

SNOWCREEK GOLF COURSE EXPANSION DEER STUDY SPRING MIGRATION 1996

Submitted by:

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Introduction and Methods

Radio-telemetry studies and deer count surveys performed during spring 1996 as part of the Snowcreek Ski Area (SSA) deer herd monitoring plan provided information on deer abundance and patterns of deer habitat use and distribution within and adjacent to the Snowcreek golf course and its proposed expansion area. Radio-telemetry studies were conducted between April 30 and June 16 and involved daily monitoring of ≥ 160 radio-collared deer from the Round Valley winter range. Ground based radio-tracking of radio-collared deer was accomplished by a non-triangulation method or "homing-in" on the animal (Raedeke Associates 1994). Initial relocations were made from a vehicle equipped with a Telonics® TR-2 receiver and an attached program/scanner (TS-1) and a truck-mounted, omni-directional antenna. A hand-held directional antenna was then used to determine the general direction of the collared deer. The precise location of the deer was determined by using a spotting scope from a vehicle or moving toward the signal until the deer was visually located. Individual radio-collared deer were relocated an average of 3 times/week (range 1-5 times/week) during daylight hours. To maintain independence between successive relocations, an individual deer was never located more than once per day (Dunn and Gipson 1977). Activity, cover type, aspect, elevation, and association with other animals was recorded for each radio-location. All deer relocations were plotted in the field on U.S. Geological Survey 7.5 minute topographic maps and the Universal Transverse Mercator (UTM) coordinates for the positions were recorded to the nearest 50 meters.

Deer count surveys were conducted at least 3 times weekly between May 10 and June 16. Surveys were performed between 0530 and 0800 from a slow moving vehicle driven along a fixed route established on dirt roads within and adjacent to the golf course expansion area. Observations were made from both sides of the vehicle, usually by two observers using 10 x 50 binoculars. Data recorded included group size, group composition, number of marked deer, vegetation type, aspect, activity, and time. In addition, the UTM X and Y coordinates were recorded for the location of each group.

Important deer use areas were also determined from foot surveys conducted within and adjacent to the existing golf course and the golf course expansion area. Surveys were performed ≥ 3 times weekly and consisted of walking the project site using meandering transects. During the surveys, all deer sign (e.g., droppings, tracks etc.) encountered was recorded and plotted on a 7.5 minute topographic map of the area.

Affected Environment

Radio-telemetry. There were no observations of radio-collared deer made within the boundaries of the proposed golf course expansion area, nor were any radio-collared deer detected in the expansion area using standard triangulation techniques. However, a total of 94 observations of 22 radio-collared deer were made to the south and east of the proposed expansion area, in vicinity of the Mammoth Moto Cross and the Mammoth Rock Trail (Figure 1). Of the 94 observations, 81 (86%) occurred in montane chaparral habitat and 13 (14%) occurred in big sagebrush habitat. Deer delayed migration in the general vicinity of the project area for an average of 14 days, with some deer remaining for as long as 22 days. However, because deer arrived in the project vicinity at different times, the entire period of delay lasted about 5 weeks, from approximately early May to mid-June.

Deer Count Surveys. A total of 39 deer observations were made during deer count surveys conducted within and adjacent to the proposed golf course expansion area (Figure 1). Of these 39 observations, 9 (23%) were made within the boundaries of the project area. The remaining 30 observations were made to the south and east of the expansion area. Of the 9 observations made within the project area, 5 were on the moraine in montane chaparral habitat and 4 were west of the gravel pit in big sagebrush habitat.

Foot Surveys. A total of 10 deer observations were made during foot surveys conducted within and adjacent to the project area (Figure 1). All 10 deer were observed in montane chaparral and coniferous forest habitats located between 200 and 400 meters south of the meadow area at the southwest corner of the expansion area. Heavy amounts of deer sign in the form of tracks, trails, and droppings was also observed in this general area, and on the moraine located east of the gravel pit. Moderate amounts of deer sign was observed on the east side of the moraine located in the southwest portion of the project area. There were no deer observed on the existing golf course during spring migration and there were no deer tracks or other sign observed along the south and east peripheries of the golf course.

Environmental Consequences

See *Snowcreek Golf Course Impact Assessment for Migratory Mule Deer*. (Taylor 1995). Also, see Table 1 for list of Past, Present, and Future Projects Influencing Cumulative Impacts to the Round Valley deer herd.

Mitigation Measures

See *Snowcreek Golf Course Impact Assessment for Migratory Mule Deer* (Taylor 1995).

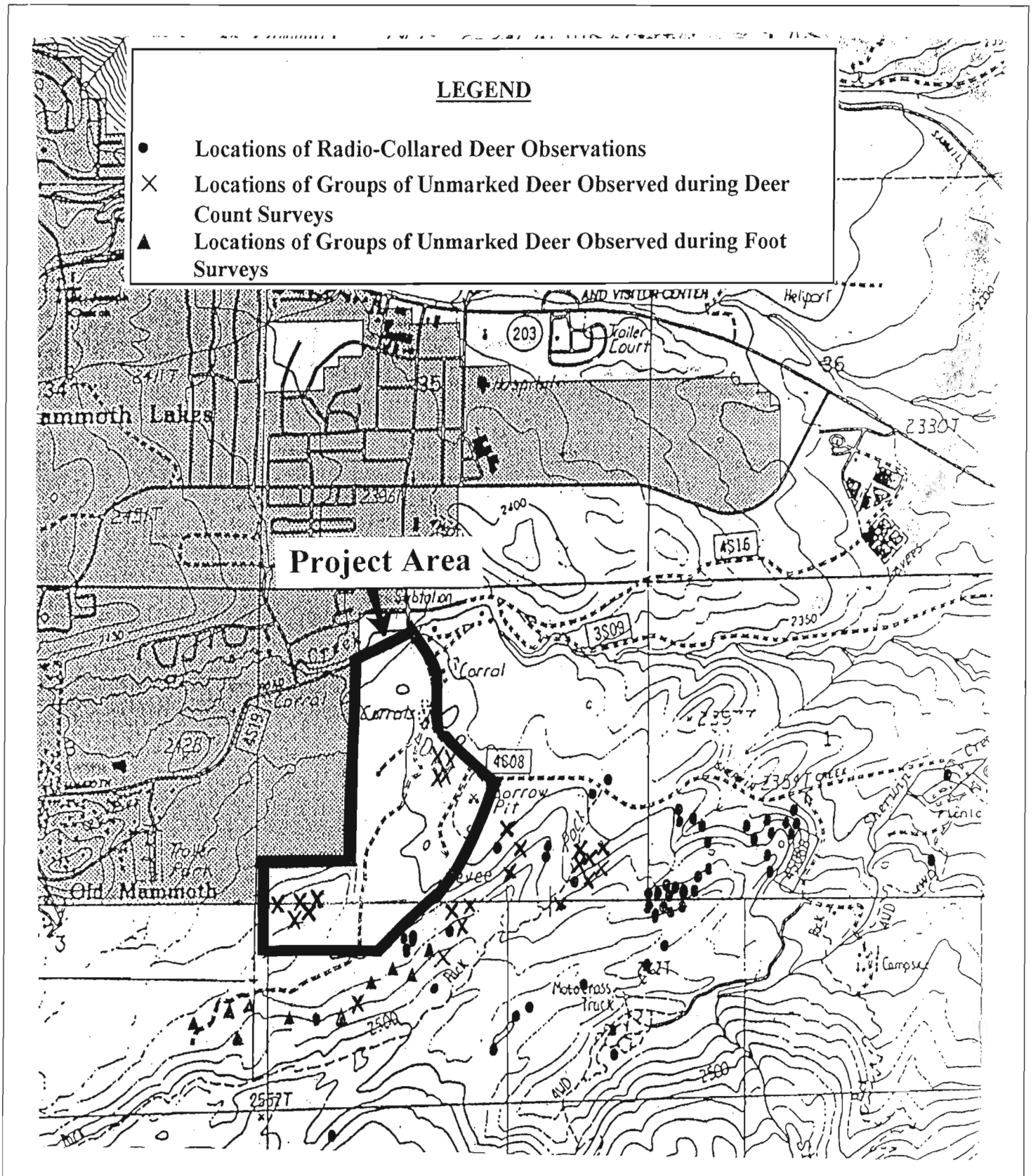


Figure 1. Locations of Radio-Collared Deer and Unmarked Deer Observed within the General Vicinity of the Snowcreek Golf Course Expansion Area.

TABLE 1. Past, Present and Future Projects Influencing Cumulative Impacts to Mule Deer from the Round Valley Herd.

Project Description	Past	Present	Future
Casa Diablo Geothermal Plant Facility		X	
Casa Diablo Geothermal Plant Expansion			X
Geothermal Exploration			X
Mammoth-June Airport		X	
Mammoth-June Airport Expansion			X
Camp O'Neal, Inc. Juvenile Facility	X		
Mammoth Elementary School	X	X	
Lodestar Development			X
Mammoth College			X
Gateway Industrial Park		X	
Snowcreek Ski Area			X
Snowcreek Golf Course		X	
Mammoth Moto Cross		X	
Sherwin Campground		X	
Mammoth Mtn. Ski Area		X	
The Trails Residential Community		X	
Gold Mining Exploration in the Long Valley Caldera		X	
Starlite Estates - Subdivision		X	
Starlite Estates - Subdivision Expansion			X
Pinyon Ranch - Subdivision		X	
Hilltop Estates - Subdivision		X	
Rimrock Ranch Estates-Subdivision			X
McGee Creek Subdivision		X	
Lakeridge Ranch Estates-Subdivision			X
Sierra Nevada Aquatic Research Lab.		X	
Marzano Cement Plant Facility		X	
Mono County Cemetery		X	
Whitmore Recreational Area		X	
Highway 395		X	
Highway 203			
Shady Rest Park		X	
Mammoth Waste Water Treatment Facility		X	

RESPONSE TO COMMENTS

I. Response to the Comments of Karl Chang re: DEIS Snowcreek Golf Course Expansion.

<u>Comment</u>	<u>Response</u>
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| 1. | <p>As specified in the deer report, the analysis of deer use patterns in the proposed golf course expansion area was based on data collected during weekly deer count surveys performed during spring 1993 in the vicinity of the proposed golf course (Taylor 1993). These surveys were conducted on foot by Timothy Taylor; all counts began as soon as light was sufficient to discern deer. The analysis was not based on data gathered by Timothy Taylor and Karl Chang during deer count surveys performed in spring 1994, nor was the data analyzed by Mr. Chang. The surveys conducted in 1994 were performed from a slow moving vehicle along a fixed driving route established in the Sherwin holding area (Taylor 1995). Data from these surveys was not used in the analysis because the road survey route did not provide an adequate view of much of the proposed expansion area.</p> |
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The map in Figure 8 representing areas of high and low deer use is based on data collected by Kucera (1985) and Taylor (1993) and accurately reflects deer use of the proposed expansion area. As specified in the deer report, during spring 1993, a total of 37 observations of deer were made within the boundaries of the golf course expansion area. All of the 37 deer were observed on the moraine located in the southwest corner of the project area; there were no deer observed in any other portion of the proposed expansion area. Based on this data, the map in Figure 8 designates the moraine as an area of high deer use, while the remainder of the project area is designated as either low deer use or no use. If the map has any flaws, it is the failure to designate areas of no deer use as areas of low use, since these areas are occasionally used by deer, as indicated by 1996 data. Therefore, I recommend extending the of area of low deer use westerly to the USFS-private property boundary and northerly to Old Mammoth Road.

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| 2. | <p>In addition to the comments of Mr. Chang, concerns have been raised regarding the pretension that golf course vegetation could provide nutritional benefits for holdover and summer resident mule deer, especially versus predisturbance diets. I could find no quantifiable data to support deer preference for herbaceous <u>golf course</u> vegetation or the nutritional benefits derived from such forage. Kucera (1988) reported that shrubs, mainly bitterbrush (<i>Purshia spp.</i>), sagebrush (<i>Artemisia spp.</i>), and tobacco brush (<i>Ceanothus velutinus</i>), comprised >90% of deer diets on the Sherwin holding area from 1985-1987. This heavy use of browse may partially</p> |
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explain why golf course vegetation, which is comprised of grasses, was not used by holdover deer during the 1996 spring migration. Other factors, including human disturbance and distance from cover may also discourage diurnal deer use of vegetation on the existing golf course.

Incidental sightings of deer on the golf course during the summer and autumn months by local residents suggest that golf course vegetation may be of greater value to summer resident deer, than to spring migrants. Kucera (1988) reported that grasses and forbs constituted between 10-57 percent of deer diets during June-September 1984 and 1985. Succulent grasses and forbs were most important during August and September indicating perhaps a greater preference for these forage components. Thus, during summer and fall, after natural herbaceous forage is no longer available, summer resident deer may be attracted to succulent golf course vegetation. A compilation by Kufeld et al. (1973) of available information on food habits of Rocky Mountain mule deer suggested that herbaceous forage, especially succulent forbs, when available, tend to be selected over browse. Nutrients derived from succulent, high quality forage, which is high in protein and low in fiber, enable deer to satisfy productive functions such as pregnancy, lactation, body growth, and autumn fat storage.

Finally, a caveat about this analysis. It assumes that deer will be provided free access to the golf course. Nutritional benefits derived from golf course vegetation cannot be assumed unless the FEIS assures at least some access to the golf course for holdover and summer resident deer.

Oh! one other thing. Because I have never played golf, and probably never will, and do not own any golfing equipment, it seems unlikely that I would ever catch "golf fever".

3. No comment.
4. There was a pine marten (*Martes americana*) detected in the project area during the forest carnivore surveys. However, Mr. Chang misidentified the track as a feral house cat (*Felis catus*) and was obviously not informed of his mistake.
5. No comment.
6. No comment.

LITERATURE CITED

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