

Sharp-tailed Grouse
(*Tympanuchus phasianellus jamesi*)
Lek Surveys
Northwest Region
1999



Alberta Conservation
Association

*Funded by Alberta Anglers, Hunters,
and Other Conservationists*

by:

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Executive Summary

Spring lek surveys in the Northwest Region of Alberta were completed for the Sharp-tailed Grouse Habitat Program in 1999, its fifth and final year. During the 1999 study period, 127 sites were investigated. Seventeen new active lek sites were recorded, while the remaining 110 sites surveyed were identified from previous surveys. Of the 127 lek sites surveyed, 54 were active in 1999, with a total reproductive population of 251 sharp-tailed grouse. Habitat assessments were completed on a 5.8 km² area around each lek site, determined by including the quarter section containing the lek as well as each of the surrounding quarter sections. Correlative analyses revealed declining presence of active lek sites as cultivation exceeded 25 %. The majority of leks (67%) had 10 or fewer sharp-tailed grouse present. Population levels this low may be more susceptible to predation and over hunting which may be a contributing factor to the abandonment and relocation of lek sites.

Acknowledgements

Valuable assistance and direction with the sharp-tailed grouse surveys were provided by Ed Kolodychuk and Leanne Osokin from the Alberta Conservation Association (A.C.A.). I wish to thank the Natural Resources Service and Public Lands staff for their continued support with the surveys and recording all sightings throughout the year (Lyle Fullerton, Mark Heckbert, Dave Moyles, Kim Morton, and Joel Politeski). Reg Arbuckle and the Grande Prairie Ducks Unlimited staff surveyed the Grande Prairie area. Thanks to Paul Hvenegaard and John Tchir (A.C.A.) for creating the survey area maps and for assisting with data analysis.

Table of Contents

Executive Summary	i
Acknowledgements.....	ii
List of Tables and Figures.....	iv
1.0 Introduction.....	1
2.0 Study Area.....	1
3.0 Methods	
3.1 Lek Surveys.....	3
3.2 Habitat Assessment.....	3
4.0 Results.....	4
5.0 Discussion.....	6
6.0 Recommendations.....	7
7.0 References.....	8
8.0 Appendices.....	10
Appendix 1. Sharp-tailed grouse lek and habitat survey form	
Appendix 2. Historical sharp-tailed grouse lek sites 1982 – 1984	
Appendix 3. Sharp-tailed grouse survey results 1995 – 1999	
Appendix 4. Reproductive population estimation of 26 lek sites	
Appendix 5. Habitat analysis (5.8 km ²) of 1999 lek sites	

List of Tables and Figures

Figure 1. Map of study area.....2

Figure 2. Active sharp-tailed grouse lek sites in the NW region.....5

Figure 3. Frequency of active lek sites by percent cultivation within 5.8 km²6

Table 1. Average number of birds in relation to percent cultivation.....4

1.0 Introduction

The Sharp-tailed Grouse Program was implemented in 1995 in response to declining abundance of sharp-tailed grouse (*Tympanuchus phasianellus jamesi*) in Alberta. Goddard (1995) reported declines from 50 to 70% from the mid 1960's to the 1990's in southern Alberta. In the Northwest region, declines in sharp-tailed grouse populations have been attributed to habitat loss from intensified agricultural practices and land clearing (Kerik and Trepanier, 1963; Holton, 1985).

The first year of the five year program (1995) focused on revisiting historic lek sites identified by Moller (1982) and Holton (1985). For the following years the program was expanded to include areas throughout the agricultural white zone. By 1998 only one of the 56 historical lek sites identified in the 1980's remained active, however, 48 new leks were located (Broatch 1999). The 1999 Northwest Region Sharp-tailed Grouse Lek Survey represented the final year of surveys in the five-year program. The objectives of the 1999 project were to maintain the survey effort from previous years, completing population density estimates and recording habitat changes within 5.3 km² of each of the 48 active lek sites identified in previous surveys; to Inventory bird abundance, sex ratio and habitat characteristics of new lek sites; and to establish a volunteer base in local communities to assist with inventories in survey areas.

2.0 Study Area

The study area was located within the settled agricultural zone (white zone) of northwest Alberta (Figure 1). The white zone was divided into 13 survey areas, using townships and rivers as boundary lines, and labeled by the nearest town within each area. (Figure 1). Agricultural expansion poses the largest threat to sharp-tailed grouse habitat in this area, augmented by oil and gas development, gravel extraction and most recently, timber harvest on private land (NRS, unpublished data 1997).

Native grassland and aspen parkland (consisting of a mosaic of aspen groves and open grassland) were once abundant in the study area, but have declined significantly since the area was first settled. Grasslands historically occurred around the settlements of Peace River, Spirit River, and the largest (93,000 km²) by Grande Prairie in the early 1900's (Wilkinson 1981). Grassland remnants found along the Peace River slopes are a unique mixture of approximately 30 native grassland plant species commonly found in southern regions of the province (Wein 1998). Only about one percent of the remaining fragments of the parkland along the Peace River valley remain undisturbed (Wein 1998).

Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)
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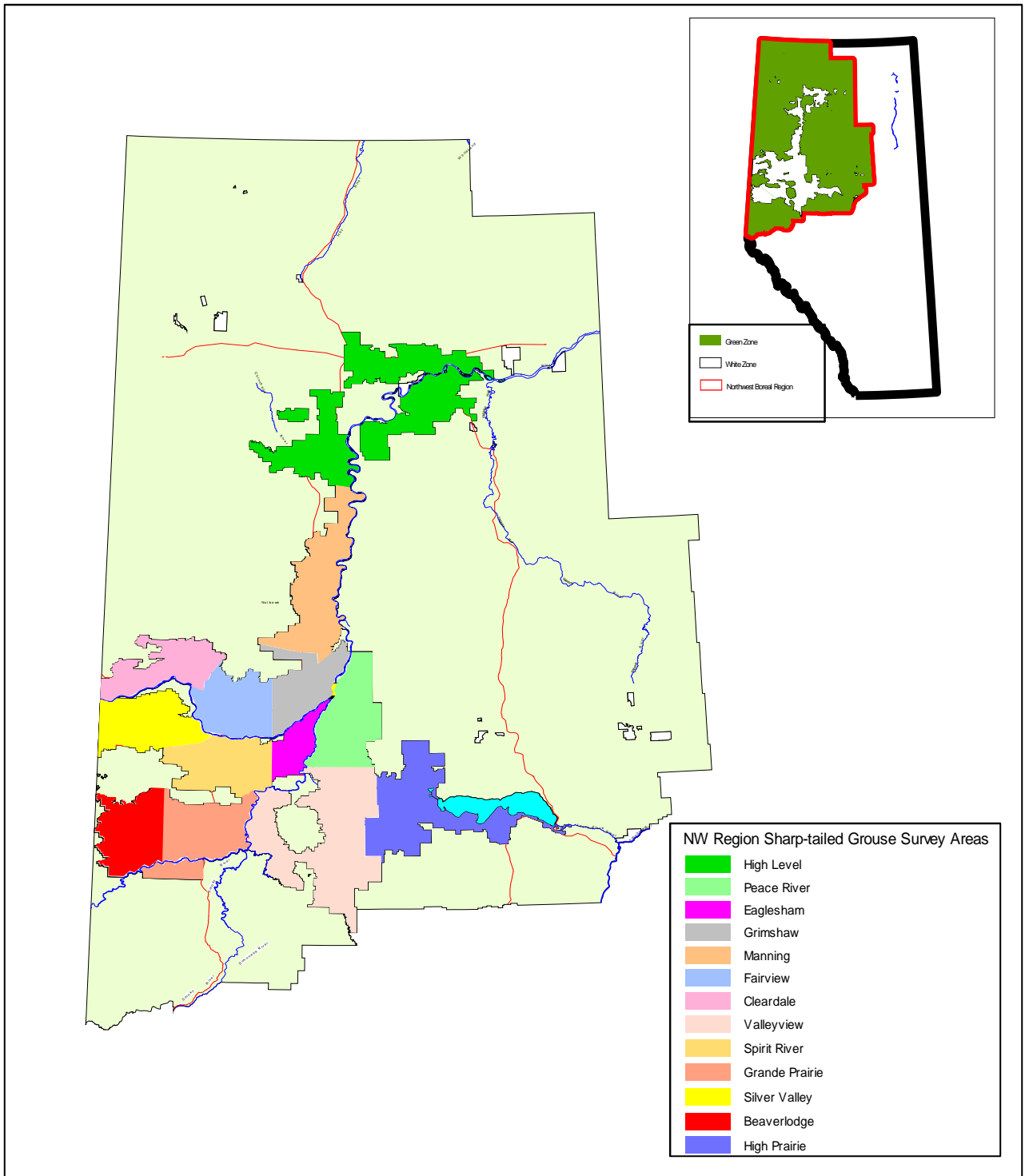


Figure 1. Map of Study Area

3.0 Methods

3.1 Lek Surveys

Ground counts were used to inventory sharp-tailed grouse numbers in the spring of 1999, between March 20 and May 22. Two crewmembers inventoried lek sites for two months and two weeks respectively. Ground surveys consisted of visiting known or potential leks within the survey areas, by foot or ATV) from a half hour before sunrise to two and a half hours after sunrise (Holton 1985, Jones and Millar 1998). The close proximity of leks usually allowed an observer to follow a pre-determined route surveying three leks per morning. To ensure assigned leks were counted that day, observers usually remained at a lek for less than five minutes (Jones and Millar 1998). Sites were recorded as being “abandoned” when no birds were observed at a known lek location. Leks located within an adjoining quarter section of the abandoned sites were recorded as a shift of the known lek site. If a new lek was located, a GPS recording at the site was taken for future reference. In identifying an active lek, Johnsgard (1973) indicated that 8-12 males should be present on the grounds. For this study a lek site was recorded as being “active” if any number of birds were present and if the site had trampled vegetation, feces, and feathers, indicating an active lek. Leks with no birds were visited again during the season, if time constraints allowed, to confirm abandonment of the site.

Total counts of birds at lek sites can over estimate the reproductive population. Rippen and Boag (1974) found that nonterritorial birds present at lek sites were a nonproductive segment of the population. It was imperative to determine sexes before flushing and then count the returning number of territorial males, which were added to the female counts to produce the reproductive population. The flush method was attempted at every lek site possible. After flushing, the non-territorial and female birds may not return as quickly as the territorial birds. This method was followed at 26 of the 54 active surveyed sites.

Sometimes inaccessible lek sites made it impossible to flush the birds. When the above method was not used, birds observed were categorized into males and females and total numbers recorded. If the sex of birds could not be identified they were recorded as unclassified.

3.2 Habitat Assessment

The assessment of habitat involved recording the predominant vegetation, land-use, and description of the quarter section containing the lek, as well as each surrounding quarter (for a total of 9 quarter sections or 5.8 km²). Each quarter section was divided into 18 cells (approximately 3.6 ha each) for mapping of vegetation and land use. The cells were then classified as: cultivated (any grain or oilseed crop land), hay land, pasture, forested, or native grass (Appendix 1). The percentage of cultivated land on all quarters was calculated and correlated with the status of the site.

The presence of suitable nesting and brooding cover within 1.6 km of the lek site strongly influences the breeding population (Pepper 1972). The Habitat Suitability Index Model for Sharp-tailed Grouse uses 1.3 km as the mean distance from known leks to nest sites (Prose 1987). The minimum habitat area is therefore assumed to be 5.3 km² (a circle with a radius of 1.3 km around the lek). Assessment of the area surrounding leks totaled 5.8 km² which was still less than the 8.04 km² recommended by Pepper (1972) but provided a general overview of the habitat and present land use patterns in the area. At some of the sites surveyed during mid March habitat assessments were not completed due to snow cover. Habitat assessments for historical leks were completed only on active sites.

4.0 Results

A total of 127 sites were surveyed in 1999. These sites included 56 historical leks (of which only three leks were still active (Appendix 2), 34 active and 20 abandoned leks from 1998, and 17 new leks. In 1999 a total of 54 out of the 127 surveyed lek sites were active, containing 502 sharp-tailed grouse (Classified as Males, Females, Unidentified, and Total Birds in Appendix 3). Figure 2 illustrates the locations of all active leks found in the Northwest Region. The majority of lek sites (67%) in this region consist of 10 birds or less (includes non-territorial birds).

Reproductive population counts were completed on 26 of the 54 active lek sites. This method resulted in a pre-flush count of 160 males, 48 females, and 64 unidentified for a total of 272 birds. A total of 203 birds returned to the lek after flushing. Two hundred and fifty one sharp-tailed grouse were estimated to comprise the reproductive population (Appendix 4).

Samples of the habitat mapping are in Appendix 1. A summary of the habitat analysis determined from the mapping is included in Appendix 5. Overall, the average number of sharp-tailed grouse was larger when less cultivation was present (Table 1).

Table 1. Average number of birds in relation to percent cultivation

% Cultivation	<=25%	26-50%	51-75%	76-100%
# of Active Leks	23	13	10	8
Avg. # of Birds	10.08	9.07	8.10	6.75

Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)
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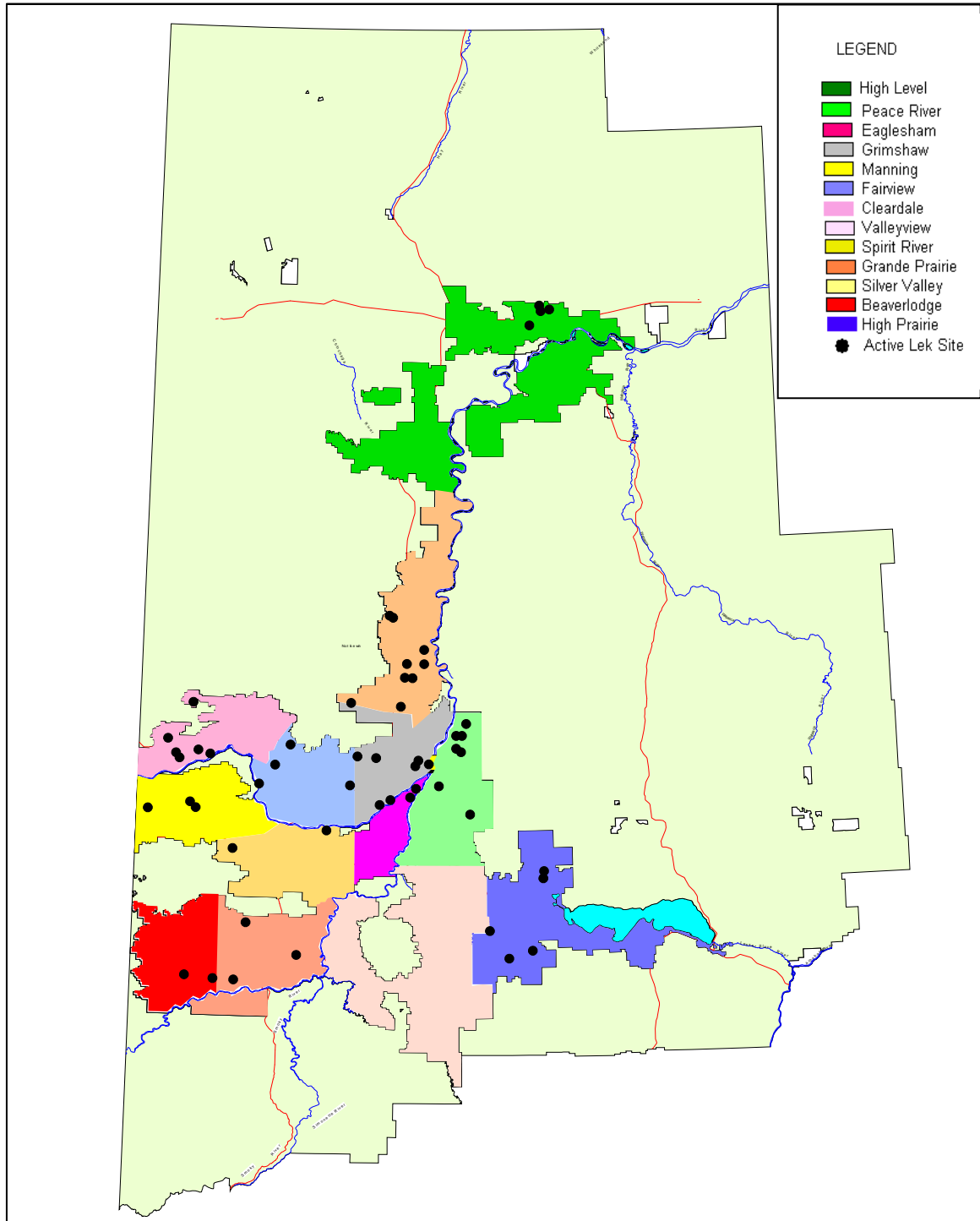


Figure 2. Active sharp-tailed grouse lek sites in the NW region.

As the percent cultivation increased above 25%, the number of active leks and number of birds declined (Figure 3).

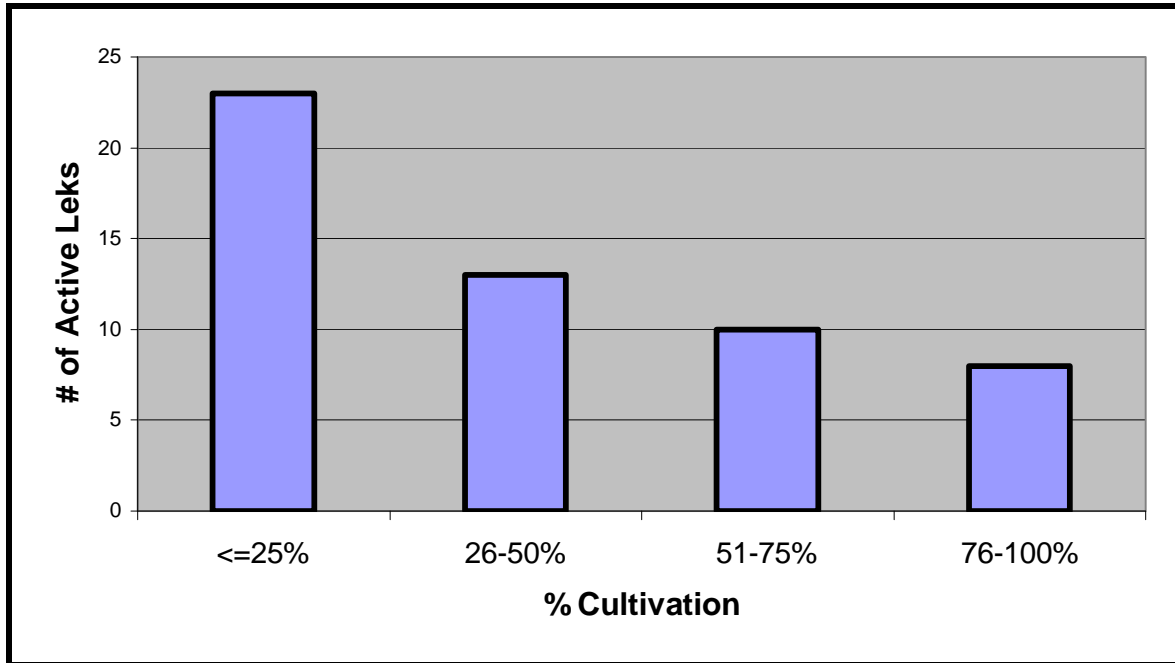


Figure 3. Frequency of active lek sites by percent cultivation within 5.8 km²

5.0 Discussion

Sharp-tailed grouse lek sites in the Northwest region have been identified throughout many parts of the white zone, however future population viability is a concern. The habitat assessments in this study revealed intensified farming to be the dominant land use type. Other researchers support the strong negative relationship between increased cultivation and lek numbers observed in this study. Marks and Marks (1988) have linked sharp-tailed grouse declines with habitat loss and land use changes to intensive farming. Pepper (1972) estimated that grazing reserves might require a minimum of 24 hectares of un-grazed pasture to sustain a lek site. Grazing reserves support 9 of the 14 lek locations in the Northwest region with 0% cultivation.

Currently only 33% of the active leks are comprised of greater than 10 birds (including non-breeding birds). Factors like predation and hunting could increase abandonment when existing sharp-tailed grouse numbers are low (Ritcey 1995; Moyles and Boag 1981). The high number of abandoned leks reported in 1999 may be a result of low numbers of resident males or habitat alteration within 1.6 km of a lek site (Evans 1961; Pepper 1972). Sharp-tailed grouse require a mosaic of habitat, which may be outside the 5.8 km² assessment area (Pepper 1972, and Moyles 1981).

Lek surveys were spread over a long period (March –May) for the NW region to complete an inventory of all sites. This survey period likely missed peak hen presence at many sites and therefore sex proportions may be biased when comparisons are made. Under current methods the identification and inventory of new and temporary lek sites were not accomplished.

6.0 Recommendations

1. The current survey methods in place in this region likely miss these new or temporary leks because a designated route to known lek sites is taken. More time should be set aside to search for new lek sites with proximity to abandoned sites.
2. The habitat requirements may have been met outside of our assessment zone of 5.8km². Expanding the area of assessment around all lek sites would provide more insight into habitat requirements and facilitate the development of projects.
3. More detail is required when recording the condition of the habitat (eg. grass understory in the shrub cover). The grazing reserves may have 0% cultivation, however the conditions of the shrub cover, understory, and overall grazing impacts are limiting factors for nesting and brood rearing
4. Incorporate more landowner input into a habitat program. One more year of survey with an extension to interview more landowners.

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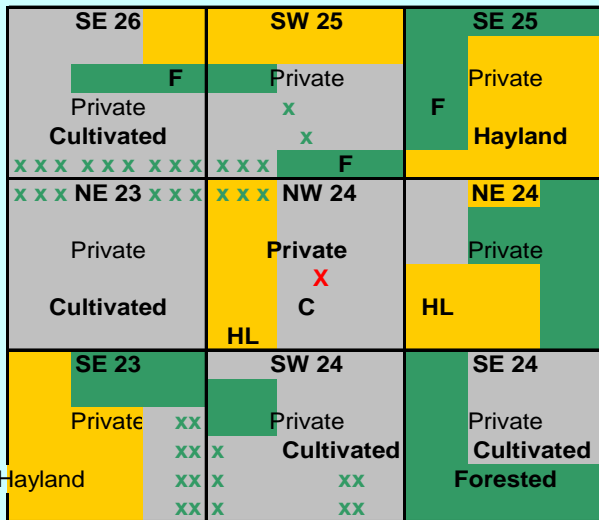
8.0 Appendices

Appendix 1. Sharp-tailed grouse lek and habitat survey form

STG Lek Survey / Sighting Form

Survey (Lek): Sighting: Date:
 Survey Area: Site # Observer(s):
 Qtr Sec Twp Rge Mer
 G.P.S. - Zone - m E / m N UTM

Lek Site: Active - Not Active -



Land Status of Qtr With Lek Site

Status:
 Landowner:
 Telephone #:

Bird Data

Displaying Males:
 Females:
 Unknowns:
 Total Birds:
 Returned Flushed Birds:

Climate

Temp: C Wind: kph / dir. Cloud: % Precip: mm

Habitat and Vegetation Description of Quarter Section With Lek

- Cultivated - Hayland - Grazing - Forested -
- Flat - Gently Rolling - Hilly - River Breaks -
- Grass - % Shrubland - % Willow - % Poplar - %
 Cultivated - % Pasture - % Hayland - % Other - %
- Grazing Impact: Low - Moderate - High -
- Fence Line(s): North - East - South - West -

Other Comments:

Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)
Lek Surveys Northwest Region 1999

Appendix 2. Historical sharp-tailed grouse lek sites 1982-1984

HISTORICAL SHARP-TAILED GROUSE LEK SITES (1982-1984)												
LOCATION DATE	TYPE	LEK STATUS	LEK SITE	LEKS NEAR	1/4	SEC	TWP	RGE	MER	M	F	TOTAL
01-Apr-84	LEK				NW	13	79	4	W6			UNKN
01-Apr-84	LEK				SE	26	79	3	W6			9
01-Apr-84	LEK				NE	30	80	21	W5			UNKN
01-Apr-83	LEK				NE	21	79	3	W6			10
01-Apr-83	LEK				SE	14	84	10	W6			2
01-Apr-83	LEK				NE	27	82	24	W5			7
01-Apr-83	LEK	ACTIVE	GS08		NW	12	84	25	W5			UNKN
01-Apr-83	LEK				SW	27	82	26	W5			7
01-Apr-83	LEK				SE	27	82	1	W6			7
01-Apr-83	LEK				NW	15	84	21	W5			3
01-Apr-83	LEK				NW	34	81	22	W5			UNKN
01-Apr-83	LEK				NW	8	85	21	W5			5
01-Apr-82	LEK				SW	18	73	3	W6			UNKN
01-Apr-82	LEK				NE	30	69	23	W5	1		1
01-Apr-82	LEK				NE	34	69	23	W5	3	2	5
01-Apr-82	LEK				NW	26	69	23	W5	3		3
01-Apr-82	LEK				NE	16	76	17	W5	3		3
01-Apr-82	LEK				SE	28	79	3	W6	6		6
01-Apr-82	LEK				SW	25	79	3	W6	4	1	5
01-Apr-82	LEK				SW	29	79	2	W6	3		3
01-Apr-82	LEK				SW	27	79	2	W6	10		10
01-Apr-82	LEK				NW	23	79	2	W6			13
01-Apr-82	LEK				NE	23	79	3	W6	3		6
01-Apr-82	LEK				NE	22	79	3	W6	6		6
01-Apr-82	LEK				SW	13	79	5	W6	2		4
01-Apr-82	LEK				NW	17	79	5	W6	3		3
01-Apr-82	LEK				NE	32	78	6	W6	2	1	3
01-Apr-82	LEK				SE	16	79	6	W6	2		5
01-Apr-82	LEK				SE	2	84	11	W6	5		5
01-Apr-82	LEK				NE	10	84	10	W6	5		6
01-Apr-82	LEK	ACTIVE	CD06		SE	23	84	10	W6	2		4
01-Apr-82	LEK				SW	22	82	6	W6	8		8
01-Apr-82	LEK				NE	21	82	6	W6	1		2
01-Apr-82	LEK				NW	18	83	6	W6	6		6
01-Apr-82	LEK				NE	23	83	6	W6	6		7
01-Apr-82	LEK				NW	25	82	8	W6			UNKN
01-Apr-82	LEK				NE	8	82	2	W6	2		3
01-Apr-82	LEK				NE	24	82	1	W6	4		7
01-Apr-82	LEK				NE	12	83	25	W5			UNKN
01-Apr-82	LEK				NE	11	84	25	W5			UNKN
01-Apr-82	LEK				NE	23	84	25	W5			UNKN
01-Apr-82	LEK				SE	18	84	24	W5	3		3
01-Apr-82	LEK				SE	26	83	25	W5	3		3
01-Apr-82	LEK				SW	26	90	22	W5	3		4
01-Apr-82	LEK				SW	6	84	20	W5	3		3
01-Apr-82	LEK				NE	33	82	20	W5	2		2
01-Apr-82	LEK				NW	11	82	24	W5	3		3
01-Apr-82	LEK				NW	4	82	24	W5	3		8
01-Apr-82	LEK				NW	2	82	24	W5	3		5
01-Apr-82	LEK	ACTIVE	EG01		NE	13	82	23	W5	3		3
01-Apr-82	LEK				SE	19	82	22	W5	4		4
01-Apr-82	LEK				NW	26	82	22	W5	2		4
01-Apr-82	LEK				SW	30	81	22	W5	2		2
01-Apr-82	LEK				SW	29	81	23	W5	9		9
01-Apr-82	LEK				SE	30	72	8	W6	6		6
01-Apr-82	LEK				NW	22	72	9	W6	6	2	8

Counts from 1980's

Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)
Lek Surveys Northwest Region 1999

Appendix 3. Sharp-tailed grouse survey results 1995-1999

AREA	Lek Site	Lek Status	1999				1998			1997			1996	1995	Comments
			M	F	U	T	M	F	T	M	F	T	T	T	
Beaverlodge	BL01	Active			5	5			6	9	1	10	-	-	
Beaverlodge	BL02	Active			5	5									
Cleardale	CD01	Active	7		1	8			6			5	6	-	
Cleardale	CD02	Not Active				0			5			6	-	-	
Cleardale	CD03	Active			5	5			14			-	-	-	
Cleardale	CD04	Active	6			6	8	2	10			-	-	-	
Cleardale	CD05	Active			8	8			8			-	-	-	
Cleardale	CD06	Active	10	4		14									Historical
Cleardale	CD07	Active			8	8									
Eaglesham	EG01	Active			10	10			11			8	14	-	Historical
Eaglesham	EG02	Active			2	2			20			-	-	-	
Eaglesham	EG03	Not Active				0			4			-	-	-	
Fairview	FV01	Active	2			2			4			10	6	13	
Fairview	FV02	Not Active				0			0			0	6	-	
Fairview	FV03	Not Active				0			12	4		4	-	-	shift to FV08
Fairview	FV04	Active	6	3		9	8	1	9	5	1	6	-	-	
Fairview	FV05	Active	5	1		6	7	2	9	4	2	6	-	-	
Fairview	FV06	Not Active				0			12			9	-	-	
Fairview	FV07	Not Active				0			8			-	-	-	
Fairview	FV08	Active	7	4		11			-			-	-	-	from FV03
Grande Prairie	GP01	Not Active				0			0			0	8	-	
Grande Prairie	GP02	Active	7	4		11			12			12	7	-	
Grande Prairie	GP03	Active	7	2		9			6	6	2	8	-	-	
Grande Prairie	GP04	Not Active				0			9	9	2	11	-	-	
Grande Prairie	GP05	Active			11	11									
Grimshaw	GS01	Not Active				0			14			16	16	-	shift back to GS08
Grimshaw	GS02	Active	5	1		6			0			4	-	-	
Grimshaw	GS03	Not Active				0			0			20	-	-	
Grimshaw	GS04	Active	4	1		5			2			4	-	-	
Grimshaw	GS05	Active	2			2			8			-	-	-	
Grimshaw	GS06	Active	5			5									
Grimshaw	GS07	Active	20	4	1	25									
Grimshaw	GS08	Active	6	2		8									Historical
Grimshaw	GS09	Active			5	5									
High Level	HL01	Active			4	4									
High Level	HL02	Active			26	26									
High Level	HL03	Active			31	31									
High Level	HL04	Active			6	6									
High Prairie	HP01	Active	10	1		11			13			-	-	-	
High Prairie	HP02	Active	10	1		11			7			-	-	-	
High Prairie	HP03	Not Active				0			4			-	-	-	

Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)
Lek Surveys Northwest Region 1999

Appendix 3. cont'd.

AREA	Lek Site	Lek Status	1999				1998			1997			1996	1995	Comments
			M	F	U	T	M	F	T	M	F	T	T	T	
High Prairie	HP04	Active			7	7	9		9			-	-	-	
High Prairie	HP05	Active			2	2			10			-	-	-	
High Prairie	HP06	Active	5	2		7									
Manning	MN01	Active	9	2	2	13			5	6	2	8	-	-	
Manning	MN02	Active	4			4			2			15	-	-	
Manning	MN03	Active	9	2		11			8			9	-	-	
Manning	MN04	Active			17	17	18	4	22			12	-	-	
Manning	MN05	Active	4	1		5	14	3	17			-	-	-	
Manning	MN06	Active	8	1	1	10	13	6	19			-	-	-	
Manning	MN07	Active	6	3		9	7	1	8			-	-	-	
Manning	MN08	Active	10	3	1	14			22			-	-	-	
Manning	MN09	Active	4			4			-			-	-	-	
Peace River	PR01	Not Active				0			7			17	17	-	shift to PR09
Peace River	PR02	Active	9	1		10			5	7	2	9	-	-	
Peace River	PR03	Not Active				0			0			3	-	-	
Peace River	PR04	Active	8			8			11	5	3	8	-	-	
Peace River	PR05	Active	3	3		6			8			-	-	-	
Peace River	PR06	Active	9	3		12			14			-	-	-	
Peace River	PR07	Not Active				0			11			-	-	-	
Peace River	PR08	Active	6	1		7			-			-	-	-	
Peace River	PR09	Active	7	3	4	14			-			-	-	-	from PR01
Peace River	PR10	Active	10	5	2	17			-			-	-	-	
Silver Valley	SV01	Active	7	3		10	2	1	3			15	12	-	
Silver Valley	SV02	Active	5	3	2	10			10			16	9	-	
Silver Valley	SV03	Not Active				0			6			11	-	-	
Silver Valley	SV04	Not Active				0	2	1	3			-	-	-	
Silver Valley	SV05	Not Active				0			6			-	-	-	
Silver Valley	SV06	Active	3		8	11									
Spirit River	SR01	Active	6			6			13			6	6	-	
Spirit River	SR02	Not Active				0			5			5	8	-	
Spirit River	SR03	Active	8	5		13			7			11	11	-	
Valleyview	VV01	Not Active				0			5			5	5	-	
Valleyview	VV02	Not Active				0			0	4		4	-	-	
			259	69	174	502	88	21	449	59	15	293	131	13	

Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)
Lek Surveys Northwest Region 1999

Appendix 4. Reproductive population estimation of 26 lek sites

Reproductive Population Estimation of 26 Lek Sites									1999		
							Males	Females	Unk	Total	Returned
NE	9	84	9	W6	1996	CD01	7		1	8	8
SW	2	84	11	W6	1997	CD07			8	8	6
NE	31	84	4	W6	1998	FV04	6	3		9	7
SW	28	82	6	W6	1998	FV05	5	1		6	6
NE	29	83	5	W6	1998	FV08	7	4		11	9
SE	31	83	22	W5	2000	GS02	5	1		6	5
SW	9	84	22	W5	2000	GS04	4	1		5	4
SE	14	84	26	W5	2000	GS07	20	4	1	25	17
NW	19	110	13	W5	2000	HL02			26	26	17
SE	19	72	17	W5	1997	HP06	5	2		7	5
NE	9	87	23	W5	1997	MN01	9	2	2	13	10
SE	6	89	22	W5	1997	MN02	4			4	4
NW	19	92	23	W5	1997	MN03	9	2		11	11
SE	35	89	23	W5	1997	MN04			17	17	17
NW	24	90	22	W5	1997	MN05	4	1		5	4
SW	36	89	22	W5	1998	MN07	6	3		9	9
NE	15	87	1	W6	1998	MN08	10	3	1	14	14
SW	20	92	23	W5	1998	MN09	4			4	4
NE	23	84	20	W5	1998	PR04	8			8	6
NE	31	80	19	W5	1998	PR05	3	3		6	3
NE	7	86	19	W5	1998	PR06	9	3		12	7
SW	34	84	20	W5	1999	PR08	6	1		7	4
NW	22	85	20	W5	1999	PR09	7	3	4	14	8
NW	24	85	20	W5	1999	PR10	10	5	2	17	8
NW	16	81	10	W6	1999	SV01	7	3		10	5
SE	10	81	10	W6	1999	SV02	5	3	2	10	5
							160	48	64	272	203
203 Males + 48 Females = 251 Reproductive Sharp-tailed Grouse											

Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)
Lek Surveys Northwest Region 1999

Appendix 5. Habitat analysis (5.8 km²) of 1999 lek sites

AREA	Lek Site	Lek Status	1999	1998	1997	1996	1995	Cult.%	Hay %	Graz.%	Forest%	Nat.%
Beaverlodge	BL01	Active	5	6	10	-	-	35	23	31	11	0
Beaverlodge	BL02	Active	5					88	0	0	12	0
Cleardale	CD01	Active	8	6	5	6	-	0	0	14	54	32
Cleardale	CD02	Not Active	0	5	6	-	-	65	6	0	29	0
Cleardale	CD03	Active	5	14	-	-	-	4	22	7	67	0
Cleardale	CD04	Active	6	10	-	-	-	0	67	5	28	0
Cleardale	CD05	Active	8	8	-	-	-	15	7	41	37	0
Cleardale	CD06	Active	14					37	52	0	11	0
Cleardale	CD07	Active	8					19	40	0	41	0
Eaglesham	EG01	Active	10	11	8	14	-	0	0	0	44	56
Eaglesham	EG02	Active	2	20	-	-	-	46	22	0	32	0
Eaglesham	EG03	Not Active	0	4	-	-	-	86	5	0	9	0
Fairview	FV01	Active	2	4	10	6	13	67	11	22	0	0
Fairview	FV02	Not Active	0	0	0	6	-	67	15	0	18	0
Fairview	FV03	Not Active	0	12	4	-	-	100	0	0	0	0
Fairview	FV04	Active	9	9	6	-	-	85	4	11	0	0
Fairview	FV05	Active	6	9	6	-	-	70	11	0	19	0
Fairview	FV06	Not Active	0	12	9	-	-	72	28	0	0	0
Fairview	FV07	Not Active	0	8	-	-	-	24	19	0	57	0
Fairview	FV08	Active	11	-	-	-	-	100	0	0	0	0
Grande Prairie	GP01	Not Active	0	0	0	8	-	65	0	33	2	0
Grande Prairie	GP02	Active	11	12	12	7	-	51	0	26	8	15
Grande Prairie	GP03	Active	9	6	8	-	-	88	0	0	12	0
Grande Prairie	GP04	Not Active	0	9	11	-	-	57	27	2	14	0
Grande Prairie	GP05	Active	11					35	27	2	36	0
Grimshaw	GS01	Not Active	0	14	16	16	-	71	11	0	18	0
Grimshaw	GS02	Active	6	0	4	-	-	94	0	0	6	0
Grimshaw	GS03	Not Active	0	0	20	-	-	62	0	0	38	0
Grimshaw	GS04	Active	5	2	4	-	-	83	0	0	17	0
Grimshaw	GS05	Active	2	8	-	-	-	0	0	0	44	56
Grimshaw	GS06	Active	5					22	0	48	30	0
Grimshaw	GS07	Active	25					22	11	0	67	0
Grimshaw	GS08	Active	8					61	22	0	17	0
Grimshaw	GS09	Active	5					40	0	0	15	45
High Level	HL01	Active	4					10	64	14	12	0
High Level	HL02	Active	26					0	0	75	25	0
High Level	HL03	Active	31					0	0	51	49	0
High Level	HL04	Active	6					0	0	64	36	0
High Prairie	HP01	Active	11	13	-	-	-	0	0	72	28	0
High Prairie	HP02	Active	11	7	-	-	-	0	0	80	20	0
High Prairie	HP03	Not Active	0	4	-	-	-	0	0	73	27	0
High Prairie	HP04	Active	7	9	-	-	-	0	47	0	53	0
High Prairie	HP05	Active	2	10	-	-	-	48	25	0	27	0
High Prairie	HP06	Active	7					15	54	0	31	0

Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi*)
Lek Surveys Northwest Region 1999

Appendix 5. cont'd.

AREA	Lek Site	Lek Status	1999	1998	1997	1996	1995	Cult.%	Hay %	Graz.%	Forest%	Nat.%
Manning	MN01	Active	13	5	8	-	-	6	83	0	11	0
Manning	MN02	Active	4	2	15	-	-	78	0	18	4	0
Manning	MN03	Active	11	8	9	-	-	28	33	0	39	0
Manning	MN04	Active	17	22	12	-	-	34	62	0	4	0
Manning	MN05	Active	5	17	-	-	-	100	0	0	0	0
Manning	MN06	Active	10	19	-	-	-	53	12	0	35	0
Manning	MN07	Active	9	8	-	-	-	56	0	44	0	0
Manning	MN08	Active	14	22	-	-	-	0	0	85	15	0
Manning	MN09	Active	4	-	-	-	-	56	32	0	12	0
Peace River	PR01	Not Active	0	7	17	17	-	28	43	0	29	0
Peace River	PR02	Active	10	5	9	-	-	44	26	4	26	0
Peace River	PR03	Not Active	0	0	3	-	-	44	33	11	12	0
Peace River	PR04	Active	8	11	8	-	-	54	0	0	46	0
Peace River	PR05	Active	6	8	-	-	-	62	0	0	38	0
Peace River	PR06	Active	12	14	-	-	-	0	0	78	22	0
Peace River	PR07	Not Active	0	11	-	-	-	69	0	19	12	0
Peace River	PR08	Active	7	-	-	-	-	41	52	0	7	0
Peace River	PR09	Active	14	-	-	-	-	30	39	0	31	0
Peace River	PR10	Active	17	-	-	-	-	52	26	0	22	0
Silver Valley	SV01	Active	10	3	15	12	-	38	15	44	3	0
Silver Valley	SV02	Active	10	10	16	9	-	31	55	11	3	0
Silver Valley	SV03	Not Active	0	6	11	-	-	41	4	11	44	0
Silver Valley	SV04	Not Active	0	3	-	-	-	56	22	0	22	0
Silver Valley	SV05	Not Active	0	6	-	-	-	11	66	11	12	0
Silver Valley	SV06	Active	11					0	57	0	36	7
Spirit River	SR01	Active	6	13	6	6	-	0	0	93	7	0
Spirit River	SR02	Not Active	0	5	5	8	-	0	0	93	7	0
Spirit River	SR03	Active	13	7	11	11	-	15	52	19	14	0
Valleyview	VV01	Not Active	0	5	5	5	-	79	0	0	21	0
Valleyview	VV02	Not Active	0	0	4	-	-	40	0	9	51	0
			502	449	293	131	13					