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Aerial Resurvey of the Higher Density Bison Areas in Wood Buffalo Park and the Northwest Territories

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An aerial resurvey of some of the more productive bison areas was done March 23rd to 26th, 1959. Previous surveys (Fuller, 1950, Novakowski, 1957,) had been flown earlier in the year, however, other work precluded any possibility of doing the survey in February, this year. The writer was accompanied by Mr. Bryant, Superintendent of Game, for the Northwest Territories section of the survey, and by Mr. Len Heron, Patrolman, and Mr. E.R. Olson, Superintendent, Wood Buffalo Park, for the Park section. The areas covered are shown in the accompanying map.

The technique applied on this survey was the same as on previous surveys. An altitude of 2,000 feet above the ground was maintained and the wing strut and window markers on the Beaver aircraft were so placed that an observation width of one mile on each side was obtained.

The total count for each transect is shown in the map. The total figures when compiled into various areas or groupings when compared with the last survey (Novakowski 1957) indicate that:

(a) The total estimated population of the Northwest Territories section of bison range from the Little Buffalo River to the Taltson River is 1,300 from a total count of 316 animals. This is slightly less than half of the total count and estimated population of 1957 (664 and 2,643 estimated). The possible reason for this decrease will be discussed.

.....2

(b) The total estimated number of animals in the Hay Camp herds observed on this survey is 3,800 from a total count of 944 animals. An almost equivalent number were counted outside the strip, thus the total estimated appears to be sound. This is a radical increase from the previous survey (413 counted, 1,700 estimated).

(c) The estimated number of animals in the Sweetgrass herds on the present survey is 5,200 from a total count of 1,280 animals. The total estimated in 1957 was 4,000 animals and an increase in this group is also apparent.

(d) The 1957 estimate for the Welstead Lake herds was 1,000 animals. The present survey indicated an estimated population of 100 animals - a decided decrease.

Discussion

1. There appears, at this time, to be only a few valid conclusions which can be drawn from the low estimate in the Northwest Territories section as compared to the previous estimate.

   (a) There has been a movement of bison from the area. This conclusion appears to be substantiated by the large increase in the Hay Camp estimate. I believe firmly that a movement of this magnitude

.....3

is not difficult to contemplate. At some other time or season this situation might well be reversed, a point which could only be settled by more periodic surveys or by tagging and recovery. The projected testing program at Hay Camp for 1960 would assist materially in this latter program.

(b) It is also possible that we were not sampling herds randomly distributed. It is apparent that if two or three large sized herds had been on the strip and not off the estimate would have changed radically. A few such herds were observed outside the strip, however, this conclusion can be augmented by more repeated and seasonal surveys to arrive at the upper and lower limits of our estimates. Herd movements are the most variable part of the technique and an attempt to statistically fix this variability by air or ground work should be attempted.

2. The Hay Camp herds, if they remain static, appear now to be able to withstand a slaughtering operation on a limited scale. The distribution of the animals is still widespread throughout the area and new methods of herding will have to be applied to obtain substantial samples for testing purposes.

3. The estimate of the Sweetgrass herds has increased substantially over the 1957 estimates. This increase is in spite of a mortality of 1,200 animals due to slaughter and drowning since 1957. This increase is likely due to a recruitment from the Welstead Lake

.....4

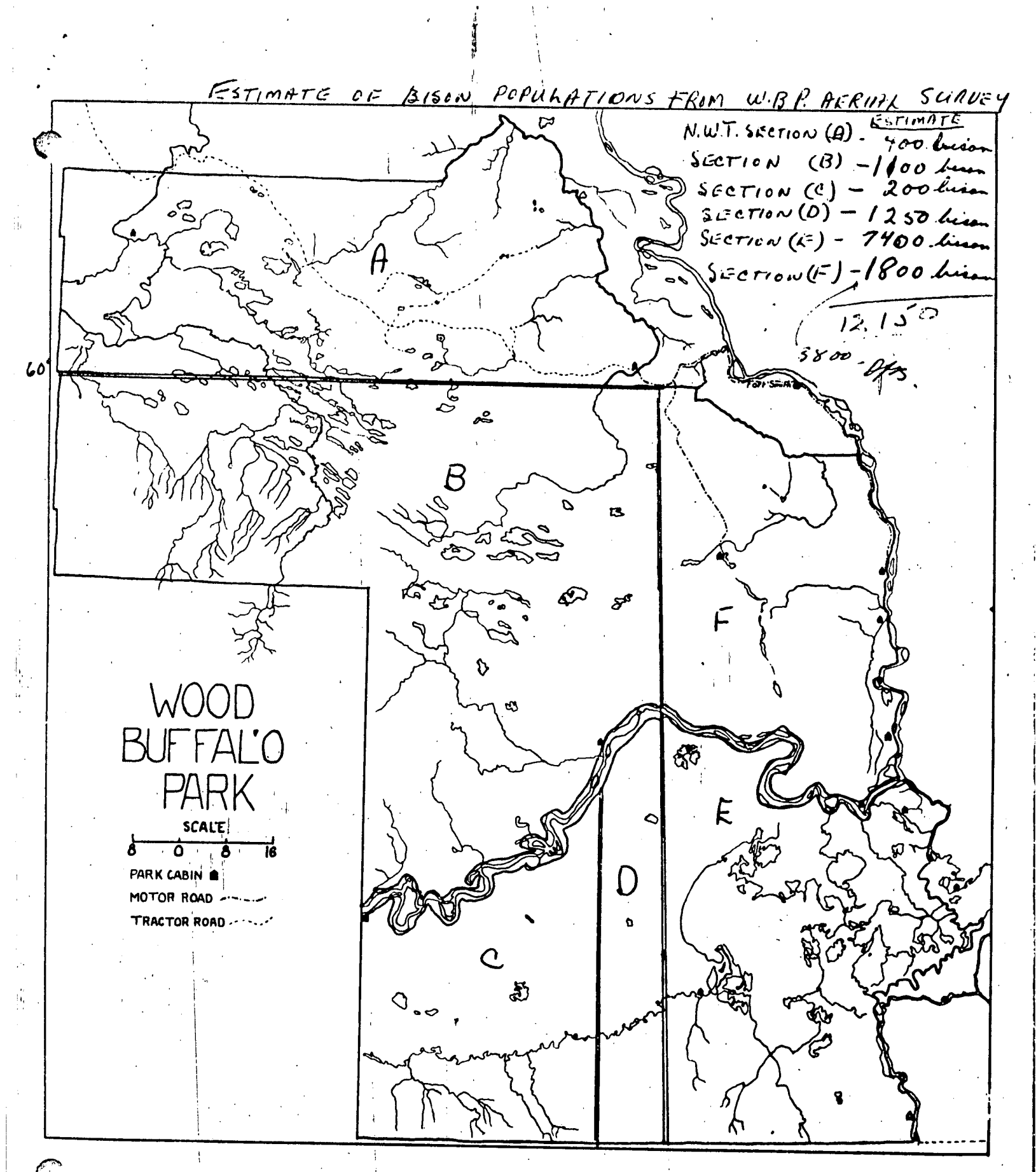
area which previously held an estimated 1,000 animals and less than 100 are now estimated for that area. This recruitment may be seasonal and especially at the time of the survey when break-up was near at hand. The Welstead Lake area is low-lying and appears to be subject to flooding with no large area of high ground avilable.

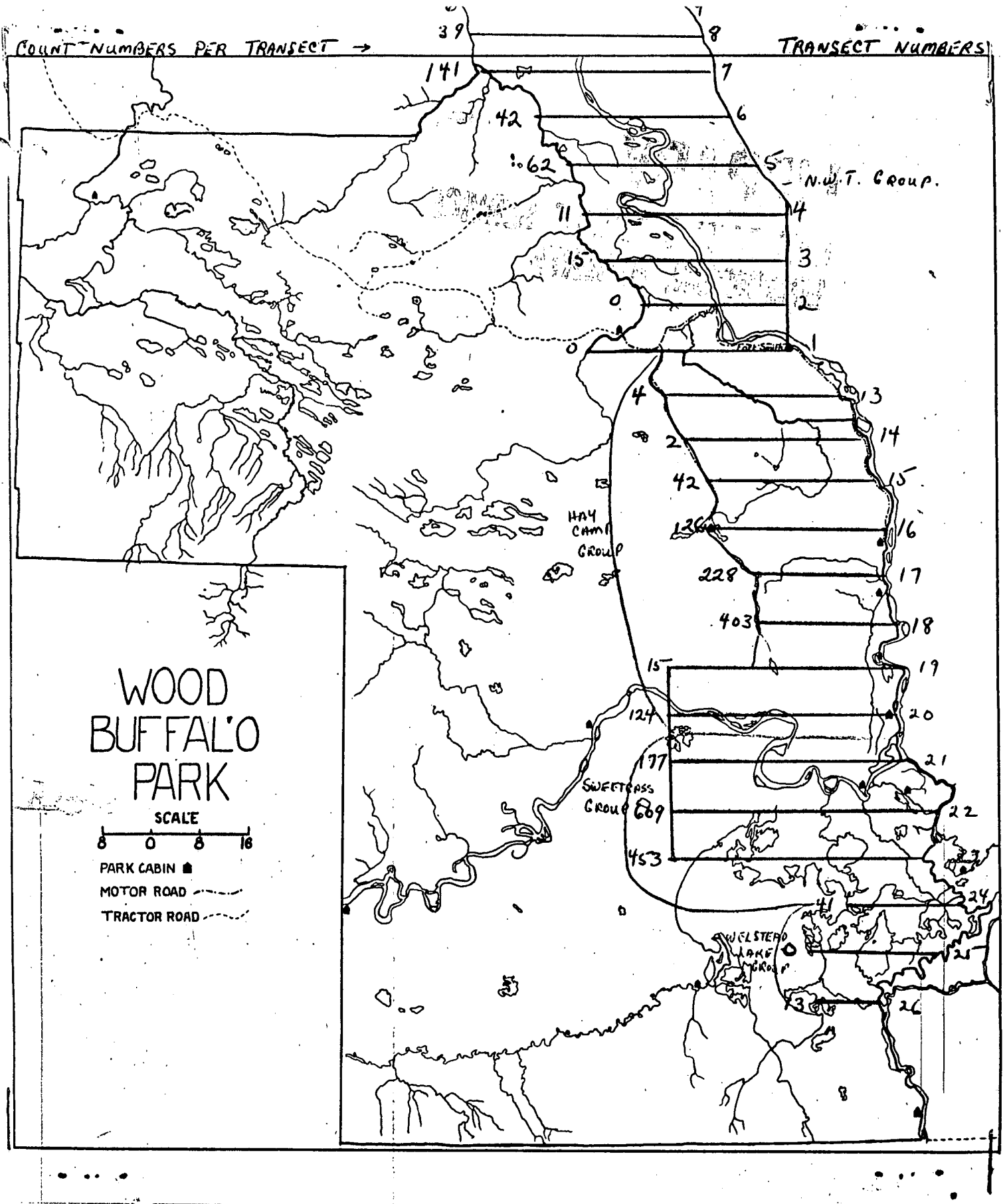
4. It appears, therefore, that on the transect type of survey employed there is and can be much variation in the total estimates. This is due largely not to small error factors inherent in the technique as discussed previously (Novakowski 1957) but to the dynamic variations in distribution of the bison chiefly in the form of discrete herd movements. This variability can be largely due to food distribution and availability governed by weather conditions, however, there are also psychological aspects to be considered. A pattern study on a herd or group of herds is desirable and can be greatly enhanced by a muskeg and snow vehicle with good mobility or a helicopter.

Literature Cited

Fuller, W.A. 1950 - Aerial census of northern bison in Wood Buffalo Park and vicinity. Journal Wildlife Management, Vol. 14, No. 4, October, 1950. pp. 445-451.

Novakowski, N.S. 1957 - Aerial resurvey of bison in Wood Buffalo National Park and surrounding areas, 1957. Manuscript report on files of Canadian Wildlife Service, Ottawa.


ESTIMATE OF BISON POPULATIONS FROM W.B.P. AERIAL SURVEY
N.W.T. SECTION (A) - ESTIMATE 400 bison
SECTION (B) - 1100 bison
SECTION (C) - 200 bison
SECTION (D) - 1250 bison
SECTION (E) - 7400 bison
SECTION (F) - 1800 bison
12.150
5800 - Ops.
60°
A
B
C
D
E
F
WOOD BUFFALO PARK
SCALE
8 0 8 16
PARK CABIN
MOTOR ROAD
TRACTOR ROAD



Map of Wood Buffalo Park and vicinity showing transects flown during 1959 aerial survey.