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Flook, D.R.

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Aerial beaver census Prince Albert Park
1958. Edmonton, 1959.

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1. Beavers - Census. 2. Aerial game
surveys - Prince Albert National Park.
3. Prince Albert National Park. I Title.

PRELIMINARY DATA
NOT FOR PUBLICATION

AERIAL BEAVER CENSUS PRINCE ALBERT PARK 1958.

Introduction

As part of the long term study of beaver in Prince Albert National Park, an aerial census of beaver colonies was carried out in the park, October 15th and 16th, 1958.

The purpose of the survey was to determine the trend in the beaver population of the park, and an estimate of the beaver numbers.

Previous aerial surveys of beaver in Prince Albert Park have been made by J.S. Tenor, October 15th and 16th, 1954; and October 5th and 6th, 1955; A. Radvanyi, October 16th and 17th, 1956; and D.R. Flock, October 15th and 16th, 1957.

The technique used in the current survey was exactly the same as that described in the report in the 1957 survey. A Cessna 180 Aircraft was chartered from Saskatchewan Government Airways. The pilot was J. Tallis, who also flew last years survey. Twenty-five east-west transects were flown traversing the park at two mile intervals. They are designated as numbers one to twenty-five, beginning 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 of the plane throughout the survey.

The survey was flown at a cruising speed of one hundred and fifteen miles per hour. A height of six hundred feet from the ground was maintained as nearly as possible through the survey 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.

A feed bed was considered evidence of a colony. In a few cases dams or lodges were seen which appeared to be in an actively maintained condition. They were considered evidence of a colony even though no feed bed could be seen.

October 15th the sky was partly cloudy. October 16th it was clear. Turbulence was moderate on both days.

Presentation of Data

The observations of beaver colonies in the 1958 survey are presented in appendices 1 and 2. These data are presented according to transects. The observations of the righthand observer are in appendix 1, and those of the lefthand observer are in appendix 2.

In order to learn more of the significance of the drying of potholes in lodge abandonment we recorded dead lodges as well as active ones and recorded the

water body as to creek, lake, or pothole. I used the term abandon throughout this report to refer to beaver as a species having discontinued to use a lodge site. The former occupants of the lodge may have emigrated or died on the location.

Numbers of active colonies recorded on each transect are presented in appendices 3 and 4. Observations are presented according to observer and according to the quarter of the park in which they occurred. The numbers of active colonies recorded in the surveys of 1954, 1955, 1956, 1957, and 1958 are compared in table 1. Only observations of the right-hand observer are used in this table.

Big game observations made during the current survey are summarized in appendix 5.

Population Trends

Inspection of table 1 reveals that the general decline in numbers of active beaver colonies which began between 1956 and 1957, continued between 1957 and 1958, although at a slower rate. The rate of decline in the northern half of the park was greater between 1957 and 1958 than in the previous year. In the southeast quarter of the park the rate of decline between 1957 and 1958 was less than in the previous year. In the southwest quarter of the park the trend reversed and a fifteen percent increase took place between 1957 and 1958.

Table 1. Trend in Numbers of Active Beaver Colonies
Counted in Five Surveys

Section of Park	1954	1955		1956		1957		1958	
	Colonies	Colonies	Trend	Colonies	Trend	Colonies	Trend	Colonies	Trend
N.E. Quarter				32		26	-12%	23	-18%
N.W. Quarter				53		52	-10%	40	-23%
N. Half	76	85	+12%	90	+6%	80	-11%	63	-21%
S.E. Quarter				118		77	-35%	62	-39%
S.W. Quarter				121		55	-55%	63	+15%
S. Half	196	165	+21%	239	+45%	132	-45%	123	-7%
Total, All Transects	212	250	+18%	329	+32%	212	-36%	188	-11%

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Observations of beaver lodges in potholes provide a partial explanation for the decline in colony numbers. The observers together counted eighty-nine potholes containing active beaver colonies, and fifty-one potholes containing abandoned beaver houses. Flock took notes on the condition of fifteen potholes containing abandoned houses. Two were dry, four were almost dry, one was almost dry and lacked food, five contained adequate water but lacked food, and three contained adequate water and the apparent cause for abandonment was not noted. It is thought that some abandoned houses in dry potholes were overlooked as they are less readily observable than those in potholes containing water. Of fifty-seven potholes noted by Flock to contain active beaver colonies, one was dry although it contained a fresh feed bed, four were almost dry, and one had a low water level.

Fluctuations in precipitation are less critical in their effect on welfare of beaver in lakes and creeks than in potholes. A much greater decline in water supply would be necessary to adversely effect beaver in lakes and creeks. Observations made from the ground indicate the exhaustion of food supply has brought about abandonment of many lodges on lakes and creeks. Because of their greater perimeter observations of food conditions on those water bodies were not made from the air.

Exhaustion of the food supply available through utilization and drowning has probably been the major factor resulting in the abandonment of lodges in lakes and creeks. Our observations indicate that both drop in water level and exhaustion of food supply have been major factors in causing abandonment of beaver lodges located in potholes. Potholes contained a substantial proportion of the active beaver colonies of the park. During the peak of the beaver population in 1956, potholes may have contained a larger proportion of the total colonies than they do now. Abandoned beaver lodges are less discernable from the air than occupied ones. They are probably not equally discernable in different types of water bodies. For that reason our aerial counts of dead lodges may not be a reliable indication of the distribution of the beaver population as to water body types at any previous time.

Population Estimates

An estimate of the number of active beaver colonies in the park based on the count of the right observer is 1,770. Using Radvanyi's estimates of average numbers of 6.7 and 8.2 beaver per lodge, estimates of the current population are 11,900 or 14,500.

Edmonton, Alberta,
April 8th, 1959.

Donald R. Flock.
Donald R. Flock,
Wildlife Biologist.

Appendix 1. Colonies Counted by Right Observer, 1950.

East Half		Creeks		Lakes		Potholes		Remarks on Pothole Conditions
Transect No.	Active	Dead	Active	Dead	Active	Dead		
1	2	1	1					
2	1					2		adequate water but no food
3	4		1			1		adequate water but no food
4								
5				2				
6								
7	1	1	1					
8	1		1					
9			1					
10			3		2			
11			2					
12	1		1					
Total N.E.	10	2	11	2	2	3		

West Half		Creeks		Lakes		Potholes		Remarks on Pothole Conditions
Transect No.	Active	Dead	Active	Dead	Active	Dead		
1	1							
2	1		3	1				
3	3							
4	2				1	1		adequate water, no food
5	2	1	1		1			
6	2		3		1			
7			2		1			
8				1				
9		1	4	1				
10		1	1					
11			1		4			
12	1	2			4	2		
Total W.W.	12	5	15	3	12	3		

{ 1 pothole with active colony
 almost dry
 1 pothole with abandoned
 colony almost dry
 1 pothole with abandoned
 colony adequate water

(Contd.) Appendix 1. Colonies Counted by Right Observer, 1950.

East Half Transect No.	Creeks		Lakes		Potholes		Remarks on Pothole Conditions
	Active	Dead	Active	Dead	Active	Dead	
13	1	1					
14	1				1		
15	6		2	15	4	1	adequate water in abandoned pothole
16	4				3		1 occupied pothole almost dry
17		2	2		1		
18	3		4		1	1	abandoned pothole dry
19	1		2				
20	3		3				
21	2				1		
22	2		1		1	1	abandoned pothole dry
23	2		3	3	2		1 pothole with foodbed dry
24							
25	2		4				
Total S.E.	27	3	21	4	14	3	
West Half							
Transect No.							
13			2		6	3	{ 1 abandoned pothole had adequ- ate water 1 abandoned pothole almost dry 1 abandoned pothole almost dry and without food
14	1	1	2		2		
15	3		4		1		
16	3	3		3	1	1	abandoned pothole with water but no food
17	2		1	2	6		{ 1 occupied pothole low water 1 occupied pothole almost dry
18	1				6		
19	5		1		2		
20	1		1	3	2	2	2 abandoned potholes almost dry
21	1		1				
22	1				1		occupied pothole almost dry
23			2				
24					1		
25	2				1		
Total S.W.	20	4	14	6	29	6	

Appendix 2. Colonies Counted by Left Observer, 1958.

East Half Transect No.	Creeks		Lakes		Potholes	
	Active	Dead	Active	Dead	Active	Dead
1	1					
2			1	1		1
3					1	2
4					1	2
5		1		1		
6		1				
7					1	
8			1			1
9			1	1		
10			1	1		
11				2		
12			1		1	
Total N.E.	1	2	5	6	4	6
West Half						
1		1			1	
2			1	3		1
3			1			
4			3			1
5		1				2
6	1	2		2		1
7		1	2		1	4
8					1	
9			1	6	1	
10			1	5		1
11	1		3	2		2
12	1			1		
Total N.W.	3	5	12	21	4	12

(Std.) Appendix 2. Gamias Counted by Left Observer, 1950

East Half Transect No.	Creeks		Lakes		Potholes	
	Active	Dead	Active	Dead	Active	Dead
13						1
14						
15				1		
16		1	1	2	1	3
17	3	2	3		1	3
18	2	1				
19	2	1	3	1		1
20	2	1	1	2	2	
21	1					
22					1	
23	1			1	1	
24			1	1	1	
25	1				4	1
Total S.E.	12	6	9	8	11	9
West Half						
13	1	1		1	2	2
14	2		3			
15				3	1	2
16	1	1	1		1	
17		2		1		
18	1			1	4	3
19	2	1				
20			1	1	1	1
21	1	1				
22	1			1	3	
23	2	1	1			
24	1				1	1
25	1					
Total S.W.	13	7	6	8	13	9

Appendix 3. Number of Active Colonies on North Transects, 1958

Transect No.	East Half			West Half			East & West
	Right Observer	Left Observer	Both Observers	Right Observer	Left Observer	Both Observers	Both Observers
1	3	1	4	1	1	2	6
2	1	1	2	4	1	5	7
3	5	1	6	3	1	4	10
4		1	1	3	3	6	7
5			0	4		4	4
6			0	6	1	7	7
7	2	1	3	3	3	6	9
8	2	1	3	1	1	2	5
9	1	1	2	4	2	6	8
10	5	1	6	1	1	2	6
11	2		2	5	4	9	11
12	2	2	4	5	1	6	10
Total North Half	23	10	33	40	19	59	92

23
43
63

10
19
29

Appendix 4. Numbers of Active Colonies on South Transects, 1958

Transect No.	East Half			West Half			East & West
	Right Observer	Left Observer	Both Observers	Right Observer	Left Observer	Both Observers	Both Observers
13	1		1	3	3	11	12
14	2		2	5	5	10	12
15	12		12	8	1	9	21
16	7	2	9	4	3	7	16
17	3	7	10	9		9	19
18	8	2	10	7	5	12	22
19	3	5	8	8	2	10	18
20	6	5	11	4	2	6	17
21	3	1	4	2	1	3	7
22	4	1	5	2	4	6	11
23	7	2	9	2	3	5	14
24		2	2	1	2	3	5
25	6	5	11	3	1	4	15
Total South Half	62	32	94	63	32	95	189
Totals North and South	65	42	127	103	51	154	261

62
63
125
32
32

Appendix 5. Big Game Observations, 1958.

Aerial Beaver Survey

Species	N.E. Quarter	N.W. Quarter	North Half	S.E. Quarter	S.W. Quarter	South Half	Entire Park
Moose	1	15	16	17	18	35	51
Elk		1	1	7	1	8	16
Deer					1		

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Aerial beaver census
Prince Albert National
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