

## Prairie-chicken harvest in Minnesota during 2010

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### INTRODUCTION

Hunting seasons for prairie-chickens (*Tympanuchus cupido pinnatus*) in Minnesota were closed from 1943 through 2002. During October 2003 a limited-entry, 5-day hunting season for prairie-chickens was held within 7 contiguous permit areas in western Minnesota. Opportunities to purchase a hunting permit were awarded through a lottery system, and each licensed hunter could harvest a maximum of 2 prairie-chickens. The same format for prairie-chicken hunting seasons has been implemented annually since 2003. The only changes that have occurred were adding 4 new permit areas in 2006 (Figure 1) and increasing the quota of hunters in some permit areas.

Only residents of Minnesota are eligible for the prairie-chicken lottery. They may apply to the lottery as an owner or tenant of  $\geq 40$  acres of grassland within a permit area (i.e., landowner). Twenty percent of the available permits in a permit area are awarded in a lottery consisting of only landowner applicants. Any permits not awarded in the landowner lottery are then included with the other 80% of permits to be awarded in a subsequent lottery for regular applicants. Any landowners who are unsuccessful in the landowner lottery are also included in the subsequent lottery. The permits within each permit area are awarded first to people who have applied the greatest number of years since last winning a permit.

Lottery winners must purchase a prairie-chicken hunting permit (i.e., license) before they hunt prairie-chickens. Permit areas 804A–811A (i.e., those south of U.S. Highway 2) are in an area that is closed to the hunting of sharp-tailed grouse (*Tympanuchus phasianellus*). Licensed prairie-chicken hunters in those permit areas, however, are allowed to take a regular bag limit of sharp-tailed grouse while hunting prairie-chickens.

The objective of the hunter survey described below is to document results of prairie-chicken hunting seasons.

### METHODS

The Electronic Licensing System (ELS) automatically recorded all lottery applications, lottery results, and purchases of permits. Prairie-chicken hunters are not required to register their harvested birds in the ELS, so during the week before the hunting season I sent a postcard survey by mail to all people who were successful in the lottery. Approximately 3 weeks later I sent the postcard survey a second time to people who had not responded to the first mailing.

The survey consisted of the following 5 questions: did you hunt, how many days did you hunt, how many prairie-chickens did you bag, how many sharp-tailed grouse did you bag while hunting for prairie-chickens, and how satisfied were you with the hunt?

To summarize hunting results for this report I used only responses from lottery winners who purchased a hunting permit. I checked to ensure that responses from people who replied to the first mailing were similar to responses from people who replied to the second mailing. Then, to estimate the numbers of hunters and birds harvested, I assumed that nonrespondents would have had the same average response as all those who responded to either mailing of the survey.

## RESULTS & DISCUSSION

One hundred eighty-six prairie-chicken hunting permits were available during 2010. There were 186 lottery winners (Table 1), and 14 of them were landowners. There were fewer applicants than there were permits available in permit area 801A. One hundred forty-seven lottery winners purchased a permit. Four lottery winners reported hunting but did not purchase a permit, so for the purposes of this summary I considered there to be 151 permit purchasers in 2010. The postcards of 3 purchasers were returned as undeliverable, so survey response rates were based on a sample size of 148. Ninety-nine permit purchasers (67%) responded to the first mailing of the survey, and 25 (17%) responded to the second mailing, so the response rate of purchasers was 84% (i.e., 124 of 148).

Fourteen purchasers who responded to the survey reported that they did not hunt (11%), and 110 respondents reported hunting, so there were an estimated 133 hunters (i.e., purchasers who went afield; Table 2). Hunters hunted an average of 2.0 days during the 5-day season (23–27 October 2010). Hunters reported harvesting 63 prairie-chickens, and the estimated total harvest was 87 prairie-chickens (Table 2). These totals for harvest included results from a hunter who reported harvesting 10 prairie-chickens, which may be questionable. Only 2 of the 730 responses to our survey since 2003 were from hunters who reported harvesting as many as 4 prairie-chickens during a single season. I estimated that 49 hunters bagged at least 1 prairie-chicken (37%, Table 2). The average rating for hunter satisfaction on a 1–5 scale was 3.0 (median = 3), and 68% of the 116 respondents to this question reported a satisfaction level of 3 or greater. Hunter satisfaction is highly correlated with hunter success (Spearman's  $r = 0.81$ ,  $n = 7$  years, Table 3).

The prairie-chicken harvest and hunter success rate during 2010 were lower than during most years since 2003 (Table 3). This may have been due to poor weather conditions during

the hunting season, relatively low densities of birds during the fall, or a combination of both. Thirty-four (27%) of the 124 purchasers who responded to the survey mentioned experiencing poor weather, including high winds and rain. This percentage was not higher among the subset of purchasers who reported not hunting (4 of 14 = 29%) or lottery winners who did not purchase a permit (2 of 26 = 8%). During 2004 when the hunter success rate was equally low, 33% of hunters reported poor weather conditions.

Although the number of male prairie-chickens counted at booming grounds during spring surveys has declined from 17.2 (14.1–20.3) in 2004 to 9.6 (8.4–10.8) in 2010, the density of booming grounds has remained relatively constant at approximately 0.13/km<sup>2</sup> (0.08–0.19/km<sup>2</sup>). There is a moderate degree of correlation between the total number of males observed in survey blocks during spring and total harvest during the fall since 2006 (i.e., when >180 permits have been available; Kendall's  $\tau = 0.6$ ,  $n = 5$  years, Table 3). The correlation coefficient ( $\tau$ ) is on a 0–1 scale and is not closer to 1 because (1) survey counts are not a perfect reflection of spring bird densities, (2) reproductive success (i.e., the number of juvenile birds in the fall population per adult in the spring population) varies from year to year, and (3) factors other than bird density contribute to annual variation in hunter success (e.g., weather conditions during the hunting season).

Prairie-chicken hunters reported bagging 15 sharp-tailed grouse while hunting prairie-chickens, and the estimated harvest was 19 sharp-tailed grouse. These sharp-tailed grouse were harvested from permit areas 802A–805A and 809A–810A, and the greatest sharp-tailed grouse harvest was from permit area 805A (Figure 1).

## **ACKNOWLEDGEMENTS**

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Table 1. Results of the lottery for prairie-chicken hunting permits in Minnesota during 2010.

Permit area	Permits available	No. of applicants	Lottery winners		Permit purchasers	
			Number <sup>a</sup>	Proportion	Number	Proportion <sup>b</sup>
801A	10	9	9	1.00	4	0.44
802A	10	18	10	0.56	6	0.60
803A	10	10	10	1.00	10	1.00
804A	17	39	18	0.46	16	0.89
805A	20	62	20	0.32	19	0.95
806A	17	39	17	0.44	16	0.94
807A	25	61	25	0.41	21	0.84
808A	20	28	20	0.71	16	0.80
809A	20	44	20	0.45	16	0.80
810A	27	82	27	0.33	16	0.59
811A	10	29	10	0.34	7	0.70
All	186	421	186	0.44	147	0.79

<sup>a</sup> Extra permits may be awarded in a permit area when the last applicant selected in the lottery applied as a member of a hunting party.

<sup>b</sup> Proportion of lottery winners who purchased a permit.

Table 2. Hunter harvest of prairie-chickens in Minnesota during 2010.

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		
801A	2	4	0	0		0.00
802A	6	7	2	2	1.0	0.29
803A	7	9	3	4	1.0	0.44
804A	14	14	10	11	1.6	0.50
805A	15	17	2	2	1.0	0.12
806A	12	15	6	8	1.1	0.47
807A	14	18	9	13	1.4	0.50
808A	10	15	11	18	2.3	0.53
809A	11	13	7	11	1.8	0.46
810A	13	15	13 <sup>d</sup>	18 <sup>d</sup>	4.5 <sup>d</sup>	0.27
811A	6	6	0	0		0.00
All	110	133	63 <sup>d</sup>	87 <sup>d</sup>	1.8	0.37

<sup>a</sup> Number of permit purchasers who actually went hunting.

<sup>b</sup> Estimated number of prairie-chickens harvested per successful hunter.

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

<sup>d</sup> One hunter reported harvesting 10 prairie-chickens, which may be questionable.

Table 3. Annual summary of prairie-chicken hunting results in Minnesota during 2003–2010.

Year	Permits available	Applicants	Hunters <sup>a</sup>	Birds harvested	Success rate <sup>b</sup>	Hunter satisfaction <sup>c</sup>
2003	100	853	92	115	0.68	4.4
2004	101	759	87	51	0.37	3.6
2005	110	500	86	90	0.58	4.0
2006	182	512	149	92	0.40	3.6
2007 <sup>d</sup>	187	519		122	0.53	
2008	186	535	137	141	0.62	3.9
2009	186	512	141	120	0.54	3.4
2010	186	421	133	87 <sup>e</sup>	0.37	3.0

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

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

<sup>c</sup> Average on a 1–5 scale.

<sup>d</sup> No hunter survey was conducted for the 2007 season; results are from the Electronic Licensing System only.

<sup>e</sup> One hunter reported harvesting 10 prairie-chickens, which may be questionable.

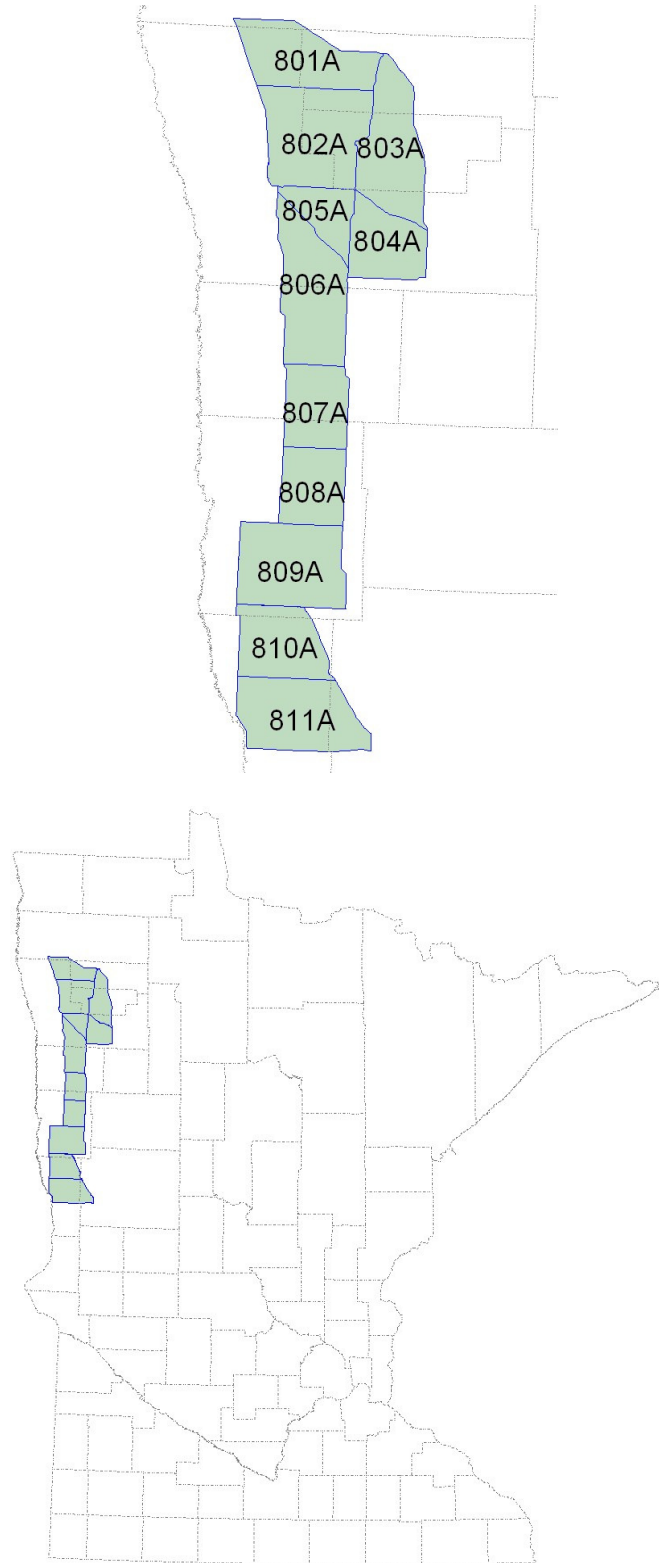


Figure 1. Map of permit areas for prairie-chicken hunting in Minnesota (top) and their location relative to counties within the state (bottom).