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**Sharp-tailed Grouse Dancing
Ground Survey in Alberta
Conservation Association's
Prairie Region
2000**



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Lethbridge, Alberta**



**Alberta Conservation
Association**

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

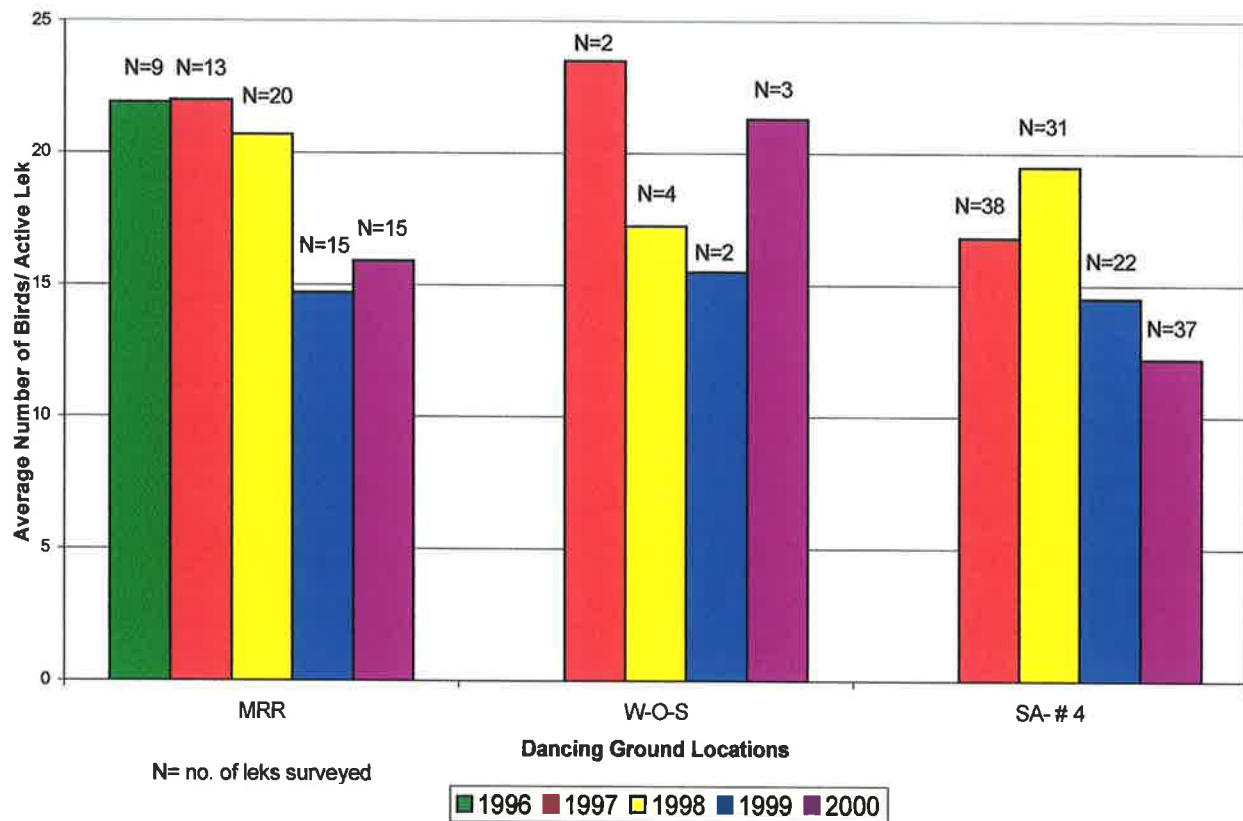


Figure 2: Trend Index for Leks on Co-operating Landowners Properties.

4.3 Pakowki Lake Project Area

In 1999, a grazing association in the Pakowki Lake project area joined the Sharp-tailed Grouse Habitat Program. Surveys were conducted in 3 sections (11 473 acres) of the total grazing association area (76 000 acres) in 2000. One sharp-tailed grouse dancing ground was found consisting of 10 unclassified birds.

Executive Summary

The Natural Resources Service initiated the Alberta Sharp-tailed Grouse Habitat Program in 1995. Funding for this project was provided from the Fish and Wildlife Trust fund. In 1997, the Alberta Conservation Association took responsibility of this program. The goal of the program is to enhance habitat by developing range/wildlife habitat management plans in cooperation with landowners. As part of this program, spring lek or dancing ground surveys was to be conducted to identify sharptail activity and obtain site specific habitat information. Monitoring of leks has been conducted by both the Alberta Conservation Association and the Natural Resources Services staff. This is the programs sixth year and summaries of the results of the sharptail lek surveys conducted in 2000 are provided in this report.

The basic method used to inventory sharp-tailed grouse numbers involved ground counts of birds displaying on leks from April to May. In 2000, surveys were conducted in areas of the Milk River Ridge, Writing-On-Stone, Special Area #4 and Pakowki Lake. Information contained in this report consists of results for dancing grounds on participating landowners associated with the sharp-tailed grouse habitat program. Landowner dancing grounds in the Milk River Ridge area were ground surveyed with 15 leks surveyed, 1 was considered inactive/ abandoned, no new ones were discovered, while 6 leks were not surveyed. A total of 238 birds were observed on 14 active leks, consisting of 67 males, 7 females, and 167 unclassified birds. The Writing-On-Stone area had 3 active leks surveyed with 64 birds (46 males, and 18 females). Special Area # 4 had 37 leks surveyed with a total of 453 birds (146 males, 37 females and 270 unclassified birds). The participating grazing association (consisting of 76 000 acres) in the Pakowki Lake area had 3 sections (11 473 acres) surveyed, with one dancing ground located consisting of 10 unclassified birds. Comparisons of each of these areas were completed for all the years surveyed.

Recommendations for future considerations include approaching other landowners in all project areas whom are not participating in the habitat program, to become involved, and establish trend blocks and/ or conduct an aerial survey for the grazing reserve in Pakowki Lake area. Continue with trend block surveys already established and continue monitoring leks to establish long term population trends.

Permission to Quote

This report contains preliminary results and interpretations and may be subject to future revisions. To prevent the issuance of misleading information, persons wishing to quote from this report, to cite it in bibliographies or to use it in any other form must first obtain permission from the author or the Alberta Conservation Association, Regional Manager, Prairie Region.

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1.0 Introduction

Population trends for sharp-tailed grouse (*Tympanuchus phasianellus jamesi*) in Alberta have been based on sporadic surveys, with some areas receiving more attention than others. It is generally believed that population levels have shown declines ranging from 50 to 70 % in some areas over the past 30 years (Goddard 1995). Though sharptail population levels naturally fluctuate in response to local conditions, it is believed that the loss of habitat and intensified agricultural development within the aspen parkland and grasslands of central and southern Alberta have significantly contributed to the observed population declines (Goddard 1995). In the Alberta Environmental Protection (1996) report of the status of Alberta wildlife, it indicates that the sharp-tailed grouse is yellow listed, meaning that it is a sensitive species, which may require special management practices.

In 1997, the Alberta Conservation Association took responsibility of a 5 year Sharp-tailed Grouse Habitat Program. The goal of the program is to enhance habitat by developing range/wildlife habitat management plans in cooperation with landowners. As part of this program, spring lek or dancing ground surveys are to be conducted to identify sharp-tailed grouse activity and obtain site specific habitat information (Goddard 1995). With the assistance of lek surveys, areas identified with potential to improve sharptail habitat are included in the habitat program.

Initially 2 areas were identified as pilot project areas. They were Special Areas #4 in the Central Region and the Milk River Ridge area in the Southern Region. Throughout the past 5 years, the project has expanded to include six areas (Jones and Millar 1998). The Foothills area is no longer being monitored by the Prairie Region (as of 2000) but is being managed by staff in the South East Slopes Region. A total of 170 previously unknown dancing grounds have been located (Miller 1999) since the program began. In 2000, only 4 of these 6 areas were surveyed. Assistance was also provided to the Natural Resources Service to continue monitoring trend blocks established in 1999 (Cerney 2000).

2.0 Project Areas

Four areas were surveyed in the spring of 2000 for sharp-tailed grouse leks (Figure 1). These areas were the Milk River Ridge, Writing-On-Stone, Special Area #4 and Pakowki Lake. The Milk River Ridge, Writing-On-Stone and Pakowki Lake areas fall within the Southern Region while Special Area #4 area is within the Central Region of Alberta. All four regions fall within the Prairie Region of the Alberta Conservation Association. The majority of the area is located within the fescue grassland or mixed grass ecoregions. Habitat types include grassy plateaus, riparian draws, wetlands, croplands, and tame pasturelands.

3.0 Methods

3.1 Dancing Ground Surveys

The main method used to inventory sharp-tailed grouse numbers in the spring involved ground counts of birds displaying on leks. Ground surveys consisted of visiting known or potential leks, by foot or ATV. In identifying an active lek, Johnsgard (1973) indicated that 8-12 males should be present on the grounds. Surveys are conducted from ½ hr before sunrise to 2 hrs after sunrise.

The close proximity of dancing grounds usually allowed an observer to plan a pre-determined route to visit 2-3 leks per morning. To ensure assigned leks were counted that day, observers usually remained at a lek for less than 5 minutes. Leks were usually visited once with counts believed to adequately reflect male numbers (Dube 1997). Birds observed were categorized into males and females and total numbers recorded. If the sex of birds couldn't be identified they were recorded as unclassified. When no birds were observed at a known lek location, it is believed to have been abandoned unless a new lek was located within the area of this mapped ground. If a new ground was located, a GPS recording at the site was taken for future reference.

3.2 Landowner Dancing Ground Trends

Landowners that have agreed to partake in the sharp-tailed grouse habitat program have had their land monitored for trends of total bird numbers throughout the years since first discovery and initial agreement by the landowner. Data and information are collected based on known leks on and within a mile of each landowners ranch.

With the limited data, changes in total bird numbers between 0 and 10 constituted a constant trend, while changes of more than 10 birds constituted an increase or decrease in population depending on the direction (increase or decrease) of bird numbers. Trends are based on surveys for the last 4 years (5 for the Milk River Ridge area) with results beginning to show some trends but still quite preliminary. For the purpose of confidentiality a project code has been assigned to each landowner. Note: The graph located in this report indicates general trends (average number of birds/active leks surveyed) for the 3 areas in 2000, excluding Pakowki Lake.

4.0 Results

4.1 Milk River Ridge Project Area

In 2000, the sharp-tailed grouse surveys were conducted on those landowners that have had the Sharp-tailed Grouse Habitat Program range management plans completed at them. There are 6 co-operating landowners participating in the program. Of the 21 known dancing grounds on the 6 ranches participating in the program, 15 grounds were surveyed. (Appendix A) Overall total bird numbers for these landowners in 2000 were 238 birds consisting of 64 males, 7 females and 167 unclassified with the average number of 15.9 grouse per active lek. The average numbers of birds surveyed over 5 years for the Milk River Ridge landowner dancing grounds are 270.6 birds.

Figure 2 shows the number of sharp-tailed grouse leks surveyed and the average numbers of birds counted per active lek over the 5 years of study. As indicated in Figure 2, 2000 had a slight increase in birds from 1999 but have decreased from previous years.

Two grounds are located on or within the vicinity of landowner MR001, 1 was active having 21 birds (all unclassified), 1 ground considered abandoned in 1999 remains abandoned in 2000. There has been an increase in the number of birds from the previous years with this single active ground surveyed.

Landowner MR002 has 7 dancing grounds on the vicinity of the ranch. A total of 85 birds (9 males, 76 unclassified) were seen on 4 active grounds and 3 grounds were not inventoried. Two have an increased number of birds indicating a population change (10+ birds) from 1998, 2 had a slight decrease over the last 3 years and one had approximately the same number of birds as in 1997. Comparing the numbers with that in 1999, all active grounds remain constant.

Landowner MR003 has 2 active grounds. Bird numbers remain constant over the years, however the numbers are slightly lower. A total of 33 unclassified birds were counted in 2000.

One ground was surveyed on Landowner MR004 property in 2000. The results of this single survey indicate a loss of an average of 11 birds, with the number of males having significantly dropped from previous years. Eleven sharp-tailed grouse were counted consisting of 6 males and 5 females.

Five dancing grounds are located on or within the vicinity of landowner MR005, only 2 grounds were surveyed with a total of 33 birds, consisting of 14 males, 1 female and 18 unclassified. Bird numbers have remained constant on one ground and decreased on the other.

Landowner MR006 has 4 active dancing grounds, with all being surveyed. Thirty-five males, 1 female and 19 unclassified sharp-tailed grouse were identified, totalling 55 birds. Total number of birds has remained constant from year to year.

4.2 Writing-On-Stone Project Area

The Sharp-tailed Grouse Habitat Program is currently working in co-operation with 1 landowner in the Writing-On-Stone project area (Appendix B). Landowner WOS 001 has 4 leks, 3 were surveyed and 1 was not located. Sixty-four birds consisting of 46 males and 18 females were seen.

The overall average number of grouse for 2000 was 21.3 sharp-tailed grouse on the 3 surveyed leks. Total sharp-tailed grouse numbers have fluctuated over the years, but each active ground remains constant. Trend comparisons can be found in Figure 2, indicating an increase in the average number of grouse/active lek over the previous 2 years.

4.4 Special Area #4 Project Area

Dancing ground surveys in the Special Area #4 project area consisted of inventories of known leks. Emphasis was placed on leks located on property owned by ranchers involved with the Sharp-tailed Grouse Habitat Program. Lek identification numbers were recoded in 1999 with new identification codes that follow those of other areas. Thirty-seven dancing grounds were surveyed in 2000 with 1 new lek identified and 1 potential site to be searched in 2001. This potential lek was surveyed over 2 days with 2 (1 female, 1 unclassified) birds seen on one day and 6 (1 female, 5 unclassified) birds on the second day. These numbers have NOT been included in the overall total number, as it has not been identified as a confirmed lek.

The Sharp-tailed Grouse Habitat Program is currently working in cooperation with 5 landowners in Special Area #4 (Appendix C). A total of 453 birds (146 males, 37 females and 270 unclassified) were seen. All known dancing grounds were surveyed in 2000, except for 2, which have been determined to be abandoned from previous surveys. The average number of birds was 12.2 birds per active lek with an average of 10 males for the 15 leks individually classified. The overall average number of birds /active lek has decreased since 1997, noting that more leks were surveyed in 2000 with fewer average numbers of birds. See Figure 2 for trend comparisons.

Landowner SA001 has 8 grounds on or near his ranch. The newly identified lek was located on this landowners property with 22 birds counted. This new lek was within 500 meters of a previously known lek and may be a satellite to the original. Continued monitoring of this lek is required to determine if it is a true lek or satellite. Of the remaining 7 leks, 5 are constant, 1 has decreased over the years and 1 had no birds. If this last lek has been abandoned it would result in the loss of an average of 21.5 birds. A total of 96 birds (40 males, 14 females and 42 unclassified) have been seen on this landowners property.

Nine active and 2 abandoned grounds are located on or within the vicinity of the ranch of landowner SA002. The 2 abandoned grounds have not been surveyed since before 1997 and will most likely be removed from the survey if no attempt to survey them will occur. Bird numbers on the active grounds have remained constant on 5 leks, while one ground has had a significant loss as compared to the 1997 count. The remaining grounds have had decreases in bird numbers ranging from 10 to 21 birds. Note: Landowner 002 and 003 share land which contains 1 active lek. One hundred fifteen sharp-tailed grouse were seen, consisting of 34 males, 6 females and the remaining 75 were unclassified.

Landowner SA003 has 12 identified dancing grounds. The status of all 12 is variable with 8 remaining constant, 2 have decreased numbers of birds (11 – 19 bird decrease since 1998) and 2 are considered an unknown status. These unknown status leks are a result of 0 birds seen this year, noting that numbers have continually decreased or have fluctuated over the years. However, another potential lek may have formed with evidence of birds seen in one particular area on 2 separate occasions (See first paragraph of this section). This area has been documented with GPS co-ordinates and will need to be searched in 2001. Of the confirmed grounds, a total of 101 birds

(20 males, 1 female, 80 unclassified) were recorded with the additional 8 also being documented.

Four leks are found on or within the vicinity of the ranch of landowner SA004. Three grounds continue to be constant. One ground could not be located, however there were birds flying between landowners properties around the area where the lek is located on the map. However, historical records indicate that the adjacent landowner had an active ground in the area birds had been seen in 2000. No confirmed ground was located therefore no data was recorded for the participating landowner. This particular ground has had a significant loss from 1997 to 1998 of 32 birds, therefore this ground may be abandoned or birds may have moved to another ground on the adjacent landowner. A more thorough survey of this area may be required if there is another active ground nearby. There were 10 males, 2 females and 40 unclassified birds identified for a total of 52 birds at the 3 confirmed dancing grounds.

Landowner SA005 has 5 grounds on or near his property. Three have remained constant, one has increased by 15 birds and the 5th ground has had a decrease of 16 birds since 1999. Ninety-one sharp-tailed grouse were seen (42 males, 14 females, 35 unclassified).

5.0 Discussion

Several survey blocks were inventoried for sharp-tailed grouse leks in 1995 and 1996 throughout Special Areas #4 (Linn 1996). Many of these areas have not been inventoried for several years, as the land is owned by landowners not involved with the habitat program. A significant number of male sharp-tailed grouse had been identified throughout the entire area surveyed (1995 and 1996 total numbers= 1121). Cannon and Knopf (1981) indicated that there is a linear relationship between displaying male density and the number of active leks over a large area. Re-surveying the area would help to provide better population statistics for sharp-tailed grouse, especially with an increase in the number of leks per unit area.

The attachment of sharp-tailed grouse to a lek is strong not only in the spring but also throughout the year (Baydack and Hein 1987). Male grouse that use a lek on a daily basis is considered to be a dominant lek, where a temporary or satellite lek is used less frequently by males. (Cannon and Knopf 1981, Rippen and Boag 1974, Webb 1964). Jones and Miller (1998) indicated that if male numbers are to be used, the numbers should be those of the territorial males on the lek. They outlined various studies that attest to this reasoning, those being biases of the unknown number of nonterritorial males that appear at leks and the misclassification of young males as females. To address this, they suggest that a lek should be flushed of all the birds and those males that return and continue dancing would be the territorial males. Plus, the use of trend blocks (initiated in 1999 - Cerney 2000) would identify the number of leks over a large area, in addition to conducting ground surveys at these leks, which would provide somewhat better estimates of bird populations.

Throughout the years, a number of sharp tailed grouse leks have been determined to be abandoned and an effort to visit them on an annual basis have not been occurring. Giesen and Connelly (1993) indicated that an inactive lek for 5 consecutive years could be removed from the survey, possibly identifying the lek as temporary or extirpated populations. However, studies with sage grouse have been inventoried annually (Aldridge 1998). In a few cases, some dancing grounds which have been determined abandoned have had birds reported on or around the area of a former dancing ground (J. Taggart, 2000 - personal communication, Watmough and Grue 1996) even after years (in some cases 10+ years) of abandonment. Whether sharp-tailed grouse will return to an area after several years of abandonment needs to be determined. Therefore, a literature search may be required, in addition to annual visits of abandoned grounds.

6.0 Recommendations

1. It would be suggested that an attempt to get more landowners in all project areas participating, based on historical information of the area and its productivity of grouse in the entire area.
2. Identification of males is important for population trends, therefore it is important the make every effort to classify the sharp-tailed grouse when visiting each lek. If time permits, a return visit to the lek would be ideal for those leks that had a first unclassified survey count. Also for territorial males, the leks should be flushed and counts of returning males would provide stronger estimates of the population.
3. Conduct an aerial survey of the grazing association area at Pakowki Lake, to locate all grounds. This would allow such a large area as this (76 000 acres) to be surveyed over a shorter time period with potentially better results than the current method of surveying sections of the entire area.
4. Continue to use trend blocks (in already established areas) for counting birds and establish trend blocks in the other project areas (Special Areas #4 and Pakowki Lake) also. This will cover entire areas and determine general numbers of grouse within an area.

7.0 Literature Cited

- Alberta Environmental Protection. 1996. The status of Alberta wildlife. Natural Resources Service, Wildlife Management Division, Edmonton. Pub. No. I/620.
- Aldridge, C.L. 1998. Reproductive and habitat use by sage grouse in Canada. Dept. of Biology. University of Regina. 23 pp.
- Baydack, R.K. and D.A. Hein. 1987. Tolerance of sharp-tailed grouse to lek disturbance. *Wildl. Soc. Bull.* 15:535-539.
- Cannon, R. W., and F. L. Knopf. 1981. Lek numbers as a trend index to prairie grouse populations. *J. Wild. Manage.* 45:776-778.
- Cerney, L. 2000. Sharp-tailed grouse dancing ground surveys in Southern and Central Alberta, 1999-2000. Alberta Conservation Association, Lethbridge, AB.
- Dube, L.A. 1997. Sharp-tailed grouse dancing ground investigations Lethbridge Resources Management Area Prairie Region. Dept. of Environmental Protection, Natural Resources Service, Fish and Wildlife, Lethbridge, AB.
- Giesen, K.M. and J.W. Connelly. 1993. Guidelines for management of Columbian sharp-tailed grouse habitats. *Wildl. Soc. Bull.* 21:325-333.
- Goddard, B. 1995. Buck for wildlife proposal outlining two program areas as recommended by the wildlife management advisory committee; 1) Sharp-tailed Grouse Habitat Program and 2) Habitat Retention Programs in the White Area. Buck for Wildlife, Lethbridge, AB.
- Johnsgard, P.A. 1973. Grouse and quails of North America. University of Nebraska Press, Lincoln, Nebraska, USA.
- Jones, P. and B. Millar. 1998. Sharp-tailed grouse dancing ground surveys in Southern and Central Alberta, 1997-1998. Alberta Conservation Association.
- Linn, D. 1996. Sharp-tailed grouse lek (dancing ground)) in Special Areas No. 4. Alberta Environmental Protection, Natural Resources Service, Wildlife Division, Prairie Region.
- Millar, B. 1999. Sharp-tailed Grouse Habitat Program and Habitat Retention Programs in the White Area, progress report. AB Conservation Association, Lethbridge, AB.

Rippen, A.B. and D.A. Boag. 1974. Spacial organization among male sharp-tailed grouse on arenas. *Can. J.Zool.* 52:591-597.

Watmough, M. and M. Grue. 1996. 1996 Sage grouse population inventory and evaluation of monitoring technique used in Alberta. Prairie Region, Lethbridge, AB.

Webb, R. 1964. Male sharp-tailed grouse dancing counts in District 1. AB. Dept. Lands and Forests. Fish and Wildlife Division. Project No. W-1-64.

Appendix A: Landowner dancing ground comparisons in the Milk River Ridge Project Area - 1996- 2000.

Lek I.D.	Landowner Code	2000			1999			1998			1997			1996			Comments				
		M	F	U	T	M	F	U	T	M	F	U	T	M	F	U		T			
MR 02	MR005				NS				31	5	0	36	26	2	28	37	4	41			
MR 04	MR005				NS				39	0	0	39	37	1	38	33	3	36			
MR 05	MR005			18	18		NS		18	0	0	18	22		22	13	2	15			
MR 07	MR003			16	16		23					22	16	7	23	8	3	5	16		
MR 08	MR004	6	5	0	11				22	0	0	22	20	2	22	17	5	22			
MR 10	MR003			17	17	15	4	4	20	3	0	23	27	3	4	34		22	22		
MR 13	MR001			21	21			11	9		10	19			4	4		4			
MR 14	MR002			26	26			28	17		1	18	11	0	11	16	2	3	21		
MR 15	MR002				NS														Abandoned		
MR 24	MR002				NS			10	27	2	0	29	30	0	30				No Survey 1996		
MR 28	MR001			0	0							N/L			12	12		17	20		
MR 33	MR002			36	36			30	15		2	17	30	4	34				Abandoned 1999		
MR 34	MR002	9		8	17	12	1		15	0	0	15	11	3	19				New Ground 1997		
MR 35	MR002			6	6			6			3	3			4				New Ground 1997		
MR 38	MR002				NS				27	4	0	31									
MR 50	MR005				NS						20	20							New Ground 1998		
MR 51	MR005	14	1		15				22	4	0	26							New Ground 1998		
MR 59	MR006			16	16			9			14	14							New Ground 1998		
MR 60	MR006	16			16			18			25	25							New Ground 1998		
MR 61	MR006			3	3			11			13	13							New Ground 1998		
MR 85	MR006	19	1		20	14		1											New Ground 1999		
	Total	64	7	167	238	61	8	151	220	262	18	134	414	230	8	48	286	128	19	50	197

Note: For grounds that were surveyed more than once, the count with the greatest number of total birds observed was used.
 NS = no survey, N/L = no lek

Appendix B: Landowner dancing ground comparisons in the Writing-On-Stone Project Area - 1997- 2000.

Lek I.D.	Landowner Code	2000					1999					1998					1997					Comments
		M	F	U	T		M	F	U	T		M	F	U	T		M	F	U	T		
WR 04	WOS001	18	6		24						20	2	0	22	31	3	0	34				
WR 05	WOS001	16	8		24		11	11	23		18	5	0	23								
WR 09	WOS001	12	4		16		20	20	19		17	2	0	19								
WR 19	WOS001				NF						4	1	0	5	13	0	0	13				
	Total	46	18		64	0	31	31	69	44	59	10	0	69	44	3	0	47				

Note: For grounds that were surveyed more than once, the count with the greatest number of total birds observed was used.

NS = No survey, NF = Not found

Appendix C: Dancing grounds surveyed in the Special Area #4 Project Area for 1997- 2000.

New Lek I.D.	Landowner Code	2000			1999			1998			1997			Comments			
		M	F	U	T	M	F	U	T	M	F	U	T				
SA4-01	SA004	10	2	5	17				13	1	0	14			12	12	
SA4-03	SA001			13	13				17	2	0	19			22	22	
SA4-06	SA003			7	7				23	3	0	26			11	11	
SA4-07	SA001			0	0				19	1	0	20			23	23	
SA4-09	SA001	10	3		13				13	3	0	16			16	16	
SA4-11	SA003			10	10				13	0	0	13			17	17	
SA4-12	SA003			12	12				16	7	0	23			14	14	
SA4-13	SA003	12	1		13				18	0	0	18			17	17	
SA4-14	SA003	6		6	12				11	3	0	14			11	11	
SA4-15	SA003	2		6	8	-	-	-	12	3	0	15			21	21	
SA4-16	SA003			0	0				17	1	0	18			22	22	
SA4-17	SA003			4	4				10	0	0	10			4	4	
SA4-18	SA001	12	7		19	15	5	20	17		10	27			19	19	
SA4-19	SA001			11	11	6	1	7	0	0	0	0			21	21	Active 1998, no count
SA4-20	SA001			14	14	12	4	2	25		8	33			21	21	
SA4-21	SA001			4	4	9	1	10	17	0	0	17			17	17	
SA4-23	SA003			22	22	11	2	1	20	8	0	28			19	19	
SA4-24	SA002, SA003			2	2	3		3	8	1	0	9			12	12	
SA4-25	SA002														0	0	Abandoned
SA4-26	SA002			13	13	19		15	34	2	0	23			24	24	
SA4-27	SA003			11	11	16			16	20	6	26			18	18	
SA4-28	SA002			8	8			6	6	18	0	18			31	31	

