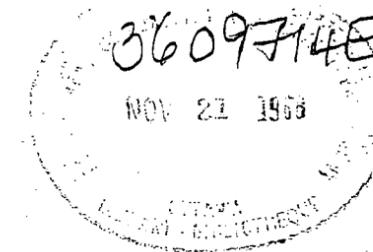




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**PROGRESS NOTES**

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Progress Notes contain *interim* data and conclusions and are presented as a service to other wildlife biologists and agencies. The notes will appear in summary volumes from time to time.

**ORIGIN AND SUCCESS OF GOOSE HUNTERS IN WESTERN SASKATCHEWAN DURING THE AUTUMN OF 1967**by Ernie Korol<sup>1</sup> and Alex Dzubin<sup>2</sup>

In Saskatchewan about 65 per cent of the total yearly goose harvest is taken within Game Management Zones 12 and 13 (Table 1). These zones, located in the west-central part of the province, are bounded on the north by Highway 14, on the east by Highway 4, on the south by Highway 32 and on the west by the Alberta border. Within this Saskatchewan Goose Management Area many fresh and saline lakes and the South Saskatchewan River form major fall congregating areas for Canada geese (primarily Branta canadensis parvipes and maxima), white-fronted geese (Anser albifrons frontalis), snow geese (Anser caerulescens) and Ross' geese (Anser rossii) (Dzubin, Miller and Schildman, 1964; Hanson, 1955; Dzubin, 1965; Miller, Dzubin and Sweet, 1968.) The area is a traditional fall staging area for geese and hunters alike. Since 1958 all goose hunting has been restricted to the morning hours only, i.e., one-half hour before sunrise to noon, CST.

Since 1961, during routine field checks of goose hunting parties by Conservation Officers, records have been kept of (a) ages of readily identifiable species (white-fronted and snow geese), (b) party size, (c) hunter origin and (d) goose species shot. Such data have been used to provide yearly indices of goose production which could then be compared to age ratios taken from banding, field counts (see Lynch, 1968), tail fan analysis, and National Kill Survey. Hunter success information is also obtained and used to determine the yearly efficiency of hunters in

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Table 1. Goose harvests and percentage of total provincial harvest taken in Game Management Zones 12 and 13.

<u>Year</u>	<u>Saskatchewan goose harvest*</u>	<u>Goose harvest in Zones 12 and 13*</u>	<u>Per cent of provincial harvest</u>
1967	74,973	48,832	65.1
1966	86,963	56,400	64.9
1965	55,240	36,300	65.7
1964	65,580	41,600	63.5
1963	94,317	60,900	64.6
1962	58,346	38,900	66.7

(After Hunter Survey Reports, Wildlife Branch, Saskatchewan Department of Natural Resources, Regina.)

\*Does not include unretrieved bird loss of 10 to 15 per cent.

attaining daily bag limits. Also, chronology of migration of each goose population is inferred from the weekly species harvest.

The objectives of the field check program were to determine:

1. Average weekly and seasonal hunter success.
2. Age ratios of bags.
3. Hunter origins.

Hunting Methods

From their water area resting locations, geese make two flights daily into the surrounding wheat and barley stubble fields to feed: one flight in the early morning, just before sunrise, and for an hour after, and the other 1 to 3 hours before sunset. On bright days feeding intervals vary from 1½ to 3 hours, while high winds, clouds and rain can extend feeding periods throughout the day. Most water areas in the region are in protected Game Preserves, or have a 500-yard no-hunting zone around them. Hunting ends at noon, CST.

A number of hunting methods are employed:

(1) Pit shooting - feeding geese are located in the afternoon, pits are dug in the evening after the geese have returned to lakes. One-half to one hour before sunrise, hunters set out decoys and hide in pits until geese again return to the field to feed. (Pit shooting was mandatory in the southern portion of Zone 12 in 1967.)

(2) Fence-line shooting - hunters hide behind grass, straw bales or fence posts on feeding flight lanes, either when geese are leaving water areas or returning from feeding. On windy or rainy days hunters may await low-flying geese near lake shores as they return.

(3) Back shooting - hunters crawl up road ditches and lie in wait between feeding geese and the resting lake. When geese have finished feeding and return to the lake, they occasionally fly over the hidden hunters.

(4) Walk-in hunting - 6 to 10 hunters surround a flock of feeding geese and slowly approach them. As geese fly up and away, one or two hunters obtain shooting.

(5) Pass shooting - on a few lakes, or on the high banks of the South Saskatchewan River, hunters lie in vegetation on flight paths or lie in stubble fields on such flight

paths. However, over-water hunting of geese is ethically unacceptable to most local hunters, even on ponds or lakes that have no 500-yard no-hunting zone around them.

Hunters are checked in the fields for provincial game bird licences, Canada migratory game bird hunting permits and waterfowl harvest by conservation officers after the morning flight is over, i.e., invariably between 0800 and 0900 hours in September and 0900 to 1130 hours in October.

#### Personnel

Department of Natural Resources Officers, Ernie Korol, Kindersley; Art Busch, Superb; Gil Carney, Regina; Barry Middlemiss, Outlook; and RCMP Constable Norman Knowles, Regina.

#### Results

##### Hunter success

The average number of geese bagged per hunter per day varies between .5 to 1.4 during each week of the hunting season, but is usually less than .8 (Table 2). Of 1,837 hunters checked during the season an average bag of .69 geese per hunter per day was calculated. In other words, the "average" goose hunters in western Saskatchewan kill less than one goose per morning hunt.

##### Species composition of bag

Nearly half, 48.5 per cent, of the 1,276 geese examined were white-fronts, 26.3 per cent were Canadas, 19.8 per cent were snow geese and 5.4 per cent were Ross' geese (Table 2). Eighty-four (25%) of the 335 Canada geese were of the "large" variety. Most of the white-fronts were harvested early in the season between the opening date, September 18, and October 14. The white goose season did not open until October 9, so most of the snow geese harvest is restricted to the October 9 to 28 interval. No Ross' geese were examined in hunter bags after October 21.

#### Age ratios

The adult:immature ratio of 619 white-fronts was 1:.70 and for 253 snow geese, 1:.63 (Table 2). If immature geese are 2.5 to 3.0 times more vulnerable to the gun than adults (see Miller, Dzubin and Sweet, 1968) then these ratios show that the percentage of young in the free-flying population, in both these species, was probably in the order of 15 to 25 per cent. These low percentages reflect (1) a poor nesting year on the breeding grounds, (2) the excellent production and survival of 1966 hatched young which are "adult" plumaged (but non-breeding) yearlings.

#### Hunting party size

The number of hunters per party varied from 1 to 21, while the mean size of 558 parties was 3.3 (Figure 1). Seventy-four per cent of the parties were composed of either 2, 3 or 4 hunters.

#### Party success

Nearly 35 per cent of the parties checked were unsuccessful in bagging even one goose (Table 3). Fifty-four per cent of all parties bagged between 1 and 5 geese, with the remaining 11 per cent bagging between 6 and 17. Of the 558 parties interviewed only two had filled their legal daily bag of five geese per hunter, one had 4.5 geese per hunter, and six parties had between 3 and 3.9 geese per hunter. All others had less than 2.9, or no geese. Only 9 of the 558 parties (20 hunters) had bagged their legal daily limit of two white-fronts, although it is recognized that populations of this species decrease after October 15 and are not available to hunters.

#### Origin of hunters

Over 60 per cent of the 1,837 hunters interviewed originated in Saskatchewan, either locally or within the province. The next largest group was from the U.S.A., some 26 per cent. The remainder were from Manitoba (4.5%), Alberta (3.3%), Ontario (1.5%) and British Columbia (.7%) (Table 4). The 1967 Canada migratory game bird hunting permit sales in Saskatchewan showed 41,416 Canadian residents (92.8%), 3,006 non-resident U.S. (6.7%) and 229 residence unknown (.5%) (Benson, 1968). The checking data

Figure 1. Frequency distribution of goose hunting party size in the Kindersley- Kerrobert- Wilkie-Leader districts of Saskatchewan - 1967

558 Parties  
1837 Hunters

Mean party size - 3.3  
Range 1 - 21

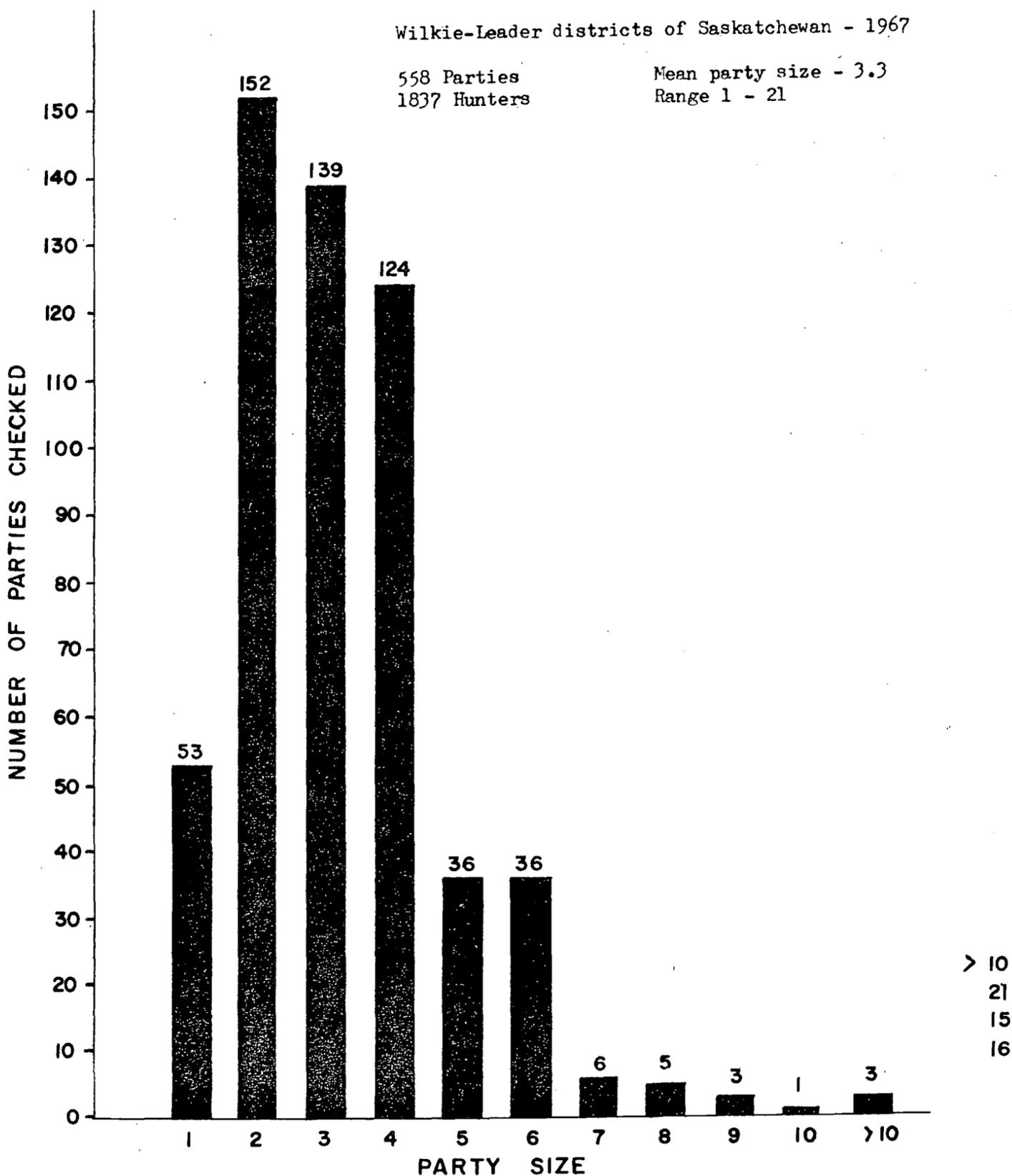


Table 2. Number and species composition of goose harvest in Zones 12 and 13, autumn, 1967. After field checks by Saskatchewan DNR Conservation Officers and RCMP.

Week of hunting season	White-fronts		Canadas		Snows		Ross'		Total geese checked	Number of hunters checked	Geese killed per hunter per day*
	Ad	Imm	Large	Small	Ad	Imm	Ad	Imm			
Sept. 18-23	130	90	19	14	1		1		255	377	.68
Sept. 25-30	80	72	13	42					207	255	.81
Oct. 2-7	66	48	4	23				3	144	232	.62
Oct. 9-14	79	37	4	24	51	36	17	21	269	357	.73
Oct. 16-21	8	4	30	71	64	36	13	14	240	375	.64
Oct. 23-28	2	3	1	33	32	24			95	167	.57
Oct. 30-Nov. 4				5	7	2			14	26	.50
Nov. 6-11	No hunters checked. Nearly all lakes frozen north of Kindersley, Oct. 27-Nov. 8. Thawing thereafter to Nov. 20. South Sask. River open to Nov. 30.										
Nov. 13-18			13	39					52	38	1.4
Totals	365	254	84	251	155	98	34	35			
	619		335		253		69		1,276	1,837	.69
Age ratio Ad:Imm	1:.70				1:.63		1:1				
% of total harvest	48.5		26.3		19.8		5.4		100.0		

\* Assuming no geese killed by hunters after being checked by conservation officers. One-half day shooting in force. White goose season opens Oct. 9 in G.M. Zones 12 and 13.

Table 3. Number of geese bagged per party zones 12 and 13, Saskatchewan, fall, 1967.

Number geese bagged	Area "A" number parties	Area "B" number parties	Area "C" number parties	Area "D" number parties	Total parties	Per cent of total parties
0	25	83	39	47	194	34.8*
1	8	21	18	34	81	14.5
2	22	20	16	25	83	14.9
3	12	18	6	36	72	12.9
4	8	5	6	24	43	7.7
5	4	1	5	13	23	4.1
6	0	6	4	14	24	4.3
7	2	3	0	7	12	2.2
8	0	0	0	5	5	.9
9	1	0	4	3	8	1.4
10	0	0	2	3	5	.9
> 10	1	1	2	4	8	1.4
	83	158	102	215	558	100.0

\*Note 35 per cent of parties checked, bagged no geese and 50 per cent bagged only one or no geese.

Table 4. Number and origin of hunters checked by Saskatchewan Department of Natural Resources Conservation Officers in Zones 12 and 13, 1967.

Week of hunting season	Origin of hunters checked							Total number hunters
	Sask.	Alta.	Man.	B.C.	Ont.	U.S.A.	Misc. & mixed	
Sept. 18-23	251	20	23		5	47	31	377
Sept. 25-30	169	8	6			72		255
Oct. 2-7	135		6	2	3	86		232
Oct. 9-14	215	9	5	2	3	120	13	367
Oct. 16-21	163	21	38	5	14	120	14	375
Oct. 23-28	116	2	5	4	3	37		167
Oct. 30-Nov. 4	23						3	26
Nov. 6-11								
Nov. 13-18	38							38
Totals	1,110	60	83	13	28	482	61	1,837
% of Total	60.4	3.3	4.5	0.7	1.5	26.3	3.3	100.0

show a higher proportion of U.S. hunters in the Goose Management Zone than the permit sales indicate for the province as a whole.

#### Limitations of the data

There are a number of biases and sampling errors inherent in conservation officer checks which may distort the tabulated results:

(1) Checks are not conducted with the same intensity, daily or through the season. Weekly sample sizes, especially after October 15, are small.

(2) Small Canada geese generally frequent the South Saskatchewan River. Although patrols are made into this area, they are not made as consistently there as they are around the more populated areas to the north. Few checks were reported from south of the river within GMZ 12. Therefore, species composition of bags may be distorted by localized checks.

(3) Checks are usually made after 0800 hours to noon, when the morning flight is over and when hunters are filling in pits or picking up decoys. Many local hunters, whose efficiency of harvest appears higher than non-locals, are not checked as they return to their jobs prior to 0900 hours. Many non-resident U.S. hunters remain in pits or afield, hoping for a "back shoot", and are therefore more readily checked.

(4) During busy periods not all parties may be recorded, especially if a large number are found in a single field, e.g., 74 hunters in approximately 200 acres of wheat stubble near Cutbank Lake, October 9.

(5) The separation of immature "large-type" Canadas from adult male "small-type" Canadas may be difficult.

(6) Some hunters may continue to hunt, especially "back shoot", after being interviewed. Their ultimate daily success is somewhat higher than reported.

(7) No checks were recorded after November 15, although a few snow and Canada geese were being harvested in the Wilkie-Unity districts until November 18, and along the South Saskatchewan River until November 30.

#### Discussion and Conclusions

For the purposes of this discussion we assumed that all data were randomly collected and accurately measured the origin and success of goose hunters in western Saskatchewan.

The low seasonal-average take of geese per hunter per day (.69) probably reflects the poor production of young in most populations of northern nesting geese in 1967. The exception was the Ross' goose population, in which production was fair but slightly below average, i.e., 27 per cent young. The low production of young was also shown from goose tail fans collected from plucking stations in the district. In 1967, tail fan ratios of adults:immatures for white-fronts were 1:.78; small Canadas 1:.52; snow geese 1:.35; and Ross' geese 1:1.44 (N = 3,344). In 1966, the tail fan age ratios were 1:2.28, 1:3.50, 1:1.71 and 1:3.42 for each respective species (N = 1,893). Field age ratio counts showed the 1966 production of young in all goose populations to be the highest ever, since surveys began in 1961. In 1967, it was one of the lowest. The 1967 adult:immature ratios are probably also weighted heavily to adult-appearing yearling birds, because of the excellent production of young in 1966.

The average weekly success of goose hunters generally reflects the state of production. In a good production year, many young (i.e., 30%-50% of population) are available. Since they are more vulnerable to the gun, more are bagged and hunter success is high. In a poor year (i.e., 5%-15% young) with cold, late springs, the reverse is true -- unsuccessful adults, non-breeding yearlings, and two-year-old geese are wary and far less vulnerable. Daily hunter success is low. Although weather, water availability and concentration of hunters play a part, hunter success is closely tied to the extreme vulnerability of young-of-the-

year to the gun. Over-all harvest can also be influenced by warm, open autumns which retard migration southward and allow more hunting pressure on the resident geese, e.g., white-fronts in 1967.

The place of daily bag limits (i.e., 5 geese - 2 of which may be white-fronts), in regulating harvest remains unclear. Only 9 of the 558 parties (20 hunters) had filled their daily bags of two white-fronts per hunter, while only two parties (3 hunters in all) had filled their five goose daily bag. Previously gathered bag check data had also suggested that daily bag limits might have to be reduced to less than one goose per day to affect reduction in harvest, or more restrictive possession or seasonal limits would have to be implemented. The data for 1967 suggest that we are now operating out of the range where daily bag limits have an effect on harvest rates of geese. The "effective level" of daily white-front bags is less than one goose per day.

The species composition of bags parallels the observed migration chronology of the various goose populations. White-fronts are early migrants and thus most of the harvest of this species occurs in the last 10 days of September and first 10 days of October (see Miller, Dzubin and Schildman, 1968). Small Canada geese start to arrive in the last week in September and peak about October 10-15, whereas snow geese do not generally peak until after October 15. Both these species remain until forced out by snow and freezing weather. As many as 5,000 "large-type" Canadas are found in the district prior to September 20, but fewer than 1,500 thereafter until the end of October. Ross' geese arrive with the white-fronts in early September and peak during the first week in October. Most Ross' and white-fronted geese have migrated south by October 15. In any year, non-breeding or unsuccessful adult geese molt and migrate south early. In poor production years, e.g., 1967, unsuccessful adults, which have molted earlier than the few successful ones, move onto the southern staging areas in large numbers. This early migratory pattern is especially noticeable in the small Canada and snow goose populations. Several thousand adults with few or no young may move into the district during the last week in September.

The per cent of unsuccessful parties, although seemingly high - 35 per cent - is approximately the same as that reported in previous years where the percentage varied

from 30 to 50. In all, the chances of a hunter shooting a goose on any one morning are very low, while the chances of his killing the legal daily limit of two white-fronts (20 of 1,837 hunters - 1.1%) or five geese in total (3 of 1,837 hunters - .2%) during a poor production year are slim indeed. In short, we are operating above the "effective range" of daily goose bag limits, and other methods, e.g., delayed opening dates and seasonal bag limits, should be considered to manipulate harvests.

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