Central Wisconsin Greater Prairie-Chicken Survey 2021

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Abstract

We conducted surveys for Greater Prairie-chickens (*Tympanuchus cupido pinnatus*) in central Wisconsin during March and April of 2021 (no surveys were conducted in 2020 due to the COVID-19 pandemic). We detected 36 booming grounds and counted a mean of 251 (range 233–266) 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 males 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, predator abundance, changes in habitat quality, variations in survival and reproductive success, assumptions of sex ratios[3], and a constant error in the use of >1 ground by males.[4] 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 males 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 males 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

No Greater Prairie-chicken lek surveys were performed in 2020 due to policies associated with the COVID-19 pandemic. We conducted surveys for Greater Prairie-chickens in central Wisconsin between March and April of 2021. We detected 36 booming grounds and counted a mean of 251 (range 233–266) males on those booming grounds (Tables 1 and 2). Each booming ground was observed on a mean of 2 different days (range 2–4 days). We observed a mean of 7 males per booming ground (range 2–20), based on mean counts.

Buena Vista Wildlife Area

Prior to 2020, the mean number of males observed at booming grounds continued to be relatively stable, ranging between 110 and 136, with an increase in observations in 2021 (Table 1). The number of detected booming grounds has continued to remain stable, ranging from 16 to 19 (Table 2).

Leola Wildlife Area

The number of males observed on booming grounds ranged between 31 and 37 from 2010 to 2014; Table 3). 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 and has remained stable since (Table 1). The number of grounds has ranged between 3 and 6 (Table 2).

Paul J. Olson Wildlife Area

Following the trend observed in other wildlife areas, the number of males observed declined in 2014 (Table 3). From 2014 thru 2017, the number of males observed has remained very consistent, ranging between 82 and 90, but has since declined (Table 1). The number of detected booming grounds has remained stable (11 to 14; Table 2).

Mead Wildlife Areas

The mean number of males observed has ranged between 12 and 18 thru 2019, with only 4 observed in 2021 (Table 1), the lowest since the onset of the survey (Table 3). Prior to 2019, the number of detected booming grounds at Mead has been stable, ranging between 3 and 4, but has since declined to only one lek detected in 2021 (Table 2).

Outlying Areas
Recent and historical booming grounds in Clark County were surveyed and no booming grounds or birds were detected in 2017. No surveys were conducted in these areas in 2021. The most recent observation during the spring breeding season 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. On November 26, 2016, two prairie chickens were observed in Unity Township approximately 2.7 miles to the northeast of the booming ground observed in 2009 (SWNE of T28N R1E S25).

Literature Cited

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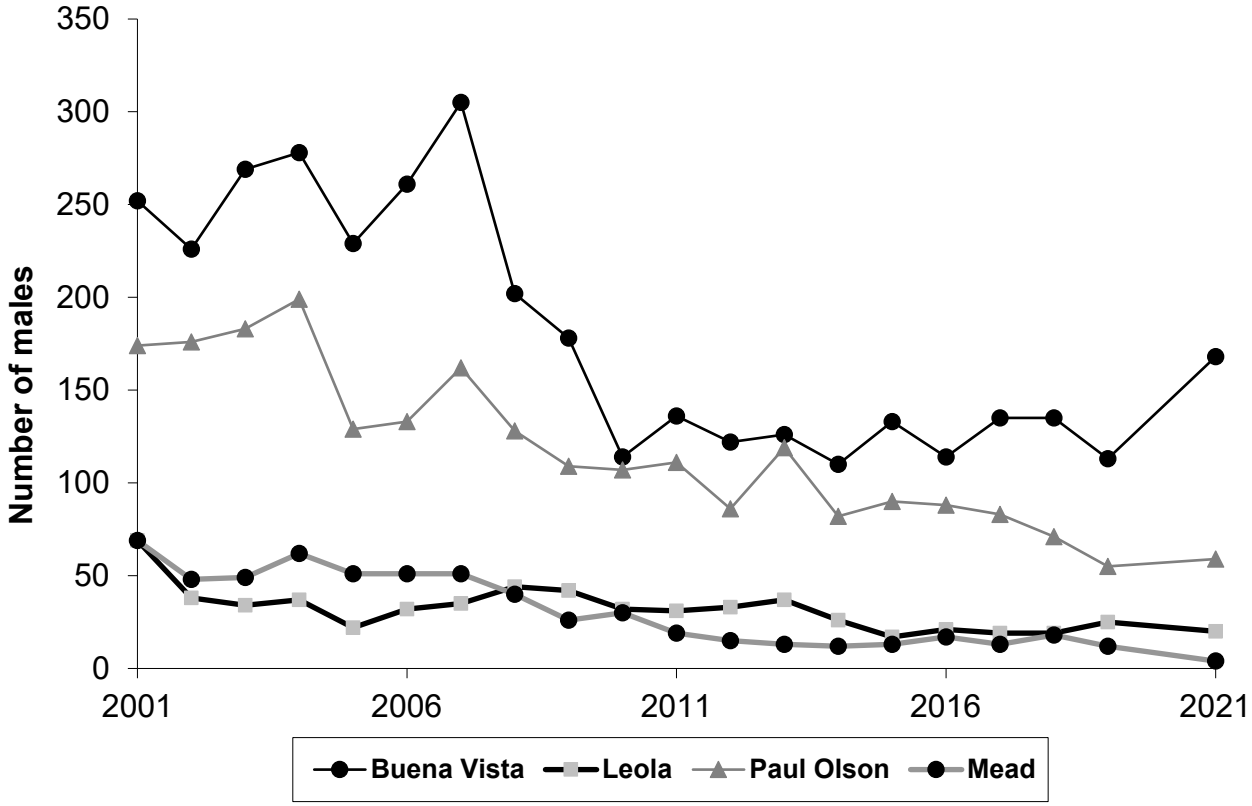

Figure 1. *Mean number of male Greater Prairie-Chickens counted on booming grounds on four major wildlife areas in central Wisconsin, 2001–2021. No surveys were conducted in 2020 due to policies associated with the COVID-19 pandemic. Prior to 2007, counts may be reported as mean or maximum number of prairie-chickens observed. 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, 2014–2021**.*

Area	2014	2015	2016	2017	2018	2019	2021
Buena Vista	110 (104–120)	133 (125–141)	114 (106–123)	135 (127–145)	135 (113–158)	113 (105–123)	168 (154–180)
Leola	26 (25–27)	17 (15–20)	21 (18–23)	19 (18–20)	19 (10–26)	25 (21–30)	20 (19–20)
Paul J. Olson	82 (72–90)	90 (85–95)	88 (78–95)	83 (75–90)	71 (61–81)	55 (46–65)	59 (57–62)
Mead	12 (10–15)	13 (12–14)	17 (15–19)	13 (11–15)	18 (14–21)	12 (11–12)	4 (3–4)
McMillan	0	0	0	0	—	—	—
Outlying Areas[1]	0	0	0	0	—	—	—
Totals	**230 (211–252)**	**253 (237–270)**	**240 (217–260)**	**250 (231–270)**	**243 (198–286)**	**205 (183–230)**	**251 (233–266)**

* Mean (Low count – high count)
** No surveys were conducted in 2020 due to COVID-19 policies.
[1] Includes Clark and Taylor Counties
– Did not survey

Table 2. *Number of Greater Prairie-Chicken booming grounds in central Wisconsin, 2014–2021*.*

Area	2014	2015	2016	2017	2018	2019	2021
Buena Vista	18	18	16	18	17	18	19
Leola	6	3	3	4	4	5	3
Paul J. Olson	13	11	13	13	12	14	13
Mead	3	4	4	3	4	2	1
McMillan	0	0	0	0	—	—	—
Outlying Areas[1]	0	0	0	0	—	—	—
Totals	**40**	**36**	**36**	**38**	**37**	**39**	**36**

* No surveys were conducted in 2020 due to COVID-19 policies.
[1] Includes Clark and Taylor Counties
– Did not survey

Table 3. *Number* of male Greater Prairie-Chickens counted** on booming grounds in central Wisconsin, 1950–2021****

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

Year	Buena Vista	Leola	Paul Olson	Mead	McMillan	Dewey	Outlying Areas	Total
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			0	230
2015	133	17	90	13				253
2016	114	21	88	17	0		0	240
2017	135	19	83	13	0		0	250
2018	135	19	71	18				243
2019	113	25	55	12				205
2020†								
2021	168	20	59	4				251

* 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 males observed on booming ground on 5/23/09, were not observed any other time in April or May.

† No surveys were conducted in 2020 due to COVID-19 policies.

Table 4. *Number of male Greater Prairie-Chickens counted on booming grounds in central Wisconsin, Buena Vista Wildlife Area, 2019 and 2021.**

Booming Ground Historical Name	2019**				2021**			
	Legal***	min	mean	max	Legal***	min	mean	max
SERR	Gov. lot 11, Sec 2, T21N R7E	7	9	11		10	11	12
Kruger	SWNW Sec 11, T21N, R7E	1	1.5	2	NWSW Sec 11, T21N, R7E	6	7.5	9
W. Meils	NWNE Sec 12, T21N, R7E	8	8.5	9	SWNE Sec 12, T21N, R7E	16	16	16
W. Meils North					NWNE Sec 12, T21N, R7E	7	7.5	8
Saeger	W ½ of NW ¼ Sec 2, T21N, R7E	1	2	3	SENE Sec 21, T21N R7E	5	7	9
Society[1]	SENW Sec 26, T21N, R7E	2	2	2		1	1	1
Hakes	NWSW Sec 27, T21N, R7E	9	9	9		6	6.5	7
S Bluetop	Gov. lot 6, Sec 3, T21N R8E	6	6	6		0	0	0
Eagle					Gov. lot 1, Sec 5, T21N, R8E	9	12.7	14
Pivot					SWNE Sec 7, T21N, R8E	2	3	4
Pratt	NESE Sec 9, T21N, R8E	8	8.5	9	NWSE Sec 9, T21N, R8E	10	10.5	11
Pichelmann West					NENE Sec 19, T21N, R8E	3	3.3	4
Steinke	SWSE Sec 25, T22N, R7E	2	2	2		0	0	0
North Steinke	SENE Sec 25, T22N, R7E	16	16	16		17	17	17
130th					NESE Sec 26, T21N, R7E	3	3	3
Silo	NWNE Sec 35, T22N, R7E	8	9.4	12		5	5	5
Brandt	SWSE Sec 35, T22N, R7E	4	4	4		5	5	5
Rozner	SWSW Sec 8, T22N, R8E	13	13.5	14		15	16	17
Dorr	SWNE Sec 20, T22N, R8E	5	6.3	8		19	19.5	20
Damon	SWNW Sec 28, T22N, R8E	6	6	6		8	9	10
SW Coddington	SWSW Sec 28, T22N, R8E	2	2	2		2	2.5	3
W. Sumner	NENE Sec 30, T22N, R8E	2	2	2		0	0	0
NW Heath[2]	SENW Sec 31, T22N, R8E	5	5.5	6	NWSE Sec 31, T22N, R8E	5	5	5
Total		105	**113.2**	123		154	**168**	180

* No surveys were conducted in 2020 due to COVID-19 policies.

** 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.

[1] Not a lek in 2021, only one male observed

[2] In 2021, birds always scattered in 2-3 locations, including NWSE, SWNE, and SENW

Table 5. *Number of male Greater Prairie-Chickens counted on booming grounds in central Wisconsin, Leola Wildlife Area, 2019 and 2021.**

Booming Ground Historical Name	2019**				2021**			
	Legal***	min	mean	max	Legal***	min	mean	max
Nationwide (Lovalace/Bula)	SWSE Sec 15, T20N, R7E	8	9	10		12	12.5	13
E. Gillis/Owen Rock	NESW Sec 16, T20N, R7E	4	5.6	8		0	0	0
Petriken	NESE Sec 21, T20N, R7E	4	4.6	6		3	3	3
Burns Pasture[1]	NWSW Sec 22, T20N, R7E	2	2	2		0	0	0
Lucas	SWSE Sec 22, T20N, R7E	3	3.5	4		0	0	0
Archer Ave	NWNE Sec 28, T20N, R7E	0	0	0	SWSE Sec 21, T20N, R7E	4	4	4
Total		21	**24.7**	30		19	**19.5**	20

* No surveys were conducted in 2020 due to COVID-19 policies.
** 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.
[1] Only one survey was used to estimate a count in 2019.

Table 6. *Number of male Greater Prairie-Chickens counted on booming grounds in central Wisconsin, Paul J. Olson Wildlife Area, 2019 and 2021.**

Booming Ground Historical Name	2019** Legal***	min	mean	max	2021** Legal***	min	mean	max
Nordstrom/Sigel[1]	SWNW Sec 2, T23N, R5E	2	3.2	5	SESE Sec 3, T23N, R5E	1	1	1
Zabawa/Reddin Rd[2]	SWNE Sec 24 & SWNE Sec 25, T23N R5E	2	2	2	SWNE Sec 25, T23N, R5E	1	1.5	2
Arpin[3]	NENW Sec 16, T24N, R4E	3	3.8	4	SWNW Sec 36, T23N, R5E	1	1.5	2
Hwy 186[3]					SWNW Sec 22, T24N, R4E	1	1.5	2
County K[4]	NWSW Sec 24, T24N, R4E	10	10.3	11		0	0	0
S. County K					NWNW Sec 25, T24N, R5E	7	7	7
N. County K					SWNW Sec 24, T24N, R4E	4	4	4
Worbil[5]	SWNE Sec 35, T24N, R4E	1	1.6	2	SENE Sec 35, T24N, R4E	2	2	2
Kock/Lundberg Rd	NESW Sec 33, T24N, R5E	3	3.8	4	NWSW Sec 33, T24N, R5E	6	6.5	7
King W./Hetze Rd	SENW Sec 36, T24N, R5E	4	5.6	8	SWNW Sec 36, T24N, R5E	6	6	6
County G West	SENE Sec 28, T24N, R6E	1	1.3	2		0	0	0
North Flaig/Bach[6]	SESE Sec 30, T24N, R6E	7	8.5	10				
Flaig[7]					NENE Sec 31, T24N, R6E	11	11	11
Brandl	NENE Sec 30, T24N, R6E	2	2.5	3	SE ¼, Sec 19, T24N, R6E			
Dobbs/County M[8]	NWNW Sec 33, T24N, R6E	3	3	3		13	13.25	14
Eron/Zarecki[9]	NWSE Sec 35, T24N, R6E	6	6.5	7	NESW Sec 35, T24N, R6E	4	4	4
Eron/Zarecki North	SWSW Sec 25, T24N, R6E	1	1.8	2		0	0	0
McKay[10]	NWNW Sec 34, T24N, R6E	1	1.5	2		0	0	0
Total		46	**55.4**	65		57	**59.3**	62

* No surveys were conducted in 2020 due to COVID-19 policies.

** 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

[1] In 2019, males move between multiple locations but most common at SWNW Sec 2, T23N, R5E. May also be found at King W./Hetze Rd. lek. Only one male observed in 2021 (not considered a lek).

[2] In 2021, most frequently observed in SWNE, but also observed in SWNW.

3 In 2021, birds mixing between leks. Surveys conducted same dates with 3 birds total among both leks on each date.

[4] In 2019, males were observed at two other locations (SWNW Sec 24 T24N R4E and NENW Sec 25 T24N R4E).

[5] In 2019, males may have also been visiting County K leks.

[6] In 2019, males may have also moved between North Flaig and Brandl leks. In 2021, all birds observed here before April. After April 3, birds found scattered inconsistently in multiple sites, including here, Flaig, and Brandl.

[7] In 2021, birds not found here prior to April. After April 3, birds observed scattered in multiple sites, including N. Flaig/Bach, Flaig, and Brandl. Bird count only provided for Flaig as most consistent during surveys. In 2021, N. Flaig/Bach and Brandl still included in total lek count, despite indicating no birds present.

[8] In 2019, multiple birds were observed during surveys, but observers had difficulty determining sex because of birds being obscured by tall vegetation near the County M lek(s). The 3 males reported for 2019 surveys is a minimum count.

[9] In 2021, birds most consistently found in SESW, but were observed in NESW on occasion.

[10] In 2019, males likely moving between McKay lek and County M lek.

Table 7. *Number of male Greater Prairie-Chickens counted on booming grounds in central Wisconsin, Mead Wildlife Area, 2019 and 2021.**

Booming Ground Historical Name	2019**				2021**			
	Legal***	min	mean	max	Legal***	min	mean	max
Deer Run Road[1]	SWSW Sec 12, T25N, R5E	3	3	3		1	1	1
County Line Road	SWSE Sec 23, T26N, R5E	8	8.5	9		0	0	0
Refuge North					SWSE Sec 33, T26N, R5E	2	2.7	3
Total		11	**11.5**	12		3	**3.8**	4

* No surveys were conducted in 2020 due to COVID-19 policies.

** 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.

[1] Not a lek in 2021 (one male observed)