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RIVERINE GOOSE SURVEY
Yukon Flats National Wildlife Refuge

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INTRODUCTION

The Yukon Flats is recognized as a major North American waterfowl production area. An extensive effort was initiated in the early 1950's and mid 1960's to collect waterfowl population and production information in response to the proposed development of the Rampart Canyon Dam and Reservoir Project (USDI 1964, Lensink 1965). Waterfowl breeding pair surveys have been conducted annually on the Yukon Flats (Stratum 04) since the original study was completed in 1965. Production surveys have been conducted for the preceeding six years and eleven years prior beginning in 1963. The major effort of the surveys has emphasized duck species associated with wetland, pond-lake habitats. Little emphasis has been directed towards surveys of geese which are generally associated with river systems. Standard survey techniques for waterfowl in general were determined to be an unsatisfactory means for estimating riverine goose numbers which have a non-random distribution (USDI 1964).

The refuge initiated a preliminary effort towards aerial surveying riverine goose populations in 1985 and 1986. The objectives of these surveys are:

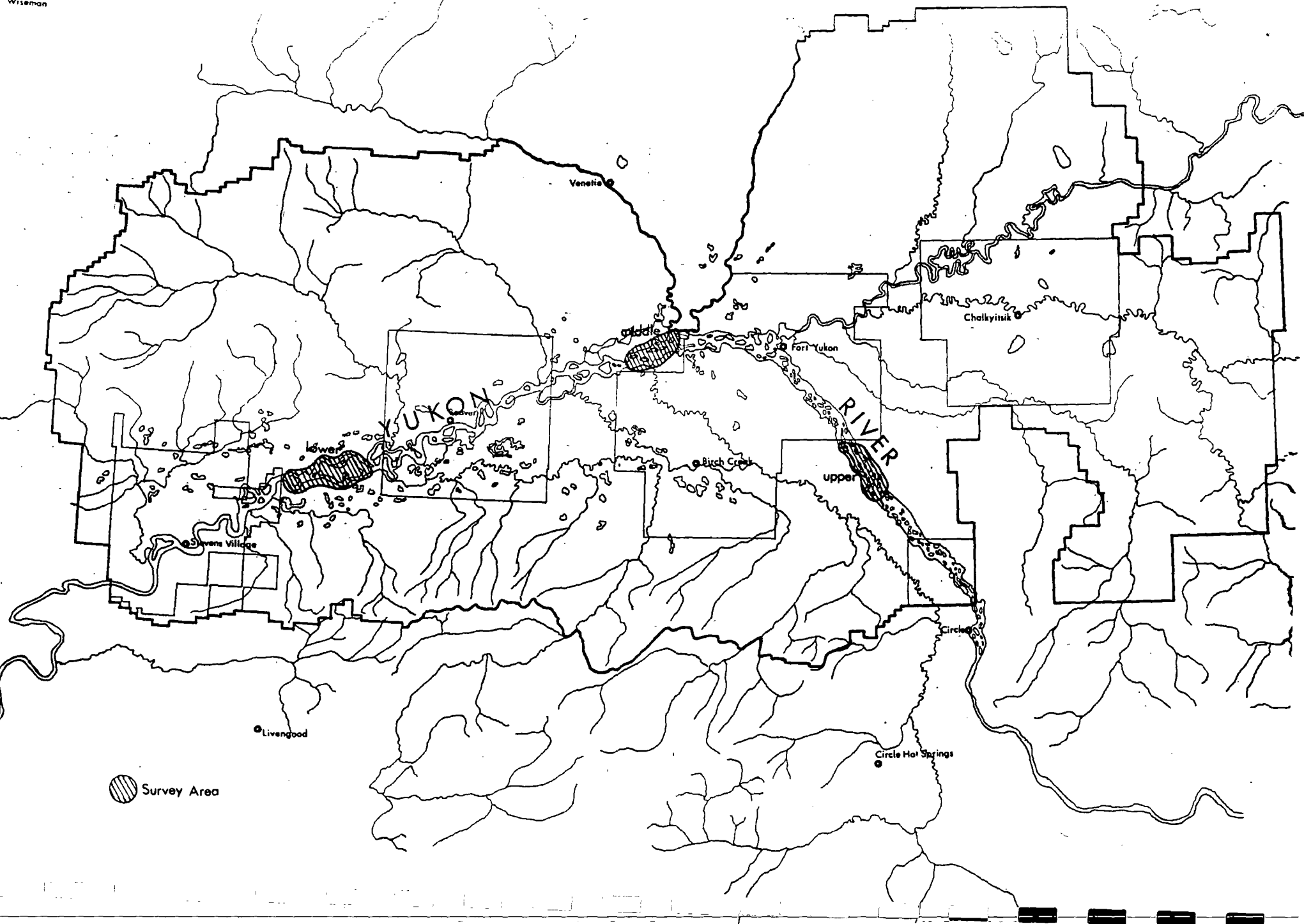
1. Determine the feasibility to; a) observe and count goose broods and young from an aircraft, b) define survey conditions that support the maximum amount of data gathering for the minimum amount of effort;
2. Establish and maintain an annual survey for monitoring goose production trends;
3. Identify important goose production areas;
4. Establish a data baseline to aid in analysis of habitat characteristics relating to goose production.

METHODS

Three study areas encompassing about 296 shoreline miles of the Yukon River were chosen within the refuge in 1985. The study areas are representative of three river configurations (Follmann 1980) characteristic of the Yukon River flowing through the Yukon Flats; upper braided portions (Circle to Fort Yukon) as the river leaves the upper Yukon canyon; lower split channel portion before the river leaves the Flats (Beaver to Stevens Village); and the mid-portion, a braided/split river configuration (Fort Yukon to Beaver) (See map).

Aerial surveys were begun before 8:00 AM on the mornings of July 9, 10, and 11, 1986 for each area respectively. Dates of first goose hatching were noted by Lensink (1965). Timing of the survey was scheduled as close to the estimated peak of goose brood production as possible. A piper PA18 (supercub) was used for its slow flight ability and maneuverability. All shorelines within the study area were aerially searched at a ground speed of about 60-75 mph at an altitude of 100-200 feet AGL. All sightings of geese were recorded according to species, age (adult, young), numbers of adults, numbers of young and numbers of broods. Locations of observations were recorded on 1:63,360 scale USGS Quadrangle maps.

Wiseman



RESULTS AND DISCUSSION

A total of 296 shoreline miles was aerially surveyed on three segments of the Yukon River within the Yukon Flats NWR. A total of 27 goose broods were counted. Table 1 displays the number of goose broods and young observed:

Table 1. Goose production on the Yukon River, Yukon Flats NWR. 1986.

<u>Survey Area</u>	<u>Survey Miles</u>	<u>Broods</u>	<u>Young</u>	<u>Adults</u>
Upper	96	18	93	36
Middle	70	0	0	2
Lower	<u>130</u>	<u>9</u>	<u>33</u>	<u>34</u>
TOTAL	296	27	126	72

Of the 27 broods, three were white-fronted geese with a total of 14 young and six adults. The remaining broods were lesser Canada geese. All white-fronted geese were observed in the upper river section. All adults observed in the upper river section were associated with a brood.

Comparison of total observed goose broods and young produced between 1985 and 1986 is presented in Tables 2 and 3. Comparison of broods and young by species is presented in Table 4.

Table 2. Comparative goose brood survey results by area, Yukon Flats NWR. 1985-86 (Refuge-296 shoreline miles)

<u>Area</u>	<u>Number of Broods</u>		<u>Average</u>	<u>% Change from 1985</u>	<u>% Change from Average</u>
	<u>1985</u>	<u>1986</u>			
Upper	13	18	15.5	+38	+16
Middle	0	0	0.0	0	0
Lower	<u>14*</u>	<u>9</u>	<u>11.5</u>	<u>-36</u>	<u>-22</u>
TOTAL	27	27	27.0	0	0

* in one observation the number was adjusted based on average brood size to determine number of broods.

Table 3. Comparative numbers of goslings produced by area, Yukon Flats NWR, 1985-86 (Refuge-296 shoreline miles)

<u>Area</u>	<u>Number of Young</u>		<u>Average</u>	<u>% Change from 1985</u>	<u>% Change from Average</u>
	<u>1985</u>	<u>1986</u>			
Upper	104	93	100	-8	-4
Middle	0	0	0	0	0
Lower	<u>123</u>	<u>33</u>	<u>78</u>	<u>-73</u>	<u>-53</u>
TOTAL	227	126	177	-44	-29

Table 4. Comparative goose broods and number of young by species, Yukon Flats NWR. 1985-86 (Refuge-196 shoreline miles)

<u>Species</u>	<u>Broods</u>		<u>% Change</u>	<u>Young</u>		<u>% Change</u>	<u>Ave. Brood Size for Both Years</u>
	<u>Year</u>	<u>Year</u>		<u>Year</u>	<u>Year</u>		
	85	86		85	86		
White-fronted	4	3	-25	29	14	-52	6.14
Lesser Canada	23*	24	+4	198	112	-43	7.95
TOTAL	27	27	0	227	126	-44	

* in one observation the number was adjusted based on average brood size to determine number of broods.

Results of comparisons between the two survey years do not provide adequate insight into goose production trend status between the two years. Although the brood numbers do not appear to be out of line, the comparison between numbers of young between years indicates a large drop. This discrepancy is probably explained by the differences in survey timing by year. The 1985 survey was conducted the first week of August when many goslings were developing adult plumage and forming into large groups, making it difficult to determine brood numbers, brood size and number of adults from the survey aircraft. Brood number was estimated from one large brood/group by determining average brood size from the rest of the survey and dividing total number of young observed by the average brood size. Future surveys will be conducted closer to the peak in hatch for both comparison purposes which will avoid the potential confusion of trying to deal with large groups and potential misidentification of adults and young from the aircraft.

The upper survey area tends to support more goose broods and includes all of the white-fronted goose observations. This area is extremely braided with many islands, bars and shoreline miles altered on an annual basis by river action. The lower survey area remains intermediate in producing goose broods. The middle survey area still remains a mystery as to why no broods were observed for the second year in a row. This area is characteristic of a moderately braided/highly split channeled river with numerous islands. Most islands are relatively stable; changes in bars and shoreline are apparently not as dynamic as the upper survey area. Why no broods are observed in the middle survey area is not readily understood as suitable habitat for nesting appears to be available.

An attempt was made to estimate the adult population and number of young produced by river area within the Yukon Flats on the Yukon River. Adults and young per shoreline-mile within each respective area (lower, middle and upper) were multiplied by the total shoreline miles within each respective area measured from USGS Quad maps at 1:63,360 scale. The total measured shoreline mileage was 519, 532, and 1064 miles respectively. The population estimate specifically for the Yukon River within YFNWR in 1986 is 1717 with 1162 young.

Future efforts for riverine goose surveys will attempt to refine the objectives and procedures. Segments of tributaries will also be surveyed. Any additional comments and/or suggestions to improve the field effort or data analysis would be appreciated. Contact L. Scott McLean, Yukon Flats NWR, 907-456-0408.

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