

A POPULATION OF WILD FALLOW DEER IN MENDOCINO COUNTY, CALIFORNIA

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Abstract: Since September 1968 an investigation of the history and status of an exotic population of white fallow deer (Dama dama) has been conducted in the North Coast Range in central Mendocino County. Preliminary findings indicate that 200 to 400 fallow deer range primarily on the grassland and oak-woodland habitats within an approximately 80-square-mile area around the point of release on the Ridgewood Ranch. With a few possible exceptions, all the deer are now found within seven miles of the release point. Since the introduction in 1949, sightings of white fallow deer have been reported as far away as 45 miles to the north and 20 miles to the south. The distribution today appears to be limited primarily by the surrounding coniferous forests, chaparral, and cultivated and urban valleys. Uncontrolled hunting is probably an important factor in limiting numbers and in preventing spread into new areas. Real Estate developments in this area probably will greatly influence the status of this population in the future.

INTRODUCTION

The most commonly kept deer in captivity and one of the most widely introduced ungulates in the world is the fallow deer (Dama dama). They were introduced into many parts of New Zealand after 1864. By the 1920's, local populations had become so damaging to their habitat that the species was declared vermin (Christie and Andrews, 1966). Similar examples from many parts of the world emphasize the dangers inherent in the introduction of exotics and the need for more adequate information about their ecology.

In September, 1968, I began an extensive investigation of the white fallow deer in the hills between Ukiah and Willits in the center of Mendocino County, California. This population had not been studied in the two decades since their introduction. This study will soon be completed and will be submitted as my master's thesis at Humboldt State College, Arcata, California.

The purpose of this investigation is to provide information about the history and basic ecology of these deer and lay the groundwork for future more intensive

studies. This paper presents a summary of my preliminary findings.

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METHODS

One or two day field trips to the study area have been made about three times each month. Direct observation has served as the basis of most field information. Observations with binoculars and a 25x telescope were made while walking transects, by stalking, and from observations points. Although I have attempted to observe the deer throughout their range, most observations were made in the foothills of the north and east slopes of Walker Valley near the center of the study area.

From late fall to early spring the deer tend to congregate into large groups, and an aerial survey was made to take advantage of this grouping behavior for censusing in April 1969; another flight is planned for January or February 1970. Several naturally marked deer have been used to gain information on individual ranges, movements, and other behavior.

Fecal pellets of fallow deer and Columbian black-tailed deer (Odocoileus hemionus columbianus) were not consistently distinguishable. For this reason I did not make fecal pellet group counts.

Much emphasis has been placed on interviewing local or former residents and others for information on history and for field observations I could not witness myself. A great deal of information on hunting pressure, buck distribution, buck weights, etc., was indirectly obtained in the course of a survey to locate and measure antlers owned by people who had found shed antlers or who had killed bucks.

Description of Fallow Deer. Fallow deer are medium-sized cervids. Adults usually weight between 85 and 200 pounds and stand about three feet at the shoulder (Walker, 1968). The summer coloration of the wild fallow deer, originally distributed through Mediterranean Europe and Asia Minor, is a bright fawn with white spots and a narrow black line along the back. In winter the coat is a uniform dull grey-brown. Centuries of semi-domestication have produced a wide range of colors from white to black. White fallow deer are not true albinos. The fawns are light brown and white-spotted at birth and become white, or at least cream-colored, within the first year.

The antlers of the bucks support brow and trez tines, and the upper half of each beam is widely palmated with points, or snags, along the top and back edges. They usually lack a bez tine. Fallows are typically grazers and are phylogenetically more closely related to the elk than to the black-tailed deer (Lydekker, 1898).

Study Area. Walker Valley is at the center of the approximately 80-square-mile study area, and is the area where the deer were introduced. It is located six miles SSW of Willits, California in the North Coast Range (See Fig. 1). The boundaries of the study area are as follows: Muir Canyon, the south edges of Little Lake Valley, and Manzanita Flat on the north; the Russian River and the western edges of Redwood and Ukiah Valleys almost to Ukiah on the east; the Ukiah-Orrs Springs Road on the south; and the complex of mountain ranges separating the Big River and Russian River drainages on the west. The terrain is mostly foothills and mountain ranges with elevations from 800 to 3339 feet. The elevation of Walker Valley is 1250 feet.

Summers are dry and warm with a mean July temperature of about 70°F. Winters are wet and cool with a mean December temperature of about 45°F. The 25 year average annual rainfall near the center of the study area is 52 inches. Snow is uncommon and generally does not last long on the ground. Creeks become nearly or completely dry in the summer, but numerous seeps and springs flow all year.

Natural vegetation includes grasslands comprised mainly of forbs and annual grasses; oak-woodlands and oak-savannah with Black oak (Quercus kelloggii) and Oregon white oak (Q. garryana) the most common trees; and Douglas-fir (Pseudotsuga menziesii) forest with Tanoak (Lithocarpus densiflorus) and Madrone (Arbutus menziesii) understory. Redwoods (Sequoia sempervirens) are associated with the Douglas-fir forest in parts of the north and east slopes of the Laughlin Range and in the mountains along the western border of the study area. This border is also the eastern edge of the coastal fog belt, and the vegetation to the west is primarily dense Redwood-Douglas-fir forest. Chaparral vegetation is found on the drier southern slopes of the higher mountains, and extensive scrubland bounds the eastern edge of the study area.

Until sometime after World War II this region was used primarily for sheep production, but now the sheep have been almost completely replaced by range cattle. The Ridgewood Ranch in Walker Valley, when owned by the late Charles S. Howard, was home to hundreds of saddle horses and thoroughbred race horses including Seabiscuit. The surrounding region has had a long history of logging. Row-crop agriculture is practiced only in the valleys.

The only native ungulate in the area is the Columbian Black-tailed deer. It is slightly smaller in stature than the fallow deer, and weights in this area are generally between 50 and 150 pounds. Over 95% of Mendocino County is black-tailed deer habitat. In recently logged coastal forest and oak-woodland-grass habitats black-tailed deer may reach densities as high as 60 to 100 per square mile. The redwood, pine-fir-chaparral, woodland-chaparral, chaparral, and some agricultural regions have densities of 30 to 60 deer per square mile (Moon, 1965). Predators include mountain lions, bobcats, black bear, and coyotes.

Much of the area has recently been subdivided, and roads and home lots are being established north of Walker Lake. Additional developments are planned in other areas. Practically the entire area is privately owned. The Ridgewood Ranch is

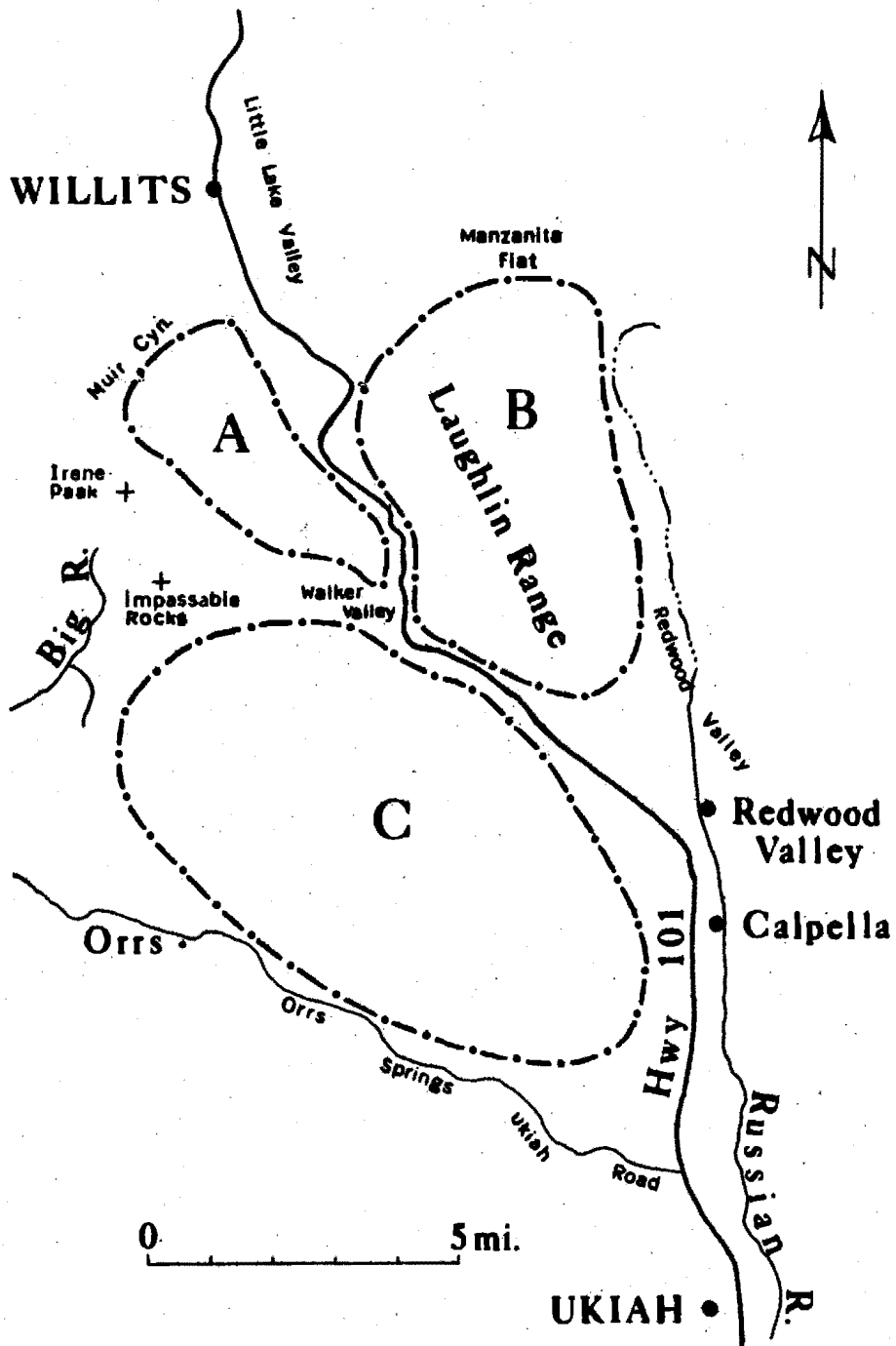


Fig. 1. Study unit encompassing the range of white fallow deer in central Mendocino County, California

presently owned by the Golden Rule Church Association.

History. Early Phoenician and Roman sailors transported fallow deer from their native habitats to other countries, notably England, where they were kept for centuries under semi-domestication in parks and estates (Whitehead, 1950). These park-bred deer were sent to zoos, parks, and estates around the world. Many escaped or were introduced into the wild as game animals or as curiosities. Presnell (1958) reviews introductions of fallow deer in the United States.

In about 1924, William Randolph Hearst began a private zoo on his Rancho Piedra Blanca near San Simeon, California. He obtained most of his animals from surplus zoo stock, and built the largest private zoo in the world in its time. There were 180 white fallow deer in the zoo in 1949 (Barrett, 1966).

In January 1949 Mr. Howard purchased 53 white fallow deer for \$10.00 each from his close friend Mr. Hearst. The deer were trucked to Ridgewood Ranch (one died en route) and placed in about a 10-acre fenced enclosure. Soon many escaped, and within several months the others were released.

The newly released deer, which had never roamed free before, quickly spread into the hills around Walker Valley; with the exception of the extensive wanderings of a few, they remained near the valley. Over intervening years they have gradually moved away from the valley. A slow dispersal rate of 0.5 miles a year for fallow deer introduced into New Zealand was given by Caughley (1963), and except for a few thriving herds, most of the introductions resulted in small to moderate-sized stable populations of restricted range (Christie and Andrews, 1966).

White deer were soon being reported from several areas in Mendocino County (See Table 1). The exact dates usually could not be determined as few records were kept. Most sightings, however, were in the first ten years after the release date. In four cases individual fallow deer joined domestic herds of cattle. One buck on a ranch near Eden Valley stayed with cattle for several years and did not mingle with the native deer. There are large numbers of fallow deer in captivity throughout the state, and they are easily obtained by anybody. It is possible that some of these sightings were of deer that had escaped or were released from areas other than Ridgewood Ranch.

Two does killed in nearby Redwood and Potter Valleys probably represent animals that occasionally wander from the study area. The sighting of a male near Hopland occurred within months of the Ridgewood Ranch release date. The early sightings of fallow deer in northern Mendocino County all took place within ten years, and most within five years, after the Ridgewood Ranch release. All these observations suggest these animals shifted away from the Willits area soon after their release.

Present Range and Status. I have divided the study area into three units: Unit A is located northeast of Walker Valley; Unit B, east of Highway 101; and Unit C, south of Walker Valley. These units do not necessarily delineate three

Table 1. Sightings of white fallow deer reported in Mendocino County after the 1949 Ridgewood Ranch introduction.

<u>VICINITY</u>	<u>APPROX. DATE</u>	<u>MILES FROM RIDGEWOOD RANCH</u>	<u>REMARKS</u>
Hopland	1949	25-30	Adult male in grape vineyard.
Redwood Valley	1950	8-10	Adult female shot on Road B.
Potter Valley	1960	10	Adult female shot near cemetery.
Eden Valley	1950-55	25	Adult male seen one summer only.
Eden Valley	1953-55	25	Adult male herded with cattle for several years.
Covelo	1950-55	30-35	Adult female seen with one fallow and one black-tailed deer fawn.
Covelo	1955-60	30-35	Adult male herded with cattle on the Hop Ranch; subsequently shot.
Laytonville	1952-53	30	Adult male herded with sheep until they were removed; thereafter it herded with cattle. Shot by hunter.
Laytonville	1960-65	25-30	Shed antler found near Cahto Mountain.
Bell Springs Mountain	1955-60	40-45	Adult fallow herded with cattle.

homogeneous populations. Most of the deer within each unit probably come into contact with at least some of the others in that unit sometime during the year. There appear to be some groups or small bands, especially on the outer boundaries of the study area, that remain isolated from the others, with the possible exception of an occasional wide-ranging buck.

Highway 101, a two-lane road in 1949 and a four-lane highway for most of its length through the study area since 1952, is now apparently an effective barrier to free movement between Units A and B. Few people have ever seen a fallow deer dead or alive on the road to date. I have heard of no more than half-a-dozen instances of dead fallow deer on the highway, and all were does except for a possible fawn. However, black-tailed deer are killed regularly by automobiles on the highway. Fallows, nevertheless, occasionally graze along Highway 101 and routinely cross the secondary roads in the study area. One Willits' resident told me he was returning to Willits from San Francisco one winter night in 1962 or 1963 when he had to stop his car to allow 25 to 30 fallow deer to cross the highway from west to east in front of him near the California Department of Forestry Station.

There appears to be little or no free movement between Units A and C. Several years ago one doe was seen to use the area along Walker Creek between Walker Lake and Walker Valley for fawning. The closest I have seen fallows to Unit C approach Unit A was approximately one mile across Walker Valley. This is as close as any other sightings I have heard about except for the instance cited above. Fallow deer seldom if ever cross Walker Creek or any part of Walker Valley.

Within each unit there are areas not normally utilized by the fallow deer. There is little or no use of the chaparral habitat, and coniferous forest areas that are inhabited are near grasslands, woodlands, or clearings. In fact, the over-all distribution is closely associated with the grassland and oak-woodland habitats. One notable exception is the area of grasslands and oak-woodlands north of Walker Lake. Fallows were often seen here in the past, but apparently the disturbances associated with the building of roads for a subdivision in this area during the past years has driven them out. Also, few fallow deer have been seen at the south end of the study area, although this area has much open grassland and oak-woodland.

Most of the study area is surrounded by dense and extensive coniferous forests, chaparral, or well-populated valleys. These regions are apparently an important factor restricting the range of fallow deer.

The fallows normally are seen in small groups that are widely distributed during most of the year. With the onset of the rut the deer congregate into certain areas, and larger groups of about a dozen may be seen. Rutting behavior that included bellowing and attempted mounting were witnessed last year on October 19 and November 29, respectively. Through the winter months very large groups may be seen in these areas of concentration. The largest herd size I have seen was 42, although a group of 75 has been reported to me.

With the coming of spring the deer again disperse. After a gestation period of about 230 days the does usually give birth to single fawns. The first fawns I saw in 1969 were on June 8; none were seen two weeks earlier. At this time the does remained solitary.

The data on sex and age structure have not yet been fully analyzed, so the discussion here will be very general. Based on counts of the large winter herds, the ratio is probably in excess of one fawn to two does over the age of two years. Bucks over two years old probably compose less than 10 percent of the estimated population of 200 to 400 fallow deer.

It is not uncommon to find individuals or groups of fallow and black-tailed deer together, usually while feeding. These associations are usually accidental and take place when members of one species enter or pass through an area occupied by the other species. On several occasions, however, I have seen one to several individuals of one species, usually yearlings, purposefully associate with members of the other species for long periods of time. There were a few rare instances of antagonism between the two species of deer and between fallows and cattle. Generally fallows do not associate closely with cattle, and I have never seen them near sheep. The two species of deer will not interbreed. In studies by I. McT. Cowan (pers. comm.) the species were mated for several years, but no offspring were produced.

As yet I have had no indication of predation on fallow deer, but more data are needed here. Uncontrolled hunting probably is very important in limiting numbers of deer, especially of the bucks. Most land owners in the area try to protect the fallows from hunting, but in out-lying areas they run a greater risk of being shot as an oddity. The fallow deer is not a game animal in California and there is no season or bag limit. I know of five bucks that were shot last year; all were taken during the hunting season, and all were tagged.

There are only a few isolated cases of fallow deer feeding in orchards or grape vineyards at the edges of Redwood and Little Lake Valleys, but any damage done by fallows is infinitesimal when compared to the damage caused by black-tailed deer. The main foods of the fallow deer are grasses and forbs, but I have seen them eat a wide variety of browse species. What effect they have on the range, which is mostly in fair to poor condition, is a subject needing further study.

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