased to 5% (CDF, 1979).

TABLE 4. DEER NUMBERS BY HABITAT TYPE IN MENDOCINO COUNTY (Longhurst, 1969)

Habitat type	Square miles	Deer per sq. mile	Deer population	
			Minimum	Maximum
Redwood	1,042	30-60	31,260	62,520
Coastal forest	530	60-100	31,800	53,000
Grassland	465	10-30	4,650	13,950
Woodland-grass	374	60-100	22,440	37,400
Pine-fir-chaparral	313	30-60	9,390	18,780
Chaparral	255	30-60	7,650	15,300
Hardwood	208	60-100	12,480	20,800
Woodland-chaparral	155	30-60	4,650	9,300
Agriculture	56	30-60	1,650	3,360
Minor conifers	48	10-30	480	1,440
Coast sagebrush	6	10-30	60	180
Riparian	.6	30-60	18	36
Barren	35	-----	-----	-----
Urban-industrial	15	-----	-----	-----
Lakes, bays, reservoirs	9	-----	-----	-----
Totals			126,528	236,066

5. Land Uses

Mendocino County is traditionally a rural county, characterized by coastal tourism, timber harvest, and agricultural products. The latter categories most seriously affect deer management. Overall land use (both current and potential) is estimated in TABLE 5, landownership is shown in Figure 5.

With the reported and rumored tremendous increase in marijuana farming in the remote portions of the County, no doubt less area will be available for legal hunting. This is almost assured since hunting season coincides with harvest period.

TABLE 5
LAND USE Vs. VEGETATION

LAND USE Vegetation Type	% of Total Acres (Thous- ands)	TIMBER PRODUCTION		HARDWOOD PRODUCTS		LIVESTOCK GRAZING		CROPLAND IRRIGATED		CROPLAND DRY		MANAGED WATERSHED		URBAN RESIDENTIAL		RECREATION		WILDLIFE HABITAT		
		Current	Potential	Current	Potential	Current	Potential	Current	Potential	Current	Potential	Current	Potential	Current	Potential	Current	Potential	Current	Potential	
<u>Forest</u>																				
Douglas-fir	10	228	228	645	—	—	—	—	—	—	—	—	—	—	—	300	300	228	645	
Redwood	13	295	295	300	—	—	—	—	—	—	—	—	—	—	—	10	10	295	300	
Other Conifer	4	89	89	104	—	—	—	—	—	—	—	—	—	—	—	89	104	89	104	
Grazable Hardwood	4	90	—	—	90	81	—	—	—	—	—	—	—	—	—	90	81	90	81	
Non-Grazable Hardwoods	26	581	—	—	581	174	—	—	—	—	—	—	—	—	—	581	174	581	174	
Non-Stocked	1	21	—	—	—	—	21	5	—	—	—	—	—	—	—	21	5	21	5	
Productive Reserve	0.3	6	—	—	—	—	—	—	—	—	—	—	—	—	—	6	6	6	6	
<u>Grassland</u>	14	307	—	—	—	—	307	307	—	—	—	—	—	—	—	307	307	307	307	
<u>Brush</u>	13	295	—	—	—	—	30	30	—	—	—	—	—	—	—	295	295	295	295	
<u>Wetland</u>	—	0.5	—	—	—	—	0.5	0.5	—	—	—	—	—	—	—	0.5	0.5	0.5	0.5	
<u>Unclassified</u>	15	334	—	—	—	—	100	100	21	30	27	30	—	—	—	334	334	250	310	

* Table 1 makes a comparison of vegetation type and land use by acres in Mendocino County. The 'percent of total' column is in current acres of vegetation type only.
Current Acres - Estimates are based on Oswalds report 1/, Soil-Veg Survey 4/, Mendocino County Crop Reports 7/, and Bottomlands Soil Survey 3/. The acres are an adjusted estimate from relevant sections of the base data available.

Potential Acres - Many acres in the county are currently used and /or maintained in a vegetation type that would be better suited or more productive in an alternative type.
The reason's are varied: economic, aesthetic, preservation or lack of information, etc.

In other cases, the current land use is only marginally suited to the land's capability to sustain the use without deterioration. In this case, the management system necessary to maintain the use is usually not economically feasible. The reason's are again varied but the use causes deterioration through erosion and loss of productivity until the land loses the capability it once had.

If all lands in the county were used according to their capability current economic product value, and productivity, the current acreage figures would appear closer to those shown under the potential columns. To obtain this figure is economically impractical and is not a 'goal' of the district.
It does point out that problems with land use in the county should be addressed through research education and information programs to enable land-owners and managers to make use decisions based upon the resource capability as far as the economics of the alternatives allow them.

** No Estimate

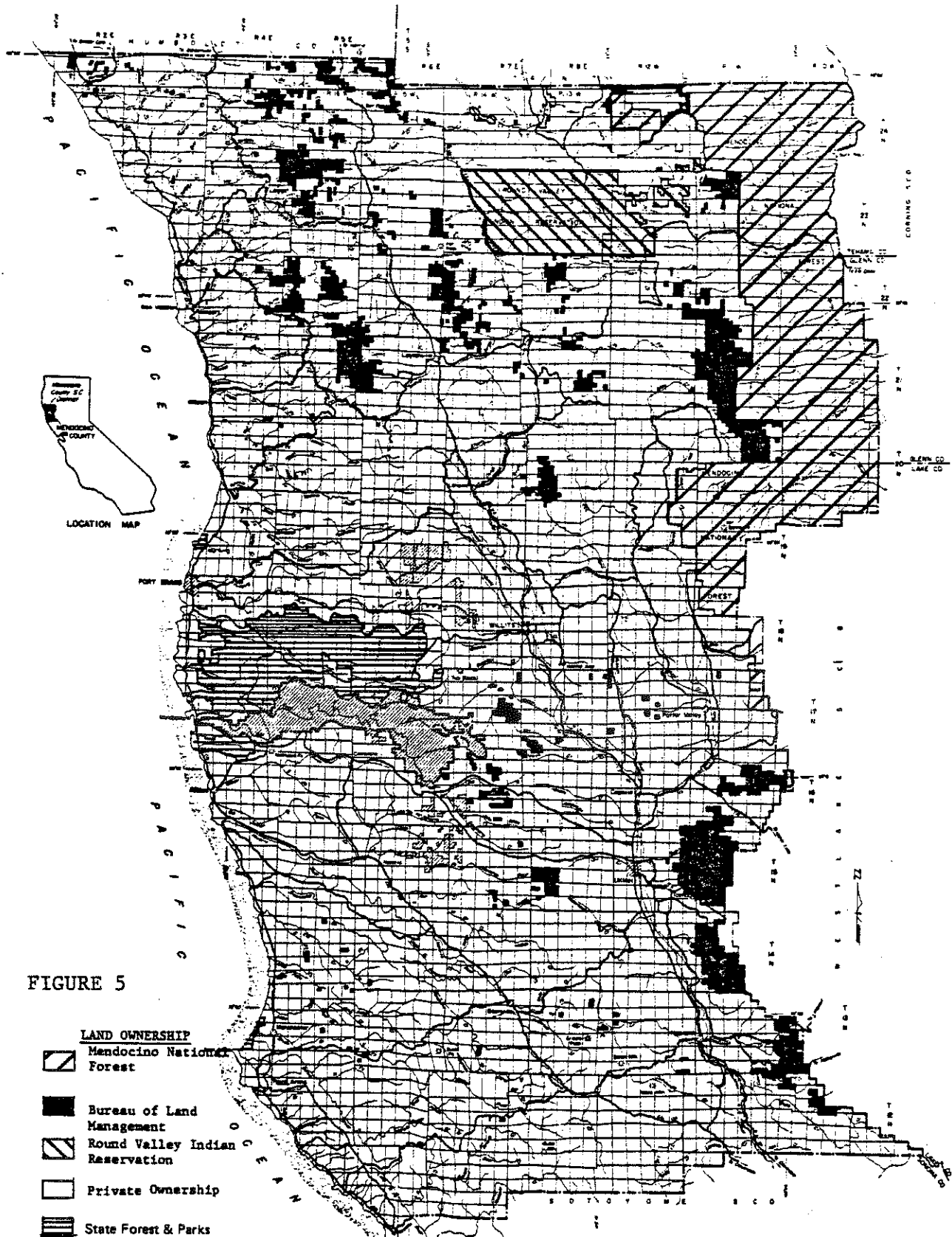








FIGURE 5

- LAND OWNERSHIP**
-  Mendocino National Forest
 -  Bureau of Land Management
 -  Round Valley Indian Reservation
 -  Private Ownership
 -  State Forest & Parks
 -  Excluded Area (from R.C.D.)

MENDOCINO COUNTY RESOURCE CONSERVATION DISTRICT
MENDOCINO COUNTY, CALIFORNIA



a. Urban/Residential

From County records spanning 1941 through 1970, 279 subdivisions averaging 39 lots per development with an average lot size of three acres occurred in Mendocino County (totaling approximately 25,000 acres). These subdivisions were generally adjacent to existing towns. From 1970-1977, 89 subdivisions averaging 22 parcels per development with an average size of 14 acres per parcel occurred (totaling approximately 33,000 acres). This later (and lower density) development of relatively large acreages has mostly occurred in previously rural areas. Projections are for the latter trend to continue.

TABLE 6. MENDOCINO COUNTY POPULATION
(thousands)

	1940	1960	1970	1980	1990
Mendocino	27.9	51.0	51.3	67.2	87.0

Sources: U.S. Dept. of Commerce-1981, Table 2, Table 3-Series II projections; Table 9
California Department of Finance 7/1/81 Estimates
1980 California Statistical Abstract-Table B-4
Report 81 P-1, California Department of Finance

b. Agriculture

Less than one percent of Mendocino County is classified as intensive agriculture (Table 7) but about 1,000 acres per year are converted from rangeland, especially with conversion to grapes in the southeastern part of the county near Ukiah and Anderson Valley between Boonville and Philo (Figure 6). While not large acreage, these valley areas usually contain productive soils and include riparian vegetation along valley streams, important to deer productivity as a source of summer green feed. Deer depredation in agricultural areas is often a problem. Orchards (apples, peach, and pear) totalled above 110,000 acres at the beginning of the century (1880 Assessor records) but are significantly reduced today. Much of the grape conversion of recent times is from old pear orchards. Hay and/or dryland grain have remained fairly stable at about 30,000 acres during this century, varying year-to-year but not over the long-run. For example, hay and field crops totalled 5,550 acres in 1976.

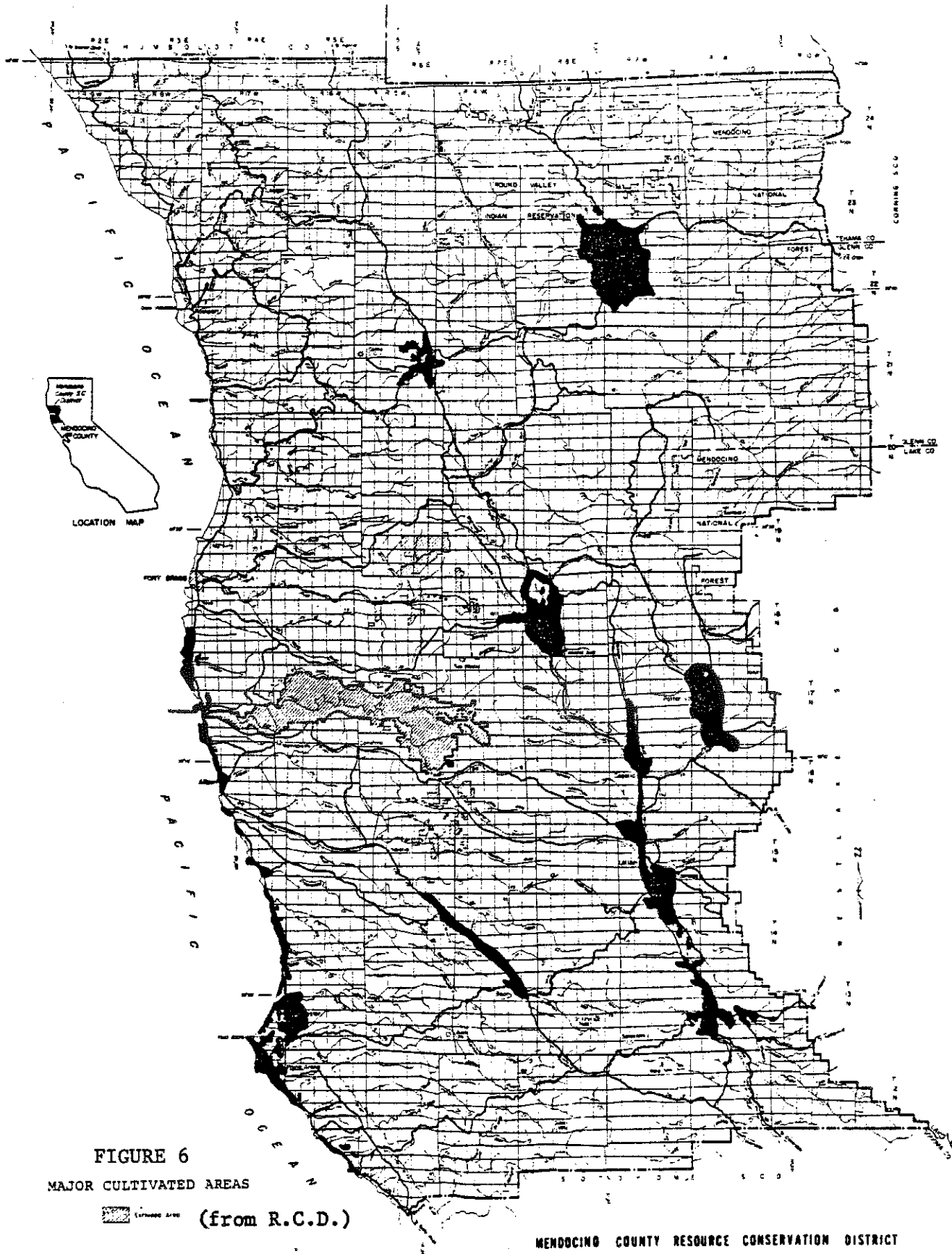


TABLE 7. CROP ACREAGES CHANGE 1972 - 1981 *

	<u>1972</u>	<u>1977</u>	<u>1981</u>	<u>Change</u>
Grapes	6,645	9,702	9,970	+3,325
Pears	4,664	4,211	3,895	- 769
Apples	805	789	821	+ 16
Prunes	558	400	295	- 263
Walnuts	599	400	330	- 269
Irrigated Pasture	5,900	4,400	N/A	-1,500
Miscellaneous fruits & nuts	158	162	69	- 89
Hay crops	17,900	23,300	N/A	+5,400
Other field crops	<u>4,250</u>	<u>4,650</u>	N/A	+ 400
Total	41,479	48,014		

* Crop Reports, County Agricultural Commission

Cattle and sheep grazing has significantly declined over the last hundred years following a peak in the 1870's. Numbers seemingly stabilized during the 1970's but livestock grazing remains one of the significant industries of the County, utilizing more acres than any other single use.

TABLE 8. GRAZING INDUSTRY OF MENDOCINO COUNTY *

Livestock #	<u>1866</u>	<u>1880</u>	<u>1963</u>	<u>1975</u>	<u>1981</u>
Sheep	42,117	277,215	102,600	40,500	40,000
Cattle	43,423	8,445	30,100	32,700	32,000
Hogs	38,999	9,064	3,500	1,400	1,500

* Assessor's Records and Crop Reports.

Federal grazing leases have doubled to 8,000 animal use months since 1971. The animals are grazed through the spring and summer. Numbers and season of use are controlled through permit. Much of the high elevation summer range of the Covelo subunit migratory herd has not healed from the overgrazing by sheep before the National Forest was established in 1906.

c. Timber Industry

As previously stated, over 70% of Mendocino County is covered with forests. Redwood logging began commercially along the coast about 1850. By 1900, about 120 million board feet (MMBM) were logged annually. Production increased to about 200 MMBM/year and held at that level until about 1930. Logging decreased to about 30 MMBM/year during the Depression, returning to 200 MMBM after World War II. The post-war housing boom started heavy logging in the Douglas-fir forests with production peaking at 1,000 MMBM annually by the middle 1950's. Production decreased during the 1960's to an average of 500 MMBM/year, and slightly less in the

1970's. The County seems to have timber growth potential to continue at a sustained basis of about 400 MMBM/year depending upon market conditions (Mendocino County RCD, 1979).

The RCD study also found that almost all old-growth redwood and much of the old-growth Douglas-fir on private ownerships has been logged. At least 75% of the conifer acreage is stocked with stands under 100 years old. There has been a significant increase in hardwood type or hardwood-conifer mixtures due to past logging practices. Recent intensive forestry practices such as aerial spray release, site preparation and planting have reduced but not eliminated this conversion to hardwoods. Spraying is controversial, but in areas of rapid sprout growth, usually extends the time period in which vegetation is useful for deer. Harvest of hardwoods for chips, firewood, and other manufacturing is increasing.

Logging of public ownerships (National Forest, BLM) began about 1955 and has mostly been on a selective basis. Public timber harvests by policy are tending toward more clearcuts and evenage management (Silviculturalist, M.N.F.). Private harvest moved to a large percentage of selection or other partial cut systems during the 1950-1970 period as a response to environmental pressure and California Forest Practice Act.

TABLE 9. AREA OF COMMERCIAL FOREST LAND, BY FOREST TYPE AND OWNERSHIP CLASS. MENDOCINO COUNTY, CALIFORNIA
JANUARY 1, 1968

(In thousand acres)

Forest type	All Ownerships	National Forest	Other Public	Forest Industry	Farmer and Miscellaneous Private
Douglas-fir	228	45	8	93	82
Redwood	295	—	28	160	107
True firs	33	28	—	—	5
Ponderosa pine	27	18	—	4	5
Bishop pine	19	—	—	—	19
Lodgepole pine	5	—	—	—	5
Incense-cedar	5	—	—	5	4
Red alder	9	—	—	—	41
California black oak	58	10	7	—	36
Oregon white oak	50	1	—	13	65
Pacific madrone	90	—	6	19	65
Tanoak	374	—	32	156	186
Other hardwoods	90	3	17	19	51
Nonstocked	21	2	—	—	19
All types	1,304	107	90	469	630

Source: Oswald - 1972 - USDA Forest Service Resource Bulletin PNW-40

TABLE 9A. PUBLIC LOGGING MENDOCINO COUNTY *

Year	Bureau Land Mgmt. (MMBM)	Mendocino NF (MMBM)
1956	5.8	2.2
1957	0.5	5.7
1958	1.3	5.2
1959	8.9	N/A
1960	2.9	N/A
1961	1.5	12.9
1962	7.4	16.8
1963	---	17.4
1964	4.1	22.7
1965	0.6	21.7
1966	0.5	21.2
1967	0.4	21.1
1968	0.5	30.3
1969	---	9.3
1970	0.8	14.4
1971	8.0	24.0
1972	5.6	25.0
1973	0.8	13.0
1974	1.1	6.4
1975	11.1	23.1
1976	2.1	49.5
1977	1.6	27.3
1978	1.0	9.9
1979	---	21.4
1980	0.9	11.0
1981		
1982		
1983		
1984		
1985		
1986		
1987		
1988		
1989		

* MNF and BLM records.

d. Recreation

Mendocino County offers a significant recreation experience associated with the coast and major rivers, such as the Russian and Eel. This water-oriented tourism probably does not have much effect on the deer population. The county's other significant recreational experience is hunting, primarily for large game (deer, bear and wild hogs).

Anderson et al (1974) reported several formal and informal surveys which estimated the average number of deer hunters at from 16,000 to 26,000 in the early 1960's. Mendocino County is still one of the most successful deer hunting counties in the State, even though hunting use has declined significantly as the deer population decreased.

Most of the livestock ranches are closed to public hunting, with about half operating as private hunting clubs. Some industrial timber holdings open some of their ownerships to public hunting, but most are used by company employees or leased for hunting clubs. Lease fees range from \$0.50 to \$2.00 per acre. The Mendocino National Forest is open to public hunting, and almost entirely accessible. About 20% of the Bureau of Land Management ownerships are accessible.

e. Fire

Both wildfire and prescribed burning have had significant effects on past and present vegetation of Mendocino County. Indians burned regularly to keep the mountains open for hunting. Grazing interests traditionally burned the brushlands and grasslands to rejuvenate existing vegetation for livestock forage, probably as often as they could be reburned. Slash fires, natural and accidental, followed much of the earlier logging, favoring hardwoods and brush (sprouting) species over conifers. Most of the County acreage has been affected by fire.

Fire suppression policies mostly stopped indiscriminate burning about 1910. Increased suppression effectiveness has reduced the average annual acreage burned by wildfire to about one-fourth its previous levels since the late 1960's (Table 10). Controlled burning of slash and rangelands have reduced by roughly the same amount since the late 1960's due to increased land values, factors of liability, etc. This latter trend has recently reversed (1980-1981) with a change in Federal policies favoring prescribed burning, and passage of SB 1704 in 1981 which allows the State of California to cost-share and accept responsibility for prescribed burning of private lands.

TABLE 10. ACREAGE BURNED IN MENDOCINO COUNTY

Year	Wildfire	Control Burn	Total
1957	2,213	7,427	9,640
1958	5,145	18,253	23,298
1959	18,444	21,459	39,902
1960	2,936	20,337	22,273
1961	1,916	21,755	23,682
1962	2,145	10,945	13,090
1963	447	9,277	9,724
1964	2,960	19,233	22,193
1965	3,963	6,958	10,921
1966	6,161	16,460	22,621
1967	1,584	10,352	11,945
1968	617	5,575	6,192
1969	613	1,447	2,060
1970	1,565	1,018	2,583
1971	2,577	3,609	6,286
1972	7,528	2,460	9,988
1973	10,892	1,883	12,775
1974	2,819	1,620	4,439
1975	1,313	4,383	5,696
1976	521	9,689	10,210
1977	519	520	1,039
1978	482	5,376	6,258
1979	1,083	2,668	3,951
1980	1,413	6,234	7,647
1981	3,712	4,068	7,780
1982			
1983			
1984			
1985			
1986			
1987			
1988			
1989			

6. Tule Elk Restablishment

Tule elk have been recently introduced into Mendocino and Lake Counties. Elk were transplanted in the Laytonville area in 1979, and in the Lake Pillsbury area in 1978 and 1980. Tule elk can now be found throughout much of eastern Mendocino County. Tule elk are protected by State law.

Competition for forage may occur between deer and elk. Although no conflicts have occurred to date, this potential is an important consideration in the long-term management of Mendocino County deer herds. Monitoring of the elk is currently being conducted by the Department of Fish and Game, and the Mendocino National Forest.

III. MAJOR FACTORS REGULATING THE DEER POPULATION

Many factors influence the Mendocino County deer population. Some are seasonal, i.e., timing of fall rains, acorn production, etc. Other factors operate over a period of years, such as habitat changes associated with timber reestablishment and growth after logging harvest. Changes in land use, such as rural subdivision and intensive agriculture, represent a permanent habitat loss.

A. Habitat Condition (Quality)

A limited amount of nutritional forage in all vegetation types on all seasonal ranges reduces the productivity of deer in Mendocino County. The conditions most significantly controlling habitat quality are weather, age of vegetation, stand composition, and land use (Taber and Dasmann, 1958; Longhurst, et al, 1976).

1. Weather

Weather patterns of precipitation and solar illumination determine annual growing season, relative growth rates and long-term growing cycles. The important factors relating to the Mendocino County deer herd appear to be acorn production, timing of first fall rains which trigger growth of green feed including grass and forbs, and soil temperatures controlling timing of green-up particularly at higher elevations. Acorn production and spring soil temperatures are at least partially manageable factors.

2. Vegetation Composition and Condition

Three factors seem to be most important in the general county-wide decline of habitat quality. First, curtailment of prescribed burning of brushfields, rangelands, and logging slash on harvested areas from the late 1960's has led to thick stands of old age/decadent vegetation with little of the diversity and palatability required by early successional wildlife species such as deer. Also, the large acreages of timberland harvested during the period 1930 to 1960's are now in intermediate (unproductive for deer) forest stages. Furthermore, a general change in silvicultural system from basically clear-cutting to selective logging occurred from about 1950 to 1970. Habitat diversity for deer is lessened through use of selective logging systems. Finally, overgrazing of oak-grass range with domestic livestock and/or deer has reduced oak and brush regeneration, often causing a serious lack of adequate escape cover, particularly for fawns.

B. Habitat Modification (Quantity)

Land uses have direct and indirect effects on deer habitat in both amount and quality.

1. Logging

Hardwoods are being harvested at an increasing rate from private lands and beginning on public lands, used for both logs and chip products. Firewood is increasing in value and may someday be used to fire generating plants. The Masonite Corporation operates a pressboard plant at Ukiah. In times of slack lumber demand, mill residues become scarce and may be replaced by logging and chipping hardwoods. Fuelwood is becoming increasingly valuable as energy costs rise. The effects of hardwood removal on deer are mixed. Naturally, the mast (acorn) crop is reduced. Forage and cover (through sprouts) are often increased in the short-run. Conversion of conifer (with hardwood understory) to hardwood (or hardwood/conifer) mixtures is usually beneficial to deer, unless tanoak is the predominant species.

2. Rural Subdivision

Because more area will be impacted, the larger average lot size of increasingly rural subdivisions will continue to disproportionately reduce the overall quality of deer habitat. Reduction of quality varies, depending upon such factors as vegetative type and terrain specific to the subdivision location. A single dwelling on a less than 40 acre parcel size may reduce the existing deer population of that area by over 50% (CDF&G).

3. Livestock Grazing

Livestock, rodents, and/or deer have essentially eliminated reproduction within the oak types (except tanoak and scruboak), resulting in old-age stands with little cover or diversity.

4. Controlled Burning Programs

Controlled burning of both logging slash and rangelands were a historical factor influencing the high deer population of the 1950's and early 1960's. As land became more valuable and litigation more frequent, liability for burning increased to the point that almost all landowners stopped the practice. Federal and State fire protection agencies operated under a policy of complete suppression of all fires from the early 1920's, reaching a high level of effectiveness during the 1960's and 1970's. Vegetation, especially the brush species, naturally grew older and often reached decadence. Chaparral species lose most of their nutritive value for deer at 3-5 years.

Federal policy changed in the mid 1970's and prescribed burning became an increasingly used management tool for multi-benefits including habitat improvement for deer. At this time, an average of 1,500 acres of chaparral are sprout-burned annually on a small patch, rotational basis on public lands. SB 1704 passed by the California legislature in

1981 allows the State of California to cost-share prescribed burning of private lands. It is anticipated that 10 to 15,000 acres of chaparral and/or oak-grass types will be prescribed burned each year, beginning in 1982. These important habitat improvement projects will only occur if the various cost-sharing programs, such as SB 1704 and Federal Sikes Act, (cooperative CDF&G, USFS, BLM wildlife habitat projects) continue to be funded.

5. Roading

Roads may have negative effects in two ways: direct habitat loss and increased disturbance through increased access. With an average road width of 35 ft, roughly 4.2 acres per mile of road are lost from production or utilization. This loss becomes significant, especially where roads are located through glades and riparian zones.

Disturbance as a result of increased access may result in lower reproductive success and reduce forage utilization around roads. On the Mendocino National Forest deer use appears to be greatly reduced where road densities are highest (Tim Bertram, per. comm.).

Lack of vehicular access also creates an opportunity for hunters who wish to pack into an area by foot or horseback.

C. Direct Factors

1. Legal Harvest

The present harvest strategy of two forked horn or better bucks, results in a harvest of 5 to 7% of the herd at most. (Longhurst, et al, 1952).

2. Highway Kill

As shown in Table 3B, highway kill has been a serious factor affecting the Mendocino County deer herd. Naturally, the reported kill reflects only a part of the total highway kill, since many deer escape to die off the road. It is not likely that the peak levels will be reached again because of the lowered overall population due to habitat changes along Highway 101.

3. Predation

The major natural predators of deer are coyote, mountain lion, and bobcat. Deer are a major prey species of the mountain lion, but this effect on the Herd is unknown. Bobcat seldom prey on live deer because of their size. A major public concern is the impact of coyote predation on deer, however it is poorly documented. Trapping records (Table 11) compiled by the CDF&G show at about the same level from 1965. Assuming a constant level of trapping effort, the records indicate a stable coyote population.

Based on observations and data, dogs seem to have a greater impact on the deer population than any natural predator. Most rural landowners have one or more large dogs that are generally uncontrolled. The size of this problem is partly indicated by the rise in requests for control of "other" animals (Table 11). Mendocino County has a leash law, however, it is hard to enforce, and relatively ineffective to date.

4. Disease

A number of parasites and diseases are known to be present in the herd. They seem to cause significant losses only during adverse climatic conditions (drought, extended periods of late summer heat, or cold wet winters) or while habitat conditions are poor.

5. Poaching-Illegal Kills

Mendocino County is patrolled by eight wardens and two lieutenants. It is a difficult county to patrol, due to rough terrain, limited access and thick stands of vegetation which limit visibility. Many of the hunting clubs provide additional enforcement (of game laws) through rules applicable to that club. The county is experiencing a "back to nature" increase in population, those with an alternate life style, in contrast with the historical rural landowner and typical hunt club member. It is believed that poaching of deer has increased with the population change. Also, it seems to normally increase along with the level of unemployment.

By its nature, the impact of the illegal harvest of deer is difficult to evaluate and quantify. Estimates are educated guesses of Wildlife Protection Officers and generally approximate the number of deer legally killed. The illegal kill is thought to be greatest in hunting season but poaching occurs year-long and is about equally divided among residents/nonresidents. Sex and age distribution of the illegal kill is unknown but thought to be heavy to bucks in season and representative of the population during the remainder of the year.

The realignment of hunting zones developed a good north and eastern hunting boundary, and did not seem to create any additional problems. The illegal kill was reduced because of definite boundaries recognizable to the hunting public.

TABLE 11. PREDATORY ANIMAL CONTROL, MENDOCINO COUNTY

Year	Coyotes	Bobcats	Bear	Fox	Lion	Other*
1960	235	154	21			
1961	221	223				75
1962	244	224	26	2	3	
1963	235	174	22			1
1964	228	192	22	7		
1965	290	203	18	6		
1966	366	195	23		1	2
1967	296	157	14		1	2
1968	380	185	5			2
1969	327	170	11		1	9
1970	342	132	5		1	
1971	357	172	9		3	
1972	313	130				
1973	291	98				
1974	311	66				51
1975	342	50	3			215
1976**	365	6	3			309
1977	278	2	2	3		82
1978	289	1	1	11		47
1979***	362	0	0	5		207
1980	397	52		61		281
1981	456	42		58	3	202
1982						
1983						
1984						
1985						
1986						
1987						
1988						
1989						

County of Mendocino, Department of Agriculture,
Division of Animal Control

* Dogs, raccoons, pigs, skunks, etc.

** Through October

*** Through Novemter

5. Continue the evaluation program of highway mortality for identification of problem areas.

6. Continue the evaluation of vegetation and deer responses to manipulation of oak stands. Thinning, clearing, and burning of small patches are primary treatments to be tested. Plant seedlings if a source of oak stock develops.

7. Evaluate and report responses of deer to habitat accomplishments of the U.S.F.S. Westside Project (a large watershed rehabilitation program on Etsel Ridge).

8. Develop a new base map reflecting subunits and habitat types to better determine where legal harvest is occurring.

9. Increase interagency coordination on deer and habitat evaluation of programs.

10. Annually monitor the levels of browsing of plantations on major timber company and public timberlands to provide benchmark data for evaluation of effects of expected increase in herd population.

B. Mortality Control

Objective: Reduce all causes of mortality, other than legal hunting harvest, in an effort to increase deer numbers to achieve herd goals. Emphasis will be placed on eliminating mortality which limits deer below the capacity of their habitat. Nutritional stress, a major mortality factor which predisposes deer to other causes, is covered in the habitat element of this Plan.

Recommended Prescriptions:

1. Cooperate with Caltrans and County agencies to minimize highway deer kill, by adding deer crossing signs, where appropriate on Highways 20 and 101.

2. Seek a change in current laws and regulations which would encourage private landowners to utilize public sport hunting to reduce deer depredation on agricultural developments, i.e., ability of landowners to approve special hunt participants, and to control harvest levels and composition.

3. Coordinate recreational use on public lands to minimize human disturbance of deer in critical habitats, i.e., fawning areas.

4. Coordinate with County, Federal Agencies, and general publics, to increase control of dogs that may be harassing deer.

5. Seek private landowner participation in Coordinated Resource Planning and SB 1704 to improve important wildlife habitats (rather than passively waiting for landowner application).

C. Habitat

Objective: To create the conditions described by the following Habitat Models in four major habitat types by 1990. These Models reflect what is presently thought to be optimum habitat.

CHAPARRAL

Cover - - - - -

1. Hiding (escape) cover . . . 4 + year brush distributed in 20 to 40 acres patches. (25%)
2. Fawning cover . . . 10 acre cells associated with nearby (1/4 mile) water and riparian vegetation. (10%)
3. Thermal cover . . . overstory vegetation providing summer shade. (5%)
4. Optional . . . to be devoted to major limiting factor of above cover types. (10%)

Forage - - - - -

1. New brush . . . 1 to 3 year brush distributed in 10 to 20 acre patches. (15%)
2. Annual grass and forms (15%)
3. Perennial grass. (10%)
4. All-aged oaks and/or riparian. (10%)

Water - - - - - available within 0.5 mile

Solitude - for the fawning period (essentially April 15 through July 15)

REDWOOD-DOUGLAS-FIR FOREST . . . Noyo and Navarro Subunits

1. Patch-cuts averaging 20 acres in size . . 15% to 20% of area
(per 10 years)
2. Old-growth (120 years +). 5% of area (at all times including public land)

3. 3-5 large cull logs/acre. all acres
4. Treatment of 50% of slash on all logged areas
5. Riparian management zones averaging 100' adjacent to all live streams

MIXED CONIFER FOREST (Covelo Subunit)

1. Meadow glade 10%
2. Browse (available and nutritious). 15%
3. Immature timber (seedling, sapling). 15%
4. Open (less than 50% crown cover) timber. 20%
5. Mature (50 to 100% crown closure) timber (including pole-sized stands) 40%
6. Oaks (a minimum of 200 sq. ft. per 40 acres, even distribution of age classes)
7. Water . . . available within 0.5 mile
8. Solitude from physical harrassment for fawning period (June 1 to July 15) in reproduction centers.

OAK-GRASSLAND . . . County-wide

1. Fawning cover . . . 10 acre cells associated with nearby water (1.0 mile) and dense vegetation for escape cover . . 10%
2. Escape/thermal cover . . . heavy, thick oak and/or brush stands, distributed ideally within 300 yards of forage areas in at least 10 acre patches. 10%
3. Annual grass and forbs . . . open to sun, preferrably on south slopes, ideally in proximity to escape cover 20%
4. Blue oaks . . . ideally with a full range of age classes; at least 25% of mast producing age 60%
 - a. Oak type should include preferred brush species as understory 10%
 - b. Oak type should include riparian, small meadows. . . . 10%
 - c. Oak type should include larger down trees, logs or rock outcrops, 2 to 3 per acre.
 - d. An understory of tall herbaceous vegetation (> 2 feet, such as wild oats) should occur under 50% of the blue oak stands.

Recommended Prescriptions:

1. Prescribe burn or otherwise manipulate 500 acres of chaparral vegetation per year within the Mendocino National Forest
2. Prescribe burn (to rejuvenate) 10% of the perennial grass type (fuelbreaks, type conversions) per year within the Mendocino National Forest.
3. Prescribe burn or otherwise manipulate 500 acres of chaparral vegetation per year on BLM lands on the following areas: Long Doe, Horse Pasture, Bentley, Thatcher and Elkhorn Ridges, Brush Mountain, and Cahto Peak.
4. Prescribe burn 8,000 to 10,000 acres annually of chaparral vegetation on private lands throughout the county under authority of SB 1704.
5. Implement the multi-agency, multi-objective Thatcher Coordinated Resource Plan in Covelo subunit. Continue to implement the Westside Watershed Improvement Project on the summer range between Hull and Bald Mountains.
6. Continue BLM cooperation with private landowners desiring to burn in areas of mixed landownership.
7. Continue existing protective fencing by CCC crews around glades in summer range at 3-5 projects annually (CDF&G, USFS project).
8. Protect all publicly-owned riparian vegetation (alders, willows, sedges, etc.) from modification, except for essential water development projects. Increase riparian vegetation, as much as possible, in Covelo subunit summer/intermediate range. Support County ordinance for riparian protection on private lands.
9. Protect all meadows and glades. Allow no decrease in this type in summer range conifer belt.
10. Do not convert staple or preferred browse species to another vegetative type in summer/intermediate range conifer belt unless suitable browse has been developed in adjacent areas.
11. Rejuvenate (restore) all staple and preferred browse species within (public) timber sale areas to satisfactory deer forage condition.
12. Underburn portions of conifer stands with even-age, scattered understory of preferred brush species. Program about 25 percent of this type work per timber sale area per entry where compatible with timber and other land management objectives.
13. Protect all black and live oaks within 300' of main and main lateral ridges (migration routes) on public lands in the Covelo subunit.

14. Maintain existing vegetative diversity within 300' radius of all meadows, glades, springs, and seeps.

15. Continue to seek funding for SB 1704, Sikes Act, and Agency habitat improvement projects.

D. Utilization

Objective: Provide for a minimum annual reported buck harvest of 3,500 animals, and a post-hunting season ratio of 30-35 bucks per 100 does.

Recommended Prescriptions:

1. Develop a program to increase appropriate hunting access to public land, some of which is presently "land-locked."

2. Reduce the road/trail density and period of use in areas of summer range on public lands where conflicts occur with maintenance of fawning habitat quality.

3. Develop an annual program to construct browse ways and trails to increase hunter access to burned or otherwise enhanced areas where ORV use can be controlled. Use hunter access and increased deer availability as criteria for prescribed burning.

4. Use a summary of this Plan to provide information to hunters at BLM and Forest Service visitor facilities.

E. Law Enforcement

Objective: To minimize the illegal take of deer in Mendocino County.

Recommended prescriptions:

1. Coordinate the enforcement of deer regulations with other appropriate agencies (USFS, BLM, Sheriff) and formally establish operating procedures to increase enforcement capabilities.

2. Formally coordinate efforts to enforce deer regulations between Department of Fish and Game (Regions 2 and 3), particularly in the area from Seven Troughs/Green Springs on the Mendocino National Forest.

3. Encourage public reporting of observed hunting violations. Continue to publicize Cal TIP secret witness program.

4. Increase the capability of Wardens through additional hiring, seasonal reassignment, 4-wheel drive vehicles and other needed equipment.

F. Communication of Information

Objective: Provide information on deer herd conditions and management to all interested publics and develop a system for incorporating public input into management programs.

Recommended Prescriptions

1. Make copies of a summary of this Plan available to all interested publics.
2. Attend meetings of local clubs, civic organizations, and the Fish & Game Advisory Committee to keep them informed of herd management programs.
3. Make new and/or updated herd information available to County Planning Department for use in land management planning decisions.
4. Develop public information handouts on public lands and opportunities for both hunting and nonhunting uses of deer in Mendocino County.
5. Have annual coordination meetings with CDF to transmit deer habitat priorities for inclusion in their Fuel Management (SB 1704) program.
6. Operate hunter check station at Covelo to increase the reporting of the harvest.
7. Prepare and submit annual report on deer harvest and herd condition to County Board of Supervisors.
8. Develop a video/slide tape highlighting deer management as sequel to presently developed USFS Westside slide-tape.

G. Review and Update

Objective: Annually review and update the Herd Plan as appropriate information becomes available.

Recommended Prescriptions

1. Conduct an annual interagency meeting to discuss the Herd Plan and achievements involving the Department, USFS, BLM, CDF, interested sportsmans clubs, and landowners.
2. Formally update the data base for the Herd Plan and convey additions to all Plan holders.

VII. MANAGEMENT ALTERNATIVES

Management of deer is concerned essentially with the output and proper utilization of a natural resource (species of wildlife) for use and enjoyment by outdoor recreationists, both hunters and nonconsumptive users, while maintaining a comparative balance between deer numbers and food supply. As such, management alternatives must first define various population levels that can be reached and maintained through time, requiring different levels of management intensity for each. Such population goals express alternative levels of resource output, each with a unique level of costs and trade-offs associated with its implementation. The following alternatives were considered, but not selected as management direction for the Mendocino deer herd:

A. Population Alternatives

Management Alternative 1 - Maintain the current population level through minor habitat enhancement programs.

Predicted Effects

1. A continued harvest of approximately 2,200 bucks is expected, approximately 100% less than the harvest levels associated with the mid to late 1960's.
2. The present level of deer conflict with other land uses, such as agriculture, subdivision, intensive range and timber management, will continue. The present level is low, in comparison with that of the mid to late 1960's.
3. A continued gradual decrease in hunter recreational use of the deer resource.
4. Failure to achieve the State-wide goals of the "Plan for California Deer," AB-1521, "Investing for Prosperity," and failure to respond to a significant public concern for the enhancement of the herd.
5. Deer numbers will probably increase as a result of present CDF projects associated with SB 1704, Bureau Land Management and U. S. Forest Service prescribed burning programs for multiple resource benefits. The increase, however, will be unmanaged, and less than its potential under coordinated resource management programs.

Management Alternative 2 - Restore the population to historic levels associated with the early mid-1960's.

1. Annual harvest of up to 4,800 bucks could result.
2. High deer densities would conflict, at least locally, with other resource programs. Serious conflicts may be expected with agriculture, timber and oak regeneration, and maintenance of a balance between all seasonal habitats.

3. Hunting and nonconsumptive use could double, bringing pressure to recreational facilities and road systems, especially on public lands.

4. Direct cost to the CDF&G would be substantial, including additional manpower and funding to support habitat improvement and coordination of other resources to minimize conflicts/competition. Unless more liberal deer regulations including the harvest of a substantial number of antlerless could be instituted, most of the additional expenditures would be wasted.

B. Utilization Alternatives

If deer were intensively managed as a resource output, the following harvest levels could be taken from the herd population. Normally, it is believed that 25% of a deer population can be utilized without harm to the overall number.

Strategy 1 . . . Bucks only, 2 points or better, harvesting approximately 3.5% of the population.

<u>Total Population</u>	<u>Projected Harvest</u>
80,000	2,800
120,000	3,200
160,000	5,600
200,000	7,000

Strategy 2 . . . Bucks 2 points or better plus enough antlerless deer to harvest 10% of the population annually.

<u>Total Population</u>	<u>Projected Harvest</u>
80,000	8,000
120,000	12,000
160,000	16,000
200,000	20,000

Strategy 3 . . . Harvest 15% of the herd annually.

<u>Total Population</u>	<u>Projected Harvest</u>
80,000	12,000
120,000	18,000
160,000	24,000
200,000	30,000

C. Selected Management Alternative

Legal harvest of antlerless deer is, as yet, socially unacceptable in Mendocino County and California. Therefore, population alternatives 1 and 2 (reached through habitat improvement and improved protection), set up technical, social, and economic boundaries of the

management situation, and thereby, (in planning theory) develop a suitable range of other population alternatives to evaluate (specifically, populations that will support a harvest of more than 2,200, but less than 4,800 bucks). The following conclusions can be drawn from existing data which tend to identify specific population levels within this range (2,200-4,800) as viable management goals.

1. The effects of SB 1704 on private land and the relatively new multiple resource management programs on public land are likely to result in up to a 50% increase (Alder Springs Herd, 1979) in the deer population by 1992 (harvest of 3,000 bucks) without significant management effort or expense, if climatic conditions are favorable.

2. "A Plan for California Deer" recommends mid-1960's levels as an appropriate management goal (harvest of 4,800 bucks in Mendocino County) for deer herds State-wide.

3. Historic harvest levels (4,800 bucks) cannot be recreated within the Mendocino herd due to long-term loss of deer habitat to unproductive vegetation stages of Forest habitat (especially in Noyo Subunit). There is not enough readily manipulatable brush habitat in other subunits to affect this loss of habitat quality in Noyo and Navarro. It could be accomplished only at great expense in direct habitat improvement and significant loss (or compromise) of other resource outputs.

Selected Management Population

Average annual harvest of 3,500 bucks through coordination of other resource management programs at minimum expense, with harvest about equally divided between the subherds.

This is a summary of the preferred alternative as outlined in our programs.

References

- Anderson, F.M., A.N. Halter, G.E. Connolly, and W.M. Longhurst
1974 A computer simulation study of deer in Mendocino County, California.
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MENDOCINO DEER HERD UPDATE

Appendix 1. Methods Used to Estimate Population Size for the Mendocino Deer Herd

TABLE 1.

	<u>BUCKS</u>	<u>DEER KILL ANTLERLESS</u>	<u>DEPREDAATION</u>	<u>TOTAL</u>
1986 - Early - Late	2229			
1987 - Early - Late				

TABLE 2.

<u>BUCK KILL</u>	<u>POPULATION ESTIMATES</u>	<u>POPULATION ESTIMATE</u>
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TABLE 3.

	<u>FALL BUCKS PER 100 DD</u>	<u>HERD COMPOSITION COUNT DATA</u>			<u>SAMPLE SIZE</u>
		<u>FALL FAWNS PER 100 DD</u>	<u>SAMPLE PER 100 DD</u>	<u>SPRING FAWNS PER 100 DD</u>	
1980	26	91		49	
1981	26	61		54	
1982	30	59		43	
1983	37	50		41	
1984	35	71		45	
1985	38	58		57	
1986	25	73		52	
1987	38	72		49	
1988					
1989					

Phased in

1989 DEER HERD MANAGEMENT PLAN UPDATE

Mendocino Deer Herd

1. Harvest (Mendocino County):

<u>Year</u>	<u>Buck Harvest</u>
1986	2235
1987	1759
1988	1809

TABLE 2. MENDOCINO COUNTY HERD COMPOSITION DATA (1958-1979)

YEAR	ESTIMATED POPULATION	HERD COUNT		SPRING fawn/100 deer
		FALL fawn/100 deer	FALL deer/bucks	
1958	168,930	78	29	N/A
1959	164,480	65	30	40
1960	199,170	76	31	51
1961	206,330	52	34	54
1962	180,090	69	34	46
1963	196,520	69	22	59
1964	210,650	57	33	40
1965	219,110	48	19	44
1966	199,220	51	20	23
1967	149,180	62	20	32
1968	189,990	61	25	46
1969	201,290	77	24	52
1970	187,110	52	20	62
1971	151,610	36	20	35
1972	141,300	25	17	22
1973	134,340	35	13	15
1974	94,590	49	21	26
1975	105,440	53	17	52
1976	130,640	58	16	56
1977	129,240	60	27	59
1978	132,530	61	31	50
1979	102,960	61	21	56

TABLE 2A - MENDOCINO COUNTY HERD COMPOSITION DATA BY HUNTING ZONE (1980-81)

Year	Estimated Population	Early Season		Spring fawn/100 deer	Late Season		Spring fawn/100 d
		Fall fawn/100 deer	deer/buck		Fall fawn/100 deer	deer/buck	
1980	83,750	73	26	49	91	39	49
1981	99,000	64	26	61	61	20	54
1982		53	30	59	40	18	43
1983		82	37	50	54	26	41
1984		62	35	71	57	33	47
1985		69	38	58	51	32	57
1986		64	25	73	61	27	52
1987		59	35	72	50	23	50
1988		77	32	52	51	32	51
1989		68	35	74	66	44	44
1990				78			74

3A. MENDOCINO COUNTY REPORTED BUCK KILL

Year	COASTAL SEASON				INLAND SEASON				Total Kill
	Age of Kill (%)				Age of Kill (%)				
	1 Yr.	2	3 Yr.	4+	1 Yr.	2	3 Yr.	4+	
1979	2	33	30	35					
1980	0	22	30	48	0	36	28	36	1,881
1981	0	24	14	62	4	50	14	32	2,197
1982	1	41	21	37	2	41	33	24	
1983	2	22	25	51	2	27	33	38	
1984	0	21	27	52	10	38	19	33	
1985	1	22	16	61	0	18	45	37	
1986	3	31	31	35	4	28	32	36	
1987	0	21	31	48	0	25	30	45	
1988	0	46	22	32	1	41	30	28	
1989	1	34	37	22	1	31	33	35	

Appendix 7. Age Class Structure by Percent of Antlerless Deer
Taken from the Fort Hunter Liggett Subunit 1961-1986

<u>YEAR</u>	<u>FAWN</u>	<u>%1-1/2</u>	<u>%2-1/2</u>	<u>%3-1/2</u>	<u>%4 PLUS</u>	<u>SAMPLE SIZE</u>
1986	14%	16%	22%	22%	26%	117

Appendix 8. Deer Carcass Transect Survey Data from the Santa Lucia
Deer Herd 1964-1986

<u>YEAR</u>	<u>PINES CREEK</u>	<u>CHINO GULCH</u>	<u>STORES VALLEY</u>	<u>AL PIOJO</u>	<u>FORT ORD</u>	<u>TOTAL</u>
1986	0	-	-	-	0	0

Appendix 9. Rainfall Date for 1963-1986

<u>YEAR</u>	<u>BIG SUR</u>	<u>KING CITY</u>
1985-86	53	17

MENDOCINO DEER HERD UPDATE

Appendix 1. Methods Used to Estimate Population Size for the Mendocino Deer Herd

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1986 Early late	2229			
1987 Early late				

TABLE 2.

POPULATION ESTIMATES

<u>BUCK KILL</u>	<u>POPULATION ESTIMATE</u>
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*Phoned in
1/27
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References

- Anderson, F.M., A.N. Halter, G.E. Connolly, and W.M. Longhurst
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