

CANADA GOOSE HUNTER PROFILE, SUCCESS AND EXPENSES ON PRINCE EDWARD ISLAND

KATHY MARTIN
Biology Department
Queens University
Kingston, Ont. K7L 3N6

and

DARYL GUIGNION
Biology Department
University of Prince Edward Island
Charlottetown, P.E.I. C1A 4P3

Canada goose hunter profile, technique, effort, harvest and cost were documented during fall migration on a 20,000 ha area of Prince Edward Island in 1974 and 1975. In 1974, 3.7 geese per hunter were shot, but in 1975 extensive fall ploughing resulted in geese feeding more frequently on tidal flats and the average kill dropped to 1.9 birds. Hunters using blinds and decoys bagged more birds than those stalking geese in 1974, but not in 1975. In both years harvest was unrelated to numbers of geese present on the area. In 1974, harvest was related directly to hunting efforts, but not in 1975. The average cost for a season of hunting was about \$70 per individual.

En 1974 et 1975, différents aspects de la chasse à l'Oie du Canada furent étudiés, pendant la migration d'automne, dans une région de 20,000 hectares située dans l'Île-du-Prince-Édouard. Le profil du chasseur, sa technique, l'effort de chasse, la récolte et le coût de cette chasse furent documentés. En 1974, chaque chasseur a abattu 3.7 oies. En 1975, ce chiffre est tombé à se nourrir plus fréquemment dans les plaines intertidales. En 1974, et non en 1975, les chasseurs qui ont utilisé des caches et des oiseau de leurre ont récolté plus de gibiers que ceux qui ont chassé à l'affût. Pendant ces deux années, la récolte ne fut pas reliée au nombre d'oies présentes, dans la région étudiée. En 1974, et non en 1975, la récolte fut directement reliée à l'effort de chasse. Le coût moyen d'une saison de chasse s'est élève à environ \$70 par individu.

Introduction

Prince Edward Island provides excellent habitat for migrating Canada geese (*Branta canadensis canadensis*). Shallow bays and tidal flats bordered by agricultural areas attract large numbers of geese during spring and autumn (Martin and Guignon 1983). Recently, the number of Canada geese both in the Atlantic Flyway and staging on Prince Edward Island has been increasing (Bellrose 1976, Atlantic Migratory Bird Technical Committee 1976). The location of large cultivated areas close to water, the predominance of resident hunters, and informal arrangements for hunting on fields have maintained a pattern of high quality, but low cost hunting on Prince Edward Island. The current trend towards large scale monocultures operated by a few individuals may change this tradition. Grain stubble fields are becoming increasingly more difficult to obtain and many gunners fear the days of inexpensive hunting are numbered. Our study documents goose hunter profile, techniques, harvest, effort expended, and costs incurred on a 20,000 ha area of Prince Edward Island during 1974 and 1975.

Study Area

The study area, located on the southern coast of Prince Edward Island, includes portions of the Dunk and Wilmot Rivers and Salutation Cove, plus surrounding fields which are cultivated extensively. Martin & Guignon (1983) describe the area in more detail.

Methods

A survey of goose hunting activities on the study area was conducted during the autumn of 1974 and 1975. Shortly before hunting season, advertisements were placed in local newspapers and on radio stations to inform all hunters and landowners of the study. Twice weekly, on Saturday and 1 day through the week, we flew over the area in a grid pattern with a Cessna 172 aircraft during early morning to count geese, and to locate blinds and sets of decoys. From field observations and interviews with landowners and hunters, data on residency, types and locations of blinds, equipment used, how fields were acquired, and hunting effort, success and costs were obtained.

Goose hunters were interviewed initially by a personal visit and later by phone. Subsequent contacts were made in proportion to frequency of their hunting excursions. Record sheets were provided and information was obtained sometimes by talking to the hunter's partners, the landowner, or other people. Data were cross-checked when exaggerations were suspected and figures were adjusted accordingly.

Costs of hunting were determined for the 1975 season by calculating expenditures for travel, guns, ammunition, decoys, goose calls, and licences. To obtain travel expenses round trip mileages from residence to blind were calculated for each excursion. Each hunter was accorded 1 trip for setting up blinds and 1 additional trip was added for every 10 excursions because those who hunted frequently generally used several fields and periodically established new blind sites. When hunters travelled together, the driver was assigned the costs of transport. Attempts were not made to compute distances covered by those who followed daily flight patterns of geese. Hence, only travel while on hunting excursions was considered and season totals of less than 20 km were not included. Because all of the hunters, except the 4 non-residents, lived within a daily commuting distance, no costs were computed for meals or lodging. Transportation costs were calculated at the rate of 10.6 cents per km (Provincial government kilometerage rate in 1975). To obtain the annual cost of a goose gun, the mean age of firearms owned by all hunters was calculated and divided by individual purchase prices. Average cost of shells, and goose calls (considered to be replaced every 5 years) were obtained from local stores. It was assumed that decoys would last for 20 years and were depreciated at 5% per year of their original price.

Results and Discussion

All known active goose hunters were contacted. Those who used blinds and decoys were easy to locate and for them we obtained complete information on harvest and total time spent hunting. It was impossible to obtain complete data for other aspects of the study and thus sample size varies with the specific topic discussed. Only 1 hunter refused to give any information.

Goose Hunter Profile

Information was obtained on 218 individuals who used the study area for all or part of their goose hunting activities during 1974 and 1975. About 60% of these hunted in the area both years. Two hundred were classified as *bona fide* hunters because they used decoys and set up blinds, and 18 were considered *casual* because they stalked geese in fields or shot them while pursuing ducks.

The majority of hunters (87.2%) lived on the study area or in small towns within 20 km. The 4 non-residents (1.8%) that hunted on the study area were former residents or had relatives in the Province. In 20 (58.9%) of 34 hunting parties at

least 1 member was a landowner or his immediate family owned the field. By sharing with the owner geese shot or by performing favors (e.g., fixing farmer's machinery promptly during harvest), 5 (14.7%) additional parties obtained hunting rights. Another 5 required no permission, as they used public land or had floating river blinds. Three (8.8%) parties hunted on their neighbour's property, and only 1 (2.9%) leased hunting rights to a 40 ha grain field.

Blinds were constructed so that they were easy to set up and did not create potential friction with farmers. Of those observed, 85 (62.0%) were situated along fence lines or hedgerows, 43 (31.4%) were in stubble grain fields, and 9 (6.6%) were along stream courses in fields or floating on a river. Of those located in stubble fields, 36 were pits and 7 were box-like structures on top of the ground.

In general, 1 or 2 hunters went out consistently and were joined occasionally by other partners. The number of *bona fide* hunters on each excursion varied from 1 to 5 ($\bar{x} = 2.7$), but as many as 8 different men reported using the same blind periodically during the season. *Casual* hunters often went out alone, or occasionally with 1 or 2 others. Many integrated their excursions with work, and went shooting in the early morning or evening. Some landowners hunted only after a flock was observed feeding in their fields for several days. A few hunters were retired or took holidays during the season and spent 6 to 10 hours per day in their blinds. Frequency and timing of excursions were determined generally by weather, work commitments, public holidays and feeding patterns of geese. Goose hunters tended to be specialized as 29.1% hunted only geese and an additional 63.4% restricted their sport to waterfowl species.

Landowners traditionally reserved stubble fields for friends or relatives even though they might be used only once or twice.

Currently hunting pressure is light on the study area, but because of new directions in agriculture, this likely will change. As small farms are incorporated into larger units (Martin and Guignon 1983), there will be a reduction in hunting opportunities since normally only friends or employees of the landowner are allowed access. This creates resentment among sportsmen who view large infrequently used fields as akin to private hunting reserves. Elsewhere on Prince Edward Island, a system of buying hunting rights to agricultural land has begun. Hunters on the study area were opposed to the practice of leasing goose fields. They felt their opportunities to obtain sites were threatened because they would be unable to compete financially with wealthy hunters, especially non-residents, and thus would be denied access to their traditional area.

Hunting Effort and Harvest

A 3-way contingency analysis examining year, hunting technique and likelihood of success of goose hunting parties (Table I) showed only a year effect ($\chi^2 = 6.90$, 1

Table I Success of *bona fide* and *casual* goose hunting parties on study area, 1974-1975

Year	Type of Hunting Party	Total Parties n	Successful Parties n(%)	Total Geese Shot n	Average Number of Geese Shot per Party
1974	Bona Fide ¹	46	36(78.3)	597	13.0
	Casual ²	12	7(58.3)	32	2.7
	All Parties	58	43(74.1)	629	10.8
1975	Bona fide	53	27(50.9)	311	5.9
	Casual	9	5(55.6)	10	1.1
	All Parties	62	32(51.6)	321	5.2

¹ used blinds and decoys

² did not use blinds and decoys

Table II Individual goose hunter success on study area, 1974-1975

Year	Type of Hunter	Number of Hunters	Successful Hunters n (%)	Geese Harvested n	Average Number of Geese Harvested per Hunter	Average Number of Geese Harvested per Successful Hunter
1974	Bona fide ¹	151	98(64.9)	597	4.0	6.1
	Casual ²	20	10(50.0)	32	1.6	3.2
	All Hunters	171	108(63.2)	629	3.7	5.8
1975	Bona fide	152	65(42.8)	311	2.0	4.8
	Casual	15	6(40.0)	10	0.7	1.7
	All Hunters	167	71(42.5)	321	1.9	4.5

¹used blinds and decoys²did not use blinds and decoys**Table III** **Bona fide** goose hunter efforts and success on study area, 1974-1975

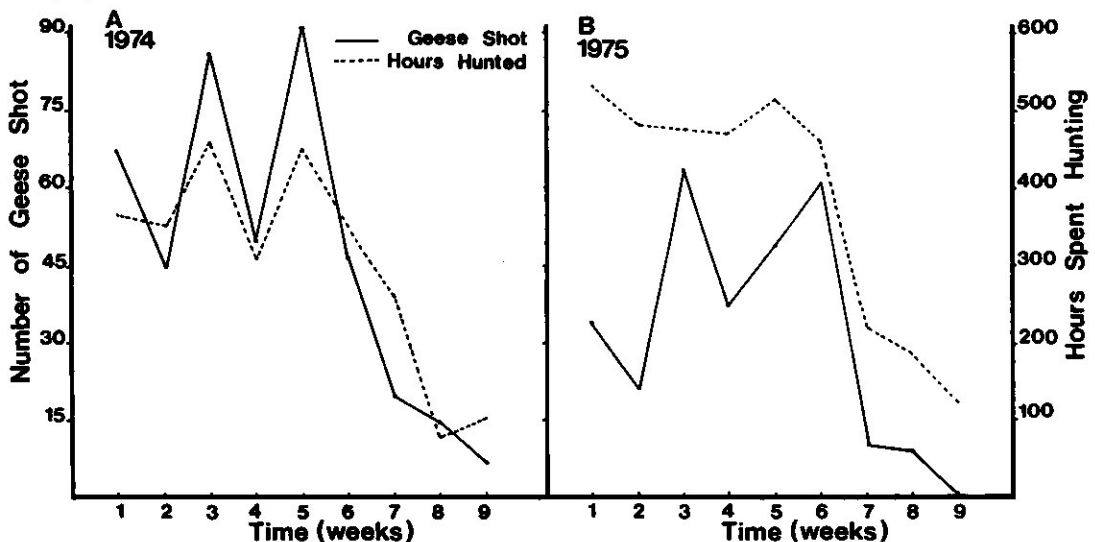
Year	Hunter Category	Number of Hunters	Total Days Hunted	Average Number of Days Hunted	Total Hours Hunted	Average Number of Hours Hunted	Average Number of Geese Shot per Hour
1974	Successful	98	759	7.7	3328	34.0	0.18
	Unsuccessful	53	144	2.7	624	11.8	0.00
	All hunters	151	903	6.0	3952	26.2	0.15
1975	Successful	65	462	7.1	2142	33.0	0.15
	Unsuccessful	87	403	4.6	1718	19.7	0.00
	All hunters	152	865	5.7	3860	25.4	0.08

df, $p < 0.01$). This between-year difference was due mainly to a change in the proportion of *bona fide* groups that were successful (Yates corrected $\chi^2 = 6.63$, 1 df, $p < 0.05$). Parties using blinds and decoys shot more geese than *casual* ones in both years, but there were more hunters in *bona fide* parties. Similar trends were found in geese harvested by individual hunters (Table II). A significant interaction between years and likelihood of success of individuals was found (3-way contingency analysis, $\chi^2 = 14.95$, 1 df, $p < 0.001$), and this again was due to a decline in the proportion of successful *bona fide* hunters from 1974 to 1975 (Yates corrected $\chi^2 = 13.96$, 1 df, $p < 0.001$). In terms of absolute success, the average kill per hunter declined from 1974 to 1975 on the study area ($t = 2.98$, 336 df, $p < 0.001$). *Bona fide* hunters shot more geese than *casuals* in 1974 ($t = 4.23$, 169 df, $p < 0.001$), but not in 1975 ($t = 1.23$, 165 df, $p > 0.05$). In 1975, unusually warm, dry weather permitted farmers to do extensive fall cultivation and geese consequently spent most of their time feeding on tidal flats (Martin and Guignion 1983). Hence the use of blinds and decoys increased the harvest only when geese were feeding in fields as they did in 1974, and not when they spent considerable time on coastal marshes and tidal flats.

It was impossible to compute the numbers of hours spent hunting by *casual* hunters because often they were engaged in other activities while pursuing geese. The total number of hours logged by all *bona fide* hunters was approximately the same each year (Table III), but the average harvest per effort declined from 1974 to 1975 ($F = 5.09$, 1 df, $p < 0.05$). A 2-way anova of geese shot per hour showed that successful individuals spent more time in their blinds ($F = 37.64$, 1 df, $p < 0.001$) than unsuccessful gunners and this did not vary between years ($F = 1.37$, 1 df, $p > 0.05$).

Certain hunters were unsuccessful but very persistent. One hunter spent 98 hours to bag 1 goose, while another spent 180 fruitless hours in a blind. On the other hand, some hunters were very successful and 1 in 1974 managed to bag 46 geese in 96 hours.

Harvest versus effort was computed weekly throughout the season (Fig 1). Data for individual hunters were used only when we could determine total harvest and time spent hunting for each week. In 1974, peak harvest occurred during weeks 3 and 5 of the season (Fig 1A). Harvest during week 3 corresponded with peak numbers of geese (2040) observed on the study area, but during week 5, the staging population had declined to less than 40% of the peak (Martin and Guignion 1983).



During 1974, harvest was related directly to time spent hunting (Fig 1A). In 1975, peak harvest occurred during weeks 3 and 6 of the season (Fig 1B), before maximum numbers of geese were observed (Martin and Guignion 1983). Hunting effort in 1975 was relatively constant during the first 6 weeks of the season and was unrelated to harvest. During week 7, when the greatest number of geese (2420) was observed on the area (Martin and Guignion 1983), only 9 geese were reported shot. Although the number of birds present on the area was slightly higher in 1975 (Martin and Guignion 1983) and hunting effort was comparable both years, total harvest was lower in 1974, and this appeared to be due primarily to changes in foraging patterns of geese which were dictated by weather and agricultural practices.

Annual goose harvest on Prince Edward Island during 1971-75 ranged from 6400 to 11300 geese (Cooch et al. 1974, Cooch and Newell 1977). The Prince Edward Island Fish and Wildlife Division indicated from their surveys that geese shot per active waterfowl hunter ranged from 2.8 to 3.0 during 1971-74 and decreased to 2.4 in 1975 (R. Dibblee, pers. comm.). The Canadian Wildlife Service reported on the basis of wing surveys a harvest on Prince Edward Island of 5.3 geese per successful hunter in 1974 and 4.2 in 1975 (Cooch 1976).

These figures are similar to our values of 5.8 geese per successful hunter in 1974 and 4.5 in 1975 (Table II). During 1971-75 total harvest on Prince Edward Island equalled or exceeded that of other Atlantic Provinces, and the average number of geese shot per licensed waterfowl hunter was either equivalent to or above that experienced on the prairie provinces (Cooch 1976, Cooch et al. 1974).

Hunting Expenses

The major cost incurred by *bona fide* hunters was the purchase of a "goose gun". Some hunters had inexpensive models but most owned automatic guns chambered for "three inch" magnum shells and a few used very expensive models. The majority of hunters preferred 12 gauge shotguns, but a few used 10 gauge. Average annual cost of a gun was about 45% of total expenses (Table IV).

Table IV Bona fide goose hunter expenditures, 1975

Type of Expenditure	Average cost per Hunter per season
Guns	\$31.23
Ammunition	10.34
Decoys and Calls	7.85
License ¹	4.76
Transportation	15.87
Total	\$70.05

¹Data were used from 123 hunters but 26 of these were farmers and did not require a provincial hunting license.

Transportation was the second major expense involved in goose hunting on the area (Table IV), but when compared to other areas of Canada, it was low because of the short distances most hunters had to travel. A survey done in British Columbia in 1972 for all types of resident hunters revealed transportation to be the major expense accounting for \$142 of a total cost of \$290 per hunter, and an average of \$39 was spent on food, alcohol and lodging (Pearse Bowden Economic Consultants Ltd. 1972).

Ammunition accounted for 14.8% of the hunting costs. Slightly fewer than 50 shells (2 boxes) were used per person per season, although the amount varied greatly. Commercial decoys made of plastic, rubber or styrofoam were most popular, but some hunters had handmade wooden decoys or silhouettes. Usually there were 2 or 3 goose calls per party; a few gunners called geese by voice. All hunters had to obtain a Federal migratory bird permit but only those who were not *bona fide* farmers required a Provincial hunting permit. The cost of licenses was thus a minor expense. Only 1 hunter claimed to have leased rights to a stubble field and he did not reveal the price involved.

Goose hunters in the study area spent an average of \$70 in 1975 on their sport (Table IV). The overall cost would have been similar in 1974 because an approximately equal effort was expended by hunters in both years. The average Canadian waterfowl hunter spent \$79.03 for the 1961 season (Benson 1963) and during 1971, total expenditures were estimated at \$107.41 per migratory bird hunter (Benson and Willey n.d.). Thus goose shooting on Prince Edward Island remains a relatively inexpensive sport, primarily because of the short travelling distances involved and the traditional informal arrangements required for access to hunting areas.

Prince Edward Island is an important stopover area on the Atlantic Flyway (Martin and Guignon 1983) and high quality goose hunting exists on agricultural lands. Non-resident migratory bird hunting permits issued for Prince Edward Island have increased during 1967 to 1976 from 39 to 277 (A. Godfrey, pers. comm.), while resident permits issued have increased from 3047 to 5718 (Benson 1968, Cooch et al. 1978). Most non-resident permits during the above period were issued for goose hunting. Although non-resident hunting has increased over the last decade, it does not yet account for a significant proportion of the migratory bird hunting on Prince Edward Island. With increasing numbers of Canada geese utilizing large agricultural fields, it can be anticipated that hunting pressure and costs will greatly accelerate in future years.

ACKNOWLEDGEMENTS

This study was one aspect of a 2-year waterfowl project undertaken as part of an interdisciplinary research project on the Dunk River conducted by the University of Prince Edward Island and government agencies. Funding was provided by the Senate Research Committee of the University and the National Research Council of Canada. We acknowledge field assistance from E. Hickey and D. Martin. The Prince Edward Island Fish and Wildlife Division provided advice and background information, and E. Morello prepared the figure. We thank hunters and landowners for their cooperation. D. Ankney, R. Curley, R. Dibblee, A.R. Lock, and D. MacAskill contributed comments on the manuscript. C.S. Findlay assisted with the statistical analysis.

References

- Atlantic Migratory Bird Technical Committee.** 1976. The Canada Goose in Atlantic Canada. Position paper No. 1, 25 pp.
- Bellrose, F.C.** 1976. *Ducks, geese and swans of North America*. Stackpole Books, Pennsylvania.
- Benson, D.A.** 1963. Fishing and hunting in Canada, 1961. *Can. Wildl. Serv. Rept.* Ottawa: Queen's Printer.

- Benson, D.A.** 1968. Report on sales of the Canada migratory game bird hunting permit 1967-68. *Can. Wildl. Serv. Prog. Note No. 4.*
- Benson, D.A.** and **Willey L.L.** n.d. Notes and data on economic impacts of the migratory bird resource—the federal aspect. *Can. Wildl. Serv. Manuscript Rept., Repository CWSC 1534, Ottawa.*
- Cooch, F.G.** 1976. Report on 1975 sales of the Canada migratory game bird hunting permit, waterfowl harvest and hunter activity. *Can. Wildl. Serv. Prog. Note No. 70.*
- Cooch, F.G.** and **Newell, K.H.** 1977. Species of waterfowl and age and sex ratios of ducks and geese harvested in Canada during the 1975 season. *Can. Wildl. Serv. Prog. Note No. 71.*
- Cooch, F.G., Kaiser, G.W.** and **Wight, L.** 1974. Report on 1973 sales of the Canada migratory game bird hunting permit, migratory game bird harvest and hunter activity. *Can. Wildl. Serv. Prog. Note No. 41.*
- Cooch, F.G., Newell, K.,** and **Wendt, S.** 1978. Report of 1976 sales of the Canada migratory game bird hunting permit, waterfowl harvest and hunter activity. *Can. Wildl. Serv. Prog. Note. No. 81.*
- Martin, K.** and **Guignion, D.** 1983. Canada goose numbers, daily movements and foraging patterns on Prince Edward Island. *Proc. N.S. Inst. Sci.* 33:107-114.
- Pearse Bowden Economic Consultants Ltd.** 1972. The value of resident hunting in British Columbia. *B.C. Fish Wildl. Branch. Study Rep. No. 6.*