SAN JACINTO/SANTA ROSA MOUNTAINS
DEER HERD MANAGEMENT PLAN

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I. INTRODUCTION

During the 1960's and early 1970's, deer herds throughout most of California experienced long-term declines (Longhurst et al. 1976). The Department of Fish and Game (DFG) initiated a program to address the decline. The program included the establishment of a select committee, the purpose of which was to examine the problem and provide restoration recommendations. After considerable public input, a statewide strategic plan for California deer herds was developed (DFG 1976). Emphasis was added to the deer management program by Legislative mandate (AB-1521, September 1977). Subsequently, a Deer Management Policy was adopted by the State Fish and Game Commission specifying that: 1) planning for deer management be on a herd basis; 2) selected program elements be included in each herd plan; and 3) herd plans generally conform to the goals of the statewide strategic plan.

The subject plan is intended to respond to the Legislative mandate and the DFG policy commitment to plan specifically for the management of the San Jacinto/Santa Rosa Mountains deer herd. Organization of the plan follows a format which includes: 1) a description of the San Jacinto/Santa Rosa Mountains deer herd management unit, 2) major factors regulating the deer herd, 3) management unit goals, 4) problems and constraints in management, 5) management programs, objectives, and recommended prescriptions, and 6) management alternatives. The plan should be viewed as dynamic in that periodic review and updating are considered integral part of the planning process. Specific details relating to the implementation of the management programs and prescriptions will be addressed in greater detail in a subsequent herd action plan. This will be developed in cooperation with the land

management agencies having primary responsibility for the lands comprising the herd range.

The San Jacinto/Santa Rosa Mountains deer range can be considered typical of many of the deer ranges associated with urban Southern California. These are largely mountainous areas, a great amount of which were placed under the administration of public land management agencies during the late 1800's early 1900's primarily for purposes of watershed protection. Subsequently, increasing demands for recreational space, opportunities for economic development, and loss of habitat values to urban-related activities accelerated with the population growth of Southern California. It is reasonable to assume that the expansion and pressures of urban population growth have contributed substantially to the present deer management situation. It also is equally reasonable to believe that implementation of deer management actions and cooperative management approaches offers considerable opportunity to restore and maintain the San Jacinto/Santa Rosa Mountains deer herd to a higher population level.

II. DESCRIPTION OF THE HERD MANAGEMENT UNIT

A. HERD LOCATION

The San Jacinto/Santa Rosa Mountains deer herd range is located in western Riverside County. Figure 1 indicates the geographic location of the herd range in Southern California, and Figure 2 defines the deer herd boundary. The San Jacinto and Santa Rosa Mountains are part of the Peninsular Range, a group of mountain ranges having a north-south orientation and extending into Baja California. San Gorgonio Pass represents the northern-most extreme of the deer range, while the eastern herd range is defined by the desert slopes of the Coachella Valley extending in a southeastern direction to the Salton Sea. The western herd boundary is defined by the coastal valleys associated with the urban communities of San Jacinto and Hemet and extends southward to the Riverside-San Diego County line (see Figure 2).

B. CLIMATE AND VEGETATION

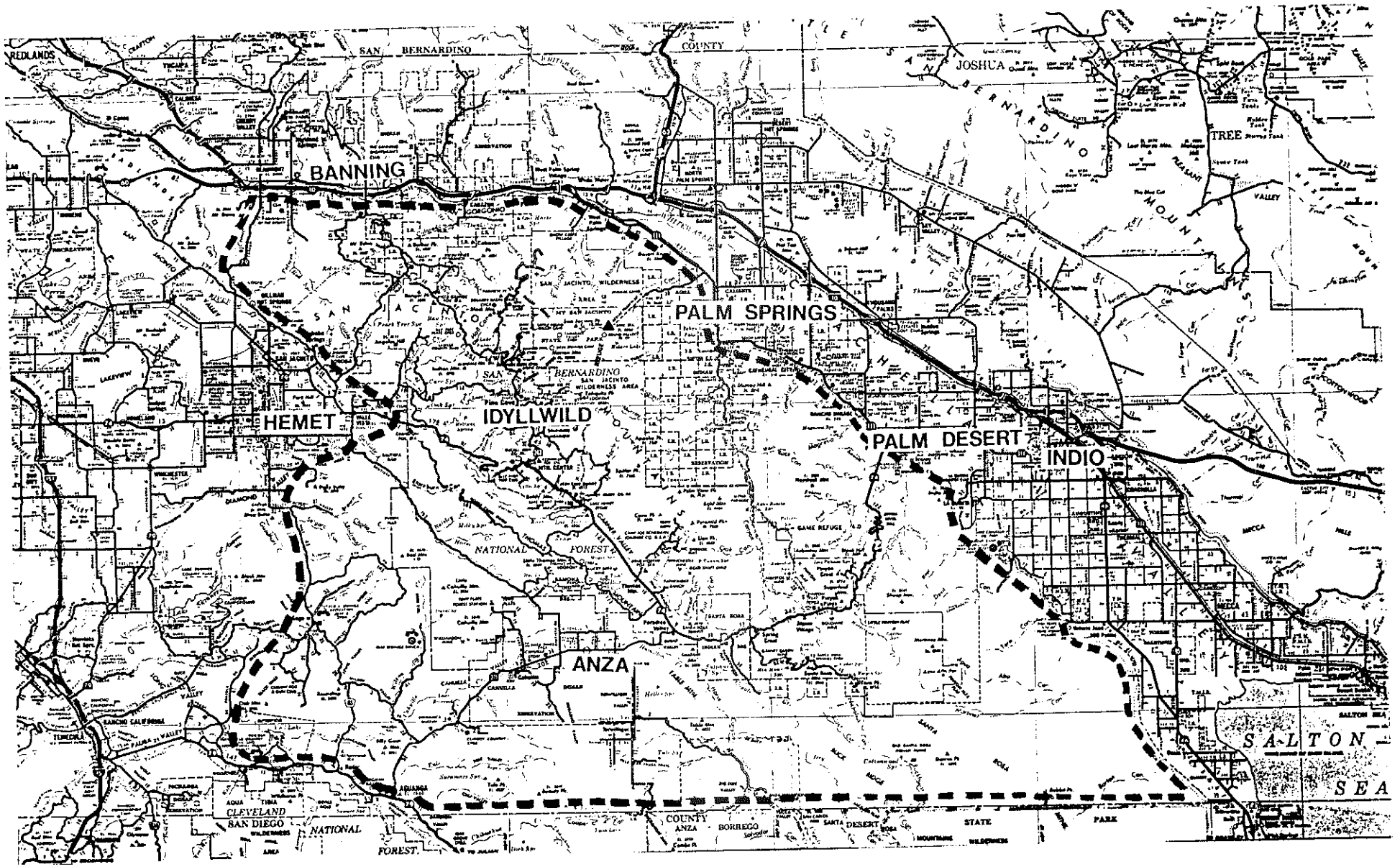
In general, Southern California is considered to have a Mediterranean type climate, characterized by hot, dry summers and cool, moist winters. Due to the diversity of slope aspects and elevations ranges within the San Jacinto/Santa Rosa mountains climatic conditions as well as vegetation associations exhibit a wide range of diversity. Geographically the Santa Rosa Mountains are considered a southeasterly extension of the main San Jacinto Mountain range. San Jacinto Peak, in the San Jacinto Mountains, rises to 10,831 feet, while the highest peak in the Santa Rosa Mountains, Toro Peak, reaches an elevation of 8,716

FIGURE 1

LOCATION OF THE SAN JACINTO/SANTA ROSA MOUNTAINS DEER HERD

FIGURE 2

SAN JACINTO / SANTA ROSA MOUNTAINS
DEER HERD BOUNDARY



feet. The southern and western cismontane slopes of the San Jacinto Mountains, as well as the cismontane western slopes of the Santa Rosa Mountains are subject to cool temperatures and moist winters associated with Coastal California. In contrast, the lower northeasterly slopes of the San Jacinto Mountains and the great majority of the Santa Rosa Mountains face the Colorado Desert and experience low rainfall, extreme summer temperatures, and are subject to intense thunderstorms from July through September.

The dominant vegetation of the southern and western slopes of both ranges below 5,000 foot elevation is chaparral. Annual rainfall on these lower coastal facing slopes averages approximately 16 inches, and the plant community is dominated by woody evergreen shrubs. This chaparral community has evolved and adapted to tolerate wildfire, and in the absence of fire, forms dense, impenetrable stands. Characteristic species include California sagebrush and black sage at lower elevations, chamise, ceanothus, and redshank at intermediate elevations and scrub oak and manzanita at higher elevations. Above the chaparral community, hardwoods and conifers predominate. Dominant hardwood species are canyon live oak and interior live oak; these are interspersed with islands of big cone Douglas-fir, generally between 5,000 and 6,000 foot elevation. Above the 5,000 foot elevation both mountain ranges experience a four-season year with an average annual precipitation of approximately 30 inches. Here the conifer forest generally coincides with the winter snowfall zone, the amount of snowfall increasing with elevation. Dominant conifer species include ponderosa pine, Jeffery pine, Coulter pine, sugar pine, white fir, lodgepole and limber pine. Within the conifer zone California black

oaks are a dominant hardwood to 8,000 foot elevation, and mountain meadow systems occur predominantly in the higher elevations of the conifer forest.

Below the conifer zone on the rocky, transmontane slopes of both mountain ranges, chaparral vegetation transitions into a Pinyon-juniper woodland community. The pinyon-juniper community occurs primarily between 3,500-5,000 elevation; precipitation can range between 8 to 15 inches yearly with some snow. One-needle pinyon pine, California juniper, redshank are characteristic of these intermediate desert facing slopes. Below the 4,000 foot elevation rainfall decreases to 2 to 5 inches annually, and extreme summer temperatures are characteristic of the Colorado desert. Creosote bush, burrobush, ocotillo, and cholla cactus are common constituents of the lower elevation desert scrub community.

C. LAND STATUS

Figure 3 illustrates the ownership status of the lands comprising the San Jacinto/Santa Rosa Mountains deer herd range. Public land included in the San Jacinto Ranger District of the San Bernardino National Forest (SBNF) represents the largest single land ownership within the herd range. Additional public lands are administered by the Bureau of Land Management (BLM) and the State of California. Mount San Jacinto State Park is included within the National Forest boundary, and is managed by the California Department of Parks and Recreation (DPR). DPR also is responsible for the management of part of Anza Borrego Desert State Park included within the deer range. These lands are located within the southern herd range, and include only that part of

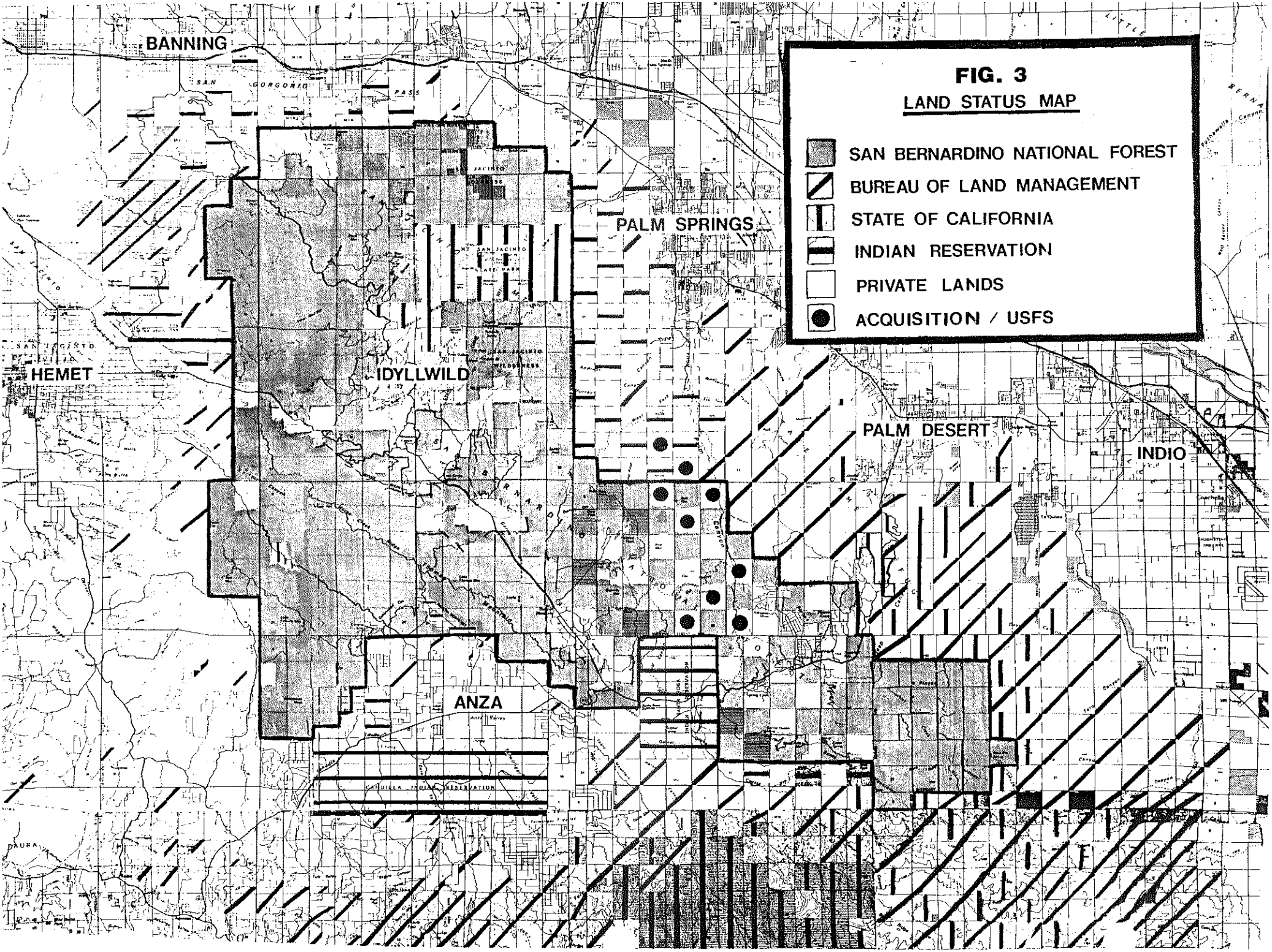


FIG. 3
LAND STATUS MAP
SAN BERNARDINO NATIONAL FOREST
BUREAU OF LAND MANAGEMENT
STATE OF CALIFORNIA
INDIAN RESERVATION
PRIVATE LANDS
ACQUISITION / USFS
BANNING
SAN GORGONIO PASS
PALM SPRINGS
HEMET
IDYLLWILD
PALM DESERT
INDIO
ANZA
CAHUILLA INDIAN RESERVATION

the State Park north of the Riverside-San Diego County line. A contiguous block of BLM lands, located north of the community of Hemet and directly west of the SBNF boundary are presently in the process of being transferred to SBNF administration. Additional isolated BLM parcels, generally surrounded by private lands, are located south of Hemet and west of Anza Borrego State Park.

Public lands under BLM administration located primarily on the eastern slopes represent the largest single ownership within the Santa Rosa Mountains. Here BLM lands, located within the eastern and southeastern herd range, generally alternate with lands administered by the California Department of Fish and Game (DFG) and private land sections. BLM and DFG lands are included within the BLM designated California Desert Conservation Area, and are managed jointly in accordance with the Santa Rosa Mountains Wildlife Habitat Management Plan (BLM, DFG 1980). Private lands of additional significance to deer management are those associated with existing mountain communities of Pine Cove, Idyllwild, Mountain Center, and Anza. Private land development is also progressing in the Garner Valley-Thomas Mountain area; in the Santa Rosa Mountains, the Pinyon Flat area represents a growing development zone. Lands comprising six Indian reservations are included within the deer herd range. Approximately 4,000 acres within the SBNF boundary are administered by the Hemet Municipal Water District or the Desert Water Agency.

Notwithstanding the large percentage of public lands within the herd range, it is important to recognize that these lands are administered by a diversity of agencies and jurisdictions. For purposes of land use planning and environmental review, private lands

within the herd range are administered by the County of Riverside in accordance with the Comprehensive General Plan (Riverside County 1982). Figure 4 illustrates additional administrative or jurisdictional boundaries within the herd range having greatest relevance to deer management. As noted earlier, all or part of six Indian reservations are located within the herd range. All deer management actions, as well as recreational uses of Indian lands are subject to the approval of tribal administrators. The deer range also includes two State game refuges; Game Refuge 4-G is located within the San Jacinto Mountains and Game Refuge 4-D is located primarily on the desert slopes of the Santa Rosa Mountains. Possession of firearms is prohibited in State game refuges and hunting is not allowed. Sport hunting is also prohibited within the boundary of both State parks located within the herd range. Two USFS wilderness areas are included within the Forest boundary. The USFS San Jacinto Wilderness is managed in conjunction with the Mount San Jacinto State Wilderness forming contiguous wilderness area comprising much of the upper elevation of the San Jacinto Mountains. In 1984, the U.S. Congress established the 20,000 acre Santa Rosa Wilderness located on SBNF lands in the Santa Rosa Mountains. All public uses as well as deer management programs and actions in both state and federal wilderness areas are subject to wilderness management guidelines and constraints (See Figure 4).

D. HERD DESCRIPTION

The San Jacinto and Santa Rosa Mountains are inhabited by Southern mule deer (*Odocoileus hemionus fuliginatus*); one of six subspecies of

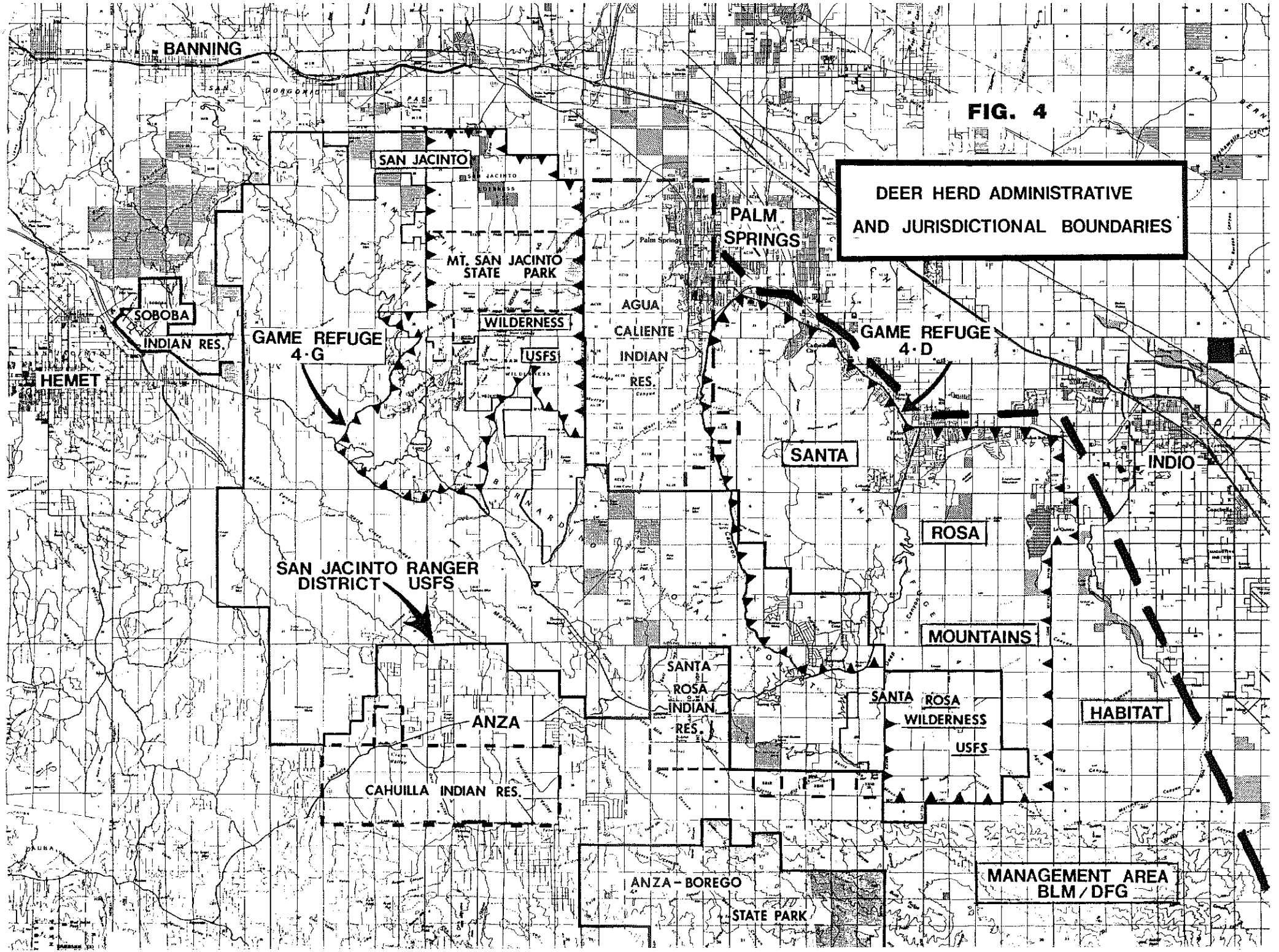


FIG. 4
DEER HERD ADMINISTRATIVE AND JURISDICTIONAL BOUNDARIES
BANNING
SAN GORGONIO PASS
SAN JACINTO
SAN JACINTO
MT. SAN JACINTO STATE PARK
WILDERNESS
USFS
SOBOBA INDIAN RES.
HEMET
GAME REFUGE 4-G
AGUA CALIENTE INDIAN RES.
PALM SPRINGS
Palm Springs
GAME REFUGE 4-D
SANTA
INDIO
ROSA
MOUNTAINS
SAN JACINTO RANGER DISTRICT USFS
SANTA ROSA INDIAN RES.
SANTA ROSA WILDERNESS USFS
HABITAT
ANZA
CAHUILLA INDIAN RES.
ANZA-BOREGO STATE PARK
MANAGEMENT AREA BLM/DFG

mule deer occurring in California. The range of this subspecies is restricted to San Diego, Orange, and western Riverside counties. Interbreeding likely occurs along the northernly ranges of this subspecies with California mule deer (O.h. californicus), which inhabit the more northern coastal and inland counties of Southern California.

The most intensive breeding activity in the San Jacinto/Santa Rosa Mountains deer herd occurs during November. However, weeks prior to this period, bucks have shed their antler velvet, their necks have swelled, and rutting behavior has begun. Bucks can be seen following does until the end of December. By mid-January, bucks normally drop their antlers and begin developing new antlers in preparation for the next breeding season.

Deer usually do not breed in California before the age of 16 to 18 months. Does during their first pregnancy generally bear a single fawn; older does commonly bear twin fawns. Triplets can occur, but are rare. During the breeding season, does, come into breeding condition multiple times. This estrus cycle occurs approximately every 28 days until fertilization occurs. Does carry their young for approximately 7 months. Fawn drop begins the latter part of May and can occur until the end of July. Fawns are generally weaned 60 to 90 days after birth, and will remain with the doe until the next fawning season.

The San Jacinto/Santa Rosa Mountains deer herd has both resident and migratory components. The herd range contains both high elevation summer ranges and lower elevation winter ranges on which year-long deer use occurs. With the exception of the Tahquitz Valley/Round Valley subpopulation, no substantial deer migrations occur within the herd range. Instead movements from higher elevation summer ranges by the

migratory component of the population are viewed more as a shift to lower elevations when snowfall blankets higher slopes. In contrast, the home range requirements of resident deer inhabiting lower elevation slopes are considerably smaller, and resident deer often occupy the same area throughout the seasons and year after year. Consequently, deer numbers on lower elevation "winter ranges", generally below 5,000 to 6,000 foot elevation, are highest during winter months when both resident and migratory deer share common ranges.

Based on survey information provided by Bonnar Blong (DFG, Wildlife Biologist) summer and winter ranges as well as movement corridors were mapped for the migratory component of the deer herd in the San Jacinto Mountains (Lively 1964). Figure 5 identifies four key summer range habitats and associated winter ranges. The information illustrated is considered valid today even though herd productivity and density have been reduced. The Tahquitz/Round Valley summer range is located at the 7,000 to 10,000 foot elevation. All of the drainages from Round Valley to Tahquitz Valley are considered one summer range, and the area has several extensive meadow systems. The entirety of this summer range is located within State Game Refuge 4-G and included in the State and Federal Wilderness Area. A separate and distinct winter range area is identified for this segment of the herd population on the desert-facing drainages of Andreas and Murray Canyons. A Desert Divide key summer range is identified on the main ridge of the San Jacinto Mountains separating Garner Valley from the eastern desert slopes above Palm Canyon. Summer range habitats are also indicated for the higher elevation conifer-hardwood zones on Thomas mountain and the Mountain Center area. In these areas, as is the case for the

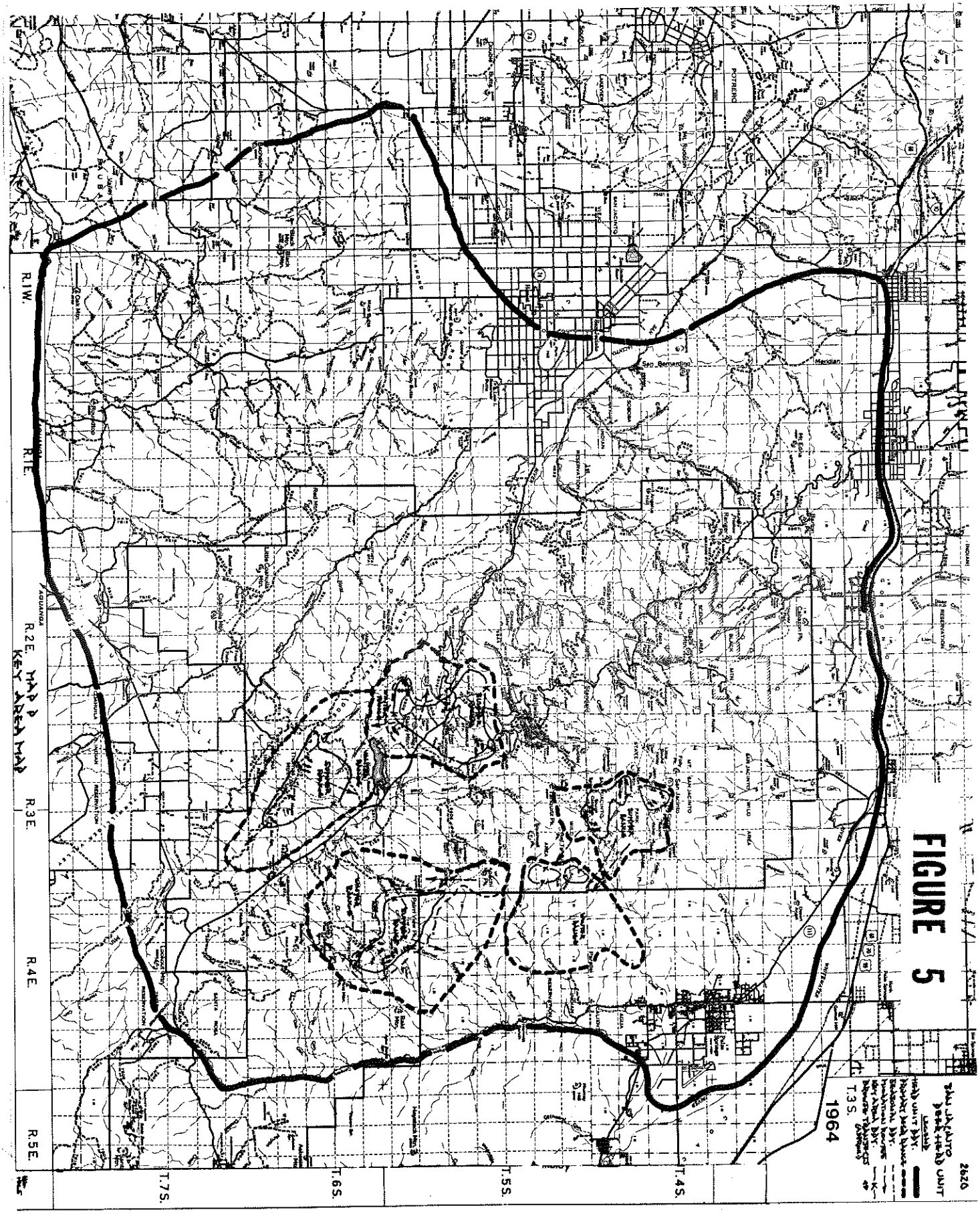
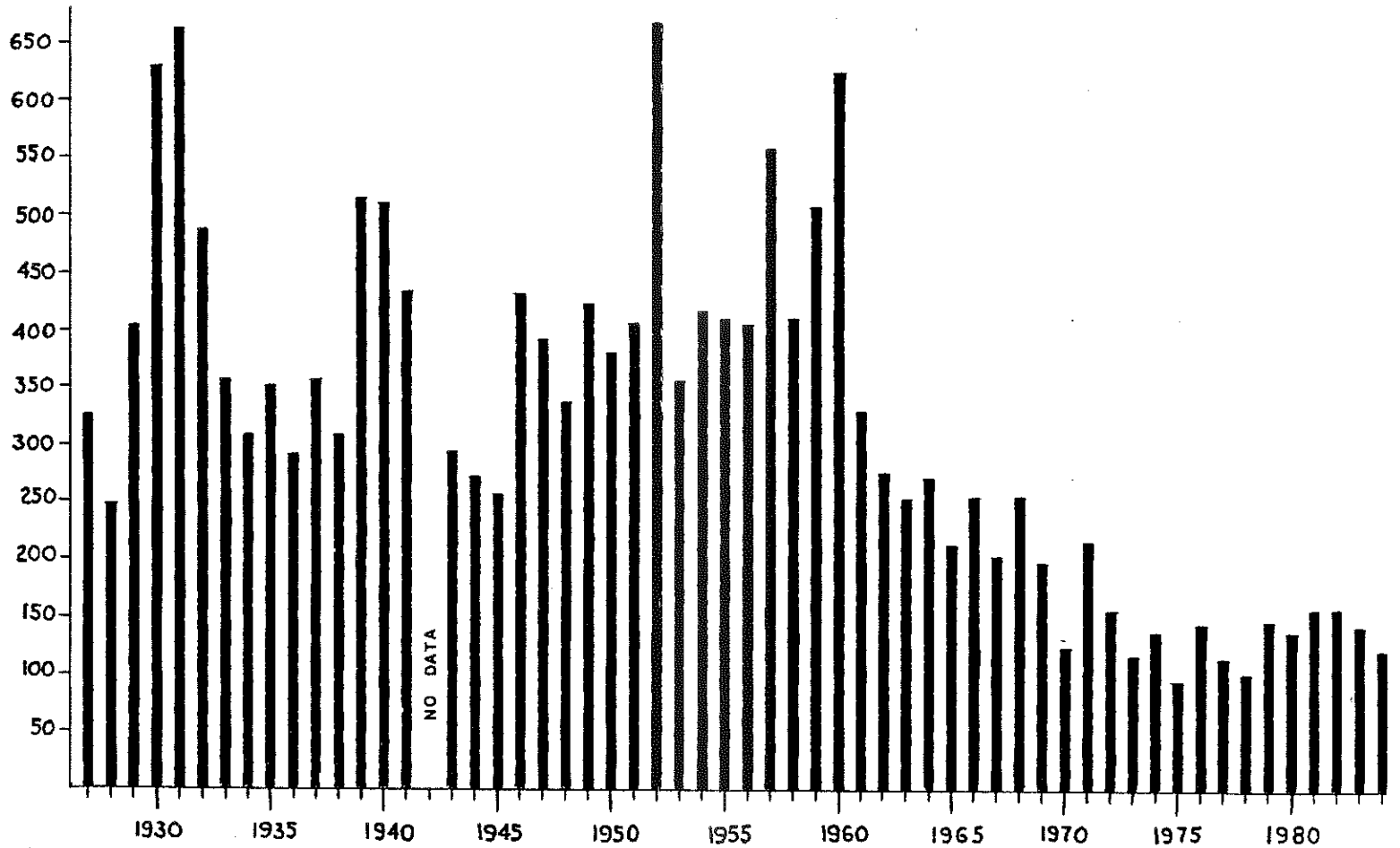

R.1W.
R.1E.
R.2E.
R.3E.
R.4E.
R.5E.
T.7S.
T.6S.
T.5S.
T.4S.
T.3S.
MAP 9
KEY AREA MAP
1964

FIGURE 5

FIGURE 7

REPORTED BUCK HARVEST
RIVERSIDE COUNTY 1927 - 1984



level. The early 1960's were a period of below average rainfall. Climatological data for Idyllwild, located at 5,400 foot elevation of the San Jacinto Mountains, indicates 8.38 inches of rainfall during the 1960-61 rainfall year. This represents the lowest rainfall ever recorded, and is well below the average rainfall of 26.42 inches (Becker and Birmingham 1981). Light (1964) and Blong (personal communication) indicate a dramatic deer die-off occurred in the San Jacinto Mountains in the summer and fall of 1961 and the winter of 1962. Herd composition counts conducted by the DFG in the Garner Valley area indicated that 90% of the 1961 fawn crop died. Deer pellet plot counts conducted in Tahquitz and Round Valleys in October 1962 indicated a 78% reduction in deer use compared to counts conducted in 1956. From the mid-1960's to the present, the harvest trend and the inferred herd population density have remained substantially unchanged but considerably below historic levels.

Long-term harvest trends are illustrated in Table 1. Average harvest data is presented in 5-year intervals for the period 1927-1984. It is important to note that the San Jacinto and Santa Rosa Mountains area represents the major area of deer hunting activity in Riverside County. This circumstance has progressed over the years in large measure due to the increasing urban populations, development of adjoining lowland valleys, and the public land open space status of much of the mountainous area. Table 1 also presents information collected from past and present buck harvest age structure analysis and average age information. Buck harvest age samples are collected in order to obtain a representative sample of the actual buck population.

TABLE 1

BUCK HARVEST TREND RIVERSIDE COUNTY 1927 - 1984

YEARS	TOTAL BUCKS TAKEN	AVERAGE ANNUAL HARVEST
1927 - 1931	2268	454
1932 - 1936	1790	358
1937 - 1941	2123	425
1943 - 1947	1638	328
1948 - 1952	2201	440
1953 - 1957	2146	429
1958 - 1962	2155	431
1963 - 1967	1190	238
1968 - 1972	960	192
1973 - 1977	625	125
1978 - 1982	700	140
1983 - 1984	---	132

BUCK HARVEST AGE STRUCTURE SAN JACINTO AND SANTA ROSA MOUNTAINS

SEASON	*1 year	2 year	3 year	4+ years	SAMPLE
1984	16%	41%	25%	18%	51
1983	10%	24%	28%	38%	61
1956	7%	10%	32%	51%	60
1955	2%	22%	32%	44%	59
1954	5%	32%	21%	42%	66

*Represents the percentage of forked horned yearlings in harvest.

AVERAGE AGE OF BUCK HARVEST SAN JACINTO AND SANTA ROSA MOUNTAINS

SEASON	AVERAGE AGE	SAMPLE
1984	3.4 years	51
1983	4.1 years	61

Both the age structure samples and the high harvest trend, indicated in Table 1, for the mid-1950's are considered indicative of a deer population at or above the carrying capacity of the range. Age structure samples collected 1954-56 indicate 40 to 50% of the buck population were 4 years old or older. Recruitment of bucks into the yearling age class was low. The data also indicate that buck only hunting during this period was having a minimum affect on the deer population density. More recently, tag returns from Riverside County indicate an annual reported buck harvest of 130 to 140 bucks. Even though limited, age structure data, as well as average age information for the 1983-84 harvest indicate adequate numbers of bucks to assure herd reproduction. In the future, increases in the deer population density as well as improved herd productivity would be indicated by an improving harvest trend and also by age structure monitoring of the harvest indicating a higher percentage of young animals in the buck population. Past harvest trends have indicated that earlier hunting seasons (September-October) generally result in a reduced harvest level in comparison with later seasons (October-November).

III. FACTORS REGULATING THE POPULATION

Successful deer herd planning and management is dependent upon the recognition of environmental factors as well as management problems affecting the productivity of the herd. A brief discussion of factors regulating the San Jacinto/Santa Rosa Mountains deer herd is provided below.

A. WEATHER

Both direct and indirect effects on the deer population are a consequence of variations in seasonal weather patterns. In general, deer seek to avoid costly physiological climatic extremes such as high or low temperature. Prolonged snow cover can severely stress deer. Conversely, a lack of annual precipitation can result in seasonal water shortages and limiited forage availability. Indirectly, these effects of weather can serve to concentrate deer, increasing vulnerability to predators, parasites, and disease.

The season and quantity of precipitation and its resultant effect on forage production and water availability at lower elevations are considered the most prominent weather factors regulating the San Jacinto/Santa Rosa Mountains deer herd. Due to its direct relationship to annual forage production, seasonal precipitation patterns are considered to be of major importance in determining the physical condition of deer throughout the year. Annual precipitation is, therefore, also considered a highly significant factor contributing to the reproductive success of the herd.

B. HABITAT

Setting aside the numerous other factors potentially regulating the deer herd, biologists would agree that the quantity and quality of habitat available for deer use are the ultimate factors regulating deer population density. This agreement is embodied in the concept of range carrying capacity defined as the maximum number of deer the range can support. Deer management objectives further refine this concept to achieve a deer density representing an "optimum carrying capacity". This is defined as a stable deer population in which deer are maintained in good physical condition, on a sustained basis, without unnecessary range depletion or damage (Dasmann 1971).

Good quality habitat is essential for deer herd productivity. If habitat provides only for the maintenance of the standing population, or deer energy reserves are depleted as a result of adverse weather or frequent disturbances, one should expect reduced body weights, smaller antlers, and lowered reproductive success. Numerous studies have established habitat nutritional quality as a major factor relating range carrying capacity to deer population density (Verme 1967; McCullough 1979). These studies have shown fawn production and survival to be directly related to the nutritional state of does. Verme (1962), studying white-tailed deer, demonstrated that well-nourished does lost only about 5% of their fawns; does fed deficient diets during winter lost about 33% while does underfed throughout their pregnancy experienced a 90% fawn loss. Many fawns from underfed does were stillborn, while many live-born fawns quickly died as a result of insufficient energy reserves.

Food, water, and cover as well as the arrangement of these habitat requirements on the herd ranges, are the primary factors used to evaluate the carrying capacity of a deer range. The extent to which any one of these required habitat values is limited or lacking on summer, winter, or intermediate ranges will in large measure, determine the contribution of the range to overall herd productivity. A major objective of deer habitat management is to provide an optimum interspersion of the necessary habitat requirements to achieve a desired herd density. The importance of the correct interspersion of necessary habitat requirements is best illustrated by the habitat attributes required of deer fawning areas, all of which must be readily available in close proximity. Generally associated with wet meadows, riparian zones, or springs and seeps, fawning area must provide habitat components necessary for successful birth and subsequent growth and development of fawns. In addition, the area must provide the required thermal and escape cover necessary to avoid depletion of energy needed for maintenance of the doe, for fawn growth and development, and to deter predation. The loss of historic fawning habitats as well as the diversion of present fawning areas to other uses in a substantial portion of the deer range, is considered a signficant factor limiting current herd productivity.

The consideration of the carrying capacity of the deer range must also recognize that the ability of the range to support deer is not static. Man-induced changes, as well as biotic changes, are continually changing the capability of the habitat to support deer. Urbanization, recreational use, grazing and timber programs are among the more obvious man-induced changes acting upon the deer range. Plant

succession, the maturation of the plant community towards a climax condition, is perhaps the most prominent biotic factor acting to change deer range carrying capacity. When considering biotic succession, it is important to note that chaparral vegetation is the most prominent and wide-spread vegetation type within the San Jacinto/Santa Rosa Mountain herd range. Over the last several decades, advancements in wildfire suppression techniques have served to reduce the ecological role of fire. Fire suppression, particularly in chaparral communities, tends to promote extensive areas of decadent vegetation which result in reduced forage productivity and nutrient quality, as well as reduced water availability. Longhurst (1976) considered the decreased amount of acreage in California subject to wildfire or prescribed burning to be a major factor contributing to deer declines in the State.

More recently, however, the use of prescribed fire as a chaparral management tool has gained renewed acceptance as a management option for improving deer ranges. The identification of additinal benefits relating to improved watershed management, increased forage production, and reduced fire fighting cost have substantially improved the economic consideration of the use of prescribed fire as a means to substantially increase the carrying capacity of chaparral deer ranges (Longhurst 1978). Additionally, increased management intensity directed at improving deer herd productivity and greater consideration of deer habitat requirements in land use planning also offers opportunity to maintain and enhance the carrying capacity of existing deer ranges.

C. HABITAT LOSS

The majority of lands providing habitat for deer in the San Jacinto Mountains and much of the higher elevations of the Santa Rosa Mountains are public lands included within the San Bernardino National Forest (SBNF). Additional public lands, primarily on the desert slopes of the Santa Rosa Mountains, are managed by the Bureau of Land Management (BLM) and are included in the California Desert Conservation Area. Management efforts on these public lands are directed toward providing multiple use benefits. In addition to wildlife management goals, public land management objectives include providing for recreation, range, timber, and mineral use as well as for watershed protection. Thus, to a very great extent, the success of deer management efforts is dependent upon the coordination and integration of other multiple resource objectives.

The SBNF was originally established as a working forest; it is now considered primarily a recreational forest. This has resulted, in large measure, due to its close proximity to the major population centers of Southern California. The majority of recreational facilties and opportunities were introduced and developed to their current levels during the period 1950 to 1975. The demand for recreational space has brought about improvements to transportation systems, which in turn have facilitated the development of additional recreation sites. The development of additional secondary roads along with the recent surge in popularity of off-road vehicles has opened numerous areas of back country land to dispersed recreation. The SBNF ranked second in the nation in visitor day use in 1982. In 1982 visitor days totaled 6.4 million forest-wide; use is projected to increase to 10.8 million

visitor days by the year 2030 (SBNF 1982). There is little doubt that loss of deer habitat values have accumulated with the increasing demands for recreational use. Depending on the intensity of recreational uses, they have often resulted in the displacement of deer or resulted in limitations on deer use of necessary habitats such as fawning areas, oak groves, meadow systems, and riparian zones.

High density recreational sites, urban developments, and mining operations often necessitate extensive land-form alterations. Existing developments have directly reduced deer forage and cover values. Many projects have indirectly introduced numerous secondary impacts such as additional road construction, increased noise, urban lighting, or other off-site disturbance factors. In a similar manner, off-road vehicle (ORV) use has resulted in land form alterations of less magnitude, but with increased frequency throughout much of the deer range. The recent increase in ORV use has proven difficult to control. The secondary impacts of ORV use include increased disturbance and harassment of deer, and may include the displacement of deer from necessary cover and food resources. These habitat disturbances are of greatest concern when deer are concentrated on lower elevation winter ranges and during the fawning season. The detrimental impacts of ORV use as well as other land-form alterations often are not recognized, but can include the separation and isolation of otherwise contiguous habitats and the disruption of deer movement corridors.

Timber management can often serve as a tool for enhancing habitat conditions by promoting vegetation conditions favorable to deer; it can also substantially alter forage and cover values, thereby reducing the carrying capacity of the deer range. Logging is no longer a

significant industry in the San Jacinto Mountains. Timber management is primarily concerned with the maintenance of the health and vigor of the forest cover. The principal utilization of wood products is fuel wood consumption. Demand for fuel wood is considered to exceed supply, and is controlled primarily by Forest Service fuel wood permit procedures. A significant timber impact of concern to deer management is the loss of oak resources due directly to urbanization and fuel wood consumption and indirectly to timber treatment practices favoring conifer species. The reduction of oak resources is considered harmful to deer in that acorns are a nutritional and often a critically important food sorce. During the late summer through fall period, acorns, if available, provide an extremely valuable food source during the period of greatest deer nutritional stress. Deer actively seek out this source of high energy forage during this period (Pine and Mansfield 1980).

The existing mountain communities within the deer herd range are within Riverside County Regional Statistical Area 51, which includes the communities of Idyllwild, Pine Cove, Mountain Center, Garner Valley, Thomas Mountain, Anza, and parts of Aguanga. Population in the statistical area, as determined by the 1980 census, was 5,953 people. Riverside County growth projections indicate a mountain area population of 8,900 by 1990 and 10,300 by the year 2000 (Riverside Co. 1982). It is important to recognize that future use and development of private lands within the herd range will be subject only to the constraints of local government acting in accordance with the County Comprehensive General Plan and adopted community policies and development standards. The major implicaton to deer management is the recognition that the

effects of urbanization, with its accompanying human activities and secondary impacts, will extend well beyond the identified community boundaries.

D. HUNTING

Deer hunting, in addition to the recreational opportunities it provides, is considered a necessary element of deer management. Hunting is widely considered a necessary management tool to restrict deer herds to the carrying capacity of their range, to curtail "boom or bust" population oscillations, and prevent undesirable range damage. Wildlife biologists have long believed that properly managed harvests serve to maximize productivity and long-term viability of the deer herd, and act also to stimulate higher rates of fawn production and survival than would otherwise occur in the absence of hunting (Taber and Dasmann 1958). Most published evidence examining the dynamics of deer populations support this view (McCullough 1979; Connolly 1981a).

Connolly's (1981) review provides useful insights relating to the effect of regulated hunting on deer population size, turnover rates, and herd sex and age ratios. It is noted that hunting only bucks tends to produce increasing deer numbers on ranges that are not fully stocked and tends to maximize impacts of excessive deer numbers on ranges stocked to carrying capacity. Doe or antlerless hunting conversely tends to reduce deer densities on both over and understocked ranges. In hunted herds, the average age of deer declines as harvest level increases. When only bucks are hunted, the average age of bucks will decrease, but that of does will not be affected. The annual rate of population turnover increases as the average age decreases. Herd sex and age ratios are affected by hunting management that is selective for

specific age and sex classes. Hunting buck only tends to reduce the ratio of bucks to does, while hunting both sexes can raise fawn-doe ratios by selectively removing does at a greater rate than fawns, or by stimulating increased production and survival of fawns. No matter which harvest strategy is employed, deer numbers will ultimately be limited in accordance with habitat quantity and quality.

Poaching, the illegal take of deer, has not been fully evaluated locally. Local game wardens have estimated that the illegal kill approaches or exceeds the legal harvest. Poaching occurs throughout the year and is generally indiscriminate, impacting all sex and age classes. In addition to being a substantial law enforcement problem, the indiscriminate and unrecorded take of poaching activity represents a significant impediment to effective deer management.

Crippling loss occurs primarily during the legal hunting season, and includes those animals shot that are not recovered and subsequently die. Studies have indicated that on the average, cripple loss is equal to 23% of the reported kill during either-sex hunts and 27% during buck only hunts (Losch and Samuel 1976).

E. COMPETITION

The extent of impacts to the deer herd resulting from inter-specific competition with domestic livestock are unknown. The San Jacinto Ranger District currerntly administers six range allotments on National Forest lands. Additional livestock production occurs on private ranches and Indian reservations located within the herd range. Forage allocations are provided for cattle and occur in both the San Jacinto and Santa Rosa Mountains. Table 2 provides a breakdown of

public land range allotments, seasons of use, and stocking levels.

Any assessment of the impacts of competition between deer and livestock is a difficult task and subject to a great many variables. The assessment would necessarily include consideration of the relative densities of the competing animals, the availability of resources such as food, water, cover, and space, as well as the degree of site-specific overlap in the use of these habitat values. A major concern of deer management is the extent to which competition limits the deer population. To a great extent, the seasonal forage requirements of deer are known to overlap those of livestock. Deer and cattle compete for acorns and grasses in the fall as well as grasses and forbs in the spring and early summer (Pine and Mansfield 1980). The extent to which competition is occurring is an important factor relevant to the physical condition of the deer throughout the year. Additionally, substantial reductions of nutritionally important forage components resulting from competition or poor forage production are considered a detriment to fawn production and survival. Deer management concerns, however, should not be limited to the examination of forage competition. The assessment needs also to examine the degree to which the presence of livestock limits deer use and access to important habitats such as fawning areas, riparian zones, oak groves, and meadow systems. It should also assess the extent to which grazing alters cover values and browse availability over the long-term. Range management activities such as fencing, type conversions, and water developments should also be assessed to determine how they affect deer habitat use.

TABLE 2

PUBLIC LAND RANGE ALLOTMENTS
SAN JACINTO & SANTA ROSA MOUNTAINS DEER HERD

ALLOTMENT	ADMINISTRATION	STOCK	AUM'S	SEASON OF USE	TOTAL ACRES
GARNER	USFS	CATTLE	1370	ALL YEAR	8,500
PARADISE	USFS	CATTLE	20	MAR.12-MAY 12	220
ROUSE	USFS	CATTLE	480	ALL YEAR	16,030
SOBOBA	USFS	CATTLE	200	DEC.1-MAR. 31	1,900
WELLMAN	USFS	CATTLE	816	ALL YEAR	20,260
VISTA GRANDE	USFS	CATTLE	650	MAR.1-DEC. 31	6,000

TOTAL AUM'S : 3536

F. PREDATION

Mountain lions and coyotes are considered the most significant predators acting upon the San Jacinto/Santa Rosa Mountains deer herd. Bobcats, feral dogs, and possibly golden eagles also take deer. The question of whether or not the deer population would be more abundant in the absence of predation is currently unresolved. One issue relevant to deer management concerns the extent to which excessive predation may be acting to limit the existing deer herd. Another issue relates to whether or not herd productivity is actually limited by other environmental factors such as habitat overuse or poor nutritional quality, either one of which would not be corrected by predator reduction.

The review by Connolly (1978) of predators and predator control provides useful insights regarding predator control and its use in deer management. It is noted that predators frequently kill young, old, diseased, or other classes of prey at rates disproportionate to their incidence in the population; predation, however, is not restricted to these classes of prey; healthy prime animals are taken as well. In general, predator control is justified in deer management only when it will produce substantial deer increases at reasonable cost, without undue damage to other environmental values, and when the increased deer production will be used. Control is most likely to produce subtantial increases where the ratio of predators to prey is high, and where deer are not fully using available habitat resources. In no case will predator reduction be of demonstrable value unless it is intensive enough to substantially reduce predator populations.

G. DISEASE

Infectious or parasitic disease can result in substantial mortality in wild deer populations. Deer are subject to a wide range of viral, bacterial, and parasitic diseases, some of which can potentially threaten the welfare of the population. The potential for disease is considered remote in relatively stable populations occupying habitats that provide for their needs. However, when deer populations occupy poor quality habitat, or when population densities are excessive, the potential for disease becomes real.

Disease in wild populations can often go undetected, or mortality arising from disease can be wrongly attributed to some other environmental factor such as adverse weather or malnutrition. Present knowledge of the occurrence of disease in the San Jacinto/Santa Rosa Mountains deer herd is lacking and recent disease factors resulting in mortality are unknown. Currently, disease is not known or considered to be limiting the deer herd. Future disease investigation would require a thorough field study, and would entail necropsy techniques and population sampling to determine the extent and existance of potential disease factors.

H. OTHER FACTORS

Deer mortality resulting from deer-vehicle collisions occurs predominately along the State highways providing access to the San Jacinto and Santa Rosa Mountains. Road kills occur throughout the year, most often at night, and are most common in localized areas of high deer use. At the current deer population level, road kills are not viewed as a substantial mortality factor. Increases in deer

density, however, will result in increased deer-vehicle collisions, and the resultant property damage and personal injury. Current management direction to limit the problem includes roadway signs to alert motorists to deer crossing areas, and deer population control.

Free-roaming and feral dogs are considered an increasingly serious hazard to deer. The extent of impacts on the deer herd are difficult to detect. Undoubtedly the great majority of dog-deer interactions are not observed and go unreported. It would be reasonable to assume, however, that the interactions are most prevalent in areas closely associated with human habitation. Harrassment by dogs, as is the case with all activities resulting in frequent disturbance of deer, represents an added stress to the deer herd. In addition to direct mortality, harassment results in a drain on energy resources which, in turn, can predispose deer to disease or predation as well as reduced reproductive success. Perhaps more important, harassment or frequent disturbance of deer often results in the avoidence or abandonment of substantial areas of deer range. The resultant loss in habitat carrying capacity ultimately results in a reduction of the deer population.

IV. MANAGEMENT UNIT GOALS

A. HERD GOALS

The goals of herd management are to maintain a healthy deer population, to improve and maintain habitat to accommodate more deer, and to provide for high-quality hunting and other recrational uses of deer. Successful attainment of these goals will not be a benefit to deer alone, for restoration and maintenance of a healthy deer herd will require habitat conditions beneficial to many other forms of wildlife. It is important to recognize that herd population density will oscillate in response to climatic conditions as well as other environmental factors, and that annual harvest levels often will not achieve desirable management objectives. The long-term management goals for the San Jacinto/Santa Rosa Mountains deer herd are therefore established as desirable management criteria rather than absolutes. The herd goals are presented below. They should be viewed as management reference points for purposes of herd monitoring which will be an ongoing process.

Herd Management Goals

Herd Size	2500-3500
Post Harvest Buck Ratio	20-30 bucks/100 does
Fall Fawn Ratio	50-60 fawns/100 does
Annual Buck Harvest	200-300 (reported)
Antlerless Harvest	When conditions warrant

B. HABITAT AND UTILIZATION GOALS

Goals for habitat management are to maintain and enhance deer habitat carrying capacity throughout winter and summer ranges. Continuation of habitat enhancement actions, particularly prescribed burning and the improvement of water distribution, offer substantial opportunity to increase present habitat carrying capacity. Additionally, the review of current multiple resource use programs and subsequent identification of deer habitat conflicts offers an opportunity to cooperatively improve range carrying capacity. Increasing efforts to reduce illegal kill, highway mortality, and deer harassment are also considered management and enforcement actions having significant potential to improve herd productivity. The accomplishment of long-term habitat maintenance will require greater integration of deer management objectives with the regional land use planning efforts of Riverside County and public land management agencies.

Herd utilization goals include provisions for diversified recreational use of deer, including both hunting and nonhunting use of the deer resource. Recreational enjoyment of the deer herd often involves the chance encounter between deer and the recreational visitor; this is in contrast to the directed efforts of the deer hunter. Increasing herd population density and maintaining long-term herd productivity will improve opportunities for deer viewing, photography, nature study, and increase the likelihood for deer encounters. Goals for hunting utilization of the deer herd are also served by improving herd productivity and providing for a long-term sustained yield harvest. Herd utilization goals therefore include

direction to improve hunter access, increase opportunities for archery and primitive weapon hunting, provide for quality back country and wilderness hunting, and insure the availability of the deer resource for nonconsumptive enjoyment.

V. PROBLEMS AND CONSTRAINTS IN HERD MANAGEMENT

Deer population management in the San Jacinto/Santa Rosa Mountains is primarily the responsibility of the Department of Fish and Game. Biologically, both population management and land management are viewed as inseparable elements of a deer management program. Under ideal circumstances neither of these management elements are constrained or impeded by administrative or jurisdictional boundaries. It is important, therefore, to recognize that land management responsibilities for public lands comprising the majority of the herd range are administered by the San Bernardino National Forest (SBNF) and the Bureau of Land Management (BLM). Within the National Forest, land management responsibilities are administered by the San Jacinto Ranger District. Public lands, primarily in the Santa Rosa Mountains, are administered by the BLM Indio Resource Area. The state wilderness area in the San Jacinto Mountains, and the small northern extension of Anza-Borrego State Park included in the herd range are managed by the California Department of Parks and Recreation (DPR). In addition, for purposes of land use planning and environmental review, private lands within the herd boundary are under the jurisdiction of the County of Riverside. Realistic, as well as practical, management of the San Jacinto/Santa Rosa Mountains deer herd therefore requires a high degree of interagency as well as within agency cooperation and coordination.

Current recreational demands within the San Jacinto/Santa Rosa Mountains are diverse and are projected to increase substantially in the future. Urbanization within the herd range currently has considerable potential for increase, which is projected to continue well into the future. Past planning and review of recreational

proposals and urban related projects have often acknowledged detrimental impacts to deer herd productivity. In large measure, however, individual projects and proposal have generally dismissed deer habitat impacts as representing only an incremental habitat loss resulting only in the displacement of deer to adjoining habitats. This approach is incorrect and has not recognized the considerable cumulative impacts of the multitude of past projects and proposals on the deer herd. Addressing cumulative deer herd impacts in regional land use planning and review should thus receive a high priority in future deer herd management. Environmental review and planning for future projects should include adequate assessments of deer habitat impacts, consider project alternatives, and provide mitigation measures to avoid or reduce identified impacts to the deer resource.

Multiple use planning and environmental review on the National Forest and BLM public lands are conducted in accordance with the National Environmental Policy Act (NEPA). In a similar manner, environmental review involving State and private lands within the herd range are conducted by State, county, and local governments in accordance with the California Environmental Quality Act (CEQA). Present implementation of both these statutes currently is deficient with regard to deer management and requires improvement. Present NEPA implementation relies almost exclusively on the Environmental Assessment (EA) document; project Environmental Impact Statement (EIS) are seldom prepared. NEPA implementation relies almost exclusively on the EA document which is generally subject only to an in-house review by the preparatory agency. Opportunities for public and affected agencies to comment on the adequacy of the document, to indicate deer

management issues and concerns and, most importantly, to participate in the NEPA decision-making process are not generally included in the NEPA review. Current procedures implementing NEPA on the SBNF do not provide or generally include opportunity for DFG review and comment of NEPA documentation (EA's) prior to the circulation of the NEPA Decision Notice. This approach to interagency coordination requires review relative to the purpose and intent of NEPA (CEQ 1978). Future implementation of CEQA and NEPA needs to insure greater consideration of deer management issues and concerns in individual project proposals and regional land use decisions.

Maintenance and improvement of the existing deer resource in large measure involves the integration of deer habitat management with the full range of multiple uses and activities occurring in the San Jacinto/Santa Rosa Mountains. Grazing, ORV use, recreational developments, timber harvest, and mining operations represent ongoing potential deer management conflicts. Correcting or reducing existing habitat deficiencies or conflicts offers considerable opportunity to increase present habitat carrying capacity. Additional identification and improved mapping of key deer areas, movement corridors, and fawning habitats are considered necessary actions for effective deer management. Also considered an important management priority is the development of deer habitat guidelines to avoid or reduce multiple use conflicts. It also is necessary to recognize that all efforts to increase deer herd productivity by reducing poaching mortality, disturbance on seasonal ranges, roadway kills, predation, or potential disease factors, to be effective in the long-term, must proceed in conjunction with actions to maintain and improve current habitat carrying capacity.

Greater emphasis on the importance of deer habitat quality is necessary, particularly with respect to habitat nutritional quality and its importance relative to herd productivity. Chaparral vegetation represents the major brushland community in the San Jacinto Mountains and much of the Santa Rosa Mountains. Decades of increasingly efficient fire suppression policy have favored the expansion of old age class brushlands over earlier chaparral stages supporting a more abundant and diverse component of forbs and grasses. In addition, the often expressed comment "cows graze, deer browse" is incorrect. Browse is certainly important to deer in winter, summer, and particularly as new growth appears. Forbs and grasses appearing after autumn rains and during the winter/spring period, however, have been shown to be heavily utilized by deer, and the extent to which they are available has been correlated with herd productivity (Leach 1956). Efforts to reintroduce prescribed burning in the management of chaparral vegetation have increased in recent years and offer substantial opportunities to improve productivity of chaparral deer ranges. Maintaining earlier vegetation stages beneficial to deer can also be accomplished in conjunction with timber and grazing programs. Efforts to achieve greater integration of deer management objectives with those of fire, range, and timber management are currently limited and warrant wider application to achieve multiple resource benefits.

Due to the existing State game refuges, the two designated State parks (hunting prohibited) and the presence of several Indian Reservations (public use subject to tribal approval) within the herd boundary, hunting opportunities are presently limited. Currently, there is a need to examine opportunities to improve hunter access, to

achieve better distribution of hunters and promote hunting quality. Impacts of greatest concern on State Park lands are recreational uses having the potential to detrimentally impact deer habitat use. Recreational use is also a substantial concern with regard to the designated wilderness management areas within the herd range. Existing game refuge boundaries warrant renewed consideration, particularly those areas of chaparral vegetation included in the present refuge boundaries. Refuge designation in chaparral deer ranges are of little habitat benefit to deer, and to a great extent the present refuge boundaries are unnecessarily retricting hunter access and opportunities for quality backcountry hunting. There is also a need to include deer habitat enhancement in the planning and implementation of wilderness programs and management guidelines. Insuring public consideration and agency participation in the consideration of the above issues is considered an important and necessary deer management action.

Public opinion and viewpoints regarding deer herd management are diverse. A segment of the public is opposed to hunting; others oppose the harvest of antlerless deer. Opinions on hunting season length and dates often elicit conflicting viewpoints which hinder effective management of the deer herd. Antlerless hunts have been controversial in the past; however, antlerless hunts are widely considered necessary if the management intent is to regulate the population within the bounds of habitat carrying capacity and maintain herd productivity. Selection of the appropriate harvest as well as the setting of season dates and length should ideally be determined to obtain harvest objectives consistent with sound herd management. The hunting season must allow a carryover of bucks and does to guarantee herd

reproduction, consider the condition of the deer at the time of harvest, and provide a favorable opportunity for recreational hunting success on a sustained basis. Increasing public confidence in deer management objectives and goals, encouraging communication, exchange of viewpoints, as well as resolving conflicts in a timely manner, are necessary actions required for successful deer management.

Funding to implement deer management programs is limited and will require cooperative efforts to implement proposed deer management action to the maximum extent practical. Department wildlife management and wildlife protection personnel are few in number. Cooperative programs with the San Bernardino National Forest, the Bureau of Land Management, and the California Department of Parks and Recreation will be required to implement the herd plan.

VI. MANAGEMENT PROGRAMS, OBJECTIVES, RECOMMENDED PRESCRIPTIONS

A. INVENTORY AND INVESTIGATIVE ELEMENT

Objective:

The objectives of inventory and investigative programs are to collect and disseminate habitat and population data required to manage and monitor the condition and trend of the deer population. Monitoring the population age structure of the harvest, and annual herd composition counts are intended to provide a basis for the determination of harvest objectives, recommendations for habitat management, and to provide a measure of the attainment of long-term deer herd goals. Additional investigative programs are recommended to document movement corridors, seasonal ranges, fawning areas, and key habitat components. These efforts are intended to address the need to provide public land managers and county land use planners necessary information regarding deer habitat requirements for use in project review and land use planning decisions. As habitat management programs and actions are implemented, initial actions should also be monitored to determine deer population response. Monitoring initial management actions and programs is intended to provide justification for future actions, support modification or improvement of ongoing recommendations, and assist in the eventual development of deer habitat management guidelines.

Recommended Prescriptions:

1. Conduct annual post-hunt herd composition counts to sample buck-to-doe ratios and fawn production and survival. Post-hunt compositon counts should be conducted in November during the

peak of breeding activity, and used to monitor attainment of herd population goals.

2. Continue to monitor age structure of the buck harvest at appropriate intervals to examine population productivity, condition, and trend. The buck harvest age structure was sampled in 1983-84, the data obtained will provide the necessary baseline information to detect changes in population age structure, average age, and buck carryover.

3. Continue to prepare annual spot kill maps from deer tag returns to monitor harvest trends and hunting pressure, and to assist in the identification of areas of high utilization, document potential land use and management conflicts, and aid in the maintenance of hunting quality.

4. Insure that population monitoring data collected is distributed to the San Bernardino National Forest and Bureau of Land Management wildlife functions, and to Wildlife Protection personnel assigned to the deer herd unit.

5. Update and improve current information concerning winter and summer ranges, migration routes, movement corridors, and fawning areas. Habitat inventory efforts should include evaluation of meadow systems, riparian zones, oak resources, key water sources, and should include information relative to ownership, condition, current habitat deficiencies, and recommendations to correct habitat deficiencies.

6. Develop and coordinate research proposals to obtain improved understanding of deer use of seasonal ranges, and migration corridors. Identify cooperative research funding support within the Department of Fish and Game, USFS, BLM, and County Fish and Game Commission. Encourage and support university graduate level research participation directed at obtaining improved understanding of deer habitat use in the San Jacinto and Santa Rosa Mountains.

7. As additional deer habitat utilization information is developed (prescriptions 5 and 6), insure the information is distributed to public land management and county land use planning agencies for use in land use planning and review. Effort should be directed towards the eventual development of a deer habitat map indicating the entirety of deer habitat components comprising the herd range.

8. The implementation of habitat improvement projects and management actions directed at increasing habitat carrying capacity should include an evaluation of deer population response. Initial monitoring efforts should include the use of pellet plot transects to document increased deer use. The evaluation efforts should be directed toward the eventual development of deer management guidelines for the management of key deer habitat components such as riparian zones, meadow habitats, oak resources, and fawning areas.

B. MORTALITY CONTROL ELEMENT

Objective:

Reduce herd mortality factors to assist in herd recovery and the attainment of herd management goals. Within the constraints of multiple use land management, maximize herd population level consistent with deer herd management goals. Implement mortality control efforts to the maximum extent practical in concert with management programs and actions directed at increasing range carrying capacity and improving habitat quality. Mortality reduction prescriptions relative to the maintenance of habitat quality and quantity as well as the reduction of illegal kills are addressed in the Habitat and Law Enforcement elements.

Recommended Prescriptions:

1. Prior to consideration of measures to reduce herd mortality attributable to natural predators, determine the relationship of fawn production and/or survival relative to the nutritional quality of the range, availability and condition of fawning habitat, and/or potential multiple use land conflicts.

2. Continue to investigate all reported or suspected incidents of disease in coordination with the Department's staff Wildlife Pathologist and the Wildlife Investigation Laboratory.

3. Maintain the herd population density consistent with the optimum carrying capacity of the range. Implement habitat

5. Review present ORV regulations and designated ORV routes on the SBNF and BLM lands within the herd boundary. Cooperatively identify current and future conflicts with deer habitat management and develop recommendations for consideration to mitigate or correct deer habitat conflicts.

6. Cooperatively review present range allotments on public lands within the herd boundary. Identify areas of forage competition, impacts to riparian zone, or range practices resulting in reduced deer habitat carrying capacity. Cooperatively develop recommendations to correct or reduce range management conflicts and to provide for greater integration and coordination of range and deer management objectives.

7. Cooperatively examine current fuel wood programs to determine management options to reduce deer management conflicts. Efforts should address the development of unauthorized roads, illegal cutting, impacts to oak resources, and loss of deer forage and cover values associated with fuelwood gathering. Consideration of management actions should include expansion of oak reforestation programs as well as the development of timber management practices compatible with deer habitat enhancement.

8. Continue and expand habitat enhancement and restoration projects. Primary emphasis should be placed on the

stabilization of meadow systems, the enhancement of riparian zones, and the development of water sources to correct habitat deficiencies limiting deer use.

9. Improve interagency coordination in the review and planning of projects and land use proposal on public lands within the herd boundary in accordance with NEPA. Request that public land management agencies provide the Department of Fish and Game the opportunity to review and comment on project proposals prior to the preparation of the project Environmental Assessment (EA). The issue of DFG review of NEPA documentation prior to the circulation of the NEPA Decision Notice requires additional coordination. Specific implementation procedures relative to DFG participation in the NEPA process will subsequently be developed and implemented by the DFG and SBNF (Reference: FSM 4/84 SIERRA NF SUPP).

10. Review the Riverside County General Plan to determine effectiveness of present regional land use planning relative to the long-term maintenance of deer habitat values. Develop for consideration recommended actions and improvements to regional land use planning efforts to effect greater consideration of deer habitat requirements in the planning and development of private lands within the herd boundary.

11. Improve interagency coordination relating to the review and planning of private land development proposals within the herd boundary in accordance with the California Environmental

Quality Act (CEQA). Request that Riverside County Planning Department include notification to the DFG in the CEQA review of all future private land use proposals within the herd boundary.

12. Insure DFG involvement in the CEQA review of major recreational proposals, urban developments, and significant land use changes proposed within the herd boundary. Direct efforts to insure adequate consideration of direct and indirect impacts to deer habitat values, participate in the development of specific planning measures to avoid or reduce detrimental impacts to long-term deer management.

13. Coordinate with the SBNF and the California Department of Parks and Recreation in the development of habitat enhancement alternatives for the State and Federal wilderness areas located within the herd range. Examine opportunities to avoid or reduce detrimental impacts to deer habitats resulting from wilderness recreational use. Emphasis should be directed towards the reduction of summer range fawning habitat conflicts and improving herd productivity.

D. UTILIZATION ELEMENT

Objective:

The objective of the herd utilization element is to provide for a balance in programs for consumptive and nonconsumptive use of the deer herd within the framework of herd population goals. Future deer

harvest objectives will be directed towards the maintenance of a healthy productive herd, the maintenance of hunting quality, and are intended to insure the availability of the deer resource for nonconsumptive enjoyment.

Recommended Prescriptions:

1. Continue buck-only hunting for the immediate future. Maintain a minimum post harvest buck to doe ratio of 20--30 bucks per 100 does. Regulate the length and timing of hunting seasons to maintain the desired buck ratio. When supported by population monitoring data (buck/doe, fawn/doe ratios, herd age structure, and harvest trend) recommend limited antlerless hunts to enhance herd productivity, balance deer numbers with habitat capacity, and maintain hunting quality.

2. Increase coordination with sportsman's organizations, archery groups, and the deer hunting public in general to obtain input relative to deer herd utilization. Work directly with these deer user groups in the development of hunting regulation proposals, to improve hunting opportunities, and maintain hunting quality.

3. Improve coordination with local governments, public land management agencies, and the County Fish and Game Commission regarding shooting arms ordinances. Cooperatively improve or modify present ordinances and restrictions consistent with public safety requirements, deer management goals, and the

utilization of the deer resource. Insure that both the positive and negative impacts of projects and proposals affecting herd utilization receive adequate consideration during planning and review procedures.

4. Review present public access opportunities and restrictions in cooperation with public land management agencies. Develop recommendations and potential road management alternatives to improve distribution of hunters, discourage road hunting, achieve desirable harvest objectives, and avoid detrimental impacts to deer habitat values.

5. Modify State Game Refuge boundaries to increase hunter access and improve opportunities for backcountry and wilderness hunting. Modify or eliminate Game Reguge 4-D in the Santa Rosa Mountains. Examine alternative for the elimination of Game Reguge 4-G in the San Jacinto Mountains.

6. Increase public awareness regarding herd management concerns and potential multiple use conflicts with deer management objectives. Insure that the public is informed regarding the purpose and justification for management actions or restrictions implemented to improve deer management. Develop additional interpretive information relating to deer natural history and deer habitat requirements. Insure distribution to the public to increase awareness and improve nonconumptive enjoyment of the deer resource.

E. LAW ENFORCEMENT ELEMENT

Objective:

The objective of the Law Enforcement element is to reduce, to the maximum extent possible, the impact of illegal activity on the deer herd. Substantial reduction of poaching activity will aid in the recovery and long-term maintenance of the deer herd. A major emphasis will be directed at increasing public awareness of the poaching problem, and at developing additional public awareness of the Department's law enforcement programs.

Recommended Prescriptions:

1. Initiate selective coordination of Fish and Game wardens to provide a more visible patrol presence within the San Jacinto/Santa Rosa Mountains and allow for staggering of work shifts to increase enforcement coverage.

2. Increase effectiveness and coordination of enforcement efforts by utilization of the Department's aircraft for both day and night patrols. Initiate selective enforcement concepts in areas of high illegal activity. Obtain additional enforcement equipment necessary to improve radio communications, improve night vision and patrol efforts, compile and distribute information relative to poaching activity, and increase effectiveness of undercover enforcement activities. Update training and provisions for field forensic evidence methodology.

3. Initiate cooperative cross-training of Class I peace officers, California Department of Forestry, SBNF, and BLM enforcement personnel. Cross-training efforts will emphasize the recognition of deer violations, deer tag validation, and the coordination of law enforcement efforts.

4. Increase the promotion of hunter ethics and sportsmanship in Hunter Safety classes. Initiate contact with sportsmen organizations, conservation groups, and the public regarding the CalTIP anti-poaching program and solicit citizen cooperation.

5. Increase public awareness of wildlife enforcement problems by developing press releases concerning poaching activity, the apprehension of poachers, and the ultimate court disposition of poaching violations. When necessary, consult with local judicial council to gain appropriate and uniform enforcement of Fish and Game violations.

F. COMMUNICATION ELEMENT

Objective:

The objective of the communication element is to keep all interested individuals and agencies informed concerning the status of the San Jacinto/Santa Rosa Mountains deer herd. Communication efforts will seek to inform the general public regarding the deer population status, management issues and concerns, and will encourage public involvement and input in the management of the deer herd.

Recommended Prescriptions

1. A summary of the herd management plan will be developed for public distribution.

2. A summary and explanation of herd population monitoring data will be continuously updated and distributed to interested publics, the County Fish and Game Commission, the SBNF, and the BLM Indio Resource Area.

3. Develop a slide presentation addressing deer management issues and concerns, deer population dynamics, and management problems and potential solutions. The presentation will be used to develop additional avenues of communication with the public, encouraging both involvement and feedback concerning the management of the deer herd.

4. Additional press releases regarding the status of herd management programs and deer related recreational opportunities will be developed to solicit public input and viewpoints.

G. REVIEW AND UPDATE

Objective:

Annual review of the herd plan will allow regularly scheduled assessments of the progress toward implementation of the herd plan. Periodic updating of the plan is intended to provide for the incorporation of newly acquired information, public input, and changes in management emphasis.

Recommended Prescriptions:

1. Continue to encourage public involvement and input in the deer management decision process and the ipmlementation of the herd plan.

2. The DFG, SBNF, BLM, and County Fish and Game Commission should annually review the progress of the herd plan. A summary of implementation progress, management issues and problems, and recommendations for future actions will subsequently be prepared and forwarded to participating agencies for review and to insure interagency coordination.

VII. MANAGEMENT ALTERNATIVES

A range of deer management approaches were recognized during the development of the San Jacinto/Santa Rosa Mountains herd plan. Potential deer management alternatives examined are indicated below along with a brief rationale for rejecting the alternative in favor of the preferred deer management plan reported herein.

A. No Action:

The no action alternative would not comply with Department policy and the Legislative mandate to maintain a healthy deer population, to improve and maintain habitat to accommodate more deer, and to provide for high-quality hunting and other recreational uses of the deer resource. Under the no action alternative consideration of deer management in regional land use and multiple use planning and review would be minimized. Actions to improve deer habitat carrying capacity and recreational use of the deer resource would not be pursued. Additional decline of the deer population and the recreational use of the wildlife resource would be anticipated.

B. Management for Maximum Sustained Yield:

Managing the deer herd for maximum sustained yield would require increasing herd productivity to the maximum extent possible and subequently harvesting deer at a level approaching the annual recruitment rate. Maximum sustained yields would require annual harvest of both bucks and antlerless deer. In turn, this would require a high level of population management as well as a

substantial land management commitment to achieve maximum productivity. To a great extent, deer management actions would predominate over other land management uses and activities. Such an approach would not be consistent with multiple use land management policies governing public lands. In addition, the approach would de-emphasize non-hunting recreational use of the deer herd by maximizing hunter opportunities to the determent of non-consumptive recreational use.

C. Close Hunting Season:

Both hunters and nonhunters have suggested closing the deer hunting season for a period of 1 to 5 years would allow the herd to "recover". This alternative does not recognize that deer population density from year to year is primarily dependent on the quality and quantity of habitat available for deer use. Also, the harvestable surplus (number of deer in excess of habitat carrying capacity) the population normally produces each year would be lost to natural mortality in the absence of hunting. The closure would serve to increase the ratio of bucks to does in the population, but this likely would be at the expense of fawn production. In addition, it is likely that the harvest would appear improved upon reopening the hunting season. Subsequent harvest, however, would soon return to pre-closure levels due to the absence of change or increase in habitat carrying capacity. This alternative was thus rejected because it would unnecessarily reduce recreational use of the deer resource. More importantly, the alternative would serve to defer management actions addressing the maintenance and improvement of habitat carrying capacity.

D. Management for Trophy Bucks:

Deer management for trophy bucks would require the maintenance of a high buck to doe ratio and increasing the average age of the buck population. Achievement of this objective would likely require limiting hunting opportunity or restricting the harvest of young bucks. Justification for deer management would be reconciled with the reduced level of recreational opportunity provided by this alternative. Considering the close association of the San Jacinto/Santa Rosa Mountains deer herd to the urban centers of Southern California management for trophy bucks cannot be justified with the present high demand for recreational hunting. This approach would serve to facilitate alternating periods of high and low population densities marked by intervals of poor fawn production and survival.

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State of California — The Resources Agency

Memorandum

To : Wildlife Management Supervisor, Region 5 — Date : September 29, 1986

From : Department of Fish and Game --Tom Paulek

Subject : San Jacinto/Santa Rosa Mountains Deer Herd Plan Update

The San Jacinto/Santa Rosa Mountain deer herd unit was included in newly established hunt zone D-16 for the 1985 deer season. The new hunt zone also included the San Diego County deer herd unit; the D-16 zone included San Diego County and much of western Riverside County. A hunter quota of 7,000 was established for the entire zone and all available tags for the 1985 season were issued to hunters. The 1985 hunter success for the new zone was three percent; the reported buck harvest for the entire zone was 229.

In 1984 the San Diego County buck harvest was 241, in 1985 the county buck harvest was reduced to 158. The Riverside County buck harvest in 1984 was 120 bucks; 119 were taken in 1985 primarily in western Riverside County. It appears the establishment of the zone hunter quota along the shorter season reduced the buck harvest in the San Diego deer herd unit. The buck kill in the San Jacinto/Santa Rosa herd unit (Western Riverside County) was not significantly reduced as a result of the establishment of zone D-16. Because the zone's 7,000 tag holders can hunt either deer herd unit, it is not known if hunter success differed significantly for the two deer herds included within zone D-16.

Buck harvest age structure samples have been monitored in the San Jacinto/Santa Rosa Mountains for the period 1983-85. A post harvest composition count was conducted by helicopter after the 1985 deer season. Age structure data along with the composition count information are indicated on the attachment. Composition count information is broken down to indicate samples for areas traditionally receiving hunting activity and the eastern slope of the San Jacinto Mountains which due to limited access and steep terrain historically receives lower hunting pressure. Average age data collected since 1983 indicates a dramatic drop (4.1 years to 2.7 years), and the percentage of yearling and 2 year old animals in the harvest samples has increased substantially. It is thought the age structure sample trends are indicative of improvement in herd fawn production and survival. If these sample indications are reflecting the actual herd performance, the harvest and/or hunter success in 1986 should also indicate improvement.

"Mill Bill" habitat improvement actions within the deer herd unit continue to partially fund prescribed burning projects in accordance with the 10-year prescribed burn plan of the San Jacinto Ranger District (SBNF). This habitat improvement program has been on-going for five years and continues to receive

funding from the Riverside County Fish and Game Commission and the Hemet Water District. Substantial deer habitat improvements have been accomplished in the Garner Valley and Rouse Ridge area; future funding is expected to benefit this habitat improvement program. Harvest age structure sampling and herd composition counts are planned for 1986. Depending on the 1986 herd monitoring results, management recommendations for the 1987 season could include consideration of adjustments to hunter quota, and season length. It may also be desirable to consider the establishment of a new hunt zone to include only the San Jacinto/ Santa Rosa herd unit.

Tom Paulek

Tom Paulek
Associate Wildlife Biologist

TP:lp

Attachment

cc: J. Davis
D. Yparraguirre

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

SAN JACINTO/SANTA ROSA MOUNTAINS (D-16)

(Western Riverside County)

BUCK HARVEST TREND RIVERSIDE COUNTY 1927 - 1984

YEARS	TOTAL BUCKS TAKEN	AVERAGE ANNUAL HARVEST
1927 - 1931	2268	454
1932 - 1936	1790	358
1937 - 1941	2125	425
1943 - 1947	1638	328
1948 - 1952	2201	440
1953 - 1957	2146	429
1958 - 1962	2155	431
1963 - 1967	1190	238
1968 - 1972	960	192
1973 - 1977	625	125
1978 - 1982	700	140
1983 - 1984	—	132
1985	119	* HUNTER QUOTA : 7000 D-16 ESTABLISHED

* San Diego-Western Riverside County

BUCK HARVEST AGE ANALYSIS 1983-85

AGE STRUCTURE OF HARVEST

	1 yr.	2 yrs.	3 yrs.	4+ yrs.	Sample
1983	10%	24%	28%	38%	61
1984	16%	41%	25%	18%	51
1985	28%	50%	13%	9%	46
1954	5%	32%	21%	42%	66
1955	2%	22%	32%	44%	59
1956	7%	10%	32%	51%	60

AVERAGE AGE OF BUCK HARVEST

SEASON	AVERAGE AGE	SAMPLE
1983	4.1 years	61
1984	3.4 years	51
1985	2.7 years	46

POST HARVEST COMPOSITION COUNTS 1985
SAN JACINTO/SANTA ROSA MOUNTAINS

	Bucks	Does	Fawns	Sample
WESTERN S. Jac. Mtns. (Hunting Areas)	22	100	44	136
EASTERN S. Jac/S. Rosa (Light Hunting)	44	100	35	93

HUNTING SEASONS

1983 — October 8 - November 20
1984 — October 13 - November 25
1985 — October 5 - November 3

1987 DEER HERD PLAN UPDATE
SAN JACINTO/SANTA ROSA MOUNTAINS DEER HERD PLAN

INTRODUCTION

The San Jacinto/Santa Rosa Mountains Deer Herd is within Hunt Zone D 16 which also includes most of San Diego County and the San Diego County Deer Herd. The zone, with a hunter quota of 7,000, was established in 1985. Goals for the herd include a harvest of 200 - 300 bucks annually, post harvest buck ratios of 20-30:100 does, and fall fawn ratios of 50-60:100 does. Changes in harvest strategy and habitat improvement through prescribed burning of decadent chaparral are the primary management tools available to achieve herd population parameter goals. Habitat improvements are being funded by the Hill Bill, the Riverside County Fish and Game Commissions, and the Lake Hemet Water District.

BIOLOGICAL INFORMATION

A. Buck Harvest

Year	Quota	Tag Sales	Harvest
1983	Part of Zone D 11		102
1984	Part of Zone D 11		94
1985 a.	7,000	7,000	81
1986	7,000	5,158	112

a. Zone D 16 established. Quota and tag sales figures are for entire zone. Harvest figures are for the San Jacinto/Santa Rosa Mountains deer herd only.

B. Herd Composition Counts

These post harvest counts are separated into two areas based on subjective estimates of relative hunting effort in the areas.

Western San Jacinto Mountains (Popular hunting areas)

Year	Bucks	Does	Fawns	Sample Size
1985	22	100	44	136
1986	19	100	39	158

Eastern San Jacinto Mountains and Santa Rosa Mountains (Less popular)

Year	Bucks	Does	Fawns	Sample Size
1985	44	100	35	93
1986	87	100	25	51

C. Age Composition of the Buck Harvest (Ranges combined)

Year	Age, Percent of Sample 1	2	3	4+	Average	Sample
1983	10	24	28	38	4.1	61
1984	16	41	25	18	3.4	51
1985	28	50	13	9	2.7	46
1986	24	53	7	16	2.8	68

HABITAT IMPROVEMENT PROJECTS

Prescibed burning in the Rouse Ridge area continued in 1986 in accordance with the San Jacinto Ranger District 10 year plan. Acreage figures for the 1986 treatments are not available. Approximatley 3,000 acres are scheduled for treatment in 1987.

OTHER CHANGES TO THE DEER HERD PLAN

None recommended at this time. Changes in the zone boundaries, as discussed in the deer herd plan, should be considered for next year. Specifically, the hunt zone for the San Jacinto/Santa Rosa Mountains Deer Herd should be separated from the San Diego County Deer Herd.

State of California

The Resources Agency
DAVIS

Memorandum

To Earl Lauppe
Wildlife Management Supervisor

Date December 16, 1988

From : Department of Fish and Game
Tom Paulek

Subject San Jacinto/Santa Rosa Mountains Deer Herd Plan Update - 1988

I. Biological Information:

The San Jacinto/Santa Rosa Mountains deer herd (SJ/SR Herd) is included in hunt zone D-16 along with the San Diego County deer herd. The D-16 hunt zone had a quota of 7,000 tags for the 1987 season; 4,974 of which were issued for the season. The deer rifle season began on October 3, 1987 and closed on November 8, 1987 (1986 season: October 4 to November 2, 1986). On the basis of tag returns, a total of 84 bucks were taken within the SJ/SR herd boundary. The attachment provides a summary of previous post harvest composition counts, buck harvest age monitoring results, and harvest trends for the SJ/SR herd along with the results of herd monitoring obtained after the 1987 hunt season.

II. Habitat Improvement Projects

Habitat improvement efforts (Hill Bill funding) were expended on the Rouse Ridge area of the San Jacinto Ranger District, SBNF. Forest Service personnel completed all exterior burning around the west, north, and east boundaries of the Rouse fuel management area. This years work along with previous years efforts have created a blackened line with enough depth to facilitate future interior burning within the fuels management area. The completion of exterior burning is expected to allow interior burning treatment in 1988 (3,000-4,000 acres) and facilitate a long-term rotational burning program for the approximate 15,000 acre Rouse area. In addition to Hill Bill funding, Forest Service contributed labor/equipment, the Riverside County Fish and Game Commission contributed $5,000 for project funding in 1987.

III. Management Recommendations:

Currently no recommendations for herd management are under consideration at the present time including the SJ/SR herd in an exclusive hunt zone (separate from San Diego County), and establishing an antlerless hunt warrant future consideration.

Tom Paulek

Tom Paulek
Associate Wildlife Biologist

cc: J. Davis

SAN JACINTO/SANTA ROSA MOUNTAINS DEER HERD
HUNT ZONE D-16

HARVEST TREND

Year	Quota	Tag Sales	Harvest (Entire)	Harvest (Local)
1985	7000	7000	229	81
1986	7000	5158	319	112
1987	7000	4974	270	84

AGE CLASSES OF BUCKS HARVESTED

Year	1 yr	2 yr	3 yr	4+ yr	Sample
1983	10%	24%	28%	38%	61
1984	16%	41%	25%	18%	51
1985	28%	50%	13%	9%	46
1986	24%	53%	7%	16%	68
1987	17%	46%	20%	17%	40

AVERAGE AGE
Northern Area Only

Year	Age	Sample
1983	4.1 yrs	61
1984	3.4	51
1985	2.7	46
1986	2.8	68
1987	3.3	40

POST HARVEST COMPOSITION COUNTS

	Year	Bucks	Does	Fawns	Sample
Western Ranges					
	1985	22	100	44	136
	1986	19	100	39	158
	1987	30	100	38	158
Eastern Ranges					
	1985	44	100	35	93
	1986	87	100	25	51
	1987		Not Done		

1989 Deer Herd Management Plan Update

County: Riverside

A. Description of the Deer Herd Management Unit

1. Herd condition

Excellent Very Good Good Fair Poor Very Poor

a. Individual animal condition

Condition of animals is considered fair to good based on observation of harvested bucks and road-killed animals. Animals observed in general exhibited subcutaneous and/or abdominal cavity fat reserves indicative of good nutritional status.

b. Herd health

The San Jacinto/Santa Rosa Mountains deer herd is currently managed for a buck-only harvest. Hunting of the antlerless segment of the herd does not occur. This has resulted in a lower buck-to-doe ratio in the herd. Herd management objectives call for the maintenance of a post-harvest ratio of 20-30 bucks per 100 does in order to meet reproductive needs. Monitoring of buck population age structure, composition, and harvest trend indicate that this objective is being met under the current management program.

Monitoring of fall fawn production since 1985 has indicated a fawn-to-doe ratio of 25-44 fawns. This is viewed as poor fawn production, and is considered to be indicative of a herd at carrying capacity of the habitat. There is no evidence to indicate that natural predation or disease are significant factors limiting this deer herd.

2. Population size

Average annual buck harvests throughout the 1950's were in excess of 400 animals per year. This was followed by a sustained decline beginning in the early 1960's. There is little doubt that deer were substantially more abundant during the 1950's; it also is likely the deer herd was in excess of the optimum population level. The early 1960's weere a period of below average rainfall. Records indicate that a dramatic deer die-off occurred in the San Jacinto Mountains in the summer and fall of 1961 and the winter of 1962. Pellet plot counts conducted in October

1962 indicated a 78% reduction in deer use compared to counts conducted in 1956. From the mid-1960's to the present, the harvest trend and the inferred herd population density have remained substantially unchanged but considerably below historic levels.

In 1985 the San Jacinto and Santa Rosa Mountains were placed in hunt zone D-16 and a quota of 7,000 hunters was established. It is important to note that hunt zone D-16 includes San Diego County as well as the San Jacinto/Santa Rosa area; it is unknown what proportion of hunters holding D-16 tags hunt in Riverside County. Since 1985 an annual harvest of 84 to 112 has been maintained from the San Jacinto/Santa Rosa deer herd. This is substantially less than the harvest of the 1950's. This is consistent with a reduction in herd carrying capacity due to increasing urbanization, recreational activity, fire suppression, and other competing land uses, resulting in the current lower herd density. Herd management objectives call for the maintenance of a herd population of 2,500 to 3,500 animals.

3. Herd statistics

Table 1 summarizes herd harvest trends, age structure monitoring, and herd composition data.

4. Deer hunting

a. Past and current hunting strategies' effects on:

1. Deer numbers

Deer numbers are primarily a function of habitat quantity and quality. Buck-only hunting has minimal effect on herd size due to the polygynous breeding strategy of deer. Current maintenance of an adequate post-harvest buck-to-doe ratio insures fertilization of all estrous does.

2. Herd composition

Herd sex and age ratios are affected by hunting management that is selective for specific age and sex classes. Hunting bucks only tends to reduce the ratio of bucks to does. The effect of hunting is demonstrated by the difference in buck-to-doe ratios in this herd between ranges experiencing high and low hunting pressure (Table 1). The average age of deer declines as harvest level increases. When only bucks are hunted, the average age of bucks will decrease, but that of

does will not be affected.

3. Herd health

Annual fawn production has ranged from 25-44 fawns per 100 does in the fall since 1985. This level of recruitment is thought to indicate a population which has reached the carrying capacity of its range. In the absence of buck hunting, buck ratio would be expected to increase and fawn production would be expected to decrease to a lower level consistent with range carrying capacity. Future herd composition would reflect a more equal buck-to-doe ratio and lower recruitment of young animals into the population. The expected lower recruitment would increase the average age of the population, and further reduce population turnover/productivity. Currently herd population density is largely regulated by range carrying capacity, and the present practice of buck-only hunting is having minimal effect on herd density.

b. Future and proposed hunting strategies' effects on:

1. Deer numbers

Current management plans call for continuation of buck-only hunting for the San Jacinto/Santa Rosa deer herd for the foreseeable future. Antlerless hunting remains a management option when conditions warrant. Hunting only bucks tends to produce increasing deer numbers on ranges that are not fully stocked, and tends to maximize impacts of excessive deer numbers on ranges stocked to carrying capacity. Antlerless hunting conversely tends to reduce deer densities and increase fawn-to-doe ratios on both over-and understocked ranges.

2. Herd composition

Current buck-only hunting will continue to result in an uneven sex ratio and limit herd fawn production. Future antlerless hunts could be utilized to adjust sex ratios and increase fawn production. This would be consistent with the herd management goal of increasing herd productivity.

3. Herd health

Under current hunting strategies, herd health will continue to be largely a function of habitat quality rather than hunting. Antlerless hunting could be used in the future to reduce deer numbers to compensate for a change in habitat carrying capacity, to maintain herd health, or to increase herd productivity (fawn production).

5. Illegal harvest

Poaching occurs throughout the year and is generally indiscriminate, affecting all sex and age classes. Poaching, the illegal take of deer, has not been fully documented in the San Jacinto and Santa Rosa Mountains. Local game wardens have estimated that the illegal kill approaches or exceeds the legal harvest each year. Herd monitoring accounts for poaching losses as well as hunting and other mortality factors. Currently, illegal harvest is not considered a primary limiting factor for the San Jacinto/Santa Rosa deer herd.

6. Other

Crippling loss occurs primarily during the legal hunting season. Previous studies have indicated that on the average, crippling loss is equal to 23% of the reported kill during either-sex hunts and 27% during buck-only hunts.

Deer mortality resulting from deer-vehicle collisions occurs predominantly along state and county highways providing access to the San Jacinto and Santa Rosa Mountains. Crippling loss and road kill mortality are also accounted for in the current herd monitoring program, and are not considered significant mortality factors.

B. Non-human Effects on Deer

1. Weather

a. Drought

Currently the San Jacinto/Santa Rosa deer herd is experiencing the third consecutive year of drought conditions. This has resulted in a reduction in available water and limited forage production. This has likely contributed to reduced recruitment of fawns into the yearling age class and lowered overall deer density. Drought serves to temporarily

reduce range carrying capacity. Monitoring of herd harvest trends, buck harvest age structure, and herd composition to date does not indicate a need for change in the buck-only harvest strategy.

b. Early storms

The comparatively mild southern California climate of the San Jacinto/Santa Rosa Mountains and the resulting infrequency of severe prolonged snow fall, combined with deer mobility allowing migration to lower elevations, results in infrequent losses directly attributable to snow accumulation. Early winter snow accumulation at higher elevations will, however, result in the shift of the migratory component of the deer herd to lower elevations; when this coincides with the hunting season, increased hunting success can be expected. Current deer hunting season dates generally precede the onset of snowfall in the San Jacinto and Santa Rosa Mountains.

c. Mild winters

The season and quantity of precipitation with its resultant effect on forage production and water availability are considered major weather factors regulating the San Jacinto/Santa Rosa herd. Because of its relationship to forage production, seasonal precipitation pattern is considered a significant factor in determining the physical condition of deer throughout the year. Ultimately, annual precipitation is a major factor in herd reproduction.

2. Predators

Mountain lions and coyotes are considered the most significant predators acting upon the San Jacinto/Santa Rosa Mountains deer herd. Bobcats and possibly golden eagles may also take additional numbers of deer. The ratio of predators to prey within the herd is not considered excessive, and predators are not known to be unduly limiting the deer herd. Herd monitoring data collected to date indicates that predation does not excessively limit the deer herd.

3. Disease and parasitism

The occurrence of disease in the San Jacinto/Santa Rosa deer herd is not fully documented. Disease is not considered a significant mortality factor. The potential for problems resulting from disease and/or parasites increases when deer occupy poor quality habitat, or when

population densities are excessive.

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

1. Effects upon Species of Special Concern

a. Changes in local populations

It is not anticipated that deer hunting will adversely impact any known threatened, endangered, or sensitive species within the San Jacinto/Santa Rosa deer herd range.

b. Changes in regional and statewide populations

Not applicable.

2. Effects upon other wildlife species

a. Changes in local populations

Deer are a major prey item for a number of species, such as mountain lion and coyote. Maintenance of a healthy and productive deer herd is necessary and beneficial to these predator species. Hunting is considered a management tool contributing to this objective. Buck-only hunting is not considered to significantly reduce deer numbers, and therefore is not anticipated to have a major effect on prey availability.

b. Changes in regional and statewide populations

None anticipated.

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

Hunting is not expected to result in changes in the health, condition, or age class structure of predator populations. Long-term hunting management relies upon the maintenance and utilization of an annual harvestable surplus of deer. The harvestable surplus is defined as those prey animals in excess of the needs of predator species. The impact of hunting on prey abundance is minimized due to buck-only hunting and restrictions on hunter activity (seasons, hunter quota, bag limit).

d. Changes in mortality factors

No changes in mortality factors for other wildlife species are anticipated (see "c" above).

3. Changes in public use/recreation

a. Hunting

None anticipated.

b. Nonconsumptive

None anticipated.

c. Nonhunting

None anticipated.

4. Effects upon human populations

a. Housing

Operation of a deer hunting season will not affect the stock of available housing.

b. Transportation

The presence of hunters during past seasons has not impacted the existing road system. The dispersed nature of hunting makes future impacts unlikely.

c. Public Services

The need for law enforcement will increase above normal levels during the deer hunt. However, much of this increased demand will be supplied by Wildlife Protection personnel. The increase will be temporary and will not adversely affect public safety.

d. Energy

The deer hunt will generate some additional trips to the National Forest by hunters. This will increase consumption of gasoline. The anticipated increase will be small relative to trips generated by other forms of mountain recreation, and is not considered significant.

e. Human Health

No adverse impacts to public health are anticipated.

f. Aesthetics

Hunting activities are not expected to impact Forest aesthetics. Revenues generated by the sale of hunting licenses, deer tags, and hunting equipment contribute to the long-term conservation of the deer herd and its habitat.

g. Cultural Resources

No adverse impacts to cultural resources are anticipated.

D. Range Landownership

The majority of the lands within the San Jacinto/Santa Rosa deer herd range are in public ownership. The San Jacinto Ranger District of the San Bernardino National Forest represents the largest single ownership within the range. Additional public lands are administered by the Bureau of Land Management (BLM) and the State of California. The California Department of Parks and Recreation manages Mount San Jacinto State Park (included within the National Forest boundary), and Anza-Borrego Desert State Park, a portion of which lies within the herd range. BLM lands are located primarily on the eastern slopes of the Santa Rosa Mountains. The BLM parcels generally alternate with lands owned by the Department of Fish and Game (DFG) and privately-owned parcels. These BLM and DFG lands are managed cooperatively under the Santa Rosa Mountains Wildlife Habitat Management Plan. Six Indian reservations lie within the deer herd range.

Most of the private lands within the herd range are associated with the communities of Idyllwild, Pine Cove, Mountain Center, and Anza. Private land development is also progressing in the Garner Valley and Pinyon Flat areas.

No significant changes in this pattern of land ownership are anticipated.

E. Range Vegetation

Man-induced changes as well as biotic changes continually modify the capability of the habitat to support deer. Losses of vegetative cover due to urbanization, recreational use, and livestock grazing are among the more obvious man-induced changes acting upon the deer range. Plant succession, the maturation of

the plant community towards a climax condition, is perhaps the most prominent biotic factor acting to change deer range carrying capacity. It is important to note that the most prominent vegetative cover within the herd range is chaparral vegetation or related types. Over the last several decades advances in wildfire suppression techniques have served to reduce the ecological role of fire, particularly in chaparral climax communities. Effective fire suppression tends to promote extensive areas of decadent vegetation, resulting in reduced forage productivity and nutrient quality, as well as reduced water availability. The decreased amount of acreage in California subject to wildfires or prescribed burning is considered to be a major factor contributing to a reduction in deer herd carrying capacity. The San Jacinto Ranger District has adopted a ten-year program of prescribed burning to rejuvenate decadent chaparral stands and improve habitat for deer. This program is funded in part by revenues from the Hill Bill program. There is also a need to place greater management emphasis on improving habitat quality, and to provide greater consideration of deer habitat requirements in land use planning.

Table 1. Herd statistics for San Jacinto/Santa Rosa deer herd.

YEAR	SEASON	HARVEST TREND				
		D-16 quota	Tag sales	Total D-16 harvest	SJ/SR harvest	Success
1985	10/5 - 11/3	7000	7000	229	81	3%
1986	10/4 - 11/2	7000	5158	319	112	6%
1987	10/3 - 11/1	7000	4974	270	84	5%
1988	10/1 - 10/30	7000	4380	248	79	6%

YEAR	BUCK AGE CLASS					AVERAGE AGE	
	1 yr.	2 yr.	3 yr.	4 yr.	Sample	Age	Sample
1954	5%	32%	21%	42%	66		
1955	2%	22%	32%	44%	59		
1956	7%	10%	32%	51%	60		
1983	10%	24%	28%	38%	61	4.1	61
1984	16%	41%	25%	18%	51	3.4	51
1985	28%	50%	13%	9%	46	2.7	46
1986	24%	53%	7%	16%	68	2.8	68
1987	17%	46%	20%	17%	40	3.3	40
1988	6%	49%	33%	12%	51	2.6	51

POST-HARVEST COMPOSITION COUNT (Ratio)

	Year	Bucks	Does	Fawns	Sample
High hunting ranges	1985	22	100	44	136
	1986	19	100	39	158
	1987	30	100	38	158
	1988	29	100	29	124

	Year	Bucks	Does	Fawns	Sample
Low hunting ranges	1985	44	100	35	93
	1986	87	100	25	51
	1987	----------not done----------			
	1988	----------not done----------			

SAN JACINTO/SANTA ROSA DEER HERD PLAN
Annual Update

July 13, 1990

Summary

The inclusion of this herd in Zone D-16 along with the San Diego deer herd makes accurate assessment of hunting pressure and success difficult since the percentage of D-16 tag holders hunting in Riverside County cannot be determined. Tag sales in D-16 have declined 37% since the establishment of the zone in 1985, while hunter success has increased from a low of 3% in 1985 to 7% in 1989. The average zonewide harvest for the period 1985-89 has been 274; local harvest has remained essentially constant since 1983, with annual harvests generally ranging from 80-90 bucks. It is difficult to assess the implications of harvest level in terms of herd size without knowledge of the hunting pressure on this herd. Hunting seasons on D-16 have been approximately 30 days long since establishment of the zone, and are timed to end in early November prior to the peak of rutting activity.

I. Biological Information

Harvest and age data for this herd are presented in the attached table. Local harvest has been essentially constant at 80-90 bucks per year since 1983. Average age declined from 1983-85, which is consistent with the herd management goal of increasing productivity. Average age has increased since 1986, due in part to a reduction in yearling representation. The percentage of yearlings in the harvest began to decline in 1986. This decline has not been reflected in the percentage of 2-year-old animals, which has been consistently higher than 40% since 1984. This suggests that the reduction in harvested yearlings reflects poor antler development (failure to develop forked horns) as a result of nutritional deficiencies, rather than a substantial decline in recruitment. The current drought and associated poor forage conditions would be a sufficient explanation for this phenomenon.

Herd composition counts have been conducted since 1985 in traditional hunting areas. Buck-to-doe ratios have been consistent with the herd objective of 20-30 bucks per 100 does. Fawn production has been declining, and is well below the objective of 50-60 fawns per 100 does. A composition count scheduled for fall of 1990 will verify these trends. Reduced fawn production is probably drought-related, since poor forage conditions would reduce the carrying capacity of the range and productivity would be expected to follow. A return to pre-drought rainfall conditions should lead to increased productivity.

II. Habitat Improvement Projects

The San Jacinto Ranger District has been very active in planning and implementing prescribed burn projects for habitat improvement. The District is presently operating under a ten-year burn plan which will provide significant improvements in deer range for years to come. The following is a summary of work completed in 1988-89.

Year	Project	Type	Vegetation	Acres	Funding
1988	Rouse North	Rx Burn	Chaparral	200	Hill Bill
1988	Rouse South	Rx Burn	Chaparral	825	Hill Bill
1988	Strawberry	Rx Burn	Chaparral	240	Co. fines
1989	Rouse South	Rx Burn	Chaparral	2000	Hill Bill
1989	Poppet Flats	Guzzlers	Chaparral	--	USFS

III. Changes to the San Jacinto/Santa Rosa Deer Herd Plan

Management of this herd would be greatly aided by improved information on local hunting pressure. This would be most effectively accomplished by establishing a new zone separate from D-16 and encompassing the range of the San Jacinto/Santa Rosa herd. An appropriate quota for the new zone would be 1500-2500 tags, based on reported hunter success for this region and known local harvest. Wildlife Protection personnel should be consulted for input on an enforceable southern boundary for this zone.

Prepared by:

Jeannine M. DeWald
Wildlife Biologist

ZONE D-16: SAN JACINTO/SANTA ROSA MTNS. DEER HERD

HARVEST TREND

Year	Season	Quota	Tag sales	Harvest D-16	SJ/SR	Success
1983	10/8 - 11/20	none	---	---	87	--
1984	10/13 - 11/25	none	---	---	97	--
*1985	10/5 - 11/3	7000	7000	229	81	3%
1986	10/4 - 11/2	7000	5158	319	112	6%
1987	10/3 - 11/1	7000	4974	270	84	5%
1988	10/1 - 10/30	7000	4380	248	79	6%
1989	10/7 - 11/5	7000	4418	304	83	7%

* D-16 zone established in 1985

BUCK HARVEST AGE CLASSES

Year	1 yr.	2 yr.	3 yr.	4 yr.	Sample
1954	5%	32%	21%	42%	66
1955	2%	22%	32%	44%	59
1956	7%	10%	32%	51%	60
1983	10%	24%	28%	38%	61
1984	16%	41%	25%	18%	51
1985	28%	50%	13%	9%	46
1986	24%	53%	7%	16%	68
1987	17%	46%	20%	17%	40
1988	6%	49%	33%	12%	51
1989	9%	43%	15%	34%	47

AVERAGE AGE (SJ/SR)

Year	Age (yrs.)	Sample
1983	4.1	61
1984	3.4	51
1985	2.7	46
1986	2.8	68
1987	3.3	40
1988	3.1	51
1989	3.7	47

POST-HARVEST COMPOSITION COUNT
(Ratio per 100 does)

	Year	Bucks	Does	Fawns	Sample
High hunting ranges	1985	22	100	44	136
	1986	19	100	39	158
	1987	30	100	38	158
	1988	29	100	29	124
	1989	---------not done---------			

	Year	Bucks	Does	Fawns	Sample
*Low hunting ranges	1985	44	100	35	93
	1986	87	100	25	51

* San Jacinto Mtns. east of Desert Divide

WHITE MOUNTAIN DEER HERD PLAN UPDATE

1992-93

I. Update of biological data

A. Composition Counts

year	Post-season bucks/100dd	Post-season fawns/100dd	Spring fawns	Fall sample	Spring sample
1986-87	16	62	--	312	--
1987-88	no counts				
1988-89	26	27	--	94	--
1989-90	no counts				
1990-91	no counts				
1991-92	19	14	--	53	--
1992-93	no counts				

Due to the inaccessibility of the range, the lack of deer concentrations, and the need for substantial snow cover for efficient helocopter surveys, fall counts have been conducted infrequently and no spring counts have been attempted.

A substantial number (up to 500 or more) of deer winter near Marble Creek near the north-west end of the White Mtn. range. Telemetry data has revealed that this wintering population is composed of a mix of White Mtn. deer and Casa Diablo herd deer from the Sierra. Lacking other, more specific and adequate data, composition counts of this group are reported to provide an indication of performance of the White Mtn. population.

year	Post-season bucks/100dd	Post-season fawns/100dd	Spring fawns	Fall sample	Spring sample
1986-87	12	65	--	145	--
1987-88	18	30	--	134	--
1988-89	no counts				
1989-90	19	25	23	138	161
1990-91	10	35	--	172	--
1991-92	10	29	30	120	247
1992-93	16	50	no ct.	158	--

B. Buck kill

Year:	1985	1986	1987	1988	1989	1990	1991	1992
	51	56	37	36	31	38	33	32

II. Update of habitat improvements

None during the report period

III. Other changes to the herd plan

None

San Jacinto/Santa Rosa Mts.
Deer Herd Plan
Annual Update

October 6, 1993

I. Biological information

The San Jacinto/ Santa Rosa Mountains deer herd is encompassed within hunt zone D-19 in Western Riverside County (formerly a portion of D-16). The quota of deer tags for zone D-19 was 1500 tags for the 1992 hunting season. The general season began on October 3, 1992 and closed on November 1, 1992. On the basis of tag returns, a total of 65 bucks were taken from the San Jacinto/Santa Rosa herd. The following tables provide a summary of the previous post harvest composition counts, buck harvest age monitoring results, and harvest trends for the San Jacinto/Santa Rosa Mt. herd along with the results of herd monitoring from previous seasons. Post season composition counts were attempted in 1992 but the flight was aborted due to cold weather and strong winds.

II. Habitat Improvement Projects.

Habitat improvement efforts (hill Bill Funding) included a controlled burn in cooperation with the San Jacinto RD, of the San Bernadino National Forest. The Rouse North burn project was completed in the summer of this year. The Forest service has a long term burn plan for the district and several projects are scheduled for the future. . Past burning activities have reduced fuel loading on the periphery of burn management areas which should facilitate long term burn program on interior units. The Rouse North project completes the peripheral burn units scheduled for the district. A return to an assertive fire management program on the district is anticipated for the coming year adding additional acres of treated habitat.

III. Changes to the San Jacinto/Santa Rosa Deer Herd Plan.

Continue to coordinate Hill bill programs with the Forest Service's long term wildlife, fuels and watershed plan. An antlerless hunt warrants future consideration for this deer herd but additional data on the population, and condition of the deer herd are needed. There is also interest in changing the season dates to follow the rut in November. Empirical data to support these changes will need to be collected prior to making any recommendations. A collection effort to gather this data will be submitted in a plan for 1994.

Zone D-19: San Jacinto/ Santa Rosa Mountains

Year	Season	Harvest trend				
		Quota	Sales	Total Harvest	Local Harvest	Success
1983	10/8 - 11/20	----	----	---	87	
1984	10/13- 11/25	----	----	---	97	
1985	10/5 - 11/3	7000	7000	229	81	3%
1986	10/4 - 11/2	7000	5158	319	112	6%
1987	10/3 - 11/1	7000	4974	270	84	5%
1988	10/1 - 10/30	7000	4380	248	79	6%
1989	10/7 - 11/5	7000	4418	304	83	7%
1990	10/6 - 11/4	7000	4659	198	80	4%
1991	10/5 - 11/3	4500	?	?	66	
1992	10/3 - 11/1	1500	NF	65	NA	4%

Buck Harvest Age Classes

Year	1 yr.	2 yr.	3 yr.	4 yr.	Avg. Age	Sample
1983	10%	24%	28%	38%	4.1	61
1984	16%	41%	25%	18%	3.4	51
1985	28%	50%	13%	9%	2.7	46
1986	24%	53%	7%	16%	2.8	68
1987	17%	46%	20%	17%	3.3	40
1988	6%	49%	33%	12%	3.1	51
1989	9%	43%	15%	34%	3.7	47
1990	2%	37%	25%	36%	3.9	50
1991	----------	not available			----------	
1992	9%	38%	24%	29%	3.1	21

Post-Harvest Composition Count
(ratio per 100 does)

	Year	Bucks	Does	Fawns	Sample
High ranges	1985	22	100	44	136
	1986	19	100	39	158
	1987	30	100	38	158
	1988	29	100	29	124
	1989	--	---	--	---
	1990	28	100	18	99
	1991	29	100	61	?
	1992	--	---	--	--

Post-Harvest Composition Count
(ratio per 100 does)

	Year	Bucks	Does	Fawns	Sample
Low ranges	1985	44	100	35	93
	1986	87	100	25	51
	1987	--	---	--	---
	1988	--	---	--	---
	1989	--	---	--	---
	1990	--	---	--	---
	1991	--	---	--	---
	1992	--	---	--	---

San Jacinto/Santa Rosa Mts.
Deer Herd Plan
Annual Update

July 22, 1995

I. Biological information

The San Jacinto/ Santa Rosa Mountains deer herd is encompassed within hunt zone D-19 in Western Riverside County. The quota of deer tags for zone D-19 was 1500 tags for the 1994 hunting season. The general season began on October 3, 1992 and closed on November 1, 1992. On the basis of tag returns, a total of 65 bucks were taken from the San Jacinto/Santa Rosa herd. The following tables provide a summary of the previous post harvest composition counts, buck harvest age monitoring results, and harvest trends for the San Jacinto/Santa Rosa Mt. herd along with the results of herd monitoring from previous seasons. Post season composition counts could not be conducted in 1994 due to budget restrictions on flight time.

II. Habitat Improvement Projects.

Habitat improvement efforts (hill Bill Funding) included controlled burns on the San Jacinto RD, of the San Bernardino National Forest. The Rouse burn project was completed in cooperation with the USFS in the summer of this year. Additionally, perimeter lines were completed with a heli-torch on the Fobes burn project. The Fobes burn is scheduled for completion next year. The Forest service has a long term burn plan for the district and several projects are scheduled for the future. Past burning activities have reduced fuel loading on the periphery of burn management areas which should facilitate long term burn program on interior units. The San Jacinto Ranger District has an assertive fire management program which is expected to continue. Out year planing efforts have identified the Baldy mountain area for controlled burns in the future.

III. Changes to the San Jacinto/Santa Rosa Deer Herd Plan.

Continue to coordinate Hill bill programs with the Forest Service's long term wildlife, fuels and watershed plan. An antlerless hunt warrants future consideration for this deer herd but additional data on the population, and condition of the deer herd are needed.

There is general interest among sportsmen favouring a change in opening dates to latter in the season. Empirical data to support these changes was collected during the winters of 1993 and 1994. Collection results revealed that the period of the rut was later than anticipated. Opening dates could conceivably be shifted as much as two weeks latter in the year while still avoiding the rut.

Zone D-19: San Jacinto/ Santa Rosa Mountains

Year	Season	Harvest trend				
		Quota	Sales	Total Harvest	Local Harvest	Success
1983	10/8 - 11/20	----	----	---	87	
1984	10/13- 11/25	----	----	---	97	
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1990	10/6 - 11/4	7000	4659	198	80	4%
1991	10/5 - 11/3	4500	?	?	66	
1992	10/3 - 11/1	1500	NF	65	NA	4%
1993	10/2 - 10/31	1500	NF	67	NA	4%
1994	10/1 - 10/30	1500	NF	82	160	13%

Buck Harvest Age Classes

Year	1 yr.	2 yr.	3 yr.	4 yr.	Avg. Age	Sample
1983	10%	24%	28%	38%	4.1	61
1984	16%	41%	25%	18%	3.4	51
1985	28%	50%	13%	9%	2.7	46
1986	24%	53%	7%	16%	2.8	68
1987	17%	46%	20%	17%	3.3	40
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1991	----------	not available		----------		
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	1988	--	---	--	---
	1989	--	---	--	---
	1990	--	---	--	---
	1991	--	---	--	---
	1992	--	---	--	---
	1993	--	---	--	---
	1994	--	---	--	---