

OCCURRENCE OF CALIFORNIA MULE DEER IN THE SOUTHERN SAN JOAQUIN VALLEY, CALIFORNIA

HOWARD CLARK¹, H.T. Harvey & Associates, 423 West Fallbrook, Suite 202, Fresno, California 93711

TRANSACTIONS OF THE WESTERN SECTION ON THE WILDLIFE SOCIETY 40:127-128

The California mule deer (*Odocoileus hemionus californicus*) is a large ungulate that utilizes several different plant communities (Wallmo 1981). It is 1 of 5 subspecies found in California (MacGregor 1976, Cronin and Bleich 1995). A sixth subspecies, the Colombian black-tailed deer (*O. h. columbianus*), is not normally considered a mule deer (MacGregor 1976). Mule deer normally occur along the foothills and mountains of the central Sierra Nevada, the transverse ranges, and the Coast Range from San Francisco to the Los Angeles basin (Wallmo 1981). Wallmo (1981) noted that California mule deer tend to favor California oak woodland and chaparral habitats along the Sierra Nevada foothills.

Mule deer were believed to be moderately abundant in California prior to the settlement of California (Leopold et al. 1951). The southern San Joaquin Valley originally contained grassland habitat and California Prairie, with extensive tule marshes and riparian corridors (Küchler 1977). Now this area is densely settled, farmed, and basically devoid of California mule deer (Wallmo 1981, Anderson and Wallmo 1984, Jameson and Peeters 1988). MacGregor (1976) and Dasmann (1952) estimate that deer populations have generally declined as the quality and quantity of deer habitat has declined in California. Habitat decrease is believed to be associated with adverse weather, fire suppression, silvicultural practices, successional changes, and over-grazing by livestock (MacGregor 1976).

Coordinates of collected mule deer in California were retrieved from the Museum of Vertebrate Zoology Data Access, University of California, Berkeley, California, and mapped using ArcView® (Environmental Systems Research Institute, Redlands, California). Ungulate biologists and California Department of Fish and Game personnel were interviewed to determine California mule deer occurrence in the southern San Joaquin Valley. Their responses were used to ascertain the current status of deer on the southern Joaquin Valley floor. In addition, a literature search was conducted to determine mule deer occurrence on the southern Joaquin Valley floor. The author's observations of a deer on the southern Joaquin Valley floor were also taken into account.

Of 138 museum records retrieved from the Museum of Vertebrate Zoology database (dates ranging from 1908 to 1948), only 46 had accompanying coordinates that could be mapped in ArcView®. Most points (98%) plotted

within the published range of the California mule deer (Kucera and Mayer 1999), however, no points plotted in the southern San Joaquin Valley.

Interviews with biologists yielded records of California mule deer occurrence in the periphery of the southern Joaquin Valley floor, most notably in the Temblor ranges, located along the southwestern side of the southern San Joaquin valley (B. Cypher, California State University, Stanislaus, pers. comm.). Mule deer have been observed along the Kern River corridor in Bakersfield, Kern County, California (A. Sheehey, Nature Ali, pers. comm.). However, T. Kucera (Ecosystem Sciences Division, University of California, Berkeley) stated "mule deer are very uncommon on the valley floor throughout the Central Valley." G. Warrick (Biologist, Center for Natural Lands Management) said that he "rarely heard of deer on the southern valley floor," but did reference 1 sighting at Elk Hills in the late 1970s or early 1980s. According to M. Sommer (Associate Wildlife Biologist, Wildlife Programs Branch, California Department of Fish and Game), very few deer are taken in the San Joaquin Valley, and those that are taken probably account for <1% of the State's total harvest. Deer numbers in the southern San Joaquin Valley are low and mainly occur along riparian areas or in agricultural areas (e.g., vineyards and alfalfa; M. Sommer, pers. comm.).

There is very little information in published literature regarding California mule deer in the San Joaquin Valley. The Jawbone deer heard may have migrated at times below 1200 m in Tuolumne County (Leopold et al. 1951). California mule deer are occasionally observed in the northeastern portion of Merced County (Orloff 2002).

One deer was observed on the southern San Joaquin Valley floor by the author. On 17 May 2002, a young male California mule deer was observed foraging in a pistachio orchard near Lost Hills, Kern County, California (Lat. 35.6°N, Long. 119.7°W). After being detected, it ran into an almond orchard. The deer was observed consuming the foliage of these orchard species. Land use in this area is primarily agriculture, rangeland, and oil extraction, and the terrain is fairly level. There are no vegetated drainages or river riparian corridors within or near the area.

Nonmigratory populations of mule deer exhibit 3 types of movements outside of their established home ranges: breeding season travels, wandering, and dispersal (Kucera 1978, Anderson and Wallmo 1984, Kucera 1992). The young male observed in the orchards may have been exhibiting wandering or dispersal movement. The breeding season for California mule deer occurs from Septem-

¹Email: hclark@harveyecology.com

ber to March, with the peak being between late November to mid-December (Anderson and Wallmo 1984).

Although mule deer prefer oak woodland and hilly terrain, orchards may be a suitable substitute for their preferred habitat (Austin and Urness 1992). Orchards likely provide the required cover and forage. Lands adjacent to chaparral may provide a dispersing route to other nearby habitats. Use of orchards and hayfields by mule deer during winter migrations in the Western States has been well documented (Wilkins 1957, Wallmo 1981, Wiggers et al. 1984, Austin et al. 1998). Some orchards, such as walnuts and almonds, are similar to riparian areas in terms of tree cover. If yearly rainfall does not yield sufficient vegetation growth, or if the population density of mule deer increases, young individuals, especially males, may forage and disperse in the agricultural region of the southern San Joaquin Valley (Wilkins 1957, Wiggers et al. 1984). Further research focusing on this issue should attempt to radio-collar deer on the periphery of the southern San Joaquin Valley and track their movements to determine their use of agricultural crops.

ACKNOWLEDGMENTS

Research funded in part by the Environmental Defense, US Bureau of Reclamation, and the National Fish and Wildlife Foundation. I thank D. Newman for reviewing the manuscript. I thank T. D. Rogers and B. F. Wakeling (Research Branch, Arizona Game and Fish Department) for compiling a bibliography of mule deer literature in the southwest (Federal Aid in Wildlife Restoration Act, Project W-78-R, July 2000). I thank B. L. Cypher, G. D. Warrick, T. E. Kucera, M. Sommer, and A. Sheehey for their comments.

LITERATURE CITED

- Anderson, A. E., and O. C. Wallmo. 1984. *Odocoileus hemionus*. Mammalian Species. 219:1-9.
- Austin, D. D., and P. J. Urness. 1992. Effects of browsing by mule deer on tree growth and fruit production in juvenile orchards. *Great Basin Naturalist* 52:352-356.
- Austin, D. D., P. J. Urness, and D. Duersch. 1998. Alfalfa hay crop loss due to mule deer depredation. *Journal of Range Management* 51:29-31.
- Cronin, M. A., and V. C. Bleich. 1995. Mitochondrial DNA variations among populations and subspecies of mule deer in California. *California Fish and Game* 81:45-54.
- Dasmann, R. F. 1952. Methods for estimating deer populations from kill data. *California Fish and Game* 38:225-233.
- Jameson, E. W., Jr., and H. J. Peeters. 1988. *California Mammals*. University of California Press, Berkeley, California.
- Küchler, A. W. 1977. The map of natural vegetation in California. Pages 909-938 in Barbour, M. G., and J. Major, editors. *The Terrestrial Vegetation in California*. John Wiley and Sons, New York, New York.
- Kucera, T. E. 1978. Social behavior and breeding system of the desert mule deer. *Journal of Mammalogy* 59:463-476.
- Kucera, T. E. 1992. Influences of sex and weather on migration of mule deer in California. *Great Basin Naturalist* 52:122-130.
- Kucera, T. E., and K. E. Mayer. 1999. A sportsman's guide to improving deer habitat in California. State of California, The Resources Agency, Department of Fish and Game, Sacramento, California. 95 pp.
- Leopold, A. S., R. McCain, and L. Tevis, Jr. 1951. The Jawbone deer herd. *California Department of Fish and Game, Game Bulletin No. 4*, 139 pp.
- MacGregor, W. G. 1976. Recent changes in California mule deer populations and management. *Proceedings of the annual conference of Western Association of State Game and Fish Commissioners* 56:373-378.
- Orloff, S. G. 2002. Medium to large mammals. Pages 339-384 in Vollmar, J. E., editor. *Wildlife and rare plant ecology of eastern Merced County's vernal pool grasslands*. Merced County UC Development Office, Merced, California.
- Wallmo, O. C., editor. 1981. *Mule and black-tailed deer of North America*. University of Nebraska Press, Lincoln, Nebraska.
- Wiggers, E. P., D. D. Wilcox, and F. C. Bryant. 1984. Cultivated cereal grains as supplemental forages for mule deer in the Texas Panhandle. *Wildlife Society Bulletin* 12:240-245.
- Wilkins, B. T. 1957. Range use, food habits, and agricultural relationships of the mule deer, Bridger Mountains, Montana. *Journal of Wildlife Management* 21:159-169.