Flook, Donald R.

Aerial survey of beaver colonies, Prince Albert Park, 1959. Edmonton, 1959.

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PRELIMINARY DATA
NOT FOR PUBLICATION

AERIAL SURVEY OF BEAVER COLONIES.

PRINCE ALBERT PARK, 1959

Introduction.

The annual aerial survey of beaver colonies has been an important phase of the study of beaver ecology in Prince Albert Park. The purpose of the survey has been to determine the trend in the beaver population in the park, and to estimate the number of colonies present.

The first aerial beaver survey of Prince Albert Park was carried out by J. S. Tener, October 15 and 16, 1954. Since then it has been repeated each year at about the same date. The 1959 survey was carried out October 16 and 17.

Procedure.

The technique used in the current survey was exactly the same as that described in reports of the previous surveys. A Cessna 180 aircraft on floats was chartered from Saskatchewan Government Airways. We were fortunate in obtaining the services of J. Tallis as pilot for the third consecutive year. Twenty-five east-west transects were flown traversing the park at two mile intervals. They were designated as numbers one to twenty-five, number one being located two miles south of the north boundary of the park. The writer counted on the right side of the plane, and A. M. Pearson counted on the left side throughout the survey. A cruising speed of 115 miles per hour was maintained as nearly as possible, through the operation and a strip one-quarter mile wide was viewed on either side of the aircraft. Each transect was divided into an east and a west half and

the observations recorded separately.

During October 1959, temperatures in the park were abnormally low and a light cover of snow accumulated. As a result the identification of active beaver colonies was less reliable than in previous years. Most of the smaller bodies of water were covered with ice and in some situations there was a light cover of snow on the ice. Snow cover on the ground varied from about 50% in some parts of the park to 100% in limited areas. There were indications that many beaver had been caught by the cold weather without their winter food collected. Wardens reported seeing beaver collecting food at the time we made the survey. A beaver was seen from the plane swimming in a small patch of open water near a house in a pond otherwise covered with clear ice, in which I was fairly certain no feed bed was present. In the cases of some colonies feed beds were probably present but obscured by ice and snow. The observers based their decision as to whether a house was in use, on such criteria as appearance of the surface of the house particularly the amount of snow on it, channels of open water running to the house, and white marks in the ice indicating presence of stored winter food. I have less confidence in the results of the 1959 survey than in those of previous surveys, although I do not know whether the resulting estimates may be higher or lower than the actual population present.

Transects 1 - 10 and the east end of 11 were surveyed October 16th, and on that day the sky was clear and the air

fairly turbulent as a result of a moderate north wind. The remaining transects wereflown October 17th and on that day there was a light overcast in the morning which cleared in the afternoon. The wind was strong from the south-east resulting in considerable turbulence.

The snow cover made moose and elk more readily observed than they had been on any previous surveys. The right observer recorded only animals which were seen within the transect width. From his records it was therefore possible to make population estimates for both species.

Observations and Discussion.

The observations of beaver colonies both active and abandoned, seen in the 1959 survey are presented in appendices 1 and 2. The observations of the right-hand observer are in appendix 1 and those of the left observer are in appendix 2. Active colonies observed are tabulated in appendix 3.

The trend in numbers of active colonies counted in six successive surveys beginning with 1954, are shown in table 1. The trend is shown for each quarter of the park, and for the north and south halves, as well as for the entire park.

The beaver population in terms of numbers of active colonies was estimated from the survey data and is shown in table 2. A population estimate is shown for each quarter of the park, the north and south halves, and the entire park.

The observations of the right-hand observer only are used in making the estimates shown in tables 1 and 2. As was the case in 1958, our survey showed a greater beaver population

Table 1.

Estimated Numbers of Beaver Colonies, 1959 Survey.

Northwest Quarter	Northeast Quarter	North Half
223	131	354
Southwest Quarter	**Southeast Quarter**	**South Half**
289	282	571
		Entire Park
		925

Table 2.

Trend on Numbers of Active Beaver Colonies Counted in six successive Surveys

Section of Park	1954	1955		1956		1957		1958		1959	
	Colonies	Colonies	Trend	Colonies	Trend	Colonies	Trend	Colonies	Trend	Colonies	Trend
N.W.Quarter				58		52	-10%	40	-23%	27	-32%
N.E.Quarter				32		28	-12%	23	-18%	17	-26%
N. Half	76	85	+12%	90	+6%	80	-11%	63	-21%	44	-30%
S.W.Quarter				121		55	-55%	63	+15%	36	-43%
S.E.Quarter				118		77	-35%	62	-19%	35	-43%
S. Half	136	165	+21%	239	+45%	132	-45%	125	- 5%	71	-43%
Total all Transects	212	250	+18%	329	+32%	212	-36%	188	-11%	115	-39%

density in the south half of the park than in the north half, the two south quarters having about equal numbers. A heavier population is indicated in the north-west quarter than in the north-east quarter.

The general population decline which first became evident in 1957 appeared to have continued. A greater proportionate decline is indicated in the areas which have the heaviest population, the south half and to a less marked degree, the north-west quarter.

Because of the difficulties encountered in distinguishing "live" and "dead" houses, due to ice and snow, no inferences will be drawn concerning abandonment of colony sites. The significance of the drying up of potholes in influencing population trends was discussed in last year's report and it was hoped that more information might have been obtained on the subject this year. However, that was not possible.

All recorded observations of moose and elk are tablulated in appendix 4. It is interesting to note that the left observer recorded five elk in the north half of the park, one on transect 1, and two each on transects 6 and 7. Although it was not specified in the notes, it is believed that they were all in the west half of the transect. The other 144 elk seen were all on transects 17 to 25.

The moose and elk populations were estimated on the basis of the observations of the right-hand observer. They are shown in tables 3 and 4 for each quarter of the park, as well as the north and south halves, and the entire park.

Table 3.

Estimated Numbers of Moose, 1959 Survey

Northwest Quarter	Northeast Quarter	North Half
372	91	463
Southwest Quarter	Southeast Quarter	South Half
555	531	1086
		Entire Park
		1549

Table 4.

Estimated Numbers of Elk, 1959 Survey

Southwest Quarter	Southeast Quarter	South Half
121	339	460

Although the population estimates are with little doubt lower than the actual numbers, they provide an indication of the size of the population. Because snow cover was not complete and because we were flying at 600 feet, (a heightlow enough for good beaver colony observations but a little too high for reliable game observations) we missed an unknown number of animals on the transects. Also, sampling was not adequate for the contagiously distributed elk herds. That is evidenced by the fact that the right-hand observer did not see any elk in the north half of the park although we know from the observations of the left-hand observer that some were present. The proportion of elk on the transect that were missed is believed higher than that for moose, because elk seemed less readily observable from 600 feet against an incomplete snow cover, than were moose.

It is evident that moose are well scattered throughout the park. The lowest population is indicated in the northeast quarter, and the highest in the two south quarters which are about the same.

It is interesting to note a very high correlation between beaver population distribution and moose population distribution. The same relationship has been noted in the Mackenzie River Valley. That demonstrates the affinity of the two species for the same types of terrain and plant cover.

Conclusions.

The survey indicated a beaver population of 925 active beaver colonies and a decline of 39% from 1958. Less

confidence can be placed in the results of the 1959 beaver survey than those of the previous years because of ice and snow making it difficult to identify beaver ponds, and to distinguish active colonies from abandoned colony sites. Because of the snow cover, big game animals were more readily observed than in previous beaver surveys. Minimum population estimates for the park of 1,550 moose and 460 elk were indicated. Actual numbers were believed to be higher. The heaviest populations of beaver, moose and elk were found in the south half of the park.

Recommendations.

Man power permitting, the aerial beaver surveys of Prince Albert Park should be continued in order to trace population changes and attempt to relate them to causitive factors.

Weather records should be kept 12 months of the year, within the park, at least at headquarters, and these kept in a permanent record at the Park Office. Weather plays a very significant part in the welfare of wild animals and we should be studying its relationship to fluctuations in animal populations in the national parks.

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Donald R. Flook

Edmonton, Alta.
February 3, 1960.

Donald R. Flook,
Wildlife Biologist.

Appendix 1. Colonies Counted by Right Observer, 1959.

Transect No.	Creeks		Lakes		Potholes	
	Active	Dead	Active	Dead	Active	Dead
West Half						
1			1			
2		1	2			
3	1					
4	1	1	1	2		
5	1	1	2			1
6	1		2			1
7			3		1	
8			1		2	1
9			3	1	1	
10	1		1	1		
11	1			2		
12		1	1	2		1
Total N.W.	6	4	17	8	4	4
East Half						
1		1	2	1		
2					1	
3	1	1	1	1		
4			1			
5						
6			1			
7	3	1	1			
8			1			
9			1			
10			2		1	
11						
12		1			1	
Total N.E.	4	3	10	2	3	

(Ctd.) Appendix 1. Colonies Counted by Right Observer, 1959.

Transect No.	Creeks		Lakes		Potholes	
	Active	Dead	Active	Dead	Active	Dead
West Half						
13	1				2	3
14						
15	1	1	1	2	3	
16	1	1	1		2	
17		1			3	1
18	1		2	1	1	
19	2	2		1	1	
20	2		3	1	1	
21		1	1			
22	1	2	1			
23			1			
24	2		1			
25	1					
Total S.W.	12	8	11	5	13	4
East Half						
13	1	1				
14	1					
15	3		2		1	
16						1
17		1				1
18	2		1		3	
19	1	1			1	
20		1	2			
21			2		1	
22			2			2
23			5		2	2
24					2	
25	1		2			
Total S.E.	9	4	16		10	6

Appendix 2. Colonies Counted by Left Observer, 1959.

	Creeks		Lakes		Potholes	
Transect No.	Active	Dead	Active	Dead	Active	Dead
West Half						
1					1	
2			1	1		
3			1			
4		1	1	3		
5	1					1
6			1			
7			1		2	1
8					1	1
9			2	1		
10			2	3	1	
11		1	2	1	1	
12	1	2	2			
Total N.W.		4	13	9	6	3
East Half						
1	1	1				
2			1			
3						
4						1
5		1				
6	1					
7	1	1			1	
8						
9						
10					1	
11						1
12			1			
Total N.E.	3	3	2		2	2

(Cntd.)

Appendix 2. Colonies Counted by Left Observer, 1959

Transect No.	Creeks		Lakes		Potholes	
	Active	Dead	Active	Dead	Active	Dead
West Half						
13			2	2		1
14	1		2			
15			2		1	
16	2	4				
17	1				1	1
18	4	1	1	1	2	1
19	1	2	1		3	
20	1	1	2			1
21	2		2	2		
22	1	2				
23			1	1		
24					1	1
25	2					1
Total S.W.	15	10	13	6	8	6
East Half						
13						1
14						
15	1		3	2		
16	2			1	1	1
17	2	3	1		1	
18	2	1		1	1	4
19	1	1	3		1	
20	3	1	1	1	2	1
21	1					
22			1			
23	1	1	1	1		
24	1	1	1			
25					3	1
Total S.E.	14	8	11	6	9	8

Appendix 3. Number of Active Colonies Counted In Transects, 1959.

	Left Observer			Right Observer			Both Observers
Transect No.	West Half	East Half	Both Halves	West Half	East Half	Both Halves	East & West
1	1	1	2	1	2	3	5
2	1	1	2	2	1	3	5
3	1		1	1	2	3	4
4	1		1	2	1	3	4
5	1		1	3		3	4
6	1	1	2	3	1	4	6
7	3	2	5	4	4	8	13
8	1		1	3	1	4	5
9	2		2	4	1	5	7
10	3	1	4	2	3	5	9
11	3		3	1		1	4
12	3	1	4	1	1	2	6
Total North Half	21	7	28	27	17	44	72
13	2		2	3	1	4	6
14	3		3		1	1	4
15	3	4	7	5	6	11	18
16	2	3	5	4		4	9
17	2	4	6	3		3	9
18	7	3	10	4	6	10	20
19	5	5	10	3	2	5	15
20	3	6	9	6	2	8	17
21	4	1	5	1	3	4	9
22	1	1	2	2	2	4	6
23	1	2	3	1	7	8	11
24	1	2	3	3	2	5	8
25	2	3	5	1	3	4	9
Total South Half	36	34	70	36	35	71	141
Total North & South	57	41	98	63	52	115	213

Appendix 4. Big Game Observations, 1959.

Transect No.	Left Observer[1] Entire Transects		Right Observer[2] West Half		Right Observer[2] East Half		Right Observer[2] Entire Transects	
	Moose	Elk	Moose	Elk	Moose	Elk	Moose	Elk
1	8	1	9	-	-	-	9	-
2	8		16	-	-	-	16	-
3	9		-	-	2	-	2	-
4	5		4	-	-	-	4	-
5	4		-	-	-	-	-	-
6	3	2	-	-	-	-	-	-
7	9	2	-	-	4	-	4	-
8	9		2	-	-	-	2	-
9	1		-	-	-	-	-	-
10	4		-	-	1	-	1	-
11	9		5	-	1	-	6	-
12	6		9	-	3	-	12	-
Total N.Half	75	5	45	-	11	-	56	-
13	1		13	-	3	-	16	-
14	13		1	-	3	-	4	-
15	10		9	-	-	-	9	-
16	17		8	-	5	-	13	-
17	23	2	4	1	17	5	21	6
18	22	1	2	4	12	-	14	4
19	15	6	4	-	9	3	13	3
20	17		5	1	5	2	10	3
21	23	1	8	-	7	-	15	-
22	25	15	7	4	3	-	10	4
23	20	6	5	-	1	2	7	2
24	12	19	1	4	-	33	1	33
25	3	34	2	1	1	4	3	5
Total S.Half	201	84	69	15	66	49	136	60
North & South	276	89	114	15	77	49	192	60

1. Left observer recorded all animals in sight including those off transect
2. Right observer recorded only animals within ¼-mile-wide transect.

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TITLE

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