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Dermacentor albipictus ON MOOSE *(Alces alces)* IN ONTARIO[1]

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Abstract: Fifty-five moose *(Alces alces)* collected from 1963 to 1965 in the Chapleau Crown Game Preserve of northern Ontario were examined for ectoparasites. *Dermacentor albipictus* was the only parasite recovered. *D. albipictus* was absent from 15 moose examined during June, July and August; first observed on 1 of 2 moose examined in September; and present on all 38 moose collected from October to May. Ticks were not evenly distributed on the body. Infestations varied from 32 to 13,490 ticks/moose for 14 individuals. Levels of infestation observed did not have an obvious adverse effect on the health of moose.

INTRODUCTION

This study was conducted to survey for ectoparasites and to investigate levels of infestation, sites of attachment and seasonal fluctuations in numbers of *Dermacentor albipictus* on moose in the Chapleau Crown Game Preserve of Ontario.

MATERIALS AND METHODS

A total of 55 moose was collected from 1963 to 1965 (by F.J.J.) within the Chapleau Crown Game Preserve (47°58'-48°44'N, 83°16'-84°06'W). One to 5 moose were collected monthly.

General descriptions of gross lesions, number and concentrations of ticks, and physical condition of moose were recorded in the field. Moose with extensive perirenal and dorsal subcutaneous fat were considered to be in good or excellent physical condition; with limited visceral fat, in fair condition; and with no perirenal fat, in poor condition.

Ticks were recorded in the field as present or absent for 26 of the moose. Hides of the remaining 29 moose were examined in the laboratory for the specific number and distribution of ticks. Within the lab, each of the 29 hides was divided along the mid-dorsal line, each half was divided into seven sections (Fig. 1), and the area of sections recorded. Fifteen of the 29 hides were examined for ectoparasites by working through the hair using index fingers and forceps. A modification of the Hopkin's technique[2,4] was used to collect ectoparasites from the remaining 14 hides. All hair was removed with electric clippers and dissolved in a hot, agitated 5% solution of KOH. The resulting fluid was strained through a sieve (0.5 mm mesh) and held for reuse. Ticks were washed from the inverted sieve onto an enamel tray, counted, and then fixed in a 9:1 solution of 70% ethanol and glycerine. Ticks were not characterized by sex or age.

Students' t-test was used to compare densities of ticks between right and left sides of moose and between sections.

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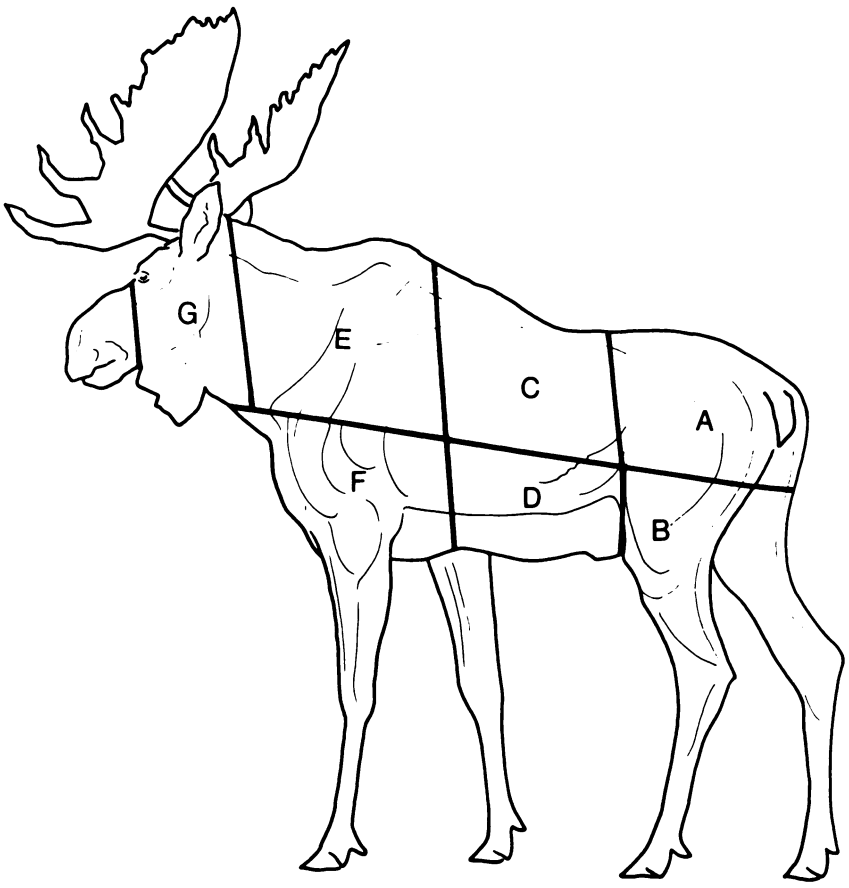

FIGURE 1. Partitioning of hide of moose collected in Chapleau Crown Game Preserve, Ontario, 1963-1965.

RESULTS AND DISCUSSION

Dermacentor albipictus was the only species of ectoparasite identified. Ticks were absent from 16 moose collected from June to early September and present on all moose (39) from late September to May. Seasonal fluctuations of *D. albipictus* quantified during the current study were similar to former general reports.[1,6,8,9] Ticks were first observed in the current study on 19 September and previously have been reported on hosts no earlier in the autumn than early October.[1] Ticks were last observed on moose in Chapleau on 20 May but have been observed on moose elsewhere in Ontario as late as 3 June.[7]

The number and density of *D. albipictus* on the 14 hides treated with KOH varied from 32 ticks (0.002/cm^2 of hide) to 13,490 ticks (0.54/cm^2) (Table 1). The greatest concentration observed was 0.96 ticks/cm^2 on a 2460 cm^2 piece of hide from the mane and withers of a moose collected in February.

TABLE 1. Number and density of *Dermacentor albipictus* from moose of Chapleau Crown Game Preserve, 1963-1965.

Moose Number	Date of Collection	Condition of Moose	Density (ticks/cm²)	Total Number of Ticks
1	8 Oct.	excellent	0.03	600
2	14 Oct.	good	0.06	1480
3	7 Nov.	excellent	0.28	7080
4	7 Nov.	excellent	0.26	6347
5	21 Dec.	excellent	0.27	6791
6	26 Jan.	poor	0.03	655
7	8 Feb.	excellent	0.43	7412
8	14 Feb.	good	0.08	1917
9	25 Feb.	excellent	0.07	1359
10	5 March	excellent	0.54	13490
11	7 April	excellent	0.24	6491
12	20 May	good	0.01	233
13	20 May	good	0.002	32
14	20 May	good	0.003	52

Local concentrations of 1.9 and 2.2 ticks/cm² have been observed on heavily infested moose in Maine and Isle Royale, respectively [5,6] Samuel (pers. comm.) estimated densities of *D. albipictus* on moose of Elk Island National Park, Alberta in excess of two ticks/cm² for whole hides and estimated more than 20,000 ticks/moose on a majority of over 40 moose examined late in 1977. We must conclude from these reports that moose of the Chapleau Crown Game Preserve were only moderately infested from 1963 to 1965.

Ten of 11 moose with alopecia were collected from January to June, the remaining animal in September. Alopecia was observed on the shoulders of all 11 moose, less frequently on the abdomen and perianal regions, infrequently on the hips, between the forelegs and the inguinal region and, in one moose, on the ears. In some cases alopecia may have resulted from moose rubbing areas which had been irritated by ticks. Loss of hair has been reported on moose infested with *D. albipictus* from Michigan in late February,[6] from Alberta in March and April (W.M. Samuel, pers. comm.) and from Minnesota.[9] Absence of any other possible lesions and no obvious association between numbers of ticks and poor condition of the moose also suggest that moose in the Chapleau Crown Game Preserve were only moderately infested with *D. albipictus* during the study.

Seven of the 14 hides treated with KOH had higher densities of ticks on the right side than on the left side ($P<0.05$) while three had higher densities on the left side ($P<0.05$). The lowest density of ticks for all 14 hides was in section "C" (0.08 ticks/cm²), high on the back midway between shoulders and anus, and highest density in section "E" (0.23 ticks/cm²), the area of the mane and withers. The density of ticks in section "C" was lower than densities in areas "D", "E" and "G" ($P<0.05$).

No differences were noted in the distribution of ticks among remaining sections ($P>0.05$). In contrast, distinct concentrations of ticks were noted at the time of collection in the mane, withers, chest, between the forelegs, on the abdomen, and in the inguinal and perianal regions. The apparent discrepancy between field and laboratory results may be explained by the size and location of sample areas selected for laboratory

studies. Areas of high and low densities of ticks were observed within each of the sections (Fig. 1), except for section "G" (the neck). Similar studies in the future should select smaller sampling areas than those used in the current study.

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