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AERIAL RECONNAISSANCE OF
TWENTY-SIX POTENTIAL SITES FOR
WOOD BISON HABITAT IN THE
SOUTHERN YUKON TERRITORY

by

Hal Reynolds

and

Christine Boyd

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Aerial reconnaissance of twenty-
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AERIAL RECONNAISSANCE OF TWENTY-SIX
POTENTIAL SITES FOR WOOD BISON HABITAT
IN THE SOUTHERN YUKON TERRITORY

by

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May 1982

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ABSTRACT

An aerial reconnaissance of 26 potential sites for wood bison habitat in the southern Yukon Territory was conducted on 8 and 9 October, 1980. Nine "river valley-bottom" sites in the southeastern Yukon, including the Ross River, North Canal, and Money Creek areas were investigated and seventeen sites in the southwestern Yukon, including the Nisling, Donjek and White River areas, were checked. Observations on habitat characteristics such as, dominant and associated vegetation communities, size of potential range and numbers of wildlife were recorded for each site surveyed. The results of these surveys are presented and discussed in terms of suitability of prospective release sites for wood bison.

ACKNOWLEDGEMENTS

We gratefully acknowledge the assistance of M. Hoefs, D. Larsen and D. Russell, Yukon Territorial Government, and A. Martell, Canadian Wildlife Service, with the identification of the final 26 sites for aerial reconnaissance. Thanks are extended to S. Popowich for drafting and to H. Breen and A. Purdy for typing. The air charters were arranged courtesy of the Wildlife Management Division, Yukon Territorial Government, and were funded by Canadian Wildlife Service, Western and Northern Region.

INTRODUCTION

Soon after a range assessment of the Nisling River valley as potential habitat for wood bison was conducted by the Canadian Wildlife Service (CWS) in July 1980, representatives from CWS and the Yukon Territorial Government (YTG) met and decided that any other potential sites should be considered as part of the initial search. As a result of this meeting, M. Dennington, CWS, using 1:250,000 topographic maps, survey notes from the ALUR program, and aerial photographs, prepared a list of 50 "river valley-bottom" sites located in the southern Yukon that could be considered. In September, 1980, at a meeting of representatives from CWS and YTG, the original list of 50 was reduced to 26 potential sites involving two general areas, one in southeastern Yukon and one in southwestern Yukon. The selection criteria used in compiling this list were based on: (1) habitat, regarding vegetative composition and snow conditions; (2) area, the size of available habitat in the potential site; and (3) access, regarding the potential for introduction of animals and public access after the introduction, as determined from map information and personal knowledge of individuals on the committee. There was a general consensus among the group that an immediate aerial reconnaissance of the sites should be undertaken to determine if further inspection would be required. On 8 and 9 October, 1980, fixed-wing aerial surveys of 26 potential sites for wood bison habitat in the southern Yukon Territory were flown, the results of which are reported herein.

METHODS

The selected sites for investigation were marked on 1:250,000 topographical maps with a general boundary line delineating the designated area. An aerial route was plotted linking the sites so as to make efficient use of aircraft time and places for refueling. We decided to divide the survey region into two areas so that all sites could be checked in two days of flying. The first survey area, the southeastern Yukon, included the Ross River, North Canol, and Money Creek areas where nine sites were identified for investigation. The second survey area, the southwestern Yukon, included the Nisling, Donjek and White River areas where 17 sites were identified for investigation. Surveys were flown so that the altitude during flights over selected sites varied between approximately 150 and 350 m a.g.l. and total coverage of each site was accomplished even if circling of the area was required. In addition to the pilot, two observers were present during all flights. One observer assisted with navigation while both watched for habitat characteristics such as dominant and associated vegetation communities, topography, and size of potential range, and recorded those observations and counted any wildlife observed in the survey area.

RESULTS

1. Survey Area One: Southeastern Yukon - Ross River - North
Canol and Money Creek Areas; 9 sites
checked. (Figure 1)
- Flight Date: October 8, 1980
- Observers: Chris Boyd; Hal Reynolds
- Pilot and Aircraft: Tom Hudgin, Alkan Air. Cessna 185
- Total Trip: 4.6 hours flying time

 SITE IDENTIFICATION

COMMENTS

Map Name
Number

Figure 1

1. Tay River - Most of the floodplain is forested with aspen. Spruce, aspen forests and black spruce - muskegs are common on the surrounding uplands. Lichen cover is heavy. In the south section there are no open meadows. To the northeast, there are a few meadows on the periphery of small lakes. Appears like good moose and caribou range.
Potential - Not good for bison.
Wildlife - 1 bull moose.
2. Tay River Tributary - Vegetation appears to be sphagnum - muskeg with Eriophorum vaginatum. West of the lake region, white spruce forests are common and extensive shrublands of willow - birch communities exist. Complete forest cover.
Potential - Not good for bison.
3. Tay Lake - Appears like Muskeg with a sphagnum-lichen cover. Probably tussock grass (Eriophorum vaginatum) is common. No open meadows except a few tussock grass - type openings.
Potential - Not good for bison
Wildlife - 2 bull moose in northwest area of site.
- 1 cow moose near Tay Lake.

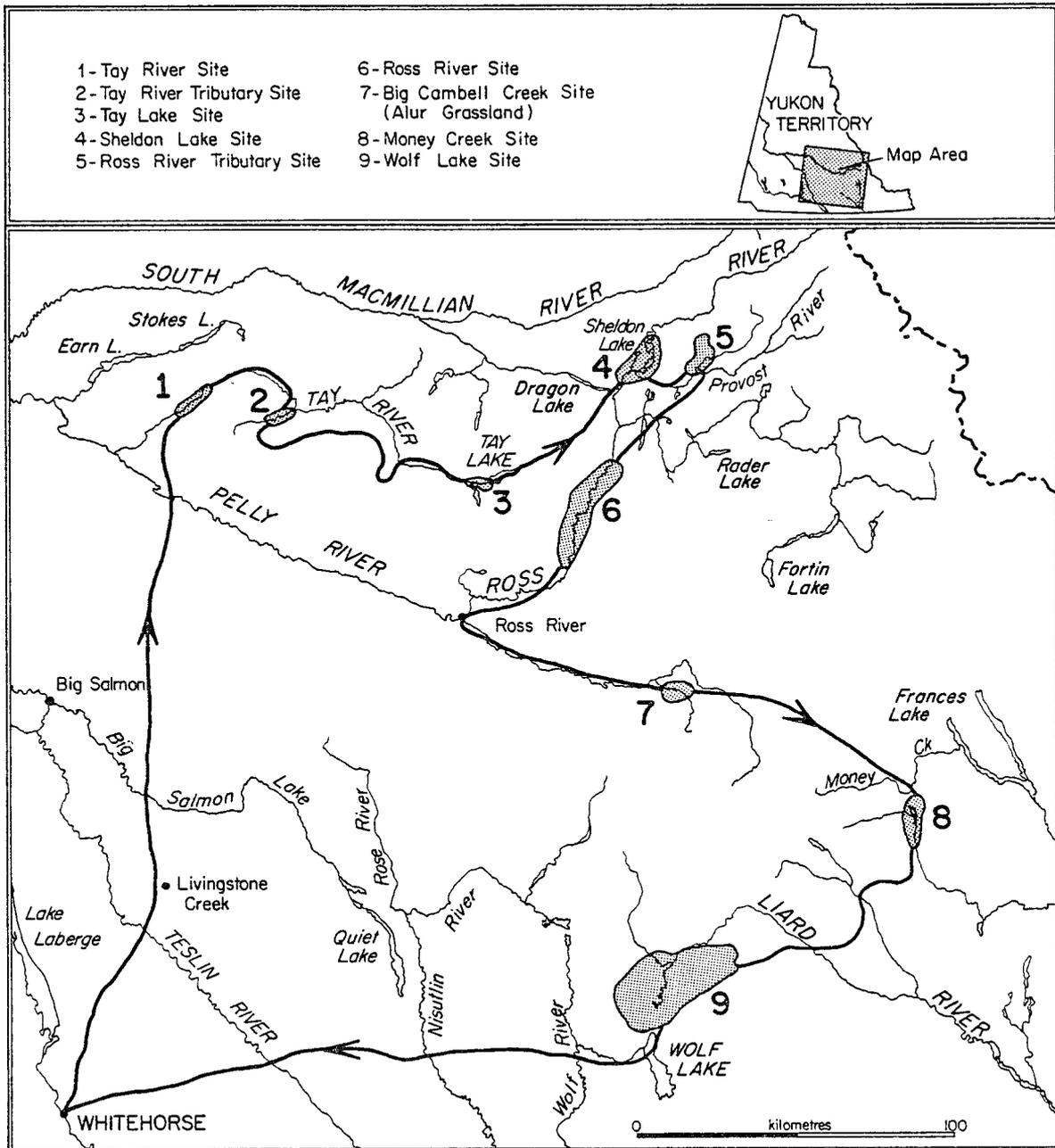


Figure 1. Southeastern Yukon survey region and location of nine sites investigated for potential wood bison habitat in the Ross River-North Canal and Money Creek areas.

<u>SITE IDENTIFICATION</u>		COMMENTS
Map Number	Name	
Figure 1		
4.	Sheldon Lake -	<p>West side of the valley there are some open meadows which appear sedge-like and may include <u>Eriophorum angustifolium</u>. There are several small meadows to the south and north end of Sheldon Lake. Muskeg was noted along the south end of the lake region. It is the best appearing area of the survey this far but is small in size.</p> <p><u>Potential</u> - Looks good but limited by small size (approximately 2.6 km²).</p> <p><u>Wildlife</u> - 2 cow moose observed at north end of lake. - 11 swans were on Field Lake.</p>
5.	Ross River Tributary -	<p>Low, wet areas with muskeg and black spruce, heavy lichen cover and white spruce forests on the high ground. A few meadows are interspersed throughout. Appears to be a sphagnum, <u>Carex</u> spp., <u>Eriophorum angustifolium</u> vegetation type. There is a burn area with a shrub cover of willow <u>Betula</u> and some paper birch.</p> <p><u>Potential</u> - Meadow area not extensive. Not good for bison range.</p> <p><u>Wildlife</u> - 4 swans on a lake between Prevost River and Otter Creek.</p>
6.	Ross River -	<p>Area is mostly white spruce and aspen forests with good shrub understory. It appears like sphagnum and lichen ground cover in the spruce forest. Shrubs may be <u>Ledum</u> sp. under the spruce and bearberry under the aspen.</p> <p><u>Potential</u> - None</p> <p><u>Wildlife</u> - 4 bull moose in aspen stand about 1.6 km east of Canol Road.</p>

SITE IDENTIFICATION

COMMENTS

Map Name
Number

Figure 1

7. Big Campbell Creek-
("Alur Grasslands")

At the west end of the marked site, a few small meadows exist along the Pelly River. The rest of the area is aspen and white spruce forests intermixed forming a parkland type. Some lichen cover was noted.

Potential - Meadow are limited by small size.

- Parkland area has no potential.

Wildlife - None observed.

8. Money Creek -

Area is quite high in elevation (above 1219 m) which could present weather problems. The valley bottom consists of knolls vegetated with birch shrubs and Eriophorum angustifolium - type meadows occur between knolls. Lichen understory occurs in the shrubland. The slopes along the river valley are pine forests with considerable lichen (Cetraria sp.) cover.

Potential - Area is extensive and therefore shows some potential. Ground cover should be checked for plant species composition. However, elevation is probably a limiting factor.

(The entire Money Creek Valley is a more extensive meadow area than Sheldon Lake area but meadows appear more Eriophorum sp. - like with less sedge. The main difference is that the topography is rougher and higher in elevation and the forest is pine (Pinus sp.) with lichen (yellow-green-Cetraria sp.) understory whereas Sheldon Lake

SITE IDENTIFICATIONMap Name
NumberCOMMENTS

Figure 1

		area consists of black spruce and muskeg-type vegetation communities).
	<u>Wildlife</u> -	18 swans on one small lake in the upper region.
	Black River - Ings River -	Some meadows were noted while flying over. The tableland in this valley was interspersed with some meadows.
9.	Wolf Lake area -	High elevation but an area of extensive meadows interspersed with shrublands on a large plateau. Warrants further investigation to determine vegetation species of the meadows. Access to the area is not good.

2. Survey Area Two:

Southwestern Yukon - Nisling - Donjek - White River areas; 17 sites checked. (Figure 2)

Flight Date:

October 9, 1980

Observers:

Chris Boyd; Hal Reynolds

Pilot and Aircraft:

Barry Watson, Alkan Air. Cessna 185

Total Trip:

5.9 hours flying time

SITE IDENTIFICATIONMap Name
NumberCOMMENTS

Figure 2

1.	Nordenskiold River -	- Long, narrow river valley. Meandering river with numerous ox-bows in various stages of succession.
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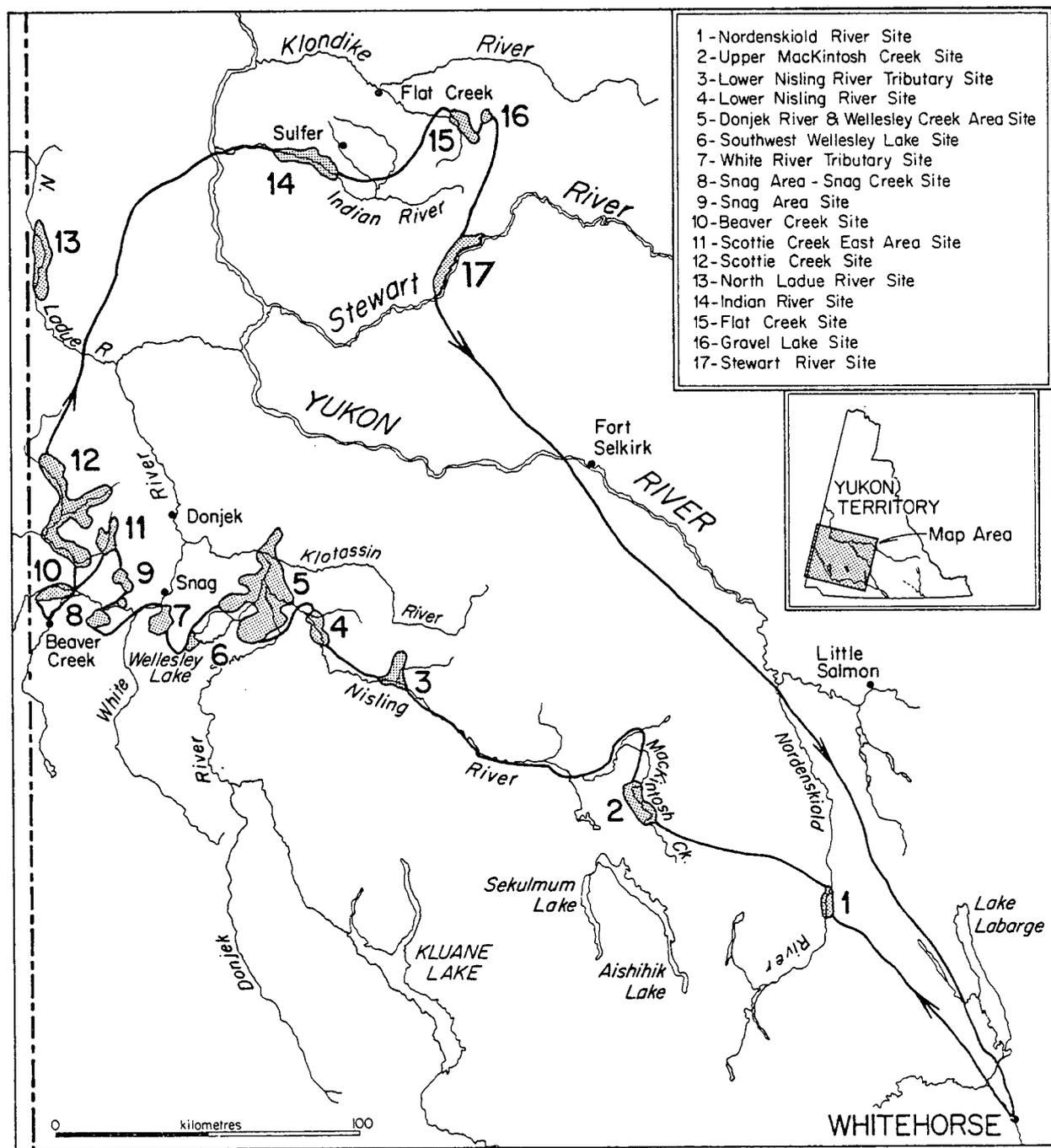


Figure 2. Southwestern Yukon region and location of seventeen sites investigated for potential wood bison habitat in the Nisling-Donjek-White River areas.

<u>SITE IDENTIFICATION</u>		<u>COMMENTS</u>
<u>Map</u>	<u>Name</u>	
<u>Number</u>		
Figure 2		<ul style="list-style-type: none"> - Small meadows scattered throughout the valley. - Upper end has dry, upland, bunch grass community. - Lower end is wetter with more meadows and fewer lakes. <p><u>Potential</u> - Has some potential but should be investigated to determine the species of grasses and sedges and the amount of cover. Small size of area is probably a major limiting factor.</p> <p><u>Wildlife</u> - Lower end - 8 swans on lake. - Upper end - 1 cow moose. Elk range - there is potential for conflict and competition with the existing elk population.</p>
2.	Upper Mackintosh Creek -	<ul style="list-style-type: none"> - South or lower end is vast extensive meadows. - Vegetation - <u>Carex</u> spp., <u>Eriophorum angustifolium</u> or <u>vaginatum</u>? - Upper Mackintosh is more shrub - <u>Betula</u> - <u>Salix</u> and is also a polygon type physiography. Extensive wet meadows (<u>Eriophorum</u> spp. - <u>Carex</u> spp.) and extensive shrubland. <p><u>Potential</u> - Warrants investigation of vegetation species and ground cover type. (We assume that this site is similar to the upper Nisling).</p>
	Upper Nisling -	<ul style="list-style-type: none"> - Baseline range inventory done July 1980. Report prepared, Reynolds et al. (1982). <p><u>Wildlife</u> - 3 moose (males) at junction of Mackintosh Creek and Nisling River. 2 moose (males) near lower lake region. 10 swans in lake on upland.</p>

SITE IDENTIFICATION
Map Name
Number

COMMENTS

Figure 2

	Middle Nisling	<u>Wildlife</u>	- Estimate about 60-80 dall sheep in several groups along slopes on northside of Nisling River.
3.	Lower Nisling River Tributary		- Below Klaza River. <u>Betula</u> shrubland with very little meadow. Appears quite hummocky terrain. Vegetation is probably dominated by <u>Eriophorum vaginatum</u> ? - Trailing evident through the area - caribou? <u>Potential</u> - No good.
4.	Lower Nisling River		- Extensive shrubland, no meadows - <u>Betula</u> communities. - Lower end has aspen forest. - Trailing evident. <u>Potential</u> - No good. <u>Wildlife</u> - 1 male moose.
5.	Donjek River and Wellesley Creek Area		- North from the mouth of the Nisling, the area is mainly shrublands. - North east area at Klotassin River is shrubby and not good. - North area of Donjek near Doyle Creek appeared hummocky and very shrubby. - On the west side in the vicinity of Wellesley Creek, the area is hummocky and shrubby and is interspersed with aspen - spruce forests. - In Area 5, the only meadows are along the lake margins and very few of those exist. <u>Potential</u> - Very poor area.
6.	South West End of Wellesley Lake		- A few open meadows were noted but very small in size and not extensive. - Most of the lowland area is shrubby. <u>Potential</u> - No good. <u>Wildlife</u> - South west shore of Wellesley Lake, estimated about 300 swans in several flocks.

 SITE IDENTIFICATION

COMMENTS

 Map Name
 Number

Figure 2

- | | | |
|-----|------------------------------|---|
| 7. | White River Tributary | - No meadows and few shrublands.
- Area is forested with aspen-spruce mixture.
<u>Potential</u> - None. |
| 8. | Snag Area - Snag Creek | - Along Snag Creek is very shrubby.
- Most of the area is forested with white spruce, muskeg and black spruce and is interspersed with aspen on the higher and drier sites.
<u>Potential</u> - None. |
| 9. | Snag Area | - Mostly aspen forest interspersed with white spruce forests.
- A few shrublands were noted but <u>no</u> meadows.
- The lower end of this site is dominated by <u>Betula</u> sp. shrubland and appeared very hummocky.
<u>Potential</u> - None.
<u>Wildlife</u> - 1 moose near lake between Site 8 and 9. |
| 10. | Beaver Creek | - The Alaska Highway bisects this site.
- Shrubland and hummocky.
<u>Potential</u> - No good. |
| 11. | Scottie Creek Area
(east) | - Shrubland and hummocky - <u>Betula</u> sp. shrubs.
- No forests but very shrubby and hummocky.
<u>Potential</u> - No good. |
| 12. | Scottie Creek | - <u>South end</u> - Large open shrublands, hummocky and interspersed with "islands" of spruce and aspen forests.
- <u>Northward</u> - shrubby with a few meadows.
- <u>West Area</u> - into Alaska appears about the same.
- <u>Central Valley Area</u> - Willow shrublands with scattered spruce forests.
- <u>Northeast Arm</u> - Hummocky but less dense cover of shrubs. |

<u>SITE IDENTIFICATION</u>		<u>COMMENTS</u>
Map Number	Name	
		- <u>North end</u> of valley - more willow shrubs and more spruce forests; very hummocky and shrubby.
		<u>Potential</u> - No good. (Fog bank settled in)
13.	North Ladue River	- <u>Not seen</u> because of fog. - North of Scottie Creek - several stands of paper birch were noted in the forest habitat.
14.	Indian River	- Lower end of river valley had a few scattered meadows but mostly shrubland interspersed with white spruce-aspen forests. - Upper end of Indian River - very shrubby and hummocky. (Sulphur - Dominion area being worked heavily - gold mining) <u>Potential</u> - Limited by small size and mining activities.
15.	Flat Creek	- Lower end - forested with white spruce and very shrubby. - Willow shrubland interspersed by small meadows. <u>Potential</u> - Limited by small size of meadow area.
16.	Gravel Lake	- Scattered meadows with extensive shrubby areas and aspen forests inbetween. - Best site since the Lower Nisling - Wellesley Lake area but not extensive enough to be worthwhile. <u>Potential</u> - Limited by small area of meadows and also by close proximity to highway.
17.	Stewart River	- Very shrubby and hummocky. - South end has extensive white spruce and aspen forests.

Figure 2

SITE IDENTIFICATION

COMMENTS

Map Name
Number

Figure 2

- A few meadows were observed but total
meadow area is small.
Potential - No good.

DISCUSSION

Survey Area One - Southeastern Yukon (Figure 1)

In the Ross River - North Canal and Money Creek areas, 4 out of 9 sites surveyed showed some potential for meadow habitat for bison but none were considered to be as good as the northeast Nisling River Valley assessed by Reynolds et al. (1982).

The Sheldon Lake Site (Fig. 1, #4) looked good in terms of meadow types but small size would be the major limiting factor of the area as suitable habitat for bison. Similarly, the Big Campbell Creek site (#7) was determined not feasible.

The Money Creek site (#8) is an extensive area of meadow-shrubland communities on the open bottom lands located between hills in this plateau of generally rolling topography. The knolls are vegetated with shrubs (birch) while the slopes along the river valleys in this region are vegetated with pine forests and a heavy ground cover of lichens. The generally high elevation of this plateau (1200 m) was considered to be a possible limiting factor in terms of bad weather conditions that would exist for foraging bison. The Robert Campbell Highway is located not too far away on the east side of the Money Creek site but it is separated from the valley by the Campbell Mountains which offer difficulties in terms of access.

The Wolf Lake site (Fig. 1, #9) was observed to be a large plateau of extensive meadows interspersed with dense shrublands. The type of vegetation of the meadows was not discernible. We decided that, mainly because of poor access, this area did not warrant further investigation on the ground and was not feasible as a relocation site for wood bison.

As a result of the aerial investigation in the southeastern Yukon, we believe that none of the nine sites surveyed warrant further inspection on the ground because their potential as wood bison habitat is not nearly as good as that of the Nisling River Valley.

After our surveys were completed, Mr. Barry Watson (pilot with Alkan Air) suggested the upper Pelly River region in the vicinity of Pelly Lakes and Otter Lake as a possible area to investigate because of existing meadows; however, we did not check this area because our survey in this region had been completed the previous day. If this area is similar to the adjacent areas that were surveyed at Ross River, then it would not be suitable. In addition, access to the upper Pelly region is not good and a transplant would be more difficult and costly to conduct than in more accessible locations.

Survey Area Two - Southwestern Yukon (Figure 2)

In the Nisling-Donjek-White River areas, 5 out of 16 sites surveyed (1 site not seen) showed some potential for meadow habitat for bison but only one, the upper Mackintosh Creek (Fig. 2, #2), was considered to be as good and comparable to the upper Nisling region assessed by Reynolds et al. (1982).

The Nordenskiold River site (Fig. 2, #1) appeared to offer some potential because of the presence of grass-sedge type meadows but quantity (biomass) of herbaceous vegetation did not appear great and the small size of the area limited any potential. In addition, this region is part of the range of the introduced elk population which could create conflict in terms of forage competition with bison.

The upper Macintosh Creek site (Fig. 2, #2) offered the best potential habitat in the south or lower end where extensive meadows were observed. The upper region consisted of denser shrub cover than the lower end and meadows were on polygon land formations. We assumed the vegetation and habitat types to be similar to the adjacent upper Nisling which has been assessed as adequate habitat for bison (Reynolds et al. 1982). Therefore, we believe that the upper Macintosh Creek area will supplement the upper Nisling in terms of being an overflow area for expansion of range by bison that may be using the upper Nisling region.

The next site offering any potential was the Indian River area to the north (Fig. 2, #14) where scattered meadow habitat was observed in the lower end of the valley; however, renewed mining activities and small size of the area were deemed major limiting factors to the potential of this site. Similarly, Flat Creek and Gravel Lake sites (Fig. 2, #15, 16) were determined not feasible because of small size of meadow areas and the proximity to the Klondike Highway where public access would be too easy.

As a result of the aerial investigation in the southwestern Yukon, we believe that only one of the 16 sites surveyed offers any potential as great as the Nisling River Valley for suitable habitat for bison. This site, the upper Macintosh Creek area, is adjacent to and part of the Nisling drainage system and, therefore, will complement the Nisling region as a suitable location for a transplant of wood bison.

Later in October, 1980, Mr. G. Searing, Biologist with LGL Ltd., indicated that the Wind River region north of the Wernecke Mountains, specifically the upper Wind River and lower Little Wind River, offered potential as bison range, because these valleys contained "sizeable expanses of grassland". Mr. Searing had not been on the ground and

therefore did not know the species composition of the meadows but suspected that both grasses and sedges were present. We were unable to check this area because of logistics and cost involved to do so after our surveys had been completed. Since that time we have not been able to arrange a cooperative survey with Mr. Searing. This area lies between approximately $64^{\circ}30''$ N. lat. and $66^{\circ}00''$ N. lat. and the only apparent access is at an airstrip located at Bear River. All other sites that have been examined are located south of $64^{\circ}00''$ N. lat. The extreme northern latitude of this location and the poor access are possible limiting factors of the areas as a suitable site.

CONCLUSIONS

Of 26 sites in the southern Yukon examined for potential wood bison habitat, 24 sites were classified as not suitable. The region of the middle and upper Nisling River combined with the Macintosh Creek area contain enough suitable habitat to warrant an introduction of wood bison.

LITERATURE CITED

Reynolds, H.W., J.R. McGillis, and R.D. Glaholt. 1982. Range assessment of the Nisling River Valley, Yukon Territory as habitat for wood bison. Unpubl. Rept. Can. Wildl. Serv., Edmonton, Alta. 64 p.