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## OCCURRENCE OF TICKS ON MULE DEER IN CENTRAL UTAH

Jordan C. Pederson<sup>1</sup>

**ABSTRACT.**—Two species of ticks were collected from mule deer and identified as *Dermacentor albipictus* (Packard) and *Ixodes* sp. The rate of occurrence of these ticks was found to be 99.6 percent and 0.4 percent, respectively. The infestation rate increased from 18.2 percent in January, to 87.5 percent in February, to 100.0 percent in March.

From January through March 1976, a mule deer (*Odocoileus hemionus Rafinesque*) trapping operation was conducted by Utah State University, the Cooperative Wildlife Research Unit, and the Utah State Division of Wildlife Resources. The principal emphasis of this study was the gathering of deer reproduction data. Deer were live-trapped, weighed, and ear-tagged, and a laparotomy was performed on all females. Additionally, a blood sample was taken from each animal. These deer were also checked for external parasites. This paper reports the occurrence of ticks on mule deer in central Utah based on this study. Appreciation is extended to Dr. C. Selby Herrin for his help in the identification of the parasites collected. The help of Paul Tervort, Dick Worthen, and Phil Zwank is gratefully acknowledged. Thanks are also extended to Dr. S. L. Welsh and R. Drobnick for their critical review of this manuscript.

Harris (1945) reported associations of *Dermacentor albipictus* (Packard) on mule deer in a South Dakota study dealing with malnutrition in deer. He states, "In a few cases the factors contributing to the death (deer) were predators or minor infestation of internal and external parasites, such as nose bot (*Cephenomyia*) and winter tick (*Dermacentor albipictus*)." Edmunds (1951) gives an account of *D. albipictus* on deer near Logan, Utah, collected by Clamaine in 1942. Beck (1955) regards *D. albipictus* as localized in distribution and a potential vector of Rocky Mountain spotted fever. Rich-

ens (1967) found this parasite on mule deer in Daggett County, Utah, where the proportion of deer infested with this tick rose from 37 percent in January to 92 percent in March of 1960. This parasite was also reported on deer in Garfield, Grand, San Juan, and Wayne counties in Utah by Pederson (1970); deer on the La Sal and Henry mountains were shown to have an infestation rate of 55 and 75 percent, respectively, or a combined occurrence of 63 percent.

Members of the genus *Ixodes* have not previously been reported on deer in Utah, although they are found as juveniles during winter months in association with small mammals (Edmunds 1951).

### METHODS AND PROCEDURES

Live trapped deer were systematically examined for external parasites. Those found were removed and placed in isopropyl alcohol (70 percent). The site of occurrence or attachment was noted. Data recorded for the host animals included sex, age, ear tag number, weight, and an estimate of general body condition. Deer killed by motor vehicles were examined as part of this study. An effort was made to collect a representative sample of ectoparasites at each site of attachment on the deer. All other ticks were removed to obtain data on reinfestation rates on live-trapped deer.

All deer examined during 1976 were from Utah County, specifically the areas of Long Hollow, Knoll Hollow, Lasson Draw, and Spanish Fork Canyon.

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## RESULTS AND DISCUSSION

Two species of ticks were collected and identified, *Dermacentor albipictus* and *Ixodes* sp. The rate of occurrence of these ticks on mule deer was 99.6 percent and 0.4 percent, respectively. *Dermacentor albipictus* specimens collected were identified as 35.6 and 57.3 percent adult males and females, respectively; 6.7 percent nymphs, and 0.4 percent larvae (Table 1). Adult females made up the largest percentage of the population for January, with a 66.6 percent occurrence rate. Adult males were highest in the population in February at 39.8 percent and lowest in March at 27.1 percent. Nymphs were first collected during February and were highest during March (14.4 percent), with an average occurrence of 6.7 percent during this study (Table 1). Their occurrence rate varied from zero in January to 14.4 percent in March.

During this study two female specimens of *Ixodes* sp. were collected, one in January and one in February. Both were collected in Long Hollow from two female mule deer older than five years.

The number of deer infected by ticks varied by age class and month. The highest rate of infestation was in the fawn age class, where it averaged 95.1 percent during this study (Table 2). The deer of 1 $\frac{3}{4}$  and 2 $\frac{3}{4}$  age classes were very similar in their monthly and total infestation rates (Table 2). Mature deer (three years and older) had an infestation rate exceeded only by fawns. They were the highest infested age class for February, with a 87.5 percent infestation rate

(Fig. 2). All age classes had a 100 percent infestation during March. The infestation rate for all age classes for the duration of the study was 84 percent.

Data gathered on the point of attachment of ticks on each deer showed that three specific points of attachment accounted for 94.6 percent of the ticks. The largest number of *D. albipictus* were attached around the anus (49.7 percent), the ears were the next highest (39.7 percent), the areas of the flank and udder accounted for 5.3 percent, and the remaining 5.3 percent were attached to other parts of the body. Ticks were usually found on the body areas of short and very sparse hair growth.

Five of the deer captured during the study were retaken and reexamined during subsequent trapping periods. Three were fawns (1 male, 2 female) and two were mature females. A female fawn trapped in Long Hollow on 24 January 1976 was examined and found to be free of external parasites. When this deer was retrapped on 23 February 1976 three male and eight female were found attached near the anus. She had lost 1.8 kg, a 5 percent loss in body weight, possibly due in part to the presence of ticks. The remaining four deer all had *D. albipictus* present on their ears and near the anus when first captured. All ticks were removed. When recaptured, all had *D. albipictus* present on their ears and near the anus. One of these, a female fawn retrapped 16 days after initial capture, had lost 1.4 kg. This is also a 5 percent loss in body weight. The other three deer, one male fawn and two mature does, expe-

TABLE 1. Occurrence on mule deer of *Dermacentor albipictus* by developmental stage, sex and month. The percentage of ticks comprising each sex or life stage for each month appears in parentheses following the number found.

Month	Adult Male	(%)	Adult Female	(%)	Nymph	(%)	Larva	(%)	Total
January	2	(33.4)	4	(66.6)	0	(0.0)	0	(0.0)	6
February	155	(39.8)	220	(56.5)	12	(3.1)	1	(0.3)	389
March	53	(27.1)	114	(58.5)	28	(14.4)	0	(0.0)	195
Total	210	(35.6)	338	(57.3)	40	(6.7)	1	(0.4)	590

TABLE 2. Infestation rate of *Dermacentor albipictus* on mule deer by month and age class.

Month	Deer Age														
	Fawn			1¾ Years			2¾ Years			3 Years and Over			Summary		
	Number examined	Number infected	Percent infected	Number examined	Number infected	Percent infected	Number examined	Number infected	Percent infected	Number examined	Number infected	Percent infected	Number examined	Number infected	Percent infected
January	2	1	50.0	2	0	0.0	1	0	0.0	6	1	16.7	11	2	18.2
February	30	29	96.6	8	5	62.5	8	5	62.5	38	34	89.4	80	70	87.5
March	9	9	100.0	2	2	100.0	1	1	100.0	16	16	100.0	28	28	100.0
Total	41	39	95.1	12	7	58.3	10	6	60.0	51		85.0	119	100	84.0

rienced no loss of body weight. During this study no deer mortality could be attributed to infestation of ticks.

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