Central Wisconsin Prairie Chicken Census 2007

By Lesa Skuldt

Abstract

There was a 26% increase (based on the maximum count) in the number of male Greater Prairie-Chickens (*Tympanuchus cupido pinnatus*) counted on booming grounds in central Wisconsin in the spring of 2007 compared to the spring of 2006. This increase follows a 10% population increase between the spring of 2005 and 2006. A mean of 569 (range 520-616) male prairie chickens were counted in April 2007 compared to a maximum of 489 for the same areas in 2006.

Methods

The survey goal is to provide an annual index to population abundance of the Greater Prairie-Chicken in Wisconsin with which to make informed management decisions. Survey objectives are to count the number of males on identified booming grounds and determine the distribution of Greater Prairie chickens by documenting the occurrence of booming grounds. Attendance at leks by cocks varies temporally, making single counts of males at a specific booming ground unreliable as an indicator of abundance. However, multiple counts also do not account for detection probability.[1] Consequently, our surveys are an index to population abundance, not a complete census.[2] Population indices can be influenced by many factors including but not limited to weather, observer skill and training, time of day, weather patterns, predator abundance, changes in habitat quality, variations in survival and reproductive success, and assumptions of sex ratios[3], and a constant error in the use of >1 ground by cocks. [4]

Below is the survey protocol that was followed during the 2007 Greater Prairie-Chicken survey.

1. Conduct surveys during peak breeding activity, which may vary annually due to weather conditions. Historically, peak has been identified between ~ 10 April-25 April.[2]
2. Conduct surveys during clear, calm mornings (preferably temperatures 25-40°F, winds <10 mph).[2] Record the following weather conditions on each survey form (sky condition, wind code and direction, and temperature) at the start and end of surveys. Note: it can be difficult to hear vocalizations upwind.
3. Obtain a minimum of three good counts per booming ground[5] (where sexes are distinguished). If inconsistencies exist in number of cocks, conduct additional surveys until counts are consistent.
4. Conduct surveys during highest activity: 45 minutes before sunrise to one to two hours after sunrise. [2]
5. Upon locating booming ground, count the number of males from one side to the other several times until the count of males is consistent. Count hens only after obtaining an accurate count of cocks. Record total (maximum) number of cocks, hens, and unknown sex.[6]
6. If number of cocks and hens cannot be determined due to vegetation or topography:
    a. First erect a ground blind, if possible, to conduct the survey at a later date.[6]
    b. Arrive prior to cock arrival on booming ground (~ one hour before sunrise). Do NOT get out of a blind until all hens have left the booming ground.
    c. If this is not possible, or when booming behavior is not occurring, you may attempt a flush count to get a count estimate[6], although birds will have to be recorded as unknown sex and the count will not be used in the survey. Flush counts should ALWAYS be a last resort.

7. Record count method (binoculars, spotting scope, flush count) and other observations, such as number of birds of unknown sex, presence of predators, competitors (e.g. pheasants), and flushing behavior.
8. Mark the approximate center of each ground with a red dot on plat book map (provided with survey materials) and provide a legal description of the booming ground (to the nearest 40 acres). [6]

Results

In 2007, a mean of 569 (range 520-616) Greater Prairie-Chicken cocks were counted on booming grounds compared to a maximum of 489 in 2006 (Table 1, 2). This resulted in a 26% increase in cocks between 2006 and 2007 (based on maximum counts). The 2005 count remains the lowest count since the onset of the range-wide survey that was implemented in 1989. It is important to note however, that in 2007, mandatory training was required for all survey personnel. Further, detailed scouting and survey protocols were established, including a minimum number of surveys required during peak breeding season and the increased use of observation blinds where binoculars and spotting scopes resulted in incomplete counts. The effects of these increased efforts on both the number of booming grounds detected and cocks counted is unknown. Additional years of surveys using the new standardized protocol and survey effort are needed to determine if the large increase observed in 2007 was a result of an actual population increase or a change in survey effort.

Further, it continues to be difficult to define separate grounds when they are close geographically. Many grounds located in Buena Vista and Paul Olson Wildlife Areas are located in adjacent (and sometimes the same) quarter-quarter sections. There can be significant movement of birds between these adjacent areas within the same breeding season. Therefore, caution should be given to interpretation of the number of grounds and the percent change in number of grounds from one year to the next. The most important index to population abundance continues to be the cumulative number of cocks counted on the grounds.

Buena Vista Wildlife Area

Between 2006 and 2007, there was a 25% increase in the number of cocks (261 to 327) and a 15% increase in the number of booming grounds (Table 2). Between those years, seven booming grounds disappeared and 11 reappeared (present earlier than 2006). Often, where a ground disappeared in 2006, a ground in the near vicinity reappeared in 2007 and with similar numbers of cocks between years (Table 3). For example, in Sec 11, T21N, R7E, adjacent pairs of grounds (South SERR and E. Shed, Bohn's, and Potter), were present in either 2006 or 2007, but the same number of cocks were counted.

Leola Wildlife Area

Between 2006 and 2007, there was a 19% increase in the number of cocks (32 to 38) and no change in the number of booming grounds (Table 2). Between 2006 and 2007, two booming grounds disappeared (present earlier than 2006) and two reappeared (Table 4). Few cocks were counted on the grounds that disappeared, while the two grounds that remained held most of the cocks. Since 2006, the number of booming grounds has remained low (N=4), resulting in more males concentrating on fewer grounds.

Paul J. Olson Wildlife Area

Between 2006 and 2007, the number of cocks increased by 36% (133 to 181) and the number of booming grounds decreased by 14% (Table 2). Between 2006 and 2007, seven booming grounds disappeared, two reappeared, and two were newly established (Table 5). The new grounds were located west of the Paul Olson boundary and did not significantly contribute to the number of cocks counted. Often in the immediate areas where grounds disappeared from 2006 to 2007, either the number of birds increased at an adjacent ground(s) or a ground not present in 2006 reappeared nearby (similar to Buena Vista Wildlife Area). The only exception to this pattern was the West Peters ground in Carson Township, located on the northern exterior of Paul Olson.

Mead/McMillan Wildlife Areas

Between 2006 and 2007, the number of cocks increased by 4% at Mead (51 to 53 cocks) and decreased by 40% at McMillan (5 to 3 cocks, Table 2). The number of booming grounds increased by 25% at Mead and remained at one ground at McMillan. At Mead, two grounds not present in 2006 reappeared (Table 6).

Outlying Areas

There was a 100% increase in the number of cocks from seven to 14, while the number of active grounds remained constant at two in Clark County (Table 2). The previously consistent ground near Sportsman Lake (Clark County) was not observed since 2005. Between 2006 and 2007, one ground disappeared southwest of Unity (Table 7). Another ground in Unity Township was reported as having been noted in previous years, but was not counted and reported until this year.

Acknowledgments

The following individuals participated in the 2007 surveys of greater prairie chickens in central Wisconsin:

Buena Vista - Ken Rosenthal, Coordinator, Greg Dahl, David Halfmann, Jon Robaidek, Brandon Stefanski WDNR, and Student Chapter of The Wildlife Society, UWSP

Paul Olson - Lesa Skuldt, Coordinator, DNR, Dan O'Connell, Portage County LCD, and Al O'Leary, Jim Yulga

Leola - Greg Dahl, Coordinator, Jon Robaidek, and Brandon Stefanski WDNR

Mead / McMillan - Tony Geiger, Coordinator, Bill Hirt, Tom Meier, Brian Peters, Jon Robaidek, Pam Stange, Brandon Stefanski, and Tom Weber WDNR

Outlying Areas - Michele Windsor, Coordinator, Scott Krultz, Bob Michelson, Richard Nikolai WDNR and Nadine Willet

Additional acknowledgement to the following:

Jim Keir, WDNR (retired) and Dr. Lyle Nauman (retired), University of Wisconsin-Stevens Point, for their past coordination of and contributions to the survey.

Dr. John Toepfer and The Society for Tympanuchus Cupido Pinnatus, Ltd., for their valuable input on the survey.

Data obtained from "Central Wisconsin Greater Prairie-Chicken Census," compiled by WDNR.

Literature Cited

[1] Anderson, D. R. 2001. The need to get the basics right in wildlife field studies. Wildlife Society Bulletin 29:1294–1297.

[2] Hamerstrom, F., and F. Hamerstrom. 1973. The prairie chicken in Wisconsin: highlights of a 22-year study of counts, behavior, movements, turnover, and habitat. Wisconsin Department of Natural Resources, Technical Bulletin 64, Madison, Wisconsin, USA.

[3] Svedarsky, W.D. 1983. Reproductive chronology of greater prairie-chickens in Minnesota and recommendations for censusing and nest searching. Prairie Naturalist 15:120-124.

[4] Grange, W.B. 1948. The booming-hooting survey, pages 35-55 *in* Wisconsin grouse problems. Wisconsin Conservation Department, Madison, Wisconsin, USA.

[5] Wisconsin Department of Natural Resources. December 1995. A management plan for Greater Prairie Chickens in Wisconsin.

[6] Anderson, R.K. Date unknown. Prairie Chicken Census Protocol (adapted from Hammerstrom and Hamerstrom 1973). Unpublished data.

Table 1. *Number Of Prairie Chicken Cocks on Central Wisconsin Booming Grounds 1950-2007.*

Year	Buena Vista	Leola	Paul Olson	Mead	McMillan	Dewey	Outlying Areas	Total
1950	550	232						
1951	550	183						
1952	265	132						
1953	344	146						
1954	256	162						
1955	305	110						
1956	299	109						
1957	239	114						
1958	297	126						
1959	169	72						
1960	157	56						
1961	135	46						
1962	157	44	54					
1963	150	37	50					
1964	175	38	38					
1965	165	21	43					
1966	183	20	62					
1967	141	10	66					
1968	139	12	71					
1969	104	28	57	43				
1970	141	78	62	54				
1971	198	77	47	102				
1972	234	88	76	108				
1973	155	46	94	121				
1974	126	46	116	96				
1975	138	52	135	118				
1976	131	45	114	119				
1977	213	75	145	154				
1978	365	82	186	212				
1979	438	53	189	211				
1980	480	79	228	187				
1981	550	75	302	180	14			1121
1982	535	69	256	163	13			1036
1983	359	49	188	97	4			697
1984	245	22	152	*	*			
1985	275	69	175	144	7			670
1986	194	47	152	*	*			
1987	193	56	194	110	25			578
1988	269	65	206	101	31			672
1989	182	64	124	128	37		56	591
1990	281	80	110	129	60		49	709
1991	216	84	91	101	64		70	626
1992	239	63	56	58	30		60	506
1993	265	65	93	65	24		45	557
1994	247	70	91	53	19	16	30	510
1995	275	87	83	38	24	+	31	538
1996	277	74	87	44	20	+	39	541
1997	334	97	100	59	9	+	22	541
1998	327	70	129	86	14	+	30	656
1999	341	89	139	92	14	0	24	699
2000	323	88	194	94	14	+	36	749
2001	252	69	174	69	5	+	17	586
2002	226	38	176	48	7	+	27	522
2003	269	34	183	49	9	?	20	564
2004	278	37	199	62	5	?	16	597
2005	229	22	129	51	4	0	9	444
2006	261	32	133	51	5	0	7	489
2007	327	38	181	53	3	0	14	616

* Blank spaces: surveys not conducted; prairie chickens may have been present + Birds present but not counted.

Table 2. *Summary of central Wisconsin prairie chicken surveys 2003-2007.*

Area	Number of Booming Grounds					Number of Booming Cocks					2006/2007	
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	BG %	Cocks %
BUENA VISTA	23	25	26	27	31	269	278	229	261	327	+ 0.15	+ 0.25
LEOLA	10	11	8	4	4	34	37	22	32	38	0.00	+ 0.19
PAUL OLSON	24	29	23	22	19	183	199	129	133	181	- 0.14	+ 0.36
MEAD	10	14	10	8	10	49	62	51	51	53	+ 0.25	+ 0.04
MCMILLIAN	1	1	2	1	1	9	5	4	5	3	0.00	- 0.40
OUTLYING AREAS	4	3	3	2	2	20	16	9	7	14	0.00	+ 1.00
DEWEY *	(?)	0	0	0	0	(?)	0	0	0	0	--	--
SEARLES *	0	0	0	0	0	0	0	0	0	0	--	--
Totals	**72**	**83**	**72**	**64**	**67**	**564**	**597**	**444**	**489**	**616**	**+ 0.05**	**+ 0.26**

* Numbers not included in totals

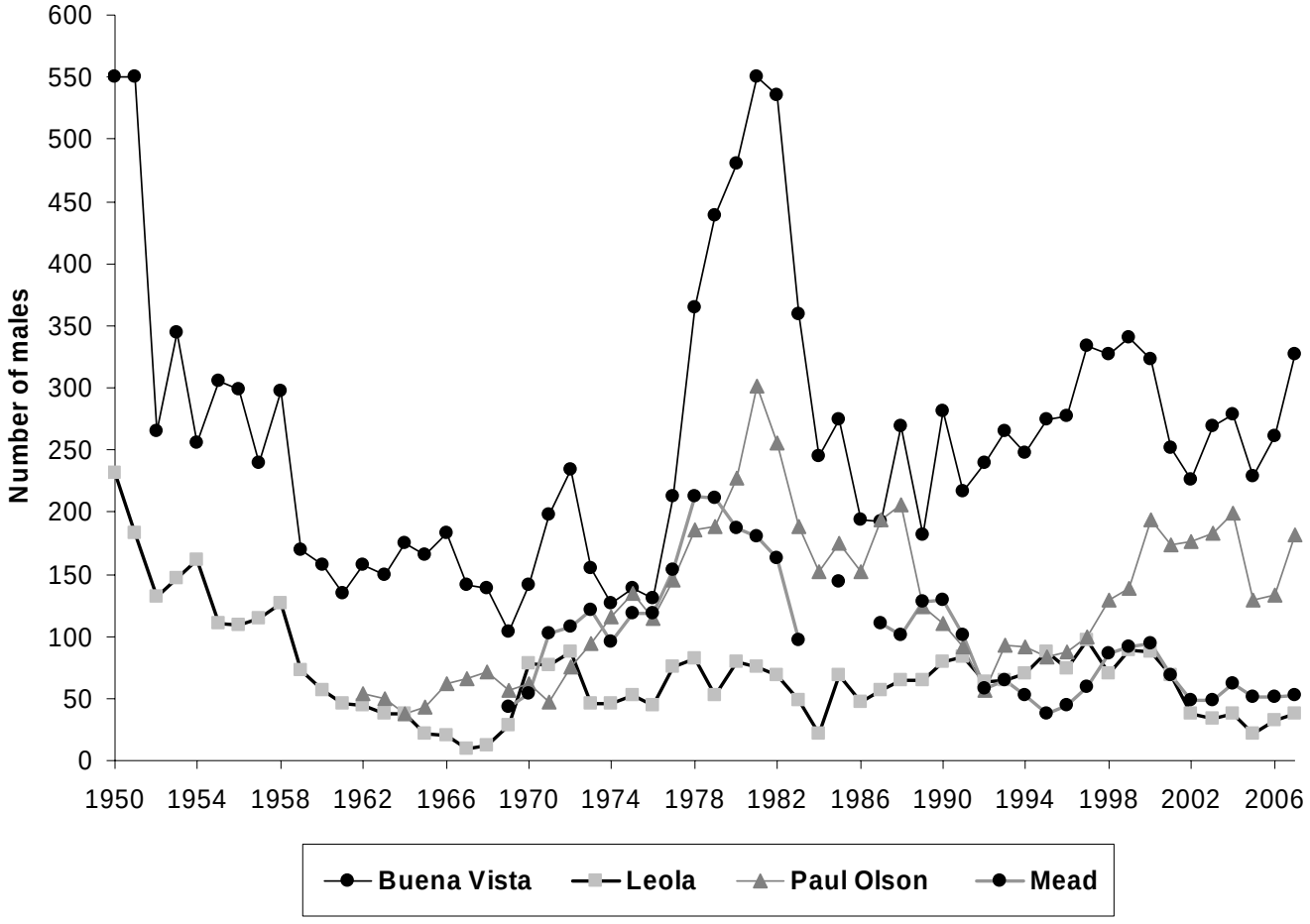

Figure 1. *The number of prairie chicken cocks on booming grounds from 1950-2007.*

Table 3. *The number of booming cocks at Buena Vista Marsh, 2006-2007.*

Booming Grounds	Number of Booming Cocks		Booming Grounds Legal Description
	2006	2007	2007
Bertotto	10	17	T21N R8E
Bertotto South	2	2	T21N R8E
Blue Top	9	7	T22N R7E
Bohn's	0	3	T21N R7E
Bovee	2	4	T22N R8E
Brandt	0	9	T22N R7E
Broken Tree	1	0	T21N R8E
Coddington, SW	15	20	T22N R8E
Damon (W. Damon Bridge)	0	4	T22N R8E
Dorr	13	12	T22N R8E
Goat Farm	1	0	T22N R7E
Hakes	22	27	T21N R7E
Hambach	0	6	T21N R7E
Hancock	3	0	T21N R7E
Hanson	17	0	T21N R7E
Heath, NW	16	17	T22N R8E
John B	13	16	T22N R8E
Kruger	0	1	T21N R7E
Lyden	13	25	T21N R7E
Pichelmann	18	0	T21N R8E
Pichelmann, N	0	18	T21N R8E
Pio	0	5	T21N R7E
Potter	3	0	T21N R7E
Prairie Star Ranch	0	2	T22N R8E
Quarry/E. Shed	0	10	T21N R7E
Richmeyer	7	15	T21N R8E
Rozner	14	16	T22N R8E
Saeger	0	2	T21N R7E
SERR	13	13	T21N R7E
Silo	7	13	T22N R7E
S. Silo	13	6	T22N R7E
Society	12	12	T21N R7E
S. Society	3	0	T21N R7E
South SERR	10	0	T21N R7E
Sumner	18	18	T22N R8E
W. Dorr	2	3	T22N R8E
W. Meils	4	21	T21N R7E
W. Scrap House	0	2	T22N R7E
W. Taft/Prairie Chicken Rd.	0	1	T21N R8E
Total	**261**	**327**	**25% increase from 2006**

Table 4. *The number of booming cocks at Leola, 2006-2007.*

Booming Grounds	Number of Booming Cocks		Booming Grounds Legal Descriptions
	2006	2007	2007
E. Gillis	14	15	T20N R7E
Granery	1	0	T20N R7E
Lovalace	0	4	T20N R7E
Lucas	15	17	T20N R7E
Petriken South	0	2	T20N R7E
SW Granery	2	0	T20N R7E
Total	**32**	**38**	**19% increase from 2006**

Table 5. *The number of booming cocks at Paul Olson Wildlife Area, 2006-2007.*

Booming Grounds	Number of Booming Cocks		Booming Grounds Legal Descriptions
	2006	2007	2007
Arpin	8	10	T24N R4E
Back	7	14	T23N R5E
Barr	1	0	T24N R6E
Brockman (North)	6	11	T24N R4E
Brockman (South)	8	5	T23N R5E
Calbow	1	0	T24N R5E
Castleberg	1	1	T24N R3E
Dobbs	3	3	T24N R6E
Eron	6	0	T24N R6E
Flaig	3	24	T24N R6E
Jisko	5	0	T24N R6E
King W.	3	14	T24N R5E
King	4	0	T24N R5E
Kock/Pugh	15	23	T24N R5E
Milano	0	2	T24N R6E
Mrozek	2	4	T24N R5E
New Ground	0	2	T23N R4E
New Ground	0	2	T24N R4E
O'Connell	4	5	T23N R5E
Osowski	4	0	T24N R6E
Raikowski	18	24	T24N R6E
Sigel	0	4	T23N R5E
Tibbets	6	5	T23N R5E
West Peters	3	0	T24N R6E
Woboril	16	16	T24N R4E
Zabawa	9	12	T23N R6E
Total	**133**	**181**	**36% increase from 2006**

Table 6. *The number of booming cocks at Mead/McMillan Wildlife Areas, 2006-2007.*

	Number of Booming Cocks		Booming Grounds Legal Descriptions
Mead	**2006**	**2007**	**2007**
Albert's	4	7	T25N R7E
Banding Pond Refuge South	0	2	T25N R5E
Berard (Wolfe)	5	5	T25N R6E
Berkhahn Flowage West	0	6	T26N R5E
Hollar, Hwy S	4	4	T25N R5E
Honey Island	14	11	T26N R5E
Little Birch	3	2	T26N R6E
Section 4	3	5	T25N R6E
Stashek East	4	3	T25N R6E
West Honey Island	14	8	T26N R5E
Total	**51**	**53**	**4% increase from 2006**
McMillan			
Hwy. E & Balsam	5	3	T27N R3E
Total	**5**	**3**	**40% decrease from 2006**

Table 7. *The number of booming cocks in the outlying areas, 2006-2007.*

Number of Booming Cocks		Booming Grounds Legal Descriptions
2006	**2007**	**2007**
6	8	T27N R1E
1	0	T27N R1E
0	6	T27N R1E
Total 7	**14**	**100% increase from 2006**

Only two active booming grounds located in year 2007 with a total of 14 booming cocks.