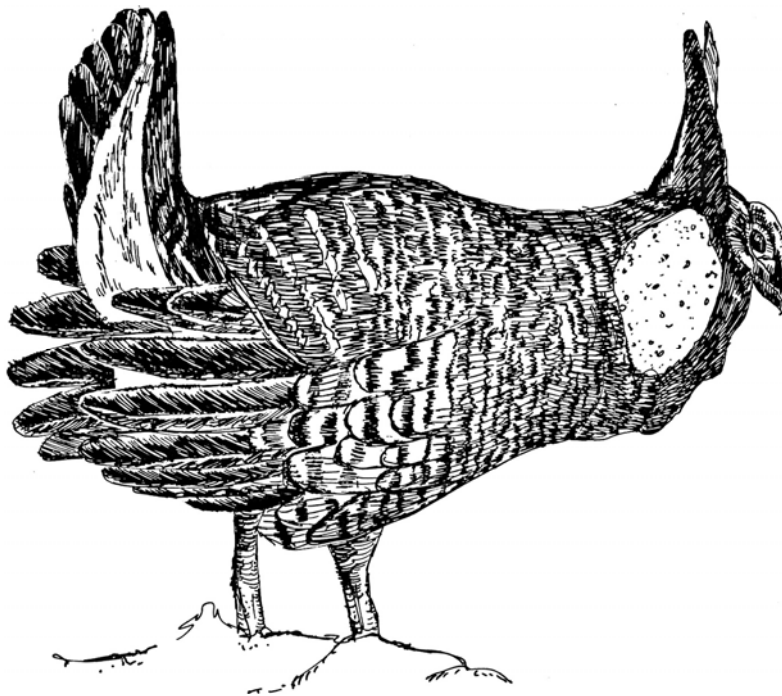


**CENTRAL WISCONSIN
GREATER PRAIRIE-CHICKEN SURVEY**

**FINAL REPORT
2010**



Compiled by:

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Abstract

There was a 21% decrease (based on mean count) in the number of male Greater Prairie-chickens (*Tympanuchus cupido pinnatus*) counted on booming grounds in central Wisconsin in the spring of 2010 compared to the spring of 2009. This follows a 16% population decrease (based on mean count) between the spring of 2008 and 2009. A mean of 283 (range 263-302) male prairie chickens were counted in April and May 2010 compared to a mean of 357 (range 317-384) for the same areas in 2009.

Background and Methods

In 2007, mandatory training was required for all survey personnel, including the establishment of detailed scouting and survey protocols (e.g. minimum number of surveys required during peak breeding season, 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. Further, it can be difficult to define separate grounds when they are close geographically. 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.

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 ratios³, and a constant error in the use of >1 ground by cocks.⁴

Since survey staff participated in this training in 2007 or 2008, no training was conducted in 2010. Below is the survey protocol that was followed during the 2010 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 ground⁵ (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 estimate⁶, 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 and provide a legal description of the booming ground (to the nearest 40 acres).⁶

Results and Discussion

In 2010, a mean of 283 (range 263-302) Greater Prairie-chicken cocks were counted on booming grounds compared to a mean of 357 (range 317-384) in 2009 (Table 1, 2). This represents a 21% decrease in cocks between 2009 and 2010 (based on mean counts). This year's count is the lowest since the onset of the range-wide survey that was implemented in 1989, with the second lowest count occurring in 2009. It should be noted that maximum counts may have only been reported prior to 2007, potentially creating a greater difference in counts compared in following years.

The Greater Prairie-chicken population in central Wisconsin has continued to decline since 2007. Winter conditions (snow depths, temperature, and winter duration) in central Wisconsin were more intense in 2008 and 2009 than previous years, but were closer to normal compared to rather mild winters prior to 2008. The winter of 2009-2010 was also mild, although two separate ice storms did occur. It is possible that the winter conditions have impacted the Greater Prairie-Chicken population. Additionally, central Wisconsin has been experiencing a drought for at least the past seven years, with greater impacts on vegetation and hydrology in Buena Vista and Leola Wildlife Areas. The extent of these impacts (and others not discussed here), are not known.

Buena Vista Wildlife Area

There was a 36% decrease in the mean number of cocks (178 to 114) and a 18% net loss in the number of booming grounds between 2009 and 2010 (22 to 18; Table 1). Between those years, seven booming grounds were lost, including four grounds where no more than one cock was ever observed (Table 3).

Leola Wildlife Area

Between 2009 and 2010, there was a 24% decrease in the mean number of cocks (42 to 32, Table 1) compared to a 5% decrease between 2008 and 2009. The same three booming grounds remained from 2009 (Table 4). A single male was observed booming < ¼ mile southeast of the Nationwide ground on April 12. It is likely this male was from an adjacent ground, perhaps Nationwide, and

was not included in the final count. Since 2006, the number of booming grounds has remained low and decreased further in 2009, resulting in more males concentrating on fewer grounds.

Paul J. Olson Wildlife Area

Between 2009 and 2010, the mean number of cocks decreased by 2% (109 to 106.5) with a 13% loss in the number of booming grounds (15 to 13, Table 1). From 2009 to 2010, one ground was lost and one was gained (Table 5). There were three locations where only one cock was counted, so the locations were not included as booming grounds. The individual cocks were included in the total count.

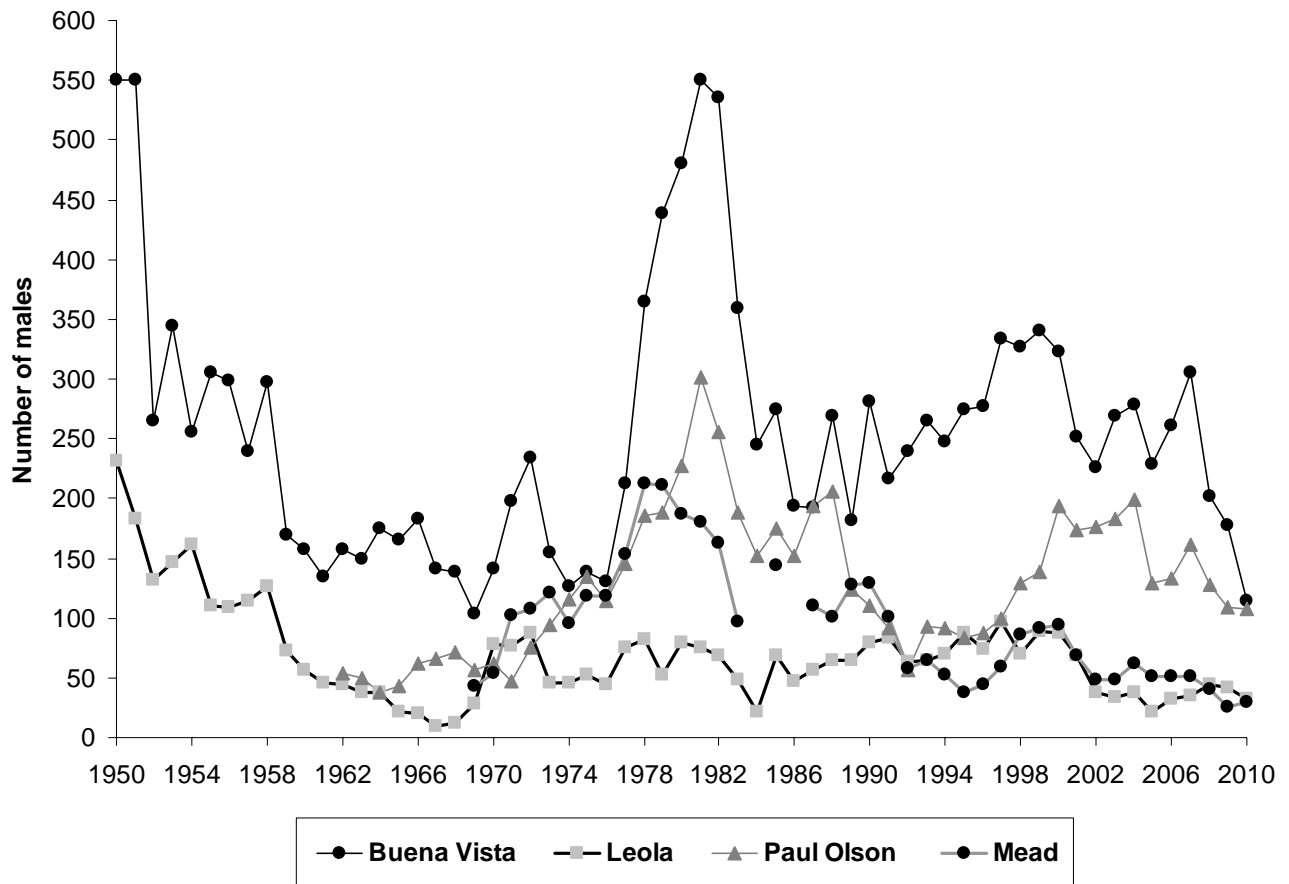
Mead/McMillan Wildlife Areas

The number of cocks increased by 15% at Mead between 2009 and 2010 (26 to 30 cocks; Table 1). For the second year, there continued to be no cocks observed at McMillan. There was a net increase in booming grounds of 33% at Mead (6 to 8). Specifically, three grounds were established at new locations and one ground disappeared (Table 6).

Outlying Areas

This was the first year since the onset of the range-wide survey in 1989 that no males were detected in the outlying areas during the breeding season. Several surveyors dedicated many mornings to searching areas around recently active and historical booming grounds. Focus was placed primarily in Clark County in the Townships of Colby and Unity, with secondary focus on Hixon and Sherman and surrounding areas in Taylor County. One surveyor even utilized playback calls from March through May for the second year in a row. Last year, two males were observed booming in late May on the last known remaining ground in Unity Township of Clark County (Table 7). In 2008, this ground had 6 males.

Figure 1. The number* of Greater Prairie-Chicken cocks counted on booming grounds on the four major wildlife areas in Central Wisconsin, 1950-2010.**



* Mean count reported since 2007, mean may not have been reported in prior years.

** We caution the use of these data for any reason other than a population index. Great variation likely exists in data throughout this period as a result of variation in protocol techniques and observers.

Table 1. Number of booming grounds and cocks for Greater Prairie-Chickens in Central Wisconsin, 2006-2010.

Area	<u>Number of Booming Grounds</u>					<u>Number of Booming Cocks</u>					<u>% Change, 2009-10***</u>	
	2006	2007	2008	2009	2010	2006	2007*	2008*	2009*	2010*	BG	Cocks*
BUENA VISTA	27	31	23	22	18	261	305	202	178	114	-0.18	-0.36
LEOLA	4	4	4	3	3	32	35 (36-38)	44 (44-44)	42 (41-43)	32 (32-32)	0.00	-0.24
PAUL OLSON	22	19	18	15	13	133	162	128	109	107	-0.13	-0.02
MEAD	8	10	9	6	8	51	51 (46-53)	40 (40-40)	26 (23-29)	30 (29-31)	0.33	0.15
MCMILLIAN	1	1	1	0	0	5	3 (3-3)	3 (2-5)	0	0	--	--
OUTLYING AREAS	2	2	1	1 ♦		7	13 (13-14)	6 (6-6)	2 ♦	0	--	--
DEWEY *	0	0	0	0	0	0	0	0	0	0	--	--
SEARLES	0	0	0	0	0	0	0	0	0	0	--	--
Totals**	64	67	56	47	44	489	569 (520-616)	423 (404-471)	357 (317-384)	283 (263-302)		

* Mean (Low count – high count)

** Mean count used for comparisons (prior to 2007, ranges not reported, means may not have been reported)

*** Percent increase or decrease between 2009 and 2010 for booming grounds (BG) and number of cocks

♦ Two cocks observed on one booming ground on 5/23/09, were not observed any other time in April or May.

Table 2. Number* of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, 1950-2010*****

Year	Buena Vista	Leola	Paul Olson	Mead	McMillan	Dewey	Outlying Areas	Total
1950	550	232						782
1951	550	183						733
1952	265	132						397
1953	344	146						490
1954	256	162						418
1955	305	110						415
1956	299	109						408
1957	239	114						353
1958	297	126						423
1959	169	72						241
1960	157	56						213
1961	135	46						181
1962	157	44	54					255
1963	150	37	50					237
1964	175	38	38					251
1965	165	21	43					229
1966	183	20	62					265
1967	141	10	66					217
1968	139	12	71					222
1969	104	28	57	43				232
1970	141	78	62	54				335
1971	198	77	47	102				424
1972	234	88	76	108				506
1973	155	46	94	121				416
1974	126	46	116	96				384
1975	138	52	135	118				443
1976	131	45	114	119				409
1977	213	75	145	154				587
1978	365	82	186	212				845
1979	438	53	189	211				891
1980	480	79	228	187				974
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					419
1985	275	69	175	144	7			670
1986	194	47	152					393
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	526
1995	275	87	83	38	24	+	31	538
1996	277	74	87	44	20	+	39	541
1997	334	97	100	59	9	+	22	621
1998	327	70	129	86	14	+	30	656

Year	Buena Vista	Leola	Paul Olson	Mead	McMillan	Dewey	Outlying Areas	Total
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	305	35	162	51	3	0	13	569
2008	202	44	128	40	3	0	6	423
2009	178	42	109	26	0		2 ♦	357
2010	114	32	107	30	0		0	283

* Maximum counts may have been recorded 2006 and earlier. Mean counts reported 2007-present unless otherwise noted.

** Blank: surveys not conducted; prairie chickens may have been present. + Birds present; not counted. ? No data.

*** We caution the use of these data for any reason other than a population index. Great variation likely exists in data throughout this period as a result of variation in protocol techniques and observers.

♦ Two cocks observed on booming ground on 5/23/09, were not observed any other time in April or May

Table 3. Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Buena Vista Wildlife Area, 2009-2010.

Booming Ground Name	2009*			2010*				
	Legal**	min.	mean	max	Legal**	min	mean	max
SERR #	NESW Sec 2, T21N R7E	2	2	2		1	1	1
Kruger #	SENE Sec 10, T21N, R7E	2	2.3	3		1	1	1
Quarry/E. Shed #	NENW Sec 11, T21N, R7E	0	0	0		1	1	1
Bohn	SESW Sec 11, T21N, R7E	4	5	6		5	7.5	11
Meils	SENE Sec 12, T21N, R7E	3	4.3	5		0	0	0
W. Meils	SENW Sec 12, T21N, R7E	10	10.7	11		12	12	12
Karris (former Hambach)	SENW Sec 14, T21N, R7E	12	14.2	17		2	2.5	3
Lyden	NESW Sec 15, T21N, R7E	12	12	12		7	8.3	9
Society	SESW Sec 23, T21N, R7E	8	9.6	11		3	4.5	5
Hakes	NESW Sec 27, T21N, R7E	13	13.8	15		12	12	12
Bertotto (north)	Gov. lot 4, Sec 3, T21N, R8E	11	12.7	15		2	3.5	5
Richtmeyer	SWSE Sec 5, T21N, R8E	4	5	7		2	2	2
Pichelmann N	SENW Sec 20, T21N, R8E	10	10.5	11		8	8.3	9
Brandt	SWSE Sec 35, T22N, R7E	7	7.7	8		4	4	4
Silo	NENW Sec 35, T22N, R7E	8	8.7	9		4	4	4
Rozner	NWSW Sec 8, T22N, R8E	6	6.7	7		6	6.3	7
S. Marsh Road (new)***	NWNW Sec 16, T22N, R8E	3	3.3	4		0	0	0
West John B #	SWNE Sec 16, T22N, R8E	--	--	--		1	1	1
John B***	NWSE Sec 17, T22N, R8E	2	2	2		0	0	0
Dorr	SENE Sec 20, T22N, R8E	7	8.7	9		4	4.3	5
SW Coddington	SWSE Sec 28, T22N, R8E	7	7.3	8		4	4.5	6
Damon (W Damon Bridge)	SWNW Sec28, T22N, R8E	1	1.3	2		2	2	2
Sumner	SENW Sec 29, T22N, R8E	15	16.7	18		12	12	12
NW Heath (NWH)	NESE Sec 31, T22N, R8E	4	4.3	5		11	11.3	12
Heath #	SWNE Sec 32, T22N, R8E	10	11	12	NESW Sec 32, T22N, R8E	1	1	1
Total		159	177.8	197		105	114	125

* Number of males counted among all surveys conducted for each ground: min (smallest number), mean, max (largest number)

** Area of ground may exist in >1 quarter quarter section

*** Evidence suggests that in 2009, both grounds consisted of most of the same birds that shifted their ground location mid-peak (using only the count at S. Marsh Road to avoid a double count)

Not considered a booming ground in 2010 (only one cock). Cock included in survey count.

Table 4. Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Leola Wildlife Area, 2009-2010.

Booming Ground Historical Name	2009*			2010*				
	Legal**	min	mean	max	Legal**	min	mean	max
Nationwide (Lovalace/Bula)	SWSE Sec 15, T20N, R7E	16	16.7	17		11	11	11
E. Gillis/Owen Rock	NESW Sec 16, T20N, R7E	13	13.7	14		11	11	11
Lucas	SESW Sec 22, T20N, R7E	12	12	12		10	10	10
Total		41	42.4	43		32	32	32

* Number of males counted among all surveys conducted for each ground: min (smallest number), mean, max (largest number)

** Area of ground may exist in >1 quarter quarter section

Table 5. Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Paul J. Olson Wildlife Area, 2009-2010.

Booming Ground Historical Name	2009*			2010*				
	Legal**	min	mean	max	Legal**	min	mean	max
Back/County F	NENE Sec 5, T23N,R5E	6	6	6		3	5	7
S. Brockman/Swetz #	SESW Sec 6, T23N,R5E	3	3.3	4		1	1	1
Ervin Rd/O'Connell #	NWNE Sec 15, T23N, R5E	3	3	3		0	0.5	1
Zabawa/Reddin Rd	NWNW Sec 30, T23N, R6E	3	4	5	NESW Sec 19, T23N, R6E	2	3	4
Arpin	NESW Sec 16, T24N R4E	2	2	2	SESW Sec 16, T24N, R4E	5	5	5
County N #	NENW Sec 22, T24N, R4E	--	--	--		1	1	1
Worbil	NWSE Sec 35, T24N,R4E	11	11.8	12		14	14	14
N. Brockman/Chestnut	NENE Sec 36, T24N,R4E	0	0	0	NESW Sec 25, T24N, R4E	1	2	3
Mrozek #	NWNE Sec 25, T24N,R5E	0	0	0	NESE Sec 25, T24N, R5E	1	1	1
Kock/Lundberg Rd	NWSW Sec 34, T24N,R5E	13	13	13		11	11	11
King W./Hetze Rd	SENE Sec 35, T24N,R5E	6	6	6		8	10.2	11
Milano (south)	NESW Sec 22, T24N, R6E	2	2	2		0	0	0
Flaig***	NWNE Sec 31, T24N,R6E	12	22.7	24		13	14.3	15
Dobbs/County M	NWNW Sec 33, T24N,R6E	6	6.7	7	NENW Sec 33, T24N, R6E	12	12.2	13
Eron	SESW Sec 35, T24N,R6E	19	19	19		16	16	16
Brandl Road		--	--	--	SESE Sec 19, T24N, R6E	1	1.8	2
Nordstrom/Sigel	SESW Sec 2, T23N, R5E	4	4	4	SWNW Sec 2, T23N, R5E	2	2.5	3
Highway 186	SENE Sec 35, T24N R4E	0	1.5	2		0	0	0
County K ****	SENE Sec 23, T24N, R4E	4	4	4	NWSW Sec 24, T24N,	6	6	6
Total		94	109	113		97	106.5	114

* Number of males counted among all surveys conducted for each ground: min (smallest number), mean, max (largest number)

** Area of ground may exist in >1 quarter quarter section

*** In 2009, two cocks would leave ground and boom on occasion on state land north of Brandl Road (included in Flaig ground count).

**** Before April 6, all 6 cocks located here. After April 6, 2 cocks moved to SWSE of Section 23.

Not considered a booming ground in 2010 (only one cock). Cock included in survey count. County N location was ½ mile east of Highway 186 on Highway N, looking south.

Table 6. Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Mead & McMillan Wildlife Areas, 2009-2010.

Booming Ground Historical Name	2009*			2010*				
	Legal**	min	mean	max	Legal**	min	mean	max
<u>Mead</u>								
Pool 15	NENE S2 T25N R5E	--	--	--		2	2	2
Section 4	NWSE S4 T25N R6E	3	3	3		3	3	3
Berard (Wolfe)	E ½ S11 T25N R6E	1	1.7	2	SWSW S11 T25N R6E	4	4	4
Albert's	NE ¼ S30 T25N R7E	3	4.7	6	SWNE S30 T25N R7E	3	3.5	4
West Honey Island	NWSW S28 T26N R5E	5	5.7	6		0	0	0
Berkhahn Flowage West	NWSE S25 T26N R5E	6	6	6		3	3.8	4
Refuge North	SESE S33 T26N R5E	--	--	--		4	4	4
Honey Island	NWSE S34 T26N R5E	5	5.5	6		9	9	9
Holmbeck***		--	--	--	SESW S35 T25N R5E	1	1	1
Total		23	26.6	29		29	30.3	31
<u>McMillan</u>								
Hwy. E & Balsam	NENE S32 T27N R3E	0	0	0		0	0	0
Total		0	0	0		0	0	0

* Number of males counted among all surveys conducted for each ground: min (smallest number), mean, max (largest number)

** Area of ground may exist in >1 quarter quarter section

***DNR staff informed about this ground in late May. The first survey was conducted on 5/21. This will be considered a ground since landowners continually observed two males at this location throughout April.

Table 7. Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Outlying Area, 2009-2010.

Booming Ground Historical Name	2009*			2010*				
	Legal**	min	mean	max	Legal**	min	mean	max
Stopplemour/K & Badger	SENE S3, T27N, R1E	0 ♦	0 ♦	2 ♦		0	0	0
Total				2		0	0	0

* Number of males counted among all surveys conducted for each ground: min (smallest number), mean, max (largest number)

** Area of ground may exist in >1 quarter quarter section

♦ Two booming cocks observed on morning of 5/23/09, were not observed any other time in April or May

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