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BEAVER REPORT

by
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Project Progress Report
Federal Aid in Wildlife Restoration
Projects W-17-4 and W-17-5, Jobs 7.1R, 7.2R and 7.3R

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JOB PROGRESS REPORT (RESEARCH)

State: Alaska

Cooperator: Richard H. Bishop

Project Nos: W-17-4 & W-17-5 Project Title: Small Game and Furbearer Investigations

Job No: 7.1R Job Title: Beaver Life History Study

Job No: 7.2R Job Title: Beaver Population Status Techniques

Job No: 7.3R Job Title: Exploitation, Sex and Age Structure of Beaver Populations

Period Covered: July 1, 1971 to June 30, 1973

SUMMARY

This study was largely inactive during the reporting period due to personnel transfer. Beaver house counts were completed on the Takotna-Nixon study area and on the Innoko-Dishna area. Fewer occupied beaver houses were found than in the previous two to three years, probably as a result of differences in counting conditions and/or technique. Beaver trapping effort was low in the study areas and adjacent areas. Habitat study plots in the Takotna River area were delineated.

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BACKGROUND

A brief background concerning beaver (*Castor canadensis*) management, its objectives, problems and their relationship to this project was written in a previous report (Bishop, 1970), to which the reader is referred.

OBJECTIVES

1. To determine and compare characteristics of productivity and population composition in the Takotna and Holitna drainages.
2. To determine relative densities of beaver populations in the Takotna and Holitna drainages, and to determine the effects of ecological factors and trapping pressure on beaver densities.
3. To determine the relationships between harvest levels and population composition of beavers in the Takotna and Holitna drainages.

PROCEDURES

Specimens of reproductive organs and skeletal material (for age determination) were collected from trappers in the Takotna and Holitna drainages. Comparisons of productivity and population composition will be made after examination and analysis of the specimens.

Relative densities of beaver populations were determined by aerial counts of occupied and unoccupied beaver houses on selected portions of the Takotna, Holitna and Innoko drainages. Counts were made from a Supercub airplane in September or October, when food caches were conspicuous. The location and status of each beaver house were plotted on 1:63,360 maps. Comparisons with past data were made to determine the direction and magnitude of trends.

Description and analysis of beaver habitat were initiated by obtaining aerial photographs of the study areas, devising a means of assessing physiography of the streams, and selecting and characterizing selected areas of beaver habitat.

The procedure, briefly, is to divide the streams into sectors based on physiographic characteristics, select stands of vegetation characteristic of the sectors, and describe species composition and other characteristics of the stands on a reconnaissance basis. A description of the physiographic characteristics will also be included.

Reports and observations of disease, unusual mortality, etc., are presently recorded and investigated as they occur.

Harvest levels were monitored through beaver sealing certificate data and personal contact with trappers. Gross data on age composition were obtained from hide measurements recorded on the same records. Data on sex and age composition of the harvest were also obtained from specimens collected from trappers. Historical information on trapping patterns, harvest and related factors was recorded.

FINDINGS

General

The study was not actively pursued for much of the reporting period. The two major reasons were (1) my transfer to another position in October, 1971, and (2) the commitments of both Peter Shepherd (Area Biologist at McGrath from October, 1971 to present) and myself to production of the publication Alaska's Wildlife and Habitat during spring and summer, 1972.

Beaver House Surveys

Holitna Drainage: No surveys were made in 1971.

Tuluksak Drainage: No surveys were made in 1971.

Takotna Drainage: Beaver house surveys were accomplished on the Takotna and Nixon Fork rivers September 13, 1971 (Table 1). Counting conditions were very good (Table 2).

Considering that trapping pressure was nearly nonexistent the preceding season (Bishop, 1971), the decline of 22 occupied beaver houses on the Takotna River is surprising. One possible reason is that the survey was done somewhat earlier than in past years, and some caches were less visible because they were incomplete, or because slightly high water levels obscured them. However, these possibilities did not seem to strongly affect count data on the adjacent Nixon Fork. The decline in number of unoccupied houses is less surprising, because spring breakup was more violent than had been the case for several years, and some old houses could easily have been washed out or covered with silt. Breakup

Table 1. Beaver house counts, Takotna River and Nixon Fork, 1967, 1969, 1970, 1971.

Area	Year	No. of Houses*	Cache			
			Present		Absent	
			No.	%	No.	%
Takotna River 116 river-miles	1967	60	48	80	22	20
	1969	168	101	60	61	40
	1970	160	97	61	63	39
	1971	106	82	77	24	18
Nixon Fork Forks to 155°30' 35 river-miles	1967	31	15	48	16	52
	1969	44	25	57	18	43
	1970	44	25	57	19	43
	1971	40	22	55	18	45
Nixon Fork New area 155°30' to 155°00' 35 river-miles	1970	25	22	88	3	13
	1971		NOT COUNTED			

* Takotna River 1969 - 6 additional houses probably occupied; 1970 - 7 additional houses probably occupied; 1971 - 0 additional houses probably occupied.

Nixon Fork 1969 - 1 house, status unknown; 1970 - 1 house, probably occupied; 1971 - 0 additional houses probably occupied.

Table 2. Summary of dates and counting conditions, aerial beaver house counts, McGrath area, 1971.

Area	Date	Counting Conditions	Remarks
Takotna River	13 Sept. 1971	Very good	Clear, warm.
Nixon Fork River	13 Sept. 1971	Very good	Clear, warm.
Innoko River	14 Sept. 1971	Good	Clear, warm. Occasional turbu- lence upstream from North Fork, Innoko.

was not severe enough to have caused extensive mortality of beavers, in my opinion.

Finally, the difference in numbers of houses could be a function of technique. The pilot in 1969 and 1970 was the same, but a different pilot was used in 1971. Their flying style differed, and while I felt I was achieving similar coverage in 1971, it is possible that I was missing houses because the stream was not followed as tightly as in the previous two years. Again, this factor seemed not to affect Nixon Fork data as strongly, and the Nixon Fork is probably more difficult to adequately follow.

Count data indicate beaver numbers on the Nixon Fork remained essentially unchanged from 1970 (Table 1). Beaver house distribution was very similar to 1970, but in three cases ponds unoccupied in 1970 contained occupied houses. Occupancy changes in these ponds is particularly interesting, because pond beaver habitat along the Nixon Fork seems marginal. Spring flooding of these ponds and subsequent somewhat higher water levels may have encouraged beaver to use these ponds again. No trapping had occurred in the ponds since 1969, which also may have affected reoccupation.

On and adjacent to the Takotna River between its mouth and the Forks, nine occupied beaver houses were found in 1971, compared to five in 1970. This portion of the river is not part of the study area, but the information is interesting because trapping pressure is usually high so near McGrath. In 1971, however, there was very little trapping in the area.

Innoko River: Beaver house counts were made on the Innoko and Dishna rivers on September 14, 1971. Counting conditions were good (Table 2). Many fewer houses were seen than in past years, but the proportion of occupied houses was considerably higher (Table 3).

The possible reasons for these differences are the same as those in relation to the Takotna River area. It is unlikely a substantial decline in beaver numbers occurred in either the Innoko or the Dishna areas.

Trapping Pressure and Harvest

Holitna and Hoholitna Drainages: The Holitna drainage above Titnuk Creek remained closed to beaver trapping in 1972. Trapping effort on Titnuk Creek and the Hoholitna River was low, with reported catches of 20 and 33 beaver, respectively.

Takotna and Nixon Fork Drainages: A harvest of 42 beaver was reported for the Takotna drainage, of which 32 were taken in the study area. Fourteen of these were taken by McGrath residents near the Forks (lower end of the study area), and 18 were taken by Sleetmute residents who trapped on the upper portion of the study area.

Table 3. Beaver house counts, Innoko and Dishna rivers, 1966-1969, and 1971.*

Area	Year	No. of Houses*	Cache			
			Present		Absent	
			No.	%	No.	%
Innoko River (Beaver Creek to Dishna River)	1966	160	51	32	109	68
	1967	186	83	45	103	55
	1968	241	99	41	142	59
	1969	283	110	39	173	61
	1970	Count Data Unusable**				
	1971	124	87	70	37	30
Dishna River (Mouth to N. 63°15'N. Lat.)	1966	60	34	57	26	43
	1967	76	39	51	37	49
	1968	109	66	61	43	39
	1969	143	82	57	61	43
	1970	Count Data Unusable**				
	1971	66	52	79	14	21

* Count data for 1966-69 from Burris (1971) and unpublished reports.

**Counts were attempted in October. Results were unsatisfactory due to ice and snow.

Forty beaver were reported from the Nixon Fork, of which 16 were taken by a McGrath/Medfra resident who regularly traps the area, and 24 were taken by an experienced trapper who was flown in from Sleetmute.

These harvests are minimal, and represent the generally low interest in beaver trapping during the 1972 season.

Population Composition and Reproduction

No work was accomplished on this portion of the study and no additional collections were made.

Miscellaneous Factors

No work was accomplished on this portion of the study.

Habitat Evaluation

A limited amount of work was done on this portion of the study early in the reporting period. Panchromatic aerial photographs (1" = 1 mi scale) were obtained from the U. S. Bureau of Land Management for the Takotna and Holitna rivers. Photographic coverage available for the study areas was determined and plotted on maps. Previously designated physiographic sectors of the Takotna River were field-checked from an airplane, and within each sector several 1 mi² vegetation plots were established on the photographs. The plots were chosen on the basis of containing representative portions of each sector with regard to physiographic characteristics and vegetation types. Beaver house counts are given by sector for 1969 through 1971 in Table 4.

Similar sectors were tentatively identified for the Holitna and Hoholitna rivers, but additional reconnaissance is needed before plots are established.

Vegetation types will be characterized in gross terms on the Takotna plots in 1973.

DISCUSSION

With both trapping effort and study effort at a low ebb during this reporting period, there seems to be little to discuss.

Lower numbers of active colonies in 1971 on the Takotna and Innokodishna rivers could be attributed to a population decline, but I believe they simply reflect differences in survey conditions and/or technique.

Aerial counts of beaver houses on the Holitna and Hoholitna rivers have not been done since the closure of beaver trapping on the Holitna in 1971, and are an absolute requisite for fall 1973.

Table 4. Summary of beaver house counts, Takotna River, 1969-1971. Data arranged by physiographic sectors of the valley.

SECTOR	YEAR	HOUSES					Total Occ.*	% Occ.
		Occ.	Unocc.	Poss. Occ.	Total			
I	1969	29	27	4	60	33	55	
	1970	37	19	3	59	40	68	
	1971	28	10	0	38	28	74	
II	1969	16	13	1	30	17	57	
	1970	18	12	3	33	21	64	
	1971	18	6	0	24	18	75	
III	1969	34	13	1	48	35	73	
	1970	20	17	0	37	20	54	
	1971	19	6	0	25	19	76	
IV	1969	22	8	0	30	22	74	
	1970	22	8	1	31	23	74	
	1971	17	2	0	19	17	89	
TOTAL	1969	101	61	6	168	107	64	
	1970	97	56	7	160	104	65	
	1971	82	24	0	106	82	77	

* Total occupied and percent occupied include "occupied" and "possibly occupied."

RECOMMENDATIONS

No recommendations will be made at this time.

LITERATURE CITED

- Bishop, R. H. 1970. Beaver Report. Vol. X. Ann. Proj. Progress Rep.,
Fed. Aid in Wildl. Rest. W-17-2. 13 pp. Mimeogr.
- _____. 1971. Beaver Report. Vol. XI. Ann. Proj. Progress Rep.,
Fed. Aid in Wildl. Rest. W-17-3. 11 pp. Mimeogr.
- Burris, O. E. 1971. Furbearer Report. Vol. IX. Ann. Proj. Seg. Rep.,
Fed. Aid in Wildl. Rest. W-17-1(A)8. 10 pp. Mimeogr.

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