

Results of the 2011 Early Canada Goose Hunting Season in North Dakota

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Summary

North Dakota's resident Canada goose population is high, and some producers are experiencing depredation of agricultural crops by Canada geese. Early fall Canada goose seasons have been held in North Dakota annually since 1999 to reduce the number of geese and crop depredation.

The early Canada goose season is open to both resident and non-resident hunters. However, state law limits nonresidents to 14 days of waterfowl hunting. Legislation was passed in 2003 that allows nonresidents to hunt the early Canada goose season in Richland and Sargeant without those days counting against the 14-day limit. The 2011 ND State Legislature passed H.B. No. 1407, which added Benson, Ramsey and Towner counties to the 14-day limit exclusion. It also required that:

"the game and fish department shall conduct a study of goose hunting in this state. The department must track the number of resident and nonresident goose hunters and the number of geese taken by county. The department shall report its findings to the legislative management by September 1, 2012."

This report presents these findings.

Season dates for the 2011 early Canada goose hunt in North Dakota were from 13 August through 15 September 2011. In addition to other license requirements, all hunters were required to register with the Harvest Information Program (HIP) before hunting. Daily bag and possession limits were 8 and 16, respectively, an increase from a bag limit of 5 and possession limit of 10 that was in place from 2000 through 2010.

Since 2000, we have measured hunter numbers, hunter activity and harvest for the early Canada goose season in September and August (beginning in 2008) with mail questionnaires sent to a sample of hunters that had registered with HIP by the end of the September season. In this report, for the first time, we analyzed the resident hunter (RH) and nonresident hunter (NRH) data separately and developed a harvest estimate that is weighted by residency.

By 15 September 2011, 20,460 residents and 2,935 nonresidents had HIP registered. A random sample of approximately 15 percent of these (3,045 residents and 455 nonresidents) were mailed an early Canada goose season questionnaire on 16 September 2011. An estimated 4,615 residents and 560 nonresidents actively hunted during the early Canada goose season.

Resident respondents hunted in 46 counties, while nonresidents hunted in 14 counties. By weighting the survey responses for counties hunted by the total estimated number of NRHs, we

estimate that 316 NRHs hunted in the three “day-exempt counties.” Five states were represented by active NRHs responding to the survey. Thirty hunters were from Minnesota, three from Wisconsin and one each from South Dakota, Illinois and Texas.

The corrected average seasonal bag was 9.45 birds per active RH and 9.11 birds per active NRH. The corrected harvest estimate was 48,711 geese (43,612 for R and 5,099 for NR). Overall hunting activity totaled 17,583 hunting days, averaging 3.41 days per active hunter, 3.32 days per active RH and 4.05 days per active NRH.

Ramsey County had the highest harvest (8,046 birds), followed by Sargent (5,427 birds) and McIntosh (3,012 birds) (Table 3). Birds were bagged by R in 43 of 53 counties in North Dakota, while NR bagged birds in 14 of the 53 counties.

The estimated Canada goose harvest by NR in the “day-exempt counties” totaled 3,273 birds (Sargent 1,921; Richland 818; and Ramsey 534). These three counties ranked as the three highest harvest counties for NRHs totaling 70.2 percent of the harvest by NRHs but only 6.7 percent of the estimated harvest for the entire state.

The trend in the estimated harvest of Canada geese in the early season has been increasing since the lowest estimated harvest in 2007. The total estimated harvest for 2011 was the highest on record, but hunter numbers were the third lowest on record. The high harvest in 2011 is likely due to the increase in daily bag limit from 5 to 8 birds. In addition, fall 2011 was relatively dry, which allowed for an early harvest and permitted hunters better access to hunting locations.

It is difficult to assess the success of eliminating the NRH day restrictions for Ramsey, Benson and Towner counties based on data from a single year, 2011. Of the five counties exempted from the NRH day restrictions, NRHs reported hunting and harvesting geese in only three – Sargent, Richland and Ramsey. We suspect that NRHs may have harvested geese in Benson and Towner counties, but these hunters, if they exist, were not sampled in our survey process.

Better estimates of harvest and hunting activity require sampling a larger number of NRHs. To do this with the current HIP sampling frame would be difficult and expensive. The HIP database was not designed for sampling early season Canada goose hunters. We need to investigate the best way to obtain a name and address database of non-resident early Canada goose season hunters that will allow for improved harvest estimates.

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Introduction

North Dakota's resident Canada goose population is high (Figure 1), and some producers are experiencing depredation of agricultural crops from these overabundant birds. Early fall Canada goose seasons have been held in North Dakota each year since 1999 to help reduce the number of geese and crop depredation. The first September Canada goose season in 1999 was limited to Richland and Sargent counties. During 2000-2002 the U.S. Fish and Wildlife Service (USFWS) allowed an experimental season with dates extended up to one week after the regular early season dates of September 1-15. This experimental season extension was discontinued by the USFWS after 2002 because more than 10 percent of the harvest during the one week extension was comprised of migrant Canada geese. Starting in 2008 the USFWS permitted the hunting of Canada geese in August.

State law limits nonresidents to 14 days of waterfowl hunting. Beginning with the 2003 season, legislation was passed that allows nonresidents to hunt the early Canada goose season in Richland and Sargeant without those days counting against the 14-day limit. The 2011 ND State Legislature passed H.B. No. 1407, which added Benson, Ramsey and Towner counties to the 14-day limit exclusion. It also required that:

“the game and fish department shall conduct a study of goose hunting in this state. The department must track the number of resident and nonresident goose hunters and the number of geese taken by county. The department shall report its findings to the legislative management by September 1, 2012.”

This report provides results of the thirteenth early Canada goose hunt in North Dakota. Season dates were from 13 August through 15 September 2011, with shooting hours from ½ hour before sunrise to sunset each day. In addition to other license requirements, all hunters were required to register with the Harvest Information Program (HIP) before hunting. Daily bag and possession limits were 8 and 16, respectively. This was an increase from a bag limit of 5 and possession limit of 10 that was in place from 2000 through 2010. All other waterfowl hunting regulations as outlined in the 2011 North Dakota Waterfowl Hunting Guide were applicable.

Methods

Since 2000, we have measured hunter numbers, hunter activity and harvest for the early Canada goose season in September and August (beginning in 2008) with mail questionnaires sent to a sample of hunters that had registered with HIP by the end of the September season. Through the 2010 season, nonresident data were not analyzed separately because they comprised such a small

portion of the total number of hunters in the survey. Thus, the analysis of harvest and days for 2000-2010 assumes that resident hunters and nonresident hunters had the same average hunting activity and average seasonal bag. In this report, we analyzed the resident hunter (RH) and nonresident hunter (NRH) data separately and developed a harvest estimate that is weighted by residency.

Hunter success and activity were determined from a survey of a sample of North Dakota HIP registrants for 2011. By 15 September 2011, 20,460 residents and 2,935 nonresidents had HIP registered (Table 1). A random sample of approximately 15 percent of these (3,045 residents and 455 nonresidents) were mailed an early Canada goose season questionnaire on 16 September 2011 (Figure 2). Disc Information Systems, Inc. (DIS), St. Cloud, MN, conducted the harvest survey. They designed the survey form to our specifications, mailed the questionnaires, received and computerized the responses and provided electronic data files. The 2011 early Canada goose survey was similar to the 2007-10 surveys, which included boxes for recording "total geese killed" and "total days hunted" on the form. Hunters were also asked to report the number of birds "downed, but not retrieved." These data are summarized here as "reported wounding loss." The reported bag estimates were corrected for memory and prestige biases using the standard technique described by Atwood (1959) and they are reported as "corrected estimates."

Survey response and hunter numbers

One thousand one hundred and ninety-seven (1,197) useable resident questionnaires (39 percent) and 194 useable nonresident questionnaires (43 percent) were returned, resulting in a HIP registrant survey rate of 5.9 percent and 6.6 percent respectively (Table 1). Of the 1,391 respondents, 927 residents (77.4 percent) and 157 nonresidents (80.9 percent) indicated they did not hunt. Two hundred and seventy residents (22.6 percent) and 37 non-residents (19.1 percent) indicated they hunted Canada geese during the early season. An estimated 4,615 residents and 560 nonresidents actively hunted during the early Canada goose season (Table 1).

Hunting by Nonresidents in Counties without Day Restrictions

Resident respondents hunted in 46 counties, while nonresidents hunted in 14 counties (Tables 7 and 8). Thirty-seven NRHs in our survey indicated that they hunted during the August-September Canada goose season. Of these, two did not indicate the county/counties they hunted in and four indicated they hunted in more than one county. Twenty-one of 35 NRH reporting "county hunted" indicated that they hunted in the "day exempt" counties. Eleven hunters reported hunting in Sargent County, six in Richland County and three in Ramsey County. One hunter reported hunting in both Richland and Sargent counties. By weighting the survey responses for counties hunted by the total estimated number of NRHs, we estimate that 316 NRHs hunted in the three "day-exempt counties" (Table 2). Of the 35 NRHs in our survey that indicated the county/counties they hunted, only three hunters reported they hunted in Ramsey County, one of the new "day-exempt counties." None reported hunting in Benson or Towner counties. These three hunters hunted in Ramsey County and by weighting the survey responses, we estimate that 43 hunters hunted in Ramsey County (Table 2). One of these three respondents hunted five days in Ramsey County, one day in Sargent County and three days Stutsman County, where the days would count against his 14-day limit.

Residency of Non-Resident Hunters

Five states were represented by active NRHs responding to the survey. Thirty hunters were from Minnesota, three from Wisconsin and one each from South Dakota, Illinois and Texas.

Harvest

The reported average seasonal bag per active hunter was 11.46 birds for RH and 11.51 birds for NR. The corrected average seasonal bag was 9.45 birds per active RH and 9.11 birds per active NRH (Table 1). The highest seasonal bags reported were 201 birds by a RH and 51 birds by a NRH. The uncorrected total harvest estimate was 59,335 Canada geese (52,910 for R and 6,445 for NR). The corrected harvest estimate was 48,711 geese (43,612 for R and 5,099 for NR). An average of 0.71 birds were reported as wounded and lost per active RH and 1.2 birds per active NRH with an overall reported wounding loss rate 8.1 percent (reported wounded and lost/total corrected harvest; Table 1).

Hunting Activity

Overall hunting activity totaled 17,583 hunting days (Table 1), averaging 3.41 days per active hunter, 3.32 days per active RH and 4.05 days per active NRH. Nine percent of the RH activity and 9 percent of their harvest occurred on the first day of the season (Table 4), while 8 percent of the NRH activity and 14 percent of their harvest on the first day of the season (Table 5). The first weekend accounted for 16 percent of the hunter activity and 14 percent of the harvest by RHs (Table 4) and 14 percent of hunter activity and 21 percent of the harvest by NRHs (Table 5). Weekend hunting activity (five weekends + Labor Day = 11 days total) accounted for 73 percent of R participation (Table 4) and 52 percent of NR participation (Table 5). Moreover, weekend hunting accounted for 80 percent of the geese harvested by R (Table 4) and 57 percent of the geese harvested by NR (Table 5). Finally, 27 percent of RHs and 8 percent of NRHs hunted only one day, and 78 percent of RHs and 84 percent of NRHs hunted four days or less (Table 6).

Distribution of Harvest

Corrected expanded estimates of birds bagged and wounding loss reported by county are shown in Table 3. Ramsey County had the highest harvest (8,046 birds), followed by Sargent (5,427 birds) and McIntosh (3,012 birds) (Table 3). Birds were bagged by R in 43 of 53 counties in North Dakota, while NR bagged birds in 14 of the 53 counties (Tables 7 and 8). However, for R, 10 counties accounted for 57 percent of the hunter days and 62 percent of the birds bagged (Table 7). For NR, three counties (Sargent, Richland and Ramsey) accounted for 54 percent of the days and 70 percent of the birds bagged (Table 8). Ramsey County had the highest number of hunter days and birds bagged by R (Table 7) and Sargent County had the highest number of hunter days and birds bagged by NR (Table 8).

The estimated Canada goose harvest by NR in the “day-exempt counties” totaled 3,273 birds (Sargent 1,921; Richland 818; and Ramsey 534). These three counties ranked as the three highest harvest counties for NRHs totaling 70.2 percent of the harvest by NRHs but only 6.7 percent of the estimated harvest for the entire state.

Discussion

The trend in the estimated harvest of Canada geese in the early season has been increasing since the lowest estimated harvest in 2007. The total estimated harvest for 2011 was the highest on record, but hunter numbers were the third lowest on record. Figure 3 shows comparisons of the estimated hunter numbers and harvest for 2000 through 2011. To allow direct comparison, the 2011 harvest estimate in this graph is not weighted for residency. Although hunter numbers have been fairly stable since 2007, the long-term trend shows a decline in active hunters. The high harvest in 2011 is likely due to the increase in daily bag limit from 5 to 8 birds. In addition, fall 2011 was relatively dry, which allowed for an early harvest and permitted hunters better access to hunting locations.

In all prior years (2000-2010), the estimates of hunter numbers, hunting activity and harvest were based on the total survey returns from a random sample of HIP registrants. Thus, the estimates were derived without regard to hunter residency and assumed that NRHs and RHs participated equally in the hunt, had the same average hunting activity and the same average hunting success. This is probably a reasonable assumption, given the small number of NRHs in annual samples and the increased cost and effort it would take to derive a larger sample size of NRHs. As directed by the ND Legislature to "...track the number of resident and NRH goose hunters and the number of geese taken by county," we analyzed the 2011 RH and NRH survey data separately and developed separate estimates for each. From the results based on residency we calculated total hunter number, activity and harvest estimates that were weighted for residency. This has the advantage of providing more accurate estimates. However, the composite estimates are not directly comparable to the estimates from previous years that were not weighted for residency. Thus, for comparative purposes, we also developed hunter number, hunting activity and harvest estimates using the standard un-weighted estimates. Both measures are included in Table 1.

Several changes for the 2011 hunting season make it difficult to compare hunting activity and harvest data for 2011 with that of previous years. The legislative changes regarding NRH hunting day restrictions for several counties, an increase in the bag limit, the weighting of harvest estimates by residency to provide information for legislative review, and the small NRH sample size all confound an assessment of comparisons with previous years.

The legislative change to exempt day restrictions for NRHs hunting in Ramsey, Benson and Towner counties, in addition to Richland and Sargent counties, was intended to increase the early fall goose harvest. North Dakota law has restricted the number of days that NRHs can hunt waterfowl since 1976. The current limit is 14-consecutive days or two 7-day periods. This law was put into place because RHs were having difficulty in securing waterfowl hunting access because of extensive buying and leasing of waterfowl hunting lands by NRHs and by large corporations for their hunting clients. In 2011, the ND Legislature thought that the 14-day restriction hindered NRHs from participating in the August-September goose season and that removing this restriction in the three additional counties would help to increase the harvest of resident Canada geese.

It appears that only a small number of NRHs hunted in North Dakota during the 2011 September goose season. In 2011, only 37 NRHs responding to our survey (out of 455 NRH HIP registrants that were mailed surveys) indicated they hunted in North Dakota. The estimated total number of NRHs was 560, compared to about 24,000 NRHs that hunt during the regular waterfowl season (Johnson 2011). The relatively low number of NRHs that hunt during the September season is likely related to the fact that most states have large numbers of resident geese and abundant September Canada goose hunting opportunities. For example, Minnesota's resident goose population in 2011 was estimated at 369,000 birds and 26,000 hunters harvested 124,000 geese during the September season. South Dakota's 2011 resident goose population was estimated at 227,000 and about 5,400 hunters harvested 80,600 birds during their August/September season. Approximately 46 percent of regular season NRH waterfowl licenses in North Dakota are purchased by Minnesota hunters, with an additional 21 percent from Wisconsin hunters and 11 percent by hunters from Michigan, Illinois, Indiana and Iowa combined.

Bag limits for the early fall Canada goose season began at 3 birds daily for the hunt in Sargent and Richland counties in 1999. In 2000, the early season was expanded statewide with a bag limit of 5 daily and 10 in possession. Beginning in 2011, the USFWS allowed an increase in the bag limit to 8 birds daily with 16 in possession. The daily bag limit for Canada geese allowed by the USFWS during the regular season continues to be 3 birds daily. Increasing bag limits can certainly increase harvest to some extent; however, the increase in harvest is generally smaller, proportionately, than the increase in the bag limit. Increases in season days and hunter numbers are generally considered to be more effective in increasing the harvest of waterfowl.

Currently, USFWS allows the early Canada goose hunt to take place during the month of August and during September 1-15. The hunting days in August are considered to be a "management take" to reduce resident goose numbers and thus the days are not counted against regular season hunting day frameworks that are limited to 107 days by the Migratory Bird Treaty (1918). The days in September, however, are considered to be part of "regular" waterfowl seasons and thus the treaty framework days and USFWS Central Flyway Canada goose framework day restrictions apply. Thus, any days taken in September, reduce the number of days we have available to hunt Canada geese at the end of the season in late December and January. At Department Advisory Board meetings held across the state in recent years, most hunters stated that they preferred not to hunt prior to August 15, because the young birds would be small, adults and young would not be fully-feathered, they would have reduced flight capabilities, weather conditions would be hot and insects abundant and because large expanses of croplands would be unharvested. Another segment of hunters prefer to hunt Canada geese late in the season, especially along the Missouri River, and they want all the late season hunting days possible. Thus, it is a balancing act for the Department to provide for early season harvest of resident Canada geese and late season harvest of migrant Canada geese.

The small size of the NRH sample in the survey reduces the precision and, potentially, the accuracy of the harvest and hunter activity estimates. For example, our corrected harvest estimate for NR has a 95 percent confidence interval of +/- 32 percent while the corrected harvest estimate for R, based on a sample size that is more than seven times larger, has a much smaller 95 percent confidence interval of +/- 15 percent. What this means is that the occurrence

of only a few highly successful or unsuccessful hunters in the survey of NRHs can highly skew the resulting harvest estimate. Achieving a larger sample size of NRHs in the survey would enhance the precision and accuracy of our harvest estimates.

The weighting of harvest estimates by residency for 2011 indicates that our harvest estimates for previous years may have been high. This is because the NRHs in 2011 hunted at a lower rate than the RHs and they had a lower average seasonal bag. The 2011 weighted corrected harvest estimate was 48,711. This was about 12 percent lower than the 2011 unweighted estimate of 55,403. The 2011 unweighted estimate was about 64 percent higher than the un-weighted estimate for 2010 (33,771). Thus, if the corrected weighted estimate for 2011 is 48,711, then our estimates for a comparable number for 2010 would 29,691 or about 12 percent lower than the unweighted corrected estimate for 2010. In any case, both sets of numbers are provided for 2011 and the more important factor is the trend in harvest numbers rather than the exact harvest estimate.

It is difficult to assess the success of eliminating the NRH day restrictions for Ramsey, Benson and Towner counties based on data from a single year, 2011. Of the five counties exempted from the NRH day restrictions, NRHs reported hunting and harvesting geese in only three of them – Sargent, Richland and Ramsey. We suspect that other NRHs may have harvested geese in Benson and Towner counties, but these hunters, if they exist, were not sampled in our survey process.

If we want or need better estimates of harvest and hunting activity, we will need to sample a larger number of NRHs. To do this with the current HIP sampling frame would be difficult and expensive. We mailed surveys to 455 nonresidents out of the 2,935 nonresidents that were HIP registered and we received completed questionnaires from only 37 NRH. Because only a small portion of nonresident HIP registrants hunt the early Canada goose season, we would have to send surveys to thousands of HIP registrants that did not hunt and had no intention of hunting early season Canada geese. Pestering these HIP registrants with additional questionnaires could have negative impacts to their response rate to other important harvest surveys. Both the Department and the USFWS use the HIP register database to provide name and address sampling frames for a number of harvest surveys. We need to investigate the best way to obtain a name and address database of non-resident early Canada goose season hunters that will allow for improved harvest estimates.

References

- Atwood, E. L. 1959. Procedures for removing the effect of response bias errors from waterfowl hunter questionnaire responses. Bureau of Sport Fisheries and Wildlife. 23pp.
- Johnson, M. A. 2011. Job D-I-2: Waterfowl harvest survey, 2010. In: Project W-67-R-51 Phase D, Migratory Game Bird Investigations, Report No. A-470. North Dakota Game and Fish Department, Bismarck. 57pp.

Table 1. Early season Canada goose harvest data, North Dakota, 2000-2011.

	2000	2001	2002	2003	2004	2005	2006	2007	2008 ¹	2009 ¹	2010 ¹	2011 ^{1,4}	2011 R & NR ²	2011 Resident ¹	2011 Non- Resident ¹
Number of HIP Registrants	25,993	23,797	35,942	26,843	21,520	23,454	24,224	21,503	22,012	23,924	22,646	23,395	23,395	20,460	2,935
Number of Surveys Mailed	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,045	455
Number Undeliverable Surveys	90	126	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Delivered Surveys	3,410	3,374	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,045	455
Number Surveys Returned	2,553	1,727	1,696	1,797	1,742	1,665	1,584	1,534	1,441	1,395	1,433	1,391	1,391	1,197	194
Number Blank Surveys Returned	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Useable Surveys Returned	2,538	1,727	1,696	1,797	1,742	1,665	1,584	1,534	1,441	1,395	1,433	1,391	1,391	1,197	194
Survey Response Rate (Usable Surveys)	74.43%	51.19%	48.46%	51.34%	49.77%	47.57%	45.26%	43.83%	41.17%	39.86%	40.94%	39.74%	39.74%	39.31%	42.64%
Percent of HIP Registrants Surveyed	9.76%	7.26%	4.72%	6.69%	8.09%	7.10%	6.54%	7.13%	6.55%	5.83%	6.33%	5.95%	5.95%	5.85%	6.61%
Number of Respondents that Hunted	942	641	311	460	544	418	496	382	308	260	336	307	307	270	37
Number of Respondents that Did Not Hunt	1596	1086	1385	1337	1198	1247	1088	1152	1133	1135	1097	1084	1,084	927	157
Percent of Respondents that Hunted	37.12%	37.12%	18.34%	25.60%	31.23%	25.11%	31.31%	24.90%	21.37%	18.64%	23.45%	22.07%	22.07%	22.56%	19.07%
Estimated Number of Active Hunters	9,648	8,833	6,591	6,871	6,720	5,888	7,585	5,355	4,705	4,459	5,310	5,163	5,175	4,615	560
Hunters Reporting Bag	731	492	283	438	532	411	486	376	305	255	333	306	306	269	37
Hunters Reporting Wounding Loss	668	247	217	313	465	284	451	366	287	243	239	231	231	202	29
Hunters Reporting Days	915	630	290	448	539	411	498	378	306	253	335	304	304	267	37
Reported Harvest	3,109	2,806	1,229	1,671	2,660	2,010	2,279	1,775	1,899	1,715	2,364	3,510	3,510	3,084	426
Reported Wounding Loss	498	266	137	163	160	157	131	122	118	98	134	177	177	143	34
Reported Total Kill (Harvest + Wounding Loss)	3,607	3,072	1,366	1,834	2,820	2,167	2,410	1,897	2,017	1,813	2,498	3,687	3,687	3,227	460
Reported Average Bag	4.25	5.70	4.34	3.82	5.00	4.89	4.69	4.72	6.23	6.73	7.10	11.47	11.47	11.46	11.51
Reported Average Bag in August ³								6.74	6.72	7.26	10.40	10.92	10.92	10.08	12.88
Reported Average Bag in September ³	4.25	5.70	4.34	3.82	5.00	4.89	4.69	4.72	7.70	6.47	5.73	11.38	10.91	11.75	9.31
Uncorrected Estimates															
Total Harvest	41,034	50,377	28,623	26,213	33,602	28,796	35,570	25,278	29,294	29,989	37,695	59,227	59,355	52,910	6,445
Harvest in August ³									17,312	16,434	22,881	32,160	31,988	27,354	4,634
Harvest in September ³	41,034	50,377	28,623	26,213	33,602	28,796	35,570	25,278	11,981	13,555	14,814	27,067	27,367	25,556	1,811
Wounding Loss	7,193	9,512	4,161	3,578	2,312	3,255	2,203	1,785	1,934	1,798	2,977	3,956	3,923	3,267	656
Total Kill (Harvest + Wounding Loss)	48,226	59,889	32,784	29,792	35,914	32,051	37,773	27,063	31,228	31,787	40,672	63,183	63,278	56,177	7,101
Corrected Average Bag	3.84	5.09	3.95	2.99	3.71	4.49	3.83	3.60	5.12	6.09	6.36	10.73	9.41	9.45	9.11
Standard Deviation	4.698	6.056	4.866	4.280	5.966	6.270	5.086	4.757	7.511	8.724	9.612	14.314	12.01	12.380	9.320
Standard Error	0.145	0.230	0.269	0.193	0.245	0.296	0.221	0.235	0.414	0.525	0.508	0.792	0.687	0.731	1.481
95 % C.I. - High	4.12	5.54	4.48	3.37	4.19	5.07	4.26	4.06	5.93	7.12	7.35	12.28	10.76	10.88	12.01
95 % C.I. - Low	3.56	4.64	3.42	2.61	3.23	3.91	3.40	3.14	4.31	5.06	5.37	9.18	8.07	8.02	6.21
Corrected Total Harvest	37,048	44,960	26,034	20,544	24,933	26,438	29,052	19,277	24,089	27,155	33,771	55,403	48,711	43,612	5,099
95 % C.I. - High	39,798	48,948	29,514	23,140	28,163	29,849	32,334	21,739	27,904	31,744	39,053	63,421	55,675	50,225	6,724
95 % C.I. - Low	31,401	30,572	23,513	17,555	19,015	29,663	18,191	14,775	19,214	26,873	28,489	47,385	41,747	36,999	3,475
Total Harvest in August ³									14,237	14,881	20,499	30,084	26,214	22,547	3,667
Total Harvest in September ³	37,048	44,960	26,034	20,544	24,933	26,438	29,052	19,277	9,852	12,274	13,272	25,319	22,497	21,065	1,432
Reported Days Hunted	2,802	1,938	876	1,111	1,441	1,073	1,349	961	925	759	1,090	1,036	1,036	886	150
Reported Days Hunted - August ³									547	416	662	563	566	458	108
Reported Days Hunted - September ³	2,802	1,938	876	1,111	1,441	1,073	1,349	961	378	343	428	473	470	428	42
Reported Average Days Hunted	3.06	3.08	3.02	2.48	2.67	2.61	2.71	2.54	3.02	3.00	3.25	3.41	3.41	3.32	4.05
Total Hunter Days	29,545	27,172	19,909	17,039	17,967	15,372	20,547	13,613	14,222	13,377	17,277	17,596	17,583	15,314	2,269
Geese/Waterfowl Hunter-Day															
Uncorrected	1.39	1.85	1.44	1.54	1.87	1.87	1.73	1.86	2.06	2.24	2.18	3.37	3.37	3.45	2.84
Corrected	1.25	1.65	1.31	1.21	1.39	1.72	1.41	1.42	1.69	2.03	1.95	3.15	2.76	2.85	2.25

¹ Includes days in August.² Weighted for residency.³ Based on percentage of hunter-days for each month⁴ Daily bag limit increased from 5 to 8

M. Johnson, Early Canada Goose 2011 (table1).xls

Note: Estimates for 2000-2011 are not weighted for residency.

Table 2. Estimated number of non-resident hunters by county,
August-September Canada goose Season, ND, 2011.

County Hunted	Estimated Number of Hunters	Percent
Sargent*	172	30.8
Richland*	101	17.9
McIntosh	43	7.7
Ramsey*	43	7.7
Barnes	29	5.1
Eddy	29	5.1
Kidder	29	5.1
Stutsman	29	5.1
Foster	14	2.6
LaMoure	14	2.6
Logan	14	2.6
McHenry	14	2.6
Nelson	14	2.6
Ransom	14	2.6
Total	559**	

*Counties exempt from 14-day non-resident hunting restriction

**Total does not equal 560 because of rounding error

M. Johnson

Early Canada Goose 2011 (table 2-8).xls

Table 3. Reported daily **resident** and **non-resident** hunting activity, harvest and wounding loss by county during the early Canada goose North Dakota, August 13 - September 15, 2011. season,

County	Days Hunted	Percent Total	Expanded Days	Birds Bagged	Percent Total	Expanded Bag	Birds Wounded/Lost	Percent Total
Barnes	50	5.8	978	152	5.1	2,360	7	5.1
Benson	19	2.2	372	75	2.5	1,165	1	0.7
Billings	1	0.1	20	3	0.1	47	0	0.0
Bottineau	17	2.0	333	33	1.1	512	2	1.5
Bowman	20	2.3	391	20	0.7	311	1	0.7
Burliegh	40	4.6	783	136	4.5	2,112	3	2.2
Cass	33	3.8	646	105	3.5	1,630	1	0.7
Cavalier	16	1.9	313	83	2.8	1,289	6	4.4
Dickey	21	2.4	411	77	2.6	1,196	5	3.7
Divide	2	0.2	39	7	0.2	109	0	0.0
Dunn	3	0.3	59	23	0.8	357	2	1.5
Eddy	12	1.4	235	16	0.5	248	0	0.0
Emmons	7	0.8	137	19	0.6	295	0	0.0
Foster	4	0.5	78	20	0.7	311	0	0.0
Grand Forks	21	2.4	411	81	2.7	1,258	2	1.5
Griggs	23	2.7	450	88	2.9	1,366	7	5.1
Hettinger	1	0.1	20	5	0.2	78	1	0.7
Kidder	13	1.5	254	20	0.7	311	1	0.7
LaMoure	22	2.5	430	72	2.4	1,118	3	2.2
Logan	72	8.3	1,409	117	3.9	1,817	1	0.7
McHenry	22	2.5	430	94	3.1	1,460	3	2.2
McIntosh	46	5.3	900	207	6.9	3,214	19	14.0
McLean	17	2.0	333	82	2.7	1,273	0	0.0
Pierce	18	2.1	352	73	2.4	1,133	2	1.5
Ramsey	105	12.2	2,054	553	18.4	8,586	27	19.9
Ransom	23	2.7	450	38	1.3	590	4	2.9
Renville	1	0.1	20	0	0.0	0	0	0.0
Richland	40	4.6	783	118	3.9	1,832	6	4.4
Rolette	13	1.5	254	53	1.8	823	2	1.5
Sargent	79	9.1	1,546	373	12.4	5,791	17	12.5
Sheridan	4	0.5	78	3	0.1	47	0	0.0
Slope	2	0.2	39	3	0.1	47	0	0.0
Stark	2	0.2	39	16	0.5	248	0	0.0
Steele	15	1.7	293	31	1.0	481	5	3.7
Stutsman	41	4.7	802	100	3.3	1,553	2	1.5
Towner	15	1.7	293	48	1.6	745	1	0.7
Traill	2	0.2	39	2	0.1	31	0	0.0
Walsh	8	0.9	157	35	1.2	543	2	1.5
Ward	8	0.9	157	15	0.5	233	1	0.7
Wells	3	0.3	59	13	0.4	202	2	1.5
Williams	3	0.3	59	0	0.0	0	0	0.0
Subtotal	864	100.0	16,903	3,009	100.0	46,720	136	100.0
Unknown	37	4.1	680	141	4.5	1,991	36	20.9
Total	901		17,583	3,150		48,711	172	

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Early Canada Goose 2011 (table 2-8).xls

Table 4. Reported daily **resident** hunting activity by date during the early Canada goose season, North Dakota, August 13 - September 15, 2011.

Day	Hunters Active	Percent Total	Cum. Percent	Birds Bagged	Percent Total	Cum. Percent	Birds Wounded/Lost	Percent Total	Cum. Percent
Aug. 13	78	11.9	11.9	267	12.1	12.1	8	8.2	8.2
Aug. 14	51	7.8	19.7	134	6.1	18.2	0	0.0	8.2
Aug. 15	9	1.4	21.1	11	0.5	18.7	1	1.0	9.2
Aug. 16	8	1.2	22.3	23	1.0	19.8	0	0.0	9.2
Aug. 17	9	1.4	23.7	23	1.0	20.8	2	2.0	11.2
Aug. 18	11	1.7	25.3	33	1.5	22.3	1	1.0	12.2
Aug. 19	13	2.0	27.3	48	2.2	24.5	1	1.0	13.3
Aug. 20	64	9.8	37.1	262	11.9	36.4	8	8.2	21.4
Aug. 21	40	6.1	43.2	139	6.3	42.7	2	2.0	23.5
Aug. 22	9	1.4	44.6	28	1.3	44.0	0	0.0	23.5
Aug. 23	9	1.4	46.0	35	1.6	45.6	2	2.0	25.5
Aug. 24	8	1.2	47.2	15	0.7	46.3	0	0.0	25.5
Aug. 25	10	1.5	48.7	18	0.8	47.1	0	0.0	25.5
Aug. 26	8	1.2	49.9	10	0.5	47.5	1	1.0	26.5
Aug. 27	68	10.4	60.3	232	10.5	58.1	12	12.2	38.8
Aug. 28	44	6.7	67.0	179	8.1	66.2	8	8.2	46.9
Aug. 29	9	1.4	68.4	28	1.3	67.5	4	4.1	51.0
Aug. 30	4	0.6	69.0	4	0.2	67.7	0	0.0	51.0
Aug. 31	7	1.1	70.1	23	1.0	68.7	2	2.0	53.1
Sept. 1	12	1.8	71.9	42	1.9	70.6	4	4.1	57.1
Sept. 2	12	1.8	73.7	30	1.4	72.0	1	1.0	58.2
Sept. 8	9	1.4	75.1	13	0.6	72.6	0	0.0	58.2
Sept. 9	9	1.4	76.5	20	0.9	73.5	2	2.0	60.2
Sept. 10	54	8.2	84.7	222	10.1	83.6	21	21.4	81.6
Sept. 11	49	7.5	92.2	209	9.5	93.1	13	13.3	94.9
Sept. 12	11	1.7	93.9	31	1.4	94.5	1	1.0	95.9
Sept. 13	15	2.3	96.2	34	1.5	96.0	1	1.0	96.9
Sept. 14	9	1.4	97.6	24	1.1	97.1	0	0.0	96.9
Sept. 15	16	2.4	100.0	63	2.9	100.0	3	3.1	100.0
Total	655	100.0		2,200	100.0		98	100.0	

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Early Canada Goose 2011 (table 2-8).xls

Table 5. Reported daily **non-resident** hunting activity by date during the early Canada goose season, North Dakota, August 13 - September 15, 2011.

Day	Hunters Active	Percent Total	Cum. Percent	Birds Bagged	Percent Total	Cum. Percent	Birds Wounded/Lost	Percent Total	Cum. Percent
Aug. 13	10	9.3	9.3	62	17.1	17.1	0	0.0	0.0
Aug. 14	8	7.5	16.8	30	8.3	25.3	0	0.0	0.0
Aug. 15	7	6.5	23.4	44	12.1	37.5	0	0.0	0.0
Aug. 16	3	2.8	26.2	1	0.3	37.7	0	0.0	0.0
Aug. 17	5	4.7	30.8	14	3.9	41.6	2	6.1	6.1
Aug. 18	5	4.7	35.5	8	2.2	43.8	0	0.0	6.1
Aug. 19	5	4.7	40.2	11	3.0	46.8	4	12.1	18.2
Aug. 20	7	6.5	46.7	19	5.2	52.1	8	24.2	42.4
Aug. 21	4	3.7	50.5	14	3.9	55.9	8	24.2	66.7
Aug. 22	3	2.8	53.3	13	3.6	59.5	0	0.0	66.7
Aug. 23	2	1.9	55.1	3	0.8	60.3	1	3.0	69.7
Aug. 24	1	0.9	56.1	2	0.6	60.9	0	0.0	69.7
Aug. 25	4	3.7	59.8	16	4.4	65.3	0	0.0	69.7
Aug. 26	4	3.7	63.6	10	2.8	68.0	1	3.0	72.7
Aug. 27	8	7.5	71.0	36	9.9	78.0	5	15.2	87.9
Aug. 28	6	5.6	76.6	23	6.3	84.3	0	0.0	87.9
Aug. 29	1	0.9	77.6	3	0.8	85.1	0	0.0	87.9
Aug. 30	0	0.0	77.6	0	0.0	85.1	0	0.0	87.9
Aug. 31	0	0.0	77.6	0	0.0	85.1	0	0.0	87.9
Sept. 1	0	0.0	77.6	0	0.0	85.1	0	0.0	87.9
Sept. 2	2	1.9	79.4	4	1.1	86.2	1	3.0	90.9
Sept. 8	3	2.8	82.2	10	2.8	89.0	0	0.0	90.9
Sept. 9	4	3.7	86.0	10	2.8	91.7	1	3.0	93.9
Sept. 10	5	4.7	90.7	7	1.9	93.7	0	0.0	93.9
Sept. 11	3	2.8	93.5	10	2.8	96.4	0	0.0	93.9
Sept. 12	2	1.9	95.3	8	2.2	98.6	0	0.0	93.9
Sept. 13	2	1.9	97.2	2	0.6	99.2	1	3.0	97.0
Sept. 14	2	1.9	99.1	3	0.8	100.0	1	3.0	100.0
Sept. 15	1	0.9	100.0	0	0.0	100.0	0	0.0	100.0
Total	107	100.0		363	100.0		33	100.0	

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Early Canada Goose 2011 (table 2-8).xls

Table 6. Reported days hunted by **resident** and **non-resident** hunters spent hunting during the early Canada goose season, North Dakota, August 13- September 15, 2011.

Resident				
Days	Hunters	Percent		
		Total Days	of Total	Cumulative Percent
0	1	0	0.4	0.4
1	71	71	26.6	27.0
2	76	152	28.5	55.4
3	32	96	12.0	67.4
4	27	108	10.1	77.5
5	24	120	9.0	86.5
6	14	84	5.2	91.8
7	7	79	2.6	94.4
8	5	40	1.9	96.3
23	4	40	1.5	97.8
12	1	12	0.4	98.1
13	2	26	0.7	98.9
16	1	16	0.4	99.3
18	1	18	0.4	99.6
54	1	54	0.4	100.0
Total	267	886	100.0	

Non-Resident				
Days	Hunters	Percent		
		Total Days	of Total	Cumulative Percent
0	0	0	0.0	0.0
1	3	3	8.1	8.1
2	9	18	24.3	32.4
3	10	30	27.0	59.5
4	9	36	24.3	83.8
5	1	5	2.7	86.5
6	2	12	5.4	91.9
9	1	9	2.7	94.6
14	1	14	2.7	97.3
23	1	23	2.7	100.0
Total	37	150	100.0	

Table 7. Reported and expanded (corrected) **resident** hunting activity and harvest by county during the early Canada goose season, North Dakota, August 13- September 15, 2011.

County	Reported Days Hunted	Percent Total	Cumulative Percent	Expanded Days	County	Reported Birds Bagged	Reported Percent Total	Cumulative Percent	Expanded Bag
Ramsey	92	11.5	11.5	1,704	Ramsey	508	19.0	19.0	7,582
Logan	71	8.9	20.4	1,315	Sargent	211	7.9	26.9	3,149
Sargent	47	5.9	26.3	870	McIntosh	185	6.9	33.8	2,761
Barnes	44	5.5	31.8	815	Nelson	153	5.7	39.5	2,284
Burleigh	40	5.0	36.8	741	Barnes	144	5.4	44.9	2,149
McIntosh	39	4.9	41.6	722	Burleigh	136	5.1	50.0	2,030
Stutsman	36	4.5	46.1	667	Logan	114	4.3	54.2	1,702
Cass	33	4.1	50.3	611	Cass	105	3.9	58.1	1,567
Nelson	31	3.9	54.1	574	Stutsman	93	3.5	61.6	1,388
Griggs	23	2.9	57.0	426	Griggs	88	3.3	64.9	1,313
Richland	22	2.8	59.8	407	McHenry	88	3.3	68.2	1,313
Dickey	21	2.6	62.4	389	Cavalier	83	3.1	71.3	1,239
Grand Forks	21	2.6	65.0	389	McLean	82	3.1	74.4	1,224
Ransom	21	2.6	67.6	389	Grand Forks	81	3.0	77.4	1,209
Bowman	20	2.5	70.1	370	Dickey	77	2.9	80.3	1,149
Benson	19	2.4	72.5	352	Benson	75	2.8	83.1	1,119
LaMoure	18	2.3	74.8	333	Pierce	73	2.7	85.8	1,090
Pierce	18	2.3	77.0	333	Rolette	53	2.0	87.8	791
Bottineau	17	2.1	79.1	315	Richland	49	1.8	89.6	731
McLean	17	2.1	81.3	315	Towner	48	1.8	91.4	716
Cavalier	16	2.0	83.3	296	LaMoure	47	1.8	93.2	701
Steele	15	1.9	85.1	278	Ransom	35	1.3	94.5	522
Ward	8	1.0	86.1	148	Emmons	19	0.7	95.2	284
Emmons	7	0.9	87.0	130	Mercer	17	0.6	95.8	254
Eddy	5	0.6	87.6	93	Morton	17	0.6	96.4	254
Kidder	5	0.6	88.3	93	Stark	16	0.6	97.0	239
Mountrail	5	0.6	88.9	93	Pembina	15	0.6	97.6	224
Sheridan	4	0.5	89.4	74	Ward	15	0.6	98.2	224
Dunn	3	0.4	89.8	56	Wells	13	0.5	98.7	194
Mercer	3	0.4	90.1	56	Divide	7	0.3	98.9	104
Pembina	3	0.4	90.5	56	Eddy	7	0.3	99.2	104
Wells	3	0.4	90.9	56	Hettinger	5	0.2	99.4	75
Williams	3	0.4	91.3	56	Kidder	5	0.2	99.6	75
Divide	2	0.3	91.5	37	Billings	3	0.1	99.7	45
Slope	2	0.3	91.8	37	Sheridan	3	0.1	99.8	45
Stark	2	0.3	92.0	37	Slope	3	0.1	99.9	45
Traill	2	0.3	92.3	37	Traill	2	0.1	100.0	30
Billings	1	0.1	92.4	19	Foster	1	0.0	100.0	15
Foster	1	0.1	92.5	19	Mountrail	0	0.0	100.0	0
Hettinger	1	0.1	92.6	19	Renville	0	0.0	100.0	0
Renville	1	0.1	92.8	19	Williams	0	0.0	100.0	0
Total Reported	800	100.0		13,740	Total Reported	2676	100.0		39,941
Unknown	27	3.3		500	Unknown	104	3.6		1,552
Total Days	827			15,314	Total Bag	2,780			43,612

Table 8. Reported and expanded (corrected) **non-resident** hunting activity and harvest by county during the early Canada goose season, North Dakota, August 13- September 15, 2011.

County	Reported Days Hunted	Percent Total	Cumulative Percent	Expanded Days
Sargent	32	27.6	27.6	576
Richland	18	15.5	43.1	324
Ramsey	13	11.2	54.3	234
McHenry	9	7.8	62.1	162
Kidder	8	6.9	69.0	144
Eddy	7	6.0	75.0	126
McIntosh	7	6.0	81.0	126
Barnes	6	5.2	86.2	108
Stutsman	5	4.3	90.5	90
LaMoure	4	3.4	94.0	72
Foster	3	2.6	96.6	54
Ransom	2	1.7	98.3	36
Logan	1	0.9	99.1	18
Nelson	1	0.9	100.0	18
Total Reported	116	100.0		2,089
Unknown	10	7.9		180
Total Days	126			2,269

Hunters Reporting Days: 37
Average Days Hunted: 4.10

County	Reported Birds Bagged	Percent Total	Cumulative Percent	Expanded Bag
Sargent	162	41.2	41.2	1,921
Richland	69	17.6	58.8	818
Ramsey	45	11.5	70.2	534
LaMoure	25	6.4	76.6	296
McIntosh	22	5.6	82.2	261
Foster	19	4.8	87.0	225
Kidder	15	3.8	90.8	178
Eddy	9	2.3	93.1	107
Barnes	8	2.0	95.2	95
Stutsman	7	1.8	96.9	83
McHenry	6	1.5	98.5	71
Logan	3	0.8	99.2	36
Ransom	3	0.8	100.0	36
Nelson	0	0.0	100.0	0
Total Reported	393	100.0		4,660
Unknown	37	8.6		439
Total Bag	430			5,099

Estimated Active Hunters 560
Corrected Average Bag: 9.11

Figure 1. North Dakota Canada Goose Population Indices

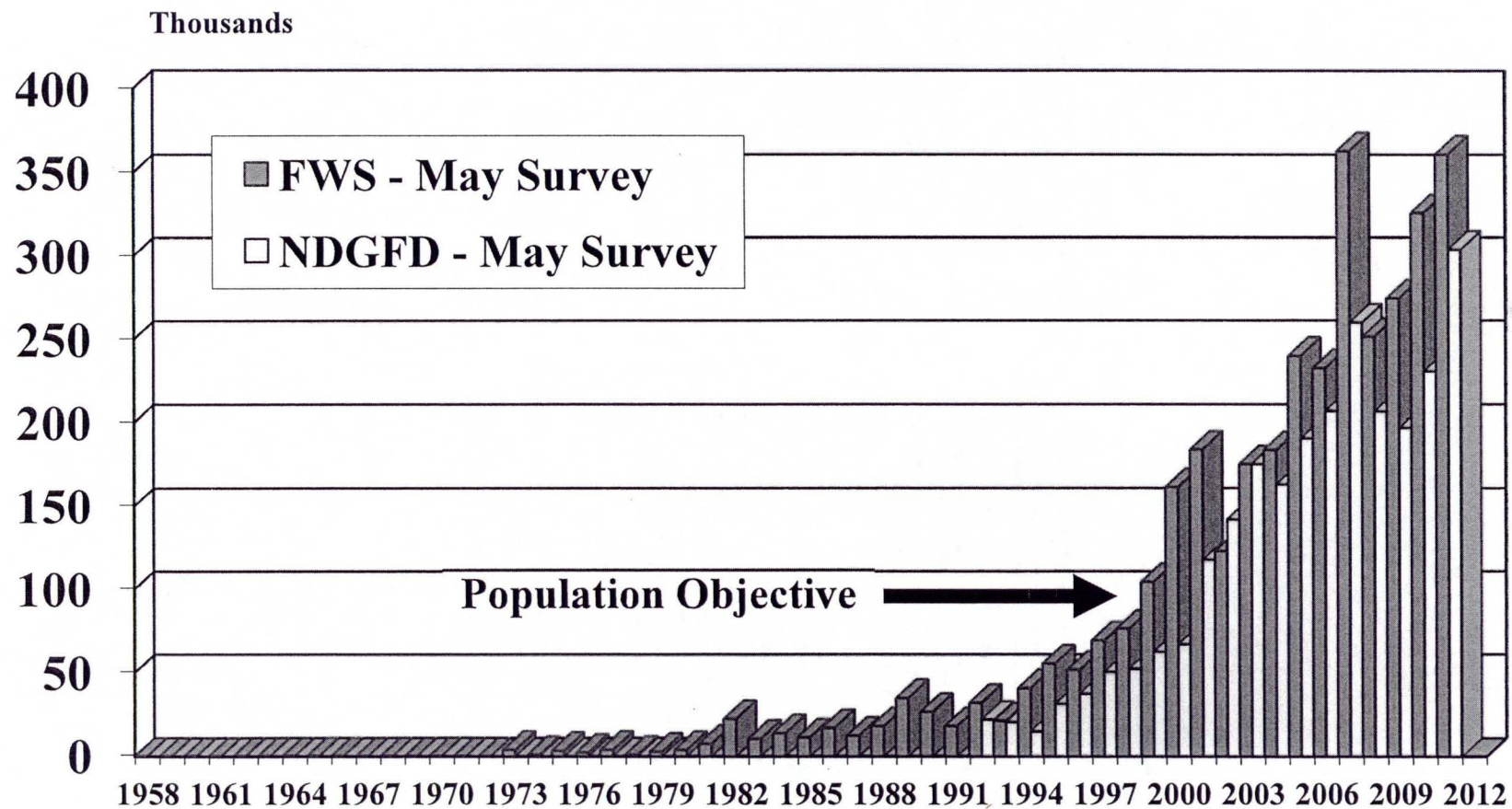




Figure 2.



2011 EARLY CANADA GOOSE QUESTIONNAIRE

North Dakota Game and Fish Department
Wildlife Division SFN 6502

NOTICE
PLEASE return this
questionnaire within 5 days.



YOU MAY COMPLETE YOUR SURVEY AT
www.esurvey.cc/huntnd

ND HUNTING ALMANAC
*Stutsman County had the highest
harvest of Canada Geese during the
2010 Early Canada Goose season.*

PLEASE USE DARK INK

Dear Goose Hunter:
You registered to hunt waterfowl during the 2011 season. It is very important to the management of Canada Geese that you fill out this survey concerning your hunting activity and success during the Early Canada Goose Season, and return it to us as soon as possible. The data collected will enable us to evaluate the effect of the Early Canada Goose season on the Canada Goose populations and to plan future special hunts. Please record only your personal activity and success during the early season. Thank you for your help.

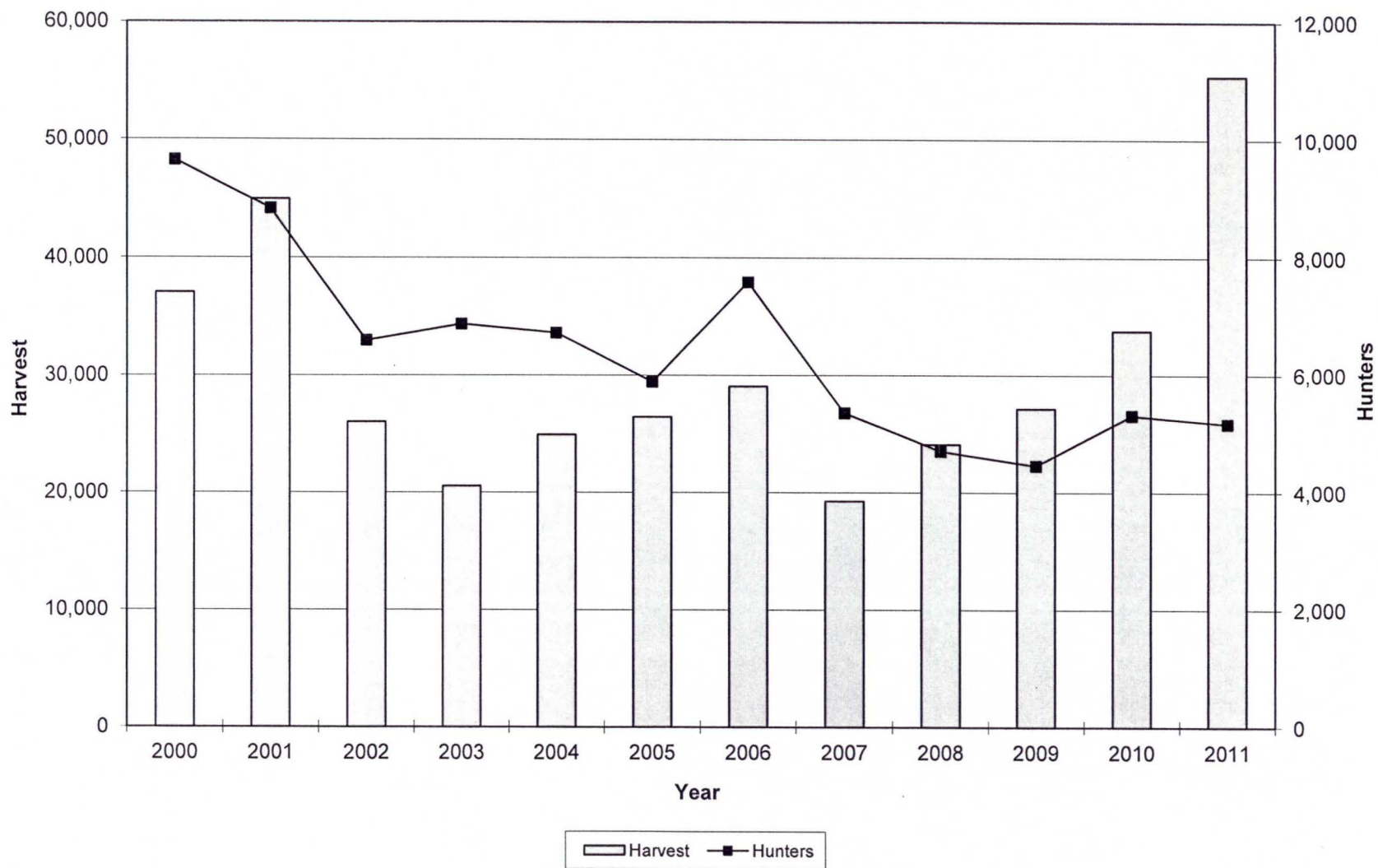
1. Did you hunt Canada Geese during the 2011 Early Canada Goose Season.. ☐ Yes ☐ No
2. How many Canada Geese did you harvest during the Early season?..... Geese harvested
(Do not report geese harvested by other members of your party)
3. How many days did you hunt during the Early season?..... Days hunted
4. Please record your activity and success for each day you hunted.

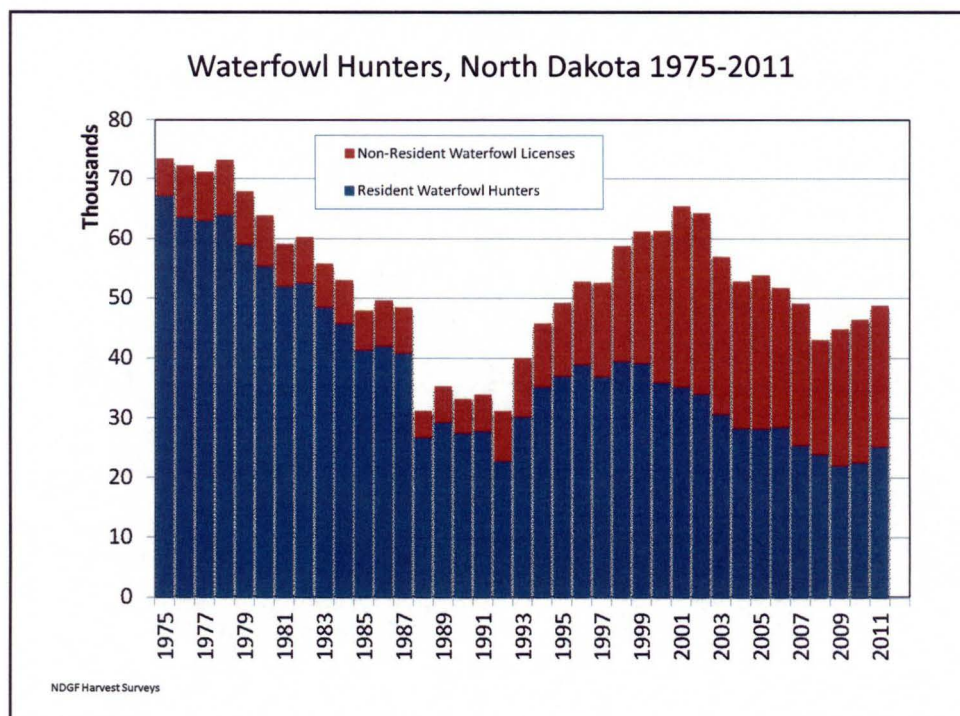
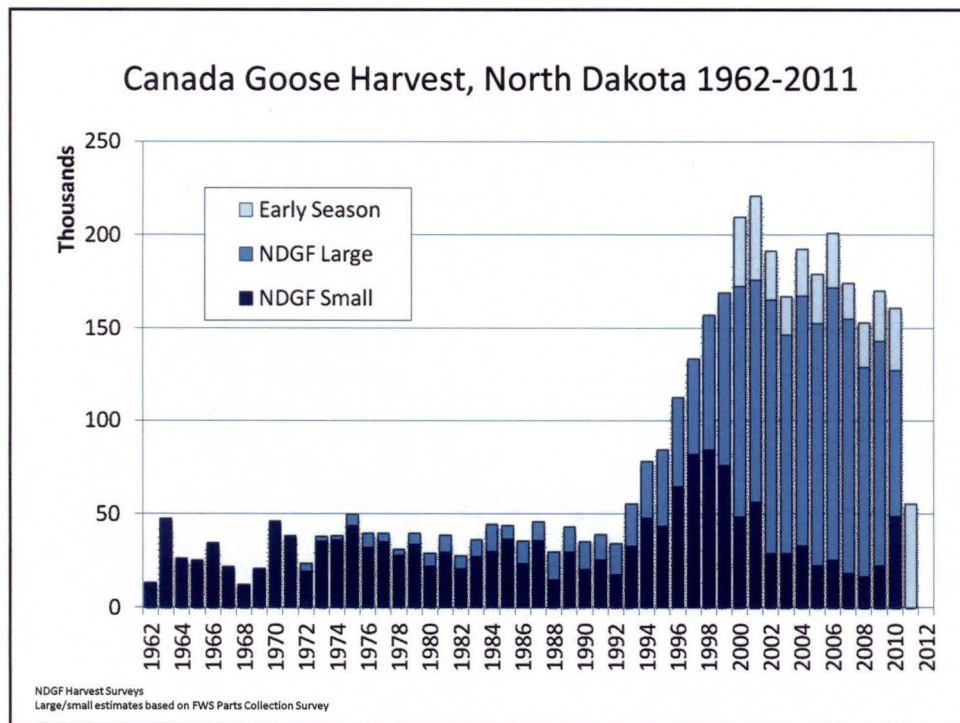
		County (Code)	Number of Geese killed		Number of Geese downed	
		Hunted	and retrieved		and NOT retrieved	
Saturday Aug	13					
Sunday Aug	14					
Monday Aug	15					
Tuesday Aug	16					
Wednesday Aug	17					
Thursday Aug	18					
Friday Aug	19					
Saturday Aug	20					
Sunday Aug	21					
Monday Aug	22					
Tuesday Aug	23					
Wednesday Aug	24					
Thursday Aug	25					
Friday Aug	26					
Saturday Aug	27					
Sunday Aug	28					
Monday Aug	29					
Tuesday Aug	30					
Wednesday Sep	31					
Thursday Sep	1					
Friday Sep	2					
Saturday Sep	3					
Sunday Sep	4					
Monday Sep	5					
Tuesday Sep	6					
Wednesday Sep	7					
Thursday Sep	8					
Friday Sep	9					
Saturday Sep	10					
Sunday Sep	11					
Monday Sep	12					
Tuesday Sep	13					
Wednesday Sep	14					

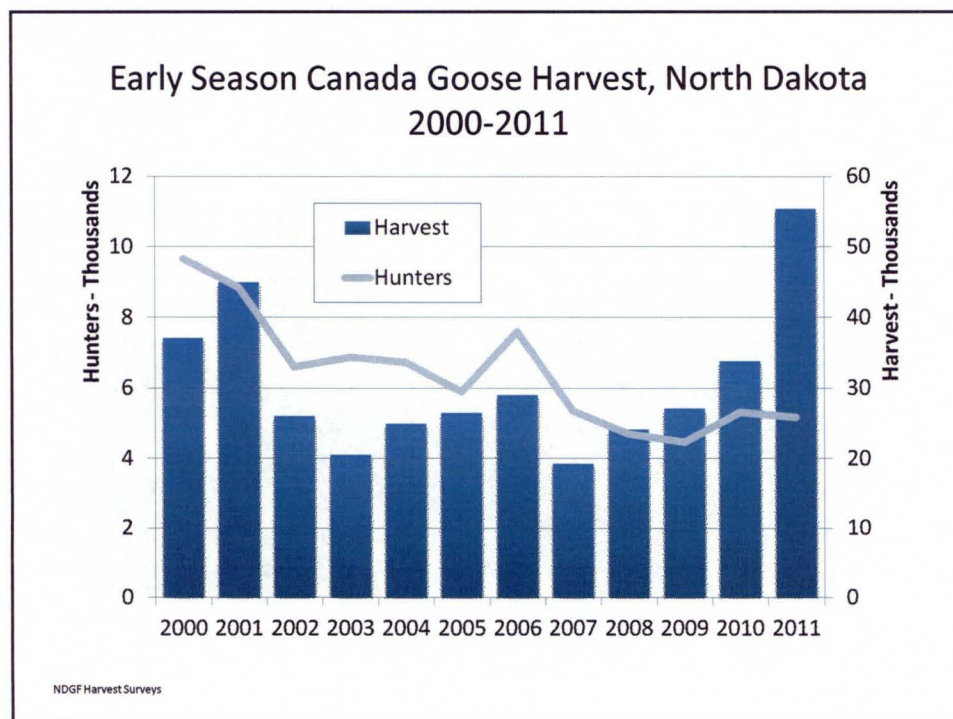
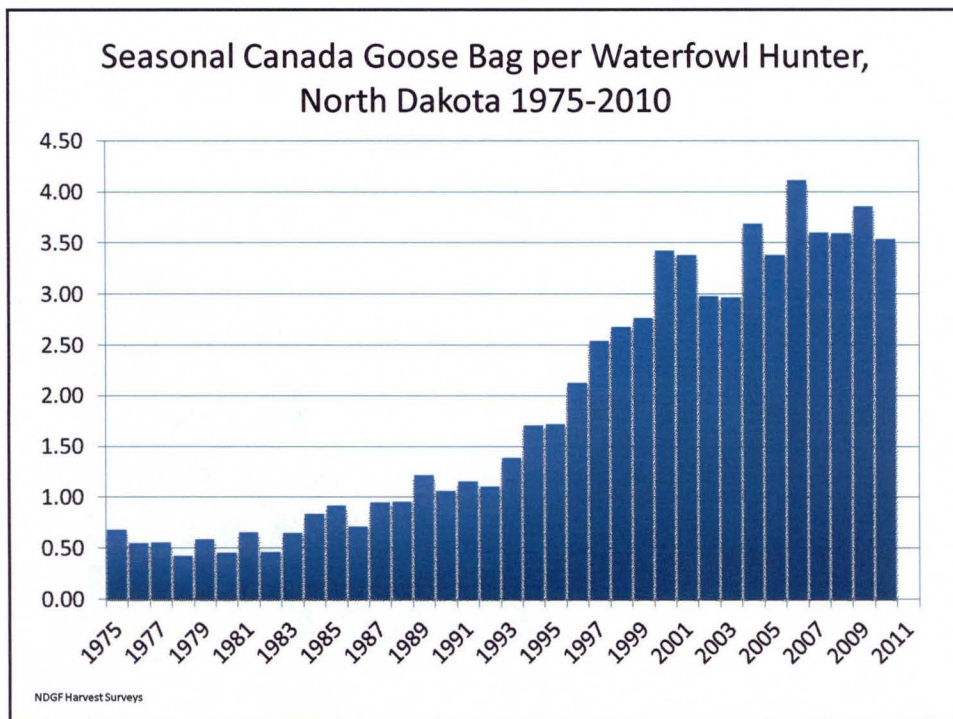
County Codes

Adams.....	01
Barnes.....	02
Benson.....	03
Billings.....	04
Bothwell.....	05
Bowman.....	06
Burke.....	07
Burlington.....	08
Cass.....	09
Cavalier.....	10
Dickey.....	11
Dixie.....	12
Dunn.....	13
Eddy.....	14
Emmons.....	15
Foster.....	16
Golden Valley.....	17
Grand Forks.....	18
Grant.....	19
Griggs.....	20
Hettinger.....	21
Kidder.....	22
Lakota.....	23
Logan.....	24
McHenry.....	25
McIntosh.....	26
McIntosh.....	27
McLean.....	28
Mercer.....	29
Morton.....	30
Mountain.....	31
Nelson.....	32
Oliver.....	33
Pembina.....	34
Pierce.....	35
Ramsey.....	36
Ransom.....	37
Reynolds.....	38
Richland.....	39
Rolette.....	40
Sargent.....	41
Sheridan.....	42
Sioux.....	43
Slope.....	44
Stark.....	45
Steele.....	46
Stutsman.....	47
Towner.....	48
Trail.....	49
Walsh.....	50
Ward.....	51
Wells.....	52
Williams.....	53
Unknown.....	99

Figure 3. Early Canada Goose Estimated Harvest and Hunters, North Dakota (2000-2011).
August seasons were initiated in 2008. Estimates not weighted for residency.







Canada Goose Kill Permits, North Dakota 2002-2012

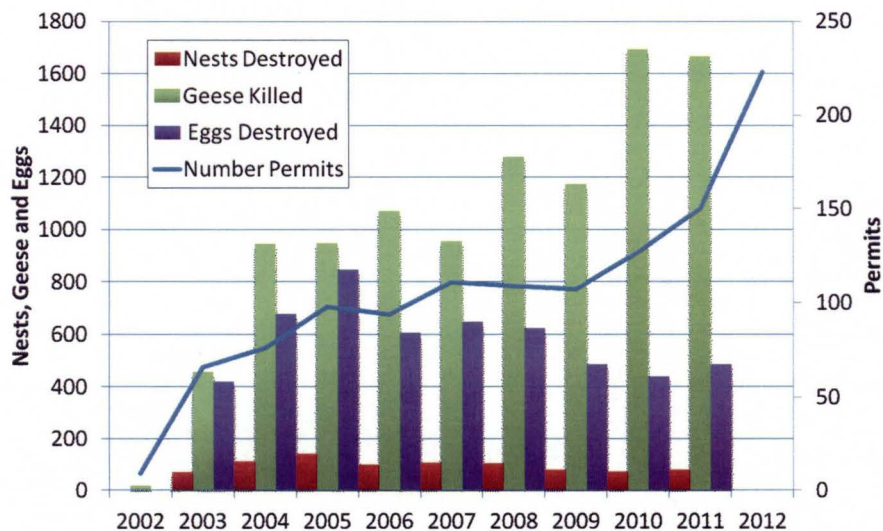
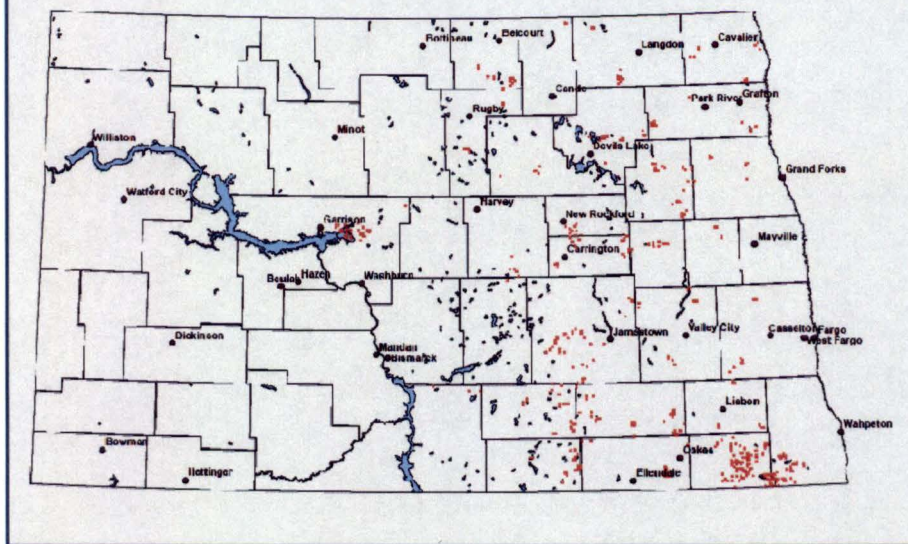


Figure 1b. Legal Sections with Canada Goose Special Permits, 2011



North Dakota Canada Goose Population Indices

