THE SAN DIEGO DEER HERD

MANAGEMENT PLAN

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by

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I. INTRODUCTION

In response to a general concern over the decline of deer numbers throughout most of California during the late 1960's and early 1970's (Longhurst et al., 1976), the Department of Fish and Game initiated a herd planning program to address the problem. Through the efforts of a special committee appointed to examine the situation and make recommendations, and with extensive public input, a statewide plan for California deer was developed in 1976. Legislative mandate AB-1521, September 1977, added emphasis to the effort. The result was a program for the development of management plans on a herd specific basis throughout California.

Two general goals established in the statewide plan form the basis for this plan: (1) restore and maintain a healthy deer herd in San Diego County; and (2) provide for high quality and diversified use of this deer herd. This document is a tactical plan and the preferred alternative for the San Diego deer herd. Specific program elements are included and it can conform to the statewide strategic plan.

This plan includes: (1) unit description and history; (2) management unit goals; (3) problems in management; (4) management programs, objectives and recommended prescriptions; (5) alternatives; (6) selected references; and (7) appendices containing supporting information.

The plan will be modified and expanded as additional information is obtained. Input from public agencies and individuals has been and will continue to be solicited.

II. DESCRIPTION OF THE DEER HERD MANAGEMENT UNIT

A. DEER HERD DEFINITION AND HISTORY

1. Herd Description and Location

The southern mule deer, Odocoileus hemionus fulginatus, is the subspecies inhabiting San Diego County. Since those are resident deer (non-migratory) they are treated as a single herd with designated sub-herds based primarily on administrative (land management) criteria.

For the purpose of this plan, the following areas are identified as the land equivalents corresponding to deer sub-herds: (1) Camp Pendleton; (2) National Forest and public domain lands; (3) privately owned and Indian lands; and (4) State Parks. These designations are important in that land management objectives, potentials for resource enhancement and utilization, as well as trade-offs with other resource programs relate to various limitations and opportunities pertaining to deer herd planning and management.

The unit lies in the extreme southwest corner of the state. Its western boundary is the Pacific Ocean from the extreme southwest corner of Orange County South to the Mexican border. The Mexican border forms the southern boundary and the Imperial County line the eastern boundary. The northern boundary is the southern limit of Riverside and Orange Counties (Figure 1). Hunting is prohibited on many areas within the unit such as the metropolitan areas and developed coastal regions, Anza Borrego Desert State Park and Cuyamaca State Park, the Mount Laguna Recreational Area, several indian reservations and on many private landholdings.

2. Population Estimates

Initial estimates of deer numbers in San Diego County were made by Longhurst et al. (1952) for the period 1947-1949. They estimated that approximately 26,000 deer inhabited the unit and that average densities ranged

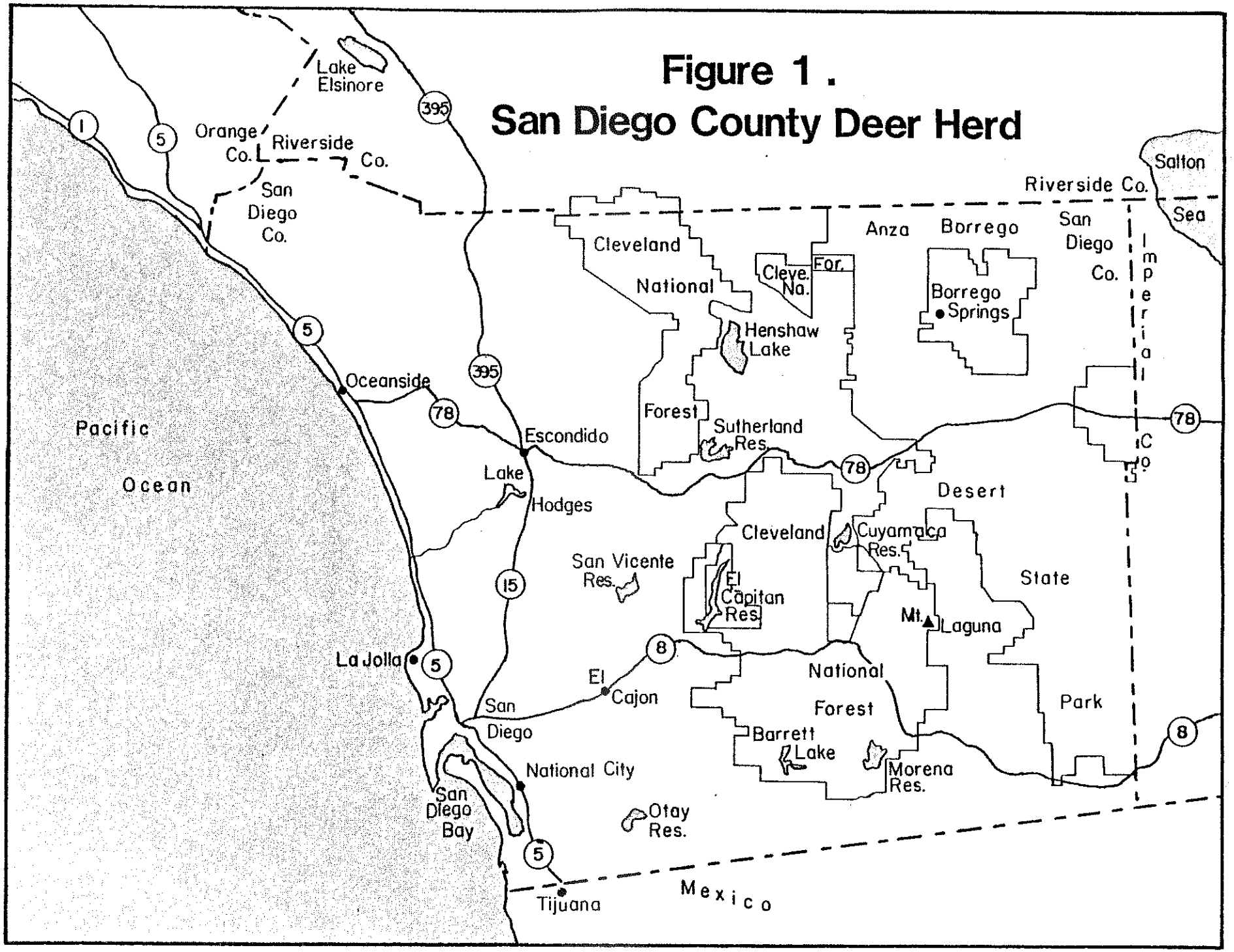


Figure 1.
San Diego County Deer Herd
Lake Elsinore
Orange Co.
Riverside Co.
San Diego Co.
Riverside Co.
Salton Sea
Cleveland National
Cleve. Nat. For.
Anza Borrego
San Diego Co.
Imperial Co.
Borrego Springs
Henshaw Lake
Oceanside
Escondido
Forest
Sutherland Res.
Pacific Ocean
Lake Hodges
Desert
Cleveland
Cuyamaca Res.
San Vicente Res.
El Capitan Res.
State
Mt. Laguna
La Jolla
El Cajon
National Forest
Park
San Diego
Barrett Lake
Morena Res.
National City
San Diego Bay
Otay Res.
Tijuana
Mexico
1
5
15
8
78
395

from 5 to 16 deer per square mile. No recent detailed estimates of population size and density are available. However, it appears that deer numbers and densities reached peak levels in the period 1954-1956 and generally declined to lowest levels in the early 1970's Recent evidence indicates a slight increase since 1972. Reduced population size and deer densities in some areas appear to be the result of habitat loss and a decline in habitat capacity for deer throughout most of San Diego County.

3. Herd Condition

The southern mule deer is one of the smallest in body size of the various mule deer sub-species. Southern mule deer appear to be in a healthy and stable condition in San Diego County. There have been no recent intensive studies made of the herd, but spot checks of hunter-killed deer show apparently healthy deer in good physical condition. Although ticks and fleas are common on the deer, there is no present evidence of problems related to parasites or diseases.

Present deer reproductive status is unknown. In 1955-56, however, embryo counts were taken from 43 adult and 9 yearling does collected on Camp Pendleton during the winter. The results showed that 93% of the adult does were pregnant with a ratio of 151 fawns per 100 does. Five of the nine yearlings were pregnant with an embryo count of 56 fawns per 100 females (DF&G 1956). Since habitat on Camp Pendleton is in a more productive state than in the county as a whole, those reproductive data probably represent optimum conditions.

4. Buck Harvest

Deer hunting records for San Diego County have been collected since 1927, when 169 bucks were reported taken. The kill generally increased with considerable fluctuation through 1955. Beginning in 1956, there was a general decline in the buck harvest which continued through the early 1970's. Since 1974, the buck kill has stabilized with a slightly upward trend since 1977 (Figure 2).

Due to limited manpower and easy hunter ingress and egress, hunter check stations have produced only limited age class data for bucks taken from the San Diego herd. Deer on Camp Pendleton have been aged for many years (Appendix I).

5. Antlerless Harvest

Antlerless hunts started in 1956, when 283 antlerless deer were harvested. They continued through 1968 with an average annual harvest of 224 deer. The permits sold for these hunts ranged from 500 in 1956 to 1,454 in 1965. The average success percentage during the antlerless harvest was 24.6% of permits sold. In 1969, the San Diego County Fish and Game Commission vetoed antlerless hunts, arguing that the buck harvest was decreasing and the antlerless hunts were contributing to this decrease.

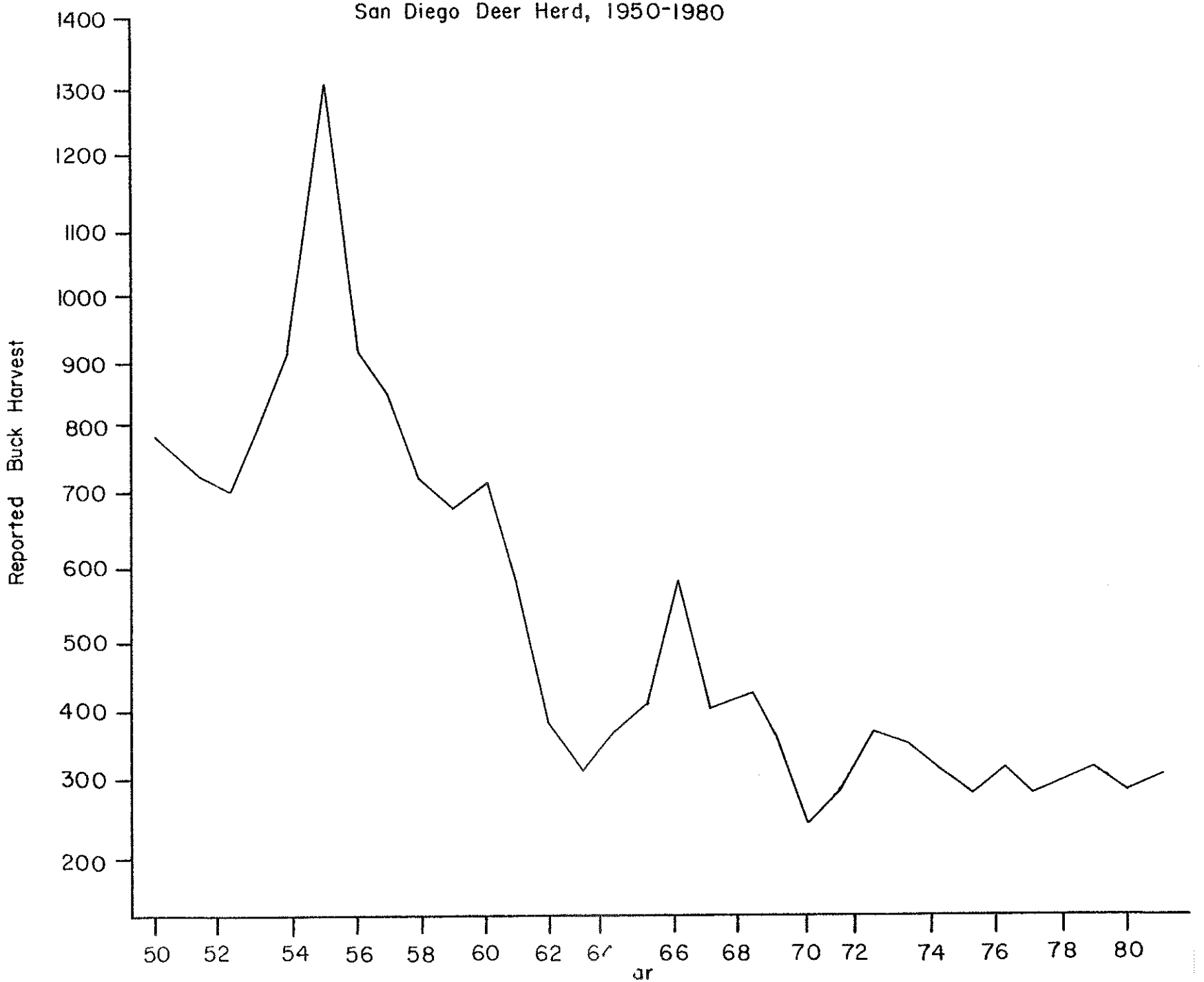
In 1975, and continuing since then, there have been 200 antlerless permits sold each year, with a harvest ranging from 33 to 56 antlerless deer taken (see Appendix II). When these hunts were started again, due to some opposition to the antlerless harvest, the number of permits was placed at a maximum of 200.

With the exception of 1974, Camp Pendleton has had either sex hunting every year that deer hunting has been held on the Base. In these hunts, antlerless deer sometimes outnumber bucks in the harvest this has had no apparent effect on the population as the buck kill has remained fairly stable since deer hunting started on the Base (see Appendix III).

6. Herd Composition

Except for Camp Pendleton, no valid herd composition data are available for the San Diego deer herd. Unless additional manpower is available, an adequate sample of deer is virtually impossible to classify in heavy chaparral areas. A limited sample of deer is periodically classified on Camp Pendleton (see Appendix IV).

Figure 2, Reported Buck Harvest for the San Diego Deer Herd, 1950-1980



From 1973 through 1976, volunteers manned four check stations on the opening days of deer seasons in the Descanso District of the Cleveland National Forest from 0830 to 1500 hours. Hunters leaving the areas were questioned about how many deer they had observed and the number they were able to classify (Hays, 1976). In 1973, hunters reported seeing 20 forked horn or better bucks per 100 does, 10 spikes per 100 does and 22 fawns per 100 does. In 1974, the ratio was 20 legal bucks, 65 spikes and 49 fawns per 100 does. For 1975, 13 legal bucks, 75 spikes and 63 fawns were sighted per 100 does. In 1976, 16 legal bucks, 10 spikes and 97 fawns were sighted per 100 does (see Appendix V). These figures are questionable, since many hunters may have occasionally misidentified the various classes of deer.

7. Herd Movements

Most deer in San Diego County are non-migratory. Some movement takes place when there is snow in the higher elevations and deer move downslope or shift to southern exposures. Only the most severe winters will cause all the deer to leave the mountain tops (Longhurst et al. 1952).

B. HERD RANGE AND HISTORY

1. Land Ownership

Forty-nine percent of the County is in private ownership. Ownership of public land is divided amongst the following agencies starting with the largest landowner; State Parks and Recreation, National Forest Service, Bureau of Land Management, Department of Defense and Bureau of Indian Affairs. (Table 1)

The seasonal rainfall averages about 10 inches around the City of San Diego but increases with elevation and distance from the coast. The higher mountains, Palomar and Mt. Laguna, average between 20 and 40 inches depending on slope and elevation. Seventy-five percent of the rainfall occurs from

*TABLE 1 LAND OWNERSHIP IN SAN DIEGO COUNTY, 1977

	Acres	% Of Public Land	% Of Total Lands
State Parks and Recreeation	489,772	35.1	18.0
U. S. Forest Service	290,740	20.9	10.7
Bureau of Land Management	185,053	13.3	6.8
Military	155,423	11.1	5.7
Bureau of Indian Affairs	123,498	8.9	4.5
Other Public Lands	149,819	10.7	5.5
Total Public Lands	1,394,305	100%	51.2%
Private	1,328,895		48.8
Total Lands in County	2,723,200		100%

* Public Land Ownership in California,1977 State of California, State Lands Commission, December 1977

and

Cleveland National Forest Land Acreage Summary as of October 1981
USDA, Forest Service, March 1982

November through March. Snow falls in the higher elevations in the winter but usually lasts only a few days. Warm summers and mild winters characterize the weather pattern for the county.

3. Early History

Using primitive weapons, indians hunted deer in San Diego County for thousands of years. Their arrows and spears probably killed a very small percentage of the available deer.

There are few historic references to deer in the County prior to 1850. In historic journals, Pedro Fages mentions deer in the San Diego area in 1769 (Priestly 1937) and Longinos Martinez in 1772 reported deer as being from San Diego to Santa Barbara (Simpson 1938). From these and other sources who reported deer in the coastal regions and other areas (Sullivan 1934; Maloney 1945; Ellison 1937) it appears that deer were fairly numerous in the coastal areas and mountains of San Diego County.

After the gold rush, there was a huge increase in domestic livestock production in California, including San Diego County. During the latter part of the 19th century, deer populations declined, not only because of competition with livestock but also because of unregulated hunting (Longhurst et al. 1952).

Near the end of the 19th century and continuing into the first half of the 20th century, deer increased in numbers for a variety of reasons. Predators were heavily hunted to protect wildlife and livestock. Timber was cut in some areas. Fire, both wild and man-caused, burned many acres of chaparral. The expansion of agriculture helped break up large continuous stands of brush and provided an additional source of food for deer. Hunting regulations were established. Deer populations flourished, as evidenced by the high reported harvests in the 1950's and 1960's.

4. Special Use Areas (Key Habitats)

There are special areas that deer prefer for various uses. These areas provide all the major elements that deer need to survive - food, cover and water. Riparian habitats, while not in great abundance in San Diego County, provide all three of these necessities in high quality and are probably the most preferred special use areas for the San Diego deer herd. Oak woodlands are also special use areas since food and cover are usually abundant and the acorn crop, available in autumn, is of high nutritional value. Deer also utilize meadows when cattle are absent or in low numbers (Bowyer and Bleich 1979).

Recently burned brushland areas are also preferred by deer since rapidly growing grasses and forbs, in addition to young shrubs, provide abundant food with greater forage diversity than mature brush stands. Other special use areas are characterized by large shrubs and trees which provide thermal and hiding cover, particularly on north slopes.

5. Dominant Plant Species

There are various plant species that are preferred by deer as forage in San Diego County. The principal browse species are Prunus spp., Cercocarpus spp., Quercus spp., Adenostema fasciculatum and Rhamnus californica (see Appendix VI). Forbs and grasses include Lotus spp., Penstemon spp., Lupinus spp., Bromus spp., Poa spp. and Stipa spp. (Hanley and Salwasser 1980).

6. Fire History

Fires set by indians benefited deer in San Diego County by altering large areas of chaparral, thereby creating interspersions of brush and open areas. Wildfires also burned huge acreages, resulting in some beneficial effects. Fire suppression techniques have vastly improved due to modern equipment and large numbers of personnel employed to cope with wildfires. The average size of wildfires has generally decreased.

In 1970, however, heavy winds caused a power line to fall, starting the Laguna Fire. This fire started on the opening day of deer season and was not contained for several days. It and the Boulder Creek Fire, which started when the Laguna Fire was still burning, consumed approximately 188,000 acres of chaparral, conifers and oak woodland on both public and private lands. As a result of these catastrophic fires a task force was formed to identify the factors contributing to the fire problem and recommend action to be taken. From this task force recommendation, the Laguna Morena Demonstration Area, 127,000 acres in southern San Diego County, was selected as the site to develop and demonstrate currently available fuel management techniques (see Appendix VII).

Since 1970, the largest single fire was the Boulder Oaks Fire in 1973. This fire burned over 8,000 acres of chaparral, oak woodlands and riparian habitats. The fire history for the National Forest Lands within the unit from 1950-1981 is summarized in Appendix VIII.

7. Livestock Grazing

During the early and middle 19th century, cattle, sheep, goats and horses in vast numbers were introduced into San Diego County by the Spanish Padres. They were so abundant that the California condor was sometimes sighted feeding on dead cattle in San Diego County. Competition between livestock and deer was a major factor for the deer decline during the latter part of the 19th century (Longhurst et al. 1952).

Tables 2 and 3 show cattle use in 1981 on the Palomar and Descanso Districts of the Cleveland National Forest in San Diego County. Some of the grazing allotments include private land adjacent to national forest land.

8. Habitat Conversion and Deer Loss

Wildlife habitat is disappearing on private lands because of residential, commercial, recreational and agricultural development. To a lesser extent, industrial development in the coastal plain has resulted in adverse impacts.

TABLE 2. LIVESTOCK GRAZING LEASES EXISTING IN 1981 ON THE PALOMAR DISTRICT OF THE CLEVELAND NATIONAL FOREST

Location	Acres	Vegetation Type	Livestock Species	Total AUM's Using Area
Love Valley	480	Oak Woodland - Meadow	Cattle	260
Mendenhall Valley	868	Chaparral, Conifer, Oak Woodland Meadow	Cattle	138
Aguanga	440	Chaparral, Non-native perennial grassland	Cattle	252
Sill Hill	1,667	Chaparral, Riparian Oaks	Cattle	192
Pine Hills	5,813	Chaparral, Oak Woodland	Cattle	1,296
Tule Springs	695	Chaparral	Cattle	75
Pamo	2,522	Chaparral	Cattle	108
Lusardi	582	Chaparral, Oak Woodland	Cattle	180
Mesa Grande	1,795	Oak Woodland, Annual Grass	Cattle	225
Black Mountain	183	Chaparral, Oak Woodland	Cattle	24
Warner Ranch	576	Chaparral Annual Grass	Cattle	120
Quail Springs	44	Chaparral, Oak Woodland	Cattle	15
Santa Ysabel	362	Chaparral	Cattle	109
Ihaja	505	Chaparral, Conifer, Oaks	Cattle	97
Witch Creek	452	Chaparral, Oak Woodland	Cattle	84
Barley Field	62	Chaparral, Oak Woodland	Cattle	20
Gem Hill	33	Chaparral, Oak Woodland	Cattle	10

TABLE 3. LIVESTOCK GRAZING LEASES EXISTING IN 1981 ON THE DESCANSO DISTRICT OF THE CLEVELAND NATIONAL FOREST

Location	Acres	Vegetation Type	Livestock Species	Total AUM's Using Area
Thing Valley	1,490	Chaparral	Cattle	168
Samataguma	2,420	Chaparral, Oak Woodland	Cattle	60
Corte Madera	6,020	Chaparral, Oak Woodland	Cattle	1,157
Laguna	4,200	Chaparral,Conifers,Riparian	Cattle	2,027
Guatay	5,909	Chaparral, Oak Meadow	Cattle	156
Conejos	2,000	Chaparral, Oaks, Grassland	Cattle	28
Hauser	85	Chaparral	Cattle	4
Descanso	90	Chaparral, Live Oak	Cattle	36
Kay	9	Small Pasture	Cattle	12
King's Creek	2,440	Chaparral, Live Oak	Cattle	30
Burrows	500	Chaparral, Live Oak	Cattle	12
Red Top	6,439	Chaparral, Oak Woodland	Cattle	1,620
La Posta	2,017	Chaparral, Oak Woodland	Cattle	120
Goathead	5,000	Chaparral, Oak Woodland	Cattle	120
Indian Creek	3,800	Oak Woodland, Riparian	Cattle	750
Morena	1,215	Oak Woodland, Meadow	Cattle	304
El Capitan	560	Chaparral, Oak Woodland	Cattle	72
Laguna Meadow	15,140	Chaparral,Conifers,Meadow	Cattle	2,225

9. Habitat Manipulation Projects

Projects designed to improve habitat and decrease large wildfire burns have been accomplished on the Palomar and Descanso Districts of the Cleveland National Forest. These projects have been summarized in Tables 4 and 5.

10. Range Inventory and Research

Deer range condition transects were established on both the Palomar and Descanso Districts of the Cleveland National Forest in the 1950's and 60's. Additional transects are presently being installed on Palomar Mountain and in three compartments of the Laguna Morena Demonstration Area. The purpose is to establish an index on deer population trends in certain areas by use of a deer pellet plot method and also to determine feeding habits and trends by measuring leader growth and utilization on shrubs. Unfortunately, because of higher priorities and limited manpower, the older transects have not been sampled for many years. On the plots currently being installed, no trend data have yet been generated.

TABLE 4. Vegetation Manipulation Projects on the Palomar District of the Cleveland National Forest

Year	Treatment	Acres
1951-79	Brush to grass conversion	2790
1973	Standing brush burns	50
1974	Disced, crushed and hand cut	805
1974	Standing brush burn	5
1974	Crush	571
1974	Sprayed brush	935
1974	Drilled perennials	350
1975	Standing brush burns	18
1975	Crushed	34
1975	Sprayed brush	245
1976	Standing brush burns	10
1976	Disced and crushed	432
1976	Sprayed brush	395
1977	Standing brush burns	85
1977	Sprayed brush	815
1977	Drilled perennials	400
1978	Standing brush burns	161
1978	Crushed	281
1978	Sprayed brush	507
1978	Drilled perennials	120
1979	Standing brush burns	339
1979	Hand cut brush	674
1979	Sprayed brush	446
1980	Standing brush burns	413
1980	Hand cut brush	247
1980	Sprayed brush	446
1981	Standing brush burns	515
1981	Understory burning	10
1981	Hand cutting	460
1981	Oak plantings	50
1981	Sprayed brush	100

TABLE 5. Vegetation manipulation projects on the Descanso District, Cleveland National Forest (All On Chaparral Areas)

Year	Treatment	Acres
1973	Standing brush burns	25
1973	Disced, crushed, raked & hand cut	1,305
1973	Sprayed brush	8,230
1973	Broadcast seed	837
1974	Hand cut	25
1974	Sprayed brush	1,844
1974	Broadcast seed	100
1975	Standing brush burns	62
1975	Sprayed brush	517
1976	Standing brush burns	393
1976	Disced, raked & hand cut	1,471
1976	Sprayed brush	2,749
1976	Broadcast seed	60
1976	Goat use on brush	387
1977	Standing brush burns	1,489
1977	Disced, raked & hand cut	1,026
1977	Sprayed brush	119
1977	Goat use on brush	540
1978	Standing brush burns	4,576
1978	Disced, raked & hand cut	1,517
1978	Sprayed brush	10
1978	Goat use on brush	490
1979	Livestock on brush	3,205
1979	Standing brush burns	1,950
1979	Hand cutting	696
1979	Goat use on brush	455
1980	Standing brush burns	1,048
1980	Hand cutting	1,528
1980	Goat use on brush	120
1981	Burning, discing, hand cutting, spraying	1,996

C. MAJOR FACTORS REGULATING THE POPULATION

1. Human Influence

Loss of habitat caused by residential, commercial, industrial and recreational development has reduced deer populations on private lands. New roads and freeways have not only destroyed habitat but also restricted deer movements to food and water sources on both private and public lands.

New developments result in people and their pets which disturb deer and degrade their habitat. Off-road vehicle (ORV) activity has increased in recent years. Although the U.S. Forest Service and the Bureau of Land Management have implemented ORV plans and curtailed ORV use, habitat has been destroyed and deer populations disrupted. This is particularly evident in McCain Valley, an area in southeastern San Diego County administered by the Bureau of Land Management. In the early 1960's, as many as 25 bucks were harvested there. In order to increase accessibility and provide greater recreational opportunities, an access road was constructed through McCain Valley. This caused people to concentrate in this area with their motorcycles, trail bikes and 4-wheel drive vehicles. Surveys and investigations by the DFG and BLM indicated many acres of valuable habitat were destroyed and some guzzlers vandalized. As a result of this habitat loss and a higher level of human intrusion, deer kill dropped to two or three per year and has remained at this level since the late 1960's (DFG Wildlife Management Unit Reports 1960-1979). In 1978-79 the BLM restricted ORV use in McCain Valley by placing barriers on most of the roads in the eastern portion. It is hoped that deer populations will become reestablished in McCain Valley in the future. The U.S. Forest Service recently opened several areas to off-road vehicle activity. Although most of the ORV's stay on established trails, some move to virgin areas and disturb wildlife.

Reservoirs have inundated valuable wildlife habitat. All reservoirs and lakes in San Diego County are man-made. Though none have been constructed

recently, there are plans for several large reservoirs to be located near Ramona, Fallbrook and on Camp Pendleton. These projects threaten valuable deer habitat, including riparian woodland.

2. Weather

In contrast to northern California, the warm summers and mild winters are not usually a major factor influencing deer populations. Unusually hot, dry summers may, however, cause stress, particularly if the thermal cover is inadequate. Periods of low rainfall indirectly cause adverse impacts by causing deer to gather near available water, thereby making them more susceptible to predators, disease, and other density dependent mortality factors.

Drought is not ordinarily a factor affecting deer populations. When northern California was experiencing drought conditions in the mid 1970's, storms moving north from Mexico provided San Diego County with an adequate supply of water. Water availability, however, may be a major factor influencing deer distribution in San Diego County. Bowyer (1981) found that deer in southern San Diego County seldom made use of areas more than 1 km from water in summer and he never observed deer more than 2.5 km from water.

3. Predation

Predators on the San Diego deer herd include mountain lions, coyotes, bobcats and feral and domestic dogs. Recent surveys by U.S. Forest Service personnel indicate that a substantial lion population exists in the Palomar District, possibly as many as 14 (Widowski 1980). Lions are efficient predators of deer and their populations have increased since the moratorium on killing lions was enacted in 1971. However, with evidence available to date they are not considered a factor limiting the deer population.

Coyotes are numerous in San Diego County and are efficient hunters. While it is certain that they take deer (mostly the young and infirm, based on limited information) they are not thought to be a major factor in suppressing deer populations where herds are stable and healthy. Bobcats may occasionally kill fawns but these incidents are probably rare.

The impact of dogs, both feral and domestic, can possibly be a factor in limiting deer populations adjacent to urban development. While probably not a major factor on the herd as a whole, feral dogs do run in packs and sometimes kill deer. Domestic dogs are not as effecient, but by chasing deer, they are a cause of stress and may contribute to deer losss in some areas.

4. Illegal Take

While there is speculation that the poaching of deer is high in San Diego County, no precise estimate of the number killed illegally is available. It is probable that poaching increases when unemployment and meat prices are high.

5. Interspecific Competition

Cattle are the primary competitors with deer for forage resources. Bowyer and Bleich (1979) studied four meadows in the Laguna and Cuyamaca Mountains and seven meadows in the Cuyamaca State Park. They found that deer were abundant on cattle-free meadows, but very few used these areas when cattle were present. This suggests that cattle may limit deer numbers in some aras of the County. Pine and Mansfield (1980) found that cattle at high stocking rates compete with deer for food in central coastal California. Dasmann (1971) states that cattle are important competitors with deer on heavily stocked ranges throughout the west.

6. Sport Hunting

At the present time in San Diego County, there is an early season archery buck hunt, a regular buck hunt, a limited either sex hunt on Camp Pendleton, a limited antlerless hunt and a post-season either-sex archery hunt. Since there

are no recent detailed estimates of population size for deer in the County, it is not known what percentage of the population the legal take amounts to, but it is thought to be small (less than 5%). Harvest data are summarized in Appendices II and III.

7. Other Factors

Although the effects of disease and parasites on the San Diego deer herd are unknown, they are not thought to be serious problem. A study of deer on Camp Pendleton is 1956 indicated that parasite numbers and incidence of disease appeared normal. this conclusion was based on a sample of 116 deer of both sexes, including fawns, yearlings and adults (DF&G 1956).

III MANAGEMENT UNIT GOALS

The primary criteria used to develop goals for the San Diego deer herd include general goals of the statewide strategic plan (A Plan for California Deer. 1976), legislative mandate (AB-1521), Department Deer Management Policy and concerns of various publics. A lack of specific information regarding existing herd condition and habitat status prevents a detailed description of the conditions the plan is intended to achieve. However, sound ecological principles of deer management and currently accepted habitat improvement techniques offer an opportunity to enhance the carrying capacity of the San Diego deer herd unit. Social and economic constraints as well as land use trade-offs will ultimately determine the population level and habitat condition prevailing at any point in time.

A. HERD GOALS

Productivity of the San Diego deer herd can be increased through management of both the deer and the habitat that supports them. This plan is intended to provide specific objectives that are ecologically feasible through the development of environmentally and socially acceptable management strategies. It is unrealistic and perhaps impossible to attain the historic

peak herd size which was thought to occur in the 1950's. The management costs and land use trade-offs, as well as the destruction of habitat by deer at those levels, are not ecologically desirable and probably not socially acceptable (Hanley and Salwesser 1980).

Since existing and historic herd performance data are extremely limited, herd size and relative condition estimates are quite general. Therefore, a statement of goals for this plan initially must be general. However, it is realistic to assume that principles of deer ecology and habitat management techniques apply in San Diego despite the lack of site specific data. Some improvements in herd status can be achieved, but increased inventory programs will be needed to measure progress towards goals. Periodic reviewing and updating will permit refinement of those goals.

Public concerns related to the San Diego deer herd primarily involve a desire to increase deer densities and improve hunter success. Historic estimates indicate the the range was, at one time, capable of supporting deer at a density ranging from 5-16 deer per square mile (Longhurst et al. 1952) with no specific deer herd improvements. Harvest data from Camp Pendleton (1953-1981) indicate that the herd can support a harvest of at least 1.12 deer per square mile on productive portions of the range.

Assuming that some habitat improvement can be achieved and that hunter success is directly related to total population, the following goals were formulated for the five to ten year planning horizon presently being considered.

1. Deer inhabiting all potential range.
2. Deer density approaching 5-10 deer per square mile and possibly higher where compatible with other land uses.
3. Appropriate utilization programs employed to harvest an average of 1.0 deer per square mile of huntable range (10-20% harvest of available deer).

B. RANGE GOALS

To achieve the proposed herd goals, deer habitat improvement is necessary. Emphasis should be placed on coordinating habitat needs of deer with other resource management programs on public lands.

The Cleveland National Forest, under the jurisdiction of the U.S. Forest Service, and Camp Pendleton, administered by the U.S. Marine Corps, are the range subunits which offer the greatest potential for enhancing deer habitat during the immediate planning horizon. Range improvements can be achieved primarily by the aggressive use of prescribed burning to increase forage quality and diversity, water development in deficient areas, reduction in competition with livestock and protection and enhancement of particularly important habitat elements such as riparian corridors, meadows and oak woodlands. The Laguna-Morena Demonstration Project is an example of the potential for deer habitat improvement in conjunction with multiple use land management. Cooperative planning between the California Department of Fish and Game and the Cleveland National Forest is now taking place on this demonstration area (see Appendix VIII).

To a lesser extent, deer habitat can be improved on private land through the new Chaparral Management Program (CMP). This program focuses on prescribed fire as the major tool of chaparral management on private land. Legislative mandate (SB 1704) authorizes the California Department of Forestry (CDF) to admininster the program. Coordination between the CDF and CFG can result in the enhancement of deer forage and habitat diversity by prescribed burning under the Camparral Management Progmram.

IV PROBLEMS IN MANAGEMENT

1. Fawns are not being recruited into the yearling age-class in sufficient numbers to attain herd goals.
2. Habitat is being lost due to urban development.
3. Funds are limited for wildlife habitat improvement.
4. Department manpower is limited and workloads keep increasing, thereby making it difficult to allocate sufficient manpower to deer programs.
5. There is a lack of specific information on the deer herd in the following categories: a) herd composition; b) effects of predators, disease and parasites; c) age-class (easy hunting access and egress make check stations infeasible except for Camp Pendleton); d) road-kill except for Camp Pendleton; e) illegal kill; f) effects of natural predators on deer populations; and g) effects of feral and domestic dogs on deer.
6. Effective and sophisticated fire suppression methods have limited many wildfires to very small areas. Fire has not been used aggressively as range management tool. This has allowed vegetation to progress to climax stages which are not productive as deer habitat.
7. A segment of the public is opposed to antlerless hunting, thereby limiting the flexibility of Department programs to regulate harvest from the herd.
8. There is evidence that competition with livestock (cattle, sheep and goats) is limiting deer numbers in some parts of the County.
9. Off-road vehicles are destroying habitat and disturbing deer on portions of the range.

11. Future reservoir projects threaten to inundate deer habitat.
12. Wildlife protection personnel are limited in deer activities because of other priorities.
13. Large blocks of public land are surrounded by private land, thereby limiting administrative uses and habitat improvement, and making public access and hunting impossible.

V MANAGEMENT PROGRAMS OBJECTIVES AND RECOMMENDED PRESCRIPTIONS

The following are the San Diego deer herd management programs, objectives and recommended prescriptions to achieve these objectives.

A. INVENTORY AND INVESTIGATION

1. Objective

To collect and maintain sufficient information to evaluate herd and habitat trends in order to effectively manage deer and their habitats in San Diego County.

2. Recommended Prescriptions

The following ongoing herd performance indicators should be continued:

a) Conduct herd composition counts on Camp Pendleton.
   1) Winter (post harvest)
   2) Spring
b) Monitor age class structure of the harvested deer from Camp Pendleton.
c) Conduct special hunts (antlerless and either sex) to achieve light to moderate harvest to monitor herd conditions.
d) Maintain antlerless and buck spot-kill maps.

The following herd performance indicators are recommended for additional monitoring:

a) Expand herd composition surveys on Camp Pendlton and other areas within the unit where deer can be observed.

b) Determine deer densities and trends in representative areas within major habitat types.

The following habitat indicator is being monitored and should continue:

a) Grass production is being inspected each spring on the Palomar District to evaluate forage availability (effects of rainfall).

The following habitat indicators are recommended for additinal or increased monitoring:

a) Forage condition should be evaluated every two years on the Palomar and Descanso Districts and on Camp Pendleton to obtain a correlation between forage and herd condition and to be used as a guide for habitat modification programs.

b) Annual oak mast yields should be surveyed for coast live oaks and black oaks to determine acorn production. This data could be used to obtain a correlation between acorn production and herd reproduction and used as a guide for oak management programs.

c) Annual inventories should be made of potential habitat improvement sites within the deer management unit.

d) Special habitat evaluations should be made in meadows, oak woodlands and riparian areas to determine and correlate deer and cattle use.

The following are research needs within the deer management unit:

a) A study should be undertaken to determine reproductive status of does on Camp Pendleton.

b) One or more areas of the unit should be selected for an intensive study of the illegal kill and its effects on the San Diego deer herd.

c) The influence of predators, disease and parasites on deer should be determined.

d) Areas should be identified which provide suitable fawning habitat. Characteristics of those sites should be documented.

The following monitoring of public attitudes and concerns are recommended: A questionnaire should be provided to hunters contacted in the field on the opening weekend of the deer season. Input will help guide future planning efforts and provide feedback on public attitudes related to management programs.

B. HERD MANAGEMENT AND MORTALITY CONTROL

1. Objective

As information becomes available from investigative efforts, identify major mortality factors which supress deer numbers below capacity of the habitat. Steps to reduce these sources of mortality will be recommended and implemented if feasible.

2. Recommended Prescriptions

a) When fawning areas and their characteristics are identified, improve habitat on other similar areas in order to reduce fawn mortality.

b) Reduce deer mortality on highways by cooperative efforts with CalTrans.

c) Based on information obtained by investigation of illegal kill, work with wardens and other law enforcement agencies to decrease this mortality factor.

d) Increase or decrease the special hunt permits when monitoring programs indicate deer are either under-harvested or over-harvested.

C. HABITAT

1. Objective

In order to improve the habitat of the San Diego deer herd, nutritious forage, adequate forage and available water should be provided with the proper interspersion to support and average deer density of 5-10 deer per square mile on Camp Pendleton, the Cleveland National Forest and BLM subunits. Limitations related to access and utilization make it unrealistic to presently apply this objective to other subunits.

2. Recommended Prescriptions

Manage chamise chaparral and other vegetation types to obtain 40-50% forage areas and 50-60% cover areas. The following are the optimum forage conditions:

a) 15-20% young brush(<4 years old) in long, narrow (<200 yards wide) patches. Create by prescribed burning on selected sites.

b) 15-20% annual grasses and forbs.

c) 5-10% oak/oak woodland.

d) 5-10% perennial grasses, forbs, meadow and riparian areas.

e) Water available within 0.5 mile radius.

The following are optimum cover conditions:

a) 20% hiding and escape cover (>4 year old brush) in 30-50 acre patches.

b) 10% fawning cover in roughly 10 acre units with succulent forage and available water within 0.1 mile.

c) 10% thermal cover with dense canopy coverage in open stands for shade in summer. Large shrubs provide more of this type cover and north slope vegetation may provide this thermal cover with prescribed strip burning.

d) 10-20% other, may be devoted to deer hunting habitat with an increasing amount of succulent forage and plant species diversity.

Fire (prescribed burning) is the primary management tool in chamise chaparral.

Following is a mixed conifer model. Assuming a 50-60% average tree canopy over the entire area, the optimum cover and forage conditions are:

a) 30-40% closed stand timber with >50% cover closure. Some 30-50 acre patches for escape.

b) 20% open stand timber (<50% crown closure).

c) 10% meadow and riparian areas.

d) 15-25% available browse.

e) 15% immature timber - shrubs seedlings, sapling stages.

f) Water available within 0.5 mile radius of any point.

While the above prescriptions may provide the optimum habitat conditions for deer, it should be noted that economic constraints, limited manpower and multiple use factors will limit implementation to small annual production areas on Forest Service and BLM lands and Camp Pendleton. At the present time, two compartments in the Laguna-Morena Demonstration Area, the Troy and the Chaparral, show the best potential of achieving the prescriptions.

Several areas have been selected on the chaparral compartment of the L-MDA where management direction is to maintain high vegetative diversity with optimum forage and cover conditions. Implementation via prescribed burning is to begin in the spring of 1982. If successful, they will be used as models for other units within the Cleveland National Forest, BLM lands and Camp Pendleton.

D. UTILIZATION

1. Objective

To provide high quality diversified use of deer in San Diego County, consumptive use should be emphasized on the Cleveland National Forest, BLM lands, Camp Pendleton and private holdings. Nonconsumptive use would occur in all suburbs and areas closed to hunting (Mount Laguna Recreational Area, Anza Borrego Desert State Park, and Cuyamaca State Park) and some private lands.

2. Recommended Prescription

Our best estimate (Longhurst et al. 1952) of the capability of the range indicate that an average deer density of 10 per square mile (range 5-16) is realistic. This will be verified through further investigation.

Historic harvest data from Camp Pendleton indicate that the deer herd has the ability to sustain an annual kill of over one deer per square mile (1.12) while the population trend remains fairly stable (As evidenced by age class data, (Appendix I). This amounts to a harvest of approximately 10% of the population annually.

It is, therefore, reasonable to assume that a light to moderate harvest (10-20% of the population) including all sexes and all age classes of deer is compatible with long-term herd maintenance. Early season archery, regular season buck hunting, antlerless and either sex hunts should be continued to achieve this type of harvest and provide additional recreational opportunities. This strategy also has the advantage of furnishing important biological information on the herd which can be used to further refine herd management programs. Basic support for this conclusion is provided by a number of investigators (Longhurst et al. 1952, Longhurst et al. 1976, McCullough 1979, Bowyer 1981 and others).

As habitat enhancement projects produce increased herd productivity, harvest strategies will be evaluated to link hunting regulations to herd increases in order to provide additional recreation and harvest opportunities.

The portion of the non-hunting public that enjoy watching and photographing deer should have this opportunity. There are many meadows in Cuyamaca State Park where there is an abundance of deer. There are also certain private holdings where there are high populations of deer and where the landowners prohibit hunting.

In order to increase the recreational opportunity for hunters and non-hunters, the following measures are recommended:

a. Work with the Cleveland National Forest and BLM to attain compatible access (hiking, horseback, etc.) through private lands to isolated public lands for the hunting public during deer season.

b. Coordinate with State Parks and Recreation personnel to allow non-consumptive users onto Cuyamaca State Park for observing and photographing deer.

E. LAW ENFORCEMENT

1. Objective

To minimize the illegal take of deer in San Diego County. While there is speculation that the illegal kill of deer may exceed the legal kill, no one knows the number that are killed illegally each year. It is probable that poaching increases when unemployment and meat prices are high.

In San Diego county, the Department's wardens, besides enforcing the hunting and fishing regulations, are required to enforce other activities made mandatory by law. They enforce laws dealing with exotic species, water pollution and streambed alteration. They are required to pick up and transport

injured wildlife, investigate depradation complaints and issue permits. The terrain they are expected to cover is large in size and sometimes difficult in terms of accessibility.

Wardens in the county generally are in agreement that deer poaching is a serious problem. There is close liaison with other law enforcement agencies but few violators are ever apprehended.

2. Recommended Prescriptions

a) Increase the amount of patrol effort in suspected deer poaching areas. This could be done either by increasing the number of patrol personnel or by reducing the number of other required activities to allow more patrol time. Night patrol utilizing the Department's airplane may also be effective.

b) Make the public more aware of the "secret witness" (CalTip) program including the toll free (800) telephone number to increase prompt reporting of illegal take.

F. COMMUNICATION OF INFORMATION

1. Objective

To provide information on management of the San Diego deer herd to all interested publics.

2. Recommended Prescriptions

a) Provide a deer herd management plan summary to interested publics.

b) Prepare periodic news releases regarding the herd, its habitat and management programs.

c) Provide private landowners with information related to deer and habitat management whenever possible. Prepare a concise description of habitat conditions and suggested techniques for creating and maintaining them (photos of examples).

d) Meet with local clubs, groups, governmental agencies and others to discuss deer management programs and create a greater awareness of deer management including the basis for antlerless harvest. Develop and utilize a structured slide presentation.

G. REVIEW AND UPDATE

1. Objective

To review the deer herd annually and update and improve the plan as additional information is obtained.

2. Recommended Prescriptions

a) Prepare an annual herd plan supplement containing additional information (herd composition counts deer take, habitat improvement, pellet group transect information, etc.).

b) Initiate a deer plan review committee of personnel representing the Cleveland National Forest, BLM, Camp Pendleton and the Department. This group would meet annually to discuss the plan progress and report progress of the respective groups pertaining to habitat improvement, herd composition counts, deer take, etc., and report on programs for the ensuing year pertaining to deer management.

The group would also plan programs on public lands for the ensuing year(s) concerning deer management in which specific goals would be developed including hunting season, hunter access to public lands, prescribed burning, wildlife water development, etc.

VI ALTERNATIVES

A. MANAGEMENT OF DEER AS IT PRESENTLY EXISTS

This management alternative would maintain the status quo of the San Diego deer herd. No additional investigative programs would be initiated and no new habitat manipulation would be recommended. The herd population level would fluctuate with habitat capacity changes and harvest would not exceed 300 ± bucks. No effort would be expended to reduce the illegal kill. Very little information on the herd could be obtained.

This alternative was not selected for the following reasons:

1. The legislative mandate (AB-1521) enacted in 1977, commits the Department of Fish and Game to restore and maintain deer herds statewide. This policy cannot be accomplished without increased management input as described in the recommended objectives and programs.
2. There is a good opportunity to enhance deer habitat and increase the deer population with the recommended management prescriptions.
3. The hunting public is dissatisfied with the present herd condition and is strongly in favor of increasing hunter success.

B. MANAGE FOR MAXIMUM FEASIBLE HABITAT PRODUCTIVITY AND MAXIMUM SUSTAINED YIELD OF DEER.

This alternative would focus all interest on deer at the expense of other wildlife species and land uses. Prescribed burning would be maximized to improve deer habitat. Deer predators would be reduced. Land management decisions would be carried out with deer as the primary management concern. Wildlife Protection personnel would have to make deer their number-one priority in enforcement to minimize the illegal kill. All of those programs would be necessary to increase the herd size and allow for the maximum sustained yield. An intensive utilization program involving the harvest of both sexes of deer in all age classes would be necessary.

This alternative was not selected for the following reasons:

1. It would conflict with the multiple use policies of the U.S. Forest Service and the Bureau of Land Management.
2. Sportsman support would be low as they desire management programs which benefit more than one wildlife species and some sportsmen are not willing to harvest the large number of antlerless deer required under this alternative.
3. Private landowners would object as increased deer numbers would damage habitat and cause conflicts with other land uses.
4. The money and manpower is not presently available for such an intensive deer habitat management program.
5. Other species of wildlife would suffer because all management would be concentrated on deer.

C. NO HABITAT IMPROVEMENT AND NO HERD MANAGEMENT

This alternative would discontinue all work now focused on deer. Hunting would be continued but there would be no efforts to improve or enhance habitat. Wildlife Protection personnel would make no concentrated effort to decrease illegal kill. Deer mortality from natural causes would increase. This alternative was not selected for the following reasons:

1. The legislative mandate (AB-1521) emphasizes that efforts will be made to maintain and enhance deer populations in California. This alternative would not achieve these objectives.
2. No biological information would be obtained on the deer resource.
3. Department policy calls for high quality diversified use of deer resources and this alternative would not provide it.
4. Recreational hunting would decrease and the local economy would suffer

D. MAINTENANCE OF MAXIMUM DEER DENSITY

This alternative would be similar to Alternative B in many respects. Prescribed burning and other habitat management would be maximized to improve habitat. Deer predators would be reduced. Land management decisions would be carried out with deer as the primary management concern. However, there would be no intensive utilization programs to harvest the maximum sustained yield of deer.

This alternative was not selected for the following reasons:

1. Livestock grazing would be restricted on National Forest and BLM lands since deer could not be maintained at maximum density with competition from livestock. This may be considered an asset by many people, but it conflicts with grazing rights on public lands.
2. Late successional dependent wildlife would suffer as all habitat management practices would be concentrated to enhance deer.
3. Sportsmen would be slow to support this alternative since they wouldn't be able to utilize the additional deer produced because of the lack of intensive utilization programs.
4. Private landowners would object as increased deer numbers would damage habitat and cause conflicts with other land uses.
5. This alternative would conflict with the multiple use policies of the U.S. Forest Service and the Bureau of Land Management.
6. Destruction of habitat by high populations of deer is neither ecologically desirable nor socially acceptable.

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APPENDIX I AGE CLASS STRUCTURE OF THE KILL FROM THE CAMP PENDLETON SUBUNIT

	MALE KILL-PERCENTAGE BY AGE CLASS						FEMALE KILL-PERCENTAGE OF AGE CLASS					
Year	Fawn	1YR.	2YR.	3YR.	4YR.&Over	Sample Size	Fawn	1YR.	2YR.	3YR.	4YR.&Over	Sample Size
1969	6	20	29	20	24	162	15	17	15	21	32	89
1970	5	26	30	24	15	132	9	17	25	26	4	99
1971	4	25	35	23	13	167	2	25	31	11	31	88
1972	8	25	23	22	22	129	14	22	19	11	34	84
1973	13	22	28	19	18	103	25	21	34	7	13	56
1974	0	20	41	30	9	79						
1975		NO HUNT						No Antlerless Hunt				
1976		NO HUNT										
1977	4	12	34	34	16	276	22	21	22	20	16	82
1978	5	17	41	22	15	179	22	35	31	5	7	55
1979	1	19+	29	33	18	160	1	21	30	27	20	84
1980	8	19	30	31	12	144	11	26	17	19	26	89
1981	4	25	31	28	13	109	5	16	14	24	41	100

APPENDIX II

YEAR	BUCK KILL	ANTLERLESS KILL	COMMENTS
1950	767		No antlerless season in county until 1956
1951	734		
1952	719		
1953	792		
1954	904		
1955	1306		
1956	909	283	500 permits for all of regular buck season
1957	852	234	1000 permits for 3-day post season
1958	731	265	955 permits for 3-day post season
1959	688	218	935 permits for 9-days in season
1960	725	376	1429 permits Sept. 27 - Nov. 3
1961	573	365	1433 " Sept. 26 - Nov. 2
1962	385	225	1422 " Sept. 25 - Nov. 1
1963	324	294	1445 " Sept. 24 - Nov. 3
1964	391	255	963 " Sept. 22 - Nov. 8
1965	417	371	1454 " Sept. 21 - Nov. 7
1966	561	343	1453 " Sept. 24 - Nov. 13
1967	406	166	721 " Sept. 23 - Nov. 12
1968	425	172	728 " Sept. 21 - Nov. 3
1969	377	No Hunt	
1970	243	No Hunt	South of I-8 closed to deer hunting
1971	286	No Hunt	"
1972	363	No Hunt	
1973	352	No Hunt	
1974	321	No Hunt	
1975	279	34	200 permits sold for antlerless hunt
1976	325	34	"
1977	282	56	"
1978	303	33	"
1979	327	49	"
1980	291	51	
1981	307	48	

APPENDIX III

CAMP PENDLETON DEER KILL, 1953-1981

YEAR	MALE	FEMALE
1953	183	102
1954	33	113
1955	127	129
1956	158	88
1957	199	106
1958	152	112
1959	189	114
1960	144	157
1961	136	124
1962	79	71
1963	78	80
1964	102	86
1965	109	68
1966	149	79
1967	145	79
1968	147	81
1969	162	89
1970	132	99
1971	167	88
1972	129	84
1973	103	56
1974	81	No antlerless hunt held
1975	Closed due to high fire danger	
1976	Closed due to high fire danger	
1977	276	82
1978	179	55
1979	169	93
1980	159	92
1981	124	106

APPENDIX IV

DEER HERD COMPOSITION - CAMP PENDLETON SUBUNIT

	PRE SEASON Per 100 Does			POST SEASON Per 100 Does		
Year*	Bucks	Fawns	Sample	Bucks	Fawns	Sample
1956	21	12	517			
1958	29	17	800	27	18	64**
1971	47	25	287			
1972	33	47	367			
1973	25	31	296			
1974	30	41	137	22	22	26**
1980	35	20	181			
1981	60	32	206			

* Years in which herd composition counts were taken
** Sample size to small for validity

APPENDIX V. HUNTER REPORTED HERD COMPOSITION DATA, 1973-1976

YEAR	1973		1974		1975				1976			
STATION	M.	B.V.	M.	B.V.	M.	B.V.	CAM.	LAG.	M.	B.V.	CAM.	LAG.
Hunters	213	91	216	30	179	60	21	137	124	85	50	64
Deer	304	78	259	62	148	101	13	118	52	116	16	46
F.O.B.S.[1]	42	7	29	2	6	5	--	11	3	12	--	3
Spikes	20	4	5	4	3	1	--	8	1	3	--	3
Does	209	59	188	43	122	89	11	91	40	94	14	30
Fawns	14	2	18	5	15	4	--	7	4	5	2	2
Does with Fawns	69	5	42	5	16	12	--	12	7	11	1	2
Coyotes	33	3	16	0	7	0	0	9	8	0	0	2
CORRECTED, PER 1,000 HUNTERS												
Deer	1427	857	1199	2067	827	1683	619	861	419	1365	320	719
F.O.B.S.	197	77	134	67	34	83	0	80	24	141	--	47
Spikes	94	44	23	133	17	17	0	58	8	35	--	47
Does	981	648	870	1433	682	1483	524	664	323	1106	280	469
Fawns	66	22	83	167	84	67	0	51	32	59	40	31
Coyotes	155	33	74	0	29	0	0	66	65	0	0	31
COMBINING MORENA & BEAR VALLEY AND CAMERON & LAGUNA AND CORRECTING PER 1,000 HUNTERS												
Deer	1257		1305		1042		829		804		544	
F.O.B.S.	161		126		46		70		72		26	
Spikes	79		37		17		51		19		26	
Does	882		939		883		646		641		386	
Fawns	53		93		79		44		43		35	
HERD COMPOSITION (Numbers in ( ) are composition by % of herd)												
F.O.B.S./100 Does	20 (13)		20 (11)		9 (5)		17 (10)		17 (10)		16 (6)*	
Spks/100 Does	10 (7)		6 (3)		3 (2)		12 (6)		4 (2)		16 (6)*	
Fawns/100 Does	22 (14)		49 (28)		68 (38)		58 (31)		50 (29)		133*(50)*	
Does	(66)		(57)		(56)		(53)		(58)		(38)*	

"Does" = $\frac{\text{(Raw Does)} \quad \text{(Does with Fawns)}}{\text{(Does with Fawns + Fawns)}}$

*Sample size of fawns too small to make this believeable.

PRECIPITATION - Approximate mean of Descanso & Mt. Laguna, mm

1 Oct. to 30 Sept.	681	326	378	405
1 Apr. to 30 Aug.	34	40	117	74

AREA ACCESSIBLE FROM CHECK STATIONS (Very Approximate)

Morena	18 sq. miles
Bear Valley	11 sq. miles
Laguna and Cameron	22 sq. miles

DENSITY OF DEER AND COYOTES = No./(Hunters X Area)

Deer	.079	.078	.067	.188	.046	.153	.038	.019	.124	.025
Coyotes	.099	.003	.004	0	.002	0	.003	.004	0	.001
Coyotes	.0041		.0022		.0010			.0013		

[1]F.O.B.S. - Forked or Better Sighted, i.e. legal bucks

APPENDIX VIII

WILDFIRE HISTORY IN THE DESCANSO AND PALOMAR DISTRICTS
OF THE CLEVELAND NATIONAL FOREST, 1950-1981

Acres Burned

Year	Descanso District	Palomar District	Total Acres
1950	1,369	8,099	9,468
1951	1,558	891	2,449
1952	1,049	41	1,090
1953	9,979	2,026	12,005
1954	233	81	314
1955	82	168	250
1956	141	31,472	31,613
1957	1,114	390	1,504
1958	426	394	820
1959	501	15	516
1960	66	6	72
1961	29	6,750	6,779
1962	800	4	804
1963	102	--	102
1964	7	133	140
1965	3	408	411
1966	--	--	--
1967	451	2,115	2,566
1968	910	41	951
1969	748	15	763
1970	146,605	7	146,612
1971	67	117	184
1972	110	503	613
1973	8,653	--	8,653
1974	255	1,819	2,074
1975	37	187	224
1976	46	16	62
1977	32	146	178
1978	177	246	423
1979	724	64	788
1980	3	3	6
1981	38	333	370
TOTALS	176,315	56,489	237,804

State of California

The Resources Agency

Memorandum

: Wildlife Management Supervisor, Region 5 Date : October 1, 1986

From : Department of Fish and Game --San Diego Unit Manager

Subject: San Diego Deer Herd Plan Update

I. Update of Biological Information

A. Harvest

Both the regular season buck hunt and the antlerless hunt were conducted in San Diego County during the 1985 season. The buck harvest was 167 animals while the antlerless hunt produced 50 animals. Buck kill on Camp Pendleton rose to 148 animals while the doe hunt produced 54 animals taken.

B. Age Composition of Harvest

Incisors were collected from 50 bucks during the hunting season. Results of the age analysis were:

Bucks	1	2	3	4	4+	N
84	12	26	13	5	6	62
85	11	24	9	4	2	50

C. Composition Counts

Composition counts were conducted by helicopter utilizing Hill Bill monies. Results were:

	Bucks	Does	Fawns	Sample
Light hunted areas	25	100	14	67
Heavily hunted area	8	100	21	67
Combined ratios	18	100	16	134

Further sampling will be conducted during the fall of 1986.

II. The following breakdown indicates acres treated and funding.

Area	Acres Treated	Funding Source
Barona Mesa	300	USFS
Chaparral II	350	Hill Bill
Pine Valley	80	Co. Fines
Brown Canyon	1900	USFS

Love Canyon	650	USFS
Poser	200	USFS
Aguanda Ridge	2 water developments	Co. Fines

III. Changes to the San Diego Deer Herd Plan

None recommended at this time.

Harold McKinnie

Harold McKinnie
Wildlife Biologist

JD:lp

cc: Hein
Davis

APPENDIX II

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1960	725	376	1429 permits Sept. 27—Nov. 3
1961	573	365	1433 permits Sept. 26—Nov. 2
1962	385	225	1422 permits Sept. 25—Nov. 1
1963	324	294	1445 permits Sept. 24—Nov. 3
1964	391	255	963 permits Sept. 22—Nov. 8
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1966	561	343	1453 permits Sept. 24—Nov. 13
1967	406	166	721 permits Sept. 23—Nov. 12
1968	425	172	728 permits Sept. 21—Nov. 3
1969	377	No Hunt	
1970	243	No Hunt	South of I-8 closed to deer hunting
1971	286	No Hunt	"
1972	363	No Hunt	
1973	352	No Hunt	
1974	321	No Hunt	
1975	279	34	200 permits sold for antlerless hunt
1976	325	34	"
1977	282	56	"
1978	303	33	"
1979	327	49	
1980	291	51	
1981	307	48	
1982	237	38	
1983	189	44	
1984	196	50	
1985	167		

State of California — The Resources Agency

Memorandum

To : Wildlife Management Supervisor, Region 5 Date October 13, 1987

From : Department of Fish and Game
San Diego Unit Manager, Inland

Subject : San Diego County Deer Herd Plan Update

In 1986, as in 1985, most of San Diego County was in Zone D-16. Camp Pendleton remained in D-15. The length of the hunting season was also the same as the previous year - 30 days, beginning on the first Saturday of October. A helicopter was again utilized for post-season herd composition counts. Also for the second year in a row, incisors from deer killed by hunters were collected to determine the age composition of the harvest.

I. Biological Information

A. Harvest

	1985	1986
Bucks, Zone D-16, San Diego Co.	174	217
Antlerless, S-11, Special Hunt	50	56

B. Age Composition of the Harvest

Incisors from 85 bucks and 23 antlerless deer were analyzed for age composition. The result were:

	F	1	2	3	4+	Average Age
Bucks, No.	0	8	38	22	17	3.4
Bucks, %	0	9	45	26	20	
Antlerless, No.	4	8	3	1	7	3.2
Antlerless, %	17	35	13	4	31	

C. Herd Composition Data

Post season herd composition counts were again conducted by helicopter through Hill Bill financing. A total of 222 animals were classified. Buck to doe ratios were 25:100 and fawn to doe ratios were 37:100. In lightly hunted areas, the buck:doe:fawn ratios were 30:100:36 and in the heavily hunted areas were 21:100:38. This is an improvement over 1985 when the ratios were 18 bucks per 100 does and 16 fawns per 100 does. Lightly hunted areas in 1985 were 23:100:14 and in heavily hunted areas were 8:100:21.

III. Other Changes to the San Diego Deer Herd Plan

If the D-16 zone is separated according to county boundaries, changes will have to be made in deer tag quotas; 4,000 appears reasonable for San Diego County.

There is also the possibility of adding one week to the season for a total of 37 days. This will depend on the 1987 harvest.

Reported Kill, San Diego County

Year	Bucks	Antlerless	Year	Bucks	Antlerless
1950	767		1969	377	
1951	734		1970	243	
1952	719		1971	286	
1953	792		1972	363	
1954	904		1973	352	
1955	1306		1974	321	
1956	909	283	1975	279	34
1957	852	234	1976	325	34
1958	731	265	1977	282	56
1959	688	218	1978	303	33
1960	725	376	1979	327	49
1961	573	365	1980	291	51
1962	385	225	1981	307	48
1963	324	294	1982	237	48
1964	391	255	1983	189	37
1965	417	371	1984	196	44
1966	561	343	1985	174	50
1967	406	166	1986	217	56
1968	425	172			

Hal McKinnie

Hal McKinnie
Wildlife Biologist

cc: J. Davis

State of California

The Resources Agency

Memorandum

To : Wildlife Management

Date October 26, 1988

From : Department of Fish and Game
Inland San Diego County Unit Manager

Subject : San Diego County Deer Herd Plan Update

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B. Age Composition of the Harvest

Incisors were collected from 63 bucks, compared to 85 in 1986. Results of the age anaylsis were:

Year	1	2	3	4	4+	N
1984	12	26	13	5	6	62
1985	11	24	9	4	2	50
1986	8	38	22	7	10	85
1987	9	21	19	10	4	63

None of the bucks were over six years of age. The average age was 2.9 years. This compares favorably with results from past years, but more consecutive years of data are needed to assess the degree of hunting impact on the herd. Incisors were also collected from antlerless deer, but the sample was too small to be valid.

Deer herd composition counts were accomplished in the San Diego portion of Zone D16 using a helicopter during November 1987 and August 1988. A total of 248 deer were sighted, of which 241 were classified. In 1986, 222 were classified. Thirty-eight bucks, 59 fawns and 144 does were seen during November, 1987.

	Buck	Doe	Fawn	N
Lightly Hunted Areas	34(30)	100	39(36)	241(222)
Heavily Hunted Areas	19(21)	100	43(38)	
Combined	26(25)	100	41(37)	

( ) indicates 1986 data

August Composition Count	Buck	Doe	Fawn	N
	36	107	39	182
Ratio	34	100	36	

II. Habitat Improvement Projects

The following breakdown indicates acres prescribed burned and funding:

1. Palomar Observatory Burn - 650 acres burned with 350 acres of islands - vegetation type was ceanothus chaparral. Funded by CELP and county fines.

2. Rattlesnake Burn - 300 acres burned - vegetation type was chamise chaparral. Funded by Hill Bill.

3. Love Valley Burn - 100 acres burned - vegetation types was scrub oak and ceanothus. Funded by Forest Service wildlife dollars.

4. West Fork Burn - 120 acres burned - vegetation types was chamise and ceanothus. Funded by Forest Service wildlife dollars.

5. Poser burn - 50 acres burned - vegetation type chamise chaparral. Funded by General Forest Service Fund.

In addition, a wildlife on Palomar Mountain in October, 1987 burned 15,900 acres of which about 2,300 acres were on Cleveland National Forest lands. Chaparral, coastal sage and conifer/oak woodland were the habitats burned. Although the conifers did not survive, it is expected that the burn will produce improved deer habitat in 2-5 years.

III. Changes to the San Diego Deer Herd Plan

None recommended at this time.

Harold McKinnie
Wildlife Biologist

HK:lp

cc: J. Davis
Bishop Office
San Diego Office

State of California

Memorandum

To : Wildlife Management Supervisor, Region 5 Date : October 1, 1986

From : Department of Fish and Game --San Diego Unit Manager

Subject : San Diego Deer Herd Plan Update

I. Update of Biological Information

A. Harvest

Both the regular season buck hunt and the antlerless hunt were conducted in San Diego County during the 1985 season. The buck harvest was 167 animals while the antlerless hunt produced 50 animals. Buck kill on Camp Pendleton rose to 148 animals while the doe hunt produced 54 animals taken.

B. Age Composition of Harvest

Incisors were collected from 50 bucks during the hunting season. Results of the age analysis were:

Bucks	1	2	3	4	4+	N
84	12	26	13	5	6	62
85	11	24	9	4	2	50

C. Composition Counts

Composition counts were conducted by helicopter utilizing Hill Bill monies. Results were:

	Bucks	Does	Fawns	Sample
Light hunted areas	25	100	14	67
Heavily hunted area	8	100	21	67
Combined ratios	18	100	16	134

Further sampling will be conducted during the fall of 1986.

II. The following breakdown indicates acres treated and funding.

Area	Acres Treated	Funding Source
Barona Mesa	300	USFS
Chaparral II	350	Hill Bill
Pine Valley	80	Co. Fines
Brown Canyon	1900	USFS

Love Canyon	650	USFS
Poser	200	USFS
Aguanda Ridge	2 water developments	Co. Fines

III. Changes to the San Diego Deer Herd Plan

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Harold McKinnie

Harold McKinnie
Wildlife Biologist

JD:lp

cc: Hein
Davis

APPENDIX II

YEAR	BUCK KILL	ANTLERLESS KILL	COMMENTS
			No antlerless season in county until 19
1950	767		
1951	734		
1952	719		
1953	792		
1954	904		
1955	1306		
1956	909	283	500 permits for all of regular buck seas
1957	852	234	1000 permits for 3-day post season
1958	731	265	955 permits for 3-day post season
1959	688	218	935 permits for 9-days in season
1960	725	376	1429 permits Sept. 27—Nov. 3
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ate of California

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III. Changes to the San Diego Deer Herd Plan

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Harold McKinnie
Wildlife Biologist

HK:lp

cc: J. Davis
Bishop Office
San Diego Office

The California Department of Forestry and Fire Protection (CDF) also does prescribed burning on private lands to improve habitat for livestock. These burns have benefitted deer and other wildlife. Following are the acres burned by CDF in San Diego County.

Years (Fiscal)	Acres Burned
1981-1982	6,030
1982-1983	1,495
1983-1984	853
1984-1985	2,000
1985-1986	3,302
1986-1987	3,064
1987-1988	2,516
1988-1989	3,002
1989-1990 (planned)	2,497
Total Acres	24,759
Average Acre Per Year	2,751

(Information furnished by John Gray, CDF Fire Chief, El Cajon)

The main vegetation treated by prescribed burns is chamise chaparral, with the desired effect being to open up this dense vegetation for wildlife. Wildlife use is usually high on these areas for several years after treatment, especially if water is nearby. Retreatment is necessary whenever chaparral stands become dominated by dense, overmature vegettion.

Wildfires also burn much of the chaparral along with many conifer and oak species. Conifers are usually killed; on Forest Service land, planting occurs to reestablish conifer plantations. Oaks are more hardy and usually crown sprout after the fire. Fire is a tool in creating more habitat for deer and other wildlife species, but needs to be used regularly to be effective in San Diego County.

Deer Herd: Camp Pendleton Marine Base

County: San Diego

A. Description of the Deer Herd Management Unit

1. Herd condition - Very Good

(Information from Slader Buck, Supervisory Wildlife Biologist; personal comment, using professional judgment and statistics.)

a. Individual animal condition

Fat indices are not available. Body weight of harvested animals has been collected for bucks and does (including antlerless males) for the last two seasons. Data from check station statistics[1] is as follows:

1988:	# Taken	Avg. Wt.	Wt. Range
Bucks	81	90.65 lb	34-165 lb
Antlerless	73	72.04 lb	37-95 lb
	154		

1989:			
Bucks	74	92.43 lb	32-134 lb
Antlerless	79	75.54 lb	21-106 lb
	153		

Discussion: Although no official fat indices were taken, every deer harvested on Camp Pendleton was inspected by Base Biologist(s). In general, fat content was less in 1989 than on animals harvested in 1988. This is believed, by Base Biologist, to be caused by poor forage due to the current drought.

b. Herd health

Statistics on fawn survival rates are not available and statistics on age structure of the deer herd will be available in Jan. or Feb. of 1990. Teeth have been collected from harvested deer since 1985 and have been sent to Matson's in Milltown, Montana, to be analyzed for age. Data since 1987 will be analyzed first and will be available for Department use by Jan.-Feb. 1990.

2. Population Size

In general, the herd has decreased in the last 30 years due to loss of habitat. Habitat is lost on Camp Pendleton from military construction, training activities and from fire.

[1] The above information includes both legal and illegal (confiscated) deer taken.

Ground transects were set up and read pre- and post-deer season in 1985, 1986, and 1987. No routes were read in 1988. In 1989 a post-season helicopter composition count was performed. Hard data is available but has not been analyzed. This information can be supplied (Jan.-Feb. '90).

3. Herd statistics

[2]Year	Bucks	Antlerless
1985	148	54
1986	88	55
1987	103	60
1988	80	73
1989	72	74

No Fall buck or fawn or Spring fawn statistics are available.

4. Deer hunting

   a. Past and current hunting strategies' effects on:

      1. Deer numbers

         No effect on deer numbers due to past and current hunting strategies.

      2. Herd composition

         Herd composition has remained stable.

      3. Herd health

         Herd health has remained stable.

   b. Future and proposed hunting strategies' effects on:

      1. Deer numbers

         Deer numbers will be affected by future/proposed hunting strategies in that less deer will be taken.

      2. Herd composition

         Herd composition will change in that more females are to be taken in future/proposed hunting strategies.

[2] The total number of deer harvested fluctuates according to the number of hunting areas on the Base open for deer hunting. If prime hunting areas are closed due to military training activities, less deer are harvested.

3. Herd health

No change is anticipated in herd health. It should remain stable.

5. Illegal harvest

Illegal harvest does occur on Camp Pendleton, but the level is unknown. It can be assumed that both military and civilian poaching occurs.

6. Other

None.

B. Non-human Effects on Deer

1. Weather

a. Drought

Low rainfall for the past three years has had an effect on deer through lack of surface (drinking) water and through poor forage.

b. Early storms

Approximately one early storm occurs each year. There appears to be no effect on the deer from early storm(s).

c. Mild winters

In general, mild winters are common here (because of geographic proximity to the ocean), so there is no effect on the deer herd.

2. Predators

Mountain lions are known to occur on Camp Pendleton. A telemetry study is currently under way to gather data on home ranges of mountain lions in the Camp Pendleton area. Based on limited food habits data available for Camp Pendleton, deer do not appear to be making as large a percentage of mountain lion diet as they do in other areas. Mountain lions have been documented taking alternative food sources including beaver and domestic sheep. According to the Base Supervisory Wildlife Biologist, "Mountain lions are <u>just starting</u> to have an impact on overall deer numbers on Camp Pendleton." (S. Buck, personal comment-Nov. 1989)

3. Disease and parasitism

As was previously mentioned, every deer legally harvested on Camp Pendleton was physically inspected by a Base Biologist. No outward or inward signs of disease or parasitism loads were found. Approximately 1% or less were found with Nose Botts and/or external warts. A disease study has been proposed for 1990. During the 1989 deer season (deer from

opening weekend), both ears from all deer were collected and given to the Orange County Vector Control District, who will be testing ticks found on the deer for Lyme Disease. Results are unavailable at this time.

C. Effects of Current Deer Hunting and Proposed Hunting Strategies on Other Species

1. Effects on Species of Special Concern

a. Changes in local populations

Endangered/sensitive species on the Base include California least tern, Stephens' kangaroo rat, black-tailed (California) gnatcatcher, and least Bell's vireo. Deer hunting occurs out of nesting season, so the only impact would occur from hunters destroying habitat needed by these species. Hunter use in these habitats is very limited, so the effect would be negligible.

b. Changes in regional and statewide populations

There would be no negative effects on regional or statewide populations because of deer hunting on Camp Pendleton.

c. General Statement Concerning C. 1-4:

According to the Base Biologist, impacts of deer hunting are really negligible compared to military training activities which involve tanks, vehicles, large numbers of people, and often result in fire. On Camp Pendleton there are year-round activities and continuous human access into areas used by wildlife.

1. Effects upon other wildlife species

a. Changes in local populations

The only changes to other wildlife species would be if incidental or illegal take occurred. (Example: a deer hunter shooting a bobcat, mistaking it for a deer or just negligently shooting a songbird or hawk or other species.)

b. Changes in regional and statewide populations

Camp Pendleton deer are not migratory, so there would be no effects on regional/statewide populations of other wildlife.

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

There would be no effect/changes in health, condition, or age class structure of other populations.

d. Changes in mortality factors

This would only occur if incidental or illegal take occurred as stated in 2.a. above. (There was one documented case in the 1988 deer season where a hunter shot at mountain lion - to the knowledge of the Base Biologist, it was not hit.)

3. Changes in public use/recreation

a. Hunting

Civilian and military access for hunting is held at a conservative level. The number of permits issued each season fluctuates with the condition of the herd.

b. Nonconsumptive

Deer hunting occurs concurrently with limited other uses, so no change would occur.

c. Nonhunting

No changes would be anticipated.

4. Effects upon human populations

In general, because Camp Pendleton is a military base, all access is controlled and all areas have specific use constraints.

a. Housing

Hunting is not allowed within 150 yards of housing; however, all housing areas are geographically separated from deer hunting areas.

b. Transportation

None

c. Public Services

None

d. Energy

None

e. Human Health

None (unless someone is shot)

f. Aesthetics

None

g. Cultural Resources

These areas occur on Camp Pendleton but are well marked and generally out of deer hunting areas. The only impact would be if a hunter accidentally impacts a "cultural site".

D. Range Landownership

Camp Pendleton is owned by the United States Marine Corps. The primary mission of the Base is military training. The Base is 126,000 acres. Seventy-thousand acres are generally available for deer hunting. No changes are anticipated in hunter acres available.

E. Range Vegetation

1. Fire

Vegetation has changed on Camp Pendleton due to fires. No quantitative numbers are currently available, but studies are being conducted on type conversion of vegetation after fires. Acreage and dates of fires are not available.

In general, fires on Camp Pendleton are frequent and erratic. Military equipment and weapons used in training activities often result in wildland fires that destroy deer and other wildlife habitat.

"For most chaparral/brush areas, a good burning cycle would be for burning to occur, on the average, once every 8-10 years. On Pendleton . . . an area will burn, then not burn for a year, then burn for three years in a row . . . etc." Constant burning depletes nature's reserves to recover and "continued burning exposes the soil to erosion and the invasion of exotic plants and grasses." Vegetation on Camp Pendleton is converting "from oak woodlands and brush (types that have more food diversity and provide more food cover) to grasslands or grass/low brush (types that have less food diversity and provide less cover). This vegetative type conversion is not beneficial to deer or other wildlife species . . . Because of the amount and types of training going on, there will always be fire on Pendleton. According to the Base Fire Department, about 80% of wildland fires are caused by training. About 60% of those were preventable. Whatever the reason, the resulting fire and fire control efforts further the loss of habitat." (Taken from question and answer pamphlet written by Base Biologist and provided to hunters.)

SAN DIEGO DEER HERD MANAGEMENT PLAN

1990 UPDATE

The season duration for both buck and antlerless hunting zones was thirty days, the same as it has been for the last six years. Dates for the 1989 season were October 7 - November 5. A helicopter was again used for deer herd composition counts. Incisors were collected for age structure composition of the herd. Kill data and collection data was used but no information from road-killed deer was analyzed. Approximately 25 deer were collected to evaluate the general health and nutrition aspects of the deer herd. Locations of harvested deer will be incorporated onto a "spot-kill map" and analyzed for hunting and herd movement trends. No public meeting was held 1989 and one has not been scheduled for 1990. Major opposition to the S-11 antlerless hunt has been a focus of individuals and groups, including the San Diego County Fish and Wildlife Commission.

I. Update of biological data:

SAN DIEGO HERD AGE ANALYSIS

YEAR	SAMPLE	1	2	3	4+	AVG. AGE
1984	62	12 (19%)	26 (42%)	13 (21%)	11 (18%)	2.5 yr.
1985	53	12 (23%)	24 (45%)	11 (21%)	6 (11%)	2.3 yr.
1986	85	8 (9%)	38 (45%)	22 (26%)	17 (20%)	2.9 yr.
1987	63	8 (13%)	21 (34%)	20 (31%)	14 (22%)	2.7 yr.
1988	67	4 (6%)	37 (55%)	13 (19.5%)	13 (19.5%)	2.7 yr.
1989	101	5 (5%)	53 (52%)	23 (23%)	20 (20%)	3.2 yr.
	431 total				six year average	2.7 yr.

SAN DIEGO DEER HERD COMPOSITION COUNTS

YEAR	SAMPLE	BUCK		DOE		FAWN
1985	134	18	:	100	:	16
1986	222	25	:	100	:	37
1987	241	25	:	100	:	41
1988	262	27	:	100	:	35
1988 summer	182	34	:	100	:	36
1989	222	23	:	100	:	26

SAN DIEGO HERD HARVEST TREND

YEAR	ZONE	QUOTA	TAG SALES	HARVEST	SUCCESS RATE
1985	D-16	7,000	7,003	174	4%
	S-1	750	684	6	<1%
	S-11	200	200	50	25%
1986	D-16	7,000	5,158	211	4%
	S-1	750	750	5	<1%
	S-11	200	200	56	28%
1987	D-16	7,000	4,974	192	4%
	S-1	750	750	14	2%
	S-11	200	200	45	22%
1988	D-16	7,000	4,380	167	4%
	S-1	1,000	1,000	14	1%
	S-11	200	200	53	26%
1989	D-16	7,000	4,418	223	5%
	S-1	1,000	1,000	11	1%
	S-11	200	200	41	20%

II. Update of habitat improvement projects:

Prescribed burns within the Cleveland National Forest include 450 acres in the Palomar District (350 in Barker Valley and 100 in Rattlesnake Canyon) and 1,550 on the Descanso District. Wildfires include the 16,000 acre Vail fire, which was 90% on the Palomar District of the National Forest with about 10,000 acres alone within the Agua Tibia Wilderness Area. Wildfires encompassed 573 acres within the Descanso District of the Forest. (This included the Hill Bill Project for the prescribed burn on Aguanga Ridge, USFS, in which $24,000 was allocated for burning 300 acres).

Total fires within the County that have affected deer range equals approximately 18,573 acres. Information on wildfires or prescribed burns within the CDF, BLM or Camp Pendleton jurisdiction is not available at this time.

One Hill Bill Project for San Diego County has been authorized for FY 1990-91. $15,000 has been allocated for a Vegetation Monitoring Project to be implemented by the USFS.

Quail Unlimited has become active in repairing and installing small game guzzlers throughout the National Forest, which will also benefit deer within the herd's range. USFS checks and maintains the big game guzzlers. These drinkers will become increasingly important during the present 4-year draught.

III. Changes to the herd plan goals, objectives or management strategy:

Herd plan goals, etc. may be changed upon evaluation of the deer collection statistics which are currently being analyzed. Necropsies were performed on about 25 deer collected within San Diego County in November, 1989 and March 1990. Bucks, does, fawns and pregnant does were collected.

It is this biologist's opinion that statistics from the Natural Diversity Data Base, and data from local Environmental Documents (EIRs, etc.) be incorporated into the Deer Herd Plan as updates on population, movements, habitat condition and availability (including open space, wildlife corridors and public/private wilderness areas) and used for deer management county-wide. In general, data for non-hunted areas in the county is minimal and not easily accessible.

Road-kill location and partial necropsies of road-killed deer by Unit Biologist(s) would generate additional information about the deer herd and it's health. Miscellaneous information acquired from Wildlife Protection personnel should be incorporated into the Deer Herd Plan where applicable.

Deer pellet/vegetation transects set up by the USFS in 1981 on the Descanso District should be read annually. Department personnel should assist the District Biologist and use the information gathered in it's management decisions.

SAN DIEGO DEER HERD AGE ANALYSIS

BUCKS

YEAR	SAMPLE	1	2	3	4+	AVG. AGE
1984	62	12(19%)	26(42%)	13(21%)	11(18%)	2.5 yrs.
1985	53	12(53%)	24(45%)	11(21%)	6(11%)	2.3 yrs.
1986	85	8(9%)	38(45%)	22(26%)	17(20%)	2.9 yrs.
1987	63	8(13%)	21(34%)	20(31%)	14(22%)	2.7 yrs.
1988	67	4(6%)	37(55%)	13(19.5%)	13(19.5%)	2.7 yrs.
1989	101	5(5%)	53(52%)	23(23%)	20(20%)	3.2 yrs.
*1990						
1991	56	2(4%)	21(37.5%)	12(21%)	21(37.5%)	3.3 yrs.

ANTLERLESS

YEAR	SAMPLE	F	1	2	3	4+	AVG. AGE
1985	18	2(11%)	6(33%)	3(17%)	4(22%)	3(17%)	2.5 yrs.
1986	23	4(17%)	8(35%)	3(13%)	1(4%)	7(31%)	2.7 yrs.
1987	19	0	8(42%)	7(37%)	2(10.5%)	2(10.5%)	1.9 yrs.
1988	20	2(10%)	5(25%)	7(35%)	0	6(30%)	2.7 yrs.
*1989							
*1990							
1991	14	1(7%)	3(21%)	3(21%)	4(30%)	3(21%)	2.8 yrs.

* Tooth analysis information not available

SAN DIEGO DEER HERD COMPOSITION COUNTS

YEAR	SAMPLE	BUCK		DOE		FAWN
1985	134	18	:	100	:	16
1986	222	25	:	100	:	37
1987	241	26	:	100	:	41
1988	262	27	:	100	:	35
1989	222	23	:	100	:	26
*1990			:	100	:	
*1991			:	100	:	

* Composition counts not conducted

SAN DIEGO COUNTY DEER BLOOD SAMPLES

,1989

Affinity Tests On 15 Individual Animals

	Road Killed			Collected					
animal #	7	8	9	22	23	E	F	G	H
Leptospirosis	C	–	C	C	C	C	–	–	C
Brucellosis	–	–	–	–	–	–	–	–	–
Blue tongue	+	–	+	–	–	+	+	–	+
EHD	+	–	+	+	–	0	–	–	+
Anaplasmosis	+	–	–	+	–	+	–	–	–

animal #	I	J	K	L	M	21
Leptospirosis	–	C	C	C	C	C
Brucellosis	–	–	–	–	–	–
Blue Tongue	+	+	–	+	+	–
EHD	+	+	–	+	+	–
Anaplasmosis	–	–	–	+	–	–

+ means positive test
– means negative test
C means contaminated test with no result
0 means no result, too much blood fat

revised 06/22/90

PRESCRIBED BURN HISTORY
for the
PALOMAR RANGER DISTRICT

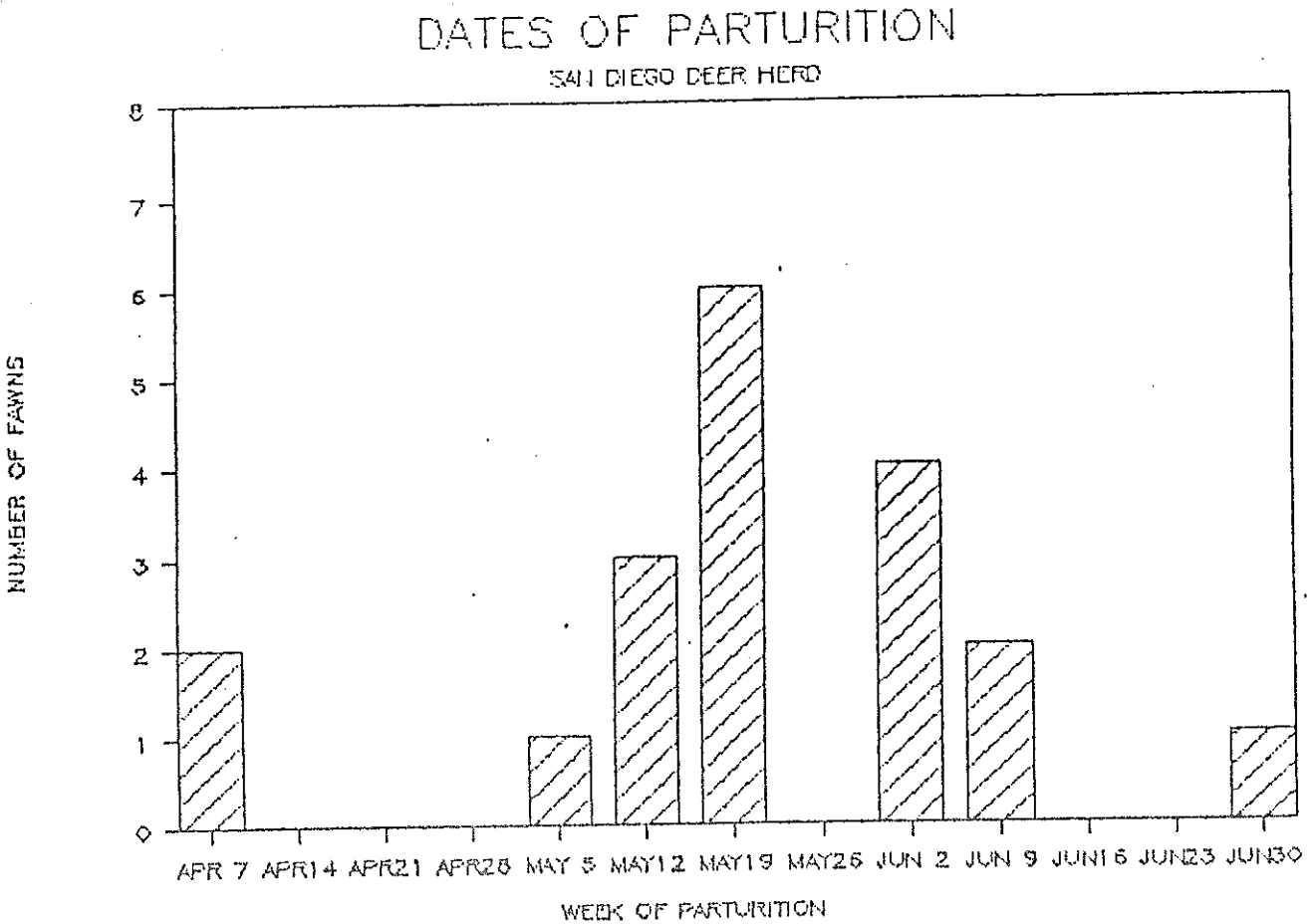
FY	DATE	PROJECT NAME	PROJECT ACRES	ACRES ACCOMPLISHED		FUNDING SOURCE
				Black	vs.Treated	
81	4/81	BARKER VALLEY	600	270	600	FS $
82	5/82	BLUE CANYON	200	90	200	FS $
	4/82	HALFWAY		(UNKNOWN)		
83	6/83	JUNCTION	100	60	100	FS $
85	6/85	LOVE VALLEY	1160	120	200	FS $
	6/85	LUSARDI	1300	260	400	FS/CDF
86	1/86	LOVE VALLEY		180	350	FS $
	6/86	BARONA	1000	775	1000	FS $
88	12/87	LOVE VALLEY		100	200	FS $
	2/88	WEST FORK	730	120	240	FS $
	6/88	OBSERVATORY	1300	540	1000	FS/CDF/CELP/S.D.CO.
	6/88	RATTLESNAKE	1400	200	400	FS/HILL BILL
89	11/88	RATTLESNAKE	1400	150	200	FS
	04/89	WEST FORK CHAP.	3600	1200	2000	FS/HILL BILL
	02/89	FINK PROJECT	300	200	300	FS/S.D. CO.
90	06/90	RATTLESNAKE	1400	350	600	FS FUELS
	06/90	WEST FORK CHAP	3600	580	1000	FS/HILL BILL
		Cumulative Total =	5,195		8,790	

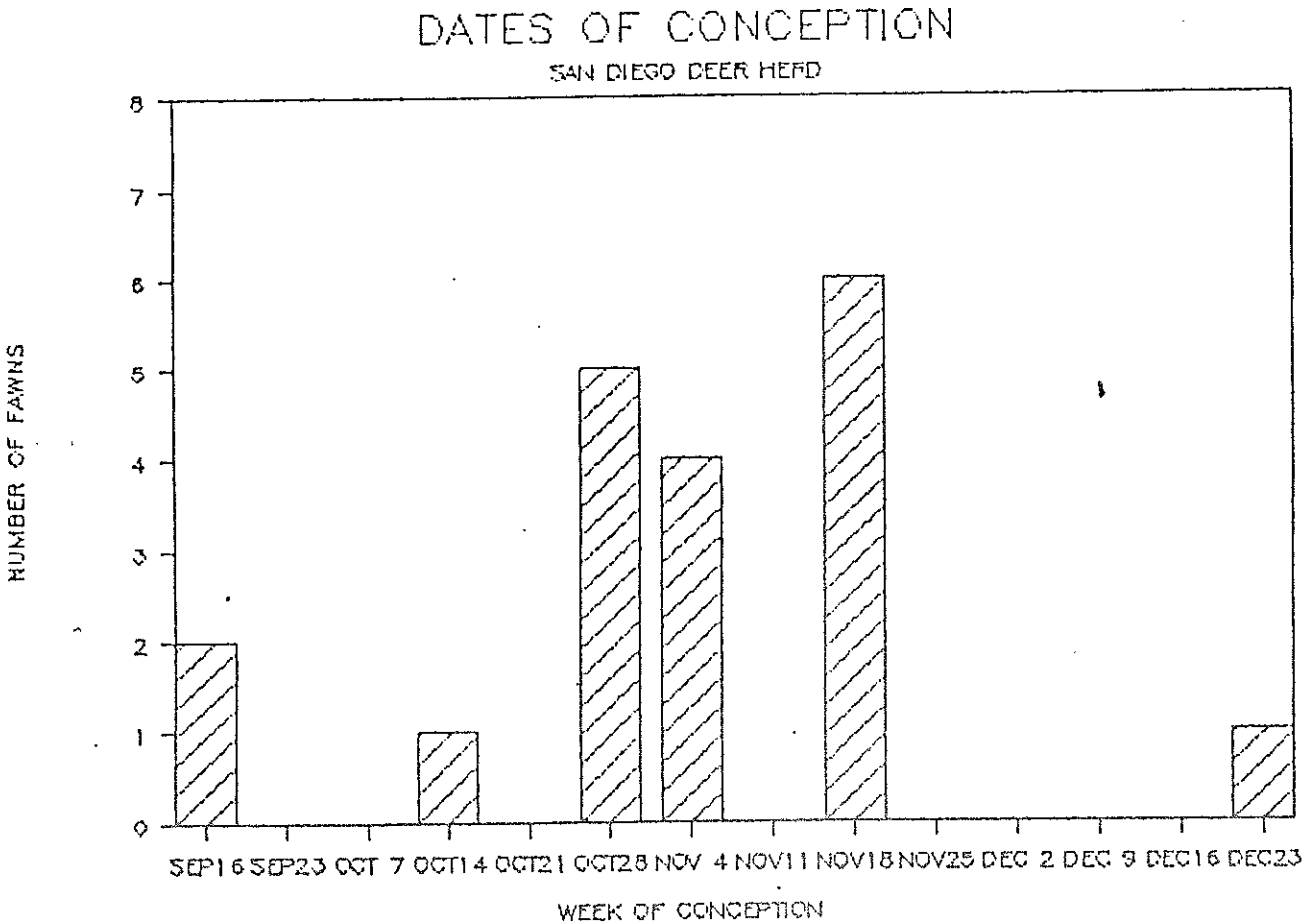
91		BODEN	1200
92		GOWER	1300
93		NORTH SLOPE	4000
94		NORTH SLOPE	4000

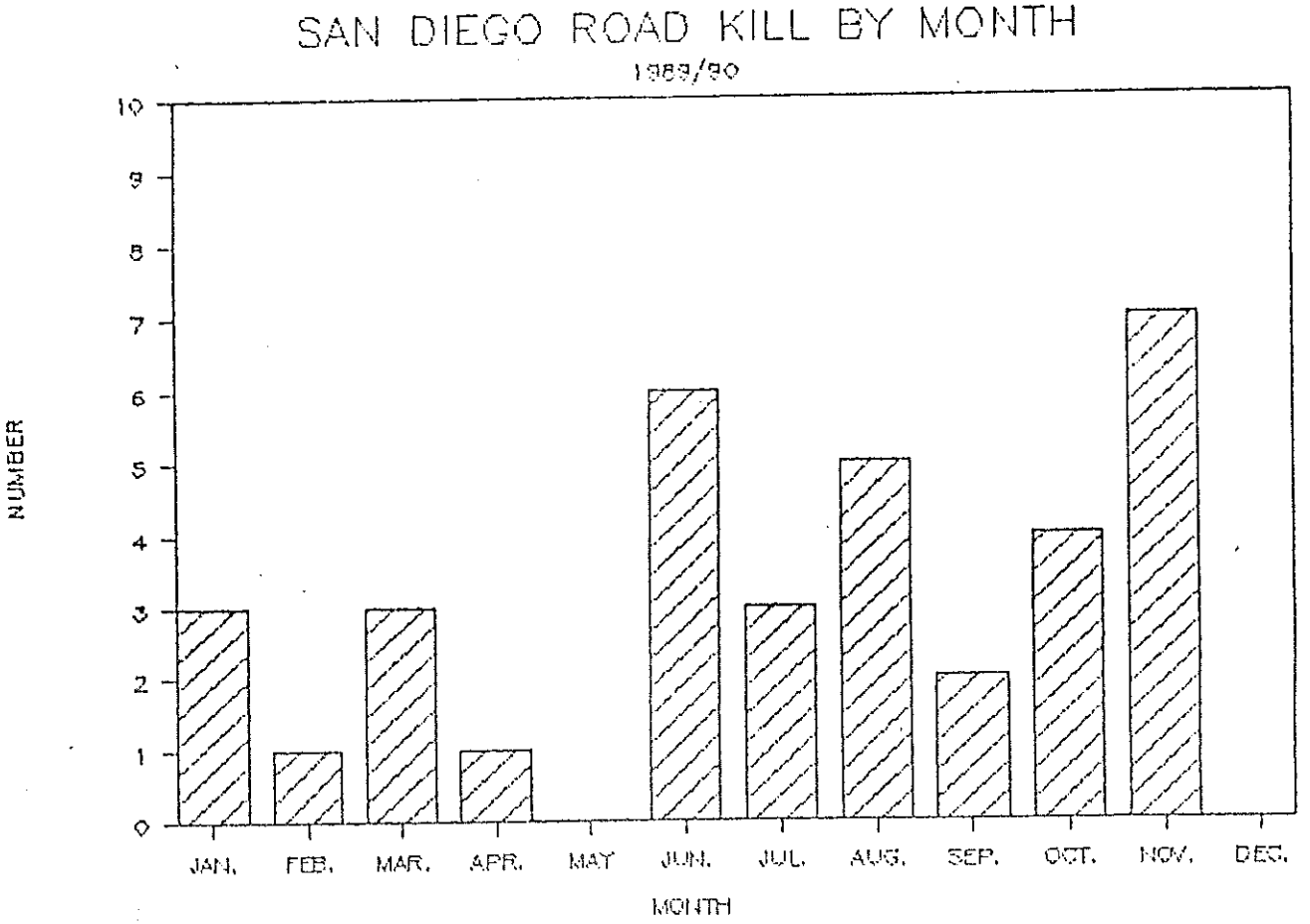
CLEVELAND NATIONAL FOREST
DESCANSO RANGER DISTRICT
PRESCRIBED BURNS

	COMPLETED BURNS	PROJECT ACRES	DATE OF BURN
1.	Anton Cyanon	3000	1980
2.	Thing Mountain	3500	1981/1982
3.	Noble Canyon #1	600	1983
4.	Noble Canyon #2	2000	1984
5.	Cottonwood Burn	2000	1984
6.	Chaparral #1	1000	1985
7.	Chaparral #2	450	1986
8.	Cameron Burn	140	1986
9.	Cameron Coop	830	1987
10.	Poser Burn	870	1988
11.	Pine Burn	2590	1988/1989
12.	Red Top Burn	100	1990

	PROPOSED BURNS	PROJECT ACRES	DATE OF BURN
13.	Troy Long Burn	1700	1992/1993
14.	Tragedy Burn	1400	1994
15.	Pine Burn	1500	1994/1995
16.	La Posta Burn	100	1996
17.	Burney/Dubois	950	1996/1997


DATES OF PARTURITION
SAN DIEGO DEER HERD
NUMBER OF FAWNS
0
1
2
3
4
5
6
7
8
APR 7 APR14 APR21 APR28 MAY 5 MAY12 MAY19 MAY26 JUN 2 JUN 9 JUN16 JUN23 JUN30
WEEK OF PARTURITION


DATES OF CONCEPTION
SAN DIEGO DEER HERD
NUMBER OF FAWNS
0
1
2
3
4
5
6
7
8
SEP16 SEP23 OCT 7 OCT14 OCT21 OCT28 NOV 4 NOV11 NOV18 NOV25 DEC 2 DEC 9 DEC16 DEC23
WEEK OF CONCEPTION


SAN DIEGO ROAD KILL BY MONTH
1989/90
NUMBER
0
1
2
3
4
5
6
7
8
9
10
JAN.
FEB.
MAR.
APR.
MAY
JUN.
JUL.
AUG.
SEP.
OCT.
NOV.
DEC.
MONTH

SAN DIEGO COUNTY DEER MORTALITY STUDY
PALOMAR RANGER DISTRICT

Date Collared	Collar Freq.	L Ear Tag #	R Ear Tag #	Sex	Age Class	Capture Location
3-10-92	.500	324	325	Doe		Barker V.
3-11-92	.515			Doe		West Fork
3-11-92	.565	331	330	Buck	Adult	West Fork
3-12-92	.495	339	338	Buck	Yearl	West Fork
3-12-92	.505	344	343	Doe	Adult	West Fork
3-12-92	.545	336	337	Buck	Adult	West Fork
3-12-92	.550	318	319	Doe	Adult	Barker V.
3-13-92	.470	333	332	Buck	Yearl	West Fork
3-13-92	.490	228	329	Doe	Adult	Barker V.
3-13-92	.520	349	350	Buck	Yearl	Barker V.
3-13-92	.525	342	341	Doe		West Fork
3-13-92	.535	301	340	Doe	Adult	West Fork

1989 Deer Herd Management Plan Update

A. Description of the Deer Herd Management Unit

I. Herd Condition

Overall, the herd is in fair condition.

a. Individual Animal Condition

Deer observed at check stations in past years have shown varying amounts of fat. Rump fat measured on 10 bucks during the opening weekend of the season varied from 4 mm to 3 cm. The only doe checked had rump fat at 1.5 mm. One fawn had no fat and was in emaciated condition with an infected jaw.

Deer have been weighed at check stations for the past 10 years. The southern mule deer is the smallest subspecies of the mule deer. Body weights of field dressed bucks range from 79 lbs to 123 lbs with the average weight being 105 lbs. Doe weights range from 64 lbs to 90 lbs with the average being 79 lbs.

b. Herd Health

Based on examination at check stations, deer killed by hunters were usually in good physical condition. Ticks and fleas were common but there was little physical evidence of disease or internal parasites. As reported before, one fawn was in very poor physical condition with an infected jaw.

To get information related to population age structure, teeth from deer were collected beginning in 1984. Most teeth were from deer legally taken by hunters, however teeth from illegal kills and road kills were included. Teeth were sent to Matson's in Montana for aging via cementum analysis. The following table shows age data. Information regarding deer within the Camp Pendleton Marine Base is presented in an attached document.

Bucks

Year	1 yr.	2 yr.	3 yr.	4+yr.	Sample Size	Ave. Age
1984	12 (19%)	26 (42%)	13 (21%)	11 (18%)	62	2.5
1985	12 (23%)	24 (45%)	11 (21%)	6 (11%)	53	2.3
1986	8 (09%)	38 (45%)	22 (26%)	17 (20%)	85	2.9
1987	8 (13%)	21 (34%)	20 (31%)	14 (22%)	63	2.7
1988	4 (06%)	37 (55%)	13 (19.5%)	13 (19.5%)	67	2.7

Based on a sample size of 330 deer, average age of the buck population was 2.6 years.
Teeth from antlerless deer also were sent to Matson's. The following table shows this data.

Antlerless

Year	Fawns	1 yrs.	2 yrs.	3 yrs.	4+ yrs.	Sample Size	Ave. Age
1985	2 (11%)	6 (33%)	3 (17%)	4 (22%)	3 (17%)	18	2.5
1986	4 (17%)	8 (35%)	3 (13%)	1 (04%)	7 (31%)	23	2.7
1987	0	8 (42%)	7 (37%)	2 (10.5%)	2 (10.5%)	19	1.9
1988	2 (10%)	5 (25%)	7 (35%)	0	6 (30%)	20	2.7

Although sample size for does was small (n=80), average age was 2.4 years.

Fawn survival has been low. From 1985-1989, the fawn to doe ratio ranged from 16-41 fawns per hundred does (see herd statistics section A.III). Factors causing poor fawn survival are unknown at this time.

II. Population Size

In 1952, Longhurst et al. estimated that 26,000 deer inhabited the county. Recently, Doug Updike used a computer model and estimated the population in the huntable portions of the county (excluding Camp Pendleton) to be about 3,500. No recent population estimate is available for the entire county. Population estimates should not be considered precise, however deer numbers in San Diego County have declined since 1952, coincidental both with a statewide decline and a decline throughout the western United States during the same period.

From 1969 to 1981, the deer season in San Diego was 44 days long, starting in the middle of October and ending late in November. The buck kill ranged from 243 to 377 and the average kill for those years was 312. In 1982, the season was reduced to 30 days, occurring mostly in October. A quota of 7,000 tags was established for the Zone D-16 which included most of San Diego County and a part of Riverside County. In 1982, all 7,000 buck tags were sold and 237 bucks were killed in San Diego County. After 1987, tag sales declined each year to a low of 4,380 (1989 California Hunting Regulations, Part 1, Mammals and Furbearers). From 1982 through 1988, the buck kill in San Diego County ranged from a high of 237 in 1982 to a low of 167 in 1988. The average buck kill for those years was 196. It is the writer's opinion that if the deer season was again 44 days in length, extended into the latter part of November, and there was no limit on the number of tags, the average kill in the county would be over 300 bucks. Thus if season length was increased and moved later, harvest would not be significantly different from the 1981 harvest.

*Longhurst , W.M. et al. 1952. A survey of California deer herds, their ranges and management problems. Calif. Fish & Game, Bulletin #6, 136 p. 1952

III. Herd Statistics

Harvest

	San Diego County		Camp Pendleton	
Year	Bucks	Antlerless	Bucks	Does
1980	291	51	159	92
1981	307	48	124	106
1982	237	48	113	54
1983	189	38	87	55
1984	196	44	76	45
1985	174	50	148	54
1986	217	56	88	55
1987	192	45	104	59
1988	167	53	80	73
1989	unavailable		72	74

In 1985, herd composition counts occurred statewide, using a helicopter. Below are the results of those counts for San Diego County.

Year	Does	Bucks	Fawns	Sample Size
1985	100	18	16	134
1986	100	25	37	222
1987	100	26	41	241
1988	100	27	35	262
1989	100	22	25	222

IV. Deer Hunting

a. Past and current hunting strategies effect on:

1. Deer Numbers

According to Doug Updike, DFG biologist in Sacramento, the deer population in the huntable areas of the county (excluding Camp Pendleton) in 1988 was 3,500 animals. Based on the 1988 herd composition counts of 27 bucks and 35 fawns per 100 does, for 1988 the deer herd composition was 2,160 does, 590 bucks and 750 fawns. (To predict buck and doe numbers for 1989, we can add 375 fawns to each which would make the doe population 2,535 and the buck population 965). Tag returns showed that 177 bucks were killed in San Diego County in 1988 (167 in D-16 and 10 in S-1). This represents a kill of 30 percent of the buck population during 1988. Updike's research shows that buck populations can sustain a harvest of 50 percent without showing a decline. If the buck harvest is less than 40 percent, buck to doe ratios may rise. With a 30 percent kill in 1988, it appears that the buck population has remained the same for the past seven years. Few does are taken in the S-1 and S-11 hunt (55 in 1988), so there should have been no decline in the San Diego County herd in the past seven years.

Herd composition counts for the past five years indicate that bucks per hundred does range from 18 to 27 and fawns per hundred does range between 16 and 37. From the variance in these numbers over the past four years, it is the writer's opinion that past and current hunting strategies have had no adverse effects on herd composition in San Diego County.

3. Herd health

It is the writer's opinion that the number of deer in San Diego County is the same now as it was seven years ago. It is also my opinion that the buck population is approximately the same as it was in 1982. Removal of deer from this stable population should result in increased fawn survival the following year. Although herd composition counts show that this increase has not taken place, there has been no significant decrease. Thus, the past and current hunting strategies have not resulted in a decline in the general health of the deer population.

b. Future and proposed hunting strategies effects on:

1. Deer numbers

It is not anticipated that the length of the D-16 deer season (30 days), the timing of the hunt (mostly in October), or the deer tag quota (7,000) will be changed in the near future. Therefore, there will be no effect on the number of bucks in the population as a result of the D-16 hunt. For the S-1 hunt (either sex, archery only), it is proposed that the number of available tags remain at 1,000 but that the current 12 week season be cut to six or seven weeks, starting in the middle of December and ending on January 31. This will remove the S-1 hunt from November, which is the peak of the rut in interior San Diego County. Since such a small number of deer are killed in this hunt yearly, the decrease in the length of the season will have minimal effect on deer numbers. For the S-11 hunt, it is proposed that the number of tags available be reduced from 200 to 150 and that the season occur during the last 16 days of the D-16 hunt instead of concurrent to the entire D-16 season. Since the average success in this hunt has been 25 percent for the past nine years, the number of antlerless deer harvested in the S-11 hunt will be approximately 12 fewer. This will have minimal effect on the number of does or fawns in the population. Thus it can be stated that future and proposed hunting strategies will have minimal effects on deer numbers.

2. Herd Composition

Future and proposed hunting strategies will have no effect on herd composition. The decrease in the number of antlerless deer being harvested is believed insignificant and herd composition will remain the same.

3. Herd health

The future proposed hunting strategies will have no effect on herd health, since the increase in antlerless deer will be insignificant and herd health will not improve or decline.

V. Illegal Harvest

While there is speculation that poaching of deer is high in San Diego County and may be as high as one-half the legal take, no precise estimate of the illegal harvest is available. It is possible that poaching increases with unemployment and high meat prices. Since the illegal harvest is unknown, it is unknown whether poaching is a limiting factor to deer populations.

VI. Other

a. Road Kill

Many deer are killed and injured by vehicles throughout the County. The kill of deer on Interstate 8 Freeway east of Alpine is alarming. Wardens in that part of the county estimate that between 50-100 deer are killed annually on this freeway between Alpine and Buckman Springs Road. It is very possible that road kill is a limiting factor to deer populations. Plans are now being made to install a deer-proof fence on Interstate 8. Some Hill Bill funds will be available. Completion of fencing is anticipated by 1995.

b. Non-Human Effects on Deer

1. Weather

a. Drought

San Diego County has had three years of low precipitation beginning with the 1986-87 rainfall year. Effects on wildlife habitat in most of the county have been serious. Intermittent streams have dried up sooner than usual in the spring and creeks and streams which usually flow year long have water only in a few pockets. Many springs are dry. This has forced deer to congregate near available water where they are more susceptible to disease, predation and poaching. This is typical during low rainfall and drought conditions.

Water distribution is a factor influencing distribution in the county. Bowyer found that deer in Southern California seldom made use of areas more than 1 km. from water in summer, and never observed them more than 2.5 km. from water (Bowyer, R.T. 1981. Management guidelines for improving southern mule deer habitat on the Laguna-Morena Demonstration Area, U.S.D.A. Forest Service 40-9AD6-9-622)

b. Early Storms

San Diego County usually does not get early storms. In November, 1985, two feet of snow fell in the higher elevations, and there was even about three inches in parts of the low desert. Coastal areas received about two inches of rain. This may have affected fawn survival as only 16 fawns per 100 does were counted that year. However, the sample size of 134 was small, and 1986 counts showed 37 fawns per 100 does. The heavier storms in Southern California usually occur in January or February.

2. Predators

Predators in San Diego County include mountain lions, coyotes, bobcats, and feral and domestic dogs. The population of mountain lions is unknown, but their numbers have increased since the moratorium on lion hunting was enacted in 1971. Personal conversation with Dick Weaver in 1985, biologist with the California Department of Fish and Game, indicated at that time that there were over 100 lions in the county and probably over 4,000 in the state. Lions are efficient predators and may be an important source of deer mortality in San Diego County.

Coyotes are numerous in San Diego County and are efficient hunters. While they take some young and infirm deer, they are not thought to be a major limiting factor in suppressing deer populations. Bobcats may occasionally kill fawns but these incidents are probably rare.

Feral dogs run in packs and sometimes kill deer. By chasing deer, domestic dogs cause stress and may contribute to deer losses in some areas. Dogs are not thought to be a major factor in supressing deer populations.

3. Diseases and Parasitism

Although the effects of disease and parasites on the San Diego deer herd are unknown, they are not thought to be a serious problem. Studies planned in late 1989 and the spring of 1990 may furnish information related to disease and internal parasites for San Diego County deer.

c. Effects of Current Deer Hunting and Proposed Hunting Strategies on:

1. Species of Special Concern

   a. Changes in Local Populations

      The wildlife species of special concern that occur in San Diego County where deer hunting occurs include threatened and endangered species listed by the U.S. Fish & Wildlife Service (State). Birds include the bald eagle, peregrine falcon, and least Bell's vireo which are listed as endangered by both agencies. Mammals include the Stephen's kangaroo rat which is listed as threatened by both agencies, and the peninsular bighorn sheep which is listed as threatened by the state. Bald eagles migrate through the area in winter, arriving in November or December and staying around lakes until March. As many as 14 have been counted at Lake Henshaw. They are not in the area during the rifle hunt and there have been no reports of bow hunters shooting them.

      The least Bell's vireo does not arrive in its nesting areas until March. It has left the area by the middle of September and is not in the area during the rifle season. They are small, secretive birds and hunters in the early archery season do not shoot at them. The Stephen's kangaroo rat hides in its burrows when humans approach and hunters do not have any effects on this species. The peninsular bighorn sheep occurs in limited numbers on BLM lands of McCain Valley and the desert floor. They are wary animals and legal hunters have no effect on this population.

In addition to the threatened and endangered species, there are several bird species of special concern which may be listed as threatened or endangered in the future. Those which may occur in the county where deer hunting also occurs include the willow flycatcher, vermilion flycatcher, northern harrier, osprey, spotted owl, longeared owl, short-eared owl, purple martin, black-tailed gnatcatcher, gray vireo, yellow warbler, yellow-breasted chat, summer tanager, and dark-eyed junco. Numbers of some of these species may have been reduced because of shooting; such species include the northern harrier, osprey, spotted owl, long-earned owl, and short-eared owl. The increase in public sentiment against indiscriminate shooting of such birds and increased patrol efforts should mitigate impacts to birds because of indiscriminate shooting. (Bird species of special concern in California, prepared by J.V. Remsom for California Department of Fish and Game, Project PR W-54-R-9, 1978) Current and proposed hunting strategies will have no further effects on those species.

There are several rare or endangered plants which occur in areas of deer hunting. These include slender-pod jewel flower (state rare), salt marsh birds beak (Service and state endangered), Parish's meadarofoam (state endangered), Dunn's mariposa lily (state rare), Mexican flannel bush (state rate), Otay tar plant (state endangered), Cuyamaca Lake downingia (state endangered), Laguna Mountain uster (state rare), and Nevin's barberry (state endangered). Most of those plants are in areas open to the public year round for hiking, camping, fishing, and bird watching. They should not be adversely affected by any hunting strategies, current or proposed.

b. Changes in regional and statewide populations

It is not anticipated that there will be impacts to regional and statewide populations other than those to local populations.

2. Effects Upon Other Wildlife Species

a. Changes in local populations

Predation by mountain lions, coyotes and bobcats has been discussed in a previous section. Currently, deer hunters kill a few coyotes and bobcats each year. There have been no reports of lions killed by hunters. Proposed hunting strategies will not change the effects on other wildlife species.

b. Changes in regional and statewide populations

Neither the current nor proposed deer hunting strategies in San Diego County will have any effects on regional and statewide populations of other wildlife species.

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

Current and proposed deer hunting strategies will have no effect on health, condition or age class of other wildlife species.

d. Changes in mortality factors

Under proposed hunting strategies, slightly fewer hunters in the field will result in slightly fewer individuals of other wildlife species being hunted. These changes will be insignificant.

f. Aesthetics

There will be no change in aesthetics in the County due to deer hunting strategies.

g. Cultural Resources

Cultural resources will not be affected by deer hunting strategies.

D. Range Landownership

Land ownership patterns have changed little in past 12 years. In 1977, according to the State Lands Commission (Public Land Ownership in California, 1977) and the USDA, Forest Service (Cleveland National Forest Land Acreage Summary as of October, 1981) public lands occupied 1,394,305 acres and 51.2% of the County while 1,328,895 acres and 48.8% were in private ownership. The public land holders were State Parks and Recreation (489,772 acres, 35.1% of public lands and 18.0% of total lands) U.S. Forest Service (290,740 acres, 20.9% of public lands and 10.7% of total lands), Bureau of Land Management 185,053 acres, 13.3% of public lands and 6.8% of total lands), military lands (755,423 acres, 11.1% of public lands and 5.7% of total lands), Bureau of Indian Affairs (123,498 acres, 8.9% of public lands and 4.5% of total lands) and other public agencies (149,819 acres, 10.7% of public lands and 5.5% of total lands. This later category includes CAlTRANS, the State University system, other state agencies, 18 incorporated cities, the County of San Diego, school districts and special districts such as water and sewer).

The main change in land ownership in the past 10 years has been the annexation of county lands by many of the incorporated cities for residential, commercial, and industrial development. The BLM has gotten rid of several small parcels, most of them going to other public agencies. The U.S. Forest Service has added a few hundred acres through purchase and land swap. All of this has resulted in a small decrease in public lands and a small gain in private lands. This trend will continue past the year 2000. (SANDAG, BLM, USFS). With the decrease in public lands (BLM and County lands) there has been a slight decrease in lands available for deer hunting.

E. Range Vegetation

I. Fire

Chaparral is the dominant vegetation type in San Diego County. Most of it is dense and high. Prescribed burning is the main management tool in opening new range for deer and other wildlife. Wildfires also play a major part in ridding the County of the dense vegetation. Wildfires are not as effective in improving habitat for wildlife because those fires do not burn in mosaic patterns and there are few vegetation islands left after a wildfire sweeps through an area. Since 1981, 36,353 acres of U.S. Forest Service lands have burned in wildfires in San Diego County. Many prescribed burns have been accomplished on both the Palomar and Descanso Districts.

These burns were designed not only to improve habitat but also to decrease large wildfire burns. An estimated 2,500 acres a year were burned by prescription on the Cleveland National Forest in San Diego County (personal communications, Tom White, U.S.F.S.)

Wildfire and prescribed burn acreages in San Diego County on the Cleveland National Forest are summarized below.

Year	Total Wildfire Acres	Total Prescribed Burn Acres
1980	----	1,461
1981	370	2,006
1982	115	2,500 est.
1983	181	2,500 est.
1984	4,788	2,500 est.
1985	739	2,500 est.
1986	1,452	2,500 est.
1987	12,300	2,470
1988	408	2,920
1989	16,000 est.	3,673
Total acres	36,353	25,030
Average acres per year	4,039	2,503

Hill Bill funds have been used since 1985 for prescribed burns to improve habitat for the southern mule deer. Prescribed burning will continue into the future.

Wildfires on BLM lands have not been as prevalant as on U.S. Forest Service lands. A wildfire in McCain Valley in 1983 burned an estimated 2,000 acres, and one on Otay Mountain in 1989 burned about 140 acres. There have been attempts (only partially successful) to prescribe burn in McCain Valley. The intention is to burn 500 acres per year on this area (personal communication with personnel from BLM, Riverside and Palm Springs)

STATE OF CALIFORNIA

OFFICE MEMO
STD. 100 (REV. 10/87)
87 46331

DATE: 8-14-92

TO:
Mr. Sonke Mastrup- Wildlife Management Division

ROOM/STA. NO.

FROM:
Randy Botta- WLM, San Diego

PHONE NUMBER (619) 675-0124 ATSS ☐

ROOM/STA. NO.

SUBJECT:
San Diego Deer Herd Information

Attached is additional information for your San Diego deer file. If you have any questions or if I can be of further assistance, please let me know.

Put your thoughts to work. Submit a **MERIT AWARD SUGGESTION.**

Herd: San Diego County, Southern Mule Deer
County: San Diego

I. Description of the Deer Herd Management Unit

A. Herd Condition

Overall, the herd is in poor condition.

1. Individual animal condition

Four separate collections of deer have been initiated over the past two years. Ninety deer from road kills, hunter check stations, and two other collections completed in November, 1989 and March, 1990 have been examined. The following table summarized the condition of these deer from quantified visceral and subcutaneous fat indices.

COLLECTION	MALE	FEMALE	TOTAL	YRL.	FAWN	EXC.	GOOD	FAIR	POOR	V. POOR	
SDRK	10	25	35	8	4	0	3	4	8	16	(31)
								9.7%	12.9%	25.8%	
51.6%											
SDC-1	3	13	16	2	1	0	0	3	6	7	(16)
										18.7%	
37.5%	43.7%										
SDC-2	8	11	19	3	1	0	0	4	6	8	(18)
								22.2%	33.3%	44.4%	
SDHCS	18	2	20	0	1	5	4	3	2	1	(15)
						33.3%	26.7%	20%	13.3%	6.7%	
	39	51	90	13	7	5	7	14	22	32	(80)
						6.2%	8.7%	17.5%	27.5%	40%	
SDRK and SDC-1 & 2						0	3	11	20	31	(65)
							4.6%	16.9	30.7%	47.7%	

Further analysis of fermurs and mandibles from both collection periods indicated fat percentages for the bone marrow regions to be equally low in percent fat. An average of 6.4% fat for mandibles and 6.8% for femurs was found in the November collection. This average dropped to 3.9% and 4.3%, respectively, for the March collection. This drop indicates a further decline in body condition of the

animals examined, even though this decline is not indicated in the viceral and subcutaneous regions. The following conclusions are supported by this data.

a. The female segment of the population is in poor to very poor condition most of the year. This indicates that the herd is at or above carrying capacity. Herd productivity and recruitment are low and are being affected by habitat condition.

b. Fawn condition is extremely poor from birth. There is probably a high post partum mortality rate. One adult deer needs to die for a fawn to survive and be recruited into the population the following year.

c. The male segment of the population is in good condition at least during the pre-rut period. The bucks are in prime condition during the hunting season and probably decline into the late fall months. At this point they are in poor condition, and as post-rut segregation begins, they will begin to again build up physical condition if sufficient quality forage is available.

d. A reduction of the adult female segment of the population, under these conditions, would result in a higher fawn survival and recruitment rate.

2. Reproduction

Reproduction investigations on female deer can supply much information on performance of the herd as well as give some indication of carrying capacity. Deer from the San Diego herd were collected during March of 1990 from the hunted portions of the range. These animals were analyzed for pregnancy rates, fetal rates, fetal sex ratios, and dates of conception and parturition. (see graphs). No abnormalities were observed in the fetuses examined. A total of 14 deer was examined.

Total adult females =	12
Total number of fetuses =	19
Total number of adult females with no fetus =	0
Pregnancy rate = 100%	

Total yrl. females =	2
Total number of fetuses =	1
Total yrls. with no fetus =	1
Pregnancy rate = 50%	

Adult fetal rate = 19/12 = 1.58 x 100 = 158 fawns/100 does
Yearling fetal rate = 1/2 = 0.5 x 100 = 50 fawns/yrls.

Overall fetal rate = 20/14 = 1.42 x 100 = 142 fawns /100 females

Overall pregnancy rate = 13/14 = 93%

Twelve fetuses were males and eight were females. Two were not examined for date of conception and parturition.

All rates and percentages fall within expected ranges for a deer herd at carrying capacity.

a. There was a low percentage of twins and no triplets; 7/13 = 54%. A herd below K would approach 100%. Most of these would survive to adults. Composition counts in November indicate only 20-25 fawns per 100 does. (See composition count data.)

b. Only 50% of the yearlings were bred. Below K all yearlings would be bred and a large percent would be twins. Sample size is insufficient for high confidence to this condition; however, the pregnant yearling was taken in a recent burn with high quality feed, while the non-pregnant deer was taken in old chaparral.

c. All adults were bred. No disruption in the breeding cycle is evident or attributable to hunting.

B. Population Size

In 1952, Longhurst et al.* estimated that 26,000 deer inhabited the county. In 1989, Doug Updike used a computer model to estimate the population in the huntable portions of the county to be 3,500 animals. (I understand this has been updated to 4,200.) This excludes Camp Pendleton. This represents a loss of 22,500 deer in 37 years (21,800 for updated estimate). From 1969 to 1981, the deer season was 44 days long, starting in the middle of October and sometimes ending the Sunday following Thanksgiving Day. The buck kill ranged from 243 to 377 and the average kill for those years was 312. In 1982, the season was reduced to 30 days, starting on the first Saturday in October. A quota of 7,000 tags was established for the Zone D-16, which includes most of San Diego County and a part of Riverside County. In 1982, all 7,000 buck tags were sold and 237 bucks were killed in San Diego County. After 1987, the number of deer tags decreased each year to a low of 4,380 in 1988. (4,418 in 1989 and 4,659 in 1990; 1989 and 1990 California Hunting Regulations, Part 1, Mammals and Furbearers and personal communication. Doug Updike, Nov. 27, 1990). From 1987 through 1988, the buck kill in San Diego County ranged from a high of 237 in 1982 to a low of 167 in 1988. The average buck kill through 1989 was 199 (224 in 1989).

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*Longhurst, W. M. Et al. A survey of California deer herds, their ranges and management problems. Calif. Fish and Game Bulletin.

C. HERD STATISTICS

SAN DIEGO HERD AGE ANALYSIS

YEAR	SAMPLE	1	2	3	4+	AVG. AGE
1984	62	12 (19%)	26 (42%)	13 (21%)	11 (18%)	2.5 YR.
1985	53	12 (23%)	24 (45%)	11 (21%)	6 (11%)	2.3 YR.
1986	85	8 (9%)	38 (45%)	22 (26%)	17 (20%)	2.9 YR.
1987	63	8 (13%)	21 (34%)	20 (31%)	14 (22%)	2.7 YR.
1988	67	4 (6%)	37 (55%)	13 (19.5%)	13 (19.5%)	2.7 YR.
1989	101	5 (5%)	53 (52%)	23 (23%)	20 (20%)	3.2 YR.
	431 TOTAL			Six-year average		2.7 YR.

SAN DIEGO DEER HERD COMPOSITION COUNTS

YEAR	SAMPLE	BUCK	:	DOE	:	FAWN
1985	134	18	:	100	:	16
1986	222	25	:	100	:	37
1987	241	26	:	100	:	41
1988	262	27	:	100	:	35
1988 Summer	182	34	:	100	:	36
1989	222	23	:	100	:	26

SAN DIEGO HERD HARVEST TREND

YEAR	ZONE	QUOTA	TAG SALES	HARVEST	SUCCESS RATE
1985	D-16	7000		174	4%
	S-1	750	684	6	<1%
	S-11	200	200	50	25%
1986	D-16	7000	5158	211	4%
	S-1	750	750	5	<1%
	S-11	200	200	56	28%
1987	D-16	7000	4974	192	4%
	S-1	750	750	14	2%
	S-11	200	200	45	22%
1988	D-16	7000	4380	167	4%
	S-1	1000	1000	14	1%
	S-11	200	200	53	26%
1989	D-16	7000	4418	223	5%
	S-1	1000	1000	11	1%
	S-11	200	200	41	20%

D. Range Land Ownership

Land ownership patterns have changed little in the past 12 years. In 1977, according to the State Lands Commission (Public Land Ownership in California, 1972) and the USDA, Forest Service (Cleveland National Forest Land Acreage Summary as of October, 1981.) Public lands occupied 1,394,305 acres and 51.2% of the County, while 1,328,895 acres and 48.8% were in private ownership. The public landholders were State Parks and Recreation (489,772 acres, 35.1% of public lands and 18.0% of total lands; U.S. Forest Service, 290,740 acres, 20.9% and 10.7% respectively; Bureau of Land Management (BIM) 185,053 acres, 13.3% and 6.8%; military Lands, 755,423 acres, 11.1%and 5.7%; Bureau of Indian Affairs, 123,498 acres, 8.9% and 4.5%; and other public agencies, 149,819 acres, 10.7% and

5.5%). This latter category includes CALTRANS, the State University system, then state agencies, 18 incorporated cities, the County of San Diego, school districts and special districts such as water and sewer.

The main change in land ownership in the past 10 years has been the annexation of county lands by many of the incorporated cities for residential, commercial, and industrial development. The BLM has gotten rid of several small parcels, most of them going to other public agencies. The U. S. Forest Service has added a few hundred acres through purchase and land exchange. All of this has lead to a small decrease in public lands and a small gain in private lands. This trend will continue past the year 2000. (SANDAG, BLM, U.S.F.S.) With the decrease in public lands (BLM and County Lands.) There has been a slight decrease in lands available for deer hunting.

E. Range Vegetation

1. Fire

Chaparral is the dominant vegetation type in San Diego County. Most of it is dense and high. Prescribed burning is the main management tool in opening new range for deer and other wildlife. Wild fires also play a major part in ridding the County of the dense vegetation wild fires are not as effective in improving habitat for wildlife as these fires do not burn in mosaic patterns and there are few vegetation islands left after a wildfire sweeps through **** Since 1981, 36,353 acres of U.S. Forest Service lands have burned in wildfires in San Diego County, many prescribed burns have been accomplished on both the Palomar and Descanso Districts. These burn are designed not only to improve habitat but also to decrease large wild fire burns. An estimated 2,500 acres a year are burned by prescription on the Cleveland National Forest in San Diego County. (Personal communication, Tom White, U.S.F.S.)

These burns, both wildfire and prescribed burns, in San Diego County on the Cleveland National Forest are summarized below.

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Hill Bill funds have been used since 1985 to burn by prescription to improve habitat for the southern mule deer. This prescribed burning will continue into the future.

Wildfires on BLM lands have not been as prevalent as on U.S. Forest service lands. A wild fire in McCain Valley in 1983 burned an estimated 12,000 acres and one on Otay Mountain in 1989 burned about 140 acres. There have been attempts, only partially successful, to prescribe burn in McCain Valley. The intention is to burn 500 acres per year on this area. (Personal communication with personnel from BLM, Riverside and Palm Springs.)

The California Department of Forestry and Fire Protection (CDF) also does prescribed burning on private lands to improve habitat for live stock. These burns have benefitted deer and other wildlife. following are the acres burned by CDF in San Diego County.

Years (Fiscal)	Acres Burned
1981-1982	6,030
1982-1983	1,495
1983-1984	853
1984-1985	2,000
1985-1986	3,302
1986-1987	3,064
1987-1988	2,516
1988-1989	3,002
1989-1990 (planned)	2,497
Total acres	24,759
Average acres per year	2,751

(Information furnished by John Gray, CDF Fire Chief, El Cajon.)

Camp Pendleton also does some precribed burning and has had many wildfires since the Base has been in existence. This information in incomplete and won't be available until sometime in 1991.

The main vegetation that is prescribed burned is chamise chaparral, with the effect being to open up this dense vegetation for wildlife. Wildlife use is usually high on these areas for several years, especially if water is nearby. The problem is that the chaparral grows back and is dense as it was before burning after 2 years. The prescribed burning cycle starts all over again.

Wildfires also burn much of the chaparral and many conifer and oak species. The conifers are usually killed and, in the case of the U.S. Forest Service, conifer plantations have to be established. Oaks are more hardy and usually crown sprout after the fire. While fire is a tool in creating more habitat for deer and other wildlife species, it has to be used every year to be effective in San Diego County.

2. Livestock Grazing

There has been a very slight increase in AUM's on U.S. Forest Service Lands since 1984. There are no current plans to increase livestock numbers on U.S. Forest Service or BLM lands. Since there has been livestock grazing in San Diego for many years, the vegetation has changed very little due to livestock grazing. Ranchers move their livestock off of a range to recover.

3. Logging

Logging is a very minor activity in San Diego County. The logging that takes place is beneficial since it thins the heavy stands of timber.

4. Drought

There has been little change in the chaparral portions of the range due to drought, as this type of vegetation does not need a lot of water to survive. The most serious impacts of the drought have been to the oak woodland and riparian woodland areas. Many oaks are showing signs of stress (brown or yellow leaves on nondecidious oaks) and some have died. The same holds true for sycamores and cottonwoods, and to a lesser extent, willows. If the present low precipitation continues, the chaparral community will start showing stress, more trees will die, and there will be no replacement for many years.

II. Major Factors Affecting the Deer Population

A. Human Factors

1. Subdivision and Development

The following information was compiled by the San Diego Association of Governments (SANDAG) and released in their INFO publications in 1989. SANDAG is represented by the 18 incorporated cities in San Diego County, the State Department of Transportation (Caltrans), the U.S. Department of Defense, and Tijuana/Baja California Norte.

In 1986, the population of San Diego County was 2,169,957. In 1989, the number of people living in the county was 2,428,181, an increase of 248,224 in numbers and 14.4% in four years. Total occupied housing units in 1986 was 771,182. This rose to 876,717 in 1889, an increase of 105,535 units and 13.7%.

SANDAG predicts that the population for the year 2000 will be 2,784,195, a numerical increase of 614,238 and 28.3% since 1986. The occupied housing units will increase in the year 2000 to 1,058,179, an increase of 286,997 units and 37.2% since 1986.

Increases in population and housing units are presented for the east county from 1986 to 1989 and from 1986 to 2,000. All of this is shown in the following table.

	POPULATION, SAN DIEGO CO.	POPULATION, EAST CO.	HOUSING UNITS, SAN DIEGO CO.	HOUSING UNITS, EAST CO.
1986	2,169,957	16,182	771,182	5,839
1989	2,418,181	16,885	876,717	6,200
INCREASE FROM 1986	248,224	703	105,535	631
PERCENT INCREASE FROM 1986	14.4%	4.3%	13.7%	6.2%
2000	2,784,195	18,774	1,058,179	7,173
INCREASE FROM 1986	614,238	2,592	286,997	1,334
PERCENT INCREASE FROM 1986	28.3%	16%	37.2%	22.8%

The large increase in population over the past 10 years has resulted in more people using public lands for a variety of recreational pursuits. While deer hunting in the county has decreased as evidenced by the drop in deer tag sales, more people are hunting quail and rabbits.

New housing tracts have encroached on lands formerly used by deer; while much of this land was in no shooting areas, some was on land where hunting was allowed. Population and housing increase in the rural east county has been low with most hunters coming from the urban and suburban areas of the county.

The public lands owned by the U.S. Forest Service, and Bureau of Land Management are heavily used by hunters who cannot hunt on private lands. These include the Cleveland National Forest, Otay Mountains and McCain Valley. As the population of the county increases, these areas will attract more and more hunters.

2. Livestock Grazing

Livestock owners have used Federal lands for over 100 years. While only a small percentage of all beef cattle graze on the federal lands, a few livestock owners have become dependent on federal grazing lands for ranching and economic survival. It has become a traditional and high-priority activity on U.S. Forest Service (USFS) and Bureau of Land Management (BLM) lands.

According to the Land and Resources Management Plan for the Cleveland National Forest, there were 27 active grazing allotments and 14 special use pasture permits on approximately 162,000 acres on USFS lands of the Cleveland National Forest at the end of 1983. The total permitted us on the Forest was 17,059 animal unit months (AUMs.)

The Final Environmental Impact Statement of the Land and Resources Management Plan for the Cleveland National Forest projects an increase in grazing allotments and AUMs. Actually, there has been a slight decrease in AUMs since 1984, with no current plans to increase livestock numbers or allotments. (Personal conversation with Tom White, USFS.) This is due to USFS involvement in enhancement of riparian habitats and stream channels and fencing to exclude cattle from riparian areas. At present, willow and cottonwood enhancement in riparian areas takes priority over livestock grazing.

The BLM also has livestock leases on several parcels in San Diego County. These include Otay and Houser Mountains and McCain Valley. Mike Meyer of BLM in the Indio Resource Conservation District said there are no plans to increase either livestock numbers or allotments on those parcels.

Cattle compete with deer for forage. Bowyer and Bleich studied 11 meadows in the Cuyamaca Mountains and Cuyamaca State Park. Their findings were that deer utilized cattle-free meadows in large numbers, but very few utilized meadows when cattle were present. They stated, "this suggests that cattle may limit deer numbers in some areas of the County" (Bowyer, R. T. and V. C. Bleich 1979, Impacts of cattle grazing on Southern Mule Deer. U.S. Forest Service Contract Study, 1979).

If grazing allotments and AUM's are to be increased in the Cleveland National Forest, the Forest Plan states that chaparral areas would be converted to meadows by prescribed fire and wildfire. Since game

species use in heavy chaparral is minimal, conversion of these areas would not create a serious impact on deer and other game species. Deer numbers would probably increase slightly in the converted meadows, especially where cattle would be absent. However, in the lighter chaparral areas, deer numbers would decrease when these lands are converted to meadows as deer which presently use these light chaparral areas would not use the converted meadows when cattle are present. Overall, there will be a decline in deer numbers if the Forests plan to convert chaparral to meadows is implemented. (writer's opinion.)

On Camp Pendleton, there are three sheep allotments with a total of 8,200 AUMs. While sheep compete with deer in other parts of the state, this is not the case on Camp Pendleton, since the sheep are restricted to open grasslands where deer and other game species are not present.

3. Logging

Of the 420,056 acres on the Cleveland National Forest, 88% or 369,808 acres consist of chaparral. Of the remainder, 40% or 16,605 acres are conifer and 5.6% or 23,405 acres are broadleaf woodland, which is mainly varieties of live oak. The remaining vegetation types are riparian and grassland.

Large-scale timber harvesting operations are not feasible on the Cleveland due to distance to processing sites, small size of the available resource, and generally poor quality of lumber produced from open-growth trees.

There is a Timber Stand Improvement Target Plan on the forest in which selected individual trees, both conifers and hardwoods, are thinned from forest stands to improve growth of remaining trees. This thinning is beneficial for wildlife species as it opens the stands for increased wildlife use while still providing canopy and other cover. The Forest Service Plan calls for 700 acres of thinning annually. This wood is sold to commercial and private interests.

The Forest Plan also proposes to retain sufficient snags for wildlife habitat and a limited amount of dead material on the ground.

The practices described above have been on going for many years and will continue into the future.

4. Fire and Fire Suppression

Wildfires in San Diego County occur every year in the chaparral and coastal sage, both man-made and natural (lightning.) Since 1981, 36,353 acres of U.S. Forest Service lands have burned in wildfires. Many prescribed burns have been accomplished on both the Palomar and Descanso districts. These burns are designed to improve the habitat

for both wildlife and livestock and to decrease large wildfire burns. An estimated 2500 acres a year are burned by prescription. (Personal Communication, Tom White, USFS.)

These burns, both wildfires and prescribed burns, are summarized below.

Year	Total Wildland		Total RX (Acres)	
1980			1,461	
1981	370		2,006	
1982	115		2,500	est.
1983	181		2,500	est.
1984	4,788		2,500	est.
1985	739		2,500	est.
1986	1,452		2,500	est.
1987	12,300		2,470	
1988	408		2,920	
1989	16,000	est.	3,673	est.
1990	unknown		unknown	

Hill Bill funds were used since 1985 to burn by prescription to improve habitat for the Southern Mule Deer. This prescribed burning will continue into the future.

Wildfires on BLM lands have been prevalent as on U.S. Forest Service lands. A wildfire in McCain Valley in 1983 burned an estimated 1,200 acres and one on Otay Mountain in 1989 burned about 140 acres. There have been attempts to prescribe burn in McCain Valley. BLM intends to burn about 500 acres per year by prescription. (Personal communication, personnel from BLM, Riverside and Palm Springs.)

The California Department of Forestry and Fire Protection (CDF) also does prescribed burning, mostly on private lands to improve habitat for livestock. These burns have benefitted wildlife. Following are the acres burned by CDF.

Year (Fiscal)	Acres Burned
1981-82	6,030
1982-83	1,495
1983-84	853
1984-85	2,000
1985-86	3,302
1986-87	3,064
1987-88	2,516
1988-89	3,002
1989-90 (planned)	2,497
Total acres	24,759
Average acres per year	2,751

(Information furnished by John Gray, CDF Fire Chief, El Cajon.)

5. Recreation (non deer hunting)

The recreational activity which has the most negative impact on the deer population is off highway vehicles (OHV). The Cleveland National Forest has set aside two areas of 15,560 acres and 117 miles of roads and trails as of 1986. Personal communication with Mike Rogers (who was the Forest Supervisor at the time) determined that these figures have not increased. According to the Forest Plan, however, this OHV use would be expanded in the future by 600 acres with more loop trails and longer distance roads being provided.

This recreation activity has been responsible for very low deer and other wildlife numbers in areas of OHV use. Since more trails are planned with more acres set aside for this type of activity, deer populations will continue to decline in these areas.

The BLM also has OHV areas in McClain Valley, which have negative impacts on deer. There are no plans at present to expand these areas.

There are several areas on the Descanso District of the Forest where target shooting is permitted. Deer are nowhere near these areas. There are no plans to expand these areas or create new ones.

Other types of recreation include camping, nature study, equestrian use, hiking, and picnicking. These have minor negative effects on deer.

6. Deer Hunting

a. Post and current hunting strategies effects on:

1) Deer Numbers

According to Doug Updike, DFG biologist in Sacramento, the deer population in the herdable areas of the County (excluding Camp Pendleton) in 1989 was 3,500 animals. Using the 1989 herd composition counts of 23 bucks and 26 fawns per 100 does, this sets the composition of the deer herd at 1,785 does, 805 bucks, and 910 fawns (To the buck and doe numbers, we can add 375 fawns to each which would make the doe population 2,160 and the buck population 1,385 in 1990.) Tag returns showed that 231 bucks were killed in San Diego County in 1989, (224 in D-16 and 7 in S-1). Using the figure of 805 bucks, this represents a kill of 28.7 percent of the population. Updike's research shows that buck populations can sustain a harvest of 50% without showing decline, and if the kill is less than 40%, buck to doe ratios may rise. With a 20 percent kill in 1989, it appears that the buck population has remained the same for the past seven years. Fewer does are taken in the S-1 and S-11 hunt (45 in 1989) so there should have been no decline in the San Diego County herd in the past seven years.

2) Herd Composition

Herd composition counts for the past six years indicate that bucks per hundred does range from 18-27 and fawns per hundred does range between 16 and 37. From the variance in these numbers over the past four years, it is the writer's opinion that past and current hunting strategies have had no adverse effects on herd composition in San Diego County.

3) Herd health

It is the writer's opinion that the number of deer in San Diego County (3,500) is the same now as it was eight years ago. It is also my opinion that the buck population (1,385) is approximately the same as it was in 1982. Removal of deer from this stable population should result in increased fawn survival the following years. While herd composition counts show that this increase has not taken place, there has been no significant decrease. Thus, the past and current hunting strategies have not caused a decline in the general health of the deer population.

b. Future and proposed hunting strategies effects on:

1) Deer numbers

It is not anticipated that the length of the D-16 Season (30 days), the time of year (mostly in October), nor the deer tag quota (7,000) will be changed. Therefore, there will be no effect on the number of bucks in the population, as a result of the D-16 hunt. For this one hunt (either sex, archery only), it is proposed that the number of available tags remain at 1,000, but that the current 12 weeks be cut to 10 weeks, starting in the middle of November and ending on January 31. This will remove the S-1 hunt from the first part of November, which is the peak of the rut in interior San Diego County. Since such a small number of deer are killed in this hunt yearly, the decrease in the length of the season will have no effect on deer numbers. For the S-11 hunt, it is proposed that the number of tags available be reduced from 200 to 170 and that the season be during the last 16 days of the D-16 hunt instead of running concurrently. Since the average success in this hunt has been 25 percent for the past nine years, the number of antlerless deer harvested in S-11 hunt will be approximately seven fewer. This will have no effect on the number of does or fawns in the population. Thus it can be stated that future and proposed hunting strategies will have no effect on deer numbers.

2) Herd Composition

Future and proposed hunting strategies will have no effect on herd composition. A few less antlerless deer being harvested is insignificant and herd composition will remain the same. The same holds true for Camp Pendleton.

3) Herd Health

The future proposed hunting strategies will have no effect on herd health, since a few less antlerless deer taken will be insignificant and herd health will not improve or decline.

7. Illegal Harvest

While there is speculation that poaching of deer is high in San Diego County and may be as high as one-half the legal take, no precise estimate of the number killed illegally is available. It is possible that poaching increases with unemployment and high meat prices. Since the illegal take is unknown, it cannot be stated that poaching is a limiting factor to deer populations.

8. Other - Road Kill

Many deer are killed and injured by vehicles throughout the County. The kill of deer on Interstate 8 Freeway east of Alpine is alarming. Wardens in that part of the County estimate that between 50-100 deer are killed annually on this Freeway between Alpine and Buckman Springs Road. It is very possible that road kill is a limiting factor to deer populations. Plans are now being made to install a deer-proof fence on Interstate 8. Some Hill Bill funds will be available. Hopefully, the fence will be completed by 1995.

B. Non-human Effects on Deer

1. Weather

a. Drought

San Diego has had four years of low precipitation beginning with the 1986-87 rainfall year. While not actually a drought, since water has not been rationed, effects on wildlife habitat in most of the County have been serious. Intermittant streams have dried up sooner than usual in the spring and creeks and streams which usually flow year round have water only in a few pockets. Many springs are dry. This has forced deer to congregate near available water where they are more susceptible to disease, predation, and poaching. This is typical during low rainfall and drought conditions.

Water distribution is a factor influencing deer distribution in the County. Bowyer found that deer in Southern California seldom

made use of areas more than 1 km, from water (Bowyer, R. T. 1981. Management guidelines for improving southern mule deer habitat on the Laguna Morena Demonstration Area, U.S.D.A. Forest Service Service 40-9AD6-9-622).

b. Early Storms

San Diego County usually does not get early storms. In November, 1985 two feet of rain fell in the higher elevations, and there was even about three inches in part of the low desert. Coastal areas received about two inches of rain. This may have affected fawn survival as only 16 fawns per 100 does were counted that year. However, the sample size of 134 was small and 1986 counts showed 37 fawns per 100 does. The heavier storms in southern California usually occur in January and February.

c. Mild winters

Doesn't seem to have any affect on fawn survival.

2. Predators

Predators in San Diego County include mountain lions, coyotes, bobcats, and feral and domestic dogs. The population of mountain lions is not known, but their populations have increased since the moratorium on lion hunting was enacted in 1971. Personal conversation with Dick Weaver in 1985, biologist with the California Department of Fish and Game, indicated at that time that there were over 100 lions in the County and probably over 4,000 in the State. Lions are efficient predators of deer and it is probable that they are a limiting factor both in town survival and deer herd carrying capacity.

Coyotes are numerous in San Diego County and they are efficient hunters. While they take some young and infirm deer, they are not thought to be a major limiting factor in suppressing deer populations. Bobcats may occasionally kill fawns but these incidents are probably rare.

Feral dogs run in packs and sometimes kill deer. Domestic dogs are not as efficient, but by chasing deer, they are a cause of stress and may contribute to deer losses in some areas. Dogs are not thought to be a major factor in suppressing deer populations.

3. Disease and Parasitism

Although the effects of disease and parasites on the San Diego deer herd are unknown, they are not thought to be a serious problem. Studies planned in late 1989 and the spring of 1990 may furnish information on the evidence of disease and internal parasites.

III. Effects of current Deer Hunting and Proposed Hunting Strategies on:

A. Species of Special Concern.

1. Changes in local populations.

The wildlife species of special concern that occur in San Diego County when hunting occurs include threatened and endangered species which are listed as such by the U.S. Fish and Wildlife Service (Service) and/or the California Department of Fish and Game (State). These are the bald eagle, peregrine falcon, and least Bell's vireo which are listed as endangered by other agencies, the Stephen's kangaroo rat which is listed as threatened by both agencies, and the peninsular bighorn sheep which is listed as threatened by the state. The bald eagle migrates through the area in winter, arriving in November or December and staying around lakes as late as March. As many as 14 have been counted at lake Henshaw. They are not in the area during the rifle hunt and there have been no reports of bow hunters shooting them in the County.

The least Bell's Vireo does not arrive in its nesting areas until March. It has left the middle of September and is not in the area during the general deer and special hunts. It is believed that hunters in the early archery season do not shoot at them. The Stephen's Kangaroo rat hides in its burroughs when humans approach and hunters do not have any effects on this species. The peninsular bighorn sheep occurs in small numbers on BIM lands of McCain Valley and the desert floor. They are wary animals and legal hunters have no effect on this population.

In addition to the threatened and endangered species, there are several bird species of special concern which may be listed as threatened or endangered in the future. Those which may occur in the County where deer hunting also occurs include the willow flycatcher, vermilion flycatcher, northern harnier, osprey, spotted owl, long-eared owl, short eared owl, purple martin, black-tailed gnatcher, gray vireo, yellow warbler, yellow-breasted chat, summer tanager, and dark-eyed juneo. The decline of some of these species has partially been caused by shooting, possibly by deer hunters, including the northern harrier, osprey, spotted owl long-eared owl, and short-eyed owl (Bird Species of Special Concern in California, prepared by J. V. Remsen Jr. for California Department of Fish and Game, Present PR W-54-R-9,1978). Current and proposed hunting strategies will have no further effects on these species.

There are several rare or endangered plants which occur in areas of deer hunting. These include slender-pod jewel flower, state rare; salt marsh birds beak, federal and state endangered; San Diego thorn mint, State endangered; Delesa nolina, State endangered; Gander's butterwood state rare; Cuyamaca Lake larkspur, state endangered; Parish's meadow foam, state endangered; Dunn's mariposa lily, state rare; Mexican flannel bush, State rare; Otay tar plant, State endangered; Cuyamaca Lake downingia, State endangered; Laguna

Mountain aster, State rare; and Nevins barberry, State endangered. Most of these plants are in areas open to the public year round for hiking, camping fishing, bird watching. They should not be impacted by any hunting strategies, current or proposed.

2. Changes in regional and statewide populations.

It is not anticipated that there will be any impacts to regional and statewide population other than those to local populations.

B. Effects upon other wildlife species

1. Changes in local populations

There is no competition between deer and other wildlife species for food, water, or cover in San Diego County. Predation by mountain lions, coyotes, and bobcats has been discussed in a previous section and currently, deer hunters kill a few coyotes and bobcats. There have been no reports of lions killed by hunters. Proposed hunting strategies will not change the effects on other wildlife species.

2. Changes in regional and statewide populations.

Neither the current nor proposed deer hunting strategies in San Diego County will have any effects on regional and statewide populations of other wildlife species.

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

Current and proposed deer hunting strategies will have no effect on health, condition or age class of other wildlife species.

4. Changes in mortality factors.

These changes will be insignificant as slightly fewer hunters in the field under proposed hunting strategies means slightly fewer individuals of other wildlife species will be hunted.

IV. Changes in Public Use/Recreation

A. Hunting

There is a high demand for deer hunting opportunities by the sporting public in the county. San Diego County has a bag limit of one or two bucks, forked horn or better. There is an archery season of 23 days prior to the general rifle season. The rifle season of the D-16 hunt is 30 days in length and is mostly in October. There is a 7,000 tag quota for the D-16 hunt which includes the pre-season archery hunt and the general rifle season. The D-16 hunt is in most of San Diego County and a part of Riverside. In 1989 Camp Pendleton's rifle hunt was in September with a limited quota of civilians and no limit on active or retired military personnel. The hunt was for four weekends only.

In addition, San Diego County has had three special hunts during the past 14 years. There is an S-10 antlerless hunt on Camp Pendleton, weekends only. There are 400 permits for this hunt, 200 for civilians and 200 for military. In 1989, this hunt was from August 5, through September 24. There is a 200 permit antlerless hunt in most of the rest of San Diego County which has been concurrent with the D-16 general buck season. There is also an S-1 hunt, either sex, archery only with 1,000 permits. This season is from November 4, 1989 through January 31, 1989.

There is a vocal public in San Diego County who are opposed to shooting female deer. They have asked that the S-11 hunt be abolished and that the length of the S-1 be shortened. The taking of 50 does does not represent a large part of the doe population. Deer populations have declined in most western states, but Denney (1976) pointed out that states in which both sexes of mule deer were taken reported only half as much decline as other states where bucks were harvested (Denney, R.N. 1976, Regulations and the mule deer harvest. Political and biological management.), Mule deer Harvest ********** ed, G. W. Workman and T. B. Low. pp 85-90, Logan, Utah State University college of Natural Resources and Agricultural Experiment Station, 134 pp.).

However, it may be politically expedient to shorten the S-11 season, and decrease the number of tags and shorten the season in the S-1 hunt. The effect of this will be a decrease in hunting opportunities in these hunts.

B. Non consumptive

Non consumptive use of deer, i.e., the observing and photographing of deer, is not high in San Diego County. That portion of the public that enjoys wildlife watching and photographing concentrate on avian species. The sky nature and low population of deer mules its difficult for the non consumptive user to observe this species. Non-consumptive use of deer is not expected to increase due to current deer hunting and proposed hunting

1. Housing

Neither the current deer hunting strategies nor the proposed hunting strategies will have any effect on housing in San Diego County. People do not move into new houses in order to hunt deer in the County. However, housing may affect hunting strategies. As more people move into the County, new housing has to be constructed. While this housing will not be on public lands, some of it will encroach upon deer range and movement corridors. The increased human population will be both hunters and non hunters. The hunters will request more deer hunting opportunities, while some of the nonhunters will ask that less hunting take place. There will be more people on each side and hunting strategies may have to be changed with either more or less deer hunting taking place.

2. Transportation

Increased human population will mean more motor vehicles on the roads and freeways of the County. Many of those motor vehicles will be

owned and operated by hunters taking advantage of the deer hunting opportunities whether the hunting be the current or the proposed hunting strategies.

3. Public services

Deer hunting strategies will have very little effect on public services; the only indirect effect is that there will be a greater demand for gasoline due to more cars on the roads of the County. A small portion of the increased demand will be due to more hunters using their private transportation.

4. Energy

Deer hunting strategies will have very little effect on energy.

5. Human health

Human health will not be affected by deer hunting strategies.

6. Aesthetics

There will be no charge in aesthetics in the County due to deer hunting strategies.

7. Cultural resources

Cultural resources will not be affected by deer hunting strategies.

SAN DIEGO DEER HERD PLAN UPDATE

1992/93

In 1992, as in previous years, most of San Diego County was included in Zone D-16. The northwestern portion of the County containing Marine Corps Base, Camp Joseph Pendleton remained in Zone D-15. Special Hunts S-1 and S-11 occurred within San Diego County as in past years. The length of the hunting season for Zone D-16 and Special Hunt S-11 remained 30 days, beginning on the first Saturday of October. Special Hunt S-1 was 86 days in length, beginning on the first Saturday of November. During the 1992 season incisor teeth were collected from harvested deer and analyzed to determine age composition. Returned deer tags from Zones D-16, S-1 and S-11 were used to develop a harvest location map for San Diego County.

Modifications were made to the boundaries of Zone D-16 in 1992 to allow the creation of a new hunt zone (Zone D-19) from the northern portion of Zone D-16. The resulting size reduction of Zone D-16 and creation of Zone D-19 was necessary to allow the management of deer on a herd-by-herd basis by separating the San Jacinto and Santa Rosa Mountains herds into two zones. In addition, the number of tags available for Zone D-16 in 1992 was reduced by 1500 tags (from 4500 in 1991 to 3000 in 1992) to allow for the appropriate harvest of bucks within the zone, while maintaining the buck ratio at or near the level set forth in the approved San Diego deer herd management plan.

I. Update of Biological Data

A. Harvest Data

YEAR	ZONE	QUOTA	TAG SALES	REPORTED HARVEST	SUCCESS RATE
1992	D-16	3000	2359	201	9%
	S-1	1000	870	23	4%
	S-11	170	170	38	22%

REPORTED HARVEST FOR 1985-1991

1985	D-16	7000	4423	174	4%
	S-1	750	684	6	<1%
	S-11	200	200	50	25%

YEAR	ZONE	QUOTA	TAG SALES	REPORTED HARVEST	SUCCESS RATE
1986	D-16	7000	5158	211	4%
	S-1	750	750	5	<1%
	S-11	200	200	56	28%
1987	D-16	7000	4974	192	4%
	S-1	750	750	14	2%
	S-11	200	200	45	22%
1988	D-16	7000	4380	167	4%
	S-1	1000	1000	14	1%
	S-11	200	200	53	26%
1989	D-16	7000	1000	233	5%
	S-1	1000	1000	11	1%
	S-11	200	200	41	20%
1990	D-16	7000	4639	127	3%
	S-1	1000	741	6	<1%
	S-11	170	170	33	19%
1991	D-16	4500	3931	158	4%
	S-1	1000	790	12	2%
	S-11	170	170	37	22%

B. Age Analysis

Incisor teeth were collected from 106 buck deer and 32 doe deer during the 1992 hunting season and analyzed to determine age structure of the harvest. Results of this analysis were:

SAMPLE	SEX	<1yr.	1yr.	2yr.	3yr.	4+yr.	AVG. AGE
106	M	4(4%)	22(21%)	34(32%)	18(17%)	28(26%)	2.9 Yrs.
32	F	5(16%)	10(31%)	4(12.5%)	4(12.5%)	9(28%)	2.6 Yrs.

AVERAGE AGE DATA FOR 1984-1991

YEAR	SEX	SAMPLE SIZE	AVERAGE AGE
1984	M	62	2.5 Yrs.
	F	0	0.0 Yrs.
1985	M	53	2.3 Yrs.
	F	18	2.5 Yrs.
1986	M	85	2.9 Yrs.
	F	23	2.7 Yrs.
1987	M	63	2.7 Yrs.
	F	19	1.9 Yrs.

YEAR	SEX	SAMPLE SIZE	AVERAGE AGE
1988	M	67	2.7 Yrs.
	F	20	2.7 Yrs.
1989	M	101	2.7 Yrs.
	F	0	0.0 Yrs.
1990	M	0	0.0 Yrs.
	F	0	0.0 Yrs.
1991	M	56	3.3 Yrs.
	F	14	2.8 Yrs.

The average age of 2.9 years for bucks sampled during 1992 is slightly lower than that for bucks sampled during 1991. This decrease can be attributed to increased fawn survival within the herd brought about by several years of above normal rainfall which improved habitat conditions. Improvement in the condition of deer range through localized habitat improvement projects and normal rainfall patterns, combined with current hunting strategies should result in continued fawn survival at or near the level currently being experienced. The average age of 2.6 years for does sampled during 1992 is also slightly lower than that for does sampled over the past several years. However, these samples are relatively small in size and may not give a precise indication of age composition within the doe segment of the population.

C. Herd Composition

Aerial composition surveys of the San Diego deer herd were conducted from a helicopter between 7-10 November, 1992. Thirteen hours of flight time resulted in the following ratios:

YEAR	SAMPLE SIZE	BUCK	:	DOE	:	FAWN
1992	185	54	:	100	:	68

II. Habitat Improvement/Research Projects

Prescribed burning continues to play an important role in improving habitat conditions for deer and other wildlife species within San Diego County. Regular prescribed burning of dense, decadent chaparral and forest understory on both public and private lands has been used to create and/or maintain good quality habitat on approximately 25,000 acres since 1980. Currently, the U.S. Forest Service and California Department of Forestry have prescribed burn

projects scheduled through 1997. Several projects submitted for Hill Bill funding by the Cleveland National Forest for 1992/93 have been rescheduled for 1994/95. These projects include the Tragedy Burn on the Descanso Ranger District and North Slope I Burn on the Palomar Ranger District.

The following breakdown indicates acres prescribed burned in 1992 and source of funding:

1. Troy Long Burn - 500 acres - vegetation type was chamise chaparral and ceanothus. Funded by Hill Bill and Forest Service wildlife dollars.

2. Boden Canyon Burn - 1200 acres - vegetation type was chamise chaparral. Funded by Hill Bill and Forest Service Fuels dollars.

3. East Grade Burn - 100 acres - vegetation type was Montain Hardwood-Conifer understory, decadent stands of ceanothus were targeted. Funded by Forest Service Fuels dollars.

During March of 1992 a three-year telemetry study of the San Diego deer herd was initiated by the Department of Fish and Game to address mortality and limiting factors within good deer herd range. This study was developed to identify major mortality and limiting factors influencing the adult segment of the deer population and attempt to quantify their impacts on the herd. The study also provides the option of developing habitat utilization and seasonal distribution data in addition to mortality and limiting factors. Two capture operations have been conducted to date resulting in the radio-collaring of eight buck and 14 doe deer. Currently, seven mortalities have been observed among the 22 radio-collared deer. Causes of these mortalities include predation, hunter take and natural death.

State of California The Resource Agency

Memorandum

To : Sonke Mastrup Date: July 27, 1993
Wildlife Management Division

From : Randy Botta, Inland San Diego, Unit Manager

Subject : Update of San Diego Deer Herd Information for 1992

Enclosed for Wildlife Management Division's files are copies of updated information on the San Diego deer herd. This information includes the San Diego Deer Herd Plan Update for 1992/93, capture and mortality information from the San Diego deer herd telemetry study, composition count results, age analysis data from road and hunter killed deer and harvest results from returned deer tags. Also included are the proposed deer season changes for the 1994/95 deer seasons within San Diego County. These changes are provided for Ken Mayer's review as well as for the deer program staffs information. In addition, a copy of last years letter sent out to S-11 hunters requesting their help in collecting incisor teeth for age analysis is included for John Carlson's use.

Randy Botta

Randy Botta
Wildlife Biologist
Inland San Diego Wildlife Unit

SAN DIEGO DEER HERD PLAN UPDATE

1992/93

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REPORTED HARVEST FOR 1985-1991

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	S-1	750	684	6	<1%
	S-11	200	200	50	25%

SAN DIEGO COUNTY DEER TELEMETRY STUDY
CAPTURE/MORTALITY INFORMATION

DATE COLLARED	COLLAR FREQ	L EAR TAG #	R EAR TAG #	SEX	AGE CLASS	CAPTURE LOCATION
3-10-92	.500	324	325 (Y)	DOE	YEARL.	BARKER V.
3-11-92	.515 *	312	313 (Y)	DOE	ADULT	FINK ROAD
3-11-92	.565 **	331	330 (Y)	BUCK	ADULT	FINK ROAD
3-12-92	.495 **	339	338 (Y)	BUCK	YEARL.	FINK ROAD
3-12-92	.505	344	343 (Y)	DOE	ADULT	FINK ROAD
3-12-92	.545 *	336	337 (Y)	BUCK	ADULT	FINK ROAD
3-12-92	.550	318	319 (Y)	DOE	ADULT	BARKER V.
3-13-92	.470 *	333	332 (Y)	BUCK	YEARL.	FINK ROAD
3-13-92	.490 *	228	229 (Y)	DOE	ADULT	BARKER V.
3-13-92	.520	349	350 (Y)	BUCK	YEARL.	BARKER V.
3-13-92	.525	342	341 (Y)	DOE	ADULT	FINK ROAD
3-13-92	.535	301	340 (Y)	DOE	ADULT	FINK ROAD
2-22-93	.555	164	165 (W)	BUCK	ADULT	FINK ROAD
2-22-93	.330 *	345	346 (Y)	DOE	YEARL.	BARKER V.
2-22-93	.345	305	304 (Y)	DOE	ADULT	BARKER V.
2-23-93	.375 *	315	314 (Y)	DOE	YEARL.	FINK ROAD
2-23-93	.380 *	311	310 (Y)	DOE	ADULT	FINK ROAD
2-23-93	.450	163	162 (W)	BUCK	YEARL.	BARKER V.
2-25-93	.580	337	336 (Y)	DOE	ADULT	FINK ROAD
2-25-93	.315	303	302 (Y)	DOE	YEARL.	FINK ROAD
2-25-93	.445	320	321 (Y)	DOE	ADULT	FINK ROAD
2-25-93	.515	348	347 (Y)	BUCK	ADULT	FINK ROAD

SAN DIEGO COUNTY DEER TELEMETRY STUDY
CAPTURE/MORTALITY INFORMATION

* MORTALITY INFORMATION

DATE	LOCATION	FREQ	SEX	CONDITION	CAUSE OF DEATH
8-5-92	NET SITE #2	.515	DOE	POOR	PNEUMONIA
1-30-93	SW OF HONOR CAMP	.545	BUCK	GOOD	HUNTER TAKE
2-4-93	NET SITE #1	.470	BUCK	NA	MTN LION
2-4-93	BARKER VLY	.490	DOE	NA	MTN LION
2-28-93	FINK ROAD	.380	DOE	FAIR	MYOPATHY
3-18-93	BARKER VLY	.330	DOE	FAIR	UNKNOWN
4-4-93	FINK ROAD	.375	DOE	NA	MTN LION

** ADDITIONAL INFORMATION

FREQ .495	10-19-92	COLLAR RETRIEVED FROM AGUANGA RIDGE NO CARCASS OR SIGNS OF MORTALITY OBSERVED - COLLAR STRAP TORN IN HALF.
FREQ .565	1-11-93	BUCK COLLAR RETRIEVED FROM BEHIND HONOR CAMP NO CARCASS OR SIGNS OF MORTALITY OBSERVED - COLLAR STRAP TORN IN HALF.
	2-22-93	2X2 BUCK SIGHTED ALIVE NEAR HONOR CAMP WITH YELLOW EAR TAGS AND NO COLLAR.

HERD COMPOSITION INFORMATION
INLAND SAN DIEGO WILDLIFE UNIT

YEAR	SAMPLE	BUCK	DOE	FAWN
1985	134	18	100	16
1986	222	25	100	37
1987	241	26	100	41
1988	262	27	100	35
1989	222	23	100	26
1990 *			100	
1991 *			100	
1992	185	54	100	68

* Composition count information not available

DEER HERD AGE ANALYSIS INFORMATION
INLAND SAN DIEGO WILDLIFE UNIT

BUCKS

YEAR	SAMPLE	0	1	2	3	4+	AVG. AGE
1984	62	0(0%)	12(19%)	26(42%)	13(21%)	11(18%)	2.5 YR
1985	53	0(0%)	12(53%)	24(45%)	11(21%)	6(11%)	2.3 YR
1986	85	0(0%)	8(9%)	38(45%)	22(26%)	6(11%)	2.9 YR
1987	63	0(0%)	8(13%)	21(34%)	20(31%)	14(22%)	2.7 YR
1988	67	0(0%)	4(6%)	37(55%)	13(19.5%)	13(19.5%)	2.7 YR
1989	101	0(0%)	5(5%)	53(52%)	23(23%)	20(20%)	2.7 YR
1990	**						
1991	56	0(0%)	2(4%)	21(37.5%)	12(21%)	21(37.5%)	3.3 YR
1992	106	4(4%)	22(21%)	34(32%)	18(17%)	28(26%)	2.9 YR

ANTLERLESS

YEAR	SAMPLE	0	1	2	3	4+	AVG. AGE
1985	18	2(11%)	6(33%)	3(17%)	4(22%)	3(17%)	2.5 YR
1986	23	4(17%)	8(35%)	3(13%)	1(4%)	7(31%)	2.7 YR
1987	19	0	8(42%)	7(37%)	2(10.5%)	2(10.5%)	1.9 YR
1988	20	2(10%)	5(25%)	7(35%)	0	6(30%)	2.7 YR
1989	**						
1990	**						
1991	14	1(7%)	3(21%)	3(21%)	4(30%)	3(21%)	2.8 YR
1992	32	5(16%)	10(31%)	4(12.5%)	4(12.5%)	9(28%)	2.6 YR

** Tooth analysis information not available.

SAN DIEGO DEER HERD HARVEST INFORMATION *

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	S-11	200	200	45	22%
1988	D-16	7000	4380	167	4%
	S-1	1000	1000	14	1%
	S-11	200	200	53	26%
1989	D-16	7000	4418	223	5%
	S-1	1000	1000	11	1%
	S-11	200	200	41	20%
1990	D-16	7000	4639	210	5%
	S-1	1000	741	6	<1%
	S-11	170	170	33	19%
1991	D-16	4500	3931	158	4%
	S-1	1000	790	12	2%
	S-11	170	170	37	22%
1992	D-16	3000	2359	201	9%
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	S-11	170	170	38	22%

* Based on Tags Returned To DFG

SAN DIEGO DEER HERD PLAN UPDATE
1993/94

In 1993, as in previous years, most of San Diego County was included in Zone D-16. The northwestern portion of the County containing Marine Corps Base, Camp Joseph Pendleton remained in Zone D-15. Special Hunts S-1 and S-11 occurred within San Diego County as in past years. A new muzzleloading hunt, Special Hunt S-45 occurred within southern San Diego County. The length of the hunting season for Zone D-16 remained 30 days, beginning on the fourth Saturday of October. Special Hunt S-11 was reduced to a length of 16 days, beginning on the third Saturday of October and Special Hunt S-1 remained 86 days in length, beginning on the first Saturday of November. Special Hunt S-45 was nine days in length, beginning on the third Saturday of January. During the 1993 season incisor teeth were collected from harvested deer and analyzed to determine age composition. Returned deer tags from Zones D-16, S-1 and S-11 were used to develop a harvest location map for San Diego County.

Modifications to hunt zones within San Diego County for the 1993/94 season included:

1. Movement of Zone D-16 and Special Hunt S-11 three weeks later into October:

   Zone D-16 was moved three weeks later into the season in order to place hunters in the field at a time when the weather is cool and more conducive to hunting. Based on past hunter success and deer herd performance, creation of a late season hunt was possible while still maintaining the desired buck ratio at or above the level set forth in the approved San Diego deer herd management plan. Special Hunt S-11 was moved three weeks later into the season to coincide with the opening of Zone D-16.

2. Reduction in the length and increase in the tag quota of Special Hunt S-11:

   The length of the season was reduced from four weeks to two weeks and the tag quota increased from 170 to 250. These modifications were made to more effectively manage the antlerless hunting program established for the San Diego deer herd while also providing increased hunter opportunity.

3. Creation of Special Hunt S-45:

   Special Hunt S-45 was created to provide increased hunter opportunity within San Diego County. Based on past hunter distribution and number of buck deer taken during the hunting season within southern San Diego County, creation of a 25 tag muzzleloading hunt was possible while still maintaining the

desired buck ratio at or above the level set forth in the approved San Diego deer herd management plan.

I. Update of Biological Data

A. Harvest Data

YEAR	ZONE	QUOTA	TAG SALES	REPORTED HARVEST	SUCCESS RATE
1993	D-16	3000	3000	227	8%
	S-1	1000	850	17	2%
	S-11	250	250	47	19%
	S-45	25	25	0	0%

REPORTED HARVEST FOR 1985-1992

YEAR	ZONE	QUOTA	TAG SALES	REPORTED HARVEST	SUCCESS RATE
1985	D-16	7000	4423	174	4%
	S-1	750	684	6	<1%
	S-11	200	200	50	25%
1986	D-16	7000	5158	211	4%
	S-1	750	750	5	<1%
	S-11	200	200	56	28%
1987	D-16	7000	4974	192	4%
	S-1	750	750	14	2%
	S-11	200	200	45	22%
1988	D-16	7000	4380	167	4%
	S-1	1000	1000	14	1%
	S-11	200	200	53	26%
1989	D-16	7000	1000	233	5%
	S-1	1000	1000	11	1%
	S-11	200	200	41	20%
1990	D-16	7000	4639	127	3%
	S-1	1000	741	6	<1%
	S-11	170	170	33	19%
1991	D-16	4500	3931	158	4%
	S-1	1000	790	12	2%
	S-11	170	170	37	22%
1992	D-16	3000	2359	201	9%
	S-1	1000	870	23	4%
	S-11	170	170	38	22%

B. Age Analysis

Incisor teeth were collected from 115 buck deer and 35 doe deer killed in San Diego County during the 1993/94 season. Analysis of this sample has not been completed to date but will be included in a revised Age Analysis section to this update as soon as the results become available.

AVERAGE AGE DATA FOR 1984-1992

YEAR	SEX	SAMPLE SIZE	AVERAGE AGE
1984	M	62	2.5 Yrs.
	F	0	0.0 Yrs.
1985	M	53	2.3 Yrs.
	F	18	2.5 Yrs.
1986	M	85	2.9 Yrs.
	F	23	2.7 Yrs.
1987	M	63	2.7 Yrs.
	F	19	1.9 Yrs.
1988	M	67	2.7 Yrs.
	F	20	2.7 Yrs.
1989	M	101	2.7 Yrs.
	F	0	0.0 Yrs.
1990	M	0	0.0 Yrs.
	F	0	0.0 Yrs.
1991	M	56	3.3 Yrs.
	F	14	2.8 Yrs.
1992	M	106	2.9 Yrs.
	F	32	2.6 Yrs.

C. Herd Composition

Aerial composition surveys of the San Diego deer herd were not conducted during the 1993/94 season. However, approximately thirteen hours of flight time have been scheduled for the 1994/95 season.

HERD COMPOSITION DATA FOR 1985-1993

YEAR	SAMPLE SIZE	BUCK	:	DOE	:	FAWN
1985	134	18	:	100	:	16
1986	222	25	:	100	:	37
1987	241	26	:	100	:	41

1988		262	27	:	100	: 35
1989		222	23	:	100	: 26
1990	*	0	0	:	100	: 0
1991	*	0	0	:	100	: 0
1992		185	54	:	100	: 68
1993	*	0	0	:	100	: 0

* Composition Count Information not Available

II. Habitat Improvement/Research Projects

Prescribed burning continues to play an important role in improving habitat conditions for deer and other wildlife species within San Diego County. Regular prescribed burning of dense, decadent chaparral and forest understory on both public and private lands has been used to create and/or maintain good quality habitat on approximately 26,000 acres since 1980. Currently, the U.S. Forest Service and California Department of Forestry have prescribed burn projects scheduled through 1997. Several projects submitted for Hill Bill funding by the Cleveland National Forest in 1993/94 have been scheduled for 1994/95. These projects include the Tragedy Burn on the Descanso Ranger District and North Slope I Burn on the Palomar Ranger District.

The following breakdown indicates acres prescribed burned in 1993 and source of funding:

1. Troy Long Burn - 500 acres - vegetation type was chamise chaparral and ceanothus. Funded by Hill Bill and Forest Service wildlife dollars.

During March of 1992 a three-year telemetry study of the San Diego deer herd was initiated by the Department of Fish and Game to address mortality and limiting factors within good deer herd range. This study was developed to identify major mortality and limiting factors influencing the adult segment of the deer population and attempt to quantify their impacts on the herd. The study also provides the option of developing habitat utilization and seasonal distribution data in addition to mortality and limiting factors. Two capture operations have been conducted to date resulting in the radio-collaring of 8 buck and 14 doe deer. A final report for this project is expected to be completed by September of 1994.

M e m o r a n d u m

To : Wildlife Management Lead Supervisor Date: August 17, 1994

From : **Department of Fish and Game** - San Diego Coastal Unit TP

Subject: Annual Deer Herd Plan Updates

I. Camp Pendleton Deer Harvest

YEAR	ZONE	QUOTA	TAG SALES	HARVEST	SUCCESS RATE
1993	S10	480*	340	85	25.0

*80 Civilian, 400 Military. Two military personnel had civilian S10 tags.

I am attaching the Pendleton deer harvest report submitted to me by Camp Pendleton staff. The success rate differs between this report and the Pendleton report as their success rate is calculated by hunter days and mine is by total deer taken divided by the number of hunters with tags. This report contains additional biological information, including kill breakdown to buck, doe, male and female fawn (table 5).

Call me at the San Diego Field Office ((619) 525-4215) if you have any questions.

Tim Dillingham

CAMP PENDLETON DEER SEASON - 1993 REPORT

This report briefly summarizes the 1993 Camp Pendleton deer hunting program and the 1993 season results.

1993 SEASON CHANGES

There were no major changes in the rifle deer season between the 1992 and 1993 season. The timing of the season, length of season, type of tag (either-sex) and deer quota (one per hunter) remained the same as the 1990, 1991 and 1992 seasons. There were two major changes in the archery season. First, we added two weeks to the archery season. This moved the opening date to the first weekend of October and allowed a month long archery-only season prior to rifle season. Secondly, civilian hunters holding a California Department of Fish and Game (CDFG) Archery Only (AO) tag were allowed archery deer hunting on Base. Although for the past several years Camp Pendleton deer hunters have been able to take one deer, this change provided the opportunity for hunters to take two deer (one with an S-10 tag and a second with an AO tag). However, one deer would have to be taken with a bow.

HABITAT

Deer habitat has largely recovered from the drought. Recovery began after the heavy rains of March 1991 ("March Miracle") and February 1992 ("Fabulous February") and was helped with above average rainfall during the 1992-93 winter. The resulting forage and available water resulted in increased fawn survival over the last three years. During our 1993 pre-season herd composition count we identified many water sources that had retained water throughout the dry months. Additionally, for the first time in several years, fires did not impact large areas of deer habitat.

AREA CLOSURES

Table 1 shows rifle hunting quotas and quota reductions for the 1993 season, based on the amount of habitat available at the opening of rifle season. Hunter quotas in almost all areas that burned during 1992 were increased back to pre-burn levels. Additionally, quotas in several areas (Echo, India, X-Ray-1) were increased based habitat conditions.

Total area closures for the 1993 season are shown in Table 2. The 1993 rifle season was shortened due to fire danger and the potential of a fire starting on-Base. Opening weekend was cancelled for these reasons. In addition, many perimeter hunting areas (Foxtrot, Golf, Hotel) remained closed for the second weekend. We attempted to compensate for this by adding 21 November (Sunday) as a hunt day at the end of the season.

RESULTS

Harvest

The 1993 archery and rifle results are provided in Tables 3 and 4 and are summarized below. The 1990, 1991 and 1992 data is shown for comparison.

	1993	1992	1991	1990
Total deer reported taken	90	114	120	112
Deer harvested by rifle hunters:				
bucks	85	114	118	109
does	31	46	41	26
fawns	29	45	47	69
rifle hunter success based on # tags issued, and where the individual hunted at least once:	25	23	30	14
	31.6%	35.7%	36.5%	38.0%
rifle hunter success based on hunter pressure (= hunter days):	14.1%	15.4%	15.5%	17.3%
Deer harvested by archery hunters:				
bucks	5	0	2	3
does	3	0	0	2
fawns	2	0	1	1
archery hunter success based on # of tags issued, and where the individual hunted at least once:	0	0	1	0
	5.1%	0.0%	3.7%	6.6%
archery hunter success based on hunter pressure (= hunter days):	2.2%	0.0%	1.8%	2.2%
Largest buck taken by rifle (field dressed lbs.)	123	128	136	121
rack	3x3	3x3	4x3	2x2
area taken	P-1	X-3	A-2	B-2
Largest doe taken by rifle (field dressed lbs.)	95	98	102	92
area taken	A-2	O-2	X-2	I

For the 1993 season the largest buck was taken by Ret. E9 Robert Provencher. The largest doe was taken by Cpl. William Davis.

Deer Condition

Overall, deer harvested during 1993 appeared healthy and were carrying approximately the same amount of fat that they were during the 1992 season. Fat reserves during our deer season are expected to be low because fall is the most stressful time of the year for deer in our area. This is just before winter rains and 'green-up.' Additionally, our rifle season occurs after the rut when fat reserves are lower, especially for bucks. The largest buck for the entire season was a 141 lb. buck taken on the opening day of archery season (2 October). This deer was in full rut. The largest buck taken during the rifle season was 123 lbs., taken

on 13 November. This deer would have weighed approximately 15 lbs. heavier during the rut.

Deer Size

Table 5. Weight of Harvested Deer, 1993 Rifle Season, Camp Pendleton, California.

	Number	Av. Wt. (lbs.)[1] (mean)	Median	Range
bucks	31	89.1	87	61 - 123
does	29	77.7	78	63 - 95
fawn male	13	50.8	51	42 - 57
fawn female	12	47.6	50	33 - 58

[1]Dressed weight cut-off between fawns/adults = 60 lbs.

CAMP PENDLETON DEER HUNTERS

	1993	1992	1991	1990
Total hunters (who hunted)	340	334	340	298
military	242	271	292	255
civilian (note: for 1993 2 military hunter applied and received a civilian S-10 tag from CDFG)	98	63	48	43
Archery deer hunters	100	58	54	45
military	51	52	47	40
military archery only	22	15	14	11
civilian	56	6	7	5
civilian archery only	49	2	3	-
Rifle deer hunters	269	317	323	287
military	220	256	278	244
civilian	49	61	45	43

A breakdown of 1993 Camp Pendleton deer hunters is:

	1993		1992		1991		1990	
	No.	Per.	No.	Per.	No.	Per.	No.	Per.
Active duty on-Base	105	31.4	116	34.6	133	39.1	80	26.8
Active duty off-Base	46	13.8	72	21.5	67	19.7	63	21.1
Retired Military	85	25.5	84	25.1	93	27.4	114	38.3
Civilian	98	29.3	63	18.8	47	13.8	41	13.8

Note: These are approximate numbers since the 'status' of 5 Military AO hunters is not known.

The increase in civilian numbers for the 1993 season is due to our opening archery hunting to civilians holding an AO tag. The low numbers of active duty during the 1990 season is the result of personnel gone on Operation Desert Storm.

The CDFG issued 80 S-10 tags to civilian hunters. The S-10 hunt continues to be popular with civilian deer hunters.

	1993	1992	1991	1990
Number CDFG S-10 tags available	80	80	60	60
No. that selected S-10 as first choice	197	232	177	210
No. that selected S-10 as one of first three choices	344	372	335	372

Because CDFG draws tag applications randomly, then issues tags based on the choices you selected (if your first choice is full, they will attempt to fill your second choice, etc.) it isn't possible to figure a percent chance of any individual being selected for S-10.

During the 1993 season only 50 civilian S-10 hunters showed up to hunt (62.5%). This number is probably lower than expected since we lost the opening weekend of hunting. During the 1992 season only 63 civilian S-10 hunters showed up to hunt (78.7%). The idea of increasing the number of civilian tags from 60 to 80 in order to have a "real" number of approximately 60 civilian rifle hunters appears to be working. During 1993, seven civilian S-10 hunters hunted archery and rifle; one hunted archery only. Civilian rifle success, based on number of hunters who showed up was 18.4% (9/49). The 1992 civilian rifle success was 14.7% (9/61). The 1993 military success was 34.5% (76/220). The 1992 military success was 41.0% (105/256).

Hunters who obtained a tag but did not hunt	1993	1992	1991	1990
Military	18	16	10	10
Civilian	29	17	12	17

DISCUSSION

Overall, the 1993 Camp Pendleton deer season was a success. Although the total number of deer taken by rifle was lower than in the previous three seasons, the 1993 season is comparable if the loss of opportunity from fire closures and decrease in total hunters is considered.

The loss of hunting opportunity from closing opening weekend and the closure of several key areas for the second weekend had a direct effect on the number of hunters in the field, the total number of deer taken and the overall success for the season. Traditionally, the opener is the most successful weekend. The average opening harvest for the 1990 - 1992 seasons, since the rifle season was shifted to hunt after the rut, is 36 deer.

An additional factor affecting the total number of deer taken during the 1993 rifle season is fewer hunters, both military and civilian. The loss of the opener may be partly responsible for this since some hunters may have planned to hunt only the opener. However, there is a downward trend in rifle hunters, beginning in 1991. During 1993 the number of total hunters and rifle hunters fell below that of 1990 when many hunters were deployed for Desert Storm.

Archery hunting success, in contrast to rifle success, increased for 1993. Five deer were taken with a bow in 1993 while none were taken in 1992. With the implementation of A0 tag, there was a large increase in hunter numbers, specifically civilians, and more deer were taken. Although the overall success rate of 5.1% is slightly higher than for other general either-sex archery hunts (based on CDFG 1992 data) it is probably comparable considering only those hunters who put foot to field were in our calculation of hunter success.

Hunters often compare Camp Pendleton hunting success against the surrounding CDFG D-15 and D-16 zones. However, because we limit the number of hunters in all areas, control hunter pressure, hunt fewer days and hunt with an either-sex tag a direct comparison to surrounding areas is not possible.

Table 1. Rifle Area Quotas and Burned Areas, 29 October, 1993, Marine Corps Base, Camp Pendleton.

Area	1992 Hunter Quota[1]	1993 Hunter Quota Unburned	1993 Percent Burned	1993 Hunter Quota[2]	1993 Plus	1993 Minus
A-1	3	3		3		
A-2	8	8		8		
A-3	7	7		7		
B-2	4	8		8	4	
C	10	10		10		
D	10	10		10		
E	5	7		7	2	
F	15	15		15		
G	8	8		8		
H	12	16		16	4	
I	10	12		12	2	
K-1	1	3		3	2	
K-2	1	2		2	1	
O-1	12	12		12		
O-2	4	5		5	1	
P-1	5	5		5		
P-2	16	16		16		
P-3	2	2		2		
R-1	7	7		7		
R-2	12	12		12		
R-3	6	6		6		
S-1	4	5		5	1	
X-1	2	3		3	1	
X-2	4	8	25	6		2
X-3	1	2		2	1	
Y-1	4	5		5	1	
Y-2	5	10		10	5	
Y-3	0	4		4	4	
	178	211		209		

[1] After reductions from burning.

[2] Higher numbers may be allowed.

Increases between 1992 and 1993 in Bravo-2, Echo, Hotel, Kilo-1, Kilo-2, Oscar-2, Sierra-1, Yankee-1, Yankee-2 and Yankee-3 due to recovery from fire.

Permanant increases in Echo (5 to 7), India (10 to 12) and X-Ray-1 (2 to 3) due to habitat.

Permanant reduction in Alpha-3 (8 to 7) due to effects of training/habitat loss and in Yankee-1 (6 to 5), Yankee-3 (5 to 4) due to effects of repeated fire.

Table 2. Closed Areas, 1993 Rifle Deer Season, Camp Pendleton, California.

	October				November															
	30		31		6		7		11		13		14		20		21	
Area	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
A-1	F	F	F	F														
A-2	F	F	F	F														
A-3	F	F	F	F														
B-2	F	F	F	F											T	T		T
C	F	F	F	F														
D	F	F	F	F	T	T	T	T										
E	F	F	F	F	T	T	T	T								T	T	T
F	F	F	F	F	F	F	F	F								T		
G	F	F	F	F	F	F	F	F										
H	F	F	F	F	F	F	F	F										
I	F	F	F	F											T			
I-2	F	F	F	F	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	T	T		
K-1	F	F	F	F	T	T	T						T		Q	Q	Q	Q
K-2	F	F	F	F	T	T							T		T	T	T	
O-1	F	F	F	F	T								T	T	T	T		
O-2	F	F	F	F														
P-1	F	F	F	F														
P-2	F	F	F	F														
P-3	F	F	F	F														
R-1	F	F	F	F														
R-2	F	F	F	F														
R-3	F	F	F	F														
S-1	F	F	F	F														
X-1	F	F	F	F														
X-2	F	F	F	F	T		T		T		T		T		T	T	T	T
X-3	F	F	F	F														
Y-1	F	F	F	F														
Y-2	F	F	F	F														
Y-3	F	F	F	F														

T = closed by RSO due to military training, or for other reason
F = closed due to fire damage to habitat or by order of Base Fire Department
Q = closed by ENRMO Wildlife Management when harvest quota reached or for other environmental reasons

Table 3. 1993 Archery Hunting Results, Camp Pendleton, California.

Area	Opening Weekend. 2 - 3 October	Pre-Rifle Hunting 4 Oct.- 29 Oct.	Rifle Season 30 Oct- 21 Nov.	Total	Deer Taken	% Suc.	Hunter Days/ Deer
	Hunter Days[1]						
A-1							
A-2		0.5		0.5			
B-2	1.0	1.0		2.0			
B-3	3.0	4.0	11.0	18.0			
C		8.5		8.5			
D	1.5			1.5	Buck	66.6	1.5
E		7.0		7.0			
F	1.5			1.5			
G	2.5	3.0		5.5			
H	11.5	7.0	3.5	22.0			
I	3.0	1.5		4.5			
J	14.0	27.0	21.5	62.5	Doe	1.6	62.5
K-1		1.5		1.5			
K-2	0.5	0.5		1.0			
M	0.5	2.5		3.0			
N	5.5	26.5	7.0	39.0	Buck	2.6	39.0
O-1	1.0	18.0		19.0	Buck	5.3	19.0
O-2							
F-1							
P-2							
P-3							
R-1							
R-2		0.5		0.5			
R-3							
S-1		1.5		1.5			
X-1							
X-2	1.0			1.0			
X-3		2.5		2.5			
Y-1		7.5		7.5	Doe	13.3	7.5
Y-2		3.0		3.0			
Y-3	2.5	8.0		10.5			
AG			2.0	2.0			
Total	49.0	131.5	45.0	225.5	5	2.2	45.1

[1]One hunter out for both AM and PM hunt = 1.0 hunter day
One hunter out for AM or PM hunt = 0.5 hunter day

Table 4. 1993 Reported Deer Harvest - Rifle Areas, Camp Pendleton, California.

Area	No. Days Open[1]	Hunter Pressure (Hunter-days)[2]	Harvest[3] B	D	FM	FF	Total	Percent Success	Hunter Days/ Deer
A-1	7.0	6.5					(0)	0.0	0.0
A-2	7.0	17.0	2	3	1	2	(8)	47.1	2.1
A-3	5.5	9.5					(0)	0.0	0.0
B-2	7.0	28.5	1	3			(4)	14.0	7.1
C	7.0	22.5					(0)	0.0	0.0
D	3.5	20.5	1	1	1	1	(4)	19.5	4.9
E	4.5	26.0	2	3	1	1	(7)	26.9	3.7
F	5.0	6.0					(0)	0.0	0.0
G	5.0	30.5	1	2		1	(4)	32.8	7.6
H	4.5	60.0	4	3	3	2	(12)	20.0	5.0
I	6.0	67.0	5	3	2	1	(11)	16.4	6.1
I-2	0.0								
K-1	3.5	8.0					(0)	0.0	0.0
K-2	4.0	4.0					(0)	0.0	0.0
O-1	6.5	36.0		1			(1)	2.8	36.0
O-2	7.0	15.5			2		(2)	12.9	7.7
P-1	7.0	14.0	1				(1)	7.1	14.0
P-2	7.0	55.0	3	2		1	(6)	10.9	9.2
P-3	7.0	4.0					(0)	0.0	0.0
R-1	7.0	9.5	1	1			(2)	10.5	4.7
R-2	7.0	21.0	2				(2)	9.5	10.5
R-3	7.0	6.0					(0)	0.0	0.0
S-1	7.0	20.0	2	1			(3)	15.0	6.7
X-1	7.0	18.0	1		1	1	(3)	16.7	6.0
X-2	2.5	11.5		1	1		(2)	17.4	5.7
X-3	7.0	17.0	2				(2)	11.8	8.5
Y-1	7.0	17.0	1				(1)	5.9	17.0
Y-2	7.0	33.5	1	3		2	(6)	17.9	5.9
Y-3	7.0	17.5	1	2	1		(4)	22.9	4.4
AG	---	0.5					(0)	0.0	0.0
Total		602.0	31	29	13	12	(85)	14.1	7.1

[1]Area open for both AM and PM hunt = 1.0 day
Area open AM or PM only = 0.5 day

[2]One hunter out for both AM and PM hunt = 1.0 Hunter Day
One hunter out for AM or PM hunt = 0.5 Hunter Day

[3]B = Buck, D = Doe, FM = Male Fawn, FF = Female Fawn
(Fawn = 60 lbs. or less dressed weight)

SAN DIEGO DEER HERD PLAN UPDATE
1994/95

In 1994, as in previous years, most of San Diego County was included in Zone D-16. The northwestern portion of the County containing Marine Corps Base, Camp Joseph Pendleton remained in Zone D-15. Special Hunts A-22, G-13 and M-6 occurred within San Diego County as in past years. The length of the hunting season for Zone D-16 remained 30 days, beginning on the fourth Saturday of October. Special Hunt G-13 remained 16 days in length, beginning on the fourth Saturday of October and Special Hunt A-22 remained 86 days in length, beginning on the first Saturday of November. Special Hunt M-6 was nine days in length, beginning on the third Saturday of January. During the 1994 season incisor teeth were collected from harvested deer and analyzed to determine age composition. Returned deer tags from Zones D-16, A-22 and G-13 were used to develop a harvest location map for San Diego County. No modifications to hunts occurring within San Diego County were made for the 1994/95 season.

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A. Harvest Data

YEAR	ZONE	QUOTA	TAG SALES	REPORTED HARVEST	SUCCESS RATE
1994	D-16	3000	3000	253	8%
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	M-6	25	25	0	0%

REPORTED HARVEST FOR 1985-1993

YEAR	ZONE	QUOTA	TAG SALES	REPORTED HARVEST	SUCCESS RATE
1985	D-16	7000	4423	174	4%
	S-1	750	684	6	<1%
	S-11	200	200	50	25%
1986	D-16	7000	5158	211	4%
	S-1	750	750	5	<1%
	S-11	200	200	56	28%
1987	D-16	7000	4974	192	4%
	S-1	750	750	14	2%
	S-11	200	200	45	22%
1988	D-16	7000	4380	167	4%
	S-1	1000	1000	14	1%
	S-11	200	200	53	26%

Herd: San Diego County, Southern Mule Deer
County: San Diego

I. Description of the Deer Herd Management Unit

A. Herd Condition

Overall, the herd is in poor condition.

1. Individual animal condition

Four separate collections of deer have been initiated over the past two years. Ninety deer from road kills, hunter check stations, and two other collections completed in November, 1989 and March, 1990 have been examined. The following table summarized the condition of these deer from quantified visceral and subcutaneous fat indices.

COLLECTION	MALE	FEMALE	TOTAL	YRL.	FAWN	EXC.	GOOD	FAIR	POOR	V. POOR	
SDRK	10	25	35	8	4	0	3	4	8	16	(31)
								9.7%	12.9%	25.8%	
51.6%											
SDC-1	3	13	16	2	1	0	0	3	6	7	(16)
										18.7%	
37.5%	43.7%										
SDC-2	8	11	19	3	1	0	0	4	6	8	(18)
								22.2%	33.3%	44.4%	
SDHCS	18	2	20	0	1	5	4	3	2	1	(15)
						33.3%	26.7%	20%	13.3%	6.7%	
	39	51	90	13	7	5	7	14	22	32	(80)
						6.2%	8.7%	17.5%	27.5%	40%	
SDRK and SDC-1 & 2						0	3	11	20	31	(65)
							4.6%	16.9	30.7%	47.7%	

Further analysis of fermurs and mandibles from both collection periods indicated fat percentages for the bone marrow regions to be equally low in percent fat. An average of 6.4% fat for mandibles and 6.8% for femurs was found in the November collection. This average dropped to 3.9% and 4.3%, respectively, for the March collection. This drop indicates a further decline in body condition of the

animals examined, even though this decline is not indicated in the viceral and subcutaneous regions. The following conclusions are supported by this data.

a. The female segment of the population is in poor to very poor condition most of the year. This indicates that the herd is at or above carrying capacity. Herd productivity and recruitment are low and are being affected by habitat condition.

b. Fawn condition is extremely poor from birth. There is probably a high post partum mortality rate. One adult deer needs to die for a fawn to survive and be recruited into the population the following year.

c. The male segment of the population is in good condition at least during the pre-rut period. The bucks are in prime condition during the hunting season and probably decline into the late fall months. At this point they are in poor condition, and as post-rut segregation begins, they will begin to again build up physical condition if sufficient quality forage is available.

d. A reduction of the adult female segment of the population, under these conditions, would result in a higher fawn survival and recruitment rate.

2. Reproduction

Reproduction investigations on female deer can supply much information on performance of the herd as well as give some indication of carrying capacity. Deer from the San Diego herd were collected during March of 1990 from the hunted portions of the range. These animals were analyzed for pregnancy rates, fetal rates, fetal sex ratios, and dates of conception and parturition. (see graphs). No abnormalities were observed in the fetuses examined. A total of 14 deer was examined.

Total adult females =	12
Total number of fetuses =	19
Total number of adult females with no fetus =	0
Pregnancy rate = 100%	

Total yrl. females =	2
Total number of fetuses =	1
Total yrls. with no fetus =	1
Pregnancy rate = 50%	

Adult fetal rate = 19/12 = 1.58 x 100 = 158 fawns/100 does
Yearling fetal rate = 1/2 = 0.5 x 100 = 50 fawns/yrls.

Overall fetal rate = 20/14 = 1.42 x 100 = 142 fawns /100 females

Overall pregnancy rate = 13/14 = 93%

Twelve fetuses were males and eight were females. Two were not examined for date of conception and parturition.

All rates and percentages fall within expected ranges for a deer herd at carrying capacity.

a. There was a low percentage of twins and no triplets; 7/13 = 54%. A herd below K would approach 100%. Most of these would survive to adults. Composition counts in November indicate only 20-25 fawns per 100 does. (See composition count data.)

b. Only 50% of the yearlings were bred. Below K all yearlings would be bred and a large percent would be twins. Sample size is insufficient for high confidence to this condition; however, the pregnant yearling was taken in a recent burn with high quality feed, while the non-pregnant deer was taken in old chaparral.

c. All adults were bred. No disruption in the breeding cycle is evident or attributable to hunting.

B. Population Size

In 1952, Longhurst et al.* estimated that 26,000 deer inhabited the county. In 1989, Doug Updike used a computer model to estimate the population in the huntable portions of the county to be 3,500 animals. (I understand this has been updated to 4,200.) This excludes Camp Pendleton. This represents a loss of 22,500 deer in 37 years (21,800 for updated estimate). From 1969 to 1981, the deer season was 44 days long, starting in the middle of October and sometimes ending the Sunday following Thanksgiving Day. The buck kill ranged from 243 to 377 and the average kill for those years was 312. In 1982, the season was reduced to 30 days, starting on the first Saturday in October. A quota of 7,000 tags was established for the Zone D-16, which includes most of San Diego County and a part of Riverside County. In 1982, all 7,000 buck tags were sold and 237 bucks were killed in San Diego County. After 1987, the number of deer tags decreased each year to a low of 4,380 in 1988. (4,418 in 1989 and 4,659 in 1990; 1989 and 1990 California Hunting Regulations, Part 1, Mammals and Furbearers and personal communication. Doug Updike, Nov. 27, 1990). From 1987 through 1988, the buck kill in San Diego County ranged from a high of 237 in 1982 to a low of 167 in 1988. The average buck kill through 1989 was 199 (224 in 1989).

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*Longhurst, W. M. Et al. A survey of California deer herds, their ranges and management problems. Calif. Fish and Game Bulletin.

C. HERD STATISTICS

SAN DIEGO HERD AGE ANALYSIS

YEAR	SAMPLE	1	2	3	4+	AVG. AGE
1984	62	12 (19%)	26 (42%)	13 (21%)	11 (18%)	2.5 YR.
1985	53	12 (23%)	24 (45%)	11 (21%)	6 (11%)	2.3 YR.
1986	85	8 (9%)	38 (45%)	22 (26%)	17 (20%)	2.9 YR.
1987	63	8 (13%)	21 (34%)	20 (31%)	14 (22%)	2.7 YR.
1988	67	4 (6%)	37 (55%)	13 (19.5%)	13 (19.5%)	2.7 YR.
1989	101	5 (5%)	53 (52%)	23 (23%)	20 (20%)	3.2 YR.
	431 TOTAL			Six-year average		2.7 YR.

SAN DIEGO DEER HERD COMPOSITION COUNTS

YEAR	SAMPLE	BUCK		DOE		FAWN
1985	134	18	:	100	:	16
1986	222	25	:	100	:	37
1987	241	26	:	100	:	41
1988	262	27	:	100	:	35
1988 Summer	182	34	:	100	:	36
1989	222	23	:	100	:	26

SAN DIEGO HERD HARVEST TREND

YEAR	ZONE	QUOTA	TAG SALES	HARVEST	SUCCESS RATE
1985	D-16	7000		174	4%
	S-1	750	684	6	<1%
	S-11	200	200	50	25%
1986	D-16	7000	5158	211	4%
	S-1	750	750	5	<1%
	S-11	200	200	56	28%
1987	D-16	7000	4974	192	4%
	S-1	750	750	14	2%
	S-11	200	200	45	22%
1988	D-16	7000	4380	167	4%
	S-1	1000	1000	14	1%
	S-11	200	200	53	26%
1989	D-16	7000	4418	223	5%
	S-1	1000	1000	11	1%
	S-11	200	200	41	20%

D. Range Land Ownership

Land ownership patterns have changed little in the past 12 years. In 1977, according to the State Lands Commission (Public Land Ownership in California, 1972) and the USDA, Forest Service (Cleveland National Forest Land Acreage Summary as of October, 1981.) Public lands occupied 1,394,305 acres and 51.2% of the County, while 1,328,895 acres and 48.8% were in private ownership. The public landholders were State Parks and Recreation (489,772 acres, 35.1% of public lands and 18.0% of total lands; U.S. Forest Service, 290,740 acres, 20.9% and 10.7% respectively; Bureau of Land Management (BIM) 185,053 acres, 13.3% and 6.8%; military Lands, 755,423 acres, 11.1%and 5.7%; Bureau of Indian Affairs, 123,498 acres, 8.9% and 4.5%; and other public agencies, 149,819 acres, 10.7% and

5.5%). This latter category includes CALTRANS, the State University system, then state agencies, 18 incorporated cities, the County of San Diego, school districts and special districts such as water and sewer.

The main change in land ownership in the past 10 years has been the annexation of county lands by many of the incorporated cities for residential, commercial, and industrial development. The BLM has gotten rid of several small parcels, most of them going to other public agencies. The U. S. Forest Service has added a few hundred acres through purchase and land exchange. All of this has lead to a small decrease in public lands and a small gain in private lands. This trend will continue past the year 2000. (SANDAG, BLM, U.S.F.S.) With the decrease in public lands (BLM and County Lands.) There has been a slight decrease in lands available for deer hunting.

E. Range Vegetation

1. Fire

Chaparral is the dominant vegetation type in San Diego County. Most of it is dense and high. Prescribed burning is the main management tool in opening new range for deer and other wildlife. Wild fires also play a major part in ridding the County of the dense vegetation wild fires are not as effective in improving habitat for wildlife as these fires do not burn in mosaic patterns and there are few vegetation islands left after a wildfire sweeps through **** Since 1981, 36,353 acres of U.S. Forest Service lands have burned in wildfires in San Diego County, many prescribed burns have been accomplished on both the Palomar and Descanso Districts. These burn are designed not only to improve habitat but also to decrease large wild fire burns. An estimated 2,500 acres a year are burned by prescription on the Cleveland National Forest in San Diego County. (Personal communication, Tom White, U.S.F.S.)

These burns, both wildfire and prescribed burns, in San Diego County on the Cleveland National Forest are summarized below.

Year	Total Wildlife Acres	Total RX Acres
1980		1,461
1981	370	2,006
1982	115	2,500 est.
1983	181	2,500 est.
1984	4,788	2,500 est.
1985	739	2,500 est.
1986	1,452	2,500 est.
1987	12,300	2,470
1988	408	2.920
1989	16,000 est.	
1990	unknown	unknown
Total acres	36,353	25,030
Average acres per year	4,039	2,503

Hill Bill funds have been used since 1985 to burn by prescription to improve habitat for the southern mule deer. This prescribed burning will continue into the future.

Wildfires on BLM lands have not been as prevalent as on U.S. Forest service lands. A wild fire in McCain Valley in 1983 burned an estimated 12,000 acres and one on Otay Mountain in 1989 burned about 140 acres. There have been attempts, only partially successful, to prescribe burn in McCain Valley. The intention is to burn 500 acres per year on this area. (Personal communication with personnel from BLM, Riverside and Palm Springs.)

The California Department of Forestry and Fire Protection (CDF) also does prescribed burning on private lands to improve habitat for live stock. These burns have benefitted deer and other wildlife. following are the acres burned by CDF in San Diego County.

Years (Fiscal)	Acres Burned
1981-1982	6,030
1982-1983	1,495
1983-1984	853
1984-1985	2,000
1985-1986	3,302
1986-1987	3,064
1987-1988	2,516
1988-1989	3,002
1989-1990 (planned)	2,497
Total acres	24,759
Average acres per year	2,751

(Information furnished by John Gray, CDF Fire Chief, El Cajon.)

Camp Pendleton also does some precribed burning and has had many wildfires since the Base has been in existence. This information in incomplete and won't be available until sometime in 1991.

The main vegetation that is prescribed burned is chamise chaparral, with the effect being to open up this dense vegetation for wildlife. Wildlife use is usually high on these areas for several years, especially if water is nearby. The problem is that the chaparral grows back and is dense as it was before burning after 2 years. The prescribed burning cycle starts all over again.

Wildfires also burn much of the chaparral and many conifer and oak species. The conifers are usually killed and, in the case of the U.S. Forest Service, conifer plantations have to be established. Oaks are more hardy and usually crown sprout after the fire. While fire is a tool in creating more habitat for deer and other wildlife species, it has to be used every year to be effective in San Diego County.

2. Livestock Grazing

There has been a very slight increase in AUM's on U.S. Forest Service Lands since 1984. There are no current plans to increase livestock numbers on U.S. Forest Service or BLM lands. Since there has been livestock grazing in San Diego for many years, the vegetation has changed very little due to livestock grazing. Ranchers move their livestock off of a range to recover.

3. Logging

Logging is a very minor activity in San Diego County. The logging that takes place is beneficial since it thins the heavy stands of timber.

4. Drought

There has been little change in the chaparral portions of the range due to drought, as this type of vegetation does not need a lot of water to survive. The most serious impacts of the drought have been to the oak woodland and riparian woodland areas. Many oaks are showing signs of stress (brown or yellow leaves on nondecidious oaks) and some have died. The same holds true for sycamores and cottonwoods, and to a lesser extent, willows. If the present low precipitation continues, the chaparral community will start showing stress, more trees will die, and there will be no replacement for many years.

II. Major Factors Affecting the Deer Population

A. Human Factors

1. Subdivision and Development

The following information was compiled by the San Diego Association of Governments (SANDAG) and released in their INFO publications in 1989. SANDAG is represented by the 18 incorporated cities in San Diego County, the State Department of Transportation (Caltrans), the U.S. Department of Defense, and Tijuana/Baja California Norte.

In 1986, the population of San Diego County was 2,169,957. In 1989, the number of people living in the county was 2,428,181, an increase of 248,224 in numbers and 14.4% in four years. Total occupied housing units in 1986 was 771,182. This rose to 876,717 in 1889, an increase of 105,535 units and 13.7%.

SANDAG predicts that the population for the year 2000 will be 2,784,195, a numerical increase of 614,238 and 28.3% since 1986. The occupied housing units will increase in the year 2000 to 1,058,179, an increase of 286,997 units and 37.2% since 1986.

Increases in population and housing units are presented for the east county from 1986 to 1989 and from 1986 to 2,000. All of this is shown in the following table.

	POPULATION, SAN DIEGO CO.	POPULATION, EAST CO.	HOUSING UNITS, SAN DIEGO CO.	HOUSING UNITS, EAST CO.
1986	2,169,957	16,182	771,182	5,839
1989	2,418,181	16,885	876,717	6,200
INCREASE FROM 1986	248,224	703	105,535	631
PERCENT INCREASE FROM 1986	14.4%	4.3%	13.7%	6.2%
2000	2,784,195	18,774	1,058,179	7,173
INCREASE FROM 1986	614,238	2,592	286,997	1,334
PERCENT INCREASE FROM 1986	28.3%	16%	37.2%	22.8%

The large increase in population over the past 10 years has resulted in more people using public lands for a variety of recreational pursuits. While deer hunting in the county has decreased as evidenced by the drop in deer tag sales, more people are hunting quail and rabbits.

New housing tracts have encroached on lands formerly used by deer; while much of this land was in no shooting areas, some was on land where hunting was allowed. Population and housing increase in the rural east county has been low with most hunters coming from the urban and suburban areas of the county.

The public lands owned by the U.S. Forest Service, and Bureau of Land Management are heavily used by hunters who cannot hunt on private lands. These include the Cleveland National Forest, Otay Mountains and McCain Valley. As the population of the county increases, these areas will attract more and more hunters.

2. Livestock Grazing

Livestock owners have used Federal lands for over 100 years. While only a small percentage of all beef cattle graze on the federal lands, a few livestock owners have become dependent on federal grazing lands for ranching and economic survival. It has become a traditional and high-priority activity on U.S. Forest Service (USFS) and Bureau of Land Management (BLM) lands.

According to the Land and Resources Management Plan for the Cleveland National Forest, there were 27 active grazing allotments and 14 special use pasture permits on approximately 162,000 acres on USFS lands of the Cleveland National Forest at the end of 1983. The total permitted us on the Forest was 17,059 animal unit months (AUMs.)

The Final Environmental Impact Statement of the Land and Resources Management Plan for the Cleveland National Forest projects an increase in grazing allotments and AUMs. Actually, there has been a slight decrease in AUMs since 1984, with no current plans to increase livestock numbers or allotments. (Personal conversation with Tom White, USFS.) This is due to USFS involvement in enhancement of riparian habitats and stream channels and fencing to exclude cattle from riparian areas. At present, willow and cottonwood enhancement in riparian areas takes priority over livestock grazing.

The BLM also has livestock leases on several parcels in San Diego County. These include Otay and Houser Mountains and McCain Valley. Mike Meyer of BLM in the Indio Resource Conservation District said there are no plans to increase either livestock numbers or allotments on those parcels.

Cattle compete with deer for forage. Bowyer and Bleich studied 11 meadows in the Cuyamaca Mountains and Cuyamaca State Park. Their findings were that deer utilized cattle-free meadows in large numbers, but very few utilized meadows when cattle were present. They stated, "this suggests that cattle may limit deer numbers in some areas of the County" (Bowyer, R. T. and V. C. Bleich 1979, Impacts of cattle grazing on Southern Mule Deer. U.S. Forest Service Contract Study, 1979).

If grazing allotments and AUM's are to be increased in the Cleveland National Forest, the Forest Plan states that chaparral areas would be converted to meadows by prescribed fire and wildfire. Since game

species use in heavy chaparral is minimal, conversion of these areas would not create a serious impact on deer and other game species. Deer numbers would probably increase slightly in the converted meadows, especially where cattle would be absent. However, in the lighter chaparral areas, deer numbers would decrease when these lands are converted to meadows as deer which presently use these light chaparral areas would not use the converted meadows when cattle are present. Overall, there will be a decline in deer numbers if the Forests plan to convert chaparral to meadows is implemented. (writer's opinion.)

On Camp Pendleton, there are three sheep allotments with a total of 8,200 AUMs. While sheep compete with deer in other parts of the state, this is not the case on Camp Pendleton, since the sheep are restricted to open grasslands where deer and other game species are not present.

3. Logging

Of the 420,056 acres on the Cleveland National Forest, 88% or 369,808 acres consist of chaparral. Of the remainder, 40% or 16,605 acres are conifer and 5.6% or 23,405 acres are broadleaf woodland, which is mainly varieties of live oak. The remaining vegetation types are riparian and grassland.

Large-scale timber harvesting operations are not feasible on the Cleveland due to distance to processing sites, small size of the available resource, and generally poor quality of lumber produced from open-growth trees.

There is a Timber Stand Improvement Target Plan on the forest in which selected individual trees, both conifers and hardwoods, are thinned from forest stands to improve growth of remaining trees. This thinning is beneficial for wildlife species as it opens the stands for increased wildlife use while still providing canopy and other cover. The Forest Service Plan calls for 700 acres of thinning annually. This wood is sold to commercial and private interests.

The Forest Plan also proposes to retain sufficient snags for wildlife habitat and a limited amount of dead material on the ground.

The practices described above have been on going for many years and will continue into the future.

4. Fire and Fire Suppression

Wildfires in San Diego County occur every year in the chaparral and coastal sage, both man-made and natural (lightning.) Since 1981, 36,353 acres of U.S. Forest Service lands have burned in wildfires. Many prescribed burns have been accomplished on both the Palomar and Descanso districts. These burns are designed to improve the habitat

for both wildlife and livestock and to decrease large wildfire burns. An estimated 2500 acres a year are burned by prescription. (Personal Communication, Tom White, USFS.)

These burns, both wildfires and prescribed burns, are summarized below.

Year	Total Wildland	Total RX (Acres)
1980		1,461
1981	370	2,006
1982	115	2,500 est.
1983	181	2,500 est.
1984	4,788	2,500 est.
1985	739	2,500 est.
1986	1,452	2,500 est.
1987	12,300	2,470
1988	408	2,920
1989	16,000 est.	3,673 est.
1990	unknown	unknown

Hill Bill funds were used since 1985 to burn by prescription to improve habitat for the Southern Mule Deer. This prescribed burning will continue into the future.

Wildfires on BLM lands have been prevalent as on U.S. Forest Service lands. A wildfire in McCain Valley in 1983 burned an estimated 1,200 acres and one on Otay Mountain in 1989 burned about 140 acres. There have been attempts to prescribe burn in McCain Valley. BLM intends to burn about 500 acres per year by prescription. (Personal communication, personnel from BLM, Riverside and Palm Springs.)

The California Department of Forestry and Fire Protection (CDF) also does prescribed burning, mostly on private lands to improve habitat for livestock. These burns have benefitted wildlife. Following are the acres burned by CDF.

Year (Fiscal)	Acres Burned
1981-82	6,030
1982-83	1,495
1983-84	853
1984-85	2,000
1985-86	3,302
1986-87	3,064
1987-88	2,516
1988-89	3,002
1989-90 (planned)	2,497
Total acres	24,759
Average acres per year	2,751

(Information furnished by John Gray, CDF Fire Chief, El Cajon.)

5. Recreation (non deer hunting)

The recreational activity which has the most negative impact on the deer population is off highway vehicles (OHV). The Cleveland National Forest has set aside two areas of 15,560 acres and 117 miles of roads and trails as of 1986. Personal communication with Mike Rogers (who was the Forest Supervisor at the time) determined that these figures have not increased. According to the Forest Plan, however, this OHV use would be expanded in the future by 600 acres with more loop trails and longer distance roads being provided.

This recreation activity has been responsible for very low deer and other wildlife numbers in areas of OHV use. Since more trails are planned with more acres set aside for this type of activity, deer populations will continue to decline in these areas.

The BLM also has OHV areas in McClain Valley, which have negative impacts on deer. There are no plans at present to expand these areas.

There are several areas on the Descanso District of the Forest where target shooting is permitted. Deer are nowhere near these areas. There are no plans to expand these areas or create new ones.

Other types of recreation include camping, nature study, equestrian use, hiking, and picnicking. These have minor negative effects on deer.

6. Deer Hunting

a. Post and current hunting strategies effects on:

1) Deer Numbers

According to Doug Updike, DFG biologist in Sacramento, the deer population in the herdable areas of the County (excluding Camp Pendleton) in 1989 was 3,500 animals. Using the 1989 herd composition counts of 23 bucks and 26 fawns per 100 does, this sets the composition of the deer herd at 1,785 does, 805 bucks, and 910 fawns (To the buck and doe numbers, we can add 375 fawns to each which would make the doe population 2,160 and the buck population 1,385 in 1990.) Tag returns showed that 231 bucks were killed in San Diego County in 1989, (224 in D-16 and 7 in S-1). Using the figure of 805 bucks, this represents a kill of 28.7 percent of the population. Updike's research shows that buck populations can sustain a harvest of 50% without showing decline, and if the kill is less than 40%, buck to doe ratios may rise. With a 20 percent kill in 1989, it appears that the buck population has remained the same for the past seven years. Fewer does are taken in the S-1 and S-11 hunt (45 in 1989) so there should have been no decline in the San Diego County herd in the past seven years.

2) Herd Composition

Herd composition counts for the past six years indicate that bucks per hundred does range from 18-27 and fawns per hundred does range between 16 and 37. From the variance in these numbers over the past four years, it is the writer's opinion that past and current hunting strategies have had no adverse effects on herd composition in San Diego County.

3) Herd health

It is the writer's opinion that the number of deer in San Diego County (3,500) is the same now as it was eight years ago. It is also my opinion that the buck population (1,385) is approximately the same as it was in 1982. Removal of deer from this stable population should result in increased fawn survival the following years. While herd composition counts show that this increase has not taken place, there has been no significant decrease. Thus, the past and current hunting strategies have not caused a decline in the general health of the deer population.

b. Future and proposed hunting strategies effects on:

1) Deer numbers

It is not anticipated that the length of the D-16 Season (30 days), the time of year (mostly in October), nor the deer tag quota (7,000) will be changed. Therefore, there will be no effect on the number of bucks in the population, as a result of the D-16 hunt. For this one hunt (either sex, archery only), it is proposed that the number of available tags remain at 1,000, but that the current 12 weeks be cut to 10 weeks, starting in the middle of November and ending on January 31. This will remove the S-1 hunt from the first part of November, which is the peak of the rut in interior San Diego County. Since such a small number of deer are killed in this hunt yearly, the decrease in the length of the season will have no effect on deer numbers. For the S-11 hunt, it is proposed that the number of tags available be reduced from 200 to 170 and that the season be during the last 16 days of the D-16 hunt instead of running concurrently. Since the average success in this hunt has been 25 percent for the past nine years, the number of antlerless deer harvested in S-11 hunt will be approximately seven fewer. This will have no effect on the number of does or fawns in the population. Thus it can be stated that future and proposed hunting strategies will have no effect on deer numbers.

2) Herd Composition

Future and proposed hunting strategies will have no effect on herd composition. A few less antlerless deer being harvested is insignificant and herd composition will remain the same. The same holds true for Camp Pendleton.

3) Herd Health

The future proposed hunting strategies will have no effect on herd health, since a few less antlerless deer taken will be insignificant and herd health will not improve or decline.

7. Illegal Harvest

While there is speculation that poaching of deer is high in San Diego County and may be as high as one-half the legal take, no precise estimate of the number killed illegally is available. It is possible that poaching increases with unemployment and high meat prices. Since the illegal take is unknown, it cannot be stated that poaching is a limiting factor to deer populations.

8. Other - Road Kill

Many deer are killed and injured by vehicles throughout the County. The kill of deer on Interstate 8 Freeway east of Alpine is alarming. Wardens in that part of the County estimate that between 50-100 deer are killed annually on this Freeway between Alpine and Buckman Springs Road. It is very possible that road kill is a limiting factor to deer populations. Plans are now being made to install a deer-proof fence on Interstate 8. Some Hill Bill funds will be available. Hopefully, the fence will be completed by 1995.

B. Non-human Effects on Deer

1. Weather

a. Drought

San Diego has had four years of low precipitation beginning with the 1986-87 rainfall year. While not actually a drought, since water has not been rationed, effects on wildlife habitat in most of the County have been serious. Intermittant streams have dried up sooner than usual in the spring and creeks and streams which usually flow year round have water only in a few pockets. Many springs are dry. This has forced deer to congregate near available water where they are more susceptible to disease, predation, and poaching. This is typical during low rainfall and drought conditions.

Water distribution is a factor influencing deer distribution in the County. Bowyer found that deer in Southern California seldom

made use of areas more than 1 km, from water (Bowyer, R. T. 1981. Management guidelines for improving southern mule deer habitat on the Laguna Morena Demonstration Area, U.S.D.A. Forest Service Service 40-9AD6-9-622).

b. Early Storms

San Diego County usually does not get early storms. In November, 1985 two feet of rain fell in the higher elevations, and there was even about three inches in part of the low desert. Coastal areas received about two inches of rain. This may have affected fawn survival as only 16 fawns per 100 does were counted that year. However, the sample size of 134 was small and 1986 counts showed 37 fawns per 100 does. The heavier storms in southern California usually occur in January and February.

c. Mild winters

Doesn't seem to have any affect on fawn survival.

2. Predators

Predators in San Diego County include mountain lions, coyotes, bobcats, and feral and domestic dogs. The population of mountain lions is not known, but their populations have increased since the moratorium on lion hunting was enacted in 1971. Personal conversation with Dick Weaver in 1985, biologist with the California Department of Fish and Game, indicated at that time that there were over 100 lions in the County and probably over 4,000 in the State. Lions are efficient predators of deer and it is probable that they are a limiting factor both in town survival and deer herd carrying capacity.

Coyotes are numerous in San Diego County and they are efficient hunters. While they take some young and infirm deer, they are not thought to be a major limiting factor in suppressing deer populations. Bobcats may occasionally kill fawns but these incidents are probably rare.

Feral dogs run in packs and sometimes kill deer. Domestic dogs are not as efficient, but by chasing deer, they are a cause of stress and may contribute to deer losses in some areas. Dogs are not thought to be a major factor in suppressing deer populations.

3. Disease and Parasitism

Although the effects of disease and parasites on the San Diego deer herd are unknown, they are not thought to be a serious problem. Studies planned in late 1989 and the spring of 1990 may furnish information on the evidence of disease and internal parasites.

owned and operated by hunters taking advantage of the deer hunting opportunities whether the hunting be the current or the proposed hunting strategies.

3. Public services

   Deer hunting strategies will have very little effect on public services; the only indirect effect is that there will be a greater demand for gasoline due to more cars on the roads of the County. A small portion of the increased demand will be due to more hunters using their private transportation.

4. Energy

   Deer hunting strategies will have very little effect on energy.

5. Human health

   Human health will not be affected by deer hunting strategies.

6. Aesthetics

   There will be no charge in aesthetics in the County due to deer hunting strategies.

7. Cultural resources

   Cultural resources will not be affected by deer hunting strategies.

SAN DIEGO DEER HERD PLAN UPDATE

1992/93

In 1992, as in previous years, most of San Diego County was included in Zone D-16. The northwestern portion of the County containing Marine Corps Base, Camp Joseph Pendleton remained in Zone D-15. Special Hunts S-1 and S-11 occurred within San Diego County as in past years. The length of the hunting season for Zone D-16 and Special Hunt S-11 remained 30 days, beginning on the first Saturday of October. Special Hunt S-1 was 86 days in length, beginning on the first Saturday of November. During the 1992 season incisor teeth were collected from harvested deer and analyzed to determine age composition. Returned deer tags from Zones D-16, S-1 and S-11 were used to develop a harvest location map for San Diego County.

Modifications were made to the boundaries of Zone D-16 in 1992 to allow the creation of a new hunt zone (Zone D-19) from the northern portion of Zone D-16. The resulting size reduction of Zone D-16 and creation of Zone D-19 was necessary to allow the management of deer on a herd-by-herd basis by separating the San Jacinto and Santa Rosa Mountains herds into two zones. In addition, the number of tags available for Zone D-16 in 1992 was reduced by 1500 tags (from 4500 in 1991 to 3000 in 1992) to allow for the appropriate harvest of bucks within the zone, while maintaining the buck ratio at or near the level set forth in the approved San Diego deer herd management plan.

I. Update of Biological Data

A. Harvest Data

YEAR	ZONE	QUOTA	TAG SALES	REPORTED HARVEST	SUCCESS RATE
1992	D-16	3000	2359	201	9%
	S-1	1000	870	23	4%
	S-11	170	170	38	22%

REPORTED HARVEST FOR 1985-1991

1985	D-16	7000	4423	174	4%
	S-1	750	684	6	<1%
	S-11	200	200	50	25%

YEAR	ZONE	QUOTA	TAG SALES	REPORTED HARVEST	SUCCESS RATE
1986	D-16	7000	5158	211	4%
	S-1	750	750	5	<1%
	S-11	200	200	56	28%
1987	D-16	7000	4974	192	4%
	S-1	750	750	14	2%
	S-11	200	200	45	22%
1988	D-16	7000	4380	167	4%
	S-1	1000	1000	14	1%
	S-11	200	200	53	26%
1989	D-16	7000	1000	233	5%
	S-1	1000	1000	11	1%
	S-11	200	200	41	20%
1990	D-16	7000	4639	127	3%
	S-1	1000	741	6	<1%
	S-11	170	170	33	19%
1991	D-16	4500	3931	158	4%
	S-1	1000	790	12	2%
	S-11	170	170	37	22%

B. Age Analysis

Incisor teeth were collected from 106 buck deer and 32 doe deer during the 1992 hunting season and analyzed to determine age structure of the harvest. Results of this analysis were:

SAMPLE	SEX	<1yr.	1yr.	2yr.	3yr.	4+yr.	AVG. AGE
106	M	4(4%)	22(21%)	34(32%)	18(17%)	28(26%)	2.9 Yrs.
32	F	5(16%)	10(31%)	4(12.5%)	4(12.5%)	9(28%)	2.6 Yrs.

AVERAGE AGE DATA FOR 1984-1991

YEAR	SEX	SAMPLE SIZE	AVERAGE AGE
1984	M	62	2.5 Yrs.
	F	0	0.0 Yrs.
1985	M	53	2.3 Yrs.
	F	18	2.5 Yrs.
1986	M	85	2.9 Yrs.
	F	23	2.7 Yrs.
1987	M	63	2.7 Yrs.
	F	19	1.9 Yrs.

YEAR	SEX	SAMPLE SIZE	AVERAGE AGE
1988	M	67	2.7 Yrs.
	F	20	2.7 Yrs.
1989	M	101	2.7 Yrs.
	F	0	0.0 Yrs.
1990	M	0	0.0 Yrs.
	F	0	0.0 Yrs.
1991	M	56	3.3 Yrs.
	F	14	2.8 Yrs.

The average age of 2.9 years for bucks sampled during 1992 is slightly lower than that for bucks sampled during 1991. This decrease can be attributed to increased fawn survival within the herd brought about by several years of above normal rainfall which improved habitat conditions. Improvement in the condition of deer range through localized habitat improvement projects and normal rainfall patterns, combined with current hunting strategies should result in continued fawn survival at or near the level currently being experienced. The average age of 2.6 years for does sampled during 1992 is also slightly lower than that for does sampled over the past several years. However, these samples are relatively small in size and may not give a precise indication of age composition within the doe segment of the population.

C. Herd Composition

Aerial composition surveys of the San Diego deer herd were conducted from a helicopter between 7-10 November, 1992. Thirteen hours of flight time resulted in the following ratios:

YEAR	SAMPLE SIZE	BUCK	:	DOE	:	FAWN
1992	185	54	:	100	:	68

II. Habitat Improvement/Research Projects

Prescribed burning continues to play an important role in improving habitat conditions for deer and other wildlife species within San Diego County. Regular prescribed burning of dense, decadent chaparral and forest understory on both public and private lands has been used to create and/or maintain good quality habitat on approximately 25,000 acres since 1980. Currently, the U.S. Forest Service and California Department of Forestry have prescribed burn

projects scheduled through 1997. Several projects submitted for Hill Bill funding by the Cleveland National Forest for 1992/93 have been rescheduled for 1994/95. These projects include the Tragedy Burn on the Descanso Ranger District and North Slope I Burn on the Palomar Ranger District.

The following breakdown indicates acres prescribed burned in 1992 and source of funding:

1. Troy Long Burn - 500 acres - vegetation type was chamise chaparral and ceanothus. Funded by Hill Bill and Forest Service wildlife dollars.

2. Boden Canyon Burn - 1200 acres - vegetation type was chamise chaparral. Funded by Hill Bill and Forest Service Fuels dollars.

3. East Grade Burn - 100 acres - vegetation type was Montain Hardwood-Conifer understory, decadent stands of ceanothus were targeted. Funded by Forest Service Fuels dollars.

During March of 1992 a three-year telemetry study of the San Diego deer herd was initiated by the Department of Fish and Game to address mortality and limiting factors within good deer herd range. This study was developed to identify major mortality and limiting factors influencing the adult segment of the deer population and attempt to quantify their impacts on the herd. The study also provides the option of developing habitat utilization and seasonal distribution data in addition to mortality and limiting factors. Two capture operations have been conducted to date resulting in the radio-collaring of eight buck and 14 doe deer. Currently, seven mortalities have been observed among the 22 radio-collared deer. Causes of these mortalities include predation, hunter take and natural death.

1989	D-16	7000	1000	233	5%
	S-1	1000	1000	11	1%
	S-11	200	200	41	20%
1990	D-16	7000	4639	127	3%
	S-1	1000	741	6	<1%
	S-11	170	170	33	19%
1991	D-16	4500	3931	158	4%
	S-1	1000	790	12	2%
	S-11	170	170	37	22%
1992	D-16	3000	2359	201	9%
	S-1	1000	870	23	4%
	S-11	170	170	38	22%
1993	D-16	3000	3000	234	8%
	A-22	1000	850	18	2%
	G-13	250	250	42	17%
	M-6	25	25	0	0%

B. Age Analysis

During the 1993/94 deer season incisor teeth were collected from 115 buck deer and 35 doe deer and during the 1994/95 season incisor teeth were collected from 86 buck deer and 19 doe deer killed within San Diego County. Analysis of these samples have not been completed to date but will be included in a revised Age Analysis section to this update as soon as the results become available.

AVERAGE AGE DATA FOR 1984-1992

YEAR	SEX	SAMPLE SIZE	AVERAGE AGE
1984	M	62	2.5 Yrs.
	F	0	0.0 Yrs.
1985	M	53	2.3 Yrs.
	F	18	2.5 Yrs.
1986	M	85	2.9 Yrs.
	F	23	2.7 Yrs.
1987	M	63	2.7 Yrs.
	F	19	1.9 Yrs.
1988	M	67	2.7 Yrs.
	F	20	2.7 Yrs.
1989	M	101	2.7 Yrs.
	F	0	0.0 Yrs.
1990	M	0	0.0 Yrs.
	F	0	0.0 Yrs.
1991	M	56	3.3 Yrs.
	F	14	2.8 Yrs.
1992	M	106	2.9 Yrs.
	F	32	2.6 Yrs.

C. Herd Composition

Aerial composition surveys of the San Diego deer herd were conducted from a helicopter between 21-23 November, 1994. Twelve hours of flight time resulted in the following ratios:

YEAR	SAMPLE SIZE	BUCK	:	DOE	:	FAWN
1994	184	20		100		69

HERD COMPOSITION DATA FOR 1985-1993

YEAR	SAMPLE SIZE	BUCK	:	DOE	:	FAWN
1985	134	18	:	100	:	16
1986	222	25	:	100	:	37
1987	241	26	:	100	:	41
1988	262	27	:	100	:	35
1989	222	23	:	100	:	26
1990 *	0	0	:	100	:	0
1991 *	0	0	:	100	:	0
1992	185	54	:	100	:	68
1993 *	0	0	:	100	:	0

* Composition Count Information not Available

II. Habitat Improvement/Research Projects

Prescribed burning continues to play an important role in improving habitat conditions for deer and other wildlife species within San Diego County. Regular prescribed burning of dense, decadent chaparral and forest understory on both public and private lands has been used to create and/or maintain good quality habitat on approximately 26,000 acres since 1980. Currently, the U.S. Forest Service and California Department of Forestry have prescribed burn projects scheduled through 1998. Several projects submitted for Hill Bill funding by the Cleveland National Forest during the 1993/94 and 1994/95 fiscal years have been rescheduled or are scheduled for 1995/96. These projects include the North Slope I and II burns on the Palomar Ranger District and the Tragedy Burn on the Descanso Ranger District.

The following breakdown indicates acres prescribed burned in 1994 and source of funding:

1. Troy Long Burn - 250 acres - vegetation type was chamise chaparral and ceanothus. Funded by Hill Bill and Forest Service wildlife dollars.

2. North Slope Burn - Firebreak construction and blacklining were conducted during in preparation for interior burning during 1995. Funding provided by Hill Bill and Forest Service wildlife dollars.

During March of 1992 a three-year telemetry study of the San Diego deer herd was initiated by the Department of Fish and Game to address mortality, limiting factors and habitat use within good deer herd range. This study was developed to identify major mortality and limiting factors influencing the adult segment of the deer population and attempt to quantify their impacts on the herd. The study also provides the option of developing habitat utilization and seasonal distribution data in addition to mortality and limiting factors. A final report for this project is expected to be completed by September of 1995.