

# Central Wisconsin Greater Prairie-Chicken Survey 2016

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## **Abstract**

We conducted surveys for Greater Prairie-chickens (*Tympanuchus cupido pinnatus*) in central Wisconsin during March and April of 2016. We detected 36 booming grounds and counted a mean of 240 (range 217-260) males on those booming grounds.

## **Background**

The goal of Greater Prairie-chicken surveys is to provide an annual index to population abundance 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.<sup>1</sup> Consequently, our surveys are an index to population abundance, not a complete census.<sup>2</sup> Population indices can be influenced by many factors including but not limited to weather, observer skill and training, time of day, predator abundance, changes in habitat quality, variations in survival and reproductive success, assumptions of sex ratios<sup>3</sup>, and a constant error in the use of >1 ground by cocks.<sup>4</sup> As such, it can be difficult to make conclusions about changes in the population over a few years or from small changes in counts from one year to the next.

## **Methods**

In 2007, we established 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.

During March, trained observers scout for booming grounds by driving within assigned areas and stopping at ½ mile intervals to prepare for surveys during peak breeding activity in April. Observers then exit their vehicle and for three minutes, listen for prairie-chicken vocalizations, as well as use binoculars or spotting scopes to observe prairie-chickens. Observers record the date, time, weather conditions, legal description and GPS coordinates of the booming ground, method of observation (e.g. binoculars, spotting scope, observation blind), sex (classified as male, female, or unknown), number of birds, and other observations (e.g. presence of predators). Scouting and surveys occur 45 minutes before sunrise to 1-2 hours after sunrise on clear, calm mornings with winds <10mph. Scouting provides time to search areas where booming grounds may be present, but have not yet been detected, as well as provides time to obtain permission to enter private property during peak breeding activity.

During April, observers conduct surveys at known booming grounds using the same protocol as during the scouting period, with the exception of stopping at ½ mile intervals. Observers attempt to conduct surveys during peak breeding activity, during which the greatest number of hens are present on the booming grounds. Observers attempt to obtain a minimum of three good counts per booming ground where all birds are distinguished by sex. In order to better distinguish the sex of all birds observed on booming grounds, booming grounds on public lands are mowed in the fall, and observers use portable blinds and arrive at the blinds prior to the arrival of any males.

Results of booming ground and prairie-chicken surveys are summarized by wildlife area, outlying area, and range-wide. For each wildlife area, results of prairie-chicken surveys are further summarized by individual booming ground. A booming ground is defined as having ≥2 males. Observations of single males were included in survey totals, but not counted as a booming ground.

## **Results**

We conducted surveys for Greater Prairie-chickens in central Wisconsin during March and April of 2016. We detected 36 booming grounds and counted a mean of 240 (range 217-260) males on those booming grounds (Table 1, 2). Each booming ground was observed on a mean of 3 different days (range 1-5 days). We observed a mean of 7 males per booming ground (range 2-13), based on the mean count.

### **Buena Vista Wildlife Area**

The mean number of males observed at booming grounds continues to be relatively stable since 2010, ranging between 110 and 136 (Table 1). Similarly, the number of detected booming grounds has remained stable since 2010, ranging from 16 to 19 (Table 2).

### **Leola Wildlife Area**

In recent years, the number of males observed on booming grounds has continued to be relatively stable (2010 to 2014; Table 1), ranging between 31 and 37. Similar to other areas, there was an observed decline in males in 2014. In 2015, 17 males were observed, the lowest number of males detected since 1968. The number of males observed in 2016 increased to 21. The number of detected booming grounds remained stable (3 to 4) prior to 2013. The number of grounds increased to 6 in 2013 and 2014 and declined to 3 again in 2015 and 2016 (Table 2).

### **Paul J. Olson Wildlife Area**

From 2012 to 2013, the observed number of males increased to the level observed in previous years (Table 1). Following the trend observed in other wildlife areas, the number of males observed declined in 2014. Since 2014, the number of males observed has remained very consistent, ranging between 82 and 88 (Table 1). Since 2012, the number of detected booming grounds has remained stable (11 to 14; Table 2).

### **Mead Wildlife Areas**

The population appears to be relatively stable since 2012 at the Mead Wildlife Area (Table 1). Similarly, the number of detected booming grounds at Mead has been stable since 2011, ranging between 2 and 4 (Table 2).

## **Outlying Areas**

Recent and historical booming grounds in Clark County were surveyed and no booming grounds or birds were detected. The most recent observation was of two males at two different locations in Clark County in 2011 (Table 1). Prior to that, a booming ground in Unity Township was observed to have had two males in 2009 and 6 males in 2008.

## **Literature Cited**

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## **Acknowledgements**

The following individuals/organizations participated in the 2016 Greater Prairie-Chicken survey:

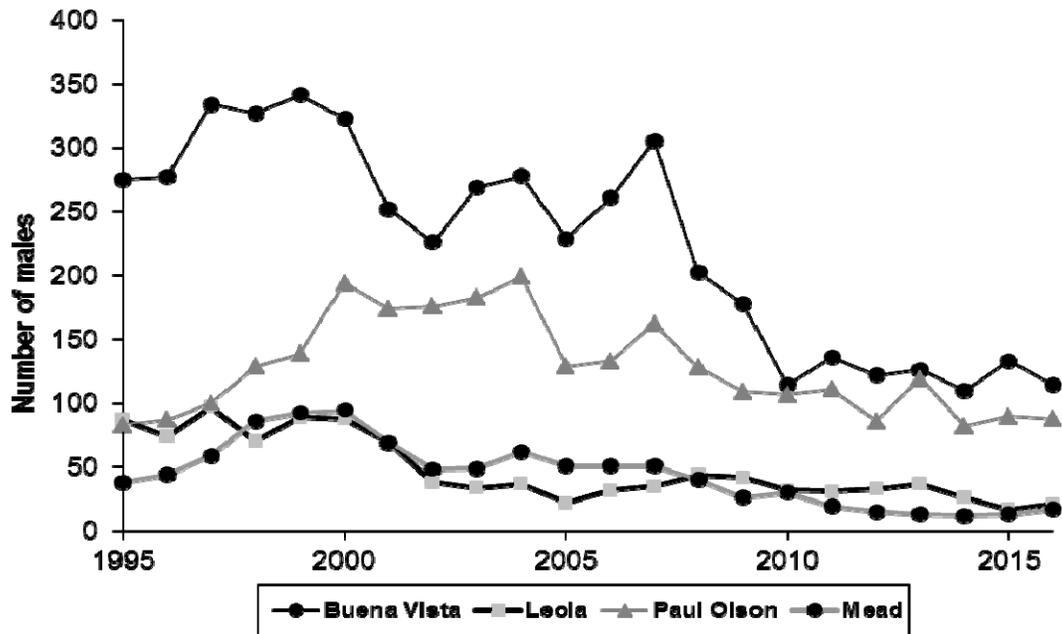
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**Mead/McMillan:** Bill Hirt, Brian Peters, and Kyle Christianson - WDNR

**Outlying Areas:** Gary Wolf, WDNR.



**Figure 1.** The number\* of Greater Prairie-Chicken cocks counted on booming grounds on the four major wildlife areas in Central Wisconsin, 1995-2016\*\*.

\* 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 male Greater Prairie-Chickens\* in Central Wisconsin, 2010-2016.*

<b>Area</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Buena Vista	114 (105-125)	136 (126-146)	122 (119-126)	126 (117-134)	110 (104-120)	133 (125-141)	114 (106-123)
Leola	32 (32-32)	31 (30-31)	33 (23-37)	37 (32-41)	26 (25-27)	17 (15-20)	21 (18-23)
Paul J. Olson	107 (97-114)	111 (99-123)	86 (76-95)	119 (106-131)	82 (72-90)	90 (85-95)	88 (78-95)
Mead	30 (29-31)	19 (18-20)	15 (14-15)	13 (11-14)	12 (10-15)	13 (12-14)	17 (15-19)
McMillan	0	0	0	0	0	0	0
Outlying Areas <sup>1</sup>	0	2 (2-2)	0	0	0	0	0
<b>Totals**</b>	<b>283</b> <b>(263-302)</b>	<b>280</b> <b>(275-321)</b>	<b>256</b> <b>(232-273)</b>	<b>295</b> <b>(266-320)</b>	<b>230</b> <b>(211-252)</b>	<b>253</b> <b>(237-270)</b>	<b>240</b> <b>(217-260)</b>

\* Mean (Low count – high count)

<sup>1</sup> Includes Clark and Taylor Counties

**Table 2.** *Number of booming grounds for Greater Prairie-Chickens in Central Wisconsin, 2010-2016.*

<b>Area</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Buena Vista	17	19	17	19	18	18	16
Leola	3	3	4	6	6	3	3
Paul J. Olson	13	16	14	13	13	11	13
Mead	8	4	2	3	3	4	4
McMillan	0	0	0	0	0	0	0
Outlying Areas	0	0	0	0	0	0	0
<b>Totals**</b>	<b>44</b>	<b>42</b>	<b>37</b>	<b>41</b>	<b>40</b>	<b>36</b>	<b>36</b>

**Table 3.** Number\* of Greater Prairie-Chicken cocks counted\*\* on booming grounds in Central Wisconsin, 1950-2016\*\*\*

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

Year	Buena Vista	Leola	Paul Olson	Mead	McMillan	Dewey	Outlying Areas	Total
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
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
2011	136	31	111	19	0	0	2	280
2012	122	33	86	15	0		0	256
2013	126	37	119	13			0	295
2014	110	26	82	12				230
2015	133	17	90	13	0		0	253
2016	114	21	88	17	0		0	240

\* 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 4.** Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Buena Vista Wildlife Area, 2015-2016.

Booming Ground Name	2015*			2016*				
	Legal**	min.	mean	max	Legal**	min	mean	max
SERR <sup>1</sup>	Gov. lot 11, Sec 2, T21N R7E	6	6	6		1	1	1
Kruger	SWNW Sec 11, T21N R7E	0	0	0		3	3.3	4
W. Meils	NENW Sec 12, T21N, R7E	11	12.5	14		16	16.3	17
Karris (former Hambach)	SENW Sec 14, T21N, R7E	9	9.5	10		5	5	5
Saeger	SWNE Sec 21, T21N, R7E	5	5	5	SENE Sec 21, T21N, R7E	4	4	4
Society	SWSW Sec 23, T21N, R7E	3	3	3		0	0	0
Hakes	NWSW Sec 27, T21N, R7E	10	10.2	11		13	13.3	14
Ellis	NWNE Sec 33, T21N, R7E	2	2	2		0	0	0
S Bluetop	Gov. lot 6, Sec 3, T21N R8E	9	9.3	10		8	8.3	9
Zielinski	Gov. lot 5, Sec 6, T21N, R8E	3	4.3	5		3	3.6	4
Potter	NWSW Sec 6, T21N, R8E	1	1	1		0	0	0
Pratt	SWSE Sec 9, T21N R8E	5	5.6	6		10	10.3	11
Steinke	SWSE Sec 25, T22N, R7E	11	12.5	14		5	5.6	6
Silo	NWNE Sec 35, T22N, R7E	5	5.6	6		1	1.5	2
Brandt	SWSE Sec 35, T22N, R7E	5	5	5		6	6.8	8
Pivot	SWNE Sec 7, T21N, R8E	2	2.7	3		0	0	0
Pratt	SWSE Sec 9, T21N, R8E	0	0	0		5	5.6	6
Pichelmann N	SENW Sec 20, T21N, R8E	2	2	2		0	0	0
Steinke	SWSE Sec 25, T22N, R7E	5	5.7	7		11	12.5	14
Brandt		0	0	0	SWSE Sec 35, T22N, R7E	5	5	5
Rozner <sup>1</sup>	SWSW Sec 8, T22N, R8E	3	3	3		8	8.6	10
Dorr	SWNE Sec 20, T22N, R8E	16	16.8	18		10	12.6	14
Damon	SENE Sec 29, T22N, R8E	5	5	5		6	6.3	7
SW Coddington <sup>2</sup>	SWSE Sec 28, T22N, R8E	10	10.3	11		0	0	0
Prairie Star Ranch	NWNE Sec 18, T22N, R8E	2	2	2		0	0	0
N Bluetop	NWNW Sec 31, T22N, R8E	6	6	6		2	2	2
NW Heath (NWH)	SWNE Sec 31, T22N, R8E	2	2	2		5	5	5
<b>Total</b>		<b>125</b>	<b>132.6</b>	<b>141</b>		<b>106</b>	<b>113.5</b>	<b>123</b>

\* 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

<sup>1</sup> Not designated as a lek in 2016, as only one male was observed.

<sup>2</sup> Six birds of unknown sex flushed during one survey in mid-April, so cannot utilize in survey. No birds observed prior or afterwards.

**Table 5.** Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Leola Wildlife Area, 2015-2016.

Booming Ground Historical Name	2015*			2016*				
	Legal**	min	mean	max	Legal**	min	mean	max
Nationwide (Lovalace/Bula)	SWSE Sec 15, T20N, R7E	2	3	5		0	0	0
E. Gillis/Owen Rock	NESW Sec 16, T20N, R7E	9	9.6	10		8	9	10
Petriken	NWSE Sec 21, T20N, R7E	4	4.5	5		0	0	0
Burns Pasture <sup>1</sup>	NESW, Sec 22, T20N, R7E	0	0	0	SENW, Sec 22, T20N, R7E	1	1.5	2
Lucas		0	0	0	SWSE, Sec 22, T20N, R7E	9	10	11
<b>Total</b>		15	17.1	20		18	20.5	23

\* 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

<sup>1</sup> In 2016, birds were moving between Burns Pasture and Lucas leks, resulting in great variability in male counts separately. Only surveys conducted on same date/times utilized, resulting in a single estimated combined count.

**Table 6.** Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Paul J. Olson Wildlife Area, 2015-2016.

Booming Ground Historical Name	2015*			2016*				
	Legal**	min	mean	max	Legal**	min	mean	max
Nordstrom/Sigel	NENW Sec 1, T23N, R5E	0	0	0	NWNW Sec 2, T23N R5E	3	3.5	4
S. Brockman/Swetz		0	0	0	SENE Sec 6, T23N, R5E	1	1.5	2
Zabawa/Reddin Rd <sup>1</sup>	NWSW Sec 19, T23N R6E	2	2.6	3		1	1.4	3
Arpin <sup>1</sup>	E ½ of NW ¼ Sec 16, T24N, R4E	2	2	2		2	2.6	3
County K	SWSE Sec 23, T24N, R4E	7	7	7		8	8	8
Worbil	NWSE Sec 35, T24N,R4E	10	10.8	11		8	8.75	9
N. Brockman/Chestnut <sup>2</sup>	SESW Sec 25, T24N R4E	6	7	8		7	7.75	8
Kock/Lundberg Rd	NWSW Sec 34, T24N,R5E	10	10	10	NESW Sec 34, T24N, R5E	9	9.75	10
King W./Hetze Rd	SWNW Sec 36, T24N,R5E	11	11.6	12		4	4	4
Flaig (S. Flaig)	SESE Sec 30, T24N, R6E	4	4.3	5	NWNE Sec 31, T24N, R6E	8	10.6	13
N. Flaig <sup>3</sup>	SENE Sec 30, T24N, R6E	12	13	14	NESE Sec 30, T24N, R6E	5	7.6	9
Dobbs/County M	NENW Sec 33, T24N, R6E	15	15	15		13	13	13
Eron	SESW Sec 35, T24N, R6E	6	6.6	8		9	9	9
Dobbs/County M	NENW Sec 33, T24N, R6E	14	15.3	16		15	15	15
<b>Total</b>		<b>85</b>	<b>89.9</b>	<b>95</b>		<b>78</b>	<b>87.5</b>	<b>95</b>

\* Number of cocks 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

<sup>1</sup> In 2015, males in lek moved between 2-3 locations within a 0.5mi<sup>2</sup> area.

<sup>2</sup> In 2015, lek in one location prior to peak. During and after peak, males were observed in several locations within a 1mi<sup>2</sup> area to the south and east of the original lek location, with same number of birds observed.

<sup>3</sup> In 2016, males in lek moved between 2 locations (NENE and NESE Sec 30, T24N, R6E).

**Table 7.** Number of Greater Prairie-Chicken cocks counted on booming grounds in Central Wisconsin, Mead Wildlife Area, 2015-2016.

Booming Ground Historical Name	2015*			2016*				
	Legal**	min	mean	max	Legal**	min	mean	max
Berard (Wolfe)	NESW S11, T25N, R6E	3	3	3		3	3	3
Berkhahn Flowage West	NWSE S25, T26N, R5E	3	3.3	4		2	2	2
Refuge North	SESE S33, T26N, R5E	1	1.6	2	SWSE S33, T26N, R5E	5	6	7
Honey Island	NWSE S34, T26N, R5E	5	5	5	NESE S34, T26N, R5E	5	6	7
<b>Total</b>		<b>12</b>	<b>12.9</b>	<b>14</b>		<b>15</b>	<b>17</b>	<b>19</b>

\* 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