2013 MINNESOTA PRAIRIE-CHICKEN HARVEST SURVEY

Charlotte Roy
Forest Wildlife Populations and Research Group
Minnesota Department of Natural Resources
Grand Rapids, Minnesota

6 December 2013

SUMMARY OF FINDINGS

Prairie-chicken (*Tympanuchus cupido pinnatus*) hunting season dates and permit areas were modified in 2013 in an attempt to increase hunter success and satisfaction. I estimated harvest, hunter success, and satisfaction from a postcard survey that is conducted annually. Although fewer hunters went afield (estimated at 93 and the lowest since 2005), hunter success (0.60) and satisfaction (3.7 on a scale of 1-5) were higher than in recent years. Harvest was estimated at 96 prairie-chickens, and 17 sharp-tailed grouse (*Tympanuchus phasianellus*) were harvested during prairie-chicken hunts.

INTRODUCTION

Prairie-chicken (*Tympanuchus cupido pinnatus*) hunting 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 (Fig. 1a,b). 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 moved forward several weeks to open 28 September and close 6 October. The earlier season was an attempt to improve hunter success and satisfaction by providing hunting opportunities before pheasant season opened.

Prairie-chicken hunting in Minnesota is a privilege that is only available to residents. Landowners or tenants of ≥40 acres of grassland within a permit area are eligible to apply for a landowner lottery that awards 20% of the available permits in a permit area. Extra landowner 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 highway 2 (i.e., 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 purchases are recorded by the Electronic Licensing System (ELS). Registration of harvested birds has not been mandatory except during 2003-2006, so I determined harvest through a postcard survey. I sent a postcard to each lottery winner the week before hunting season. Three weeks later I sent another postcard to people who had not yet responded. Postcards contained 5 questions: 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 were considered. I compared responses from the first mailing to responses from the second mailing to examine possible nonresponse bias. I assumed that non-respondents would have had the same

response as respondents to the second mailing when estimating the number of hunters, birds harvested, birds per harvester, and hunter success due to detected nonresponse bias. Each of these metrics was calculated by permit area and summed for all areas.

RESULTS & DISCUSSION

The combined quota for the 11 permit areas during 2013 was 126, and 277 individuals applied in the lottery (Table 1). Only 2 permit areas (804A and 813A) had fewer applicants than permits available, and all 5 surplus permits were purchased. Of the 131 lottery winners, 97 later purchased a permit, of whom, 4 were landowners.

Seventy-eight permit purchasers (83%) responded to the survey and 3 surveys were undeliverable; 56 (59%) responded to the first mailing and 22 (23%) to the second mailing. This response rate is slightly lower than survey response rates during the last two years (90% in 2011, and 95% in 2012), but similar to 2010 (84%). Respondents to the first mailing were more likely than respondents to the second mailing to have hunted (98% vs. 90% of respondents), hunted a similar number of days (2.1 vs. 2.2), were more likely to have harvested a prairie-chicken (66% vs. 52%), tended to harvest more chickens (1.2 vs. 0.8 birds per hunter), harvested a similar number of sharp-tails (0.1 vs. 0.5 birds per hunter), and tended to be more satisfied (mean 3.9 vs. 3.3, median 4 vs. 3), with 85% and 76% of respondents reporting satisfaction scores $\geq$3, respectively. Thus, hunters that were more successful and satisfied were more likely to respond to the survey, indicating a nonresponse bias.

I attempted to correct for the nonresponse bias this year, which differed from previous years with similar results in first and second mailings, and when it was assumed that non-respondents would have had similar responses to all respondents. Instead, I assumed that non-respondents would have had similar responses to those received from the second mailing (i.e., class method of correction). This assumption may not eliminate nonresponse bias if non-respondents were less successful and less satisfied than respondents to the second mailing,

but should more closely approximate the actual harvest and hunter numbers than assuming similar responses of non-respondents and all respondents.

Seventy-four respondents reported that they hunted prairie-chickens (Table 2). I estimated the total number of hunters to be 93 (i.e., purchasers who went afield) after accounting for hunting by non-respondents. Hunters reported harvesting 83 prairie-chickens during the 9-day season. I estimated total harvest as 96 prairie-chickens, with an estimated 56 hunters bagging $\geq$1 chicken. Survey respondents reported harvesting 17 sharp-tailed grouse while hunting prairie-chickens from permit areas 803A, 804A, and 805A (Fig. 1).

Prairie-chicken hunter success and satisfaction during 2013 were higher than during recent years (Table 3). Improvements in satisfaction and success may be due to the earlier season, younger birds (for success but not necessarily satisfaction), less interference with other hunters (i.e., no overlap with pheasant season), and changes in the permit areas to provide new opportunities. Successful hunters reported higher average satisfaction (4.4) than respondents that were not successful (2.6). However, some hunters (n = 11) reported that they preferred the later season (i.e., did not like the season changes this year). Although we cannot exclude the possibility that non-respondents had lower satisfaction than respondents to the second mailing, survey results support the conclusion that the changes to the hunting season improved hunter success and satisfaction of prairie-chicken hunters overall.

ACKNOWLEDGEMENTS

I would like to thank Laura Gilbert for preparing and mailing the postcards and entering data. I would also like to thank Mike Larson for his assistance in transitioning prairie-chicken data management and report writing responsibilities, as well as for commenting on the report. Funding for this survey was partially provided by the Federal Aid in Wildlife Restoration Act, Minnesota project W-69-S-12.

Table 1. Prairie-chicken hunt lottery applicants, winners, and hunting permit purchasers in Minnesota during 2013.

Permit area	Permits available	No. of applicants	Lottery winners		Permit purchasers[a]		Surplus purchasers[c]
			No.[b]	Proportion	No.	Proportion	
803A	10	18	10	0.56	8	0.80	0
804A	12	11	11	1.00	8	0.73	1
805A	12	70	13	0.19	12	0.92	0
806A	12	33	15	0.45	13	0.87	0
807A	20	39	20	0.51	16	0.80	0
808A	15	31	18	0.58	18	1.00	0
809A	15	22	17	0.77	6	0.35	0
810A	15	32	15	0.47	7	0.47	0
811A	5	13	6	0.46	3	0.50	0
812A	5	7	5	0.71	5	1.00	0
813A	5	1	1	1.00	1	1.00	4
All	126	277	131	0.47	97	0.74	5

[a] Lottery winners who purchased a hunting permit.
[b] The number of permits may exceed the quota when the last applicant selected in the lottery belongs to a hunting party.
[c] Number of people purchasing a surplus permit after the lottery because the permit quota was not met during the lottery.

Table 2. Prairie-chicken harvest in Minnesota during 2013.

Permit area	No. of hunters[a]		Birds harvested		Birds per harvester[b]	Success rate[c]
	Self-reported	Estimated	Self-reported	Estimated		
803A	5	7	10	11	1.8	0.86
804A	7	8	6	7	1.4	0.63
805A	10	12	14	15	1.7	0.75
806A	8	12	11	14	1.8	0.67
807A	12	16	13	16	1.6	0.63
808A	14	17	17	19	1.9	0.59
809A	4	6	5	6	1.5	0.67
810A	5	6	4	5	2.5	0.33
811A	3	3	0	0	NA	NA
812A	5	5	3	3	1.5	0.4
813A	1	1	0	0	NA	NA
All	74	93[d]	83	96[d]	1.7[d]	0.60[d]

[a] Permit purchasers who hunted.
[b] Estimated number of birds harvested per successful hunter.
[c] Proportion of estimated hunters harvesting ≥1 prairie-chicken.
[d] Assumed that non-respondents were represented by respondents in the second mailing.

Table 3. Summary of prairie-chicken hunting in Minnesota during 2003–2013.

Year	Permits available	Applicants	Hunters[a]	Birds harvested	Success rate[b]	Hunter satisfaction[c]
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[d]	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[e]	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[f]	96[f]	0.60[f]	3.7[f]

[a] Estimated number who went hunting, not permit purchasers.

[b] Proportion of hunters harvesting ≥1 prairie-chicken.

[c] Mean on a scale of 1–5.

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

[e] One hunter reported harvesting 10 prairie-chickens in 2010.

[f] Assumed that non-respondents were represented by respondents in the second mailing.

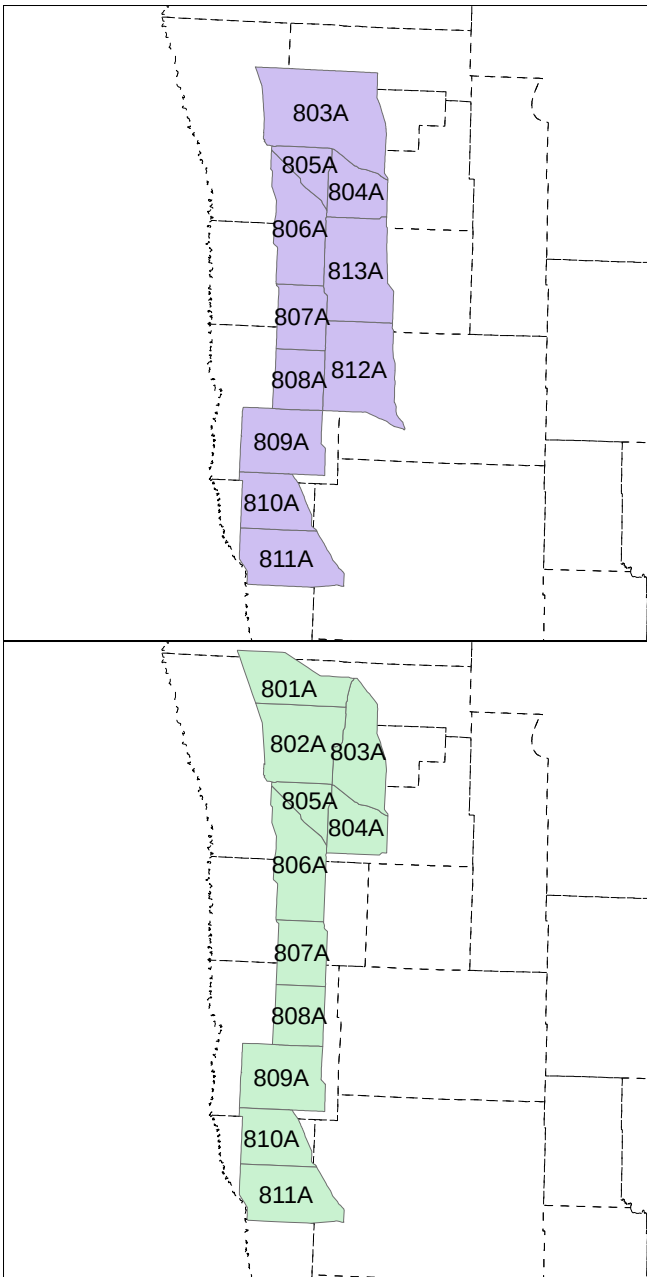

Figure 1a. Prairie-chicken hunting permit area boundaries in northwestern Minnesota during 2013 (top) compared to 2012 (bottom). County boundaries are indicated by dashed lines. Permit areas 812A and 813A were added, 801A was eliminated, and 802A and portions of 803A were combined into a revised permit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

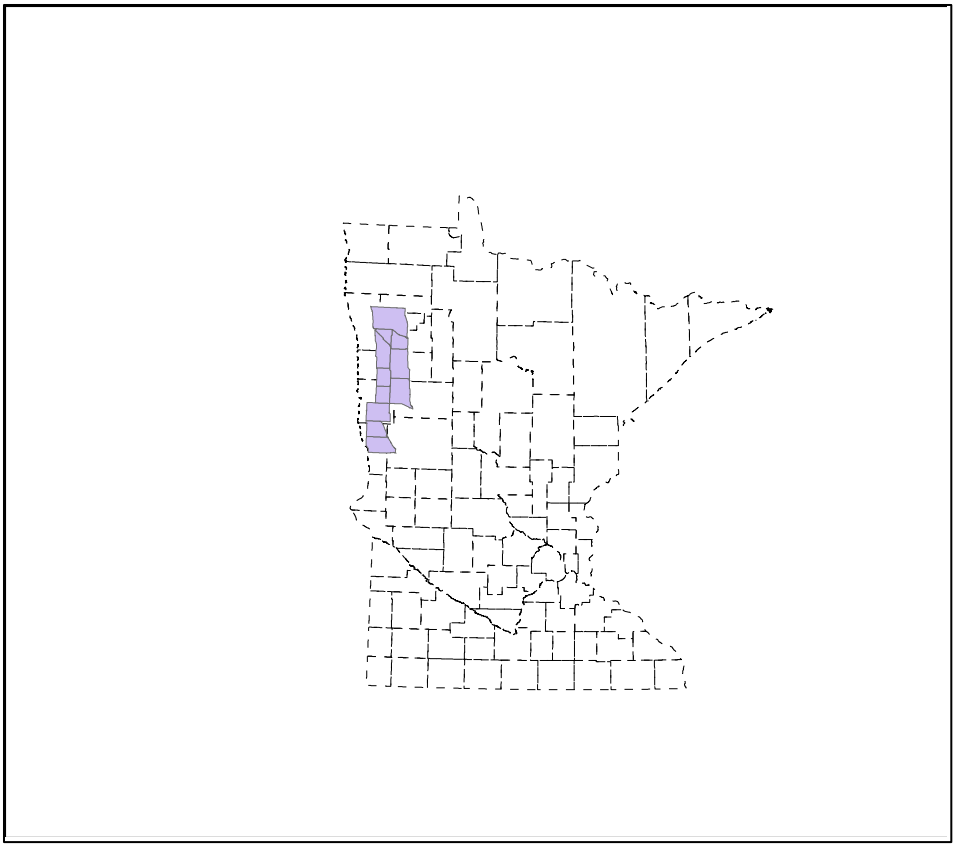

Figure 1b. Northwestern location of prairie-chicken hunting permit areas within the state relative to county boundaries (dashed lines).