BEAVER FOOD CACHE SURVEY
Yukon Flats National Wildlife Refuge
Alaska
1986

YFNWR
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INTRODUCTION

In Alaska, beaver (Castor canadensis) is an important commercial and subsistence wildlife resource. Public Law 96-487, Alaska National Interest Lands Conservation Act (ANILCA) establishes management objectives for the Yukon Flats NWR (Title III, Sec. 302. (9)) which include conserving fish and wildlife populations and habitats in their natural diversity including furbearers. The majority of existing available data are from studies initiated in the early 1960's in response to the Ramparts Dam Project; most furbearer data collected was preliminary and generalized.

The objective of the annual beaver food cache survey is to determine trends in the relative abundance of beaver in representative drainages within the Yukon Flats NWR. Eventually, estimates of beaver populations will be used to evaluate annual beaver harvest in terms of, 1) how closely harvest approaches optimum sustained yield, 2) whether or not optimum aged beaver are harvested, and 3) whether or not particular areas may be over harvested and beaver populations need to be protected or restored.

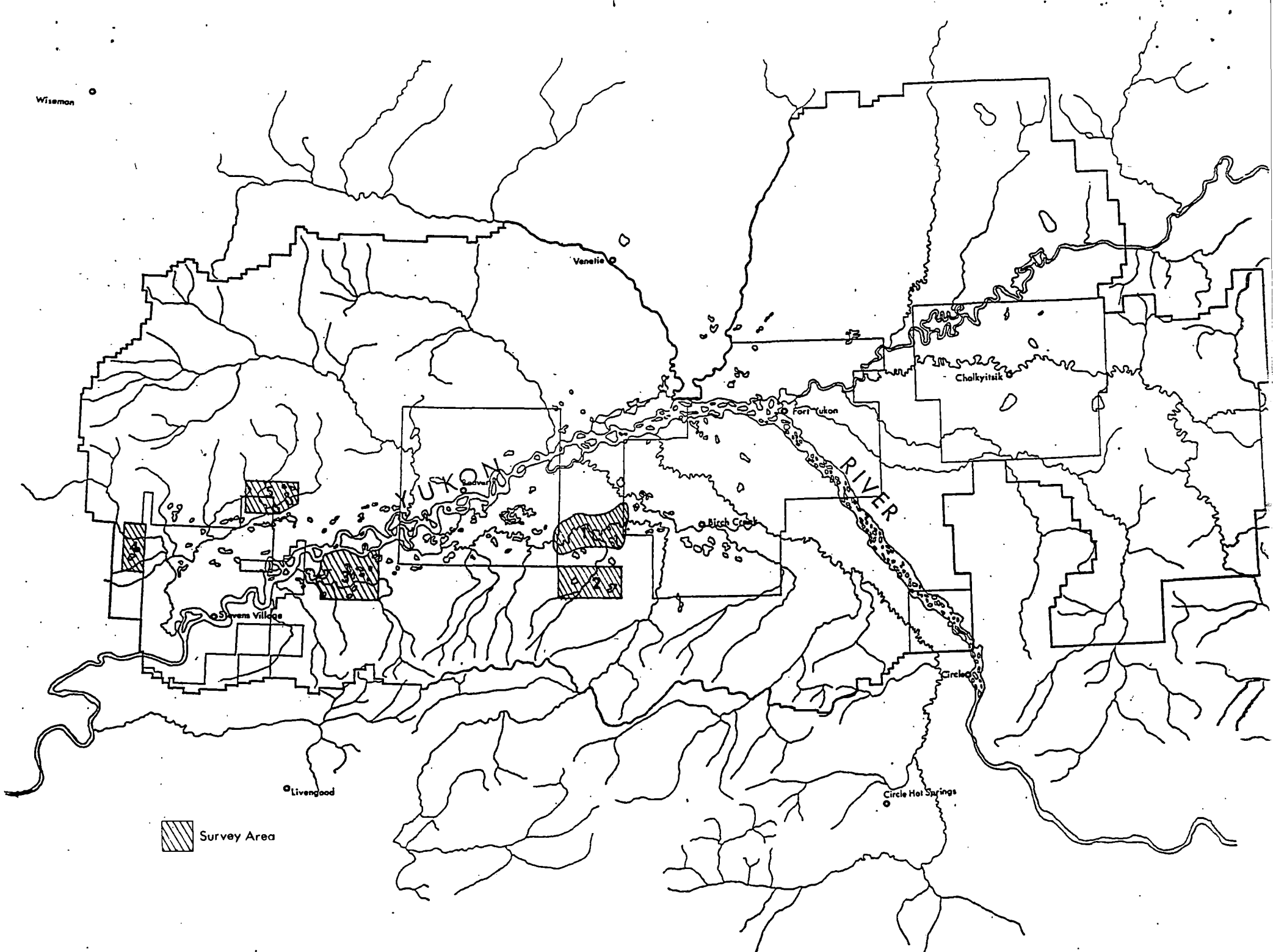
Data collection was accomplished by Lori Nordstrom (Biological Technician).

METHODS AND MATERIALS

Beaver food cache surveys are conducted on an annual basis in accordance to techniques outlined by Hay (1958), Murray (1961), Koontz (1968), Boyce (1974), Gipson (1982), and Swenson, et al. (1983).

Five study areas of about 60-70 sq. miles (155-180 sq km) have been established in representative areas within the refuge. Representative areas sample habitat diversity where potential exists for beaver occurrence. Areas sampled include Beaver Creek (on the Flats), White Mountains foothills, Dall River, and the Yukon Flats proper (Figure 1).

Food cache surveys are normally conducted late September/early October after leaf fall and before ice formation obscures observation. A Piper PA-18 (Super Cub) is flown between 100 and 200 meters AGL at a speed of about 100 km/hour. All water bodies within each study area are searched. All beaver lodges are located and marked on 1:63,360 scale quadrangle maps. A series of symbols for each lodge located are used to denote the presence of a food cache, open water (in case of a thin layer of ice), and tracks (in case of a light snowfall). Surveys are conducted during daylight hours. Optimum weather conditions for surveys occur after a light freeze and a light snow, when beaver activity and the cache of food can be easily observed.


Wiseman
Venetie
Chalkyitsik
Fort Yukon
YUKON
RIVER
Birch Creek
Stevens Village
Livengood
Circle
Circle Hot Springs
Survey Area

RESULTS AND DISCUSSION

The 1986 food cache survey was initially delayed by year-end (FY86) fiscal constraints. The survey commenced on October 6 completing two of the five survey units. The remainder of the survey was preempted due to poor weather and survey conditions. No comparison for the complete survey was made for this year.

Comparison of lodge/waterbody (LWB) ratios generally show a continuing gradual increase in both areas surveyed in 1986 (Table 1). This increase would indicate that beaver are continuing to disperse within the survey area. The dispersal is also born out by the increase of 15 new lodges surveyed for both areas (Table 2 & 3). The LWB ratio gives a general indication of beaver colony density distribution within a given area.

The food-cache activity/lodge (FAL) ratios indicate an increase for Sussaymin Lakes compared to the 1985 survey and an continued decline on the Tulebaugh Lake survey for the past three years (Table 1). The decline in the Tulebaugh Lake survey area does not necessarily indicate a drop in the beaver population. This is born out by the increase in new lodges which indicate a dispersal and also a net gain in active lodges (Table 3). Sussaymin Lakes survey area also demonstrated a net gain in active lodges in comparison to last year's survey results. The FAL ratio is an indicator of existing colony activity at a lodge in relation to all known lodges available for use in a survey area by beaver groups.

Table 1. Beaver lodges surveyed on two survey areas, Yukon Flats NWR, 1986.

Sussaymin Lakes

	Year			
	1983	1984	1985	1986
Lodges	9	24	35	41
Active	7	21	16	22
Waterbodies surveyed	34	56	56	56
Lodge/waterbodies ratio	27:100	43:100	63:100	73:100
Food-cache activity/lodge ratio	78:100	88:100	46:100	54:100

Tulebaugh Lake

	Year			
	1983	1984	1985	1986
Lodges	11	18	30	40
Active	8	15	23	26
Waterbodies surveyed	170	194	194	194
Lodge/waterbodies ratio	7:100	9:100	15:100	21:100
Food-cache activity/lodge ratio	73:100	83:100	77:100	65:100

Table 2. Comparison of active/inactive lodges for 1985-1986, Sussaymin Lakes Survey Area.

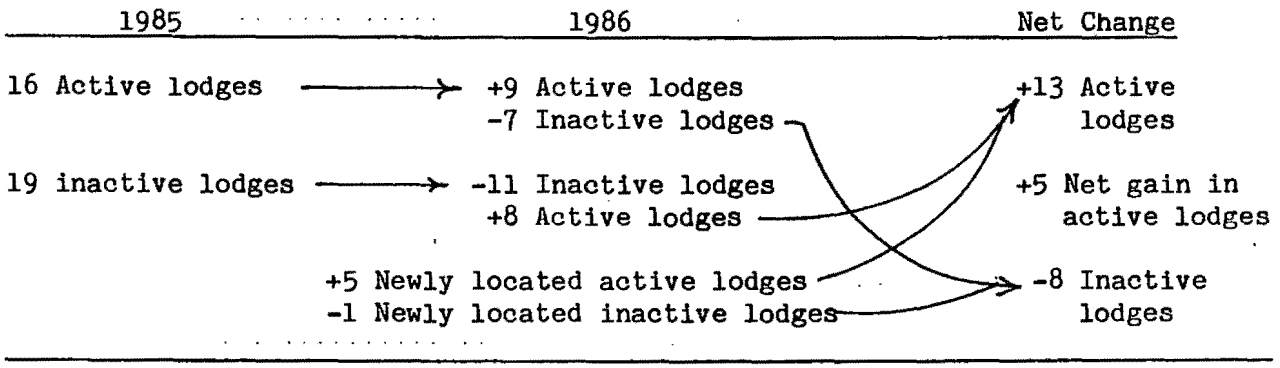
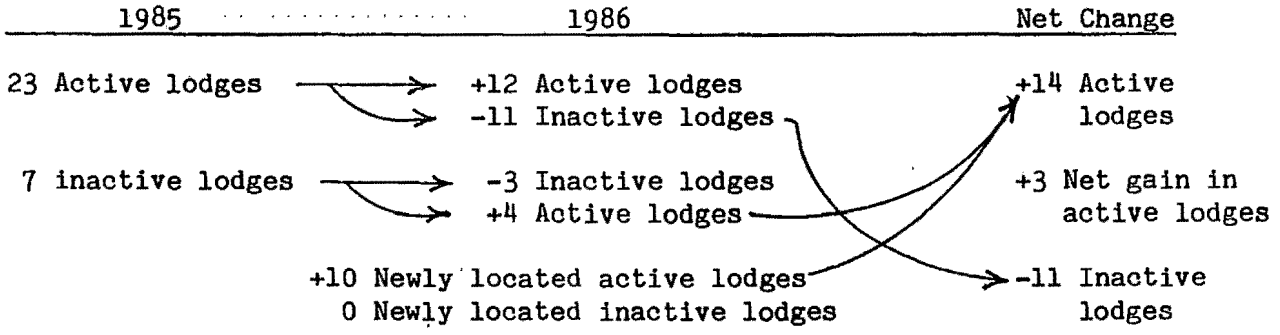


Table 3. Comparison of active/inactive lodges for 1985-1986, Tulebaugh Lake Survey Area.



Beaver colonies within the two survey areas as indicated through aerial food-cache surveys remained relatively stable or increased slightly. The LWB ratio increased for the two areas by 23% over 1985. The increase is reflected in the increase in newly located lodges (15). There was a 10% decrease in the FAL ratio indicating not as many available lodges were occupied. There was a net gain of eight active lodges indicating a relatively stable or slight increase in beaver population reflected through beaver colony activity.

As the LWB ratio continues to increase with a decline in the FAL ratio, the beaver population as expressed as colonies should remain relatively stable or possibly increasing if there is no gain or a net gain in active lodges respectively. Should the LWB ratio remain constant with a decline in the FAL ratio, beaver populations would likely be declining. The converse should also apply; ie. an increase in the LWB ratio and the FAL ratio should indicate a population increase. The surveys will not identify immigration or dispersal into or from the survey area.

We are beginning to observe an activity pattern for beaver occupation of lodges in the study areas over the past four years. An active colony within a given area appears to rotate between a group of lodges occupying one lodge a year or two, then occupying another lodge a year or two before returning to the earlier occupied lodge. Whether these are the same animals is unknown, nevertheless, use of lodges appears to be somewhat cyclic over time.

Previous workers used beaver food cache counts in conjunction with estimates of average colony size, which allowed estimates of beaver populations within given areas. Swenson, et al. (1983) demonstrated that food cache surveys in Montana do not accurately reflected variations in colony size, thus limiting their usefulness in population estimates. Methods to sample colony size within representative habitats on the refuge will need to provide area specific averages that will prove meaningful in use with food cache counts to estimate populations.

Until more work is completed to obtain an accurate estimate of colony size, the food cache surveys will continue to provide a trend of beaver activity by area through enumeration of the number of active beaver colonies in sampled areas.

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