EXOTIC BIG GAME ON RANCHO PIEDRA BLANCA

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Abstract: During the summers of 1965 and 1966 a study was made on the history and status of several exotic big game, now present in northwestern San Luis Obispo County, California. Zebra (Equus burchellii), fallow deer (Dama dama), sambar (Cervus unicolor), elk (Cervus canadensis nelsoni), thar (Hemitragus jemlaicus), and aoudads (Ammotragus lervia) are now present, having escaped in 1953 from the zoo owned by William Randolph Hearst. Sambar, elk, thar and aoudads have all been seen up to ten miles from the release site, but the majority of these animals remain within four miles of Hearst Castle. Information on the ecology of these introductions is needed.

A multitude of exotic species have been introduced into this country in the last century, but few of them have been carefully studied. As a result there is a lack of basic information about the ecology of these introductions (Craighead and Dasmann, 1965). This is certainly part of the reason why exotic introductions are so controversial a wildlife management technique today.

The purpose of my study is to provide an account of the largest introduction of exotic big game that California has ever experienced. The value of the study is two-fold. It sets the stage for more profound research into the ecology of this particular introduction, and secondly, provides an inventory of immediate use to landowners and public agencies.

I would like to acknowledge the Hearst Corporation and the National Science Foundation for making this study possible. Also, I want to thank Dr. R.F. Dasmann, Dr. W.W. Chase, Dr. A.B. Cowan, Dr. G.S. Hunt and Dr. A.S. Leopold for their counsel; the many local people who were so helpful; and the California Department of Fish and Game for their cooperation.

METHODS

Field work was carried out during the summers of 1965 and 1966 on the 76,000 acre Rancho Piedra Blanca owned by the Hearst Corporation, and adjacent ranches in northwestern San Luis Obispo County, California (fig. 1). My procedure involved first, a review of much of the literature on exotic introductions, and the life histories of the species now present on the study area. I relied heavily on information from local people for historical data. Local people also helped pinpoint areas to check present distribution and numbers first hand. I tried to make reconnaissance trips into all the major sections of the study area, but spent most of the time carefully checking areas known to contain exotics. Direct observation, pellet counts, tracks, and forage utilization were all used in determining distribution. My direct observations plus those of local people were the main source of population estimates. Pellet counts were used as an indication of population density.

HISTORY

To enlarge a worker's frame of reference and to make it easier to understand present conditions, it is valuable to know something of the past. In particular, how did exotic big game come to be in this part of California? The case starts with the purchase of the Piedra Blanca land grant in 1865 by George Hearst a '49er and later Senator from California. In 1919 William Randolph Hearst, the Senator's only son, began building his castle on Lone Tree Hill above the town of San Simeon. Mr. Hearst, having a great love for animals, began a zoo that eventually covered nearly

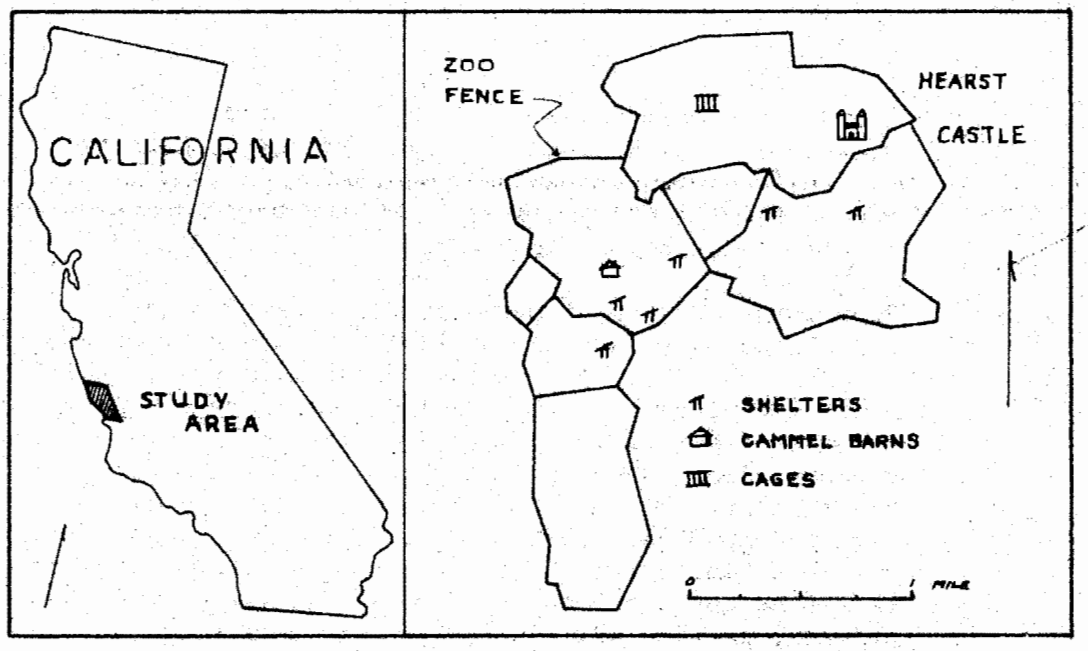

Figure 1. Location of study area. Figure 2. Extent of Hearst's zoo.

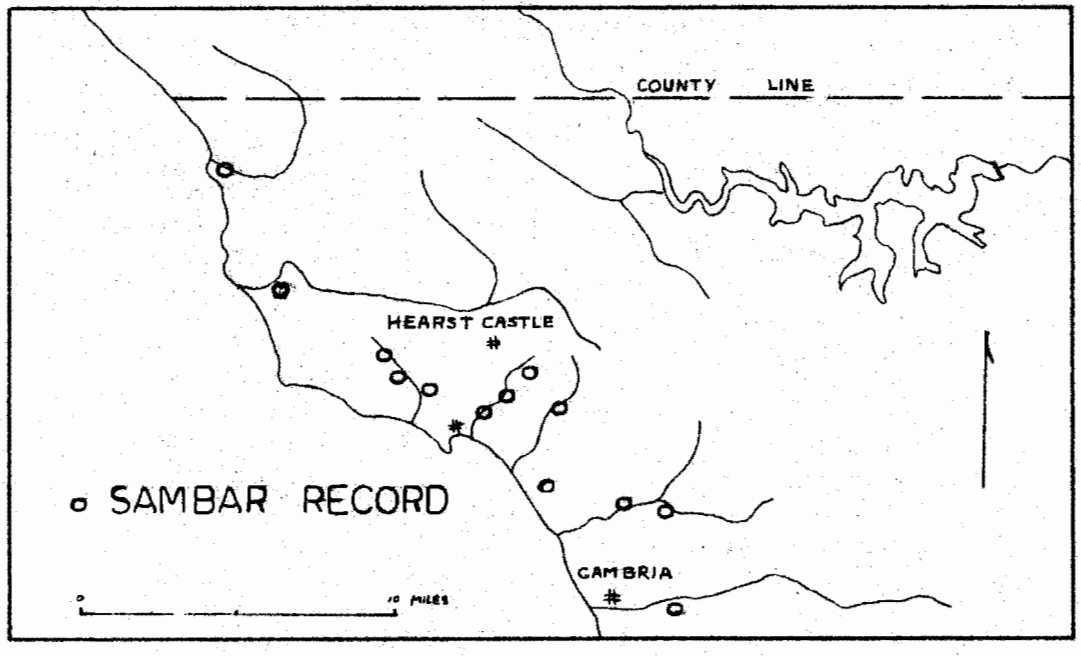

Figure 3. Location of sambar observations made from 1964 to 1966.

2,000 acres enclosed by a stout, eight foot, woven wire fence. He also built a group of cages near the castle for dangerous animals (fig. 2). It was to become the largest private zoo in the world during its time (Swanberg, 1961).

From about 1924 until Hearst's death in 1951, the zoo contained a large assortment of animals from emus to giraffes (table 1). In most cases there were only a few individuals of any species, but there were large numbers of a few. Many species were bought and sold at various times, thus it is hard to determine their productivity while in the zoo. Some of the animals required more care than others, consequently, pens and shelters, including a giraffe house, were built. Since the range could not provide enough forage for all the animals, particularly during the dry season, large quantities of hay and grain were supplied.

Table 1. Animals known to have been in the Hearst zoo at one time or another between 1924 and 1953.

In Cages

African lion	Polar bear
Tiger	Black bear
Puma	Himalayan bear
Leopard	Sun bear
Panther	Sloth bear
Ocelot	Costimundi
Golden cats	Raccoon
Cheetah	Badger
Bobcat	Chimpanzee
Kinkajou	Rhesus monkey
Coyote	Orangatang
Fox	Tapir
Grizzly bear	Elephant

Table 1. (Continued)

In Pens and Fields

Ostrich
Rhea
Emu
Cassowary
Wallaroo
Grey kangaroo
Giant red kangaroo
Rocky mountain elk
Red deer
Sambar deer
White fallow deer
Axis deer
Barishingha deer
Reindeer
Pronghorn antelope
Giraffe
Sable antelope
Nilghai
Eland
Duicker
Leuoryx
Beisa oryx
Blackbuck
Springbuck
Waterbuck
Blessbuck
Ellipse
White tailed gnu
Musk ox
Bison
Yak
Water buffalo
Aoudad
Mouflon sheep
Rocky mountain sheep
Himalayan thar
Ibex
Spanish goat
Camel
Llama
Grevy zebra
Chapman zebra
Grant zebra

In order to provide the necessary care for the animals, a keeper was hired who had a variable number of assistants through the years. John Connelly, the first keeper, was replaced sometime in the early 1930's by Gary Baldwin. Mr. Baldwin left in 1937 and Mr. Connelly took over again. Sometime later he was replaced by Hayes Perkins, who apparently remained at least until 1942 when the dangerous animals were removed to the San Francisco Zoo. Dave Sprague was the keeper until 1953 when most of the animals were sold. Since 1953 there has been no keeper or any management of the remaining species, which include: aoudad (Ammotragus lervia), thar (Hemitragus jemlaicus), elk (Cervus canadensis nelsoni), sambar (Cervus unicolor), fallow deer (Dama dama), and zebra (Equus burchellii). At this point cattle were run into the animal pastures and all the animals were able to escape due to the disrepair of the fences.

One of the more exciting jobs of the keepers was to try to recapture animals which occasionally escaped the enclosures. From personal conversations with Mr. Baldwin, Mr. Sprague, and several local people, the only species present outside the enclosures for any length of time before 1950 were elk, thar, and sambar. All of these were present in small free populations as early as 1940. However, they remained close by and were supposedly included in the regular census (table 2). The last available census, taken in 1963 by the late Mr. Apperson, ranch superintendent, undoubtedly does not include all the animals on the ranch at that time.

Table 2. Census figures for selected species in the Hearst zoo.

Species	Perkins '37-'42	Sprague-1949	1950	1951	1952	1953	Apperson 1963
Aoudad	?	98	58 (81 sold)	55	67	85	172
Thar	?	50	65	75	90	105	154
Rocky Mt. Elk	30+	43	44	55 8+ sold)	34	?	30+
Sambar	2+	20	20	20	19	20	10+
Fallow Deer	100+	180	176	106 (122 sold)	96	85	1+
Zebra	?	15	18	13 (6 sold)	12	12	16
Axis Deer	9+	33	42	37 (9 sold)	24	18	Died
Red Deer	?	9	9	1 (8 sold)	1	1	Died

Occasionally I was given accounts of sightings of various species including Dall sheep, oryx, and African lion by local people. Although one might think anything possible after observing zebras along the roadside, I have not been able to confirm any of these stories.

PRESENT STATUS

I will now describe the status of the remaining exotics by species from the period of their escape to the present; however, accounts in greater detail may be found in Barrett (1966).

Zebra

One or more varieties of Burchell's zebra have remained close to the castle because, unlike other exotics, they rarely jump a normal cattle fence. Since 1953, at least two individuals have escaped to join cattle on neighboring ranches, but these were killed during recapture attempts.

The zebras never have reproduced well, and although they increased from twelve in 1953 to sixteen in 1963, there are only three males and four females today. There has been no successful reproduction since 1963, thus, the future of this species appears bleak.

Fallow Deer

The white fallow deer was the most prosperous species in the Hearst zoo. Before its release, the population was reduced to 85 in 1953 from a previous total of 180, mainly by the sale of animals after Hearst's death. Soon after their escape, fallow deer were commonly seen on neighboring ranches. There was apparently a rapid dispersal north to San Carpojo Creek, south to San Simeon Creek, and east to Las Tablas Creek.

These pure white deer were apparently an easy target or unadaptable to life in the wild, because by 1963 they had become rare. About this time one male was shot on Las Tablas Creek and two were shot near San Simeon

Creek. One male was reportedly seen on Pico Creek in 1965. Recently, I have seen only one female fallow deer in the castle area, and a single female was seen at Pico Creek last year. I have seen no sign of successful reproduction and if the past trend continues, this species is on the verge of extinction in this part of California.

Sambar

The sambar, an elk-like animal native to India and Southeast Asia (Cahalane, 1939), first escaped the zoo sometime during the 1940's. It was not until 1953, when the remaining 20 sambar escaped, that this species was known to have dispersed beyond the immediate castle area. In the following decade sambar were seen north to Arroyo de la Cruz, south to San Simeon Creek and east to Burnett Creek, mainly in heavily wooded canyons (fig. 3).

Mr. Apperson's census in 1963 sets the sambar population at ten or more in the castle area. Since 1963, a male sambar was shot just north of Cayucos, and stags have been seen at Santa Rosa Creek, San Simeon Creek, Arroyo de la Cruz and San Carpojo Creek. One female was seen at San Simeon Creek, one at Arroyo de la Cruz and five at San Carpojo Creek in 1966. Sambar are also rumored to be along Pico Creek. I have personally observed ten different individuals in Arroyo Puerto and five in Arroyo Laguna.

Sambar are very secretive, relatively nocturnal, partial to dense woods and therefore are difficult to observe and hard to hunt. I would estimate a minimum population of 30 sambar, but there may be many more if small groups are present in all the suitable coastal stream canyons from San Carpojo Creek to Cayucos. It appears that this species is holding its own if not increasing. Sambar make considerable use of oat hay crops on the Hearst ranch. The present sambar population poses no problems, but if it were to increase significantly, this species could be a potential nuisance to crop raisers along the coast.

Elk

Rocky Mountain elk, originally from Wyoming, first escaped the zoo fences in the 1940's, but are said to have stayed close to the zoo area. In 1952, 34 head were counted in and around the zoo, all of which were free by 1953. Through the following decade elk dispersed north to Dutra Creek, (one bull was shot on Chew's ridge, 40 miles north of the castle), south to Santa Rosa Creek, and east to the crest of the Santa Lucias. By 1960, the elk population had increased significantly. Herds of 50-75 animals were reported in both the Pico Creek area south of the castle and on Pine Ridge to the north (fig. 4).

At the present, elk seem to be less abundant. Occasionally a small group is seen at Santa Rosa Creek, and about 20 head were observed at San Simeon Creek last year. There are at least 20 head in the Pico Creek area. Last year I observed 17 head in the castle area. As many as 21 have been observed in the Burnett Creek area, and eight to ten are commonly seen in the San Carpojo Creek-Dutra Creek area. To my knowledge no elk have ever been seen east of the Santa Lucias.

In general, I think the elk which stray south of Pico Creek are harassed too much to remain there permanently. Elk are found commonly in the Pico Creek-Middle Ridge, Burnett Creek-Hearst Castle, and San Carpojo Creek-Dutra Creek areas. I have seen a total of 25 different individuals, but if all the reports I have received are reliable, there could be as many as 100 elk in the study area. Elk have created problems by feeding on crops, and are not appreciated by many of the landowners.

Thar

The Himalayan thar is a goat-like animal, native to the south slopes of the main axis of the Himalayas (Schafer, 1950; Anderson and Henderson, 1961). A few thar jumped the eight foot high pen fence in the 1940's and were not recaptured, but they remained close to the zoo. A ten foot enclosure was built which was

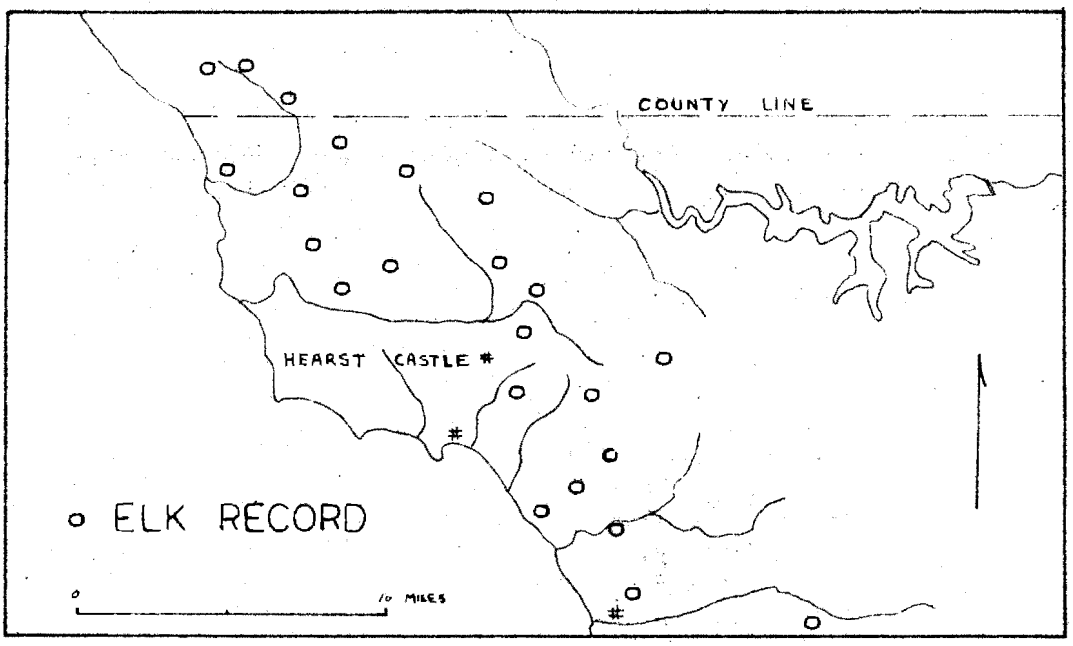

Figure 4. Location of elk observations made from 1964 to 1966.

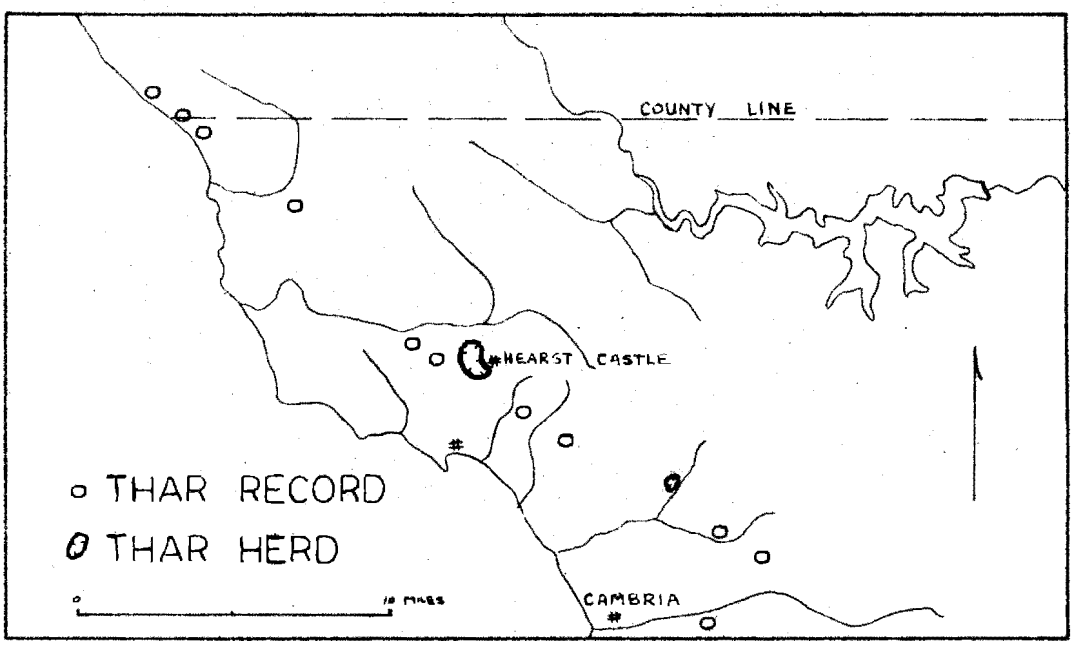

Figure 5. Location of thar observations made from 1964 to 1966, and the female-young herd home ranges.

effective in restraining the rest until 1953, when 105 thar escaped through a hole in the fence. A few males soon dispersed to the north and were seen along the coast highway in the Salmon Creek area. I observed four large males there in 1965 (fig. 5).

Mr. Apperson records a total of 154 thar in the castle area in 1963. In August, 1965, I determined the castle herd's population and home range. Including the males which leave the herd during the non-breeding season, this herd had 83 adult males, 14 yearling males, 137 adult females, 15 yearling females and 30 young, for a total of 276. Last year, reproduction success was similar to 1965, therefore the present total should be approximately 300.

By 1964, thar had begun to disperse south to San Simeon Creek and Steiner Creek. A group of eleven were seen in several locations as far south as Santa Rosa Creek in 1965. Several times last year, I observed up to 13 individuals including females and young at San Simeon Creek. It appears that this group is establishing itself as a new herd. One female and her young has remained with a herd of domestic sheep on Steiner Creek since 1965.

Thar have not dispersed inland past the summer fog belt, but have remained in the cooler coastal region. Evidently they are not adapted to the high summer temperature inland. I estimate there are presently about 350 thar in the study area. This species is quite capable of causing severe range damage when it becomes numerous, thus its presence is a potential problem. Also, one landowner has had trouble with thar damaging his pear trees.

Aoudad

The aoudad or Barbary sheep has characteristics of both sheep and goats. It is native to northern Africa but is well known in America because of its introduction into New Mexico and Texas as a game species (Ogren, 1965). It is notable that many of

these animals originally came from the Hearst zoo. The aoudad was first free in 1953 when 85 individuals escaped from the zoo pastures. During the next decade the main herd remained in the vicinity of the castle, and increased to a minimum of 172. Aoudads soon dispersed to the south. They were first observed in the San Simeon Creek area, around Vulture Rock, in 1954. By 1964, landowners say there were over 100 aoudads in the San Simeon Creek herd. In July, 1960, a 55,000 acre wildfire burned over the eastern section of the study area, opening up the dense chaparral. Much of the area was seeded to grasses, producing excellent forage conditions. In 1961, aoudads were first seen in the Pine Mountain area, just east of the castle. By 1964, local people had counted as many as 80 aoudads in this area (fig. 6).

It appears that there are presently three aoudad herds: the castle or Red Rock herd, Pine Mountain herd, and the San Simeon Creek or Vulture Rock herd. There is an undetermined amount of movement between herds, particularly by the males. The Red Rock herd is the largest and most thoroughly studied herd. In August, 1965, I made an accurate census of this herd. There were 20 adult males, 9 yearling males, 180 adult females, 11 yearling females, and 38 young, for a total of 258. I was told that many more adult males would join the herd from October through December for the breeding season. However, in November, 1966, I counted 16 adult males, 4 yearling males, 172 adult females, 6 yearling females and 51 young, for a total of 249. From August, 1965 to November, 1966 there were at least 11 adult male, and 31 adult female mortalities from this herd. In general, this herd has apparently stabilized at about 250 animals. I cannot account for the paucity of adult males.

The Pine Mountain herd is the least well known. I have only seen two aoudads in this area, but pellet counts made last year indicate a population close to 100. The most recent record of this herd is 143 individuals counted in September, 1966, just

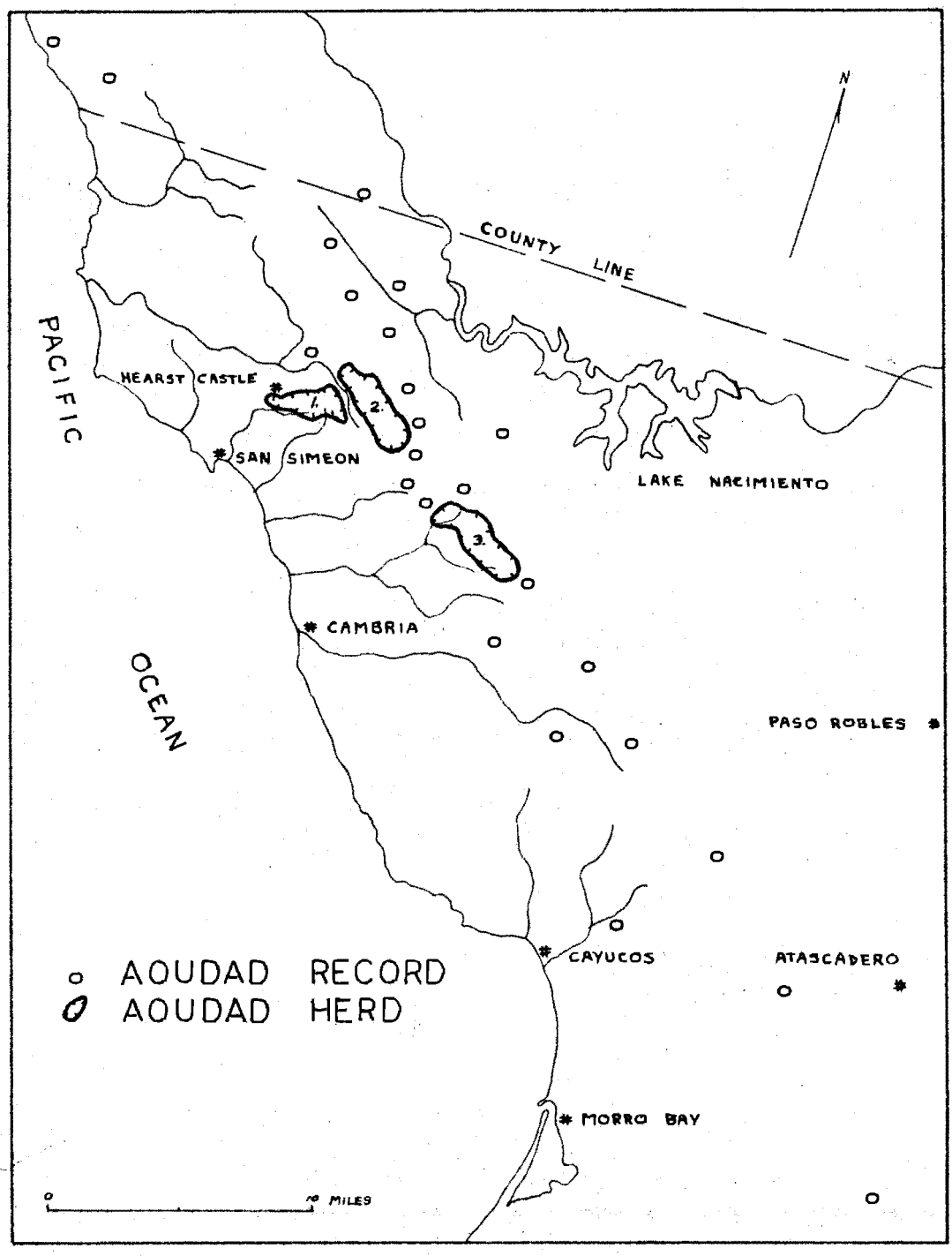

Figure 6. Location of aoudad observations made from 1964 to 1966, and the three female-young home ranges.

south of Pine Mountain. Thus, apparently this herd has expanded rapidly since the 1960 Weferling burn.

The Vulture Rock herd is said to have increased to over 100 head by 1964. In 1964, heavy hunting pressure reduced this herd significantly. I observed 16 aoudads on Vulture Rock in 1965 and 15 in 1966. All sex and age classes were present in both cases and reproduction was good. Local landowners saw as many as 30 animals in this herd last year. My pellet counts indicate a population of about 50. I have records of ten adult aoudad mortalities in this herd last year--all were shot. In summary, this population has been reduced from past numbers by constant hunting, which continues to limit the herd.

Outside the above areas, aoudads, probably all males, have recently been seen north to the Monterey County line, south to Arroyo Grande, and east to Paso Robles and Atascadero. Typical observations are of one to five large individuals wandering through an area or remaining only a short time.

Assuming the reports of others are reliable, I estimate there is a total population of 400-450 aoudads in the study area. The aoudad is the most abundant, most wide spread exotic, and like the thar, is capable of causing severe range damage.

DISCUSSION AND CONCLUSION

Many of us like to argue the aesthetic implications of disrupting the natural scene by introducing exotics. But this is useless in the case at hand since, as you have seen, four exotics have successfully adapted to our south central coast. Without major changes in the environment or hunting pressure, I doubt that they will disappear. Extermination of sambar, elk, thar or the aoudad is no doubt possible but not probable. Therefore I believe we are faced

with a need for an analysis of both negative and positive aspects of the future of the animals and land involved.

We should remember that whenever any species is introduced, it will effect a certain amount of change in the new environment--this is true for cattle and hogs as well as thar and aoudads. The benefits an introduced animal provides must be weighed against the cost of limiting the environmental changes effected to a tolerable level. If the scale is tipped to the negative side, we would want to exterminate our exotic, if possible, before it disperses farther than it already has. If however, benefits outweigh the costs, we might be interested in measures to increase its numbers and range.

What is the score for each of our exotics? At this point I am not certain. There are definite positive and negative points for each one of the species. The sooner we can quantify these positive and negative points, the better we will be. Meanwhile, there is no advantage in changing the legal status of exotics before we make a real effort to study them, since they do not seem to pose an immediate threat. By immediate I mean two to three years, which is time enough to determine what we need to know, if we start now.

I will conclude with these thoughts. Exotics are a touchy subject. Landowners, sportsmen, public agencies and the public in general all have an interest in the situation I have described to you today. As much or more than any other wildlife problem, that of the introduced exotic needs to be handled with positive, knowledgeable, and effective communication. I hope I have given you an account of a little known situation here in California, as well as an example of a wildlife problem which, from the start, certainly begs for meaningful communication between all the people involved.

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