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CANADA. WILDLIFE SERVICE. PROGRESS NOTE

**Migratory birds killed in Canada during the 1978 season**by J. S. Wendt,<sup>1</sup> W. Mortimer<sup>1</sup> and F. G. Cooch<sup>1</sup>**Introduction**

The National Harvest Survey (NHS) is a mail survey conducted each year to estimate the kill of migratory game birds by hunters in Canada. The surveys are intended to provide accurate data on the legal sport kill. Those data do not include crippling loss, illegal kill or hunting by native peoples.

The Species Composition Survey (SCS) is also a mail survey. Duck wings and tail fans from geese are solicited from hunters and used to identify the species, age and sex of the birds killed. Information from the SCS is used to proportion by species the kill estimates from the NHS.

**Methods**

Both the NHS and SCS are based on questionnaires sent to selected purchasers of Migratory Game Bird Hunting Permits. The NHS sample is chosen both from the current and the previous year's purchasers according to certain strata. The SCS sample is chosen from the previous year's sales only. Cooch *et al* (1978) give a detailed description of the survey methods and calculations.

The survey results are broken into geographic zones, which are shown in Figure 1.

**Results**

Permit sales continued to increase in 1978, although sales decreased in Saskatchewan and Alberta (Tables 1 and 2). Sales to non-residents remained almost unchanged from those of recent years.

For the NHS we contacted about the same number of people as in 1977 and a record 60.2% responded (Tables 3 and 4). We attribute this increased response to the postcard reminders that we sent to all selected hunters a few days after the first questionnaire. (We used the same technique on half of the sample in 1977).

The NHS estimates (Tables 5-14) show decreased duck kill in Alberta and Quebec, increased duck kill in Manitoba, general decreases in eastern goose kill (but with an increase in the Greater Snow Goose kill in Quebec as described with the SCS results) and an increase in Manitoba goose kill over 1977 data. The striking decrease in duck harvest in Alberta was partly a result of a cut in daily bag limit from eight in 1977 to four in 1978.

Kill estimates for each zone of hunt are generally more precise than 1977 estimates (Table 15) as a result of increased response.

In 1978 operational difficulties, as well as a decreased duck kill, resulted in a decreased SCS sample. The most significant problem was the widespread late delivery of survey material to the Prairie Provinces. For example, one set of envelopes, mailed in late August, arrived at its destination in Alberta on 17 November, too late to be used. The short, country-wide postal strikes during the 1978 hunting season were probably detrimental. We also had some difficulty preparing survey materials; many hunters in Ontario and the Prairies received only five instead of ten wing envelopes.

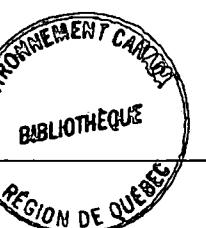
We do not know exactly how many people respond to the SCS. Many hunters do not write their permit numbers on envelopes and many permit numbers do not match the list of numbers selected in the survey. Therefore the return rate, estimated response rate and the net coverage of the hunting population are only approximate. Overall, the estimated response rate dropped to 32% from 37% in 1977 (Table 16). Ontario zone 2, Manitoba zone 2, all of Saskatchewan and Alberta zone 1 show markedly reduced response rates from 1977, possibly due to the operational problems described above.

When the results of the two surveys are combined, the increased precision of the NHS estimates largely compensates for the reduced SCS response. Tables 17 and 18 give the kill estimates, by species, from 1975 to 1978. For duck species and for the sport duck and sea duck subtotals, percentage kills are expressed relative to the total duck kill for each year. For goose species, the percentage of total goose kill is given. Total ducks and total geese are expressed as percentages of the total waterfowl kill.

The SCS sample includes only about 1% of the hunters in Canada (Table 16). As a result, a single duck wing or goose tail fan received in this survey can be extrapolated to represent a kill of 100 birds, or even more. Thus, standard errors for kill estimates that are less than 1000 are rather large in comparison with the estimate itself. Care must be used in interpreting the estimates for these scarcer species.

We were particularly interested in the kill of Greater Snow Geese in Quebec because we also ran a special survey of snow goose hunters in that province in 1978. That survey took a somewhat different approach from the NHS-SCS combination and over 85% of those surveyed responded. The estimated snow goose kill from the special survey was 43 104, close to the NHS-SCS figure of about 43 000.

Many agencies, including the Canadian Wildlife Service, are interested in the economic value that is derived from wildlife. A logical first step in such an evaluation is to determine the value of the food obtained by harvesting the wildlife. Table 19 gives estimates of the total body weight of waterfowl killed in each zone. The weights were calculated from the SCS kill figures by using average weights (Bellrose 1976, particularly) of the various species taken.

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## Progress Notes

## Canadian Wildlife Service

Progress Notes contain *interim* data and conclusions and are presented as a service to other wildlife biologists and agencies.

Of course the total economic value of waterfowl is much greater than the price of the meat. Aesthetic values, that cannot be quantified economically, are also important.

Aesthetically, it is often preferable to have a good mix of species rather than a preponderance of one or two types. A diversity measure, such as the Shannon-Wiener index in Table 20, can be used to indicate how evenly the kill is divided between the possible quarry species. This index is 0 when all the kill is of one species only, and it is 1 when the kill is divided equally between all the species listed in Table 17. For example, Prince Edward Island has a low diversity index because of the emphasis on Black Duck and Canada Goose in the kill. Ontario and Quebec, on the other hand,

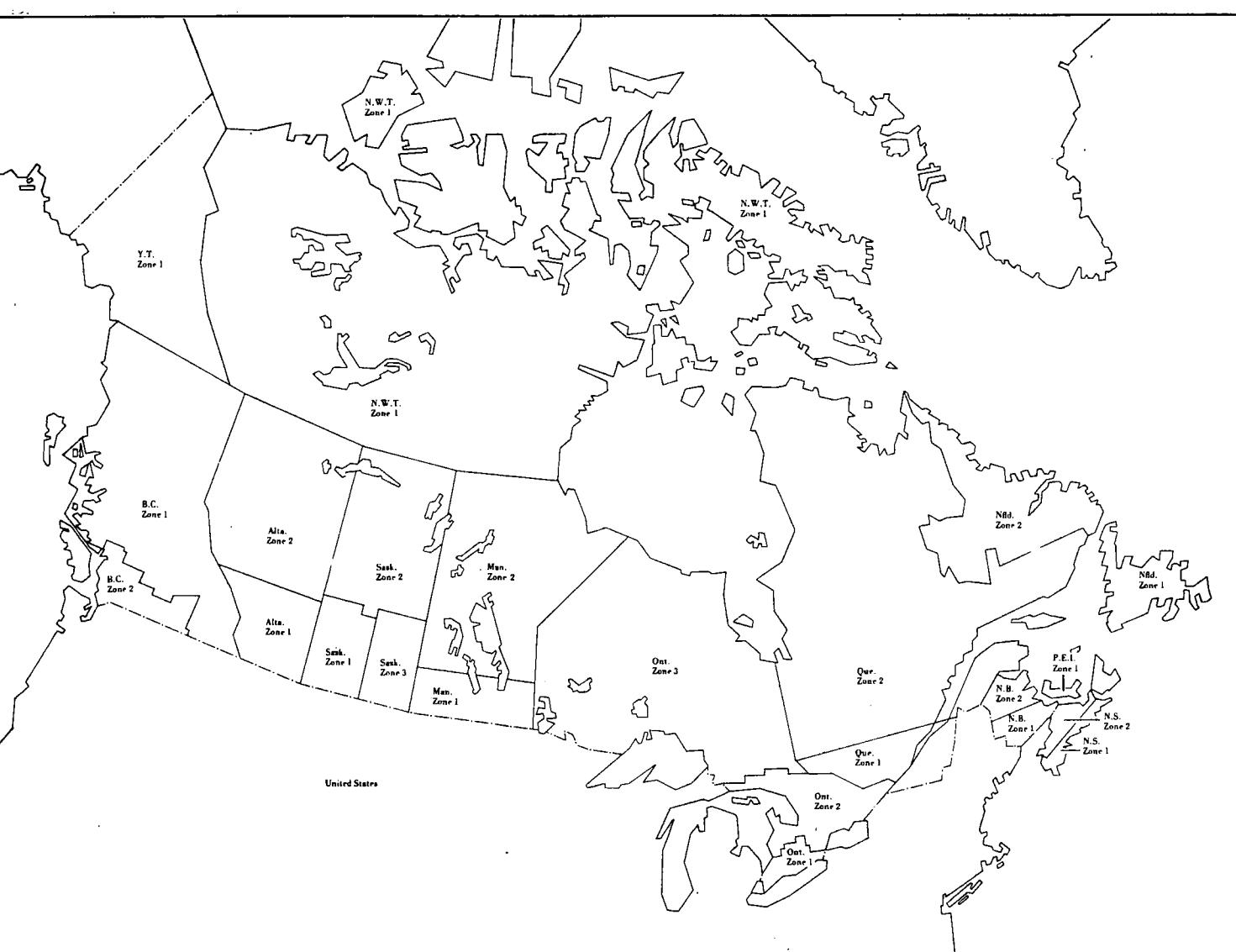
are areas with diverse kill, more evenly divided among several species.

### References

Bellrose, F. C. 1976. Ducks, geese and swans of North America. Stock Pole Books.

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 H. Boyd and G. H. Finney, eds. Migratory game bird hunters and hunting in Canada. Can. Wildl. Serv. Rep. Ser. No. 43.

**Figure 1**  
Geographic zones used in NHS and SCS



**Erratum April 1980**  
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### Migratory birds killed in Canada during the 1978 season

by J. S. Wendt, W. Mortimer and E.G. Cooch

Replace page 44 (Table 19) with the table set below.

**Table 19**  
Live weight (kg) of waterfowl killed per active hunter

Province	Zone	1975	1976	1977	1978
Nfld.	1	5.2	5.7	5.8	6.2
	2	13.9	16.5	18.8	19.4
PEI	1	10.7	18.9	16.5	12.4
	2	9.3	9.3	9.3	8.7
NS	1	18.8	18.9	18.0	14.2
	2	9.3	9.3	9.3	8.7
NB	1	6.1	7.4	5.4	6.7
	2	7.3	10.3	5.8	6.1
Que.	1	11.3	13.4	13.7	14.5
	2	12.6	14.0	13.0	14.1
Ont.	1	10.1	12.2	8.7	10.9
	2	7.5	8.2	7.8	7.4
	3	11.3	10.5	10.1	10.8
Man.	1	19.5	14.7	11.4	17.1
	2	21.4	18.5	15.7	18.8
Sask.	1	25.6	23.2	17.7	19.3
	2	25.1	22.0	17.5	20.4
	3	21.0	22.1	17.2	18.4
Alta.	1	19.5	17.8	16.9	15.2
	2	21.9	20.9	17.4	14.9
BC	1	13.2	11.1	12.0	9.5
	2	19.2	19.4	17.8	17.6
NWT	1	11.5	15.1	11.8	13.8
Yukon	1	12.2	10.5	7.7	11.4

**Table 1**  
Permit sales by province of purchase

Category	Year	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	NWT	Yukon	Total sales
Canadian res.	37 286	6 370	16 230	15 039	74 221	150 994	46 050	53 691	76 092	28 277	814	617	505 681	
Non-res.	11	26	67	210	524	8 704	4 119	4 267	1 025	284	7	21	19 265	
Total	1978	37 297	6 396	16 297	15 249	74 745	159 698	50 169	57 958	77 117	28 561	821	638	524 946
	1977	36 188	6 158	15 744	14 209	72 828	156 895	46 438	60 029	82 175	28 357	902	607	520 530
	1976	29 621	5 756	13 326	13 743	66 453	143 816	46 681	61 669	75 739	26 561	893	513	484 771
	1975	30 115	4 963	13 990	12 930	63 768	148 670	42 846	57 723	69 191	25 918	721	485	471 320
	1974	25 127	5 038	13 791	11 916	58 345	136 469	37 167	51 504	66 127	27 764	591	323	434 162
	1973	27 919	4 972	15 071	12 869	57 247	141 277	41 711	51 307	67 012	33 456	—	—	452 841
	1972	23 682	4 492	12 158	11 336	53 082	131 427	41 133	50 004	63 309	31 032	—	—	421 677
	1971	23 460	4 513	11 381	11 146	50 276	133 563	40 960	49 448	62 902	30 225	—	—	418 237
	1970	21 347	3 926	9 926	10 293	46 009	135 231	39 230	47 722	59 986	31 350	—	—	405 650
	1969	19 089	3 794	8 848	10 110	39 477	134 037	41 611	45 347	53 602	32 764	—	—	389 325
	1968	17 645	3 649	9 022	9 558	37 110	139 182	38 712	43 596	53 623	33 301	—	—	385 553
	1967	14 863	3 094	7 883	7 739	32 491	146 493	35 620	44 651	55 892	33 195	—	—	383 032
	1966	13 269	3 271	7 220	8 535	35 868	144 063	37 784	44 744	52 911	32 394	—	—	380 059























**Table 18 (cont'd)**  
Estimated retrieved kill of waterfowl in Quebec

Species	Zone	1975		1976		1977		1978	
		Kill	%	Kill	%	Kill	%	Kill	%
Lesser Scaup	01	24 804	6.4	26 317	5.4	26 698	5.1	17 739	4.3
	02	4 734	5.7	7 465	6.6	6 246	5.5	4 282	3.7
	Total	29 538	6.3	33 782	5.6	32 944	5.2	22 021	4.2
Ring-necked Duck	01	13 079	3.4	13 462	2.7	16 566	3.2	18 075	4.4
	02	3 064	3.7	3 105	2.7	3 173	2.8	6 483	5.6
	Total	16 143	3.5	16 477	2.7	19 739	3.1	24 558	4.6
Goldeneye	01	22 168	5.8	15 922	3.3	17 349	3.3	26 250	6.3
	02	7 532	9.1	8 730	7.7	9 026	8.0	13 660	11.9
	Total	29 700	6.3	24 652	4.1	26 375	4.2	39 910	7.5
Bufflehead	01	9 946	2.6	6 565	1.3	3 395	0.7	8 414	2.0
	02	344	0.4	1 901	1.7	1 347	1.2	668	0.6
	Total	10 290	2.2	8 466	1.4	4 742	0.8	9 082	1.7
Ruddy Duck	01	810	0.2	818	0.2	0	0.0	0	0.0
	02	0	0.0	334	0.3	0	0.0	0	0.0
	Total	810	0.2	1 152	0.2	0	0.0	0	0.0
Total sport ducks	Total	421 362	90.1	534 948	88.7	565 428	89.6	494 199	93.4
Oldsquaw	01	3 940	1.0	6 771	1.4	2 722	0.5	3 410	0.8
	02	2 163	2.6	4 878	4.3	1 853	1.6	3 984	3.5
	Total	6 103	1.3	11 649	1.9	4 575	0.7	7 394	1.4
Common Eider	01	1 105	0.3	1 737	0.4	1 943	0.4	2 093	0.5
	02	6 796	8.2	7 585	6.7	4 211	3.7	5 709	5.0
	Total	7 901	1.7	9 322	1.5	6 154	1.0	7 802	1.5
Harlequin Duck	02	0	0.0	0	0.0	42	0.0	0	0.0
	Total	0	0.0	0	0.0	42	0.0	0	0.0
Common Scoter	01	10 491	2.7	14 733	3.0	21 618	4.2	5 273	1.3
	02	1 025	1.2	3 267	2.9	4 852	4.3	1 239	1.1
	Total	11 516	2.5	18 000	3.0	26 470	4.2	6 512	1.2
White-winged Scoter	01	4 930	1.3	7 606	1.6	6 984	1.3	3 830	0.9
	02	137	0.2	1 098	1.0	3 368	3.0	972	0.8
	Total	5 067	1.1	8 704	1.4	10 352	1.6	4 802	0.9
Surf Scoter	01	11 488	3.0	11 535	2.4	8 591	1.7	4 872	1.2
	02	4 457	5.4	8 743	7.7	9 628	8.5	3 501	3.0
	Total	15 945	3.4	20 278	3.4	18 219	2.9	8 373	1.6
Total sea ducks		46 532	9.9	67 953	11.3	65 812	10.4	34 883	6.6
Total ducks		467 894	90.0	602 901	91.9	631 240	89.8	529 082	83.0
Canada Goose	01	4 583	12.7	13 562	35.1	33 778	62.7	44 839	52.1
	02	11 911	73.5	12 624	86.7	17 594	97.4	20 427	90.8
	Total	16 494	31.6	26 186	49.2	51 372	71.4	65 266	60.1
Snow Goose	01	1 387	3.9	143	0.4	20 133*	37.3	0	0.0
	02	107	0.7	0	0.0	473*	2.6	0	0.0
	Total	1 494	2.9	143	0.3	20 606*	28.6	0	0.0
Blue Goose	01	0	0.0	0	0.0	0	0.0	549	0.6
	02	2 459	15.2	0	0.0	0	0.0	0	0.0
	Total	2 459	4.7	0	0.0	0	0.0	549	0.5

**Table 18 (cont'd)**  
Estimated retrieved kill of waterfowl in Quebec

Species	Zone	1975		1976		1977		1978	
		Kill	%	Kill	%	Kill	%	Kill	%
Greater Snow Goose	01	30 038	83.4	24 984	64.6	0*	0.0	40 666	47.3
	02	1 720	10.6	1 934	13.3	0*	0.0	2 082	9.2
	Total	31 758	60.8	26 918	50.6	0*	0.0	42 748	39.4
Total geese		52 205	10.0	53 247	8.1	71 978	10.2	108 563	17.0
Waterfowl		520 099	100.0	656 148	100.0	703 218	100.0	637 645	100.0

(cont'd)

\* Lesser and greater snow geese not differentiated in 1977.





**Table 18 (cont'd)**  
Estimated retrieved kill of waterfowl in Manitoba

Species	Zone	1975		1976		1977		1978	
		Kill	%	Kill	%	Kill	%	Kill	%
Ring-necked Duck	01	16 579	8.0	8 636	3.5	4 180	2.4	5 706	2.3
	02	3 679	3.9	709	0.7	1 644	1.9	1 097	0.9
	Total	20 258	6.8	9 345	2.7	5 824	2.2	6 803	1.9
Goldeneye	01	2 251	1.1	3 434	1.4	0	0.0	1 866	0.8
	02	3 069	3.3	1 668	1.5	0	0.0	862	0.7
	Total	5 320	1.8	5 102	1.4	0	0.0	2 728	0.8
Bufflehead	01	3 434	1.7	3 441	1.4	3 039	1.7	2 186	0.9
	02	461	0.5	406	0.4	254	0.3	496	0.4
	Total	3 895	1.3	3 847	1.1	3 293	1.3	2 682	0.7
Ruddy Duck	01	244	0.1	929	0.4	741	0.4	0	0.0
	Total	244	0.1	929	0.3	741	0.3	0	0.0
Total sport ducks		298 738	99.8	351 368	99.7	259 217	99.9	361 072	100.0
Oldsquaw	02	0	0.0	0	0.0	0	0.0	123	0.1
	Total	0	0.0	0	0.0	0	0.0	123	0.0
White-winged Scoter	01	0	0.0	397	0.2	195	0.1	0	0.0
	02	145	0.2	0	0.0	0	0.0	0	0.0
	Total	145	0.0	397	0.1	195	0.1	0	0.0
Surf Scoter	01	122	0.1	577	0.2	0	0.0	0	0.0
	02	216	0.2	0	0.0	0	0.0	0	0.0
	Total	338	0.1	577	0.2	0	0.0	0	0.0
Total sea ducks		483	0.2	974	0.3	195	0.1	123	0.0
Total ducks		299 221	66.3	352 342	78.2	259 412	77.3	361 195	74.4

Canada Goose	01	702	0.6	1 465	2.1	1 428	2.8	278	0.3
	02	0	0.0	433	1.6	1 893	7.8	179	0.6
	Total	702	0.5	1 898	1.9	3 321	4.4	457	0.4
Small Canada Goose	01	23 597	19.8	9 091	12.8	5 671	11.0	9 040	9.5
	02	4 948	14.8	5 029	18.4	3 123	12.8	3 640	12.3
	Total	28 545	18.7	14 120	14.3	8 794	11.6	12 680	10.2
Large Canada Goose	01	46 920	39.4	30 444	42.8	16 940	32.7	51 324	54.2
	02	22 253	66.5	19 296	70.5	16 006	65.8	18 908	64.1
	Total	69 173	45.4	49 740	50.5	32 946	43.3	70 232	56.5
Snow Goose	01	29 829	25.1	18 238	25.6	17 555	33.9	19 222	20.3
	02	5 521	16.5	1 653	6.0	1 368	5.6	3 679	12.5
	Total	35 350	23.2	19 891	20.2	18 923	24.9	22 901	18.4
Blue Goose	01	16 449	13.8	11 452	16.1	10 167	19.6	14 283	15.1
	02	499	1.5	610	2.2	1 935	8.0	2 661	9.0
	Total	16 948	11.1	12 062	12.2	12 102	15.9	16 944	13.6
Greater Snow Goose	01	167	0.1	0	0.0	0	0.0	0	0.0
	Total	167	0.1	0	0.0	0	0.0	0	0.0
White-fronted Goose	01	511	0.4	334	0.5	0	0.0	103	0.1
	02	0	0.0	350	1.3	0	0.0	231	0.8
	Total	511	0.3	684	0.7	0	0.0	334	0.3

(cont'd)

**Table 18 (cont'd)**  
Estimated retrieved kill of waterfowl in Manitoba

Species	Zone	1975		1976		1977		1978	
		Kill	%	Kill	%	Kill	%	Kill	%
Ross' Goose	01	773	0.6	100	0.1	0	0.0	484	0.5
	02	238	0.7	0	0.0	0	0.0	179	0.6
Total	Total	1 011	0.7	100	0.1	0	0.0	663	0.5
Total geese		152 407	33.7	98 495	21.8	76 086	22.7	124 211	25.6
Waterfowl		451 628	100.0	450 837	100.0	335 498	100.0	485 406	100.0

(cont'd)







**Table 18 (cont'd)**  
Estimated retrieved kill of waterfowl in British Columbia

Species	Zone	1975		1976		1977		1978	
		Kill	%	Kill	%	Kill	%	Kill	%
Lesser Scaup	01	1 849	2.1	1 680	2.0	2 603	2.5	1 100	1.7
	02	917	0.6	686	0.5	867	0.6	1 834	1.3
	Total	2 766	1.2	2 366	1.0	3 470	1.3	2 934	1.4
Ring-necked Duck	01	933	1.1	187	0.2	880	0.9	757	1.1
	02	458	0.3	207	0.1	176	0.1	636	0.4
	Total	1 391	0.6	394	0.2	1 056	0.4	1 393	0.7
Goldeneye	01	5 603	6.5	5 435	6.6	730	0.7	575	0.9
	02	709	0.5	966	0.6	114	0.1	1 039	0.7
	Total	6 312	2.7	6 401	2.8	844	0.3	1 614	0.8
Bufflehead	01	3 389	3.9	2 773	3.4	3 078	3.0	2 129	3.2
	02	1 543	1.0	314	0.2	1 230	0.8	1 606	1.1
	Total	4 932	2.1	3 087	1.3	4 308	1.7	3 735	1.8
Ruddy Duck	01	100	0.1	71	0.1	0	0.0	161	0.2
	Total	100	0.0	71	0.0	0	0.0	161	0.1
Total sport ducks		235 672	99.8	231 059	99.9	259 452	99.9	209 872	99.7
Oldsquaw	01	342	0.4	0	0.0	0	0.0	0	0.0
	Total	342	0.1	0	0.0	0	0.0	0	0.0
Common Scoter	01	0	0.0	0	0.0	91	0.1	95	0.1
	Total	0	0.0	0	0.0	91	0.0	95	0.0
White-winged Scoter	01	0	0.0	62	0.1	0	0.0	113	0.2
	02	158	0.1	0	0.0	63	0.0	238	0.2
	Total	158	0.1	62	0.0	63	0.0	351	0.2
Surf Scoter	01	50	0.1	83	0.1	0	0.0	77	0.1
	02	0	0.0	0	0.0	0	0.0	143	0.1
	Total	50	0.0	83	0.0	0	0.0	220	0.1
Total sea ducks		550	0.2	145	0.1	154	0.1	666	0.3
Total ducks		236 222	94.9	231 204	95.3	259 606	95.9	210 538	94.4

Canada Goose	01	0	0.0	0	0.0	0	0.0	176	2.5
	Total	0	0.0	0	0.0	0	0.0	176	1.4
Small Canada Goose	01	363	4.4	601	10.5	1 149	19.2	1 353	19.4
	02	282	6.3	0	0.0	3 438	68.1	733	13.0
	Total	645	5.0	601	5.2	4 587	41.6	2 086	16.6
Large Canada Goose	01	6 941	83.7	5 147	89.5	4 751	79.3	5 138	73.8
	02	2 018	44.7	2 896	50.7	1 100	21.8	4 513	80.3
	Total	8 959	69.9	8 043	70.2	5 851	53.0	9 651	76.7
Snow Goose	01	838	10.1	0	0.0	0	0.0	0	0.0
	02	1 863	41.3	2 617	45.8	508	10.1	374	6.7
	Total	2 701	21.1	2 617	22.8	508	4.6	374	3.0
White-fronted Goose	01	155	1.9	0	0.0	92	1.5	292	4.2
	02	348	7.7	0	0.0	0	0.0	0	0.0
	Total	503	3.9	0	0.0	92	0.8	292	2.3

(cont'd)

**Table 18 (cont'd)**  
Estimated retrieved kill of waterfowl in British Columbia

Species	Zone	1975		1976		1977		1978	
		Kill	%	Kill	%	Kill	%	Kill	%
Brant	02	0	0.0	199	3.5	0	0.0	0	0.0
	Total	0	0.0	199	1.7	0	0.0	0	0.0
Total geese		12 808	5.1	11 460	4.7	11 038	4.1	12 579	5.6
Waterfowl	Total	249 030	100.0	242 664	100.0	270 644	100.0	223 117	100.0

(cont'd)

**Table 18 (cont'd)**  
Estimated retrieved kill of waterfowl in Northwest Territories

Species	1975		1976		1977		1978	
	Kill	%	Kill	%	Kill	%	Kill	%
Common Merganser	0	0.0	0	0.0	735	3.5	0	0.0
Red-breasted Merganser	0	0.0	0	0.0	829	4.0	0	0.0
Mallard	4 703	49.3	13 844	47.5	10 715	51.6	6 736	37.1
American Wigeon	1 385	14.5	5 579	19.1	1 443	6.9	4 422	24.4
Green-winged Teal	619	6.5	3 433	11.8	246	1.2	1 549	8.5
Blue-winged Teal	62	0.6	0	0.0	625	3.0	0	0.0
Shoveler	411	4.3	574	2.0	123	0.6	374	2.1
Pintail	216	2.3	2 620	9.0	645	3.1	2 155	11.9
Redhead	191	2.0	0	0.0	0	0.0	0	0.0
Greater Scaup	145	1.5	0	0.0	0	0.0	0	0.0
Lesser Scaup	1 125	11.8	1 048	3.6	2 621	12.6	681	3.8
Ring-necked Duck	144	1.5	0	0.0	799	3.8	718	4.0
Goldeneye	62	0.6	1 427	4.9	0	0.0	1 162	6.4
Bufflehead	238	2.5	240	0.8	799	3.8	0	0.0
Ruddy Duck	191	2.0	167	0.6	123	0.6	0	0.0
Total sport ducks	9 492	99.5	28 932	99.2	19 703	94.8	17 797	98.1
Oldsquaw	0	0.0	0	0.0	0	0.0	237	1.3
Common Scoter	48	0.5	0	0.0	1 075	5.2	0	0.0
Surf Scoter	0	0.0	240	0.8	0	0.0	100	0.6
Total sea ducks	48	0.5	240	0.8	1 075	5.2	337	1.9
Total ducks	9 540	85.4	29 172	94.4	20 778	97.7	18 134	89.0
Small Canada Goose	0	0.0	144	8.3	496	100.0	320	14.3
Large Canada Goose	0	0.0	144	8.3	0	0.0	72	3.2
Snow Goose	1 307	80.0	1 438	83.3	0	0.0	1 647	73.7
White-fronted Goose	327	20.0	0	0.0	0	0.0	196	8.8
Total geese	1 634	14.6	1 726	5.6	496	2.3	2 235	11.0
Waterfowl	11 174	100.0	30 898	100.0	21 274	100.0	20 369	100.0

(cont'd)

**Table 18 (cont'd)**  
Estimated retrieved kill of waterfowl in Yukon

Species	1975		1976		1977		1978	
	Kill	%	Kill	%	Kill	%	Kill	%
Common Merganser	121	2.4	0	0.0	0	0.0	29	1.0
Red-breasted Merganser	0	0.0	105	2.7	0	0.0	0	0.0
Hooded Merganser	121	2.4	0	0.0	0	0.0	0	0.0
Mallard	1 252	25.0	1 047	26.8	810	26.3	1 306	44.0
American Wigeon	703	14.0	955	24.5	318	10.3	272	9.2
Green-winged Teal	403	8.1	47	1.2	314	10.2	305	10.3
Blue-winged Teal	263	5.3	0	0.0	18	0.6	41	1.4
Shoveler	41	0.8	152	3.9	255	8.3	0	0.0
Pintail	689	13.8	333	8.5	354	11.5	225	7.6
Canvasback	38	0.8	0	0.0	51	1.7	0	0.0
Greater Scaup	0	0.0	0	0.0	72	2.3	87	2.9
Lesser Scaup	866	17.3	469	12.0	300	9.8	358	12.0
Ring-necked Duck	41	0.8	0	0.0	0	0.0	0	0.0
Goldeneye	203	4.1	252	6.5	18	0.6	98	3.3
Bufflehead	150	3.0	311	8.0	226	7.3	176	5.9
Ruddy Duck	0	0.0	0	0.0	0	0.0	74	2.5
Total sport ducks	4 891	97.7	3 671	94.1	2 736	88.9	2 971	100.0
Harlequin Duck	0	0.0	0	0.0	5	0.2	0	0.0
White-winged Scoter	113	2.3	189	4.8	335	10.9	0	0.0
Surf Scoter	0	0.0	42	1.1	0	0.0	0	0.0
Total sea ducks	113	2.3	231	5.9	340	11.1	0	0.0
Total ducks	5 004	92.2	3 902	94.2	3 076	95.1	2 971	86.9
Canada Goose	0	0.0	0	0.0	27	17.1	0	0.0
Small Canada Goose	0	0.0	89	36.9	67	42.4	269	60.2
Large Canada Goose	212	50.0	105	43.6	62	39.2	61	13.6
White-fronted Goose	212	50.0	47	19.5	2	1.3	117	26.2
Total geese	424	7.8	241	5.8	158	4.9	447	13.1
Waterfowl	5 428	100.0	4 143	100.0	3 234	100.0	3 418	100.0

**Table 19**  
Live weight (kg) of waterfowl killed per active hunter

Province	Zone	1975	1976	1977	1978
Nfld.	1	1.7	1.6	2.2	2.5
	2	4.7	4.8	7.0	6.2
PEI	1	2.9	4.7	4.1	3.5
NS	1	5.5	6.0	6.6	5.2
NB	2	3.9	3.3	3.8	3.3
	1	2.6	3.1	2.6	3.3
Que.	2	3.1	3.9	2.3	2.5
	1	4.3	5.3	5.8	5.1
Ont.	2	3.4	4.4	4.5	4.7
	1	4.1	4.9	3.6	4.5
	3	3.3	3.3	3.5	3.3
Man.	2	4.8	4.2	4.3	4.4
	1	4.6	4.4	3.2	4.8
Sask.	2	4.9	5.2	4.2	5.6
	1	10.1	9.1	5.5	5.3
	3	9.3	8.2	6.6	6.9
Alta.	2	6.8	7.9	5.1	5.9
	1	6.5	5.8	5.6	4.6
BC	2	7.3	8.2	7.0	5.2
	1	4.5	4.2	5.2	3.5
NWT	1	3.1	8.5	5.8	5.6
Yukon	1	7.0	5.4	4.2	4.4

**Table 20**  
Shannon-Wiener species diversity of waterfowl kill

Province	Zone	1975	1976	1977	1978
Nfld.	1	.52	.63	.60	.52
	2	.58	.60	.57	.61
PEI	1	.47	.43	.41	.38
NS	1	.60	.59	.56	.49
NB	2	.45	.44	.49	.38
	1	.57	.62	.58	.56
Que.	2	.51	.53	.55	.45
	1	.77	.76	.74	.75
Ont.	2	.70	.72	.71	.65
	1	.67	.63	.66	.63
	3	.68	.66	.69	.62
Man.	3	.67	.73	.65	.68
	1	.65	.62	.58	.55
Sask.	2	.50	.41	.44	.45
	1	.46	.46	.47	.45
	3	.38	.36	.31	.35
Alta.	3	.44	.37	.40	.45
	1	.57	.52	.53	.54
BC	2	.41	.37	.41	.43
	1	.50	.50	.50	.46
NWT	1	.53	.47	.49	.54
Yukon	1	.62	.59	.62	.57

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