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Migratory game birds harvested in Canada during the 1991, 1992, and 1993 hunting seasons

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Introduction

The Harvest Questionnaire Survey (HQS) and the Species Composition Survey (SCS) are conducted annually to estimate the number of migratory game birds killed by hunters in Canada. Together, they make up the National Harvest Survey (NHS). This Progress Note reports on the harvest for the following hunting seasons: September 1991 to 10 March 1992 ("1991"), September 1992 to 10 March 1993 ("1992"), and September 1993 to 10 March 1994 ("1993"). Note that the 1991 data reported here are revised and replace data published earlier in Progress Note No. 204.

Methods

The HQS is based on a questionnaire that asks hunters to provide information on the number, location, and timing of their hunting trips and on the number and type of migratory game birds killed (for nine species groups). The questionnaire was mailed in December of each year, 1991, 1992, and 1993, to a sample selected from the lists of purchasers of migratory game bird hunting permits for the current and previous years. A reminder was mailed to nonrespondents in February of each year (1992, 1993, and 1994).

The SCS asks hunters to send in a wing from each duck killed and the tail feathers from each goose killed, along with the hunting details. This allows the species group harvest estimates from the HQS to be partitioned by species. Wing/tail envelopes were mailed in August of each year (1991, 1992, and 1993) to hunters selected from lists of permit purchasers in previous years.

Additional wing envelopes for the SCS were sent in late December of each year (1991, 1992, and 1993) to the hunters selected in Newfoundland, as they have been since 1983. This extra mailing increases the reliability of the estimate of species composition for Newfoundland, by ensuring that wings from the late harvest of sea ducks are adequately represented. The recent trend in kill estimates by species for this province is not comparable with the results prior to 1983. Murres are also legally taken by hunters in Newfoundland, but that kill is addressed by separate surveys (Collins et al. 1991; Elliot et al. 1991).

Hunters in eastern Canada were asked to send a wing from any woodcock shot. The results of this additional wing collection can be obtained from the Canadian Wildlife Service, Atlantic region office, P.O. Box 6227, Sackville, New Brunswick E4L 1G6; and the Québec office, 1141 route de l'Église, Sainte-Foy, Québec, G1V 4H5.

The results of the NHS do not include estimates of illegal kill, legal hunting without permits by native people or crippling loss. Cooch et al. (1978) give a full description of the survey methods.

Data processing and analysis

In 1992, the processing and analysis of the survey data were transferred from a mainframe to microcomputers. This transfer was done to reduce costs, streamline operations, and update the analysis programs.

The estimates presented here for the 1991, 1992, and 1993 seasons were all calculated using the same new analysis programs (written in SAS). Also, all estimates for 1990 presented for comparison in Tables 18–30 have been recalculated using the same new programs, as well as the Table 7 estimates for 1988, 1989, and 1990.

Use of the new data analysis programs on data from previous years results in harvest estimates that are slightly different from those published previously (Progress Note No. 197 and earlier). There are several sources for these differences: i) different decision rules for inputting missing values or excluding observations with missing values; ii) different algorithms used for the calculations; and iii) differences caused by rounding. However, differences in the estimates obtained with the two analytical approaches were small, generally less than 1%. More details on the new estimation procedures, including variance for the NHS, are available in Collins (1991).

In the case of the 1991 data, differences between estimates published in Progress Note No. 204 and this publication are due to a revision to the prototype matching procedure of the permit file on the microcomputer platform. The revision of this data processing procedure ensured that as many renewing hunters as possible were identified. Estimates therefore had to be recalculated, since the weight of the renewing hunters stratum increased slightly. Again, the differences in the estimates obtained with the two procedures are small; the total harvest estimates of duck and geese, for example, have been revised to a figure about 1% larger. Since this revision, the data processing functions on the new platform are considered to be stabilized.

Results

In the past 28 years, the number of permits sold has changed markedly (Fig. 1). The decrease in sales since 1978 should be noted by those who use kill statistics as indices of trends in migratory game bird populations and harvest

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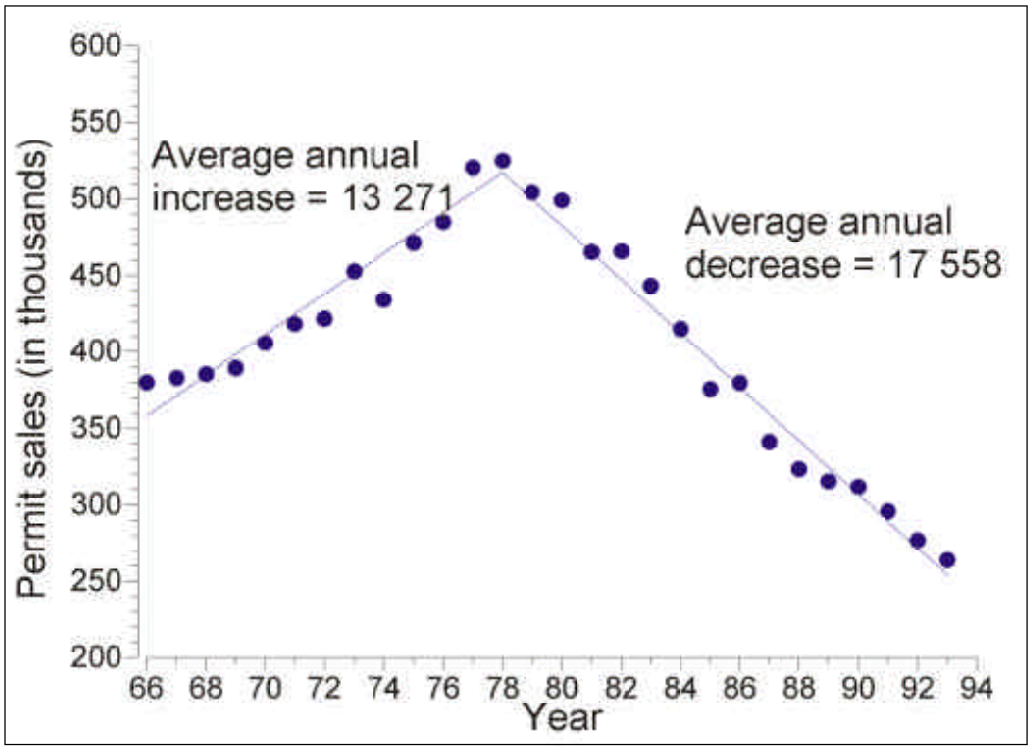
Figure 1
Total sales of migratory game bird hunting permits in Canada, 1966–1993 (based on permit stubs received)



characteristics. The permit sale totals for each province are given in Table 1. The total sales are derived from the number of permit stubs received and exclude stubs lost in the mail or not properly returned by permit outlets. The number of lost stubs is assumed to be minimal.

The survey results are summarized for the same 23 geographic zones for which the survey sample selection is stratified (Fig. 2).

The distribution of permit sales between those who purchased a permit the previous year (renewals) and those who did not, and between resident and nonresident (non-Canadian) purchasers, is shown in Table 2 for 1991, 1992, and 1993.

Table 3 gives the number of permit purchasers who were sampled and who responded to the 1991, 1992, and 1993 HQS. This is compared with earlier years in Table 4. Tables 5 through 16 present the results of the HQS questionnaire. Indications of the amount of recreational activity provided by hunting are presented in Tables 6 and 15.

Table 17 shows the number of permit purchasers who were sampled and who responded to the 1991, 1992, and 1993 SCS. Results of the SCS are used to assign species-specific proportions to the estimated duck and goose kills. The most recent four years of estimated harvests for each species are summarized for Canada (Table 18) and by province/territory and zone (Tables 19 through 30), based on data from both the HQS and the SCS.

In some areas, Canada Geese are further identified to groups of subspecies based on size differences. For some provinces/territories, the tables show kills for large and small Canada Geese; elsewhere, subspecies that could not be separated are recorded simply as Canada Geese. Note that large and small Canada Geese from different areas of the country may correspond to different geographical subpopulations.

In the process of calculating estimates, rounding to significant digits took place at the last step in the analyses. It should not be expected that rounded column totals will equal the sum of values that have also been rounded.

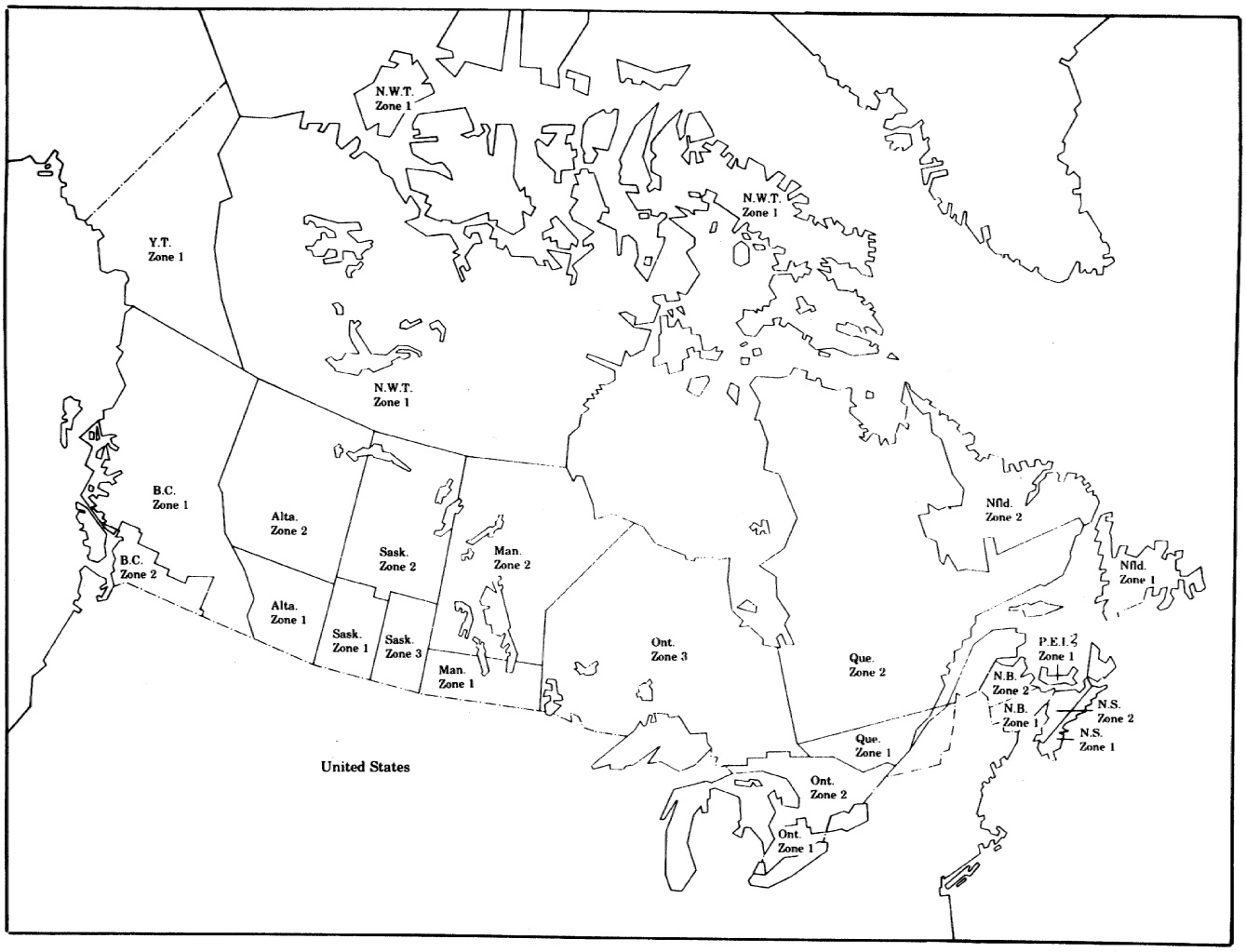
References

Collins, B.T. 1991. Estimation procedures for the Migratory Bird Harvest Surveys. Unpublished report, Wildlife Toxicology and Survey Branch, Canadian Wildlife Service.

Collins, B.T.; Elliot, R.D.; Legris, A. 1991. The harvest of Common Murres in Newfoundland in 1990–91. Unpublished report, Wildlife Toxicology and Survey Branch, Canadian Wildlife Service.

Cooch, F.G.; Wendt, S.; Smith, G.E.J.; Butler, G. 1978. The Canada Migratory Game Bird Hunting Permit and associated surveys. Pages 8–39 *in* Boyd, H.; Finney, G.H. (eds.). Migratory game bird hunters and hunting in Canada. Can. Wildl. Serv. Rep. Ser. 43. 127 pp.

Figure 2
Geographic zones used in selecting samples for the HQS and SCS and for reporting their result



Elliot, R.D.; Collins, B.T.; Hayakawa, E.G.; Metras, L. 1991. The harvest of murres in Newfoundland from 1977–78 to 1987–88. Pages 36–44 *in* Gaston, A.J.; Elliot, R.D. (eds.). Studies of high-latitude seabirds. 2. Conservation biology of Thick-billed Murres in the Northwest Atlantic. Can. Wildl. Serv. Occas. Pap. No. 69.

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