



## **2020 MINNESOTA PRAIRIE-CHICKEN HARVEST SURVEY**

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### **SUMMARY OF FINDINGS**

The Minnesota DNR conducts a postcard survey of Greater Prairie-chicken (*Tympanuchus cupido pinnatus*) hunters each year to estimate hunter numbers and harvest, and to evaluate hunter success and satisfaction. In 2020, 105 hunters were estimated to have gone afield and harvested 112 prairie-chickens and 41 sharp-tailed grouse (*Tympanuchus phasianellus*) during prairie-chicken hunts. Hunter success (0.62) was higher than last year and satisfaction (4.0 on a scale of 1-5) was similar to recent years and consistent with improvement following changes to the permit areas and season (i.e., longer length and earlier dates) in 2013.

### **INTRODUCTION**

Greater Prairie-chicken (*Tympanuchus cupido pinnatus*) hunting in Minnesota was closed in 1943 because of population declines resulting from habitat loss. However, hunting was reopened in 2003 because prairie-chicken populations were considered robust enough to allow a limited season. During 2003-2005, a limited-entry 5-day hunting season was opened in 7 permit areas in western Minnesota. Permits were awarded through a lottery system, with a bag and season limit of 2 prairie-chickens. In 2006, 4 new permit areas were added and the number of permits was increased in some areas. Surplus licenses were offered for sale after the lottery

for the first time in 2011, and in 2013, the permit areas were revised again. These most recent changes eliminated 801A and 802A, modified 803A to include portions of the former 802A and 803A, and added 812A and 813A to expand hunting eastward (Figures 1 and 2). The number of available permits was also reduced in some permit areas to more closely reflect opportunities to harvest prairie-chickens in each permit area. The season was lengthened from 5 days to 9 days to provide hunting opportunity on >1 weekend and was moved from mid-October to open in late-September. The earlier season was an attempt to improve hunter success and satisfaction by providing hunting opportunities before pheasant season opened (to reduce hunter interference and flushing distance). These changes were based on hunter comments received by DNR Wildlife Managers during prior years and input received during a public input survey during March 2013. Responses of surveyed prairie-chicken hunters in 2015 provided additional evidence that the earlier season is preferred by most, although hunter preferences were clearly divided. In 2020, the prairie-chicken season opened 26 September and closed 4 October.

Prairie-chicken hunting in Minnesota is a privilege that is only available to residents. Landowners or tenants of  $\geq 40$  acres of grassland within a permit area are eligible to apply for a landowner lottery that awards up to 20% of the available permits in a permit area. Remaining permits are then included with the regular lottery. Any landowner not receiving a permit through the landowner lottery can participate in the regular lottery. The lottery gives preference to persons that have applied for a permit unsuccessfully for the most years. Upon selection, lottery winners must purchase a prairie-chicken hunting permit before hunting. Although sharp-tailed grouse (*Tympanuchus phasianellus*) hunting is closed south of U.S. Highway 2 in the western part of the state (i.e., in permit areas 804A–813A), licensed prairie-chicken hunters may also take sharp-tailed grouse while hunting prairie-chickens. Harvest is documented each year in this annual report.

## **METHODS**

Lottery applicants, winners, and permit purchasers were recorded by the Electronic Licensing System (ELS). Registration of harvested birds has not been mandatory except during 2003-2007, so I determined harvest through a postcard survey. I sent a postcard to each lottery winner the week before hunting season. Six weeks later I sent another postcard to people who had not yet responded. Postcards contained 6 questions: did you purchase a permit, did you hunt, and if so, for how many days, how many prairie-chickens did you harvest, how many sharp-tailed grouse did you harvest during prairie-chicken hunts, and how satisfied were you (on a scale of 1-5)?

Only responses from lottery winners who purchased a hunting permit or reported hunting were considered in the analysis. I compared responses from the first mailing to responses from the second mailing to examine possible nonresponse bias and adjusted as necessary. I calculated the number of birds harvested, birds per harvester, and hunter success (i.e., proportion of estimated hunters harvesting  $\geq 1$  prairie-chicken) for each permit area. Each of these metrics was calculated by permit area and for all areas.

## **RESULTS & DISCUSSION**

The combined quota for the 11 permit areas during 2020 was 125 permits, and 366 individuals applied in the lottery (Table 1). Of the 128 lottery winners, 107—including 1 landowner—later purchased a permit. All permit areas had more applicants than permits available, so surplus permits were not available.

Ninety-seven purchasers (91%,  $n = 107$ ) responded to the survey; 92 (86%) responded to the first mailing and 5 (5%) to the second mailing. This response rate is similar to survey response rates since 2010 (mean: 87%; range: 83-95%). I detected a response bias in the number of days afield, but not the number of respondents that hunted, the number of prairie-chickens harvested, or the number of sharp-tailed grouse harvested. Respondents to the first

mailing reported harvesting prairie-chickens at similar rates as respondents to the second mailing (64% vs. 40%), and reported harvesting a similar number of chickens (1.1 vs. 0.8 birds per hunter) and sharp-tailed grouse (0.4 vs. 0.8 birds per hunter), but hunted fewer days (2.2 vs. 4.0). Respondents to the first mailing were as likely as respondents to the second mailing to have hunted (97% vs. 100% of respondents), and reported similar satisfaction (mean 4.1 vs. 3.2, median 5.0 vs. 3.0), with 92% and 80% of respondents reporting satisfaction scores  $\geq 3$ , respectively. However, statistical power to detect a difference between mailings was low because only 5 hunters returned surveys in the second mailing, and the magnitude of the differences between responses to the first and second mailing were similar to those in recent years in which a response-bias correction has been used. Therefore, I assumed that non-respondents to the survey had similar success as respondents to the second mailing (i.e., class method of correction). This assumption may not eliminate nonresponse bias if non-respondents were less successful than respondents to the second mailing, but should more closely approximate the actual harvest than assuming similar responses of non-respondents and all respondents.

Ninety-four respondents reported that they hunted prairie-chickens (Table 2). I estimated the total number of hunters to be 105 (i.e., purchasers who went afield) after accounting for hunting by non-respondents. Hunters reported harvesting 102 prairie-chickens and total harvest after accounting for non-respondents was estimated as 112 prairie-chickens. An estimated 64 hunters bagged  $\geq 1$  chicken. Prairie-chicken hunter success during 2020 was higher than last year and in recent years of the survey. Survey respondents also reported harvesting 41 sharp-tailed grouse while hunting prairie-chickens from permit areas 803A, 804A, 805A, 806A, 807A, 808A, and 809A (Figure 1). Successful hunters reported higher average satisfaction (4.5) than respondents that were not successful (3.4), but satisfaction of prairie-chicken hunters was high overall.

Prairie-chicken hunter satisfaction was similar to 2013-2019, which is consistent with improved satisfaction following changes to the season framework in 2013 to accomplish this goal (Table 3). Hunter survey responses in the 2013 Wildlife Public Input Survey and through this postcard survey in 2015 indicated that hunter preferences are split, but that the majority of hunters support the current season framework. Both the 2013 and 2015 surveys asked hunters about their preference for a season opening on the last Saturday in September or an opener on the Saturday nearest 20 October. The majority of respondents to the 2013 survey (64% of respondents who expressed an opinion) indicated a preference for the earlier season. Likewise, in the 2015 survey, 56% of respondents indicated a preference for the earlier season. Supporters of the early season indicated that the birds were less wary early in the season and pheasant hunting did not affect the hunt. Reasons provided in support of a later season included cooler weather for hunters and dogs, better plumage on birds, fewer standing crops, opportunity to harvest pheasants while hunting chickens, and no conflict with the waterfowl opener. Although a large minority still indicated a preference for a later season, the current season meets the timing preferences of the majority of responding prairie-chicken hunters.

## **ACKNOWLEDGEMENTS**

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Table 1. Prairie-chicken hunt lottery applicants, winners, and hunting permit purchasers in Minnesota during 2020.

Permit area	Permits available	No. of applicants	Lottery winners		Permit purchasers <sup>a</sup>		Surplus purchasers <sup>c</sup>
			No. <sup>b</sup>	Proportion	No.	Proportion	
803A	8	12	8	0.67	5	0.63	0
804A	10	11	10	0.91	10	1.00	0
805A	10	53	10	0.19	10	1.00	0
806A	12	33	13	0.39	9	0.69	0
807A	20	78	21	0.27	16	0.76	0
808A	20	57	21	0.37	17	0.81	0
809A	15	43	15	0.35	14	0.93	0
810A	15	38	15	0.39	12	0.80	0
811A	5	11	5	0.45	4	0.80	0
812A	5	20	5	0.25	5	1.00	0
813A	5	10	5	0.50	5	1.00	0
All	125	366	128	0.35	107	0.84	0

<sup>a</sup> Lottery winners who purchased a hunting permit.

<sup>b</sup> The number of permits may exceed the quota when the last applicant selected in the lottery belongs to a hunting party.

<sup>c</sup> Number of people purchasing a surplus permit after the lottery because the permit quota was not met during the lottery. Surplus permits were not available in 2020, because more people applied for permits in each area than there were permits available.

Table 2. Prairie-chicken harvest in Minnesota during 2020.

Permit area	No. of hunters <sup>a</sup>		Birds harvested		Birds per harvester <sup>b</sup>	Success rate <sup>c</sup>
	Self-reported	Estimated	Self-reported	Estimated		
803A	5	5	3	3	1.5	0.40
804A	6	10	3	6	1.7	0.30
805A	10	10	13	13	1.9	0.70
806A	9	9	9	9	1.8	0.56
807A	13	15	19	21	1.9	0.73
808A	16	17	21	22	1.6	0.82
809A	13	14	13	14	1.5	0.71
810A	10	11	4	5	2.0	0.18
811A	4	4	6	6	1.5	1.00
812A	3	5	4	6	2.0	0.60
813A	5	5	7	7	1.8	0.80
All	94	105 <sup>d</sup>	102	112 <sup>d</sup>	1.7 <sup>d</sup>	0.62 <sup>d</sup>

<sup>a</sup> Permit purchasers who hunted.

<sup>b</sup> Estimated number of birds harvested per successful hunter, assuming non-respondents had success similar to that of respondents to the second mailing.

<sup>c</sup> Proportion of estimated hunters harvesting  $\geq 1$  prairie-chicken.

<sup>d</sup> Assumed that non-respondents were represented by respondents in the second mailing.

Table 3. Summary of prairie-chicken hunting in Minnesota during 2003–2020.

Year	Permits available	Applicants	Hunters <sup>a</sup>	Birds harvested	Success rate <sup>b</sup>	Hunter satisfaction <sup>c</sup>
2003	100	853	92	130	0.75	4.4
2004	101	759	87	58	0.45	3.6
2005	110	500	86	94	0.63	4.0
2006	182	512	149	109	0.49	3.6
2007 <sup>d</sup>	187	519		122	0.53	
2008	186	535	137	133	0.58	3.9
2009	186	512	143	118	0.52	3.4
2010	186	421	136	78 <sup>e</sup>	0.32	3.0
2011	186	264	138	103	0.45	3.4
2012	186	298	158	86	0.39	3.4
2013	126	277	93 <sup>f</sup>	96 <sup>f</sup>	0.60 <sup>f</sup>	3.7 <sup>f</sup>
2014	126	305	102	95	0.54	3.7
2015	126	271	112	103	0.55	3.6
2016	126	304	111	102	0.58	3.8
2017	125	317	97	86 <sup>f</sup>	0.55 <sup>f</sup>	4.0 <sup>f</sup>
2018	125	303	104	82 <sup>f</sup>	0.51 <sup>f</sup>	3.9 <sup>f</sup>
2019	125	354	100	64 <sup>f</sup>	0.37 <sup>f</sup>	3.8 <sup>f</sup>
2020	125	366	105	112 <sup>f</sup>	0.62 <sup>f</sup>	4.0 <sup>f</sup>

<sup>a</sup> Estimated number who went hunting, not permit purchasers.

<sup>b</sup> Proportion of hunters harvesting  $\geq 1$  prairie-chicken.

<sup>c</sup> Mean on a scale of 1–5.

<sup>d</sup> A hunter survey was not conducted during 2007; results are from the Electronic Licensing System, which documented 150 permit purchasers.

<sup>e</sup> One hunter reported harvesting 10 prairie-chickens in 2010.

<sup>f</sup> Assumed that non-respondents were represented by respondents in the second mailing in 2013, 2017, 2018, 2019, and 2020.

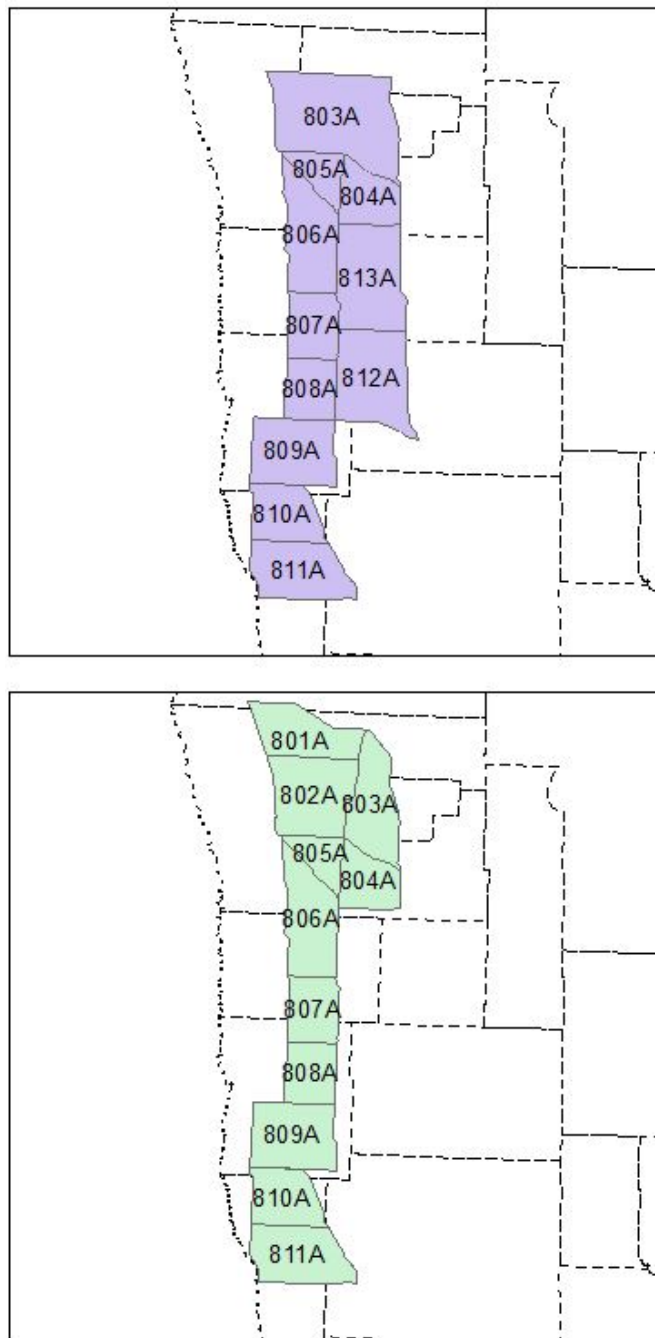


Figure 1. Prairie-chicken hunting permit area boundaries in northwestern Minnesota since 2013 (top) compared to during 2006–2012 (bottom). County boundaries are indicated by dashed lines. Permit areas 812A and 813A were added, 801A was eliminated, and 802A and portions of 803A were combined into a revised permit area 803A.



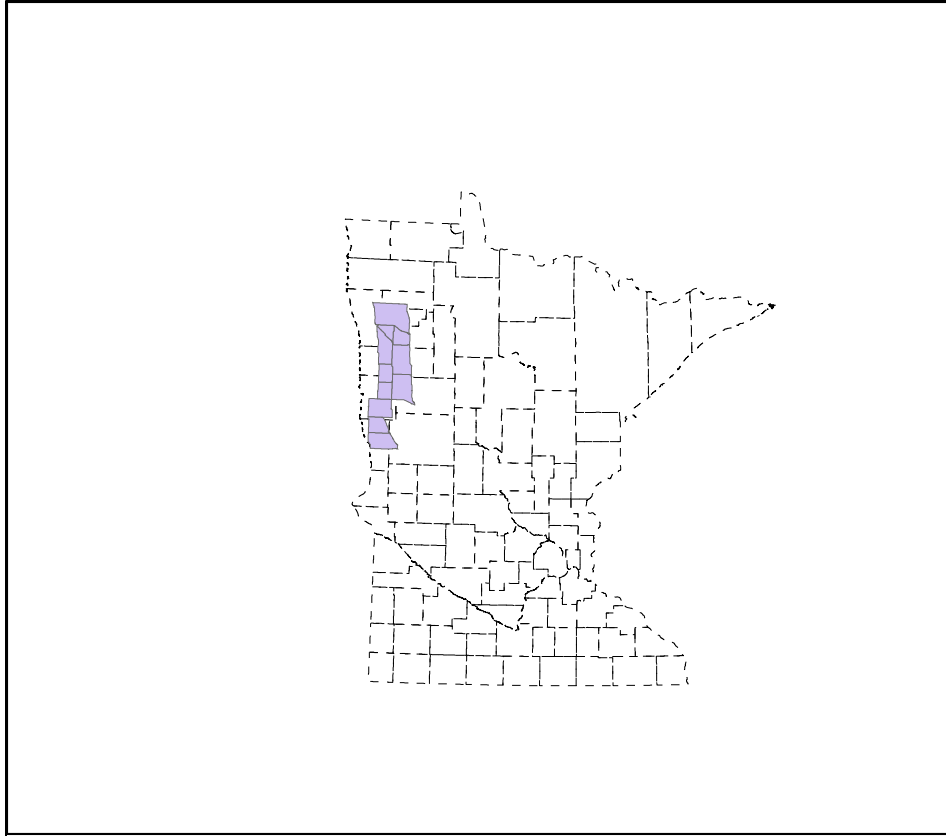


Figure 2. Northwestern location of prairie-chicken hunting permit areas within the state relative to county boundaries (dashed lines).