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An Estimate of Winter Utilization of the Cedar Creek Natural History Area by the White-Tailed Deer

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ABSTRACT— Estimates of utilization of the Cedar Creek Natural History Area by the white-tailed deer (*Odocoileus virginianus borealis*) during the winters of 1963 and 1964 were made using the deer-drive method. The 1964 estimate is considered the more realistic index of winter utilization by deer of the area because of increased efficiency of the drive, weather conditions favoring deer-drive technics, and agreement with results of pellet-count studies made independently on the area.

The administration of a tract of land such as the Cedar Creek Natural History Area must be concerned with preserving, studying and maintaining habitats within the tract in order to promote its use as an area for ecological study (Marshall, 1963). One aspect of these problems is the minimizing of undesirable alterations from overpopulations of certain species (Wilcox, 1950). It has been recognized for some time that the white-tailed deer (*Odocoileus virginianus borealis*) is a potential problem in the management of Cedar Creek. The history of the George Reserve deer herd in Michigan, reported by O'Roke and Hamerstrom (1948), studies by Norberg (1957) and observations of browse conditions on the Cedar Creek Area in recent years point to the problem. The purpose of this paper is to report on data obtained in 1963 and 1964 regarding winter utilization of the Cedar Creek Area by the white-tailed deer. Further, it is hoped that these data, along with others, will be useful if consideration of a policy to control deer in the area becomes warranted in the future.

Methods

To estimate the numbers of deer in the Cedar Creek Area under winter conditions, counts of deer in a smaller area of typical habitat were made using the deer-drive method described by Mosby, et al (1960). Index figures are not considered absolute numbers or to imply even distribution; they serve simply as estimates of the number of individuals present in an area.

The area in which the deer drives were made is located in the center of the cedar bog surrounding Cedar Bog Lake (See Figure and Photo) and includes the northwest portion of Section 27 and the northeast portion of Section 28, T34N, R23W, Anoka County, Minnesota. The Isanti-Anoka County line and County Road 24 served as the north and south boundaries of the area. Cedar Creek bordered the area on the west, while the woodland-open field break running north and south through the approximate center of Section 27 was the east boundary. This area was suitable for deer-drive

technics since it was bounded on three sides by either creek, road or clearing. It lent itself to establishing a drive line on its north boundary with relatively little disturbance to deer within the area. The line of drive was southward with counters adequately positioned along the west, south and east boundaries.

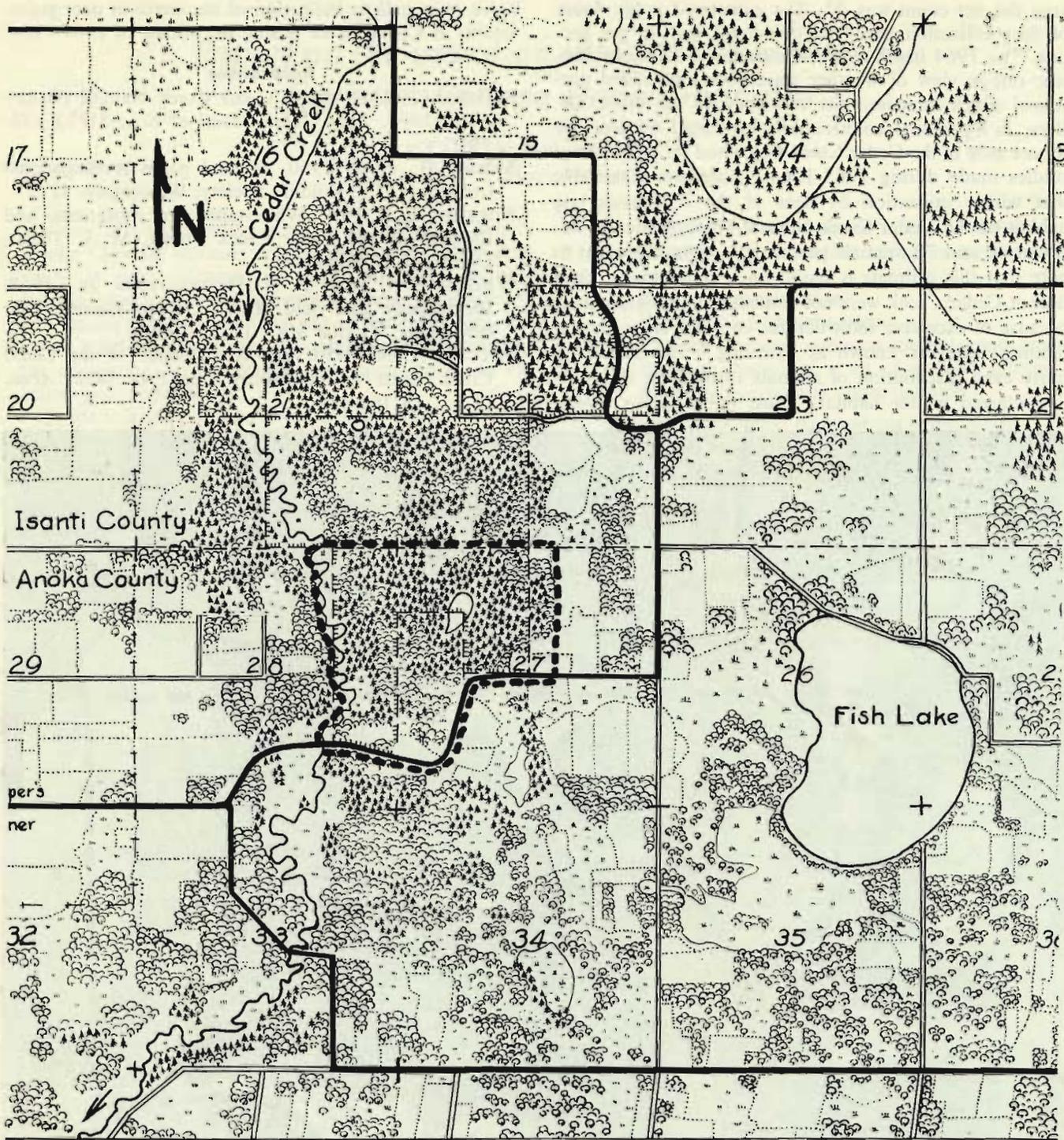
Personnel involved in the 1963 drive were Mr. Alvar Peterson, Resident Manager of the Cedar Creek Natural History Area, instructors and students of the Macalester College Biology Department, Mr. R. Meierotto and students of the College of Saint Thomas Biology Department; and Dr. James Beer and students of the mammalogy class, University of Minnesota. Forty-one persons were in the drive line and 17 acted as counters. The same groups participated in 1964 with the addition of Messrs. Sargent, Heezen, Forbes, and Drs. Mech and Tester from the radio-telemetry research project at Cedar Creek. The drive line consisted of 50 persons and counters numbered 16. The splendid efforts of all who participated in the drives are hereby acknowledged. The cooperation and interest of Dr. William H. Marshall, Director of the Cedar Creek Natural History Area, in this project is also appreciated.

Counts were based only on deer observed passing through the drive line to the north or past counters on the west, south or east boundaries. The drive in 1963 was made on March 2, a partly cloudy, calm day with a temperature of approximately 32° F. Snow drifts of up to eight inches were occasional. Contrasting conditions existed on January 25, 1964. Snow had fallen the night before and was blown and drifted to two feet or more by northwest winds of 20 m.p.h. and gusts of 34 m.p.h. The temperature was 5° F with a partially clearing sky. By all factors, conditions favoring deer counts were better in 1964 than 1963 as the deer were bedded down in the cover of the cedar bog and not widely distributed as in milder weather. In 1963 the drive began at 1:00 p.m. and was completed at 2:07 p.m. Start and finish times in 1964 were 2:13 and 3:15 p.m.

Results and Conclusions

Deer counted in the 1963 drive totaled 16. Since the area driven was approximately two-thirds of a section, the index figure of utilization was calculated as 24 deer per section. In 1964 a total of 49 deer was observed leaving the area but as two animals had entered the drive

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SCALE ————— 1 MILE

CEDAR CREEK FOREST and ENVIRONS

- | | | |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|  deciduous forest |  grassland |  marshland |
|  coniferous forest |  cultivated fields | |

Sketch Map of Cedar Creek Showing Area of Deer Drive (Dash Line).

area the net count was 47. The calculated index figure of deer utilization based on this count was 70 per section. The 1964 index figure is considered the more realistic one in view of weather conditions and added personnel which increased the efficiency of the drive. Dr. Beer, in a personal conversation, estimated 60 deer per square mile in the Cedar Creek bog based on pellet count studies made during 1963-1964. It appears reasonable that winter utilization by deer of the coniferous bog habitat of the Cedar Creek Natural History Area is between 60 and 70 animals per section. It is important to note that this estimate is based on a count made when deer at Cedar Creek were not confined to restricted areas because of excessive snow depths, i.e., deer were not exhibiting behavior known as "yarding," and implies a fairly even distribution of animals throughout this type of preferred winter habitat. Thus, these figures should

serve as a realistic indication of the status of deer populations at Cedar Creek during the winter of 1963-1964.

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Aerial Photo of Deer Drive Area (Dash Line). ◊ Is Center of Section 27, T34N, R23W, Anoka County, Minnesota.